A46 Coventry Junctions (Walsgrave) Scheme number: TR010066

6.3 Environmental Statement Appendices

Appendix 9.3 Ground Investigation Report

APFP Regulations 5(2)(a)

Planning Act 2008

Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009

Volume 6

November 2024

Infrastructure Planning

Planning Act 2008

The Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009

A46 Coventry Junctions (Walsgrave)
Development Consent Order 202[x]

ENVIRONMENTAL STATEMENT APPENDICES
Appendix 9.3 Ground Investigation Report

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A46 COVENTRY JUNCTIONS (WALSGRAVE)

Ground Investigation Report

GDMS 42880

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1. Introduction

1.1. Scope and Objective of Report

1.1.1. This PCF Stage 3 Ground Investigation Report (GIR) describes the results of the ground investigation carried out at the site in May and June 2023 and provides a summary of the results of the investigation.

1.1.2. The objectives of this report are to:

- Provide a summary of the findings of the ground investigation,
- Provide an interpretation of the ground conditions for the site,
- Highlight geotechnical and geo-environmental considerations for the proposed structures and geotechnical works,
- Present representative geotechnical parameters to be taken forward to design based on the results of the ground investigation and other findings presented in this GIR,
- Present an assessment of contaminated land risks to human and non-human receptors.

1.2. Scheme Overview

1.2.1. Octavius Infrastructure Limited (OIL) have been commissioned by National Highways (NH) to develop the preferred option for upgrading the A46 Junction at Walsgrave. The junction forms part of the A46 Coventry Junctions Upgrade scheme encompassing both Walsgrave and Binley junctions on the A46 east of Coventry.

1.2.2. The preferred option, as described in the Preliminary Sources Study Report (PSSR) [1], is Option 11. This is shown in the drawings in Figure A.2ii. Option 11 was developed from Option 6 in the Statement of Intent.

1.2.3. The Scheme Designer, Design Joint Venture (DJV) is formed of COWI UK and Sweco. DJV acted on behalf of OIL as Investigation Supervisor throughout the ground investigation.

1.2.4. Walsgrave Junction is located approximately 4.8km to the east of Coventry city centre. The site area covers an approximate 2.5 km section of the A46 which passes from E439087, N281000 (north) to E438570, N278723 (south). In the central part of the site is Walsgrave Junction, linking the A46 to the B4082 which trends east to west. The site area encompasses some of the B4082 which extends west to E438040, N279396.

1.2.5. The A46 Walsgrave junction connects the A46 to the B4082 at Walsgrave and this junction is currently a 3-arm roundabout. The preferred scheme from PCF Stage 2 comprises a grade separated junction located to the north of the existing Walsgrave

roundabout with the B4082 extending to the new junction. The A46 mainline will be designed to 50mph to minimise the impact on the adjacent Coombe Country Park.

1.2.6. The proposed Walsgrave Overbridge will span over the existing A46 mainline as part of the proposed new Walsgrave Junction. In the location of the proposed structure the existing horizontal and vertical alignment of the existing A46 mainline is proposed to be retained. The existing A46 mainline is a rural all-purpose dual carriageway (D2AP). The proposed structure will also span over a 2.5m wide maintenance walkway adjacent to the northbound carriageway giving a total required clearance of 28.2m. A clear span of 29m is proposed for the overbridge. The overbridge structure is proposed to be single span weathering steel-concrete composite deck with fully integral supports.

1.2.7. At the time of writing, three options are being considered for the overbridge substructure at the pre-options phase:

- Option 1: Full height concrete abutment on shallow foundations,
- Option 2: Full height concrete abutment on piled foundations,
- Option 3: Bankseat abutment on reinforced soil wall foundation.

1.3. Geotechnical Category

1.3.1. The NH document CD 622 [2] describes the methodology to review the proposed scheme, identify the project complexity, assess the risks and thereby determine its Geotechnical Classification.

1.3.2. Taking into consideration the characteristics of the A46 Walsgrave Junction scheme and the available geotechnical information together with experience of construction, this project is considered to be Geotechnical Category 2 based on BS EN 1997-1 [3].

1.4. Other Relevant Information

1.4.1. No other relevant information to apply at the time of writing this GIR.

2. Existing Information

2.1. Historical Development of Site Area

2.1.1. 13 No. historical maps were identified and reviewed as part of the PCF Stage 2 PSSR [1].

2.1.2. The maps show that from 1886 until 1955 the land was predominantly used for agricultural purposes with five gravel pits located within or adjacent to the site boundary.

2.1.3. In 1955 the housing development along Clifford Bridge Road was constructed, as well as allotments and gardens adjacent and a large pit to the south of Brinklow Road. This pit was enlarged in 1967 and two additional pits were constructed adjacent to it.

2.1.4. From 1973 to 1974, the housing estate to the east of Clifford Bridge Road was developed.

2.1.5. From 1980, the gravel pits to the south of Brinklow Road are no longer visible.

2.1.6. In 1991 the A46 Walsgrave Junction was developed, which included a roundabout leading west to another roundabout connecting Clifford Bridge Road. Two bridges are shown crossing the A46. One from Hungerley Hall to the north of the roundabout and one further north along Farber Road. A weir is labelled approximately 100m north of the sluice.

2.1.7. In 2010, the housing estates south-west of Walsgrave Junction are present.

2.2. Geological Maps and Memoirs

2.2.1. The PSSR identified Made Ground south of the Walsgrave Junction and north of Brinklow Road. A smaller deposit was identified north of Walsgrave Junction and to the east of the A46. This area also contains a region of "infilled land", to the north of the perimeter and west of the A46. The BGS defines infilled land as "areas where the ground has been cut away then wholly or partially backfilled".

2.2.2. The published 1:50,000 scale geological map of the area, Figure A.1 in Appendix A, produced by the British Geological Survey (BGS), Solid and Bedrock maps of Coventry (Sheet 169) [4] and the BGS Technical Report WA/89/29 ‘Geology of the Coventry Area’ [5] suggests the site is underlain by the following superficial geological units:

- Alluvium,
- River Terrace Deposits,
- Wolston Glacigenic Formation: Bosworth Clay Member,

- Wolston Glacigenic Formation: Thrussington Till,
- Baginton Sand and Gravel Formation.

2.2.3. The bedrock deposit anticipated beneath the site is the Mercia Mudstone Group.

2.3. Aerial Photographs

2.3.1. Aerial photography from 2023, presented in Figure 2-1, shows that between Walsgrave Junction and Brinklow Road, the A46 is bordered by residential housing in the west and Coombe Pool in the east. The residential estate continues southeast of Brinklow Road and the southwest is agricultural land. The A46 carriageway continues north of Walsgrave Junction, bordered by Hungerley Hall Farmhouse in the west and agricultural land in the east and west. The B4082 leads off Walsgrave Junction to the west and is encircled by agricultural land in the north and a smaller region in the south, followed by the housing estate. In 1999, the aerial imagery shows the presence of the landfill site situated to the southwest of the site, north of Brinklow Road, but it is not visible from 2010 onward.

Figure 2-1 Aerial imagery from 2023 sourced from Google Maps 2023.

2.4. Site Walkover

2.4.1. A walkover survey was conducted by AECOM on the 2nd of September 2021 and the findings of it are reported in the PSSR [1]. Due to traffic management restrictions, the carriageway of the A46 was not accessed but a visual survey was carried out from the two bridges that cross the A46 carriageway at Hungerley Hall Farm and Farber Road. The walkover survey confirmed the presence of agricultural land across the site and that most fields were being used for growing crops.

2.4.2. The walkover confirmed that the site is generally flat ignoring any earthworks.

2.4.3. The walkover identified two small areas of the site being covered with fly tipped material. This was identified at the southern boundary of the B4082, in front of the field access gate. At the western boundary of the A46, north of Hungerley Hall Farmhouse fly tipped material was identified as potentially containing asbestos. The ground investigation works described in this GIR identified that these areas had been cleared of the waste material.

2.4.4. The walkover did not encounter invasive species.

2.5. Topographical Survey Information

2.5.1. A topographical survey was undertaken by Octavius Infrastructure Limited (OIL) in September 2022 [6]. The survey shows that the site slopes gently southwards across 1.2km from an elevation of approximately +79m AOD in the north to approximately +74m AOD at Walsgrave Junction. Continuing southward from Walsgrave Junction, the site gently increases in elevation to approximately +84m AOD over 600m.

2.6. Records of Mines

2.6.1. PSSR [1] identified Coal Measures to the west of the site, including Deep Coal (between 50m and 1200m) next to the western perimeter of the site adjacent to the B4082. Shallower coal measures (at least 2m thick, between 600m and 1200m depth) are located approximately 1.1 miles (1.8km) further west of the B4802 and Clifford Bridge Road junction. The productive Coal Measures are concealed and lie at considerable depth. Any working of the coal seams is likely to be part of the Binley Colliery (approximately 2km south). The PSSR states that, due to modern mining techniques being used, the subsidence associated with longwall mining would have occurred in the short-term and is an unlikely risk to the site.

2.6.2. The Coal Authority's Interactive Map Viewer [7] indicates that the Study Area is within the Coal Authority's Mining Reporting Area. The PSSR identifies one substantial claim regarding subsidence damage in 1995. However, it has been concluded that, because of the nature, location, and age of the claim, mining risk is negligible within the site area.

2.7. Existing Ground Investigations

2.7.1. The PSSR [1] identified three historical ground investigations within and adjacent to the site which have been given in Table 2-1.

Table 2-1 Historical ground investigations identifies in the PSSR.

Company	Date	Description	Exploratory holes	Maximum depth (m)
Northwest Holst Soil Engineering Ltd	1981	Coventry Eastern Bypass Stage I	16 boreholes	16.3
	1983	Coventry Eastern Bypass Stage II	25 boreholes	13
Bostock Hill and Rigby Ltd	1983	Coventry Eastern Bypass & M40 Gaydon	15 boreholes	11.95

2.8. Flood Records

2.8.1. The PSSR [1] identified that the site is considered susceptible to fluvial flooding. There is a medium risk of flooding from the River Sowe and Smite Brook (less than 1 in 30 but greater than or equal to 1 in 100 chance) and a high risk from Coombe Pool (greater than or equal to 1 in 30 chance). It is also noted that there is a moderate potential for groundwater flooding to the south of the site, at the location of the landfill. The remainder of the site is deemed as low or negligible risk of groundwater flooding.

2.9. Contaminated Land

2.9.1. There is the potential for contaminated land on site as identified within the PSSR [1] and Environmental Scoping Report [8] due to the presence of landfill deposits in the north and south of the Scheme and historic industrial and agricultural land uses. Made Ground is also likely to be associated with the construction of the A46 carriageway and B4082. A detailed contamination assessment has been carried out as part of this GIR.

2.10. As-Built Construction Records

2.10.1. The PSSR [1] identifies as-built construction records from GDMS [9]. The A46 was constructed in the mid-1980s and is formed of a two-lane dual carriageway with central reserve, trending approximately north to south. Walsgrave Junction was constructed in the centre of the site and comprises an at-grade roundabout linking the A46 to the B4082. The B4082 is a single lane carriageway trending approximately east to west.

2.10.2. There is a cutting slope approximately 1 mile (1.7km) long north of Walsgrave Junction adjacent to the A46 Northbound. This cutting slope extends past the northern perimeter and varies in height from 0.8m to 7.2m, with a slope angle between 10° and 25° to the horizontal. There is one cutting slope and one bund slope situated to the north of

Walsgrave Junction adjacent to the A46 Southbound, the bund slope lies within the site boundary at Chainage 1200m to Chainage 1550m and the cutting slope surpasses the boundary from Chainage 1550m to Chainage 2050m. Their height varies from 0.5m to 7.6m.

2.10.3. Generally, in the remainder of the site to the south of Walsgrave Junction, each of the two A46 carriageways are adjacent to bund slopes with height ranging from 3.5 m to 6.7m and slope angles from 25° to 40° to the horizontal.

2.11. Geomorphological Mapping

2.11.1. No geomorphological mapping has been carried out.

2.12. Landfill

2.12.1. The PSSR [1] interprets the extents of historic landfill from the GDMS and Environment Agency database [10]. Five landfill sites have been identified, four of which are south of Walsgrave Junction. The remaining landfill site is in north of Walsgrave Junction.

2.12.2. Table 2-2 details the historic landfill sites on site.

Table 2-2 Historical landfill sites identified in the PSSR.

Number	Site Name	Waste Type	Approximate Extents North/South
1	Walsgrave Hill Borrow Pit	Inert, Special	E280400, N439100 / E280600, N439100
2	Sharman's Yard	-	E438200, N279000 / E438200, N278800
3	Scrap Yard	-	E438200, N279000 / E438200, N278800
4	Coombe Fields	Industrial	E438400, N28800 / E438400, N28800
5	Coombe Estate	Inert	E438000, N279300 / E438000, N279100

2.13. Services

2.13.1. A Statutory Undertakers Report (SUR) [11] was prepared during PCF Stage 2 and should be consulted along with the relevant service plans prior to any intrusive ground investigation and construction work. The SUR indicates Western Power Distribution (WPD) overhead cables and associated pylons traversing the west flank of the site would affect the proposed works. Requirements of a minimum horizontal offset of 5m from the edge of earthworks/or carriageway and a minimum 7.3m vertical clearance from the top of proposed pavement was supplied by WPD.

2.13.2. A Ground Penetrating (GPR) survey was carried out in August and September 2023. In addition to the above, street lighting and drainage assets adjacent to the existing carriageways, as well as existing Vodafone and Western Power Comms cables were

identified. The Vodafone and Western Power Comms cables will be physically located when planned trial holes are carried out.

2.14. Subsidence

2.14.1. The PSSR [1] provides the following risk levels for natural ground subsidence:

- Shrink swell clay: areas of negligible, low and high risk.
- Running sands: areas of negligible, low and high risk.
- Compressible deposits: areas of negligible, very low and high risk.
- Collapsible deposits: areas of negligible and very low risk.
- Landsides: areas of very low and low risk.
- Ground dissolution of soluble rocks: very low risk.

2.14.2. Subsidence risk from mining has been discussed in Section 2.6.

2.15. Unexploded Ordnance

2.15.1. A 1st Line Defence Unexploded Ordnance (UXO) risk assessment was reviewed as part of the PSSR [1]. This indicated a medium risk area for UXO north of Walsgrave Junction.

2.16. Other Relevant Information

2.16.1. Not applicable.

3. Field and Laboratory Studies

3.1. Introduction

3.1.1. The following section details the 2023 ground investigation field and laboratory works. The ground investigation was based on Design Fix 2 (for Consultation) and was amended to target Design Fix 3 elements of the alignment.

3.1.2. The ground investigation was designed by the Design Joint Venture (DJV) between COWI and SWECO.

3.2. Geomorphological/Geological Mapping and Topographic Survey

3.2.1. No additional geological or geomorphological mapping has been competed as part of this ground investigation.

3.2.2. A topographic survey was conducted by OIL in September 2022, see details in Section 2.5 above.

3.3. Ground Investigations

3.3.1. The Ground Investigation Scope Report (GISR) [12] sets out the objectives of the Ground Investigation, which were:

- Determine the occurrence, distribution and engineering properties of the geological formations and artificial ground along the preferred route,
- Determine the lateral extent, depth, and composition of landfill deposits on the preferred route,
- Determine the groundwater profile beneath the preferred route.

3.3.2. The Ground Investigation was planned so that these objectives could be achieved and targeted the following geotechnical hazards identified in the PSSR [1]:

- Landfill deposits,
- Compressible and cohesive deposits,
- Unexploded ordinance,
- Aggressive ground conditions,
- Soluble ground conditions,
- Groundwater,
- Contaminated land.

3.3.3. The ground investigation works were carried out by Strata Geotechnics on the instructions of Octavius Infrastructure Limited acting as investigation supervisor. The

fieldwork was carried out between May and June 2023. Monthly monitoring and groundwater sampling is currently planned to take place until July 2024.

3.4. Description of Fieldwork

3.4.1. Fieldwork for the ground investigation was carried out between the 12th of May to the 23rd of June 2023 by Strata Geotechnics in accordance with BS EN 1997-2 [13] and BS5930 [14]. A location plan can be seen in Figure A.2 in Appendix A.

3.4.2. The ground investigation consisted of the following:

- 14 No. cable percussive boreholes,
- 15 No. cable percussive boreholes followed by rotary drilling,
- 8 No. dynamic (windowless) sample boreholes,
- 3 No. mechanically excavated trial pits.

3.4.3. A cable avoidance tool survey was undertaken at each exploratory hole location prior to excavation. Additionally, an inspection pit was excavated by hand to a depth of 1.2m below ground level to check for buried services.

3.4.4. During fieldwork, the presence of a service within the inspection pit for BH125 led to it being aborted. A second borehole, BH125A, was carried out approximately 3.5m to the west of the original location and achieved the scheduled depth.

3.4.5. Groundwater and gas monitoring points were also installed at 20 No. exploratory hole locations at a depth instructed by the DJV. The depths of installations for each exploratory hole location have been given in Table 3-1 and details of the strata type and monitoring findings are given in Section 4.5.

3.4.6. The borehole logs for the ground investigation are included in Appendix C, and a summary of borehole type, depths and installation details is provided in Table 3-1.

Table 3-1 Summary of Borehole Installations and Water Strikes

Borehole ID	Type	Scheduled Depth (m bgl)	Final Depth (m bgl)	Ground Level (m AOD)	Installation Depth (m bgl) (1)	Water Strike (m bgl) (2)
BH102	CP	10.00	10.25	72.88	-	-
BH103	CP	10.00	10.45	73.65	-	-
BH104	CP	15.00	9.79	73.14	5.50 - 9.79	1.00
BH105	CP+RC	10.00	10.41	72.57	3.50 - 10.00	1.00
BH106	CP+RC	10.00	10.79	75.85	3.50 - 10.40	3.50
BH107	CP	10.00	10.00	76.11	0.60 - 2.20	-
BH108	CP+RC	20.00	20.00	76.71	-	1.20
BH109	CP+RC	20.00	20.50	79.10	1.90 - 4.20	-

BH110	CP+RC	20.00	20.15	78.98	5.50 – 20.00	7.40
BH111	CP	10.00	10.00	78.17	1.80 - 3.80	5.40
BH112	CP	10.00	10.00	77.36	1.40 - 5.10	-
BH113	CP+RC	10.00	11.20	77.28	-	2.10
BH114	CP	10.00	9.79	77.04	-	4.30
BH115	CP+RC	10.00	9.85	75.07	-	-
BH116	CP	15.00	10.37	74.46	-	-
BH117	CP+RC	10.00	15.50	73.80	6.70 – 15.5	4.10
BH118	CP+RC	10.00	10.00	75.23	-	4.00
BH119	CP	25.00	10.24	74.84	-	3.60
BH120	CP+RC	15.00	25.00	74.67	-	3.15
BH121	CP+RC	25.00	16.00	73.49	6.50 – 16.00	2.50
BH122	CP+RC	10.00	25.16	76.29	-	5.00
BH123	CP	25.00	13.37	76.29	3.20 - 8.90	7.50
BH124	CP+RC	25.00	25.00	76.38	-	5.60, 10.00
BH125	CP	25.00	0.40	70.44	-	-
BH125A	CP+RC	10.00	25.00	70.45	3.60 – 8.00	3.50
BH126	CP	10.00	10.69	72.58	5.80 - 7.80	5.20, 10.20
BH127	CP	10.00	9.86	74.72	7.40 – 9.86	8.50
BH128	CP	10.00	11.91	74.37	-	5.95
WS102	WLS	6.00	6.45	71.43	2.90 - 3.70	-
WS103	WLS	5.00	5.05	71.96	1.60 - 2.30	-
WS104	WLS	5.00	3.90	75.29	1.90 - 3.90	2.00
WS105	WLS	5.00	3.90	74.48	1.50 - 3.90	-
WS106	WLS	5.00	5.00	72.57	2.30 – 5.00	-
WS107	WLS	5.00	4.45	74.62	-	1.00
WS108	WLS	5.00	3.50	73.00	-	-
WS109	WLS	5.00	3.00	71.04	1.00 – 3.00	-
TP101	TP	4.50	2.40	71.94	-	-
TP102	TP	4.50	2.50	75.36	-	2.50
TP103	TP	4.50	2.50	74.60	-	-

Note: CP – cable percussion, RC – rotary core, WLS – dynamic (windowless) sample, TP – trial pit.

(1) 50mm diameter slotted standpipe installation.

(2) Water strike depth measured during fieldwork.

3.4.7. Four exploratory holes were removed from the planned scope of works, for reasons stated in Table 3-2.

Table 3-2 Summary of omitted exploratory hole locations.

Borehole ID	Reason for removal
BH101	This borehole was located under electricity pylons. There was no suitable relocation position.
BH129	This borehole was descoped due to change in gantry position.
BH130	This borehole was descoped due to change in gantry position.
WS101	This borehole was in a housing estate and had to be removed due to accessibility issues.

3.4.8. In addition to the exploratory holes the fieldwork included:

- Split tube and solid cone standard penetration tests (SPT) in boreholes to determine the relative density of each stratum. SPTs were taken at 1m intervals up to 5m below ground level and then at 1.5m intervals thereafter.
- Representative disturbed and undisturbed samples were taken at depths shown in the exploratory hole record. Geotechnical and environmental sampling was carried on the samples.
- Three infiltration tests, but aborted in TP102 due to instability of the trial pit and in TP103 due to the presence of very stiff clay which resulted in no infiltration. As a result, infiltration data is only available for the test carried out in TP101.
- Four groundwater and gas monitoring visits during the fieldwork.

3.4.9. In addition to above, follow-up fieldwork is planned to be undertaken, consisting of the following (results and findings to be provided separately at a later date):

- monthly monitoring visits over a one-year period, to complete in July 2024.
- groundwater sampling and variable head permeability testing undertaken as part of the monthly long-term monitoring works.

3.5. Results of In Situ Tests

3.5.1. A total of 212 No. SPTs were carried out in the exploratory boreholes at regular intervals in accordance with BS EN ISO 22476 [15]. SPT results are shown in the exploratory hole logs included in Appendix C.

3.5.2. BS EN ISO 22476 provides the following equation for adjusting Standard Penetration Resistance (N) values to account for the energy delivered to the drive rods (N_{60} = N value adjusted to a reference energy ratio of 60%):

$$N_{60} = \frac{Er}{60} N$$

3.5.3. The E_r values provided by Strata Geotechnics for the test equipment (see Appendix C) ranged from 56% to 67%, therefore the adjusted N_{60} value is only fractionally higher than the 'N' value. Corrected N_{60} values are used for the derivations of geotechnical properties in Section 4. It should be noted that refusal 'N' values that did not achieve 300mm

test drive penetration have been extrapolated to an equivalent 300mm penetration, with the maximum uncorrected 'N' value set to 100.

3.5.4. In addition to SPTs, 9 No. in-situ hand penetrometer and 52 No. in-situ shear vane tests were performed. These were used in the derivation of geotechnical parameters, which is discussed in Section 4.

3.6. Drainage Studies

3.6.1. Three soakaway tests were scheduled in TP101, TP102 and TP103. The first test was carried out in TP101, where there was no infiltration due to the ground conditions being impermeable. As TP102 and TP103 were also constructed in impermeable ground, it was decided not to carry out infiltration tests in these locations.

3.7. Geophysical Surveys

3.7.1. No geophysical surveys were carried out as part of this ground investigation.

3.8. Test Pile Results

3.8.1. No pile tests were carried out as part of this ground investigation.

3.9. Other Field Work

3.9.1. A non-intrusive UXO magnetometer survey and target investigation was undertaken at one trial pit (TP103) and UXO magnetometer surveys were undertaken at exploratory holes recognised as medium risk as part of this ground investigation. These exploratory holes were BH122, BH123, BH124, BH126, BH127, BH128, WS106. No evidence of UXO was found during the fieldworks.

3.10. Laboratory Investigations

3.10.1. Samples retrieved from the various strata were scheduled for laboratory and soil testing, specified by the DJV. The samples were distributed to two laboratories by Strata Geotechnics, these were:

- i2 Analytical Ltd. UKAS test number 4041,
- Professional Soils Laboratory Ltd. UKAS test number 4043,

3.10.2. Soil testing was conducted in accordance with the methodologies described in BS 1377:1990 [16] and BS ISO 17892 [17]. The rock test procedures used for testing were carried out in accordance with the methodologies described by the International Society of Rock Mechanics (ISRM).

3.10.3. The following geotechnical tests were carried out:

- California bearing ratio (CBR) tests,
- Compaction tests,
- Consolidation tests,
- Density tests,
- BRE SD1 (2005) tests,
- Laboratory vane tests,
- Atterberg limits tests,
- Moisture condition value tests,
- Moisture content tests,
- Particle size distribution analysis,
- Point load tests,
- Rock porosity and density tests,
- Rock uniaxial compressive strength and deformability tests,
- Shear box tests,
- Triaxial tests.

3.10.4. Geo-environmental testing was also specified by the DJV. The geo-environmental tests carried out are listed in Section 4.6.

3.11. Description of Tests

3.11.1. Results for all of the geotechnical and geo-environmental tests can be found in Appendix C.

4. Ground Summary

4.1. General Site Description

4.1.1. North of Walsgrave Junction, the ground slopes gently falling west from approximately 89 m AOD to 75 m AOD. Walsgrave Junction and the B4082 lie relatively flat and at approximately 75 m AOD. To the south of Walsgrave Junction, the A46 lies upon the lower reaches of a gentle slope falling to the south-west. The ground level gently slopes from approximately 80 m AOD to 75 m AOD.

4.1.2. Information available on GDMS shows that there is an approximately 1.7km long cutting north of Walsgrave Junction, adjacent to the A46 Northbound from Walsgrave Junction at Chainage 900 m and extending beyond Chainage 2050 m at the northern perimeter. Geotechnical Asset Database (GAD) measurements indicate that the cutting slopes are approximately 25º dipping to the east, varying in height between approximately 0.8m and 7.2m. There are two cuttings adjacent to the A46 Southbound from Chainage 1200 m to Chainage 1550 m and from Chainage 1550 m to beyond Chainage 2050 m at the northern site boundary. GAD indicates the cuttings are between 10º and 25º dipping to the west. The measured height varies between approximately 0.5 m and 7.6 m. Generally, the remainder of the A46 highway south of Walsgrave Junction is adjacent to a bund front ranging in slope angle from 25º to 40º and heights from approximately 3.5m to 7.6m.

4.1.3. Four different ground models have been developed for the site for Zones 1 to 4 as illustrated in Figure 4-1. The geology in each of these zones is summarised in Sections 4.3 to 4.6.

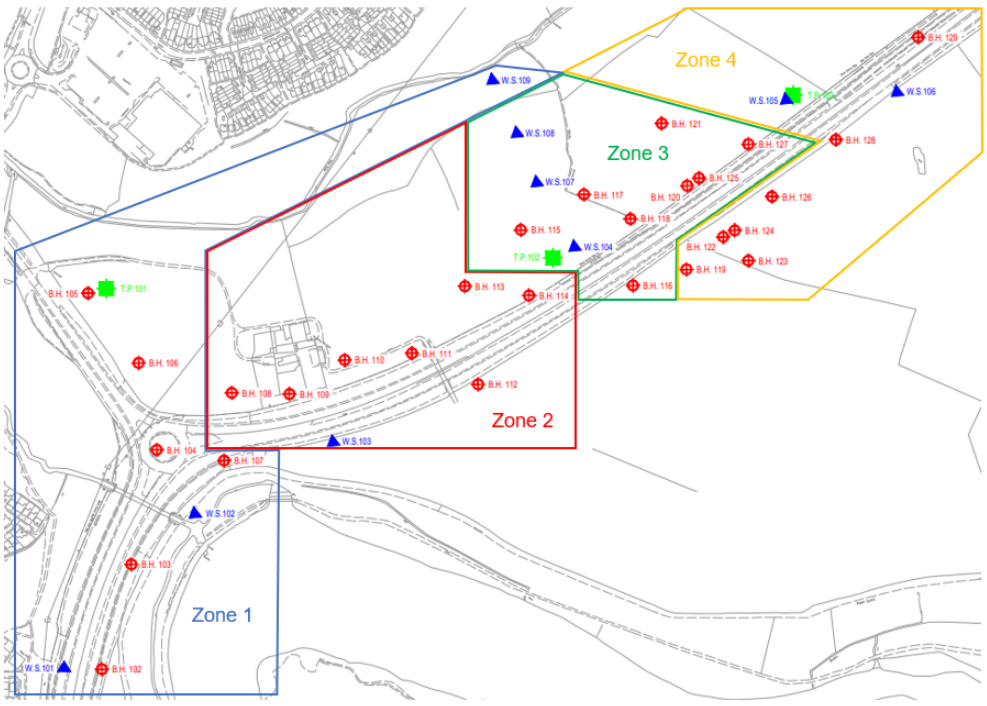

Figure 4-1 - Plan of zones based on geology.

4.2. Geology for the site

4.2.1. The strata encountered, including elevations, depths and general descriptions are provided in Table 4-1.

4.2.2. Whilst geological mapping identifies Bosworth Clay and the Thrussington Till members as separate units, this investigation has identified them collectively through their parent unit. This is because investigation methods limited the identification of laminated sections that would suggest the Bosworth Clay member and there is little published data on the unit. This, combined with cohesiveness of the Thrussington Till member, meant that it was not possible to distinguish them from each other. Therefore, the parent unit, the Wolston Glacigenic Formation, has been assigned to those strata.

Table 4-1 - Summary of ground conditions sitewide.

Stratum	Elevation of Stratum (mAOD)		Thickness (m)	Description
	Top	Base		
Topsoil	+70.44 to +78.98	+69.95 to 78.68	0.20 – 0.60	Firm to stiff, brown to dark brown, sandy gravelly **CLAY** with rootlets and roots. Brown to dark brown, slightly clayey slightly gravelly, fine to coarse **SAND** with rootlets.
Made Ground	+71.16 to +79.10	+69.30 to 78.20	0.40 – 3.50	Outside of the carriageway: Firm to stiff, orangish brown to dark brown, sandy gravelly **CLAY.** Orangish brown to dark brown, slightly clayey gravelly, fine to coarse **SAND**.
Alluvium	+69.04 to 76.75	+68.44 to +76.35	2.00 – 2.95	Soft to stiff, orangish brown to dark brown, sandy gravelly slightly silty **CLAY**. Occasionally, orangish brown to greyish brown, slightly clayey gravelly, fine to coarse **SAND**. Occasionally, firm, dark brown, slightly sandy, slightly gravelly **PEAT**.
River Terrace Deposits	+68.44 to 69.38	+67.08 to +68.04	0.40 – 2.30	Orangish to greyish brown sandy **GRAVEL**. Sand is fine to coarse.
Wolston Glacigenic Formation	+64.78 to +76.03	+62.68 to 74.34	0.40 – 13.35	Firm to very stiff, orangish brown to dark brown, sandy slightly gravelly **CLAY** with frequent black specs. Very loose to very dense, orangish brown to dark brown, clayey slightly gravelly **SAND**.
Baginton Sand and Gravel Formation	+64.65 to +78.68	+62.45 to 77.98	0.65 – 5.20	Loose to dense, orangish brown to reddish brown, slightly clayey gravelly **SAND**. Loose to medium dense, orangish brown, clayey sandy **GRAVEL**. Occasionally, firm to stiff, orangish brown to dark brown, sandy slightly gravelly **CLAY**.
Mercia Mudstone Group	+45.60 to +75.78	+45.45 to +73.87	0.50 – 17.16 (Not Proven)	Grade IV (fully and partially weathered) Firm to very stiff, reddish brown locally mottled greenish grey, slightly sandy gravelly **CLAY**. Occasionally: Very dense reddish brown slightly clayey sandy angular fine to coarse **GRAVEL**. Very dense reddish brown locally mottled grey, gravelly clayey **SAND**. Grade I to Grade III Extremely weak to moderately weak, reddish brown **MUDSTONE**.

Description of encountered strata

Topsoil

4.2.3. Topsoil was encountered in almost all exploratory holes. Topsoil is generally described as firm to stiff, brown to dark brown, sandy gravelly CLAY with roots and rootlets. Topsoil has also been described as brown to dark brown, slightly clayey slightly gravelly, fine to coarse SAND with frequent rootlets. On average, the topsoil is 0.40m thick.

4.2.4. The gravel in the Topsoil is typically subangular to rounded and of quartzite.

Made Ground

4.2.5. Made Ground was encountered in six of the exploratory hole locations.

4.2.6. BH102 and BH103 were carried out within the carriageway and Made Ground was overlain by bituminous paving 0.4m and 0.1m thick respectively. The Made Ground beneath the bituminous paving is described as yellowish brown to grey, fine to coarse, angular to subangular, sandy GRAVEL. The sand is fine to coarse. The thickness of this ranges from 0.4 to 3.5m. The gravel within the Made Ground beneath the bituminous paving is subangular to angular and consists of sandstone and concrete.

4.2.7. The Made Ground in BH109 and BH117, which were constructed outside of the carriageway, is described as firm to stiff, orangish brown to dark brown occasionally mottled grey and yellow, sandy, gravelly CLAY. Sand is fine to coarse. Gravel within the cohesive Made Ground is subrounded to rounded, consisting of quartzite and brick fragments. The thickness of the cohesive Made Ground deposits ranges from 0.90m to 1.70m.

4.2.8. In WS102 and WS103, which were also constructed outside of the carriageway, Made Ground is described as orangish brown to dark brown, slightly clayey gravelly fine to coarse SAND. Gravel is subangular to rounded, fine to coarse of quartzite and brick. The thickness of this deposit is 1.5m.

4.2.9. The gravel in the Made Ground for boreholes outside of the A46 carriageway typically consists of quartzite and brick. The gravel in the Made Ground in boreholes within the carriageway consists of sandstone and gravel.

Alluvium

4.2.10. Alluvium deposits were found in eight exploratory hole locations along the south and west site boundaries. These locations were BH103, BH104, BH105, BH106, BH107, WS102, WS107 and WS109.

4.2.11. The deposit is generally described as soft to stiff orangish brown to dark brown, sandy gravelly slightly silty CLAY. Sand is fine to coarse, and gravel is subangular to rounded fine to coarse and typically consists of quartzite and chert.

4.2.12. The Alluvium deposit is also described in BH107, WS102 and WS107 as orangish brown to greyish brown, slightly clayey gravelly, fine to coarse SAND. Gravel is angular to rounded and typically consists of quartzite. The thickness of granular Alluvium ranges from 0.50m – 0.70m, and this is underlain by the cohesive Alluvium.

River Terrace Deposits

4.2.13. River Terrace Deposits were found in two exploratory hole locations, BH102 and WS109. The deposit is described as orangish to greyish brown sandy GRAVEL. Sand is fine to coarse. The gravel is angular to rounded, fine to coarse and comprises of quartz, sandstone, and chert.

4.2.14. The thickness ranges from 0.4m in WS109 to 2.3m in BH102.

Wolston Glacigenic Formation

4.2.15. As described in paragraph 4.2.2, the Wolston Glacigenic Formation is the parent unit of the Thrussington Till member and Bosworth Clay and has been used to identify strata that comprise either of these units.

4.2.16. The Wolston Glacigenic Formation was found in BH116, BH117, BH118, BH119, BH120, BH121, BH122, BH123, BH124, BH125A, BH126, BH127, BH128, TP102, TP103, WS104, WS105, WS106 and WS108.

4.2.17. The Wolston Glacigenic Formation is typically found to the north of the site on both the east and west sides of the A46 carriageway.

4.2.18. The Wolston Glacigenic Formation is described as firm to very stiff, orangish brown to dark brown with occasional black specs, sandy slightly gravelly CLAY. Gravel is fine to coarse, rounded to subrounded occasionally angular to subangular, of quartzite, sandstone, and mudstone.

4.2.19. The thickness of cohesive deposits within the Wolston Glacigenic Formation ranges from 0.40m (in WS108) to 8.10m (BH128), with the average thickness being 3.27m.

4.2.20. The formation is also described as medium dense to very dense, orangish brown to dark brown, clayey slightly gravelly, fine to coarse SAND. Gravel is subrounded occasionally subangular and rounded of quartzite, mudstone, and siltstone. Two localised pockets were described as very loose or loose.

4.2.21. The thickness of granular lenses in the formation ranges from 0.40m (in WS106) to 6.15m (in BH124), with an average thickness of 2.10m.

Baginton Sand and Gravel Formation

4.2.22. The Baginton Sand and Gravel Formation was identified in the following exploratory hole locations: BH103, BH108, BH109, BH110, BH111, BH112, BH113, BH114, BH116, BH117, BH118, BH120, BH121, BH125A, BH127, WS102, WS103, WS104, WS107 and WS108.

4.2.23. The formation was predominantly found in the north of Hungerley Hall Farm to the east and west of the A46 carriageway.

4.2.24. The thickness of the Baginton Sand and Gravel Formation ranges from 0.65m (in WS104) to 5.20m (in BH120).

4.2.25. The Baginton Sand and Gravel Formation is generally described as loose to dense, orangish brown to reddish brown, slightly clayey gravelly, fine to coarse SAND. The formation is also described as loose to medium dense, orangish brown, clayey sandy, fine to coarse GRAVEL. The gravel is typically subangular to rounded and of quartzite. The thickness of granular material within the formation ranges between 0.4m (in WS106) and 4.8m (in BH124), with an average thickness of 2.13m.

4.2.26. The formation also contains lenses of clay with a thickness range of 0.10m (in WS107) to 2.50m (in BH120), with an average thickness of 0.83m. The clay is described as firm to stiff, orangish brown to dark brown, sandy slightly gravelly CLAY. Gravel is subangular to rounded and quartzite or occasionally mudstone.

Mercia Mudstone Group

4.2.27. The Mercia Mudstone Group was encountered in all but one (WS107) of the exploratory holes. The top of the formation was found to be Grade IV (fully weathered) Mercia Mudstone Group which was underlain by Grade I to Grade III (unweathered and partially weathered) Mercia Mudstone Group. Weathering grades have been taken as per Table 4.1 in the British Geological Survey Research Report RR/01/02 [18]. Grade I (unweathered) Mercia Mudstone Group was found at one exploratory hole location (BH108) at an elevation of +58.21m AOD.

4.2.28. The Grade IV Mercia Mudstone Group is described as firm to stiff, orangish brown to reddish brown mottled grey occasionally blueish grey, slightly sandy gravelly CLAY. Sand is fine to coarse.

4.2.29. The Grade IV Mercia Mudstone Group is also locally (0.5m thick layer in BH119 and a 2.5m thick layer in BH123) described as very dense, reddish brown locally mottled grey, clayey gravelly, fine to coarse SAND.

4.2.30. Gravel is subrounded to rounded of quartzite, mudstone, and siltstone.

4.2.31. The thickness of the Grade IV Mercia Mudstone Group ranges from 0.5m to 10.85m. The thickness was not proven in the following exploratory hole locations: BH102, BH103, BH104, BH107, BH111, BH114, BH115, BH116, BH119, BH123, BH126, BH127, BH128, TP101 – 103, WS102, WS103, WS106, WS108.

4.2.32. In the locations where the thickness of the Grade IV Mercia Mudstone Group was proven, it was underlain by more competent Grade I to Grade III Mercia Mudstone Group.

4.2.33. The Grade I to Grade III Mercia Mudstone Group is typically described as extremely weak to moderately weak, reddish brown occasionally mottled grey, MUDSTONE. Discontinuities are at 0 – 10 degrees and are very closely to medium spaced, planar smooth occasionally undulating rough, clean.

4.2.34. The thickness of the Grade I to Grade III Mercia Mudstone Group was not proven.

Geology in Zone 1

4.2.35. Zone 1 consists of Alluvium and Baginton Sand and Gravel Formation, overlying the Mercia Mudstone Group, with localised superficial layers of Made Ground and River Terrace Deposits. The boreholes constructed in this area were: BH102, BH103, BH104, BH105, BH106, BH107, TP101, WS102 and WS109.

4.2.36. A summary of the ground conditions in Zone 1 is shown Table 4-2.

Table 4-2 - Summary of ground condition in Zone 1.

Stratum	Depth		Thickness (m)	Remarks
	Top (m bgl)	Bottom (m bgl)		
Topsoil	0	0.3 – 0.6	0.3 – 0.6	Not always present
Made Ground	0	0.3 – 3.5	0.3 – 3.5	Only present in BH102, BH103 and WS102
Alluvium	0 – 0.6	2.2 – 3.5	2.1 – 2.9	Present in all boreholes except BH102 and TP101
River Terrace Deposits	2.6 – 3.5	3 – 5.8	0.4 – 2.3	Only present in BH102 and WS109
Baginton Sand and Gravel Formation	2.5 – 2.75	3.7 – 4.5	0.95 – 2	Only present in BH103 and WS102
Mercia Mudstone Group (Grade IV)	0.3 – 5.8	2.4 – 10.45	0.6 – 7.8	Present in all boreholes except WS109
Mercia Mudstone Group (Grade III/II/I)	2.95 – 6.9	Not proven	Not proven	Only present in BH105 and BH106

Geology in Zone 2

4.2.37. Zone 2 consists of Baginton Sand and Gravel Formation overlying the Mercia Mudstone Group, with localised superficial layers of Made Ground. The boreholes constructed in this area were: BH108, BH109, BH110, BH111, BH112, BH113, BH114 and WS103.

4.2.38. A summary of the ground conditions in Zone 2 is shown Table 4-3.

Table 4-3 - Summary of ground conditions in Zone 2.

Stratum	Depth		Thickness (m)	Remarks
	Top (m bgl)	Bottom (m bgl)		
Topsoil	0	0.3 – 0.6	0.3 – 0.6	Only present in BH108, BH110, BH113
Made Ground	0	0.9 – 1.2	0.9 – 1.2	Only present in BH109 and WS103
Baginton Sand and Gravel Formation	0 – 1.2	1.5 – 5.1	1.2 – 5.1	Present in all boreholes
Mercia Mudstone Group (Grade IV)	1.5 – 5.1	5.05 – 18.4	1.6 – 15.2	Present in all boreholes
Mercia Mudstone Group (Grade I to Grade III)	7 – 13.6	Not proven	Not proven	Present in all boreholes except BH111, BH114 or WS103

Geology in Zone 3

4.2.39. Zone 3 generally consists of the Wolston Glacigenic Formation overlying Baginton Sand and Gravel Formation, which in turn overlie the Mercia Mudstone Group. In addition, there are localised deposits of Made Ground and Alluvium, in BH117 and WS107 respectively. The boreholes constructed in this area were: BH115, BH116, BH117, BH118, BH120, BH121, BH125, BH125A, BH127, TP102, WS104, WS107 and WS108.

4.2.40. A summary of the ground conditions in Zone 3 is shown Table 4-4.

Table 4-4 - Summary of ground conditions in Zone 3.

Stratum	Depth		Thickness (m)	Remarks
	Top (m bgl)	Bottom (m bgl)		
Topsoil	0	0.35 – 0.6	0.35 – 0.6	Present in all boreholes except BH116, BH117 and WS107
Made Ground	0	1.7	1.7	Present only in BH117
Alluvium	0	2	2	Present only in WS107
Wolston Glacigenic Formation	0 – 1.7	0.8 – 8	0.4 – 6.3	Present in all boreholes except BH115, BH125 and WS107
Baginton Sand and Gravel Formation	0.8 – 8	1.9 – 9	0.65 – 5.2	Present in all boreholes except BH115, BH125 and TP102
Mercia Mudstone Group (Grade IV)	0.6 – 9	3.5 – 19.85	0.15 – 11.25	Present in all boreholes except BH125, TP102 and WS107
Mercia Mudstone Group (Grade I to Grade III)	7 – 10.6	Not proven	Not proven	Not always present

Geology in Zone 4

4.2.41. Zone 4 generally consists of the Wolston Glacigenic Formation overlying the Mercia Mudstone Group. The boreholes constructed in this area were: BH119, BH122, BH123, BH124, BH126, BH128, TP103, WS105 and WS106.

4.2.42. A summary of the ground conditions in Zone 4 is shown Table 4-5.

Table 4-5 - Summary of ground conditions in Zone 4.

Stratum	Depth		Thickness (m)	Remarks
	Top (m bgl)	Bottom (m bgl)		
Topsoil	0	0.2 – 0.8	0.2 – 0.8	Present in all boreholes except WS106
Wolston Glacigenic Formation	0 – 0.8	1.2 – 13.7	1.2 – 13.35	Present in all boreholes
Mercia Mudstone Group (Grade IV)	0 – 9	5 – 18.2	1.69 – 10.2	Present in all boreholes BH124, TP103 and WS105
Mercia Mudstone Group (Grade I Grade III)	11.4 – 13.7	Not proven	Not proven	Only present in BH122 and BH124

4.3. Geotechnical Parameters for Design

Topsoil

4.3.1. Topsoil was logged at 25 locations. Results of laboratory and in-situ testing on the material are presented below.

Classification

4.3.2. Two soil density tests were performed on the material. In both, a bulk density of 2.07Mg/m³ was measured. Results are plotted in Figure A.3.

4.3.3. One PSD test was carried out on the material. This showed a fines content of 39%, indicating it to be a cohesive soil. Results are plotted in Figure A.11.

4.3.4. Atterberg limits and moisture content were measured on three samples. The results are shown in Table 4-6 and plotted in Figure A.20 and Figure A.27.

Table 4-6 - Atterberg limits and moisture content results for Topsoil samples.

Attribute	Range	Average Value
Moisture Content	16% – 23%	19%
Liquid Limit	27% – 37%	33%
Plastic Limit	16% – 19%	17%
Plasticity Index (PI)	11% – 18%	16%

Made Ground

4.3.5. Made Ground was logged at six locations. Results of laboratory and in-situ testing on the material are presented below.

Classification

4.3.6. Four soil density tests were performed on the material. The results of these are plotted in Figure A.4 and range from 1.98 Mg/m³ to 2.36 Mg/m³, with an average of 2.21 Mg/m³.

4.3.7. No PSD tests were performed on the material.

4.3.8. Atterberg limits and moisture content were measured on three samples. One of these samples was found to not be plastic and thus no Atterberg Limits were obtained. The results of the remaining tests are shown in Table 4-7 and plotted in Figure A.21 and Figure A.28.

Table 4-7 - Atterberg limits and moisture content results for Made Ground samples.

Attribute	Range	Average Value
Moisture Content	5% – 14%	9%
Liquid Limit	29% – 33%	31%
Plastic Limit	15% – 16%	16%
Plasticity Index (PI)	14% – 17%	16%

Standard Penetration Test

4.3.9. Two SPTs were undertaken in granular portions of Made Ground. The SPT results indicate uncorrected "N" values ranging from 9 (N_{60} = 10) to 30 (N_{60} = 34), with an average of 20 (N_{60} = 22).

4.3.10. One SPT was carried out in a cohesive portion of Made Ground. The uncorrected "N" value measured was 6 (N_{60} = 6).

4.3.11. The results of all three tests have been combined in Figure A.34.

Drained Shear Strength – Granular Portion

4.3.12. Figure 36a in CIRIA R143 [19] allows for derivation of the peak effective angle of friction of granular soils using SPT results. N_{60} values ranging from 10 to 34 correspond to a peak angle of friction ranging from 31˚ to 39˚, with an average of 35˚.

Drained Shear Strength – Cohesive Portion

4.3.13. The constant volume internal angle of friction of the cohesive portion has been estimated using the equation $\varphi'_{cv} = 42 - 12.5log_{10}I_P$, from BS8002 [20], where I_P is plasticity index. This results in a range of constant volume internal angle of friction values, from 27˚ to 28˚.

Undrained Shear Strength

4.3.14. Undrained shear strength is only applicable for the cohesive portion of the material.

4.3.15. Undrained shear strength was measured in six field vane tests. The results ranged from 40kPa to 66kPa, with an average undrained shear strength of 52kPa.

4.3.16. One SPT test was carried out on Made Ground logged as cohesive, with an N_{60} of 7. The result of this test was correlated with undrained shear strength using the

following equation, taken from CIRIA R143: $c_u = f_1 N_{60}$. Using Figure 31 in CIRIA R143, the value of f_1 was taken as 6 based on the average plasticity index of 16%.

4.3.17. Using the above correlation, the N_{60} of 6 corresponds to an undrained shear strength of 42kPa.

4.3.18. Undrained shear strength results are plotted in Figure A.53.

Stiffness – Granular Portion

4.3.19. CIRIA R143 recommends that drained Young's Modulus (in MPa) of granular soils can be taken as between N_{60} and $2N_{60}$ for foundations. By assuming a correlation of $1.5N_{60}$, drained Young's Modulus varies from 15MPa to 51MPa, with an average of 33MPa.

Stiffness – Cohesive Portion

4.3.20. Correlations linking drained Young's Modulus to undrained shear strength and plasticity index for soft clays, presented in Stroud et. al. (1975), were re-published in The Handbook of Geotechnical Investigation and Design Tables by Burt Look [21]. For a plasticity index between 10% and 20%, drained Young's Modulus can be taken as 270 c_u.

4.3.21. The drained Young's Modulus of the cohesive portion of the Made Ground can therefore be considered to range between 10.5MPa and 17.8MPa, with an average of 13.5MPa.

Coefficient of Consolidation

4.3.22. Coefficient of consolidation is only relevant for the cohesive portion of Made Ground.

4.3.23. No consolidation tests were performed on the material.

4.3.24. NAVFAC (1988) published correlations with liquid limit that can be approximated to coefficient of consolidation. These were republished in the Handbook of Geotechnical Investigation and Design Tables by Burt Look.

4.3.25. Based on this correlation, a liquid limit between 29% and 33% corresponds to a coefficient of consolidation between around 15 and 20 m²/year.

Alluvium

4.3.26. Alluvium was logged at eight locations. Considering the very small portion of granular material in the unit (sand was only logged in three boreholes, with a maximum thickness of 0.7m), no properties were derived for the granular material in the unit. All of

the properties derived for Alluvium are for cohesive material. Any tests performed on the granular material were not included in the data set.

4.3.27. Results of laboratory and in-situ testing on the material are presented below.

Classification

4.3.28. Eight soil density tests were performed on the material. One test result, of 2.15 Mg/m³, has not been included in the data as it was carried out on granular material. The results of the remaining seven tests ranged from 1.76 Mg/m³ to 2.22 Mg/m³, with an average of 2.07 Mg/m³.

4.3.29. Soil density was also measured in two consolidated undrained triaxial tests, ranging between 2.19 Mg/m³ and 2.22 Mg/m³, with an average of 2.21 Mg/m³. It was also measured in one unconsolidated undrained triaxial test as 2.05 Mg/m³, in one shear box test it was measured as 1.99 Mg/m³ and in one CBR test it was measured as 2.03 Mg/m³.

4.3.30. Bulk density test results for Alluvium are plotted in Figure A.5.

4.3.31. Six PSD tests were carried out on the material. The fines content was measured to range from 37% to 86%, with an average of 65%. As the fines content measured as above 35% in all samples, in accordance with the definitions set out in BS5930 [14], all of these samples are cohesive. The results are plotted in Figure A.12.

4.3.32. Atterberg limits and moisture content were measured on 13 samples. One of these samples was granular and found to not be plastic. Therefore, Atterberg Limits were not obtained for the sample and the moisture content test result has been omitted. The results of the remaining tests are shown in Table 4-8 and plotted in Figure A.22 and Figure A.29.

Table 4-8 - Atterberg limits and moisture content results for Alluvium samples.

Attribute	Range	Average Value
Moisture Content	9% – 34%	20%
Liquid Limit	27% – 65%	41%
Plastic Limit	13% – 27%	20%
Plasticity Index (PI)	13% – 38%	21%

Compaction

4.3.33. Three compaction tests were undertaken on samples of Alluvium. Compaction test results indicate maximum dry density ranging between 1.84Mg/m³ and 1.87Mg/m³, with

an average of 1.85Mg/m³. Optimum moisture content was measured to range between 12% and 15%, with an average of 14%. All samples tested were cohesive.

4.3.34. One laboratory CBR test was carried out on a sample of Alluvium at a depth of 1.1m bgl. The CBR test reported a CBR value of 11% at the top of the sample and 9.4% at the base of the sample. All samples tested were cohesive.

Standard Penetration Test

4.3.35. Nine SPTs were undertaken in the Alluvium. The SPT results indicate uncorrected "N" values ranging from 4 (N_{60} = 4) to 29 (N_{60} = 31), with an average of 13 (N_{60} = 14). All of the nine SPTs were undertaken in cohesive material. Two N_{60} values of over 20 were recorded. These relatively high values were likely recorded due to gravel content within the cohesive material. All SPT results are plotted in Figure A.35.

Drained Shear Strength

4.3.36. One shear box test was carried out on a cohesive sample of Alluvium. A peak drained cohesion of 2kPa and a peak internal angle of friction of 31˚ was measured in this test. The results are plotted in Figure A.43.

4.3.37. Two consolidated undrained triaxial tests (with pore water pressure measurement) were performed on cohesive samples of Alluvium. The results of these tests have been plotted in the q-p' plot shown in Figure A.51. Considering all of the results together, peak drained cohesion was interpreted as 5kPa and peak internal angle of friction as 30˚.

4.3.38. The internal angle of friction has also been estimated using the equation $\varphi'_{cv} = 42 - 12.5log10I_P$, from BS8002, where I_P is plasticity index. This results in a range of internal angle of friction values, from 22˚ to 28˚, with an average of 25˚. Note that these are constant volume rather than peak values.

Undrained Shear Strength

4.3.39. Undrained shear strength was measured in five field vane tests. The results ranged from 10kPa to 60kPa, with an average undrained shear strength of 36kPa. It was also measured in six laboratory vane tests, with results ranging from 24kPa to 120kPa, with an average of 52kPa. In the two field pocket penetrometer tests carried out on the material, the undrained strength was measured to range between 48kPa and 72kPa, with an average of 60kPa.

4.3.40. Undrained shear strength was also measured in one unconsolidated undrained triaxial test, where it was measured as 78kPa, as well as two consolidated undrained triaxial tests (with pore water pressure measurement), where it was measured to range

between 70kPa to 80kPa, with an average of 75kPa. In the one shear box test carried out on the material, it was measured as 61kPa.

4.3.41. In nine SPT tests, N_{60} was found to range between 4 and 31. The results of these tests were correlated with undrained shear strength using the following equation, taken from CIRIA R143: $c_u = f_1 N_{60}$. Figure 31 in CIRIA R143 suggests that the value of f_1 can be taken as around 5 for a plasticity index of 21%. Using the above correlation, the N_{60} values were used to estimate undrained shear strengths. The N_{60} values of above 20 were ignored, because they were considered to have likely been affected by localised gravels and therefore not representative of the Alluvium. Using the remaining results, the correlated undrained shear strength ranges from 21kPa to 84kPa, with an average of 53kPa.

4.3.42. The undrained shear strength results for Alluvium are plotted in Figure A.54.

Stiffness

4.3.43. Correlations linking drained Young's Modulus to undrained shear strength and plasticity index for soft clays, presented in Stroud et. al. (1975), were re-published in The Handbook of Geotechnical Investigation and Design Tables by Burt Look. For a plasticity index between 20% and 30%, drained Young's Modulus can be taken as 200 c_u.

4.3.44. All undrained shear strength results were used to derive the Young's Modulus, with the exception of the two SPT results where an N_{60} value of over 20 was recorded.

4.3.45. The drained Young's Modulus of the Alluvium can therefore be considered to range between 2MPa and 24MPa, with an average of 10.6MPa.

Coefficient of Consolidation

4.3.46. No consolidation tests were performed on the material.

4.3.47. NAVFAC (1988) published correlations with liquid limit that can be approximated to coefficient of consolidation. These were republished in the Handbook of Geotechnical Investigation and Design Tables by Burt Look.

4.3.48. The liquid limit of the Alluvium was measured to vary significantly, between 27% and 65%. Using the above correlation, the average liquid limit of corresponds to a coefficient of consolidation of around 10 m^2/year.

River Terrace Deposits

4.3.49. River Terrace Deposits were logged at two locations. Results of laboratory and in-situ testing on the material are presented below.

Classification

4.3.50. Two soil density tests were performed on the material. The results of these ranged from 1.99 Mg/m³ to 2.19 Mg/m³, with an average of 2.10 Mg/m³.

4.3.51. Soil density was also measured in one shear box test to be 1.99 Mg/m³.

4.3.52. The results of all soil density tests are plotted in Figure A.6.

4.3.53. One PSD test was carried out on the material. The fines content was measured as 8%. The results are plotted in Figure A.13.

4.3.54. As the material is not plastic, no Atterberg Limit tests were carried out. No measurements of moisture content were made.

Standard Penetration Test

4.3.55. Four SPTs were undertaken in the River Terrace Deposits. The SPT results indicate uncorrected "N" values ranging from 13 (N_{60} = 14) to 50 (N_{60} = 51), with an average of 34 (N_{60} = 36). These results are plotted in Figure A.36.

Drained Shear Strength

4.3.56. One shear box test was carried out on a sample of River Terrace Deposits. The results of the test are shown in Figure A.44. A peak drained cohesion of 14kPa and a peak internal angle of friction of 50˚ was measured in this test. The measured values are considered unsuitably high for the material.

4.3.57. Figure 36a in CIRIA R143 allows for derivation of the peak effective angle of friction of granular soils using SPT results. N_{60} values ranging from 14 to 51 correspond to a peak angle of friction ranging from 32˚ to 43˚, with an average of 38˚.

Stiffness

4.3.58. CIRIA R143 recommends that drained Young's Modulus (in MPa) of granular soils can be taken as between N_{60} and $2N_{60}$ for foundations. By assuming a correlation of $1.5N_{60}$, drained Young's Modulus of the River Terrace Deposits varies from 21MPa to 77MPa, with an average of 54MPa.

Wolston Glacigenic Formation

4.3.59. The Wolston Glacigenic Formation was logged at 19 locations. Results of laboratory and in-situ testing on the material are presented below.

Classification

4.3.60. 20 soil density tests were performed on the material. The results of these ranged from 1.89 Mg/m³ to 2.33 Mg/m³, with an average of 2.12 Mg/m³. Whilst 16 of these tests were performed on cohesive samples, the remaining four were performed on granular samples. The bulk density was generally measured to be higher in the granular samples, with a range from 1.89 Mg/m³ to 2.33 Mg/m³, with an average of 2.15 Mg/m³.

4.3.61. Soil density was also measured in eight oedometer tests, ranging between 1.96 Mg/m³ and 2.26 Mg/m³, with an average of 2.10 Mg/m³. It was also measured in four unconsolidated undrained triaxial tests, ranging between 2.13 Mg/m³ and 2.24 Mg/m³, with an average of 2.18 Mg/m³. In eight shear box tests it was measured as ranging between 1.86 Mg/m³ and 2.26 Mg/m³, with an average of 2.11 Mg/m³. One of these tests was performed on a granular sample, with the bulk density measured as 2.26 Mg/m³. In five CBR tests it was measured as ranging between 2.04 Mg/m³ and 2.19 Mg/m³, with an average of 2.09 Mg/m³.

4.3.62. 19 PSD tests were carried out on the material. The fines content was measured to range from 20% to 88%. 16 of these tests were carried out on samples described as clay, in which the fines content was measured to range from 35% to 88%, with an average of 67%. These results are plotted in Figure A.14. The remaining three tests were carried out on samples described as sand, in which the fines content was measured to range from 20% to 27%, with an average of 24%. These results are plotted in Figure A.15. All PSD results correspond to the definitions of cohesive and granular soil set out in BS5930 [14], whereby a soil with a fines content of 35% or more is classed as cohesive.

4.3.63. Moisture content was measured on 42 samples and Atterberg Limits were measured on 41 samples. One of these samples was found to be granular and not plastic, so no Atterberg Limits were obtained. Its moisture content was measured to be 10%. The results of the remaining tests are shown in Table 4-9 and plotted in Figure A.23 and Figure A.30.

Table 4-9 - Atterberg limits and moisture content results for Wolston Glacigenic Formation samples.

Attribute	Range	Average Value
Moisture Content	9% – 23%	16%
Liquid Limit	26% – 67%	37%
Plastic Limit	12% – 28%	18%
Plasticity Index (PI)	12% – 39%	20%

Compaction

4.3.64. 16 compaction tests were undertaken on samples of the Wolston Glacigenic Formation. All of these samples were described as clay. Compaction test results indicate maximum dry density ranging between 1.64Mg/m³ and 2.03Mg/m³, with an average of 1.80Mg/m³. Optimum moisture content was measured to range between 10% and 21%, with an average of 16%.

4.3.65. Five laboratory CBR tests were carried out on samples of the Wolston Glacigenic Formation taken at depths from 0.7m bgl to 1.0m bgl. All of these samples were described as clay. The CBR tests reported CBR values of between 3.9% and 13%, with an average of 7.9%, at the top of the sample and between 3.5% and 13%, with an average of 8.1%, at the base of the sample.

Standard Penetration Test

4.3.66. 26 SPTs were undertaken in cohesive layers of the Wolston Glacigenic Formation. The SPT results indicate uncorrected "N" values ranging from 5 (N_{60} = 5) to 100 (N_{60} = 111), Two N_{60} values of 97 and 111 were recorded, which are considered uncharacteristically high for a clay generally described as having firm to very stiff consistency. These high values may have been a result of gravel content in the clay at this location. Ignoring these values, the "N" values range from 5 (N_{60} = 5) to 60 (N_{60} = 67), with an average of 26 (N_{60} = 28). The values, which increase significantly with depth, are plotted in Figure A.38.

4.3.67. 15 SPTs were carried out in granular layers of the Wolston Glacigenic Formation. The SPT results indicate uncorrected "N" values ranging from 3 (N_{60} = 3) to 70 (N_{60} = 78), with an average of 36 (N_{60} = 39). Two very low "N" values of 3 and 4 were obtained in localised granular layers described as very loose or loose. The SPT results are plotted in Figure A.37.

Drained Shear Strength – Granular Portion

4.3.68. One shear box test was carried out on a granular sample of the Wolston Glacigenic Formation. The results of this test have been plotted in Figure A.45. Peak drained cohesion was interpreted as 4kPa and peak internal angle of friction as 32˚. As a cohesionless material, the drained cohesion of 4kPa should be ignored.

4.3.69. Figure 36a in CIRIA R143 allows for derivation of the peak effective angle of friction of granular soils using SPT results. N_{60} values ranging from 3 to 78 correspond to a peak angle of friction ranging from 28˚ to 46˚, with the average of 28 corresponding to 39˚.

Drained Shear Strength – Cohesive Portion

4.3.70. Seven shear box tests were carried out on cohesive samples of Wolston Glacigenic Formation. The results of these tests have been plotted in Figure A.46 Considering all of the results together, peak drained cohesion was interpreted as 16kPa and peak internal angle of friction as 31˚.

4.3.71. The internal angle of friction has also been estimated using the equation $\varphi'_{cv} = 42 - 12.5log_{10}I_P$, from BS8002, where I_P is plasticity index. This results in a range of internal angle of friction values, from 22˚ to 29˚, with an average of 26˚. Note that these are constant volume, rather than peak results.

Undrained Shear Strength

4.3.72. Undrained shear strength is only applicable to the cohesive portion of the soil.

4.3.73. Undrained shear strength was measured in 27 field vane tests. The results ranged from 62kPa to 140kPa, with an average undrained shear strength of 123kPa. It was also measured in nine laboratory vane tests, with results ranging from 6kPa to 124kPa. Very low strength results of 6kPa and 13kPa were measured on two samples, which were described as sand. Ignoring these two values, the lowest strength measured was 23kPa and the average was 84kPa. In the two field pocket penetrometer tests carried out on the material, the undrained strength was measured as 192kPa.

4.3.74. Undrained shear strength was also measured in five unconsolidated undrained triaxial tests, where it was measured to range between 61kPa and 280kPa, with an average of 153kPa. In the eight shear box tests carried out on the material, it was measured to range between 56kPa and 99kPa, with an average of 76kPa.

4.3.75. In the 26 SPT tests carried out on cohesive material, N_{60} was found to range between 5 and 67 (ignoring the high values of 97 and 111). The results of these tests were correlated with undrained shear strength using the following equation, taken from CIRIA R143: $c_u = f_1 N_{60}$. Figure 31 in CIRIA R143 suggests that the value of f_1 can be taken as around 5 for a plasticity index of 20%. However, f_1 was taken to be 4.5, as it correlated better with the other undrained shear strength test results.

4.3.76. Using the above correlation, the N_{60} values correspond to undrained shear strengths ranging from 23kPa to 302kPa with the average being 127kPa.

4.3.77. All of the test results demonstrate undrained shear strength to increase significantly with depth below ground level. The results are plotted in Figure A.55.

Stiffness – Granular Portion

4.3.78. CIRIA R143 recommends that drained Young's Modulus (in MPa) of granular soils can be taken as between N_{60} and $2N_{60}$ for foundations. By assuming a correlation of $1.5N_{60}$, drained Young's Modulus varies from 4.5MPa to 117MPa, with an average of 59MPa.

Stiffness – Cohesive Portion

4.3.79. Undrained Young's Modulus has been estimated using the chart proposed by Jamiolkowski et. al. (re-published in Handbook of Geotechnical Investigation and Design Tables by Burt Look), which correlates stiffness with undrained shear strength, overconsolidation ratio and plasticity index.

4.3.80. Table 4.1 of CIRIA C504 [22] states that the overconsolidation ratio lodgement tills, such as the Wolston Glacigenic Formation, can be taken as between 2 and 5.

4.3.81. Considering an overconsolidation ratio of 4 and an average plasticity index of 20%, the undrained Young's Modulus can be taken as $400c_u$. This corresponds to a range between 9.2MPa and 121MPa, with an average of 48MPa. This ignores the two highest SPT results.

Coefficient of Consolidation

4.3.82. Coefficient of consolidation is highly dependent on the stress applied to the soil.

4.3.83. The most significant amount of consolidation is likely to occur where the overbridge approach embankments will be constructed. As these are to have a height of around 8m, the applied vertical stress from these will be around 150kPa.

4.3.84. In the 19 boreholes where the Wolston Glacigenic Formation was encountered, the minimum depth recorded was 0m and the maximum was 13.7m below ground level. 13.7m is considered an outlier, with all of the maximum depth in the remaining boreholes being less than 9m. Therefore, the vertical in-situ stress in the Wolston Glacigenic Formation will generally range from 0kPa to 180kPa.

4.3.85. The most relevant stress range in the Wolston Glacigenic Formation, considering the in-situ stresses and design situation, is 0kPa to 330kPa. This stress range has been divided into three, with the coefficients of consolidation for each shown in Table 4-10. All results are plotted in Figure A.58.

Table 4-10 – Coefficient of Consolidation for Wolston Glacigenic Formation

Stress Range	Coefficient of Consolidation Range	Coefficient of Consolidation Average Value
0 – 110kPa	0.43 m^2/year – 35 m^2/year	10.2 m^2/year
110kPa – 220kPa	0.79 m^2/year – 38 m^2/year	12.1 m^2/year
220kPa – 330kPa	0.68 m^2/year – 37 m^2/year	11.1 m^2/year

Baginton Sand and Gravel Formation

4.3.86. Baginton Sand and Gravel Formation was recorded in 20 boreholes. In all of these boreholes, either part or all of the unit was logged as granular (sand or gravel). In nine boreholes, part of the unit was logged as cohesive (clay). Results of laboratory and in-situ testing on the material are presented below.

Classification

4.3.87. 20 soil density tests were performed on the material. The results of these ranged from 1.84 Mg/m^3 to 2.28 Mg/m^3, with an average of 2.07 Mg/m^3. No significant difference in trend was observed between granular and cohesive samples.

4.3.88. Soil density was also measured in one oedometer test to be 2.08 Mg/m^3. In 21 shear box tests it was measured as ranging between 1.75 Mg/m^3 and 2.22 Mg/m^3, with an average of 2.10 Mg/m^3. No significant difference in trend was observed between granular and cohesive samples.

4.3.89. Results of the soil density tests are shown in Figure A.8.

4.3.90. 22 PSD tests were carried out on granular samples of the material. The results are plotted in Figure A.16. The fines content was measured to range from 1% to 27%, with an average of 12%. These results correspond to the definition of a granular soil set out in BS5930.

4.3.91. Three PSD tests were carried out on cohesive samples of the material. The results are plotted in Figure A.17. The fines content was measured to range from 40% to 47%, with an average of 42%. These results correspond to the definition of a cohesive soil set out in BS5930.

4.3.92. Moisture content was measured on 23 samples. It ranged between 6% and 22%, with an average of 13%. No significant difference in trend was observed between granular and cohesive samples. The results are plotted in Figure A.24.

4.3.93. Atterberg Limits were measured on nine samples. Seven of these samples were granular and consequently found to not be plastic, so no Atterberg Limits were obtained.

The results of the two remaining tests, performed on cohesive samples, are shown in Table 4-11 and plotted in Figure A.31. The results of the tests are shown in Table 4-11, along with the results of the moisture content tests.

Table 4-11 - Atterberg limits and moisture content results for Baginton Sand and Gravel Formation samples.

Attribute	Range	Average Value
Moisture Content	6% – 22%	13%
Liquid Limit	25% – 28%	27%
Plastic Limit	12% – 14%	13%
Plasticity Index (PI)	13% – 14%	14%

Compaction

4.3.94. Nine compaction tests were undertaken on samples of the Baginton Sand and Gravel Formation. One of the samples was described as clay with all the remaining samples being described as sand or gravel. Compaction test results indicate maximum dry density ranging between 1.85Mg/m³ and 2.05Mg/m³, with an average of 1.95Mg/m³. Optimum moisture content was measured to range between 7.9% and 14%, with an average of 11%.

4.3.95. No CBR tests were undertaken on the material.

Standard Penetration Test

4.3.96. 35 SPTs were undertaken in granular layers of the Baginton Sand and Gravel Formation. The SPT results indicate uncorrected “N” values ranging from 6 (N_{60} = 6) to 100 (N_{60} = 108), with an average of 26 (N_{60} = 28). The SPT “N” value is noted to increase with depth. This is likely due to the increased gravel content with depth. The results are plotted in Figure A.39.

4.3.97. Four SPTs were undertaken in cohesive portions of Baginton Sand and Gravel Formation. The SPT results indicate uncorrected “N” values ranging from 9 (N_{60} = 9) to 56 (N_{60} = 60), with an average of 25 (N_{60} = 27). The results are plotted in Figure A.40.

Drained Shear Strength – Granular Portion

4.3.98. 19 shear box tests were carried out on granular samples of Baginton Sand and Gravel Formation. The results of these tests have been plotted in Figure A.47. Considering all the results together, peak drained cohesion was interpreted as 10kPa and peak internal angle of friction as 43˚. As the material is granular, the drained cohesion should be ignored.

4.3.99. Figure 36a in CIRIA R143 allows for derivation of the peak effective angle of friction of granular soils using SPT results. N_{60} values ranging from 6 to 108 correspond to a peak angle of friction ranging from 28˚ to 46˚, with the average of 28 corresponding to 37˚.

Drained Shear Strength – Cohesive Portion

4.3.100. Two shear box tests were carried out on cohesive samples of the Baginton Sand and Gravel Formation. The results of these tests have been plotted in Figure A.48 Considering all the results together, peak drained cohesion was interpreted as 12kPa and peak internal angle of friction as 29˚.

4.3.101. The internal angle of friction has also been estimated using the equation $\varphi'_{cv} = 42 - 12.5log_{10}I_P$, from BS8002, where I_P is plasticity index. This results in an internal angle of friction of 28˚. Note that this is a constant volume, rather than peak value.

Undrained Shear Strength

4.3.102. Undrained shear strength is only applicable for the cohesive portion of the material.

4.3.103. Undrained shear strength was measured in 6 field vane tests. The results ranged from 20kPa to 70kPa, with an average undrained shear strength of 50kPa. In the one field pocket penetrometer test carried out on the material, the undrained strength was measured as 72kPa.

4.3.104. Undrained shear strength was also measured in two shear box tests. It was measured to range 66kPa and 71kPa, with an average of 68kPa.

4.3.105. It was not considered suitable to derive undrained shear strength from SPT results due to the low thickness of cohesive portions of the material, meaning that a significant proportion of all of the SPT tests would penetrate through granular as well as cohesive material. This would therefore not give an accurate representation of the cohesive portions.

4.3.106. The undrained shear strength results are plotted in Figure A.56.

Stiffness – Granular Portion

4.3.107. CIRIA R143 recommends that drained Young's Modulus (in MPa) of granular soils can be taken as between N_{60} and $2N_{60}$ for foundations. By assuming a correlation of $1.5N_{60}$, drained Young's Modulus of the granular portion of the Baginton Sand and Gravel Formation varies from 9MPa to 162MPa, with an average of 42MPa.

Stiffness – Cohesive Portion

4.3.108. Correlations linking drained Young's Modulus to undrained shear strength and plasticity index for soft clays, presented in Stroud et. al. (1975), were re-published in The Handbook of Geotechnical Investigation and Design Tables by Burt Look. For a plasticity index between 10% and 20%, drained Young's Modulus can be taken as 200 c_u.

4.3.109. Considering the range of undrained shear strength results from 20kPa to 72kPa and using the correlation of 200 c_u, the drained Young's Modulus ranges from 4MPa to 14MPa, with an average of 11.2MPa.

Coefficient of Consolidation

4.3.110. Coefficient of consolidation is only relevant for the cohesive portion of the soil.

4.3.111. Coefficient of consolidation is highly dependent on the stress applied to the soil.

4.3.112. The most significant amount of consolidation is likely to occur where the overbridge approach embankments will be constructed. As these are to have a height of around 8m, the applied vertical stress from these will be around 150kPa.

4.3.113. In the 20 boreholes where the Baginton Sand and Gravel Formation was encountered, the minimum depth recorded was 0 and the maximum was 9m below ground level. Therefore, the vertical in-situ stress in the formation will generally range from 0 to 180kPa.

4.3.114. The most relevant stress range in the Baginton Sand and Gravel Formation, considering the in-situ stresses and design situation, is therefore 0kPa to 330kPa. This stress range has been divided into three, with the coefficients of consolidation for each shown in Table 4-12. All results are plotted in Figure A.59.

Table 4-12 – Coefficient of Consolidation for Baginton Sand and Gravel Formation

Stress Range	Coefficient of Consolidation Range	Coefficient of Consolidation Average Value
0 – 110kPa	6.8 m^2/year – 36 m^2/year	21 m^2/year
110kPa – 220kPa	4.1 m^2/year – 33 m^2/year	23 m^2/year
220kPa – 330kPa	6.4 m^2/year – 17 m^2/year	12 m^2/year

Mercia Mudstone Group (Grade IV)

4.3.115. Grade IV Mercia Mudstone Group was logged at 32 locations. All of the material was logged as clay, with the exception of a 0.5m thick layer of sand in BH119 and a 2.47m thick layer of gravel in BH123. Considering the very small portion granular material,

any tests performed on granular material were not included in the data set. All of the properties derived below are relevant for clay.

4.3.116. Results of laboratory and in-situ testing on the material are presented below.

Classification

4.3.117. 25 soil density tests were performed on the material. The results of these ranged from 1.80 Mg/m³ to 2.21 Mg/m³, with an average of 2.06 Mg/m³.

4.3.118. Soil density was also measured in four consolidated undrained triaxial tests, ranging between 2.10 Mg/m³ and 2.21 Mg/m³, with an average of 2.17 Mg/m³. It was also measured in 12 unconsolidated undrained triaxial tests, with a range from 2.08 Mg/m³ to 2.26 Mg/m³, with an average 2.16 Mg/m³. In four shear box tests it was measured to range between 1.79 Mg/m³ and 2.21 Mg/m³, with an average of 2.01 Mg/m³. In five CBR tests it was measured to range from 2.07 Mg/m³ to 2.15 Mg/m³, with an average of 2.11 Mg/m³ and in five oedometer tests it ranged from 1.98 Mg/m³ to 2.19 Mg/m³, with an average of 2.10 Mg/m³.

4.3.119. The soil density results are plotted in Figure A.9.

4.3.120. 14 PSD tests were carried out on the material. The fines content was measured to range from 47% to 88%, with an average of 73%. These results are plotted in Figure A.18.

4.3.121. Atterberg limits and moisture content were measured on 59 samples. One of these samples was described as gravel and found to not be plastic and thus no Atterberg Limits were obtained. The results of the remaining tests are shown in Table 4-13 and plotted in Figure A.25 and Figure A.32.

Table 4-13 - Atterberg limits and moisture content results for Grade IV Mercia Mudstone Group samples.

Attribute	Range	Average Value
Moisture Content	9% – 27%	15%
Liquid Limit	25% – 48%	36%
Plastic Limit	13% – 23%	18%
Plasticity Index (PI)	10% – 25%	18%

Compaction

4.3.122. Five compaction tests were undertaken on samples of the Grade IV Mercia Mudstone Group. Compaction test results indicate maximum dry density ranging between

1.75Mg/m³ and 1.91Mg/m³, with an average of 1.81Mg/m³. Optimum moisture content was measured to range between 13% and 18%, with an average of 16%.

4.3.123. Five laboatory CBR tests were carried out on samples of the Grade IV Mercia Mudstone Group taken at depths from 2.5m bgl to 5.7m bgl. The CBR tests reported CBR values of between 3.5% and 11%, with an average of 6.8%, at the top of the sample and between 2.7% and 11%, with an average of 6.5%, at the base of the sample.

Standard Penetration Test

4.3.124. 85 SPTs were undertaken in the Grade IV Mercia Mudstone Group. The SPT results indicate uncorrected "N" values ranging from 8 (N_{60} = 8) to 100 (N_{60} = 111), with an average of 66 (N_{60} = 72). The SPT N values increase significantly with increasing depth below ground level. The SPT results are plotted in Figure A.41.

Drained Shear Strength

4.3.125. Four shear box tests were carried out on Grade IV Mercia Mudstone Group. The results of these tests have been plotted in Figure A.49. Considering all the results together, peak drained cohesion was interpreted as 20kPa and peak internal angle of friction as 32˚.

4.3.126. Four consolidated undrained triaxial tests (with pore water pressure measurement) were carried out on Grade IV Mercia Mudstone Group. The results of these tests have been plotted in Figure A.52. Considering all of the results together, drained cohesion was interpreted as peak 21kPa and peak internal angle of friction as 41º, which is uncharacteristically high for cohesive material.

4.3.127. The internal angle of friction has also been estimated using the equation $\varphi'_{cv} = 42 - 12.5log_{10}I_P$, from BS8002, where I_P is plasticity index. This results in an internal angle of friction of 26˚. Note that this is a constant volume, rather than peak value.

4.3.128. Table 7.1 of CIRIA C570 [23] recommends that for Grade IV Mercia Mudstone Group, drained cohesion can be up to 20kPa and angle of friction ranges between 25˚ and 32˚. The results from the consolidated undrained triaxial tests have therefore not been included in the derivation of the drained strength of the material.

Undrained Shear Strength

4.3.129. Undrained shear strength was measured in three field vane tests. The results ranged from 48kPa to 82kPa, with an average undrained shear strength of 60kPa. It was also measured in 16 laboratory vane tests, with results ranging from 33kPa to 150kPa, with an average of 97kPa. In the one field pocket penetrometer tests carried out on the material, the undrained strength was measured as 168kPa.

4.3.130. Undrained shear strength was also measured in 12 unconsolidated undrained triaxial tests, where it was measured to range between 27kPa and 240kPa, with an average of 144kPa. The strength measured increased significantly in proportion with the depth of the sample. It was measured in four consolidated undrained triaxial tests (with pore water pressure measurement) to range from 98kPa to 181kPa, with an average of 138kPa. In the five shear box tests carried out on the material, it was measured to range between 67kPa and 93kPa, with an average of 79kPa.

4.3.131. In the 85 PT tests carried out on cohesive material, N60 was found to range between 8 and 111. The results of these tests were correlated with undrained shear strength using the following equation, taken from CIRIA R143: $c_u = f_1 N_{60}$. The value of f1 was taken as 5, which is recommended for the Mercia Mudstone Group in CIRIA C570.

4.3.132. Using the above correlation, the N60 values correspond to undrained shear strengths ranging from 43kPa to 558kPa, with an average of 353kPa. The undrained shear strength was correlated as over 300kPa for 47 tests, which is considered more representative of an extremely weak mudstone than a very stiff clay.

4.3.133. All of the test results demonstrate undrained shear strength to increase significantly with depth below ground level.

4.3.134. The undrained shear strength results are plotted in Figure A.57.

Stiffness

4.3.135. In the absence of reliable data or information for the overconsolidation ratio of Grade IV Mercia Mudstone Group, the drained Young's Modulus has been correlated with SPT N_{60} results. This was done using the equation E' = N_{60}, set out in CIRIA R143.

4.3.136. The drained Young's Modulus of the Grade IV Mercia Mudstone Group can therefore be taken as 8MPa to 111MPa, with an average of 72MPa.

Coefficient of Consolidation

4.3.137. Coefficient of consolidation is highly dependent on the stress applied to the soil.

4.3.138. The most significant amount of consolidation is likely to occur where the overbridge approach embankments will be constructed. As these are to have a height of around 8m, the applied vertical stress from these will be around 150kPa.

4.3.139. In the 32 boreholes where Grade IV Mercia Mudstone Group was encountered, the minimum depth recorded was 0.6m and the maximum was 19.85m below ground level. Therefore, the vertical in-situ stress in the unit will generally range from 0 to 400kPa.

4.3.140. The most relevant stress range in Grade IV Mercia Mudstone Group, considering the in-situ stresses and design situation, is 0 to 550kPa. This stress range

has been divided into five, with the coefficients of consolidation for each shown in Table 4-14. All results are plotted in Figure A.60.

Table 4-14 – Coefficient of Consolidation for Grade IV Mercia Mudstone Group

Stress Range	Coefficient of Consolidation Range	Coefficient of Consolidation Average Value
0 – 110kPa	1.1 m^2/year – 35 m^2/year	14.3 m^2/year
110kPa – 220kPa	1.2 m^2/year – 28 m^2/year	9.3 m^2/year
220kPa – 330kPa	1.4 m^2/year – 9.5 m^2/year	3.3 m^2/year
330kPa – 440kPa	1.1 m^2/year – 31 m^2/year	10.4 m^2/year
440kPa – 550kPa	0.55 m^2/year – 37 m^2/year	12.8 m^2/year

Grade I to Grade III Mercia Mudstone Group

Classification

4.3.141. 29 soil or rock density tests were performed on the material. The results of these ranged from 1.87 Mg/m^3 to 2.53 Mg/m^3, with an average of 2.33 Mg/m^3.

4.3.142. Density was also measured to be 2.17 Mg/m^3 in one shear box test.

4.3.143. All bulk density test results are plotted in Figure A.10.

4.3.144. One PSD test was carried out on the material. The fines content was measured to be 52%. The results of the test are plotted in Figure A.19.

4.3.145. Moisture content was measured on 41 samples of Grade I to Grade III Mercia Mudstone Group. It was found to range between 5% and 17%, with an average of 11%. There was a downward trend in the moisture content with increasing depth below ground level. The results are shown in Figure A.26.

Atterberg limits were only measured on two samples. This is because in general as a rock, the material was not considered suitable for Atterberg Limit testing. The results of the remaining tests are shown in

4.3.146. Table 4-15 and plotted in Figure A.33.

Table 4-15 - Atterberg limits and moisture content results for Grade I to Grade III Mercia Mudstone Group samples.

Attribute	Range	Average Value
Liquid Limit	36% – 38%	37%
Plastic Limit	17% – 18%	18%
Plasticity Index (PI)	19% – 20%	20%

Standard Penetration Test

4.3.147. 31 SPTs were undertaken in the Grade I to Grade III Mercia Mudstone Group. The SPT results indicate uncorrected "N" values ranging from 77 (N_{60} = 85) to 101 (N_{60} = 112), with an average of 98 (N_{60} = 106). The results are plotted in Figure A.42.

Drained Shear Strength

4.3.148. One shear box test was carried out on Grade I to Grade III Mercia Mudstone Group. The results of these tests have been plotted in Figure A.50. Considering all of the results together, peak drained cohesion was interpreted as 10kPa and peak internal angle of friction as 31˚.

4.3.149. Table 7.1 of CIRIA C570 recommends that for Grade III Mercia Mudstone Group, peak drained cohesion should be less than 20kPa and peak internal angle of friction should range between 32˚ and 42˚, while for Grade I and Grade II Mercia Mudstone Group, peak drained cohesion should be less than 25kPa and peak internal angle of friction should be over 40˚.

Point Load Index

4.3.150. As a rock, point load index was tested on Grade I to Grade III Mercia Mudstone Group instead of undrained shear strength.

4.3.151. Point load index was measured on 37 samples of Grade I to Grade III Mercia Mudstone Group. It was found to range between 0.04MPa and 0.5MPa, with an average of 0.18MPa. These results are plotted in Figure A.73. Of the tests performed axially, the Point Load Index ranged from 0.08MPa to 0.5MPa, with an average of 0.2MPa.

Unconfined Compressive Strength

4.3.152. As a rock, unconfined compressive strength (UCS) was tested on Grade I to Grade III Mercia Mudstone Group instead of undrained shear strength.

4.3.153. UCS was measured on 21 samples of Grade I to Grade III Mercia Mudstone Group. It was found to range between 1.11MPa and 7.68MPa, with an average of 2.78MPa. These results are plotted in Figure A.74.

4.3.154. UCS can also be correlated from Point Load Index tests. The International Society for Rock Mechanics recommends that the Point Load Index can be multiplied by 22 to obtain UCS (this is reproduced in CIRIA R181 [24]). This can only be used on axial Point Load Index test results.

4.3.155. The correlation has been calibrated for the Grade I to Grade III Mercia Mudstone Group. The correlation was adjusted from 22 to 15 to better fit the data obtained at the site.

4.3.156. The UCS values derived from the axial Point Load Index tests therefore range from 1.2MPa to 7.5MPa, with an average of 3MPa.

Stiffness

4.3.157. Wilson (1980) suggested a correlation between UCS and Young's Modulus of E = 310 UCS for mudstone (this is reproduced in Pile Design and Construction Practice by Tomlinson and Woodward [25]). This corresponds to a Young's Modulus ranging from 340MPa and 2400MPa, for samples which were tested with the direct UCS test, with an average of 862MPa. Where the UCS was calibrated from Point Load Index tests, the corresponding Young's Modulus ranges from 372MPa to 2325MPa, with an average of 931MPa.

4.3.158. CIRIA C570 recommends that the Young's Modulus of the Mercia Mudstone Group can be derived by equating the SPT N_{60} to the Young's Modulus in MPa. The SPT results can therefore be calibrated to Young's Modulus values ranging from 85MPa to 112MPa, with an average of 98MPa.

4.3.159. In addition, CIRIA R181 suggests that the Young's Modulus of the Mercia Mudstone Group at Grades II and III (partially weathered) can be taken as between 350MPa and 820MPa.

Summary of Geotechnical Parameters

4.3.160. Table 4-16 presents the geotechnical parameters determined by evaluating the combination of laboratory testing, in situ testing, field observation, engineering geological interpretation and references to current practice guidance. Ranges of parameters are shown first, with average values (where applicable) inside brackets.

Table 4-16 - Summary of geotechnical parameters.

Stratum	ρ_{sat} (Mg/m³)	c' (kPa)	ϕ_{peak} (°)	c_u (kPa)	UCS (MPa)	E_u (MPa)	E' (MPa)	c_v (m²/year)
Made Ground (Granular)	1.98 – 2.36 (2.21)	0 (1)	31 – 39 (35)	-	-	-	15 – 51 (33)	-
Made Ground (Cohesive)		0 (1)	27 – 28 (28) (3) (ϕ'_{cv})	31 – 66 (49)	-	13.1 – 22.3 (16.9) (11)	10.5 – 17.8 (13.5)	15 – 20 (13)
Alluvium	1.76 – 2.22 (2.08)	0 (1)	30 – 31 (30) (4)	21 – 84 (53) (8)	-	2.5 – 30 (13) (8) (10)	2 – 24 (10.6) (8)	~10 (13)
River Terrace Deposits	1.99 – 2.19 (2.06)	0 (1)	32 – 43 (38) (5)	-	-	-	21 – 77 (54)	-
Wolston Glacigenic Formation (Granular)	1.86 – 2.33 (2.12)	0 (1)	28 – 46 (38) (5)	-	-	-	4.5 – 117 (59)	0.43 – 38 (11)
Wolston Glacigenic Formation (Cohesive)		2 (2)	31	23 – 302 (119) (9)	-	11.5 – 151 (60) (9) (11)	9.2 – 121 (48) (9)	0 – 110kPa: 0.43 – 35 (10.2) 110kPa – 220kPa: 0.79 – 38 (12.1) 220kPa – 330kPa: 0.68 – 37 (11.1)
Baginton Sand and Gravel Formation (Granular)	1.75 – 2.28 (2.08)	0 (1)	28 – 46 (39) (5)	-	-	-	9 – 162 (42)	-
Baginton Sand and Gravel Formation (Cohesive)		2 (2)	29	20 – 72 (57)	-	5 – 17.5 (14) (11)	4 – 14 (11.2)	0 – 110kPa: 6.8 – 36 (21) 110kPa – 220kPa: 4.1 – 33 (23) 220kPa – 330kPa: 6.4 – 17 (12)
Mercia Mudstone Group (Grade IV)	1.79 – 2.26 (2.09)	5 (2)	32	27 – 558 (273)	-	10 – 139 (90) (11)	8 – 111 (72)	0 – 110kPa: 1.1 – 35 (14.3) 110kPa – 220kPa: 1.2 – 28 (9.3) 220kPa – 330kPa: 1.4 – 9.5 (3.3) 330kPa – 440kPa: 1.1 – 31 (10.4) 440kPa – 550kPa: 0.55 – 37 (12.8)
Mercia Mudstone Group (Grade I to Grade III)	1.87 – 2.53 (2.33)	5 (2)	32 (7)	-	1.11 – 7.68 (2.91) (10)	-	85 – 2400 (606) (12)	-

Notes:

(1) Material unlikely to have any significant drained cohesion, so conservative to assume as zero
(2) Recommended to assume a lower value than obtained in laboratory test results to maintain conservatism
(3) Constant volume internal angle of friction, based on plasticity index correlation, due to lack of direct laboratory testing
(4) Weighted average of shear box and triaxial test results.
(5) Weighted average of shear box test results and SPT correlation.
(6) Results from consolidated undrained triaxial tests ignored due to measurement of uncharacteristically high internal angle of friction.
(7) Lower bound of values recommended in CIRIA C570 used, based on shear box test result of 31˚.
(8) SPT N60 values of over 20 ignored in correlation with undrained shear strength.
(9) Laboratory vane test results from samples described as sand and correlated values from SPT N60 values of 97 and 111 ignored.
(10) Weighted average of UCS test results and correlation of Point Load Index test results.
(11) Derived using E' = 0.8 Eu.
(12) Weighted average of correlations from UCS, Point Load Index and SPT tests.
(13) Approximate values taken from correlation with liquid limit, published by NAVFAC (1988).
(14) Whilst the results indicate classifications of DS-1 and AC-1 for the Grade IV Mercia Mudstone Group, the same classes as the Grade I to Grade III Mercia Mudstone Group (DS-3 and AC-3) should be applied due to the identification of gypsum bands in the unit.

4.4. Chemical Aggressiveness

4.4.1. Chemical tests were undertaken to assess the ground conditions to concrete for all the geological units as BRE Special Digest 1. Table 4-17 presents the results of the assessment for each geological unit. At the current stage of design, it is not expected that the material demonstrating values of Oxidisable Sulphates above 0.3% will be disturbed. However, design and ACEC classes have been assigned based on natural ground being disturbed should this occur. As per the guidance set out in BRE Special Digest 1, the Total Potential Sulphate (TPS) and Oxidisable Sulphate (OS) as a percentage of SO4 have been calculated using the following relationships:

Total Potential Sulphate (% SO4) = 3 x Total Sulphur (%S)

Oxidisable Sulphates (% SO4) = Total Potential Sulphates – Acid Soluble Sulphates (% SO4)

4.4.2. For Alluvium deposits, three samples were tested in accordance with BRE SD1. The results classify the Alluvium as Design Sulphate Class of DS-1 with a corresponding ACEC Class AC-1. The results of the pH, water-soluble sulphate tests, which were used to derive these classes, are plotted in Figure A.61, Figure A.67 and Figure A.75 respectively.

4.4.3. For the River Terrace Deposits, only one sample was tested in accordance with BRE SD1. The results classify the River Terrace Deposits as Design Sulphate Class of DS-1 with a corresponding ACEC Class AC-1. The results of the pH, water-soluble sulphate and total potential sulphate tests, which were used to derive these classes, are plotted in Figure A.62, Figure A.68 and Figure A.76 respectively.

4.4.4. For the Wolston Glacigenic Formation, 13 samples were tested in accordance with BRE SD1. A Total Potential Sulphate of 4.23% was found within the formation at BH127. Based on BRE Special Digest 1, this would warrant a design class of DS-5, however it is recommended that this is limited to DS-4. Furthermore, the OS value for this location is 0.15%, indicating that the source of sulphate is from Acid Soluble sulphates and the sulphates would not oxidise if disturbed. Of the remaining 12 locations, the maximum TPS value is 0.42%, (BH120), therefore it is recommended that design class DS-3 is adopted. The results of the pH, water-soluble sulphate and total potential sulphate tests are plotted in Figure A.63, Figure A.69 and Figure A.77 respectively.

4.4.5. For the Baginton Sand and Gravel Formation, eight samples were tested in accordance with BRE SD1. The results classify the Baginton Sand and Gravel Formation as Design Sulphate Class of DS-2 with a corresponding ACEC Class AC-2. The results of the pH, water-soluble sulphate and total potential sulphate tests, which were used to derive these classes, are plotted in Figure A.64, Figure A.70 and Figure A.78.

4.4.6. For the Grade IV Mercia Mudstone Group, 16 samples were tested in accordance with BRE SD1. The results classify the Grade IV Mercia Mudstone Group as Design Sulphate Class of DS-3 with a corresponding ACEC Class AC-3. The results of the pH, water-soluble sulphate and total potential sulphate tests carried out on the material, which were used to derive these classes, are shown in Figure A.65, Figure A.71 and Figure A.79.

4.4.7. For the Grade I to Grade III Mercia Mudstone Group, six samples were tested in accordance with BRE SD1. The results classify the Grade I to Grade III Mercia Mudstone Group as Design Sulphate Class of DS-3 with a corresponding ACEC Class AC-3. The results of pH, water-soluble sulphate and total potential sulphate tests, which were used to derive these parameters, are shown in Figure A.66, Figure A.72 and Figure A.80.

4.4.8. A summary of chemical aggressiveness testing results and derived classifications is summarised in Table 4-17.

Table 4-17 Recommended concrete design class for geological units.

Strata	Number of tests	pH	Water Soluble Sulphate (mg/l SO_4)	Acid Soluble Sulphates (SO4)	Total Potential Sulphate (% SO_4)	Oxidisable Sulphates (% SO_4)	Design Class	Concrete ACEC
Alluvium	3	7.6 – 8.2	16 – 27	0.02 – 0.03	0.03	0.00 – 0.01	DS-1	AC-1
Baginton Sand and Gravel Formation	8	7.1 – 9.0	10 - 330	0.01 – 0.12	0.03 – 0.45	0.02 – 0.36	DS-2	AC-2
River Terrace Deposits	1	8.2	18	0.01	0.03	0.02	DS-1	AC-1
Wolston Glacigenic Formation	13	6.7 – 9.0	16 – 1800	0.01 – 4.08	0.03 – 4.23	0.00 – 0.38	DS-3[a]	AC-3
Mercia Mudstone Group (Grade IV)	16	7.1 – 9	10 – 370	0.02 – 0.12	0.03 – 0.96	0.01 – 0.84	DS-3	AC-3
Mercia Mudstone Group (Grade I to Grade III)	6	7.5 – 8.6	13 – 1600	0.02 – 0.49	0.03 – 0.54	0.00 – 0.05	DS-3	AC-3

Notes:

[a] – See Paragraph 4.4.4.

4.5. Hydrogeology

4.5.1. The ground investigation confirmed that groundwater is present in both superficial deposits and bedrock.

4.5.2. Groundwater strikes were recorded in 20 of the 36 boreholes drilled and in one of the three trial pits. Four groundwater strikes occurred in Alluvium, two in the Baginton Sand and Gravel Formation, ten in the Wolston Glacigenic Formation and seven in the Mercia Mudstone Group.

4.5.3. A summary of groundwater strikes recorded during the during the ground investigation is provided in Table 4-18.

Table 4-18 - Summary of ground water strikes.

BH ID	Datum (ground level)	Strike		Rise (after 20 minutes)		Lithology (where strike initially encountered)
	m AOD	m bgl	m AOD	m bgl	m AOD	
BH104	73.14	1.00	72.14	1.00	72.14	Alluvium
BH106	75.85	3.50	72.35	2.81	73.04	Mercia Mudstone Group
BH108	76.71	1.20	75.51	0.90	75.81	Baginton Sand and Gravels Formation
BH110	78.98	7.40	71.58	7.00	71.98	Mercia Mudstone Group
BH111	78.17	5.40	72.77	5.14	73.03	Mercia Mudstone Group
BH113	77.28	2.10	75.18	1.90	75.38	Baginton Sand and Gravels Formation
BH114	77.04	4.30	72.74	4.26	72.78	Mercia Mudstone Group
BH117	73.80	4.10	69.70	3.55	70.25	Alluvium
BH118	75.23	4.00	71.23	3.90	71.33	Wolston Glacigenic Formation
BH119	74.84	3.60	71.24	3.37	71.47	Wolston Glacigenic Formation
BH120	74.67	3.15	71.52	2.40	72.27	Wolston Glacigenic Formation
BH121	73.49	2.50	70.99	2.50	70.99	Alluvium
BH122	76.29	5.00	71.29	4.52	71.77	Alluvium
BH123	76.29	7.50	68.79	6.95	69.34	Mercia Mudstone Group
BH124	76.38	5.60	70.78	4.76	71.62	Wolston Glacigenic Formation
		10.00	66.38	8.10	68.28	Wolston Glacigenic Formation
BH125A	70.45	3.50	66.95	2.70	67.75	Wolston Glacigenic Formation
BH126	72.58	5.20	67.38	4.55	68.03	Wolston Glacigenic Formation
		10.20	62.38	6.50	66.08	Wolston Glacigenic Formation
BH127	74.72	8.50	66.22	2.00	72.72	Wolston Glacigenic Formation
BH128	74.37	5.95	68.42	5.35	69.02	Wolston Glacigenic Formation

BH ID	Datum (ground level)	Strike		Rise (after 20 minutes)		Lithology (where strike initially encountered)
	m AOD	m bgl	m AOD	m bgl	m AOD	
WS104	75.29	2.00	73.29	1.20	74.09	Wolston Glacigenic Formation
TP102	75.36	2.50	72.86	2.50	72.86	Wolston Glacigenic Formation

4.5.4. Most water strikes were encountered in the Wolston Glacigenic Formation. Water level recovery was slower in boreholes intersecting the Thrussington Till Member due to likely lower permeability associated with higher clay content compared to elsewhere in the Wolston Glacigenic Formation.

4.5.5. Water level recovery of up to 6.5m was associated with strikes in the Mercia Mudstone Group (BH126 and BH127), suggesting that permeable layers in the Grade IV Mercia Mudstone Group are confined by overlying superficial deposits. Significant water ingress in BH127 appears to be associated with a siltstone band within the Grade IV Mercia Mudstone Group.

4.5.6. 20 of the drilled boreholes were selected for combined groundwater and ground gas monitoring installations, of which 18 have been installed with Diver dataloggers to date. A Barodiver has additionally been installed to record atmospheric pressure.

4.5.7. Dataloggers were downloaded on roughly a weekly basis during the GI and then monthly, concurrent with the manual water level dip monitoring round, subject to access constraints. To date, six water monitoring rounds have been undertaken between May and August 2023.

4.5.8. Monitoring borehole details are provided in Table 4-19 while manual dip data collected to date is presented in Table 4-20.

4.5.9. Water level logger data was not available at the time of writing.

Table 4-19 - Monitoring borehole details.

BH ID	Borehole depth	Datum (ground level)	Response zone top		Response zone base		Response zone lithology
	mbgl	mAOD	mbgl	mAOD	mbgl	mAOD	
BH111	10.00	68.17	1.50	76.67	3.80	74.37	Baginton Sand and Gravel Formation
WS104	3.90	71.39	1.90	73.39	3.90	71.39	Alluvium
BH105	10.41	62.16	3.20	69.37	10.00	62.57	Mercia Mudstone Group
BH106	10.79	65.06	3.50	72.35	10.40	65.45	Mercia Mudstone Group
BH109	20.50	58.60	1.50	77.60	4.20	74.90	Baginton Sand and Gravel Formation
BH110	20.15	58.83	5.50	73.48	20.00	58.98	Mercia Mudstone Group
WS109	3.00	68.04	1.00	70.04	3.00	68.04	Alluvium
BH127	9.86	64.86	6.90	67.82	9.50	65.22	Mercia Mudstone Group
WS105	3.90	70.58	1.20	73.28	3.90	70.58	Wolston Glacigenic Formation
BH117	15.50	58.30	6.70	67.10	15.50	58.30	Wolston Glacigenic Formation / Mercia Mudstone Group
BH121	16.00	57.49	6.50	66.99	16.00	57.49	Mercia Mudstone Group
BH125A	25.00	45.45	3.80	66.65	8.00	62.45	Wolston Glacigenic Formation
WS102	6.45	64.98	2.90	68.53	3.70	67.73	Alluvium
WS103	5.05	66.91	1.60	70.36	2.30	69.66	Wolston Glacigenic Formation
WS106	5.00	67.57	2.30	70.27	5.00	67.57	Mercia Mudstone Group
BH123	13.37	62.92	2.80	73.49	8.90	67.39	Wolston Glacigenic Formation / Mercia Mudstone Group
BH126	10.69	61.89	5.40	67.18	7.80	64.78	Wolston Glacigenic Formation
BH107	10.00	66.11	0.40	75.71	2.20	73.91	Alluvium
BH104	9.79	63.35	5.20	67.94	9.79	63.35	Mercia Mudstone Group
BH112	10.00	67.36	1.30	76.06	5.10	72.26	Baginton Sand and Gravel Formation

Table 4-20 - Manual water level dip data

BH ID	Response zone lithology	Datum (ground level)	Water level at installation		Monitoring 01: 23/05/23		Monitoring 02: 02/06/23		Monitoring 03: 09/06/23		Monitoring 04: 22-26/06/23		Monitoring 05: 24-25/07/23		Monitoring 06: 21-29/08/23	
		m AOD	m bgl	m AOD	m bgl	m AOD	m bgl	m AOD	m bgl	m AOD	m bgl	m AOD	m bgl	m AOD	m bgl	m AOD
BH111	BSGS	78.17	3.40	74.77	2.90	75.27	2.85	75.32	2.30	75.87	2.36	75.81	2.51	75.66	2.70	75.47
WS104	WOLS	75.29	dry	dry	1.12	74.17	1.27	74.02	1.48	73.81	1.44	73.85	1.88	73.41	2.09	73.20
BH105	MMG	72.57	dry	dry	-	-	3.90	68.67	1.78	70.79	1.45	71.12	2.07	70.50	2.32	70.25
BH106	MMG	75.85	dry	dry	-	-	2.52	73.33	2.88	72.97	2.97	72.88	3.14	72.71	3.45	72.40
BH109	BSGS	79.10	dry	dry	-	-	2.22	76.88	2.67	76.43	2.72	76.38	2.84	76.26	2.88	76.22
BH110	MMG	78.98	dry	dry	-	-	4.79	74.19	5.06	73.92	5.17	73.81	5.39	73.59	5.47	73.51
WS109	ALV	71.04	dry	dry	-	-	1.38	69.66	1.53	69.51	1.45	69.59	1.46	69.58	-	-
BH127	MMG	74.72	1.80	72.92	-	-	1.00	73.72	2.40	72.32	0.68	74.04	0.67	74.05	0.74	73.98
WS105	WOLS	74.48	dry	dry	-	-	3.95	70.53	3.35	71.13	2.23	72.25	0.75	73.73	0.95	73.53
BH117	WOLS/ MMG	73.80	dry	dry	-	-	-	-	-	-	1.05	72.75	1.14	72.66	1.24	72.56
BH121	MMG	73.49	dry	dry	-	-	-	-	-	-	0.45	73.04	0.71	72.78	0.41	73.08
BH125A	WOLS	70.45	dry	dry	-	-	-	-	-	-	1.51	68.94	1.29	69.16	1.47	68.98
WS102	ALV	71.43	1.40	70.03	-	-	-	-	-	-	dry	dry	0.71	70.72	1.01	70.42
WS103	WOLS	71.96	dry	dry	-	-	-	-	-	-	dry	dry	dry	dry	dry	dry
WS106	MMG	72.57	dry	dry	-	-	-	-	-	-	3.42	69.15	3.68	68.89	3.26	69.31

BH ID	Response zone lithology	Datum (ground level)	Water level at installation		Monitoring 01: 23/05/23		Monitoring 02: 02/06/23		Monitoring 03: 09/06/23		Monitoring 04: 22-26/06/23		Monitoring 05: 24-25/07/23		Monitoring 06: 21-29/08/23	
		m AOD	m bgl	m AOD	m bgl	m AOD	m bgl	m AOD	m bgl	m AOD	m bgl	m AOD	m bgl	m AOD	m bgl	m AOD
BH123	WOLS/ MMG	76.29	10.60	65.69	-	-	-	-	-	-	3.50	72.79	3.61	72.68	3.73	72.56
BH126	WOLS	72.58	5.80	66.78	-	-	-	-	-	-	2.91	69.67	2.92	69.66	3.24	69.34
BH107	ALV	76.11	dry	dry	-	-	-	-	-	-	dry	dry	dry	dry	dry	dry
BH104	MMG	73.14	1.50	71.64	-	-	-	-	-	-	0.98	72.16	-	-	-	-
BH112	BSGS	77.36	dry	dry	-	-	-	-	-	-	4.42	72.94	3.65	73.71	3.75	73.61

ALV – Alluvium
BGSG – Baginton Sand and Gravel Formation
WOLS – Wolston Glacigenic Formation
MMG – Mercia Mudstone Group

*Note that missing data is due to access constraints preventing data collection.

4.5.10. The water level dip data collected between late May and August 2023 indicates that summer groundwater levels across the site are generally quite close to surface, ranging from 0.41mbgl (73.08mAOD) in BH121 (Mercia Mudstone Group) to 5.47mbgl (73.51mAOD) in BH110 (Mercia Mudstone Group).

4.5.11. The data suggests that there is reasonable hydraulic continuity between the weathered Mercia Mudstone Group and more permeable superficial deposits.

4.5.12. The hydraulic gradient reflects topography to some degree. Groundwater flow appears to be westwards from the topographic high at Hungerley Hall Farm towards the River Sowe and, to a lesser extent, northwards. The groundwater high of approximately 76mAOD at BH109 and BH111 (BSGS) may be associated with recharge through the Baginton Sand and Gravel Formation.

4.5.13. The limited data available for WS102 (ALV) and BH104 (MMG) suggests that there may also be a southerly component of groundwater flow from the topographic high towards Smite Brook, where groundwater levels are close to surface. However, this would need to be confirmed once further monitoring data becomes available.

4.5.14. It is possible that perched groundwater is present in more permeable horizons within the Wolston Glacigenic Formation underlying the northern part of the scheme, but this cannot be confirmed from the data available to date. Groundwater levels in this formation appear to fall from either side of the existing road towards a low of around 69mAOD (1.45mbgl) in BH125A (WOLS). While this may be due to the nature of perched groundwater, it may also potentially be due to a local discharge zone, for example a drain.

4.6. Geoenvironmental considerations

Introduction

4.6.1. The desk-based information within the Scheme PSSR, Environmental Assessment Report (EAR) and the Environmental Scoping Report has been used to develop a preliminary Conceptual Site Model (CSM) which forms the basis to investigate potential contaminant linkages for the proposed Scheme via a source-pathway-receptor model. For a source of contamination (or hazard) to present a risk to a receptor (an entity that can be harmed such as construction workers, groundwater), there must be a plausible exposure pathway.

4.6.2. A risk evaluation has been undertaken by Sweco (see 4.6.57) by considering the source-pathway-receptor relationship in terms of both the probability (likelihood) that a source-pathway-receptor linkage will occur and the potential consequences of occurrence.

4.6.3. This source-pathway-receptor model is considered best practice methodology to evaluate environmental risk arising from potential land contamination, according to

Department of Environment, Food and Rural Affairs (DEFRA) and Environment Agency guidance documentation.

4.6.4. This assessment utilises information from the Strata Geotechnics 2023 ground investigation [26].

Preliminary conceptual site model

4.6.5. Based on the data within the Scheme PSSR, EAR and Environmental Scoping Report, a CSM has been developed and the following sources have been identified:

- Source 1: infilled land for example from ground excavation, infilled ponds potential for hydrocarbons, inorganics and metals
- Source 2: Made Ground associated with the existing A46 carriageway and B4082 including vehicle fuels, brake and exhaust products
- Source 3: potentially contaminated materials associated with former and current land uses including scrap yard, metal recyclers, commercial premises, unspecified tanks and agricultural land
- Source 4: landfill in south of the Scheme
- Source 5: ground gas derived from organic rich deposits (peat)

4.6.6. Receptors have been identified and include:

- Human Health
    - Construction workers
    - Future site occupiers and users
    - Off-site residents/commercial users
    - Off-site land users (public open space users, workers)
- Surface Waters
    - Coombe Pool SSSI directly to the east of the Scheme
    - The proposed Scheme crosses Smite Brook, a tributary of the River Sowe
    - Ponds
    - Drainage channels, connecting to River Sowe
- Groundwater
    - Secondary A Aquifers – Alluvium, River Terrace Deposits, Baginton Sand and Gravel Formation (sand and gravel)
    - Secondary B Aquifer – Mercia Mudstone Group (mudstone)
    - Secondary Undifferentiated Aquifer – Thrussington Member (Wolston Formation) (clay)

- Ecological
    - Flora and fauna (including livestock)

4.6.7. The nearest groundwater abstraction is 853m northwest of the scheme for industrial and commercial purposes. Given the distance to the abstraction this is not considered to pose a separate receptor with risks to be assessed via the described aquifers.

4.6.8. For a hazard to present a risk to a receptor they must be linked by an exposure pathway. Several potentially plausible pathways have been identified and include:

- Direct contact with, or ingestion of contaminated soils and dusts (including asbestos fibres) by humans
- Inhalation of ground gas and / or vapours by humans
- Migration of ground gas and / or vapours into buildings
- Leaching and / or dissolution and migration of contaminants through permeable strata in the unsaturated zone towards the saturated zone
- Lateral migration of contaminants via groundwater flow
- Migration of contaminants in the saturated zone towards surface water
- Surface run-off towards surface waters
- Uptake by plant roots, ingestion and / or inhalation of contaminated soil and / or dust by animals

Visual and olfactory evidence of contamination

4.6.9. Very few visual or olfactory observations of potential contamination were noted during the ground investigation, with the exception of:

- Metal filings and tyre scraps were identified from 2.0mbgl in BH102 located in the existing carriageway and in the footprint of the historic landfill in the south of the site

4.6.10. This observation is not considered to be indicative of significant widespread contamination. Full details are provided within the Strata Geotechnics exploratory hole logs in Appendix C.

Chemical Analysis

4.6.11. Samples were selected for chemical analysis to assess potential contamination risks to both human health and controlled water receptors. Analysis comprised a suite of contaminants established from review of the potential sources, which had the potential to be present both within, and in close proximity, to the proposed Scheme. Chemical analysis results from soil samples have also been considered in the context of the proposed bulk earthworks and their suitability for reuse (Materials management).

4.6.12. A total of 91 soil samples were scheduled for chemical analysis. The samples were tested for a combination of analysis as detailed in Table 4-21.

Table 4-21 - Soil analysis summary.

Analysis	Analysis suite
Made Ground (9 samples)	All samples analysed for: metals, polynuclear aromatic hydrocarbons (PAH) speciated, benzene, toluene, ethylbenzene, xylenes (BTEX), MTBE, total petroleum hydrocarbons (TPH), phenol, cyanide (free, complex and total), sulphate, moisture, total organic carbon (TOC) and pH
Topsoil (15 samples)	
Natural (64 samples)	
Asbestos screen/ID (9 samples)	Asbestos screening and quantification if positively identified

4.6.13. A total of 68 soil samples were scheduled for soil leachability chemical analysis. The samples were tested for the analytes detailed in Table 4-22.

Table 4-22 - Soil leachability analysis summary.

Analysis	Analysis suite
Made Ground (9 samples)	All samples analysed for: metals, ammoniacal nitrogen, speciated PAH, BTEX, TPH, MTBE, phenol, cyanide (free, complex and total), sulphate and pH
Topsoil (5 samples)	
Natural (54 samples)	

4.6.14. Groundwater monitoring is scheduled to be undertaken in 2023 with the results to be reported separately which will set the baseline for the hydrogeological regime. Discussion of the implication on dewatering will be reported in 4.6.59. The groundwater samples will be scheduled for the analytes detailed in Table 4-23.

Table 4-23: Groundwater analysis summary

Response zone	Analysis suite
Natural ground (TBC)	All samples analysed for: metals, PAHs, BTEXs, TPH, phenols, cyanides, ammoniacal nitrogen as NH_4, sulphate, sulphide, sulphur, phosphate, nitrate, nitrite, chemical oxygen demand (COD), biological oxygen demand (BOD), dissolved organic carbon (DOC), TOC, hardness, suspended solids, alkalinity, pH, electrical conductivity

Assessment of risk to human health

Human health screening criteria

4.6.15. The chemical analysis results have been compared with generic assessment criteria (GAC) protective of a commercial end-use and for the protection of construction workers. Risks to future non-motorised site users have been assessed against GAC for a public open space (POS) parks end-use. Whilst not necessarily directly applicable, the POSpark GAC is, in the context of the proposed works considered the most appropriate

assessment criteria to assess risks to construction workers, future site occupiers and users and users and occupiers of adjacent land areas (including off-site residents to the east of the proposed scheme). Where the available GACs are determined on soil organic matter (SOM) content (contaminant partitions within the organic content of the soil), a SOM content of 1% has been used based on the recorded SOM results during the investigation. This enables the assessment of human health risk from land contamination to be in line with UK Government published guidance [27] [28] [29] [30].

4.6.16. Generic human health screening hierarchy as developed by Sweco is included within Appendix B.1.

Human health risks

Human health risks: generic screening

4.6.17. A generic quantitative risk assessment (GQRA) has been undertaken using the GAC for both commercial and POSpark end uses. The screening results are summarised Table 4-24 and Table 4-25 with the full results in Appendix B.2.

Table 4-24: Soil analysis exceedances of generic screening criteria protective of human health - Commercial

Contaminant	Screening value (mg/kg)	Number of analyses	Concentration range (mg/kg)		Number of samples exceeding	Location of exceedances
			Min	Max		
Nickel	980	91	3.5	1,100	1	BH102

4.6.18. Concentrations exceeding the human health criteria for a commercial end use were recorded in a sample taken from BH102 at 2.3mbgl located in the south of the Scheme within the footprint of a former landfill. The sample from BH102 is described as comprising Made Ground of sand and gravel with metal filings and tyre scraps. No visual or olfactory evidence of contamination were identified in this location. The recorded concentration was slightly elevated above the relevant criteria. Given the depth to the exceedance and the presence of material above which does not exceed the criteria this location is not considered to pose an unacceptable risk to human health in its current location.

Table 4-25: Soil analysis exceedances of generic screening criteria protective of human health - POSpark

Contaminant	Screening value (mg/kg)	Number of analyses	Concentration range (mg/kg)		Number of samples exceeding	Location of exceedances
			Min	Max		
Arsenic	79	91	1.1	200	1	BH102
Lead	630	91	1.9	1,700	1	BH102
Nickel	230	91	3.5	1,100	2	BH102

4.6.19. Concentrations exceeding the human health criteria for a POSpark end use were recorded in samples taken from BH102 at 1.6mbgl and 2.3mbgl. The samples are

described as Made Ground of sands and gravel with metal filings and tyre scraps noted from 2.0mbgl. No significant visual or olfactory evidence of contamination was identified. BH102 is located within the footprint of a former landfill. Given the depth to the exceedances and the presence of material above which does not exceed the criteria this location is not considered to pose an unacceptable risk to human health in its current location.

4.6.20. The remaining material outside of this area at the proposed Scheme is considered to present an acceptably low risk to human health given the absence of concentrations exceeding the relevant criteria.

4.6.21. The Environmental Management Plan (EMP) shall outline measures to further mitigate the likely limited impacts to human health. Mitigation measures shall include (but are not limited to) the use of appropriate health and safety measures prior to the commencement of works, application of appropriate work methodologies and by the use of personal protective equipment (PPE) during the works.

4.6.22. Risks, although likely to be low, may exist from the potential presence of unidentified and/or untested contamination outside of investigation locations. These potential risks should be reflected, together with mitigating measures, within the EMP. For the avoidance of doubt, should unexpected contamination be identified, appropriate action and advice from the appointed environmental specialist should be sought, including as necessary a cessation to work and implementation of procedures to manage the conditions appropriately.

Human health risks: asbestos

4.6.23. Asbestos was detected in two of the 10 soil samples which were screened for the presence of asbestos. Chrysotile was recorded at a concentration of 0.695% at a depth of 1.6mbgl and as loose fibres, quantified with a concentration of <0.001% at 2.3mbgl both in BH102.

4.6.24. Given the depth to the identified asbestos and lack of positive identification at all other locations tested the risk from asbestos in soils is considered very low and is discounted from further assessment.

4.6.25. Waste classification of the material in BH102 is discussed in Materials management.

4.6.26. Although not identified within the exploratory holes outside of those in BH102, the use of asbestos within construction materials including historical imported fill was widespread. Care should be exercised to ensure that should potential asbestos containing materials (ACMs) be identified, works shall cease and appropriate advice from the appointed environmental specialist should be sought, as detailed in the EMP.

Ground gas monitoring

4.6.27. Ground gas monitoring of nine well installations was undertaken during the GI works between May and August 2023. Further gas monitoring is ongoing as part of the extended 12-month monitoring programme and the results from these monitoring rounds will subsequently be analysed following completion.

4.6.28. Gas monitoring recorded the following concentrations:

- The steady carbon dioxide concentrations were recorded at between 0.0% volume by volume (v/v) and 2.4%v/v, with the highest concentrations recorded in BH109 located in the location of the proposed cutting. Results from BH109 during the three monitoring rounds were recorded between 1.7%v/v and 2.4%v/v. Results above the short-term Occupational Exposure Limit of 1.5%v/v were recorded on four occasions across two of the boreholes, BH109 (three rounds) and BH111 (one round). The long-term Occupational Exposure Limit of 0.5%v/v was exceeded at three locations during the four monitoring rounds.
- Methane was not recorded in any location above the method detection limit (0.1%v/v).
- Oxygen levels were recorded at or around the expected atmospheric concentration in the majority of locations with some reduction when other ground gas was present.
- Gas flows were recorded at between -1 litres per hour (L/hr) and 0.9L/hr with the majority of the results between -0.3L/hr and 0.3L/hr.
- Hydrogen sulphide and carbon monoxide were not detected with all recorded concentrations at 0ppm.

4.6.29. It should be noted that on several occasions the response zones in the groundwater monitoring wells were flooded and therefore the results are not necessarily reflective of actual ground gas conditions. These monitoring results have been discounted from the above summary but are included in Appendix B.3 for completeness and are flagged as flooded.

4.6.30. Assessment of the observed gas concentrations and flow rates presented in Appendix B.3 indicate the maximum Characteristic Situation (CS), as calculated using the methodology set out in CIRIA C665 [31] is CS1. No protective measures are therefore deemed necessary for structures in the proposed Scheme. No impacts to off-site receptors have been identified from ground gas migrating off-site.

4.6.31. Based on the results from the post ground investigation gas monitoring within the Strata 2023 ground investigation report, no ground gas hazards have been identified associated with the operation of the proposed Scheme.

4.6.32. Gas monitoring should be undertaken within any open excavations during construction prior to man entry in accordance with industry best practice and confined

space protocols with operatives undertaking continuous gas monitoring using personal gas monitors.

Assessment of risk to controlled waters

4.6.33. Due to the close proximity of the surface water bodies including Coombe Pool and Smite Brook and the presence of an SPZ within the proposed Scheme boundary, the soil leachability chemical analysis results have been screened to assess the potential risks to controlled waters posed by soils and groundwater beneath the proposed Scheme.

4.6.34. Controlled waters screening criteria

4.6.35. Potential impacts to surface water quality are assessed through comparison to the Environmental Quality Standard (EQS) guideline values published in Parts 1, 2 and 3 of Schedule 3 of the Water Framework Directive (WFD) (Standards and Classification) Directions (England and Wales) 2015 [32].

4.6.36. Risks to groundwater from the proposed Scheme have been assessed through comparing the chemical laboratory data against appropriate generic assessment criteria. The UK Drinking Water Standards (DWS) and World Health Organisation (WHO) guidelines for drinking water quality (2011) have been used for protection of the identified potentially sensitive aquifer receptors.

4.6.37. A generic controlled waters screening hierarchy as developed by Sweco is included within Appendix B.1.

Soil leachability screening

Risk to surface waters

4.6.38. The reported laboratory analytical concentrations for leachability testing compared against WFD and EQS screening values.

4.6.39. The GQRA screened leachate data is provided within Appendix B.4 and a summary of soil leachability concentrations exceeding the screening criteria is presented within Table 4-26. Where the laboratory limit of detection (LOD) exceeds the screening criteria these are not considered to require further assessment and are excluded from the table.

Table 4-26 - Generic screening of leachability analysis results exceedances (compared to WFD/EQS criteria).

Contaminant	Screening value (mg/L)	Number of analyses	Concentration range (mg/L)		Number of samples exceeding	Location and depth of maximum concentration
			Min	Max		
Ammoniacal nitrogen as N	0.20	68	<0.015	0.4	3	BH109 0.5mbgl
Cadmium	0.00008	68	<0.0001	0.0052	1	WS109 1.7mbgl
Copper	0.001	68	<0.0007	0.0477	67	BH112 0.3mbgl
Lead	0.0012	68	<0.001	0.064	4	BH107 0.5mbgl
Nickel	0.004	68	<0.003	0.081	3	WS109 1.7mbgl
Zinc	0.0123	68	0.0013	0.4508	15	WS109 1.7mbgl
Sulphate as SO_4	400	68	0.7	731	1	WS109 1.7mbgl
Benzo(a)pyrene	0.00000017	68	<0.00001	<0.00001	68	N/A
Fluoranthene	0.0000063	68	<0.00001	0.00026	68	BH111 0.3mbgl

4.6.40. A total of three samples recorded concentrations of ammoniacal nitrogen as N above the assessment criterion. These exceedances were generally observed in both natural strata (alluvium and Wolston Glaciogenic Formation) and Made Ground and were slightly elevated above the criterion. As such the recorded levels are not considered to pose an unacceptable risk to controlled waters.

4.6.41. Limited concentrations of metals were observed to exceed the respective criteria with the exception of copper. The concentrations exceeding the criteria were generally within an order of magnitude of the criteria. The highest concentrations of metals, with the exception of copper and lead were identified in WS109 at 1.7mbgl in a band of peat. These concentrations are not considered to pose an unacceptable risk to controlled waters. The highest concentrations of leachable copper and lead were identified in natural material in agricultural locations and are likely to reflect natural levels.

4.6.42. Exceedances of fluoranthene were recorded in all samples with concentrations in all of the samples at the LOD (0.00001mg/L) with the exception of one sample from BH111 at 0.3mbgl in the Baginton Sand and Gravel Formation.

4.6.43. All concentrations of benzo(a)pyrene were recorded at the LOD (0.00001mg/L). Concentrations of PAHs are not considered to pose an unacceptable risk to surface waters.

Risk to groundwater

4.6.44. The reported laboratory analytical concentrations were compared against DWS screening values.

4.6.45. The GQRA screened leachate data is provided within Appendix B.4 and a summary of soil leachability concentrations exceeding the screening criteria are presented within Table 4-27. Where the laboratory limit of detection (LOD) exceeds the screening criteria these are not considered to require further assessment and are excluded from the table.

Table 4-27 - Generic screening of leachability analysis results exceedances (compared to DWS criteria)

Contaminant	Screening value (mg/L)	Number of analyses	Concentration range (mg/L)		Number of samples exceeding	Location and depth of maximum concentration
			Min	Max		
Ammoniacal nitrogen as NH_4	0.5	68	<0.015	0.51	1	BH109 0.5mbgl
Cadmium	0.005	68	<0.0001	0.0052	1	WS109 1.7mbgl
Lead	0.01	68	<0.001	0.064	1	BH107 0.5mbgl
Nickel	0.02	68	<0.0003	0.081	1	WS109 1.7mbgl
Benzene	0.001	68	<0.003	<0.003	68	N/A
Sulphate as SO_4	250	68	0.7	731	1	WS109 1.7mbgl

4.6.46. An elevated leachable concentration of ammoniacal nitrogen as NH_4 above the criterion was recorded in a single sample from BH109 at 0.5mbgl. This exceedance was negligible and is not considered to pose an unacceptable risk to controlled waters.

4.6.47. Metals were identified as exceeding relevant criteria in two locations, WS109 and BH107, with concentrations marginally above the criteria, and therefore, not considered to pose an unacceptable risk to controlled waters.

4.6.48. Benzene concentrations recorded exceedances in all samples due to the LOD (0.003mg/L) being slightly elevated above the criteria (0.001mg/L). Given the lack of visual or olfactory evidence of contamination and the closeness of the LOD to the criteria benzene is not considered to pose an unacceptable risk to controlled waters.

4.6.49. A single concentration of sulphate as SO_4 was recorded above the criterion in WS109 at 1.7mbgl from a sample of peat. It is considered the source of this exceedance is due to the peat and is less than an order of magnitude above the criterion and therefore is not considered to pose an unacceptable risk.

Controlled waters risk assessment summary

Soil leachability

4.6.50. Considering the following site-specific factors, the potential for the identified exceedances to pose an unacceptable risk to controlled waters is considered Low:

- The raised concentrations (above LOD's) are generally slightly elevated above the relevant criteria and within one order of magnitude of the criteria.
- No significant amounts of Made Ground have been identified outside of the landfill in the south where no significant works are proposed.
- Visual and olfactory evidence of contamination was not recorded in samples.
- The majority of samples were from natural strata and are therefore likely to be reflective of natural background levels.

4.6.51. Assuming the works are undertaken in an appropriate manner, with risks to controlled waters mitigated as detailed in the EMP. Mitigation measures shall include (but are not limited to) appropriate site management, for example; management of stockpiles of excavated soils, groundwater encountered in excavations and surface water drainage.

4.6.52. There may be contaminated soils which have not been identified by the current investigation and these may present a risk, although likely to be low, in addition to those assessed. These should be mitigated as detailed in the EMP. Should unexpected contamination be identified, appropriate action and advice from the appointed environmental specialist should be sought, including as necessary a cessation to work and implementation of procedures to manage the conditions appropriately.

4.6.53. In the context of risk to controlled waters, materials exhibiting significant visual and/or olfactory evidence of potential contamination (for example strong hydrocarbon odours or oily sheens) shall be segregated and stockpiled as detailed in the EMP.

Ecological risks: flora and fauna

4.6.54. Whilst there are no screening criteria protective of flora and fauna, in consideration of the human health risk assessments and absence of visual or olfactory evidence of shallow contamination during the fieldworks, the potential for impact to flora and fauna is considered to be very low. Given the use of the majority of the land for agricultural purposes any negative effects of contamination on the land would already be identified.

4.6.55. The EMP shall outline measures to mitigate impacts to flora and fauna.

4.6.56. Excavated surface soil materials used during landscaping are required to be suitable for the proposed planting scheme, in accordance with the British Standard for Topsoil BS3882:2015.

Risk evaluation: post assessment

4.6.57. A risk evaluation associated with land quality at the proposed Scheme has been undertaken, as presented in Table 4-28, by considering the source-pathway-receptor relationships identified in Preliminary conceptual site model in terms of both the probability (likelihood) that a source-receptor linkage will occur and the potential consequences of the occurrence.

4.6.58. Risk assessment methodology and definitions are provided for reference in Appendix B.5.

4.6.59. Assumptions:

- The risk evaluation is limited to the construction and operation of the proposed Scheme.
- The assessment assumes risk posed to the identified receptors will be mitigated during construction as detailed in the Principal Contractor's EMP. Potential mitigation measures to be included within the EMP shall include (but are not limited to) those measures summarised in Table 4-28.
- It is predicted that the proposed permanent works are unlikely to give rise to any significant risks relating to land quality during the operational phase.

Table 4-28 - Risk evaluation summary.

Potential sources	Potential pathways and likelihood of hazard-receptor linkage	Potential receptors and consequence of hazard-receptor linkage	Risk level (pre-mitigation)	Mitigation measures	Risk level (post mitigation)
Source 1: Infilled land for example from ground extraction, infilled ponds potential for hydrocarbons, inorganics and metals	Direct contact with, inhalation or ingestion of contaminated soils, dusts and inhalation of vapours: **Low likelihood**	On-site Human Receptors Construction workers: **Medium**	Moderate/Low	The EMP shall outline measures to mitigate impacts to human health. Mitigation measures shall include (but are not limited to) the use of appropriate health and safety measures prior to the commencement of works, application of appropriate work methodologies and by the use of PPE during the works.	Low
	Direct contact with, inhalation or ingestion of contaminated soils, dusts and inhalation of vapours: **Unlikely**	Off-site Human Receptors and future site occupiers/ users Users/occupiers of adjacent land areas; agricultural fields, paths, off-site residents to the west of the proposed scheme: **Medium**	Low	The EMP shall outline measures to mitigate impacts to human health from asbestos free fibres or ACMs in accordance with the Control of Asbestos Regulations (CAR) 2012. This is to ensure potential ACMs and free fibres within excavated or exposed soil are identified, handled and managed appropriately. Should potential ACMs be identified, works shall cease and appropriate advice from the appointed environmental advisor should be sought, as detailed in the EMP.	Low
	Migration of contaminants in the saturated zone towards surface water. Surface run-off towards surface waters, including via local drainage systems: **Low Likelihood**	Surface Water: Coombe Pool, Smite Brook, ponds and other surface water bodies **Medium**	Moderate/Low	The EMP shall outline measures to mitigate short term (construction stage) pollution impacts to surface water. Mitigation measures shall include (but are not limited to) adherence to all relevant environmental legislation and best practice, appropriate site management, such as management of temporary material stockpiles (on hardstanding and away from potential conduits to surface waters) and surface water drainage. Should dewatering be required during construction, the contractor will liaise with the respective water company prior to commencement of works to agree the maximum daily volume and flow rate, chemical analysis suite and frequency of testing that is permitted under an authorised discharge consent. It is anticipated that the discharge	Low

Potential sources	Potential pathways and likelihood of hazard-receptor linkage	Potential receptors and consequence of hazard-receptor linkage	Risk level (pre-mitigation)	Mitigation measures	Risk level (post mitigation)
				consent will be provided within the Principal Contractor's EMP.	
	Migration of contaminants in the saturated zone to aquifers **Low Likelihood**.	Aquifers **Medium**	Moderate/Low	The EMP shall outline measures to mitigate short term (construction stage) pollution impacts to groundwater. Mitigation measures shall include (but are not limited to) adherence to all relevant environmental legislation and best practice, appropriate site management, such as management of temporary material stockpiles (on hardstanding and away from potential conduits to groundwater).	Low
	Uptake by plant roots, ingestion/inhalation of contaminated soil/dust by animals: **Low Likelihood**	Flora and Fauna: **Mild**	Low	The EMP shall outline measures to mitigate impacts to flora and fauna.	Very low

Potential sources	Potential pathways and likelihood of hazard-receptor linkage	Potential receptors and consequence of hazard-receptor linkage	Risk level (pre-mitigation)	Mitigation measures	Risk level (post mitigation)
Source 2: Made Ground associated with the existing A46 carriageway and B4082 including vehicle fuels, brake and exhaust products	Direct contact with, inhalation or ingestion of contaminated soils, dusts and inhalation of vapours: **Low likelihood**	On-site Human Receptors Construction workers: **Medium**	Moderate/Low	The EMP shall outline measures to mitigate impacts to human health. Mitigation measures shall include (but are not limited to) the use of appropriate health and safety measures prior to the commencement of works, application of appropriate work methodologies and by the use of PPE during the works.	Low
	Direct contact with, inhalation or ingestion of contaminated soils, dusts and inhalation of vapours: **Unlikely**	Off-site Human Receptors and future site occupiers/ users Users/occupiers of adjacent land areas; agricultural fields, paths, off-site residents to the west of the proposed scheme: **Medium**	Low	The EMP shall outline measures to mitigate impacts to human health from asbestos free fibres or ACMs in accordance with CAR 2012. This is to ensure potential ACMs and free fibres within excavated or exposed soil are identified, handled and managed appropriately. Should potential ACMs be identified, works shall cease and appropriate advice from the appointed environmental advisor should be sought, as detailed in the EMP.	Low
	Migration of contaminants in the saturated zone towards surface water. Surface run-off towards surface waters, including via local drainage systems: **Low Likelihood**	Surface Water: Coombe Pool, Smite Brook, ponds and other surface water bodies **Medium**	Moderate/Low	The EMP shall outline measures to mitigate short term (construction stage) pollution impacts to surface water. Mitigation measures shall include (but are not limited to) adherence to all relevant environmental legislation and best practice, appropriate site management, such as management of temporary material stockpiles (on hardstanding and away from potential conduits to surface waters) and surface water drainage. Should dewatering be required during construction, the contractor will liaise with the respective water company prior to commencement of works to agree the maximum daily volume and flow rate, chemical analysis suite and frequency of testing that is permitted under an authorised discharge consent. It is anticipated that the discharge	Low

Potential sources	Potential pathways and likelihood of hazard-receptor linkage	Potential receptors and consequence of hazard-receptor linkage	Risk level (pre-mitigation)	Mitigation measures	Risk level (post mitigation)
				consent will be provided within the Principal Contractor's EMP.	
	Migration of contaminants in the saturated zone to aquifers **Low Likelihood**.	Aquifers **Medium**	Moderate/Low	The EMP shall outline measures to mitigate short term (construction stage) pollution impacts to groundwater. Mitigation measures shall include (but are not limited to) adherence to all relevant environmental legislation and best practice, appropriate site management, such as management of temporary material stockpiles (on hardstanding and away from potential conduits to groundwater).	Low
	Uptake by plant roots, ingestion/inhalation of contaminated soil/dust by animals: **Low Likelihood**	Flora and Fauna: **Mild**	Low	The EMP shall outline measures to mitigate impacts to flora and fauna.	Very low
Source 3: Potentially contaminated materials associated with former and current land uses including scrap yard, metal recyclers, commercial	Direct contact with, inhalation or ingestion of contaminated soils, dusts and inhalation of vapours: **Low likelihood**	On-site Human Receptors Construction workers: **Medium**	Moderate/Low	The EMP shall outline measures to mitigate impacts to human health. Mitigation measures shall include (but are not limited to) the use of appropriate health and safety measures prior to the commencement of works, application of appropriate work methodologies and by the use of PPE during the works.	Low

Potential sources	Potential pathways and likelihood of hazard-receptor linkage	Potential receptors and consequence of hazard-receptor linkage	Risk level (pre-mitigation)	Mitigation measures	Risk level (post mitigation)
premises, unspecified tanks and agricultural land	Direct contact with, inhalation or ingestion of contaminated soils, dusts and inhalation of vapours: **Unlikely**	Off-site Human Receptors and future site occupiers/ users Users/occupiers of adjacent land areas; agricultural fields, paths, off-site residents to the west of the proposed scheme: **Medium**	Low	The EMP shall outline measures to mitigate impacts to human health from asbestos free fibres or ACMs in accordance with CAR 2012. This is to ensure potential ACMs and free fibres within excavated or exposed soil are identified, handled and managed appropriately. Should potential ACMs be identified, works shall cease and appropriate advice from the appointed environmental advisor should be sought, as detailed in the EMP. Potential fly tipped asbestos located around BH104. These stockpiles of sheeting should not be disturbed. Should their removal be required and following confirmation of asbestos presence, then a specialist contractor should be employed. Testing of soil for asbestos should be undertaken following removal works to inform any remedial works required.	Low
	Migration of contaminants in the saturated zone towards surface water. Surface run-off towards surface waters, including via local drainage systems: **Low Likelihood**	Surface Water: Coombe Pool, Smite Brook, ponds and other surface water bodies **Medium**	Moderate/Low	The EMP shall outline measures to mitigate short term (construction stage) pollution impacts to surface water. Mitigation measures shall include (but are not limited to) adherence to all relevant environmental legislation and best practice, appropriate site management, such as management of temporary material stockpiles (on hardstanding and away from potential conduits to surface waters) and surface water drainage. Should dewatering be required during construction, the contractor will liaise with the respective water company prior to commencement of works to agree the maximum daily volume and flow rate, chemical analysis suite and frequency of testing that is permitted under an authorised discharge consent. It is anticipated that the discharge consent will be provided within the Principal Contractor's EMP.	Low

Potential sources	Potential pathways and likelihood of hazard-receptor linkage	Potential receptors and consequence of hazard-receptor linkage	Risk level (pre-mitigation)	Mitigation measures	Risk level (post mitigation)
	Migration of contaminants in the saturated zone to aquifers **Low Likelihood**.	Aquifers **Medium**	Moderate/Low	The EMP shall outline measures to mitigate short term (construction stage) pollution impacts to groundwater. Mitigation measures shall include (but are not limited to) adherence to all relevant environmental legislation and best practice, appropriate site management, such as management of temporary material stockpiles (on hardstanding and away from potential conduits to groundwater).	Low
	Uptake by plant roots, ingestion/inhalation of contaminated soil/dust by animals: **Low Likelihood**	Flora and Fauna: **Mild**	Low	The EMP shall outline measures to mitigate impacts to flora and fauna.	Very low
Source 4: Landfill in the south of the scheme	Direct contact with, inhalation or ingestion of contaminated soils, dusts and inhalation of vapours: **Unlikely**	Off-site Human Receptors and future site occupiers/ users Users/occupiers of adjacent land areas; agricultural fields, paths, off-site residents to the west of the proposed scheme: **Medium**	Low	The EMP shall outline measures to mitigate impacts to human health. Mitigation measures shall include (but are not limited to) the use of appropriate health and safety measures prior to the commencement of works, application of appropriate work methodologies and by the use of PPE during the works. Asbestos was identified at depth within the landfill during the investigation, therefore the EMP shall outline measures to mitigate impacts to human health from asbestos free fibres or ACMs in accordance with CAR 2012. This is to ensure potential ACMs and free fibres within excavated or exposed soil are identified, handled and managed appropriately. Should potential ACMs be identified, works shall cease and appropriate advice from the appointed environmental advisor should be sought, as detailed in the EMP.	Low

Potential sources	Potential pathways and likelihood of hazard-receptor linkage	Potential receptors and consequence of hazard-receptor linkage	Risk level (pre-mitigation)	Mitigation measures	Risk level (post mitigation)
	Migration of contaminants in the saturated zone towards surface water. Surface run-off towards surface waters, including via local drainage systems: **Low Likelihood**	Surface Water: Coombe Pool, Smite Brook, ponds and other surface water bodies **Medium**	Moderate/Low	The EMP shall outline measures to mitigate short term (construction stage) pollution impacts to surface water. Mitigation measures shall include (but are not limited to) adherence to all relevant environmental legislation and best practice, appropriate site management, such as management of temporary material stockpiles (on hardstanding and away from potential conduits to surface waters) and surface water drainage. Should dewatering be required during construction, the contractor will liaise with the respective water company prior to commencement of works to agree the maximum daily volume and flow rate, chemical analysis suite and frequency of testing that is permitted under an authorised discharge consent. It is anticipated that the discharge consent will be provided within the Principal Contractor's EMP.	Low
	Migration of contaminants in the saturated zone to aquifers **Low Likelihood**.	Aquifers **Medium**	Moderate/Low	The EMP shall outline measures to mitigate short term (construction stage) pollution impacts to groundwater. Mitigation measures shall include (but are not limited to) adherence to all relevant environmental legislation and best practice, appropriate site management, such as management of temporary material stockpiles (on hardstanding and away from potential conduits to groundwater).	Low
	Uptake by plant roots, ingestion/inhalation of contaminated soil/dust by animals: **Low Likelihood**	Flora and Fauna: **Mild**	Low	The EMP shall outline measures to mitigate impacts to flora and fauna.	Very low

Potential sources	Potential pathways and likelihood of hazard-receptor linkage	Potential receptors and consequence of hazard-receptor linkage	Risk level (pre-mitigation)	Mitigation measures	Risk level (post mitigation)
Source 5: Hazardous ground-gas derived from organic alluvial deposits including peat	Inhalation of gas. Accumulation of gases in enclosed spaces. Lateral migration of ground gas off-site **Low Likelihood**	Construction workers, off-site property and onsite and off-site human receptors Risk of asphyxiation, explosion: **Severe**	Moderate	Safe method of access and egress from open excavations. Gas monitoring should be undertaken within any open excavations during construction prior to man entry in accordance with industry best practice/confined space protocols with operatives undertaking continuous gas monitoring using personal gas monitors. The contractor is to prepare works methodology and risk assessments prior to works commencement as detailed within the EMP.	Low

Materials management

Introduction

4.6.60. Construction works will generate excavation arisings. Under current waste legislation, these arisings would constitute waste unless it can be demonstrated that there is no requirement or intention to discard and could remain a waste until demonstrated they cease to be such.

4.6.61. A materials management assessment has been undertaken by a waste management specialist to inform options for the re-use and or disposal of excavation arisings. The assessment has been undertaken in accordance with the current waste regulatory framework based on results of the 2023 Strata GI. The assessment assumes sampled materials are generally representative of ground conditions across the proposed Scheme.

The waste hierarchy

4.6.62. The foundation for waste management is the five-step waste hierarchy of the EU[1] Waste Framework Directive (WFD) 2008/98/EC, presented in Figure 4-2, which establishes an order of preference for managing and disposing of waste where preventing waste is the preferred option and sending waste to landfill is the last resort.

Figure 4-2 - EU[1] Waste Framework Directive hierarchy.

[1] The UK left the EU on 31 January 2020 however English legislation which implements requirements of EU law such as the Waste Framework Directive remains in force and has been largely unaltered.

Site-won materials reuse

Regulatory mechanisms for reuse

4.6.63. The re-use of materials is a more sustainable approach to construction. Benefits include (but are not limited to) improved efficiency and cost effectiveness, diversion of materials landfill, reduction in primary aggregate use, reduction in haulage costs (both import and disposal) and associated reduction in the proposed Scheme's carbon footprint. An environmental permit, environmental exemption, or management in accordance with the CL:AIRE Definition of Waste Code of Practice (DoW CoP) 2008, Version 2 (2011) [33] may be required to enable reuse of excavated materials in accordance with the current waste regulatory framework.

4.6.64. Where re-use is proposed, this should be confirmed by the appropriate regulator (EA Local Waste Officer and Local Authority).

4.6.65. In excavating, storing and using topsoil or sub-soils, established good practice as detailed in DEFRA's Construction Code of Practice for the Sustainable use of Soils on Construction Sites, September 2009 should be followed.

Reuse suitability assessment

General

4.6.66. A review of the ground conditions, field observations, soil chemical analysis reported within the Strata 2023 Factual Report has been undertaken.

4.6.67. The principal aim of the assessment was to establish whether or not the materials are likely to pose potential risk to human health and the wider environment if reused in accordance with the current waste regulatory framework. The assessment is provided within Risk evaluation: post assessment.

4.6.68. There may be contaminated soils which have not been identified by the current investigation and these may present a risk, although likely to be low, in addition to those assessed. These should be mitigated as detailed in the EMP. Should unexpected contamination be identified, appropriate action and advice from the appointed environmental specialist should be sought, including as necessary a cessation to work and implementation of procedures to manage the conditions appropriately.

4.6.69. Materials exhibiting significant visual or olfactory evidence of potential contamination (such as strong hydrocarbon odours or oily sheens) shall be segregated and stockpiled as detailed in the EMP.

4.6.70. Reuse is also subject to the material's geotechnical properties as detailed in Section 0.

Visual and olfactory evidence of contamination

4.6.71. There are no significant visual or olfactory observations of potential contamination were noted during the ground investigation, with the exception of:

- Metal filings and tyre scraps were identified from 2.0mbgl in BH102 located in the existing carriageway and in the footprint of the historic landfill in the south of the site.

4.6.72. This observation is not considered to be indicative of significant widespread contamination. Full details are provided within the Strata Geotechnics exploratory hole logs (see Appendix C).

Human health suitability

4.6.73. The materials tested for reuse suitability during future construction works are unlikely to pose a significant long-term risk to human health and are considered suitable for reuse. This assumes the works are undertaken in accordance with the regulatory requirements detailed in Paragraph 4.6.63 to 4.6.65 and in an appropriate manner, with potential residual risks to human health mitigated as detailed in the EMP.

4.6.74. Material from the former landfill (BH102) in the south is not suitable for reuse due to the presence of asbestos.

4.6.75. Although not identified in the laboratory analysis or within the exploratory holes outside of the landfill footprint, the use of asbestos within construction materials including imported fill can be widespread. Care should be exercised to ensure that should potential ACMs be identified, works shall cease and appropriate advice from the appointed environmental specialist should be sought, as detailed in the EMP.

Controlled waters suitability

4.6.76. The materials tested for reuse suitability during future construction works are unlikely to pose a significant long-term risk to controlled waters and are considered suitable for reuse with the exception of landfilled material in the south of the proposed Scheme. The suitability of the remaining material is assumed that the works are undertaken in accordance with the regulatory requirements detailed in Paragraph 4.6.63 to 4.6.65 and in an appropriate manner, with potential residual risks to controlled waters mitigated as detailed in the EMP.

Materials import

4.6.77. Should it be requirement to import suitable earthworks materials to enable construction, materials could be either a product (such as quarried fill) or a waste such as surplus soils or rock from other developments. In the latter case, it may be possible to use

the CL:AIRE DoW CoP to enable the direct transfer and use of clean[2] naturally occurring soil and mineral materials from one site to another development site for use. This may negate the need for regulation of the import under waste legislation (specifically the receiving development site may not require an environmental permit or waste exemption).

4.6.78. These provisions under the DoW CoP (Direct Transfer) do not apply to manufactured soils. In addition, import materials arising as a result of mineral extraction activities, such as quarried aggregates, are regulated under the Mining Waste Directive 2006 2006/21/ec.

Waste assessment

The legal requirement

4.6.79. A proportion of excavation arisings generated during construction may be surplus or unsuitable for retention for use in construction. It is a legal requirement to assess any arisings potentially to be disposed of as a waste.

Waste materials assessment

4.6.80. A representative range of samples were retrieved during the GI and scheduled for chemical analysis to enable up-front assessment of the likely disposal classification of potential wastes. The laboratory results are provided within the Strata 2023 Factual Report. A waste assessment of the available data has been undertaken by a waste management specialist in accordance with the current waste regulatory framework. Methodologies can be made available on request.

4.6.81. The assessment assumes wastes sampled and analysed, are generally representative of ground conditions across the proposed Scheme, however previously unidentified wastes may be present (un-sampled depths, between sampling points or under/within buildings/structures). In addition, the receiving disposal facility may require further assessment. If encountered during the works, and disposal is proposed, these should be segregated and tested following excavation to inform disposal options.

4.6.82. Following selection of the appropriate potential List of Waste (LoW) codes for the materials encountered during the GI, a hazardous properties assessment (WM3[3]) was undertaken using the industry recognised HazWasteOnline™ screening tool; a web-based software tool for classifying waste that follows the latest EA guidance and European regulations. Outputs of the assessment are included for reference within Appendix B.6.

[2] Materials must be sourced from a reputable supplier and be accompanied by certification indicating they are potentially physically and chemically suitable for use on site. Chemical certification of the materials must include testing for a range of commonly occurring contaminants. These test results will be assessed in accordance with the current regulatory framework to ensure protection of risk to human health and controlled waters. Assessment of the material should be undertaken prior to delivery to the Scheme (with three samples analysed per source as a minimum).

[3] EA/SEPA, Technical Guidance WM3, Guidance on the classification and assessment of waste, 1st Edition v1.1. GB (January 2021) (EU Exit Update).

4.6.83. Appropriate disposal routes should be identified by National Highways and OIL, however they are likely to be as follows:

Non-hazardous Waste

4.6.84. With the exception of two samples of hazardous Made Ground located within the footprint of the historical landfill (BH102):

- The majority of soils and stones sampled (seven samples of Made Ground and 82 samples of natural strata) and assessed to date across the proposed Scheme were classed as non-hazardous waste (LoW 17 05 04) under WM3.
- Although ACMs or asbestos free fibres were not identified in the laboratory analysis or within the preliminary exploratory holes located outside of the footprint of the historical landfill, excavated arisings should be inspected for visible fragments of ACM as a precaution. If found during construction, any asbestos fragments should be appropriately removed in accordance with the EMP and disposed of separately (as LoW Code 17 06 05*), or as a bulk wastes including fragments treated as a mixed hazardous waste.

Hazardous Waste

4.6.85. Exploratory location BH102 was located within the footprint of the historical landfill. Made Ground at this location comprised asphaltic surface cover underlain by a yellowish brown gravel of sandstone (0.4mbgl to 1.2mbgl) and dark grey sandy gravel containing metal filings and tyre scraps (1.2mbgl to 3.5mbgl).

4.6.86. The northern extent of the historical landfill site has not been defined, as such these Made Ground materials may be encountered if excavation is undertaken within the southern extent of the proposed Scheme.

4.6.87. Made Ground encountered in BH102 between 1.2mbgl and 3.5mbgl has been classified as hazardous waste (LoW 17 05 03*) under WM3 due to the reported concentrations of metals (both samples), TPH and asbestos (sample collected at 1.6mbgl). Asbestos fragments should be appropriately removed where feasible and practical in accordance with the EMP and disposed of separately (as LoW Code 17 06 05*), or as a bulk material including fragments treated as a mixed hazardous waste.

4.6.88. The asphaltic surface cover and underlying gravel of sandstone (non-hazardous Made Ground) should be segregated if excavated from the hazardous Made Ground arisings. The deeper hazardous Made Ground arisings at this location are unsuitable for retention on the Scheme and therefore segregation of the asphaltic surface cover and shallower gravel of sandstone should reduce the volume of hazardous waste requiring offsite disposal.

Un-assessed Asphalt surface cover

4.6.89. Asphalt recorded from existing ground level (EGL) to depths of 0.1mbgl within BH103 and from GL to 0.4mbgl in BH102 progressed within the footprint of the historical landfill have not been tested and assessed to date to inform their WM3 waste classification.

4.6.90. There is potential for asphalt to include coal tar as a binder, which could render the asphalt hazardous for disposal. If excavated, the asphalt should be assessed at the point of recovery to identify disposal or re-use requirements, at which point either the hazardous (17 03 01*) or non-hazardous (17 03 02) LoW code would apply.

4.6.91. Previously untested asphalt should be segregated and subject to a hazardous properties (WM3) assessment.

Disposal options

4.6.92. In accordance with the principles of the waste hierarchy, wastes should be diverted from landfill to appropriately licensed waste processing, treatment or recovery facilities within the region. Opportunities should be sought where possible to re-use suitable arisings on other construction projects or developments. Although not preferable, where landfill disposal is required for these as a last resort:

Non-hazardous waste

4.6.93. Topsoil (natural) - scheme wide (to depths of between 0.2mbgl and 0.8mbgl):

- In accordance with European Council Decision 2003/33/EC, topsoil is specifically excluded from disposal to an inert landfill and likely requires disposal to a landfill licensed to accept non-hazardous waste.

4.6.94. General Made Ground (gravelly sands and clays) in the vicinity of WS102, WS103, BH109 and BH117:

- Representative results from the waste acceptance criteria (WAC) analysis met the inert WAC limits. These general Made Ground wastes may be (subject to the specific landfill permit) acceptable at a landfill or exempt site for inert waste.

4.6.95. Alluvium, Baginton Sand and Gravel Formation, Wolston Glacigenic Formation, Mercia Mudstone Group – scheme wide:

- In accordance with European Council Decision 2003/33/EC, unless contaminated (including by poor segregation from other wastes) it is considered that these wastes requiring disposal may be acceptable at a landfill as inert waste without further assessment. This should be reviewed with any receiving landfill, in line with their specific permit requirements. If deemed unsuitable for disposal as inert waste by the landfill, further WAC analysis may be required at an agreed frequency.

4.6.96. Peat and organic rich materials:

- Where encountered, peat (such as that encountered between 1.7mbgl and 2mbgl in WS109) and any other organic rich wastes cannot be disposed of as waste at an inert landfill and must be considered non-hazardous waste unless the constituent organic rich parts are appropriately segregated and disposed of separately.

  Hazardous Waste

4.6.97. Made Ground recorded in BH102 between 1.2mbgl and 3.5mbgl in the footprint of the historical landfill:

- Representative results from the WAC analysis met the Stable Non-Reactive Hazardous Waste (SNRHW) limits. These Made Ground wastes may be (subject to the specific landfill permit) suitable for disposal within a SNRHW cell at a non-hazardous landfill.

  Asphalt surface cover

4.6.98. Asphalt recorded from existing ground level (EGL) to depths of 0.1mbgl within BH103 and from GL to 0.4mbgl in BH102 progressed within the footprint of the historical landfill have not been tested and assessed to date to inform landfill disposal options (WAC assessment).

5. Geotechnical Risk Register

5.1.1. As per the process outlined in CD 622, a risk assessment for the proposed scheme has been carried out based on the findings of this ground investigation. The risks identified in the PSSR [1] have been provided and comments on their development as a result of the ground investigation findings are given. Additional risks resulting from the ground investigation works and assessment of the findings are also included.

5.1.2. The Geotechnical Risk Register considers geotechnical risks and provides control measures to be implemented to reduce them. The risks will be reviewed further during design stages to determine the residual risks present during construction.

5.1.3. It should be noted that the Construction (Design and Management) Regulations 2015 make it clear that information concerning significant residual risks and details of any critical design issues should be passed to others who may need it to construct, use, maintain or de-construct a structure of facility being design. The risk register is generic for this scheme and will need to be redefined and developed for each element of works completed at the site.

5.1.4. The likelihood of a hazard occurring is assessed alongside its severity which, when combined, provides the degree of risk. The recommended scale that likelihood and severity are measured are given in Appendix B of CD 622 have been used in this risk assessment. Table 5-1 and Table 5-2 provide the likelihood and severity scale and resulting degree of risk respectively. Table 5-3 provides a description on the risk classification from low, medium to high and Table 5-4 presents the Geotechnical Risk Register for the scheme.

Table 5-1 - Classification of likelihood and severity.

Likelihood (L)		Severity (S)	
Extremely unlikely	1	Minor	1
Unlikely	2	Moderate	2
Likely	3	Serious	3
Extremely likely	4	Moderate harm	4
Almost certain	5	Minor harm	5

Table 5-2 - Risk degree matrix

		Severity				
		1	2	3	4	5
Likelihood	1	1	1	3	4	5
	2	2	4	6	8	10
	3	3	6	9	12	15
	4	4	8	12	16	20
	5	5	10	15	20	25

Table 5-3 - Classification of risk.

Risk Rating	Risk Degree	Response
Low	1 - 8	Ensure control measures are maintained and reviewed as necessary.
Medium	9 - 19	Additional control measures needed to reduce risk rating to a level that is equivalent to a test of "reasonably required" for.
High	20 - 25	Activity not permitted. Hazard to be avoided or risk to be reduced to tolerable level.

Table 5-4 - Geotechnical Risk Register

Risk ID	Hazard	Stage Identified	Consequence	Likelihood	Severity	Risk	Proposed Mitigation Measures	Likelihood	Severity	Residual Risk
1	Detailed UXO Risk Assessment undertaken by 1st Line Defence identified a medium risk are for UXO. The remainder of the site is low risk.	PSSR	Encountering unexploded ordinance during ground investigation or construction of overbridge and roundabouts.	3	4	12	A UXO Risk Management Plan and Site Specific UXO Awareness Briefings to be undertaken. A risk assessment to be carried out by the contractor, with mitigations dependent on the final design. Mitigations likely to include a non-intrusive UXO magnetometer survey and target investigation where appropriate, with UXO specialist present on site to support shallow intrusive works. An intrusive magnetometer survey was carried out in all borehole locations down to the minimum penetration as part of the GI. This is to be carried out at pile locations also.	1	4	4
2	Cohesive material within the Alluvium, Baginton Sand and Gravel Formation and/or River Terrace Deposits.	PSSR	Material with low strength, high compressibility and variable thickness and occurrence. Potential for excessive volumetric changes creating excessive differential settlement of road pavement, earthworks, or structures.	3	3	9	Ground investigation found River Terrace Deposits to be granular. Alluvium deposits were up to 2.95m thick. Cohesive material was found to be up to 1.8m thick in the Baginton Sand and Gravel Formation. Results from the ground investigation testing to be incorporated into the permanent design. Settlement designs to consider cohesive material where appropriate.	2	3	6

Risk ID	Hazard	Stage Identified	Consequence	Likelihood	Severity	Risk	Proposed Mitigation Measures	Likelihood	Severity	Residual Risk
							Design to consider excavation/ replacement or ground improvement of cohesive material, column supported earthworks and piled foundations. Settlements to be monitored during construction. Prepare GDR including finalisation of design recommendations.			
3	Landfill deposits and/or Made Ground resulting in contaminated land.	PSSR	Instability of deep excavations in landfill. Aggressive chemicals. Variable thickness, strength, and compressibility of landfill material. Decomposition of organic matter. Impact on Health and Welfare of GI and construction workers.	4	3	12	Ground investigation confirmed presence of landfilled material in BH102. Asbestos identified at depth. Chemical concentrations identified exceeding the criteria for the protection of human health at depth for metals. No unacceptable risks identified to controlled water receptors, however due to variability and hazardous waste assessment this material is considered to not be suitable for reuse. Design to identify any areas of contaminated land and appropriate treatment. Potential risks and mitigation measures to be detailed in the Environmental Management Plan. Should unexpected contamination be identified, works shall cease, and appropriate advice sought	2	3	6

Risk ID	Hazard	Stage Identified	Consequence	Likelihood	Severity	Risk	Proposed Mitigation Measures	Likelihood	Severity	Residual Risk
							from the appointed environmental advisor. Protection of controlled waters must be maintained throughout site works. Appropriate ground treatment or foundation solutions, e.g. vibro columns, soil mixing or piles. Alternatively, substantial landfill deposits to be excavated and disposed of in the appropriate manner. This may have considerable cost implications. Voids arising from landfill removal to be infilled with engineered well compacted fill. This material may be sourced from cuttings on site or imported on site and is subject to acceptability criteria identified during the design.			
4	Instability of existing slopes	PSSR	Increased loading and excavations on unstable earthworks during construction affecting the cutting or embankment. Potential for layers of high plasticity clay, soft or low strength soil, high water table, seepage leading to preferential pathway for failure within slopes.	3	3	9	Design to avoid the requirement of positioning heavy plant near crests of earthworks slopes. Adopt suitable working methodologies for construction. Short and long-term analysis during detailed design to ensure the slopes will have sufficient design resistance. All new earthworks will have crest and toe drainage to support the long-term stability. Existing earthworks defects recommended to be repaired where applicable.	1	3	3

Risk ID	Hazard	Stage Identified	Consequence	Likelihood	Severity	Risk	Proposed Mitigation Measures	Likelihood	Severity	Residual Risk
5	Flooding	PSSR	Flooding on the site during or after construction. Increased construction costs. Damage to structures, foundations, and earthworks, including erosion of embankments and cut slopes. Maintenance liability.	4	4	16	Ensure adequate temporary and permanent drainage for earthworks and structures, particularly in areas at risk of surface water or groundwater flooding.	2	4	8
6	Instability of excavations cause by weak, unstable ground.	PSSR	Excavations in loose granular material or presence of running sand may be more susceptible to collapse particularly if ground water is present.	4	3	12	Ground investigation findings to be considered in the design of permanent works. Any temporary works design to be undertaken by contractor will be based on site specific information on the ground conditions. Provision should be made for groundwater control construction. Where possible, the requirement for significant excavations below the water table should be avoided at the design stage.	2	3	6
7	Chemically and/or environmentally aggressive conditions.	PSSR	Chemical attach and deterioration on concrete. Increased cost.	3	3	9	A chemical aggressivity assessment was undertaken as part of the GI. A BRE sulphate aggressivity assessment was undertaken and design to be carried out using recommended design classes.	2	3	6

Risk ID	Hazard	Stage Identified	Consequence	Likelihood	Severity	Risk	Proposed Mitigation Measures	Likelihood	Severity	Residual Risk
8	Striking services underground or overhead during ground investigation and construction.	PSSR	Danger to operatives and disruption to services in the area. Increased cost and delays.	3	4	12	Contractor to obtain up to date and review statutory undertakers' utility plans and undertaken on site detection for buried services prior to drilling. Establish site procedures to be undertaken in the event underground services are encountered, including risk assessment and method statement. E.g., Obtain up to date service plans and records. Undertake GPR surveys and mark out services prior to any investigations. Operate permit to dig system. Plan ground investigation to avoid buried services. All buried services are to be mapped and located prior to commencement of any intrusive works. Any potential service diversions should be identified at the planning stage and liaison with STATS provided commenced. Exclusion zones to be implemented where applicable.	2	4	8
9	Shortfall of suitable fill material.	PSSR	Lithologies may not be conductive to the production of high-quality fill for re-use as part of the works.	3	2	6	Detailed assessment for material suitability for re-use on site to be undertaken. Engineering assessment indicates that Alluvium, Wolston Glacigenic Formation	2	2	4

Risk ID	Hazard	Stage Identified	Consequence	Likelihood	Severity	Risk	Proposed Mitigation Measures	Likelihood	Severity	Residual Risk
			Degree of suitability of soils for re-use makes it difficult to achieve a cut-fill balance. May need to import fill for construction.				and Grade IV Mercia Mudstone Group will be suitable for use as cohesive fill. River Terrace Deposits and Baginton Sand and Gravel Formation may be suitable for use as granular fill. Use of Performance Specification for construction to maximise opportunity to use site won fill. Contractors' responsibility to source suitable fill which meets the Performance Specification.			
10	Operation of earthworks haul route, construction, and ground investigation work adjacent to a live carriageway.	PSSR	Conflict of earthworks, construction, and GI vehicles with Public Highways.	3	4	12	Appropriate traffic management to be applied by contractor and site operatives to be suitably trained.	2	4	8
11	Variation in soil and bedrock parameters, extents, and depths.	PSSR	Impact on reliability of design. Increased costs and/or delays to the project if variations are discovered during construction. Potential failure of design if variations are not discovered during construction and cannot be accounted for.	3	3	9	Intrusive ground investigation has been carried out and findings are to be used in design of permanent works. Design to consider areas of the site that present inefficient excavating conditions and incorporate this accordingly. Prepare GDR including finalisation of design recommendations.	2	3	6
12	Variation in groundwater levels.	PSSR	Impact on integrity of permanent and temporary works	3	3	9	Groundwater monitoring has been carried out during ground investigation and is to continue	2	3	6

Risk ID	Hazard	Stage Identified	Consequence	Likelihood	Severity	Risk	Proposed Mitigation Measures	Likelihood	Severity	Residual Risk
			design where excavations, foundations and piles intersect groundwater. Potential additional construction costs for dewatering temporary excavations, and potential programme delays associated with dewatering abstraction licensing and discharge permitting.				for 12 months post GI completion, monitoring to cover winter and spring seasons when groundwater levels are likely to be highest. Groundwater monitoring results to be incorporated into drainage design. Land access to be agreed prior to monitoring visits to ensure readings can be taken from installations. Recommendations on managing groundwater levels for permanent works to be presented in GDR.			
13	Piled foundations.	PSSR	Failure or excessive settlement of piled foundations impacting integrity of structures. Structure maintenance or replacement required. Additional Costs. Medium risk of Potential UXO Disruption to users, possible road closures.	3	4	12	Ground investigation carried out and characteristic parameters to be incorporated into pile design. A UXO Risk Management Plan and Site Specific UXO Awareness Briefings to be undertaken for all personnel conducting intrusive works. Unexploded Ordnance (UXO) Specialists Presence on Site to support shallow intrusive works. Piles to be installed with highest concrete class as determined by BRE chemical aggressivity assessment.	1	4	4
14	Disturbance of Protected Species.	PSSR	Coombe Pool designated a Site of Special Scientific Interest (SSSI) due	3	3	9	Multiple ecology surveys have been undertaken to establish the species present across site, the potential impact to	2	3	6

Risk ID	Hazard	Stage Identified	Consequence	Likelihood	Severity	Risk	Proposed Mitigation Measures	Likelihood	Severity	Residual Risk
			to nesting island for Herons east of site. Potential for increased cost and delays if found to be present on site.				them and planned mitigations. These are discussed in more detail in the Preliminary Environmental Information Report [34] [34]. Establish site procedures to be undertaken in the event of protected species encountered during the works, including risk assessment and method statement.			
15	The culvert.	PSSR	Small area of earthworks cutting adjacent to culvert potentially affecting the structural integrity. Ground investigation boreholes drilling through the culvert.	2	3	6	Ground investigation tailored so that culvert was not affect during works. Design to ensure culvert is not affected by construction or permanent works.	1	3	3
16	Coombe Pool main spillway.	PSSR	Small area of earthworks cutting adjacent to main spillway potentially affecting the structural integrity.	2	4	8	Acquire report on structure stability and confirm the exact location of the main spillway, design to ensure it is not affected by the earthworks and review and follow the report's recommendations.	1	4	4
17	Grade II Listed Building.	PSSR	Earthworks within proximity of Grade II Listed building – Hungerley Hall Farmhouse could damage its structural integrity.	3	3	9	Proposal of retaining wall to increase stability of earthworks and the surrounding soil to minimise the effect of the scheme on Hungerley Hall Farmhouse.	2	3	6
18	Presence of watercourses.	PSSR	Construction / GI working near open water – The River	3	4	12	Site team to be made aware of watercourses through	2	4	8

Risk ID	Hazard	Stage Identified	Consequence	Likelihood	Severity	Risk	Proposed Mitigation Measures	Likelihood	Severity	Residual Risk
			Sowe, Smite Brook, and Coombe Pool. Potential for contaminant pathways to be created to watercourses.				induction, toolbox talks, briefings etc. Site operatives to avoid watercourses and maintain a safe distance. Care to be taken during construction works to prevent contamination of the watercourses using clean drilling techniques if applicable and proper handling or disposal of waste / arisings / site won material. Spill kits to be present during construction works.			
19	Agricultural Land.	PSSR	Damage to crops.	2	2	4	Construction works to maintain a distance from agricultural land and any waste / arisings / site won material to be used or disposed of correctly. Site team to liaise with landowner to keep them informed of works taking place.	1	2	2
20	Frost Susceptible Soils.	PSSR	Frost heave creating surface damage	3	3	9	Testing from ground investigation to be incorporated into the design of permanent works. GDR to be produced including finalisation of design recommendations. Design and final highway construction thickness to take account of frost heave risk.	2	3	6
21	Small amounts of asbestos encountered in landfill and	PSSR	Health risk to construction/GI workers	2	3	6	All workers to have undertaken asbestos awareness training. Ensure encountered asbestos is managed appropriately.	1	3	3

Risk ID	Hazard	Stage Identified	Consequence	Likelihood	Severity	Risk	Proposed Mitigation Measures	Likelihood	Severity	Residual Risk
	during site walkover.									
22	Ground conditions susceptible to solubility/deterioration such as gypsum/halite within the Mercia Mudstone Group.	PSSR	Potential for solution/deterioration of gypsum/halite resulting in excessive / differential settlement of road pavements, earthworks or structures.	2	2	4	Ground investigation identified gypsum bands within Mercia Mudstone Group. Foundation design to consider presence of dissolution bands. Settlements to be monitored during construction.	2	2	4
23	The walkover survey was not undertaken along the roads and earthworks due to the need for temporary traffic management if working adjacent to live carriageways and complications with existing traffic management associated with Binley junction works.	PSSR	Potential for new or worsened existing minor defects since last Principal Inspections.	2	2	4	No walkover was undertaken as part of the 2023 GI works due to traffic management constraints and the presence of vegetation. Risk to be maintained on the Xactium Risk register and inspection to be undertaken at an appropriate time.	2	2	4
24	Drainage assessment was not carried out at this stage.	PSSR	Potential for drainage defects that have not been identified.	2	2	4	Risk to be added to the Xactium Risk register and carried on to and assessed by the DJV at PCF Stage 3.	1	2	2
25	Baseline groundwater	GIR	Impact on integrity of permanent geotechnical and	3	3	9	Up to the date of this report, not all groundwater monitoring and sampling has been	2	3	6

Risk ID	Hazard	Stage Identified	Consequence	Likelihood	Severity	Risk	Proposed Mitigation Measures	Likelihood	Severity	Residual Risk
	conditions not yet established		drainage design. Impact on temporary works design, particularly in relation to potential dewatering requirements.				completed. Groundwater conceptual model is to be reviewed once all data is available. Access to monitoring locations to be co-ordinated to ensure data can be collected.			
26	Site-won materials not suitable for re-use on the Proposed Scheme or excess of materials	GIR	Programme delays and increase of costs due to treatment, storage, or disposal of unsuitable and excess site-won fill material. Programme delays and increase of costs due to importing of suitable fill material.	3	3	9	Design to include consideration of likely proportions of material suitable for re-use as part of earthworks (balance) assessment. Develop bespoke earthworks specification to maximise proportions of site-won fill which can be re-used, treated or stored on the Proposed Scheme.	2	3	6
27	Site-won materials not suitable for use as fill to foundation systems (pile groups or shallow foundations)	GIR	Increased cost and carbon footprint due to import of suitable material.	3	3	9	Foundation design to consider reuse of site material.	2	3	6
27	Landfill material unsuitable for reuse.	GIR	Programme delays and increase of costs due to disposal of hazardous waste where unsuitable for retention under the MMP (CL:AIRE DoWCoP).	3	3	9	Made Ground encountered in BH102 between 1.2mbgl and 3.5mbgl has been classified as hazardous waste under WM3 due to the reported concentrations of metals, TPH and asbestos. Materials to be managed in accordance with the principal Contractor's EMP (including	2	3	6

Risk ID	Hazard	Stage Identified	Consequence	Likelihood	Severity	Risk	Proposed Mitigation Measures	Likelihood	Severity	Residual Risk
							asbestos management plan), SWMP and MMP Where requiring excavation as part of the works, hazardous waste should be delineated, segregated and further tested and assessed (where applicable) to inform disposal options. Design to consider measures to avoid foundation solutions which require excavation for the construction of foundations bearing directly on hazardous waste. Design to account for ground improvement, where required.			

6. Engineering Assessment

6.1. General Overview

6.1.1. This section provides a general overview of the works proposed for the preferred option taken forward from PCF Stage 2. This option comprises earthworks and a new overbridge. Changes to the design can be expected through preliminary design (PCF Stage 3) and detailed design (PCF Stage 5).

6.1.2. The scheme comprises a new grade-separated junction to the north of the existing Walsgrave roundabout. The new junction is to consist of two roundabouts, connected by an overbridge over the existing A46 carriageway. These will be connected to a new alignment of the B4082 and slip-roads to/from the existing A46 carriageway, all of which will be constructed on new earthworks. The A46 carriageway will be diverted around the eastern leg of the existing roundabout, which will be removed. The geotechnical elements of the scheme include:

- Embankments and cuttings,
- Gantries and overbridges,
- Retaining walls,
- Depending on the development of the design, strengthened earthworks.

6.2. Earthworks

Existing Cuttings and Embankments

6.2.1. It is expected that the existing side slopes of the existing A46 carriageway will be retained.

New Cuttings

6.2.2. The new cuttings will be formed in the superficial deposits (Alluvium, River Terrace Deposits, Wolston Glaciogenic Formation and Baginton Sand and Gravel Formation) as well as Grade IV Mercia Mudstone Group where there are no or minimal superficial deposits. The cutting slopes will generally have a gradient of 1V:3H, with short sections of cutting with a low height possibly having slopes of up to 1V:2H.

6.2.3. The B4082 alignment has been designed in a cutting and/or at-grade with the A46 alignment with a verge separation. The alignment is based on the assumption that the Hungerley Hall Farm overbridge will be maintained as part of the proposed scheme. As earthwork slopes will be kept to a maximum gradient of 1V:2.5H, it is not anticipated

that special geotechnical measures will be required on either side of the B4082 carriageway.

6.2.4. Groundwater monitoring readings recorded to date suggest that groundwater is relatively high in all areas where cuttings are proposed. It is currently unclear how high groundwater levels may be over time because monitoring readings are currently only available for the period between June and August 2023. There is therefore no data available to assess possible seasonal fluctuations in groundwater levels.

6.2.5. It is therefore possible that groundwater control measures will be required for the construction of all cuttings. In addition, groundwater control measures such as slope drains may be required to mitigate the risk of instability posed by groundwater levels during the operational phase of the scheme.

6.2.6. New cuttings and structures may alter groundwater flow pathways, which could lead to potential contaminant migration.

New Embankments

6.2.7. It is envisaged that carriageway embankments will be constructed with a maximum slope angle between 1V:3H and 1V:2H (where the slope height is low). If steeper slopes are required, strengthened earthworks may be required.

Use of Excavated materials

6.2.8. The use of site-won fill will be maximised to limit the need for mass haul and import of fill. Where possible, any site-won material not suitable for use will be treated to make it suitable for use.

6.2.9. Site-won Alluvium, Grade IV Mercia Mudstone Group and Wolston Glaciogenic Formation will be suitable for use as cohesive fill material. These will mostly fall under Class 2A/2B, or Class 2C where a higher fraction of granular material is measured in samples tested.

6.2.10. Site-won Baginton Sand and Gravel Formation and River Terrace Deposits materials may be suitable for use as granular fill material, provided that the maximum fines content is not exceeded. Only one PSD test was performed on a sample of River Terrace Deposits, and 11 out of 25 samples of the Baginton Sand and Gravel Formation tested recorded a fines content greater than 15%. The materials may therefore be suitable for use as Class 1A/1B, provided the measured fines content does not exceed 15%.

6.3. Bridge Structures and Gantries

Gantries

6.3.1. A new gantry is to be constructed south of the new overbridge. This is likely to be constructed on piled foundations due to the high horizontal loads exerted on the gantry, as well as the small cross-sectional profile of the connection between the super-structure and sub-structure.

Bridge Substructure

6.3.2. An Options Report (HE604820-OIL-SBR-S01-RP-CB-31701), which includes three substructure options for the bridge substructure among several options for the bridge deck, has been prepared by the DJV for consultation with OIL and NH SES Structures.

6.3.3. The bridge structure is a single span integral bridge structure, meaning that the substructure (abutments and foundations) is monolithically connected to the bridge deck without joints between the end of the bridge deck and the abutments. Three options have been considered for the sub-structure of the overbridge abutments in the Options Report. These are full height frame abutment (spread footings), piled foundations, and bankseat abutments bearing on reinforced earth walls.

6.3.4. It is important to note that whilst the options provided in this Option Report are focussed on the options for the abutments only, the same options considered for the abutments will be appropriate to the wingwall structures which are conceived as structurally independent from the abutments. Whilst it will be possible to use different structural solutions for the wingwalls and abutments, it has been assumed for the purposes of this GIR that the wingwalls and abutments will be of the same typology.

Option 1 full height frame abutment (spread footings)

6.3.5. In this option, the abutment would support the bridge deck while acting as a retaining wall for the backfill material behind the abutment. The abutment would be cast-in-situ and be supported on spread footings of approximate 20.0m length and 7.0m width. Due to the presence of relatively soft deposits at shallow depth at the proposed bridge location, excavate and replace (E&R) techniques would likely to be necessary at the location of the abutments. The thickness of the wall stem would likely range between 1.5m (depth of the bridge deck) and 2.0m. A differential settlement of the order of 1 in 2000 (i.e. 15mm on a 30m span) would be expected for this option. Since the ground conditions are expected to be similar under each abutment, a differential settlement criterion of 1 in 2000 would be considered appropriate.

Option 2 piled frame abutment

6.3.6. Similar to Option 1, the abutment would support the bridge deck while also acting as a retaining wall for the backfill material behind the abutment. However, in Option 2 the abutment would be supported by a single row of piles. Rotary bored piles would likely be preferred for the bridge foundations, as these would be able to penetrate the Mercia Mudstone Group. It may be possible to use continuous flight augering (CFA) piles. However, CFA may be unsuitable due to the risk of over-flighting. It is anticipated that pile diameters would range between 1200mm and 1500mm, and the pile length between 7.0m to 12.0m. Since there would be no need for a spread footing to support the abutment, there would be no structural requirement for E&R under the abutments.

Option 3 bankseat abutment

6.3.7. This option consists of an end-screen wall that would be cast around the longitudinal beams. The spread footing supporting the end-screen would sit directly on reinforced soil walls. Modular concrete facing panels would form the vertical face of the wall supporting the bankseat abutment with steel reinforcement strips attached to the modular panels. This type of wall would be able to resist the lateral earth pressures by friction along the reinforcement, which would ensure the soil mass would act as a reinforced soil block. The reinforced soil block would be made of selected granular material Class 6I/6J.

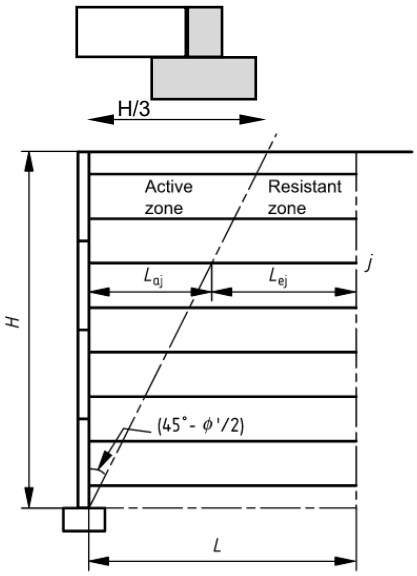

Figure 6-1 - Initial sizing of reinforced soil block

6.3.8. The height of the bankseat abutment includes the combined height of the end-screen, deck structure and pavement build-up (totalling 2.3m), as well as the depth of the spread footing (1.0m) supporting the bridge deck. As a result, the minimum height of the bankseat would be expected to be 3.3m, accounting for a 1.0m deep spread footing.

Based on past experience and engineering judgement, the width of the spread footing would be anticipated to range between 2.5m to 3.0m.

6.3.9. The width of the reinforced soil block (or L in Figure 6-1) would typically be between 6.5m and 7.0m. The distance measured from the back face of the reinforced soil wall panels to the heel of the bankseat abutment is commonly greater than H/3, where H is the height of the reinforced soil block, in order to mobilise the full reinforcement capacity. This means that this distance would be approximately 2.0m (with H being 5.75m). However, this distance would likely increase considerably when limiting the pressures applied to the top of the reinforced soil blocks in the serviceability limit state in order to avoid overstressing the reinforcement. Similar to Option 1, a differential settlement of the order of 1 in 2000 (i.e. 15mm on a 30m span) would be expected for this option.

6.3.10. If spread footings or bankseat abutments bearing on reinforced earth walls are selected and the founding level is within the Alluvium, Wolston Glaciogenic Formation, cohesive layers of the Baginton Sand and Gravel Formation or weaker material of the Grade IV Mercia Mudstone Group, it is likely that long-term settlements would develop. The preferred mitigation for this would be to excavate some of the shallowest existing cohesive deposits below the foundations and replace excavated material up to founding level with general granular fill material. This fill material would likely be Class 1A/1B and, as indicated in Section 6.2.10, could be site-won River Terrace Deposits or Baginton Sand and Gravel Formation.

6.3.11. Further details on advantages and disadvantages of each of these three substructure options related to aspects such as health and safety, capital cost and whole life cost, sustainability, maintenance etc, are presented in the Structure Options Report (HE604820-OIL-SBR-S01-RP-CB-31701).

Preferred option

6.3.12. At the time of preparing the Structure Options Report, the ground investigation data had not been fully reviewed and assessed, and Option 2 was recommended then. However, following detailed review and assessment of the ground investigation data, Option 3 was deemed to be more appropriate. This was discussed with National Highways SES Structures in January 2024, and in collaboration with the TA, Option 2 was agreed to be selected.

6.3.13. As discussed in 6.2.4 and 6.2.6, groundwater levels may be relatively high. Therefore, dewatering may be required for the excavations under the potential shallow footings or reinforced soil walls under the abutments, depending on the bridge foundation option selected. It should be noted that these excavations, as well as foundations and piles, may alter groundwater flow pathways within the natural strata. Significant changes in the groundwater flow pathways may lead to potential contaminant migration, increase in

the risk of groundwater mounding and flooding and a reduction groundwater flow to receptors.

6.4. Retaining Walls, Strengthened Earthworks and Regrading

A46 carriageway / slip roads

6.4.1. In the current design, slope steepening or retaining walls will likely be required between the new slip roads and the existing A46 carriageway due to there likely being insufficient space for a stable simply graded embankment slope.

6.4.2. The extent and type of slope steepening measure or retaining structure required have not yet been selected. At this stage, a reinforced concrete gravity retaining wall solution has been adopted as part of the preliminary design for Design Alignment Fix 3.

6.4.3. However, it is likely that the use of strengthened earthworks would be a preferable solution due to the low carbon footprint of this technical solution compared to conventional concrete retaining walls (either gravity or cantilever). This will be considered further at detailed design stage.

6.4.4. The anticipated height of the proposed retaining walls or slope strengthened works is expected to range between approximately 1.0m and 1.6m high. However, the exact height will be determined at detailed design and upon selection of a specific solution.

Hungerley Hall Farm / B4082

6.4.5. The preliminary design includes the realignment of B4082 to connect with the existing Hungerley Hall Farm (HFF) accommodation bridge.

6.4.6. The B4082 realignment will be at ground level to enable a connection to the existing HHF overbridge for future use as an accommodation access. To accommodate drainage, fencing (acoustic) and landscaping, the permanent land use is increased towards HHF. The realignment earthworks will be graded to a maximum 1:2.5 slope angle between A46 and B4082; and B4082 and HHF ground level. Therefore, no additional retaining structures or slope steepening measures will be required along the new realignment of B4082.

6.4.7. Due to the realignment being relatively close to HHF, a structural survey of HHF and barn should be undertaken to establish safe vibration and settlement limits to be taken into account in the design and construction of the adjacent works. Structural monitoring may be required during the construction works. Discussions on this topic are underway in the project team.

Flood Bund / Coombe Pool SSSI

6.4.8. As part of the preliminary design, it is proposed to remove the existing embankment that runs parallel to the east of the A46 southbound carriageway. The eastern embankment currently serves as a protection barrier to flood waters entering from the Smite Brook (Coombe Pool / SSSI).

6.4.9. The A46 Southbound Flood Protection Report (HE604820-OIL-HGN-00-RP-ZX-30002) is currently being prepared by DJV for consultation with OIL and NH SES Structures. The report includes several options for the reinstatement of the flood protection, ensuring that the highway will be protected against flood waters in accordance with CD 356. Preliminary hydraulic modelling in the report suggests a maximum 100-year and climate change water level in the vicinity of Walsgrave Junction of 73.29mAOD. The design flood level combined with the 600mm freeboard requirement yields a minimum level of flood protection for highways design of approximately 74.0mAOD.

Option 1 – Embedded retaining wall at the verge

6.4.10. An embedded retaining wall at the edge of the verge would meet the existing ground level of the embankment or a revised level as deemed appropriate for construction methods. The retaining wall would reach heights of 3m with an embedment depth of approximately 6m. However, this will be determined during detailed design. The length of the retaining wall would be approximately 135m.

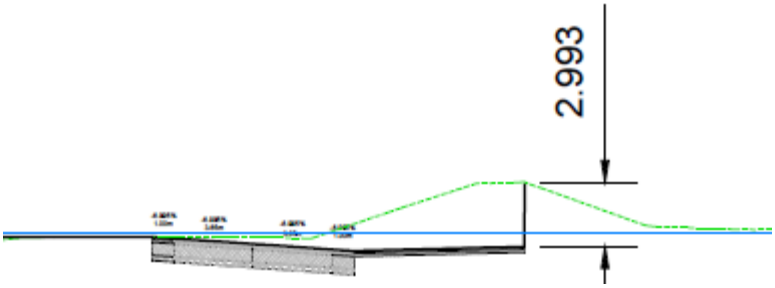

Figure 6-2 Embedded retaining wall sketch at CH:920 (only southbound carriageway shown)

Option 2 – Southbound carriageway raise

6.4.11. In this option, the southbound carriageway would be raised to a minimum design flood protection level of 74.0mAOD. The alignment of the southbound carriageway would be vertically offset by approximately 1.1m to take the carriageway and verge above the design flood level of 74.0mAOD. This would require a retaining wall structure in the central reserve beneath the central barrier. The pavement layers would be below the design flood level with a risk of being disturbed if the ground water levels were to reach the design flood level, requiring specific assessment for materials and water presence in this area. Unlike Option 1, no retaining structure would be required at the edge of the verge.

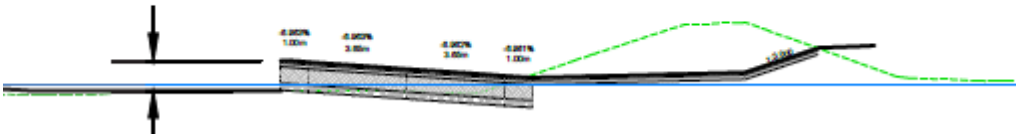

Figure 6-3 Southbound carriageway raised 1.1m above central reserve at CH:920 (only southbound carriageway shown).

Option 3 – Impermeable bund at verge edge

6.4.12. : The alignment would be at the same distance from Coombe Pool with an adjustment to the verge fall towards carriageway. The road and verge surface level would be below the flood level with the bund intended to protect water entering the carriageway. The slopes and top width would require geotechnical and permeability review at detailed design stage to determine if this option would be viable without disturbing the SSSI permanently and in construction.

6.4.13. Option 3 is currently the preferred option and it has been incorporated in the Stage 3 Preliminary Design.

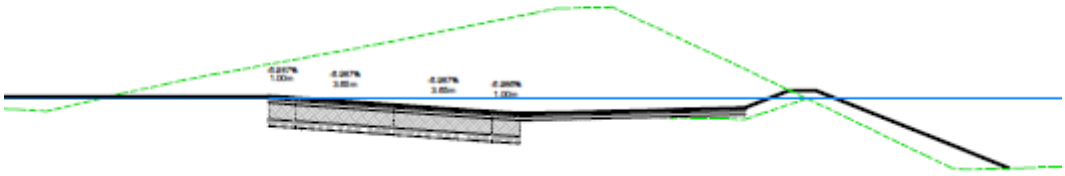

Figure 6-4 Bund protection of Southbound carriageway at CH:920 (only southbound carriageway shown).

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Figure A.1

Geology Roam

Map Product: DiGMapGB-50 Rock Unit
Basemap: (1:50 000) Rock Unit

Bedrock	
Helsby Sandstone Formation (HEY)	
Mercia Mudstone Group (MMG)	
Superficial Deposits	
Thrussington Till Member (THT)	
Wolston Glacigenic Formation (WOLS)	
Bosworth Clay Member (BOS)	
River Terrace Deposits, 1 (RTD1)	
Baginton Sand And Gravel Formation (BGSG)	
Alluvium (ALV)	

Linear Features	
Alteration Areas	
Faults	
Fault, inferred	
Fault, inferred, displacement unknown	
Fold Axes	
Fossil Horizons	
Landforms	
Mineral Veins	
Rock Units	
Coal seam, inferred	

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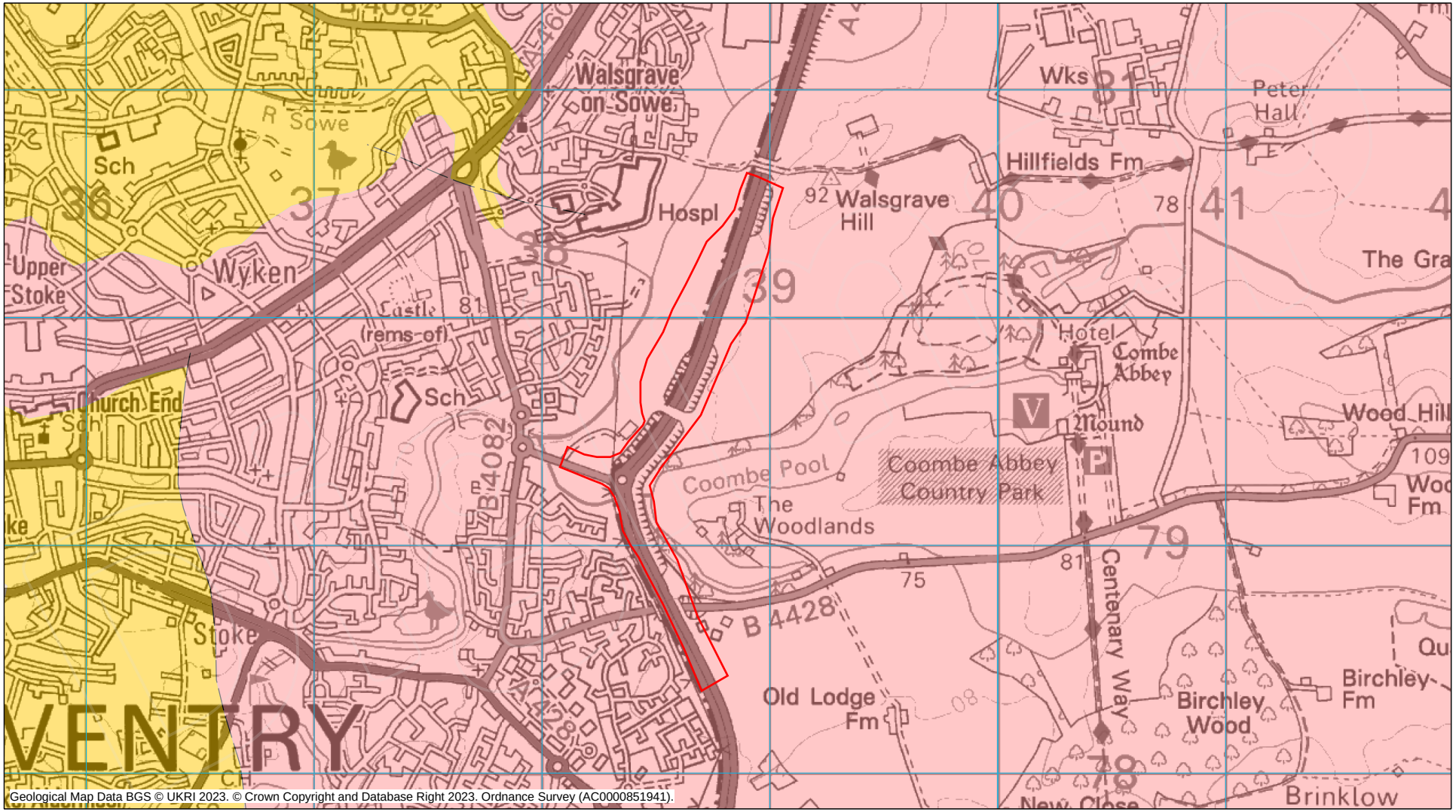
Walsgrave Bedrock



Digimap®

Scale 1:25000

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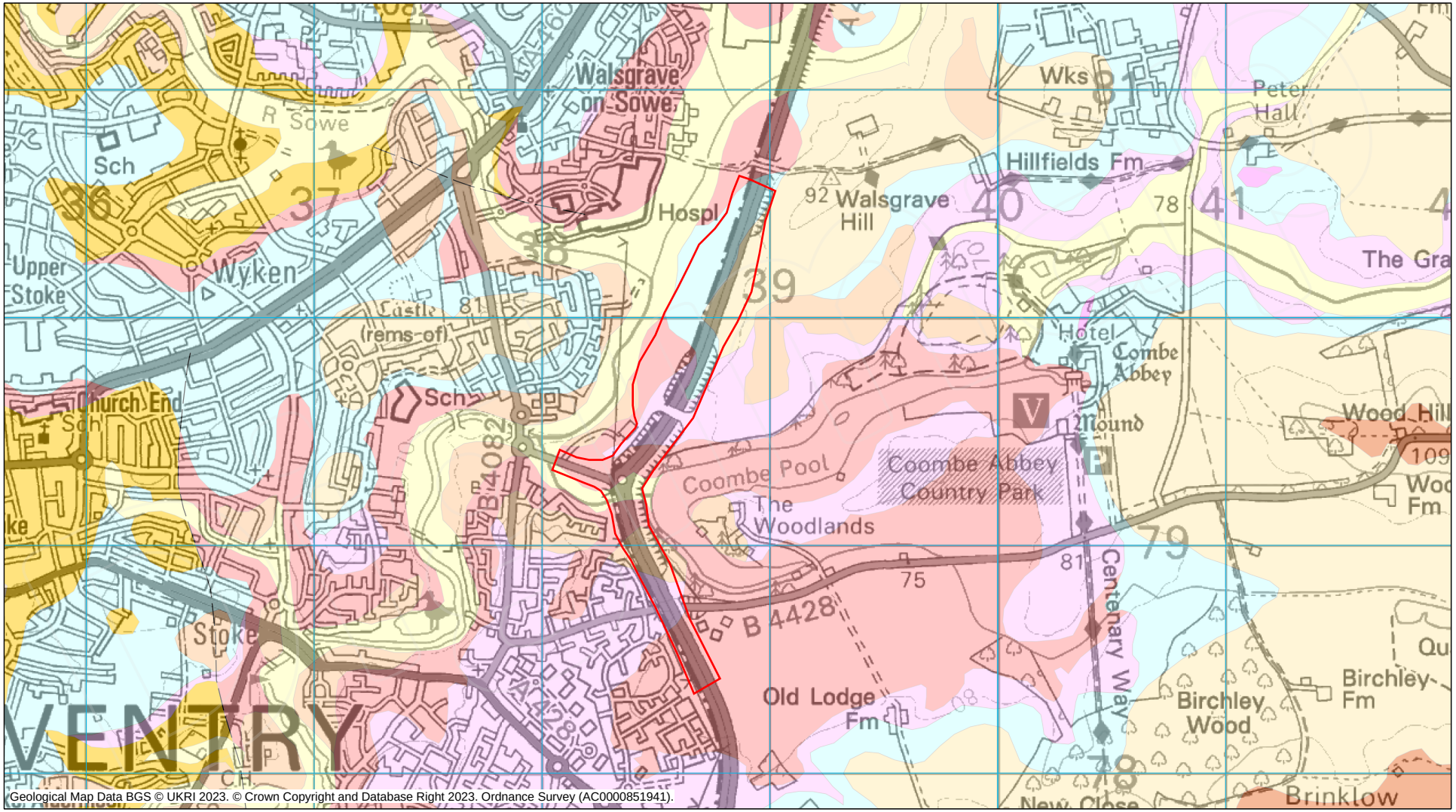
Projection: British National Grid

31 October 2023 10:29

Walsgrave Bedrock and Superficial Deposits



Digimap®

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Projection: British National Grid

31 October 2023 10:32

Figure A.2i

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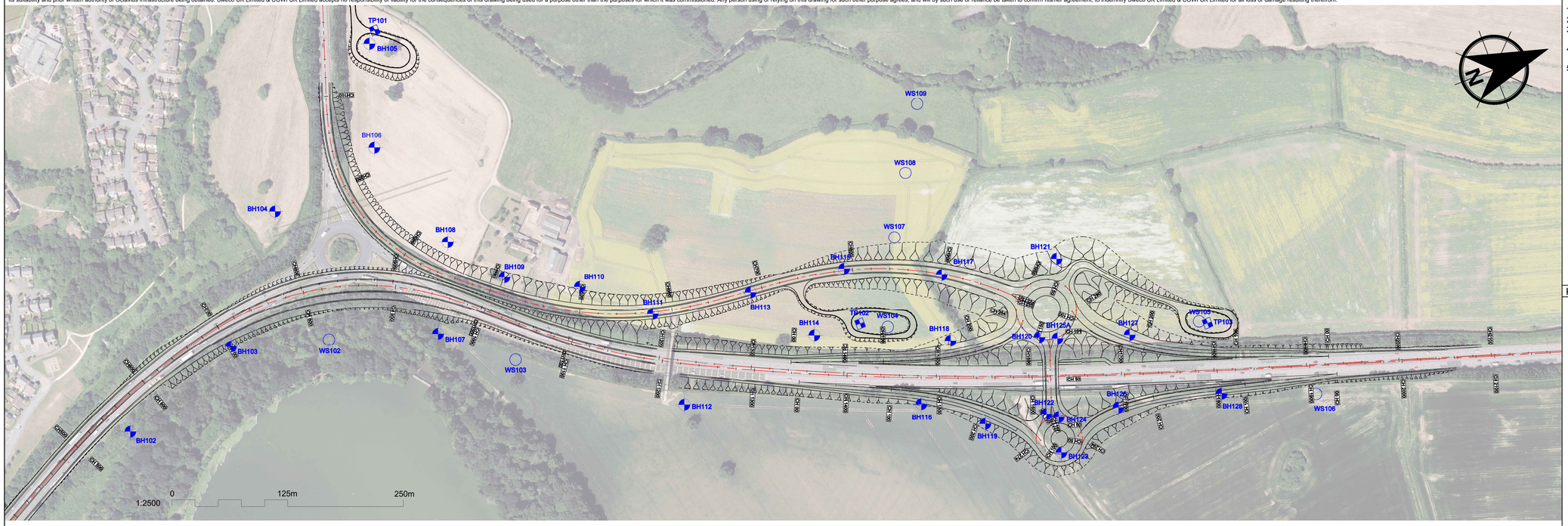

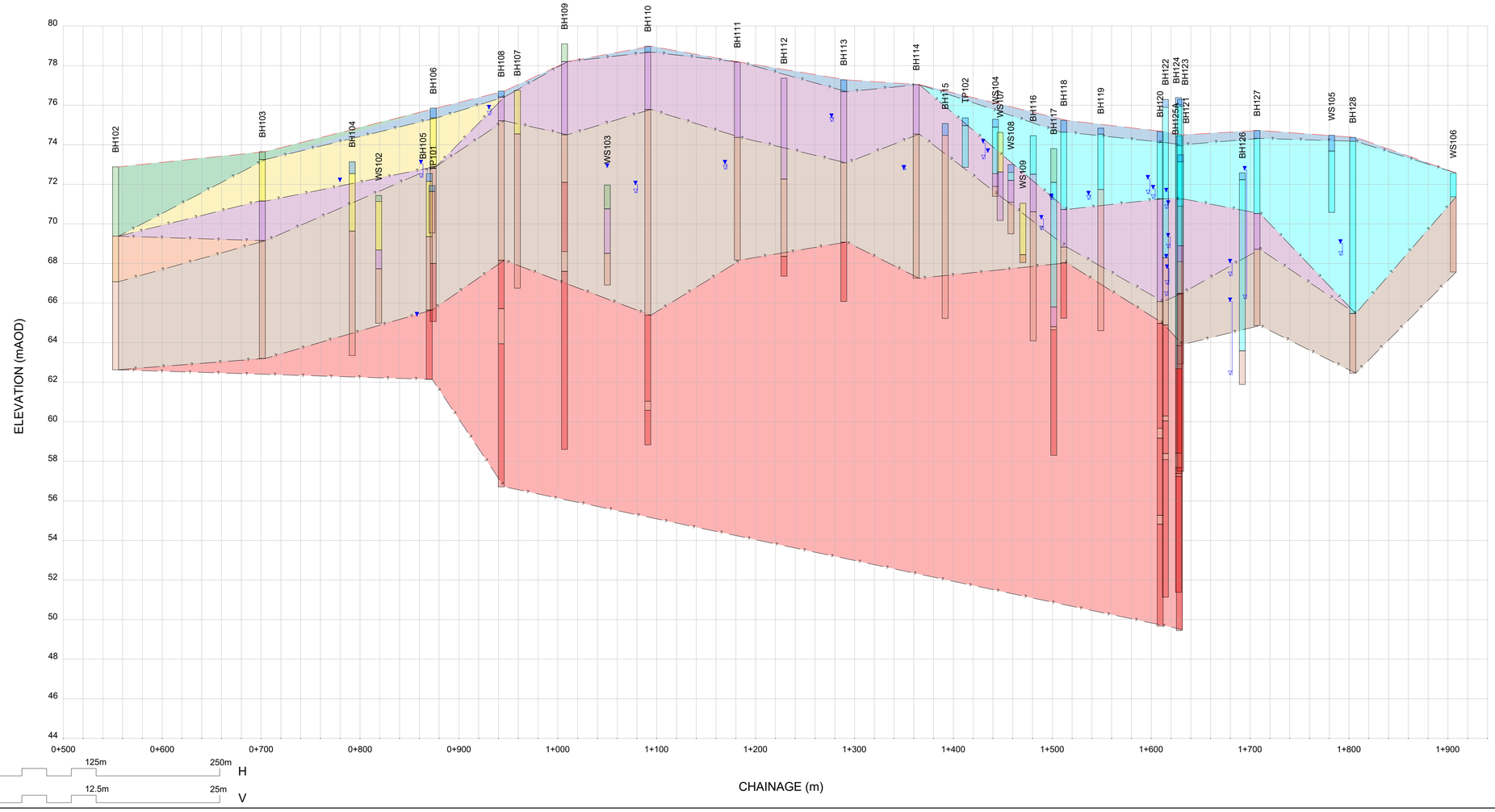

NOTES

1. This drawing is to be read in conjuction with al other relevant documentation.
2. Do not scale from this drawing, use only printed dimensions.
3. All dimensions, chainages and levels in metres unless otherzise defined in the drawing.
4. For details of each stratum refer to Section 4 of Ground Investigation Report (HE604820-OIL-VGI-00-RP-GI-00001).
5. Whilst the long section shows all exploratory hole locations on the scheme, interpolation of strata has been carried out primarily using exploratory hole locations adjacent the northbound carriageway. Where there are not exploratory hole locations adjacent to the northbound carriageway, locations closest to the southbound have been use

Strata Hatch	Geology Code	Description
	MGR	Made Ground
	TS	Topsoil
	ALV	Alluvium
	BGSG	Baginton Sand and Gravels Formation
	MMG	Mercia Mudstone Group (Grade IV)
	MMG	Mercia Mudstone Group (Grade I To III)
	RTD	River Terrace Deposits
	WOLS	Wolston Glacigenic Formation

KEY TO SYMBOLS

- Existing Ground Level
- Uncertain Ground Strata
- Cable Percussion/rotary Borehole
- Window Sample Borehole
- Trial Pit
- Water Strike and Level after 20 minutes

REV	DATE	REVISION NOTE	ORG	CHK'D	APP'D
P01.01	---		---	---	---

DESIGNER

SWECO

CONTRACTOR

CLIENT

PROJECT TITLE

A46 COVENTRY JUNCTIONS (WALSGRAVE)

PROJECT STAGE

PCF STAGE 3

DRAWING TITLE

GEOLOGICAL LONG SECTION

SUITABILITY

WORK IN PROGRESS

SHEET SIZE	SCALE	STATUS	REVISION
A1	AS SHOWN	S0	P01.01

DRAWING NUMBER

HE604820-OIL-VGI-00-DR-GI-00001

Figure A.2ii

TO M6/M69

BRIDLEWAY 235

FARBER ROAD

PUBLIC RIGHT OF WAY 156/R75x/1

WYKEN CROFT NATURE PARK

COVENTRY & WARWICKSHIRE UNIVERSITY HOSPITAL

EXISTING A46 MAINLINE SECTION RETAINED

WALSGRAVE HILL FARM

PEARL HYDE COMMUNITY PRIMARY SCHOOL

A46 WALSGRAVE JUNCTION

RIVER SOWE

EXISTING RIVER SOWE CULVERT

EXISTING HUNGERLEY HALL FARM ACCOMMODATION BRIDGE

B4082

EXISTING WALSGRAVE JUNCTION

EXISTING SMITE BROOK CULVERT

CLIFFORD BRIDGE ROAD

CLIFFORD BRIDGE PRIMARY SCHOOL

B4027

BRINKLOW ROAD

TO BINLEY JUNCTION

BINLEY

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NOTES

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2. DO NOT SCALE FROM THIS DRAWING, USE ONLY PRINTED DIMENSIONS.
3. ALL DIMENSIONS, CHAINAGES, LEVELS AND COORDINATES ARE IN METRES UNLESS OTHERWISE STATED.

KEY TO SYMBOLS

BOUNDARIES
- DRAFT ORDER LIMITS
- BOROUGH BOUNDARY
- SITE COMPOUND

PROPOSED CONSTRUCTION
- CARRIAGEWAY
- BRIDGE
- ADVANCE DIRECTION SIGN
- GANTRY
- ANTI-GLARE SCREEN
- SAFETY BARRIER
- FENCING
- FENCE GATE
- LIGHTING
- ATTENUATION BASIN
- EARTHWORKS - CUTTING INCLUDING LANDSCAPING
- EARTHWORKS - EMBANKMENT INCLUDING LANDSCAPING
- VERGE INCLUDING LANDSCAPING
- PAVED VERGE / PATH
- RETAINING WALL
- CENTRAL RESERVE
- MAINTENANCE ACCESS
- HUNGERLEY HALL FARM / WALSGRAVE HILL FARM ALTERNATE ACCESS

EXISTING FEATURES
- CARRIAGEWAY
- 132kV OVERHEAD LINE (OHL)
- PYLON
- SEWER SEWERMAIN
- GRADE II LISTED BUILDING
- SITE OF SPECIAL SCIENTIFIC INTEREST (SSSI)
- WATERCOURSE

PROPOSED ENVIRONMENTAL MITIGATION
- HEDGEROW
- TREES

1:10000 SCALE AT A3

0 500m 1000m

CLIENT

national highways

PROJECT TITLE

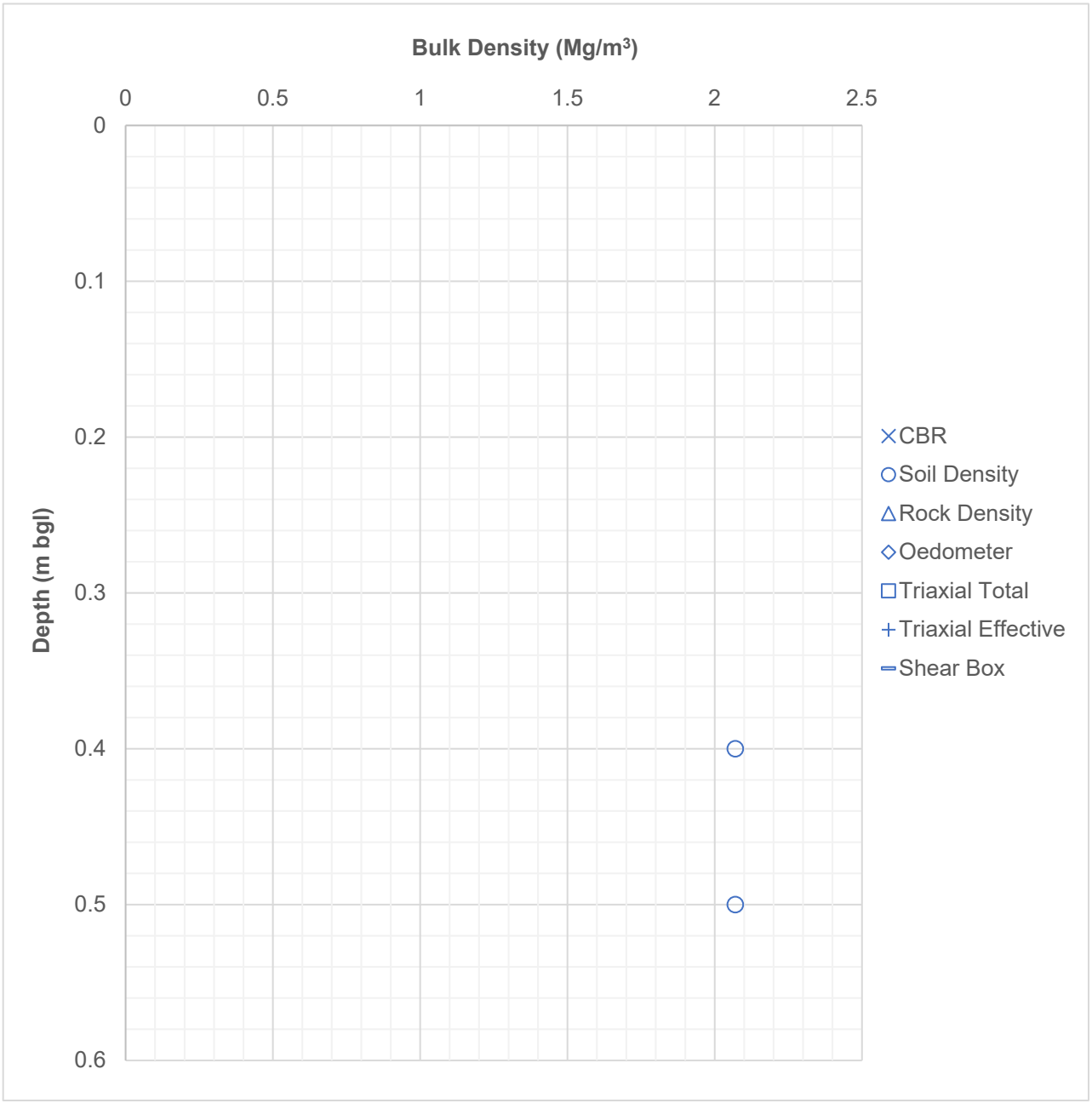
A46 COVENTRY JUNCTIONS (WALSGRAVE)

DRAWING TITLE

GENERAL ARRANGEMENT
LARGE SCALE MAP

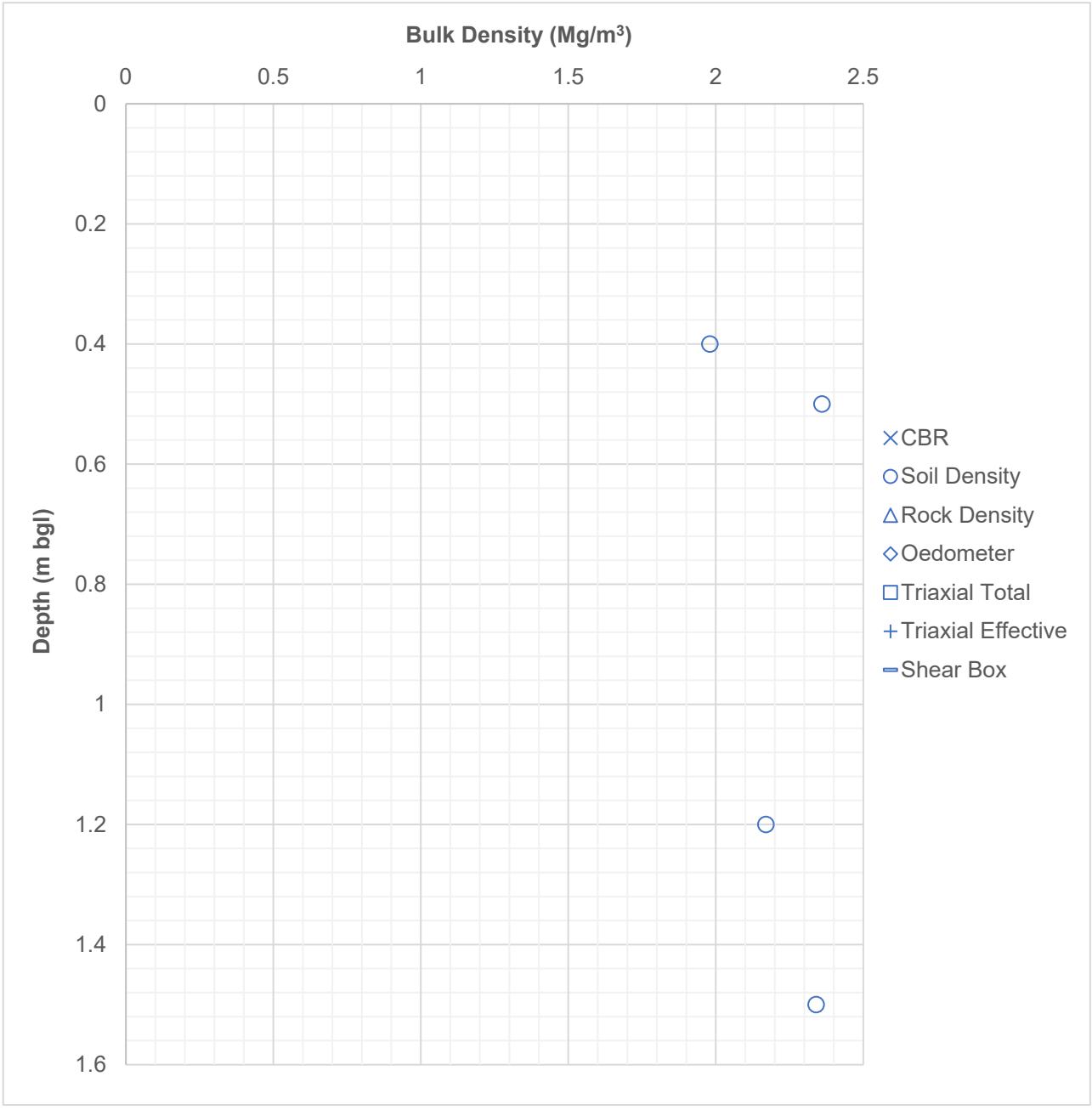
Bulk Density vs. Depth Below Ground Level (m)

Project ID:	**A46**	Project Title:	**A46 Coventry Junctions Upgrade (Walsgrave)**	Location:	**Coventry**
Client:	**National Highways**	Geology :	**Topsoil**	Figure:	**A.3**



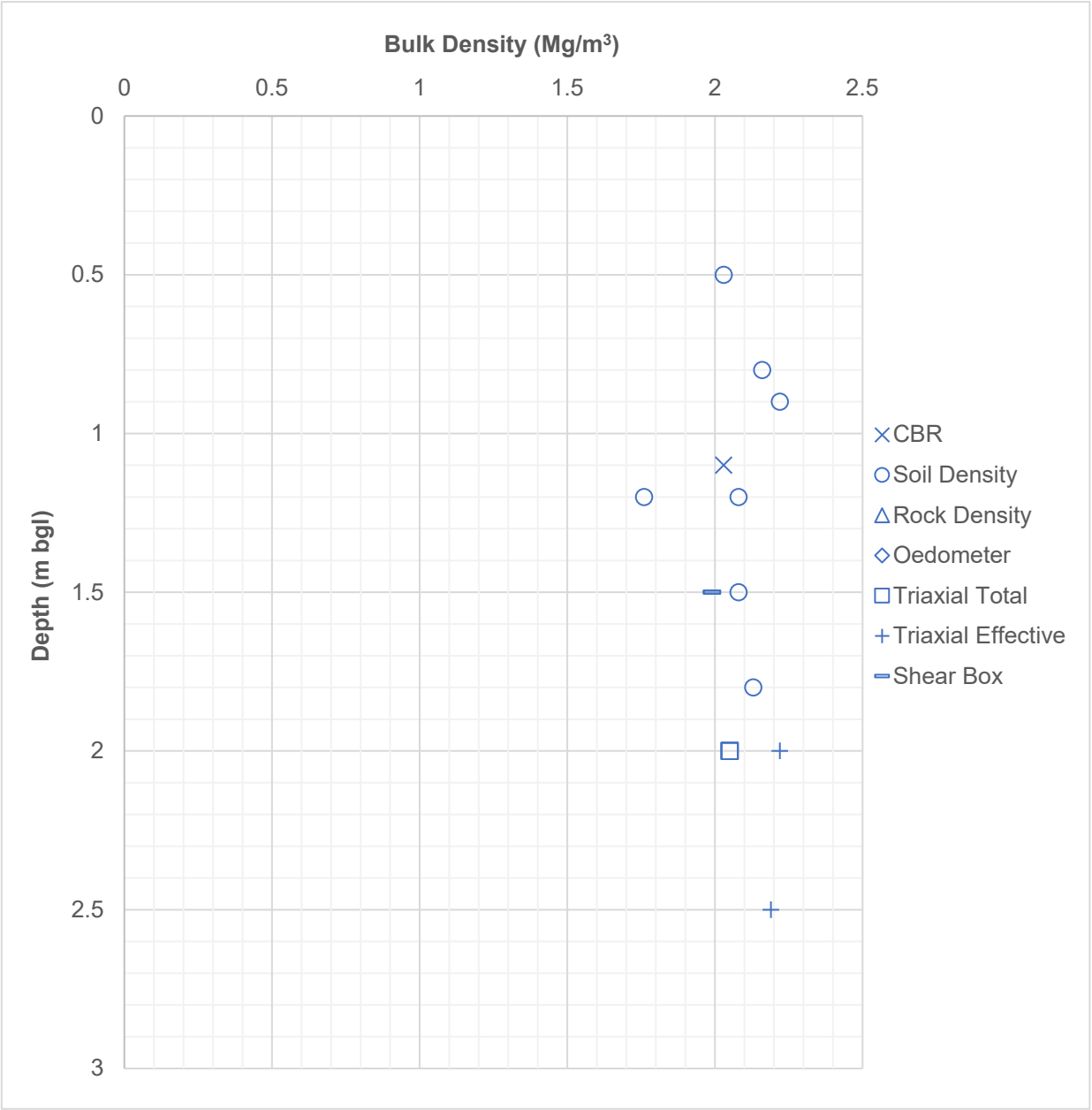
Bulk Density vs. Depth Below Ground Level (m)

Project ID:	**A46**	Project Title:	**A46 Coventry Junctions Upgrade (Walsgrave)**	Location:	**Coventry**
Client:	**National Highways**	Geology :	**Made Ground**	Figure:	**A.4**



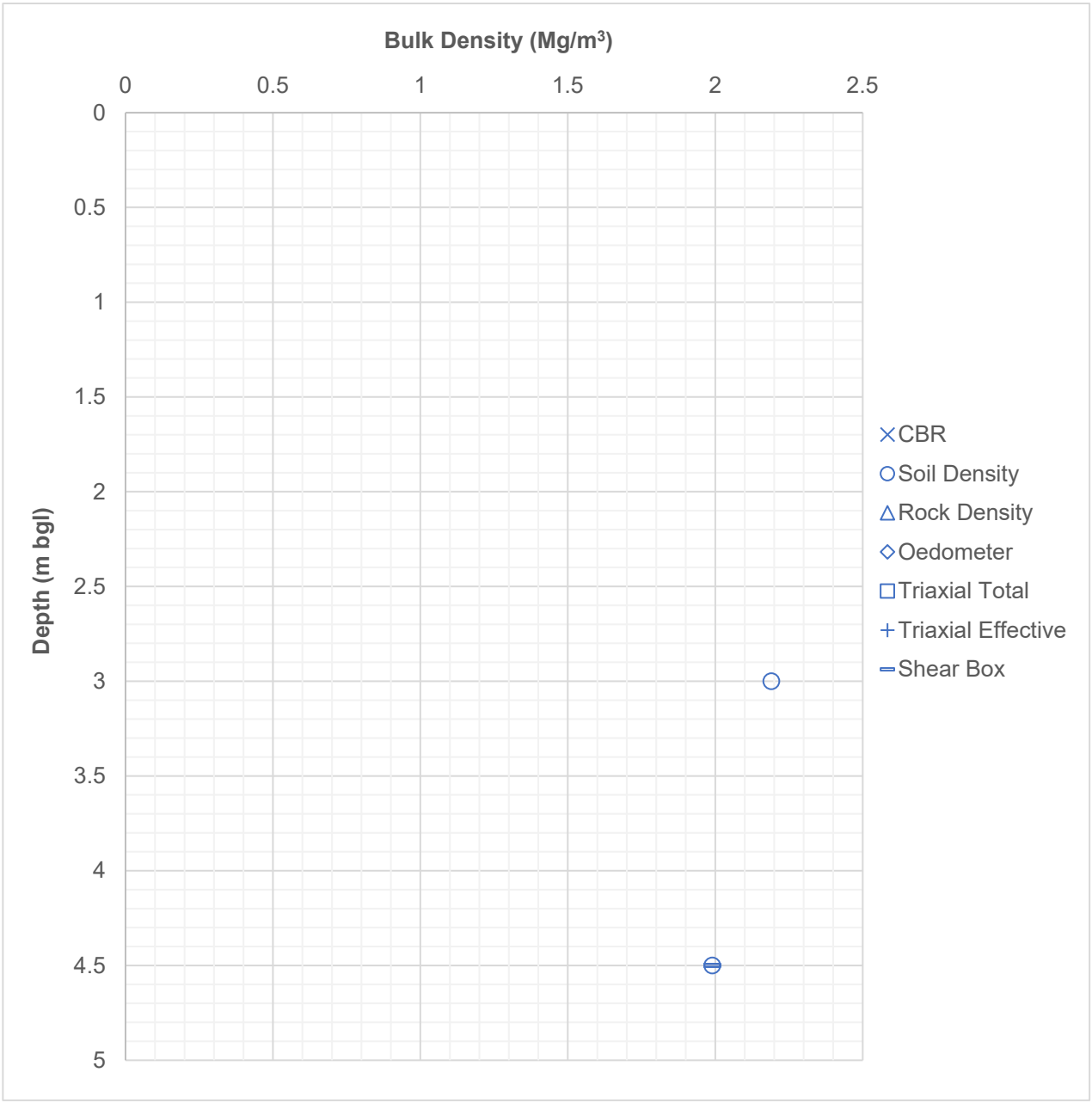
Bulk Density vs. Depth Below Ground Level (m)

Project ID:	**A46**	Project Title:	**A46 Coventry Junctions Upgrade (Walsgrave)**	Location:	**Coventry**
Client:	**National Highways**	Geology :	**Alluvium**	Figure:	**A.5**



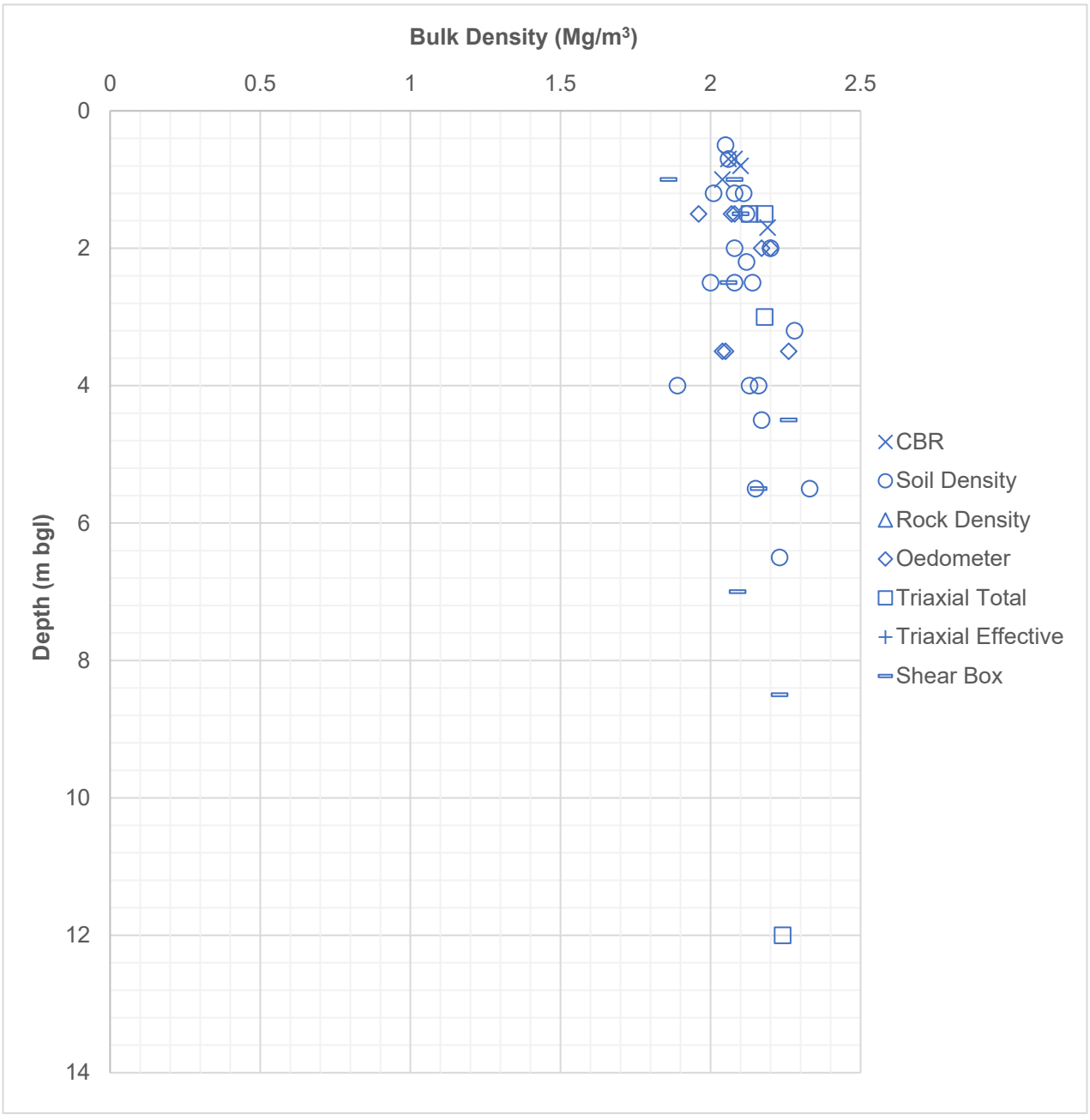
Bulk Density vs. Depth Below Ground Level (m)

Project ID:	**A46**	Project Title:	**A46 Coventry Junctions Upgrade (Walsgrave)**	Location:	**Coventry**
Client:	**National Highways**	Geology :	**River Terrace Deposits**	Figure:	**A.6**



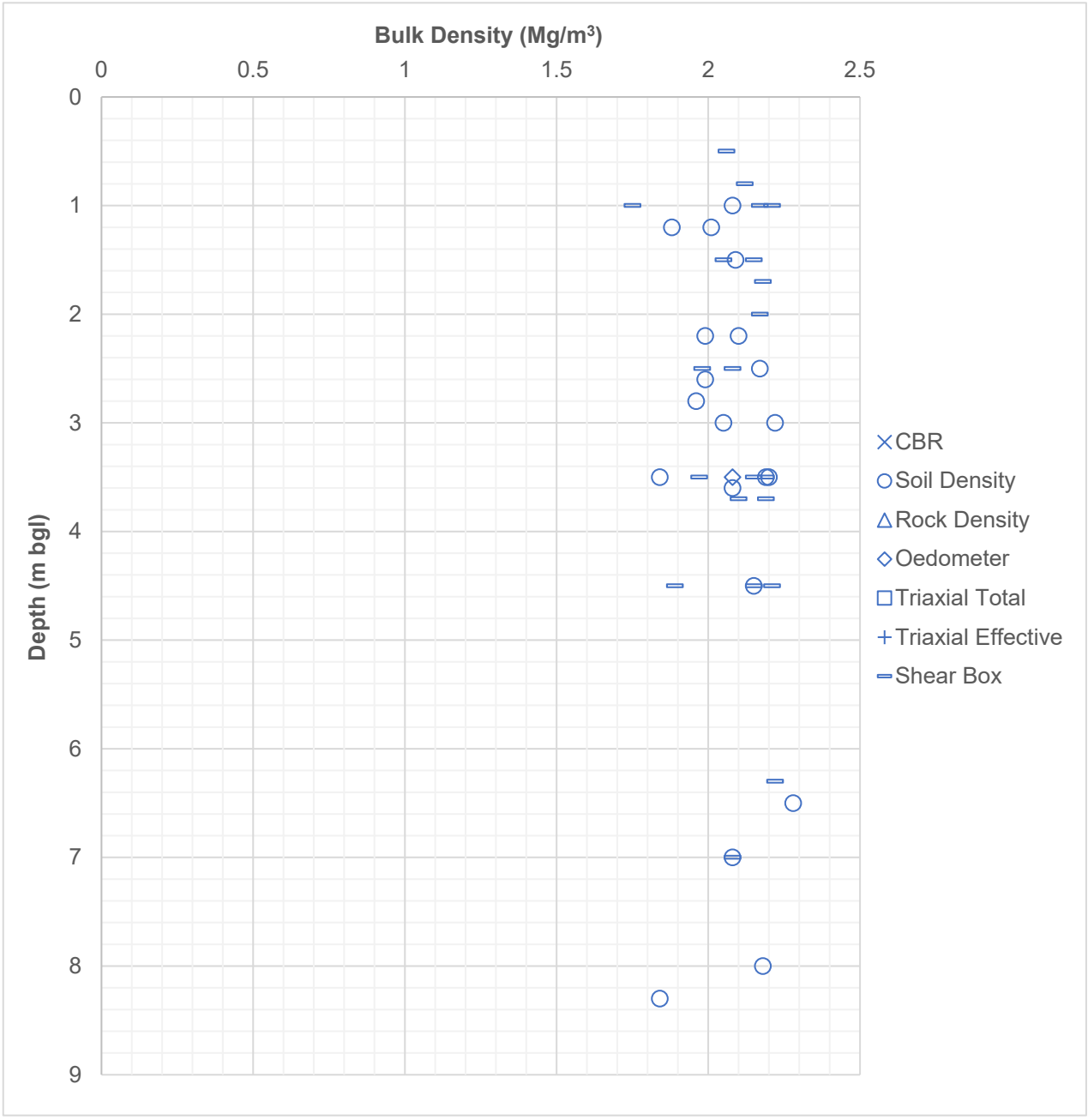
Bulk Density vs. Depth Below Ground Level (m)

Project ID:	**A46**	Project Title:	**A46 Coventry Junctions Upgrade (Walsgrave)**	Location:	**Coventry**
Client:	**National Highways**	Geology :	**Wolston Glacigenic Formation**	Figure:	**A.7**



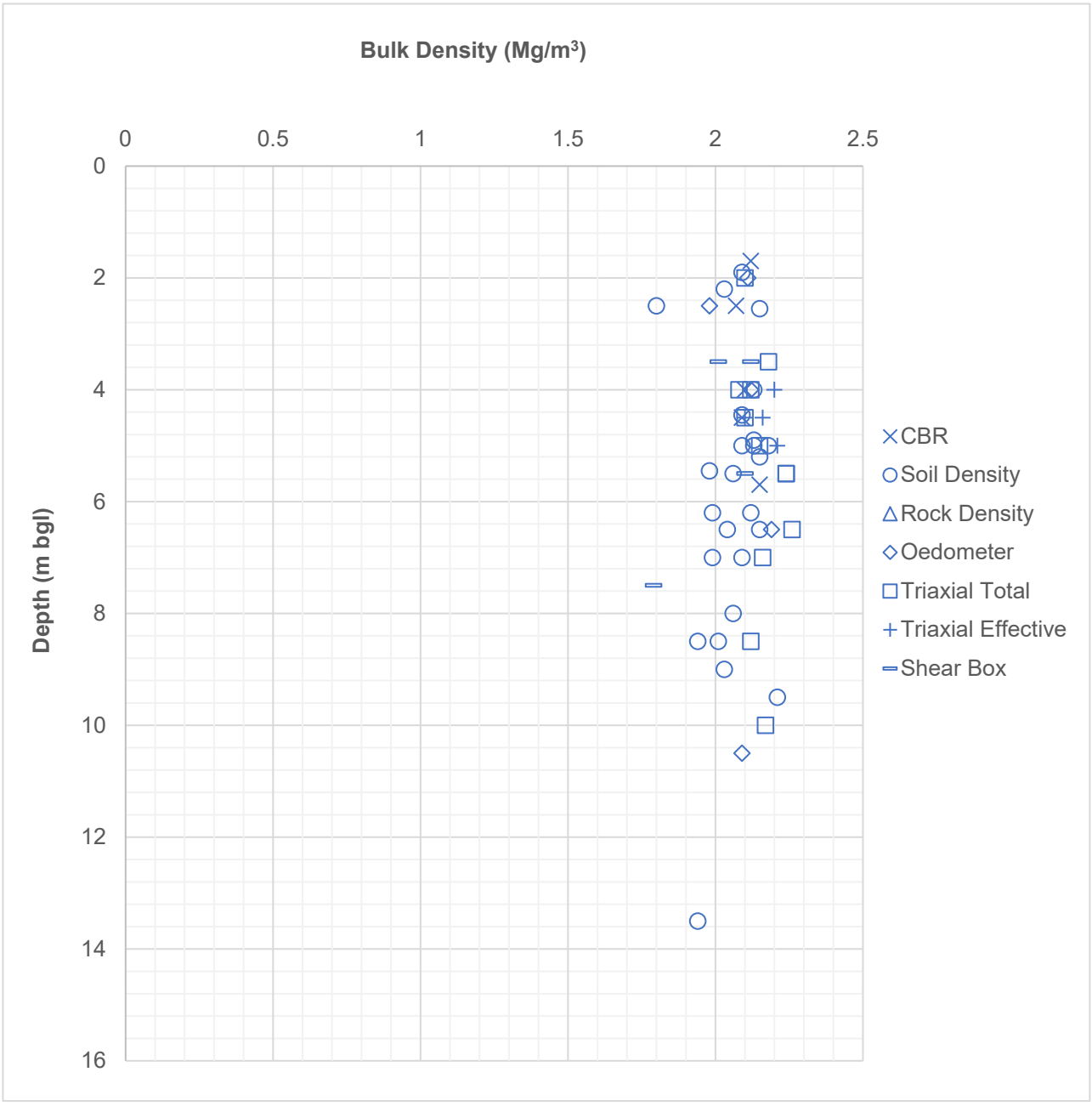
Bulk Density vs. Depth Below Ground Level (m)

Project ID:	**A46**	Project Title:	**A46 Coventry Junctions Upgrade (Walsgrave)**	Location:	**Coventry**
Client:	**National Highways**	Geology :	**Baginton Sand and Gravel Formation**	Figure:	**A.8**



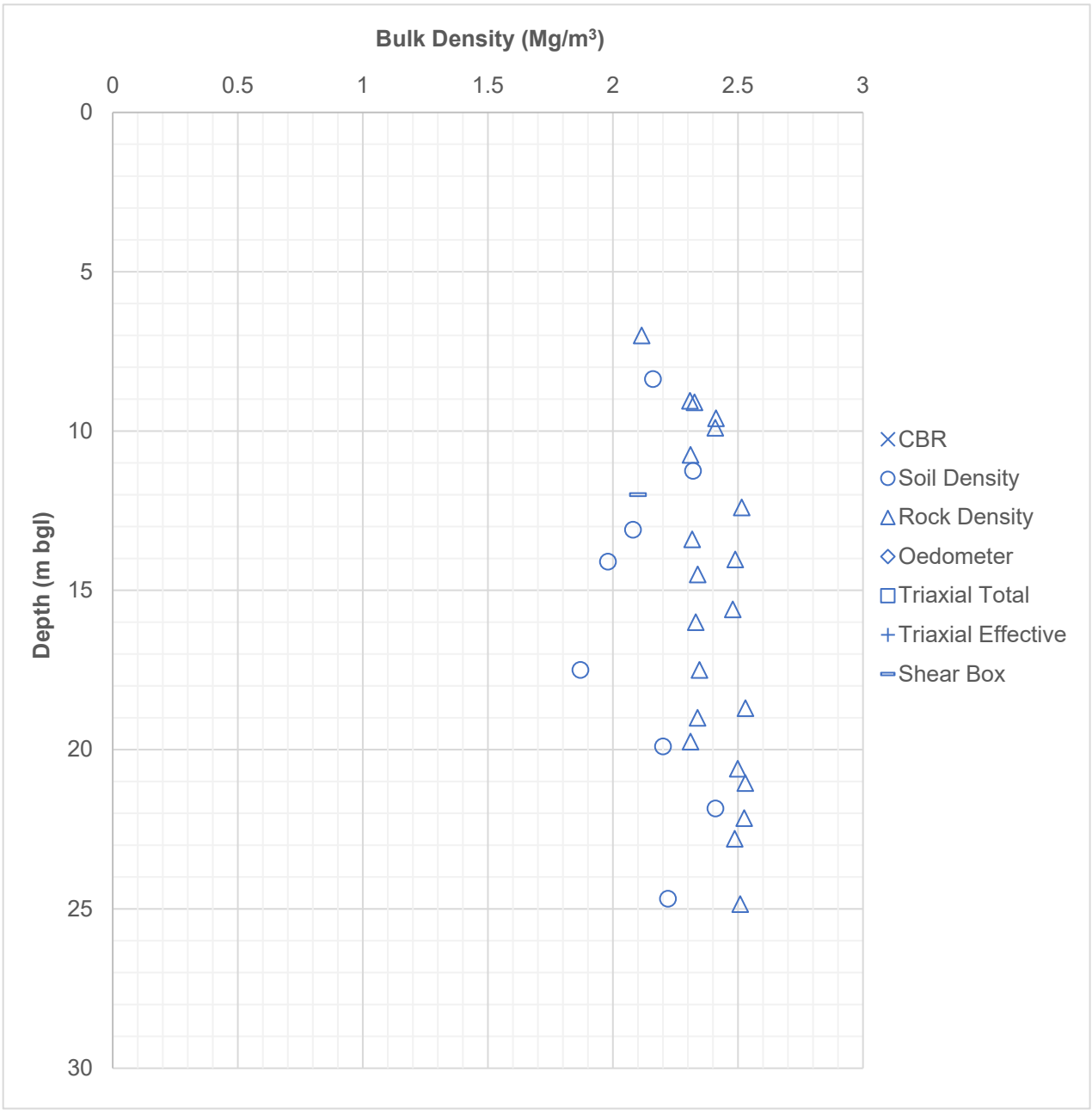
Bulk Density vs. Depth Below Ground Level (m)

Project ID:	**A46**	Project Title:	**A46 Coventry Junctions Upgrade (Walsgrave)**	Location:	**Coventry**
Client:	**National Highways**	Geology :	**Mercia Mudstone Group (Grade IV)**	Figure:	**A.9**



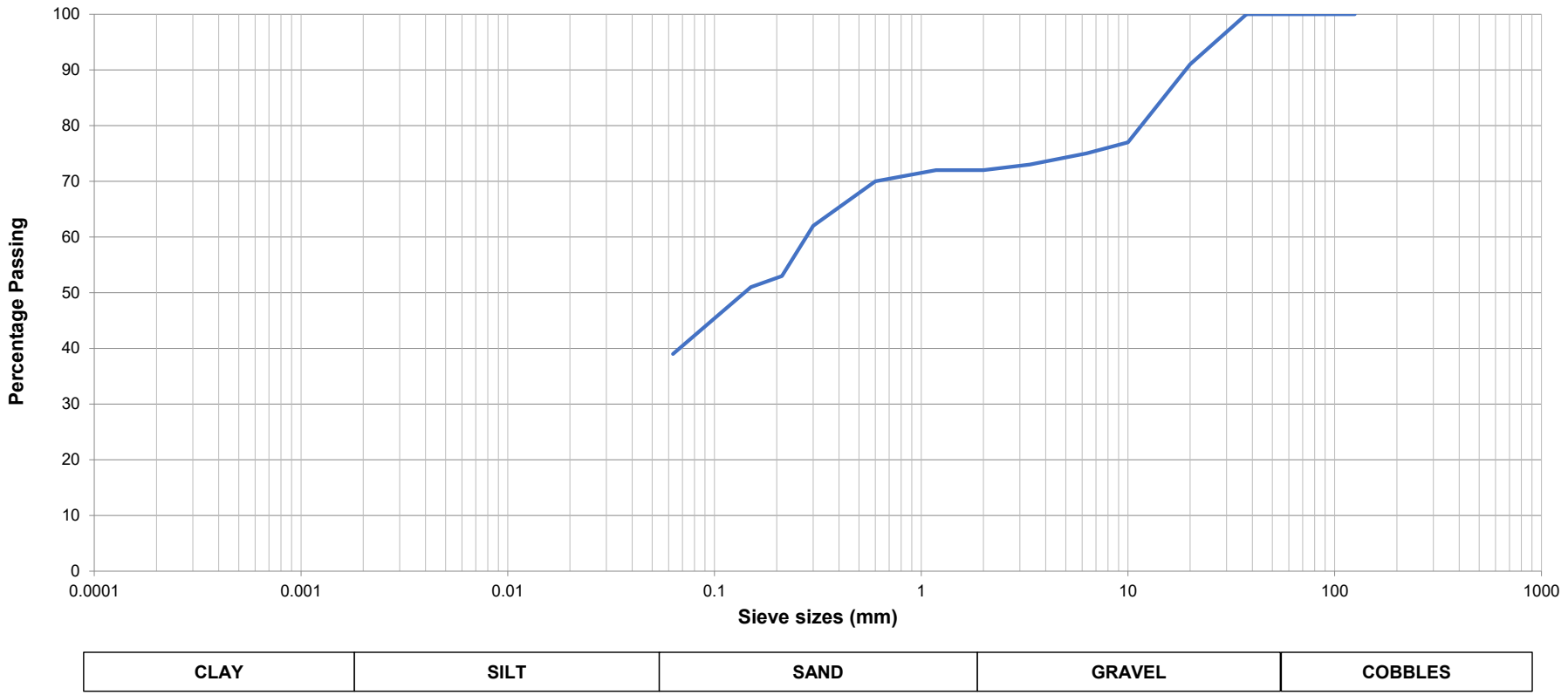
Bulk Density vs. Depth Below Ground Level (m)

Project ID:	**A46**	Project Title:	**A46 Coventry Junctions Upgrade (Walsgrave)**	Location:	**Coventry**
Client:	**National Highways**	Geology :	**Mercia Mudstone Group (Grade I to Grade III)**	Figure:	**A.10**



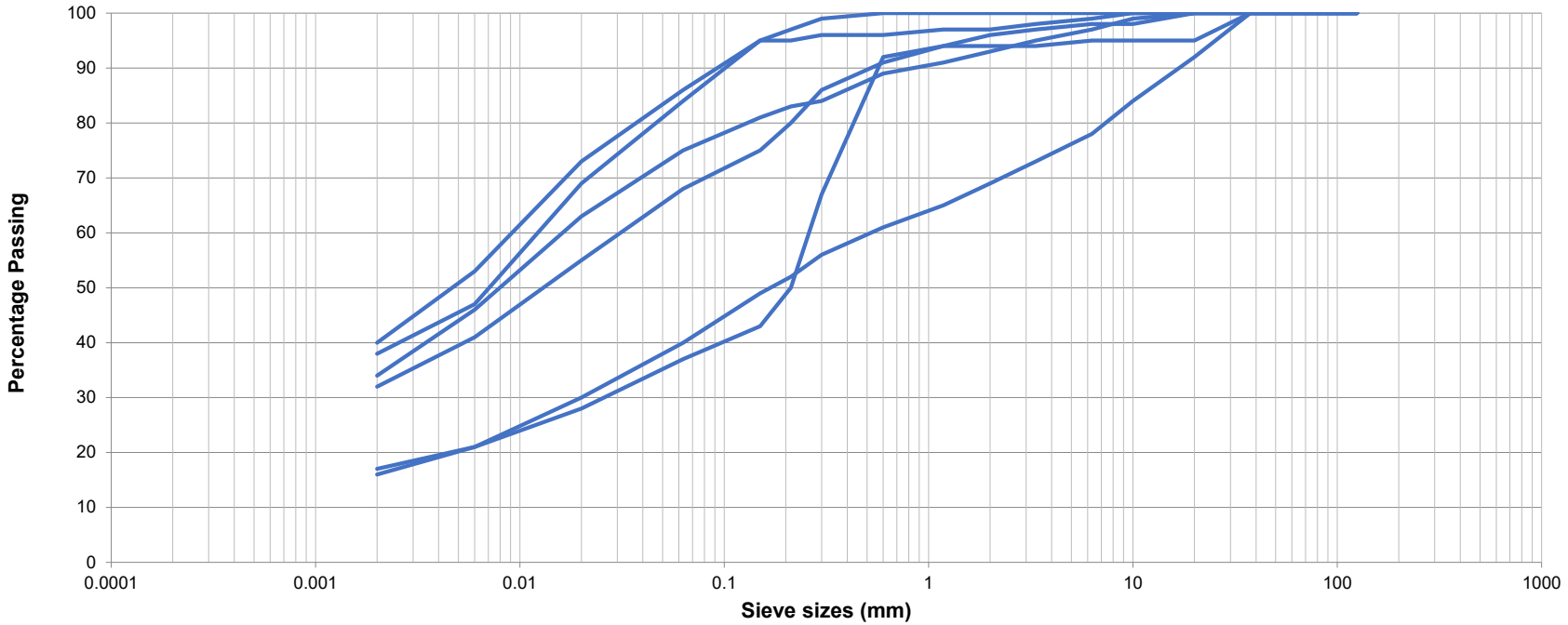
Particle Size Distribution

Project ID:	**A46**	Project Title:	**A46 Coventry Junctions Upgrade (Walsgrave)**	Location:	**Coventry**
Client:	**National Highways**	Geology :	**Topsoil**	Figure:	**A.11**



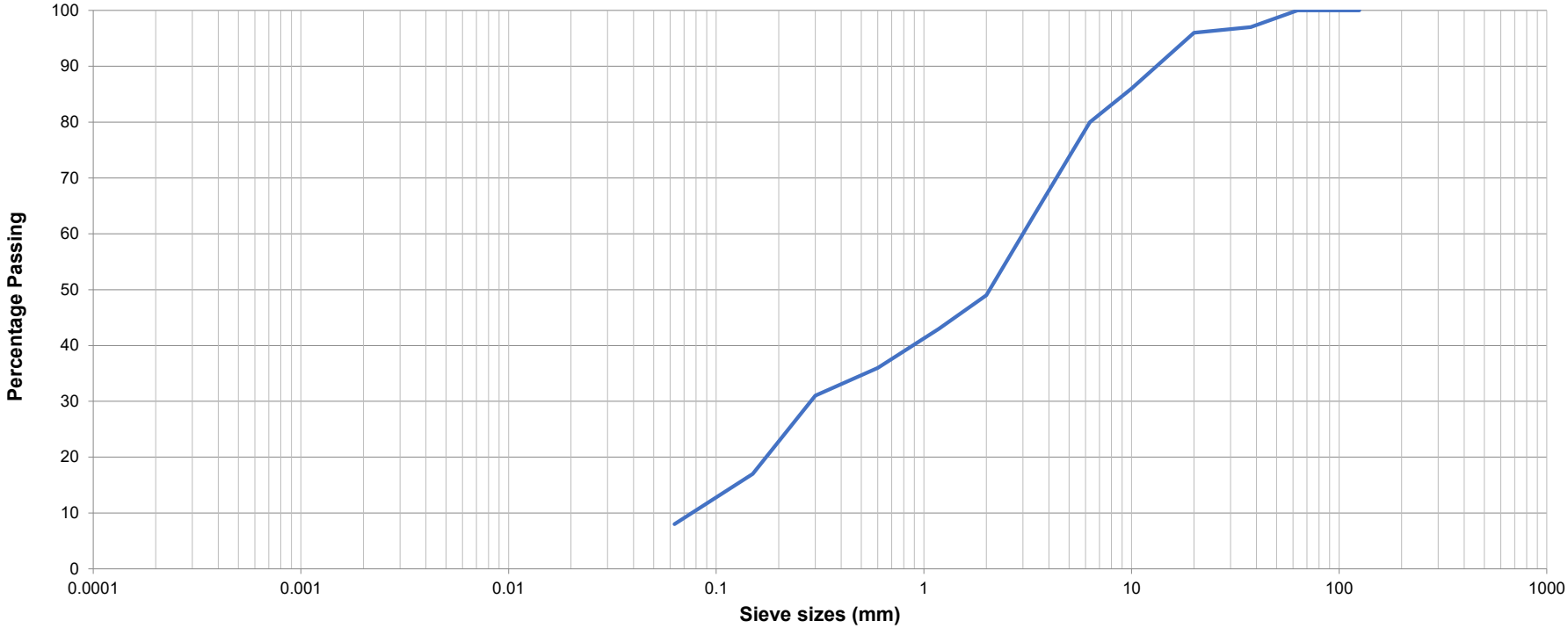
Particle Size Distribution

Project ID:	**A46**	Project Title:	**A46 Coventry Junctions Upgrade (Walsgrave)**	Location:	**Coventry**
Client:	**National Highways**	Geology :	**Alluvium**	Figure:	**A.12**



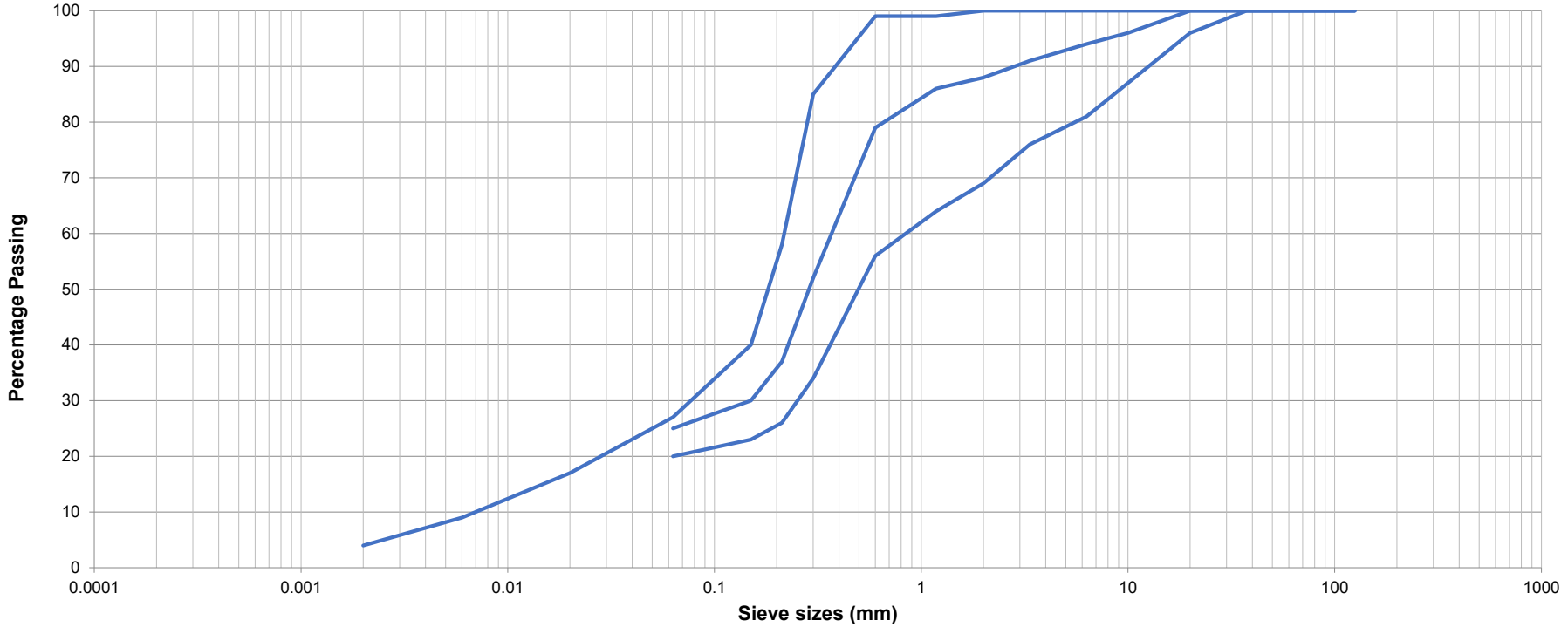
Particle Size Distribution

Project ID:	**A46**	Project Title:	**A46 Coventry Junctions Upgrade (Walsgrave)**	Location:	**Coventry**
Client:	**National Highways**	Geology :	**River Terrace Deposits**	Figure:	**A.13**



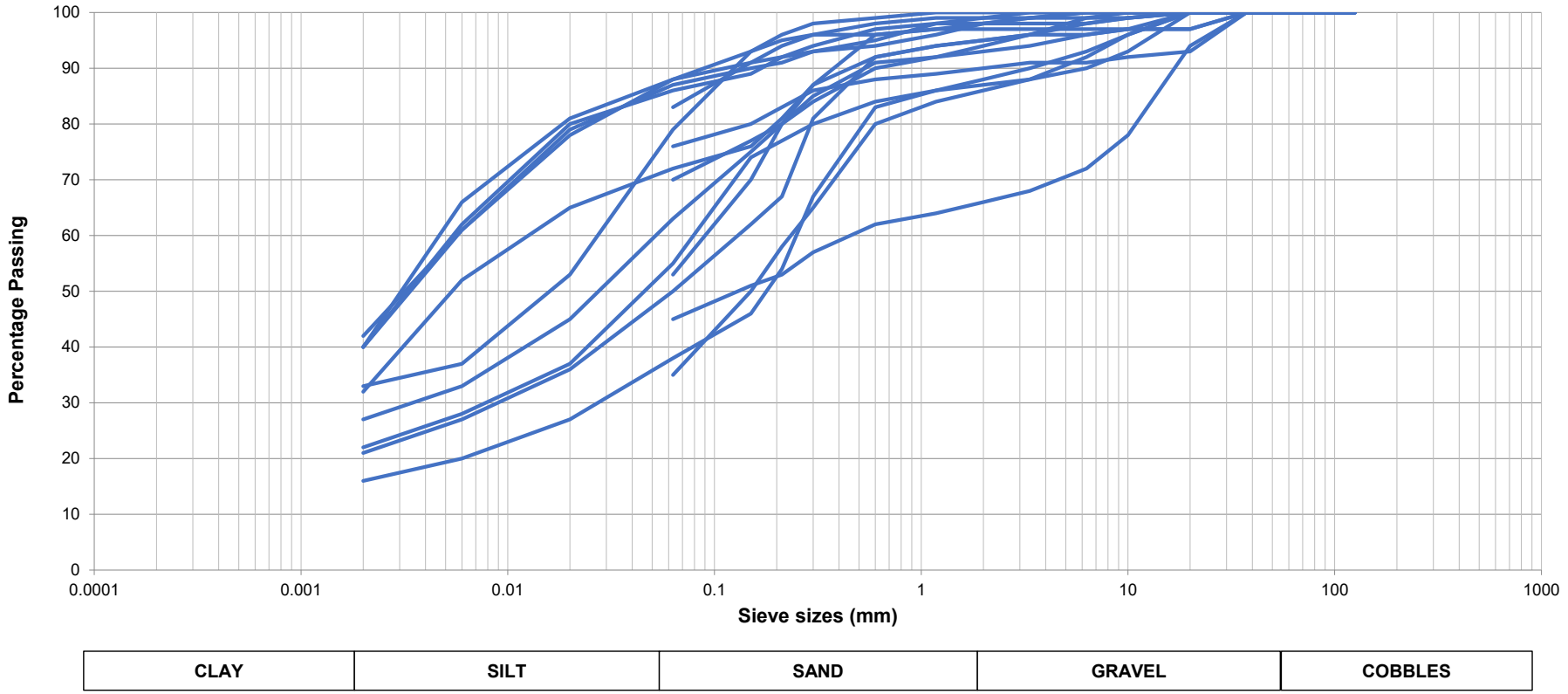
Particle Size Distribution

Project ID:	**A46**	Project Title:	**A46 Coventry Junctions Upgrade (Walsgrave)**	Location:	**Coventry**
Client:	**National Highways**	Geology :	**Wolston Glacigenic Formation (Granular)**	Figure:	**A.14**



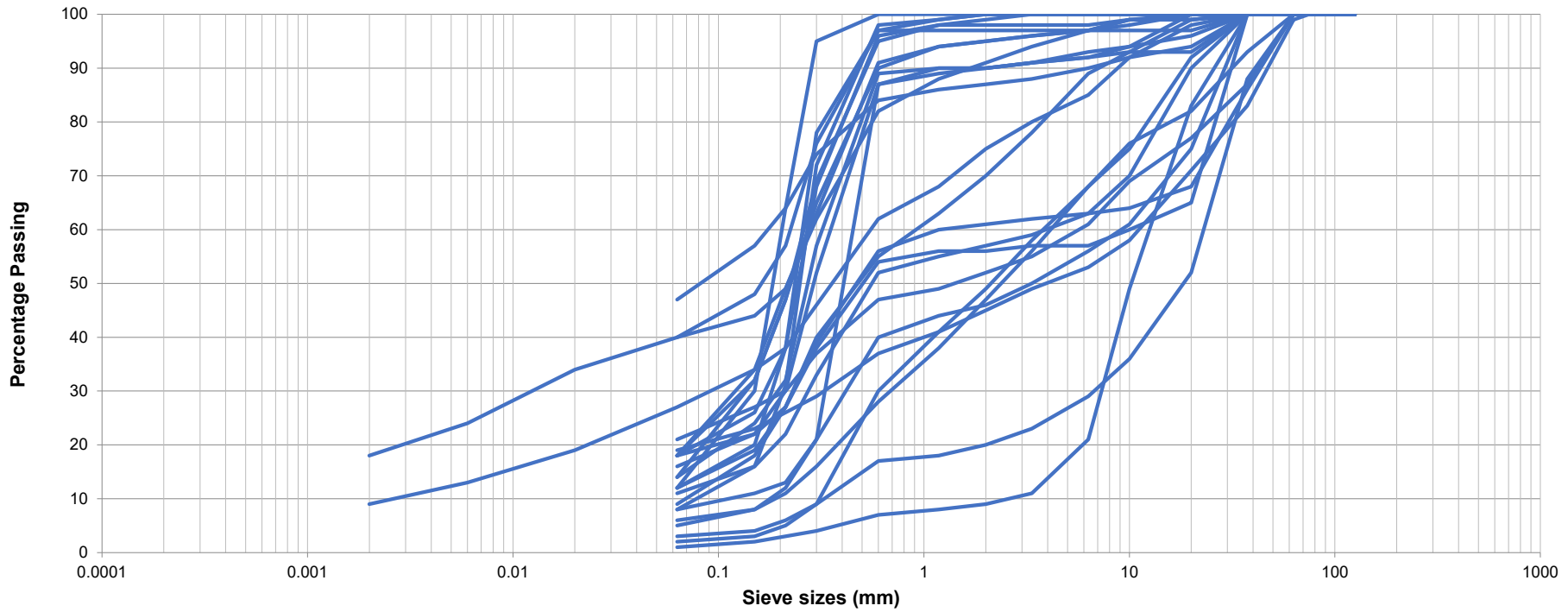
Particle Size Distribution

Project ID:	**A46**	Project Title:	**A46 Coventry Junctions Upgrade (Walsgrave)**	Location:	**Coventry**
Client:	**National Highways**	Geology :	**Wolston Glacigenic Formation (Cohesive)**	Figure:	**A.15**



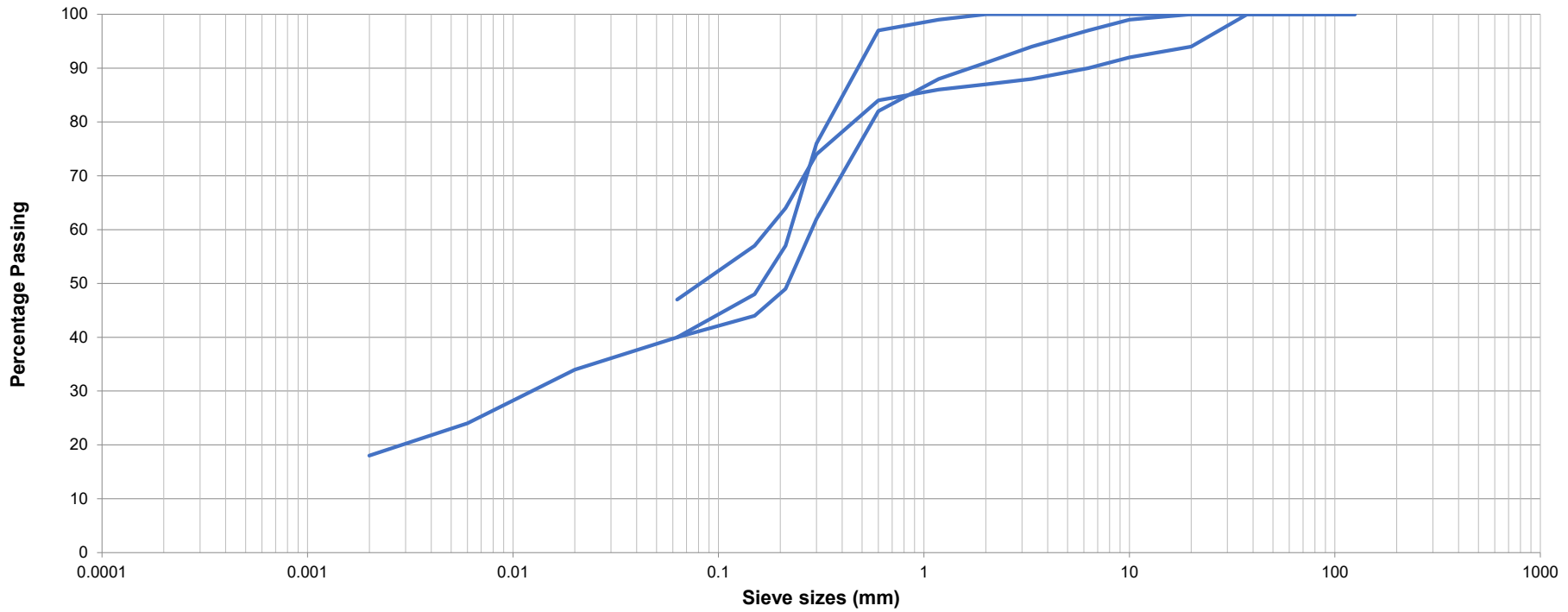
Particle Size Distribution

Project ID:	**A46**	Project Title:	**A46 Coventry Junctions Upgrade (Walsgrave)**	Location:	**Coventry**
Client:	**National Highways**	Geology :	**Baginton Sand and Gravel Formation (Granular)**	Figure:	**A.16**



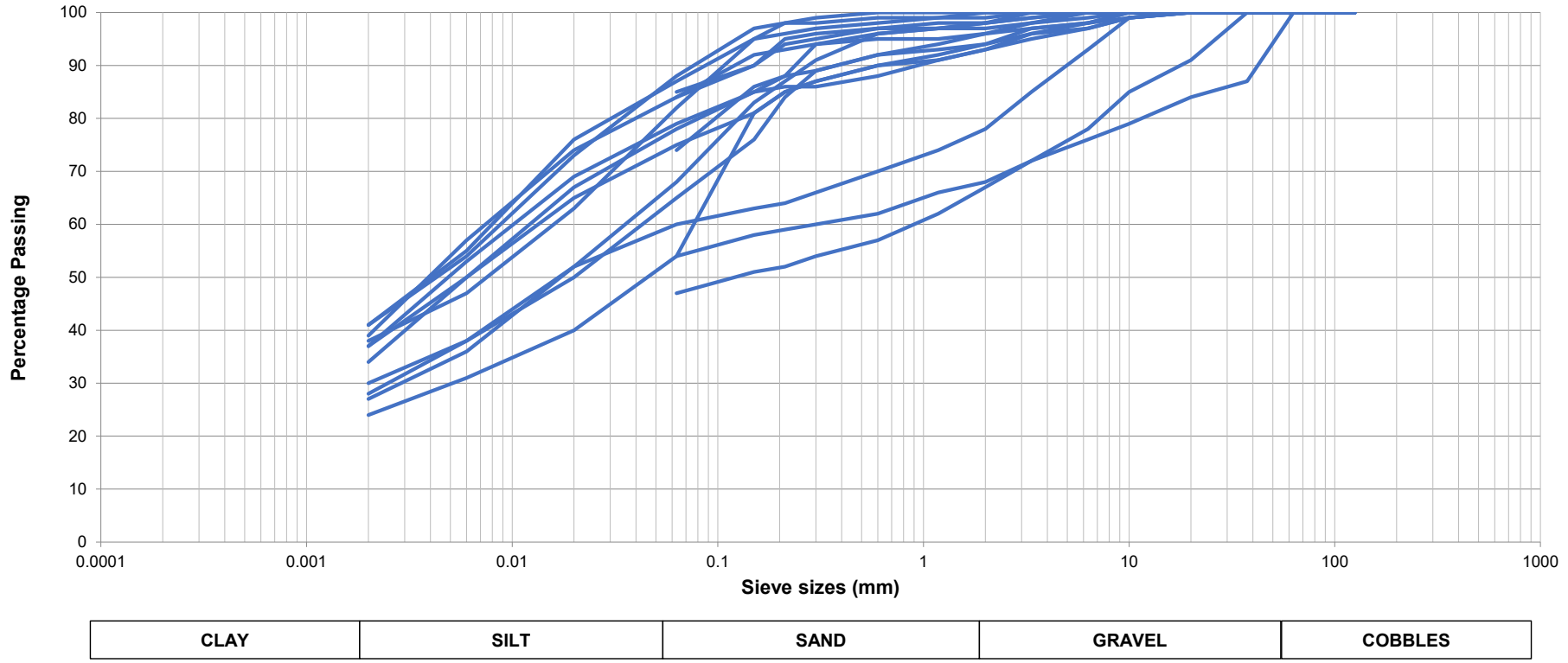
Particle Size Distribution

Project ID:	**A46**	Project Title:	**A46 Coventry Junctions Upgrade (Walsgrave)**	Location:	**Coventry**
Client:	**National Highways**	Geology :	**Baginton Sand and Gravel Formation (Cohesive)**	Figure:	**A.17**



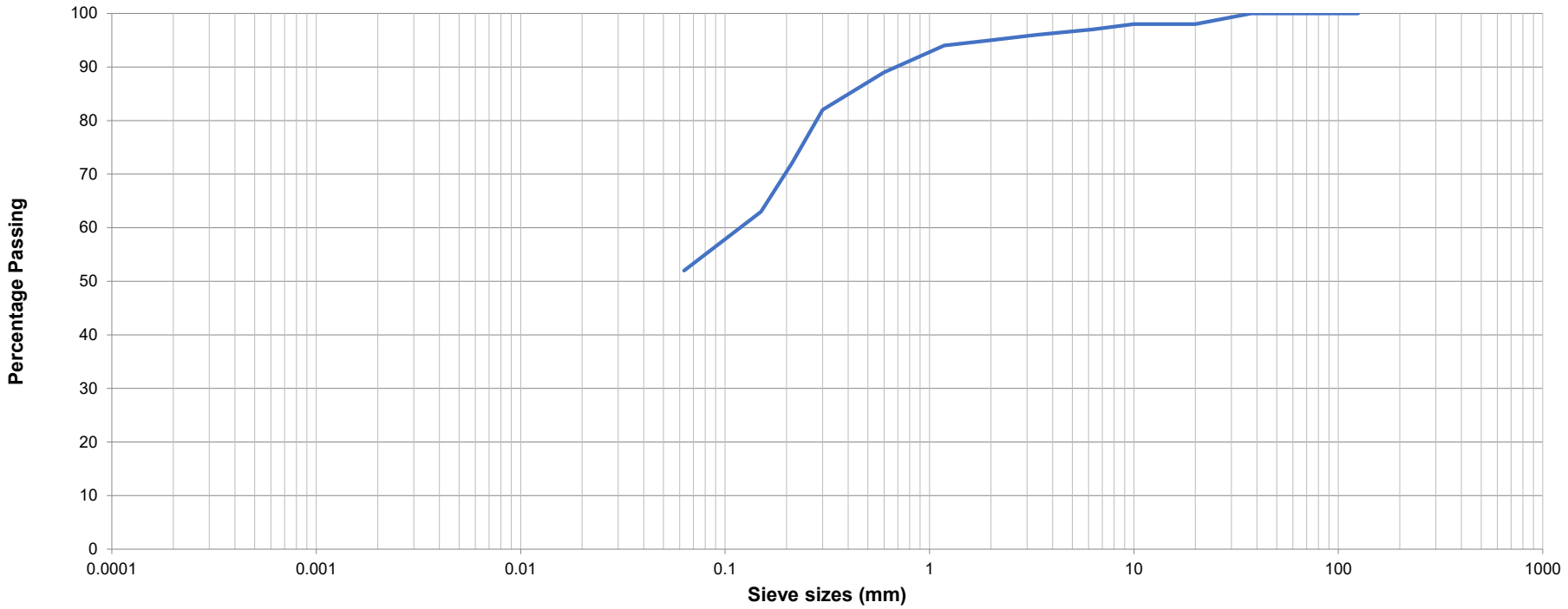
Particle Size Distribution

Project ID:	**A46**	Project Title:	**A46 Coventry Junctions Upgrade (Walsgrave)**	Location:	**Coventry**
Client:	**National Highways**	Geology :	**Mercia Mudstone Group (Grade IV)**	Figure:	**A.18**



Particle Size Distribution

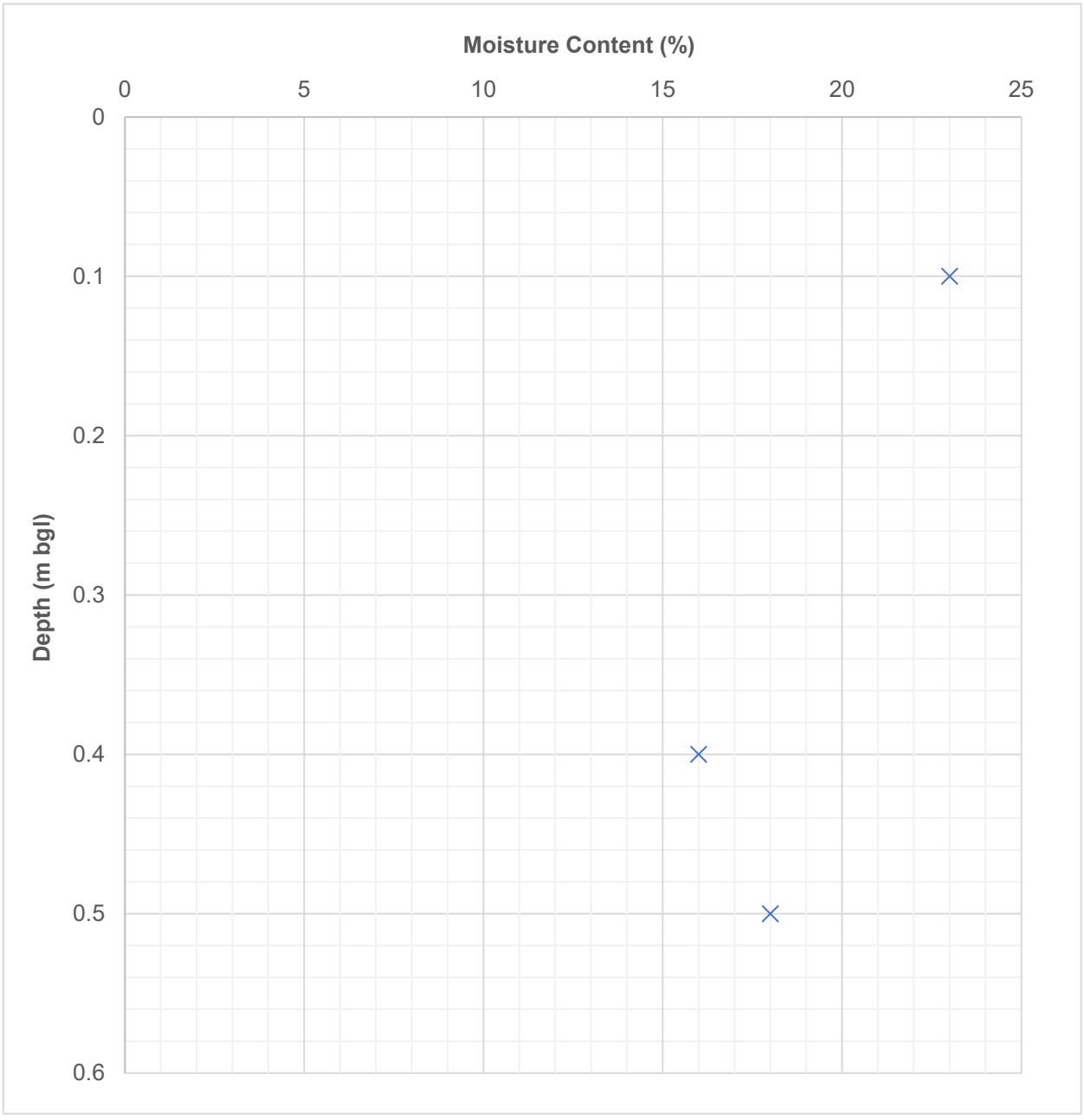
Project ID:	**A46**	Project Title:	**A46 Coventry Junctions Upgrade (Walsgrave)**	Location:	**Coventry**
Client:	**National Highways**	Geology :	**Mercia Mudstone Group (Grade I to Grade III)**	Figure:	**A.19**



CLAY	SILT	SAND	GRAVEL	COBBLES

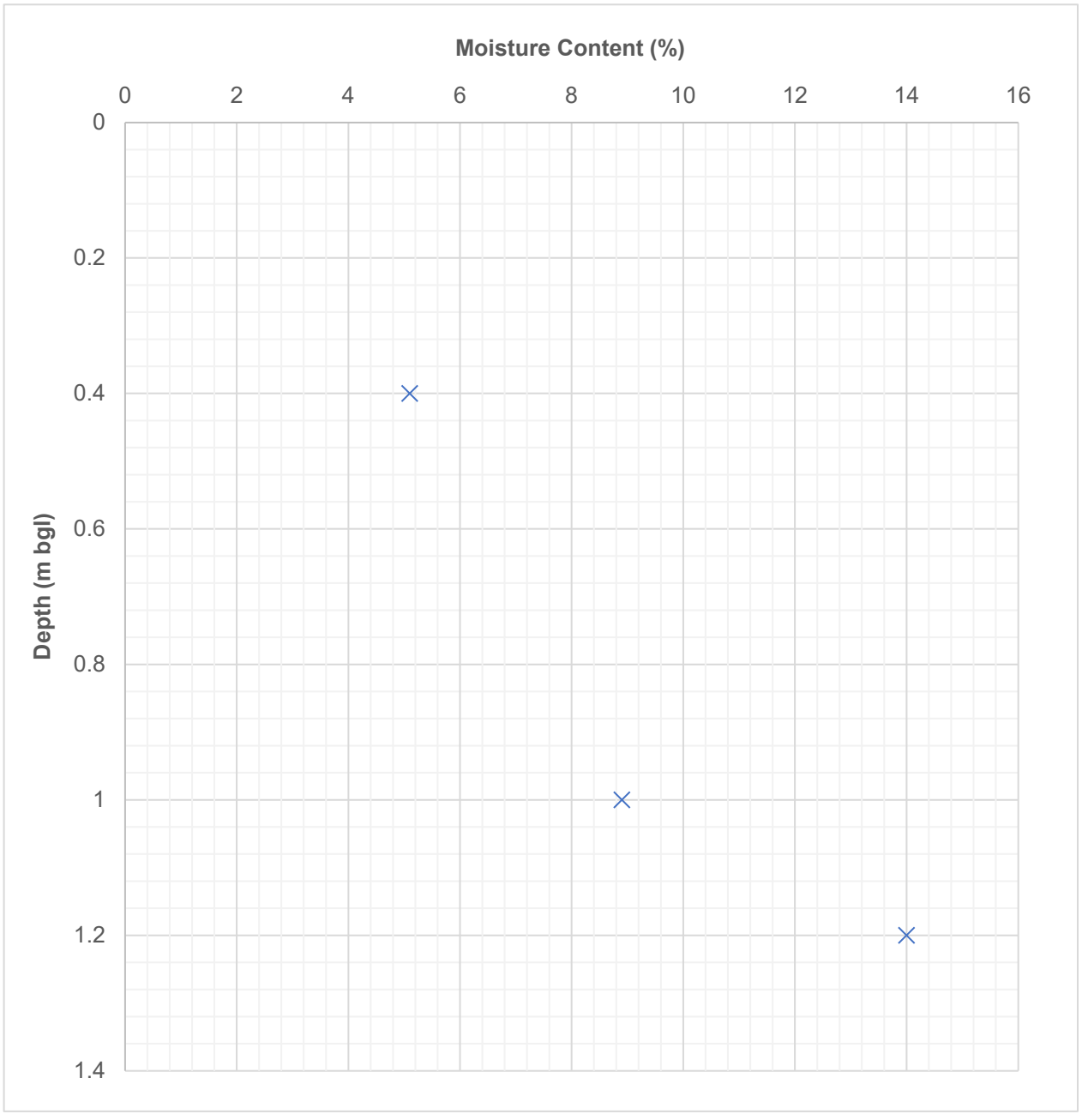
Moisture Content vs. Depth Below Ground Level (m)

Project ID:	**A46**	Project Title:	**A46 Coventry Junctions Upgrade (Walsgrave)**	Location:	**Coventry**
Client:	**National Highways**	Geology :	**Topsoil**	Figure:	**A.20**



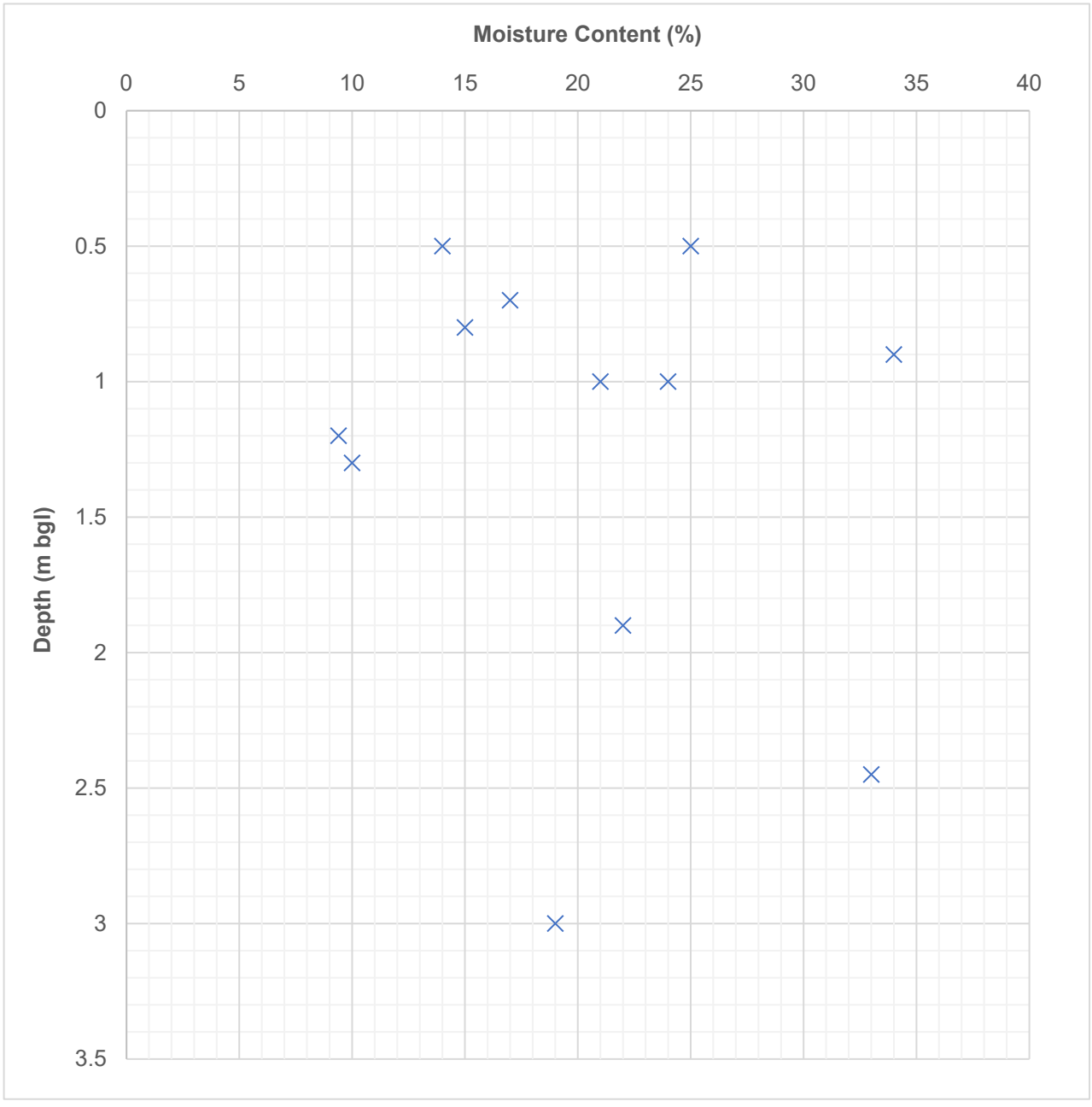
Moisture Content vs. Depth Below Ground Level (m)

Project ID:	**A46**	Project Title:	**A46 Coventry Junctions Upgrade (Walsgrave)**	Location:	**Coventry**
Client:	**National Highways**	Geology :	**Made Ground**	Figure:	**A.21**



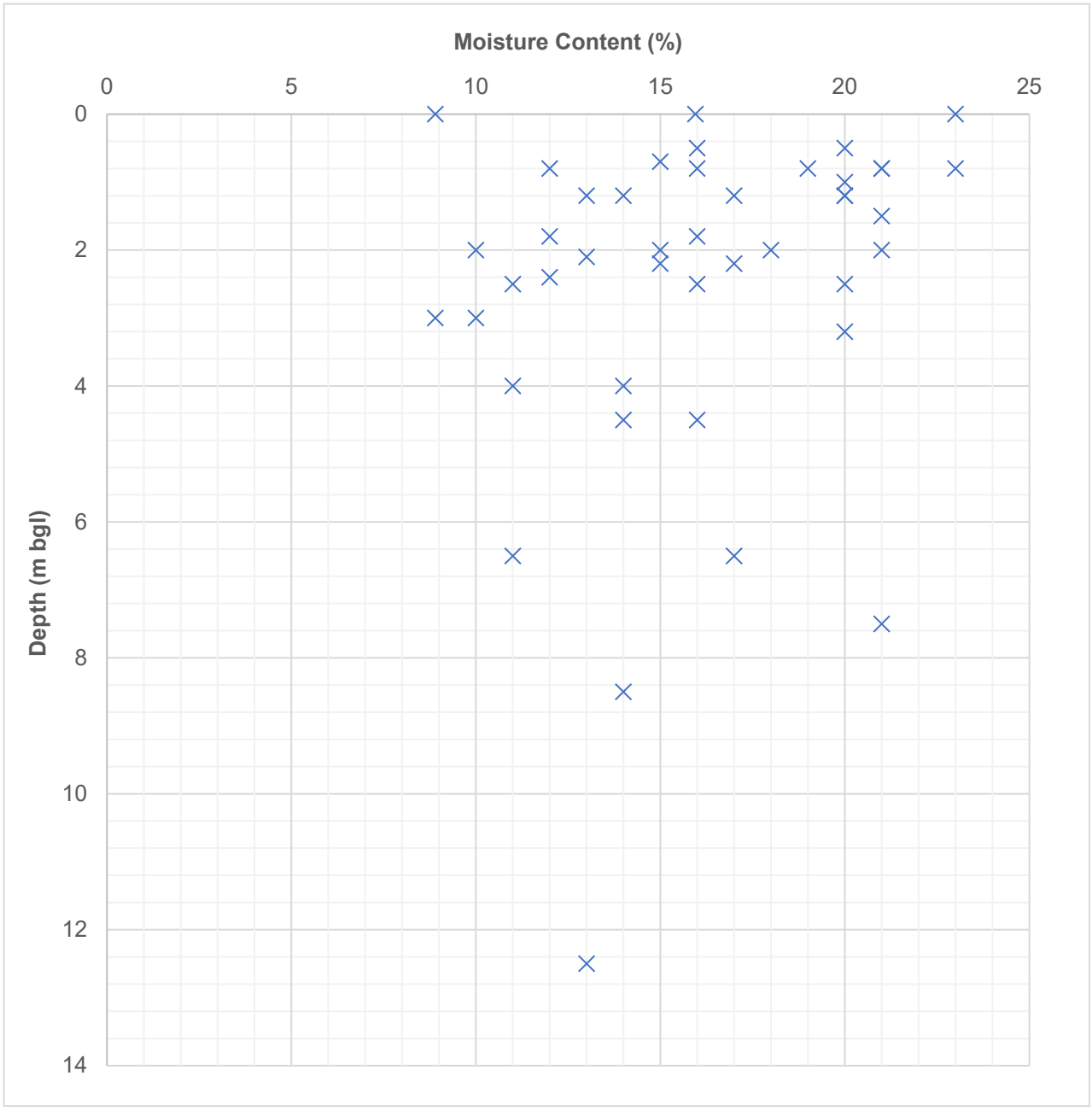
Moisture Content vs. Depth Below Ground Level (m)

Project ID:	**A46**	Project Title:	**A46 Coventry Junctions Upgrade (Walsgrave)**	Location:	**Coventry**
Client:	**National Highways**	Geology :	**Alluvium**	Figure:	**A.22**



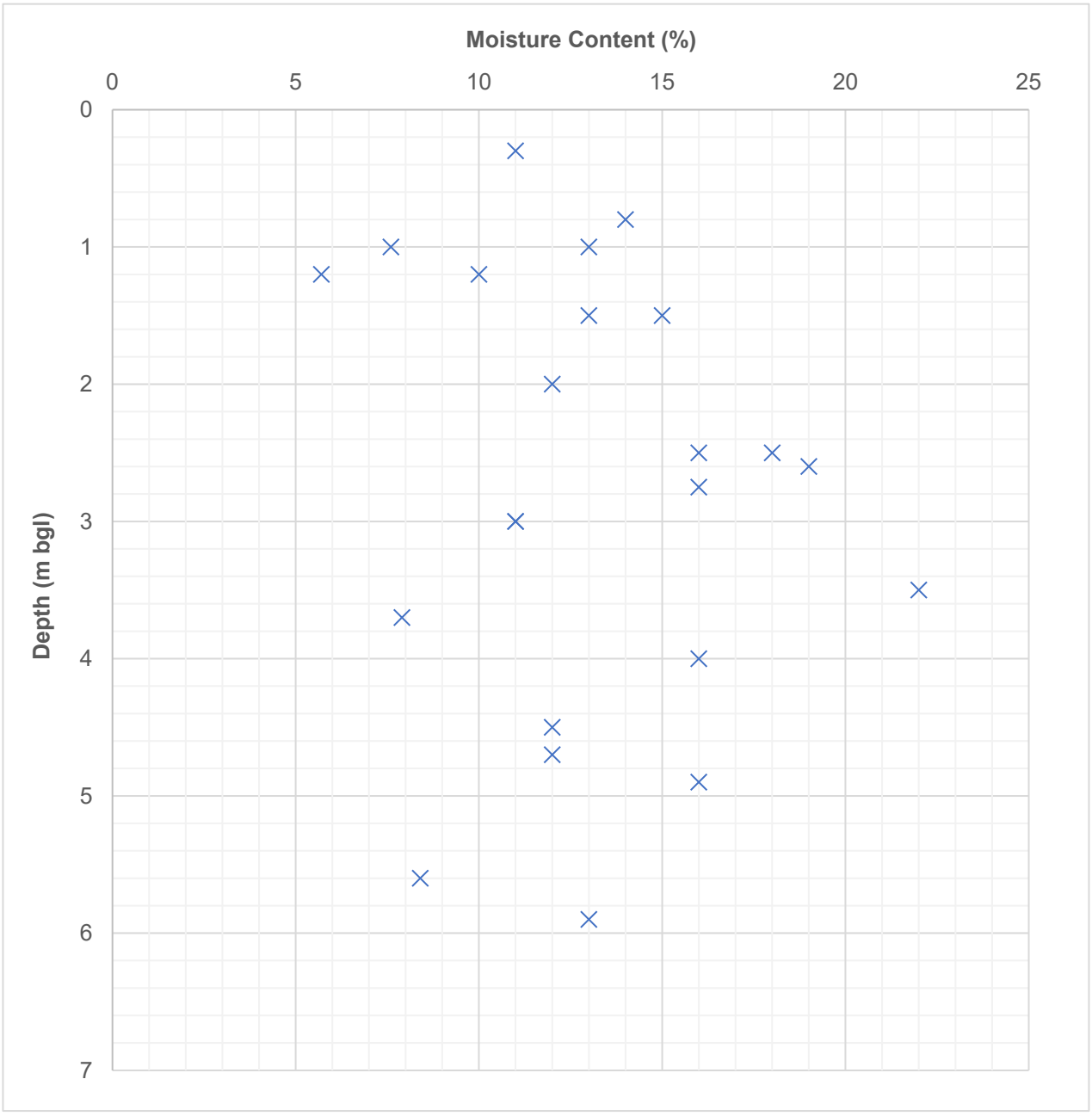
Moisture Content vs. Depth Below Ground Level (m)

Project ID:	**A46**	Project Title:	**A46 Coventry Junctions Upgrade (Walsgrave)**	Location:	**Coventry**
Client:	**National Highways**	Geology :	**Wolston Glacigenic Formation**	Figure:	**A.23**



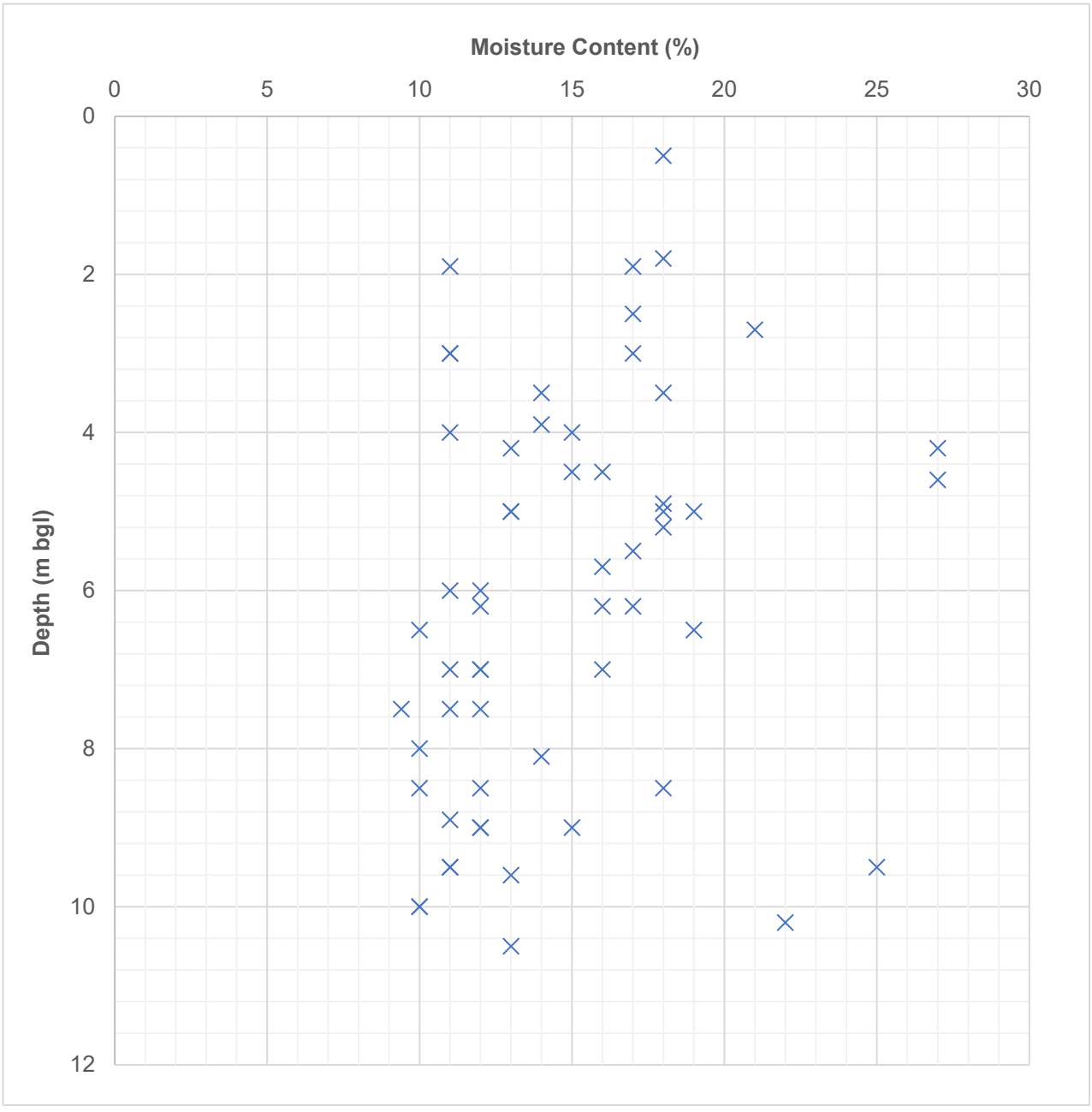
Moisture Content vs. Depth Below Ground Level (m)

Project ID:	**A46**	Project Title:	**A46 Coventry Junctions Upgrade (Walsgrave)**	Location:	**Coventry**
Client:	**National Highways**	Geology :	**Baginton Sand and Gravel Formation**	Figure:	**A.24**



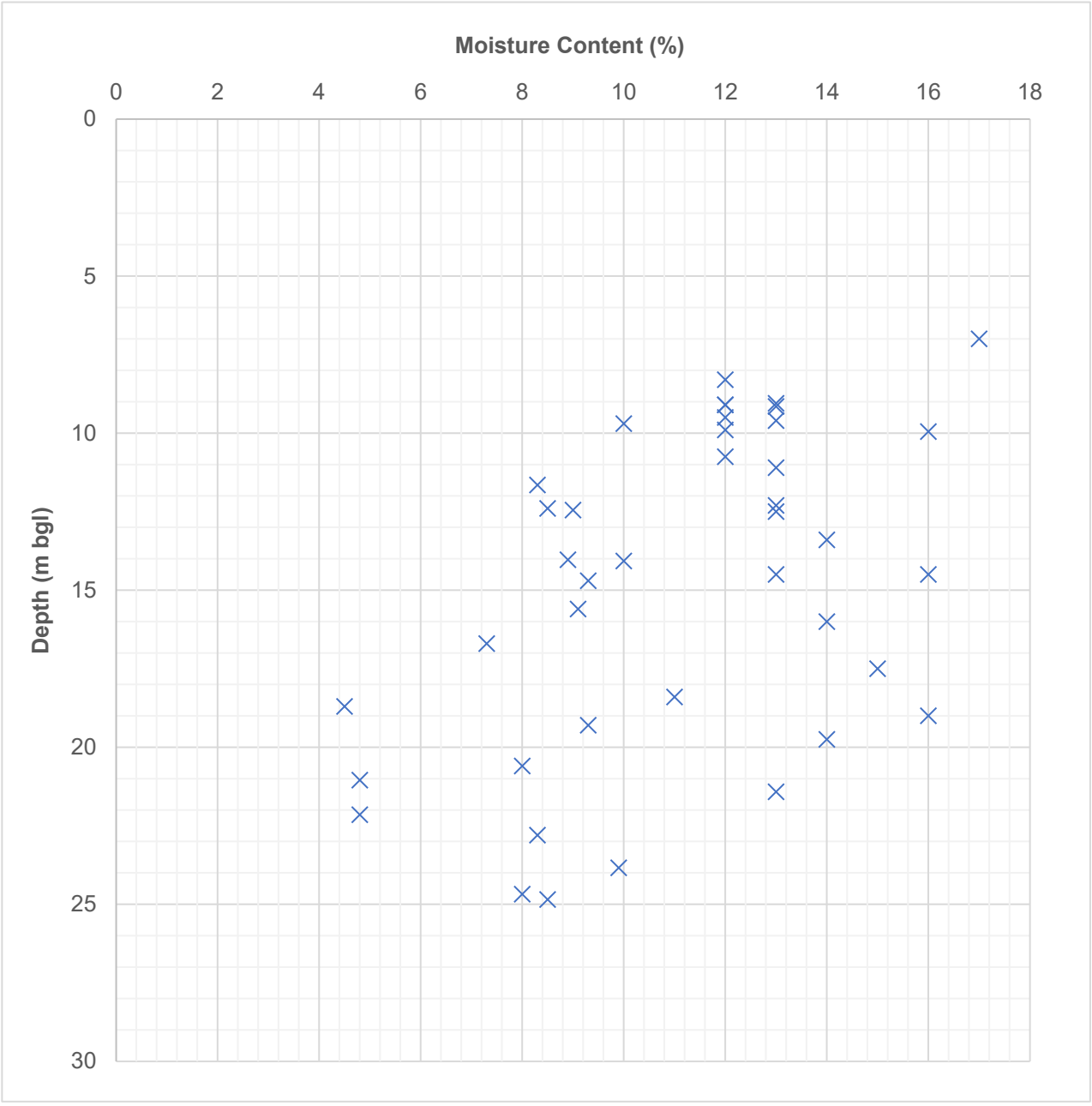
Moisture Content vs. Depth Below Ground Level (m)

Project ID:	**A46**	Project Title:	**A46 Coventry Junctions Upgrade (Walsgrave)**	Location:	**Coventry**
Client:	**National Highways**	Geology :	**Mercia Mudstone Group (Grade IV)**	Figure:	**A.25**



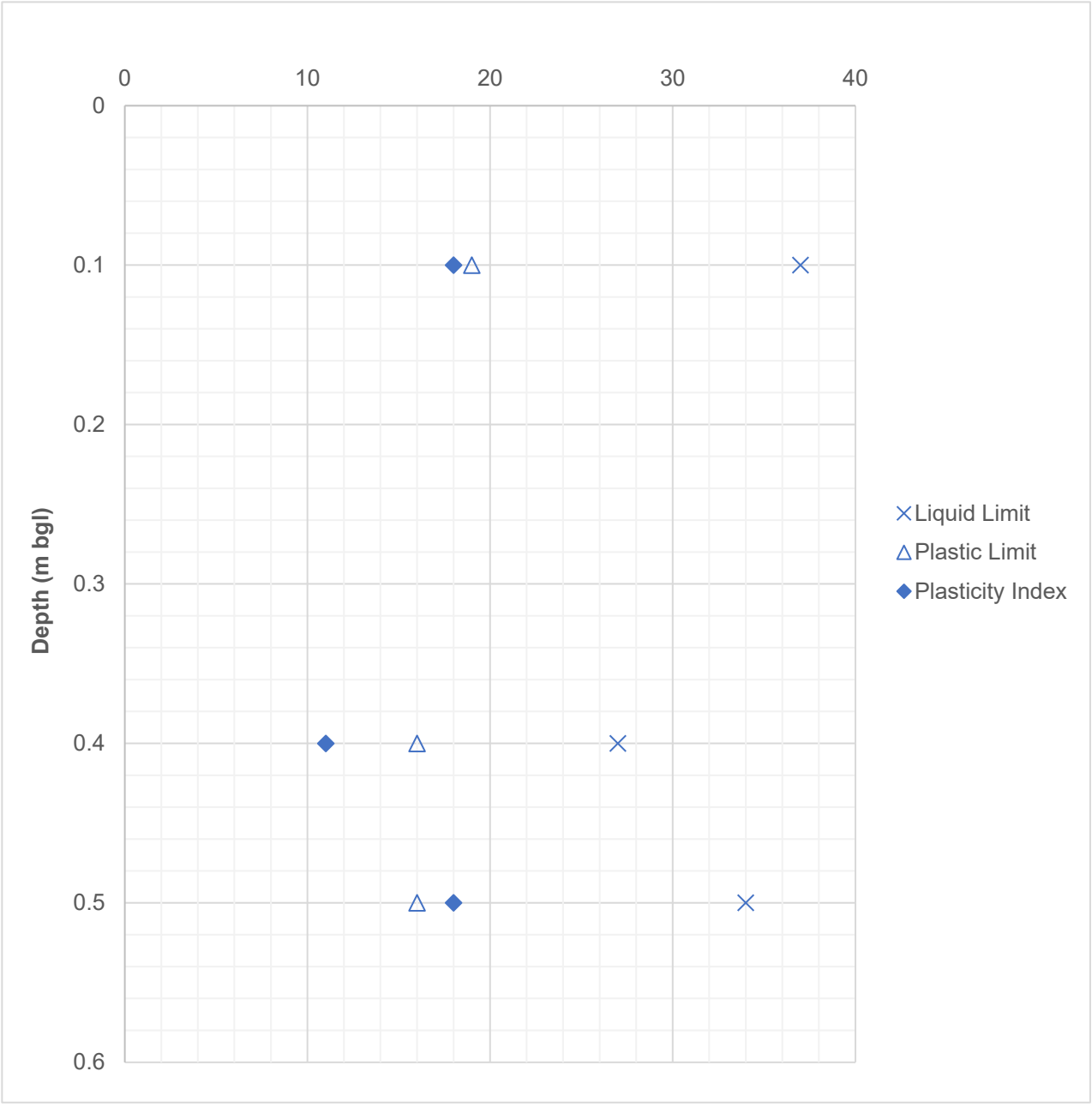
Moisture Content vs. Depth Below Ground Level (m)

Project ID:	**A46**	Project Title:	**A46 Coventry Junctions Upgrade (Walsgrave)**	Location:	**Coventry**
Client:	**National Highways**	Geology :	**Mercia Mudstone Group (Grade I to Grade III)**	Figure:	**A.26**



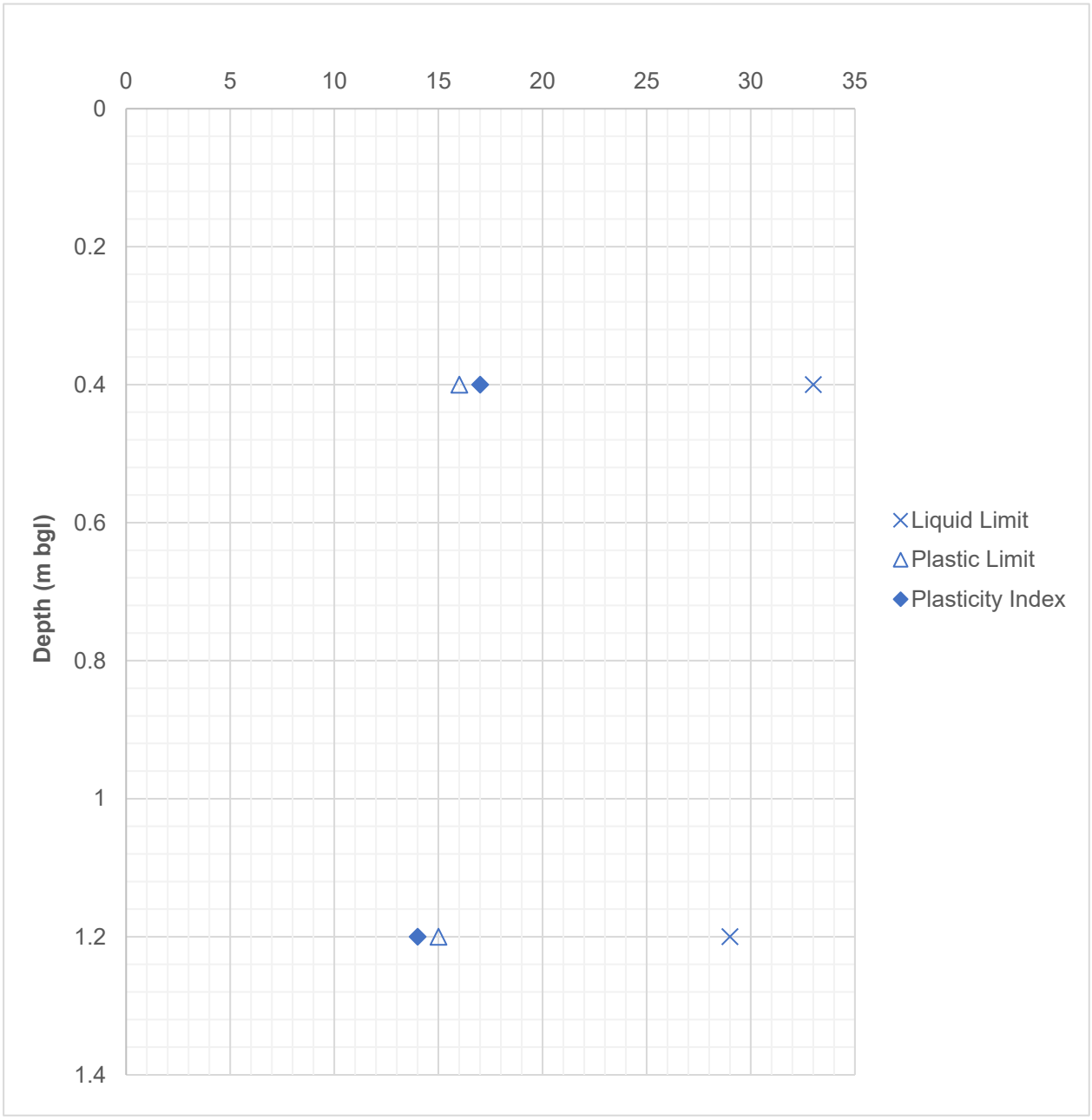
Atterberg Limits vs. Depth Below Ground Level (m)

Project ID:	A46	Project Title:	A46 Coventry Junctions Upgrade (Walsgrave)	Location:	Coventry
Client:	National Highways	Geology :	Topsoil	Figure:	A.27



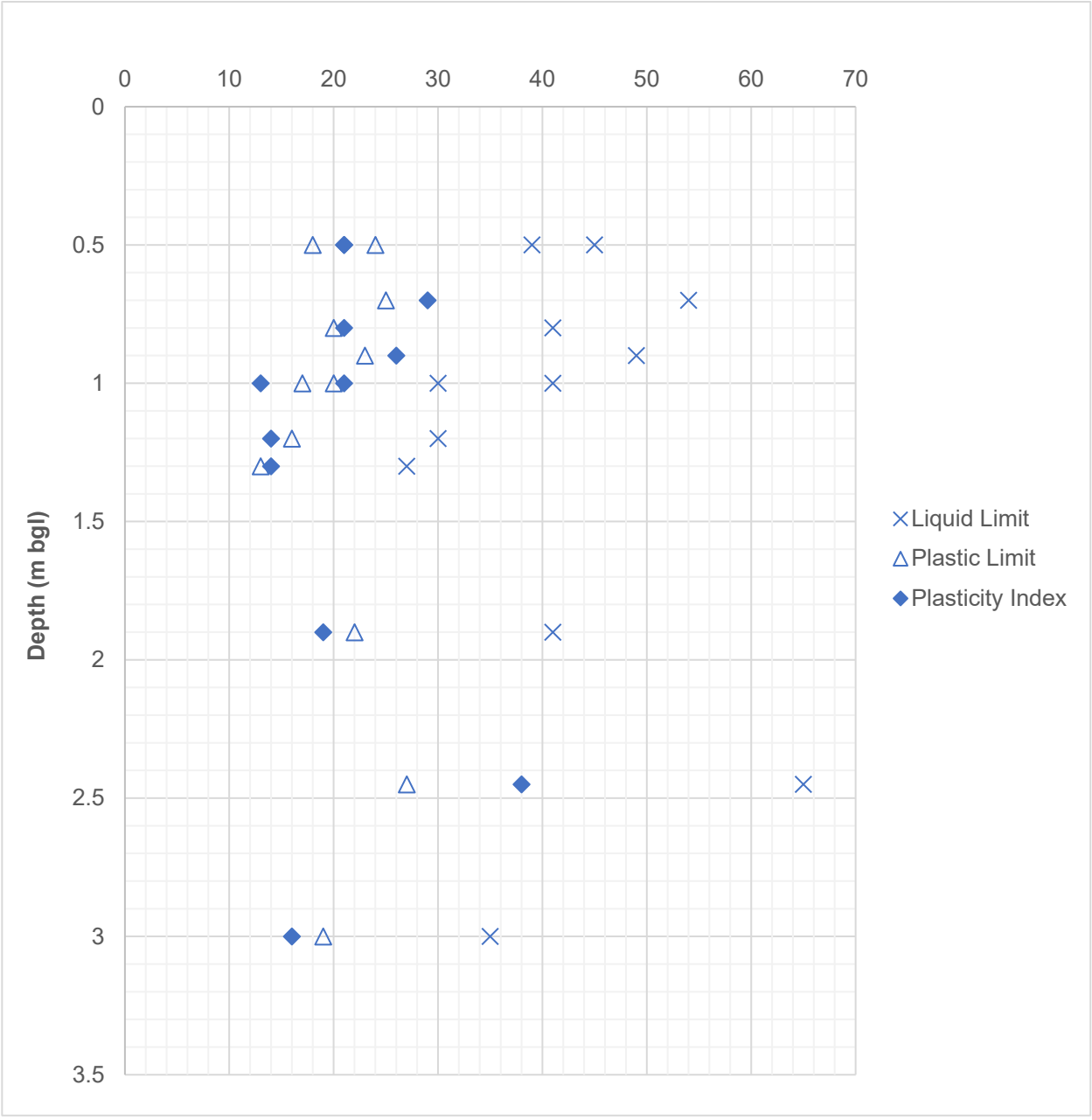
Atterberg Limits vs. Depth Below Ground Level (m)

Project ID:	**A46**	Project Title:	**A46 Coventry Junctions Upgrade (Walsgrave)**	Location:	**Coventry**
Client:	**National Highways**	Geology :	**Made Ground**	Figure:	**A.28**



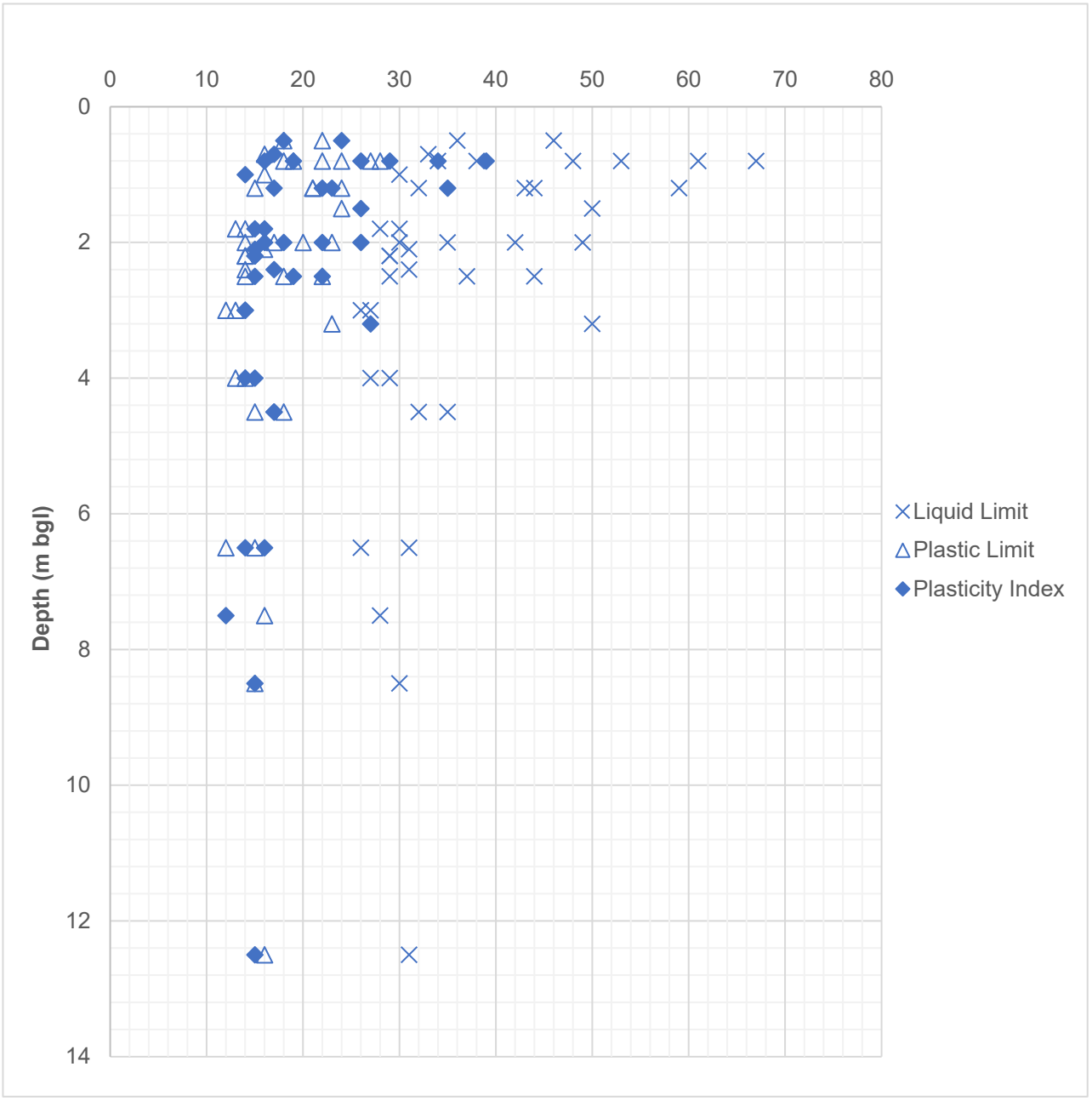
Atterberg Limits vs. Depth Below Ground Level (m)

Project ID:	A46	Project Title:	A46 Coventry Junctions Upgrade (Walsgrave)	Location:	Coventry
Client:	National Highways	Geology :	Alluvium	Figure:	A.29



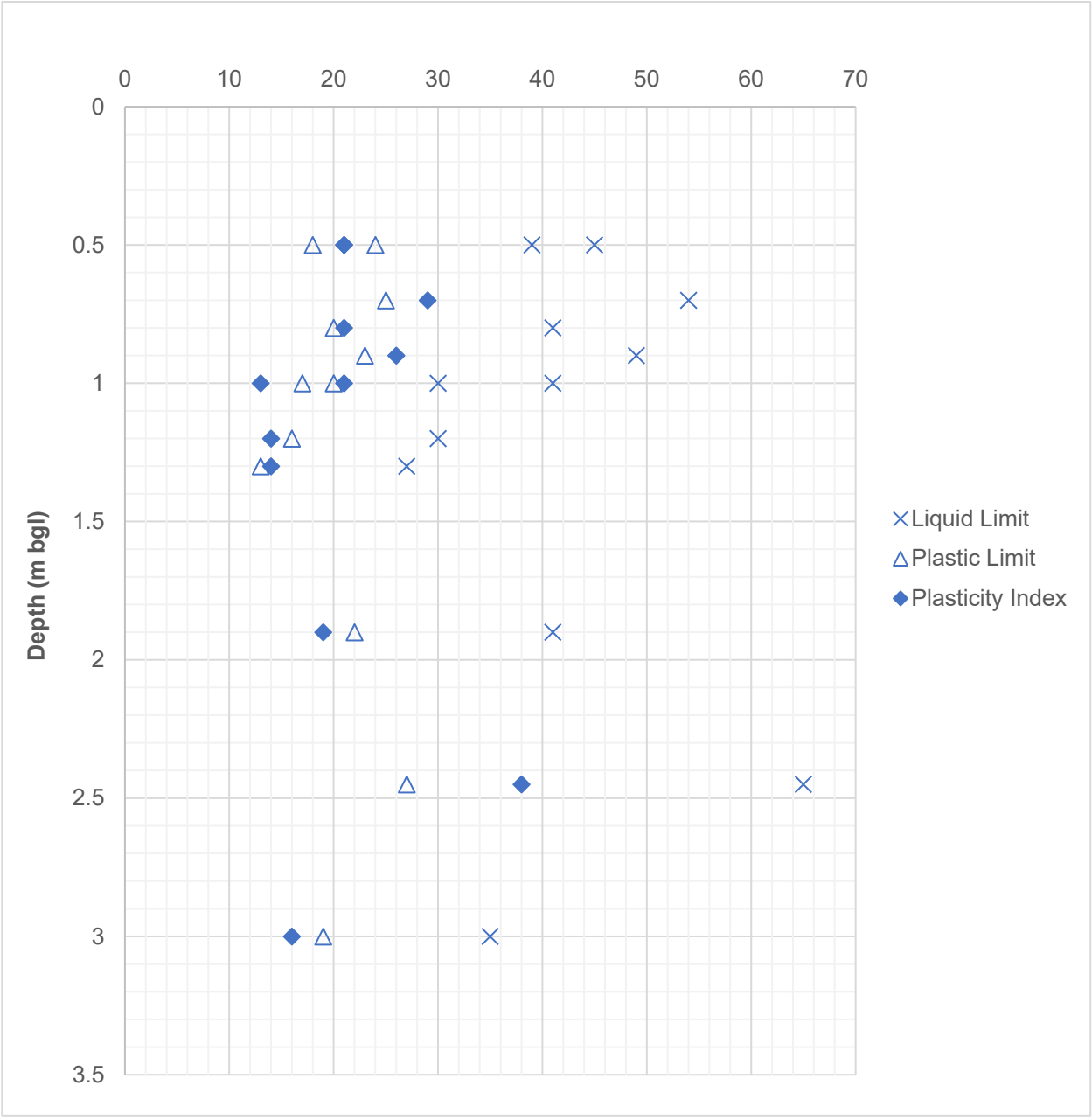
Atterberg Limits vs. Depth Below Ground Level (m)

Project ID:	A46	Project Title:	A46 Coventry Junctions Upgrade (Walsgrave)	Location:	Coventry
Client:	National Highways	Geology :	Wolston Galcigenic Formation	Figure:	A.30



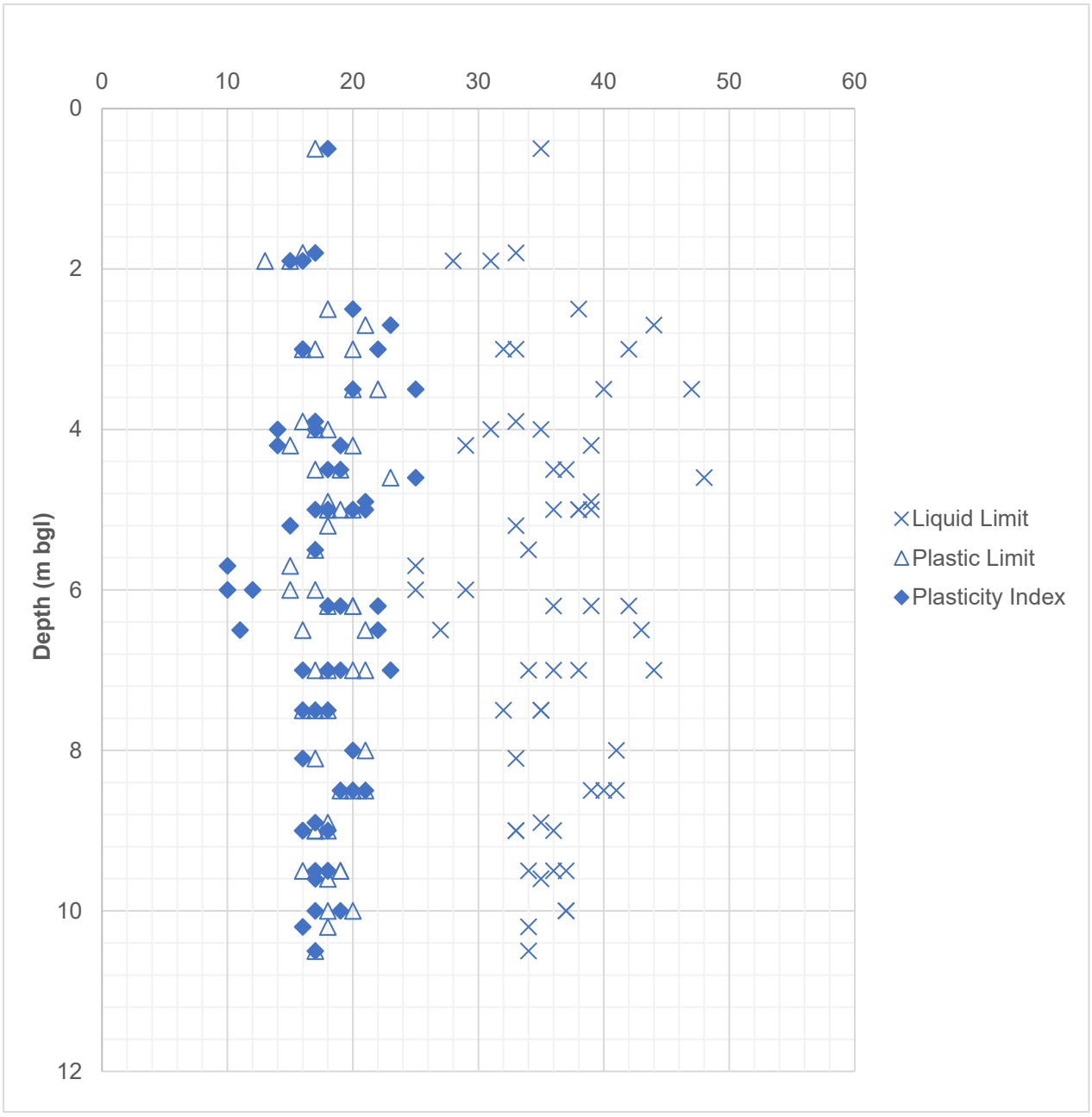
Atterberg Limits vs. Depth Below Ground Level (m)

Project ID:	**A46**	Project Title:	**A46 Coventry Junctions Upgrade (Walsgrave)**	Location:	**Coventry**
Client:	**National Highways**	Geology :	**Baginton Sand and Gravel Formation**	Figure:	**A.31**



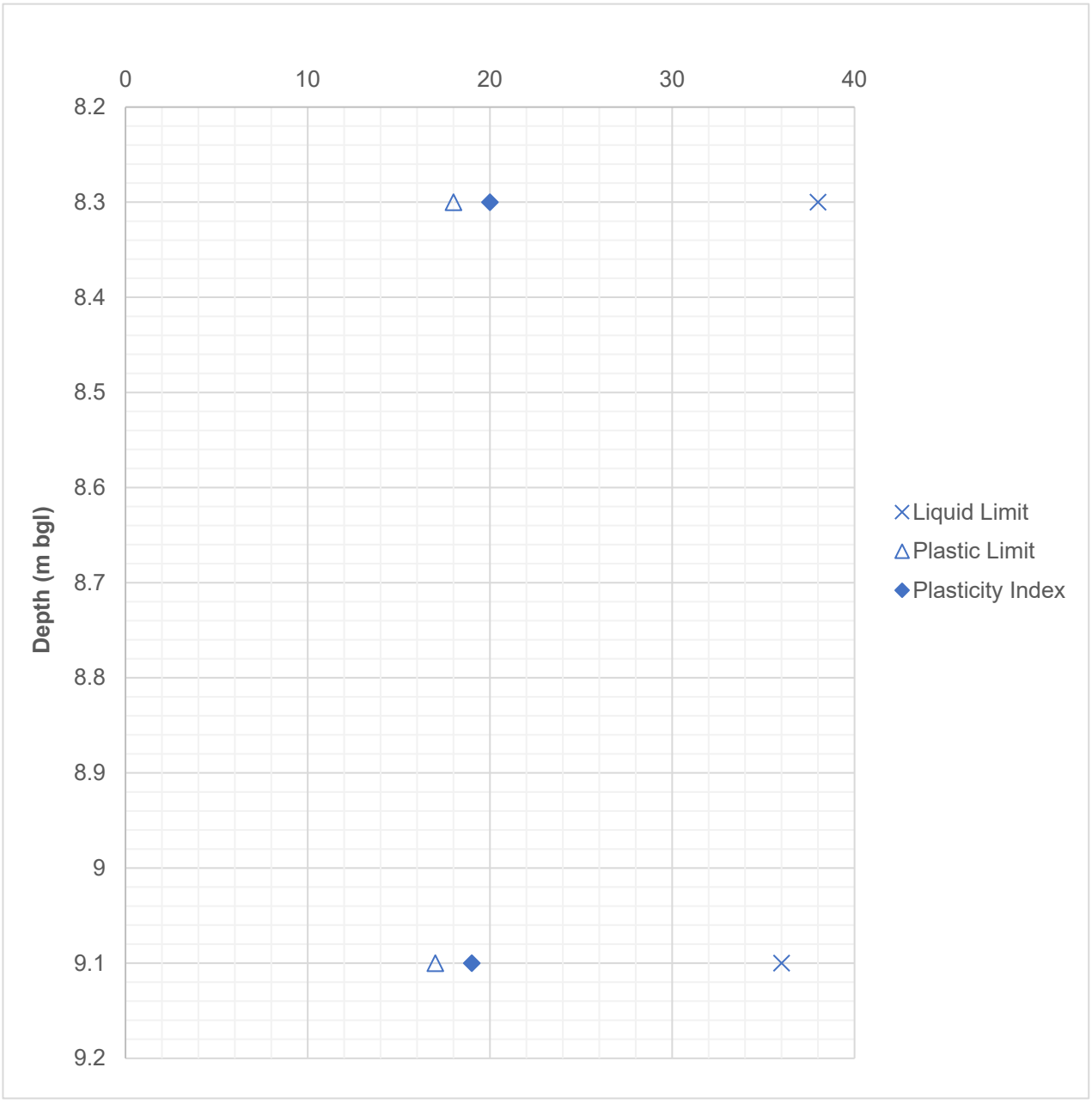
Atterberg Limits vs. Depth Below Ground Level (m)

Project ID:	**A46**	Project Title:	**A46 Coventry Junctions Upgrade (Walsgrave)**	Location:	**Coventry**
Client:	**National Highways**	Geology :	**Mercia Mudstone Group (Grade IV)**	Figure:	**A.32**



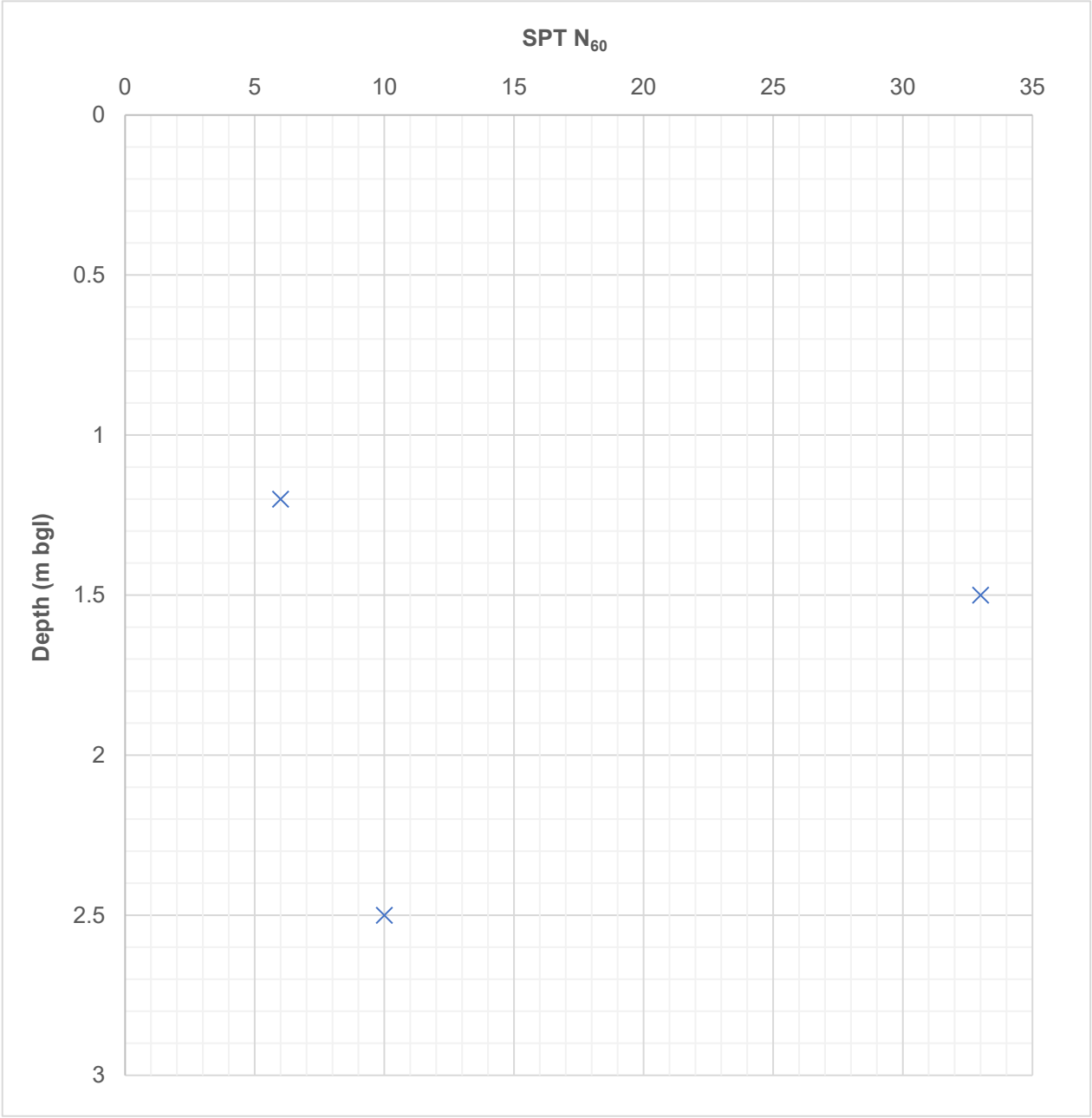
Atterberg Limits vs. Depth Below Ground Level (m)

Project ID:	**A46**	Project Title:	**A46 Coventry Junctions Upgrade (Walsgrave)**	Location:	**Coventry**
Client:	**National Highways**	Geology :	**Mercia Mudstone Group (Grade I to Grade III)**	Figure:	**A.33**



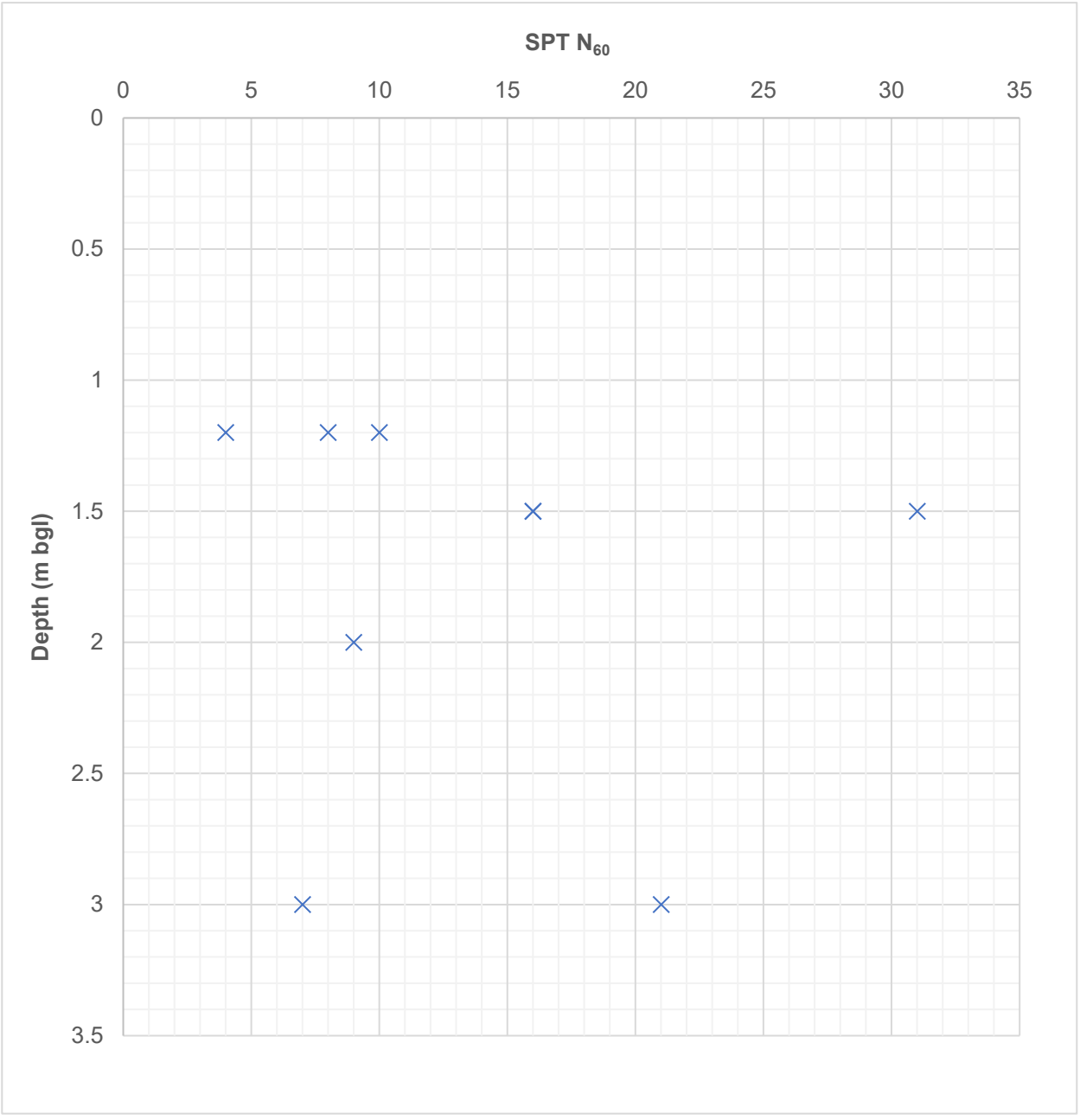
SPT 'N_{60}' vs. Depth Below Ground Level (m)

Project ID:	**A46**	Project Title:	**A46 Coventry Junctions Upgrade (Walsgrave)**	Location:	**Coventry**
Client:	**National Highways**	Geology :	**Made Ground**	Figure:	**A.34**



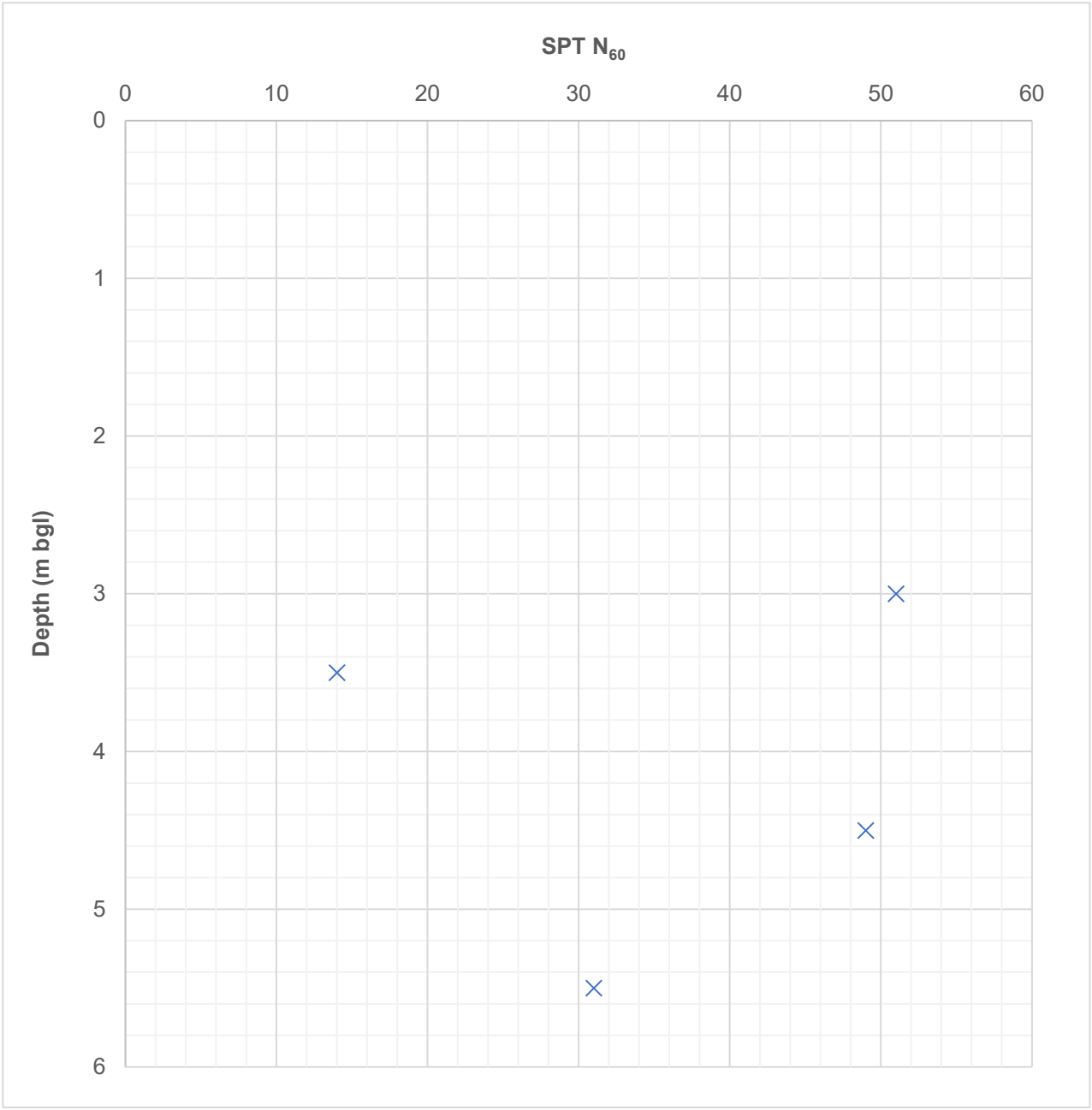
SPT 'N_{60}' vs. Depth Below Ground Level (m)

Project ID:	**A46**	Project Title:	**A46 Coventry Junctions Upgrade (Walsgrave)**	Location:	**Coventry**
Client:	**National Highways**	Geology :	**Alluvium**	Figure:	**A.35**



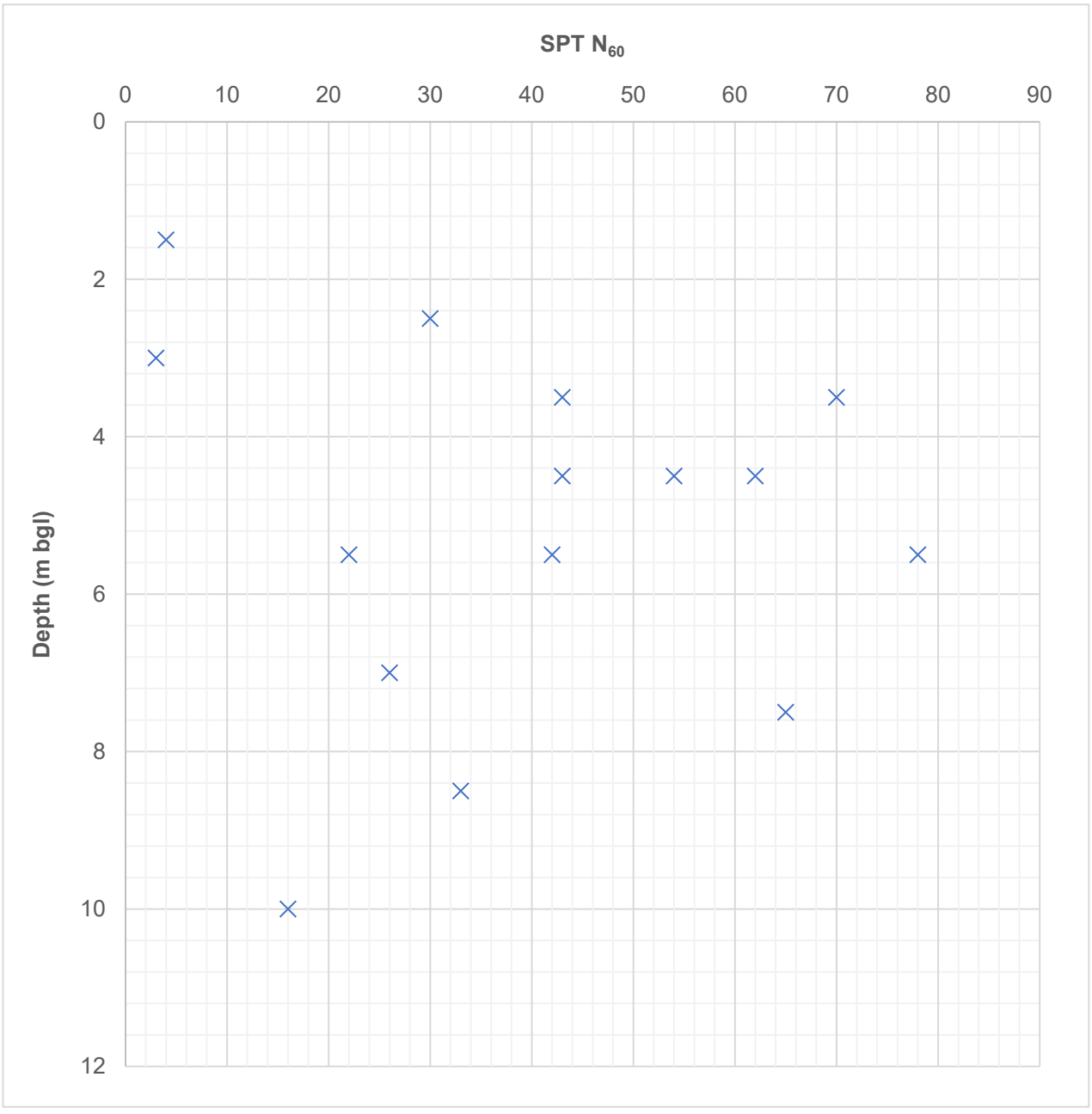
SPT 'N_{60}' vs. Depth Below Ground Level (m)

Project ID:	**A46**	Project Title:	**A46 Coventry Junctions Upgrade (Walsgrave)**	Location:	**Coventry**
Client:	**National Highways**	Geology :	**River Terrace Deposits**	Figure:	**A.36**



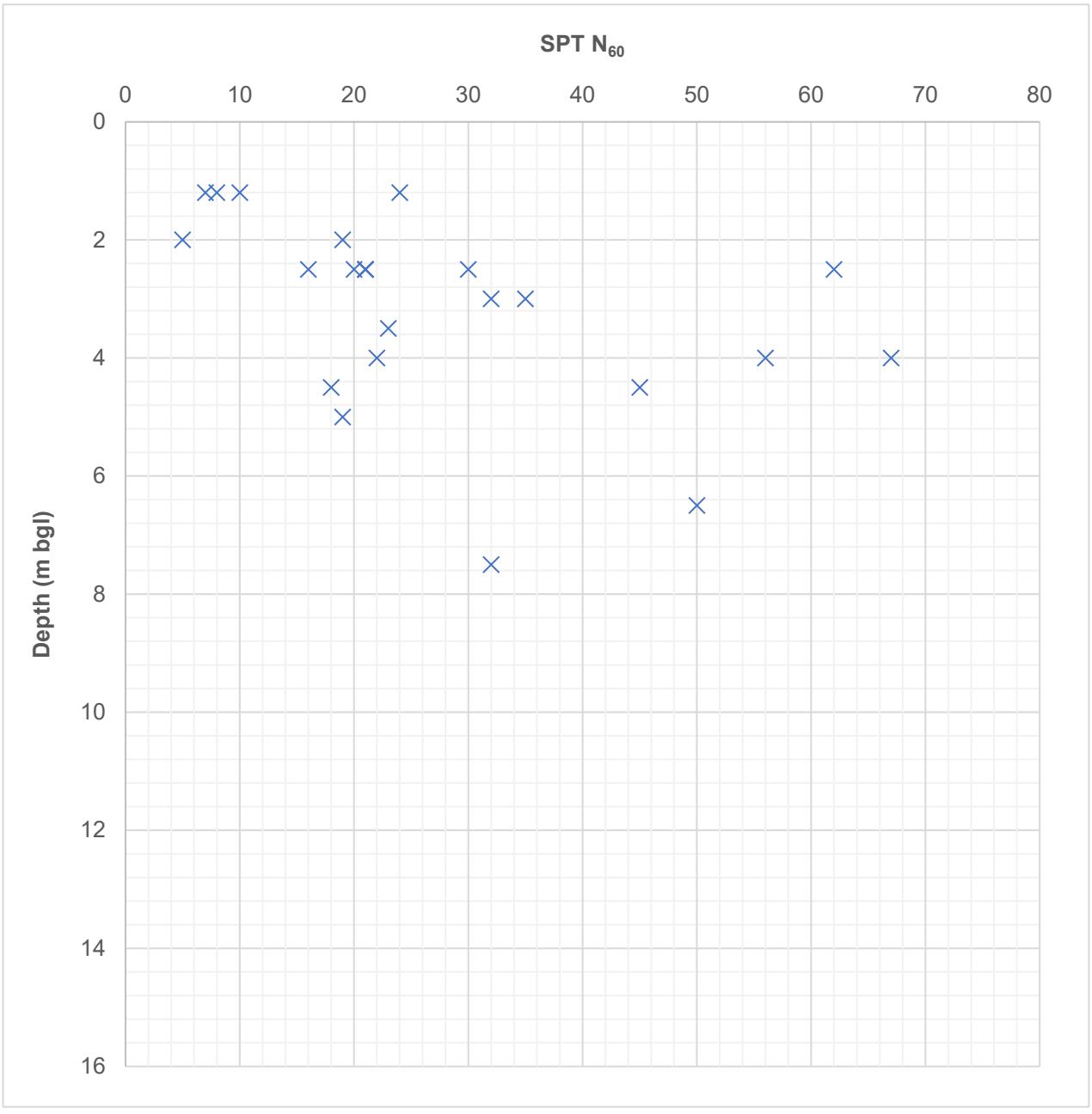
SPT 'N_{60}' vs. Depth Below Ground Level (m)

Project ID:	**A46**	Project Title:	**A46 Coventry Junctions Upgrade (Walsgrave)**	Location:	**Coventry**
Client:	**National Highways**	Geology :	**Wolston Glacigenic Formation (Granular)**	Figure:	**A.37**



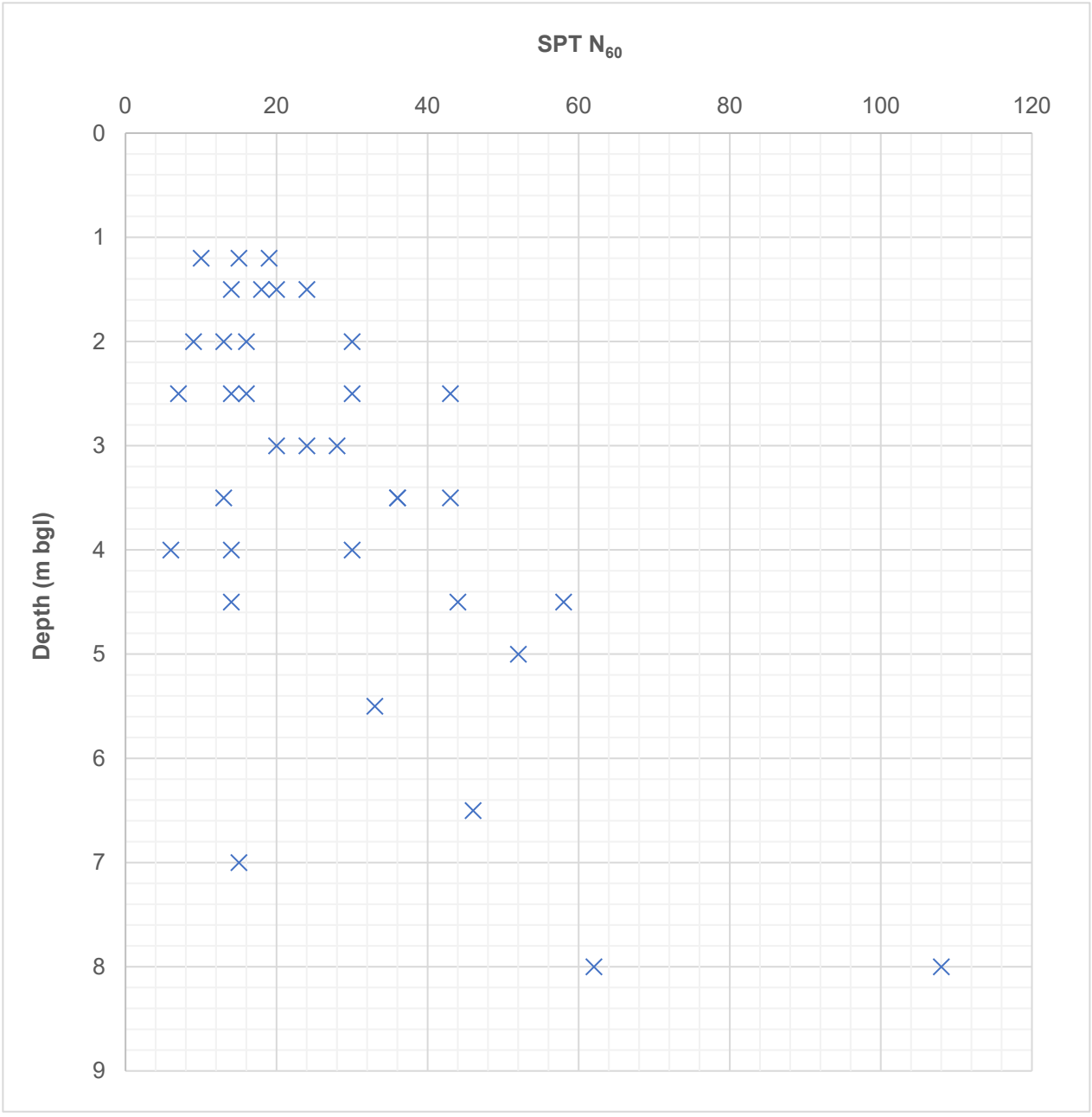
SPT 'N_{60}' vs. Depth Below Ground Level (m)

Project ID:	**A46**	Project Title:	**A46 Coventry Junctions Upgrade (Walsgrave)**	Location:	**Coventry**
Client:	**National Highways**	Geology :	**Wolston Glacigenic Formation (Cohesive)**	Figure:	**A.38**



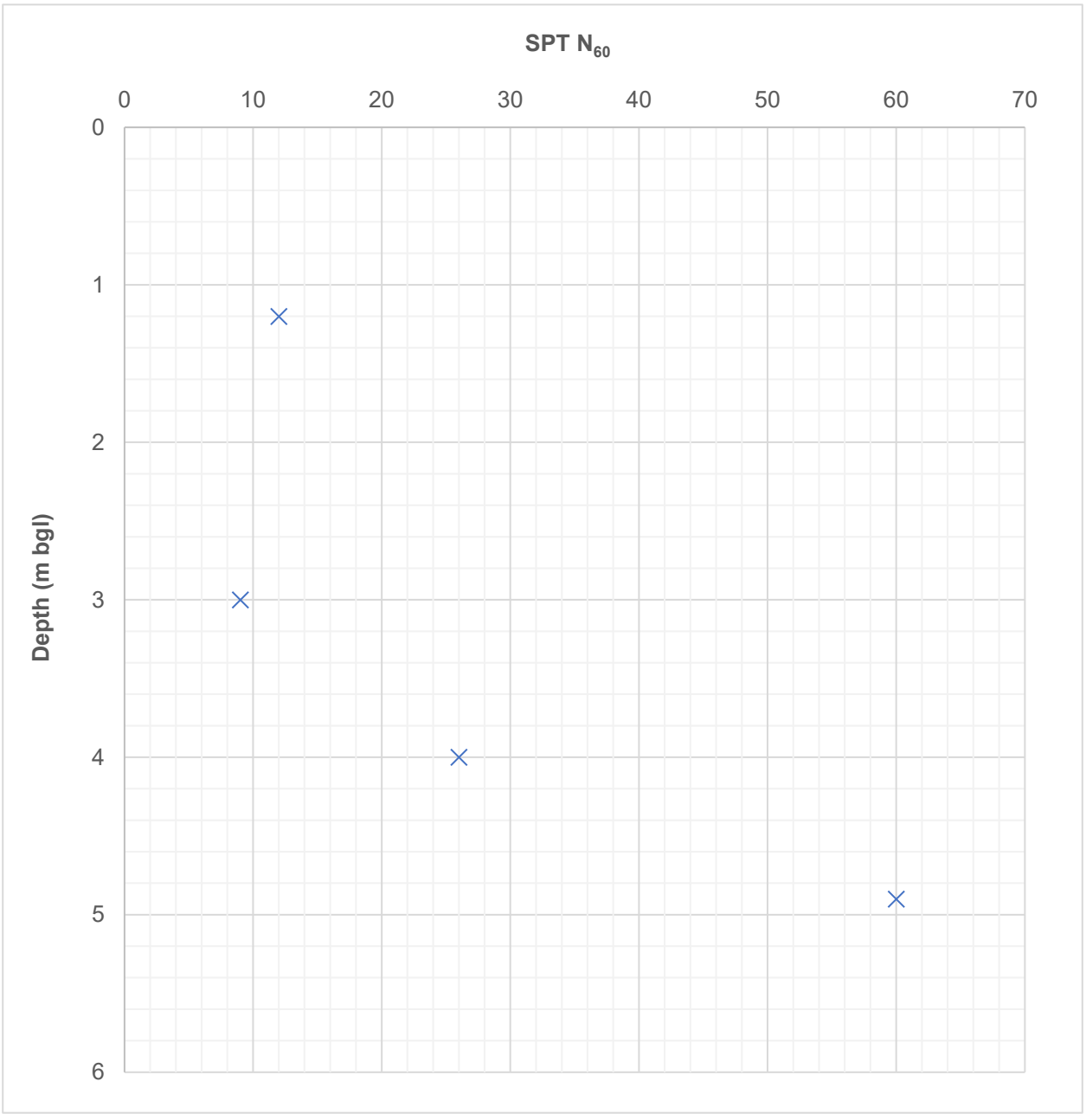
SPT 'N_{60}' vs. Depth Below Ground Level (m)

Project ID:	**A46**	Project Title:	**A46 Coventry Junctions Upgrade (Walsgrave)**	Location:	**Coventry**
Client:	**National Highways**	Geology :	**Baginton Sand and Gravel Formation (Granular)**	Figure:	**A.39**



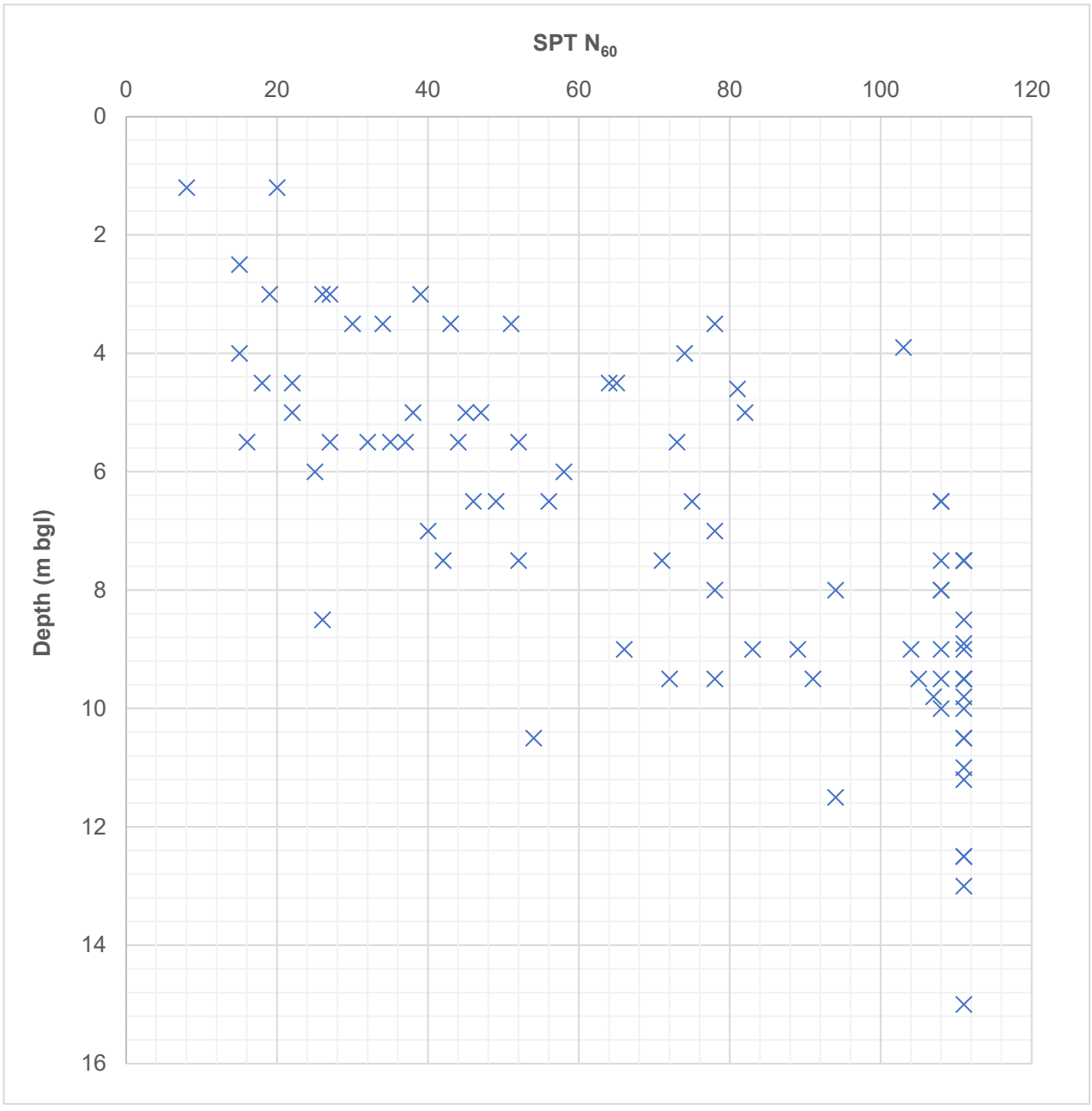
SPT 'N_{60}' vs. Depth Below Ground Level (m)

Project ID:	**A46**	Project Title:	**A46 Coventry Junctions Upgrade (Walsgrave)**	Location:	**Coventry**
Client:	**National Highways**	Geology :	**Baginton Sand and Gravel Formation (Cohesive)**	Figure:	**A.40**



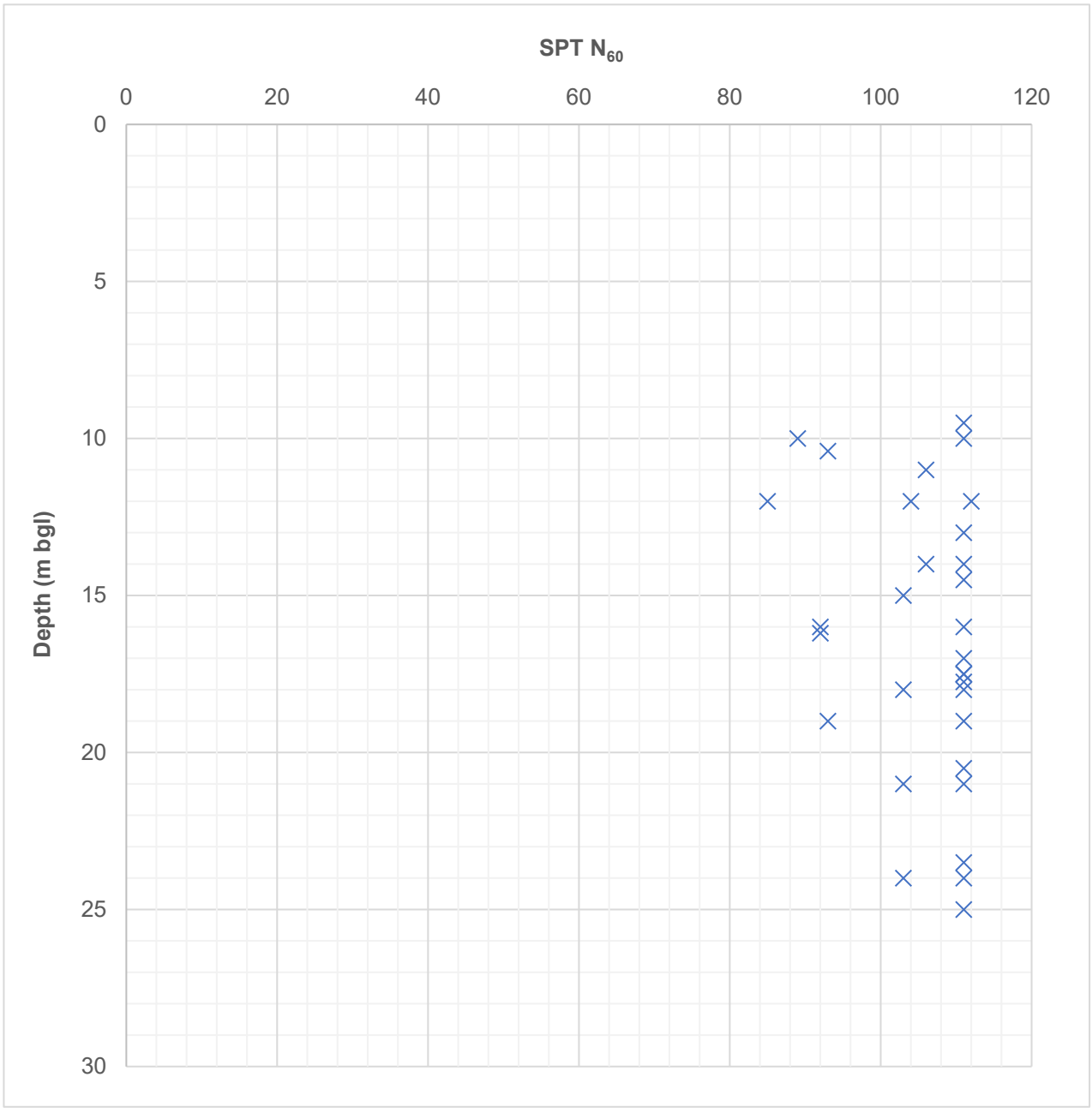
SPT 'N_{60}' vs. Depth Below Ground Level (m)

Project ID:	**A46**	Project Title:	**A46 Coventry Junctions Upgrade (Walsgrave)**	Location:	**Coventry**
Client:	**National Highways**	Geology :	**Mercia Mudstone Group (Grade IV)**	Figure:	**A.41**



SPT 'N_{60}' vs. Depth Below Ground Level (m)

Project ID:	**A46**	Project Title:	**A46 Coventry Junctions Upgrade (Walsgrave)**	Location:	**Coventry**
Client:	**National Highways**	Geology :	**Mercia Mudstone Group (Grade I to Grade III)**	Figure:	**A.42**



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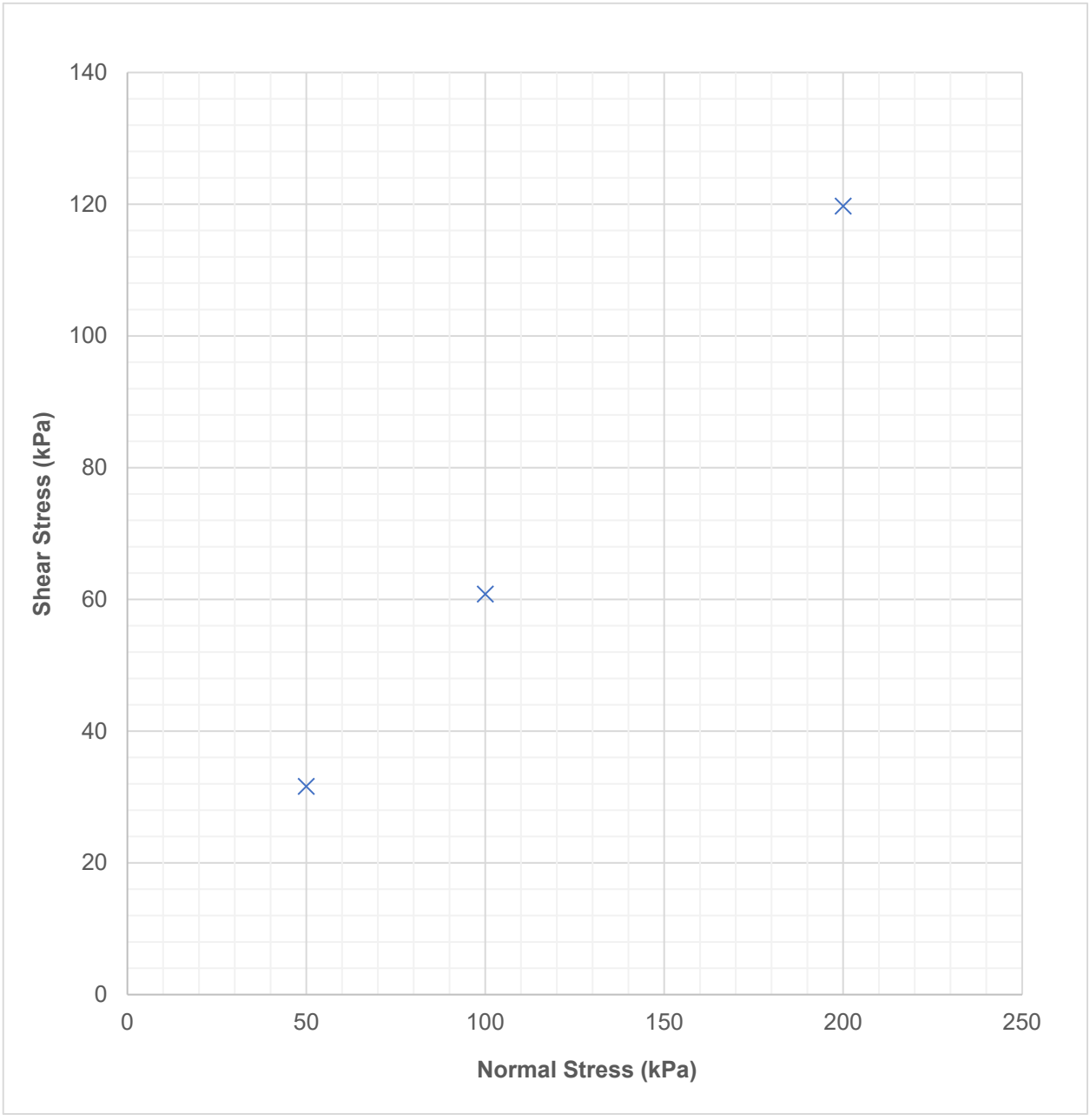
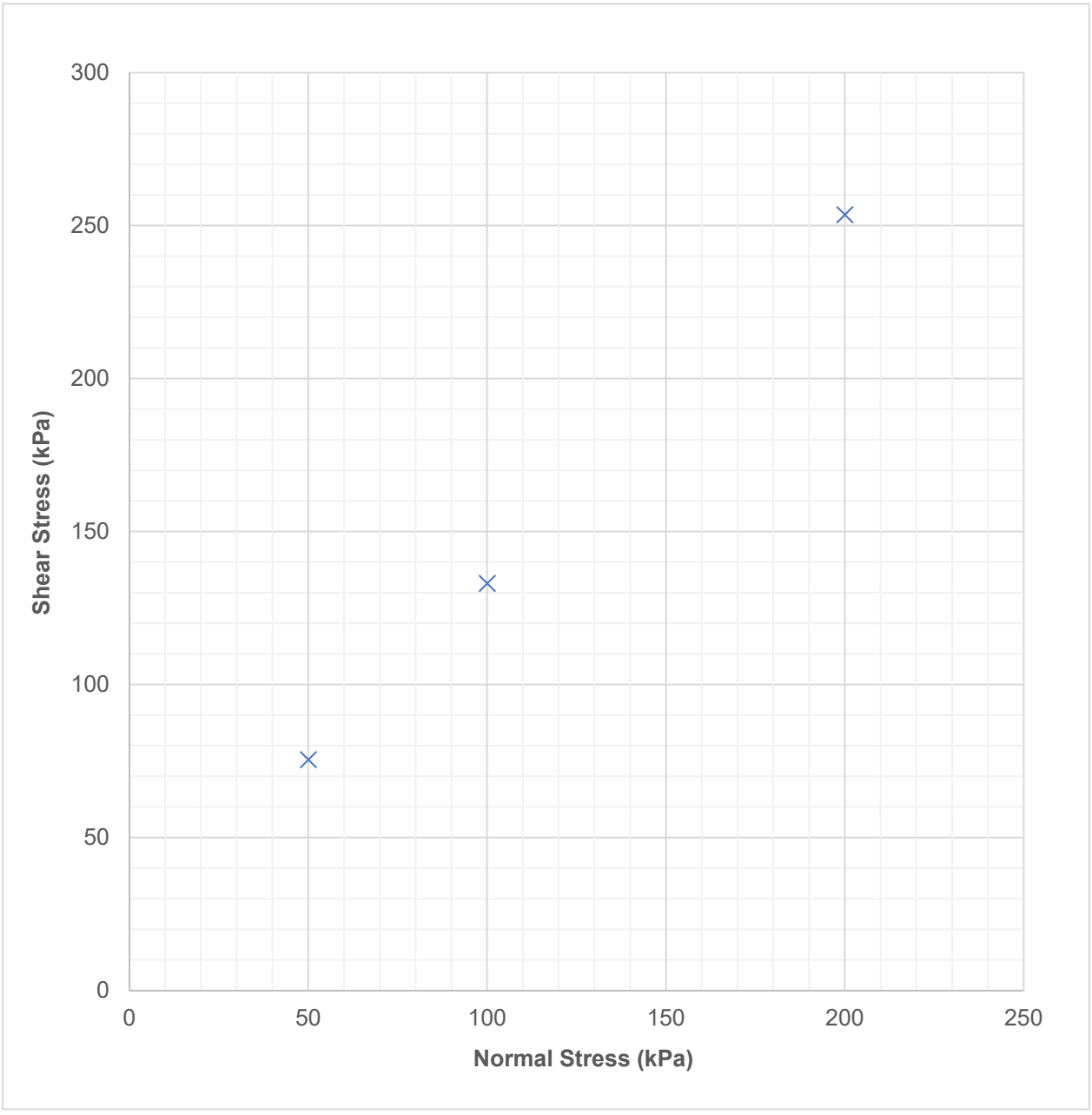
Shear Box Test: Normal Stress vs. Shear Stress

Project ID:	**A46**	Project Title:	**A46 Coventry Junctions Upgrade (Walsgrave)**	Location:	**Coventry**
Client:	**National Highways**	Geology :	**Alluvium**	Figure:	**A.43**



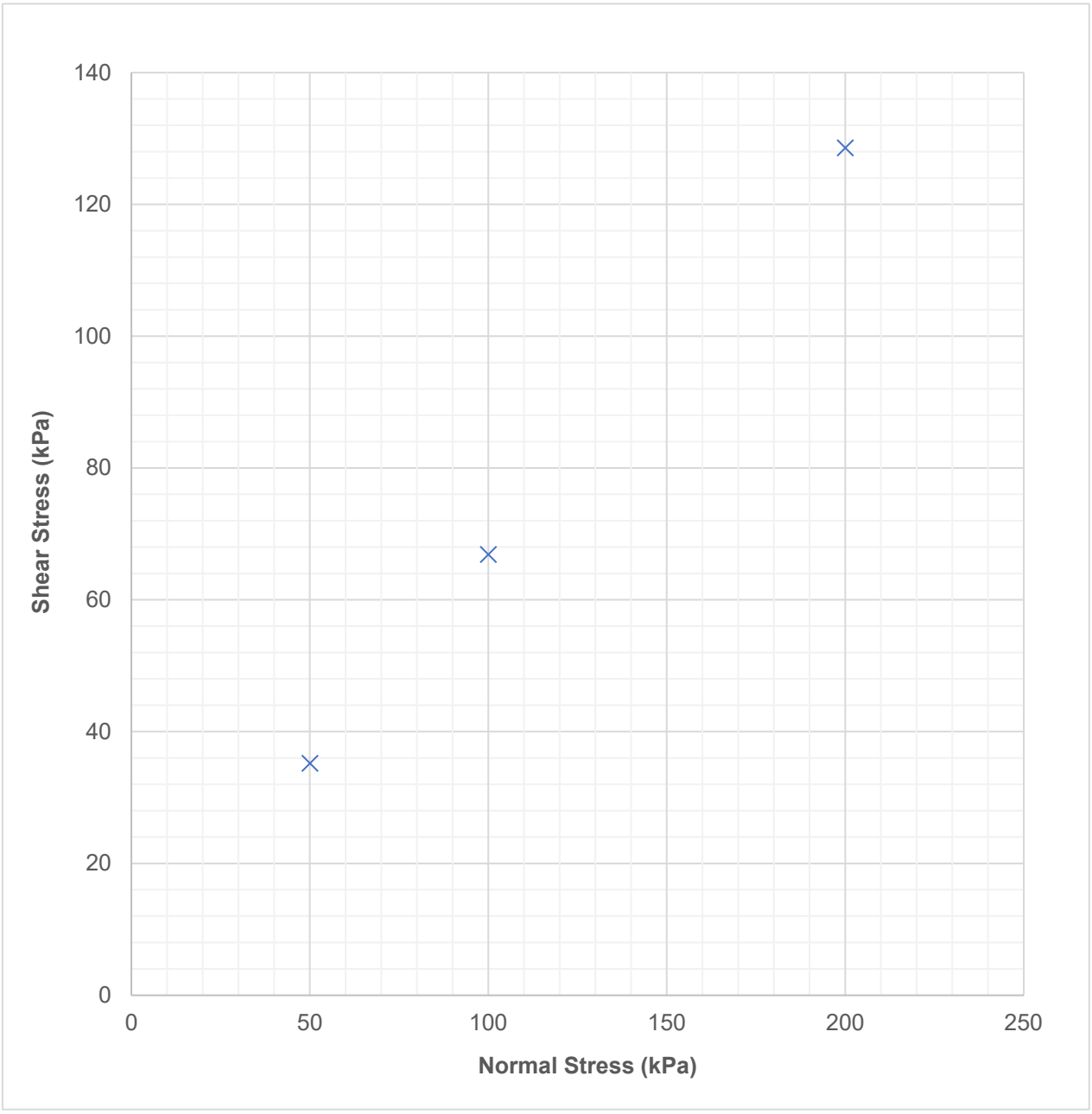
Shear Box Test: Normal Stress vs. Shear Stress

Project ID:	**A46**	Project Title:	**A46 Coventry Junctions Upgrade (Walsgrave)**	Location:	**Coventry**
Client:	**National Highways**	Geology :	**River Terrace Deposits**	Figure:	**A.44**



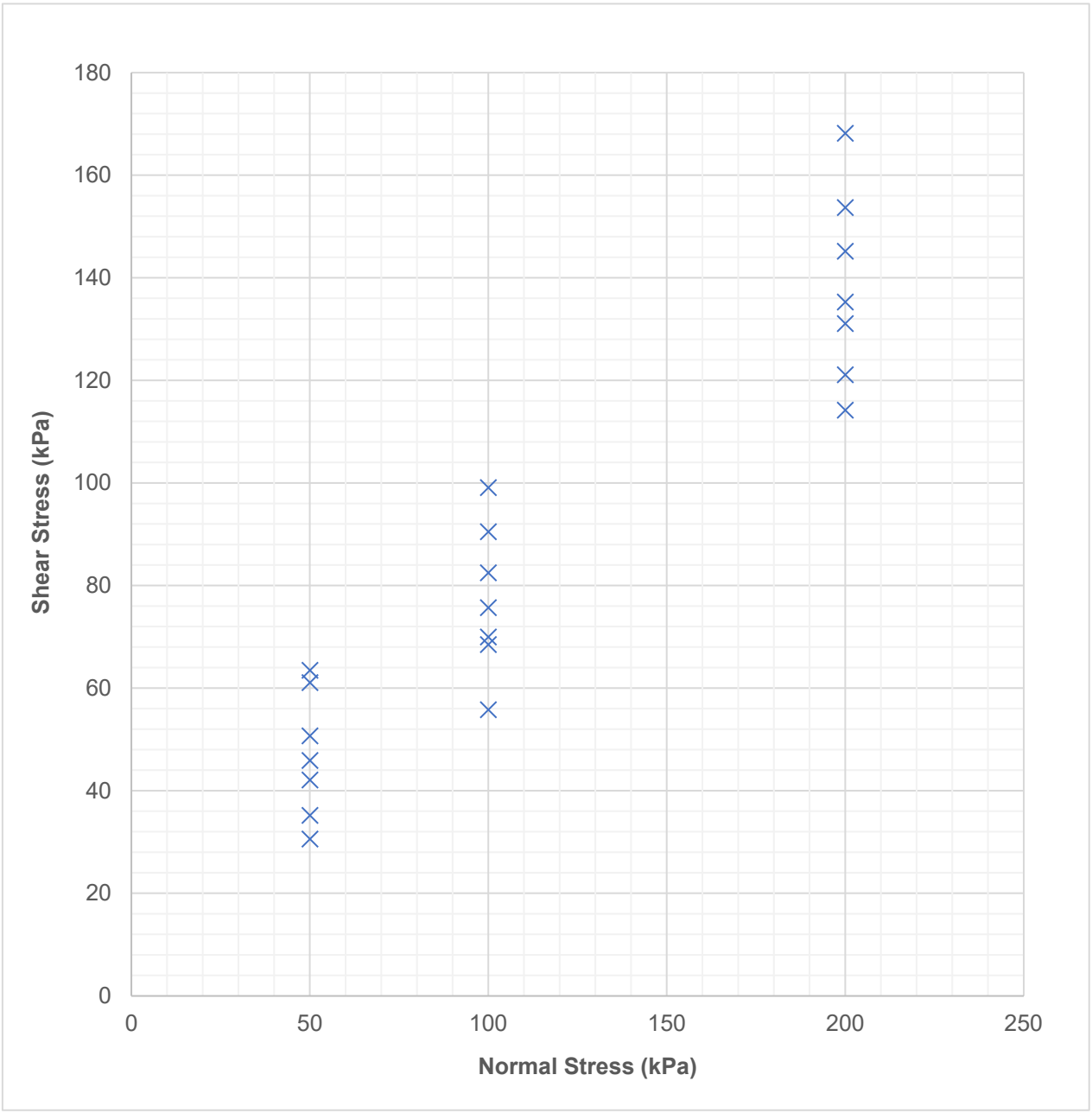
Shear Box Test: Normal Stress vs. Shear Stress

Project ID:	**A46**	Project Title:	**A46 Coventry Junctions Upgrade (Walsgrave)**	Location:	**Coventry**
Client:	**National Highways**	Geology :	**Wolston Glacigenic Formation (Granular)**	Figure:	**A.45**



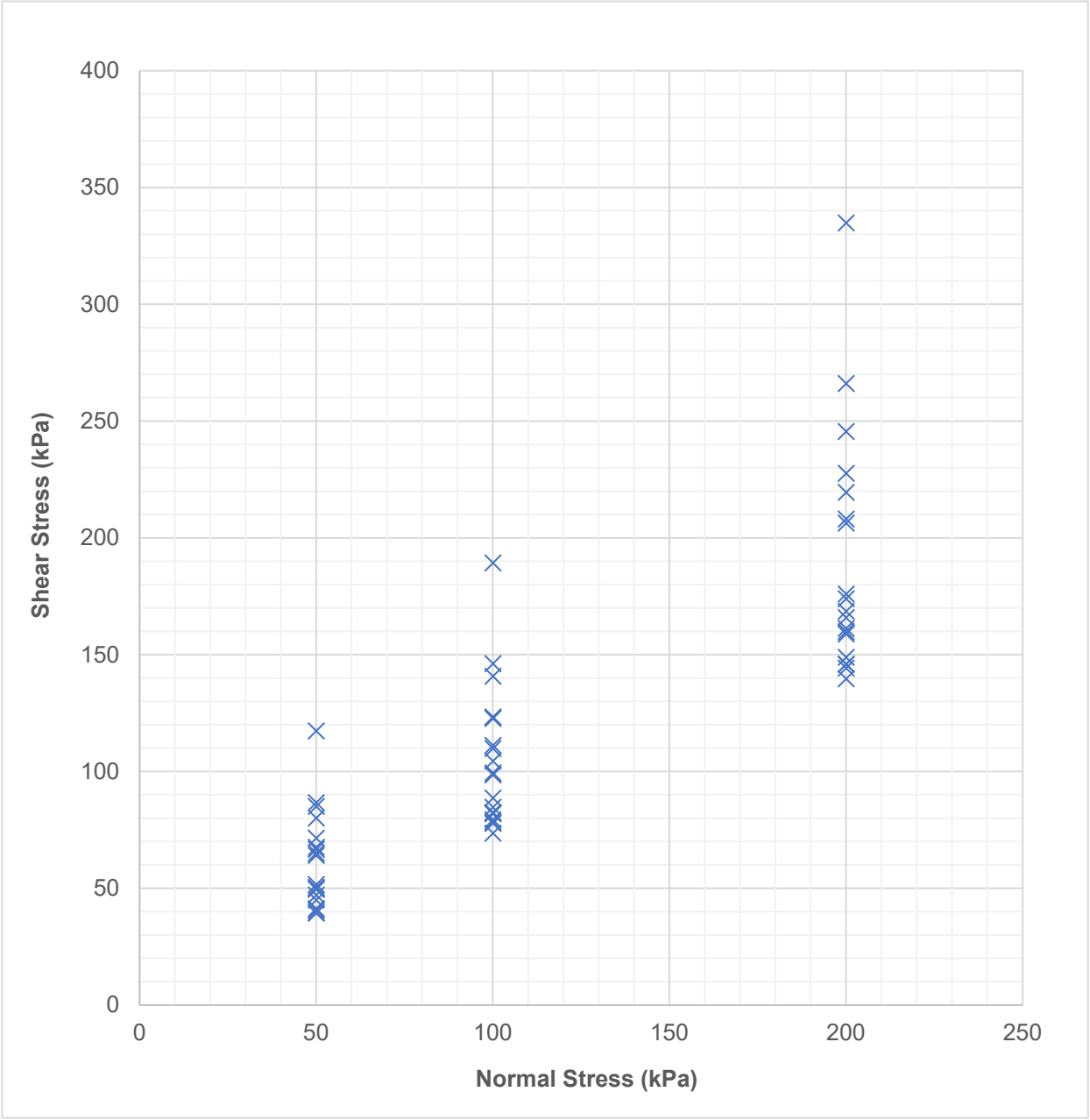
Shear Box Test: Normal Stress vs. Shear Stress

Project ID:	**A46**	Project Title:	**A46 Coventry Junctions Upgrade (Walsgrave)**	Location:	**Coventry**
Client:	**National Highways**	Geology :	**Wolston Glacigenic Formation (Cohesive)**	Figure:	**A.46**



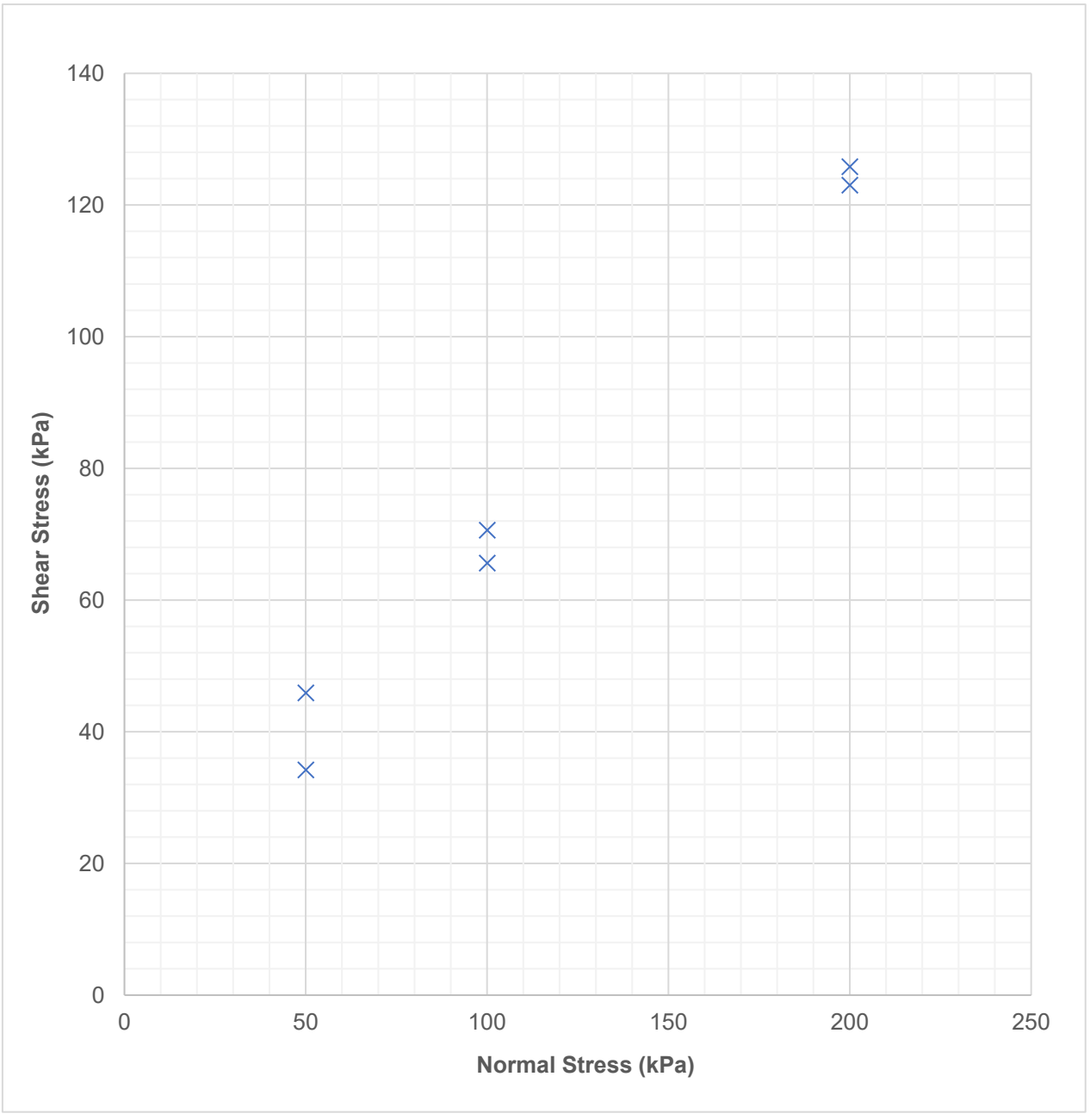
Shear Box Test: Normal Stress vs. Shear Stress

Project ID:	**A46**	Project Title:	**A46 Coventry Junctions Upgrade (Walsgrave)**	Location:	**Coventry**
Client:	**National Highways**	Geology :	**Baginton Sand and Gravel Formation (Granular**	Figure:	**A.47**



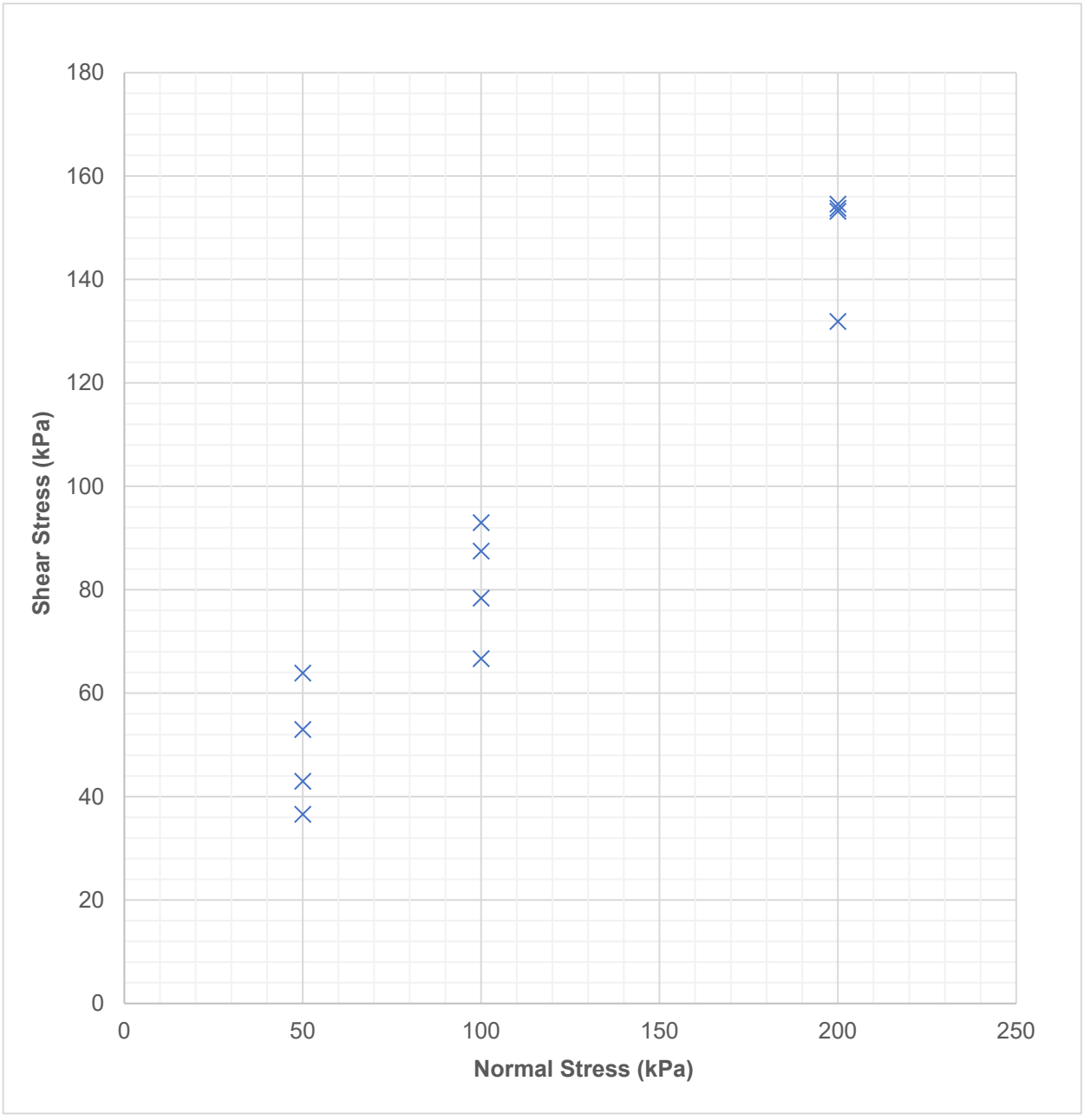
Shear Box Test: Normal Stress vs. Shear Stress

Project ID:	**A46**	Project Title:	**A46 Coventry Junctions Upgrade (Walsgrave)**	Location:	**Coventry**
Client:	**National Highways**	Geology :	**Baginton Sand and Gravel Formation (Cohesive)**	Figure:	**A.48**



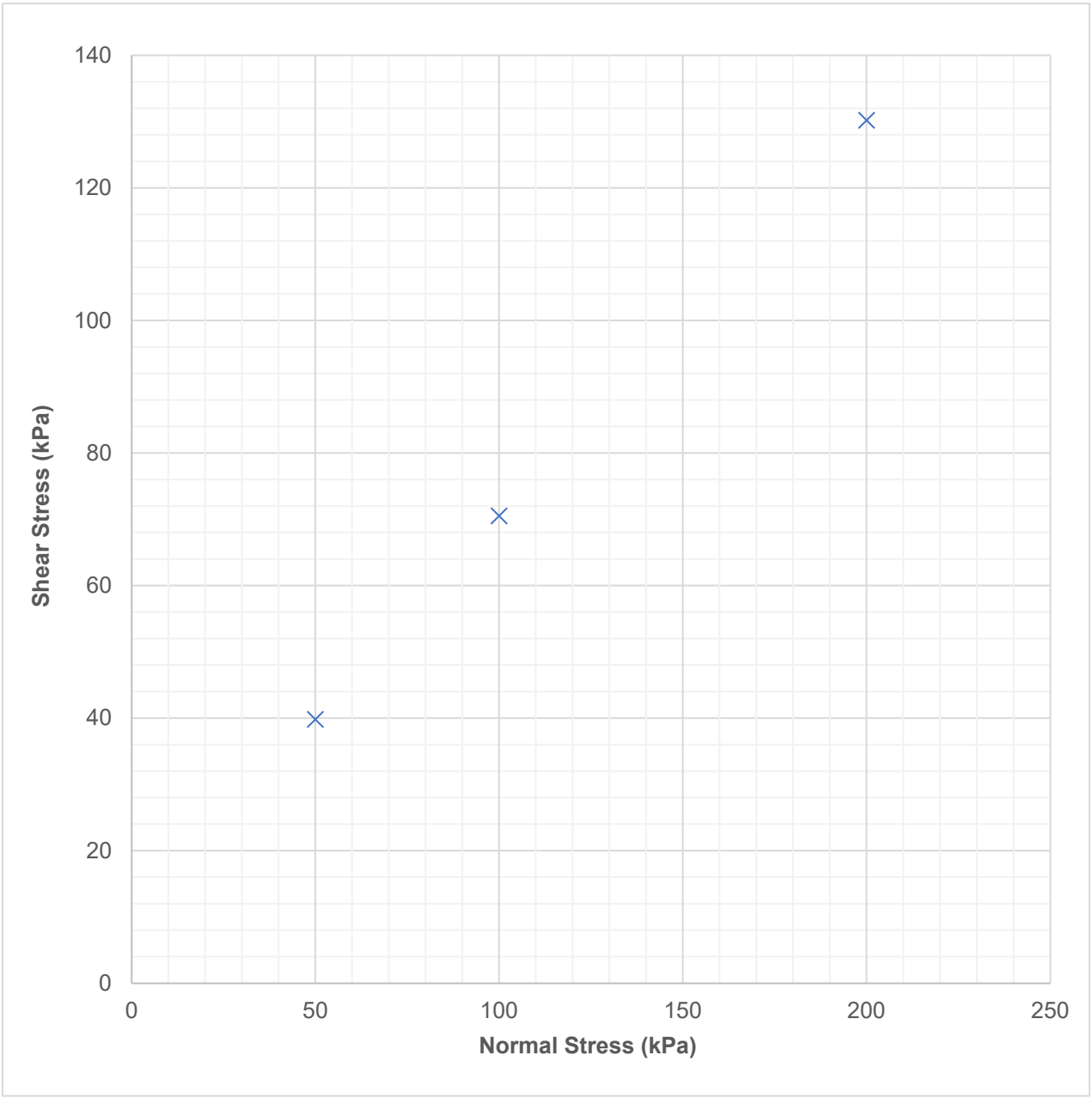
Shear Box Test: Normal Stress vs. Shear Stress

Project ID:	**A46**	Project Title:	**A46 Coventry Junctions Upgrade (Walsgrave)**	Location:	**Coventry**
Client:	**National Highways**	Geology :	**Mercia Mudstone Group (Grade IV)**	Figure:	**A.49**



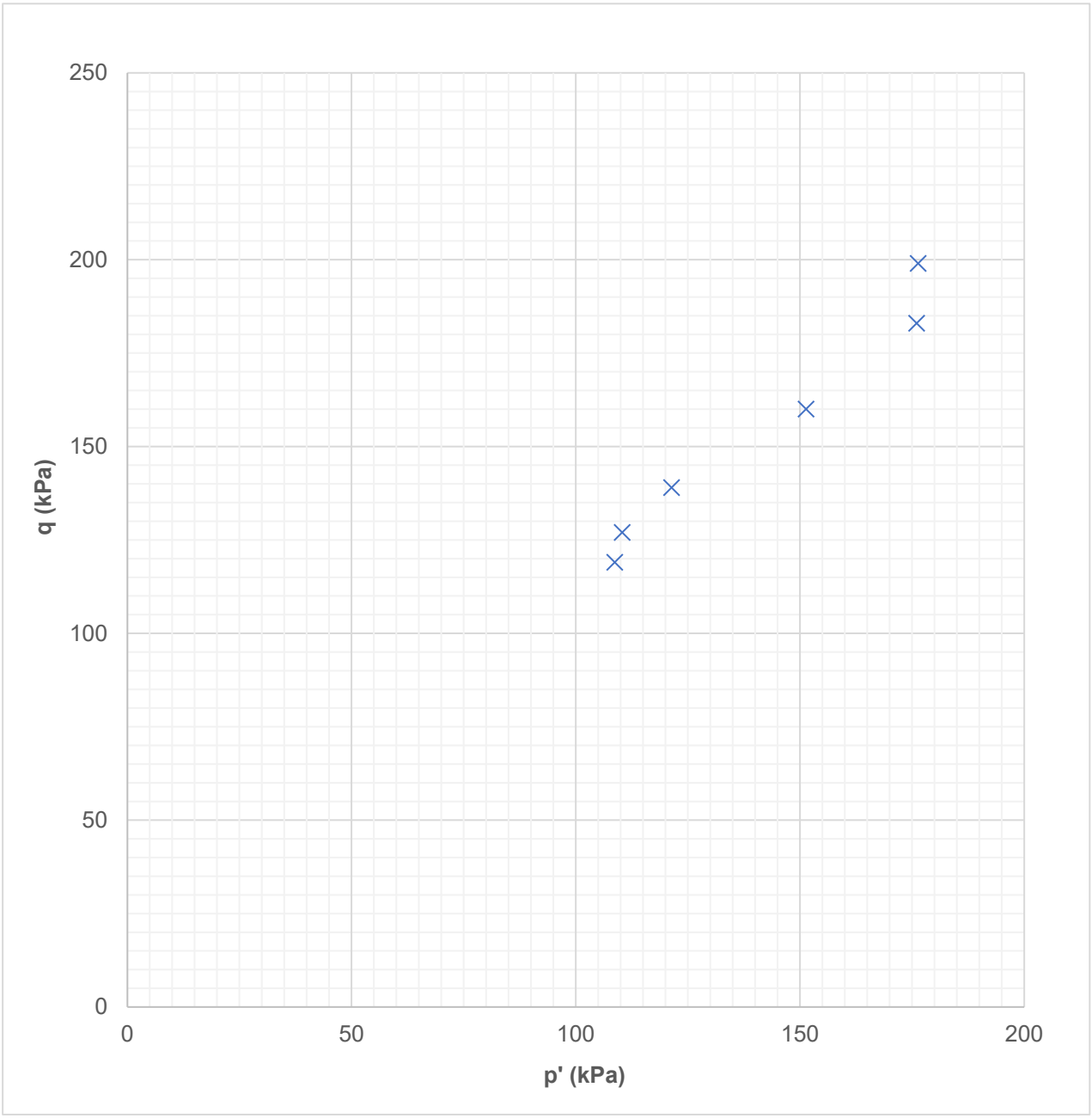
Shear Box Test: Normal Stress vs. Shear Stress

Project ID:	**A46**	Project Title:	**A46 Coventry Junctions Upgrade (Walsgrave)**	Location:	**Coventry**
Client:	**National Highways**	Geology :	**Mercia Mudstone Group (Grade I to Grade III)**	Figure:	**A.50**



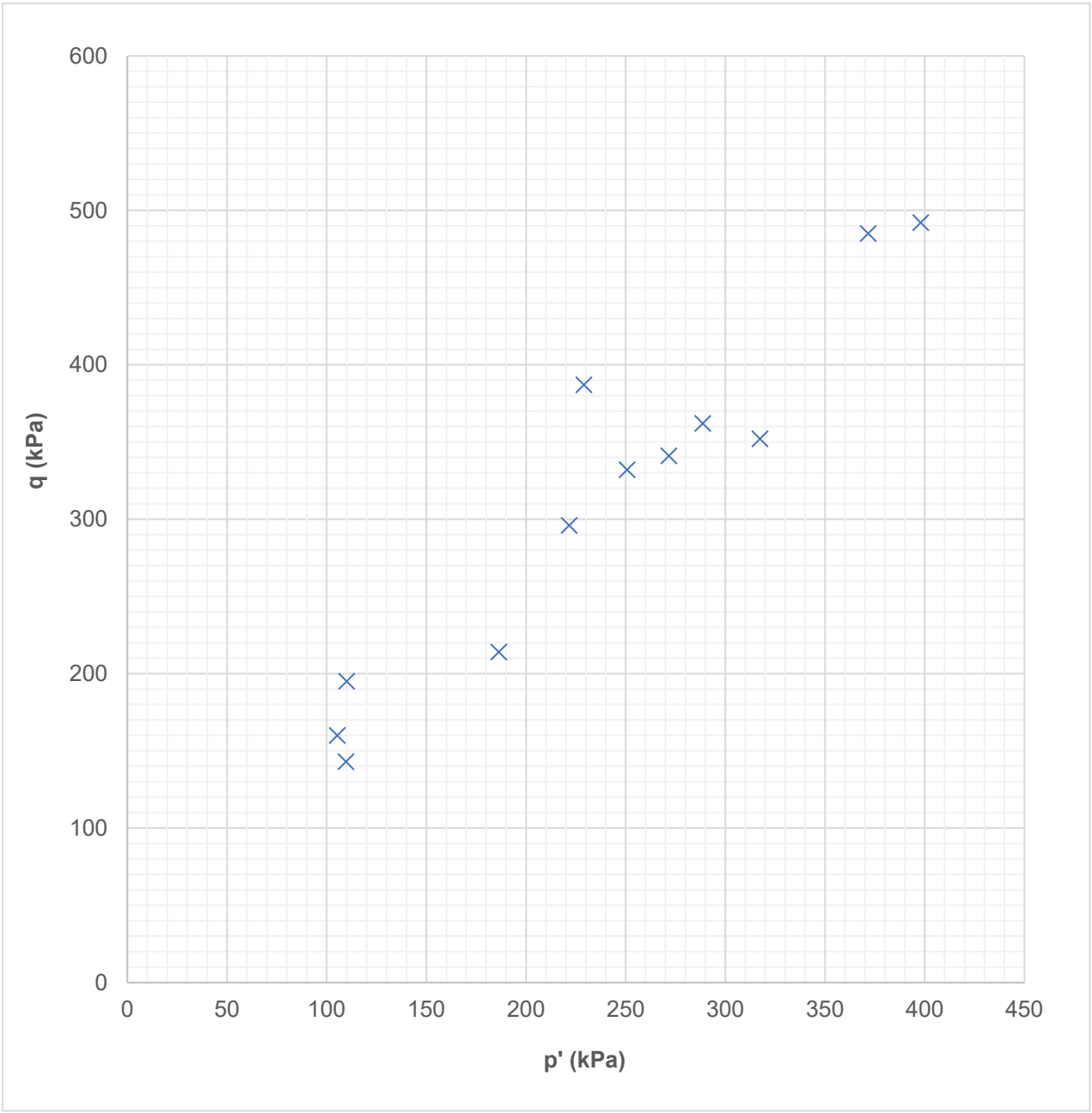
Consolidated Undrained Triaxial Test (with Pore Water Pressure Measurement): q-p' Plot

Project ID:	**A46**	Project Title:	**A46 Coventry Junctions Upgrade (Walsgrave)**	Location:	**Coventry**
Client:	**National Highways**	Geology :	**Alluvium**	Figure:	**A.51**



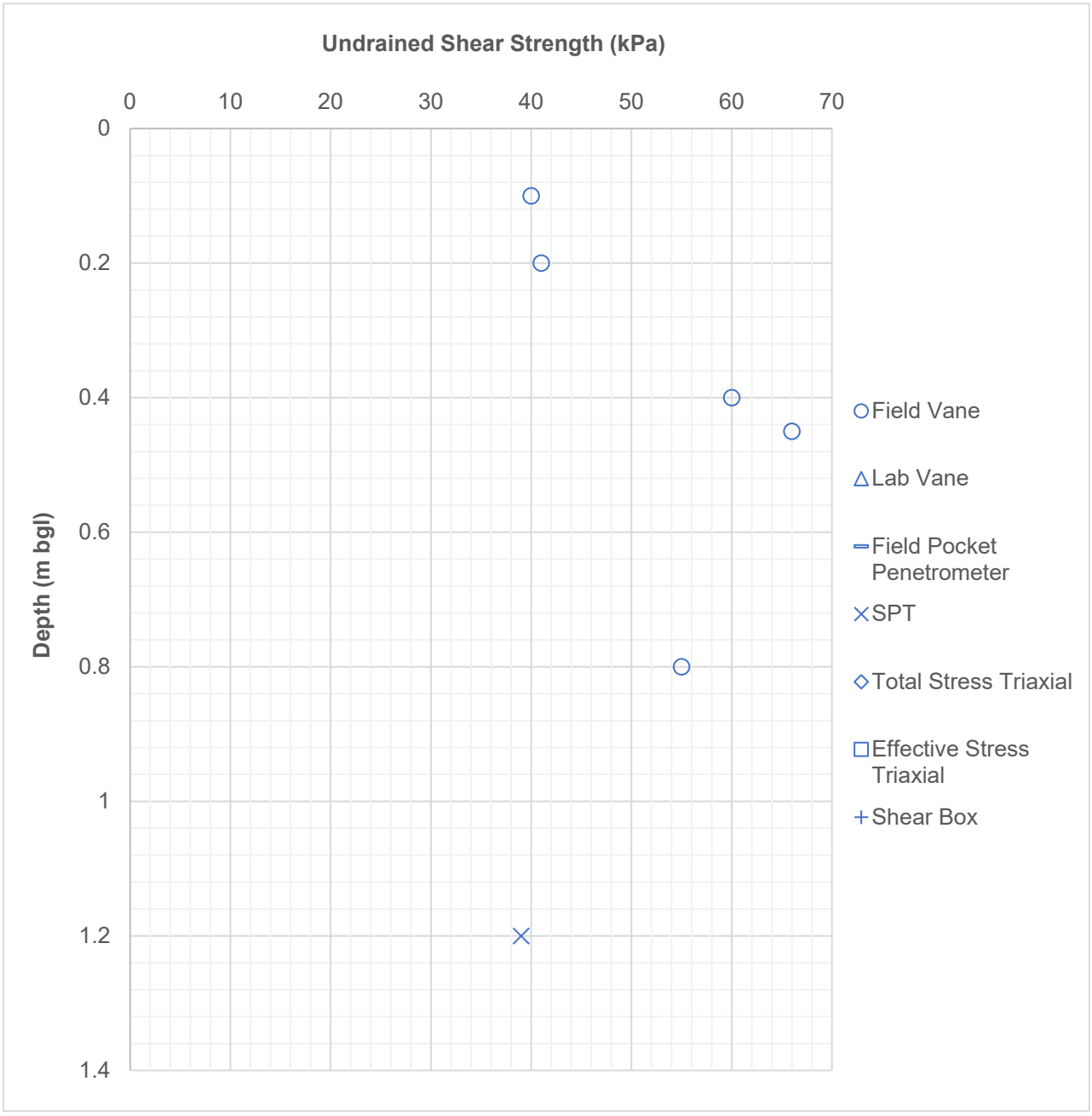
Consolidated Undrained Triaxial Test (with Pore Water Pressure Measurement): q-p' Plot

Project ID:	**A46**	Project Title:	**A46 Coventry Junctions Upgrade (Walsgrave)**	Location:	**Coventry**
Client:	**National Highways**	Geology :	**Mercia Mudstone Group (Grade IV)**	Figure:	**A.52**



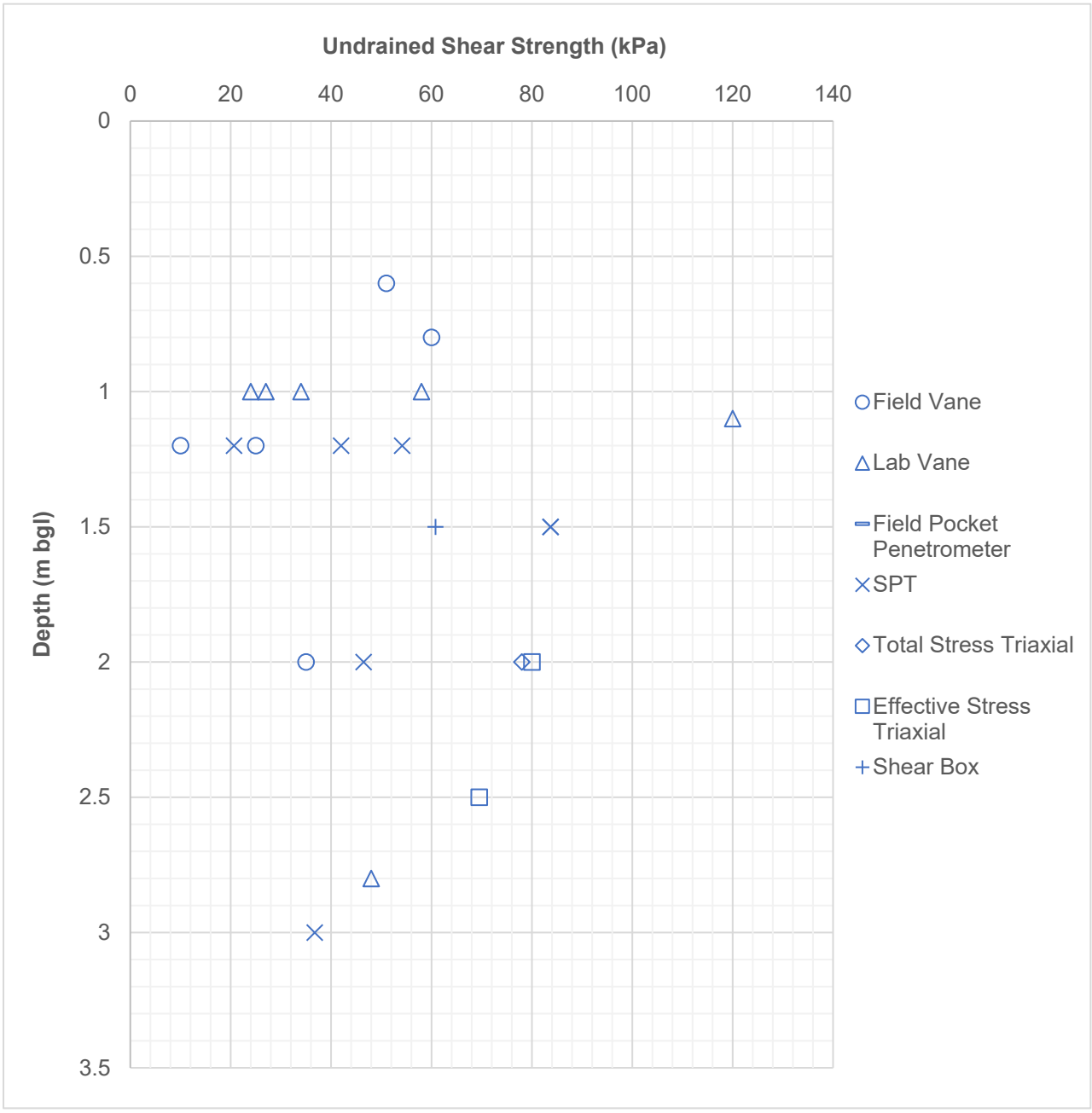
Undrained Shear Strength vs. Depth Below Ground Level (m)

Project ID:	**A46**	Project Title:	**A46 Coventry Junctions Upgrade (Walsgrave)**	Location:	**Coventry**
Client:	**National Highways**	Geology :	**Made Ground**	Figure:	**A.53**



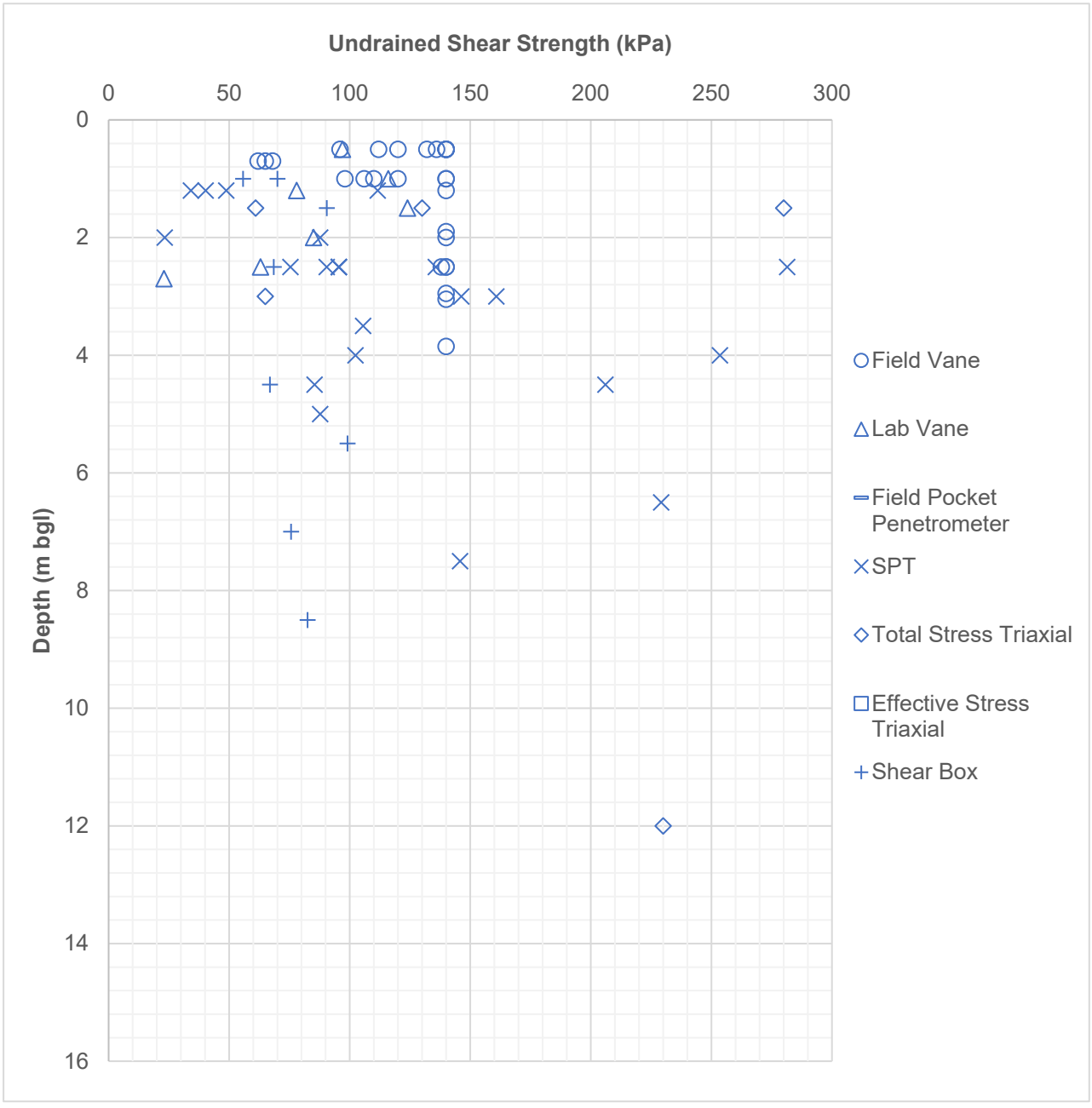
Undrained Shear Strength vs. Depth Below Ground Level (m)

Project ID:	**A46**	Project Title:	**A46 Coventry Junctions Upgrade (Walsgrave)**	Location:	**Coventry**
Client:	**National Highways**	Geology :	**Alluvium**	Figure:	**A.54**



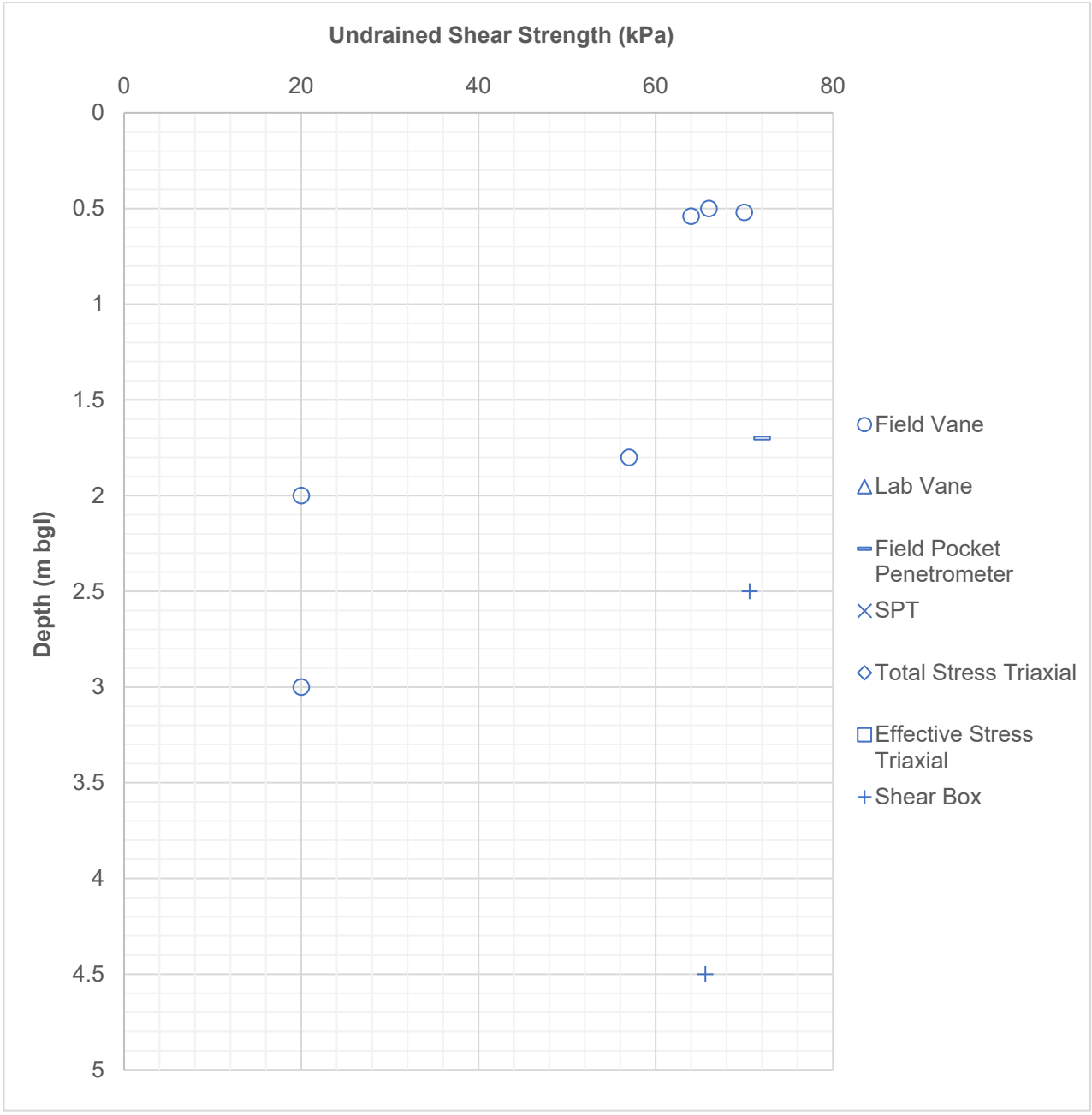
Undrained Shear Strength vs. Depth Below Ground Level (m)

Project ID:	**A46**	Project Title:	**A46 Coventry Junctions Upgrade (Walsgrave)**	Location:	**Coventry**
Client:	**National Highways**	Geology :	**Wolston Glacigenic Formation**	Figure:	**A.55**



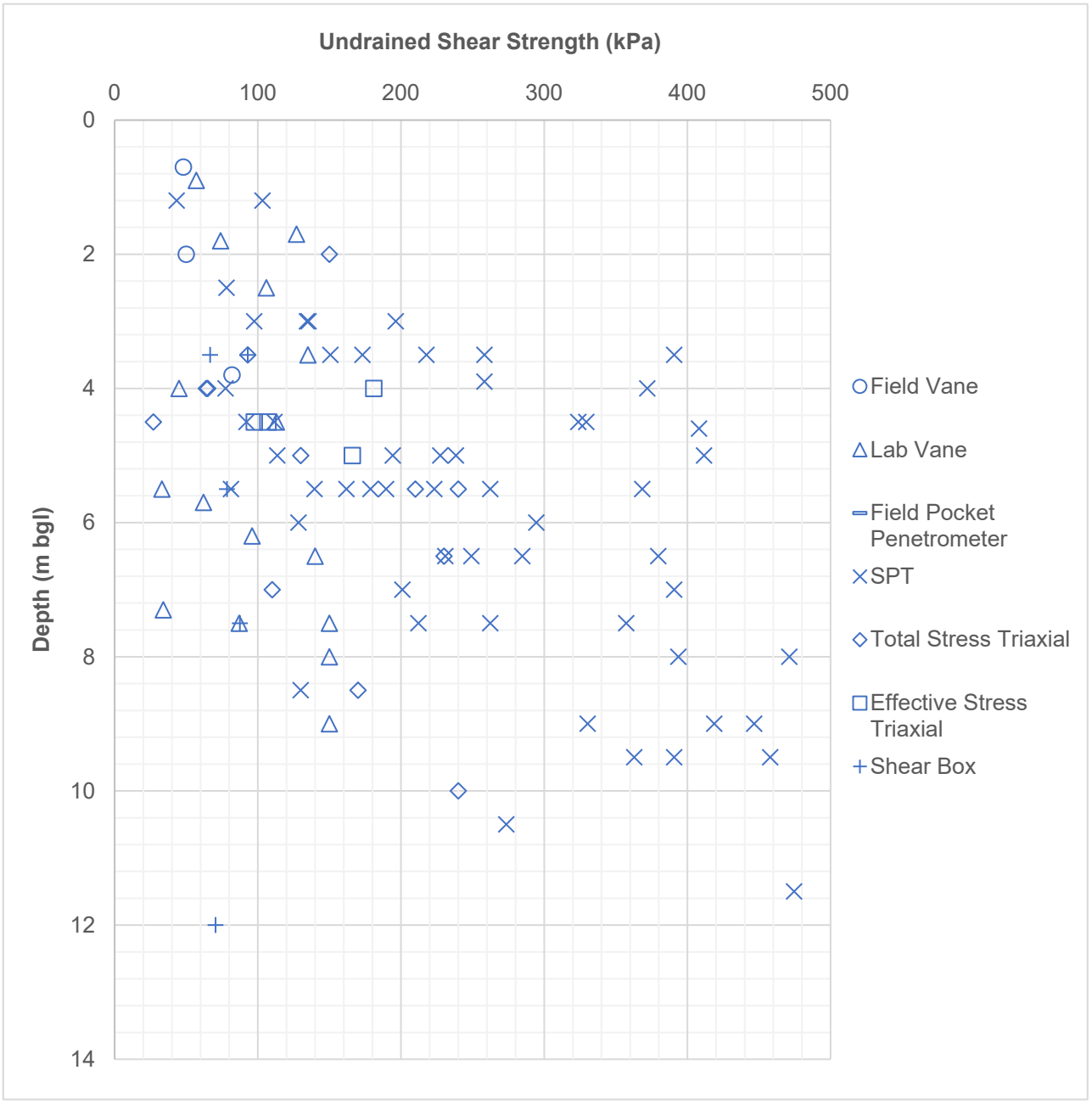
Undrained Shear Strength vs. Depth Below Ground Level (m)

Project ID:	**A46**	Project Title:	**A46 Coventry Junctions Upgrade (Walsgrave)**	Location:	**Coventry**
Client:	**National Highways**	Geology :	**Baginton Sand and Gravel Formation**	Figure:	**A.56**



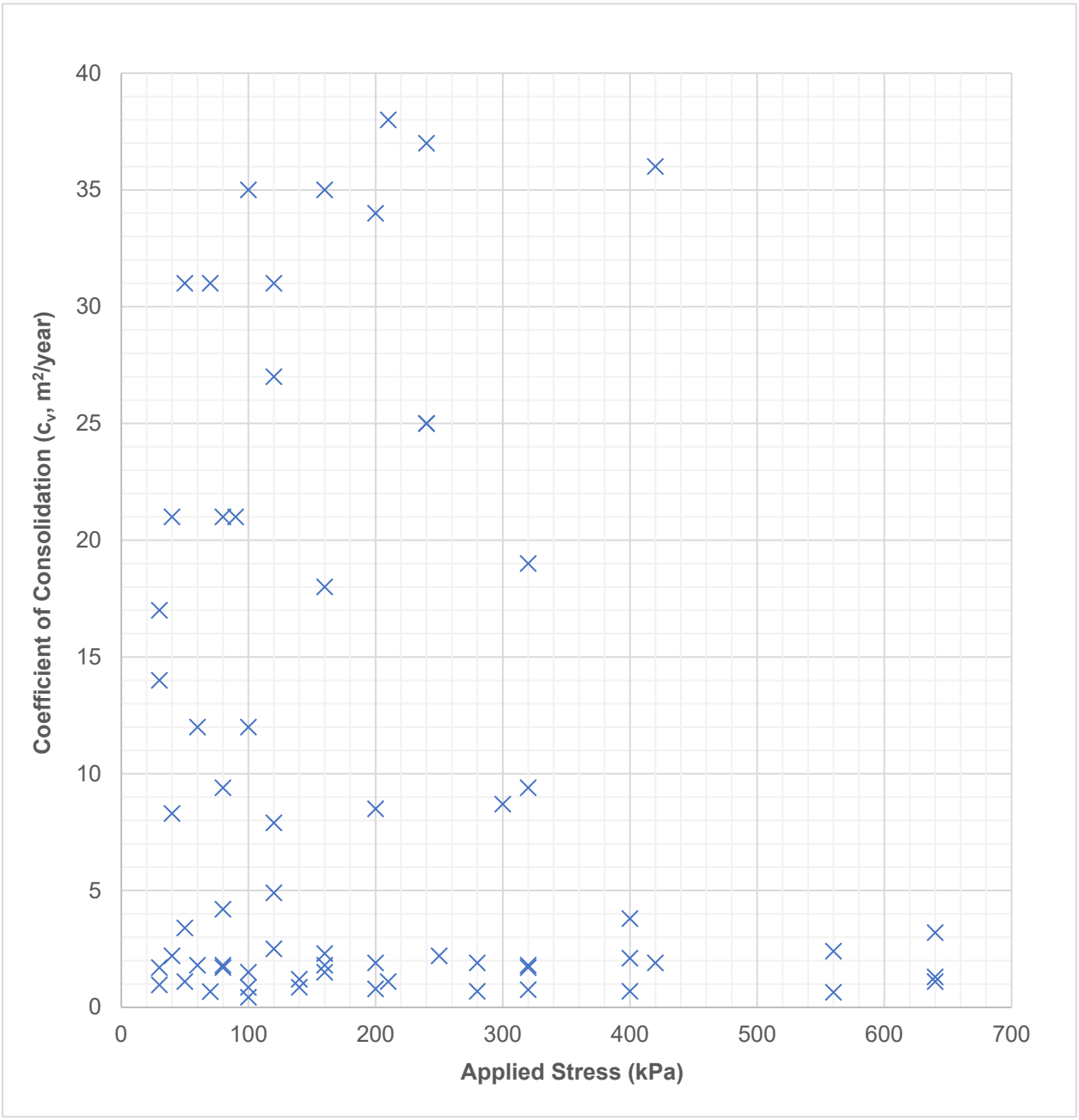
Undrained Shear Strength vs. Depth Below Ground Level (m)

Project ID:	**A46**	Project Title:	**A46 Coventry Junctions Upgrade (Walsgrave)**	Location:	**Coventry**
Client:	**National Highways**	Geology :	**Mercia Mudstone Group (Grade IV)**	Figure:	**A.57**



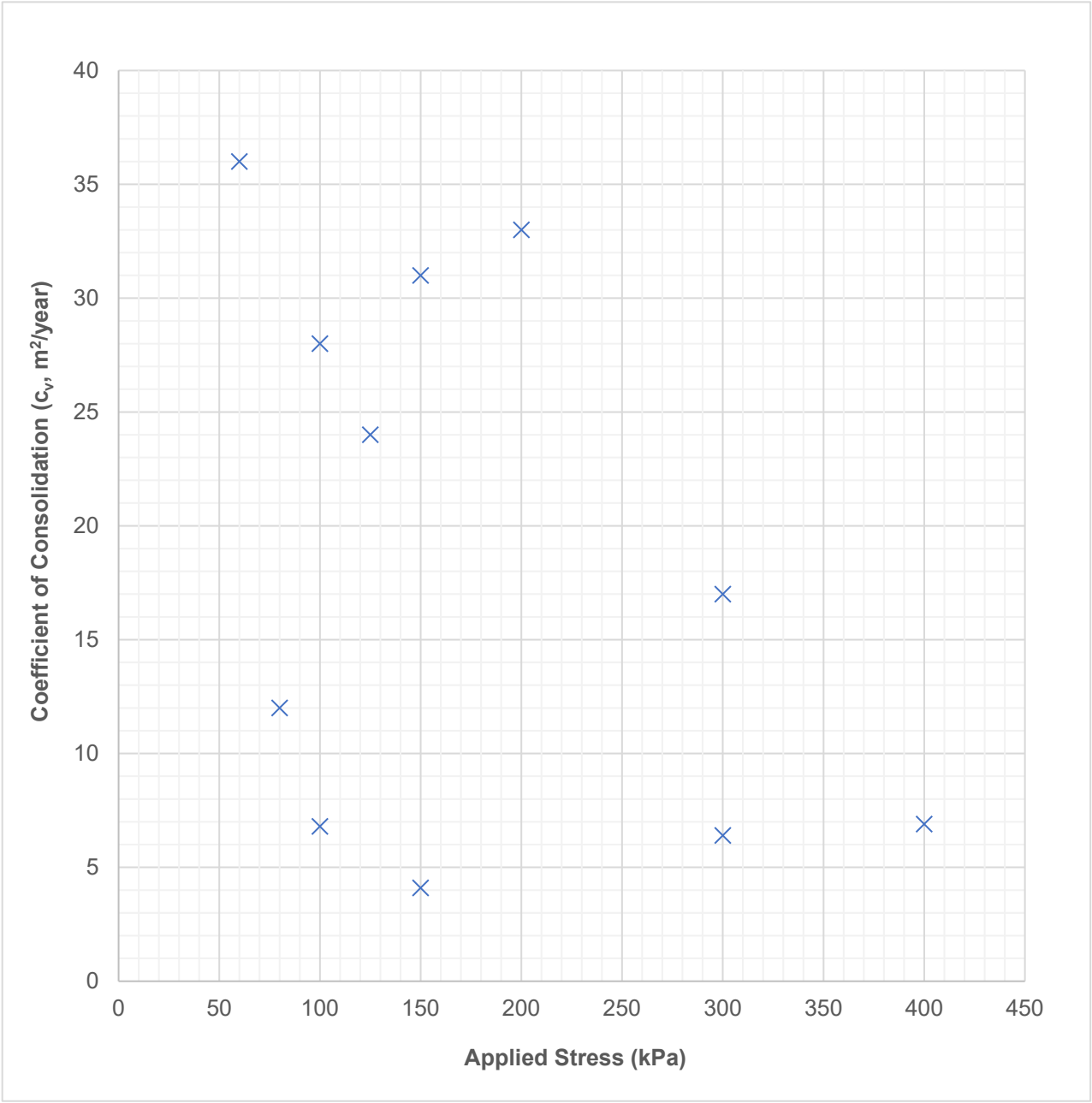
Coefficient of Consolidation vs. Depth Below Ground Level (m)

Project ID:	**A46**	Project Title:	**A46 Coventry Junctions Upgrade (Walsgrave)**	Location:	**Coventry**
Client:	**National Highways**	Geology :	**Wolston Glacigenic Formation**	Figure:	**A.58**



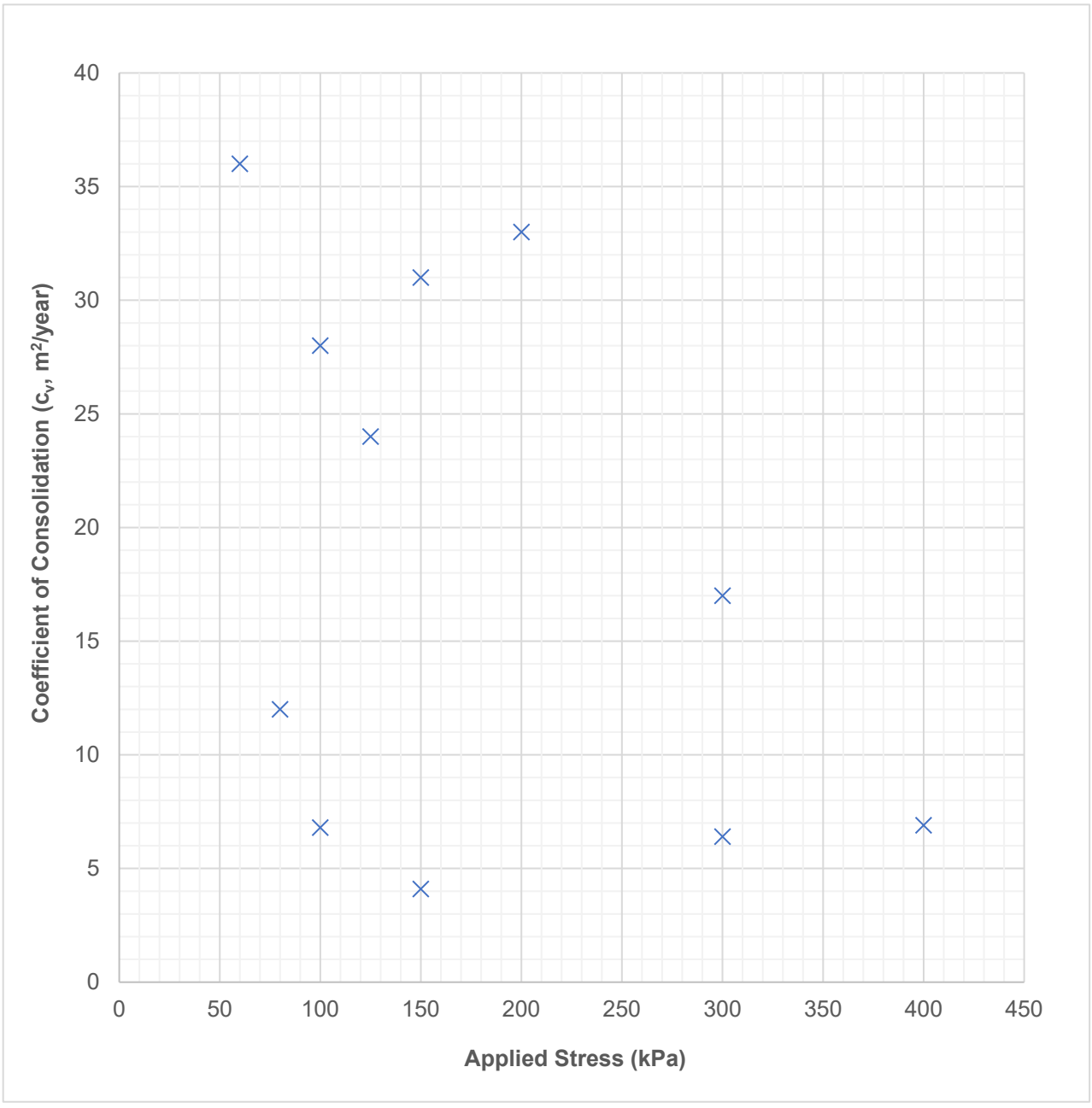
Coefficient of Consolidation vs. Depth Below Ground Level (m)

Project ID:	**A46**	Project Title:	**A46 Coventry Junctions Upgrade (Walsgrave)**	Location:	**Coventry**
Client:	**National Highways**	Geology :	**Baginton Sand and Gravel Formation**	Figure:	**A.59**



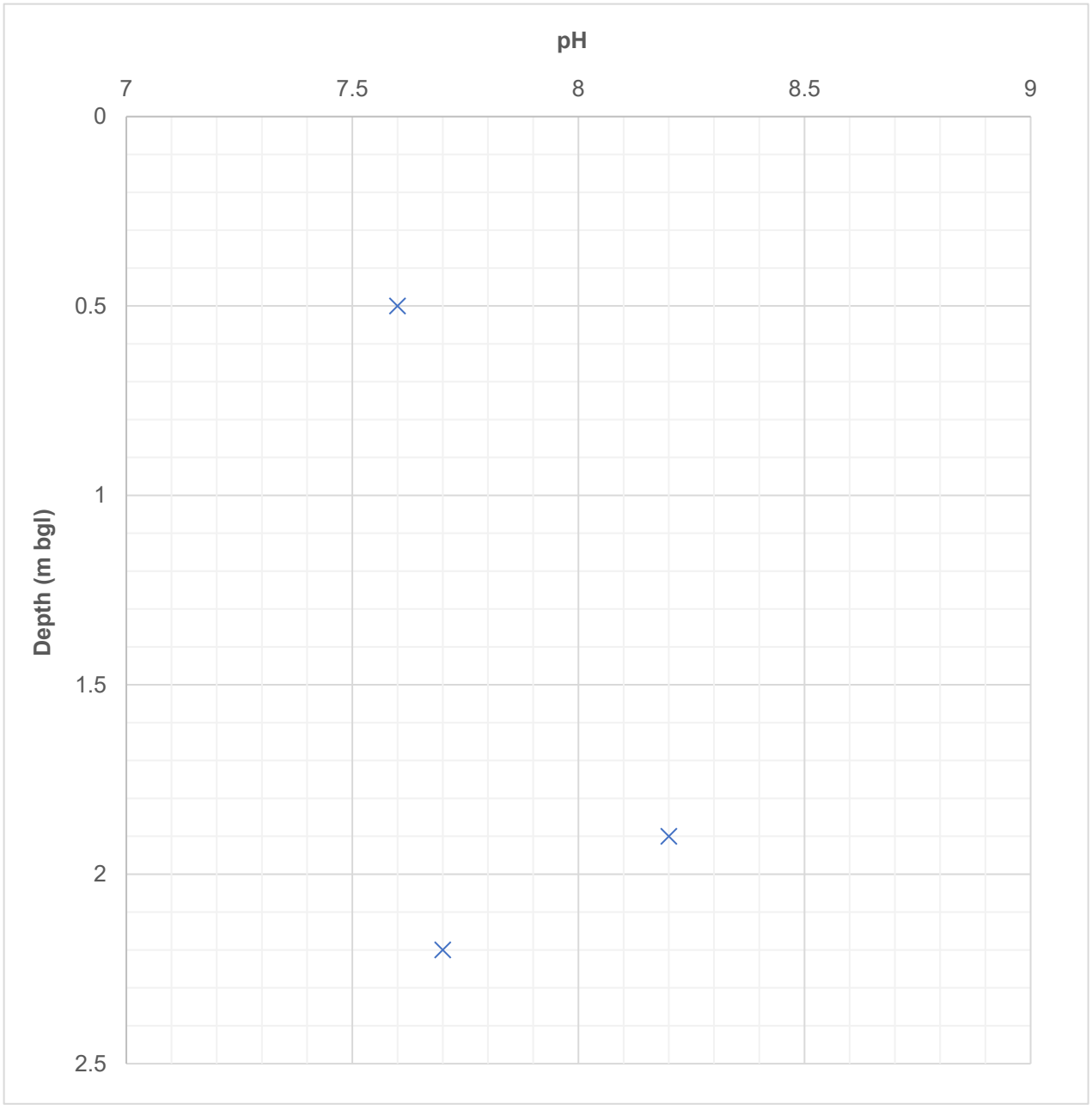
Coefficient of Consolidation vs. Depth Below Ground Level (m)

Project ID:	**A46**	Project Title:	**A46 Coventry Junctions Upgrade (Walsgrave)**	Location:	**Coventry**
Client:	**National Highways**	Geology :	**Mercia Mudstone Group (Grade IV)**	Figure:	**A.60**



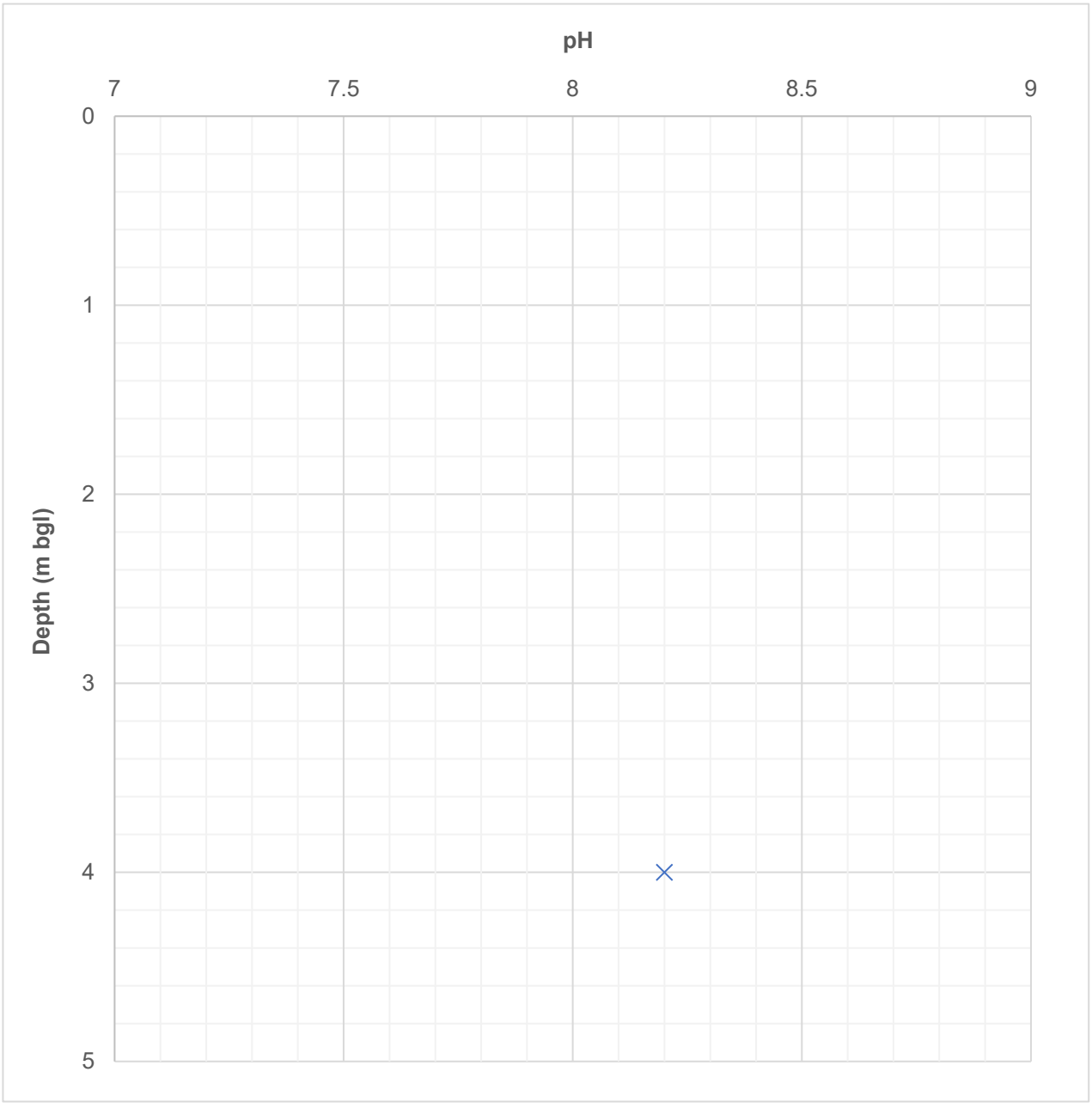
pH vs. Depth Below Ground Level (m)

Project ID:	**A46**	Project Title:	**A46 Coventry Junctions Upgrade (Walsgrave)**	Location:	**Coventry**
Client:	**National Highways**	Geology :	**Alluvium**	Figure:	**A.61**



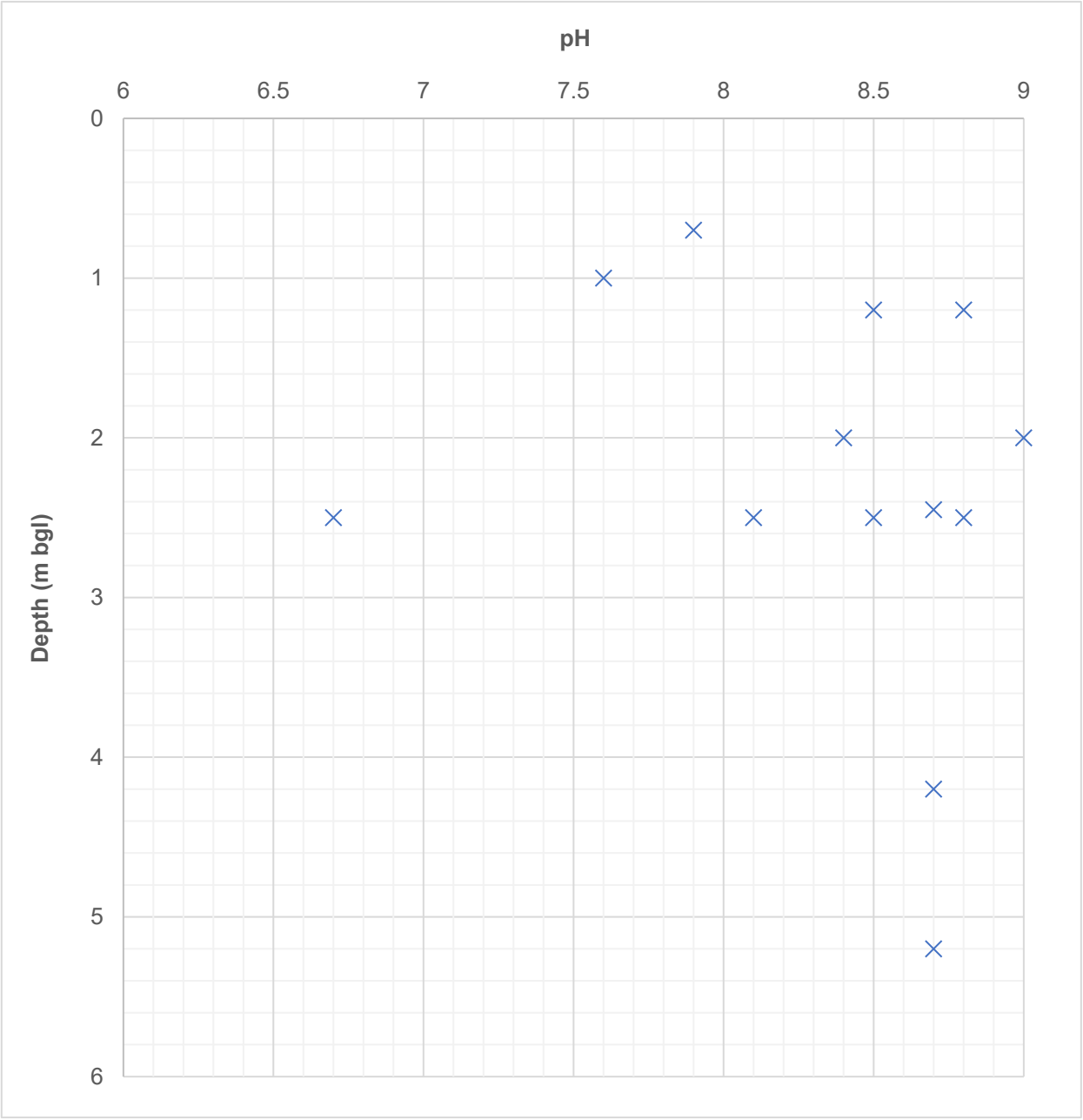
pH vs. Depth Below Ground Level (m)

Project ID:	A46	Project Title:	A46 Coventry Junctions Upgrade (Walsgrave)	Location:	Coventry
Client:	National Highways	Geology :	River Terrace Deposits	Figure:	A.62



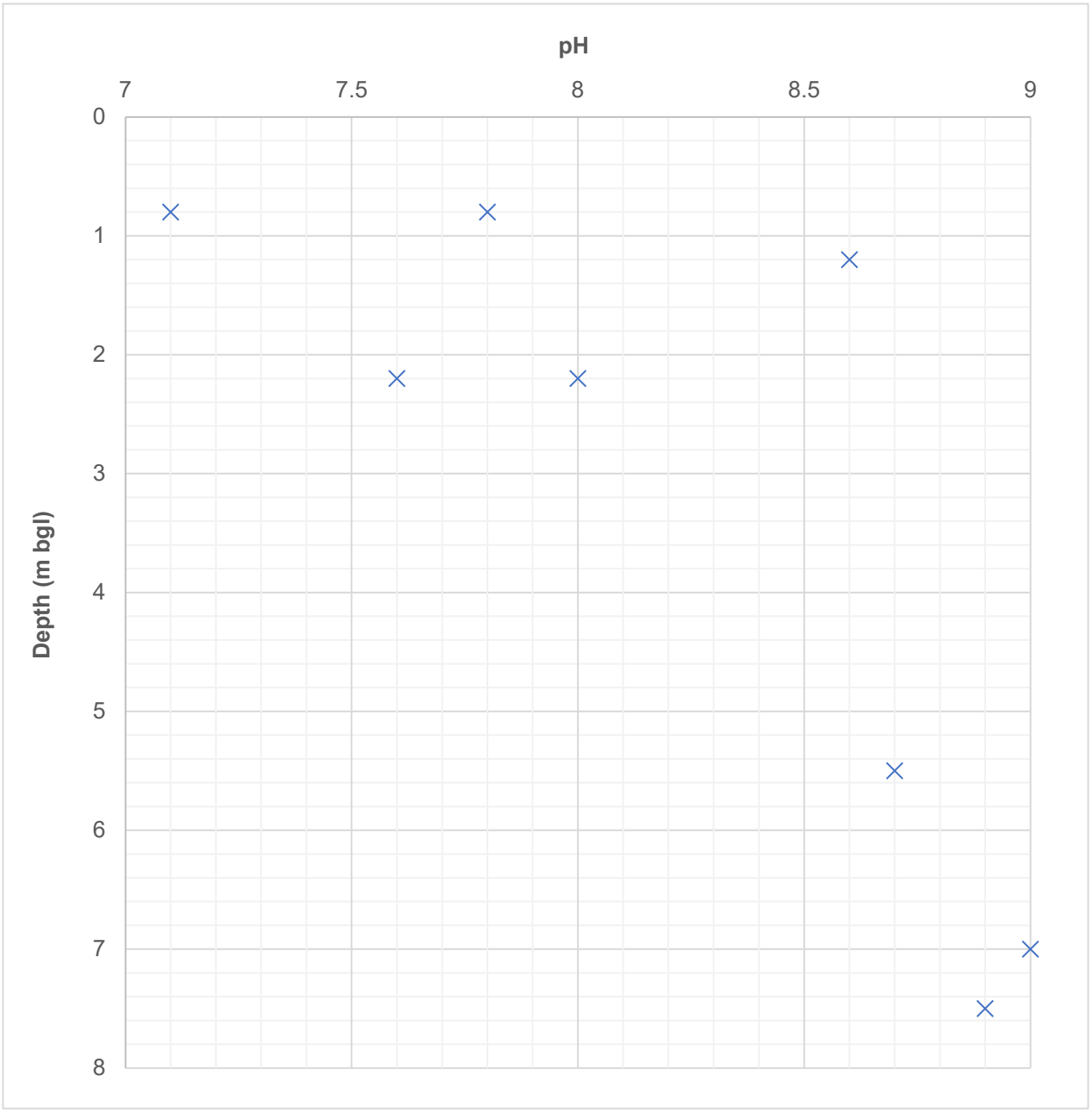
pH vs. Depth Below Ground Level (m)

Project ID:	**A46**	Project Title:	**A46 Coventry Junctions Upgrade (Walsgrave)**	Location:	**Coventry**
Client:	**National Highways**	Geology :	**Wolston Glacigenic Formation**	Figure:	**A.63**



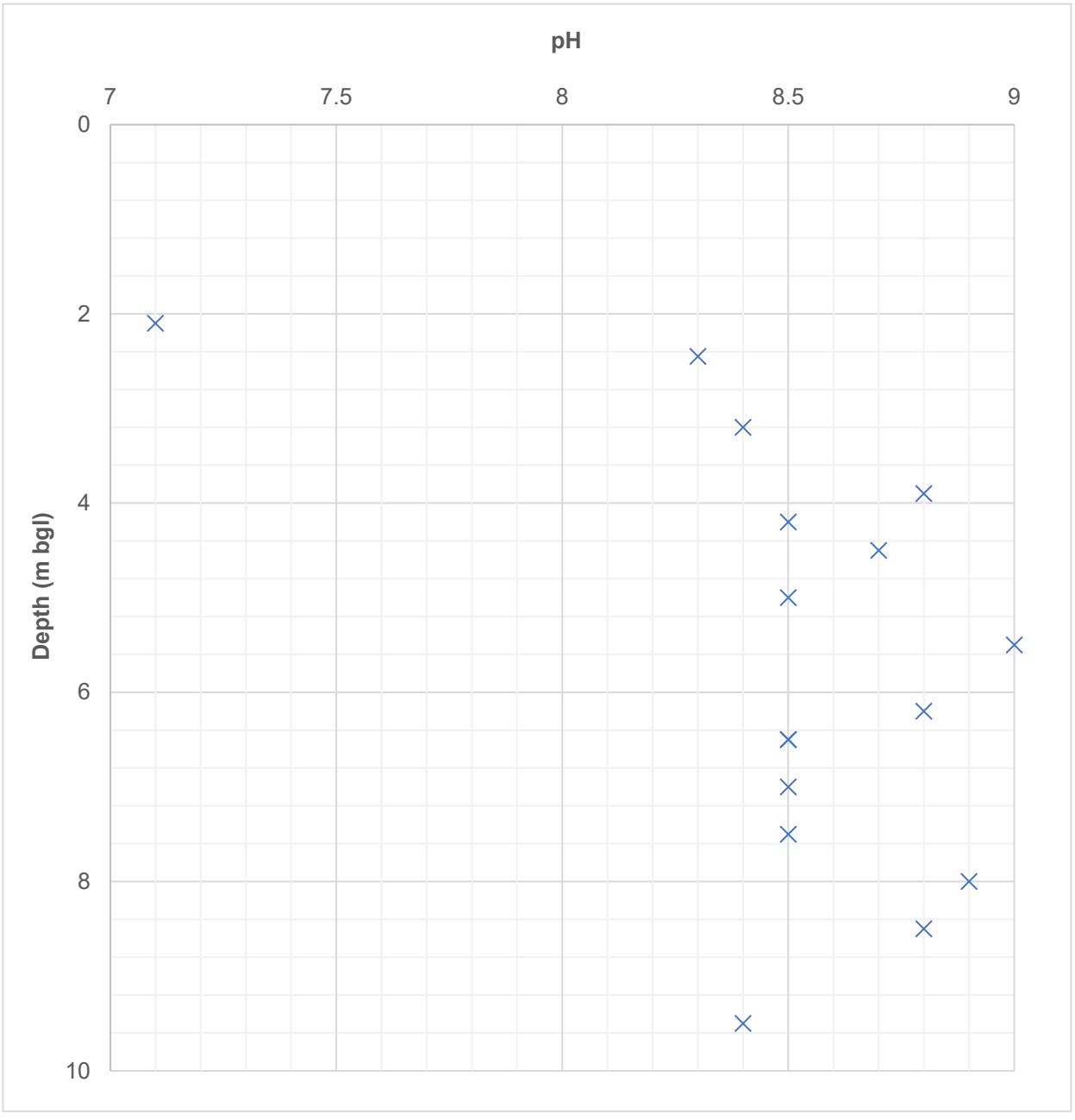
pH vs. Depth Below Ground Level (m)

Project ID:	**A46**	Project Title:	**A46 Coventry Junctions Upgrade (Walsgrave)**	Location:	**Coventry**
Client:	**National Highways**	Geology :	**Baginton Sand and Gravel Formation**	Figure:	**A.64**



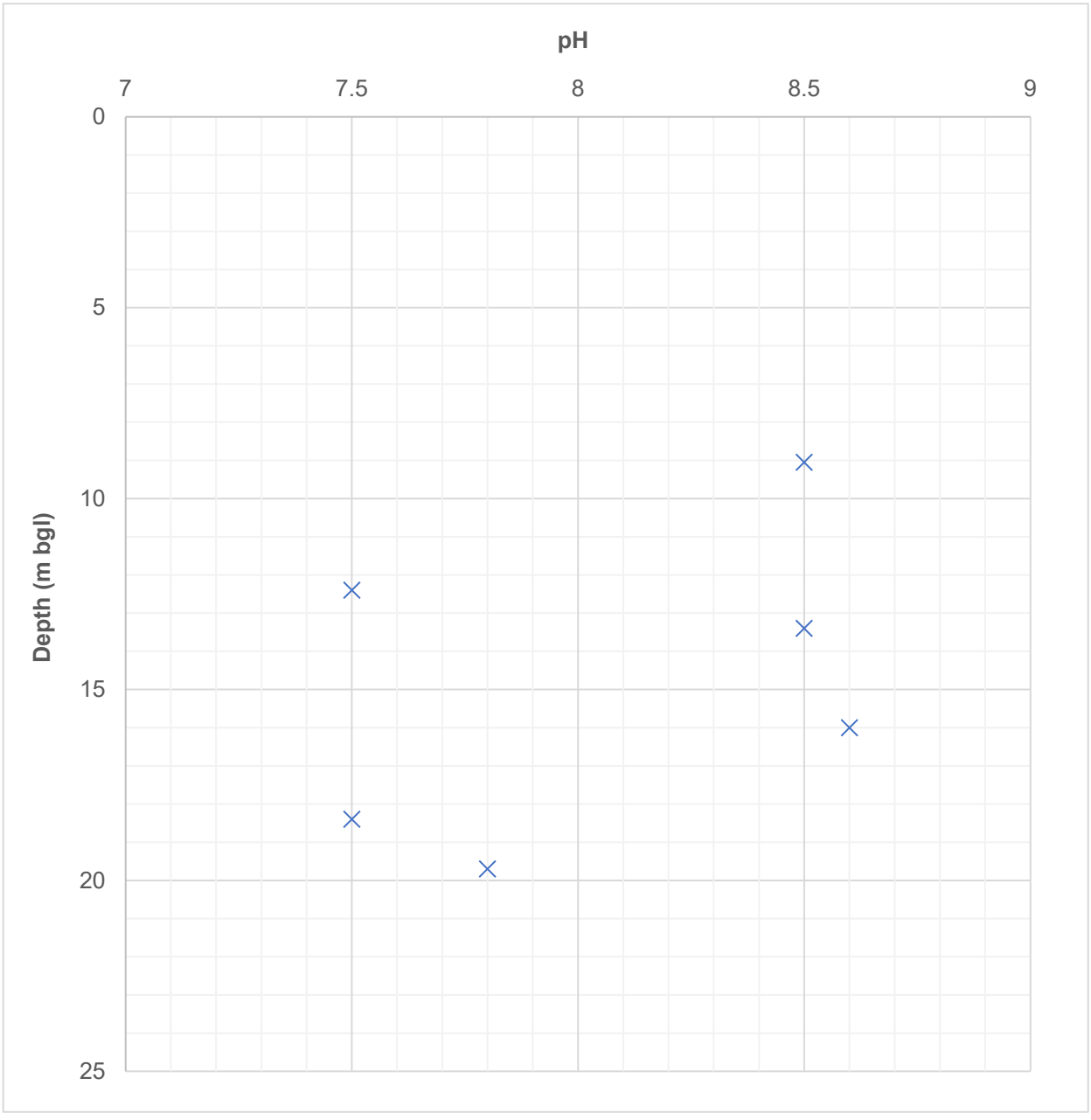
pH vs. Depth Below Ground Level (m)

Project ID:	**A46**	Project Title:	**A46 Coventry Junctions Upgrade (Walsgrave)**	Location:	**Coventry**
Client:	**National Highways**	Geology :	**Mercia Mudstone Group (Grade IV)**	Figure:	**A.65**



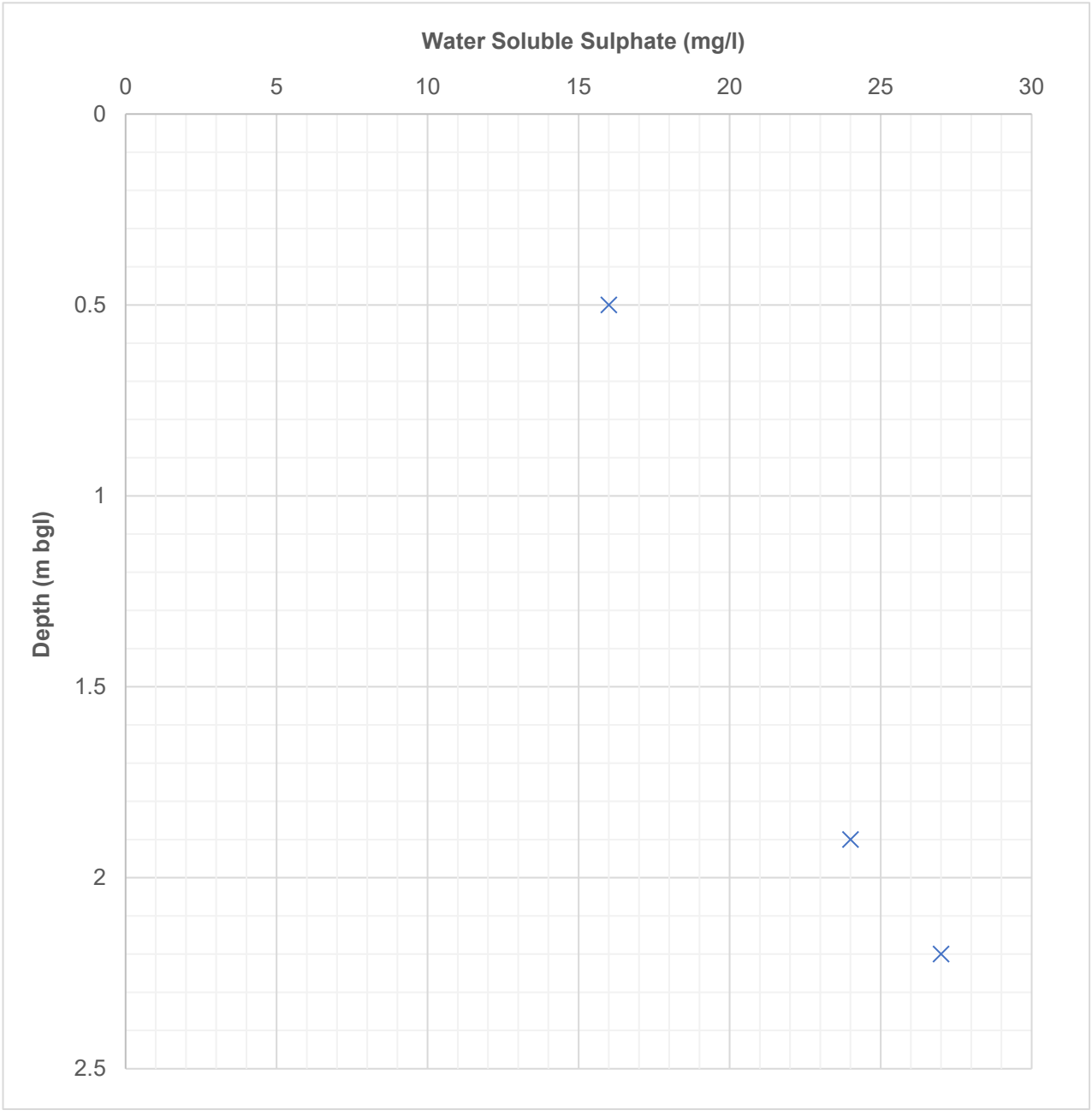
pH vs. Depth Below Ground Level (m)

Project ID:	**A46**	Project Title:	**A46 Coventry Junctions Upgrade (Walsgrave)**	Location:	**Coventry**
Client:	**National Highways**	Geology :	**Mercia Mudstone Group (Grade I to Grade III)**	Figure:	**A.66**



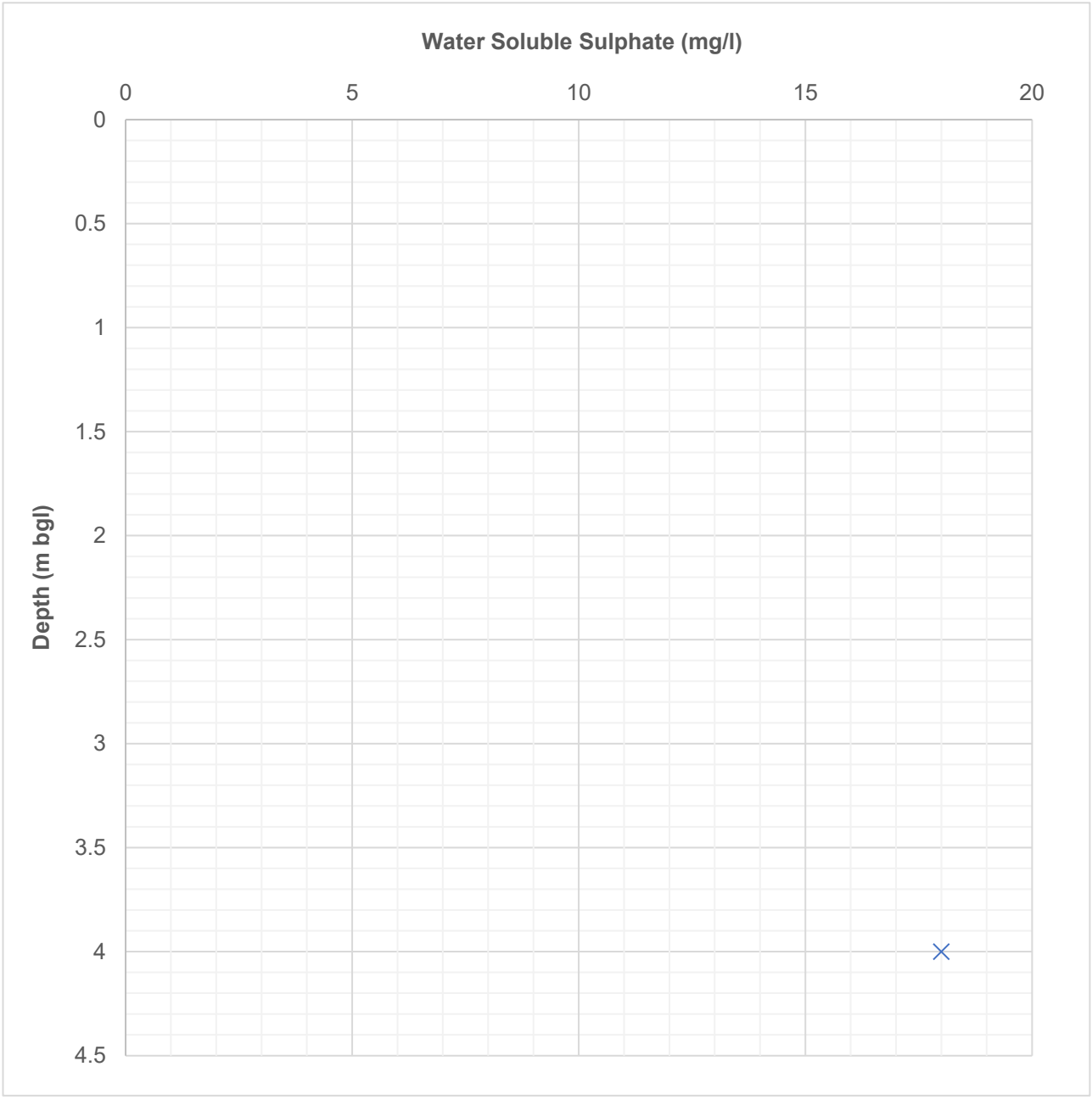
Water Soluble Sulphate vs. Depth Below Ground Level (m)

Project ID:	**A46**	Project Title:	**A46 Coventry Junctions Upgrade (Walsgrave)**	Location:	**Coventry**
Client:	**National Highways**	Geology :	**Alluvium**	Figure:	**A.67**



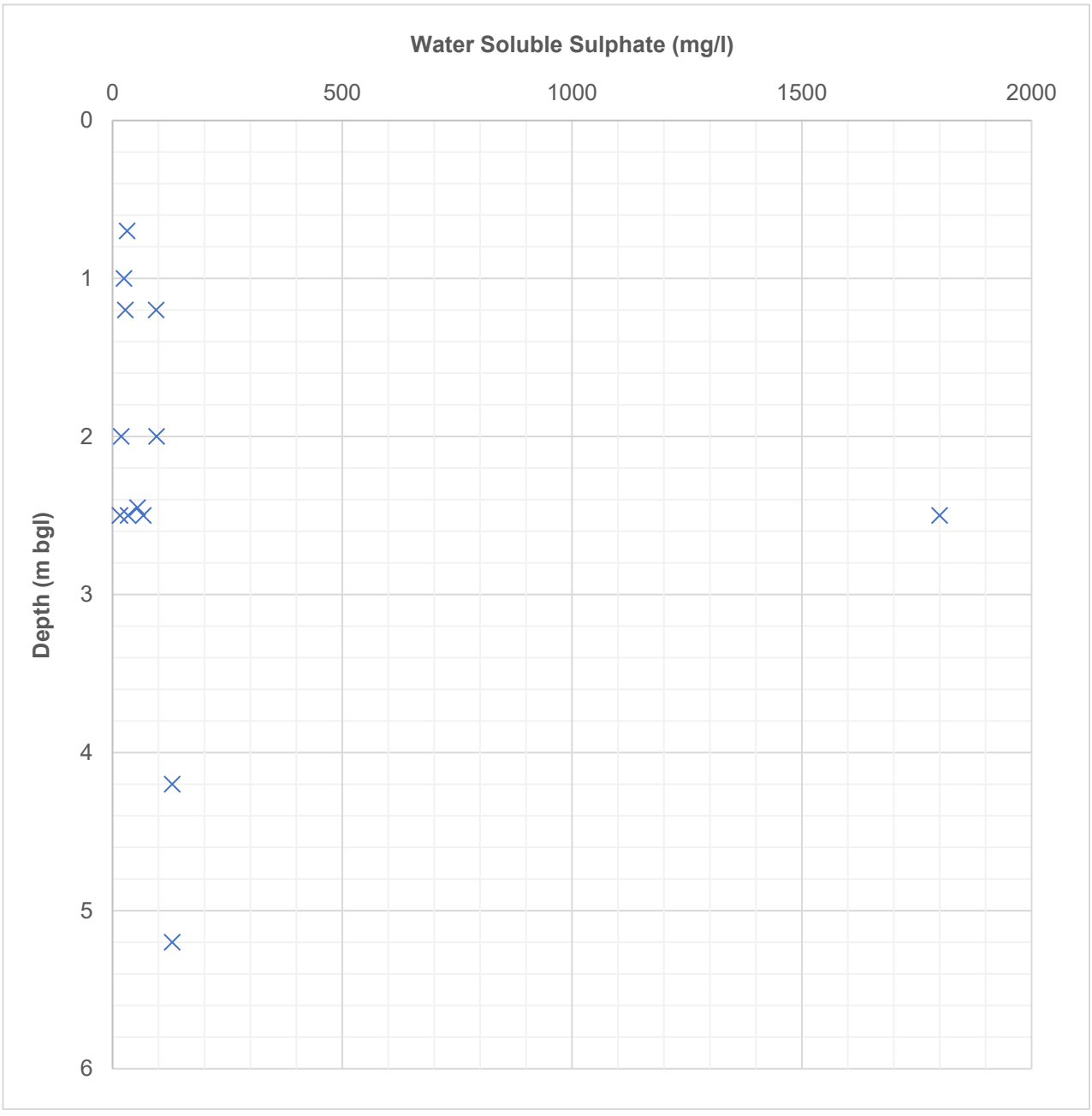
Water Soluble Sulphate vs. Depth Below Ground Level (m)

Project ID:	**A46**	Project Title:	**A46 Coventry Junctions Upgrade (Walsgrave)**	Location:	**Coventry**
Client:	**National Highways**	Geology :	**River Terrace Deposits**	Figure:	**A.68**



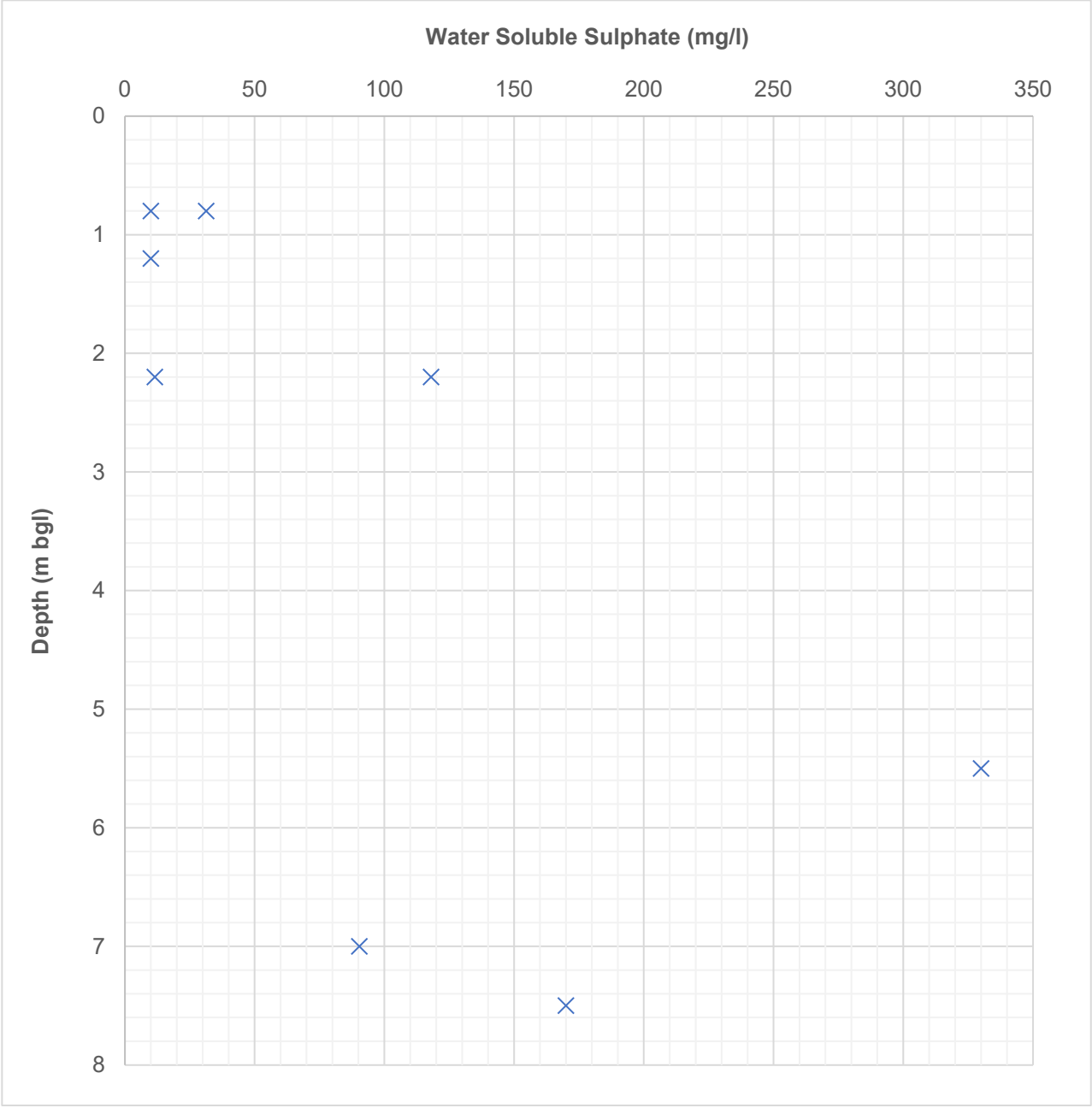
Water Soluble Sulphate vs. Depth Below Ground Level (m)

Project ID:	**A46**	Project Title:	**A46 Coventry Junctions Upgrade (Walsgrave)**	Location:	**Coventry**
Client:	**National Highways**	Geology :	**Wolston Glacigenic Formation**	Figure:	**A.69**



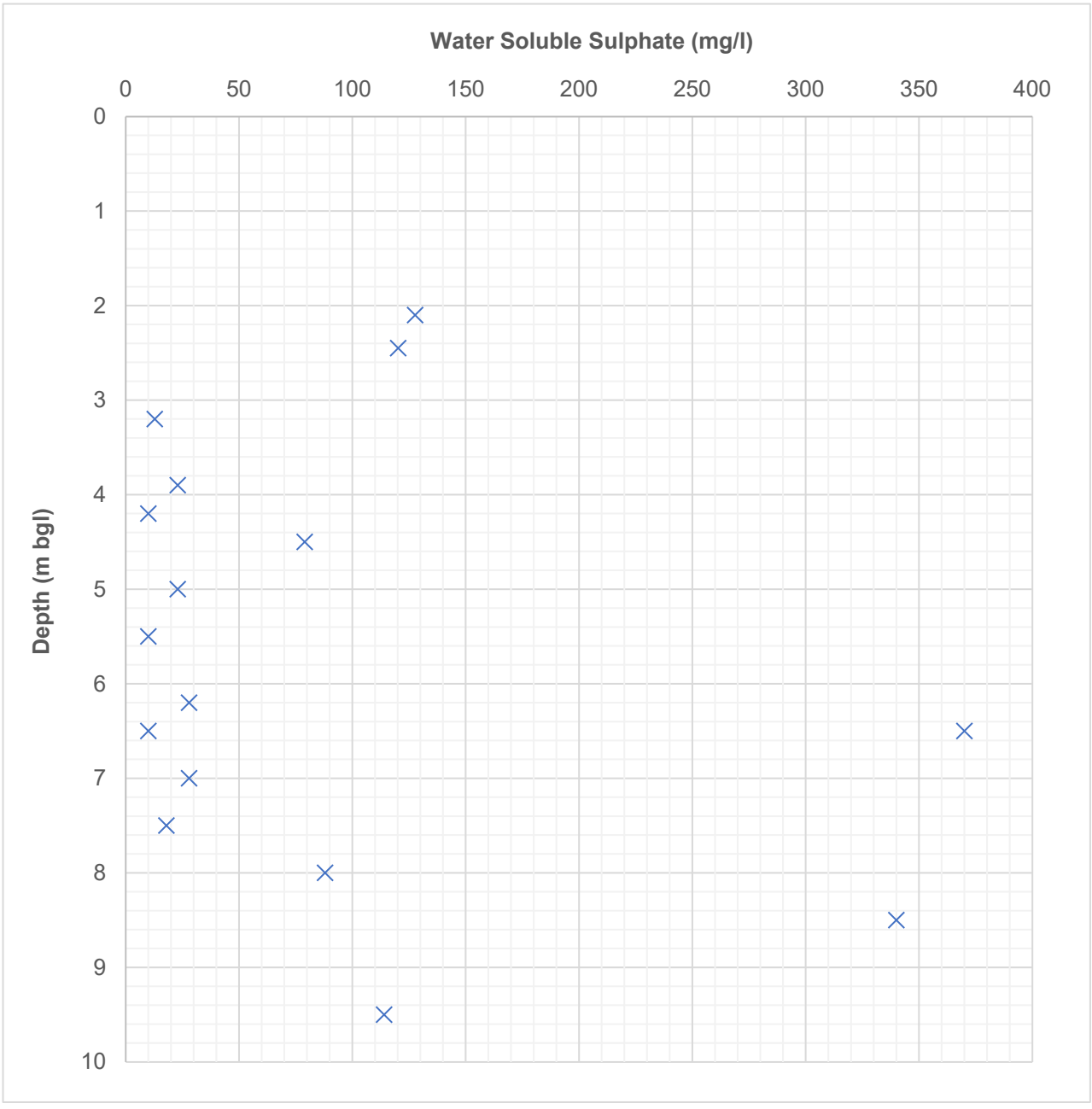
Water Soluble Sulphate vs. Depth Below Ground Level (m)

Project ID:	**A46**	Project Title:	**A46 Coventry Junctions Upgrade (Walsgrave)**	Location:	**Coventry**
Client:	**National Highways**	Geology :	**Baginton Sand and Gravel Formation**	Figure:	**A.70**



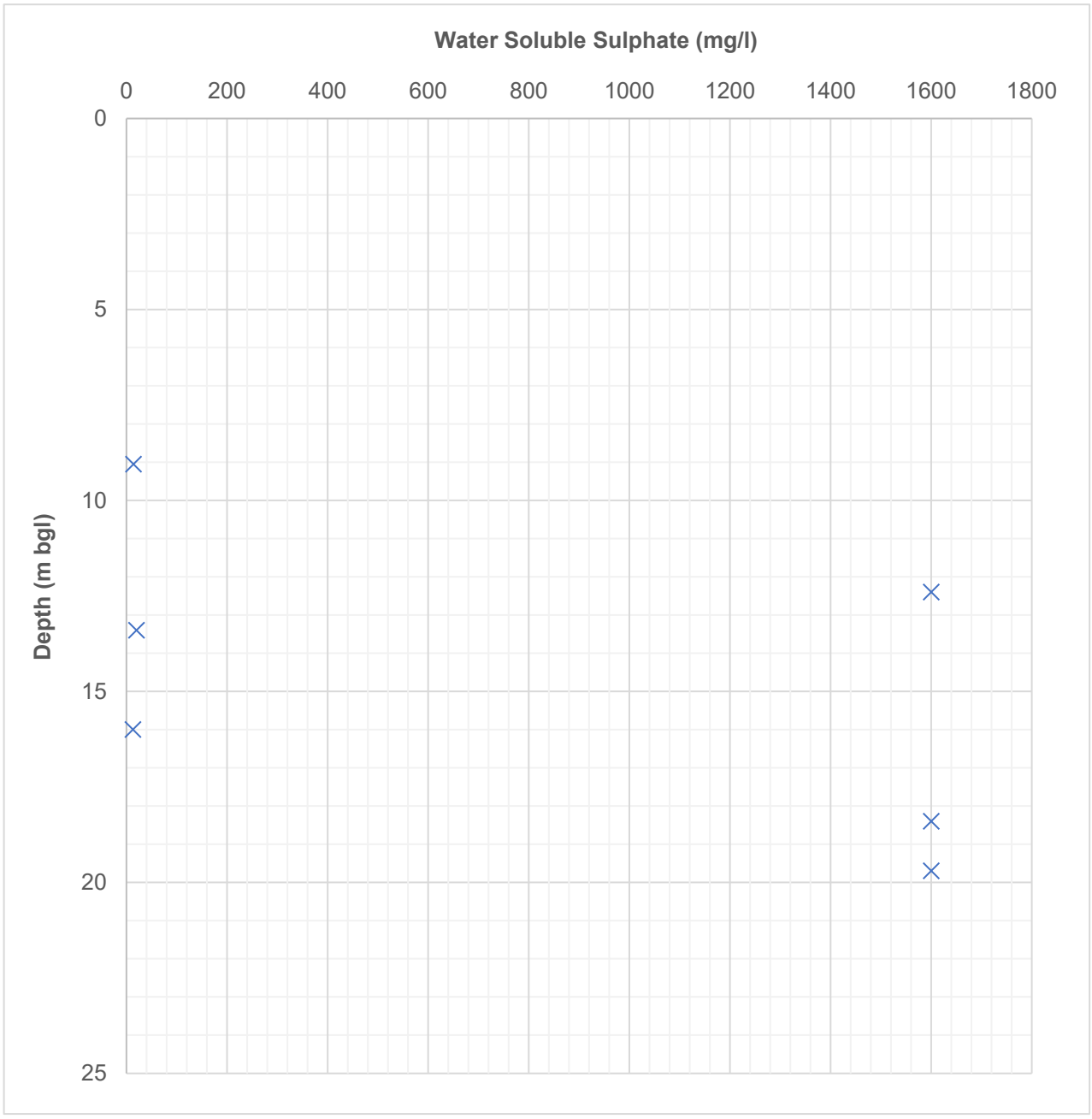
Water Soluble Sulphate vs. Depth Below Ground Level (m)

Project ID:	**A46**	Project Title:	**A46 Coventry Junctions Upgrade (Walsgrave)**	Location:	**Coventry**
Client:	**National Highways**	Geology :	**Mercia Mudstone Formation (Grade IV)**	Figure:	**A.71**



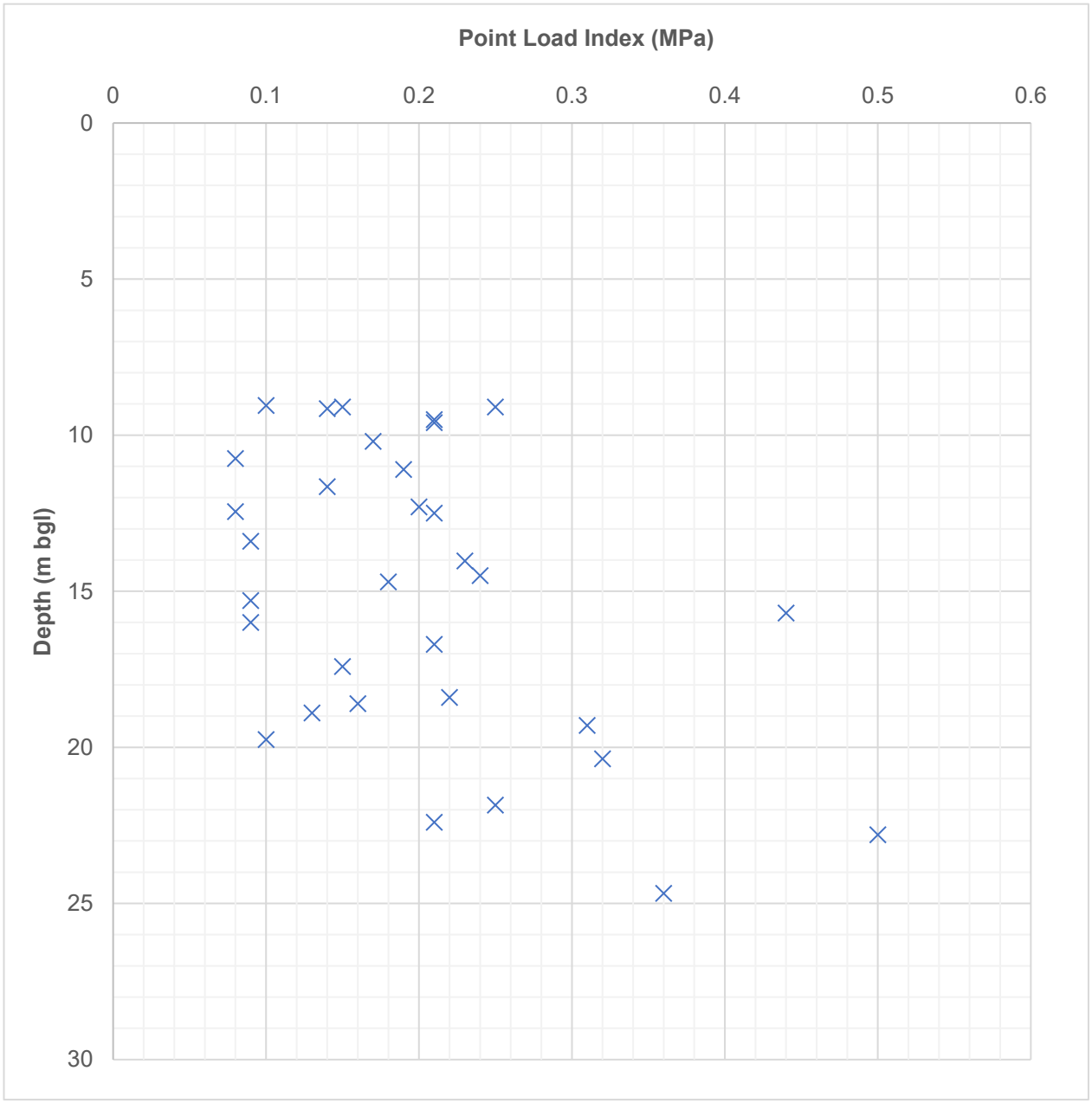
Water Soluble Sulphate vs. Depth Below Ground Level (m)

Project ID:	**A46**	Project Title:	**A46 Coventry Junctions Upgrade (Walsgrave)**	Location:	**Coventry**
Client:	**National Highways**	Geology :	**Mercia Mudstone Formation (Grade I to Grade III)**	Figure:	**A.72**



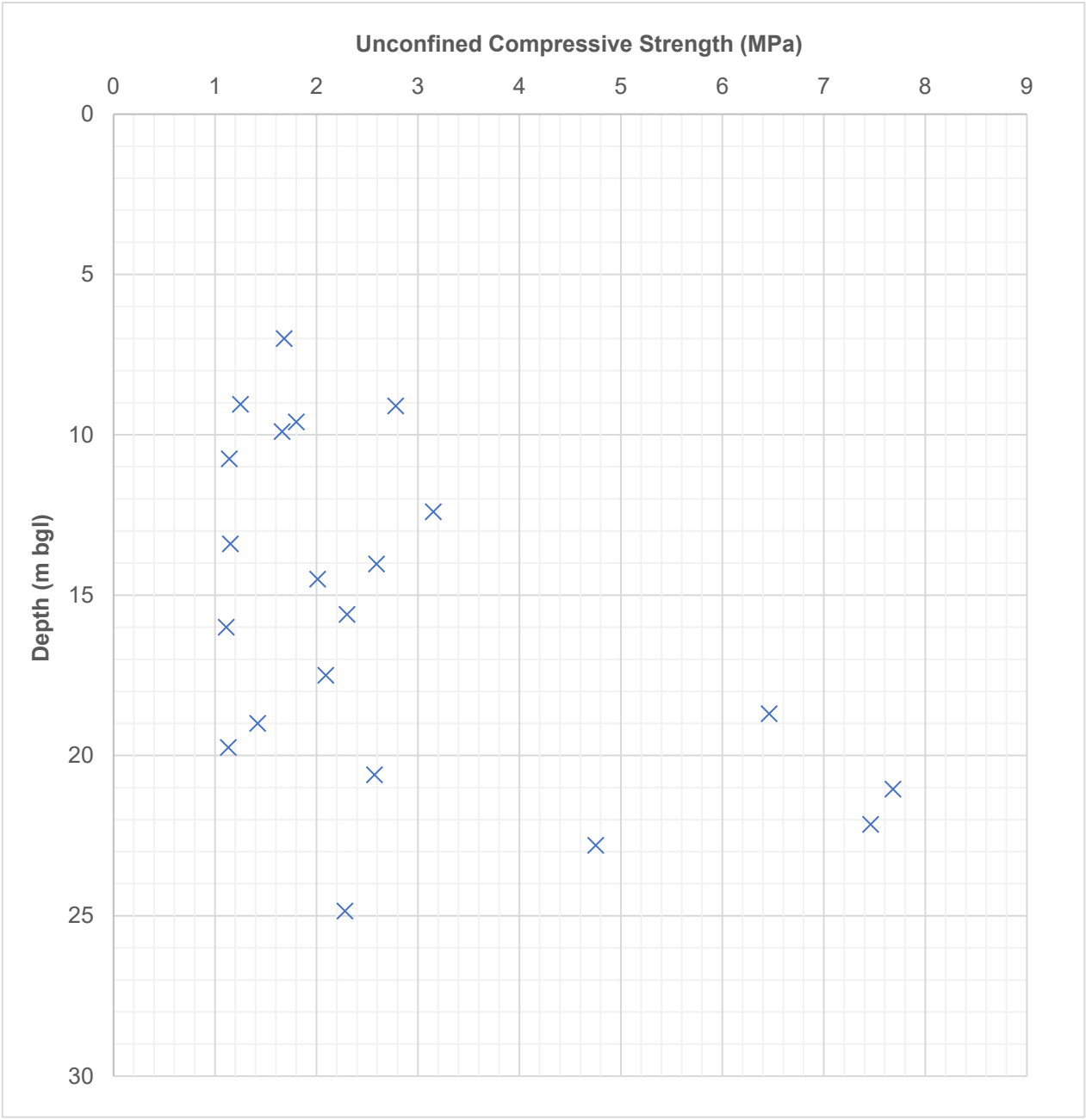
Point Load Index vs. Depth Below Ground Level (m)

Project ID:	**A46**	Project Title:	**A46 Coventry Junctions Upgrade (Walsgrave)**	Location:	**Coventry**
Client:	**National Highways**	Geology :	**Mercia Mudstone Group (Grade I to Grade III)**	Figure:	**A.73**



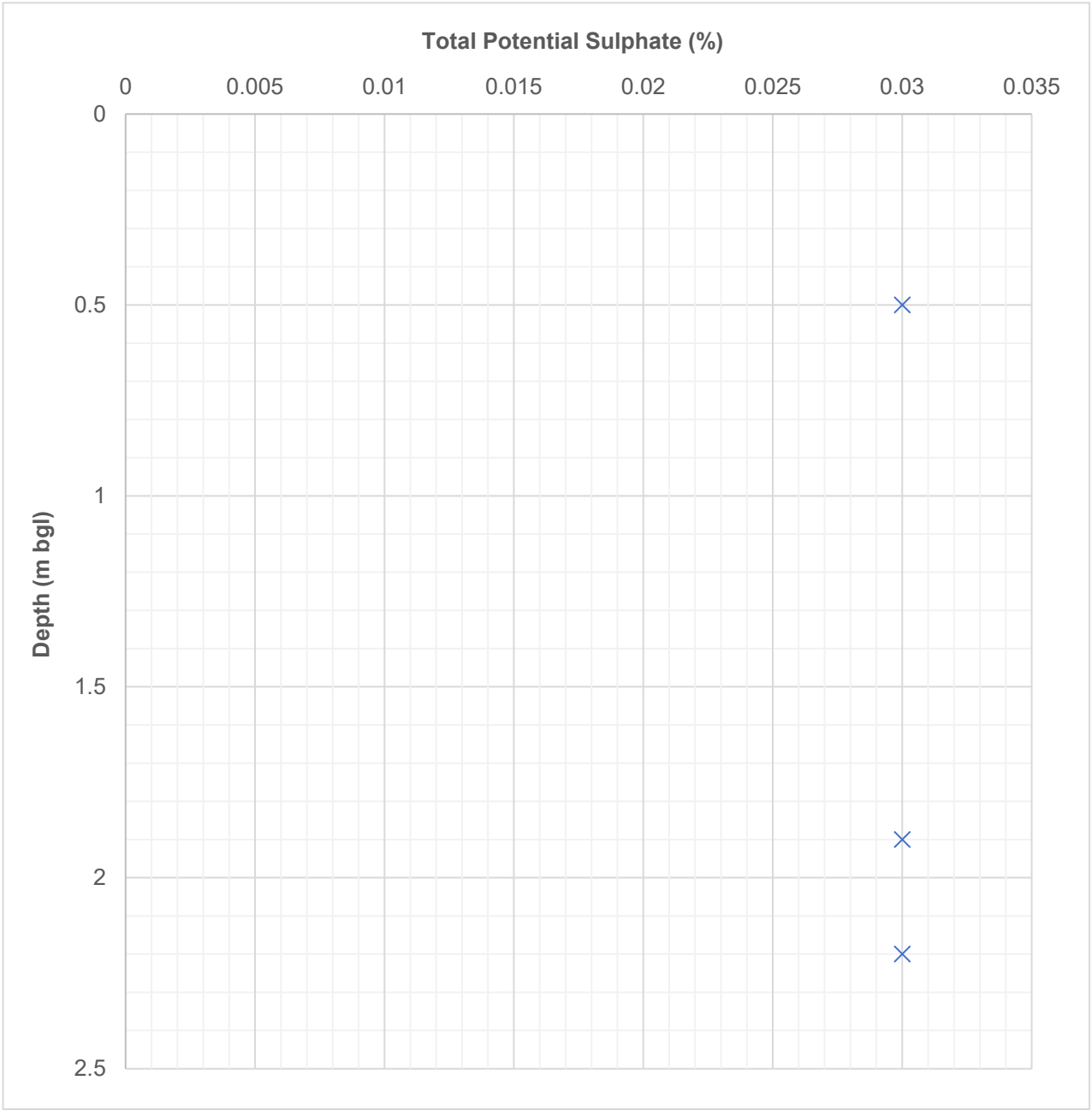
Unconfined Compressive Strength vs. Depth Below Ground Level (m)

Project ID:	**A46**	Project Title:	**A46 Coventry Junctions Upgrade (Walsgrave)**	Location:	**Coventry**
Client:	**National Highways**	Geology :	**Mercia Mudstone Group (Grade I to Grade III)**	Figure:	**A.74**



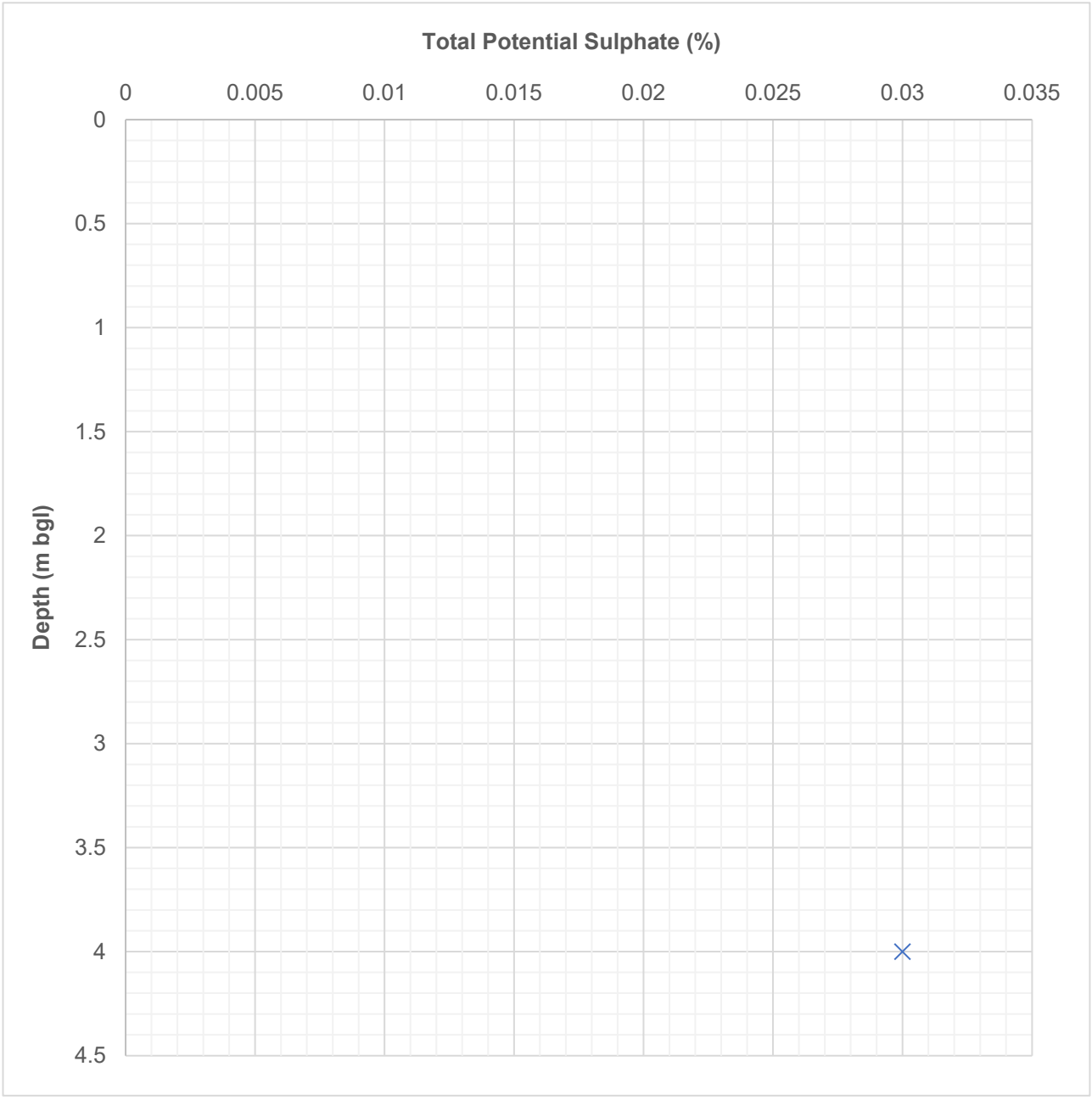
Total Potential Sulphate vs. Depth Below Ground Level (m)

Project ID:	**A46**	Project Title:	**A46 Coventry Junctions Upgrade (Walsgrave)**	Location:	**Coventry**
Client:	**National Highways**	Geology :	**Alluvium**	Figure:	**A.75**



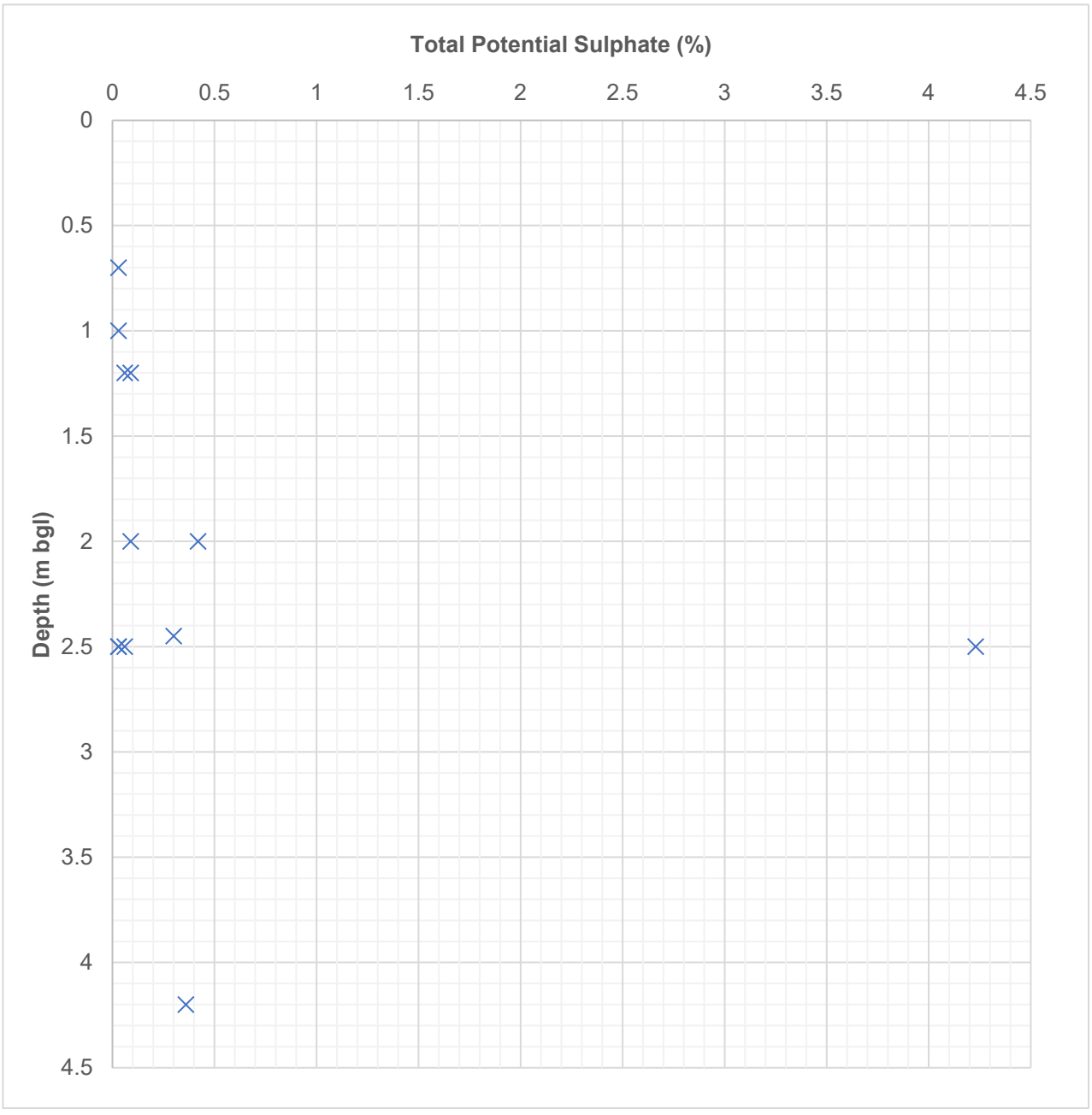
Total Potential Sulphate vs. Depth Below Ground Level (m)

Project ID:	**A46**	Project Title:	**A46 Coventry Junctions Upgrade (Walsgrave)**	Location:	**Coventry**
Client:	**National Highways**	Geology :	**River Terrace Deposits**	Figure:	**A.76**



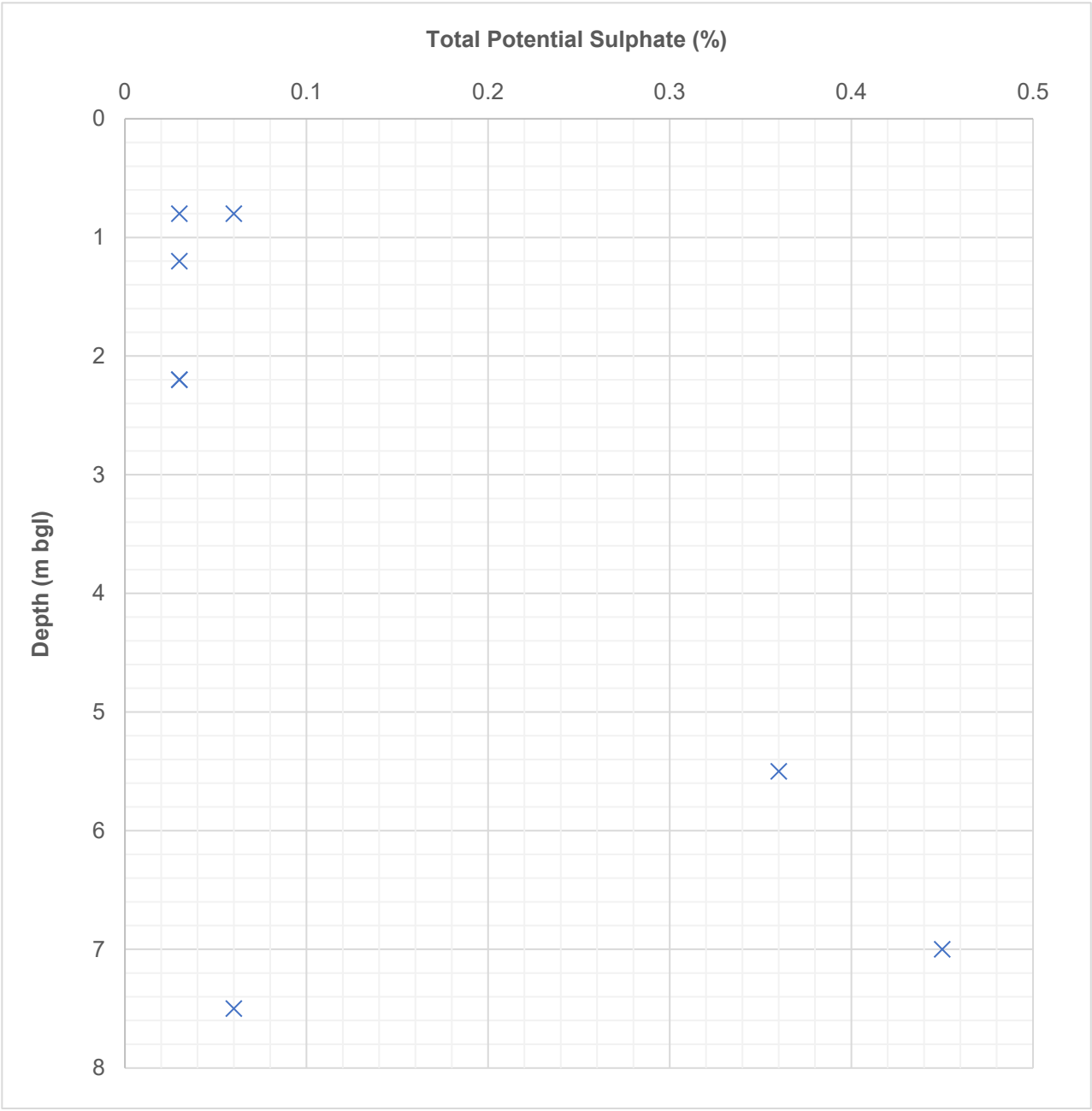
Total Potential Sulphate vs. Depth Below Ground Level (m)

Project ID:	**A46**	Project Title:	**A46 Coventry Junctions Upgrade (Walsgrave)**	Location:	**Coventry**
Client:	**National Highways**	Geology :	**Wolston Glacigenic Formation**	Figure:	**A.77**



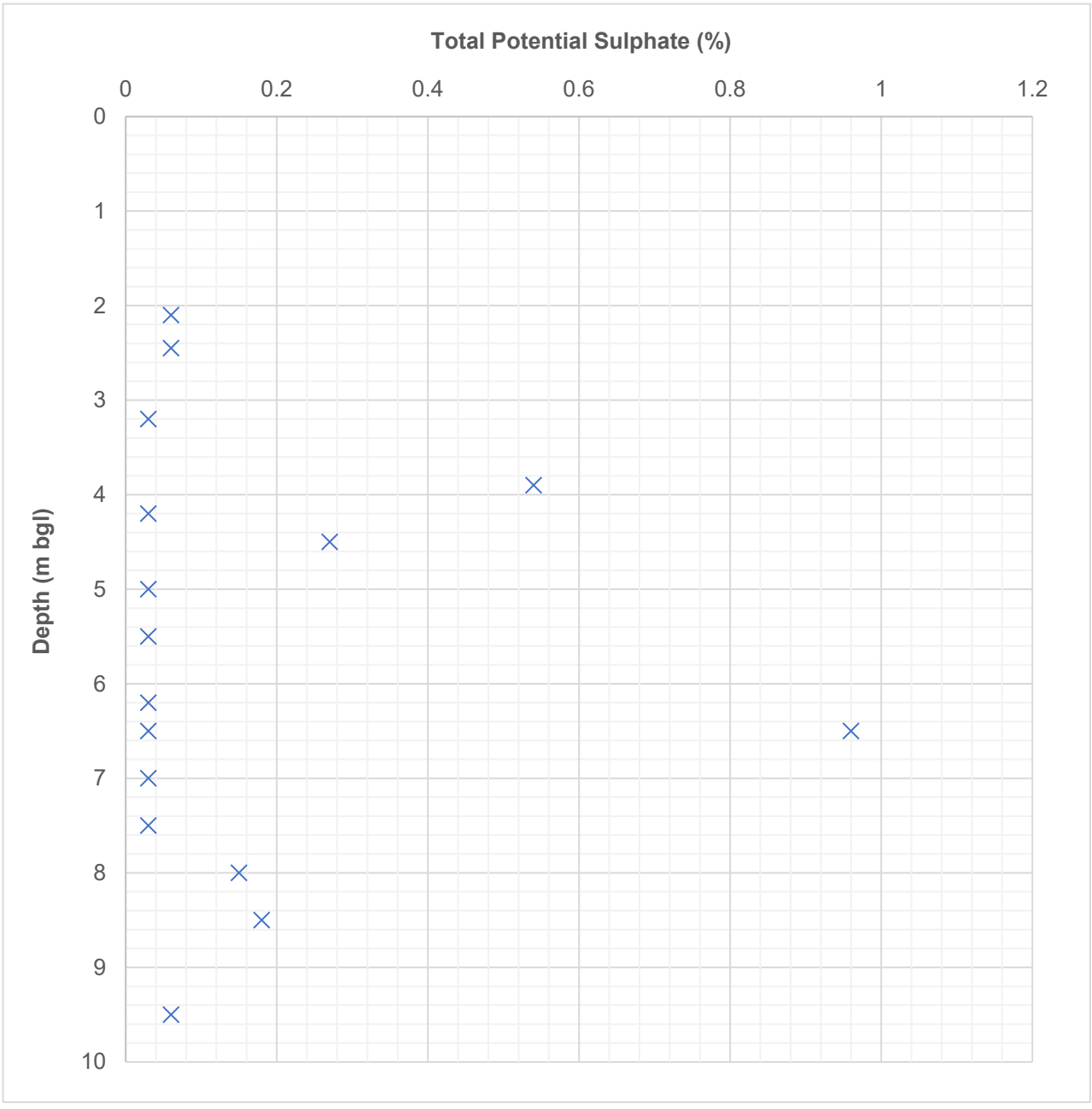
Total Potential Sulphate vs. Depth Below Ground Level (m)

Project ID:	**A46**	Project Title:	**A46 Coventry Junctions Upgrade (Walsgrave)**	Location:	**Coventry**
Client:	**National Highways**	Geology :	**Baginton Sand and Gravel Formation**	Figure:	**A.78**



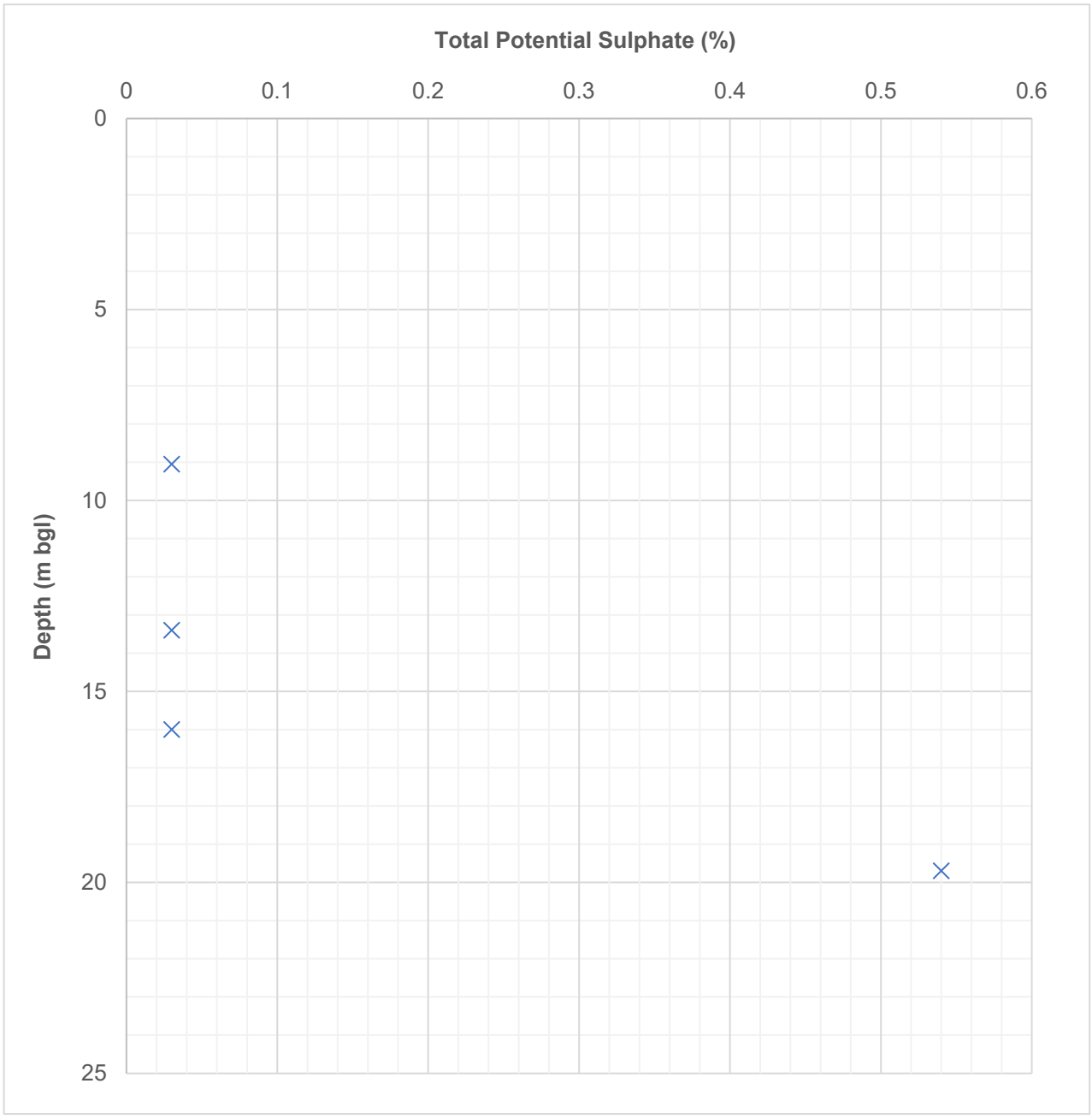
Total Potential Sulphate vs. Depth Below Ground Level (m)

Project ID:	**A46**	Project Title:	**A46 Coventry Junctions Upgrade (Walsgrave)**	Location:	**Coventry**
Client:	**National Highways**	Geology :	**Mercia Mudstone Formation (Grade IV)**	Figure:	**A.79**



Total Potential Sulphate vs. Depth Below Ground Level (m)

Project ID:	**A46**	Project Title:	**A46 Coventry Junctions Upgrade (Walsgrave)**	Location:	**Coventry**
Client:	**National Highways**	Geology :	**Mercia Mudstone Formation (Grade I to Grade III)**	Figure:	**A.80**



Appendix B. Geo-environmental Documents

Figure Number	Figure Title
B.1	Generic Human Health Screening Hierarchy
B.2	Generic Quantitative Risk Assessment – Soil Screening
B.3	Generic Quantitative Risk Assessment – Gas Screening
B.4	Generic Quantitative Risk Assessment – Leachate Screening
B.5	Risk Assessment Methodology
B.6	Waste Classification Report

1. Overview of generic soil screening guideline values

1.1. Introduction

1.1.1. In order to put the chemical analysis results for the site into context, the data has initially been assessed in relation to several sets of legislative guidelines and other criteria, commonly used for the assessment of land contamination. This is undertaken in consideration of the conceptual model for the site which establishes the pathways and receptors which are applicable.

1.1.2. This approach constitutes a Generic Quantitative Risk Assessment (GQRA). A GQRA may typically involve a site investigation to gather information on the type, levels and extent of contamination present, with comparison against generic assessment criteria (GAC) for various site use scenarios and environmental receptors. Assessment criteria may also take account of specific exposure pathways.

1.1.3. The background and hierarchy to the assessment criteria which have been used to undertake a GQRA in this report are described below. Assessment criteria are now available covering different levels of risk for both planning and Part 2A assessments.

1.2. Land Quality Management (LQM) GAC 2009

1.2.1. In July 2009 Land Quality Management (LQM) published GAC for approximately 80 chemicals or groups of chemicals. These were generated using the updated contaminated land exposure assessment (CLEA) framework and the CLEA software (v1.04). GAC were generated for the standard CLEA land uses using a soil organic matter (SOM) content of 1%, 2.5% and 6%. Transparent explanation of the GAC generation process including all chemical input parameters is provided within the LQM Report.

1.3. The EIC/AGS/CL:AIRE GAC 2010

1.3.1. In January 2010 Contaminated Land: Applications in Real Environments (CL:AIRE) in association with The Environmental Industries Commission (EIC) and The Association of Geotechnical and Geoenvironmental Specialists (AGS) published GAC for 35 contaminants.

1.3.2. GACs for the 35 contaminants were generated using CLEA v1.06 for the three standard CLEA land uses (residential with consumption of homegrown produce, commercial and allotments) as well as residential

without consumption of homegrown produce. The GACs have been generated using a SOM content of 1%, 2.5% and 6%.

1.3.3. The methodology and supporting information for the EIC/AGS GACs is fully documented in the report published by CL:AIRE.

1.4. Category 4 Screening Levels 2014

1.4.1. In March 2014 CL:AIRE published Category 4 Screening Levels (C4SLs) for six contaminants in a project backed by Department of Environment Food, and Rural Affairs (DEFRA). These C4SLs describe low levels of harm which is in contrast to the minimal risk levels described by SGVs.

1.4.2. The underlying assumptions describing the exposure scenarios have been updated from those detailed in the SGV reports such as those describing inhalation rates in line with new research. In addition, the toxicological data for the six contaminants was reviewed and updated where deemed appropriate.

1.4.3. C4SL have been primarily derived to provide screening criteria for Part 2A assessments. Soils with concentrations below the C4SL cannot be determined under Part 2A as contaminated land.

1.4.4. Currently C4SLs have been derived for: arsenic, benzene, benzo(a)pyrene, cadmium, chromium and lead at a SOM of 6%. They are published for the following land use scenarios:

- Residential (with and without homegrown produce)
- Allotments
- Commercial.

1.4.5. They also include two new land use scenarios both based on public open space (POS).

1.4.6. Sweco have produced Sweco C4SL (SC4SL) for the six contaminants at SOMs of 1% and 2.5%.

1.5. LQM Suitable for Use Levels (S4UL) 2015

1.5.1. In January 2015 LQM published Suitable for Use Levels (S4ULs) for a total of 89 chemicals or groups of chemicals which represent a minimal level of risk (equivalent to risk levels used in the derivation of SGVs). These were generated using the updated scenarios found in the C4SL framework, revisions to chemical data and updated toxicological data where available and generated using the CLEA software (v1.06). Transparent explanation

of the S4UL generation process including all chemical input parameters is provided within the LQM Report.

1.5.2. The new S4ULs have been published for five types of land use as follows;

- Residential (with and without consumption of homegrown produce)
- Allotments
- Commercial
- Public Open Space – Parks
- Public Open Space– Residential

1.5.3. All S4ULs are generated based on a standard soil type defined as a sandy loam with a soil organic matter (SOM) content of 1%, 2.5% and 6%.

1.6. Sweco Suitable for Use Criteria (SS4UL)

1.6.1. A series of generic assessment criteria have been generated by Sweco using CLEA (v1.07) for the standard land uses as defined by the CLEA framework for all contaminants for which SGV and associated TOX reports have been published

1.6.2. The SOM parameter is used to predict the level of sorption that will occur between the contaminant and soil particles. It affects the potential mobility of contaminants and therefore influences the predicted exposure by humans to a particular contaminant. Amending the SOM is therefore reflected in either an increase or decrease of the generic screening criteria.

1.6.3. The use of generic assessment criteria generated using SOM concentrations of 1% and 2.5% should be considered where site specific assessment (i.e. analytical results for fraction / total organic carbon) has identified soil conditions that are better characterised by an organic content which is below the 6% assumed in the published SGVs.

1.7. Hierarchy of Generic Assessment Criteria

1.7.1. In all cases, a GAC is only used where the conceptual model for the site indicates that it would be appropriate to use criteria derived for the five standard land uses.

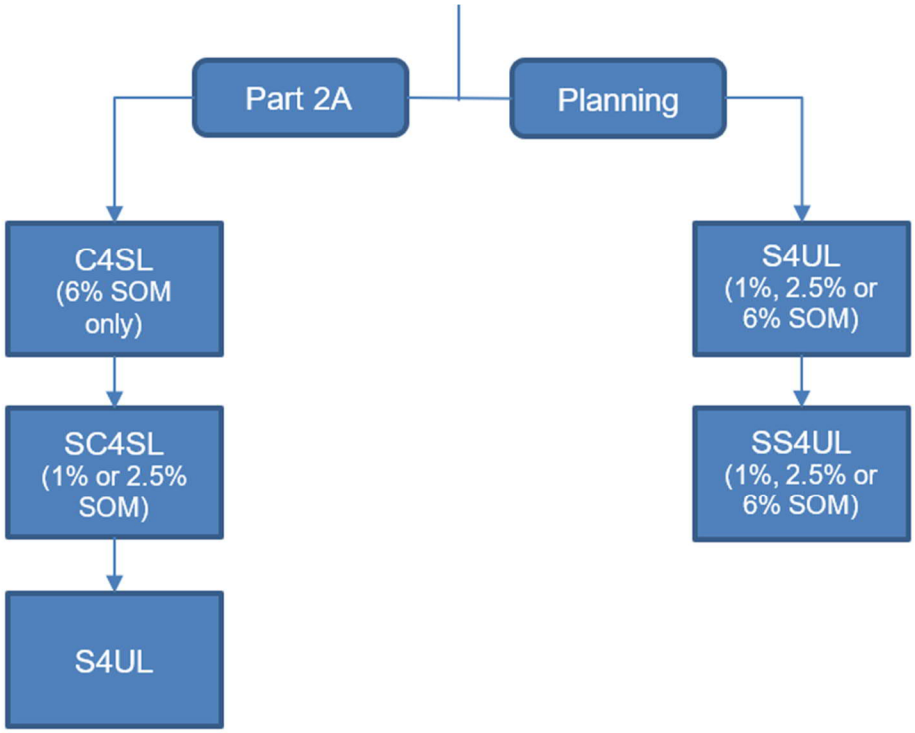
1.7.2. The C4SL for benzo(a)pyrene uses a surrogate for all polycyclic aromatic hydrocarbons (PAHs) and similarly the S4UL also have benzo(a)pyrene as a surrogate for coal tar which can be used as an alternative approach to screening against individual PAHs. The S4ULs also have assessment criteria for individual PAHs and Sweco have adopted the approach of screening against the individual PAHs.

1.7.3. When deriving the assessment criteria some criteria are derived at a concentration greater than the chemicals' theoretical solubility limit. The S4ULs are presented in the LQM 2015 report with both the solubility limited value and the human health risk criteria. These solubility limited criteria are indicative of the presence of free product and do not present a concentration where human health risk may necessarily occur. In these cases, Sweco have taken the human health derived criteria as the assessment criteria with the exception of where free product is present.

1.7.4. Similarly, when the vapour saturation limit has been exceeded Sweco have taken the human health derived value as the assessment criteria rather than the vapour saturation limited criteria.

1.7.5. The selection of the appropriate criteria for the assessment is made based on both the end use and the regime (planning or Part 2A) under which the assessment is designed to perform. The choice of criteria are shown in Figure 1.

Figure 1: GQRA Assessment Criteria Choice Flowchart



Notes:

Category 4 Screening Levels (C4SLs)

The lead C4SL is currently used for both Part 2A and Planning scenarios. The remaining five C4SLs are used for a Part 2A assessment approach. C4SLs have been produced for 6% SOM only.

Sweco Category 4 Screening Levels (SC4SLs)

Sweco calculated C4SL for the six contaminants at 1% and 2.5% SOM to be used where the use of the C4SL for 6% SOM would not be appropriate.

Suitable for Use Levels (S4ULs)

These are used where S4ULs have been published. Based on recorded site conditions the most appropriate S4ULs based on a SOM of 1%, 2.5% or 6% are selected.

Sweco Generic Assessment Criteria (SS4ULs)

For contaminants not included in the S4ULs or C4SLs the SS4ULS will be utilised.

Based on recorded site conditions the most appropriate Sweco SS4UL based on a SOM of 1%, 2.5% or 6% are selected.

Total Mercury

1.7.6. No assessment screening criteria is currently available for concentrations of total mercury measured in soil, with S4UL available for elemental mercury, methyl mercury and inorganic mercury.

1.7.7. The concentrations of total mercury in soils reported by the laboratory have been screened against assessment criteria for inorganic mercury. As stated in the mercury SGV report, total mercury concentrations can normally be compared with the inorganic mercury SGV because the equilibrium concentrations of elemental and methyl mercury compounds is likely to be very low.

1.7.8. Consideration should be given in the conceptual site model as to whether available information indicates elemental mercury may have been introduced into the soil by anthropogenic activity. Similarly, where there are peaty or flooded soils, or soils amended with sewage sludge, these more reducing soil conditions may trigger increased methylation. In these cases, screening against the elemental or methyl mercury S4UL may be more applicable.

Cyanide

1.7.9. The assessment criteria for free and complex cyanide has been derived for an acute exposure scenario based on a single dose of soil ingested by a three year old female child. The criteria have been derived outside of the CLEA model utilising data and methodology produced by the Environment Agency TOX reports and CLEA regime.

1.7.10. The Tolerable Daily Intake has been sourced from the DEFRA and Environment Agency R &D TOX 51 report on inorganic cyanide.

1.7.11. The three year old child has been chosen as the receptor as this is taken to be the youngest age a child will be able to be independent from their parents i.e. mobile enough to leave their protection and therefore access and consume a source of cyanide. The body weight used is sourced from Technical Review 2, Environment Agency, 2009 and is the mean body weight for a three year old female child.

1.7.12. A single 5g dose has been used which approximates to a teaspoon of soil.

1.7.13. These criteria are used in both the Part 2A and planning assessments.

[1] DEFRA/Environment Agency, 2002. Contaminants in Soil: Collation of Toxicological Data and Intake Values for Humans. Inorganic Cyanide.

[2] Environment Agency, 2009. A review of body weight and height data used within the Contaminated Land Exposure Assessment model (CLEA).

2. Soil leachability and groundwater

2.1.1. Leachability analysis provides an indication of the potential for contaminants to be mobilised from soil through percolation of rain water and impact groundwater quality beneath the site. Two types of assessment have been undertaken on the groundwater and leachability analysis results, firstly relating to the potential impact on groundwater quality and secondly the potential impact on surface water quality.

2.1.2. The impact on groundwater quality has been assessed through the use of UK Drinking Water Standards (DWS) which are documented in The Water Supply (Water Quality) Regulations 2016. Where an appropriate UK DWS is not available, the World Health Organisation (WHO) guidelines for drinking water quality (2011) have been used.

2.1.3. Potential impacts on surface water quality which may occur through a linkage between groundwater on the site and a nearby surface water course are assessed through comparison to the environmental quality standards (EQS) presented in parts 1, 2 and 3 of Schedule 3 of The Water Framework Directive (Standards and Classification) Directions (England and Wales) 2015. In the absence of these values, the 2004 EQS criteria have been used.

3. References

- Science Report Final SC050021/SR2. Human Health Toxicological Assessment of Contaminants in Soil. Environment Agency. January 2009.
- Science Report SC050021/SR3. Updated Technical Background to the CLEA Model. Environment Agency. January 2009.
- Science Report SC050021/SR4. CLEA Software (Version 1.05) Handbook, Environment Agency. September 2009. NB this document was not re-published for CLEA V1.06.
- Science Report SC050021/SR7. Compilation of Data for Priority Organic Pollutants for Derivation of Soil Guideline Values. Environment Agency, November 2008.
- SC050021/Final Technical review 1. A Review of Body Weight and Height Data used within the Contaminated Land Exposure Assessment Model (CLEA). Environment Agency. January 2009.
- Science report: SC050021. Using Soil Guideline Values. / SGV Introduction. Environment Agency, March 2009.
- The LQM/CIEH Generic Assessment Criteria for Human Health Risk Assessment (2nd Edition). Land Quality Press, Nottingham. Nathanail, C.P., McCaffrey, C., Ashmore, M.H., Cheng, Y.Y., Gillett, A., R. & Scott, D. 2009.
- The LQM/CIEH S4ULs for Human Health Risk Assessment. Land Quality Press, Nottingham. Nathanail, C.P., McCaffrey, C., Gillet, A.G., Ogden, R.C. and Nathanail, J.F. 2015.
- CL:AIRE in association with AGS and EIC. The Soil Generic Assessment Criteria for Human Health Risk Assessment. January 2010.
- CL:AIRE. SP1010: Development of Category 4 Screening Levels for Assessment of Land Affected by Contamination. Final Project Report. September 2014.
- DEFRA. SP1010: Development of Category 4 Screening Levels for Assessment of Land Affected by Contamination – Policy Companion Document. December 2014.
- The Water Supply (Water Quality) Regulations. 2016.
- World Health Organisation. Guidelines for Drinking Water Quality. Fourth Edition. 2011.
- The Water Framework Directive (Standards and Classification) Directions (England and Wales) 2015.

Glossary

- SGV - Soil Guideline Value published by DEFRA in accordance with the CLEA framework published in August 2009 for an SOM of 6% based on minimal level of risk.

- Sweco GAC - Assessment criteria generated by Sweco for contaminants with SGV at 1% and 2.5% SOM.
- LQM GAC - 2009 assessment criteria developed by LQM.
- EIC/AGS/CL:AIRE GAC - 2010 assessment criteria.
- C4SL - 2014 assessment criteria based on a low level of harm at 6% SOM.
- SC4SL - Sweco assessment criteria for contaminants with a C4SL at 1% and 2.5% SOM.
- S4UL - LQM 2015 updates in line with C4SL but still minimal risk levels.
- SS4UL - Sweco assessment criteria based on S4UL methodology using other readily available contaminant toxicological data such as that from EIC 2010 work.

Free product – An organic contaminant such as PAHs present in concentrations above the saturation point of the soil or solubility concentration in water resulting in a visible product in situ.

Generic Screening Assessment - Soil Screening POSresi

			Location	BH104	TP103	TP101	TP102	WS102	WS108	WS103	WS106	BH108	BH121	BH106	BH107	BH128	BH127	BH119	BH111	BH123	BH116	BH110	BH112	BH114	WS105	BH123	WS102	BH117	BH116	WS106	BH108	BH112	BH115	BH109	WS108	BH103	BH128	BH120	BH107	BH126	BH121	BH124	BH110	BH114	TP101	TP102	BH126	BH103	WS103	BH118	BH127	TP103
Parameter	Units	Criterion	Standard	0.10m	0.10m	0.10m	0.10m	0.10m	0.10m	0.10m	0.10m	0.10m	0.10m	0.30m	0.30m	0.30m	0.30m	0.30m	0.30m	0.30m	0.30m	0.30m	0.30m	0.30m	0.40m	0.50m	0.50m	0.50m	0.50m	0.50m	0.50m	0.50m	0.50m	0.50m	0.50m	0.50m	0.50m	0.50m	0.50m	0.50m	0.50m	0.50m	1.00m	1.00m	1.00m	1.00m	1.00m	1.00m	1.00m	1.00m	1.00m	1.00m
Arsenic (aqua regia extractable)	mg/kg	79	1% SOM SC4SL POS Resi	8.3	8.6	6.6	7.3	9.0	11	5.0	9.2	5.4	10	6.4	11	10	11	11	5.7	9.4	7.3	6.9	6.6	6.8	8.3	9.9	12	10	9.3	12	5.7	4.6	9.0	6.8	15	3.3	9.8	7.9	6.7	13	9.5	10	5.4	1.1	5.2	10	11	9.0	4.4	7.7	9.9	7.8
Boron (Water Soluble)	mg/kg	21000	1% SOM S4UL POS Resi	0.3	0.7	1.8	0.3	2.8	0.5	0.4	0.5	0.6	0.4	0.7	0.5	1.2	0.7	0.4	0.4	1.5	0.4	1.0	0.3	0.5	0.6	0.8	0.6	<0.2	0.2	1.1	0.7	0.3	0.4	0.6	0.6	0.4	0.3	0.6	<0.2	1.7	0.5	1.1	0.4	<0.2	0.2	<0.2	1.3	0.4	0.2	0.5	1.3	0.7
Cadmium (aqua regia extractable)	mg/kg	220	1% SOM SC4SL POS Resi	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	0.4	<0.2	0.3	<0.2	<0.2	0.3	0.4	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	0.4	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Copper (aqua regia extractable)	mg/kg	12000	1% SOM S4UL POS Resi	27	21	16	14	21	20	21	25	12	28	13	39	24	24	20	13	23	15	16	15	18	19	25	29	33	20	22	14	15	16	24	37	33	23	15	16	21	24	24	8.6	8.3	12	10	22	12	13	17	21	23
Chromium (hexavalent)	mg/kg	21	1% SOM SC4SL POS Resi	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8
Chromium (III)	mg/kg	1500	1% SOM S4UL POS Resi	22	29	28	14	21	19	11	30	14	28	17	20	35	30	26	17	28	15	15	8.8	13	28	31	28	26	23	38	10	11	19	13	30	11	33	27	15	39	31	38	5.8	3.4	29	11	40	23	8.4	21	37	34
Lead (aqua regia extractable)	mg/kg	630	1% SOM SC4SL POS Resi	37	24	27	25	18	25	23	28	24	39	25	35	14	31	29	25	31	19	33	17	26	29	30	17	27	9.9	16	23	13	30	120	12	9.5	12	15	22	20	10	19	9.5	1.9	7.9	5.8	17	11	6.7	15	13	12
Mercury (aqua regia extractable)	mg/kg	120	1% SOM S4UL POS Resi	0.8	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Zinc (aqua regia extractable)	mg/kg	81000	1% SOM S4UL POS Resi	75	95	290	50	64	78	45	69	58	72	67	79	59	74	65	50	66	46	75	48	54	62	67	70	66	57	68	44	41	67	88	61	44	56	46	90	64	55	64	34	11	88	31	62	58	16	50	58	54
Complex Cyanide	mg/kg	500	Sueco Acute Criteria	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Free Cyanide	mg/kg	30	Sueco Acute Criteria	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Acenaphthene	mg/kg	15000	1% SOM S4UL POS Resi	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Acenaphthylene	mg/kg	15000	1% SOM S4UL POS Resi	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Benzo(a)anthracene	mg/kg	29	1% SOM S4UL POS Resi	<0.05	<0.05	<0.05	<0.05	0.06	<0.05	<0.05	0.13	<0.05	<0.05	<0.05	<0.05	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.13	0.06	0.05	<0.05	<0.05	<0.05	0.05	<0.05	<0.05	<0.05	0.06	<0.05	0.15	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.16	<0.05	<0.05	<0.05
Benzo(a)pyrene	mg/kg	5.7	1% SOM S4UL POS Resi	0.05	<0.05	<0.05	<0.05	0.09	<0.05	<0.05	0.09	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.19	0.05	0.05	<0.05	<0.05	<0.05	0.06	<0.05	<0.05	<0.05	0.08	<0.05	0.12	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.16	<0.05	<0.05	<0.05
Benzo(ghi)perylene	mg/kg	640	1% SOM S4UL POS Resi	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.21	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.13	<0.05	<0.05	<0.05
Benzo(b)fluoranthene	mg/kg	7.1	1% SOM S4UL POS Resi	0.08	<0.05	<0.05	<0.05	0.10	<0.05	<0.05	0.14	<0.05	<0.05	<0.05	0.06	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.22	0.09	0.06	<0.05	<0.05	<0.05	0.09	<0.05	<0.05	<0.05	0.11	<0.05	0.17	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.21	<0.05	<0.05	<0.05
Benzo(k)fluoranthene	mg/kg	190	1% SOM S4UL POS Resi	<0.05	<0.05	<0.05	<0.05	0.05	<0.05	<0.05	0.06	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.10	<0.05	0.06	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.09	<0.05	<0.05	<0.05
Chrysene	mg/kg	57	1% SOM S4UL POS Resi	<0.05	<0.05	<0.05	<0.05	0.06	<0.05	<0.05	0.10	<0.05	<0.05	<0.05	<0.05	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.14	<0.05	0.05	<0.05	<0.05	<0.05	0.05	<0.05	<0.05	<0.05	0.10	<0.05	0.16	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.18	<0.05	<0.05	<0.05
Ethylbenzene	mg/kg	24000	1% SOM S4UL POS Resi	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000
Fluorene	mg/kg	9900	1% SOM S4UL POS Resi	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Fluoranthene	mg/kg	3100	1% SOM S4UL POS Resi	0.06	<0.05	0.08	0.10	<0.05	<0.05	0.20	<0.05	<0.05	<0.05	<0.05	0.09	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.16	0.11	0.12	0.05	<0.05	<0.05	0.10	<0.05	<0.05	<0.05	0.17	<0.05	0.40	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.06	<0.05	0.25	<0.05	<0.05	<0.05
Indeno(1,2,3-cd)pyrene	mg/kg	82	1% SOM S4UL POS Resi	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.15	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.09	<0.05	<0.05	<0.05
Naphthalene	mg/kg	4900	1% SOM S4UL POS Resi	<0.05	<0.05	0.65	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Phenanthrene	mg/kg	3100	1% SOM S4UL POS Resi	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.22	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.07	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.11	<0.05	0.17	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.09	<0.05	<0.05	<0.05
Pyrene	mg/kg	7400	1% SOM S4UL POS Resi	0.09	<0.05	0.08	0.10	<0.05	<0.05	0.20	<0.05	<0.05	<0.05	0.05	0.09	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.17	0.13	0.11	0.06	<0.05	<0.05	0.09	<0.05	<0.05	<0.05	0.15	<0.05	0.38	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.07	<0.05	0.25	<0.05	<0.05	<0.05
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	13000	1% SOM S4UL POS Resi	<1.0	<1.0	1.6	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	13000	1% SOM S4UL POS Resi	<2.0	<2.0	5.6	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	900000	1% SOM S4UL POS Resi	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	370000	1% SOM S4UL POS Resi	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	13000	1% SOM S4UL POS Resi	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	250000	1% SOM S4UL POS Resi	<8.0	<8.0	13	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	5100	1% SOM S4UL POS Resi	<2.0	<2.0	19	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	2.4	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	3800	1% SOM S4UL POS Resi	<10	<10	28	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	56000	1% SOM S4UL POS Resi	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	5000	1% SOM S4UL POS Resi	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	5000	1% SOM S4UL POS Resi	<1.0	<1.0	11	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	3800	1% SOM S4UL POS Resi	<10	<10	79	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	23	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	56000	1% SOM S4UL POS Resi	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Benzene	mg/kg	139	1% SOM SC4SL POS Resi	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000
Toluene	mg/kg	56000	1% SOM S4UL POS Resi	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000
p & m-Xylene	mg/kg	41000	1% SOM S4UL POS Resi	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000
o-Xylene	mg/kg	41000	1% SOM S4UL POS Resi	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000

Generic Screening Assessment - Soil Screening POSresi

			Location	BH115	BH119	BH104	BH120	WS104	BH109	BH102	WS109	WS108	BH109	BH126	BH117	BH124	WS105	BH111	BH123	WS106	BH107	BH102	WS109	BH115	BH108	BH106	TP102	BH110	BH117	BH128	BH116	TP101	BH119	BH120	WS103	BH121	BH114	TP103	BH102	TP103	WS108	TP102	BH109	BH109	BH109
Parameter	Units	Criterion	Standard	1.00m	1.00m	1.00m	1.00m	1.00m	1.00m	1.10m	1.20m	1.50m	1.50m	1.50m	1.50m	1.50m	1.50m	1.50m	1.50m	1.50m	1.50m	1.60m	1.70m	2.00m	2.00m	2.00m	2.00m	2.00m	2.00m	2.00m	2.00m	2.00m	2.00m	2.00m	2.00m	2.00m	2.00m	2.30m	2.50m	2.50m	2.50m	7.50m	8.30m	9.50m
Arsenic (aqua regia extractable)	mg/kg	79	1% SOM SC4SL POS Resi	9.3	8.2	25	9.2	12	6.1	2.8	17	25	3.2	6.9	5.8	7.1	8.3	11	9.6	8.7	6.0	78	7.8	8.9	8.8	9.4	56	3.9	2.3	10	8.9	5.2	9.5	11	4.6	19	2.5	9.8	200	9.7	27	5.9	9.0	3.5	11
Boron (Water Soluble)	mg/kg	21000	1% SOM S4UL POS Resi	0.6	0.3	0.8	0.3	0.8	0.4	<0.2	0.4	0.3	0.3	0.2	0.5	0.3	0.4	0.9	0.2	0.5	0.7	0.5	4.5	0.2	0.4	0.3	0.3	0.4	0.4	<0.2	0.2	0.3	<0.2	0.3	0.3	0.3	<0.2	0.8	1.7	1.4	0.3	0.4	0.4	0.3	0.3
Cadmium (aqua regia extractable)	mg/kg	220	1% SOM SC4SL POS Resi	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	3.7	0.5	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	0.3	<0.2	31	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Copper (aqua regia extractable)	mg/kg	12000	1% SOM S4UL POS Resi	11	15	17	17	18	25	29	15	39	23	18	11	16	34	17	23	22	16	580	12	15	13	9.5	14	6.2	15	20	26	9.1	15	33	17	20	18	21	5100	73	29	16	7.9	26	11
Chromium (hexavalent)	mg/kg	21	1% SOM SC4SL POS Resi	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8
Chromium (III)	mg/kg	1500	1% SOM S4UL POS Resi	20	25	34	28	27	14	10	34	24	5.5	27	13	23	33	22	33	28	22	220	9.3	24	30	28	19	5.6	13	28	18	27	18	22	15	25	8.1	32	480	37	18	27	22	23	27
Lead (aqua regia extractable)	mg/kg	630	1% SOM SC4SL POS Resi	9.3	13	16	12	13	47	14	17	12	14	10	8.5	8.1	11	14	12	12	18	300	6.2	8.2	15	13	8.5	6.6	5.4	12	12	7.6	7.3	9.2	7.9	8.9	6.0	11	1700	14	15	8.1	10	2.2	10
Mercury (aqua regia extractable)	mg/kg	120	1% SOM S4UL POS Resi	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Zinc (aqua regia extractable)	mg/kg	81000	1% SOM S4UL POS Resi	27	42	85	49	62	68	60	86	84	29	50	32	44	64	66	57	54	58	260	57	72	90	81	58	17	33	61	55	86	43	61	28	55	20	60	8100	58	110	89	65	64	85
Complex Cyanide	mg/kg	500	Sweco Acute Criteria	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Free Cyanide	mg/kg	90	Sweco Acute Criteria	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Acenaphthene	mg/kg	15000	1% SOM S4UL POS Resi	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Acenaphthylene	mg/kg	15000	1% SOM S4UL POS Resi	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Benzo(a)anthracene	mg/kg	29	1% SOM S4UL POS Resi	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.05	0.97	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.06	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Benzo(a)pyrene	mg/kg	5.7	1% SOM S4UL POS Resi	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.60	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Benzo(ghi)perylene	mg/kg	640	1% SOM S4UL POS Resi	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.29	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Benzo(b)fluoranthene	mg/kg	7.1	1% SOM S4UL POS Resi	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.90	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Benzo(k)fluoranthene	mg/kg	190	1% SOM S4UL POS Resi	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.36	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Chrysene	mg/kg	57	1% SOM S4UL POS Resi	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.07	0.99	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Ethylbenzene	mg/kg	24000	1% SOM S4UL POS Resi	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000
Fluorene	mg/kg	9900	1% SOM S4UL POS Resi	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.21	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.08	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Fluoranthene	mg/kg	3100	1% SOM S4UL POS Resi	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.18	1.8	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.14	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Indeno(1,2,3-cd)pyrene	mg/kg	82	1% SOM S4UL POS Resi	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.27	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Naphthalene	mg/kg	4900	1% SOM S4UL POS Resi	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.29	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Phenanthrene	mg/kg	3100	1% SOM S4UL POS Resi	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.21	1.3	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.23	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Pyrene	mg/kg	7400	1% SOM S4UL POS Resi	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.14	1.5	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.17	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	13000	1% SOM S4UL POS Resi	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	9.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	4.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	13000	1% SOM S4UL POS Resi	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	9.7	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
TPH-CWG - Aliphatic >EC16 - EC18	mg/kg	600000	1% SOM S4UL POS Resi	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	370000	1% SOM S4UL POS Resi	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	13000	1% SOM S4UL POS Resi	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	250000	1% SOM S4UL POS Resi	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	9.4	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	570	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	40	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	5100	1% SOM S4UL POS Resi	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	27	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	3800	1% SOM S4UL POS Resi	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	270	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	54	<10	<10	<10	<10	<10
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	56000	1% SOM S4UL POS Resi	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	9000	1% SOM S4UL POS Resi	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	9000	1% SOM S4UL POS Resi	<1.0	<1.0	<1.0	<1.0	<1.0	2.8	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	3800	1% SOM S4UL POS Resi	<10	<10	<10	<10	<10	<10	12	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	11	580	16	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	260	<10	<10	<10	<10	<10
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	56000	1% SOM S4UL POS Resi	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Benzene	mg/kg	139	1% SOM SC4SL POS Resi	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000
Toluene	mg/kg	56000	1% SOM S4UL POS Resi	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000
p & m-Xylene	mg/kg	41000	1% SOM S4UL POS Resi	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000
o-Xylene	mg/kg	41000	1% SOM S4UL POS Resi	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000

Generic Screening Assessment - Soil Screening Commercial

			Location	BH121	BH104	TP103	TP101	WS106	TP102	WS103	BH108	WS108	WS102	BH112	BH111	BH114	BH128	BH127	BH107	BH123	BH116	BH119	BH110	BH106	WS105	BH124	WS106	WS108	BH121	BH123	BH109	BH115	WS102	BH116	BH108	BH128	BH112	BH110	BH117	BH126	BH107	BH120	BH103	TP103	WS103	BH103	BH115	BH119	BH127	BH126	TP101	BH114
Parameter	Units	Criterion	Standard	0.10m	0.10m	0.10m	0.10m	0.10m	0.10m	0.10m	0.10m	0.10m	0.10m	0.30m	0.30m	0.30m	0.30m	0.30m	0.30m	0.30m	0.30m	0.30m	0.30m	0.40m	0.50m	0.50m	0.50m	0.50m	0.50m	0.50m	0.50m	0.50m	0.50m	0.50m	0.50m	0.50m	0.50m	0.50m	0.50m	0.50m	0.50m	0.50m	1.00m	1.00m	1.00m	1.00m	1.00m	1.00m	1.00m	1.00m	1.00m	1.00m
Arsenic (aqua regia extractable)	mg/kg	640	1% SOM SC4SL Commercial	10	8.3	8.6	6.6	9.2	7.3	5.0	5.4	11	9.0	6.6	6.7	6.8	10	11	11	9.4	7.3	11	6.9	6.4	8.3	10	12	15	9.5	9.9	6.8	9.0	12	9.3	5.7	9.8	4.6	5.4	10	13	6.7	7.9	2.3	7.8	4.4	9.0	9.3	8.2	9.9	11	5.2	1.1
Boron (Water Soluble)	mg/kg	240000	1% SOM S4UL Commercial	0.4	0.3	0.7	1.8	0.5	0.3	0.4	0.6	0.5	2.8	0.3	0.4	0.5	1.2	0.7	0.5	1.5	0.4	0.4	1.0	0.7	0.6	1.1	1.1	0.6	0.5	0.8	0.6	0.4	0.6	0.2	0.7	0.3	0.3	0.4	<0.2	1.7	<0.2	0.6	0.4	0.7	0.2	0.4	0.6	0.3	1.3	1.3	0.2	<0.2
Cadmium (aqua regia extractable)	mg/kg	410	1% SOM SC4SL Commercial	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	0.4	<0.2	<0.2	0.3	<0.2	0.3	<0.2	<0.2	<0.2	<0.2	0.4	0.4	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Copper (aqua regia extractable)	mg/kg	68000	1% SOM S4UL Commercial	28	27	21	16	25	14	21	12	20	21	15	13	19	24	24	39	23	15	20	16	13	19	24	22	37	24	25	24	16	20	20	14	23	15	8.6	33	21	16	15	33	23	13	12	11	15	21	22	12	8.3
Chromium (hexavalent)	mg/kg	49	1% SOM SC4SL Commercial	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8
Chromium (III)	mg/kg	8600	1% SOM S4UL Commercial	28	22	29	28	30	14	11	14	19	21	8.8	17	13	35	30	20	28	15	26	15	17	28	38	38	30	31	31	13	19	28	23	10	33	11	5.8	26	39	15	27	11	34	8.4	23	20	25	37	40	29	3.4
Lead (aqua regia extractable)	mg/kg	2300	1% SOM SC4SL Commercial	39	37	24	27	28	25	23	24	25	18	17	25	26	14	31	35	31	19	29	33	25	29	19	16	12	10	30	120	30	17	9.9	23	12	13	9.5	27	20	22	15	9.5	12	6.7	11	9.3	13	13	17	7.9	1.9
Mercury (aqua regia extractable)	mg/kg	1100	1% SOM S4UL Commercial	<0.3	0.8	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Nickel (aqua regia extractable)	mg/kg	980	1% SOM S4UL Commercial	20	17	21	30	20	11	8.0	12	16	19	6.9	12	9.3	33	23	16	23	10	19	10	14	22	38	40	31	29	28	11	13	24	24	7.6	31	8.3	6.0	21	40	11	21	10	33	6.5	22	11	22	34	40	26	3.5
Selenium (aqua regia extractable)	mg/kg	12000	1% SOM S4UL Commercial	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Zinc (aqua regia extractable)	mg/kg	730000	1% SOM S4UL Commercial	72	75	65	290	69	50	45	58	78	64	48	60	54	59	74	79	66	46	65	75	67	62	64	58	61	55	67	88	67	70	57	44	56	41	34	66	64	50	46	44	54	16	58	27	42	58	62	98	11

Generic Screening Assessment - Soil Screening Commercial

			Location	BH118	BH104	BH109	TP102	BH120	WS104	BH102	WS109	BH109	WS108	BH124	BH126	BH107	BH123	BH117	WS105	BH111	WS106	BH102	WS109	BH128	BH117	BH106	BH110	BH119	WS103	TP101	BH116	BH120	TP103	TP102	BH114	BH121	BH108	BH115	BH102	WS108	TP102	TP103	BH109	BH109	BH109
Parameter	Units	Criterion	Standard	1.00m	1.00m	1.00m	1.00m	1.00m	1.00m	1.10m	1.20m	1.50m	1.50m	1.50m	1.50m	1.50m	1.50m	1.50m	1.50m	1.50m	1.50m	1.60m	1.70m	2.00m	2.00m	2.00m	2.00m	2.00m	2.00m	2.00m	2.00m	2.00m	2.00m	2.00m	2.00m	2.00m	2.00m	2.30m	2.50m	2.50m	2.50m	7.50m	8.30m	9.50m
Arsenic (aqua regia extractable)	mg/kg	640	1% SOM SC4SL Commercial	7.7	25	6.1	10	9.2	12	2.8	17	3.2	25	7.1	6.9	6.0	8.6	5.8	8.3	11	8.7	78	7.8	10	2.3	9.4	3.9	9.5	4.6	5.2	8.9	11	9.8	56	2.5	19	8.8	8.9	200	27	5.9	9.7	9.0	3.5	11
Boron (Water Soluble)	mg/kg	240000	1% SOM S4UL Commercial	0.5	0.8	0.4	<0.2	0.3	0.8	<0.2	0.4	0.3	0.3	0.3	0.2	0.7	0.2	0.5	0.4	0.9	0.5	0.5	4.5	<0.2	0.4	0.3	0.4	<0.2	0.3	0.3	0.2	0.3	0.8	0.3	<0.2	0.3	0.4	0.2	1.7	0.3	0.4	1.4	0.4	0.3	0.3
Cadmium (aqua regia extractable)	mg/kg	410	1% SOM SC4SL Commercial	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	3.7	0.5	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	0.3	<0.2	<0.2	<0.2	31	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Copper (aqua regia extractable)	mg/kg	68000	1% SOM S4UL Commercial	17	17	25	10	17	18	29	15	23	39	16	18	16	23	11	24	17	22	580	12	20	15	9.5	6.2	15	17	8.1	26	33	21	14	18	20	13	15	5100	29	16	23	7.9	26	11
Chromium (hexavalent)	mg/kg	49	1% SOM SC4SL Commercial	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8
Chromium (III)	mg/kg	8600	1% SOM S4UL Commercial	21	34	14	11	28	27	10	34	6.5	24	23	27	22	33	13	33	22	28	220	9.3	28	13	28	5.6	18	15	27	18	22	32	19	8.1	25	30	24	480	18	27	37	22	23	27
Lead (aqua regia extractable)	mg/kg	2300	1% SOM SC4SL Commercial	15	16	47	5.8	12	13	14	17	14	12	9.1	10	18	12	8.5	11	14	12	300	6.2	12	5.4	13	6.6	7.3	7.9	7.6	12	9.2	11	8.5	6.0	8.9	15	8.2	1700	15	8.1	14	10	2.2	10
Mercury (aqua regia extractable)	mg/kg	1100	1% SOM S4UL Commercial	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Nickel (aqua regia extractable)	mg/kg	980	1% SOM S4UL Commercial	18	30	13	12	28	25	15	28	6.5	35	23	27	23	33	12	31	21	29	400	14	30	13	28	7.2	19	13	23	20	24	33	21	6.4	23	30	23	1100	33	27	36	21	20	25
Selenium (aqua regia extractable)	mg/kg	12000	1% SOM S4UL Commercial	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	2.4	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Zinc (aqua regia extractable)	mg/kg	730000	1% SOM S4UL Commercial	50	85	68	31	49	62	60	96	29	94	44	50	58	57	32	64	66	54	260	57	61	33	81	17	43	28	86	55	61	60	58	20	55	90	72	8100	110	89	58	65	64	85
Complex Cyanide	mg/kg	500	Sweco Acute Criteria	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Free Cyanide	mg/kg	30	Sweco Acute Criteria	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Anthracene	mg/kg	520000	1% SOM S4UL Commercial	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.33	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.06	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Acenaphthene	mg/kg	84000	1% SOM S4UL Commercial	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Acenaphthylene	mg/kg	83000	1% SOM S4UL Commercial	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Benzo(a)pyrene	mg/kg	35	1% SOM S4UL Commercial	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.60	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Benzo(k)fluoranthene	mg/kg	1200	1% SOM S4UL Commercial	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.36	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Benzo(ghi)perylene	mg/kg	3900	1% SOM S4UL Commercial	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.29	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.06	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Benzo(b)fluoranthene	mg/kg	44	1% SOM S4UL Commercial	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.90	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Benzo(a)anthracene	mg/kg	170	1% SOM S4UL Commercial	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.97	<0.05	<0.05	<0.05	<0.05	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.06	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Chrysene	mg/kg	350	1% SOM S4UL Commercial	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.99	<0.05	<0.05	<0.05	<0.05	0.07	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Di-benzo(a,h)anthracene	mg/kg	3.5	1% SOM S4UL Commercial	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.12	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Fluoranthene	mg/kg	23000	1% SOM S4UL Commercial	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	1.8	<0.05	<0.05	<0.05	<0.05	0.18	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.14	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Fluorene	mg/kg	63000	1% SOM S4UL Commercial	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.21	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.08	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Indeno(1,2,3-cd)pyrene	mg/kg	500	1% SOM S4UL Commercial	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.27	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Naphthalene	mg/kg	190	1% SOM S4UL Commercial	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.29	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Phenanthrene	mg/kg	22000	1% SOM S4UL Commercial	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	1.3	<0.05	<0.05	<0.05	<0.05	0.21	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.23	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Pyrene	mg/kg	54000	1% SOM S4UL Commercial	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	1.5	<0.05	<0.05	<0.05	<0.05	0.14	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.17	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	59000	1% SOM S4UL Commercial	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	77	<2.0	9.7	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	3200	1% SOM S4UL Commercial	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	7800	1% SOM S4UL Commercial	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	2000	1% SOM S4UL Commercial	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	9700	1% SOM S4UL Commercial	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	9.0	<1.0	4.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	1600000	1% SOM S4UL Commercial	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	9.4	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	570	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	40	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	28000	1% SOM S4UL Commercial	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	270	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	54	<10	<10	<10	<10	<10	<10
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	56000	1% SOM S4UL Commercial	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	3500	1% SOM S4UL Commercial	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	28000	1% SOM S4UL Commercial	<10	<10	<10	<10	<10	<10	12	<10	<10	<10	<10	<10	11	<10	<10	<10	<10	<10	580	16	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	260	<10	<10	<10	<10	<10	<10
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	26000	1% SOM S4UL Commercial	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	36000	1% SOM S4UL Commercial	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	2.4	<2.0	<2.0	<2.0	<2.0	<2.0	27	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	16000	1% SOM S4UL Commercial	<1.0	<1.0	<1.0	<1.0	<1.0	2.8	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Benzene	mg/kg	27.2	1% SOM SC4SL Commercial	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000
Toluene	mg/kg	56000	1% SOM S4UL Commercial	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000
Ethylbenzene	mg/kg	5700	1% SOM S4UL Commercial	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000
MTBE (Methyl Tertiary Butyl Ether)	mg/kg	7900	1% SOM EIC Commercial	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000
p & m-Xylene	mg/kg	5900	1% SOM S4UL Commercial	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000
o-Xylene	mg/kg	6600	1% SOM S4UL Commercial	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000	< 0.005000

BH111

Environmental Monitoring Date	Installation Depth (m BGL)	Depth to Water (m)	Gas Flow Rate (L/hr)	Methane (peak) % vol	Carbon Dioxide (steady) % vol	Oxygen (steady) % vol	Hydrogen sulfide (ppm)	Carbon Monoxide (ppm)	Carbon Dioxide Gas Characteristic Value	Methane Gas Characteristic Value	Gas Characteristic Situation Value
23/05/2023	1.5-3.8	2.9	0.9	0.1	1.6	16.9	0	10	0.0144	0.0009	1
02/06/2023		2.85	0.1	0.1	0.1	20.1	0	0	0.0001	0.0001	1
22/06/2023		2.36	0.5	0.1	0.1	17.6	0	0	0.0005	0.0005	1
24/07/2023		2.51	-0.4	0.1	0.1	20.1	0	0	-0.0004	-0.0004	1
21/08/2023		2.7	0.2	0.1	0.3	20.2	0	0	0.0006	0.0002	1

BH105

Environmental Monitoring Date	Installation Depth (m BGL)	Depth to Water (m)	Gas Flow Rate (L/hr)	Methane (peak) % vol	Carbon Dioxide (steady) % vol	Oxygen (steady) % vol	Hydrogen sulfide (ppm)	Carbon Monoxide (ppm)	Carbon Dioxide Gas Characteristic Value	Methane Gas Characteristic Value	Gas Characteristic Situation Value
02/06/2023	3.2-10	3.9	-1	0.1	0.1	20.2	0	0	-0.001	-0.001	1
24/07/2023		0.67	0.1	0.1	2	20.6	0	0	0.002	0.0001	1
21/08/2023		2.32	0.1	0.1	1.8	20.5	0	0	0.0018	0.0001	1

BH106

Environmental Monitoring Date	Installation Depth (m BGL)	Depth to Water (m)	Gas Flow Rate (L/hr)	Methane (peak) % vol	Carbon Dioxide (steady) % vol	Oxygen (steady) % vol	Hydrogen sulfide (ppm)	Carbon Monoxide (ppm)	Carbon Dioxide Gas Characteristic Value	Methane Gas Characteristic Value	Gas Characteristic Situation Value
02/06/2023	3.5-10.4	2.52	0.1	0.1	0.1	20.2	0	0	0.0001	0.0001	1

BH109

Environmental Monitoring Date	Installation Depth (m BGL)	Depth to Water (m)	Gas Flow Rate (L/hr)	Methane (peak) % vol	Carbon Dioxide (steady) % vol	Oxygen (steady) % vol	Hydrogen sulfide (ppm)	Carbon Monoxide (ppm)	Carbon Dioxide Gas Characteristic Value	Methane Gas Characteristic Value	Gas Characteristic Situation Value
02/06/2023	1.5-4.2	2.22	0.1	0.1	2.4	17.3	0	0	0.0024	0.0001	1
24/07/2023		2.84	-0.2	0.1	1.7	20	0	0	-0.0034	-0.0002	1
21/08/2023		2.88	0.1	0.1	2.1	20.1	0	0	0.0021	0.0001	1

BH110

Environmental Monitoring Date	Installation Depth (m BGL)	Depth to Water (m)	Gas Flow Rate (L/hr)	Methane (peak) % vol	Carbon Dioxide (steady) % vol	Oxygen (steady) % vol	Hydrogen sulfide (ppm)	Carbon Monoxide (ppm)	Carbon Dioxide Gas Characteristic Value	Methane Gas Characteristic Value	Gas Characteristic Situation Value
02/06/2023	5.5-20	4.79	0.1	0.1	0.1	20.5	0	0	0.0001	0.0001	1

WS109

Environmental Monitoring Date	Installation Depth (m BGL)	Depth to Water (m)	Gas Flow Rate (L/hr)	Methane (peak) % vol	Carbon Dioxide (steady) % vol	Oxygen (steady) % vol	Hydrogen sulfide (ppm)	Carbon Monoxide (ppm)	Carbon Dioxide Gas Characteristic Value	Methane Gas Characteristic Value	Gas Characteristic Situation Value
02/06/2023	1.0-3.0	1.38	0.1	0.1	0.6	20.6	0	0	0.0006	0.0001	1
22/06/2023		1.45	0.3	0.1	0.1	20.2	0	0	0.0003	0.0003	1
24/07/2023		1.46	-0.3	0.1	0.1	11.7	0	0	-0.0003	-0.0003	1

BH127

Environmental Monitoring Date	Installation Depth (m BGL)	Depth to Water (m)	Gas Flow Rate (L/hr)	Methane (peak) % vol	Carbon Dioxide (steady) % vol	Oxygen (steady) % vol	Hydrogen sulfide (ppm)	Carbon Monoxide (ppm)	Carbon Dioxide Gas Characteristic Value	Methane Gas Characteristic Value	Gas Characteristic Situation Value
02/06/2023	6.9-9.5	1.0	0.1	0.1	0.1	20.6	0	0	0.0001	0.0001	1

WS105

Environmental Monitoring Date	Installation Depth (m BGL)	Depth to Water (m)	Gas Flow Rate (L/hr)	Methane (peak) % vol	Carbon Dioxide (steady) % vol	Oxygen (steady) % vol	Hydrogen sulfide (ppm)	Carbon Monoxide (ppm)	Carbon Dioxide Gas Characteristic Value	Methane Gas Characteristic Value	Gas Characteristic Situation Value
02/06/2023	1.2-3.9	3.95	0.1	0.1	0.5	20	0	0	0.0005	0.0001	1
24/07/2023		0.73	0.9	0.1	0.8	20.1	0	0	0.0072	0.0009	1
21/08/2023		0.95	0.1	0.1	1.4	20	0	0	0.0014	0.0001	1

WS104

Environmental Monitoring Date	Installation Depth (m BGL)	Depth to Water (m)	Gas Flow Rate (L/hr)	Methane (peak) % vol	Carbon Dioxide (steady) % vol	Oxygen (steady) % vol	Hydrogen sulfide (ppm)	Carbon Monoxide (ppm)	Carbon Dioxide Gas Characteristic Value	Methane Gas Characteristic Value	Gas Characteristic Situation Value
02/06/2023	1.9-3.9	1.27	0.1	0.1	4.3	11.7	0	0	0.0043	0.0001	1

Detection limit of 0.1 used in calculation

Denotes 'flooded' filter section

Generic Screening Assessment - Leachate Screening DWS

| Parameter | Units | Criterion | Location | WS103 | BH108 | BH104 | WS102 | BH114 | BH111 | BH106 | BH112 | BH107 | BH116 | WS105 | WS106 | BH103 | WS108 | BH28 | BH115 | BH117 | BH120 | BH109 | BH107 | BH123 | BH126 | BH124 | BH121 | WS102 | BH127 | WS113 | BH119 | BH128 | WS104 | BH053 | TP103 | TP101 | BH114 | BH115 | TP102 | BH118 | BH105 | BH002 | WS109 | BH124 | WS106 | BH126 | BH111 | WS105 | BH117 | BH123 | BH109 | BH102 | TP101 | TP102 | BH122 | BH120 | BH110 | BH106 | TP103 | BH121 | BH119 | BH008 | WS103 | BH102 | TP102 | WS106 | TP103 | BH109 | BH009 | BH108 |
|---|---|---

Generic Screening Assessment – Leachate Screening EQS

			Location	WS102	BH108	WS103	BH104	BH111	BH114	BH116	BH107	BH106	BH112	WS105	BH117	WS106	BH103	BH126	BH124	WS106	BH128	BH115	BH120	BH123	BH107	BH109	BH121	WS102	TP103	BH127	TP102	BH115	TP101	BH114	BH119	BH126	WS104	BH118	BH109	WS103	BH102	WS109	BH125	WS106	BH124	WS105	BH117	BH109	BH123	BH111	BH102	WS109	TP101	BH120	WS103	BH102	WS106	TP103	TP102	BH109	BH109	BH108
Parameter	Units	Criterion	Standard	0.10m	0.10m	0.10m	0.10m	0.30m	0.30m	0.30m	0.30m	0.30m	0.30m	0.40m	0.50m	0.50m	0.50m	0.50m	0.50m	0.50m	0.50m	0.50m	0.50m	0.50m	0.50m	0.50m	0.50m	0.50m	0.50m	0.50m	0.50m	0.50m	1.00m	1.00m	1.00m	1.00m	1.00m	1.00m	1.00m	1.00m	1.00m	1.00m	1.00m	1.00m	1.00m	1.00m	1.00m	1.00m	1.00m	1.00m	1.00m	1.00m	1.00m	1.00m	1.00m	1.00m	1.00m	1.70m	2.00m	2.00m	2.00m	2.00m	2.00m	2.00m	2.00m	2.00m	2.00m	2.50m	2.50m	2.50m	2.80m	2.80m	2.80m	7.60m	8.30m	9.80m
Arsenic (dissolved)	mg/l	0.05	WFD Inland Class 1-2	0.001	<0.001	0.009	<0.001	<0.001	0.003	0.001	<0.001	0.002	0.002	<0.001	0.003	<0.001	0.004	0.007	<0.001	0.002	0.002	0.004	<0.001	<0.001	0.003	0.003	<0.001	0.003	<0.001	0.003	<0.001	0.005	<0.001	<0.001	<0.001	0.004	<0.001	0.002	0.004	0.007	0.003	<0.001	0.001	0.006	<0.001	0.002	<0.001	0.004	0.003	<0.001	0.003	0.006	0.004	0.002	0.001	0.003	<0.001	0.003	0.011	0.007
Cadmium (dissolved)	mg/l	8.00E-05	WFD Inland Class 1-2	<0.0001	<0.0001	<0.0001

SWECO

HazWasteOnline™

Waste Classification Report

HazWasteOnline™ classifies waste as either **hazardous** or **non-hazardous** based on its chemical composition, related legislation and the rules and data defined in the current UK or EU technical guidance (Appendix C) (note that HP 9 Infectious is not assessed). It is the responsibility of the classifier named below to:

a) understand the origin of the waste
b) select the correct List of Waste code(s)
c) confirm that the list of determinands, results and sampling plan are fit for purpose
d) select and justify the chosen metal species (Appendix B)
e) correctly apply moisture correction and other available corrections
f) add the meta data for their user-defined substances (Appendix A)
g) check that the classification engine is suitable with respect to the national destination of the waste (Appendix C)

To aid the reviewer, the laboratory results, assumptions and justifications managed by the classifier are highlighted in pale yellow.

28X5Q-JHGJY-4SF8R

This Waste Classification Report contains user defined substances. See Appendix A for details.

Job name

A46 COVENTRY JUNCTIONS UPGRADE (WALSGRAVE JUNCTION) STAGE 3

Description/Comments

Strata Geotechnics Factual GI Report Ref: G230651.
Chrysotile asbestos cement identified in lab analysis within BH102 at 1.6 m. Asbestos fragments should be appropriately removed where feasible and practical and disposed of separately (as LoW Code 17 06 05*), or bulk material including fragments treated as mixed Hazardous waste.

Project

65210852

Site

A46 COVENTRY JUNCTIONS UPGRADE (WALSGRAVE JUNCTION) STAGE 3

Classified by

Name: [redacted]
Date: **25 Oct 2023 12:55 GMT**
Telephone: [redacted]

Company: **Sweco UK Limited**
Second Floor, Quay 2
139 Fountainbridge
Edinburgh
EH3 9QG

HazWasteOnline™ provides a two day, hazardous waste classification course that covers the use of the software and both basic and advanced waste classification techniques. Certification has to be renewed every 3 years.

HazWasteOnline™ Certification: CERTIFIED

Course	Date
Hazardous Waste Classification	22 Apr 2021

Next 3 year Refresher due by Apr 2024

Purpose of classification

2 - Material Characterisation

Address of the waste

N/A **Post Code** N/A

SIC for the process giving rise to the waste

42110 Construction of roads and motorways

Description of industry/producer giving rise to the waste

Construction of road improvements.

Description of the specific process, sub-process and/or activity that created the waste

Waste generated during construction of road improvements.

Description of the waste

Predominantly natural strata. Localised made ground (including limited landfill materials) also present on the scheme.

Job summary

#	Sample name	Depth [m]	Classification Result	Hazard properties	Page
1	TP103_0.10	0.1	Non Hazardous		4
2	WS108_0.10	0.1	Non Hazardous		7
3	TP101_0.10	0.1	Non Hazardous		10
4	WS102_0.10	0.1	Non Hazardous		13
5	WS106_0.10	0.1	Non Hazardous		16
6	WS103_0.10	0.1	Non Hazardous		19
7	BH104_0.10	0.1	Non Hazardous		22
8	BH121_0.10	0.1	Non Hazardous		25
9	BH108_0.10	0.1	Non Hazardous		28
10	TP102_0.10	0.1	Non Hazardous		31
11	BH128_0.30	0.3	Non Hazardous		34
12	BH106_0.30	0.3	Non Hazardous		37
13	BH107_0.30	0.3	Non Hazardous		40
14	BH127_0.30	0.3	Non Hazardous		43
15	BH111_0.30	0.3	Non Hazardous		46
16	BH114_0.30	0.3	Non Hazardous		49
17	BH112_0.30	0.3	Non Hazardous		52
18	BH119_0.30	0.3	Non Hazardous		55
19	BH110_0.30	0.3	Non Hazardous		58
20	BH123_0.30	0.3	Non Hazardous		61
21	BH116_0.30	0.3	Non Hazardous		64
22	WS105_0.40	0.4	Non Hazardous		67
23	BH126_0.50	0.5	Non Hazardous		70
24	BH116_0.50	0.5	Non Hazardous		73
25	BH107_0.50	0.5	Non Hazardous		76
26	BH115_0.50	0.5	Non Hazardous		79
27	BH117_0.50	0.5	Non Hazardous		82
28	BH103_0.50	0.5	Non Hazardous		85
29	WS108_0.50	0.5	Non Hazardous		88
30	BH128_0.50	0.5	Non Hazardous		91
31	BH123_0.50	0.5	Non Hazardous		94
32	BH108_0.50	0.5	Non Hazardous		97
33	BH109_0.50	0.5	Non Hazardous		100
34	WS106_0.50	0.5	Non Hazardous		103
35	BH112_0.50	0.5	Non Hazardous		106
36	BH110_0.50	0.5	Non Hazardous		109
37	BH121_0.50	0.5	Non Hazardous		112
38	WS102_0.50	0.5	Non Hazardous		115
39	BH120_0.50	0.5	Non Hazardous		118
40	BH124_0.50	0.5	Non Hazardous		121
41	BH103_1.00	1	Non Hazardous		124
42	BH120_1.00	1	Non Hazardous		127
43	WS103_1.00	1	Non Hazardous		130
44	BH109_1.00	1	Non Hazardous		133
45	BH114_1.00	1	Non Hazardous		136
46	BH119_1.00	1	Non Hazardous		139
47	TP101_1.00	1	Non Hazardous		142
48	BH126_1.00	1	Non Hazardous		145
49	WS104_1.00	1	Non Hazardous		148
50	BH115_1.00	1	Non Hazardous		151
51	BH104_1.00	1	Non Hazardous		154
52	TP103_1.00	1	Non Hazardous		157
53	BH118_1.00	1	Non Hazardous		160
54	TP102_1.00	1	Non Hazardous		163
55	BH127_1.00	1	Non Hazardous		166
56	BH102_1.10	1.1	Non Hazardous		169
57	WS109_1.20	1.2	Non Hazardous		172
58	BH117_1.50	1.5	Non Hazardous		175
59	BH107_1.50	1.5	Non Hazardous		178
60	BH126_1.50	1.5	Non Hazardous		181
61	WS105_1.50	1.5	Non Hazardous		184
62	WS108_1.50	1.5	Non Hazardous		187
63	BH124_1.50	1.5	Non Hazardous		190

#	Sample name	Depth [m]	Classification Result	Hazard properties	Page
64	BH123_1.50	1.5	Non Hazardous		193
65	BH111_1.50	1.5	Non Hazardous		196
66	BH109_1.50	1.5	Non Hazardous		199
67	WS106_1.50	1.5	Non Hazardous		202
68	BH102_1.60	1.6	Hazardous	HP 3(i), HP 7, HP 11	205
69	WS109_1.70	1.7	Non Hazardous		208
70	BH108_2.00	2	Non Hazardous		211
71	TP103_2.00	2	Non Hazardous		214
72	WS103_2.00	2	Non Hazardous		217
73	TP102_2.00	2	Non Hazardous		220
74	BH121_2.00	2	Non Hazardous		223
75	BH116_2.00	2	Non Hazardous		226
76	BH106_2.00	2	Non Hazardous		229
77	BH117_2.00	2	Non Hazardous		232
78	BH128_2.00	2	Non Hazardous		235
79	BH120_2.00	2	Non Hazardous		238
80	BH115_2.00	2	Non Hazardous		241
81	TP101_2.00	2	Non Hazardous		244
82	BH114_2.00	2	Non Hazardous		247
83	BH119_2.00	2	Non Hazardous		250
84	BH110_2.00	2	Non Hazardous		253
85	BH102_2.30	2.3	Hazardous	HP 7, HP 14	256
86	TP102_2.50	2.5	Non Hazardous		259
87	TP103_2.50	2.5	Non Hazardous		262
88	WS108_2.50	2.5	Non Hazardous		265
89	BH109_7.50	7.5	Non Hazardous		268
90	BH109_8.30	8.3	Non Hazardous		271
91	BH109_9.50	9.5	Non Hazardous		274

Related documents

#	Name	Description
1	Sweco Standard Soils February 2022	waste stream template used to create this Job

Report

Created by: Megan Tait

Created date: 25 Oct 2023 12:55 GMT

Appendices	Page
Appendix A: Classifier defined and non GB MCL determinands	277
Appendix B: Rationale for selection of metal species	278
Appendix C: Version	279

Classification of sample: TP103_0.10

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:
TP103_0.10
Sample Depth:
0.1 m
Moisture content:
13%
(dry weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 13% Dry Weight Moisture Correction applied (MC)

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1		arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		8.6	mg/kg	1.32	10.048	mg/kg	0.001 %	✓	
2		boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		0.7	mg/kg	3.22	1.995	mg/kg	0.000199 %	✓	
3		cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		<0.2	mg/kg	1.142	<0.228	mg/kg	<0.0000228 %		<**LOD**
4		chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		29	mg/kg	1.462	37.509	mg/kg	0.00375 %	✓	
5		chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<1.8	mg/kg	2.27	<4.086	mg/kg	<0.000409 %		<**LOD**
6		copper { copper sulphate }	029-004-00-0	231-847-6	7758-98-7		21	mg/kg	2.512	46.678	mg/kg	0.00467 %	✓	
7		lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	24	mg/kg		21.239	mg/kg	0.00212 %	✓	
8		mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.3	mg/kg	1.353	<0.406	mg/kg	<0.0000406 %		<**LOD**
9		nickel { nickel sulfate }	028-009-00-5	232-104-9	7786-81-4		21	mg/kg	2.637	49	mg/kg	0.0049 %	✓	
10		selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<1	mg/kg	2.554	<2.554	mg/kg	<0.000255 %		<**LOD**
11		zinc { zinc sulphate (hydrous) (mono-, hexa- and hepta hydrate); [1] zinc sulphate (anhydrous) [2] }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		65	mg/kg	4.398	252.978	mg/kg	0.0253 %	✓	
12		TPH (C6 to C40) petroleum group			TPH		<20	mg/kg		<20	mg/kg	<0.002 %		<**LOD**
13		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<**LOD**
14		benzene	601-020-00-8	200-753-7	71-43-2		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<**LOD**

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number									
15		toluene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-021-00-3	203-625-9	108-88-3									
16		ethylbenzene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-023-00-4	202-849-4	100-41-4									
17		xylene				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
18		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<1	mg/kg	1.884	<1.884	mg/kg	<0.000188 %		<LOD
		006-007-00-5											
19		pH				6.7	pH		6.7	pH	6.7 pH		
				PH									
20		naphthalene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
21		acenaphthylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-917-1	208-96-8									
22		acenaphthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			201-469-6	83-32-9									
23		fluorene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			201-695-5	86-73-7									
24		phenanthrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			201-581-5	85-01-8									
25		anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			204-371-1	120-12-7									
26		fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-912-4	206-44-0									
27		pyrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			204-927-3	129-00-0									
28		benzo[a]anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-033-00-9	200-280-6	56-55-3									
29		chrysene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-048-00-0	205-923-4	218-01-9									
30		benzo[b]fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-034-00-4	205-911-9	205-99-2									
31		benzo[k]fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-036-00-5	205-916-6	207-08-9									
32		benzo[a]pyrene; benzo[def]chrysene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-032-00-3	200-028-5	50-32-8									
33		indeno[123-cd]pyrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-893-2	193-39-5									
34		dibenz[a,h]anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
35		benzo[ghi]perylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-883-8	191-24-2									
36		phenol				<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
		604-001-00-2	203-632-7	108-95-2									
37		asbestos				<			<		<		ND
		650-013-00-6	- - - - - - -	12001-28-4 132207-32-0 12172-73-5 77536-66-4 77536-68-6 77536-67-5 12001-29-5									
38		Asbestos Fragments (Visible to Naked Eye).				<			<		<		ND
				12001-28-4 132207-32-0 12172-73-5									

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number							
				77536-66-4 77536-68-6 77536-67-5 12001-29-5							
								Total:	0.045 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Determinand defined by classifier (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: WS108_0.10

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:
WS108_0.10
Sample Depth:
0.1 m
Moisture content:
14%
(dry weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 14% Dry Weight Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		11 mg/kg	1.32	12.74 mg/kg	0.00127 %	✓	
2	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		0.5 mg/kg	3.22	1.412 mg/kg	0.000141 %	✓	
3	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		<0.2 mg/kg	1.142	<0.228 mg/kg	<0.0000228 %		<LOD
4	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		19 mg/kg	1.462	24.359 mg/kg	0.00244 %	✓	
5	chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<1.8 mg/kg	2.27	<4.086 mg/kg	<0.000409 %		<LOD
6	copper { copper sulphate }	029-004-00-0	231-847-6	7758-98-7		20 mg/kg	2.512	44.065 mg/kg	0.00441 %	✓	
7	lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	25 mg/kg		21.93 mg/kg	0.00219 %	✓	
8	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.3 mg/kg	1.353	<0.406 mg/kg	<0.0000406 %		<LOD
9	nickel { nickel sulfate }	028-009-00-5	232-104-9	7786-81-4		16 mg/kg	2.637	37.006 mg/kg	0.0037 %	✓	
10	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<1 mg/kg	2.554	<2.554 mg/kg	<0.000255 %		<LOD
11	zinc { zinc sulphate (hydrous) (mono-, hexa- and hepta hydrate); [1] zinc sulphate (anhydrous) [2] }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		78 mg/kg	4.398	300.911 mg/kg	0.0301 %	✓	
12	TPH (C6 to C40) petroleum group			TPH		<20 mg/kg		<20 mg/kg	<0.002 %		<LOD
13	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
14	benzene	601-020-00-8	200-753-7	71-43-2		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
15		toluene	601-021-00-3	203-625-9	108-88-3		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<**LOD**
16		ethylbenzene	601-023-00-4	202-849-4	100-41-4		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<**LOD**
17		xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
18		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<1	mg/kg	1.884	<1.884	mg/kg	<0.000188 %		<**LOD**
19		pH			PH		6.5	pH		6.5	pH	6.5 pH		
20		naphthalene	601-052-00-2	202-049-5	91-20-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
21		acenaphthylene		205-917-1	208-96-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
22		acenaphthene		201-469-6	83-32-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
23		fluorene		201-695-5	86-73-7		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
24		phenanthrene		201-581-5	85-01-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
25		anthracene		204-371-1	120-12-7		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
26		fluoranthene		205-912-4	206-44-0		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
27		pyrene		204-927-3	129-00-0		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
28		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
29		chrysene	601-048-00-0	205-923-4	218-01-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
30		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
31		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
32		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
33		indeno[123-cd]pyrene		205-893-2	193-39-5		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
34		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
35		benzo[ghi]perylene		205-883-8	191-24-2		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
36		phenol	604-001-00-2	203-632-7	108-95-2		<1	mg/kg		<1	mg/kg	<0.0001 %		<**LOD**
37		asbestos	650-013-00-6	- - - - - - -	12001-28-4 132207-32-0 12172-73-5 77536-66-4 77536-68-6 77536-67-5 12001-29-5		<			<		<		**ND**
38		Asbestos Fragments (Visible to Naked Eye).			12001-28-4 132207-32-0 12172-73-5		<			<		<		**ND**

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number							
				77536-66-4 77536-68-6 77536-67-5 12001-29-5							
								Total:	0.0473 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Determinand defined by classifier (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP101_0.10

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:
TP101_0.10
Sample Depth:
0.1 m
Moisture content:
17%
(dry weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 17% Dry Weight Moisture Correction applied (MC)

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1		arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		6.6	mg/kg	1.32	7.448	mg/kg	0.000745 %	✓	
2		boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		1.8	mg/kg	3.22	4.954	mg/kg	0.000495 %	✓	
3		cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		<0.2	mg/kg	1.142	<0.228	mg/kg	<0.0000228 %		<**LOD**
4		chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		28	mg/kg	1.462	34.977	mg/kg	0.0035 %	✓	
5		chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<1.8	mg/kg	2.27	<4.086	mg/kg	<0.000409 %		<**LOD**
6		copper { copper sulphate }	029-004-00-0	231-847-6	7758-98-7		16	mg/kg	2.512	34.348	mg/kg	0.00343 %	✓	
7		lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	27	mg/kg		23.077	mg/kg	0.00231 %	✓	
8		mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.3	mg/kg	1.353	<0.406	mg/kg	<0.0000406 %		<**LOD**
9		nickel { nickel sulfate }	028-009-00-5	232-104-9	7786-81-4		30	mg/kg	2.637	67.607	mg/kg	0.00676 %	✓	
10		selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<1	mg/kg	2.554	<2.554	mg/kg	<0.000255 %		<**LOD**
11		zinc { zinc sulphate (hydrous) (mono-, hexa- and hepta hydrate); [1] zinc sulphate (anhydrous) [2] }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		290	mg/kg	4.398	1090.084	mg/kg	0.109 %	✓	
12		TPH (C6 to C40) petroleum group			TPH		227	mg/kg		194.017	mg/kg	0.0194 %	✓	
13		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<**LOD**
14		benzene	601-020-00-8	200-753-7	71-43-2		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<**LOD**

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number									
15		toluene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-021-00-3	203-625-9	108-88-3									
16		ethylbenzene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-023-00-4	202-849-4	100-41-4									
17		xylene				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
18		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<1	mg/kg	1.884	<1.884	mg/kg	<0.000188 %		<LOD
		006-007-00-5											
19		pH				7	pH		7	pH	7pH		
				PH									
20		naphthalene				0.65	mg/kg		0.556	mg/kg	0.0000556 %	✓	
		601-052-00-2	202-049-5	91-20-3									
21		acenaphthylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-917-1	208-96-8									
22		acenaphthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			201-469-6	83-32-9									
23		fluorene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			201-695-5	86-73-7									
24		phenanthrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			201-581-5	85-01-8									
25		anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			204-371-1	120-12-7									
26		fluoranthene				0.08	mg/kg		0.0684	mg/kg	0.00000684 %	✓	
			205-912-4	206-44-0									
27		pyrene				0.08	mg/kg		0.0684	mg/kg	0.00000684 %	✓	
			204-927-3	129-00-0									
28		benzo[a]anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-033-00-9	200-280-6	56-55-3									
29		chrysene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-048-00-0	205-923-4	218-01-9									
30		benzo[b]fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-034-00-4	205-911-9	205-99-2									
31		benzo[k]fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-036-00-5	205-916-6	207-08-9									
32		benzo[a]pyrene; benzo[def]chrysene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-032-00-3	200-028-5	50-32-8									
33		indeno[123-cd]pyrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-893-2	193-39-5									
34		dibenz[a,h]anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
35		benzo[ghi]perylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-883-8	191-24-2									
36		phenol				<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
		604-001-00-2	203-632-7	108-95-2									
37		asbestos				<			<		<		ND
		650-013-00-6	- - - - - - -	12001-28-4 132207-32-0 12172-73-5 77536-66-4 77536-68-6 77536-67-5 12001-29-5									
38		Asbestos Fragments (Visible to Naked Eye).				<			<		<		ND
				12001-28-4 132207-32-0 12172-73-5									

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number							
				77536-66-4 77536-68-6 77536-67-5 12001-29-5							
								Total:	0.147 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Determinand defined by classifier (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Supplementary Hazardous Property Information

HP 3(i): Flammable "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"

Force this Hazardous property to non hazardous because Not considered flammable at the recorded concentration in a soil matrix.

Hazard Statements hit:

Flam. Liq. 3; H226 "Flammable liquid and vapour."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.0194%)

Classification of sample: WS102_0.10

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:
WS102_0.10
Sample Depth:
0.1 m
Moisture content:
5.1%
(dry weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 5.1% Dry Weight Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		9 mg/kg	1.32	11.306 mg/kg	0.00113 %	✓	
2	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		2.8 mg/kg	3.22	8.578 mg/kg	0.000858 %	✓	
3	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		<0.2 mg/kg	1.142	<0.228 mg/kg	<0.0000228 %		<LOD
4	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		21 mg/kg	1.462	29.203 mg/kg	0.00292 %	✓	
5	chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<1.8 mg/kg	2.27	<4.086 mg/kg	<0.000409 %		<LOD
6	copper { copper sulphate }	029-004-00-0	231-847-6	7758-98-7		21 mg/kg	2.512	50.186 mg/kg	0.00502 %	✓	
7	lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	18 mg/kg		17.127 mg/kg	0.00171 %	✓	
8	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.3 mg/kg	1.353	<0.406 mg/kg	<0.0000406 %		<LOD
9	nickel { nickel sulfate }	028-009-00-5	232-104-9	7786-81-4		19 mg/kg	2.637	47.666 mg/kg	0.00477 %	✓	
10	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<1 mg/kg	2.554	<2.554 mg/kg	<0.000255 %		<LOD
11	zinc { zinc sulphate (hydrous) (mono-, hexa- and hepta hydrate); [1] zinc sulphate (anhydrous) [2] }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		64 mg/kg	4.398	267.809 mg/kg	0.0268 %	✓	
12	TPH (C6 to C40) petroleum group			TPH		11 mg/kg		10.466 mg/kg	0.00105 %	✓	
13	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
14	benzene	601-020-00-8	200-753-7	71-43-2		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
15		toluene	601-021-00-3	203-625-9	108-88-3		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<**LOD**
16		ethylbenzene	601-023-00-4	202-849-4	100-41-4		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<**LOD**
17		xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
18		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<1	mg/kg	1.884	<1.884	mg/kg	<0.000188 %		<**LOD**
19		pH			PH		7.3	pH		7.3	pH	7.3 pH		
20		naphthalene	601-052-00-2	202-049-5	91-20-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
21		acenaphthylene		205-917-1	208-96-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
22		acenaphthene		201-469-6	83-32-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
23		fluorene		201-695-5	86-73-7		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
24		phenanthrene		201-581-5	85-01-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
25		anthracene		204-371-1	120-12-7		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
26		fluoranthene		205-912-4	206-44-0		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
27		pyrene		204-927-3	129-00-0		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
28		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
29		chrysene	601-048-00-0	205-923-4	218-01-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
30		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
31		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
32		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
33		indeno[123-cd]pyrene		205-893-2	193-39-5		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
34		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
35		benzo[ghi]perylene		205-883-8	191-24-2		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
36		phenol	604-001-00-2	203-632-7	108-95-2		<1	mg/kg		<1	mg/kg	<0.0001 %		<**LOD**
37		asbestos	650-013-00-6	- - - - - - -	12001-28-4 132207-32-0 12172-73-5 77536-66-4 77536-68-6 77536-67-5 12001-29-5		<			<		<		**ND**
38		Asbestos Fragments (Visible to Naked Eye).			12001-28-4 132207-32-0 12172-73-5		<			<		<		**ND**

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number							
				77536-66-4 77536-68-6 77536-67-5 12001-29-5							
								Total:	0.0453 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Determinand defined by classifier (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Supplementary Hazardous Property Information

HP 3(i): Flammable "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"

Force this Hazardous property to non hazardous because Not considered flammable at the recorded concentration in a soil matrix.

Hazard Statements hit:

Flam. Liq. 3; H226 "Flammable liquid and vapour."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.00105%)

Classification of sample: WS106_0.10

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:
WS106_0.10
Sample Depth:
0.1 m
Moisture content:
13%
(dry weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 13% Dry Weight Moisture Correction applied (MC)

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1		arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		9.2	mg/kg	1.32	10.75	mg/kg	0.00107 %	✓	
2		boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		0.5	mg/kg	3.22	1.425	mg/kg	0.000142 %	✓	
3		cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		<0.2	mg/kg	1.142	<0.228	mg/kg	<0.0000228 %		<LOD
4		chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		30	mg/kg	1.462	38.802	mg/kg	0.00388 %	✓	
5		chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<1.8	mg/kg	2.27	<4.086	mg/kg	<0.000409 %		<LOD
6		copper { copper sulphate }	029-004-00-0	231-847-6	7758-98-7		25	mg/kg	2.512	55.569	mg/kg	0.00556 %	✓	
7		lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	28	mg/kg		24.779	mg/kg	0.00248 %	✓	
8		mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.3	mg/kg	1.353	<0.406	mg/kg	<0.0000406 %		<LOD
9		nickel { nickel sulfate }	028-009-00-5	232-104-9	7786-81-4		20	mg/kg	2.637	46.667	mg/kg	0.00467 %	✓	
10		selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<1	mg/kg	2.554	<2.554	mg/kg	<0.000255 %		<LOD
11		zinc { zinc sulphate (hydrous) (mono-, hexa- and hepta hydrate); [1] zinc sulphate (anhydrous) [2] }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		69	mg/kg	4.398	268.546	mg/kg	0.0269 %	✓	
12		TPH (C6 to C40) petroleum group			TPH		<20	mg/kg		<20	mg/kg	<0.002 %		<LOD
13		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
14		benzene	601-020-00-8	200-753-7	71-43-2		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number									
15		toluene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-021-00-3	203-625-9	108-88-3									
16		ethylbenzene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-023-00-4	202-849-4	100-41-4									
17		xylene				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
18		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<1	mg/kg	1.884	<1.884	mg/kg	<0.000188 %		<LOD
		006-007-00-5											
19		pH				6.6	pH		6.6	pH	6.6 pH		
				PH									
20		naphthalene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
21		acenaphthylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-917-1	208-96-8									
22		acenaphthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			201-469-6	83-32-9									
23		fluorene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			201-695-5	86-73-7									
24		phenanthrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			201-581-5	85-01-8									
25		anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			204-371-1	120-12-7									
26		fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-912-4	206-44-0									
27		pyrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			204-927-3	129-00-0									
28		benzo[a]anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-033-00-9	200-280-6	56-55-3									
29		chrysene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-048-00-0	205-923-4	218-01-9									
30		benzo[b]fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-034-00-4	205-911-9	205-99-2									
31		benzo[k]fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-036-00-5	205-916-6	207-08-9									
32		benzo[a]pyrene; benzo[def]chrysene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-032-00-3	200-028-5	50-32-8									
33		indeno[123-cd]pyrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-893-2	193-39-5									
34		dibenz[a,h]anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
35		benzo[ghi]perylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-883-8	191-24-2									
36		phenol				<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
		604-001-00-2	203-632-7	108-95-2									
37		asbestos				<			<		<		ND
		650-013-00-6	- - - - - - -	12001-28-4 132207-32-0 12172-73-5 77536-66-4 77536-68-6 77536-67-5 12001-29-5									
38		Asbestos Fragments (Visible to Naked Eye).				<			<		<		ND
				12001-28-4 132207-32-0 12172-73-5									

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number							
				77536-66-4 77536-68-6 77536-67-5 12001-29-5							
								Total:	0.0478 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Determinand defined by classifier (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: WS103_0.10

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:
WS103_0.10
Sample Depth:
0.1 m
Moisture content:
24%
(dry weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 24% Dry Weight Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		5 mg/kg	1.32	5.324 mg/kg	0.000532 %	✓	
2	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		0.4 mg/kg	3.22	1.039 mg/kg	0.000104 %	✓	
3	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		0.2 mg/kg	1.142	0.184 mg/kg	0.0000184 %	✓	
4	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		11 mg/kg	1.462	12.965 mg/kg	0.0013 %	✓	
5	chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<1.8 mg/kg	2.27	<4.086 mg/kg	<0.000409 %		<LOD
6	copper { copper sulphate }	029-004-00-0	231-847-6	7758-98-7		21 mg/kg	2.512	42.537 mg/kg	0.00425 %	✓	
7	lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	23 mg/kg		18.548 mg/kg	0.00185 %	✓	
8	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.3 mg/kg	1.353	<0.406 mg/kg	<0.0000406 %		<LOD
9	nickel { nickel sulfate }	028-009-00-5	232-104-9	7786-81-4		8 mg/kg	2.637	17.011 mg/kg	0.0017 %	✓	
10	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<1 mg/kg	2.554	<2.554 mg/kg	<0.000255 %		<LOD
11	zinc { zinc sulphate (hydrous) (mono-, hexa- and hepta hydrate); [1] zinc sulphate (anhydrous) [2] }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		45 mg/kg	4.398	159.602 mg/kg	0.016 %	✓	
12	TPH (C6 to C40) petroleum group			TPH		11 mg/kg		8.871 mg/kg	0.000887 %	✓	
13	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
14	benzene	601-020-00-8	200-753-7	71-43-2		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
15		toluene	601-021-00-3	203-625-9	108-88-3		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<**LOD**
16		ethylbenzene	601-023-00-4	202-849-4	100-41-4		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<**LOD**
17		xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
18		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<1	mg/kg	1.884	<1.884	mg/kg	<0.000188 %		<**LOD**
19		pH			PH		6.7	pH		6.7	pH	6.7 pH		
20		naphthalene	601-052-00-2	202-049-5	91-20-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
21		acenaphthylene		205-917-1	208-96-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
22		acenaphthene		201-469-6	83-32-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
23		fluorene		201-695-5	86-73-7		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
24		phenanthrene		201-581-5	85-01-8		0.22	mg/kg		0.177	mg/kg	0.0000177 %	✓	
25		anthracene		204-371-1	120-12-7		0.08	mg/kg		0.0645	mg/kg	0.00000645 %	✓	
26		fluoranthene		205-912-4	206-44-0		0.2	mg/kg		0.161	mg/kg	0.0000161 %	✓	
27		pyrene		204-927-3	129-00-0		0.2	mg/kg		0.161	mg/kg	0.0000161 %	✓	
28		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		0.13	mg/kg		0.105	mg/kg	0.0000105 %	✓	
29		chrysene	601-048-00-0	205-923-4	218-01-9		0.1	mg/kg		0.0806	mg/kg	0.00000806 %	✓	
30		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		0.14	mg/kg		0.113	mg/kg	0.0000113 %	✓	
31		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		0.05	mg/kg		0.0403	mg/kg	0.00000403 %	✓	
32		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		0.09	mg/kg		0.0726	mg/kg	0.00000726 %	✓	
33		indeno[123-cd]pyrene		205-893-2	193-39-5		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
34		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
35		benzo[ghi]perylene		205-883-8	191-24-2		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
36		phenol	604-001-00-2	203-632-7	108-95-2		<1	mg/kg		<1	mg/kg	<0.0001 %		<**LOD**
37		asbestos	650-013-00-6	- - - - - - -	12001-28-4 132207-32-0 12172-73-5 77536-66-4 77536-68-6 77536-67-5 12001-29-5		<			<		<		**ND**
38		Asbestos Fragments (Visible to Naked Eye).			12001-28-4 132207-32-0 12172-73-5		<			<		<		**ND**

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number							
				77536-66-4 77536-68-6 77536-67-5 12001-29-5							
								Total:	0.0277 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Determinand defined by classifier (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Supplementary Hazardous Property Information

HP 3(i): Flammable "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"

Force this Hazardous property to non hazardous because Not considered flammable at the recorded concentration in a soil matrix.

Hazard Statements hit:

Flam. Liq. 3; H226 "Flammable liquid and vapour."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.00088%)

Classification of sample: BH104_0.10

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:
BH104_0.10
Sample Depth:
0.1 m
Moisture content:
15%
(dry weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 15% Dry Weight Moisture Correction applied (MC)

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1		arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		8.3	mg/kg	1.32	9.529	mg/kg	0.000953 %	✓	
2		boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		0.3	mg/kg	3.22	0.84	mg/kg	0.000084 %	✓	
3		cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		<0.2	mg/kg	1.142	<0.228	mg/kg	<0.0000228 %		<**LOD**
4		chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		22	mg/kg	1.462	27.96	mg/kg	0.0028 %	✓	
5		chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<1.8	mg/kg	2.27	<4.086	mg/kg	<0.000409 %		<**LOD**
6		copper { copper sulphate }	029-004-00-0	231-847-6	7758-98-7		27	mg/kg	2.512	58.97	mg/kg	0.0059 %	✓	
7		lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	37	mg/kg		32.174	mg/kg	0.00322 %	✓	
8		mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		0.8	mg/kg	1.353	0.942	mg/kg	0.0000942 %	✓	
9		nickel { nickel sulfate }	028-009-00-5	232-104-9	7786-81-4		17	mg/kg	2.637	38.977	mg/kg	0.0039 %	✓	
10		selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<1	mg/kg	2.554	<2.554	mg/kg	<0.000255 %		<**LOD**
11		zinc { zinc sulphate (hydrous) (mono-, hexa- and hepta hydrate); [1] zinc sulphate (anhydrous) [2] }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		75	mg/kg	4.398	286.821	mg/kg	0.0287 %	✓	
12		TPH (C6 to C40) petroleum group			TPH		<20	mg/kg		<20	mg/kg	<0.002 %		<**LOD**
13		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<**LOD**
14		benzene	601-020-00-8	200-753-7	71-43-2		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<**LOD**

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number									
15		toluene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-021-00-3	203-625-9	108-88-3									
16		ethylbenzene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-023-00-4	202-849-4	100-41-4									
17		xylene				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
18		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<1	mg/kg	1.884	<1.884	mg/kg	<0.000188 %		<LOD
		006-007-00-5											
19		pH				6.7	pH		6.7	pH	6.7 pH		
				PH									
20		naphthalene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
21		acenaphthylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-917-1	208-96-8									
22		acenaphthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			201-469-6	83-32-9									
23		fluorene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			201-695-5	86-73-7									
24		phenanthrene				0.05	mg/kg		0.0435	mg/kg	0.00000435 %	✓	
			201-581-5	85-01-8									
25		anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			204-371-1	120-12-7									
26		fluoranthene				0.06	mg/kg		0.0522	mg/kg	0.00000522 %	✓	
			205-912-4	206-44-0									
27		pyrene				0.09	mg/kg		0.0783	mg/kg	0.00000783 %	✓	
			204-927-3	129-00-0									
28		benzo[a]anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-033-00-9	200-280-6	56-55-3									
29		chrysene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-048-00-0	205-923-4	218-01-9									
30		benzo[b]fluoranthene				0.08	mg/kg		0.0696	mg/kg	0.00000696 %	✓	
		601-034-00-4	205-911-9	205-99-2									
31		benzo[k]fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-036-00-5	205-916-6	207-08-9									
32		benzo[a]pyrene; benzo[def]chrysene				0.05	mg/kg		0.0435	mg/kg	0.00000435 %	✓	
		601-032-00-3	200-028-5	50-32-8									
33		indeno[123-cd]pyrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-893-2	193-39-5									
34		dibenz[a,h]anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
35		benzo[ghi]perylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-883-8	191-24-2									
36		phenol				<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
		604-001-00-2	203-632-7	108-95-2									
37		asbestos				<			<		<		ND
		650-013-00-6	- - - - - - -	12001-28-4 132207-32-0 12172-73-5 77536-66-4 77536-68-6 77536-67-5 12001-29-5									
38		Asbestos Fragments (Visible to Naked Eye).				<			<		<		ND
				12001-28-4 132207-32-0 12172-73-5									

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number							
				77536-66-4 77536-68-6 77536-67-5 12001-29-5							
								Total:	0.0487 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Determinand defined by classifier (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: BH121_0.10

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:
BH121_0.10
Sample Depth:
0.1 m
Moisture content:
12%
(dry weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 12% Dry Weight Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		10 mg/kg	1.32	11.789 mg/kg	0.00118 %	✓	
2	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		0.4 mg/kg	3.22	1.15 mg/kg	0.000115 %	✓	
3	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		<0.2 mg/kg	1.142	<0.228 mg/kg	<0.0000228 %		<LOD
4	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		28 mg/kg	1.462	36.539 mg/kg	0.00365 %	✓	
5	chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<1.8 mg/kg	2.27	<4.086 mg/kg	<0.000409 %		<LOD
6	copper { copper sulphate }	029-004-00-0	231-847-6	7758-98-7		28 mg/kg	2.512	62.793 mg/kg	0.00628 %	✓	
7	lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	39 mg/kg		34.821 mg/kg	0.00348 %	✓	
8	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.3 mg/kg	1.353	<0.406 mg/kg	<0.0000406 %		<LOD
9	nickel { nickel sulfate }	028-009-00-5	232-104-9	7786-81-4		20 mg/kg	2.637	47.084 mg/kg	0.00471 %	✓	
10	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<1 mg/kg	2.554	<2.554 mg/kg	<0.000255 %		<LOD
11	zinc { zinc sulphate (hydrous) (mono-, hexa- and hepta hydrate); [1] zinc sulphate (anhydrous) [2] }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		72 mg/kg	4.398	282.724 mg/kg	0.0283 %	✓	
12	TPH (C6 to C40) petroleum group			TPH		<20 mg/kg		<20 mg/kg	<0.002 %		<LOD
13	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
14	benzene	601-020-00-8	200-753-7	71-43-2		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
15		toluene	601-021-00-3	203-625-9	108-88-3		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<**LOD**
16		ethylbenzene	601-023-00-4	202-849-4	100-41-4		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<**LOD**
17		xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
18		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<1	mg/kg	1.884	<1.884	mg/kg	<0.000188 %		<**LOD**
19		pH			PH		6.6	pH		6.6	pH	6.6 pH		
20		naphthalene	601-052-00-2	202-049-5	91-20-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
21		acenaphthylene		205-917-1	208-96-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
22		acenaphthene		201-469-6	83-32-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
23		fluorene		201-695-5	86-73-7		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
24		phenanthrene		201-581-5	85-01-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
25		anthracene		204-371-1	120-12-7		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
26		fluoranthene		205-912-4	206-44-0		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
27		pyrene		204-927-3	129-00-0		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
28		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
29		chrysene	601-048-00-0	205-923-4	218-01-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
30		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
31		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
32		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
33		indeno[123-cd]pyrene		205-893-2	193-39-5		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
34		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
35		benzo[ghi]perylene		205-883-8	191-24-2		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
36		phenol	604-001-00-2	203-632-7	108-95-2		<1	mg/kg		<1	mg/kg	<0.0001 %		<**LOD**
37		asbestos	650-013-00-6	- - - - - - -	12001-28-4 132207-32-0 12172-73-5 77536-66-4 77536-68-6 77536-67-5 12001-29-5		<			<		<		**ND**
38		Asbestos Fragments (Visible to Naked Eye).			12001-28-4 132207-32-0 12172-73-5		<			<		<		**ND**

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number							
				77536-66-4 77536-68-6 77536-67-5 12001-29-5							
								Total:	0.0508 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Determinand defined by classifier (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: BH108_0.10

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:
BH108_0.10
Sample Depth:
0.1 m
Moisture content:
11%
(dry weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 11% Dry Weight Moisture Correction applied (MC)

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1		arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		5.4	mg/kg	1.32	6.423	mg/kg	0.000642 %	✓	
2		boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		0.6	mg/kg	3.22	1.74	mg/kg	0.000174 %	✓	
3		cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		<0.2	mg/kg	1.142	<0.228	mg/kg	<0.0000228 %		<**LOD**
4		chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		14	mg/kg	1.462	18.434	mg/kg	0.00184 %	✓	
5		chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<1.8	mg/kg	2.27	<4.086	mg/kg	<0.000409 %		<**LOD**
6		copper { copper sulphate }	029-004-00-0	231-847-6	7758-98-7		12	mg/kg	2.512	27.154	mg/kg	0.00272 %	✓	
7		lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	24	mg/kg		21.622	mg/kg	0.00216 %	✓	
8		mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.3	mg/kg	1.353	<0.406	mg/kg	<0.0000406 %		<**LOD**
9		nickel { nickel sulfate }	028-009-00-5	232-104-9	7786-81-4		12	mg/kg	2.637	28.505	mg/kg	0.00285 %	✓	
10		selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<1	mg/kg	2.554	<2.554	mg/kg	<0.000255 %		<**LOD**
11		zinc { zinc sulphate (hydrous) (mono-, hexa- and hepta hydrate); [1] zinc sulphate (anhydrous) [2] }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		58	mg/kg	4.398	229.802	mg/kg	0.023 %	✓	
12		TPH (C6 to C40) petroleum group			TPH		<20	mg/kg		<20	mg/kg	<0.002 %		<**LOD**
13		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<**LOD**
14		benzene	601-020-00-8	200-753-7	71-43-2		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<**LOD**

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number									
15		toluene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-021-00-3	203-625-9	108-88-3									
16		ethylbenzene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-023-00-4	202-849-4	100-41-4									
17		xylene				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
18		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<1	mg/kg	1.884	<1.884	mg/kg	<0.000188 %		<LOD
		006-007-00-5											
19		pH				6.5	pH		6.5	pH	6.5 pH		
				PH									
20		naphthalene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
21		acenaphthylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-917-1	208-96-8									
22		acenaphthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			201-469-6	83-32-9									
23		fluorene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			201-695-5	86-73-7									
24		phenanthrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			201-581-5	85-01-8									
25		anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			204-371-1	120-12-7									
26		fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-912-4	206-44-0									
27		pyrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			204-927-3	129-00-0									
28		benzo[a]anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-033-00-9	200-280-6	56-55-3									
29		chrysene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-048-00-0	205-923-4	218-01-9									
30		benzo[b]fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-034-00-4	205-911-9	205-99-2									
31		benzo[k]fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-036-00-5	205-916-6	207-08-9									
32		benzo[a]pyrene; benzo[def]chrysene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-032-00-3	200-028-5	50-32-8									
33		indeno[123-cd]pyrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-893-2	193-39-5									
34		dibenz[a,h]anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
35		benzo[ghi]perylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-883-8	191-24-2									
36		phenol				<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
		604-001-00-2	203-632-7	108-95-2									
37		asbestos				<			<		<		ND
		650-013-00-6	- - - - - - -	12001-28-4 132207-32-0 12172-73-5 77536-66-4 77536-68-6 77536-67-5 12001-29-5									
38		Asbestos Fragments (Visible to Naked Eye).				<			<		<		ND
				12001-28-4 132207-32-0 12172-73-5									

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number							
				77536-66-4 77536-68-6 77536-67-5 12001-29-5							
								Total:	0.0365 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Determinand defined by classifier (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP102_0.10

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:
TP102_0.10
Sample Depth:
0.1 m
Moisture content:
14%
(dry weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 14% Dry Weight Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		7.3 mg/kg	1.32	8.455 mg/kg	0.000845 %	✓	
2	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		0.3 mg/kg	3.22	0.847 mg/kg	0.0000847 %	✓	
3	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		<0.2 mg/kg	1.142	<0.228 mg/kg	<0.0000228 %		<LOD
4	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		14 mg/kg	1.462	17.949 mg/kg	0.00179 %	✓	
5	chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<1.8 mg/kg	2.27	<4.086 mg/kg	<0.000409 %		<LOD
6	copper { copper sulphate }	029-004-00-0	231-847-6	7758-98-7		14 mg/kg	2.512	30.845 mg/kg	0.00308 %	✓	
7	lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	25 mg/kg		21.93 mg/kg	0.00219 %	✓	
8	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.3 mg/kg	1.353	<0.406 mg/kg	<0.0000406 %		<LOD
9	nickel { nickel sulfate }	028-009-00-5	232-104-9	7786-81-4		11 mg/kg	2.637	25.442 mg/kg	0.00254 %	✓	
10	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<1 mg/kg	2.554	<2.554 mg/kg	<0.000255 %		<LOD
11	zinc { zinc sulphate (hydrous) (mono-, hexa- and hepta hydrate); [1] zinc sulphate (anhydrous) [2] }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		50 mg/kg	4.398	192.891 mg/kg	0.0193 %	✓	
12	TPH (C6 to C40) petroleum group			TPH		<20 mg/kg		<20 mg/kg	<0.002 %		<LOD
13	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
14	benzene	601-020-00-8	200-753-7	71-43-2		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
15		toluene	601-021-00-3	203-625-9	108-88-3		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<**LOD**
16		ethylbenzene	601-023-00-4	202-849-4	100-41-4		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<**LOD**
17		xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
18		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<1	mg/kg	1.884	<1.884	mg/kg	<0.000188 %		<**LOD**
19		pH			PH		6.5	pH		6.5	pH	6.5 pH		
20		naphthalene	601-052-00-2	202-049-5	91-20-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
21		acenaphthylene		205-917-1	208-96-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
22		acenaphthene		201-469-6	83-32-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
23		fluorene		201-695-5	86-73-7		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
24		phenanthrene		201-581-5	85-01-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
25		anthracene		204-371-1	120-12-7		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
26		fluoranthene		205-912-4	206-44-0		0.1	mg/kg		0.0877	mg/kg	0.00000877 %	✓	
27		pyrene		204-927-3	129-00-0		0.1	mg/kg		0.0877	mg/kg	0.00000877 %	✓	
28		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		0.06	mg/kg		0.0526	mg/kg	0.00000526 %	✓	
29		chrysene	601-048-00-0	205-923-4	218-01-9		0.06	mg/kg		0.0526	mg/kg	0.00000526 %	✓	
30		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		0.1	mg/kg		0.0877	mg/kg	0.00000877 %	✓	
31		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		0.05	mg/kg		0.0439	mg/kg	0.00000439 %	✓	
32		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		0.08	mg/kg		0.0702	mg/kg	0.00000702 %	✓	
33		indeno[123-cd]pyrene		205-893-2	193-39-5		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
34		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
35		benzo[ghi]perylene		205-883-8	191-24-2		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
36		phenol	604-001-00-2	203-632-7	108-95-2		<1	mg/kg		<1	mg/kg	<0.0001 %		<**LOD**
37		asbestos	650-013-00-6	- - - - - - -	12001-28-4 132207-32-0 12172-73-5 77536-66-4 77536-68-6 77536-67-5 12001-29-5		<			<		<		**ND**
38		Asbestos Fragments (Visible to Naked Eye).			12001-28-4 132207-32-0 12172-73-5		<			<		<		**ND**

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number							
				77536-66-4 77536-68-6 77536-67-5 12001-29-5							
								Total:	0.0329 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Determinand defined by classifier (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: BH128_0.30

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:
BH128_0.30
Sample Depth:
0.3 m
Moisture content:
12%
(dry weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 12% Dry Weight Moisture Correction applied (MC)

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1		arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		10	mg/kg	1.32	11.789	mg/kg	0.00118 %	✓	
2		boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		1.2	mg/kg	3.22	3.45	mg/kg	0.000345 %	✓	
3		cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		<0.2	mg/kg	1.142	<0.228	mg/kg	<0.0000228 %		<**LOD**
4		chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		35	mg/kg	1.462	45.674	mg/kg	0.00457 %	✓	
5		chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<1.8	mg/kg	2.27	<4.086	mg/kg	<0.000409 %		<**LOD**
6		copper { copper sulphate }	029-004-00-0	231-847-6	7758-98-7		24	mg/kg	2.512	53.822	mg/kg	0.00538 %	✓	
7		lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	14	mg/kg		12.5	mg/kg	0.00125 %	✓	
8		mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.3	mg/kg	1.353	<0.406	mg/kg	<0.0000406 %		<**LOD**
9		nickel { nickel sulfate }	028-009-00-5	232-104-9	7786-81-4		33	mg/kg	2.637	77.688	mg/kg	0.00777 %	✓	
10		selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<1	mg/kg	2.554	<2.554	mg/kg	<0.000255 %		<**LOD**
11		zinc { zinc sulphate (hydrous) (mono-, hexa- and hepta hydrate); [1] zinc sulphate (anhydrous) [2] }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		59	mg/kg	4.398	231.676	mg/kg	0.0232 %	✓	
12		TPH (C6 to C40) petroleum group			TPH		<20	mg/kg		<20	mg/kg	<0.002 %		<**LOD**
13		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<**LOD**
14		benzene	601-020-00-8	200-753-7	71-43-2		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<**LOD**

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number									
15		toluene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-021-00-3	203-625-9	108-88-3									
16		ethylbenzene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-023-00-4	202-849-4	100-41-4									
17		xylene				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
18		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<1	mg/kg	1.884	<1.884	mg/kg	<0.000188 %		<LOD
		006-007-00-5											
19		pH				8.5	pH		8.5	pH	8.5 pH		
				PH									
20		naphthalene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
21		acenaphthylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-917-1	208-96-8									
22		acenaphthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			201-469-6	83-32-9									
23		fluorene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			201-695-5	86-73-7									
24		phenanthrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			201-581-5	85-01-8									
25		anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			204-371-1	120-12-7									
26		fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-912-4	206-44-0									
27		pyrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			204-927-3	129-00-0									
28		benzo[a]anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-033-00-9	200-280-6	56-55-3									
29		chrysene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-048-00-0	205-923-4	218-01-9									
30		benzo[b]fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-034-00-4	205-911-9	205-99-2									
31		benzo[k]fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-036-00-5	205-916-6	207-08-9									
32		benzo[a]pyrene; benzo[def]chrysene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-032-00-3	200-028-5	50-32-8									
33		indeno[123-cd]pyrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-893-2	193-39-5									
34		dibenz[a,h]anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
35		benzo[ghi]perylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-883-8	191-24-2									
36		phenol				<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
		604-001-00-2	203-632-7	108-95-2									
37		asbestos				<			<		<		ND
		650-013-00-6	- - - - - - -	12001-28-4 132207-32-0 12172-73-5 77536-66-4 77536-68-6 77536-67-5 12001-29-5									
38		Asbestos Fragments (Visible to Naked Eye).				<			<		<		ND
				12001-28-4 132207-32-0 12172-73-5									

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number							
				77536-66-4 77536-68-6 77536-67-5 12001-29-5							
								Total:	0.0468 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Determinand defined by classifier (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: BH106_0.30

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:
BH106_0.30
Sample Depth:
0.3 m
Moisture content:
15%
(dry weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 15% Dry Weight Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		6.4 mg/kg	1.32	7.348 mg/kg	0.000735 %	✓	
2	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		0.7 mg/kg	3.22	1.96 mg/kg	0.000196 %	✓	
3	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		<0.2 mg/kg	1.142	<0.228 mg/kg	<0.0000228 %		<LOD
4	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		17 mg/kg	1.462	21.606 mg/kg	0.00216 %	✓	
5	chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<1.8 mg/kg	2.27	<4.086 mg/kg	<0.000409 %		<LOD
6	copper { copper sulphate }	029-004-00-0	231-847-6	7758-98-7		13 mg/kg	2.512	28.393 mg/kg	0.00284 %	✓	
7	lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	25 mg/kg		21.739 mg/kg	0.00217 %	✓	
8	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.3 mg/kg	1.353	<0.406 mg/kg	<0.0000406 %		<LOD
9	nickel { nickel sulfate }	028-009-00-5	232-104-9	7786-81-4		14 mg/kg	2.637	32.099 mg/kg	0.00321 %	✓	
10	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<1 mg/kg	2.554	<2.554 mg/kg	<0.000255 %		<LOD
11	zinc { zinc sulphate (hydrous) (mono-, hexa- and hepta hydrate); [1] zinc sulphate (anhydrous) [2] }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		67 mg/kg	4.398	256.227 mg/kg	0.0256 %	✓	
12	TPH (C6 to C40) petroleum group			TPH		<20 mg/kg		<20 mg/kg	<0.002 %		<LOD
13	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
14	benzene	601-020-00-8	200-753-7	71-43-2		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
15		toluene	601-021-00-3	203-625-9	108-88-3		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<**LOD**
16		ethylbenzene	601-023-00-4	202-849-4	100-41-4		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<**LOD**
17		xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
18		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<1	mg/kg	1.884	<1.884	mg/kg	<0.000188 %		<**LOD**
19		pH			PH		7.4	pH		7.4	pH	7.4 pH		
20		naphthalene	601-052-00-2	202-049-5	91-20-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
21		acenaphthylene		205-917-1	208-96-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
22		acenaphthene		201-469-6	83-32-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
23		fluorene		201-695-5	86-73-7		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
24		phenanthrene		201-581-5	85-01-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
25		anthracene		204-371-1	120-12-7		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
26		fluoranthene		205-912-4	206-44-0		0.05	mg/kg		0.0435	mg/kg	0.00000435 %	✓	
27		pyrene		204-927-3	129-00-0		0.05	mg/kg		0.0435	mg/kg	0.00000435 %	✓	
28		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
29		chrysene	601-048-00-0	205-923-4	218-01-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
30		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		0.06	mg/kg		0.0522	mg/kg	0.00000522 %	✓	
31		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
32		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
33		indeno[123-cd]pyrene		205-893-2	193-39-5		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
34		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
35		benzo[ghi]perylene		205-883-8	191-24-2		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
36		phenol	604-001-00-2	203-632-7	108-95-2		<1	mg/kg		<1	mg/kg	<0.0001 %		<**LOD**
37		asbestos	650-013-00-6	- - - - - - -	12001-28-4 132207-32-0 12172-73-5 77536-66-4 77536-68-6 77536-67-5 12001-29-5		<			<		<		**ND**
38		Asbestos Fragments (Visible to Naked Eye).			12001-28-4 132207-32-0 12172-73-5		<			<		<		**ND**

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number							
				77536-66-4 77536-68-6 77536-67-5 12001-29-5							
								Total:	0.04 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Determinand defined by classifier (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: BH107_0.30

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:
BH107_0.30
Sample Depth:
0.3 m
Moisture content:
11%
(dry weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 11% Dry Weight Moisture Correction applied (MC)

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1		arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		11	mg/kg	1.32	13.084	mg/kg	0.00131 %	✓	
2		boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		0.5	mg/kg	3.22	1.45	mg/kg	0.000145 %	✓	
3		cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		<0.2	mg/kg	1.142	<0.228	mg/kg	<0.0000228 %		<**LOD**
4		chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		20	mg/kg	1.462	26.334	mg/kg	0.00263 %	✓	
5		chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<1.8	mg/kg	2.27	<4.086	mg/kg	<0.000409 %		<**LOD**
6		copper { copper sulphate }	029-004-00-0	231-847-6	7758-98-7		39	mg/kg	2.512	88.249	mg/kg	0.00882 %	✓	
7		lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	35	mg/kg		31.532	mg/kg	0.00315 %	✓	
8		mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.3	mg/kg	1.353	<0.406	mg/kg	<0.0000406 %		<**LOD**
9		nickel { nickel sulfate }	028-009-00-5	232-104-9	7786-81-4		16	mg/kg	2.637	38.006	mg/kg	0.0038 %	✓	
10		selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<1	mg/kg	2.554	<2.554	mg/kg	<0.000255 %		<**LOD**
11		zinc { zinc sulphate (hydrous) (mono-, hexa- and hepta hydrate); [1] zinc sulphate (anhydrous) [2] }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		79	mg/kg	4.398	313.006	mg/kg	0.0313 %	✓	
12		TPH (C6 to C40) petroleum group			TPH		<20	mg/kg		<20	mg/kg	<0.002 %		<**LOD**
13		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<**LOD**
14		benzene	601-020-00-8	200-753-7	71-43-2		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<**LOD**

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number									
15		toluene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-021-00-3	203-625-9	108-88-3									
16		ethylbenzene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-023-00-4	202-849-4	100-41-4									
17		xylene				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
18		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<1	mg/kg	1.884	<1.884	mg/kg	<0.000188 %		<LOD
		006-007-00-5											
19		pH				7.9	pH		7.9	pH	7.9 pH		
				PH									
20		naphthalene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
21		acenaphthylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-917-1	208-96-8									
22		acenaphthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			201-469-6	83-32-9									
23		fluorene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			201-695-5	86-73-7									
24		phenanthrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			201-581-5	85-01-8									
25		anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			204-371-1	120-12-7									
26		fluoranthene				0.09	mg/kg		0.0811	mg/kg	0.00000811 %	✓	
			205-912-4	206-44-0									
27		pyrene				0.09	mg/kg		0.0811	mg/kg	0.00000811 %	✓	
			204-927-3	129-00-0									
28		benzo[a]anthracene				0.05	mg/kg		0.045	mg/kg	0.0000045 %	✓	
		601-033-00-9	200-280-6	56-55-3									
29		chrysene				0.05	mg/kg		0.045	mg/kg	0.0000045 %	✓	
		601-048-00-0	205-923-4	218-01-9									
30		benzo[b]fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-034-00-4	205-911-9	205-99-2									
31		benzo[k]fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-036-00-5	205-916-6	207-08-9									
32		benzo[a]pyrene; benzo[def]chrysene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-032-00-3	200-028-5	50-32-8									
33		indeno[123-cd]pyrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-893-2	193-39-5									
34		dibenz[a,h]anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
35		benzo[ghi]perylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-883-8	191-24-2									
36		phenol				<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
		604-001-00-2	203-632-7	108-95-2									
37		asbestos				<			<		<		ND
		650-013-00-6	- - - - - - -	12001-28-4 132207-32-0 12172-73-5 77536-66-4 77536-68-6 77536-67-5 12001-29-5									
38		Asbestos Fragments (Visible to Naked Eye).				<			<		<		ND
				12001-28-4 132207-32-0 12172-73-5									

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number							
				77536-66-4 77536-68-6 77536-67-5 12001-29-5							
								Total:	0.0543 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Determinand defined by classifier (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: BH127_0.30

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:
BH127_0.30
Sample Depth:
0.3 m
Moisture content:
10%
(dry weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 10% Dry Weight Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		11 mg/kg	1.32	13.203 mg/kg	0.00132 %	✓	
2	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		0.7 mg/kg	3.22	2.049 mg/kg	0.000205 %	✓	
3	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		<0.2 mg/kg	1.142	<0.228 mg/kg	<0.0000228 %		<LOD
4	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		30 mg/kg	1.462	39.861 mg/kg	0.00399 %	✓	
5	chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<1.8 mg/kg	2.27	<4.086 mg/kg	<0.000409 %		<LOD
6	copper { copper sulphate }	029-004-00-0	231-847-6	7758-98-7		24 mg/kg	2.512	54.801 mg/kg	0.00548 %	✓	
7	lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	31 mg/kg		28.182 mg/kg	0.00282 %	✓	
8	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.3 mg/kg	1.353	<0.406 mg/kg	<0.0000406 %		<LOD
9	nickel { nickel sulfate }	028-009-00-5	232-104-9	7786-81-4		23 mg/kg	2.637	55.131 mg/kg	0.00551 %	✓	
10	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<1 mg/kg	2.554	<2.554 mg/kg	<0.000255 %		<LOD
11	zinc { zinc sulphate (hydrous) (mono-, hexa- and hepta hydrate); [1] zinc sulphate (anhydrous) [2] }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		74 mg/kg	4.398	295.86 mg/kg	0.0296 %	✓	
12	TPH (C6 to C40) petroleum group			TPH		<20 mg/kg		<20 mg/kg	<0.002 %		<LOD
13	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
14	benzene	601-020-00-8	200-753-7	71-43-2		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number									
15		toluene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<**LOD**
		601-021-00-3	203-625-9	108-88-3									
16		ethylbenzene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<**LOD**
		601-023-00-4	202-849-4	100-41-4									
17		xylene				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
18		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<1	mg/kg	1.884	<1.884	mg/kg	<0.000188 %		<**LOD**
		006-007-00-5											
19		pH				7.4	pH		7.4	pH	7.4 pH		
				PH									
20		naphthalene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-052-00-2	202-049-5	91-20-3									
21		acenaphthylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			205-917-1	208-96-8									
22		acenaphthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			201-469-6	83-32-9									
23		fluorene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			201-695-5	86-73-7									
24		phenanthrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			201-581-5	85-01-8									
25		anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			204-371-1	120-12-7									
26		fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			205-912-4	206-44-0									
27		pyrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			204-927-3	129-00-0									
28		benzo[a]anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-033-00-9	200-280-6	56-55-3									
29		chrysene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-048-00-0	205-923-4	218-01-9									
30		benzo[b]fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-034-00-4	205-911-9	205-99-2									
31		benzo[k]fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-036-00-5	205-916-6	207-08-9									
32		benzo[a]pyrene; benzo[def]chrysene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-032-00-3	200-028-5	50-32-8									
33		indeno[123-cd]pyrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			205-893-2	193-39-5									
34		dibenz[a,h]anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-041-00-2	200-181-8	53-70-3									
35		benzo[ghi]perylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			205-883-8	191-24-2									
36		phenol				<1	mg/kg		<1	mg/kg	<0.0001 %		<**LOD**
		604-001-00-2	203-632-7	108-95-2									
37		asbestos				<			<		<		**ND**
		650-013-00-6	- - - - - - -	12001-28-4 132207-32-0 12172-73-5 77536-66-4 77536-68-6 77536-67-5 12001-29-5									
38		Asbestos Fragments (Visible to Naked Eye).				<			<		<		**ND**
				12001-28-4 132207-32-0 12172-73-5									

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number							
				77536-66-4 77536-68-6 77536-67-5 12001-29-5							
								Total:	0.052 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Determinand defined by classifier (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: BH111_0.30

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:
BH111_0.30
Sample Depth:
0.3 m
Moisture content:
8.9%
(dry weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 8.9% Dry Weight Moisture Correction applied (MC)

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1		arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		6.7	mg/kg	1.32	8.123	mg/kg	0.000812 %	✓	
2		boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		0.4	mg/kg	3.22	1.183	mg/kg	0.000118 %	✓	
3		cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		<0.2	mg/kg	1.142	<0.228	mg/kg	<0.0000228 %		<LOD
4		chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		17	mg/kg	1.462	22.816	mg/kg	0.00228 %	✓	
5		chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<1.8	mg/kg	2.27	<4.086	mg/kg	<0.000409 %		<LOD
6		copper { copper sulphate }	029-004-00-0	231-847-6	7758-98-7		13	mg/kg	2.512	29.984	mg/kg	0.003 %	✓	
7		lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	25	mg/kg		22.957	mg/kg	0.0023 %	✓	
8		mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.3	mg/kg	1.353	<0.406	mg/kg	<0.0000406 %		<LOD
9		nickel { nickel sulfate }	028-009-00-5	232-104-9	7786-81-4		12	mg/kg	2.637	29.054	mg/kg	0.00291 %	✓	
10		selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<1	mg/kg	2.554	<2.554	mg/kg	<0.000255 %		<LOD
11		zinc { zinc sulphate (hydrous) (mono-, hexa- and hepta hydrate); [1] zinc sulphate (anhydrous) [2] }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		60	mg/kg	4.398	242.31	mg/kg	0.0242 %	✓	
12		TPH (C6 to C40) petroleum group			TPH		<20	mg/kg		<20	mg/kg	<0.002 %		<LOD
13		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
14		benzene	601-020-00-8	200-753-7	71-43-2		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number									
15		toluene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-021-00-3	203-625-9	108-88-3									
16		ethylbenzene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-023-00-4	202-849-4	100-41-4									
17		xylene				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
18		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<1	mg/kg	1.884	<1.884	mg/kg	<0.000188 %		<LOD
		006-007-00-5											
19		pH				7.4	pH		7.4	pH	7.4 pH		
				PH									
20		naphthalene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
21		acenaphthylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-917-1	208-96-8									
22		acenaphthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			201-469-6	83-32-9									
23		fluorene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			201-695-5	86-73-7									
24		phenanthrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			201-581-5	85-01-8									
25		anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			204-371-1	120-12-7									
26		fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-912-4	206-44-0									
27		pyrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			204-927-3	129-00-0									
28		benzo[a]anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-033-00-9	200-280-6	56-55-3									
29		chrysene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-048-00-0	205-923-4	218-01-9									
30		benzo[b]fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-034-00-4	205-911-9	205-99-2									
31		benzo[k]fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-036-00-5	205-916-6	207-08-9									
32		benzo[a]pyrene; benzo[def]chrysene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-032-00-3	200-028-5	50-32-8									
33		indeno[123-cd]pyrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-893-2	193-39-5									
34		dibenz[a,h]anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
35		benzo[ghi]perylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-883-8	191-24-2									
36		phenol				<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
		604-001-00-2	203-632-7	108-95-2									
37		asbestos				<			<		<		ND
		650-013-00-6	- - - - - - -	12001-28-4 132207-32-0 12172-73-5 77536-66-4 77536-68-6 77536-67-5 12001-29-5									
38		Asbestos Fragments (Visible to Naked Eye).				<			<		<		ND
				12001-28-4 132207-32-0 12172-73-5									

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number							
				77536-66-4 77536-68-6 77536-67-5 12001-29-5							
								Total:	0.0387 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Determinand defined by classifier (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: BH114_0.30

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:
BH114_0.30
Sample Depth:
0.3 m
Moisture content:
11%
(dry weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 11% Dry Weight Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		6.8 mg/kg	1.32	8.088 mg/kg	0.000809 %	✓	
2	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		0.5 mg/kg	3.22	1.45 mg/kg	0.000145 %	✓	
3	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		<0.2 mg/kg	1.142	<0.228 mg/kg	<0.0000228 %		<LOD
4	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		13 mg/kg	1.462	17.117 mg/kg	0.00171 %	✓	
5	chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<1.8 mg/kg	2.27	<4.086 mg/kg	<0.000409 %		<LOD
6	copper { copper sulphate }	029-004-00-0	231-847-6	7758-98-7		19 mg/kg	2.512	42.993 mg/kg	0.0043 %	✓	
7	lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	26 mg/kg		23.423 mg/kg	0.00234 %	✓	
8	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.3 mg/kg	1.353	<0.406 mg/kg	<0.0000406 %		<LOD
9	nickel { nickel sulfate }	028-009-00-5	232-104-9	7786-81-4		9.3 mg/kg	2.637	22.091 mg/kg	0.00221 %	✓	
10	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<1 mg/kg	2.554	<2.554 mg/kg	<0.000255 %		<LOD
11	zinc { zinc sulphate (hydrous) (mono-, hexa- and hepta hydrate); [1] zinc sulphate (anhydrous) [2] }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		54 mg/kg	4.398	213.953 mg/kg	0.0214 %	✓	
12	TPH (C6 to C40) petroleum group			TPH		<20 mg/kg		<20 mg/kg	<0.002 %		<LOD
13	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
14	benzene	601-020-00-8	200-753-7	71-43-2		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
15		toluene	601-021-00-3	203-625-9	108-88-3		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<**LOD**
16		ethylbenzene	601-023-00-4	202-849-4	100-41-4		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<**LOD**
17		xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
18		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<1	mg/kg	1.884	<1.884	mg/kg	<0.000188 %		<**LOD**
19		pH			PH		6.7	pH		6.7	pH	6.7 pH		
20		naphthalene	601-052-00-2	202-049-5	91-20-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
21		acenaphthylene		205-917-1	208-96-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
22		acenaphthene		201-469-6	83-32-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
23		fluorene		201-695-5	86-73-7		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
24		phenanthrene		201-581-5	85-01-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
25		anthracene		204-371-1	120-12-7		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
26		fluoranthene		205-912-4	206-44-0		0.12	mg/kg		0.108	mg/kg	0.0000108 %	✓	
27		pyrene		204-927-3	129-00-0		0.11	mg/kg		0.0991	mg/kg	0.00000991 %	✓	
28		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		0.05	mg/kg		0.045	mg/kg	0.0000045 %	✓	
29		chrysene	601-048-00-0	205-923-4	218-01-9		0.05	mg/kg		0.045	mg/kg	0.0000045 %	✓	
30		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		0.06	mg/kg		0.0541	mg/kg	0.00000541 %	✓	
31		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		0.06	mg/kg		0.0541	mg/kg	0.00000541 %	✓	
32		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		0.05	mg/kg		0.045	mg/kg	0.0000045 %	✓	
33		indeno[123-cd]pyrene		205-893-2	193-39-5		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
34		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
35		benzo[ghi]perylene		205-883-8	191-24-2		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
36		phenol	604-001-00-2	203-632-7	108-95-2		<1	mg/kg		<1	mg/kg	<0.0001 %		<**LOD**
37		asbestos	650-013-00-6	- - - - - - -	12001-28-4 132207-32-0 12172-73-5 77536-66-4 77536-68-6 77536-67-5 12001-29-5		<			<		<		**ND**
38		Asbestos Fragments (Visible to Naked Eye).			12001-28-4 132207-32-0 12172-73-5		<			<		<		**ND**

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number							
				77536-66-4 77536-68-6 77536-67-5 12001-29-5							
								Total:	0.036 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Determinand defined by classifier (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: BH112_0.30

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:
BH112_0.30
Sample Depth:
0.3 m
Moisture content:
12%
(dry weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 12% Dry Weight Moisture Correction applied (MC)

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1		arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		6.6	mg/kg	1.32	7.78	mg/kg	0.000778 %	✓	
2		boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		0.3	mg/kg	3.22	0.862	mg/kg	0.0000862 %	✓	
3		cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		<0.2	mg/kg	1.142	<0.228	mg/kg	<0.0000228 %		<**LOD**
4		chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		8.8	mg/kg	1.462	11.484	mg/kg	0.00115 %	✓	
5		chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<1.8	mg/kg	2.27	<4.086	mg/kg	<0.000409 %		<**LOD**
6		copper { copper sulphate }	029-004-00-0	231-847-6	7758-98-7		15	mg/kg	2.512	33.639	mg/kg	0.00336 %	✓	
7		lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	17	mg/kg		15.179	mg/kg	0.00152 %	✓	
8		mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.3	mg/kg	1.353	<0.406	mg/kg	<0.0000406 %		<**LOD**
9		nickel { nickel sulfate }	028-009-00-5	232-104-9	7786-81-4		6.9	mg/kg	2.637	16.244	mg/kg	0.00162 %	✓	
10		selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<1	mg/kg	2.554	<2.554	mg/kg	<0.000255 %		<**LOD**
11		zinc { zinc sulphate (hydrous) (mono-, hexa- and hepta hydrate); [1] zinc sulphate (anhydrous) [2] }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		48	mg/kg	4.398	188.483	mg/kg	0.0188 %	✓	
12		TPH (C6 to C40) petroleum group			TPH		<20	mg/kg		<20	mg/kg	<0.002 %		<**LOD**
13		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<**LOD**
14		benzene	601-020-00-8	200-753-7	71-43-2		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<**LOD**

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number									
15		toluene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-021-00-3	203-625-9	108-88-3									
16		ethylbenzene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-023-00-4	202-849-4	100-41-4									
17		xylene				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
18		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<1	mg/kg	1.884	<1.884	mg/kg	<0.000188 %		<LOD
		006-007-00-5											
19		pH				6.4	pH		6.4	pH	6.4 pH		
				PH									
20		naphthalene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
21		acenaphthylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-917-1	208-96-8									
22		acenaphthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			201-469-6	83-32-9									
23		fluorene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			201-695-5	86-73-7									
24		phenanthrene				0.07	mg/kg		0.0625	mg/kg	0.00000625 %	✓	
			201-581-5	85-01-8									
25		anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			204-371-1	120-12-7									
26		fluoranthene				0.11	mg/kg		0.0982	mg/kg	0.00000982 %	✓	
			205-912-4	206-44-0									
27		pyrene				0.13	mg/kg		0.116	mg/kg	0.0000116 %	✓	
			204-927-3	129-00-0									
28		benzo[a]anthracene				0.06	mg/kg		0.0536	mg/kg	0.00000536 %	✓	
		601-033-00-9	200-280-6	56-55-3									
29		chrysene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-048-00-0	205-923-4	218-01-9									
30		benzo[b]fluoranthene				0.09	mg/kg		0.0804	mg/kg	0.00000804 %	✓	
		601-034-00-4	205-911-9	205-99-2									
31		benzo[k]fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-036-00-5	205-916-6	207-08-9									
32		benzo[a]pyrene; benzo[def]chrysene				0.05	mg/kg		0.0446	mg/kg	0.00000446 %	✓	
		601-032-00-3	200-028-5	50-32-8									
33		indeno[123-cd]pyrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-893-2	193-39-5									
34		dibenz[a,h]anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
35		benzo[ghi]perylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-883-8	191-24-2									
36		phenol				<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
		604-001-00-2	203-632-7	108-95-2									
37		asbestos				<			<		<		ND
		650-013-00-6	- - - - - - -	12001-28-4 132207-32-0 12172-73-5 77536-66-4 77536-68-6 77536-67-5 12001-29-5									
38		Asbestos Fragments (Visible to Naked Eye).				<			<		<		ND
				12001-28-4 132207-32-0 12172-73-5									

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number							
				77536-66-4 77536-68-6 77536-67-5 12001-29-5							
								Total:	0.0305 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Determinand defined by classifier (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: BH119_0.30

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:
BH119_0.30
Sample Depth:
0.3 m
Moisture content:
6.6%
(dry weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 6.6% Dry Weight Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		11 mg/kg	1.32	13.624 mg/kg	0.00136 %	✓	
2	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		0.4 mg/kg	3.22	1.208 mg/kg	0.000121 %	✓	
3	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		<0.2 mg/kg	1.142	<0.228 mg/kg	<0.0000228 %		<LOD
4	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		26 mg/kg	1.462	35.648 mg/kg	0.00356 %	✓	
5	chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<1.8 mg/kg	2.27	<4.086 mg/kg	<0.000409 %		<LOD
6	copper { copper sulphate }	029-004-00-0	231-847-6	7758-98-7		20 mg/kg	2.512	47.124 mg/kg	0.00471 %	✓	
7	lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	29 mg/kg		27.205 mg/kg	0.00272 %	✓	
8	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.3 mg/kg	1.353	<0.406 mg/kg	<0.0000406 %		<LOD
9	nickel { nickel sulfate }	028-009-00-5	232-104-9	7786-81-4		19 mg/kg	2.637	46.995 mg/kg	0.0047 %	✓	
10	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<1 mg/kg	2.554	<2.554 mg/kg	<0.000255 %		<LOD
11	zinc { zinc sulphate (hydrous) (mono-, hexa- and hepta hydrate); [1] zinc sulphate (anhydrous) [2] }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		65 mg/kg	4.398	268.166 mg/kg	0.0268 %	✓	
12	TPH (C6 to C40) petroleum group			TPH		<20 mg/kg		<20 mg/kg	<0.002 %		<LOD
13	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
14	benzene	601-020-00-8	200-753-7	71-43-2		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
15		toluene	601-021-00-3	203-625-9	108-88-3		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<**LOD**
16		ethylbenzene	601-023-00-4	202-849-4	100-41-4		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<**LOD**
17		xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
18		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<1	mg/kg	1.884	<1.884	mg/kg	<0.000188 %		<**LOD**
19		pH			PH		7.3	pH		7.3	pH	7.3 pH		
20		naphthalene	601-052-00-2	202-049-5	91-20-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
21		acenaphthylene		205-917-1	208-96-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
22		acenaphthene		201-469-6	83-32-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
23		fluorene		201-695-5	86-73-7		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
24		phenanthrene		201-581-5	85-01-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
25		anthracene		204-371-1	120-12-7		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
26		fluoranthene		205-912-4	206-44-0		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
27		pyrene		204-927-3	129-00-0		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
28		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
29		chrysene	601-048-00-0	205-923-4	218-01-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
30		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
31		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
32		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
33		indeno[123-cd]pyrene		205-893-2	193-39-5		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
34		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
35		benzo[ghi]perylene		205-883-8	191-24-2		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
36		phenol	604-001-00-2	203-632-7	108-95-2		<1	mg/kg		<1	mg/kg	<0.0001 %		<**LOD**
37		asbestos	650-013-00-6	- - - - - - -	12001-28-4 132207-32-0 12172-73-5 77536-66-4 77536-68-6 77536-67-5 12001-29-5		<			<		<		**ND**
38		Asbestos Fragments (Visible to Naked Eye).			12001-28-4 132207-32-0 12172-73-5		<			<		<		**ND**

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number							
				77536-66-4 77536-68-6 77536-67-5 12001-29-5							
								Total:	0.0471 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Determinand defined by classifier (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: BH110_0.30

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:
BH110_0.30
Sample Depth:
0.3 m
Moisture content:
11%
(dry weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 11% Dry Weight Moisture Correction applied (MC)

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1		arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		6.9	mg/kg	1.32	8.207	mg/kg	0.000821 %	✓	
2		boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		1	mg/kg	3.22	2.901	mg/kg	0.00029 %	✓	
3		cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		0.3	mg/kg	1.142	0.309	mg/kg	0.0000309 %	✓	
4		chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		15	mg/kg	1.462	19.751	mg/kg	0.00198 %	✓	
5		chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<1.8	mg/kg	2.27	<4.086	mg/kg	<0.000409 %		<**LOD**
6		copper { copper sulphate }	029-004-00-0	231-847-6	7758-98-7		16	mg/kg	2.512	36.205	mg/kg	0.00362 %	✓	
7		lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	33	mg/kg		29.73	mg/kg	0.00297 %	✓	
8		mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.3	mg/kg	1.353	<0.406	mg/kg	<0.0000406 %		<**LOD**
9		nickel { nickel sulfate }	028-009-00-5	232-104-9	7786-81-4		10	mg/kg	2.637	23.754	mg/kg	0.00238 %	✓	
10		selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<1	mg/kg	2.554	<2.554	mg/kg	<0.000255 %		<**LOD**
11		zinc { zinc sulphate (hydrous) (mono-, hexa- and hepta hydrate); [1] zinc sulphate (anhydrous) [2] }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		75	mg/kg	4.398	297.157	mg/kg	0.0297 %	✓	
12		TPH (C6 to C40) petroleum group			TPH		<20	mg/kg		<20	mg/kg	<0.002 %		<**LOD**
13		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<**LOD**
14		benzene	601-020-00-8	200-753-7	71-43-2		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<**LOD**

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number									
15		toluene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-021-00-3	203-625-9	108-88-3									
16		ethylbenzene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-023-00-4	202-849-4	100-41-4									
17		xylene				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
18		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<1	mg/kg	1.884	<1.884	mg/kg	<0.000188 %		<LOD
		006-007-00-5											
19		pH				7.7	pH		7.7	pH	7.7 pH		
				PH									
20		naphthalene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
21		acenaphthylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-917-1	208-96-8									
22		acenaphthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			201-469-6	83-32-9									
23		fluorene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			201-695-5	86-73-7									
24		phenanthrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			201-581-5	85-01-8									
25		anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			204-371-1	120-12-7									
26		fluoranthene				0.16	mg/kg		0.144	mg/kg	0.0000144 %	✓	
			205-912-4	206-44-0									
27		pyrene				0.17	mg/kg		0.153	mg/kg	0.0000153 %	✓	
			204-927-3	129-00-0									
28		benzo[a]anthracene				0.13	mg/kg		0.117	mg/kg	0.0000117 %	✓	
		601-033-00-9	200-280-6	56-55-3									
29		chrysene				0.14	mg/kg		0.126	mg/kg	0.0000126 %	✓	
		601-048-00-0	205-923-4	218-01-9									
30		benzo[b]fluoranthene				0.22	mg/kg		0.198	mg/kg	0.0000198 %	✓	
		601-034-00-4	205-911-9	205-99-2									
31		benzo[k]fluoranthene				0.1	mg/kg		0.0901	mg/kg	0.00000901 %	✓	
		601-036-00-5	205-916-6	207-08-9									
32		benzo[a]pyrene; benzo[def]chrysene				0.19	mg/kg		0.171	mg/kg	0.0000171 %	✓	
		601-032-00-3	200-028-5	50-32-8									
33		indeno[123-cd]pyrene				0.15	mg/kg		0.135	mg/kg	0.0000135 %	✓	
			205-893-2	193-39-5									
34		dibenz[a,h]anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
35		benzo[ghi]perylene				0.21	mg/kg		0.189	mg/kg	0.0000189 %	✓	
			205-883-8	191-24-2									
36		phenol				<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
		604-001-00-2	203-632-7	108-95-2									
37		asbestos				<			<		<		ND
		650-013-00-6	- - - - - - -	12001-28-4 132207-32-0 12172-73-5 77536-66-4 77536-68-6 77536-67-5 12001-29-5									
38		Asbestos Fragments (Visible to Naked Eye).				<			<		<		ND
				12001-28-4 132207-32-0 12172-73-5									

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number							
				77536-66-4 77536-68-6 77536-67-5 12001-29-5							
								Total:	0.045 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Determinand defined by classifier (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: BH123_0.30

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:
BH123_0.30
Sample Depth:
0.3 m
Moisture content:
7.2%
(dry weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 7.2% Dry Weight Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		9.4 mg/kg	1.32	11.577 mg/kg	0.00116 %	✓	
2	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		1.5 mg/kg	3.22	4.505 mg/kg	0.000451 %	✓	
3	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		0.4 mg/kg	1.142	0.426 mg/kg	0.0000426 %	✓	
4	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		28 mg/kg	1.462	38.175 mg/kg	0.00382 %	✓	
5	chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<1.8 mg/kg	2.27	<4.086 mg/kg	<0.000409 %		<LOD
6	copper { copper sulphate }	029-004-00-0	231-847-6	7758-98-7		23 mg/kg	2.512	53.889 mg/kg	0.00539 %	✓	
7	lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	31 mg/kg		28.918 mg/kg	0.00289 %	✓	
8	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.3 mg/kg	1.353	<0.406 mg/kg	<0.0000406 %		<LOD
9	nickel { nickel sulfate }	028-009-00-5	232-104-9	7786-81-4		23 mg/kg	2.637	56.571 mg/kg	0.00566 %	✓	
10	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<1 mg/kg	2.554	<2.554 mg/kg	<0.000255 %		<LOD
11	zinc { zinc sulphate (hydrous) (mono-, hexa- and hepta hydrate); [1] zinc sulphate (anhydrous) [2] }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		66 mg/kg	4.398	270.768 mg/kg	0.0271 %	✓	
12	TPH (C6 to C40) petroleum group			TPH		<20 mg/kg		<20 mg/kg	<0.002 %		<LOD
13	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
14	benzene	601-020-00-8	200-753-7	71-43-2		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
15		toluene	601-021-00-3	203-625-9	108-88-3		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<**LOD**
16		ethylbenzene	601-023-00-4	202-849-4	100-41-4		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<**LOD**
17		xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
18		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<1	mg/kg	1.884	<1.884	mg/kg	<0.000188 %		<**LOD**
19		pH			PH		7.4	pH		7.4	pH	7.4 pH		
20		naphthalene	601-052-00-2	202-049-5	91-20-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
21		acenaphthylene		205-917-1	208-96-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
22		acenaphthene		201-469-6	83-32-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
23		fluorene		201-695-5	86-73-7		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
24		phenanthrene		201-581-5	85-01-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
25		anthracene		204-371-1	120-12-7		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
26		fluoranthene		205-912-4	206-44-0		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
27		pyrene		204-927-3	129-00-0		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
28		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
29		chrysene	601-048-00-0	205-923-4	218-01-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
30		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
31		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
32		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
33		indeno[123-cd]pyrene		205-893-2	193-39-5		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
34		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
35		benzo[ghi]perylene		205-883-8	191-24-2		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
36		phenol	604-001-00-2	203-632-7	108-95-2		<1	mg/kg		<1	mg/kg	<0.0001 %		<**LOD**
37		asbestos	650-013-00-6	- - - - - - -	12001-28-4 132207-32-0 12172-73-5 77536-66-4 77536-68-6 77536-67-5 12001-29-5		<			<		<		**ND**
38		Asbestos Fragments (Visible to Naked Eye).			12001-28-4 132207-32-0 12172-73-5		<			<		<		**ND**

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number							
				77536-66-4 77536-68-6 77536-67-5 12001-29-5							
								Total:	0.0496 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Determinand defined by classifier (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: BH116_0.30

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:
BH116_0.30
Sample Depth:
0.3 m
Moisture content:
10%
(dry weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 10% Dry Weight Moisture Correction applied (MC)

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1		arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		7.3	mg/kg	1.32	8.762	mg/kg	0.000876 %	✓	
2		boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		0.4	mg/kg	3.22	1.171	mg/kg	0.000117 %	✓	
3		cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		<0.2	mg/kg	1.142	<0.228	mg/kg	<0.0000228 %		<LOD
4		chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		15	mg/kg	1.462	19.93	mg/kg	0.00199 %	✓	
5		chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<1.8	mg/kg	2.27	<4.086	mg/kg	<0.000409 %		<LOD
6		copper { copper sulphate }	029-004-00-0	231-847-6	7758-98-7		15	mg/kg	2.512	34.25	mg/kg	0.00343 %	✓	
7		lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	19	mg/kg		17.273	mg/kg	0.00173 %	✓	
8		mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.3	mg/kg	1.353	<0.406	mg/kg	<0.0000406 %		<LOD
9		nickel { nickel sulfate }	028-009-00-5	232-104-9	7786-81-4		10	mg/kg	2.637	23.97	mg/kg	0.0024 %	✓	
10		selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<1	mg/kg	2.554	<2.554	mg/kg	<0.000255 %		<LOD
11		zinc { zinc sulphate (hydrous) (mono-, hexa- and hepta hydrate); [1] zinc sulphate (anhydrous) [2] }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		46	mg/kg	4.398	183.913	mg/kg	0.0184 %	✓	
12		TPH (C6 to C40) petroleum group			TPH		<20	mg/kg		<20	mg/kg	<0.002 %		<LOD
13		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
14		benzene	601-020-00-8	200-753-7	71-43-2		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number									
15		toluene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-021-00-3	203-625-9	108-88-3									
16		ethylbenzene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-023-00-4	202-849-4	100-41-4									
17		xylene				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
18		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<1	mg/kg	1.884	<1.884	mg/kg	<0.000188 %		<LOD
		006-007-00-5											
19		pH				6.9	pH		6.9	pH	6.9 pH		
				PH									
20		naphthalene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
21		acenaphthylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-917-1	208-96-8									
22		acenaphthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			201-469-6	83-32-9									
23		fluorene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			201-695-5	86-73-7									
24		phenanthrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			201-581-5	85-01-8									
25		anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			204-371-1	120-12-7									
26		fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-912-4	206-44-0									
27		pyrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			204-927-3	129-00-0									
28		benzo[a]anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-033-00-9	200-280-6	56-55-3									
29		chrysene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-048-00-0	205-923-4	218-01-9									
30		benzo[b]fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-034-00-4	205-911-9	205-99-2									
31		benzo[k]fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-036-00-5	205-916-6	207-08-9									
32		benzo[a]pyrene; benzo[def]chrysene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-032-00-3	200-028-5	50-32-8									
33		indeno[123-cd]pyrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-893-2	193-39-5									
34		dibenz[a,h]anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
35		benzo[ghi]perylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-883-8	191-24-2									
36		phenol				<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
		604-001-00-2	203-632-7	108-95-2									
37		asbestos				<			<		<		ND
		650-013-00-6	- - - - - - -	12001-28-4 132207-32-0 12172-73-5 77536-66-4 77536-68-6 77536-67-5 12001-29-5									
38		Asbestos Fragments (Visible to Naked Eye).				<			<		<		ND
				12001-28-4 132207-32-0 12172-73-5									

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number							
				77536-66-4 77536-68-6 77536-67-5 12001-29-5							
								Total:	0.032 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Determinand defined by classifier (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: WS105_0.40

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:
WS105_0.40
Sample Depth:
0.4 m
Moisture content:
12%
(dry weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 12% Dry Weight Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		8.3 mg/kg	1.32	9.785 mg/kg	0.000978 %	✓	
2	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		0.6 mg/kg	3.22	1.725 mg/kg	0.000172 %	✓	
3	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		0.3 mg/kg	1.142	0.306 mg/kg	0.0000306 %	✓	
4	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		28 mg/kg	1.462	36.539 mg/kg	0.00365 %	✓	
5	chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<1.8 mg/kg	2.27	<4.086 mg/kg	<0.000409 %		<LOD
6	copper { copper sulphate }	029-004-00-0	231-847-6	7758-98-7		19 mg/kg	2.512	42.609 mg/kg	0.00426 %	✓	
7	lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	29 mg/kg		25.893 mg/kg	0.00259 %	✓	
8	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.3 mg/kg	1.353	<0.406 mg/kg	<0.0000406 %		<LOD
9	nickel { nickel sulfate }	028-009-00-5	232-104-9	7786-81-4		22 mg/kg	2.637	51.792 mg/kg	0.00518 %	✓	
10	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<1 mg/kg	2.554	<2.554 mg/kg	<0.000255 %		<LOD
11	zinc { zinc sulphate (hydrous) (mono-, hexa- and hepta hydrate); [1] zinc sulphate (anhydrous) [2] }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		62 mg/kg	4.398	243.457 mg/kg	0.0243 %	✓	
12	TPH (C6 to C40) petroleum group			TPH		<20 mg/kg		<20 mg/kg	<0.002 %		<LOD
13	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
14	benzene	601-020-00-8	200-753-7	71-43-2		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
15		toluene	601-021-00-3	203-625-9	108-88-3		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<**LOD**
16		ethylbenzene	601-023-00-4	202-849-4	100-41-4		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<**LOD**
17		xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
18		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<1	mg/kg	1.884	<1.884	mg/kg	<0.000188 %		<**LOD**
19		pH			PH		7.2	pH		7.2	pH	7.2 pH		
20		naphthalene	601-052-00-2	202-049-5	91-20-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
21		acenaphthylene		205-917-1	208-96-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
22		acenaphthene		201-469-6	83-32-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
23		fluorene		201-695-5	86-73-7		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
24		phenanthrene		201-581-5	85-01-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
25		anthracene		204-371-1	120-12-7		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
26		fluoranthene		205-912-4	206-44-0		0.05	mg/kg		0.0446	mg/kg	0.00000446 %	✓	
27		pyrene		204-927-3	129-00-0		0.06	mg/kg		0.0536	mg/kg	0.00000536 %	✓	
28		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
29		chrysene	601-048-00-0	205-923-4	218-01-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
30		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
31		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
32		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
33		indeno[123-cd]pyrene		205-893-2	193-39-5		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
34		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
35		benzo[ghi]perylene		205-883-8	191-24-2		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
36		phenol	604-001-00-2	203-632-7	108-95-2		<1	mg/kg		<1	mg/kg	<0.0001 %		<**LOD**
37		asbestos	650-013-00-6	- - - - - - -	12001-28-4 132207-32-0 12172-73-5 77536-66-4 77536-68-6 77536-67-5 12001-29-5		<			<		<		**ND**
38		Asbestos Fragments (Visible to Naked Eye).			12001-28-4 132207-32-0 12172-73-5		<			<		<		**ND**

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number							
				77536-66-4 77536-68-6 77536-67-5 12001-29-5							
								Total:	0.0443 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Determinand defined by classifier (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: BH126_0.50

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:
BH126_0.50
Sample Depth:
0.5 m
Moisture content:
11%
(dry weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 11% Dry Weight Moisture Correction applied (MC)

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1		arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		13	mg/kg	1.32	15.463	mg/kg	0.00155 %	✓	
2		boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		1.7	mg/kg	3.22	4.931	mg/kg	0.000493 %	✓	
3		cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		<0.2	mg/kg	1.142	<0.228	mg/kg	<0.0000228 %		<LOD
4		chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		39	mg/kg	1.462	51.352	mg/kg	0.00514 %	✓	
5		chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<1.8	mg/kg	2.27	<4.086	mg/kg	<0.000409 %		<LOD
6		copper { copper sulphate }	029-004-00-0	231-847-6	7758-98-7		21	mg/kg	2.512	47.519	mg/kg	0.00475 %	✓	
7		lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	20	mg/kg		18.018	mg/kg	0.0018 %	✓	
8		mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.3	mg/kg	1.353	<0.406	mg/kg	<0.0000406 %		<LOD
9		nickel { nickel sulfate }	028-009-00-5	232-104-9	7786-81-4		40	mg/kg	2.637	95.016	mg/kg	0.0095 %	✓	
10		selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<1	mg/kg	2.554	<2.554	mg/kg	<0.000255 %		<LOD
11		zinc { zinc sulphate (hydrous) (mono-, hexa- and hepta hydrate); [1] zinc sulphate (anhydrous) [2] }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		64	mg/kg	4.398	253.574	mg/kg	0.0254 %	✓	
12		TPH (C6 to C40) petroleum group			TPH		<20	mg/kg		<20	mg/kg	<0.002 %		<LOD
13		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
14		benzene	601-020-00-8	200-753-7	71-43-2		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number									
15		toluene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-021-00-3	203-625-9	108-88-3									
16		ethylbenzene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-023-00-4	202-849-4	100-41-4									
17		xylene				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
18		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<1	mg/kg	1.884	<1.884	mg/kg	<0.000188 %		<LOD
		006-007-00-5											
19		pH				8.1	pH		8.1	pH	8.1 pH		
				PH									
20		naphthalene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
21		acenaphthylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-917-1	208-96-8									
22		acenaphthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			201-469-6	83-32-9									
23		fluorene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			201-695-5	86-73-7									
24		phenanthrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			201-581-5	85-01-8									
25		anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			204-371-1	120-12-7									
26		fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-912-4	206-44-0									
27		pyrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			204-927-3	129-00-0									
28		benzo[a]anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-033-00-9	200-280-6	56-55-3									
29		chrysene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-048-00-0	205-923-4	218-01-9									
30		benzo[b]fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-034-00-4	205-911-9	205-99-2									
31		benzo[k]fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-036-00-5	205-916-6	207-08-9									
32		benzo[a]pyrene; benzo[def]chrysene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-032-00-3	200-028-5	50-32-8									
33		indeno[123-cd]pyrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-893-2	193-39-5									
34		dibenz[a,h]anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
35		benzo[ghi]perylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-883-8	191-24-2									
36		phenol				<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
		604-001-00-2	203-632-7	108-95-2									
37		asbestos				<			<		<		ND
		650-013-00-6	- - - - - - -	12001-28-4 132207-32-0 12172-73-5 77536-66-4 77536-68-6 77536-67-5 12001-29-5									
38		Asbestos Fragments (Visible to Naked Eye).				<			<		<		ND
				12001-28-4 132207-32-0 12172-73-5									

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number							
				77536-66-4 77536-68-6 77536-67-5 12001-29-5							
								Total:	0.0517 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Determinand defined by classifier (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: BH116_0.50

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:
BH116_0.50
Sample Depth:
0.5 m
Moisture content:
12%
(dry weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 12% Dry Weight Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		9.3 mg/kg	1.32	10.963 mg/kg	0.0011 %	✓	
2	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		0.2 mg/kg	3.22	0.575 mg/kg	0.0000575 %	✓	
3	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		<0.2 mg/kg	1.142	<0.228 mg/kg	<0.0000228 %		<LOD
4	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		23 mg/kg	1.462	30.014 mg/kg	0.003 %	✓	
5	chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<1.8 mg/kg	2.27	<4.086 mg/kg	<0.000409 %		<LOD
6	copper { copper sulphate }	029-004-00-0	231-847-6	7758-98-7		20 mg/kg	2.512	44.852 mg/kg	0.00449 %	✓	
7	lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	9.9 mg/kg		8.839 mg/kg	0.000884 %	✓	
8	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.3 mg/kg	1.353	<0.406 mg/kg	<0.0000406 %		<LOD
9	nickel { nickel sulfate }	028-009-00-5	232-104-9	7786-81-4		24 mg/kg	2.637	56.5 mg/kg	0.00565 %	✓	
10	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<1 mg/kg	2.554	<2.554 mg/kg	<0.000255 %		<LOD
11	zinc { zinc sulphate (hydrous) (mono-, hexa- and hepta hydrate); [1] zinc sulphate (anhydrous) [2] }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		57 mg/kg	4.398	223.823 mg/kg	0.0224 %	✓	
12	TPH (C6 to C40) petroleum group			TPH		<20 mg/kg		<20 mg/kg	<0.002 %		<LOD
13	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
14	benzene	601-020-00-8	200-753-7	71-43-2		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
15		toluene	601-021-00-3	203-625-9	108-88-3		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<**LOD**
16		ethylbenzene	601-023-00-4	202-849-4	100-41-4		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<**LOD**
17		xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
18		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<1	mg/kg	1.884	<1.884	mg/kg	<0.000188 %		<**LOD**
19		pH			PH		7.1	pH		7.1	pH	7.1 pH		
20		naphthalene	601-052-00-2	202-049-5	91-20-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
21		acenaphthylene		205-917-1	208-96-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
22		acenaphthene		201-469-6	83-32-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
23		fluorene		201-695-5	86-73-7		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
24		phenanthrene		201-581-5	85-01-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
25		anthracene		204-371-1	120-12-7		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
26		fluoranthene		205-912-4	206-44-0		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
27		pyrene		204-927-3	129-00-0		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
28		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
29		chrysene	601-048-00-0	205-923-4	218-01-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
30		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
31		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
32		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
33		indeno[123-cd]pyrene		205-893-2	193-39-5		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
34		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
35		benzo[ghi]perylene		205-883-8	191-24-2		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
36		phenol	604-001-00-2	203-632-7	108-95-2		<1	mg/kg		<1	mg/kg	<0.0001 %		<**LOD**
37		asbestos	650-013-00-6	- - - - - - -	12001-28-4 132207-32-0 12172-73-5 77536-66-4 77536-68-6 77536-67-5 12001-29-5		<			<		<		**ND**
38		Asbestos Fragments (Visible to Naked Eye).			12001-28-4 132207-32-0 12172-73-5		<			<		<		**ND**

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number							
				77536-66-4 77536-68-6 77536-67-5 12001-29-5							
								Total:	0.0407 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Determinand defined by classifier (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: BH107_0.50

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:
BH107_0.50
Sample Depth:
0.5 m
Moisture content:
6.6%
(dry weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 6.6% Dry Weight Moisture Correction applied (MC)

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1		arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		6.7	mg/kg	1.32	8.298	mg/kg	0.00083 %	✓	
2		boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		<0.2	mg/kg	3.22	<0.644	mg/kg	<0.0000644 %		<LOD
3		cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		<0.2	mg/kg	1.142	<0.228	mg/kg	<0.0000228 %		<LOD
4		chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		15	mg/kg	1.462	20.566	mg/kg	0.00206 %	✓	
5		chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<1.8	mg/kg	2.27	<4.086	mg/kg	<0.000409 %		<LOD
6		copper { copper sulphate }	029-004-00-0	231-847-6	7758-98-7		16	mg/kg	2.512	37.699	mg/kg	0.00377 %	✓	
7		lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	22	mg/kg		20.638	mg/kg	0.00206 %	✓	
8		mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.3	mg/kg	1.353	<0.406	mg/kg	<0.0000406 %		<LOD
9		nickel { nickel sulfate }	028-009-00-5	232-104-9	7786-81-4		11	mg/kg	2.637	27.208	mg/kg	0.00272 %	✓	
10		selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<1	mg/kg	2.554	<2.554	mg/kg	<0.000255 %		<LOD
11		zinc { zinc sulphate (hydrous) (mono-, hexa- and hepta hydrate); [1] zinc sulphate (anhydrous) [2] }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		50	mg/kg	4.398	206.282	mg/kg	0.0206 %	✓	
12		TPH (C6 to C40) petroleum group			TPH		<20	mg/kg		<20	mg/kg	<0.002 %		<LOD
13		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
14		benzene	601-020-00-8	200-753-7	71-43-2		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number									
15		toluene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-021-00-3	203-625-9	108-88-3									
16		ethylbenzene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-023-00-4	202-849-4	100-41-4									
17		xylene				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
18		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<1	mg/kg	1.884	<1.884	mg/kg	<0.000188 %		<LOD
		006-007-00-5											
19		pH				7.4	pH		7.4	pH	7.4 pH		
				PH									
20		naphthalene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
21		acenaphthylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-917-1	208-96-8									
22		acenaphthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			201-469-6	83-32-9									
23		fluorene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			201-695-5	86-73-7									
24		phenanthrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			201-581-5	85-01-8									
25		anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			204-371-1	120-12-7									
26		fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-912-4	206-44-0									
27		pyrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			204-927-3	129-00-0									
28		benzo[a]anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-033-00-9	200-280-6	56-55-3									
29		chrysene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-048-00-0	205-923-4	218-01-9									
30		benzo[b]fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-034-00-4	205-911-9	205-99-2									
31		benzo[k]fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-036-00-5	205-916-6	207-08-9									
32		benzo[a]pyrene; benzo[def]chrysene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-032-00-3	200-028-5	50-32-8									
33		indeno[123-cd]pyrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-893-2	193-39-5									
34		dibenz[a,h]anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
35		benzo[ghi]perylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-883-8	191-24-2									
36		phenol				<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
		604-001-00-2	203-632-7	108-95-2									
37		asbestos				<			<		<		ND
		650-013-00-6	- - - - - - -	12001-28-4 132207-32-0 12172-73-5 77536-66-4 77536-68-6 77536-67-5 12001-29-5									
38		Asbestos Fragments (Visible to Naked Eye).				<			<		<		ND
				12001-28-4 132207-32-0 12172-73-5									

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number							
				77536-66-4 77536-68-6 77536-67-5 12001-29-5							
								Total:	0.0352 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Determinand defined by classifier (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: BH115_0.50

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:
BH115_0.50
Sample Depth:
0.5 m
Moisture content:
11%
(dry weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 11% Dry Weight Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		9 mg/kg	1.32	10.705 mg/kg	0.00107 %	✓	
2	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		0.4 mg/kg	3.22	1.16 mg/kg	0.000116 %	✓	
3	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		<0.2 mg/kg	1.142	<0.228 mg/kg	<0.0000228 %		<LOD
4	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		19 mg/kg	1.462	25.018 mg/kg	0.0025 %	✓	
5	chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<1.8 mg/kg	2.27	<4.086 mg/kg	<0.000409 %		<LOD
6	copper { copper sulphate }	029-004-00-0	231-847-6	7758-98-7		16 mg/kg	2.512	36.205 mg/kg	0.00362 %	✓	
7	lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	30 mg/kg		27.027 mg/kg	0.0027 %	✓	
8	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.3 mg/kg	1.353	<0.406 mg/kg	<0.0000406 %		<LOD
9	nickel { nickel sulfate }	028-009-00-5	232-104-9	7786-81-4		13 mg/kg	2.637	30.88 mg/kg	0.00309 %	✓	
10	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<1 mg/kg	2.554	<2.554 mg/kg	<0.000255 %		<LOD
11	zinc { zinc sulphate (hydrous) (mono-, hexa- and hepta hydrate); [1] zinc sulphate (anhydrous) [2] }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		67 mg/kg	4.398	265.46 mg/kg	0.0265 %	✓	
12	TPH (C6 to C40) petroleum group			TPH		<20 mg/kg		<20 mg/kg	<0.002 %		<LOD
13	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
14	benzene	601-020-00-8	200-753-7	71-43-2		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
15		toluene	601-021-00-3	203-625-9	108-88-3		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<**LOD**
16		ethylbenzene	601-023-00-4	202-849-4	100-41-4		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<**LOD**
17		xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
18		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<1	mg/kg	1.884	<1.884	mg/kg	<0.000188 %		<**LOD**
19		pH			PH		7	pH		7	pH	7pH		
20		naphthalene	601-052-00-2	202-049-5	91-20-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
21		acenaphthylene		205-917-1	208-96-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
22		acenaphthene		201-469-6	83-32-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
23		fluorene		201-695-5	86-73-7		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
24		phenanthrene		201-581-5	85-01-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
25		anthracene		204-371-1	120-12-7		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
26		fluoranthene		205-912-4	206-44-0		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
27		pyrene		204-927-3	129-00-0		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
28		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
29		chrysene	601-048-00-0	205-923-4	218-01-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
30		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
31		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
32		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
33		indeno[123-cd]pyrene		205-893-2	193-39-5		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
34		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
35		benzo[ghi]perylene		205-883-8	191-24-2		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
36		phenol	604-001-00-2	203-632-7	108-95-2		<1	mg/kg		<1	mg/kg	<0.0001 %		<**LOD**
37		asbestos	650-013-00-6	- - - - - - -	12001-28-4 132207-32-0 12172-73-5 77536-66-4 77536-68-6 77536-67-5 12001-29-5		<			<		<		**ND**
38		Asbestos Fragments (Visible to Naked Eye).			12001-28-4 132207-32-0 12172-73-5		<			<		<		**ND**

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number							
				77536-66-4 77536-68-6 77536-67-5 12001-29-5							
								Total:	0.0427 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Determinand defined by classifier (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: BH117_0.50

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:
BH117_0.50
Sample Depth:
0.5 m
Moisture content:
10%
(dry weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 10% Dry Weight Moisture Correction applied (MC)

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1		arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		10	mg/kg	1.32	12.003	mg/kg	0.0012 %	✓	
2		boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		<0.2	mg/kg	3.22	<0.644	mg/kg	<0.0000644 %		<**LOD**
3		cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		<0.2	mg/kg	1.142	<0.228	mg/kg	<0.0000228 %		<**LOD**
4		chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		26	mg/kg	1.462	34.546	mg/kg	0.00345 %	✓	
5		chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<1.8	mg/kg	2.27	<4.086	mg/kg	<0.000409 %		<**LOD**
6		copper { copper sulphate }	029-004-00-0	231-847-6	7758-98-7		33	mg/kg	2.512	75.351	mg/kg	0.00754 %	✓	
7		lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	27	mg/kg		24.545	mg/kg	0.00245 %	✓	
8		mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.3	mg/kg	1.353	<0.406	mg/kg	<0.0000406 %		<**LOD**
9		nickel { nickel sulfate }	028-009-00-5	232-104-9	7786-81-4		21	mg/kg	2.637	50.337	mg/kg	0.00503 %	✓	
10		selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<1	mg/kg	2.554	<2.554	mg/kg	<0.000255 %		<**LOD**
11		zinc { zinc sulphate (hydrous) (mono-, hexa- and hepta hydrate); [1] zinc sulphate (anhydrous) [2] }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		66	mg/kg	4.398	263.876	mg/kg	0.0264 %	✓	
12		TPH (C6 to C40) petroleum group			TPH		<20	mg/kg		<20	mg/kg	<0.002 %		<**LOD**
13		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<**LOD**
14		benzene	601-020-00-8	200-753-7	71-43-2		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<**LOD**

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number									
15		toluene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<**LOD**
		601-021-00-3	203-625-9	108-88-3									
16		ethylbenzene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<**LOD**
		601-023-00-4	202-849-4	100-41-4									
17		xylene				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
18		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<1	mg/kg	1.884	<1.884	mg/kg	<0.000188 %		<**LOD**
		006-007-00-5											
19		pH				7.1	pH		7.1	pH	7.1 pH		
				PH									
20		naphthalene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-052-00-2	202-049-5	91-20-3									
21		acenaphthylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			205-917-1	208-96-8									
22		acenaphthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			201-469-6	83-32-9									
23		fluorene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			201-695-5	86-73-7									
24		phenanthrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			201-581-5	85-01-8									
25		anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			204-371-1	120-12-7									
26		fluoranthene				0.1	mg/kg		0.0909	mg/kg	0.00000909 %	✓	
			205-912-4	206-44-0									
27		pyrene				0.09	mg/kg		0.0818	mg/kg	0.00000818 %	✓	
			204-927-3	129-00-0									
28		benzo[a]anthracene				0.05	mg/kg		0.0455	mg/kg	0.00000455 %	✓	
		601-033-00-9	200-280-6	56-55-3									
29		chrysene				0.05	mg/kg		0.0455	mg/kg	0.00000455 %	✓	
		601-048-00-0	205-923-4	218-01-9									
30		benzo[b]fluoranthene				0.09	mg/kg		0.0818	mg/kg	0.00000818 %	✓	
		601-034-00-4	205-911-9	205-99-2									
31		benzo[k]fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-036-00-5	205-916-6	207-08-9									
32		benzo[a]pyrene; benzo[def]chrysene				0.06	mg/kg		0.0545	mg/kg	0.00000545 %	✓	
		601-032-00-3	200-028-5	50-32-8									
33		indeno[123-cd]pyrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			205-893-2	193-39-5									
34		dibenz[a,h]anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-041-00-2	200-181-8	53-70-3									
35		benzo[ghi]perylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			205-883-8	191-24-2									
36		phenol				<1	mg/kg		<1	mg/kg	<0.0001 %		<**LOD**
		604-001-00-2	203-632-7	108-95-2									
37		asbestos				<			<		<		**ND**
		650-013-00-6	- - - - - - -	12001-28-4 132207-32-0 12172-73-5 77536-66-4 77536-68-6 77536-67-5 12001-29-5									
38		Asbestos Fragments (Visible to Naked Eye).				<			<		<		**ND**
				12001-28-4 132207-32-0 12172-73-5									

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number							
				77536-66-4 77536-68-6 77536-67-5 12001-29-5							
								Total:	0.0492 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Determinand defined by classifier (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: BH103_0.50

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:
BH103_0.50
Sample Depth:
0.5 m
Moisture content:
5.4%
(dry weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 5.4% Dry Weight Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		2.3 mg/kg	1.32	2.881 mg/kg	0.000288 %	✓	
2	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		0.4 mg/kg	3.22	1.222 mg/kg	0.000122 %	✓	
3	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		<0.2 mg/kg	1.142	<0.228 mg/kg	<0.0000228 %		<LOD
4	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		11 mg/kg	1.462	15.253 mg/kg	0.00153 %	✓	
5	chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<1.8 mg/kg	2.27	<4.086 mg/kg	<0.000409 %		<LOD
6	copper { copper sulphate }	029-004-00-0	231-847-6	7758-98-7		33 mg/kg	2.512	78.64 mg/kg	0.00786 %	✓	
7	lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	9.5 mg/kg		9.013 mg/kg	0.000901 %	✓	
8	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.3 mg/kg	1.353	<0.406 mg/kg	<0.0000406 %		<LOD
9	nickel { nickel sulfate }	028-009-00-5	232-104-9	7786-81-4		10 mg/kg	2.637	25.016 mg/kg	0.0025 %	✓	
10	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<1 mg/kg	2.554	<2.554 mg/kg	<0.000255 %		<LOD
11	zinc { zinc sulphate (hydrous) (mono-, hexa- and hepta hydrate); [1] zinc sulphate (anhydrous) [2] }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		44 mg/kg	4.398	183.595 mg/kg	0.0184 %	✓	
12	TPH (C6 to C40) petroleum group			TPH		58 mg/kg		55.028 mg/kg	0.0055 %	✓	
13	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
14	benzene	601-020-00-8	200-753-7	71-43-2		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number									
15		toluene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<**LOD**
		601-021-00-3	203-625-9	108-88-3									
16		ethylbenzene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<**LOD**
		601-023-00-4	202-849-4	100-41-4									
17		xylene				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
18		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<1	mg/kg	1.884	<1.884	mg/kg	<0.000188 %		<**LOD**
		006-007-00-5											
19		pH				9.5	pH		9.5	pH	9.5 pH		
				PH									
20		naphthalene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-052-00-2	202-049-5	91-20-3									
21		acenaphthylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			205-917-1	208-96-8									
22		acenaphthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			201-469-6	83-32-9									
23		fluorene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			201-695-5	86-73-7									
24		phenanthrene				0.17	mg/kg		0.161	mg/kg	0.0000161 %	✓	
			201-581-5	85-01-8									
25		anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			204-371-1	120-12-7									
26		fluoranthene				0.4	mg/kg		0.38	mg/kg	0.000038 %	✓	
			205-912-4	206-44-0									
27		pyrene				0.38	mg/kg		0.361	mg/kg	0.0000361 %	✓	
			204-927-3	129-00-0									
28		benzo[a]anthracene				0.15	mg/kg		0.142	mg/kg	0.0000142 %	✓	
		601-033-00-9	200-280-6	56-55-3									
29		chrysene				0.16	mg/kg		0.152	mg/kg	0.0000152 %	✓	
		601-048-00-0	205-923-4	218-01-9									
30		benzo[b]fluoranthene				0.17	mg/kg		0.161	mg/kg	0.0000161 %	✓	
		601-034-00-4	205-911-9	205-99-2									
31		benzo[k]fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-036-00-5	205-916-6	207-08-9									
32		benzo[a]pyrene; benzo[def]chrysene				0.12	mg/kg		0.114	mg/kg	0.0000114 %	✓	
		601-032-00-3	200-028-5	50-32-8									
33		indeno[123-cd]pyrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			205-893-2	193-39-5									
34		dibenz[a,h]anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-041-00-2	200-181-8	53-70-3									
35		benzo[ghi]perylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			205-883-8	191-24-2									
36		phenol				<1	mg/kg		<1	mg/kg	<0.0001 %		<**LOD**
		604-001-00-2	203-632-7	108-95-2									
37		asbestos				<			<		<		**ND**
		650-013-00-6	- - - - - - -	12001-28-4 132207-32-0 12172-73-5 77536-66-4 77536-68-6 77536-67-5 12001-29-5									
38		Asbestos Fragments (Visible to Naked Eye).				<			<		<		**ND**
				12001-28-4 132207-32-0 12172-73-5									

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number							
				77536-66-4 77536-68-6 77536-67-5 12001-29-5							
								Total:	0.0383 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Determinand defined by classifier (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Supplementary Hazardous Property Information

HP 3(i): Flammable "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"

Force this Hazardous property to non hazardous because Not considered flammable at the recorded concentration in a soil matrix.

Hazard Statements hit:

Flam. Liq. 3; H226 "Flammable liquid and vapour."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.0055%)

Classification of sample: WS108_0.50

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:
WS108_0.50
Sample Depth:
0.5 m
Moisture content:
13%
(dry weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 13% Dry Weight Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		15 mg/kg	1.32	17.526 mg/kg	0.00175 %	✓	
2	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		0.6 mg/kg	3.22	1.71 mg/kg	0.000171 %	✓	
3	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		<0.2 mg/kg	1.142	<0.228 mg/kg	<0.0000228 %		<LOD
4	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		30 mg/kg	1.462	38.802 mg/kg	0.00388 %	✓	
5	chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<1.8 mg/kg	2.27	<4.086 mg/kg	<0.000409 %		<LOD
6	copper { copper sulphate }	029-004-00-0	231-847-6	7758-98-7		37 mg/kg	2.512	82.242 mg/kg	0.00822 %	✓	
7	lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	12 mg/kg		10.619 mg/kg	0.00106 %	✓	
8	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.3 mg/kg	1.353	<0.406 mg/kg	<0.0000406 %		<LOD
9	nickel { nickel sulfate }	028-009-00-5	232-104-9	7786-81-4		31 mg/kg	2.637	72.334 mg/kg	0.00723 %	✓	
10	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<1 mg/kg	2.554	<2.554 mg/kg	<0.000255 %		<LOD
11	zinc { zinc sulphate (hydrous) (mono-, hexa- and hepta hydrate); [1] zinc sulphate (anhydrous) [2] }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		61 mg/kg	4.398	237.41 mg/kg	0.0237 %	✓	
12	TPH (C6 to C40) petroleum group			TPH		<20 mg/kg		<20 mg/kg	<0.002 %		<LOD
13	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
14	benzene	601-020-00-8	200-753-7	71-43-2		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number									
15		toluene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-021-00-3	203-625-9	108-88-3									
16		ethylbenzene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-023-00-4	202-849-4	100-41-4									
17		xylene				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
18		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<1	mg/kg	1.884	<1.884	mg/kg	<0.000188 %		<LOD
		006-007-00-5											
19		pH				7.8	pH		7.8	pH	7.8 pH		
				PH									
20		naphthalene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
21		acenaphthylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-917-1	208-96-8									
22		acenaphthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			201-469-6	83-32-9									
23		fluorene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			201-695-5	86-73-7									
24		phenanthrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			201-581-5	85-01-8									
25		anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			204-371-1	120-12-7									
26		fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-912-4	206-44-0									
27		pyrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			204-927-3	129-00-0									
28		benzo[a]anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-033-00-9	200-280-6	56-55-3									
29		chrysene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-048-00-0	205-923-4	218-01-9									
30		benzo[b]fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-034-00-4	205-911-9	205-99-2									
31		benzo[k]fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-036-00-5	205-916-6	207-08-9									
32		benzo[a]pyrene; benzo[def]chrysene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-032-00-3	200-028-5	50-32-8									
33		indeno[123-cd]pyrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-893-2	193-39-5									
34		dibenz[a,h]anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
35		benzo[ghi]perylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-883-8	191-24-2									
36		phenol				<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
		604-001-00-2	203-632-7	108-95-2									
37		asbestos				<			<		<		ND
		650-013-00-6	- - - - - - -	12001-28-4 132207-32-0 12172-73-5 77536-66-4 77536-68-6 77536-67-5 12001-29-5									
38		Asbestos Fragments (Visible to Naked Eye).				<			<		<		ND
				12001-28-4 132207-32-0 12172-73-5									

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number							
				77536-66-4 77536-68-6 77536-67-5 12001-29-5							
								Total:	0.0492 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Determinand defined by classifier (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: BH128_0.50

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:
BH128_0.50
Sample Depth:
0.5 m
Moisture content:
12%
(dry weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 12% Dry Weight Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		9.8 mg/kg	1.32	11.553 mg/kg	0.00116 %	✓	
2	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		0.3 mg/kg	3.22	0.862 mg/kg	0.0000862 %	✓	
3	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		<0.2 mg/kg	1.142	<0.228 mg/kg	<0.0000228 %		<LOD
4	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		33 mg/kg	1.462	43.064 mg/kg	0.00431 %	✓	
5	chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<1.8 mg/kg	2.27	<4.086 mg/kg	<0.000409 %		<LOD
6	copper { copper sulphate }	029-004-00-0	231-847-6	7758-98-7		23 mg/kg	2.512	51.58 mg/kg	0.00516 %	✓	
7	lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	12 mg/kg		10.714 mg/kg	0.00107 %	✓	
8	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.3 mg/kg	1.353	<0.406 mg/kg	<0.0000406 %		<LOD
9	nickel { nickel sulfate }	028-009-00-5	232-104-9	7786-81-4		31 mg/kg	2.637	72.98 mg/kg	0.0073 %	✓	
10	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<1 mg/kg	2.554	<2.554 mg/kg	<0.000255 %		<LOD
11	zinc { zinc sulphate (hydrous) (mono-, hexa- and hepta hydrate); [1] zinc sulphate (anhydrous) [2] }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		56 mg/kg	4.398	219.896 mg/kg	0.022 %	✓	
12	TPH (C6 to C40) petroleum group			TPH		<20 mg/kg		<20 mg/kg	<0.002 %		<LOD
13	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
14	benzene	601-020-00-8	200-753-7	71-43-2		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
15		toluene	601-021-00-3	203-625-9	108-88-3		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<**LOD**
16		ethylbenzene	601-023-00-4	202-849-4	100-41-4		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<**LOD**
17		xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
18		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<1	mg/kg	1.884	<1.884	mg/kg	<0.000188 %		<**LOD**
19		pH			PH		8.6	pH		8.6	pH	8.6 pH		
20		naphthalene	601-052-00-2	202-049-5	91-20-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
21		acenaphthylene		205-917-1	208-96-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
22		acenaphthene		201-469-6	83-32-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
23		fluorene		201-695-5	86-73-7		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
24		phenanthrene		201-581-5	85-01-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
25		anthracene		204-371-1	120-12-7		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
26		fluoranthene		205-912-4	206-44-0		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
27		pyrene		204-927-3	129-00-0		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
28		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
29		chrysene	601-048-00-0	205-923-4	218-01-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
30		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
31		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
32		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
33		indeno[123-cd]pyrene		205-893-2	193-39-5		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
34		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
35		benzo[ghi]perylene		205-883-8	191-24-2		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
36		phenol	604-001-00-2	203-632-7	108-95-2		<1	mg/kg		<1	mg/kg	<0.0001 %		<**LOD**
37		asbestos	650-013-00-6	- - - - - - -	12001-28-4 132207-32-0 12172-73-5 77536-66-4 77536-68-6 77536-67-5 12001-29-5		<			<		<		**ND**
38		Asbestos Fragments (Visible to Naked Eye).			12001-28-4 132207-32-0 12172-73-5		<			<		<		**ND**

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number							
				77536-66-4 77536-68-6 77536-67-5 12001-29-5							
								Total:	0.0442 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Determinand defined by classifier (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: BH123_0.50

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:
BH123_0.50
Sample Depth:
0.5 m
Moisture content:
12%
(dry weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 12% Dry Weight Moisture Correction applied (MC)

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1		arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		9.9	mg/kg	1.32	11.671	mg/kg	0.00117 %	✓	
2		boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		0.8	mg/kg	3.22	2.3	mg/kg	0.00023 %	✓	
3		cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		0.4	mg/kg	1.142	0.408	mg/kg	0.0000408 %	✓	
4		chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		31	mg/kg	1.462	40.454	mg/kg	0.00405 %	✓	
5		chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<1.8	mg/kg	2.27	<4.086	mg/kg	<0.000409 %		<**LOD**
6		copper { copper sulphate }	029-004-00-0	231-847-6	7758-98-7		25	mg/kg	2.512	56.065	mg/kg	0.00561 %	✓	
7		lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	30	mg/kg		26.786	mg/kg	0.00268 %	✓	
8		mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.3	mg/kg	1.353	<0.406	mg/kg	<0.0000406 %		<**LOD**
9		nickel { nickel sulfate }	028-009-00-5	232-104-9	7786-81-4		28	mg/kg	2.637	65.917	mg/kg	0.00659 %	✓	
10		selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<1	mg/kg	2.554	<2.554	mg/kg	<0.000255 %		<**LOD**
11		zinc { zinc sulphate (hydrous) (mono-, hexa- and hepta hydrate); [1] zinc sulphate (anhydrous) [2] }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		67	mg/kg	4.398	263.09	mg/kg	0.0263 %	✓	
12		TPH (C6 to C40) petroleum group			TPH		<20	mg/kg		<20	mg/kg	<0.002 %		<**LOD**
13		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<**LOD**
14		benzene	601-020-00-8	200-753-7	71-43-2		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<**LOD**

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number									
15		toluene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-021-00-3	203-625-9	108-88-3									
16		ethylbenzene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-023-00-4	202-849-4	100-41-4									
17		xylene				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
18		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<1	mg/kg	1.884	<1.884	mg/kg	<0.000188 %		<LOD
		006-007-00-5											
19		pH				7.6	pH		7.6	pH	7.6 pH		
				PH									
20		naphthalene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
21		acenaphthylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-917-1	208-96-8									
22		acenaphthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			201-469-6	83-32-9									
23		fluorene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			201-695-5	86-73-7									
24		phenanthrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			201-581-5	85-01-8									
25		anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			204-371-1	120-12-7									
26		fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-912-4	206-44-0									
27		pyrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			204-927-3	129-00-0									
28		benzo[a]anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-033-00-9	200-280-6	56-55-3									
29		chrysene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-048-00-0	205-923-4	218-01-9									
30		benzo[b]fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-034-00-4	205-911-9	205-99-2									
31		benzo[k]fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-036-00-5	205-916-6	207-08-9									
32		benzo[a]pyrene; benzo[def]chrysene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-032-00-3	200-028-5	50-32-8									
33		indeno[123-cd]pyrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-893-2	193-39-5									
34		dibenz[a,h]anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
35		benzo[ghi]perylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-883-8	191-24-2									
36		phenol				<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
		604-001-00-2	203-632-7	108-95-2									
37		asbestos				<			<		<		ND
		650-013-00-6	- - - - - - -	12001-28-4 132207-32-0 12172-73-5 77536-66-4 77536-68-6 77536-67-5 12001-29-5									
38		Asbestos Fragments (Visible to Naked Eye).				<			<		<		ND
				12001-28-4 132207-32-0 12172-73-5									

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number							
				77536-66-4 77536-68-6 77536-67-5 12001-29-5							
								Total:	0.0497 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Determinand defined by classifier (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: BH108_0.50

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:
BH108_0.50
Sample Depth:
0.5 m
Moisture content:
5.8%
(dry weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 5.8% Dry Weight Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		5.7 mg/kg	1.32	7.113 mg/kg	0.000711 %	✓	
2	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		0.7 mg/kg	3.22	2.13 mg/kg	0.000213 %	✓	
3	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		<0.2 mg/kg	1.142	<0.228 mg/kg	<0.0000228 %		<LOD
4	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		10 mg/kg	1.462	13.814 mg/kg	0.00138 %	✓	
5	chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<1.8 mg/kg	2.27	<4.086 mg/kg	<0.000409 %		<LOD
6	copper { copper sulphate }	029-004-00-0	231-847-6	7758-98-7		14 mg/kg	2.512	33.236 mg/kg	0.00332 %	✓	
7	lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	23 mg/kg		21.739 mg/kg	0.00217 %	✓	
8	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.3 mg/kg	1.353	<0.406 mg/kg	<0.0000406 %		<LOD
9	nickel { nickel sulfate }	028-009-00-5	232-104-9	7786-81-4		7.6 mg/kg	2.637	18.94 mg/kg	0.00189 %	✓	
10	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<1 mg/kg	2.554	<2.554 mg/kg	<0.000255 %		<LOD
11	zinc { zinc sulphate (hydrous) (mono-, hexa- and hepta hydrate); [1] zinc sulphate (anhydrous) [2] }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		44 mg/kg	4.398	182.901 mg/kg	0.0183 %	✓	
12	TPH (C6 to C40) petroleum group			TPH		<20 mg/kg		<20 mg/kg	<0.002 %		<LOD
13	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
14	benzene	601-020-00-8	200-753-7	71-43-2		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
15		toluene	601-021-00-3	203-625-9	108-88-3		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<**LOD**
16		ethylbenzene	601-023-00-4	202-849-4	100-41-4		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<**LOD**
17		xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
18		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<1	mg/kg	1.884	<1.884	mg/kg	<0.000188 %		<**LOD**
19		pH			PH		6.9	pH		6.9	pH	6.9 pH		
20		naphthalene	601-052-00-2	202-049-5	91-20-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
21		acenaphthylene		205-917-1	208-96-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
22		acenaphthene		201-469-6	83-32-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
23		fluorene		201-695-5	86-73-7		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
24		phenanthrene		201-581-5	85-01-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
25		anthracene		204-371-1	120-12-7		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
26		fluoranthene		205-912-4	206-44-0		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
27		pyrene		204-927-3	129-00-0		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
28		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
29		chrysene	601-048-00-0	205-923-4	218-01-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
30		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
31		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
32		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
33		indeno[123-cd]pyrene		205-893-2	193-39-5		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
34		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
35		benzo[ghi]perylene		205-883-8	191-24-2		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
36		phenol	604-001-00-2	203-632-7	108-95-2		<1	mg/kg		<1	mg/kg	<0.0001 %		<**LOD**
37		asbestos	650-013-00-6	- - - - - - -	12001-28-4 132207-32-0 12172-73-5 77536-66-4 77536-68-6 77536-67-5 12001-29-5		<			<		<		**ND**
38		Asbestos Fragments (Visible to Naked Eye).			12001-28-4 132207-32-0 12172-73-5		<			<		<		**ND**

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number							
				77536-66-4 77536-68-6 77536-67-5 12001-29-5							
								Total:	0.0311 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Determinand defined by classifier (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: BH109_0.50

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:
BH109_0.50
Sample Depth:
0.5 m
Moisture content:
7.4%
(dry weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 7.4% Dry Weight Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		6.8 mg/kg	1.32	8.36 mg/kg	0.000836 %	✓	
2	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		0.6 mg/kg	3.22	1.799 mg/kg	0.00018 %	✓	
3	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		0.4 mg/kg	1.142	0.425 mg/kg	0.0000425 %	✓	
4	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		13 mg/kg	1.462	17.691 mg/kg	0.00177 %	✓	
5	chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<1.8 mg/kg	2.27	<4.086 mg/kg	<0.000409 %		<LOD
6	copper { copper sulphate }	029-004-00-0	231-847-6	7758-98-7		24 mg/kg	2.512	56.127 mg/kg	0.00561 %	✓	
7	lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	120 mg/kg		111.732 mg/kg	0.0112 %	✓	
8	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.3 mg/kg	1.353	<0.406 mg/kg	<0.0000406 %		<LOD
9	nickel { nickel sulfate }	028-009-00-5	232-104-9	7786-81-4		11 mg/kg	2.637	27.005 mg/kg	0.0027 %	✓	
10	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<1 mg/kg	2.554	<2.554 mg/kg	<0.000255 %		<LOD
11	zinc { zinc sulphate (hydrous) (mono-, hexa- and hepta hydrate); [1] zinc sulphate (anhydrous) [2] }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		88 mg/kg	4.398	360.351 mg/kg	0.036 %	✓	
12	TPH (C6 to C40) petroleum group			TPH		<20 mg/kg		<20 mg/kg	<0.002 %		<LOD
13	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
14	benzene	601-020-00-8	200-753-7	71-43-2		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number									
15		toluene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-021-00-3	203-625-9	108-88-3									
16		ethylbenzene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-023-00-4	202-849-4	100-41-4									
17		xylene				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
18		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<1	mg/kg	1.884	<1.884	mg/kg	<0.000188 %		<LOD
		006-007-00-5											
19		pH				6.9	pH		6.9	pH	6.9 pH		
				PH									
20		naphthalene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
21		acenaphthylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-917-1	208-96-8									
22		acenaphthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			201-469-6	83-32-9									
23		fluorene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			201-695-5	86-73-7									
24		phenanthrene				0.11	mg/kg		0.102	mg/kg	0.0000102 %	✓	
			201-581-5	85-01-8									
25		anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			204-371-1	120-12-7									
26		fluoranthene				0.17	mg/kg		0.158	mg/kg	0.0000158 %	✓	
			205-912-4	206-44-0									
27		pyrene				0.15	mg/kg		0.14	mg/kg	0.000014 %	✓	
			204-927-3	129-00-0									
28		benzo[a]anthracene				0.06	mg/kg		0.0559	mg/kg	0.00000559 %	✓	
		601-033-00-9	200-280-6	56-55-3									
29		chrysene				0.1	mg/kg		0.0931	mg/kg	0.00000931 %	✓	
		601-048-00-0	205-923-4	218-01-9									
30		benzo[b]fluoranthene				0.11	mg/kg		0.102	mg/kg	0.0000102 %	✓	
		601-034-00-4	205-911-9	205-99-2									
31		benzo[k]fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-036-00-5	205-916-6	207-08-9									
32		benzo[a]pyrene; benzo[def]chrysene				0.08	mg/kg		0.0745	mg/kg	0.00000745 %	✓	
		601-032-00-3	200-028-5	50-32-8									
33		indeno[123-cd]pyrene				0.05	mg/kg		0.0466	mg/kg	0.00000466 %	✓	
			205-893-2	193-39-5									
34		dibenz[a,h]anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
35		benzo[ghi]perylene				0.08	mg/kg		0.0745	mg/kg	0.00000745 %	✓	
			205-883-8	191-24-2									
36		phenol				<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
		604-001-00-2	203-632-7	108-95-2									
37		asbestos				<			<		<		ND
		650-013-00-6	- - - - - - -	12001-28-4 132207-32-0 12172-73-5 77536-66-4 77536-68-6 77536-67-5 12001-29-5									
38		Asbestos Fragments (Visible to Naked Eye).				<			<		<		ND
				12001-28-4 132207-32-0 12172-73-5									

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number							
				77536-66-4 77536-68-6 77536-67-5 12001-29-5							
								Total:	0.0615 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Determinand defined by classifier (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: WS106_0.50

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:
WS106_0.50
Sample Depth:
0.5 m
Moisture content:
16%
(dry weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 16% Dry Weight Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		12 mg/kg	1.32	13.659 mg/kg	0.00137 %	✓	
2	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		1.1 mg/kg	3.22	3.053 mg/kg	0.000305 %	✓	
3	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		<0.2 mg/kg	1.142	<0.228 mg/kg	<0.0000228 %		<LOD
4	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		38 mg/kg	1.462	47.879 mg/kg	0.00479 %	✓	
5	chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<1.8 mg/kg	2.27	<4.086 mg/kg	<0.000409 %		<LOD
6	copper { copper sulphate }	029-004-00-0	231-847-6	7758-98-7		22 mg/kg	2.512	47.636 mg/kg	0.00476 %	✓	
7	lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	16 mg/kg		13.793 mg/kg	0.00138 %	✓	
8	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.3 mg/kg	1.353	<0.406 mg/kg	<0.0000406 %		<LOD
9	nickel { nickel sulfate }	028-009-00-5	232-104-9	7786-81-4		40 mg/kg	2.637	90.92 mg/kg	0.00909 %	✓	
10	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<1 mg/kg	2.554	<2.554 mg/kg	<0.000255 %		<LOD
11	zinc { zinc sulphate (hydrous) (mono-, hexa- and hepta hydrate); [1] zinc sulphate (anhydrous) [2] }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		58 mg/kg	4.398	219.896 mg/kg	0.022 %	✓	
12	TPH (C6 to C40) petroleum group			TPH		<20 mg/kg		<20 mg/kg	<0.002 %		<LOD
13	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
14	benzene	601-020-00-8	200-753-7	71-43-2		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
15		toluene	601-021-00-3	203-625-9	108-88-3		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<**LOD**
16		ethylbenzene	601-023-00-4	202-849-4	100-41-4		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<**LOD**
17		xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
18		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<1	mg/kg	1.884	<1.884	mg/kg	<0.000188 %		<**LOD**
19		pH			PH		7.9	pH		7.9	pH	7.9 pH		
20		naphthalene	601-052-00-2	202-049-5	91-20-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
21		acenaphthylene		205-917-1	208-96-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
22		acenaphthene		201-469-6	83-32-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
23		fluorene		201-695-5	86-73-7		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
24		phenanthrene		201-581-5	85-01-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
25		anthracene		204-371-1	120-12-7		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
26		fluoranthene		205-912-4	206-44-0		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
27		pyrene		204-927-3	129-00-0		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
28		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
29		chrysene	601-048-00-0	205-923-4	218-01-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
30		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
31		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
32		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
33		indeno[123-cd]pyrene		205-893-2	193-39-5		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
34		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
35		benzo[ghi]perylene		205-883-8	191-24-2		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
36		phenol	604-001-00-2	203-632-7	108-95-2		<1	mg/kg		<1	mg/kg	<0.0001 %		<**LOD**
37		asbestos	650-013-00-6	- - - - - - -	12001-28-4 132207-32-0 12172-73-5 77536-66-4 77536-68-6 77536-67-5 12001-29-5		<			<		<		**ND**
38		Asbestos Fragments (Visible to Naked Eye).			12001-28-4 132207-32-0 12172-73-5		<			<		<		**ND**

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number							
				77536-66-4 77536-68-6 77536-67-5 12001-29-5							
								Total:	0.0468 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Determinand defined by classifier (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: BH112_0.50

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:
BH112_0.50
Sample Depth:
0.5 m
Moisture content:
5.1%
(dry weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 5.1% Dry Weight Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		4.6 mg/kg	1.32	5.779 mg/kg	0.000578 %	✓	
2	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		0.3 mg/kg	3.22	0.919 mg/kg	0.0000919 %	✓	
3	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		<0.2 mg/kg	1.142	<0.228 mg/kg	<0.0000228 %		<LOD
4	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		11 mg/kg	1.462	15.297 mg/kg	0.00153 %	✓	
5	chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<1.8 mg/kg	2.27	<4.086 mg/kg	<0.000409 %		<LOD
6	copper { copper sulphate }	029-004-00-0	231-847-6	7758-98-7		15 mg/kg	2.512	35.847 mg/kg	0.00358 %	✓	
7	lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	13 mg/kg		12.369 mg/kg	0.00124 %	✓	
8	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.3 mg/kg	1.353	<0.406 mg/kg	<0.0000406 %		<LOD
9	nickel { nickel sulfate }	028-009-00-5	232-104-9	7786-81-4		8.3 mg/kg	2.637	20.823 mg/kg	0.00208 %	✓	
10	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<1 mg/kg	2.554	<2.554 mg/kg	<0.000255 %		<LOD
11	zinc { zinc sulphate (hydrous) (mono-, hexa- and hepta hydrate); [1] zinc sulphate (anhydrous) [2] }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		41 mg/kg	4.398	171.565 mg/kg	0.0172 %	✓	
12	TPH (C6 to C40) petroleum group			TPH		<20 mg/kg		<20 mg/kg	<0.002 %		<LOD
13	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
14	benzene	601-020-00-8	200-753-7	71-43-2		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number									
15		toluene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-021-00-3	203-625-9	108-88-3									
16		ethylbenzene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-023-00-4	202-849-4	100-41-4									
17		xylene				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
18		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<1	mg/kg	1.884	<1.884	mg/kg	<0.000188 %		<LOD
		006-007-00-5											
19		pH				7.3	pH		7.3	pH	7.3 pH		
				PH									
20		naphthalene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
21		acenaphthylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-917-1	208-96-8									
22		acenaphthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			201-469-6	83-32-9									
23		fluorene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			201-695-5	86-73-7									
24		phenanthrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			201-581-5	85-01-8									
25		anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			204-371-1	120-12-7									
26		fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-912-4	206-44-0									
27		pyrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			204-927-3	129-00-0									
28		benzo[a]anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-033-00-9	200-280-6	56-55-3									
29		chrysene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-048-00-0	205-923-4	218-01-9									
30		benzo[b]fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-034-00-4	205-911-9	205-99-2									
31		benzo[k]fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-036-00-5	205-916-6	207-08-9									
32		benzo[a]pyrene; benzo[def]chrysene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-032-00-3	200-028-5	50-32-8									
33		indeno[123-cd]pyrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-893-2	193-39-5									
34		dibenz[a,h]anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
35		benzo[ghi]perylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-883-8	191-24-2									
36		phenol				<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
		604-001-00-2	203-632-7	108-95-2									
37		asbestos				<			<		<		ND
		650-013-00-6	- - - - - - -	12001-28-4 132207-32-0 12172-73-5 77536-66-4 77536-68-6 77536-67-5 12001-29-5									
38		Asbestos Fragments (Visible to Naked Eye).				<			<		<		ND
				12001-28-4 132207-32-0 12172-73-5									

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number							
				77536-66-4 77536-68-6 77536-67-5 12001-29-5							
								Total:	0.0294 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Determinand defined by classifier (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: BH110_0.50

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:
BH110_0.50
Sample Depth:
0.5 m
Moisture content:
3.8%
(dry weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 3.8% Dry Weight Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		5.4 mg/kg	1.32	6.869 mg/kg	0.000687 %	✓	
2	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		0.4 mg/kg	3.22	1.241 mg/kg	0.000124 %	✓	
3	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		<0.2 mg/kg	1.142	<0.228 mg/kg	<0.0000228 %		<LOD
4	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		5.8 mg/kg	1.462	8.167 mg/kg	0.000817 %	✓	
5	chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<1.8 mg/kg	2.27	<4.086 mg/kg	<0.000409 %		<LOD
6	copper { copper sulphate }	029-004-00-0	231-847-6	7758-98-7		8.6 mg/kg	2.512	20.81 mg/kg	0.00208 %	✓	
7	lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	9.5 mg/kg		9.152 mg/kg	0.000915 %	✓	
8	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.3 mg/kg	1.353	<0.406 mg/kg	<0.0000406 %		<LOD
9	nickel { nickel sulfate }	028-009-00-5	232-104-9	7786-81-4		6 mg/kg	2.637	15.241 mg/kg	0.00152 %	✓	
10	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<1 mg/kg	2.554	<2.554 mg/kg	<0.000255 %		<LOD
11	zinc { zinc sulphate (hydrous) (mono-, hexa- and hepta hydrate); [1] zinc sulphate (anhydrous) [2] }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		34 mg/kg	4.398	144.055 mg/kg	0.0144 %	✓	
12	TPH (C6 to C40) petroleum group			TPH		<20 mg/kg		<20 mg/kg	<0.002 %		<LOD
13	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
14	benzene	601-020-00-8	200-753-7	71-43-2		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
15		toluene	601-021-00-3	203-625-9	108-88-3		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<**LOD**
16		ethylbenzene	601-023-00-4	202-849-4	100-41-4		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<**LOD**
17		xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
18		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<1	mg/kg	1.884	<1.884	mg/kg	<0.000188 %		<**LOD**
19		pH			PH		8.3	pH		8.3	pH	8.3 pH		
20		naphthalene	601-052-00-2	202-049-5	91-20-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
21		acenaphthylene		205-917-1	208-96-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
22		acenaphthene		201-469-6	83-32-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
23		fluorene		201-695-5	86-73-7		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
24		phenanthrene		201-581-5	85-01-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
25		anthracene		204-371-1	120-12-7		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
26		fluoranthene		205-912-4	206-44-0		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
27		pyrene		204-927-3	129-00-0		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
28		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
29		chrysene	601-048-00-0	205-923-4	218-01-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
30		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
31		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
32		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
33		indeno[123-cd]pyrene		205-893-2	193-39-5		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
34		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
35		benzo[ghi]perylene		205-883-8	191-24-2		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
36		phenol	604-001-00-2	203-632-7	108-95-2		<1	mg/kg		<1	mg/kg	<0.0001 %		<**LOD**
37		asbestos	650-013-00-6	- - - - - - -	12001-28-4 132207-32-0 12172-73-5 77536-66-4 77536-68-6 77536-67-5 12001-29-5		<			<		<		**ND**
38		Asbestos Fragments (Visible to Naked Eye).			12001-28-4 132207-32-0 12172-73-5		<			<		<		**ND**

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number							
				77536-66-4 77536-68-6 77536-67-5 12001-29-5							
								Total:	0.0237 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Determinand defined by classifier (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: BH121_0.50

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:
BH121_0.50
Sample Depth:
0.5 m
Moisture content:
12%
(dry weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 12% Dry Weight Moisture Correction applied (MC)

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1		arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		9.5	mg/kg	1.32	11.199	mg/kg	0.00112 %	✓	
2		boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		0.5	mg/kg	3.22	1.437	mg/kg	0.000144 %	✓	
3		cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		<0.2	mg/kg	1.142	<0.228	mg/kg	<0.0000228 %		<**LOD**
4		chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		31	mg/kg	1.462	40.454	mg/kg	0.00405 %	✓	
5		chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<1.8	mg/kg	2.27	<4.086	mg/kg	<0.000409 %		<**LOD**
6		copper { copper sulphate }	029-004-00-0	231-847-6	7758-98-7		24	mg/kg	2.512	53.822	mg/kg	0.00538 %	✓	
7		lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	10	mg/kg		8.929	mg/kg	0.000893 %	✓	
8		mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.3	mg/kg	1.353	<0.406	mg/kg	<0.0000406 %		<**LOD**
9		nickel { nickel sulfate }	028-009-00-5	232-104-9	7786-81-4		29	mg/kg	2.637	68.271	mg/kg	0.00683 %	✓	
10		selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<1	mg/kg	2.554	<2.554	mg/kg	<0.000255 %		<**LOD**
11		zinc { zinc sulphate (hydrous) (mono-, hexa- and hepta hydrate); [1] zinc sulphate (anhydrous) [2] }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		55	mg/kg	4.398	215.97	mg/kg	0.0216 %	✓	
12		TPH (C6 to C40) petroleum group			TPH		<20	mg/kg		<20	mg/kg	<0.002 %		<**LOD**
13		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<**LOD**
14		benzene	601-020-00-8	200-753-7	71-43-2		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<**LOD**

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number									
15		toluene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-021-00-3	203-625-9	108-88-3									
16		ethylbenzene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-023-00-4	202-849-4	100-41-4									
17		xylene				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
18		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<1	mg/kg	1.884	<1.884	mg/kg	<0.000188 %		<LOD
		006-007-00-5											
19		pH				8.4	pH		8.4	pH	8.4 pH		
				PH									
20		naphthalene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
21		acenaphthylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-917-1	208-96-8									
22		acenaphthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			201-469-6	83-32-9									
23		fluorene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			201-695-5	86-73-7									
24		phenanthrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			201-581-5	85-01-8									
25		anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			204-371-1	120-12-7									
26		fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-912-4	206-44-0									
27		pyrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			204-927-3	129-00-0									
28		benzo[a]anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-033-00-9	200-280-6	56-55-3									
29		chrysene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-048-00-0	205-923-4	218-01-9									
30		benzo[b]fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-034-00-4	205-911-9	205-99-2									
31		benzo[k]fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-036-00-5	205-916-6	207-08-9									
32		benzo[a]pyrene; benzo[def]chrysene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-032-00-3	200-028-5	50-32-8									
33		indeno[123-cd]pyrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-893-2	193-39-5									
34		dibenz[a,h]anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
35		benzo[ghi]perylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-883-8	191-24-2									
36		phenol				<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
		604-001-00-2	203-632-7	108-95-2									
37		asbestos				<			<		<		ND
		650-013-00-6	- - - - - - -	12001-28-4 132207-32-0 12172-73-5 77536-66-4 77536-68-6 77536-67-5 12001-29-5									
38		Asbestos Fragments (Visible to Naked Eye).				<			<		<		ND
				12001-28-4 132207-32-0 12172-73-5									

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number							
				77536-66-4 77536-68-6 77536-67-5 12001-29-5							
								Total:	0.0431 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Determinand defined by classifier (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: WS102_0.50

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:
WS102_0.50
Sample Depth:
0.5 m
Moisture content:
6.3%
(dry weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 6.3% Dry Weight Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		12 mg/kg	1.32	14.905 mg/kg	0.00149 %	✓	
2	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		0.6 mg/kg	3.22	1.817 mg/kg	0.000182 %	✓	
3	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		<0.2 mg/kg	1.142	<0.228 mg/kg	<0.0000228 %		<LOD
4	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		28 mg/kg	1.462	38.498 mg/kg	0.00385 %	✓	
5	chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<1.8 mg/kg	2.27	<4.086 mg/kg	<0.000409 %		<LOD
6	copper { copper sulphate }	029-004-00-0	231-847-6	7758-98-7		20 mg/kg	2.512	47.257 mg/kg	0.00473 %	✓	
7	lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	17 mg/kg		15.992 mg/kg	0.0016 %	✓	
8	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.3 mg/kg	1.353	<0.406 mg/kg	<0.0000406 %		<LOD
9	nickel { nickel sulfate }	028-009-00-5	232-104-9	7786-81-4		24 mg/kg	2.637	59.53 mg/kg	0.00595 %	✓	
10	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<1 mg/kg	2.554	<2.554 mg/kg	<0.000255 %		<LOD
11	zinc { zinc sulphate (hydrous) (mono-, hexa- and hepta hydrate); [1] zinc sulphate (anhydrous) [2] }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		70 mg/kg	4.398	289.609 mg/kg	0.029 %	✓	
12	TPH (C6 to C40) petroleum group			TPH		<20 mg/kg		<20 mg/kg	<0.002 %		<LOD
13	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
14	benzene	601-020-00-8	200-753-7	71-43-2		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
15		toluene	601-021-00-3	203-625-9	108-88-3		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<**LOD**
16		ethylbenzene	601-023-00-4	202-849-4	100-41-4		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<**LOD**
17		xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
18		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<1	mg/kg	1.884	<1.884	mg/kg	<0.000188 %		<**LOD**
19		pH			PH		7.5	pH		7.5	pH	7.5 pH		
20		naphthalene	601-052-00-2	202-049-5	91-20-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
21		acenaphthylene		205-917-1	208-96-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
22		acenaphthene		201-469-6	83-32-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
23		fluorene		201-695-5	86-73-7		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
24		phenanthrene		201-581-5	85-01-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
25		anthracene		204-371-1	120-12-7		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
26		fluoranthene		205-912-4	206-44-0		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
27		pyrene		204-927-3	129-00-0		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
28		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
29		chrysene	601-048-00-0	205-923-4	218-01-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
30		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
31		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
32		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
33		indeno[123-cd]pyrene		205-893-2	193-39-5		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
34		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
35		benzo[ghi]perylene		205-883-8	191-24-2		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
36		phenol	604-001-00-2	203-632-7	108-95-2		<1	mg/kg		<1	mg/kg	<0.0001 %		<**LOD**
37		asbestos	650-013-00-6	- - - - - - -	12001-28-4 132207-32-0 12172-73-5 77536-66-4 77536-68-6 77536-67-5 12001-29-5		<			<		<		**ND**
38		Asbestos Fragments (Visible to Naked Eye).			12001-28-4 132207-32-0 12172-73-5		<			<		<		**ND**

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number							
				77536-66-4 77536-68-6 77536-67-5 12001-29-5							
								Total:	0.0499 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Determinand defined by classifier (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: BH120_0.50

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:
BH120_0.50
Sample Depth:
0.5 m
Moisture content:
11%
(dry weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 11% Dry Weight Moisture Correction applied (MC)

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1		arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		7.9	mg/kg	1.32	9.397	mg/kg	0.00094 %	✓	
2		boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		0.6	mg/kg	3.22	1.74	mg/kg	0.000174 %	✓	
3		cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		<0.2	mg/kg	1.142	<0.228	mg/kg	<0.0000228 %		<LOD
4		chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		27	mg/kg	1.462	35.551	mg/kg	0.00356 %	✓	
5		chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<1.8	mg/kg	2.27	<4.086	mg/kg	<0.000409 %		<LOD
6		copper { copper sulphate }	029-004-00-0	231-847-6	7758-98-7		15	mg/kg	2.512	33.942	mg/kg	0.00339 %	✓	
7		lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	15	mg/kg		13.514	mg/kg	0.00135 %	✓	
8		mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.3	mg/kg	1.353	<0.406	mg/kg	<0.0000406 %		<LOD
9		nickel { nickel sulfate }	028-009-00-5	232-104-9	7786-81-4		21	mg/kg	2.637	49.883	mg/kg	0.00499 %	✓	
10		selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<1	mg/kg	2.554	<2.554	mg/kg	<0.000255 %		<LOD
11		zinc { zinc sulphate (hydrous) (mono-, hexa- and hepta hydrate); [1] zinc sulphate (anhydrous) [2] }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		46	mg/kg	4.398	182.256	mg/kg	0.0182 %	✓	
12		TPH (C6 to C40) petroleum group			TPH		<20	mg/kg		<20	mg/kg	<0.002 %		<LOD
13		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
14		benzene	601-020-00-8	200-753-7	71-43-2		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number									
15		toluene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-021-00-3	203-625-9	108-88-3									
16		ethylbenzene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-023-00-4	202-849-4	100-41-4									
17		xylene				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
18		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<1	mg/kg	1.884	<1.884	mg/kg	<0.000188 %		<LOD
		006-007-00-5											
19		pH				7.8	pH		7.8	pH	7.8 pH		
				PH									
20		naphthalene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
21		acenaphthylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-917-1	208-96-8									
22		acenaphthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			201-469-6	83-32-9									
23		fluorene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			201-695-5	86-73-7									
24		phenanthrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			201-581-5	85-01-8									
25		anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			204-371-1	120-12-7									
26		fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-912-4	206-44-0									
27		pyrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			204-927-3	129-00-0									
28		benzo[a]anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-033-00-9	200-280-6	56-55-3									
29		chrysene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-048-00-0	205-923-4	218-01-9									
30		benzo[b]fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-034-00-4	205-911-9	205-99-2									
31		benzo[k]fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-036-00-5	205-916-6	207-08-9									
32		benzo[a]pyrene; benzo[def]chrysene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-032-00-3	200-028-5	50-32-8									
33		indeno[123-cd]pyrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-893-2	193-39-5									
34		dibenz[a,h]anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
35		benzo[ghi]perylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-883-8	191-24-2									
36		phenol				<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
		604-001-00-2	203-632-7	108-95-2									
37		asbestos				<			<		<		ND
		650-013-00-6	- - - - - - -	12001-28-4 132207-32-0 12172-73-5 77536-66-4 77536-68-6 77536-67-5 12001-29-5									
38		Asbestos Fragments (Visible to Naked Eye).				<			<		<		ND
				12001-28-4 132207-32-0 12172-73-5									

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number							
				77536-66-4 77536-68-6 77536-67-5 12001-29-5							
								Total:	0.0357 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Determinand defined by classifier (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: BH124_0.50

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:
BH124_0.50
Sample Depth:
0.5 m
Moisture content:
14%
(dry weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 14% Dry Weight Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		10 mg/kg	1.32	11.582 mg/kg	0.00116 %	✓	
2	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		1.1 mg/kg	3.22	3.107 mg/kg	0.000311 %	✓	
3	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		<0.2 mg/kg	1.142	<0.228 mg/kg	<0.0000228 %		<LOD
4	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		38 mg/kg	1.462	48.719 mg/kg	0.00487 %	✓	
5	chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<1.8 mg/kg	2.27	<4.086 mg/kg	<0.000409 %		<LOD
6	copper { copper sulphate }	029-004-00-0	231-847-6	7758-98-7		24 mg/kg	2.512	52.878 mg/kg	0.00529 %	✓	
7	lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	19 mg/kg		16.667 mg/kg	0.00167 %	✓	
8	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.3 mg/kg	1.353	<0.406 mg/kg	<0.0000406 %		<LOD
9	nickel { nickel sulfate }	028-009-00-5	232-104-9	7786-81-4		38 mg/kg	2.637	87.889 mg/kg	0.00879 %	✓	
10	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<1 mg/kg	2.554	<2.554 mg/kg	<0.000255 %		<LOD
11	zinc { zinc sulphate (hydrous) (mono-, hexa- and hepta hydrate); [1] zinc sulphate (anhydrous) [2] }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		64 mg/kg	4.398	246.901 mg/kg	0.0247 %	✓	
12	TPH (C6 to C40) petroleum group			TPH		<20 mg/kg		<20 mg/kg	<0.002 %		<LOD
13	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
14	benzene	601-020-00-8	200-753-7	71-43-2		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
15		toluene	601-021-00-3	203-625-9	108-88-3		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<**LOD**
16		ethylbenzene	601-023-00-4	202-849-4	100-41-4		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<**LOD**
17		xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
18		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<1	mg/kg	1.884	<1.884	mg/kg	<0.000188 %		<**LOD**
19		pH			PH		7.9	pH		7.9	pH	7.9 pH		
20		naphthalene	601-052-00-2	202-049-5	91-20-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
21		acenaphthylene		205-917-1	208-96-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
22		acenaphthene		201-469-6	83-32-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
23		fluorene		201-695-5	86-73-7		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
24		phenanthrene		201-581-5	85-01-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
25		anthracene		204-371-1	120-12-7		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
26		fluoranthene		205-912-4	206-44-0		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
27		pyrene		204-927-3	129-00-0		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
28		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
29		chrysene	601-048-00-0	205-923-4	218-01-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
30		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
31		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
32		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
33		indeno[123-cd]pyrene		205-893-2	193-39-5		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
34		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
35		benzo[ghi]perylene		205-883-8	191-24-2		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
36		phenol	604-001-00-2	203-632-7	108-95-2		<1	mg/kg		<1	mg/kg	<0.0001 %		<**LOD**
37		asbestos	650-013-00-6	- - - - - - -	12001-28-4 132207-32-0 12172-73-5 77536-66-4 77536-68-6 77536-67-5 12001-29-5		<			<		<		**ND**
38		Asbestos Fragments (Visible to Naked Eye).			12001-28-4 132207-32-0 12172-73-5		<			<		<		**ND**

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number							
				77536-66-4 77536-68-6 77536-67-5 12001-29-5							
								Total:	0.0499 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Determinand defined by classifier (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: BH103_1.00

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:
BH103_1.00
Sample Depth:
1 m
Moisture content:
9.4%
(dry weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 9.4% Dry Weight Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		9 mg/kg	1.32	10.862 mg/kg	0.00109 %	✓	
2	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		0.4 mg/kg	3.22	1.177 mg/kg	0.000118 %	✓	
3	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		<0.2 mg/kg	1.142	<0.228 mg/kg	<0.0000228 %		<LOD
4	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		23 mg/kg	1.462	30.727 mg/kg	0.00307 %	✓	
5	chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<1.8 mg/kg	2.27	<4.086 mg/kg	<0.000409 %		<LOD
6	copper { copper sulphate }	029-004-00-0	231-847-6	7758-98-7		12 mg/kg	2.512	27.551 mg/kg	0.00276 %	✓	
7	lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	11 mg/kg		10.055 mg/kg	0.00101 %	✓	
8	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.3 mg/kg	1.353	<0.406 mg/kg	<0.0000406 %		<LOD
9	nickel { nickel sulfate }	028-009-00-5	232-104-9	7786-81-4		22 mg/kg	2.637	53.023 mg/kg	0.0053 %	✓	
10	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<1 mg/kg	2.554	<2.554 mg/kg	<0.000255 %		<LOD
11	zinc { zinc sulphate (hydrous) (mono-, hexa- and hepta hydrate); [1] zinc sulphate (anhydrous) [2] }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		58 mg/kg	4.398	233.162 mg/kg	0.0233 %	✓	
12	TPH (C6 to C40) petroleum group			TPH		<21 mg/kg		<21 mg/kg	<0.0021 %		<LOD
13	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
14	benzene	601-020-00-8	200-753-7	71-43-2		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number									
15		toluene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<**LOD**
		601-021-00-3	203-625-9	108-88-3									
16		ethylbenzene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<**LOD**
		601-023-00-4	202-849-4	100-41-4									
17		xylene				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
18		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<1	mg/kg	1.884	<1.884	mg/kg	<0.000188 %		<**LOD**
		006-007-00-5											
19		pH				7.8	pH		7.8	pH	7.8 pH		
				PH									
20		naphthalene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-052-00-2	202-049-5	91-20-3									
21		acenaphthylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			205-917-1	208-96-8									
22		acenaphthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			201-469-6	83-32-9									
23		fluorene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			201-695-5	86-73-7									
24		phenanthrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			201-581-5	85-01-8									
25		anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			204-371-1	120-12-7									
26		fluoranthene				0.06	mg/kg		0.0548	mg/kg	0.00000548 %	✓	
			205-912-4	206-44-0									
27		pyrene				0.07	mg/kg		0.064	mg/kg	0.0000064 %	✓	
			204-927-3	129-00-0									
28		benzo[a]anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-033-00-9	200-280-6	56-55-3									
29		chrysene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-048-00-0	205-923-4	218-01-9									
30		benzo[b]fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-034-00-4	205-911-9	205-99-2									
31		benzo[k]fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-036-00-5	205-916-6	207-08-9									
32		benzo[a]pyrene; benzo[def]chrysene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-032-00-3	200-028-5	50-32-8									
33		indeno[123-cd]pyrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			205-893-2	193-39-5									
34		dibenz[a,h]anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-041-00-2	200-181-8	53-70-3									
35		benzo[ghi]perylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			205-883-8	191-24-2									
36		phenol				<1	mg/kg		<1	mg/kg	<0.0001 %		<**LOD**
		604-001-00-2	203-632-7	108-95-2									
37		asbestos				<			<		<		**ND**
		650-013-00-6	- - - - - - -	12001-28-4 132207-32-0 12172-73-5 77536-66-4 77536-68-6 77536-67-5 12001-29-5									
38		Asbestos Fragments (Visible to Naked Eye).				<			<		<		**ND**
				12001-28-4 132207-32-0 12172-73-5									

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number							
				77536-66-4 77536-68-6 77536-67-5 12001-29-5							
								Total:	0.0399 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Determinand defined by classifier (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: BH120_1.00

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:
BH120_1.00
Sample Depth:
1 m
Moisture content:
14%
(dry weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 14% Dry Weight Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		9.2 mg/kg	1.32	10.655 mg/kg	0.00107 %	✓	
2	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		0.3 mg/kg	3.22	0.847 mg/kg	0.0000847 %	✓	
3	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		<0.2 mg/kg	1.142	<0.228 mg/kg	<0.0000228 %		<LOD
4	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		28 mg/kg	1.462	35.898 mg/kg	0.00359 %	✓	
5	chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<1.8 mg/kg	2.27	<4.086 mg/kg	<0.000409 %		<LOD
6	copper { copper sulphate }	029-004-00-0	231-847-6	7758-98-7		17 mg/kg	2.512	37.455 mg/kg	0.00375 %	✓	
7	lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	12 mg/kg		10.526 mg/kg	0.00105 %	✓	
8	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.3 mg/kg	1.353	<0.406 mg/kg	<0.0000406 %		<LOD
9	nickel { nickel sulfate }	028-009-00-5	232-104-9	7786-81-4		28 mg/kg	2.637	64.761 mg/kg	0.00648 %	✓	
10	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<1 mg/kg	2.554	<2.554 mg/kg	<0.000255 %		<LOD
11	zinc { zinc sulphate (hydrous) (mono-, hexa- and hepta hydrate); [1] zinc sulphate (anhydrous) [2] }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		49 mg/kg	4.398	189.034 mg/kg	0.0189 %	✓	
12	TPH (C6 to C40) petroleum group			TPH		<22 mg/kg		<22 mg/kg	<0.0022 %		<LOD
13	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
14	benzene	601-020-00-8	200-753-7	71-43-2		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
15		toluene	601-021-00-3	203-625-9	108-88-3		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<**LOD**
16		ethylbenzene	601-023-00-4	202-849-4	100-41-4		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<**LOD**
17		xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
18		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<1	mg/kg	1.884	<1.884	mg/kg	<0.000188 %		<**LOD**
19		pH			PH		7.9	pH		7.9	pH	7.9 pH		
20		naphthalene	601-052-00-2	202-049-5	91-20-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
21		acenaphthylene		205-917-1	208-96-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
22		acenaphthene		201-469-6	83-32-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
23		fluorene		201-695-5	86-73-7		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
24		phenanthrene		201-581-5	85-01-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
25		anthracene		204-371-1	120-12-7		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
26		fluoranthene		205-912-4	206-44-0		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
27		pyrene		204-927-3	129-00-0		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
28		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
29		chrysene	601-048-00-0	205-923-4	218-01-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
30		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
31		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
32		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
33		indeno[123-cd]pyrene		205-893-2	193-39-5		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
34		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
35		benzo[ghi]perylene		205-883-8	191-24-2		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
36		phenol	604-001-00-2	203-632-7	108-95-2		<1	mg/kg		<1	mg/kg	<0.0001 %		<**LOD**
37		asbestos	650-013-00-6	- - - - - - -	12001-28-4 132207-32-0 12172-73-5 77536-66-4 77536-68-6 77536-67-5 12001-29-5		<			<		<		**ND**
38		Asbestos Fragments (Visible to Naked Eye).			12001-28-4 132207-32-0 12172-73-5		<			<		<		**ND**

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number							
				77536-66-4 77536-68-6 77536-67-5 12001-29-5							
								Total:	0.0382 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Determinand defined by classifier (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: WS103_1.00

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:
WS103_1.00
Sample Depth:
1 m
Moisture content:
5.7%
(dry weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 5.7% Dry Weight Moisture Correction applied (MC)

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1		arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		4.4	mg/kg	1.32	5.496	mg/kg	0.00055 %	✓	
2		boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		0.2	mg/kg	3.22	0.609	mg/kg	0.0000609 %	✓	
3		cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		<0.2	mg/kg	1.142	<0.228	mg/kg	<0.0000228 %		<LOD
4		chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		8.4	mg/kg	1.462	11.615	mg/kg	0.00116 %	✓	
5		chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<1.8	mg/kg	2.27	<4.086	mg/kg	<0.000409 %		<LOD
6		copper { copper sulphate }	029-004-00-0	231-847-6	7758-98-7		13	mg/kg	2.512	30.891	mg/kg	0.00309 %	✓	
7		lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	6.7	mg/kg		6.339	mg/kg	0.000634 %	✓	
8		mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.3	mg/kg	1.353	<0.406	mg/kg	<0.0000406 %		<LOD
9		nickel { nickel sulfate }	028-009-00-5	232-104-9	7786-81-4		6.5	mg/kg	2.637	16.214	mg/kg	0.00162 %	✓	
10		selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<1	mg/kg	2.554	<2.554	mg/kg	<0.000255 %		<LOD
11		zinc { zinc sulphate (hydrous) (mono-, hexa- and hepta hydrate); [1] zinc sulphate (anhydrous) [2] }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		16	mg/kg	4.398	66.572	mg/kg	0.00666 %	✓	
12		TPH (C6 to C40) petroleum group			TPH		<23	mg/kg		<23	mg/kg	<0.0023 %		<LOD
13		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
14		benzene	601-020-00-8	200-753-7	71-43-2		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number									
15		toluene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-021-00-3	203-625-9	108-88-3									
16		ethylbenzene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-023-00-4	202-849-4	100-41-4									
17		xylene				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
18		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<1	mg/kg	1.884	<1.884	mg/kg	<0.000188 %		<LOD
		006-007-00-5											
19		pH				7.6	pH		7.6	pH	7.6 pH		
				PH									
20		naphthalene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
21		acenaphthylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-917-1	208-96-8									
22		acenaphthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			201-469-6	83-32-9									
23		fluorene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			201-695-5	86-73-7									
24		phenanthrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			201-581-5	85-01-8									
25		anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			204-371-1	120-12-7									
26		fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-912-4	206-44-0									
27		pyrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			204-927-3	129-00-0									
28		benzo[a]anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-033-00-9	200-280-6	56-55-3									
29		chrysene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-048-00-0	205-923-4	218-01-9									
30		benzo[b]fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-034-00-4	205-911-9	205-99-2									
31		benzo[k]fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-036-00-5	205-916-6	207-08-9									
32		benzo[a]pyrene; benzo[def]chrysene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-032-00-3	200-028-5	50-32-8									
33		indeno[123-cd]pyrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-893-2	193-39-5									
34		dibenz[a,h]anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
35		benzo[ghi]perylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-883-8	191-24-2									
36		phenol				<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
		604-001-00-2	203-632-7	108-95-2									
37		asbestos				<			<		<		ND
		650-013-00-6	- - - - - - -	12001-28-4 132207-32-0 12172-73-5 77536-66-4 77536-68-6 77536-67-5 12001-29-5									
38		Asbestos Fragments (Visible to Naked Eye).				<			<		<		ND
				12001-28-4 132207-32-0 12172-73-5									

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number							
				77536-66-4 77536-68-6 77536-67-5 12001-29-5							
								Total:	0.0172 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Determinand defined by classifier (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: BH109_1.00

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:
BH109_1.00
Sample Depth:
1 m
Moisture content:
6.8%
(dry weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 6.8% Dry Weight Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		6.1 mg/kg	1.32	7.541 mg/kg	0.000754 %	✓	
2	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		0.4 mg/kg	3.22	1.206 mg/kg	0.000121 %	✓	
3	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		<0.2 mg/kg	1.142	<0.228 mg/kg	<0.0000228 %		<LOD
4	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		14 mg/kg	1.462	19.159 mg/kg	0.00192 %	✓	
5	chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<1.8 mg/kg	2.27	<4.086 mg/kg	<0.000409 %		<LOD
6	copper { copper sulphate }	029-004-00-0	231-847-6	7758-98-7		25 mg/kg	2.512	58.795 mg/kg	0.00588 %	✓	
7	lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	47 mg/kg		44.007 mg/kg	0.0044 %	✓	
8	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.3 mg/kg	1.353	<0.406 mg/kg	<0.0000406 %		<LOD
9	nickel { nickel sulfate }	028-009-00-5	232-104-9	7786-81-4		13 mg/kg	2.637	32.094 mg/kg	0.00321 %	✓	
10	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<1 mg/kg	2.554	<2.554 mg/kg	<0.000255 %		<LOD
11	zinc { zinc sulphate (hydrous) (mono-, hexa- and hepta hydrate); [1] zinc sulphate (anhydrous) [2] }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		68 mg/kg	4.398	280.018 mg/kg	0.028 %	✓	
12	TPH (C6 to C40) petroleum group			TPH		<24 mg/kg		<24 mg/kg	<0.0024 %		<LOD
13	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
14	benzene	601-020-00-8	200-753-7	71-43-2		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
15		toluene	601-021-00-3	203-625-9	108-88-3		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<**LOD**
16		ethylbenzene	601-023-00-4	202-849-4	100-41-4		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<**LOD**
17		xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
18		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<1	mg/kg	1.884	<1.884	mg/kg	<0.000188 %		<**LOD**
19		pH			PH		7.5	pH		7.5	pH	7.5 pH		
20		naphthalene	601-052-00-2	202-049-5	91-20-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
21		acenaphthylene		205-917-1	208-96-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
22		acenaphthene		201-469-6	83-32-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
23		fluorene		201-695-5	86-73-7		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
24		phenanthrene		201-581-5	85-01-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
25		anthracene		204-371-1	120-12-7		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
26		fluoranthene		205-912-4	206-44-0		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
27		pyrene		204-927-3	129-00-0		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
28		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
29		chrysene	601-048-00-0	205-923-4	218-01-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
30		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
31		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
32		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
33		indeno[123-cd]pyrene		205-893-2	193-39-5		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
34		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
35		benzo[ghi]perylene		205-883-8	191-24-2		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
36		phenol	604-001-00-2	203-632-7	108-95-2		<1	mg/kg		<1	mg/kg	<0.0001 %		<**LOD**
37		asbestos	650-013-00-6	- - - - - - -	12001-28-4 132207-32-0 12172-73-5 77536-66-4 77536-68-6 77536-67-5 12001-29-5		<			<		<		**ND**
38		Asbestos Fragments (Visible to Naked Eye).			12001-28-4 132207-32-0 12172-73-5		<			<		<		**ND**

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number							
				77536-66-4 77536-68-6 77536-67-5 12001-29-5							
								Total:	0.0478 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Determinand defined by classifier (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: BH114_1.00

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:
BH114_1.00
Sample Depth:
1 m
Moisture content:
13%
(dry weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 13% Dry Weight Moisture Correction applied (MC)

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1		arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		1.1	mg/kg	1.32	1.285	mg/kg	0.000129 %	✓	
2		boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		<0.2	mg/kg	3.22	<0.644	mg/kg	<0.0000644 %		<**LOD**
3		cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		<0.2	mg/kg	1.142	<0.228	mg/kg	<0.0000228 %		<**LOD**
4		chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		3.4	mg/kg	1.462	4.398	mg/kg	0.00044 %	✓	
5		chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<1.8	mg/kg	2.27	<4.086	mg/kg	<0.000409 %		<**LOD**
6		copper { copper sulphate }	029-004-00-0	231-847-6	7758-98-7		8.3	mg/kg	2.512	18.449	mg/kg	0.00184 %	✓	
7		lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	1.9	mg/kg		1.681	mg/kg	0.000168 %	✓	
8		mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.3	mg/kg	1.353	<0.406	mg/kg	<0.0000406 %		<**LOD**
9		nickel { nickel sulfate }	028-009-00-5	232-104-9	7786-81-4		3.5	mg/kg	2.637	8.167	mg/kg	0.000817 %	✓	
10		selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<1	mg/kg	2.554	<2.554	mg/kg	<0.000255 %		<**LOD**
11		zinc { zinc sulphate (hydrous) (mono-, hexa- and hepta hydrate); [1] zinc sulphate (anhydrous) [2] }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		11	mg/kg	4.398	42.812	mg/kg	0.00428 %	✓	
12		TPH (C6 to C40) petroleum group			TPH		<25	mg/kg		<25	mg/kg	<0.0025 %		<**LOD**
13		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<**LOD**
14		benzene	601-020-00-8	200-753-7	71-43-2		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<**LOD**

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number									
15		toluene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-021-00-3	203-625-9	108-88-3									
16		ethylbenzene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-023-00-4	202-849-4	100-41-4									
17		xylene				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
18		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<1	mg/kg	1.884	<1.884	mg/kg	<0.000188 %		<LOD
		006-007-00-5											
19		pH				7.9	pH		7.9	pH	7.9 pH		
				PH									
20		naphthalene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
21		acenaphthylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-917-1	208-96-8									
22		acenaphthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			201-469-6	83-32-9									
23		fluorene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			201-695-5	86-73-7									
24		phenanthrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			201-581-5	85-01-8									
25		anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			204-371-1	120-12-7									
26		fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-912-4	206-44-0									
27		pyrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			204-927-3	129-00-0									
28		benzo[a]anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-033-00-9	200-280-6	56-55-3									
29		chrysene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-048-00-0	205-923-4	218-01-9									
30		benzo[b]fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-034-00-4	205-911-9	205-99-2									
31		benzo[k]fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-036-00-5	205-916-6	207-08-9									
32		benzo[a]pyrene; benzo[def]chrysene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-032-00-3	200-028-5	50-32-8									
33		indeno[123-cd]pyrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-893-2	193-39-5									
34		dibenz[a,h]anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
35		benzo[ghi]perylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-883-8	191-24-2									
36		phenol				<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
		604-001-00-2	203-632-7	108-95-2									
37		asbestos				<			<		<		ND
		650-013-00-6	- - - - - - -	12001-28-4 132207-32-0 12172-73-5 77536-66-4 77536-68-6 77536-67-5 12001-29-5									
38		Asbestos Fragments (Visible to Naked Eye).				<			<		<		ND
				12001-28-4 132207-32-0 12172-73-5									

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number							
				77536-66-4 77536-68-6 77536-67-5 12001-29-5							
								Total:	0.0113 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Determinand defined by classifier (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: BH119_1.00

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:
BH119_1.00
Sample Depth:
1 m
Moisture content:
11%
(dry weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 11% Dry Weight Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		8.2 mg/kg	1.32	9.754 mg/kg	0.000975 %	✓	
2	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		0.3 mg/kg	3.22	0.87 mg/kg	0.000087 %	✓	
3	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		<0.2 mg/kg	1.142	<0.228 mg/kg	<0.0000228 %		<LOD
4	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		25 mg/kg	1.462	32.918 mg/kg	0.00329 %	✓	
5	chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<1.8 mg/kg	2.27	<4.086 mg/kg	<0.000409 %		<LOD
6	copper { copper sulphate }	029-004-00-0	231-847-6	7758-98-7		15 mg/kg	2.512	33.942 mg/kg	0.00339 %	✓	
7	lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	13 mg/kg		11.712 mg/kg	0.00117 %	✓	
8	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.3 mg/kg	1.353	<0.406 mg/kg	<0.0000406 %		<LOD
9	nickel { nickel sulfate }	028-009-00-5	232-104-9	7786-81-4		22 mg/kg	2.637	52.259 mg/kg	0.00523 %	✓	
10	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<1 mg/kg	2.554	<2.554 mg/kg	<0.000255 %		<LOD
11	zinc { zinc sulphate (hydrous) (mono-, hexa- and hepta hydrate); [1] zinc sulphate (anhydrous) [2] }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		42 mg/kg	4.398	166.408 mg/kg	0.0166 %	✓	
12	TPH (C6 to C40) petroleum group			TPH		<26 mg/kg		<26 mg/kg	<0.0026 %		<LOD
13	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
14	benzene	601-020-00-8	200-753-7	71-43-2		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
15		toluene	601-021-00-3	203-625-9	108-88-3		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<**LOD**
16		ethylbenzene	601-023-00-4	202-849-4	100-41-4		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<**LOD**
17		xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
18		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<1	mg/kg	1.884	<1.884	mg/kg	<0.000188 %		<**LOD**
19		pH			PH		7.7	pH		7.7	pH	7.7 pH		
20		naphthalene	601-052-00-2	202-049-5	91-20-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
21		acenaphthylene		205-917-1	208-96-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
22		acenaphthene		201-469-6	83-32-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
23		fluorene		201-695-5	86-73-7		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
24		phenanthrene		201-581-5	85-01-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
25		anthracene		204-371-1	120-12-7		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
26		fluoranthene		205-912-4	206-44-0		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
27		pyrene		204-927-3	129-00-0		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
28		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
29		chrysene	601-048-00-0	205-923-4	218-01-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
30		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
31		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
32		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
33		indeno[123-cd]pyrene		205-893-2	193-39-5		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
34		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
35		benzo[ghi]perylene		205-883-8	191-24-2		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
36		phenol	604-001-00-2	203-632-7	108-95-2		<1	mg/kg		<1	mg/kg	<0.0001 %		<**LOD**
37		asbestos	650-013-00-6	- - - - - - -	12001-28-4 132207-32-0 12172-73-5 77536-66-4 77536-68-6 77536-67-5 12001-29-5		<			<		<		**ND**
38		Asbestos Fragments (Visible to Naked Eye).			12001-28-4 132207-32-0 12172-73-5		<			<		<		**ND**

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number							
				77536-66-4 77536-68-6 77536-67-5 12001-29-5							
								Total:	0.0345 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Determinand defined by classifier (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP101_1.00

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:
TP101_1.00
Sample Depth:
1 m
Moisture content:
13%
(dry weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 13% Dry Weight Moisture Correction applied (MC)

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1		arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		5.2	mg/kg	1.32	6.076	mg/kg	0.000608 %	✓	
2		boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		0.2	mg/kg	3.22	0.57	mg/kg	0.000057 %	✓	
3		cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		<0.2	mg/kg	1.142	<0.228	mg/kg	<0.0000228 %		<**LOD**
4		chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		29	mg/kg	1.462	37.509	mg/kg	0.00375 %	✓	
5		chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<1.8	mg/kg	2.27	<4.086	mg/kg	<0.000409 %		<**LOD**
6		copper { copper sulphate }	029-004-00-0	231-847-6	7758-98-7		12	mg/kg	2.512	26.673	mg/kg	0.00267 %	✓	
7		lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	7.9	mg/kg		6.991	mg/kg	0.000699 %	✓	
8		mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.3	mg/kg	1.353	<0.406	mg/kg	<0.0000406 %		<**LOD**
9		nickel { nickel sulfate }	028-009-00-5	232-104-9	7786-81-4		26	mg/kg	2.637	60.667	mg/kg	0.00607 %	✓	
10		selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<1	mg/kg	2.554	<2.554	mg/kg	<0.000255 %		<**LOD**
11		zinc { zinc sulphate (hydrous) (mono-, hexa- and hepta hydrate); [1] zinc sulphate (anhydrous) [2] }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		98	mg/kg	4.398	381.413	mg/kg	0.0381 %	✓	
12		TPH (C6 to C40) petroleum group			TPH		<27	mg/kg		<27	mg/kg	<0.0027 %		<**LOD**
13		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<**LOD**
14		benzene	601-020-00-8	200-753-7	71-43-2		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<**LOD**

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number									
15		toluene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-021-00-3	203-625-9	108-88-3									
16		ethylbenzene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-023-00-4	202-849-4	100-41-4									
17		xylene				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
18		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<1	mg/kg	1.884	<1.884	mg/kg	<0.000188 %		<LOD
		006-007-00-5											
19		pH				8.5	pH		8.5	pH	8.5 pH		
				PH									
20		naphthalene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
21		acenaphthylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-917-1	208-96-8									
22		acenaphthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			201-469-6	83-32-9									
23		fluorene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			201-695-5	86-73-7									
24		phenanthrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			201-581-5	85-01-8									
25		anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			204-371-1	120-12-7									
26		fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-912-4	206-44-0									
27		pyrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			204-927-3	129-00-0									
28		benzo[a]anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-033-00-9	200-280-6	56-55-3									
29		chrysene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-048-00-0	205-923-4	218-01-9									
30		benzo[b]fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-034-00-4	205-911-9	205-99-2									
31		benzo[k]fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-036-00-5	205-916-6	207-08-9									
32		benzo[a]pyrene; benzo[def]chrysene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-032-00-3	200-028-5	50-32-8									
33		indeno[123-cd]pyrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-893-2	193-39-5									
34		dibenz[a,h]anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
35		benzo[ghi]perylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-883-8	191-24-2									
36		phenol				<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
		604-001-00-2	203-632-7	108-95-2									
37		asbestos				<			<		<		ND
		650-013-00-6	- - - - - - -	12001-28-4 132207-32-0 12172-73-5 77536-66-4 77536-68-6 77536-67-5 12001-29-5									
38		Asbestos Fragments (Visible to Naked Eye).				<			<		<		ND
				12001-28-4 132207-32-0 12172-73-5									

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number							
				77536-66-4 77536-68-6 77536-67-5 12001-29-5							
								Total:	0.0558 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Determinand defined by classifier (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: BH126_1.00

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:
BH126_1.00
Sample Depth:
1 m
Moisture content:
13%
(dry weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 13% Dry Weight Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		11 mg/kg	1.32	12.853 mg/kg	0.00129 %	✓	
2	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		1.3 mg/kg	3.22	3.704 mg/kg	0.00037 %	✓	
3	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		<0.2 mg/kg	1.142	<0.228 mg/kg	<0.0000228 %		<LOD
4	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		40 mg/kg	1.462	51.736 mg/kg	0.00517 %	✓	
5	chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<1.8 mg/kg	2.27	<4.086 mg/kg	<0.000409 %		<LOD
6	copper { copper sulphate }	029-004-00-0	231-847-6	7758-98-7		22 mg/kg	2.512	48.9 mg/kg	0.00489 %	✓	
7	lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	17 mg/kg		15.044 mg/kg	0.0015 %	✓	
8	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.3 mg/kg	1.353	<0.406 mg/kg	<0.0000406 %		<LOD
9	nickel { nickel sulfate }	028-009-00-5	232-104-9	7786-81-4		40 mg/kg	2.637	93.334 mg/kg	0.00933 %	✓	
10	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<1 mg/kg	2.554	<2.554 mg/kg	<0.000255 %		<LOD
11	zinc { zinc sulphate (hydrous) (mono-, hexa- and hepta hydrate); [1] zinc sulphate (anhydrous) [2] }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		62 mg/kg	4.398	241.302 mg/kg	0.0241 %	✓	
12	TPH (C6 to C40) petroleum group			TPH		<28 mg/kg		<28 mg/kg	<0.0028 %		<LOD
13	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
14	benzene	601-020-00-8	200-753-7	71-43-2		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
15		toluene	601-021-00-3	203-625-9	108-88-3		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<**LOD**
16		ethylbenzene	601-023-00-4	202-849-4	100-41-4		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<**LOD**
17		xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
18		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<1	mg/kg	1.884	<1.884	mg/kg	<0.000188 %		<**LOD**
19		pH			PH		8.5	pH		8.5	pH	8.5 pH		
20		naphthalene	601-052-00-2	202-049-5	91-20-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
21		acenaphthylene		205-917-1	208-96-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
22		acenaphthene		201-469-6	83-32-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
23		fluorene		201-695-5	86-73-7		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
24		phenanthrene		201-581-5	85-01-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
25		anthracene		204-371-1	120-12-7		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
26		fluoranthene		205-912-4	206-44-0		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
27		pyrene		204-927-3	129-00-0		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
28		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
29		chrysene	601-048-00-0	205-923-4	218-01-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
30		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
31		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
32		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
33		indeno[123-cd]pyrene		205-893-2	193-39-5		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
34		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
35		benzo[ghi]perylene		205-883-8	191-24-2		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
36		phenol	604-001-00-2	203-632-7	108-95-2		<1	mg/kg		<1	mg/kg	<0.0001 %		<**LOD**
37		asbestos	650-013-00-6	- - - - - - -	12001-28-4 132207-32-0 12172-73-5 77536-66-4 77536-68-6 77536-67-5 12001-29-5		<			<		<		**ND**
38		Asbestos Fragments (Visible to Naked Eye).			12001-28-4 132207-32-0 12172-73-5		<			<		<		**ND**

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number							
				77536-66-4 77536-68-6 77536-67-5 12001-29-5							
								Total:	0.0506 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Determinand defined by classifier (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: WS104_1.00

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:
WS104_1.00
Sample Depth:
1 m
Moisture content:
13%
(dry weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 13% Dry Weight Moisture Correction applied (MC)

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1		arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		12	mg/kg	1.32	14.021	mg/kg	0.0014 %	✓	
2		boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		0.8	mg/kg	3.22	2.28	mg/kg	0.000228 %	✓	
3		cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		<0.2	mg/kg	1.142	<0.228	mg/kg	<0.0000228 %		<LOD
4		chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		27	mg/kg	1.462	34.922	mg/kg	0.00349 %	✓	
5		chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<1.8	mg/kg	2.27	<4.086	mg/kg	<0.000409 %		<LOD
6		copper { copper sulphate }	029-004-00-0	231-847-6	7758-98-7		18	mg/kg	2.512	40.009	mg/kg	0.004 %	✓	
7		lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	13	mg/kg		11.504	mg/kg	0.00115 %	✓	
8		mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.3	mg/kg	1.353	<0.406	mg/kg	<0.0000406 %		<LOD
9		nickel { nickel sulfate }	028-009-00-5	232-104-9	7786-81-4		25	mg/kg	2.637	58.334	mg/kg	0.00583 %	✓	
10		selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<1	mg/kg	2.554	<2.554	mg/kg	<0.000255 %		<LOD
11		zinc { zinc sulphate (hydrous) (mono-, hexa- and hepta hydrate); [1] zinc sulphate (anhydrous) [2] }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		62	mg/kg	4.398	241.302	mg/kg	0.0241 %	✓	
12		TPH (C6 to C40) petroleum group			TPH		<29	mg/kg		<29	mg/kg	<0.0029 %		<LOD
13		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
14		benzene	601-020-00-8	200-753-7	71-43-2		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number									
15		toluene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-021-00-3	203-625-9	108-88-3									
16		ethylbenzene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-023-00-4	202-849-4	100-41-4									
17		xylene				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
18		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<1	mg/kg	1.884	<1.884	mg/kg	<0.000188 %		<LOD
		006-007-00-5											
19		pH				7.6	pH		7.6	pH	7.6 pH		
				PH									
20		naphthalene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
21		acenaphthylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-917-1	208-96-8									
22		acenaphthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			201-469-6	83-32-9									
23		fluorene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			201-695-5	86-73-7									
24		phenanthrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			201-581-5	85-01-8									
25		anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			204-371-1	120-12-7									
26		fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-912-4	206-44-0									
27		pyrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			204-927-3	129-00-0									
28		benzo[a]anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-033-00-9	200-280-6	56-55-3									
29		chrysene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-048-00-0	205-923-4	218-01-9									
30		benzo[b]fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-034-00-4	205-911-9	205-99-2									
31		benzo[k]fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-036-00-5	205-916-6	207-08-9									
32		benzo[a]pyrene; benzo[def]chrysene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-032-00-3	200-028-5	50-32-8									
33		indeno[123-cd]pyrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-893-2	193-39-5									
34		dibenz[a,h]anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
35		benzo[ghi]perylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-883-8	191-24-2									
36		phenol				<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
		604-001-00-2	203-632-7	108-95-2									
37		asbestos				<			<		<		ND
		650-013-00-6	- - - - - - -	12001-28-4 132207-32-0 12172-73-5 77536-66-4 77536-68-6 77536-67-5 12001-29-5									
38		Asbestos Fragments (Visible to Naked Eye).				<			<		<		ND
				12001-28-4 132207-32-0 12172-73-5									

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number							
				77536-66-4 77536-68-6 77536-67-5 12001-29-5							
								Total:	0.0442 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Determinand defined by classifier (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: BH115_1.00

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:
BH115_1.00
Sample Depth:
1 m
Moisture content:
9.1%
(dry weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 9.1% Dry Weight Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		9.3 mg/kg	1.32	11.255 mg/kg	0.00113 %	✓	
2	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		0.6 mg/kg	3.22	1.771 mg/kg	0.000177 %	✓	
3	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		<0.2 mg/kg	1.142	<0.228 mg/kg	<0.0000228 %		<LOD
4	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		20 mg/kg	1.462	26.793 mg/kg	0.00268 %	✓	
5	chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<1.8 mg/kg	2.27	<4.086 mg/kg	<0.000409 %		<LOD
6	copper { copper sulphate }	029-004-00-0	231-847-6	7758-98-7		11 mg/kg	2.512	25.324 mg/kg	0.00253 %	✓	
7	lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	9.3 mg/kg		8.524 mg/kg	0.000852 %	✓	
8	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.3 mg/kg	1.353	<0.406 mg/kg	<0.0000406 %		<LOD
9	nickel { nickel sulfate }	028-009-00-5	232-104-9	7786-81-4		11 mg/kg	2.637	26.584 mg/kg	0.00266 %	✓	
10	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<1 mg/kg	2.554	<2.554 mg/kg	<0.000255 %		<LOD
11	zinc { zinc sulphate (hydrous) (mono-, hexa- and hepta hydrate); [1] zinc sulphate (anhydrous) [2] }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		27 mg/kg	4.398	108.84 mg/kg	0.0109 %	✓	
12	TPH (C6 to C40) petroleum group			TPH		<30 mg/kg		<30 mg/kg	<0.003 %		<LOD
13	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
14	benzene	601-020-00-8	200-753-7	71-43-2		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
15		toluene	601-021-00-3	203-625-9	108-88-3		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<**LOD**
16		ethylbenzene	601-023-00-4	202-849-4	100-41-4		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<**LOD**
17		xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
18		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<1	mg/kg	1.884	<1.884	mg/kg	<0.000188 %		<**LOD**
19		pH			PH		7.8	pH		7.8	pH	7.8 pH		
20		naphthalene	601-052-00-2	202-049-5	91-20-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
21		acenaphthylene		205-917-1	208-96-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
22		acenaphthene		201-469-6	83-32-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
23		fluorene		201-695-5	86-73-7		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
24		phenanthrene		201-581-5	85-01-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
25		anthracene		204-371-1	120-12-7		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
26		fluoranthene		205-912-4	206-44-0		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
27		pyrene		204-927-3	129-00-0		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
28		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
29		chrysene	601-048-00-0	205-923-4	218-01-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
30		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
31		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
32		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
33		indeno[123-cd]pyrene		205-893-2	193-39-5		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
34		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
35		benzo[ghi]perylene		205-883-8	191-24-2		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
36		phenol	604-001-00-2	203-632-7	108-95-2		<1	mg/kg		<1	mg/kg	<0.0001 %		<**LOD**
37		asbestos	650-013-00-6	- - - - - - -	12001-28-4 132207-32-0 12172-73-5 77536-66-4 77536-68-6 77536-67-5 12001-29-5		<			<		<		**ND**
38		Asbestos Fragments (Visible to Naked Eye).			12001-28-4 132207-32-0 12172-73-5		<			<		<		**ND**

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number							
				77536-66-4 77536-68-6 77536-67-5 12001-29-5							
								Total:	0.025 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Determinand defined by classifier (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: BH104_1.00

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:
BH104_1.00
Sample Depth:
1 m
Moisture content:
15%
(dry weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 15% Dry Weight Moisture Correction applied (MC)

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1		arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		25	mg/kg	1.32	28.703	mg/kg	0.00287 %	✓	
2		boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		0.8	mg/kg	3.22	2.24	mg/kg	0.000224 %	✓	
3		cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		<0.2	mg/kg	1.142	<0.228	mg/kg	<0.0000228 %		<LOD
4		chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		34	mg/kg	1.462	43.211	mg/kg	0.00432 %	✓	
5		chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<1.8	mg/kg	2.27	<4.086	mg/kg	<0.000409 %		<LOD
6		copper { copper sulphate }	029-004-00-0	231-847-6	7758-98-7		17	mg/kg	2.512	37.13	mg/kg	0.00371 %	✓	
7		lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	16	mg/kg		13.913	mg/kg	0.00139 %	✓	
8		mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.3	mg/kg	1.353	<0.406	mg/kg	<0.0000406 %		<LOD
9		nickel { nickel sulfate }	028-009-00-5	232-104-9	7786-81-4		30	mg/kg	2.637	68.783	mg/kg	0.00688 %	✓	
10		selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<1	mg/kg	2.554	<2.554	mg/kg	<0.000255 %		<LOD
11		zinc { zinc sulphate (hydrous) (mono-, hexa- and hepta hydrate); [1] zinc sulphate (anhydrous) [2] }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		85	mg/kg	4.398	325.064	mg/kg	0.0325 %	✓	
12		TPH (C6 to C40) petroleum group			TPH		<31	mg/kg		<31	mg/kg	<0.0031 %		<LOD
13		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
14		benzene	601-020-00-8	200-753-7	71-43-2		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number									
15		toluene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-021-00-3	203-625-9	108-88-3									
16		ethylbenzene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-023-00-4	202-849-4	100-41-4									
17		xylene				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
18		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<1	mg/kg	1.884	<1.884	mg/kg	<0.000188 %		<LOD
		006-007-00-5											
19		pH				7.5	pH		7.5	pH	7.5 pH		
				PH									
20		naphthalene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
21		acenaphthylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-917-1	208-96-8									
22		acenaphthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			201-469-6	83-32-9									
23		fluorene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			201-695-5	86-73-7									
24		phenanthrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			201-581-5	85-01-8									
25		anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			204-371-1	120-12-7									
26		fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-912-4	206-44-0									
27		pyrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			204-927-3	129-00-0									
28		benzo[a]anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-033-00-9	200-280-6	56-55-3									
29		chrysene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-048-00-0	205-923-4	218-01-9									
30		benzo[b]fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-034-00-4	205-911-9	205-99-2									
31		benzo[k]fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-036-00-5	205-916-6	207-08-9									
32		benzo[a]pyrene; benzo[def]chrysene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-032-00-3	200-028-5	50-32-8									
33		indeno[123-cd]pyrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-893-2	193-39-5									
34		dibenz[a,h]anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
35		benzo[ghi]perylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-883-8	191-24-2									
36		phenol				<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
		604-001-00-2	203-632-7	108-95-2									
37		asbestos				<			<		<		ND
		650-013-00-6	- - - - - - -	12001-28-4 132207-32-0 12172-73-5 77536-66-4 77536-68-6 77536-67-5 12001-29-5									
38		Asbestos Fragments (Visible to Naked Eye).				<			<		<		ND
				12001-28-4 132207-32-0 12172-73-5									

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number							
				77536-66-4 77536-68-6 77536-67-5 12001-29-5							
								Total:	0.0561 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Determinand defined by classifier (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP103_1.00

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:
TP103_1.00
Sample Depth:
1 m
Moisture content:
14%
(dry weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 14% Dry Weight Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		7.8 mg/kg	1.32	9.034 mg/kg	0.000903 %	✓	
2	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		0.7 mg/kg	3.22	1.977 mg/kg	0.000198 %	✓	
3	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		<0.2 mg/kg	1.142	<0.228 mg/kg	<0.0000228 %		<LOD
4	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		34 mg/kg	1.462	43.59 mg/kg	0.00436 %	✓	
5	chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<1.8 mg/kg	2.27	<4.086 mg/kg	<0.000409 %		<LOD
6	copper { copper sulphate }	029-004-00-0	231-847-6	7758-98-7		23 mg/kg	2.512	50.675 mg/kg	0.00507 %	✓	
7	lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	12 mg/kg		10.526 mg/kg	0.00105 %	✓	
8	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.3 mg/kg	1.353	<0.406 mg/kg	<0.0000406 %		<LOD
9	nickel { nickel sulfate }	028-009-00-5	232-104-9	7786-81-4		33 mg/kg	2.637	76.325 mg/kg	0.00763 %	✓	
10	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<1 mg/kg	2.554	<2.554 mg/kg	<0.000255 %		<LOD
11	zinc { zinc sulphate (hydrous) (mono-, hexa- and hepta hydrate); [1] zinc sulphate (anhydrous) [2] }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		54 mg/kg	4.398	208.323 mg/kg	0.0208 %	✓	
12	TPH (C6 to C40) petroleum group			TPH		<32 mg/kg		<32 mg/kg	<0.0032 %		<LOD
13	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
14	benzene	601-020-00-8	200-753-7	71-43-2		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
15		toluene	601-021-00-3	203-625-9	108-88-3		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<**LOD**
16		ethylbenzene	601-023-00-4	202-849-4	100-41-4		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<**LOD**
17		xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
18		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<1	mg/kg	1.884	<1.884	mg/kg	<0.000188 %		<**LOD**
19		pH			PH		8.3	pH		8.3	pH	8.3 pH		
20		naphthalene	601-052-00-2	202-049-5	91-20-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
21		acenaphthylene		205-917-1	208-96-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
22		acenaphthene		201-469-6	83-32-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
23		fluorene		201-695-5	86-73-7		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
24		phenanthrene		201-581-5	85-01-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
25		anthracene		204-371-1	120-12-7		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
26		fluoranthene		205-912-4	206-44-0		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
27		pyrene		204-927-3	129-00-0		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
28		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
29		chrysene	601-048-00-0	205-923-4	218-01-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
30		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
31		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
32		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
33		indeno[123-cd]pyrene		205-893-2	193-39-5		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
34		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
35		benzo[ghi]perylene		205-883-8	191-24-2		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
36		phenol	604-001-00-2	203-632-7	108-95-2		<1	mg/kg		<1	mg/kg	<0.0001 %		<**LOD**
37		asbestos	650-013-00-6	- - - - - - -	12001-28-4 132207-32-0 12172-73-5 77536-66-4 77536-68-6 77536-67-5 12001-29-5		<			<		<		**ND**
38		Asbestos Fragments (Visible to Naked Eye).			12001-28-4 132207-32-0 12172-73-5		<			<		<		**ND**

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number							
				77536-66-4 77536-68-6 77536-67-5 12001-29-5							
								Total:	0.0443 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Determinand defined by classifier (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: BH118_1.00

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:
BH118_1.00
Sample Depth:
1 m
Moisture content:
12%
(dry weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 12% Dry Weight Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		7.7 mg/kg	1.32	9.077 mg/kg	0.000908 %	✓	
2	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		0.5 mg/kg	3.22	1.437 mg/kg	0.000144 %	✓	
3	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		<0.2 mg/kg	1.142	<0.228 mg/kg	<0.0000228 %		<LOD
4	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		21 mg/kg	1.462	27.404 mg/kg	0.00274 %	✓	
5	chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<1.8 mg/kg	2.27	<4.086 mg/kg	<0.000409 %		<LOD
6	copper { copper sulphate }	029-004-00-0	231-847-6	7758-98-7		17 mg/kg	2.512	38.124 mg/kg	0.00381 %	✓	
7	lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	15 mg/kg		13.393 mg/kg	0.00134 %	✓	
8	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.3 mg/kg	1.353	<0.406 mg/kg	<0.0000406 %		<LOD
9	nickel { nickel sulfate }	028-009-00-5	232-104-9	7786-81-4		18 mg/kg	2.637	42.375 mg/kg	0.00424 %	✓	
10	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<1 mg/kg	2.554	<2.554 mg/kg	<0.000255 %		<LOD
11	zinc { zinc sulphate (hydrous) (mono-, hexa- and hepta hydrate); [1] zinc sulphate (anhydrous) [2] }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		50 mg/kg	4.398	196.336 mg/kg	0.0196 %	✓	
12	TPH (C6 to C40) petroleum group			TPH		<33 mg/kg		<33 mg/kg	<0.0033 %		<LOD
13	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
14	benzene	601-020-00-8	200-753-7	71-43-2		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number									
15		toluene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<**LOD**
		601-021-00-3	203-625-9	108-88-3									
16		ethylbenzene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<**LOD**
		601-023-00-4	202-849-4	100-41-4									
17		xylene				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
18		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<1	mg/kg	1.884	<1.884	mg/kg	<0.000188 %		<**LOD**
		006-007-00-5											
19		pH				7.7	pH		7.7	pH	7.7 pH		
				PH									
20		naphthalene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-052-00-2	202-049-5	91-20-3									
21		acenaphthylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			205-917-1	208-96-8									
22		acenaphthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			201-469-6	83-32-9									
23		fluorene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			201-695-5	86-73-7									
24		phenanthrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			201-581-5	85-01-8									
25		anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			204-371-1	120-12-7									
26		fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			205-912-4	206-44-0									
27		pyrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			204-927-3	129-00-0									
28		benzo[a]anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-033-00-9	200-280-6	56-55-3									
29		chrysene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-048-00-0	205-923-4	218-01-9									
30		benzo[b]fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-034-00-4	205-911-9	205-99-2									
31		benzo[k]fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-036-00-5	205-916-6	207-08-9									
32		benzo[a]pyrene; benzo[def]chrysene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-032-00-3	200-028-5	50-32-8									
33		indeno[123-cd]pyrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			205-893-2	193-39-5									
34		dibenz[a,h]anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-041-00-2	200-181-8	53-70-3									
35		benzo[ghi]perylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			205-883-8	191-24-2									
36		phenol				<1	mg/kg		<1	mg/kg	<0.0001 %		<**LOD**
		604-001-00-2	203-632-7	108-95-2									
37		asbestos				<			<		<		**ND**
		650-013-00-6	- - - - - - -	12001-28-4 132207-32-0 12172-73-5 77536-66-4 77536-68-6 77536-67-5 12001-29-5									
38		Asbestos Fragments (Visible to Naked Eye).				<			<		<		**ND**
				12001-28-4 132207-32-0 12172-73-5									

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number							
				77536-66-4 77536-68-6 77536-67-5 12001-29-5							
								Total:	0.0372 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Determinand defined by classifier (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP102_1.00

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:
TP102_1.00
Sample Depth:
1 m
Moisture content:
12%
(dry weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 12% Dry Weight Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		10 mg/kg	1.32	11.789 mg/kg	0.00118 %	✓	
2	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		<0.2 mg/kg	3.22	<0.644 mg/kg	<0.0000644 %		<LOD
3	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		<0.2 mg/kg	1.142	<0.228 mg/kg	<0.0000228 %		<LOD
4	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		11 mg/kg	1.462	14.355 mg/kg	0.00144 %	✓	
5	chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<1.8 mg/kg	2.27	<4.086 mg/kg	<0.000409 %		<LOD
6	copper { copper sulphate }	029-004-00-0	231-847-6	7758-98-7		10 mg/kg	2.512	22.426 mg/kg	0.00224 %	✓	
7	lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	5.8 mg/kg		5.179 mg/kg	0.000518 %	✓	
8	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.3 mg/kg	1.353	<0.406 mg/kg	<0.0000406 %		<LOD
9	nickel { nickel sulfate }	028-009-00-5	232-104-9	7786-81-4		12 mg/kg	2.637	28.25 mg/kg	0.00283 %	✓	
10	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<1 mg/kg	2.554	<2.554 mg/kg	<0.000255 %		<LOD
11	zinc { zinc sulphate (hydrous) (mono-, hexa- and hepta hydrate); [1] zinc sulphate (anhydrous) [2] }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		31 mg/kg	4.398	121.728 mg/kg	0.0122 %	✓	
12	TPH (C6 to C40) petroleum group			TPH		<34 mg/kg		<34 mg/kg	<0.0034 %		<LOD
13	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
14	benzene	601-020-00-8	200-753-7	71-43-2		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
15		toluene	601-021-00-3	203-625-9	108-88-3		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<**LOD**
16		ethylbenzene	601-023-00-4	202-849-4	100-41-4		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<**LOD**
17		xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
18		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<1	mg/kg	1.884	<1.884	mg/kg	<0.000188 %		<**LOD**
19		pH			PH		8.2	pH		8.2	pH	8.2 pH		
20		naphthalene	601-052-00-2	202-049-5	91-20-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
21		acenaphthylene		205-917-1	208-96-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
22		acenaphthene		201-469-6	83-32-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
23		fluorene		201-695-5	86-73-7		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
24		phenanthrene		201-581-5	85-01-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
25		anthracene		204-371-1	120-12-7		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
26		fluoranthene		205-912-4	206-44-0		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
27		pyrene		204-927-3	129-00-0		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
28		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
29		chrysene	601-048-00-0	205-923-4	218-01-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
30		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
31		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
32		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
33		indeno[123-cd]pyrene		205-893-2	193-39-5		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
34		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
35		benzo[ghi]perylene		205-883-8	191-24-2		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
36		phenol	604-001-00-2	203-632-7	108-95-2		<1	mg/kg		<1	mg/kg	<0.0001 %		<**LOD**
37		asbestos	650-013-00-6	- - - - - - -	12001-28-4 132207-32-0 12172-73-5 77536-66-4 77536-68-6 77536-67-5 12001-29-5		<			<		<		**ND**
38		Asbestos Fragments (Visible to Naked Eye).			12001-28-4 132207-32-0 12172-73-5		<			<		<		**ND**

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number							
				77536-66-4 77536-68-6 77536-67-5 12001-29-5							
								Total:	0.0249 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Determinand defined by classifier (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: BH127_1.00

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:
BH127_1.00
Sample Depth:
1 m
Moisture content:
13%
(dry weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 13% Dry Weight Moisture Correction applied (MC)

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1		arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		9.9	mg/kg	1.32	11.567	mg/kg	0.00116 %	✓	
2		boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		1.3	mg/kg	3.22	3.704	mg/kg	0.00037 %	✓	
3		cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		<0.2	mg/kg	1.142	<0.228	mg/kg	<0.0000228 %		<LOD
4		chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		37	mg/kg	1.462	47.856	mg/kg	0.00479 %	✓	
5		chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<1.8	mg/kg	2.27	<4.086	mg/kg	<0.000409 %		<LOD
6		copper { copper sulphate }	029-004-00-0	231-847-6	7758-98-7		21	mg/kg	2.512	46.678	mg/kg	0.00467 %	✓	
7		lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	13	mg/kg		11.504	mg/kg	0.00115 %	✓	
8		mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.3	mg/kg	1.353	<0.406	mg/kg	<0.0000406 %		<LOD
9		nickel { nickel sulfate }	028-009-00-5	232-104-9	7786-81-4		34	mg/kg	2.637	79.334	mg/kg	0.00793 %	✓	
10		selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<1	mg/kg	2.554	<2.554	mg/kg	<0.000255 %		<LOD
11		zinc { zinc sulphate (hydrous) (mono-, hexa- and hepta hydrate); [1] zinc sulphate (anhydrous) [2] }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		58	mg/kg	4.398	225.734	mg/kg	0.0226 %	✓	
12		TPH (C6 to C40) petroleum group			TPH		<35	mg/kg		<35	mg/kg	<0.0035 %		<LOD
13		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
14		benzene	601-020-00-8	200-753-7	71-43-2		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number									
15		toluene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-021-00-3	203-625-9	108-88-3									
16		ethylbenzene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-023-00-4	202-849-4	100-41-4									
17		xylene				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
18		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<1	mg/kg	1.884	<1.884	mg/kg	<0.000188 %		<LOD
		006-007-00-5											
19		pH				8.2	pH		8.2	pH	8.2 pH		
				PH									
20		naphthalene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
21		acenaphthylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-917-1	208-96-8									
22		acenaphthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			201-469-6	83-32-9									
23		fluorene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			201-695-5	86-73-7									
24		phenanthrene				0.09	mg/kg		0.0796	mg/kg	0.00000796 %	✓	
			201-581-5	85-01-8									
25		anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			204-371-1	120-12-7									
26		fluoranthene				0.25	mg/kg		0.221	mg/kg	0.0000221 %	✓	
			205-912-4	206-44-0									
27		pyrene				0.25	mg/kg		0.221	mg/kg	0.0000221 %	✓	
			204-927-3	129-00-0									
28		benzo[a]anthracene				0.16	mg/kg		0.142	mg/kg	0.0000142 %	✓	
		601-033-00-9	200-280-6	56-55-3									
29		chrysene				0.18	mg/kg		0.159	mg/kg	0.0000159 %	✓	
		601-048-00-0	205-923-4	218-01-9									
30		benzo[b]fluoranthene				0.21	mg/kg		0.186	mg/kg	0.0000186 %	✓	
		601-034-00-4	205-911-9	205-99-2									
31		benzo[k]fluoranthene				0.09	mg/kg		0.0796	mg/kg	0.00000796 %	✓	
		601-036-00-5	205-916-6	207-08-9									
32		benzo[a]pyrene; benzo[def]chrysene				0.16	mg/kg		0.142	mg/kg	0.0000142 %	✓	
		601-032-00-3	200-028-5	50-32-8									
33		indeno[123-cd]pyrene				0.09	mg/kg		0.0796	mg/kg	0.00000796 %	✓	
			205-893-2	193-39-5									
34		dibenz[a,h]anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
35		benzo[ghi]perylene				0.13	mg/kg		0.115	mg/kg	0.0000115 %	✓	
			205-883-8	191-24-2									
36		phenol				<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
		604-001-00-2	203-632-7	108-95-2									
37		asbestos				<			<		<		ND
		650-013-00-6	- - - - - - -	12001-28-4 132207-32-0 12172-73-5 77536-66-4 77536-68-6 77536-67-5 12001-29-5									
38		Asbestos Fragments (Visible to Naked Eye).				<			<		<		ND
				12001-28-4 132207-32-0 12172-73-5									

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number							
				77536-66-4 77536-68-6 77536-67-5 12001-29-5							
								Total:	0.0473 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Determinand defined by classifier (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: BH102_1.10

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:
BH102_1.10
Sample Depth:
1.1 m
Moisture content:
2.4%
(dry weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 2.4% Dry Weight Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		2.8 mg/kg	1.32	3.61 mg/kg	0.000361 %	✓	
2	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		<0.2 mg/kg	3.22	<0.644 mg/kg	<0.0000644 %		<LOD
3	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		<0.2 mg/kg	1.142	<0.228 mg/kg	<0.0000228 %		<LOD
4	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		10 mg/kg	1.462	14.273 mg/kg	0.00143 %	✓	
5	chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<1.8 mg/kg	2.27	<4.086 mg/kg	<0.000409 %		<LOD
6	copper { copper sulphate }	029-004-00-0	231-847-6	7758-98-7		29 mg/kg	2.512	71.132 mg/kg	0.00711 %	✓	
7	lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	14 mg/kg		13.672 mg/kg	0.00137 %	✓	
8	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.3 mg/kg	1.353	<0.406 mg/kg	<0.0000406 %		<LOD
9	nickel { nickel sulfate }	028-009-00-5	232-104-9	7786-81-4		15 mg/kg	2.637	38.623 mg/kg	0.00386 %	✓	
10	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<1 mg/kg	2.554	<2.554 mg/kg	<0.000255 %		<LOD
11	zinc { zinc sulphate (hydrous) (mono-, hexa- and hepta hydrate); [1] zinc sulphate (anhydrous) [2] }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		60 mg/kg	4.398	257.691 mg/kg	0.0258 %	✓	
12	TPH (C6 to C40) petroleum group			TPH		43 mg/kg		41.992 mg/kg	0.0042 %	✓	
13	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
14	benzene	601-020-00-8	200-753-7	71-43-2		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
15		toluene	601-021-00-3	203-625-9	108-88-3		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
16		ethylbenzene	601-023-00-4	202-849-4	100-41-4		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
17		xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
18		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<1 mg/kg	1.884	<1.884 mg/kg	<0.000188 %		<LOD
19		pH			PH		9.2 pH		9.2 pH	9.2 pH		
20		naphthalene	601-052-00-2	202-049-5	91-20-3		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
21		acenaphthylene		205-917-1	208-96-8		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
22		acenaphthene		201-469-6	83-32-9		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
23		fluorene		201-695-5	86-73-7		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
24		phenanthrene		201-581-5	85-01-8		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
25		anthracene		204-371-1	120-12-7		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
26		fluoranthene		205-912-4	206-44-0		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
27		pyrene		204-927-3	129-00-0		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
28		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
29		chrysene	601-048-00-0	205-923-4	218-01-9		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
30		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
31		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
32		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
33		indeno[123-cd]pyrene		205-893-2	193-39-5		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
34		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
35		benzo[ghi]perylene		205-883-8	191-24-2		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
36		phenol	604-001-00-2	203-632-7	108-95-2		<1 mg/kg		<1 mg/kg	<0.0001 %		<LOD
37		asbestos	650-013-00-6	- - - - - - -	12001-28-4 132207-32-0 12172-73-5 77536-66-4 77536-68-6 77536-67-5 12001-29-5		<		<	<		ND
38		Asbestos Fragments (Visible to Naked Eye).			12001-28-4 132207-32-0 12172-73-5		<		<	<		ND

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number							
				77536-66-4 77536-68-6 77536-67-5 12001-29-5							
								Total:	0.0453 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Determinand defined by classifier (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Supplementary Hazardous Property Information

HP 3(i): Flammable "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"

Force this Hazardous property to non hazardous because Not considered flammable at the recorded concentration in a soil matrix.

Hazard Statements hit:

Flam. Liq. 3; H226 "Flammable liquid and vapour."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.0042%)

Classification of sample: WS109_1.20

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:
WS109_1.20
Sample Depth:
1.2 m
Moisture content:
26%
(dry weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 26% Dry Weight Moisture Correction applied (MC)

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1		arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		17	mg/kg	1.32	17.814	mg/kg	0.00178 %	✓	
2		boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		0.4	mg/kg	3.22	1.022	mg/kg	0.000102 %	✓	
3		cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		<0.2	mg/kg	1.142	<0.228	mg/kg	<0.0000228 %		<LOD
4		chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		34	mg/kg	1.462	39.439	mg/kg	0.00394 %	✓	
5		chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<1.8	mg/kg	2.27	<4.086	mg/kg	<0.000409 %		<LOD
6		copper { copper sulphate }	029-004-00-0	231-847-6	7758-98-7		15	mg/kg	2.512	29.901	mg/kg	0.00299 %	✓	
7		lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	17	mg/kg		13.492	mg/kg	0.00135 %	✓	
8		mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.3	mg/kg	1.353	<0.406	mg/kg	<0.0000406 %		<LOD
9		nickel { nickel sulfate }	028-009-00-5	232-104-9	7786-81-4		28	mg/kg	2.637	58.593	mg/kg	0.00586 %	✓	
10		selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<1	mg/kg	2.554	<2.554	mg/kg	<0.000255 %		<LOD
11		zinc { zinc sulphate (hydrous) (mono-, hexa- and hepta hydrate); [1] zinc sulphate (anhydrous) [2] }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		96	mg/kg	4.398	335.08	mg/kg	0.0335 %	✓	
12		TPH (C6 to C40) petroleum group			TPH		<20	mg/kg		<20	mg/kg	<0.002 %		<LOD
13		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
14		benzene	601-020-00-8	200-753-7	71-43-2		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number									
15		toluene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-021-00-3	203-625-9	108-88-3									
16		ethylbenzene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-023-00-4	202-849-4	100-41-4									
17		xylene				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
18		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<1	mg/kg	1.884	<1.884	mg/kg	<0.000188 %		<LOD
		006-007-00-5											
19		pH				7.1	pH		7.1	pH	7.1 pH		
				PH									
20		naphthalene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
21		acenaphthylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-917-1	208-96-8									
22		acenaphthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			201-469-6	83-32-9									
23		fluorene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			201-695-5	86-73-7									
24		phenanthrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			201-581-5	85-01-8									
25		anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			204-371-1	120-12-7									
26		fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-912-4	206-44-0									
27		pyrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			204-927-3	129-00-0									
28		benzo[a]anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-033-00-9	200-280-6	56-55-3									
29		chrysene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-048-00-0	205-923-4	218-01-9									
30		benzo[b]fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-034-00-4	205-911-9	205-99-2									
31		benzo[k]fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-036-00-5	205-916-6	207-08-9									
32		benzo[a]pyrene; benzo[def]chrysene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-032-00-3	200-028-5	50-32-8									
33		indeno[123-cd]pyrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-893-2	193-39-5									
34		dibenz[a,h]anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
35		benzo[ghi]perylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-883-8	191-24-2									
36		phenol				<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
		604-001-00-2	203-632-7	108-95-2									
37		asbestos				<			<		<		ND
		650-013-00-6	- - - - - - -	12001-28-4 132207-32-0 12172-73-5 77536-66-4 77536-68-6 77536-67-5 12001-29-5									
38		Asbestos Fragments (Visible to Naked Eye).				<			<		<		ND
				12001-28-4 132207-32-0 12172-73-5									

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number							
				77536-66-4 77536-68-6 77536-67-5 12001-29-5							
								Total:	0.0526 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Determinand defined by classifier (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: BH117_1.50

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:
BH117_1.50
Sample Depth:
1.5 m
Moisture content:
10%
(dry weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 10% Dry Weight Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		5.8 mg/kg	1.32	6.962 mg/kg	0.000696 %	✓	
2	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		0.5 mg/kg	3.22	1.464 mg/kg	0.000146 %	✓	
3	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		<0.2 mg/kg	1.142	<0.228 mg/kg	<0.0000228 %		<LOD
4	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		13 mg/kg	1.462	17.273 mg/kg	0.00173 %	✓	
5	chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<1.8 mg/kg	2.27	<4.086 mg/kg	<0.000409 %		<LOD
6	copper { copper sulphate }	029-004-00-0	231-847-6	7758-98-7		11 mg/kg	2.512	25.117 mg/kg	0.00251 %	✓	
7	lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	8.5 mg/kg		7.727 mg/kg	0.000773 %	✓	
8	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.3 mg/kg	1.353	<0.406 mg/kg	<0.0000406 %		<LOD
9	nickel { nickel sulfate }	028-009-00-5	232-104-9	7786-81-4		12 mg/kg	2.637	28.764 mg/kg	0.00288 %	✓	
10	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<1 mg/kg	2.554	<2.554 mg/kg	<0.000255 %		<LOD
11	zinc { zinc sulphate (hydrous) (mono-, hexa- and hepta hydrate); [1] zinc sulphate (anhydrous) [2] }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		32 mg/kg	4.398	127.94 mg/kg	0.0128 %	✓	
12	TPH (C6 to C40) petroleum group			TPH		<20 mg/kg		<20 mg/kg	<0.002 %		<LOD
13	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
14	benzene	601-020-00-8	200-753-7	71-43-2		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
15		toluene	601-021-00-3	203-625-9	108-88-3		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<**LOD**
16		ethylbenzene	601-023-00-4	202-849-4	100-41-4		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<**LOD**
17		xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
18		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<1	mg/kg	1.884	<1.884	mg/kg	<0.000188 %		<**LOD**
19		pH			PH		8.3	pH		8.3	pH	8.3 pH		
20		naphthalene	601-052-00-2	202-049-5	91-20-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
21		acenaphthylene		205-917-1	208-96-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
22		acenaphthene		201-469-6	83-32-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
23		fluorene		201-695-5	86-73-7		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
24		phenanthrene		201-581-5	85-01-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
25		anthracene		204-371-1	120-12-7		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
26		fluoranthene		205-912-4	206-44-0		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
27		pyrene		204-927-3	129-00-0		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
28		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
29		chrysene	601-048-00-0	205-923-4	218-01-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
30		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
31		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
32		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
33		indeno[123-cd]pyrene		205-893-2	193-39-5		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
34		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
35		benzo[ghi]perylene		205-883-8	191-24-2		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
36		phenol	604-001-00-2	203-632-7	108-95-2		<1	mg/kg		<1	mg/kg	<0.0001 %		<**LOD**
37		asbestos	650-013-00-6	- - - - - - -	12001-28-4 132207-32-0 12172-73-5 77536-66-4 77536-68-6 77536-67-5 12001-29-5		<			<		<		**ND**
38		Asbestos Fragments (Visible to Naked Eye).			12001-28-4 132207-32-0 12172-73-5		<			<		<		**ND**

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number							
				77536-66-4 77536-68-6 77536-67-5 12001-29-5							
								Total:	0.0246 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Determinand defined by classifier (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: BH107_1.50

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:
BH107_1.50
Sample Depth:
1.5 m
Moisture content:
9.9%
(dry weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 9.9% Dry Weight Moisture Correction applied (MC)

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1		arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		6	mg/kg	1.32	7.208	mg/kg	0.000721 %	✓	
2		boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		0.7	mg/kg	3.22	2.051	mg/kg	0.000205 %	✓	
3		cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		<0.2	mg/kg	1.142	<0.228	mg/kg	<0.0000228 %		<LOD
4		chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		22	mg/kg	1.462	29.258	mg/kg	0.00293 %	✓	
5		chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<1.8	mg/kg	2.27	<4.086	mg/kg	<0.000409 %		<LOD
6		copper { copper sulphate }	029-004-00-0	231-847-6	7758-98-7		16	mg/kg	2.512	36.567	mg/kg	0.00366 %	✓	
7		lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	18	mg/kg		16.379	mg/kg	0.00164 %	✓	
8		mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.3	mg/kg	1.353	<0.406	mg/kg	<0.0000406 %		<LOD
9		nickel { nickel sulfate }	028-009-00-5	232-104-9	7786-81-4		23	mg/kg	2.637	55.181	mg/kg	0.00552 %	✓	
10		selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<1	mg/kg	2.554	<2.554	mg/kg	<0.000255 %		<LOD
11		zinc { zinc sulphate (hydrous) (mono-, hexa- and hepta hydrate); [1] zinc sulphate (anhydrous) [2] }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		58	mg/kg	4.398	232.102	mg/kg	0.0232 %	✓	
12		TPH (C6 to C40) petroleum group			TPH		19	mg/kg		17.288	mg/kg	0.00173 %	✓	
13		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
14		benzene	601-020-00-8	200-753-7	71-43-2		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number									
15		toluene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<**LOD**
		601-021-00-3	203-625-9	108-88-3									
16		ethylbenzene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<**LOD**
		601-023-00-4	202-849-4	100-41-4									
17		xylene				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
18		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<1	mg/kg	1.884	<1.884	mg/kg	<0.000188 %		<**LOD**
		006-007-00-5											
19		pH				7.9	pH		7.9	pH	7.9 pH		
				PH									
20		naphthalene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-052-00-2	202-049-5	91-20-3									
21		acenaphthylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			205-917-1	208-96-8									
22		acenaphthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			201-469-6	83-32-9									
23		fluorene				0.21	mg/kg		0.191	mg/kg	0.0000191 %	✓	
			201-695-5	86-73-7									
24		phenanthrene				1.3	mg/kg		1.183	mg/kg	0.000118 %	✓	
			201-581-5	85-01-8									
25		anthracene				0.33	mg/kg		0.3	mg/kg	0.00003 %	✓	
			204-371-1	120-12-7									
26		fluoranthene				1.8	mg/kg		1.638	mg/kg	0.000164 %	✓	
			205-912-4	206-44-0									
27		pyrene				1.5	mg/kg		1.365	mg/kg	0.000136 %	✓	
			204-927-3	129-00-0									
28		benzo[a]anthracene				0.97	mg/kg		0.883	mg/kg	0.0000883 %	✓	
		601-033-00-9	200-280-6	56-55-3									
29		chrysene				0.99	mg/kg		0.901	mg/kg	0.0000901 %	✓	
		601-048-00-0	205-923-4	218-01-9									
30		benzo[b]fluoranthene				0.9	mg/kg		0.819	mg/kg	0.0000819 %	✓	
		601-034-00-4	205-911-9	205-99-2									
31		benzo[k]fluoranthene				0.36	mg/kg		0.328	mg/kg	0.0000328 %	✓	
		601-036-00-5	205-916-6	207-08-9									
32		benzo[a]pyrene; benzo[def]chrysene				0.6	mg/kg		0.546	mg/kg	0.0000546 %	✓	
		601-032-00-3	200-028-5	50-32-8									
33		indeno[123-cd]pyrene				0.27	mg/kg		0.246	mg/kg	0.0000246 %	✓	
			205-893-2	193-39-5									
34		dibenz[a,h]anthracene				0.12	mg/kg		0.109	mg/kg	0.0000109 %	✓	
		601-041-00-2	200-181-8	53-70-3									
35		benzo[ghi]perylene				0.29	mg/kg		0.264	mg/kg	0.0000264 %	✓	
			205-883-8	191-24-2									
36		phenol				<1	mg/kg		<1	mg/kg	<0.0001 %		<**LOD**
		604-001-00-2	203-632-7	108-95-2									
37		asbestos				<			<		<		**ND**
		650-013-00-6	- - - - - - -	12001-28-4 132207-32-0 12172-73-5 77536-66-4 77536-68-6 77536-67-5 12001-29-5									
38		Asbestos Fragments (Visible to Naked Eye).				<			<		<		**ND**
				12001-28-4 132207-32-0 12172-73-5									

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number							
				77536-66-4 77536-68-6 77536-67-5 12001-29-5							
								Total:	0.0415 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Determinand defined by classifier (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Supplementary Hazardous Property Information

HP 3(i): Flammable "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"

Force this Hazardous property to non hazardous because Not considered flammable at the recorded concentration in a soil matrix.

Hazard Statements hit:

Flam. Liq. 3; H226 "Flammable liquid and vapour."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.00173%)

Classification of sample: BH126_1.50

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:
BH126_1.50
Sample Depth:
1.5 m
Moisture content:
12%
(dry weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 12% Dry Weight Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		6.9 mg/kg	1.32	8.134 mg/kg	0.000813 %	✓	
2	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		0.2 mg/kg	3.22	0.575 mg/kg	0.0000575 %	✓	
3	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		<0.2 mg/kg	1.142	<0.228 mg/kg	<0.0000228 %		<LOD
4	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		27 mg/kg	1.462	35.234 mg/kg	0.00352 %	✓	
5	chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<1.8 mg/kg	2.27	<4.086 mg/kg	<0.000409 %		<LOD
6	copper { copper sulphate }	029-004-00-0	231-847-6	7758-98-7		18 mg/kg	2.512	40.367 mg/kg	0.00404 %	✓	
7	lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	10 mg/kg		8.929 mg/kg	0.000893 %	✓	
8	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.3 mg/kg	1.353	<0.406 mg/kg	<0.0000406 %		<LOD
9	nickel { nickel sulfate }	028-009-00-5	232-104-9	7786-81-4		27 mg/kg	2.637	63.563 mg/kg	0.00636 %	✓	
10	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<1 mg/kg	2.554	<2.554 mg/kg	<0.000255 %		<LOD
11	zinc { zinc sulphate (hydrous) (mono-, hexa- and hepta hydrate); [1] zinc sulphate (anhydrous) [2] }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		50 mg/kg	4.398	196.336 mg/kg	0.0196 %	✓	
12	TPH (C6 to C40) petroleum group			TPH		<20 mg/kg		<20 mg/kg	<0.002 %		<LOD
13	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
14	benzene	601-020-00-8	200-753-7	71-43-2		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
15		toluene	601-021-00-3	203-625-9	108-88-3		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<**LOD**
16		ethylbenzene	601-023-00-4	202-849-4	100-41-4		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<**LOD**
17		xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
18		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<1	mg/kg	1.884	<1.884	mg/kg	<0.000188 %		<**LOD**
19		pH			PH		8.7	pH		8.7	pH	8.7 pH		
20		naphthalene	601-052-00-2	202-049-5	91-20-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
21		acenaphthylene		205-917-1	208-96-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
22		acenaphthene		201-469-6	83-32-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
23		fluorene		201-695-5	86-73-7		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
24		phenanthrene		201-581-5	85-01-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
25		anthracene		204-371-1	120-12-7		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
26		fluoranthene		205-912-4	206-44-0		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
27		pyrene		204-927-3	129-00-0		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
28		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
29		chrysene	601-048-00-0	205-923-4	218-01-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
30		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
31		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
32		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
33		indeno[123-cd]pyrene		205-893-2	193-39-5		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
34		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
35		benzo[ghi]perylene		205-883-8	191-24-2		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
36		phenol	604-001-00-2	203-632-7	108-95-2		<1	mg/kg		<1	mg/kg	<0.0001 %		<**LOD**
37		asbestos	650-013-00-6	- - - - - - -	12001-28-4 132207-32-0 12172-73-5 77536-66-4 77536-68-6 77536-67-5 12001-29-5		<			<		<		**ND**
38		Asbestos Fragments (Visible to Naked Eye).			12001-28-4 132207-32-0 12172-73-5		<			<		<		**ND**

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number							
				77536-66-4 77536-68-6 77536-67-5 12001-29-5							
								Total:	0.0384 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Determinand defined by classifier (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: WS105_1.50

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:
WS105_1.50
Sample Depth:
1.5 m
Moisture content:
14%
(dry weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 14% Dry Weight Moisture Correction applied (MC)

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1		arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		8.3	mg/kg	1.32	9.613	mg/kg	0.000961 %	✓	
2		boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		0.4	mg/kg	3.22	1.13	mg/kg	0.000113 %	✓	
3		cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		<0.2	mg/kg	1.142	<0.228	mg/kg	<0.0000228 %		<**LOD**
4		chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		33	mg/kg	1.462	42.308	mg/kg	0.00423 %	✓	
5		chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<1.8	mg/kg	2.27	<4.086	mg/kg	<0.000409 %		<**LOD**
6		copper { copper sulphate }	029-004-00-0	231-847-6	7758-98-7		24	mg/kg	2.512	52.878	mg/kg	0.00529 %	✓	
7		lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	11	mg/kg		9.649	mg/kg	0.000965 %	✓	
8		mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.3	mg/kg	1.353	<0.406	mg/kg	<0.0000406 %		<**LOD**
9		nickel { nickel sulfate }	028-009-00-5	232-104-9	7786-81-4		31	mg/kg	2.637	71.699	mg/kg	0.00717 %	✓	
10		selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<1	mg/kg	2.554	<2.554	mg/kg	<0.000255 %		<**LOD**
11		zinc { zinc sulphate (hydrous) (mono-, hexa- and hepta hydrate); [1] zinc sulphate (anhydrous) [2] }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		64	mg/kg	4.398	246.901	mg/kg	0.0247 %	✓	
12		TPH (C6 to C40) petroleum group			TPH		<20	mg/kg		<20	mg/kg	<0.002 %		<**LOD**
13		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<**LOD**
14		benzene	601-020-00-8	200-753-7	71-43-2		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<**LOD**

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number									
15		toluene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-021-00-3	203-625-9	108-88-3									
16		ethylbenzene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-023-00-4	202-849-4	100-41-4									
17		xylene				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
18		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<1	mg/kg	1.884	<1.884	mg/kg	<0.000188 %		<LOD
		006-007-00-5											
19		pH				8.3	pH		8.3	pH	8.3 pH		
				PH									
20		naphthalene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
21		acenaphthylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-917-1	208-96-8									
22		acenaphthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			201-469-6	83-32-9									
23		fluorene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			201-695-5	86-73-7									
24		phenanthrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			201-581-5	85-01-8									
25		anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			204-371-1	120-12-7									
26		fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-912-4	206-44-0									
27		pyrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			204-927-3	129-00-0									
28		benzo[a]anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-033-00-9	200-280-6	56-55-3									
29		chrysene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-048-00-0	205-923-4	218-01-9									
30		benzo[b]fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-034-00-4	205-911-9	205-99-2									
31		benzo[k]fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-036-00-5	205-916-6	207-08-9									
32		benzo[a]pyrene; benzo[def]chrysene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-032-00-3	200-028-5	50-32-8									
33		indeno[123-cd]pyrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-893-2	193-39-5									
34		dibenz[a,h]anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
35		benzo[ghi]perylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-883-8	191-24-2									
36		phenol				<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
		604-001-00-2	203-632-7	108-95-2									
37		asbestos				<			<		<		ND
		650-013-00-6	- - - - - - -	12001-28-4 132207-32-0 12172-73-5 77536-66-4 77536-68-6 77536-67-5 12001-29-5									
38		Asbestos Fragments (Visible to Naked Eye).				<			<		<		ND
				12001-28-4 132207-32-0 12172-73-5									

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number							
				77536-66-4 77536-68-6 77536-67-5 12001-29-5							
								Total:	0.0465 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Determinand defined by classifier (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: WS108_1.50

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:
WS108_1.50
Sample Depth:
1.5 m
Moisture content:
12%
(dry weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 12% Dry Weight Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		25 mg/kg	1.32	29.472 mg/kg	0.00295 %	✓	
2	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		0.3 mg/kg	3.22	0.862 mg/kg	0.0000862 %	✓	
3	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		<0.2 mg/kg	1.142	<0.228 mg/kg	<0.0000228 %		<LOD
4	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		24 mg/kg	1.462	31.319 mg/kg	0.00313 %	✓	
5	chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<1.8 mg/kg	2.27	<4.086 mg/kg	<0.000409 %		<LOD
6	copper { copper sulphate }	029-004-00-0	231-847-6	7758-98-7		39 mg/kg	2.512	87.461 mg/kg	0.00875 %	✓	
7	lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	12 mg/kg		10.714 mg/kg	0.00107 %	✓	
8	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.3 mg/kg	1.353	<0.406 mg/kg	<0.0000406 %		<LOD
9	nickel { nickel sulfate }	028-009-00-5	232-104-9	7786-81-4		35 mg/kg	2.637	82.396 mg/kg	0.00824 %	✓	
10	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<1 mg/kg	2.554	<2.554 mg/kg	<0.000255 %		<LOD
11	zinc { zinc sulphate (hydrous) (mono-, hexa- and hepta hydrate); [1] zinc sulphate (anhydrous) [2] }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		94 mg/kg	4.398	369.112 mg/kg	0.0369 %	✓	
12	TPH (C6 to C40) petroleum group			TPH		<20 mg/kg		<20 mg/kg	<0.002 %		<LOD
13	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
14	benzene	601-020-00-8	200-753-7	71-43-2		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
15		toluene	601-021-00-3	203-625-9	108-88-3		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<**LOD**
16		ethylbenzene	601-023-00-4	202-849-4	100-41-4		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<**LOD**
17		xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
18		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<1	mg/kg	1.884	<1.884	mg/kg	<0.000188 %		<**LOD**
19		pH			PH		8.3	pH		8.3	pH	8.3 pH		
20		naphthalene	601-052-00-2	202-049-5	91-20-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
21		acenaphthylene		205-917-1	208-96-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
22		acenaphthene		201-469-6	83-32-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
23		fluorene		201-695-5	86-73-7		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
24		phenanthrene		201-581-5	85-01-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
25		anthracene		204-371-1	120-12-7		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
26		fluoranthene		205-912-4	206-44-0		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
27		pyrene		204-927-3	129-00-0		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
28		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
29		chrysene	601-048-00-0	205-923-4	218-01-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
30		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
31		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
32		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
33		indeno[123-cd]pyrene		205-893-2	193-39-5		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
34		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
35		benzo[ghi]perylene		205-883-8	191-24-2		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
36		phenol	604-001-00-2	203-632-7	108-95-2		<1	mg/kg		<1	mg/kg	<0.0001 %		<**LOD**
37		asbestos	650-013-00-6	- - - - - - -	12001-28-4 132207-32-0 12172-73-5 77536-66-4 77536-68-6 77536-67-5 12001-29-5		<			<		<		**ND**
38		Asbestos Fragments (Visible to Naked Eye).			12001-28-4 132207-32-0 12172-73-5		<			<		<		**ND**

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number							
				77536-66-4 77536-68-6 77536-67-5 12001-29-5							
								Total:	0.0642 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Determinand defined by classifier (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: BH124_1.50

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:
BH124_1.50
Sample Depth:
1.5 m
Moisture content:
12%
(dry weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 12% Dry Weight Moisture Correction applied (MC)

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1		arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		7.1	mg/kg	1.32	8.37	mg/kg	0.000837 %	✓	
2		boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		0.3	mg/kg	3.22	0.862	mg/kg	0.0000862 %	✓	
3		cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		<0.2	mg/kg	1.142	<0.228	mg/kg	<0.0000228 %		<**LOD**
4		chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		23	mg/kg	1.462	30.014	mg/kg	0.003 %	✓	
5		chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<1.8	mg/kg	2.27	<4.086	mg/kg	<0.000409 %		<**LOD**
6		copper { copper sulphate }	029-004-00-0	231-847-6	7758-98-7		16	mg/kg	2.512	35.881	mg/kg	0.00359 %	✓	
7		lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	9.1	mg/kg		8.125	mg/kg	0.000813 %	✓	
8		mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.3	mg/kg	1.353	<0.406	mg/kg	<0.0000406 %		<**LOD**
9		nickel { nickel sulfate }	028-009-00-5	232-104-9	7786-81-4		23	mg/kg	2.637	54.146	mg/kg	0.00541 %	✓	
10		selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<1	mg/kg	2.554	<2.554	mg/kg	<0.000255 %		<**LOD**
11		zinc { zinc sulphate (hydrous) (mono-, hexa- and hepta hydrate); [1] zinc sulphate (anhydrous) [2] }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		44	mg/kg	4.398	172.776	mg/kg	0.0173 %	✓	
12		TPH (C6 to C40) petroleum group			TPH		<20	mg/kg		<20	mg/kg	<0.002 %		<**LOD**
13		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<**LOD**
14		benzene	601-020-00-8	200-753-7	71-43-2		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<**LOD**

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number									
15		toluene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-021-00-3	203-625-9	108-88-3									
16		ethylbenzene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-023-00-4	202-849-4	100-41-4									
17		xylene				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
18		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<1	mg/kg	1.884	<1.884	mg/kg	<0.000188 %		<LOD
		006-007-00-5											
19		pH				8.5	pH		8.5	pH	8.5 pH		
				PH									
20		naphthalene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
21		acenaphthylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-917-1	208-96-8									
22		acenaphthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			201-469-6	83-32-9									
23		fluorene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			201-695-5	86-73-7									
24		phenanthrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			201-581-5	85-01-8									
25		anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			204-371-1	120-12-7									
26		fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-912-4	206-44-0									
27		pyrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			204-927-3	129-00-0									
28		benzo[a]anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-033-00-9	200-280-6	56-55-3									
29		chrysene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-048-00-0	205-923-4	218-01-9									
30		benzo[b]fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-034-00-4	205-911-9	205-99-2									
31		benzo[k]fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-036-00-5	205-916-6	207-08-9									
32		benzo[a]pyrene; benzo[def]chrysene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-032-00-3	200-028-5	50-32-8									
33		indeno[123-cd]pyrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-893-2	193-39-5									
34		dibenz[a,h]anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
35		benzo[ghi]perylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-883-8	191-24-2									
36		phenol				<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
		604-001-00-2	203-632-7	108-95-2									
37		asbestos				<			<		<		ND
		650-013-00-6	- - - - - - -	12001-28-4 132207-32-0 12172-73-5 77536-66-4 77536-68-6 77536-67-5 12001-29-5									
38		Asbestos Fragments (Visible to Naked Eye).				<			<		<		ND
				12001-28-4 132207-32-0 12172-73-5									

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number							
				77536-66-4 77536-68-6 77536-67-5 12001-29-5							
								Total:	0.0341 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Determinand defined by classifier (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: BH123_1.50

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:
BH123_1.50
Sample Depth:
1.5 m
Moisture content:
14%
(dry weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 14% Dry Weight Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		8.6 mg/kg	1.32	9.96 mg/kg	0.000996 %	✓	
2	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		0.2 mg/kg	3.22	0.565 mg/kg	0.0000565 %	✓	
3	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		<0.2 mg/kg	1.142	<0.228 mg/kg	<0.0000228 %		<LOD
4	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		33 mg/kg	1.462	42.308 mg/kg	0.00423 %	✓	
5	chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<1.8 mg/kg	2.27	<4.086 mg/kg	<0.000409 %		<LOD
6	copper { copper sulphate }	029-004-00-0	231-847-6	7758-98-7		23 mg/kg	2.512	50.675 mg/kg	0.00507 %	✓	
7	lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	12 mg/kg		10.526 mg/kg	0.00105 %	✓	
8	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.3 mg/kg	1.353	<0.406 mg/kg	<0.0000406 %		<LOD
9	nickel { nickel sulfate }	028-009-00-5	232-104-9	7786-81-4		33 mg/kg	2.637	76.325 mg/kg	0.00763 %	✓	
10	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<1 mg/kg	2.554	<2.554 mg/kg	<0.000255 %		<LOD
11	zinc { zinc sulphate (hydrous) (mono-, hexa- and hepta hydrate); [1] zinc sulphate (anhydrous) [2] }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		57 mg/kg	4.398	219.896 mg/kg	0.022 %	✓	
12	TPH (C6 to C40) petroleum group			TPH		<20 mg/kg		<20 mg/kg	<0.002 %		<LOD
13	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
14	benzene	601-020-00-8	200-753-7	71-43-2		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
15		toluene	601-021-00-3	203-625-9	108-88-3		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<**LOD**
16		ethylbenzene	601-023-00-4	202-849-4	100-41-4		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<**LOD**
17		xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
18		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<1	mg/kg	1.884	<1.884	mg/kg	<0.000188 %		<**LOD**
19		pH			PH		8.5	pH		8.5	pH	8.5 pH		
20		naphthalene	601-052-00-2	202-049-5	91-20-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
21		acenaphthylene		205-917-1	208-96-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
22		acenaphthene		201-469-6	83-32-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
23		fluorene		201-695-5	86-73-7		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
24		phenanthrene		201-581-5	85-01-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
25		anthracene		204-371-1	120-12-7		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
26		fluoranthene		205-912-4	206-44-0		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
27		pyrene		204-927-3	129-00-0		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
28		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
29		chrysene	601-048-00-0	205-923-4	218-01-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
30		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
31		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
32		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
33		indeno[123-cd]pyrene		205-893-2	193-39-5		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
34		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
35		benzo[ghi]perylene		205-883-8	191-24-2		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
36		phenol	604-001-00-2	203-632-7	108-95-2		<1	mg/kg		<1	mg/kg	<0.0001 %		<**LOD**
37		asbestos	650-013-00-6	- - - - - - -	12001-28-4 132207-32-0 12172-73-5 77536-66-4 77536-68-6 77536-67-5 12001-29-5		<			<		<		**ND**
38		Asbestos Fragments (Visible to Naked Eye).			12001-28-4 132207-32-0 12172-73-5		<			<		<		**ND**

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number							
				77536-66-4 77536-68-6 77536-67-5 12001-29-5							
								Total:	0.0441 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Determinand defined by classifier (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: BH111_1.50

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:
BH111_1.50
Sample Depth:
1.5 m
Moisture content:
13%
(dry weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 13% Dry Weight Moisture Correction applied (MC)

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1		arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		11	mg/kg	1.32	12.853	mg/kg	0.00129 %	✓	
2		boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		0.9	mg/kg	3.22	2.565	mg/kg	0.000256 %	✓	
3		cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		<0.2	mg/kg	1.142	<0.228	mg/kg	<0.0000228 %		<LOD
4		chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		22	mg/kg	1.462	28.455	mg/kg	0.00285 %	✓	
5		chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<1.8	mg/kg	2.27	<4.086	mg/kg	<0.000409 %		<LOD
6		copper { copper sulphate }	029-004-00-0	231-847-6	7758-98-7		17	mg/kg	2.512	37.787	mg/kg	0.00378 %	✓	
7		lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	14	mg/kg		12.389	mg/kg	0.00124 %	✓	
8		mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.3	mg/kg	1.353	<0.406	mg/kg	<0.0000406 %		<LOD
9		nickel { nickel sulfate }	028-009-00-5	232-104-9	7786-81-4		21	mg/kg	2.637	49	mg/kg	0.0049 %	✓	
10		selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<1	mg/kg	2.554	<2.554	mg/kg	<0.000255 %		<LOD
11		zinc { zinc sulphate (hydrous) (mono-, hexa- and hepta hydrate); [1] zinc sulphate (anhydrous) [2] }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		66	mg/kg	4.398	256.87	mg/kg	0.0257 %	✓	
12		TPH (C6 to C40) petroleum group			TPH		<20	mg/kg		<20	mg/kg	<0.002 %		<LOD
13		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
14		benzene	601-020-00-8	200-753-7	71-43-2		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number									
15		toluene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-021-00-3	203-625-9	108-88-3									
16		ethylbenzene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-023-00-4	202-849-4	100-41-4									
17		xylene				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
18		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<1	mg/kg	1.884	<1.884	mg/kg	<0.000188 %		<LOD
		006-007-00-5											
19		pH				8	pH		8	pH	8pH		
				PH									
20		naphthalene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
21		acenaphthylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-917-1	208-96-8									
22		acenaphthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			201-469-6	83-32-9									
23		fluorene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			201-695-5	86-73-7									
24		phenanthrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			201-581-5	85-01-8									
25		anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			204-371-1	120-12-7									
26		fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-912-4	206-44-0									
27		pyrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			204-927-3	129-00-0									
28		benzo[a]anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-033-00-9	200-280-6	56-55-3									
29		chrysene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-048-00-0	205-923-4	218-01-9									
30		benzo[b]fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-034-00-4	205-911-9	205-99-2									
31		benzo[k]fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-036-00-5	205-916-6	207-08-9									
32		benzo[a]pyrene; benzo[def]chrysene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-032-00-3	200-028-5	50-32-8									
33		indeno[123-cd]pyrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-893-2	193-39-5									
34		dibenz[a,h]anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
35		benzo[ghi]perylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-883-8	191-24-2									
36		phenol				<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
		604-001-00-2	203-632-7	108-95-2									
37		asbestos				<			<		<		ND
		650-013-00-6	- - - - - - -	12001-28-4 132207-32-0 12172-73-5 77536-66-4 77536-68-6 77536-67-5 12001-29-5									
38		Asbestos Fragments (Visible to Naked Eye).				<			<		<		ND
				12001-28-4 132207-32-0 12172-73-5									

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number							
				77536-66-4 77536-68-6 77536-67-5 12001-29-5							
								Total:	0.0431 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Determinand defined by classifier (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: BH109_1.50

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:
BH109_1.50
Sample Depth:
1.5 m
Moisture content:
5.9%
(dry weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 5.9% Dry Weight Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		3.2 mg/kg	1.32	3.99 mg/kg	0.000399 %	✓	
2	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		0.3 mg/kg	3.22	0.912 mg/kg	0.0000912 %	✓	
3	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		<0.2 mg/kg	1.142	<0.228 mg/kg	<0.0000228 %		<LOD
4	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		6.5 mg/kg	1.462	8.971 mg/kg	0.000897 %	✓	
5	chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<1.8 mg/kg	2.27	<4.086 mg/kg	<0.000409 %		<LOD
6	copper { copper sulphate }	029-004-00-0	231-847-6	7758-98-7		23 mg/kg	2.512	54.551 mg/kg	0.00546 %	✓	
7	lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	14 mg/kg		13.22 mg/kg	0.00132 %	✓	
8	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.3 mg/kg	1.353	<0.406 mg/kg	<0.0000406 %		<LOD
9	nickel { nickel sulfate }	028-009-00-5	232-104-9	7786-81-4		6.5 mg/kg	2.637	16.184 mg/kg	0.00162 %	✓	
10	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<1 mg/kg	2.554	<2.554 mg/kg	<0.000255 %		<LOD
11	zinc { zinc sulphate (hydrous) (mono-, hexa- and hepta hydrate); [1] zinc sulphate (anhydrous) [2] }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		29 mg/kg	4.398	120.434 mg/kg	0.012 %	✓	
12	TPH (C6 to C40) petroleum group			TPH		<20 mg/kg		<20 mg/kg	<0.002 %		<LOD
13	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
14	benzene	601-020-00-8	200-753-7	71-43-2		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
15		toluene	601-021-00-3	203-625-9	108-88-3		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<**LOD**
16		ethylbenzene	601-023-00-4	202-849-4	100-41-4		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<**LOD**
17		xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
18		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<1	mg/kg	1.884	<1.884	mg/kg	<0.000188 %		<**LOD**
19		pH			PH		7.6	pH		7.6	pH	7.6 pH		
20		naphthalene	601-052-00-2	202-049-5	91-20-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
21		acenaphthylene		205-917-1	208-96-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
22		acenaphthene		201-469-6	83-32-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
23		fluorene		201-695-5	86-73-7		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
24		phenanthrene		201-581-5	85-01-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
25		anthracene		204-371-1	120-12-7		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
26		fluoranthene		205-912-4	206-44-0		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
27		pyrene		204-927-3	129-00-0		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
28		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
29		chrysene	601-048-00-0	205-923-4	218-01-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
30		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
31		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
32		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
33		indeno[123-cd]pyrene		205-893-2	193-39-5		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
34		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
35		benzo[ghi]perylene		205-883-8	191-24-2		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
36		phenol	604-001-00-2	203-632-7	108-95-2		<1	mg/kg		<1	mg/kg	<0.0001 %		<**LOD**
37		asbestos	650-013-00-6	- - - - - - -	12001-28-4 132207-32-0 12172-73-5 77536-66-4 77536-68-6 77536-67-5 12001-29-5		<			<		<		**ND**
38		Asbestos Fragments (Visible to Naked Eye).			12001-28-4 132207-32-0 12172-73-5		<			<		<		**ND**

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number							
				77536-66-4 77536-68-6 77536-67-5 12001-29-5							
								Total:	0.0249 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Determinand defined by classifier (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: WS106_1.50

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:
WS106_1.50
Sample Depth:
1.5 m
Moisture content:
12%
(dry weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 12% Dry Weight Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		8.7 mg/kg	1.32	10.256 mg/kg	0.00103 %	✓	
2	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		0.5 mg/kg	3.22	1.437 mg/kg	0.000144 %	✓	
3	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		<0.2 mg/kg	1.142	<0.228 mg/kg	<0.0000228 %		<LOD
4	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		28 mg/kg	1.462	36.539 mg/kg	0.00365 %	✓	
5	chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<1.8 mg/kg	2.27	<4.086 mg/kg	<0.000409 %		<LOD
6	copper { copper sulphate }	029-004-00-0	231-847-6	7758-98-7		22 mg/kg	2.512	49.337 mg/kg	0.00493 %	✓	
7	lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	12 mg/kg		10.714 mg/kg	0.00107 %	✓	
8	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.3 mg/kg	1.353	<0.406 mg/kg	<0.0000406 %		<LOD
9	nickel { nickel sulfate }	028-009-00-5	232-104-9	7786-81-4		29 mg/kg	2.637	68.271 mg/kg	0.00683 %	✓	
10	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<1 mg/kg	2.554	<2.554 mg/kg	<0.000255 %		<LOD
11	zinc { zinc sulphate (hydrous) (mono-, hexa- and hepta hydrate); [1] zinc sulphate (anhydrous) [2] }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		54 mg/kg	4.398	212.043 mg/kg	0.0212 %	✓	
12	TPH (C6 to C40) petroleum group			TPH		<20 mg/kg		<20 mg/kg	<0.002 %		<LOD
13	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
14	benzene	601-020-00-8	200-753-7	71-43-2		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number									
15		toluene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-021-00-3	203-625-9	108-88-3									
16		ethylbenzene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-023-00-4	202-849-4	100-41-4									
17		xylene				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
18		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<1	mg/kg	1.884	<1.884	mg/kg	<0.000188 %		<LOD
		006-007-00-5											
19		pH				8.6	pH		8.6	pH	8.6 pH		
				PH									
20		naphthalene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
21		acenaphthylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-917-1	208-96-8									
22		acenaphthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			201-469-6	83-32-9									
23		fluorene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			201-695-5	86-73-7									
24		phenanthrene				0.21	mg/kg		0.188	mg/kg	0.0000187 %	✓	
			201-581-5	85-01-8									
25		anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			204-371-1	120-12-7									
26		fluoranthene				0.18	mg/kg		0.161	mg/kg	0.0000161 %	✓	
			205-912-4	206-44-0									
27		pyrene				0.14	mg/kg		0.125	mg/kg	0.0000125 %	✓	
			204-927-3	129-00-0									
28		benzo[a]anthracene				0.05	mg/kg		0.0446	mg/kg	0.00000446 %	✓	
		601-033-00-9	200-280-6	56-55-3									
29		chrysene				0.07	mg/kg		0.0625	mg/kg	0.00000625 %	✓	
		601-048-00-0	205-923-4	218-01-9									
30		benzo[b]fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-034-00-4	205-911-9	205-99-2									
31		benzo[k]fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-036-00-5	205-916-6	207-08-9									
32		benzo[a]pyrene; benzo[def]chrysene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-032-00-3	200-028-5	50-32-8									
33		indeno[123-cd]pyrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-893-2	193-39-5									
34		dibenz[a,h]anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
35		benzo[ghi]perylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-883-8	191-24-2									
36		phenol				<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
		604-001-00-2	203-632-7	108-95-2									
37		asbestos				<			<		<		ND
		650-013-00-6	- - - - - - -	12001-28-4 132207-32-0 12172-73-5 77536-66-4 77536-68-6 77536-67-5 12001-29-5									
38		Asbestos Fragments (Visible to Naked Eye).				<			<		<		ND
				12001-28-4 132207-32-0 12172-73-5									

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number							
				77536-66-4 77536-68-6 77536-67-5 12001-29-5							
								Total:	0.042 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Determinand defined by classifier (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: BH102_1.60

Hazardous Waste
Classified as **17 05 03 ***
in the List of Waste

Sample details

Sample name:
BH102_1.60
Sample Depth:
1.6 m
Moisture content:
16%
(dry weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 03 * (Soil and stones containing hazardous substances)

Hazard properties

HP 7: Carcinogenic "waste which induces cancer or increases its incidence"

Hazard Statements hit:

Carc. 1A; H350 "May cause cancer [state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard]."

Because of determinands:

asbestos: (conc.: 0.599%)
Asbestos Fragments (Visible to Naked Eye).: (conc.: 0.599%)

Carc. 1B; H350 "May cause cancer [state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard]."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.247%)

HP 11: Mutagenic "waste which may cause a mutation, that is a permanent change in the amount or structure of the genetic material in a cell"

Hazard Statements hit:

Muta. 1B; H340 "May cause genetic defects [state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard]."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.247%)

Hazard properties (substances considered hazardous until shown otherwise)

HP 3(i): Flammable "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"

Hazard Statements hit:

Flam. Liq. 3; H226 "Flammable liquid and vapour."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.247%)

Determinands

Moisture content: 16% Dry Weight Moisture Correction applied (MC)

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1		arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		78	mg/kg	1.32	88.781	mg/kg	0.00888 %	✓	
2		boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		0.5	mg/kg	3.22	1.388	mg/kg	0.000139 %	✓	
3		cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		3.7	mg/kg	1.142	3.644	mg/kg	0.000364 %	✓	
4		chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		220	mg/kg	1.462	277.192	mg/kg	0.0277 %	✓	
5		chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<1.8	mg/kg	2.27	<4.086	mg/kg	<0.000409 %		<LOD
6		copper { copper sulphate }	029-004-00-0	231-847-6	7758-98-7		580	mg/kg	2.512	1255.851	mg/kg	0.126 %	✓	
7		lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	300	mg/kg		258.621	mg/kg	0.0259 %	✓	
8		mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.3	mg/kg	1.353	<0.406	mg/kg	<0.0000406 %		<LOD
9		nickel { nickel sulfate }	028-009-00-5	232-104-9	7786-81-4		400	mg/kg	2.637	909.202	mg/kg	0.0909 %	✓	
10		selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<1	mg/kg	2.554	<2.554	mg/kg	<0.000255 %		<LOD
11		zinc { zinc sulphate (hydrous) (mono-, hexa- and hepta hydrate); [1] zinc sulphate (anhydrous) [2] }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		260	mg/kg	4.398	985.742	mg/kg	0.0986 %	✓	
12		TPH (C6 to C40) petroleum group			TPH		2870	mg/kg		2474.138	mg/kg	0.247 %	✓	
13		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
14		benzene	601-020-00-8	200-753-7	71-43-2		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
15		toluene	601-021-00-3	203-625-9	108-88-3		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
16		ethylbenzene	601-023-00-4	202-849-4	100-41-4		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
17		xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
18		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<1	mg/kg	1.884	<1.884	mg/kg	<0.000188 %		<LOD
19		pH			PH		7.5	pH		7.5	pH	7.5 pH		
20		naphthalene	601-052-00-2	202-049-5	91-20-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
21		acenaphthylene		205-917-1	208-96-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
22		acenaphthene		201-469-6	83-32-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
23		fluorene		201-695-5	86-73-7		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
24		phenanthrene		201-581-5	85-01-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number									
25		anthracene	204-371-1	120-12-7		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
26		fluoranthene	205-912-4	206-44-0		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
27		pyrene	204-927-3	129-00-0		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
28		benzo[a]anthracene	200-280-6	56-55-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-033-00-9											
29		chrysene	205-923-4	218-01-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-048-00-0											
30		benzo[b]fluoranthene	205-911-9	205-99-2		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-034-00-4											
31		benzo[k]fluoranthene	205-916-6	207-08-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-036-00-5											
32		benzo[a]pyrene; benzo[def]chrysene	200-028-5	50-32-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-032-00-3											
33		indeno[123-cd]pyrene	205-893-2	193-39-5		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
34		dibenz[a,h]anthracene	200-181-8	53-70-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-041-00-2											
35		benzo[ghi]perylene	205-883-8	191-24-2		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
36		phenol	203-632-7	108-95-2		<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
		604-001-00-2											
37		asbestos	- - - - - - -	12001-28-4 132207-32-0 12172-73-5 77536-66-4 77536-68-6 77536-67-5 12001-29-5		6950	mg/kg		5991.379	mg/kg	0.599 %	✓	
		650-013-00-6											
38		Asbestos Fragments (Visible to Naked Eye).		12001-28-4 132207-32-0 12172-73-5 77536-66-4 77536-68-6 77536-67-5 12001-29-5		6950	mg/kg		5991.379	mg/kg	0.599 %	✓	
										Total:	1.825 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Hazardous result
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Determinand defined by classifier (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: WS109_1.70

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:
WS109_1.70
Sample Depth:
1.7 m
Moisture content:
65%
(dry weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 65% Dry Weight Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		7.8 mg/kg	1.32	6.242 mg/kg	0.000624 %	✓	
2	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		4.5 mg/kg	3.22	8.781 mg/kg	0.000878 %	✓	
3	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		0.5 mg/kg	1.142	0.346 mg/kg	0.0000346 %	✓	
4	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		9.3 mg/kg	1.462	8.238 mg/kg	0.000824 %	✓	
5	chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<1.8 mg/kg	2.27	<4.086 mg/kg	<0.000409 %		<LOD
6	copper { copper sulphate }	029-004-00-0	231-847-6	7758-98-7		12 mg/kg	2.512	18.267 mg/kg	0.00183 %	✓	
7	lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	6.2 mg/kg		3.758 mg/kg	0.000376 %	✓	
8	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.3 mg/kg	1.353	<0.406 mg/kg	<0.0000406 %		<LOD
9	nickel { nickel sulfate }	028-009-00-5	232-104-9	7786-81-4		14 mg/kg	2.637	22.372 mg/kg	0.00224 %	✓	
10	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<1 mg/kg	2.554	<2.554 mg/kg	<0.000255 %		<LOD
11	zinc { zinc sulphate (hydrous) (mono-, hexa- and hepta hydrate); [1] zinc sulphate (anhydrous) [2] }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		57 mg/kg	4.398	151.928 mg/kg	0.0152 %	✓	
12	TPH (C6 to C40) petroleum group			TPH		46 mg/kg		27.879 mg/kg	0.00279 %	✓	
13	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
14	benzene	601-020-00-8	200-753-7	71-43-2		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number									
15		toluene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-021-00-3	203-625-9	108-88-3									
16		ethylbenzene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-023-00-4	202-849-4	100-41-4									
17		xylene				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
18		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<1	mg/kg	1.884	<1.884	mg/kg	<0.000188 %		<LOD
		006-007-00-5											
19		pH				4.5	pH		4.5	pH	4.5 pH		
				PH									
20		naphthalene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
21		acenaphthylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-917-1	208-96-8									
22		acenaphthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			201-469-6	83-32-9									
23		fluorene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			201-695-5	86-73-7									
24		phenanthrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			201-581-5	85-01-8									
25		anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			204-371-1	120-12-7									
26		fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-912-4	206-44-0									
27		pyrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			204-927-3	129-00-0									
28		benzo[a]anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-033-00-9	200-280-6	56-55-3									
29		chrysene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-048-00-0	205-923-4	218-01-9									
30		benzo[b]fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-034-00-4	205-911-9	205-99-2									
31		benzo[k]fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-036-00-5	205-916-6	207-08-9									
32		benzo[a]pyrene; benzo[def]chrysene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-032-00-3	200-028-5	50-32-8									
33		indeno[123-cd]pyrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-893-2	193-39-5									
34		dibenz[a,h]anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
35		benzo[ghi]perylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-883-8	191-24-2									
36		phenol				<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
		604-001-00-2	203-632-7	108-95-2									
37		asbestos				<			<		<		ND
		650-013-00-6	- - - - - - -	12001-28-4 132207-32-0 12172-73-5 77536-66-4 77536-68-6 77536-67-5 12001-29-5									
38		Asbestos Fragments (Visible to Naked Eye).				<			<		<		ND
				12001-28-4 132207-32-0 12172-73-5									

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number							
				77536-66-4 77536-68-6 77536-67-5 12001-29-5							
								Total:	0.0259 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Determinand defined by classifier (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Supplementary Hazardous Property Information

HP 3(i): Flammable "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"

Force this Hazardous property to non hazardous because Not considered flammable at the recorded concentration in a soil matrix.

Hazard Statements hit:

Flam. Liq. 3; H226 "Flammable liquid and vapour."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.00279%)

Classification of sample: BH108_2.00

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:
BH108_2.00
Sample Depth:
2 m
Moisture content:
14%
(dry weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 14% Dry Weight Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		8.8 mg/kg	1.32	10.192 mg/kg	0.00102 %	✓	
2	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		0.4 mg/kg	3.22	1.13 mg/kg	0.000113 %	✓	
3	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		<0.2 mg/kg	1.142	<0.228 mg/kg	<0.0000228 %		<LOD
4	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		30 mg/kg	1.462	38.462 mg/kg	0.00385 %	✓	
5	chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<1.8 mg/kg	2.27	<4.086 mg/kg	<0.000409 %		<LOD
6	copper { copper sulphate }	029-004-00-0	231-847-6	7758-98-7		13 mg/kg	2.512	28.642 mg/kg	0.00286 %	✓	
7	lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	15 mg/kg		13.158 mg/kg	0.00132 %	✓	
8	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.3 mg/kg	1.353	<0.406 mg/kg	<0.0000406 %		<LOD
9	nickel { nickel sulfate }	028-009-00-5	232-104-9	7786-81-4		30 mg/kg	2.637	69.386 mg/kg	0.00694 %	✓	
10	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<1 mg/kg	2.554	<2.554 mg/kg	<0.000255 %		<LOD
11	zinc { zinc sulphate (hydrous) (mono-, hexa- and hepta hydrate); [1] zinc sulphate (anhydrous) [2] }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		90 mg/kg	4.398	347.205 mg/kg	0.0347 %	✓	
12	TPH (C6 to C40) petroleum group			TPH		<20 mg/kg		<20 mg/kg	<0.002 %		<LOD
13	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
14	benzene	601-020-00-8	200-753-7	71-43-2		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
15		toluene	601-021-00-3	203-625-9	108-88-3		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<**LOD**
16		ethylbenzene	601-023-00-4	202-849-4	100-41-4		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<**LOD**
17		xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
18		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<1	mg/kg	1.884	<1.884	mg/kg	<0.000188 %		<**LOD**
19		pH			PH		8.2	pH		8.2	pH	8.2 pH		
20		naphthalene	601-052-00-2	202-049-5	91-20-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
21		acenaphthylene		205-917-1	208-96-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
22		acenaphthene		201-469-6	83-32-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
23		fluorene		201-695-5	86-73-7		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
24		phenanthrene		201-581-5	85-01-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
25		anthracene		204-371-1	120-12-7		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
26		fluoranthene		205-912-4	206-44-0		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
27		pyrene		204-927-3	129-00-0		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
28		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
29		chrysene	601-048-00-0	205-923-4	218-01-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
30		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
31		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
32		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
33		indeno[123-cd]pyrene		205-893-2	193-39-5		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
34		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
35		benzo[ghi]perylene		205-883-8	191-24-2		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
36		phenol	604-001-00-2	203-632-7	108-95-2		<1	mg/kg		<1	mg/kg	<0.0001 %		<**LOD**
37		asbestos	650-013-00-6	- - - - - - -	12001-28-4 132207-32-0 12172-73-5 77536-66-4 77536-68-6 77536-67-5 12001-29-5		<			<		<		**ND**
38		Asbestos Fragments (Visible to Naked Eye).			12001-28-4 132207-32-0 12172-73-5		<			<		<		**ND**

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number							
				77536-66-4 77536-68-6 77536-67-5 12001-29-5							
								Total:	0.0539 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Determinand defined by classifier (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP103_2.00

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:
TP103_2.00
Sample Depth:
2 m
Moisture content:
12%
(dry weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 12% Dry Weight Moisture Correction applied (MC)

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1		arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		9.8	mg/kg	1.32	11.553	mg/kg	0.00116 %	✓	
2		boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		0.8	mg/kg	3.22	2.3	mg/kg	0.00023 %	✓	
3		cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		<0.2	mg/kg	1.142	<0.228	mg/kg	<0.0000228 %		<LOD
4		chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		32	mg/kg	1.462	41.759	mg/kg	0.00418 %	✓	
5		chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<1.8	mg/kg	2.27	<4.086	mg/kg	<0.000409 %		<LOD
6		copper { copper sulphate }	029-004-00-0	231-847-6	7758-98-7		21	mg/kg	2.512	47.094	mg/kg	0.00471 %	✓	
7		lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	11	mg/kg		9.821	mg/kg	0.000982 %	✓	
8		mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.3	mg/kg	1.353	<0.406	mg/kg	<0.0000406 %		<LOD
9		nickel { nickel sulfate }	028-009-00-5	232-104-9	7786-81-4		33	mg/kg	2.637	77.688	mg/kg	0.00777 %	✓	
10		selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<1	mg/kg	2.554	<2.554	mg/kg	<0.000255 %		<LOD
11		zinc { zinc sulphate (hydrous) (mono-, hexa- and hepta hydrate); [1] zinc sulphate (anhydrous) [2] }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		60	mg/kg	4.398	235.603	mg/kg	0.0236 %	✓	
12		TPH (C6 to C40) petroleum group			TPH		<20	mg/kg		<20	mg/kg	<0.002 %		<LOD
13		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
14		benzene	601-020-00-8	200-753-7	71-43-2		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number									
15		toluene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-021-00-3	203-625-9	108-88-3									
16		ethylbenzene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-023-00-4	202-849-4	100-41-4									
17		xylene				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
18		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<1	mg/kg	1.884	<1.884	mg/kg	<0.000188 %		<LOD
		006-007-00-5											
19		pH				8.3	pH		8.3	pH	8.3 pH		
				PH									
20		naphthalene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
21		acenaphthylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-917-1	208-96-8									
22		acenaphthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			201-469-6	83-32-9									
23		fluorene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			201-695-5	86-73-7									
24		phenanthrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			201-581-5	85-01-8									
25		anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			204-371-1	120-12-7									
26		fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-912-4	206-44-0									
27		pyrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			204-927-3	129-00-0									
28		benzo[a]anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-033-00-9	200-280-6	56-55-3									
29		chrysene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-048-00-0	205-923-4	218-01-9									
30		benzo[b]fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-034-00-4	205-911-9	205-99-2									
31		benzo[k]fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-036-00-5	205-916-6	207-08-9									
32		benzo[a]pyrene; benzo[def]chrysene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-032-00-3	200-028-5	50-32-8									
33		indeno[123-cd]pyrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-893-2	193-39-5									
34		dibenz[a,h]anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
35		benzo[ghi]perylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-883-8	191-24-2									
36		phenol				<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
		604-001-00-2	203-632-7	108-95-2									
37		asbestos				<			<		<		ND
		650-013-00-6	- - - - - - -	12001-28-4 132207-32-0 12172-73-5 77536-66-4 77536-68-6 77536-67-5 12001-29-5									
38		Asbestos Fragments (Visible to Naked Eye).				<			<		<		ND
				12001-28-4 132207-32-0 12172-73-5									

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number							
				77536-66-4 77536-68-6 77536-67-5 12001-29-5							
								Total:	0.0457 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Determinand defined by classifier (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: WS103_2.00

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:
WS103_2.00
Sample Depth:
2 m
Moisture content:
9.6%
(dry weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 9.6% Dry Weight Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		4.6 mg/kg	1.32	5.542 mg/kg	0.000554 %	✓	
2	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		0.3 mg/kg	3.22	0.881 mg/kg	0.0000881 %	✓	
3	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		<0.2 mg/kg	1.142	<0.228 mg/kg	<0.0000228 %		<LOD
4	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		15 mg/kg	1.462	20.003 mg/kg	0.002 %	✓	
5	chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<1.8 mg/kg	2.27	<4.086 mg/kg	<0.000409 %		<LOD
6	copper { copper sulphate }	029-004-00-0	231-847-6	7758-98-7		17 mg/kg	2.512	38.959 mg/kg	0.0039 %	✓	
7	lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	7.9 mg/kg		7.208 mg/kg	0.000721 %	✓	
8	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.3 mg/kg	1.353	<0.406 mg/kg	<0.0000406 %		<LOD
9	nickel { nickel sulfate }	028-009-00-5	232-104-9	7786-81-4		13 mg/kg	2.637	31.275 mg/kg	0.00313 %	✓	
10	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<1 mg/kg	2.554	<2.554 mg/kg	<0.000255 %		<LOD
11	zinc { zinc sulphate (hydrous) (mono-, hexa- and hepta hydrate); [1] zinc sulphate (anhydrous) [2] }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		28 mg/kg	4.398	112.356 mg/kg	0.0112 %	✓	
12	TPH (C6 to C40) petroleum group			TPH		<20 mg/kg		<20 mg/kg	<0.002 %		<LOD
13	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
14	benzene	601-020-00-8	200-753-7	71-43-2		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
15		toluene	601-021-00-3	203-625-9	108-88-3		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<**LOD**
16		ethylbenzene	601-023-00-4	202-849-4	100-41-4		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<**LOD**
17		xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
18		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<1	mg/kg	1.884	<1.884	mg/kg	<0.000188 %		<**LOD**
19		pH			PH		7.9	pH		7.9	pH	7.9 pH		
20		naphthalene	601-052-00-2	202-049-5	91-20-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
21		acenaphthylene		205-917-1	208-96-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
22		acenaphthene		201-469-6	83-32-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
23		fluorene		201-695-5	86-73-7		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
24		phenanthrene		201-581-5	85-01-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
25		anthracene		204-371-1	120-12-7		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
26		fluoranthene		205-912-4	206-44-0		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
27		pyrene		204-927-3	129-00-0		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
28		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
29		chrysene	601-048-00-0	205-923-4	218-01-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
30		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
31		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
32		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
33		indeno[123-cd]pyrene		205-893-2	193-39-5		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
34		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
35		benzo[ghi]perylene		205-883-8	191-24-2		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
36		phenol	604-001-00-2	203-632-7	108-95-2		<1	mg/kg		<1	mg/kg	<0.0001 %		<**LOD**
37		asbestos	650-013-00-6	- - - - - - -	12001-28-4 132207-32-0 12172-73-5 77536-66-4 77536-68-6 77536-67-5 12001-29-5		<			<		<		**ND**
38		Asbestos Fragments (Visible to Naked Eye).			12001-28-4 132207-32-0 12172-73-5		<			<		<		**ND**

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number							
				77536-66-4 77536-68-6 77536-67-5 12001-29-5							
								Total:	0.0247 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Determinand defined by classifier (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP102_2.00

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:
TP102_2.00
Sample Depth:
2 m
Moisture content:
15%
(dry weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 15% Dry Weight Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		56 mg/kg	1.32	64.294 mg/kg	0.00643 %	✓	
2	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		0.3 mg/kg	3.22	0.84 mg/kg	0.000084 %	✓	
3	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		<0.2 mg/kg	1.142	<0.228 mg/kg	<0.0000228 %		<LOD
4	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		19 mg/kg	1.462	24.147 mg/kg	0.00241 %	✓	
5	chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<1.8 mg/kg	2.27	<4.086 mg/kg	<0.000409 %		<LOD
6	copper { copper sulphate }	029-004-00-0	231-847-6	7758-98-7		14 mg/kg	2.512	30.577 mg/kg	0.00306 %	✓	
7	lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	8.5 mg/kg		7.391 mg/kg	0.000739 %	✓	
8	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.3 mg/kg	1.353	<0.406 mg/kg	<0.0000406 %		<LOD
9	nickel { nickel sulfate }	028-009-00-5	232-104-9	7786-81-4		21 mg/kg	2.637	48.148 mg/kg	0.00481 %	✓	
10	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<1 mg/kg	2.554	<2.554 mg/kg	<0.000255 %		<LOD
11	zinc { zinc sulphate (hydrous) (mono-, hexa- and hepta hydrate); [1] zinc sulphate (anhydrous) [2] }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		58 mg/kg	4.398	221.808 mg/kg	0.0222 %	✓	
12	TPH (C6 to C40) petroleum group			TPH		<20 mg/kg		<20 mg/kg	<0.002 %		<LOD
13	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
14	benzene	601-020-00-8	200-753-7	71-43-2		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number									
15		toluene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-021-00-3	203-625-9	108-88-3									
16		ethylbenzene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-023-00-4	202-849-4	100-41-4									
17		xylene				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
18		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<1	mg/kg	1.884	<1.884	mg/kg	<0.000188 %		<LOD
		006-007-00-5											
19		pH				7.5	pH		7.5	pH	7.5 pH		
				PH									
20		naphthalene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
21		acenaphthylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-917-1	208-96-8									
22		acenaphthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			201-469-6	83-32-9									
23		fluorene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			201-695-5	86-73-7									
24		phenanthrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			201-581-5	85-01-8									
25		anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			204-371-1	120-12-7									
26		fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-912-4	206-44-0									
27		pyrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			204-927-3	129-00-0									
28		benzo[a]anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-033-00-9	200-280-6	56-55-3									
29		chrysene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-048-00-0	205-923-4	218-01-9									
30		benzo[b]fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-034-00-4	205-911-9	205-99-2									
31		benzo[k]fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-036-00-5	205-916-6	207-08-9									
32		benzo[a]pyrene; benzo[def]chrysene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-032-00-3	200-028-5	50-32-8									
33		indeno[123-cd]pyrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-893-2	193-39-5									
34		dibenz[a,h]anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
35		benzo[ghi]perylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-883-8	191-24-2									
36		phenol				<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
		604-001-00-2	203-632-7	108-95-2									
37		asbestos				<			<		<		ND
		650-013-00-6	- - - - - - -	12001-28-4 132207-32-0 12172-73-5 77536-66-4 77536-68-6 77536-67-5 12001-29-5									
38		Asbestos Fragments (Visible to Naked Eye).				<			<		<		ND
				12001-28-4 132207-32-0 12172-73-5									

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number							
				77536-66-4 77536-68-6 77536-67-5 12001-29-5							
								Total:	0.0428 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Determinand defined by classifier (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: BH121_2.00

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:
BH121_2.00
Sample Depth:
2 m
Moisture content:
16%
(dry weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 16% Dry Weight Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		19 mg/kg	1.32	21.626 mg/kg	0.00216 %	✓	
2	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		0.3 mg/kg	3.22	0.833 mg/kg	0.0000833 %	✓	
3	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		<0.2 mg/kg	1.142	<0.228 mg/kg	<0.0000228 %		<LOD
4	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		25 mg/kg	1.462	31.499 mg/kg	0.00315 %	✓	
5	chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<1.8 mg/kg	2.27	<4.086 mg/kg	<0.000409 %		<LOD
6	copper { copper sulphate }	029-004-00-0	231-847-6	7758-98-7		20 mg/kg	2.512	43.305 mg/kg	0.00433 %	✓	
7	lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	8.9 mg/kg		7.672 mg/kg	0.000767 %	✓	
8	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.3 mg/kg	1.353	<0.406 mg/kg	<0.0000406 %		<LOD
9	nickel { nickel sulfate }	028-009-00-5	232-104-9	7786-81-4		23 mg/kg	2.637	52.279 mg/kg	0.00523 %	✓	
10	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<1 mg/kg	2.554	<2.554 mg/kg	<0.000255 %		<LOD
11	zinc { zinc sulphate (hydrous) (mono-, hexa- and hepta hydrate); [1] zinc sulphate (anhydrous) [2] }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		55 mg/kg	4.398	208.522 mg/kg	0.0209 %	✓	
12	TPH (C6 to C40) petroleum group			TPH		<20 mg/kg		<20 mg/kg	<0.002 %		<LOD
13	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
14	benzene	601-020-00-8	200-753-7	71-43-2		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
15		toluene	601-021-00-3	203-625-9	108-88-3		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<**LOD**
16		ethylbenzene	601-023-00-4	202-849-4	100-41-4		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<**LOD**
17		xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
18		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<1	mg/kg	1.884	<1.884	mg/kg	<0.000188 %		<**LOD**
19		pH			PH		8.3	pH		8.3	pH	8.3 pH		
20		naphthalene	601-052-00-2	202-049-5	91-20-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
21		acenaphthylene		205-917-1	208-96-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
22		acenaphthene		201-469-6	83-32-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
23		fluorene		201-695-5	86-73-7		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
24		phenanthrene		201-581-5	85-01-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
25		anthracene		204-371-1	120-12-7		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
26		fluoranthene		205-912-4	206-44-0		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
27		pyrene		204-927-3	129-00-0		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
28		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
29		chrysene	601-048-00-0	205-923-4	218-01-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
30		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
31		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
32		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
33		indeno[123-cd]pyrene		205-893-2	193-39-5		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
34		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
35		benzo[ghi]perylene		205-883-8	191-24-2		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
36		phenol	604-001-00-2	203-632-7	108-95-2		<1	mg/kg		<1	mg/kg	<0.0001 %		<**LOD**
37		asbestos	650-013-00-6	- - - - - - -	12001-28-4 132207-32-0 12172-73-5 77536-66-4 77536-68-6 77536-67-5 12001-29-5		<			<		<		**ND**
38		Asbestos Fragments (Visible to Naked Eye).			12001-28-4 132207-32-0 12172-73-5		<			<		<		**ND**

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number							
				77536-66-4 77536-68-6 77536-67-5 12001-29-5							
								Total:	0.0397 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Determinand defined by classifier (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: BH116_2.00

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:
BH116_2.00
Sample Depth:
2 m
Moisture content:
16%
(dry weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 16% Dry Weight Moisture Correction applied (MC)

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1		arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		8.9	mg/kg	1.32	10.13	mg/kg	0.00101 %	✓	
2		boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		0.2	mg/kg	3.22	0.555	mg/kg	0.0000555 %	✓	
3		cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		<0.2	mg/kg	1.142	<0.228	mg/kg	<0.0000228 %		<LOD
4		chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		18	mg/kg	1.462	22.679	mg/kg	0.00227 %	✓	
5		chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<1.8	mg/kg	2.27	<4.086	mg/kg	<0.000409 %		<LOD
6		copper { copper sulphate }	029-004-00-0	231-847-6	7758-98-7		26	mg/kg	2.512	56.297	mg/kg	0.00563 %	✓	
7		lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	12	mg/kg		10.345	mg/kg	0.00103 %	✓	
8		mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.3	mg/kg	1.353	<0.406	mg/kg	<0.0000406 %		<LOD
9		nickel { nickel sulfate }	028-009-00-5	232-104-9	7786-81-4		20	mg/kg	2.637	45.46	mg/kg	0.00455 %	✓	
10		selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<1	mg/kg	2.554	<2.554	mg/kg	<0.000255 %		<LOD
11		zinc { zinc sulphate (hydrous) (mono-, hexa- and hepta hydrate); [1] zinc sulphate (anhydrous) [2] }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		55	mg/kg	4.398	208.522	mg/kg	0.0209 %	✓	
12		TPH (C6 to C40) petroleum group			TPH		<20	mg/kg		<20	mg/kg	<0.002 %		<LOD
13		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
14		benzene	601-020-00-8	200-753-7	71-43-2		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number									
15		toluene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-021-00-3	203-625-9	108-88-3									
16		ethylbenzene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-023-00-4	202-849-4	100-41-4									
17		xylene				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
18		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<1	mg/kg	1.884	<1.884	mg/kg	<0.000188 %		<LOD
		006-007-00-5											
19		pH				7.6	pH		7.6	pH	7.6 pH		
				PH									
20		naphthalene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
21		acenaphthylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-917-1	208-96-8									
22		acenaphthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			201-469-6	83-32-9									
23		fluorene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			201-695-5	86-73-7									
24		phenanthrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			201-581-5	85-01-8									
25		anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			204-371-1	120-12-7									
26		fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-912-4	206-44-0									
27		pyrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			204-927-3	129-00-0									
28		benzo[a]anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-033-00-9	200-280-6	56-55-3									
29		chrysene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-048-00-0	205-923-4	218-01-9									
30		benzo[b]fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-034-00-4	205-911-9	205-99-2									
31		benzo[k]fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-036-00-5	205-916-6	207-08-9									
32		benzo[a]pyrene; benzo[def]chrysene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-032-00-3	200-028-5	50-32-8									
33		indeno[123-cd]pyrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-893-2	193-39-5									
34		dibenz[a,h]anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
35		benzo[ghi]perylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-883-8	191-24-2									
36		phenol				<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
		604-001-00-2	203-632-7	108-95-2									
37		asbestos				<			<		<		ND
		650-013-00-6	- - - - - - -	12001-28-4 132207-32-0 12172-73-5 77536-66-4 77536-68-6 77536-67-5 12001-29-5									
38		Asbestos Fragments (Visible to Naked Eye).				<			<		<		ND
				12001-28-4 132207-32-0 12172-73-5									

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number							
				77536-66-4 77536-68-6 77536-67-5 12001-29-5							
								Total:	0.0385 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Determinand defined by classifier (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: BH106_2.00

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:
BH106_2.00
Sample Depth:
2 m
Moisture content:
12%
(dry weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 12% Dry Weight Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		9.4 mg/kg	1.32	11.081 mg/kg	0.00111 %	✓	
2	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		0.3 mg/kg	3.22	0.862 mg/kg	0.0000862 %	✓	
3	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		<0.2 mg/kg	1.142	<0.228 mg/kg	<0.0000228 %		<LOD
4	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		28 mg/kg	1.462	36.539 mg/kg	0.00365 %	✓	
5	chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<1.8 mg/kg	2.27	<4.086 mg/kg	<0.000409 %		<LOD
6	copper { copper sulphate }	029-004-00-0	231-847-6	7758-98-7		9.5 mg/kg	2.512	21.305 mg/kg	0.00213 %	✓	
7	lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	13 mg/kg		11.607 mg/kg	0.00116 %	✓	
8	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.3 mg/kg	1.353	<0.406 mg/kg	<0.0000406 %		<LOD
9	nickel { nickel sulfate }	028-009-00-5	232-104-9	7786-81-4		28 mg/kg	2.637	65.917 mg/kg	0.00659 %	✓	
10	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<1 mg/kg	2.554	<2.554 mg/kg	<0.000255 %		<LOD
11	zinc { zinc sulphate (hydrous) (mono-, hexa- and hepta hydrate); [1] zinc sulphate (anhydrous) [2] }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		81 mg/kg	4.398	318.064 mg/kg	0.0318 %	✓	
12	TPH (C6 to C40) petroleum group			TPH		<20 mg/kg		<20 mg/kg	<0.002 %		<LOD
13	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
14	benzene	601-020-00-8	200-753-7	71-43-2		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
15		toluene	601-021-00-3	203-625-9	108-88-3		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<**LOD**
16		ethylbenzene	601-023-00-4	202-849-4	100-41-4		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<**LOD**
17		xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
18		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<1	mg/kg	1.884	<1.884	mg/kg	<0.000188 %		<**LOD**
19		pH			PH		8.4	pH		8.4	pH	8.4 pH		
20		naphthalene	601-052-00-2	202-049-5	91-20-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
21		acenaphthylene		205-917-1	208-96-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
22		acenaphthene		201-469-6	83-32-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
23		fluorene		201-695-5	86-73-7		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
24		phenanthrene		201-581-5	85-01-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
25		anthracene		204-371-1	120-12-7		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
26		fluoranthene		205-912-4	206-44-0		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
27		pyrene		204-927-3	129-00-0		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
28		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
29		chrysene	601-048-00-0	205-923-4	218-01-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
30		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
31		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
32		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
33		indeno[123-cd]pyrene		205-893-2	193-39-5		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
34		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
35		benzo[ghi]perylene		205-883-8	191-24-2		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
36		phenol	604-001-00-2	203-632-7	108-95-2		<1	mg/kg		<1	mg/kg	<0.0001 %		<**LOD**
37		asbestos	650-013-00-6	- - - - - - -	12001-28-4 132207-32-0 12172-73-5 77536-66-4 77536-68-6 77536-67-5 12001-29-5		<			<		<		**ND**
38		Asbestos Fragments (Visible to Naked Eye).			12001-28-4 132207-32-0 12172-73-5		<			<		<		**ND**

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number							
				77536-66-4 77536-68-6 77536-67-5 12001-29-5							
								Total:	0.0496 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Determinand defined by classifier (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: BH117_2.00

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:
BH117_2.00
Sample Depth:
2 m
Moisture content:
18%
(dry weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 18% Dry Weight Moisture Correction applied (MC)

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1		arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		2.3	mg/kg	1.32	2.574	mg/kg	0.000257 %	✓	
2		boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		0.4	mg/kg	3.22	1.091	mg/kg	0.000109 %	✓	
3		cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		<0.2	mg/kg	1.142	<0.228	mg/kg	<0.0000228 %		<**LOD**
4		chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		13	mg/kg	1.462	16.102	mg/kg	0.00161 %	✓	
5		chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<1.8	mg/kg	2.27	<4.086	mg/kg	<0.000409 %		<**LOD**
6		copper { copper sulphate }	029-004-00-0	231-847-6	7758-98-7		15	mg/kg	2.512	31.928	mg/kg	0.00319 %	✓	
7		lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	5.4	mg/kg		4.576	mg/kg	0.000458 %	✓	
8		mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.3	mg/kg	1.353	<0.406	mg/kg	<0.0000406 %		<**LOD**
9		nickel { nickel sulfate }	028-009-00-5	232-104-9	7786-81-4		13	mg/kg	2.637	29.048	mg/kg	0.0029 %	✓	
10		selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<1	mg/kg	2.554	<2.554	mg/kg	<0.000255 %		<**LOD**
11		zinc { zinc sulphate (hydrous) (mono-, hexa- and hepta hydrate); [1] zinc sulphate (anhydrous) [2] }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		33	mg/kg	4.398	122.993	mg/kg	0.0123 %	✓	
12		TPH (C6 to C40) petroleum group			TPH		<20	mg/kg		<20	mg/kg	<0.002 %		<**LOD**
13		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<**LOD**
14		benzene	601-020-00-8	200-753-7	71-43-2		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<**LOD**

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number									
15		toluene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-021-00-3	203-625-9	108-88-3									
16		ethylbenzene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-023-00-4	202-849-4	100-41-4									
17		xylene				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
18		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<1	mg/kg	1.884	<1.884	mg/kg	<0.000188 %		<LOD
		006-007-00-5											
19		pH				8	pH		8	pH	8pH		
				PH									
20		naphthalene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
21		acenaphthylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-917-1	208-96-8									
22		acenaphthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			201-469-6	83-32-9									
23		fluorene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			201-695-5	86-73-7									
24		phenanthrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			201-581-5	85-01-8									
25		anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			204-371-1	120-12-7									
26		fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-912-4	206-44-0									
27		pyrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			204-927-3	129-00-0									
28		benzo[a]anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-033-00-9	200-280-6	56-55-3									
29		chrysene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-048-00-0	205-923-4	218-01-9									
30		benzo[b]fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-034-00-4	205-911-9	205-99-2									
31		benzo[k]fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-036-00-5	205-916-6	207-08-9									
32		benzo[a]pyrene; benzo[def]chrysene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-032-00-3	200-028-5	50-32-8									
33		indeno[123-cd]pyrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-893-2	193-39-5									
34		dibenz[a,h]anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
35		benzo[ghi]perylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-883-8	191-24-2									
36		phenol				<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
		604-001-00-2	203-632-7	108-95-2									
37		asbestos				<			<		<		ND
		650-013-00-6	- - - - - - -	12001-28-4 132207-32-0 12172-73-5 77536-66-4 77536-68-6 77536-67-5 12001-29-5									
38		Asbestos Fragments (Visible to Naked Eye).				<			<		<		ND
				12001-28-4 132207-32-0 12172-73-5									

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number							
				77536-66-4 77536-68-6 77536-67-5 12001-29-5							
								Total:	0.0239 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Determinand defined by classifier (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: BH128_2.00

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:
BH128_2.00
Sample Depth:
2 m
Moisture content:
15%
(dry weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 15% Dry Weight Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		10 mg/kg	1.32	11.481 mg/kg	0.00115 %	✓	
2	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		<0.2 mg/kg	3.22	<0.644 mg/kg	<0.0000644 %		<LOD
3	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		<0.2 mg/kg	1.142	<0.228 mg/kg	<0.0000228 %		<LOD
4	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		28 mg/kg	1.462	35.586 mg/kg	0.00356 %	✓	
5	chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<1.8 mg/kg	2.27	<4.086 mg/kg	<0.000409 %		<LOD
6	copper { copper sulphate }	029-004-00-0	231-847-6	7758-98-7		20 mg/kg	2.512	43.682 mg/kg	0.00437 %	✓	
7	lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	12 mg/kg		10.435 mg/kg	0.00104 %	✓	
8	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.3 mg/kg	1.353	<0.406 mg/kg	<0.0000406 %		<LOD
9	nickel { nickel sulfate }	028-009-00-5	232-104-9	7786-81-4		30 mg/kg	2.637	68.783 mg/kg	0.00688 %	✓	
10	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<1 mg/kg	2.554	<2.554 mg/kg	<0.000255 %		<LOD
11	zinc { zinc sulphate (hydrous) (mono-, hexa- and hepta hydrate); [1] zinc sulphate (anhydrous) [2] }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		61 mg/kg	4.398	233.281 mg/kg	0.0233 %	✓	
12	TPH (C6 to C40) petroleum group			TPH		14 mg/kg		12.174 mg/kg	0.00122 %	✓	
13	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
14	benzene	601-020-00-8	200-753-7	71-43-2		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
15		toluene	601-021-00-3	203-625-9	108-88-3		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<**LOD**
16		ethylbenzene	601-023-00-4	202-849-4	100-41-4		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<**LOD**
17		xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
18		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<1	mg/kg	1.884	<1.884	mg/kg	<0.000188 %		<**LOD**
19		pH			PH		8.4	pH		8.4	pH	8.4 pH		
20		naphthalene	601-052-00-2	202-049-5	91-20-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
21		acenaphthylene		205-917-1	208-96-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
22		acenaphthene		201-469-6	83-32-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
23		fluorene		201-695-5	86-73-7		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
24		phenanthrene		201-581-5	85-01-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
25		anthracene		204-371-1	120-12-7		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
26		fluoranthene		205-912-4	206-44-0		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
27		pyrene		204-927-3	129-00-0		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
28		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
29		chrysene	601-048-00-0	205-923-4	218-01-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
30		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
31		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
32		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
33		indeno[123-cd]pyrene		205-893-2	193-39-5		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
34		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
35		benzo[ghi]perylene		205-883-8	191-24-2		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
36		phenol	604-001-00-2	203-632-7	108-95-2		<1	mg/kg		<1	mg/kg	<0.0001 %		<**LOD**
37		asbestos	650-013-00-6	- - - - - - -	12001-28-4 132207-32-0 12172-73-5 77536-66-4 77536-68-6 77536-67-5 12001-29-5		<			<		<		**ND**
38		Asbestos Fragments (Visible to Naked Eye).			12001-28-4 132207-32-0 12172-73-5		<			<		<		**ND**

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number							
				77536-66-4 77536-68-6 77536-67-5 12001-29-5							
								Total:	0.0427 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Determinand defined by classifier (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Supplementary Hazardous Property Information

HP 3(i): Flammable "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"

Force this Hazardous property to non hazardous because Not considered flammable at the recorded concentration in a soil matrix.

Hazard Statements hit:

Flam. Liq. 3; H226 "Flammable liquid and vapour."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.00122%)

Classification of sample: BH120_2.00

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:
BH120_2.00
Sample Depth:
2 m
Moisture content:
11%
(dry weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 11% Dry Weight Moisture Correction applied (MC)

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1		arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		11	mg/kg	1.32	13.084	mg/kg	0.00131 %	✓	
2		boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		0.3	mg/kg	3.22	0.87	mg/kg	0.000087 %	✓	
3		cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		<0.2	mg/kg	1.142	<0.228	mg/kg	<0.0000228 %		<LOD
4		chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		22	mg/kg	1.462	28.968	mg/kg	0.0029 %	✓	
5		chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<1.8	mg/kg	2.27	<4.086	mg/kg	<0.000409 %		<LOD
6		copper { copper sulphate }	029-004-00-0	231-847-6	7758-98-7		33	mg/kg	2.512	74.672	mg/kg	0.00747 %	✓	
7		lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	9.2	mg/kg		8.288	mg/kg	0.000829 %	✓	
8		mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.3	mg/kg	1.353	<0.406	mg/kg	<0.0000406 %		<LOD
9		nickel { nickel sulfate }	028-009-00-5	232-104-9	7786-81-4		24	mg/kg	2.637	57.009	mg/kg	0.0057 %	✓	
10		selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<1	mg/kg	2.554	<2.554	mg/kg	<0.000255 %		<LOD
11		zinc { zinc sulphate (hydrous) (mono-, hexa- and hepta hydrate); [1] zinc sulphate (anhydrous) [2] }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		61	mg/kg	4.398	241.688	mg/kg	0.0242 %	✓	
12		TPH (C6 to C40) petroleum group			TPH		<20	mg/kg		<20	mg/kg	<0.002 %		<LOD
13		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
14		benzene	601-020-00-8	200-753-7	71-43-2		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number									
15		toluene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-021-00-3	203-625-9	108-88-3									
16		ethylbenzene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-023-00-4	202-849-4	100-41-4									
17		xylene				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
18		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<1	mg/kg	1.884	<1.884	mg/kg	<0.000188 %		<LOD
		006-007-00-5											
19		pH				8.3	pH		8.3	pH	8.3 pH		
				PH									
20		naphthalene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
21		acenaphthylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-917-1	208-96-8									
22		acenaphthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			201-469-6	83-32-9									
23		fluorene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			201-695-5	86-73-7									
24		phenanthrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			201-581-5	85-01-8									
25		anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			204-371-1	120-12-7									
26		fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-912-4	206-44-0									
27		pyrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			204-927-3	129-00-0									
28		benzo[a]anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-033-00-9	200-280-6	56-55-3									
29		chrysene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-048-00-0	205-923-4	218-01-9									
30		benzo[b]fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-034-00-4	205-911-9	205-99-2									
31		benzo[k]fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-036-00-5	205-916-6	207-08-9									
32		benzo[a]pyrene; benzo[def]chrysene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-032-00-3	200-028-5	50-32-8									
33		indeno[123-cd]pyrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-893-2	193-39-5									
34		dibenz[a,h]anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
35		benzo[ghi]perylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-883-8	191-24-2									
36		phenol				<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
		604-001-00-2	203-632-7	108-95-2									
37		asbestos				<			<		<		ND
		650-013-00-6	- - - - - - -	12001-28-4 132207-32-0 12172-73-5 77536-66-4 77536-68-6 77536-67-5 12001-29-5									
38		Asbestos Fragments (Visible to Naked Eye).				<			<		<		ND
				12001-28-4 132207-32-0 12172-73-5									

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number							
				77536-66-4 77536-68-6 77536-67-5 12001-29-5							
								Total:	0.0456 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Determinand defined by classifier (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: BH115_2.00

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:
BH115_2.00
Sample Depth:
2 m
Moisture content:
9.4%
(dry weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 9.4% Dry Weight Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		8.9 mg/kg	1.32	10.741 mg/kg	0.00107 %	✓	
2	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		0.2 mg/kg	3.22	0.589 mg/kg	0.0000589 %	✓	
3	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		<0.2 mg/kg	1.142	<0.228 mg/kg	<0.0000228 %		<LOD
4	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		24 mg/kg	1.462	32.063 mg/kg	0.00321 %	✓	
5	chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<1.8 mg/kg	2.27	<4.086 mg/kg	<0.000409 %		<LOD
6	copper { copper sulphate }	029-004-00-0	231-847-6	7758-98-7		15 mg/kg	2.512	34.438 mg/kg	0.00344 %	✓	
7	lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	8.2 mg/kg		7.495 mg/kg	0.00075 %	✓	
8	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.3 mg/kg	1.353	<0.406 mg/kg	<0.0000406 %		<LOD
9	nickel { nickel sulfate }	028-009-00-5	232-104-9	7786-81-4		23 mg/kg	2.637	55.433 mg/kg	0.00554 %	✓	
10	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<1 mg/kg	2.554	<2.554 mg/kg	<0.000255 %		<LOD
11	zinc { zinc sulphate (hydrous) (mono-, hexa- and hepta hydrate); [1] zinc sulphate (anhydrous) [2] }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		72 mg/kg	4.398	289.443 mg/kg	0.0289 %	✓	
12	TPH (C6 to C40) petroleum group			TPH		<20 mg/kg		<20 mg/kg	<0.002 %		<LOD
13	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
14	benzene	601-020-00-8	200-753-7	71-43-2		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
15		toluene	601-021-00-3	203-625-9	108-88-3		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<**LOD**
16		ethylbenzene	601-023-00-4	202-849-4	100-41-4		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<**LOD**
17		xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
18		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<1	mg/kg	1.884	<1.884	mg/kg	<0.000188 %		<**LOD**
19		pH			PH		8.4	pH		8.4	pH	8.4 pH		
20		naphthalene	601-052-00-2	202-049-5	91-20-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
21		acenaphthylene		205-917-1	208-96-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
22		acenaphthene		201-469-6	83-32-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
23		fluorene		201-695-5	86-73-7		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
24		phenanthrene		201-581-5	85-01-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
25		anthracene		204-371-1	120-12-7		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
26		fluoranthene		205-912-4	206-44-0		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
27		pyrene		204-927-3	129-00-0		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
28		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
29		chrysene	601-048-00-0	205-923-4	218-01-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
30		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
31		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
32		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
33		indeno[123-cd]pyrene		205-893-2	193-39-5		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
34		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
35		benzo[ghi]perylene		205-883-8	191-24-2		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
36		phenol	604-001-00-2	203-632-7	108-95-2		<1	mg/kg		<1	mg/kg	<0.0001 %		<**LOD**
37		asbestos	650-013-00-6	- - - - - - -	12001-28-4 132207-32-0 12172-73-5 77536-66-4 77536-68-6 77536-67-5 12001-29-5		<			<		<		**ND**
38		Asbestos Fragments (Visible to Naked Eye).			12001-28-4 132207-32-0 12172-73-5		<			<		<		**ND**

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number							
				77536-66-4 77536-68-6 77536-67-5 12001-29-5							
								Total:	0.0461 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Determinand defined by classifier (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP101_2.00

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:
TP101_2.00
Sample Depth:
2 m
Moisture content:
12%
(dry weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 12% Dry Weight Moisture Correction applied (MC)

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1		arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		5.2	mg/kg	1.32	6.13	mg/kg	0.000613 %	✓	
2		boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		0.3	mg/kg	3.22	0.862	mg/kg	0.0000862 %	✓	
3		cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		<0.2	mg/kg	1.142	<0.228	mg/kg	<0.0000228 %		<**LOD**
4		chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		27	mg/kg	1.462	35.234	mg/kg	0.00352 %	✓	
5		chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<1.8	mg/kg	2.27	<4.086	mg/kg	<0.000409 %		<**LOD**
6		copper { copper sulphate }	029-004-00-0	231-847-6	7758-98-7		8.1	mg/kg	2.512	18.165	mg/kg	0.00182 %	✓	
7		lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	7.6	mg/kg		6.786	mg/kg	0.000679 %	✓	
8		mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.3	mg/kg	1.353	<0.406	mg/kg	<0.0000406 %		<**LOD**
9		nickel { nickel sulfate }	028-009-00-5	232-104-9	7786-81-4		23	mg/kg	2.637	54.146	mg/kg	0.00541 %	✓	
10		selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<1	mg/kg	2.554	<2.554	mg/kg	<0.000255 %		<**LOD**
11		zinc { zinc sulphate (hydrous) (mono-, hexa- and hepta hydrate); [1] zinc sulphate (anhydrous) [2] }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		86	mg/kg	4.398	337.698	mg/kg	0.0338 %	✓	
12		TPH (C6 to C40) petroleum group			TPH		<20	mg/kg		<20	mg/kg	<0.002 %		<**LOD**
13		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<**LOD**
14		benzene	601-020-00-8	200-753-7	71-43-2		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<**LOD**

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number									
15		toluene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-021-00-3	203-625-9	108-88-3									
16		ethylbenzene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-023-00-4	202-849-4	100-41-4									
17		xylene				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
18		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<1	mg/kg	1.884	<1.884	mg/kg	<0.000188 %		<LOD
		006-007-00-5											
19		pH				8.5	pH		8.5	pH	8.5 pH		
				PH									
20		naphthalene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
21		acenaphthylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-917-1	208-96-8									
22		acenaphthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			201-469-6	83-32-9									
23		fluorene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			201-695-5	86-73-7									
24		phenanthrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			201-581-5	85-01-8									
25		anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			204-371-1	120-12-7									
26		fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-912-4	206-44-0									
27		pyrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			204-927-3	129-00-0									
28		benzo[a]anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-033-00-9	200-280-6	56-55-3									
29		chrysene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-048-00-0	205-923-4	218-01-9									
30		benzo[b]fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-034-00-4	205-911-9	205-99-2									
31		benzo[k]fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-036-00-5	205-916-6	207-08-9									
32		benzo[a]pyrene; benzo[def]chrysene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-032-00-3	200-028-5	50-32-8									
33		indeno[123-cd]pyrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-893-2	193-39-5									
34		dibenz[a,h]anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
35		benzo[ghi]perylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-883-8	191-24-2									
36		phenol				<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
		604-001-00-2	203-632-7	108-95-2									
37		asbestos				<			<		<		ND
		650-013-00-6	- - - - - - -	12001-28-4 132207-32-0 12172-73-5 77536-66-4 77536-68-6 77536-67-5 12001-29-5									
38		Asbestos Fragments (Visible to Naked Eye).				<			<		<		ND
				12001-28-4 132207-32-0 12172-73-5									

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number							
				77536-66-4 77536-68-6 77536-67-5 12001-29-5							
								Total:	0.049 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Determinand defined by classifier (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: BH114_2.00

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:
BH114_2.00
Sample Depth:
2 m
Moisture content:
13%
(dry weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 13% Dry Weight Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		2.5 mg/kg	1.32	2.921 mg/kg	0.000292 %	✓	
2	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		<0.2 mg/kg	3.22	<0.644 mg/kg	<0.0000644 %		<**LOD**
3	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		0.3 mg/kg	1.142	0.303 mg/kg	0.0000303 %	✓	
4	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		8.1 mg/kg	1.462	10.477 mg/kg	0.00105 %	✓	
5	chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<1.8 mg/kg	2.27	<4.086 mg/kg	<0.000409 %		<**LOD**
6	copper { copper sulphate }	029-004-00-0	231-847-6	7758-98-7		18 mg/kg	2.512	40.009 mg/kg	0.004 %	✓	
7	lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	6 mg/kg		5.31 mg/kg	0.000531 %	✓	
8	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.3 mg/kg	1.353	<0.406 mg/kg	<0.0000406 %		<**LOD**
9	nickel { nickel sulfate }	028-009-00-5	232-104-9	7786-81-4		6.4 mg/kg	2.637	14.933 mg/kg	0.00149 %	✓	
10	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<1 mg/kg	2.554	<2.554 mg/kg	<0.000255 %		<**LOD**
11	zinc { zinc sulphate (hydrous) (mono-, hexa- and hepta hydrate); [1] zinc sulphate (anhydrous) [2] }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		20 mg/kg	4.398	77.839 mg/kg	0.00778 %	✓	
12	TPH (C6 to C40) petroleum group			TPH		<20 mg/kg		<20 mg/kg	<0.002 %		<**LOD**
13	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<**LOD**
14	benzene	601-020-00-8	200-753-7	71-43-2		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<**LOD**

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
15		toluene	601-021-00-3	203-625-9	108-88-3		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<**LOD**
16		ethylbenzene	601-023-00-4	202-849-4	100-41-4		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<**LOD**
17		xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
18		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<1	mg/kg	1.884	<1.884	mg/kg	<0.000188 %		<**LOD**
19		pH			PH		7.9	pH		7.9	pH	7.9 pH		
20		naphthalene	601-052-00-2	202-049-5	91-20-3		0.29	mg/kg		0.257	mg/kg	0.0000257 %	✓	
21		acenaphthylene		205-917-1	208-96-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
22		acenaphthene		201-469-6	83-32-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
23		fluorene		201-695-5	86-73-7		0.08	mg/kg		0.0708	mg/kg	0.00000708 %	✓	
24		phenanthrene		201-581-5	85-01-8		0.23	mg/kg		0.204	mg/kg	0.0000204 %	✓	
25		anthracene		204-371-1	120-12-7		0.06	mg/kg		0.0531	mg/kg	0.00000531 %	✓	
26		fluoranthene		205-912-4	206-44-0		0.14	mg/kg		0.124	mg/kg	0.0000124 %	✓	
27		pyrene		204-927-3	129-00-0		0.17	mg/kg		0.15	mg/kg	0.000015 %	✓	
28		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		0.06	mg/kg		0.0531	mg/kg	0.00000531 %	✓	
29		chrysene	601-048-00-0	205-923-4	218-01-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
30		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
31		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
32		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
33		indeno[123-cd]pyrene		205-893-2	193-39-5		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
34		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
35		benzo[ghi]perylene		205-883-8	191-24-2		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
36		phenol	604-001-00-2	203-632-7	108-95-2		<1	mg/kg		<1	mg/kg	<0.0001 %		<**LOD**
37		asbestos	650-013-00-6	- - - - - - -	12001-28-4 132207-32-0 12172-73-5 77536-66-4 77536-68-6 77536-67-5 12001-29-5		<			<		<		**ND**
38		Asbestos Fragments (Visible to Naked Eye).			12001-28-4 132207-32-0 12172-73-5		<			<		<		**ND**

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number							
				77536-66-4 77536-68-6 77536-67-5 12001-29-5							
								Total:	0.0184 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Determinand defined by classifier (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: BH119_2.00

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:
BH119_2.00
Sample Depth:
2 m
Moisture content:
12%
(dry weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 12% Dry Weight Moisture Correction applied (MC)

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1		arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		9.5	mg/kg	1.32	11.199	mg/kg	0.00112 %	✓	
2		boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		<0.2	mg/kg	3.22	<0.644	mg/kg	<0.0000644 %		<LOD
3		cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		<0.2	mg/kg	1.142	<0.228	mg/kg	<0.0000228 %		<LOD
4		chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		18	mg/kg	1.462	23.489	mg/kg	0.00235 %	✓	
5		chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<1.8	mg/kg	2.27	<4.086	mg/kg	<0.000409 %		<LOD
6		copper { copper sulphate }	029-004-00-0	231-847-6	7758-98-7		15	mg/kg	2.512	33.639	mg/kg	0.00336 %	✓	
7		lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	7.3	mg/kg		6.518	mg/kg	0.000652 %	✓	
8		mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.3	mg/kg	1.353	<0.406	mg/kg	<0.0000406 %		<LOD
9		nickel { nickel sulfate }	028-009-00-5	232-104-9	7786-81-4		19	mg/kg	2.637	44.729	mg/kg	0.00447 %	✓	
10		selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<1	mg/kg	2.554	<2.554	mg/kg	<0.000255 %		<LOD
11		zinc { zinc sulphate (hydrous) (mono-, hexa- and hepta hydrate); [1] zinc sulphate (anhydrous) [2] }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		43	mg/kg	4.398	168.849	mg/kg	0.0169 %	✓	
12		TPH (C6 to C40) petroleum group			TPH		<20	mg/kg		<20	mg/kg	<0.002 %		<LOD
13		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
14		benzene	601-020-00-8	200-753-7	71-43-2		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number									
15		toluene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-021-00-3	203-625-9	108-88-3									
16		ethylbenzene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-023-00-4	202-849-4	100-41-4									
17		xylene				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
18		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<1	mg/kg	1.884	<1.884	mg/kg	<0.000188 %		<LOD
		006-007-00-5											
19		pH				8.1	pH		8.1	pH	8.1 pH		
				PH									
20		naphthalene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
21		acenaphthylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-917-1	208-96-8									
22		acenaphthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			201-469-6	83-32-9									
23		fluorene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			201-695-5	86-73-7									
24		phenanthrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			201-581-5	85-01-8									
25		anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			204-371-1	120-12-7									
26		fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-912-4	206-44-0									
27		pyrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			204-927-3	129-00-0									
28		benzo[a]anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-033-00-9	200-280-6	56-55-3									
29		chrysene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-048-00-0	205-923-4	218-01-9									
30		benzo[b]fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-034-00-4	205-911-9	205-99-2									
31		benzo[k]fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-036-00-5	205-916-6	207-08-9									
32		benzo[a]pyrene; benzo[def]chrysene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-032-00-3	200-028-5	50-32-8									
33		indeno[123-cd]pyrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-893-2	193-39-5									
34		dibenz[a,h]anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
35		benzo[ghi]perylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-883-8	191-24-2									
36		phenol				<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
		604-001-00-2	203-632-7	108-95-2									
37		asbestos				<			<		<		ND
		650-013-00-6	- - - - - - -	12001-28-4 132207-32-0 12172-73-5 77536-66-4 77536-68-6 77536-67-5 12001-29-5									
38		Asbestos Fragments (Visible to Naked Eye).				<			<		<		ND
				12001-28-4 132207-32-0 12172-73-5									

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number							
				77536-66-4 77536-68-6 77536-67-5 12001-29-5							
								Total:	0.032 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Determinand defined by classifier (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: BH110_2.00

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:
BH110_2.00
Sample Depth:
2 m
Moisture content:
9.4%
(dry weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 9.4% Dry Weight Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		3.9 mg/kg	1.32	4.707 mg/kg	0.000471 %	✓	
2	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		0.4 mg/kg	3.22	1.177 mg/kg	0.000118 %	✓	
3	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		<0.2 mg/kg	1.142	<0.228 mg/kg	<0.0000228 %		<LOD
4	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		5.6 mg/kg	1.462	7.481 mg/kg	0.000748 %	✓	
5	chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<1.8 mg/kg	2.27	<4.086 mg/kg	<0.000409 %		<LOD
6	copper { copper sulphate }	029-004-00-0	231-847-6	7758-98-7		6.2 mg/kg	2.512	14.235 mg/kg	0.00142 %	✓	
7	lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	6.6 mg/kg		6.033 mg/kg	0.000603 %	✓	
8	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.3 mg/kg	1.353	<0.406 mg/kg	<0.0000406 %		<LOD
9	nickel { nickel sulfate }	028-009-00-5	232-104-9	7786-81-4		7.2 mg/kg	2.637	17.353 mg/kg	0.00174 %	✓	
10	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<1 mg/kg	2.554	<2.554 mg/kg	<0.000255 %		<LOD
11	zinc { zinc sulphate (hydrous) (mono-, hexa- and hepta hydrate); [1] zinc sulphate (anhydrous) [2] }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		17 mg/kg	4.398	68.341 mg/kg	0.00683 %	✓	
12	TPH (C6 to C40) petroleum group			TPH		<20 mg/kg		<20 mg/kg	<0.002 %		<LOD
13	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
14	benzene	601-020-00-8	200-753-7	71-43-2		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
15		toluene	601-021-00-3	203-625-9	108-88-3		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<**LOD**
16		ethylbenzene	601-023-00-4	202-849-4	100-41-4		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<**LOD**
17		xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
18		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<1	mg/kg	1.884	<1.884	mg/kg	<0.000188 %		<**LOD**
19		pH			PH		8.5	pH		8.5	pH	8.5 pH		
20		naphthalene	601-052-00-2	202-049-5	91-20-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
21		acenaphthylene		205-917-1	208-96-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
22		acenaphthene		201-469-6	83-32-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
23		fluorene		201-695-5	86-73-7		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
24		phenanthrene		201-581-5	85-01-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
25		anthracene		204-371-1	120-12-7		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
26		fluoranthene		205-912-4	206-44-0		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
27		pyrene		204-927-3	129-00-0		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
28		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
29		chrysene	601-048-00-0	205-923-4	218-01-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
30		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
31		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
32		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
33		indeno[123-cd]pyrene		205-893-2	193-39-5		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
34		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
35		benzo[ghi]perylene		205-883-8	191-24-2		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
36		phenol	604-001-00-2	203-632-7	108-95-2		<1	mg/kg		<1	mg/kg	<0.0001 %		<**LOD**
37		asbestos	650-013-00-6	- - - - - - -	12001-28-4 132207-32-0 12172-73-5 77536-66-4 77536-68-6 77536-67-5 12001-29-5		<			<		<		**ND**
38		Asbestos Fragments (Visible to Naked Eye).			12001-28-4 132207-32-0 12172-73-5		<			<		<		**ND**

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number							
				77536-66-4 77536-68-6 77536-67-5 12001-29-5							
								Total:	0.015 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Determinand defined by classifier (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: BH102_2.30

Hazardous Waste
Classified as **17 05 03 ***
in the List of Waste

Sample details

Sample name:
BH102_2.30
Sample Depth:
2.3 m
Moisture content:
15%
(dry weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 03 * (Soil and stones containing hazardous substances)

Hazard properties

HP 7: Carcinogenic "waste which induces cancer or increases its incidence"

Hazard Statements hit:

Carc. 1A; H350i "May cause cancer by inhalation."

Because of determinand:

nickel sulfate: (compound conc.: 0.252%)

HP 14: Ecotoxic "waste which presents or may present immediate or delayed risks for one or more sectors of the environment"

Hazard Statements hit:

Aquatic Chronic 1; H410 "Very toxic to aquatic life with long lasting effects."

Because of determinands:

copper sulphate: (compound conc.: 1.114%)
lead compounds with the exception of those specified elsewhere in this Annex: (Note 1 conc.: 0.148%)
nickel sulfate: (compound conc.: 0.252%)
zinc sulphate (hydrous) (mono-, hexa- and hepta hydrate); [1] zinc sulphate (anhydrous) [2]: (compound conc.: 3.098%)

Determinands

Moisture content: 15% Dry Weight Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		200 mg/kg	1.32	229.622 mg/kg	0.023 %	✓	
2	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		1.7 mg/kg	3.22	4.76 mg/kg	0.000476 %	✓	
3	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		31 mg/kg	1.142	30.793 mg/kg	0.00308 %	✓	
4	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		480 mg/kg	1.462	610.041 mg/kg	0.061 %	✓	
5	chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<1.8 mg/kg	2.27	<4.086 mg/kg	<0.000409 %		<**LOD**
6	copper { copper sulphate }	029-004-00-0	231-847-6	7758-98-7		5100 mg/kg	2.512	11138.851 mg/kg	1.114 %	✓	
7	lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	1700 mg/kg		1478.261 mg/kg	0.148 %	✓	

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number									
8		mercury { mercury dichloride }				<0.3	mg/kg	1.353	<0.406	mg/kg	<0.0000406 %		<LOD
		080-010-00-X	231-299-8	7487-94-7									
9		nickel { nickel sulfate }				1100	mg/kg	2.637	2522.046	mg/kg	0.252 %	✓	
		028-009-00-5	232-104-9	7786-81-4									
10		selenium { nickel selenate }				2.4	mg/kg	2.554	5.33	mg/kg	0.000533 %	✓	
		028-031-00-5	239-125-2	15060-62-5									
11		zinc { zinc sulphate (hydrous) (mono-, hexa- and hepta hydrate); [1] zinc sulphate (anhydrous) [2] }				8100	mg/kg	4.398	30976.696	mg/kg	3.098 %	✓	
		030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]									
12		TPH (C6 to C40) petroleum group				530	mg/kg		460.87	mg/kg	0.0461 %	✓	
				TPH									
13		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		603-181-00-X	216-653-1	1634-04-4									
14		benzene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-020-00-8	200-753-7	71-43-2									
15		toluene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-021-00-3	203-625-9	108-88-3									
16		ethylbenzene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-023-00-4	202-849-4	100-41-4									
17		xylene				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
18		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<1	mg/kg	1.884	<1.884	mg/kg	<0.000188 %		<LOD
		006-007-00-5											
19		pH				7.2	pH		7.2	pH	7.2 pH		
				PH									
20		naphthalene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
21		acenaphthylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-917-1	208-96-8									
22		acenaphthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			201-469-6	83-32-9									
23		fluorene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			201-695-5	86-73-7									
24		phenanthrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			201-581-5	85-01-8									
25		anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			204-371-1	120-12-7									
26		fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-912-4	206-44-0									
27		pyrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			204-927-3	129-00-0									
28		benzo[a]anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-033-00-9	200-280-6	56-55-3									
29		chrysene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-048-00-0	205-923-4	218-01-9									
30		benzo[b]fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-034-00-4	205-911-9	205-99-2									
31		benzo[k]fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-036-00-5	205-916-6	207-08-9									
32		benzo[a]pyrene; benzo[def]chrysene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-032-00-3	200-028-5	50-32-8									
33		indeno[123-cd]pyrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-893-2	193-39-5									

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number									
34		dibenz[a,h]anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-041-00-2	200-181-8	53-70-3									
35		benzo[ghi]perylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			205-883-8	191-24-2									
36		phenol				<1	mg/kg		<1	mg/kg	<0.0001 %		<**LOD**
		604-001-00-2	203-632-7	108-95-2									
37		asbestos				<10	mg/kg		<10	mg/kg	<0.001 %		<**LOD**
		650-013-00-6	- - - - - - -	12001-28-4 132207-32-0 12172-73-5 77536-66-4 77536-68-6 77536-67-5 12001-29-5									
38		Asbestos Fragments (Visible to Naked Eye).				<			<		<		**ND**
				12001-28-4 132207-32-0 12172-73-5 77536-66-4 77536-68-6 77536-67-5 12001-29-5									
										Total:	4.748 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Hazardous result
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Determinand defined by classifier (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Supplementary Hazardous Property Information

HP 3(i): Flammable "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"

Force this Hazardous property to non hazardous because Not considered flammable at the recorded concentration in a soil matrix.

Hazard Statements hit:

Flam. Liq. 3; H226 "Flammable liquid and vapour."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.0461%)

Classification of sample: TP102_2.50

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:
TP102_2.50
Sample Depth:
2.5 m
Moisture content:
13%
(dry weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 13% Dry Weight Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		5.9 mg/kg	1.32	6.894 mg/kg	0.000689 %	✓	
2	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		0.4 mg/kg	3.22	1.14 mg/kg	0.000114 %	✓	
3	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		<0.2 mg/kg	1.142	<0.228 mg/kg	<0.0000228 %		<LOD
4	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		27 mg/kg	1.462	34.922 mg/kg	0.00349 %	✓	
5	chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<1.8 mg/kg	2.27	<4.086 mg/kg	<0.000409 %		<LOD
6	copper { copper sulphate }	029-004-00-0	231-847-6	7758-98-7		16 mg/kg	2.512	35.564 mg/kg	0.00356 %	✓	
7	lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	8.1 mg/kg		7.168 mg/kg	0.000717 %	✓	
8	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.3 mg/kg	1.353	<0.406 mg/kg	<0.0000406 %		<LOD
9	nickel { nickel sulfate }	028-009-00-5	232-104-9	7786-81-4		27 mg/kg	2.637	63 mg/kg	0.0063 %	✓	
10	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<1 mg/kg	2.554	<2.554 mg/kg	<0.000255 %		<LOD
11	zinc { zinc sulphate (hydrous) (mono-, hexa- and hepta hydrate); [1] zinc sulphate (anhydrous) [2] }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		89 mg/kg	4.398	346.385 mg/kg	0.0346 %	✓	
12	TPH (C6 to C40) petroleum group			TPH		<20 mg/kg		<20 mg/kg	<0.002 %		<LOD
13	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
14	benzene	601-020-00-8	200-753-7	71-43-2		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
15		toluene	601-021-00-3	203-625-9	108-88-3		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<**LOD**
16		ethylbenzene	601-023-00-4	202-849-4	100-41-4		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<**LOD**
17		xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
18		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<1	mg/kg	1.884	<1.884	mg/kg	<0.000188 %		<**LOD**
19		pH			PH		8.3	pH		8.3	pH	8.3 pH		
20		naphthalene	601-052-00-2	202-049-5	91-20-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
21		acenaphthylene		205-917-1	208-96-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
22		acenaphthene		201-469-6	83-32-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
23		fluorene		201-695-5	86-73-7		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
24		phenanthrene		201-581-5	85-01-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
25		anthracene		204-371-1	120-12-7		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
26		fluoranthene		205-912-4	206-44-0		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
27		pyrene		204-927-3	129-00-0		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
28		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
29		chrysene	601-048-00-0	205-923-4	218-01-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
30		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
31		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
32		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
33		indeno[123-cd]pyrene		205-893-2	193-39-5		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
34		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
35		benzo[ghi]perylene		205-883-8	191-24-2		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
36		phenol	604-001-00-2	203-632-7	108-95-2		<1	mg/kg		<1	mg/kg	<0.0001 %		<**LOD**
37		asbestos	650-013-00-6	- - - - - - -	12001-28-4 132207-32-0 12172-73-5 77536-66-4 77536-68-6 77536-67-5 12001-29-5		<			<		<		**ND**
38		Asbestos Fragments (Visible to Naked Eye).			12001-28-4 132207-32-0 12172-73-5		<			<		<		**ND**

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number							
				77536-66-4 77536-68-6 77536-67-5 12001-29-5							
								Total:	0.0526 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Determinand defined by classifier (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP103_2.50

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:
TP103_2.50
Sample Depth:
2.5 m
Moisture content:
13%
(dry weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 13% Dry Weight Moisture Correction applied (MC)

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1		arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		9.7	mg/kg	1.32	11.334	mg/kg	0.00113 %	✓	
2		boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		1.4	mg/kg	3.22	3.989	mg/kg	0.000399 %	✓	
3		cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		<0.2	mg/kg	1.142	<0.228	mg/kg	<0.0000228 %		<LOD
4		chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		37	mg/kg	1.462	47.856	mg/kg	0.00479 %	✓	
5		chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<1.8	mg/kg	2.27	<4.086	mg/kg	<0.000409 %		<LOD
6		copper { copper sulphate }	029-004-00-0	231-847-6	7758-98-7		23	mg/kg	2.512	51.123	mg/kg	0.00511 %	✓	
7		lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	14	mg/kg		12.389	mg/kg	0.00124 %	✓	
8		mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.3	mg/kg	1.353	<0.406	mg/kg	<0.0000406 %		<LOD
9		nickel { nickel sulfate }	028-009-00-5	232-104-9	7786-81-4		36	mg/kg	2.637	84.001	mg/kg	0.0084 %	✓	
10		selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<1	mg/kg	2.554	<2.554	mg/kg	<0.000255 %		<LOD
11		zinc { zinc sulphate (hydrous) (mono-, hexa- and hepta hydrate); [1] zinc sulphate (anhydrous) [2] }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		58	mg/kg	4.398	225.734	mg/kg	0.0226 %	✓	
12		TPH (C6 to C40) petroleum group			TPH		<20	mg/kg		<20	mg/kg	<0.002 %		<LOD
13		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
14		benzene	601-020-00-8	200-753-7	71-43-2		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number									
15		toluene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-021-00-3	203-625-9	108-88-3									
16		ethylbenzene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-023-00-4	202-849-4	100-41-4									
17		xylene				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
18		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<1	mg/kg	1.884	<1.884	mg/kg	<0.000188 %		<LOD
		006-007-00-5											
19		pH				8.3	pH		8.3	pH	8.3 pH		
				PH									
20		naphthalene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
21		acenaphthylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-917-1	208-96-8									
22		acenaphthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			201-469-6	83-32-9									
23		fluorene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			201-695-5	86-73-7									
24		phenanthrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			201-581-5	85-01-8									
25		anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			204-371-1	120-12-7									
26		fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-912-4	206-44-0									
27		pyrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			204-927-3	129-00-0									
28		benzo[a]anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-033-00-9	200-280-6	56-55-3									
29		chrysene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-048-00-0	205-923-4	218-01-9									
30		benzo[b]fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-034-00-4	205-911-9	205-99-2									
31		benzo[k]fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-036-00-5	205-916-6	207-08-9									
32		benzo[a]pyrene; benzo[def]chrysene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-032-00-3	200-028-5	50-32-8									
33		indeno[123-cd]pyrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-893-2	193-39-5									
34		dibenz[a,h]anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
35		benzo[ghi]perylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-883-8	191-24-2									
36		phenol				<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
		604-001-00-2	203-632-7	108-95-2									
37		asbestos				<			<		<		ND
		650-013-00-6	- - - - - - -	12001-28-4 132207-32-0 12172-73-5 77536-66-4 77536-68-6 77536-67-5 12001-29-5									
38		Asbestos Fragments (Visible to Naked Eye).				<			<		<		ND
				12001-28-4 132207-32-0 12172-73-5									

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number							
				77536-66-4 77536-68-6 77536-67-5 12001-29-5							
								Total:	0.0467 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Determinand defined by classifier (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: WS108_2.50

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:
WS108_2.50
Sample Depth:
2.5 m
Moisture content:
7.2%
(dry weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 7.2% Dry Weight Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		27 mg/kg	1.32	33.254 mg/kg	0.00333 %	✓	
2	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		0.3 mg/kg	3.22	0.901 mg/kg	0.0000901 %	✓	
3	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		<0.2 mg/kg	1.142	<0.228 mg/kg	<0.0000228 %		<LOD
4	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		18 mg/kg	1.462	24.541 mg/kg	0.00245 %	✓	
5	chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<1.8 mg/kg	2.27	<4.086 mg/kg	<0.000409 %		<LOD
6	copper { copper sulphate }	029-004-00-0	231-847-6	7758-98-7		29 mg/kg	2.512	67.947 mg/kg	0.00679 %	✓	
7	lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	15 mg/kg		13.993 mg/kg	0.0014 %	✓	
8	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.3 mg/kg	1.353	<0.406 mg/kg	<0.0000406 %		<LOD
9	nickel { nickel sulfate }	028-009-00-5	232-104-9	7786-81-4		33 mg/kg	2.637	81.167 mg/kg	0.00812 %	✓	
10	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<1 mg/kg	2.554	<2.554 mg/kg	<0.000255 %		<LOD
11	zinc { zinc sulphate (hydrous) (mono-, hexa- and hepta hydrate); [1] zinc sulphate (anhydrous) [2] }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		110 mg/kg	4.398	451.28 mg/kg	0.0451 %	✓	
12	TPH (C6 to C40) petroleum group			TPH		<20 mg/kg		<20 mg/kg	<0.002 %		<LOD
13	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
14	benzene	601-020-00-8	200-753-7	71-43-2		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
15		toluene	601-021-00-3	203-625-9	108-88-3		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<**LOD**
16		ethylbenzene	601-023-00-4	202-849-4	100-41-4		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<**LOD**
17		xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
18		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<1	mg/kg	1.884	<1.884	mg/kg	<0.000188 %		<**LOD**
19		pH			PH		8.3	pH		8.3	pH	8.3 pH		
20		naphthalene	601-052-00-2	202-049-5	91-20-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
21		acenaphthylene		205-917-1	208-96-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
22		acenaphthene		201-469-6	83-32-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
23		fluorene		201-695-5	86-73-7		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
24		phenanthrene		201-581-5	85-01-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
25		anthracene		204-371-1	120-12-7		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
26		fluoranthene		205-912-4	206-44-0		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
27		pyrene		204-927-3	129-00-0		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
28		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
29		chrysene	601-048-00-0	205-923-4	218-01-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
30		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
31		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
32		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
33		indeno[123-cd]pyrene		205-893-2	193-39-5		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
34		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
35		benzo[ghi]perylene		205-883-8	191-24-2		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
36		phenol	604-001-00-2	203-632-7	108-95-2		<1	mg/kg		<1	mg/kg	<0.0001 %		<**LOD**
37		asbestos	650-013-00-6	- - - - - - -	12001-28-4 132207-32-0 12172-73-5 77536-66-4 77536-68-6 77536-67-5 12001-29-5		<			<		<		**ND**
38		Asbestos Fragments (Visible to Naked Eye).			12001-28-4 132207-32-0 12172-73-5		<			<		<		**ND**

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number							
				77536-66-4 77536-68-6 77536-67-5 12001-29-5							
								Total:	0.0704 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Determinand defined by classifier (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: BH109_7.50

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:
BH109_7.50
Sample Depth:
7.5 m
Moisture content:
6.9%
(dry weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 6.9% Dry Weight Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		9 mg/kg	1.32	11.116 mg/kg	0.00111 %	✓	
2	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		0.4 mg/kg	3.22	1.205 mg/kg	0.00012 %	✓	
3	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		<0.2 mg/kg	1.142	<0.228 mg/kg	<0.0000228 %		<LOD
4	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		22 mg/kg	1.462	30.079 mg/kg	0.00301 %	✓	
5	chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<1.8 mg/kg	2.27	<4.086 mg/kg	<0.000409 %		<LOD
6	copper { copper sulphate }	029-004-00-0	231-847-6	7758-98-7		7.9 mg/kg	2.512	18.562 mg/kg	0.00186 %	✓	
7	lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	10 mg/kg		9.355 mg/kg	0.000935 %	✓	
8	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.3 mg/kg	1.353	<0.406 mg/kg	<0.0000406 %		<LOD
9	nickel { nickel sulfate }	028-009-00-5	232-104-9	7786-81-4		21 mg/kg	2.637	51.796 mg/kg	0.00518 %	✓	
10	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<1 mg/kg	2.554	<2.554 mg/kg	<0.000255 %		<LOD
11	zinc { zinc sulphate (hydrous) (mono-, hexa- and hepta hydrate); [1] zinc sulphate (anhydrous) [2] }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		65 mg/kg	4.398	267.414 mg/kg	0.0267 %	✓	
12	TPH (C6 to C40) petroleum group			TPH		<20 mg/kg		<20 mg/kg	<0.002 %		<LOD
13	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
14	benzene	601-020-00-8	200-753-7	71-43-2		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number									
15		toluene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-021-00-3	203-625-9	108-88-3									
16		ethylbenzene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-023-00-4	202-849-4	100-41-4									
17		xylene				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
18		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<1	mg/kg	1.884	<1.884	mg/kg	<0.000188 %		<LOD
		006-007-00-5											
19		pH				8.7	pH		8.7	pH	8.7 pH		
				PH									
20		naphthalene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
21		acenaphthylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-917-1	208-96-8									
22		acenaphthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			201-469-6	83-32-9									
23		fluorene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			201-695-5	86-73-7									
24		phenanthrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			201-581-5	85-01-8									
25		anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			204-371-1	120-12-7									
26		fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-912-4	206-44-0									
27		pyrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			204-927-3	129-00-0									
28		benzo[a]anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-033-00-9	200-280-6	56-55-3									
29		chrysene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-048-00-0	205-923-4	218-01-9									
30		benzo[b]fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-034-00-4	205-911-9	205-99-2									
31		benzo[k]fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-036-00-5	205-916-6	207-08-9									
32		benzo[a]pyrene; benzo[def]chrysene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-032-00-3	200-028-5	50-32-8									
33		indeno[123-cd]pyrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-893-2	193-39-5									
34		dibenz[a,h]anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
35		benzo[ghi]perylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-883-8	191-24-2									
36		phenol				<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
		604-001-00-2	203-632-7	108-95-2									
37		asbestos				<			<		<		ND
		650-013-00-6	- - - - - - -	12001-28-4 132207-32-0 12172-73-5 77536-66-4 77536-68-6 77536-67-5 12001-29-5									
38		Asbestos Fragments (Visible to Naked Eye).				<			<		<		ND
				12001-28-4 132207-32-0 12172-73-5									

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number							
				77536-66-4 77536-68-6 77536-67-5 12001-29-5							
								Total:	0.0421 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Determinand defined by classifier (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: BH109_8.30

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:
BH109_8.30
Sample Depth:
8.3 m
Moisture content:
8.1%
(dry weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 8.1% Dry Weight Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		3.5 mg/kg	1.32	4.275 mg/kg	0.000427 %	✓	
2	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		0.3 mg/kg	3.22	0.894 mg/kg	0.0000894 %	✓	
3	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		<0.2 mg/kg	1.142	<0.228 mg/kg	<0.0000228 %		<**LOD**
4	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		23 mg/kg	1.462	31.097 mg/kg	0.00311 %	✓	
5	chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<1.8 mg/kg	2.27	<4.086 mg/kg	<0.000409 %		<**LOD**
6	copper { copper sulphate }	029-004-00-0	231-847-6	7758-98-7		26 mg/kg	2.512	60.411 mg/kg	0.00604 %	✓	
7	lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	2.2 mg/kg		2.035 mg/kg	0.000204 %	✓	
8	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.3 mg/kg	1.353	<0.406 mg/kg	<0.0000406 %		<**LOD**
9	nickel { nickel sulfate }	028-009-00-5	232-104-9	7786-81-4		20 mg/kg	2.637	48.782 mg/kg	0.00488 %	✓	
10	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<1 mg/kg	2.554	<2.554 mg/kg	<0.000255 %		<**LOD**
11	zinc { zinc sulphate (hydrous) (mono-, hexa- and hepta hydrate); [1] zinc sulphate (anhydrous) [2] }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		64 mg/kg	4.398	260.377 mg/kg	0.026 %	✓	
12	TPH (C6 to C40) petroleum group			TPH		<20 mg/kg		<20 mg/kg	<0.002 %		<**LOD**
13	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<**LOD**
14	benzene	601-020-00-8	200-753-7	71-43-2		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<**LOD**

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
15		toluene	601-021-00-3	203-625-9	108-88-3		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<**LOD**
16		ethylbenzene	601-023-00-4	202-849-4	100-41-4		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<**LOD**
17		xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
18		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<1	mg/kg	1.884	<1.884	mg/kg	<0.000188 %		<**LOD**
19		pH			PH		8.8	pH		8.8	pH	8.8 pH		
20		naphthalene	601-052-00-2	202-049-5	91-20-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
21		acenaphthylene		205-917-1	208-96-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
22		acenaphthene		201-469-6	83-32-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
23		fluorene		201-695-5	86-73-7		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
24		phenanthrene		201-581-5	85-01-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
25		anthracene		204-371-1	120-12-7		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
26		fluoranthene		205-912-4	206-44-0		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
27		pyrene		204-927-3	129-00-0		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
28		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
29		chrysene	601-048-00-0	205-923-4	218-01-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
30		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
31		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
32		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
33		indeno[123-cd]pyrene		205-893-2	193-39-5		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
34		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
35		benzo[ghi]perylene		205-883-8	191-24-2		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
36		phenol	604-001-00-2	203-632-7	108-95-2		<1	mg/kg		<1	mg/kg	<0.0001 %		<**LOD**
37		asbestos	650-013-00-6	- - - - - - -	12001-28-4 132207-32-0 12172-73-5 77536-66-4 77536-68-6 77536-67-5 12001-29-5		<			<		<		**ND**
38		Asbestos Fragments (Visible to Naked Eye).			12001-28-4 132207-32-0 12172-73-5		<			<		<		**ND**

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number							
				77536-66-4 77536-68-6 77536-67-5 12001-29-5							
								Total:	0.0439 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Determinand defined by classifier (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: BH109_9.50

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:
BH109_9.50
Sample Depth:
9.5 m
Moisture content:
12%
(dry weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 12% Dry Weight Moisture Correction applied (MC)

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1		arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		11	mg/kg	1.32	12.967	mg/kg	0.0013 %	✓	
2		boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		0.3	mg/kg	3.22	0.862	mg/kg	0.0000862 %	✓	
3		cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		<0.2	mg/kg	1.142	<0.228	mg/kg	<0.0000228 %		<LOD
4		chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		27	mg/kg	1.462	35.234	mg/kg	0.00352 %	✓	
5		chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<1.8	mg/kg	2.27	<4.086	mg/kg	<0.000409 %		<LOD
6		copper { copper sulphate }	029-004-00-0	231-847-6	7758-98-7		11	mg/kg	2.512	24.668	mg/kg	0.00247 %	✓	
7		lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	10	mg/kg		8.929	mg/kg	0.000893 %	✓	
8		mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.3	mg/kg	1.353	<0.406	mg/kg	<0.0000406 %		<LOD
9		nickel { nickel sulfate }	028-009-00-5	232-104-9	7786-81-4		25	mg/kg	2.637	58.855	mg/kg	0.00589 %	✓	
10		selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<1	mg/kg	2.554	<2.554	mg/kg	<0.000255 %		<LOD
11		zinc { zinc sulphate (hydrous) (mono-, hexa- and hepta hydrate); [1] zinc sulphate (anhydrous) [2] }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		85	mg/kg	4.398	333.771	mg/kg	0.0334 %	✓	
12		TPH (C6 to C40) petroleum group			TPH		<20	mg/kg		<20	mg/kg	<0.002 %		<LOD
13		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
14		benzene	601-020-00-8	200-753-7	71-43-2		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number									
15		toluene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-021-00-3	203-625-9	108-88-3									
16		ethylbenzene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-023-00-4	202-849-4	100-41-4									
17		xylene				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
18		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<1	mg/kg	1.884	<1.884	mg/kg	<0.000188 %		<LOD
		006-007-00-5											
19		pH				8.6	pH		8.6	pH	8.6 pH		
				PH									
20		naphthalene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
21		acenaphthylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-917-1	208-96-8									
22		acenaphthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			201-469-6	83-32-9									
23		fluorene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			201-695-5	86-73-7									
24		phenanthrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			201-581-5	85-01-8									
25		anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			204-371-1	120-12-7									
26		fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-912-4	206-44-0									
27		pyrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			204-927-3	129-00-0									
28		benzo[a]anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-033-00-9	200-280-6	56-55-3									
29		chrysene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-048-00-0	205-923-4	218-01-9									
30		benzo[b]fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-034-00-4	205-911-9	205-99-2									
31		benzo[k]fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-036-00-5	205-916-6	207-08-9									
32		benzo[a]pyrene; benzo[def]chrysene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-032-00-3	200-028-5	50-32-8									
33		indeno[123-cd]pyrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-893-2	193-39-5									
34		dibenz[a,h]anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
35		benzo[ghi]perylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-883-8	191-24-2									
36		phenol				<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
		604-001-00-2	203-632-7	108-95-2									
37		asbestos				<			<		<		ND
		650-013-00-6	- - - - - - -	12001-28-4 132207-32-0 12172-73-5 77536-66-4 77536-68-6 77536-67-5 12001-29-5									
38		Asbestos Fragments (Visible to Naked Eye).				<			<		<		ND
				12001-28-4 132207-32-0 12172-73-5									

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number							
				77536-66-4 77536-68-6 77536-67-5 12001-29-5							
								Total:	0.0506 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Determinand defined by classifier (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Appendix A: Classifier defined and non GB MCL determinands

chromium(III) oxide (worst case) (EC Number: 215-160-9, CAS Number: 1308-38-9)

Description/Comments: Data from C&L Inventory Database
Data source: https://echa.europa.eu/information-on-chemicals/cl-inventory-database/-/discli/details/33806
Data source date: 17 Jul 2015
Hazard Statements: Acute Tox. 4; H332 , Acute Tox. 4; H302 , Eye Irrit. 2; H319 , STOT SE 3; H335 , Skin Irrit. 2; H315 , Resp. Sens. 1; H334 , Skin Sens. 1; H317 , Repr. 1B; H360FD , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

lead compounds with the exception of those specified elsewhere in this Annex

GB MCL index number: 082-001-00-6
Description/Comments: Least-worst case: IARC considers lead compounds Group 2A; Probably carcinogenic to humans; Lead REACH Consortium, following MCL protocols, considers many simple lead compounds to be Carcinogenic category 2
Additional Hazard Statement(s): Carc. 2; H351
Reason for additional Hazards Statement(s):
20 Nov 2021 - Carc. 2; H351 hazard statement sourced from: IARC Group 2A (Sup 7, 87) 2006; Lead REACH Consortium www.reach-lead.eu/substanceinformation.html. Review date 29/09/2015

TPH (C6 to C40) petroleum group (CAS Number: TPH)

Description/Comments: Hazard statements taken from WM3 1st Edition 2015; Risk phrases: WM2 3rd Edition 2013
Data source: WM3 1st Edition 2015
Data source date: 25 May 2015
Hazard Statements: Flam. Liq. 3; H226 , Asp. Tox. 1; H304 , STOT RE 2; H373 , Muta. 1B; H340 , Carc. 1B; H350 , Repr. 2; H361d , Aquatic Chronic 2; H411

ethylbenzene (EC Number: 202-849-4, CAS Number: 100-41-4)

GB MCL index number: 601-023-00-4
Description/Comments:
Additional Hazard Statement(s): Carc. 2; H351
Reason for additional Hazards Statement(s):
20 Nov 2021 - Carc. 2; H351 hazard statement sourced from: IARC Group 2B (77) 2000

salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex

GB MCL index number: 006-007-00-5
Description/Comments: Conversion factor based on a worst case compound: sodium cyanide
Additional Hazard Statement(s): EUH032 >= 0.2 %
Reason for additional Hazards Statement(s):
20 Nov 2021 - EUH032 >= 0.2 % hazard statement sourced from: WM3, Table C12.2

pH (CAS Number: PH)

Description/Comments: Appendix C4
Data source: WM3 1st Edition 2015
Data source date: 25 May 2015
Hazard Statements: None.

acenaphthylene (EC Number: 205-917-1, CAS Number: 208-96-8)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 17 Jul 2015
Hazard Statements: Acute Tox. 4; H302 , Acute Tox. 1; H330 , Acute Tox. 1; H310 , Eye Irrit. 2; H319 , STOT SE 3; H335 , Skin Irrit. 2; H315

acenaphthene (EC Number: 201-469-6, CAS Number: 83-32-9)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 17 Jul 2015
Hazard Statements: Eye Irrit. 2; H319 , STOT SE 3; H335 , Skin Irrit. 2; H315 , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410 , Aquatic Chronic 2; H411

fluorene (EC Number: 201-695-5, CAS Number: 86-73-7)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 06 Aug 2015
Hazard Statements: Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

phenanthrene (EC Number: 201-581-5, CAS Number: 85-01-8)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 06 Aug 2015
Hazard Statements: Acute Tox. 4; H302 , Eye Irrit. 2; H319 , STOT SE 3; H335 , Carc. 2; H351 , Skin Sens. 1; H317 , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410 , Skin Irrit. 2; H315

anthracene (EC Number: 204-371-1, CAS Number: 120-12-7)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 17 Jul 2015
Hazard Statements: Eye Irrit. 2; H319 , STOT SE 3; H335 , Skin Irrit. 2; H315 , Skin Sens. 1; H317 , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

fluoranthene (EC Number: 205-912-4, CAS Number: 206-44-0)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 21 Aug 2015
Hazard Statements: Acute Tox. 4; H302 , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

pyrene (EC Number: 204-927-3, CAS Number: 129-00-0)

Description/Comments: Data from C&L Inventory Database; SDS Sigma Aldrich 2014
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 21 Aug 2015
Hazard Statements: Skin Irrit. 2; H315 , Eye Irrit. 2; H319 , STOT SE 3; H335 , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

indeno[123-cd]pyrene (EC Number: 205-893-2, CAS Number: 193-39-5)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 06 Aug 2015
Hazard Statements: Carc. 2; H351

benzo[ghi]perylene (EC Number: 205-883-8, CAS Number: 191-24-2)

Description/Comments: Data from C&L Inventory Database; SDS Sigma Aldrich 28/02/2015
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 23 Jul 2015
Hazard Statements: Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

Asbestos Fragments (Visible to Naked Eye). (CAS Number: 12001-28-4 132207-32-0 12172-73-5 77536-66-4 77536-68-6 77536-67-5 12001-29-5)

Description/Comments:
Data source: Regulation 1272/2008/EC - Classification, labelling and packaging of substances and mixtures. (CLP)
Data source date: 02 Aug 2022
Hazard Statements: Carc. 1A; H350 , STOT RE 1; H372

Appendix B: Rationale for selection of metal species

arsenic {arsenic trioxide}

Reasonable case CLP species based on hazard statements/molecular weight and most common (stable) oxide of arsenic. Industrial sources include: smelting; main precursor to other arsenic compounds (edit as required)

boron {diboron trioxide; boric oxide}

Reasonable case CLP species based on hazard statements/ molecular weight, physical form and low solubility. Industrial sources include: fluxing agent for glass/enamels; additive for fibre optics, borosilicate glass (edit as required)

cadmium {cadmium oxide}

Reasonable case CLP species based on hazard statements/molecular weight, very low solubility in water. Industrial sources include: electroplating baths, electrodes for storage batteries, catalysts, ceramic glazes, phosphors, pigments and nematocides. (edit as required) Worst case compounds in CLP: cadmium sulphate, chloride, fluoride & iodide not expected as either very soluble and/or compound's industrial usage not related to site history (edit as required)

chromium in chromium(III) compounds {chromium(III) oxide (worst case)}

Reasonable case species based on hazard statements/molecular weight. Industrial sources include: tanning, pigment in paint, inks and glass (edit as required)

chromium in chromium(VI) compounds {chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex}

Worst case species based on hazard statements/molecular weight (edit as required)

copper {copper sulphate}

NA

lead {lead compounds with the exception of those specified elsewhere in this Annex}

Worst Case Species.

mercury {mercury dichloride}

Worst case CLP species based on hazard statements/molecular weight (edit as required)

nickel {nickel sulfate}

Cr VI reported at laboratory LOD in each sample.

selenium {nickel selenate}

Worst case CLP species based on hazard statements/molecular weight (edit as required)

zinc {zinc sulphate (hydrous) (mono-, hexa- and hepta hydrate); [1] zinc sulphate (anhydrous) [2]}

Cr VI reported at laboratory LOD in each sample.

cyanides {salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex}

Harmonised group entry used as most reasonable case as complex cyanides and those specified elsewhere in the annex are not likely to be present in this soil: [Note conversion factor based on a worst case compound: sodium cyanide] (edit as required)

Appendix C: Version

HazWasteOnline Classification Engine: WM3 1st Edition v1.2.GB - Oct 2021
HazWasteOnline Classification Engine Version: 2023.296.5780.10677 (23 Oct 2023)
HazWasteOnline Database: 2023.296.5780.10677 (23 Oct 2023)

This classification utilises the following guidance and legislation:
WM3 v1.2.GB - Waste Classification - 1st Edition v1.2.GB - Oct 2021
CLP Regulation - Regulation 1272/2008/EC of 16 December 2008
1st ATP - Regulation 790/2009/EC of 10 August 2009
2nd ATP - Regulation 286/2011/EC of 10 March 2011
3rd ATP - Regulation 618/2012/EU of 10 July 2012
4th ATP - Regulation 487/2013/EU of 8 May 2013
Correction to 1st ATP - Regulation 758/2013/EU of 7 August 2013
5th ATP - Regulation 944/2013/EU of 2 October 2013
6th ATP - Regulation 605/2014/EU of 5 June 2014
WFD Annex III replacement - Regulation 1357/2014/EU of 18 December 2014
Revised List of Waste 2014 - Decision 2014/955/EU of 18 December 2014
7th ATP - Regulation 2015/1221/EU of 24 July 2015
8th ATP - Regulation (EU) 2016/918 of 19 May 2016
9th ATP - Regulation (EU) 2016/1179 of 19 July 2016
10th ATP - Regulation (EU) 2017/776 of 4 May 2017
HP14 amendment - Regulation (EU) 2017/997 of 8 June 2017
13th ATP - Regulation (EU) 2018/1480 of 4 October 2018
14th ATP - Regulation (EU) 2020/217 of 4 October 2019
15th ATP - Regulation (EU) 2020/1182 of 19 May 2020
The Chemicals (Health and Safety) and Genetically Modified Organisms (Contained Use)(Amendment etc.) (EU Exit) Regulations 2020 - UK: 2020 No. 1567 of 16th December 2020
The Waste and Environmental Permitting etc. (Legislative Functions and Amendment etc.) (EU Exit) Regulations 2020 - UK: 2020 No. 1540 of 16th December 2020
GB MCL List - version 1.1 of 09 June 2021

RISK ASSESSMENT METHODOLOGY AND DEFINITIONS

Introduction

Risk assessment is a process by which the actual or potential risks posed by identified hazards to specific receptors is estimated. In the context of this study hazards relate to sources, or potential sources of contamination capable of causing harm. Receptors are the entity which may be at risk of adverse effects from the hazard and include human health, surface waters, groundwater, ecological systems, buildings and services. In order for a hazard to present a risk to a receptor they must be linked by an exposure pathway. This source-pathway-receptor model is considered best practice methodology to evaluate environmental risks arising from potential land contamination, according to DEFRA and Environment Agency guidance documentation.

Methodology

The environmental risk assessment in this report is based upon a formalised tiered system of risk estimation which aims to identify significant environmental risks that may require further investigation or indicate a potential for exposure to legal or financial liability.

Risk screening (Tier 1 of the framework for environmental risk assessment) (generic) can identify priority risks and determine which hazards or risks should be investigated in greater detail. If the initial generic assessment indicates little potential for concern then there is no justification in undertaking more detailed and sophisticated assessments (e.g. Tier 2 and 3 quantitative analysis).

The risk evaluation methodology used is consistent with guidance published in the following documents:

- DEFRA Guidelines for Environmental Risk Assessment and Management, Revised Departmental Guidance, November 2011.
- CIRIA C552. Contaminated Land Risk Assessment, A Guide to Good Practice. 2001
- DEFRA, Environmental Protection Act 1990, Part 2A, Contaminated Land Statutory Guidance, April 2012.
- Environment Agency CLR11 Procedures for the Management of Land Contamination - Contaminated Land Report 11, September 2004[1].

Environmental risk (DEFRA 2011) is evaluated by the following stages:

1. Identifying the possible hazards.
2. Assessing the consequences arising from a hazard.
3. Determining the probability of consequences occurring.
4. Charactering the significance of the overall risk.

[1] Note CLR11 reflects the approach described in DEFRA 2011

In this report a formalised system is used to classify both the

- probability of a hazard occurring and
- potential severity of the hazard occurring.

In order to estimate the significance of risks to various receptors arising at the study site each of the five stages has been undertaken. The risk classification system used for this assessment adopts the following terminology:

Definitions for classification of likelihood of hazard-receptor linkage

High Likelihood	:	An event is very likely to occur in the short term, and is almost inevitable over the long term OR there is evidence at the receptor of harm or pollution.
Likely	:	It is probable that an event will occur. It is not inevitable, but possible in the short term and likely over the long term.
Low Likelihood	:	Circumstances are possible under which an event could occur. It is by no means certain that even over a longer period such an event would take place, and less likely in the short term.
Unlikely	:	It is improbable that an event would occur in the very long term.

Definitions for classification of potential consequence of hazard-receptor linkage

Severe	:	• Acute risks to human health • Short-term risk of pollution sensitive water resources (e.g. major spillage into controlled waters). • Impact on controlled wastes e.g. large scale pollution or very high levels of contamination. • Catastrophic damage to buildings or property (e.g. explosion causing building collapse). • Ecological system effects – irreversible adverse changes to a protected location. Immediate risks.
Moderate	:	• Chronic risks to human health • Pollution of sensitive water resources (e.g. leaching of contaminants into controlled waters). • Ecological system effects – substantial adverse changes to a protected location. • Significant damage to buildings, structures and services (e.g. damage rendering a building unsafe to occupy, such as foundation damage).
Mild	:	• Non-permanent health effects to human health • Pollution of non-sensitive water resources (e.g. pollution of non-classified groundwater). • Damage to buildings, structures and services (e.g. damage rendering a building unsafe to occupy, such as foundation damage). • Substantial damage to non-sensitive environment (e.g. crops).
Negligible	:	• Non-permanent health effects to human health (easily prevented by appropriate use of PPE). • Minor pollution to non-sensitive water resources

	• Minor damage to non-sensitive environments (e.g. crops). • Easily repairable effects of damage to buildings, structures, services or the environment (e.g. discolouration of concrete, loss of plants in a landscaping scheme).

The combination of likelihood (probability) and consequence gives an overall environmental risk, as identified by the risk matrix below:

		Consequence			
		Severe	Moderate	Mild	Negligible
Probability	High Likelihood	Very High Risk	High Risk	Moderate Risk	Moderate/ Low Risk
	Likely	High Risk	Moderate Risk	Moderate/ Low Risk	Low Risk
	Low Likelihood	Moderate Risk	Moderate/ Low Risk	Low Risk	Negligible Risk
	Unlikely	Moderate/ Low Risk	Low Risk	Negligible Risk	Negligible Risk

Appendix C. Ground Investigation factual information

Due to the size of the Strata Geotechnics factual report revision 003, this Appendix includes the whole factual report, with the exception of the photos contained in Appendix E of the factual report (core photos, dynamic sample photos). The complete factual report will be placed on GDMS (GDMS ref. 42879).

Laboratory results also excluded from the DCO submission version

Factual Ground Investigation Report

A46 Walsgrave Junction

Client: Octavius Infrastructure Ltd

Project Number: G230651

Date of Issue: 24/12/2023

Project Title	A46 Walsgrave Junction			Project Ref		G230651
Prepared By	[redacted]					[redacted]
Checked By	[redacted]					
Approved By	[redacted]					
Issue No	Status	Reason	Date	Prep.	Check	Approval
001	DRAFT	Awaiting Client Comment	07/08/2023	[redacted]		
002	FINAL	Following Client Comment	13/09/2023	[redacted]		
003	FINAL	Following Client Comment	24/12/2023	[redacted]		

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1 Introduction

1.1 Appointment

Strata Geotechnics was appointed to undertake a ground investigation at the site in Walsgrave, Coventry by Octavius Infrastructure Ltd. The specification for the works was provided by the client's Investigation Supervisor and is included by the specification document titled: Specification for Ground Investigation: A46 Walsgrave Junction. Instruction to proceed with the work was received on 18/04/2023.

This report presents a site-wide factual account of the site works undertaken.

1.2 Site Location and Description

The site is located between Coombe Fields and Coombe Country Park spanning up to the M6/M69 junction in the north. The site is located at central grid reference 438538 and 279405.

The site is broadly linear in shape following the A46 with a small section branching to the west along the B4082. The site is approximately 3km by 500m in size. At the time of the investigation the site was predominantly occupied by agricultural fields, the A46 and the B4082.

A site location plan is included in Appendix A.

1.3 Purpose of Investigation

The purpose of this investigation was to determine the subsurface ground and groundwater conditions at the site of the proposed infrastructure development. It is understood that the development will comprise of a grade separation of the A46 Coventry Bypass. This information was obtained from a combination of intrusive investigation techniques and laboratory testing.

1.4 Scope of the Investigation

The Ground Investigation was carried out between 03/05/2023 and 23/06/2023. The works comprised:

- 30 no. deep boreholes by rotary or cable percussive techniques (denoted BH101 to BH130) to a maximum depth ranging from 10m to 25m BGL as specified by the client's Investigation Supervisor.
- 9 no. windowless sampled boreholes (denoted WS101 to WS109) to a maximum depth of 6m BGL as specified by the Investigation Supervisor.
- 3 no. machine excavated Trial Pits to a maximum depth of 2.5mbgl (denoted TP101 to TP103). TP102 collapsed during construction.

Locations Summarised below:

Table 1-1 Investigation Locations.

Location ID	Type	Easting	Northing	Elevation
BH102	CP	438461.1	279010.9	72.88
BH103	CP	438414.2	279145.3	73.65
BH104	CP	438269.3	279257.6	70.91
BH105	CP+RC	438162.0	279402.7	72.55
BH106	CP+RC	438268.9	279366.9	75.85
BH107	CP	438481.4	279359.1	76.75
BH108	CP+RC	438392.7	279404.3	76.71
BH109	CP+RC	438450.0	279447.9	79.10
BH110	CP+RC	438488.9	279520.3	78.98
BH111	CP	438544.6	279583.3	78.17
BH112	CP	438648.2	279580.1	77.36
BH113	CP+RC	438560.5	279690.3	77.28
BH114	CP	438628.4	279737.9	77.04
BH115	CP+RC	438572.6	279793.7	75.07
BH116	CP	438739.3	279819.1	74.46
BH117	CP+RC	438616.7	279889.7	73.80
BH118	CP+RC	438686.5	279873.1	75.23
BH119	CP	438783.9	279876.1	74.84
BH120	CP+RC	438717.3	279964.1	74.67
BH121	CP+RC	438645.0	280011.8	73.49
BH122	CP+RC	438797.6	279941.6	76.29
BH123	CP	438842.3	279941.6	76.29
BH124	CP+RC	438805.5	279952.7	76.38

Location ID	Type	Easting	Northing	Elevation
BH125	CP	438729.1	279982.0	70.44
BH125A	CP+RC	438725.6	279981.9	70.45
BH126	CP	438818.8	280016.8	72.58
BH127	CP	438749.9	280056.1	74.72
BH128	CP	438845.0	280126.1	74.37
TP101	TP	438150.9	279412.3	71.94
TP102	TP	438634.7	279788.4	75.36
TP103	TP	438768.6	280139.0	74.60
WS102	WLS	438445.2	279246.8	71.43
WS103	WLS	438544.9	279426.5	77.69
WS104	WLS	438648.6	279815.1	75.29
WS105	WLS	438763.4	280131.1	74.48
WS106	WLS	438881.9	280221.2	72.57
WS107	WLS	438560.8	279856.5	74.62
WS108	WLS	438500.0	279892.5	73.00
WS109	WLS	438434.9	279931.0	71.04

The works were undertaken as detailed by: “Specification for Ground Investigation: A46 Walsgrave Junction”. provided by National Highways.

BH101, BH129, BH130 and WS101 were descoped by the Client descoped prior to works being undertaken.

1.4.1 In-situ testing

1.4.1.1 Standard Penetration Tests (SPTs)

In-situ Standard Penetration Tests (SPTs) were conducted within the boreholes to ascertain ‘N’ values of the various lithologies encountered. This test acts as a proxy to ascertain the relative density of granular material. Relative density is determined in accordance with BS5930 table 10 for granular materials only. For fine grained or cohesive deposits consistency has been derived by hand field tests carried out by the logging engineer rather than from SPT results. SPT ‘N’ values detailed in this report have not been corrected for overburden pressure or hammer energy efficiency.

1.4.1.2 *In-situ Hand Shear Vane and Pocket Penetrometer Testing*

In-situ hand vane tests were carried out using a portable hand vane tester (upper limit 140 kN/m^2) or pocket penetrometer where appropriate (upper limit 430kN/m^2 unconfined compressive strength, UCS) on the natural clay deposits encountered in the trial pits and boreholes. Refusal of test equipment due to excessive stiffness is noted on the logs as 141kPa. Likewise where a refusal occurs, residual strength cannot be measured and will be noted as 0kPa.

In-situ hand vane test results indicate the peak and residual undrained shear strength of the soil whereas the in-situ pocket penetrometer test results indicate the peak UCS of the soil which is numerically twice that of undrained shear strength.

1.4.1.3 *In-situ Photo Ionisation Detector (PID)*

In-situ Photo Ionisation Detector (PID) tests were conducted in conjunction with environmental sampling to assist in determining appropriate samples for testing. Results presented in Appendix B.

1.4.2 Monitoring Wells and Instruments

20No. Installation pipes, 50mm in diameter and 2.2m to 16m bgl in depth, were installed to allow monitoring of groundwater and ground gas levels.

Table 1-2 Monitoring well installations.

Location ID	Hole depth (m)	Diameter (mm)	Response Top (m bgl)	Response Base (m bgl)	Cover Type	Installed Instrument
BH104	11.90	50	5.20	9.50	Raised	Diver
BH105	10.41	50	3.20	10.00	Raised	Diver
BH106	10.79	50	3.50	10.40	Raised	Diver
BH107	10.00	50	0.40	2.20	Raised	Diver
BH109	20.50	50	1.50	4.20	Raised	Diver
BH110	20.15	50	5.50	20.00	Raised	Diver
BH111	10.00	50	1.50	3.80	Raised	Diver
BH112	10.00	50	1.40	5.10	Raised	Diver
BH117	15.50	50	2.10	6.70	Raised	Diver
BH121	16.00	50	6.50	16.00	Raised	Diver
BH123	13.00	50	2.80	8.90	Raised	Diver
BH125A	25.00	50	3.60	8.00	Raised	Diver
BH126	10.69	50	5.40	7.80	Raised	Diver
BH127	9.86	50	6.90	9.50	Raised	Diver

Location ID	Hole depth (m)	Diameter (mm)	Response Top (m bgl)	Response Base (m bgl)	Cover Type	Installed Instrument
WS102	6.45	50	2.90	3.70	Raised	Diver
WS103	7.90	50	1.60	2.30	Raised	Diver
WS104	3.90	50	1.90	3.90	Raised	Diver
WS105	3.90	50	1.20	3.90	Raised	Diver
WS106	5.00	50	2.30	5.00	Raised	Diver
WS109	3.00	50	1.00	3.00	Raised	Diver

Monitoring installations should be appropriately decommissioned at the end of their useful life in accordance with the appropriate Environmental Agency guidance. For additional information contact the author.

Results derived from the installed instruments are presented in Appendix F.

1.4.3 Service Clearance

Before any intrusive works, all the locations were scanned utilising a CAT (Cable Avoidance Tool) and associated generator by the main contractor using both ground penetrating radar (GPR) and electromagnetic (CAT) methods. As a final precaution a hand inspection pit was dug to 1.20m bgl for every borehole location, while trial pits were scanned at 300mm intervals up to and including 1.20m bgl.

1.4.4 Sampling Provision

During the investigation Environmental jar samples (ES) were recovered at pre-determined intervals for contamination testing purposes. Disturbed (D) and Bulk (B), samples were also recovered at specified depths and at every strata change for descriptive purposes and for geotechnical testing. Undisturbed thin-wall 100mm diameter (UT100) samples were also taken from cohesive strata for geotechnical laboratory testing. Undisturbed thin-wall piston 100mm diameter (P) samples were also taken from sensitive cohesive strata for geotechnical laboratory testing. Rotary Core (C) sampling was requested upon reaching appropriate strata for descriptive purposes and for geotechnical testing. Rotary core sub samples (CSS) were selected from the core and preserved for the purposes of geotechnical testing. The exploratory hole logs are presented in Appendix B.

1.4.5 Laboratory testing

Laboratory testing was requested by the client comprising geo-environmental, geotechnical and geo-chemical testing as follows:

1.4.5.1 Geo-Environmental

Ten geo-environmental suites have been scheduled. The determinants within these suites were detailed by the A46 Walsgrave Junction GI specification and include:

Table 1-3 Determinants for Soil Suite C.1

Soil Suite C.1	
pH	Nickel (aqua regia extractable)
Moisture Content	Selenium (aqua regia extractable)
Arsenic (aqua regia extractable)	Zinc (aqua regia extractable)
Boron - Water Soluble	Cyanide - Total
Cadmium (aqua regia extractable)	Cyanide - Complex
Chromium (aqua regia extractable)	Cyanide - Free
Chromium - III	Sulphate (as SO4) - Total
Chromium - Hexavalent (NaOH extract)	Phenols - Total (monohydric)
Copper (aqua regia extractable)	PAH - Speciated (EPA 16) INC Total- (see appendix for full technical spec)
Lead (aqua regia extractable)	TPH : CWG (see appendix for full technical spec) inc BTEX & MTBE
Mercury (aqua regia extractable)	Total Organic Carbon (TOC)

Table 1-4 Determinants for Leachability Suite C.2

Leachability Suite C.2	
pH	Selenium
Arsenic	Zinc
Boron	Cyanide (total)
Cadmium	Cyanide (free)
Chromium (total)	Cyanide (complex)
Copper	Sulphate (total)
Lead	Ammoniacal Nitrogen as N, NH_3 and and NH_4
Mercury	Phenol
Nickel	Speciated PAH

Table 1-5 Determinants for Controlled Waters Suite C.3

Controlled Waters Suite C.3	
pH	Cyanide - Total - Low Level
Arsenic (dissolved)	Cyanide - Complex - Low Level
Boron (dissolved)	Cyanide - Free - Low Level
Cadmium (dissolved)	Sulphate as SO4
Chromium (dissolved)	Sulphide
Chromium - III	Chloride
Chromium - Hexavalent	Ammoniacal Nitrogen as N
Copper (dissolved)	Ammoniacal Nitrogen as NH3
Lead (dissolved)	Ammoniacal Nitrogen as NH4
Mercury (dissolved)	Phenols - Total (monohydric) - Low Level
Nickel (dissolved)	PAH - Speciated (EPA 16) INC Total
Selenium (dissolved)	TPH : CWG
Zinc	Nitrate (as N03)
Zinc (dissolved)	Electrical Conductivity

Table 1-6 Determinants for Coal Tar Suite C.4

Coal Tar Suite C.4	
SEM	SVOC
SARA by latroscan saturates	

Table 1-7 Determinants for Clean Groundwater and Surface Water Suite C.5

Clean Groundwater and Surface Water C.5	
pH	Iron (Total)
Electrical Conductivity at 25°C	Iron (dissolved)
Alkalinity (as CaCO3)	Manganese (Total)
Hardness - Total (as CaCO3)	Manganese (dissolved)
Suspended Solids	Cyanide - Total - Low Level
Total Organic Carbon (TOC)	Cyanide - Free - Low Level
Dissolved Organic Carbon (DOC)	Thiocyanate (as SCN)
Chemical Oxygen Demand (COD)	Arsenic (dissolved)
Biochemical Oxygen Demand (BOD) - 5 day	Boron (dissolved)
Calcium (dissolved)	Cadmium (dissolved)
Magnesium (dissolved)	Chromium (dissolved)
Potassium (dissolved)	Chromium - III
Sodium (dissolved)	Chromium - Hexavalent
Nitrate (as N03)	Copper (dissolved)
Nitrite (as N02)	Lead (dissolved)
Ammoniacal Nitrogen as N	Mercury (dissolved)
Ammoniacal Nitrogen as NH3	Nickel (dissolved)
Ammoniacal Nitrogen as NH4	Selenium (dissolved)
Nitrogen - Total (Kjeldahl)	Zinc (dissolved)
Chloride	Vanadium (dissolved)
Sulphate as SO4	PAH - Speciated (EPA 16) INC Total - (see appendix for full technical spec)
Sulphur - Total	TPH : TEXAS Bandings (see appendix for full technical spec)
Sulphide	Phenols - Total (monohydric)
Orthophosphate (as P)	

Table 1-8 Determinants for Suite E

Suite E- Soil Samples	
Arsenic	Organic Matter
Boron	Speciated Total Petroleum (TPHCWG)
Cadmium	Speciated polyaromatic hydrocarbon
Chromium (total)	BTEX
Chromium (hexavalent)	VOC
Copper	SVOC
Lead	Phenol
Mercury	Cyanide (total)
Nickel	Asbestos ID
Zinc	Asbestos quantification
pH	Asbestos quantification by gravimetric analysis
Moisture content	Fraction of organic carbon
Water soluble sulphate (as SO_4)	Nitrate
Ammonium	Phosphate

Table 1-9 Determinants for Suite F

Suite F – Water Samples	
Arsenic	BTEX
Boron	VOC
Cadmium	SVOC
Chromium (total)	Phenol
Chromium (hexavalent)	Cyanide (total)
Copper	Nitrate
Lead	Phosphate
Mercury	Ammonium
Nickel	Hardness
Zinc	Sulphate (as SO4)
pH	Speciated total petroleum

Table 1-10 Determinants for Suite G

Suite G – NRA Leachate extract samples	
Arsenic	Speciated total petroleum
Boron	hydrocarbons (TPHCWG)
Cadmium	to include chromatogram
Chromium (total)	Speciated polyaromatic
Chromium (hexavalent)	hydrocarbons (USEPA 16)
Copper	Phenol
Lead	Cyanide (total)
Mercury	Nitrate
Nickel	Zinc
Zinc	Sulphate as SO_4
pH	Phosphate
Ammonium	

Table 1-11 Determinants for Suite H

Suite H – Single Stage WAC Test	
Total BTEX	Copper
Total PCBs (7 congeners)	Mercury
TPH Total WAC (Mineral oi)	Molybdenum
Total (of 17) PAHs	Nickel
pH	Lead
Acid neutralisation capacity	Antimony
Moisture content	Selenium
Leachate analyses	Zinc
Arsenic	Chloride
Barium	Fluoride
Cadmium	37
Chromium (total)	Sulphate (as SO4)
Phenol Index	Total dissolved solids
Dissolved organic carbon at own pH or pH 7.5–8.0	

1.4.5.2 Geo-chemical

The client has requested the following geo-chemical testing has been scheduled.

- BRE Suite A – Greenfield Pyrite absent
- BRE Suite B – Greenfield Pyrite present
- BRE Suite D – Brownfield Pyrite present

1.4.5.3 Geotechnical

The client has requested the following geotechnical testing has been scheduled.

- Moisture Content (MC)
- Atterberg Limits (Liquid Limit/Plastic Limit/Plasticity Index)
- Particle Size Distribution by Wet Sieve and Sedimentation by Pipette (PSD)
- Saturated Moisture Content
- Porosity
- Dry Density/ Moisture content relationship (2.5kg and 4.5kg)
- Small Shear Box
- Large Shear Box
- California Bearing Ratio (CBR)
- Unconsolidated Undrained Triaxial (3x38mm)
- Consolidated Undrained Triaxial (3x38mm)
- Consolidated Drained Triaxial (3x38mm)
- Laboratory Vane
- Unconfined Compressive Strength of Soil/Rock
- Point Load Index of Rock

All the tests on the previous page have been carried out in accordance with the relevant standards at UKAS and MCERTS by either I2 Analytical, Professional Soils Laboratory, SUEZ (DETS North) or CTS Group laboratories. Standards adhered to include: BS1377:1990-2022, BS EN 17892 (where appropriate) and BRE SD1 for sulphate suites.

Samples collected during this investigation will be retained on the premises of Strata Geotechnics for a period of six weeks from the date of issue of the final factual report. Should any additional laboratory tests be required, please contact Strata Geotechnics prior to the above disposal date.

2 Limitations of Study

Strata Geotechnics are a wholly owned subsidiary of Van Elle Limited (VEL).

This report is for the sole use and benefit of Octavius Infrastructure Ltd in accordance with their brief and should not be relied upon or used by other parties without explicit prior written agreement from VEL. VEL disclaim any responsibility to the client and others in respect of any matters outside the above scope.

The investigation has been carried out to our understanding of current legislation and best practice; designed to produce information adequate for the appraisal of potential site conditions in relation to the proposed future use of the site. This investigation generally adhered to the guidelines outlined in BS5930:2015+A1:2020, Code of Practice for Site Investigations. In regard to testing of soils, the investigation generally adheres to guidance outlined in BS1377:1990 to 2022 and Testing of Soils for Civil Engineering Purposes and BS EN 17892 where appropriate.

New information, legislation, local authority planning conditions or changes to best practice may necessitate further fieldworks and revision/reissue of the ground investigation report after the date of this report issue. Further assessment, investigation or construction activities over time may reveal conditions that were not found during the period of these investigations and, therefore, could not have been taken into account in the preparation of the report. VEL reserves the right to amend their conclusions and recommendations in the light of further information that may become available.

Interpretation and recommendations should not be assumed valid for either adjacent areas of land or alternative land uses. Should the proposed site use change, the findings of this report should be re-assessed for the new end-use.

Intrusive investigations can only investigate ground beneath a small proportion of the total site area. Attention is drawn to the fact that the findings are based on data obtained from the borehole samples and in-situ testing. Where comments are made based on information obtained from third parties, VEL assumes that all third-party information is true and correct. No independent action has been undertaken to validate the findings of third-party information, unless specifically stated. The possibility of variation in ground conditions around the borehole should not be overlooked. As such these do not necessarily address all aspects of the ground behaviour on site. Any opinion or diagram of a possible configuration of strata beyond the borehole or extrapolated to greater depth is conjectural and given for guidance only, no responsibility is accepted as to its accuracy. No liability can be accepted for such variations.

This investigation was undertaken in good faith with regards to the request and requirements of Octavius Infrastructure Ltd at the time of quotation, it does not constitute a full interpretative report with regards to the geotechnical or environmental status of the site. There may be other sources of information not included in this report that hold data relevant to the site that could materially affect the conclusions made in this report.

Where applicable this report should be presented to the relevant statutory authority, planning body, or design engineers as soon as possible for their review, comment and/or acceptance.

It is possible therefore that the intrusive investigation undertaken by VEL, whilst fully appropriate, may not have encountered all significant subsurface conditions. Consequently, no liability can be accepted for conditions not revealed by the exploratory holes.

3 Results of the Ground Investigation

3.1 Published Ground Conditions

The published geological records available from the British Geological Survey indicates that the Site is underlain by Alluvium and River Terrace deposits often comprising clay, silt, sand and gravel from the Quaternary period. The superficial geology also includes the Bosworth clay member and Thrussington member of Diamicton. The underlying solid bedrock geology is listed as the Mercia Mudstone Group which is Triassic in age (201Ma)

3.2 Encountered Ground Conditions

Table 3-1 Summary of ground conditions encountered

Location	Strata Encountered						
	Topsoil	Made Ground Including hardstanding	Alluvium Sand, silt, gravel and clay.	River Terrace Deposits Sand and gravel.	Bagington Sand and Gravel Formation Loose to medium dense sand and gravel.	Wolston Glacigenic Formation Thrussington Till and Bosworth Clay	Mercia Mudstone Group
BH102		0.00 – 3.50		3.50 – 5.80			5.80 – 10.25*
BH103		0.0 – 0.40	0.40 – 2.50		2.50 – 4.50		4.50 – 10.45*
BH104	0.0 – 0.60		0.60 – 3.50				3.50 – 9.79*
BH105	0.0 – 0.40		0.40 – 3.20				3.20 – 10.41*
BH106	0.0 – 0.50		0.50 – 2.95				2.95 – 10.79*
BH107			0.0 – 2.20				2.20 – 10.0*
BH108	0.0 – 0.30				0.30 – 1.50		1.50 – 20.00*
BH109		0.0 - 0.90			0.90 – 4.60		4.60 – 20.5*
BH110	0.0 – 0.30				0.30 – 3.20		3.20 – 20.15*
BH111					0.0 – 3.80		3.80 – 10.0*
BH112					0.0 -5.10		5.10 – 10.0*
BH113	0.0 - 0.60				0.60 – 4.20		4.20 – 11.20*
BH114					0.0 -2.50		2.50 – 9.79*
BH115	0.0 – 0.60						0.60 – 9.85*
BH116					1.95 – 3.85	0.4 – 1.95	3.85 – 10.37*
BH117		0.0 – 1.70			8.00 - 9.15	1.70 – 8.00	9.15 – 15.50*
BH118	0.0 – 0.60				4.50 – 6.40	0.60 – 4.50	6.40 – 10.0*
BH119	0.0 – 0.30					0.30 – 4.50	4.50 – 10.24*
BH120	0.0 – 0.55				3.40 – 8.60	0.55 – 3.40	8.60 – 25.0*
BH121	0.0 – 0.35				4.60 – 5.40	0.35 – 4.60	5.40 – 16.0*
BH122	0.0 – 0.40					0.40 – 8.00	8.00 – 25.16*
BH123	0.0 – 0.35					0.35 – 5.40	5.40 – 13.37*
BH124	0.0 – 0.35					0.35 – 13.70	13.70 – 25.0*
BH125	0.0 – 0.40*						
BH125A	0.0 – 0.50				3.20 – 8.00	0.50 – 3.20	8.00 – 25.0*
BH126	0.0 – 0.35				4.20 – 6.00	0.35 – 4.20	9.00 – 10.69*

Location	Strata Encountered						
	Topsoil	Made Ground Including hardstanding	Alluvium Sand, silt, gravel and clay.	River Terrace Deposits Sand and gravel.	Bagington Sand and Gravel Formation Loose to medium dense sand and gravel.	Wolston Glacigenic Formation Thrussington Till and Bosworth Clay	Mercia Mudstone Group
BH127	0.0 – 0.40				4.20 – 6.00	0.40 – 4.20	6.00 – 9.86*
BH128	0.0 – 0.20					0.20 – 8.90	8.90 – 11.91*
TP101	0.0 – 0.30						0.30 – 2.40*
TP102	0.0 – 0.40					0.40 – 2.50*	
TP103	0.0 – 0.50					0.50 – 2.50*	
WS102		0.0 – 0.30	0.30 – 2.75		2.75 – 3.70		3.70 - 6.45*
WS103		0.0 – 1.20			1.20 – 3.45		3.45 – 5.05*
WS104	0.0 – 0.40				2.75 – 3.40	0.40 – 2.75	3.40 – 3.90*
WS105	0.0 – 1.20					1.20 -3.90*	
WS106						0.0 – 1.20	1.2 – 5.00*
WS107			0.0 –2.00		2.00 – 4.45*		
WS108	0.0 – 0.40				0.80 – 1.90	0.40 – 0.80	1.90 – 3.50*
WS109			0.0 – 2.60	2.60-3.00*			

*base of strata not encountered
All depths given in meters below ground level (m BGL)

3.2.1 Made Ground

Made Ground was encountered in BH102, BH103, WS102 and WS103 as gravelly sand with quartzite and brick. Locations BH102, BH103 had a hardstanding bituminous material at ground level which required coring in order to advance the boreholes.

In BH109 and BH117 the Made Ground encountered was a gravelly silty sandy clay containing quartzite and red brick.

3.2.2 Alluvium Deposits

Alluvium deposits are abundantly present across the length of the site. The alluvium comprised of varying percentages of clay, silt, sand and gravel with low to medium cobble content in some locations.

In locations where alluvium was not present (BH109-BH114, BH116, BH118, BH119, BH125, BH126-BH128, TP101-103 anWS109) either River Terrace deposits were present or the Wolston Glacigenic Formation.

3.2.3 Bagington Sand and Gravel Formation

Typically, loose to very dense, rounded to subrounded silty sand and gravel with occasional lenses of clay. They are orangish brown and locally mottled grey in colour and either are present in lieu of alluvium or are overlain by alluvium. Occasionally they are recorded as having a low cobble content of quartzite.

3.2.4 Wolston Glacigenic Formation

The Wolston Glacigenic Formation comprises of both the Thrussington Till member and Bosworth Clay which were present in a small number of locations across the site. The formation is characterised by reddish brown till – logged as gravelly clay and the Bosworth Clay which is a Glaciolacustrine mud logged as reddish brown locally mottled stiff grey clay.

3.2.5 Mercia Mudstone Group

The final strata encountered was a stiff to very stiff clay becoming extremely weak to medium strong mudstone. The Mercia Mudstone Group was encountered in all boreholes which reached bedrock and is distinctively recognised by the reddish-brown colour with greyish reduction spots and gleying. The group includes mudstone, siltstone and sandstone with common gypsum bands throughout the sequence. Fractures logged were typically 0-10 degrees, planar smooth and closely to very closely spaced. Infill was typically of clay or gypsum.

3.3 In-situ Tests

3.3.1 In-situ Hand Shear Vane Tests and Pocket Penetrometer Tests

In-situ hand shear vane tests were undertaken where possible and indicated peak undrained shear strengths of between 10 and 140 kPa and residual shear strengths of between 62 and 10 kPa.

In-situ pocket penetrometer tests were undertaken on suitable material and indicate the peak unconfined compressive strength (UCS) of the soil which is numerically twice that of undrained shear strength. UCS values of between 96 and 384 kPa were recorded.

3.3.2 In-situ PID Tests

In total 109 PID readings were taken within the exploratory locations. Below is a summary of the readings:

Table 3-2 PID values recorded across site works.

Range (ppm)	No. of results	Notes
0.0	24	-
0.1 – 0.9	0	-
1.0 – 1.9	15	-
2.0 – 9.9	65	-
10.0 – 46.0	5	Highest recorded (52) in BH112

Full results can be found within the exploratory hole logs in Appendix B.

3.3.3 Variable Head (Falling) Permeability Tests and Infiltration Tests

1No. Infiltration test was undertaken in accordance with BRE 365 across the site. The infiltration rate was negligible as no drainage in 24 hours was recorded. 2No. further locations were originally included within the scope of work, however were descoped based on the results of the first.

A full set of data can be found in Appendix C.

3.3.4 In-situ Standard Penetration Tests (SPT)

Standard penetration tests (SPT's) were carried out with the use of a normal solid cone or split spoon sampler in the solid deposits encountered within the boreholes in order to determine the relative strength / density of the materials tested. Where the full penetration depth could not be achieved, the bottom sampling depth is indicated as less than 0.45m from the top (start of test), with the actual depth of penetration being recorded in millimetres. The results are shown as 'N' values on the graphic borehole record sheets, these have not been corrected for hammer efficiency or over burden pressure. Where possible a disturbed sample was collected also.

A summary of SPT results by geological unit is presented below:

Table 3-3 SPT results by geology.

Strata	SPT Range ('N')	Notes
Made Ground	6- 9	Only 2No tests undertaken in Made Ground
Alluvium Deposits	3 - 87	Indicative of variable conditions
River Terrace Deposits	6 – 44	Indicative of loose to dense conditions.
Wolston Glacigenic Fm	15 - 59	Indicative of variable conditions

Strata	SPT Range ('N')	Notes
Mercia Mudstone Group	13 – 100+	Indicative of variable conditions

3.4 Laboratory Testing

Geotechnical laboratory test results indicate that the soils at the site are:

Table 3-4 Geotechnical testing results by geology.

Geotechnical	Topsoil	Made Ground	Alluvium	River Terrace Deposits	Wolston Glacigenic Formation	Mercia Mudstone Group
Moisture Content %	16*	-	9.6 - 34	10 – 27	13 – 21	10 - 27
PSD – Gravel %	-	-	0 - 80	2 - 22	-	2 - 22
PSD – Sand %	-	-	17 - 60	14 – 31	-	14 -31
PSD – Silt %	-	-	21 - 44	33 – 45	-	33 - 45
PSD – Clay %	-	-	16 - 38	27 – 39	-	27 - 39
Plasticity Index %	11*	-	14 - 26	11 - 25	15 - 26	11 - 25

*Only one result recorded to date.

Please find full laboratory test results in appendix D

3.5 Groundwater

Below is a summary of groundwater encountered during the drilling works.

Table 3-5 Groundwater encountered during drilling works.

Location	Depth groundwater was encountered (m BGL)	Water level after 20 minutes (m BGL)
BH104	1.0	1.0
BH106	3.5	2.81
BH108	1.20	0.90
BH110	7.40	7.0
BH111	5.40	5.14
BH113	2.10	1.90
BH114	4.30	4.26
BH117	4.10	3.55
BH118	4.00	3.90
BH119	3.60	3.37
BH120	3.15	2.40
BH121	2.50	2.50
BH122	5.00	4.52
BH123	7.50	6.95
BH124	5.60	4.76
	10	8.10
BH125A	3.50	2.70
BH126	5.20	4.55
	10.20	6.50
BH127	8.50	2.0
BH128	5.95	5.35
WS104	2.0	1.20

Water strikes are detailed on the exploratory hole logs presented in Appendix B.

Changes in groundwater level may occur for several reasons, including seasonal effects and variations in drainage. The long term groundwater elevation may increase or decrease at some time in the future. Groundwater direction has not been determined as part of this report.

3.6 Groundwater and ground gas monitoring

During drilling combined groundwater and ground gas-monitoring installations were placed in 20 no. of the boreholes upon completion. 19 no. continuous water monitoring divers were installed as part of this. Details of the installations are included on the Borehole Logs in Appendix B.

The 50mm installations are scheduled to be monitored on 12 occasions over the course of one year: groundwater levels were recorded on each occasion to date as well as:

- Atmospheric pressure (mbar)
- Differential pressure
- Gas flow (l/hr)
- Methane, CH4 (%) and LEL
- Carbon Dioxide, CO2 (%)
- Oxygen, O2 (%)
- Carbon Monoxide, CO (ppm)
- Hydrogen Sulphide, H2S (ppm)

To date 6 no. water monitoring visits have been undertaken, the results are presented in Appendix F.

3.7 Groundwater Sampling

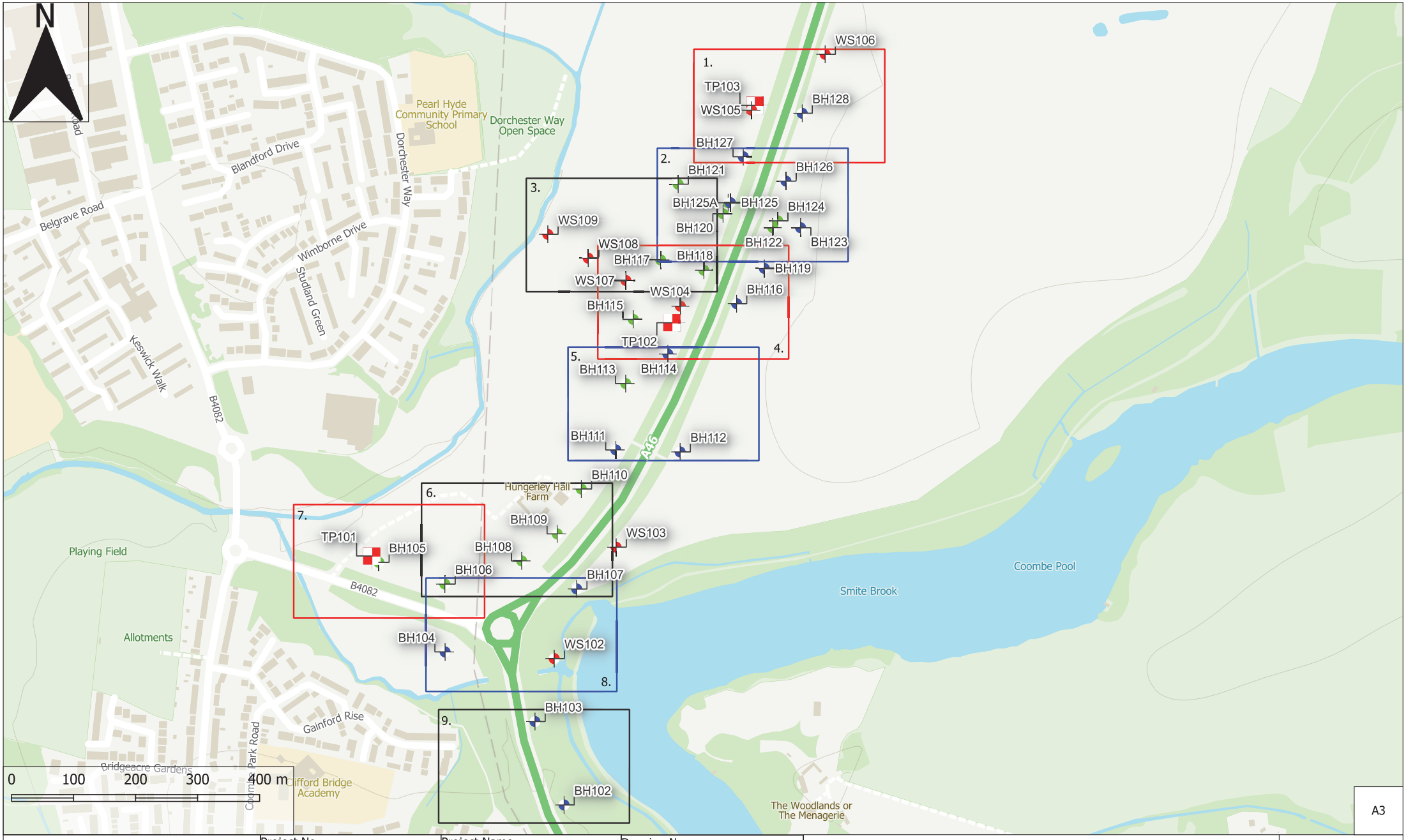
No groundwater sampling has been instructed to date.

4 References

- British Geological Survey (BGS – formerly the Institute of Geological Sciences (IGS)) www.bgs.ac.uk and BGS Geoindex: http://mapapps2.bgs.ac.uk/geoindex/home.html.
- BS 5930:2015 A1 - 2020 Code of Practice for Site Investigations.
- BS EN ISO 14688 Identification, Description and classification of soils
- BS EN ISO 14689 Identification, Description and classification of rocks
- BS1377:1990-2022, Methods for Testing of Soils for Civil Engineering Purposes.
- BS EN ISO 17892, Geotechnical investigation and testing. Laboratory testing of soil
- BS 8574:2014- Geotechnical Data Management
- Soil and Rock Description in Engineering Practice, D. Norbury.
- BRE Special Digest 365 (Revised 2016) – Soakaway design
- BS EN ISO 22282:1:2012 Geotechnical investigation and testing — Geohydraulic testing

APPENDICES

Appendix A: Drawings



A3

STRATA GEOTECHNICS

Project No.	Project Name.	Drawing Name.
G230651	A46 Walsgrave Junction	Exploratory Hole Location Plan

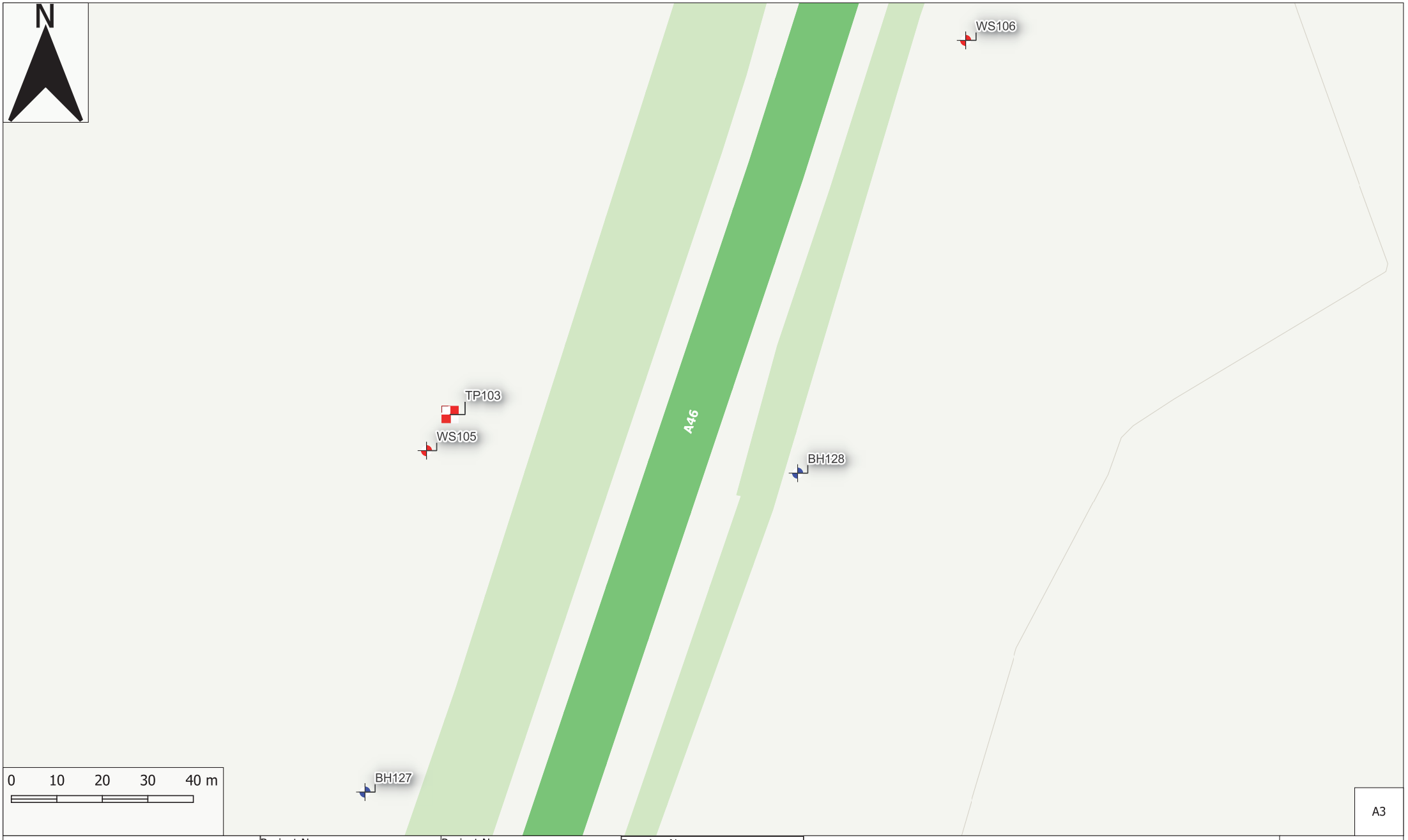
Client.		Drawing Ref.
Octavius Infrastructure Ltd	1:5,500	G230651/A46-Walsgrave/EHLP-O/Rev.B/TK/2023-12-22

Legend

Location Details

- Trial Pitting
- Cable Percussive
- Windowless Sampling
- Cable Percussive +Rotary Cored

Drawn By:	Checked By:	Approved By:
TK	SW	JW



A3

STRATA GEOTECHNICS

Project No. G230651	Project Name. A46 Walsgrave Junction	Drawing Name. Inset 1	
Client. Octavius Infrastructure Ltd	1:750	Drawing Ref. G230651/A46-Walsgrave/EHLP-I1/Rev.B/TK/2023-12-22	

Legend

Location Details

- Trial Pitting
- Cable Percussive
- Windowless Sampling

Drawn By: TK

Checked By: SW

Approved By: JW

A3

STRATA GEOTECHNICS	Project No. G230651	Project Name. A46 Walsgrave Junction	Drawing Name. Inset 2
Client. Octavius Infrastructure Ltd	1:750	Drawing Ref. G230651/A46-Walsgrave/EHLP-I2/Rev.B/TK/2023-12-22	

Legend

Location Details
- Cable Percussive +Rotary Cored
- Cable Percussive

Drawn By:	TK
Checked By:	SW
Approved By:	JW

A3

STRATA GEOTECHNICS

Project No.	Project Name.	Drawing Name.
G230651	A46 Walsgrave Junction	Inset 3

Client.	1:750	Drawing Ref.
Octavius Infrastructure Ltd		G230651/A46-Walsgrave/EHLP-I3/Rev.B/TK/2023-12-22

Legend

Location Details

Windowless Sampling

Cable Percussive +Rotary Cored

Drawn By:	Checked By:	Approved By:
TK	SW	JW

STRATA GEOTECHNICS	Project No. G230651	Project Name. A46 Walsgrave Junction	Drawing Name. Inset 4
Client. Octavius Infrastructure Ltd	1:750	Drawing Ref. G230651/A46-Walsgrave/EHLP-I4/Rev.B/TK/2023-12-22	

Legend

Location Details

- Trial Pitting
- Cable Percussive
- Windowless Sampling
- Cable Percussive +Rotary Cored

Drawn By:	TK
Checked By:	SW
Approved By:	JW

A3

STRATA GEOTECHNICS

Project No.	Project Name.	Drawing Name.
G230651	A46 Walsgrave Junction	Inset 5

Legend

Location Details

Cable Percussive +Rotary Cored

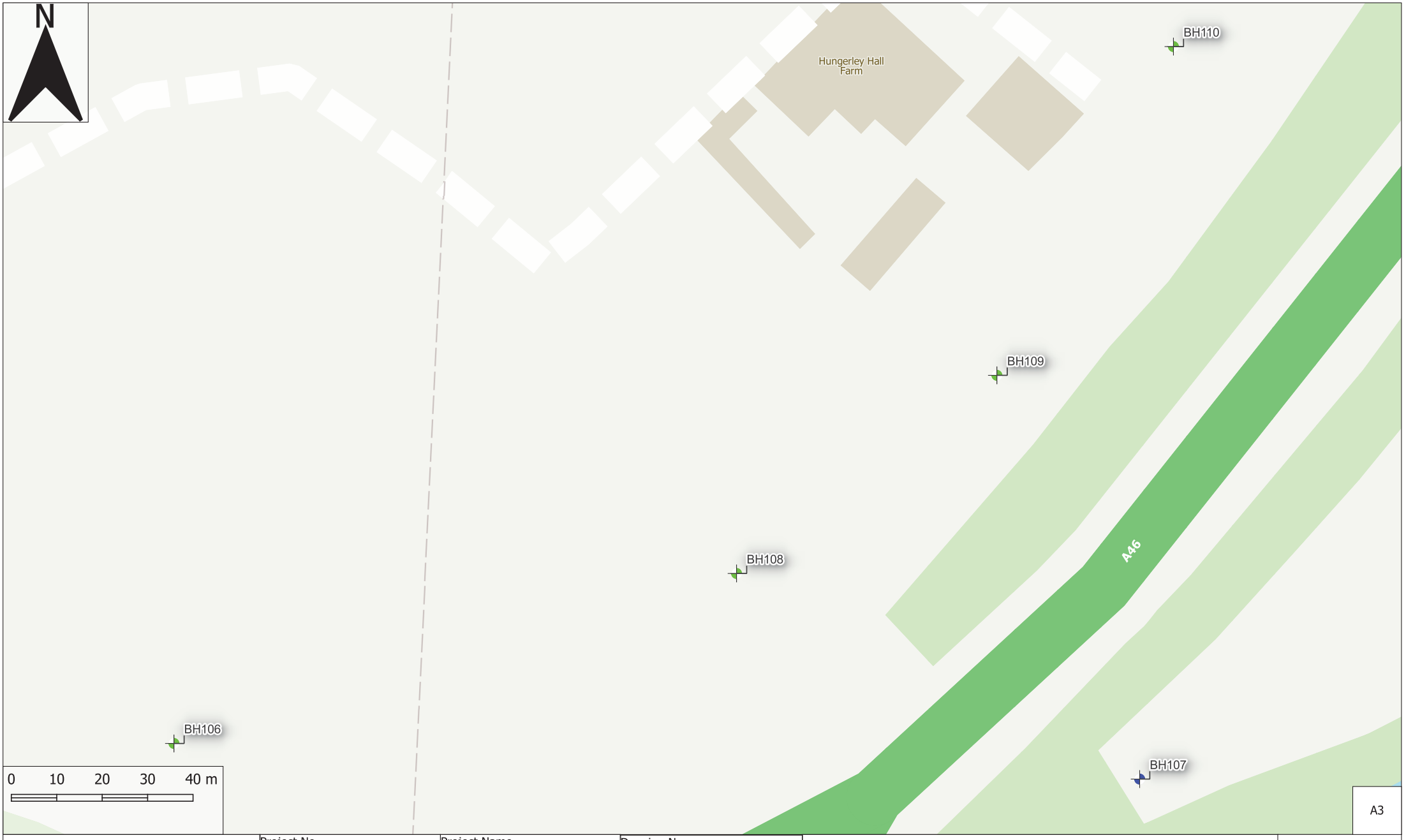
Cable Percussive

Drawn By: TK

Checked By: SW

Approved By: JW

Client.		Drawing Ref.
Octavius Infrastructure Ltd	1:750	G230651/A46-Walsgrave/EHLP-I5/Rev.B/TK/2023-12-22

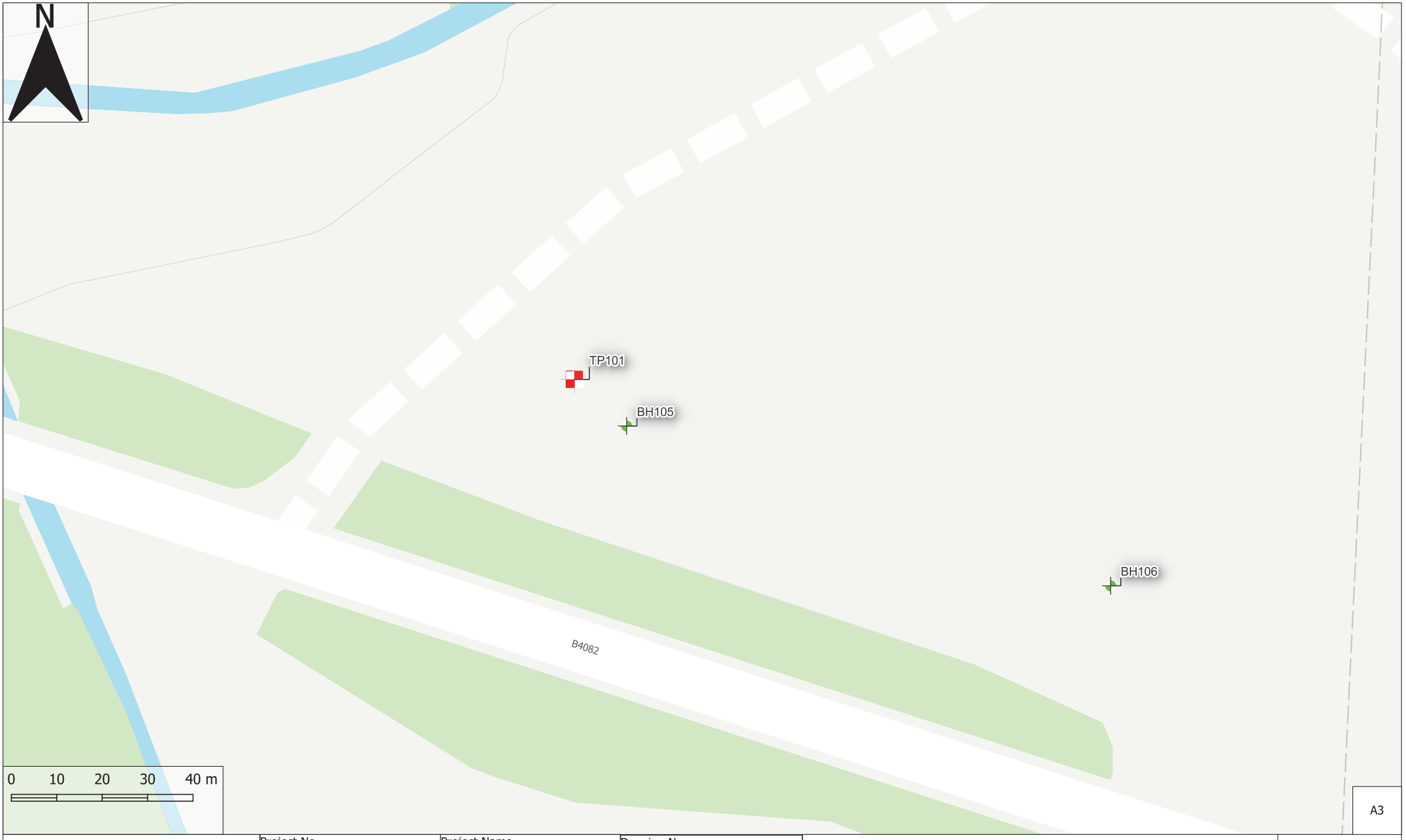


STRATA GEOTECHNICS	Project No. G230651	Project Name. A46 Walsgrave Junction	Drawing Name. Inset 6
Client. Octavius Infrastructure Ltd	1:750	Drawing Ref. G230651/A46-Walsgrave/EHLP-I6/Rev.B/TK/2023-12-22	

Legend

Location Details
- Cable Percussive +Rotary Cored
- Cable Percussive

Drawn By:	TK
Checked By:	SW
Approved By:	JW



A3

STRATA GEOTECHNICS	Project No. G230651	Project Name. A46 Walsgrave Junction	Drawing Name. Inset 7
Client. Octavius Infrastructure Ltd	1:750	Drawing Ref. G230651/A46-Walsgrave/EHLP-I7/Rev.B/TK/2023-12-22	

Legend

Location Details

Cable Percussive +Rotary Cored

Trial Pitting

Drawn By: TK

Checked By: SW

Approved By: JW

A3

STRATA GEOTECHNICS

Project No.	Project Name.	Drawing Name.
G230651	A46 Walsgrave Junction	Inset 8

Client.	1:750	Drawing Ref.
Octavius Infrastructure Ltd		G230651/A46-Walsgrave/EHLP-I8/Rev.B/TK/2023-12-22

Legend

Location Details

Cable Percussive +Rotary Cored

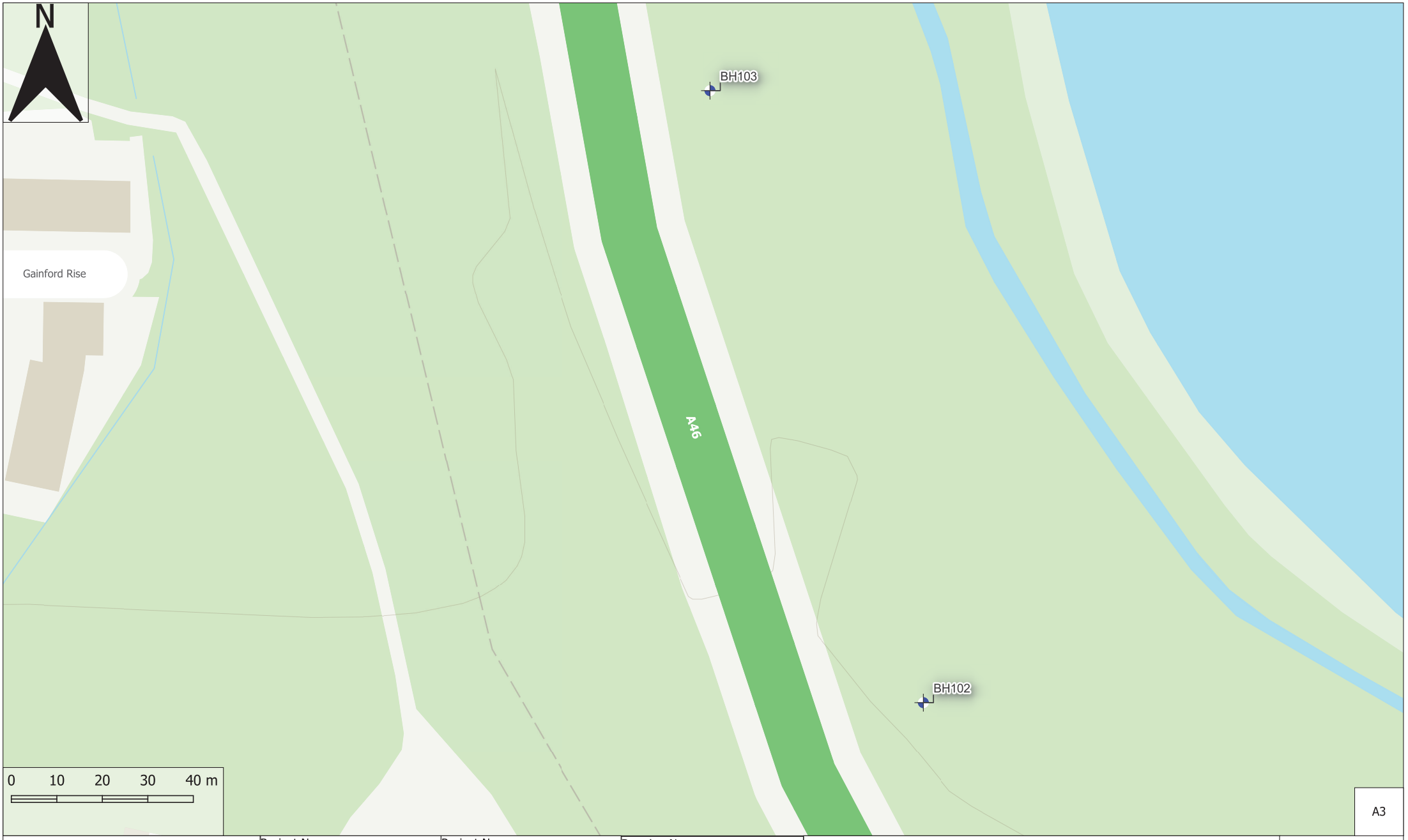
Cable Percussive

Windowless Sampling

Drawn By: TK

Checked By: SW

Approved By: JW



A3

STRATA GEOTECHNICS

Project No.	Project Name.	Drawing Name.
G230651	A46 Walsgrave Junction	Inset 9

Client.	1:750	Drawing Ref.
Octavius Infrastructure Ltd		G230651/A46-Walsgrave/EHLP-I9/Rev.B/TK/2023-12-22

Legend

Location Details

Cable Percussive

Drawn By: TK

Checked By: SW

Approved By: JW

Appendix B: Exploratory Hole Records

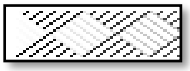
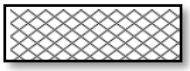
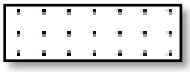
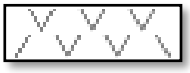
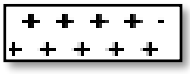
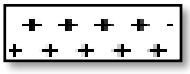
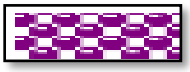
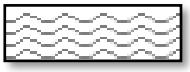
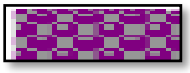
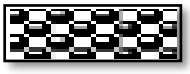
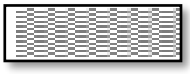
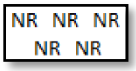
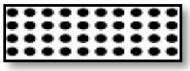
Legends:

U	Undisturbed driven tube sample, 100mm nominal diameter unless noted
UT	Undisturbed thin wall tube sample, 100mm nominal diameter unless noted
P	Undisturbed pushed piston sample, 100mm nominal diameter unless noted
CBR	CBR mould sample
BLK	Block sample
D	Small disturbed sample
B	Disturbed bulk sample
SD	Standard Penetration Test liner sample
ES	Soil sample for environmental testing
W	Water sample
L	Liner, dynamic/windowless sample
C	Core sample
CSS	Core sub sample

Test results

N (S)	Standard penetration test, split spoon sampler (uncorrected)
N (C)	Standard penetration test, solid cone (uncorrected)
K	Field permeability test, kFH indicates falling head, kPI indicates packer injection
HV	Hand vane test [peak/residual], kPa, Undrained Shear Strength
I_a or I_d	Point load strength quoted for axial (a) and diameter (d), MPa Point Load Index
PP	Pocket Penetrometer, kPa, Unconfined Compressive Strength
LMP	Lump sample for laboratory testing
Non-Intact	Core recovered in sections less than one full diameter without signs of weathering

Soil, Rock and Backfill Legends:

Topsoil		**MADE GROUND**	
Concrete		**Bituminous Material**	
Clay		**Silt**	
Sand		**Gravel**	
Cobbles		**Peat**	
Sandstone		**Mudstone**	
Siltstone		**Coal**	
Breccia		**Fine grained Igneous**	
Limestone		**Medium grained Igneous**	
Conglomerate		**Coarse grained Igneous**	
Clean Ballast		**Fine grained Metamorphic**	
Slightly dirty Ballast		**Medium grained Metamorphic**	
Dirty Ballast		**Coarse grained Metamorphic**	
Broken Ground		**No Recovery**	
Cement Bentonite		**Bentonite**	
Arisings		**Grout**	

STRATA GEOTECHNICS	Contract Name: A46 Walsgrave		Client: Octavius				Borehole ID: BH102
	Contract Number: G230651	Date Started: 03/05/2023	Date Completed: 04/05/2023	Logged: JAW	Checked: SW	Status: FINAL	Sheet 1 of 2
Cable Percussion Borehole Log	Easting: 438461.1	Northing: 279010.9	Ground Level: 72.88m (OD)	Plant Used: Dando 2000		Print Date: 21/12/2023	Scale: 1:50
Weather: Sunny	Rig Crew: Matthew Higginson	Termination: Target Depth		SPT Hammer: AR3573 Energy Ratio: 67%			

Samples & In Situ Testing			Strata Details				Groundwater	
Depth	Sample ID	Test Result	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
				(0.40)		MADE GROUND: BITUMINOUS MATERIAL.		
0.40 - 0.50	D2		72.48	0.40		MADE GROUND: Yellowish brown slightly sandy sand is fine to coarse fine to coarse angular GRAVEL of sandstone.		
0.40 - 0.80	B1							
0.50 - 0.60	ES3			(0.80)				
0.70 - 0.80	D4							
0.80 - 1.20	B5							
1.00 - 1.10	D6							
1.10	ES		71.68	1.20		MADE GROUND: Medium dense dark grey very sandy sand is fine to coarse angular to subangular GRAVEL.		
1.20	D8							
1.50 - 2.00	B9	SPT(C) 1.50m, N=30 (2,5/6,6,13,5)						
1.60	ES							
1.60 - 1.70	ES10							
1.70 - 1.80	D11					2.00 - 3.50: Metal filings and tyre scraps found from 2.0m		
2.00 - 2.20	D12							
2.30	ES			(2.30)				
2.30 - 2.40	ES14	SPT(C) 2.50m, N=9 (1,1/2,1,3,3)						
2.50 - 3.00	B13							
3.00 - 3.20	ES15							
3.20 - 3.30	D16							
3.50 - 4.00	B17	SPT(C) 3.50m, N=13 (2,2/3,3,3,4)	69.38	3.50		Dense greyish brown SAND and GRAVELS. Sand is fine to coarse. Gravel is fine to coarse, subangular chert [RIVER TERRACE DEPOSITS]		
3.60 - 3.70	D18							
3.70 - 3.80	ES19							
4.00 - 4.20	D							
4.00 - 4.20	D20							
4.30 - 4.40	ES21							
4.50 - 5.00	B22	SPT(C) 4.50m, N=44 (3,5/5,10,12,17)		(2.30)				
5.00 - 5.20	D23							
5.50 - 6.00	B24	SPT(C) 5.50m, N=28 (4,7/9,6,6,7)						
5.60 - 5.70	ES26							
			67.08	5.80		Stiff reddish brown gravelly CLAY. Gravel is medium to coarse subangular mudstone. (Partially Weathered Mercia Mudstone - Grade IVa)		
6.20	D25							
6.20 - 6.30	ES33							
6.50 - 6.95	D27	SPT(S) 6.50m, N=68 (6,6/10,14,19,25)						
6.50 - 7.00	B28							
6.60 - 6.70	D37							
6.80 - 6.90	ES36							
				(3.00)				
7.50	D							
7.50	D29							
8.00 - 8.10	UT	Ublows = 50						
8.00 - 8.50	B30	Recovery = 0%						
8.10 - 8.20	D38							
8.70 - 8.80	D39							
8.80	D31		64.08	8.80		Stiff, blueish grey locally mottled reddish brown mottled gravelly interlaminated CLAY. Gravel is fine to coarse subrounded to subangular mudstone and siltstone. (Partially Weathered Mercia Mudstone - Grade IVa)		
8.80 - 9.00	B32							
				(1.45)				
9.50 - 9.72	D34	SPT(S) 9.50m, 100 (25 for 100mm/100 for 120mm)						
9.50 - 9.80	B35							
9.60 - 9.70	D40	SPT(C) 9.80m, N=96 (25 for 145mm/17,22,29,28)						

Start & End of Shift Observations

Date	Time	Depth (m)	Casing (m)	Water (m)
03-05-2023	19:30	0.00	0.00	
03-05-2023	23:55	6.50	6.20	5.50
04-05-2023	19:30	6.50	6.20	6.40
04-05-2023	23:00	10.25	6.20	6.40

Borehole Diameter

Depth (m)	Dia (mm)
10.25	180

Casing Diameter

Depth (m)	Dia (mm)
6.20	200

Remarks:

Position was cleared by Octavius prior to being cored to 0.4m bgl by Holemasters. Inspection pit was dug to 1.2m bgl . No water strikes were encountered during drilling. Position was backfilled with bentonite and reinstated using cement and cold lay upon completion.

Chiselling

From (m)	To (m)	Duration	Remarks
1.20	1.50	00:45	
2.10	2.20	00:30	
9.50	9.80	00:40	

Installation

Top (m)	Base (m)	Type	Dia (mm)

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks

STRATA GEOTECHNICS	Contract Name: A46 Walsgrave		Client: Octavius				Borehole ID: BH102
	Contract Number: G230651	Date Started: 03/05/2023	Date Completed: 04/05/2023	Logged: JAW	Checked: SW	Status: FINAL	Sheet 2 of 2
Cable Percussion Borehole Log	Easting: 438461.1	Northing: 279010.9	Ground Level: 72.88m (OD)	Plant Used: Dando 2000		Print Date: 21/12/2023	Scale: 1:50
Weather: Sunny	Rig Crew: Matthew Higginson	Termination: Target Depth		SPT Hammer: AR3573 Energy Ratio: 67%			

Samples & In Situ Testing			Strata Details				Groundwater	
Depth	Sample ID	Test Result	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
			62.63	10.25		Stiff, blueish grey locally mottled reddish brown mottled gravelly interlaminated CLAY. Gravel is fine to coarse subrounded to subangular mudstone and siltstone. (Partially Weathered Mercia Mudstone - Grade IVa)		
						End of Borehole at 10.25m		

11 12 13 14 15 16 17 18 19 20

Start & End of Shift Observations					Borehole Diameter		Casing Diameter		Remarks
Date	Time	Depth (m)	Casing (m)	Water (m)	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)	
					10.25	180	6.20	200	Position was cleared by Octavius prior to being cored to 0.4m bgl by Holemasters. Inspection pit was dug to 1.2m bgl . No water strikes were encountered during drilling. Position was backfilled with bentonite and reinstated using cement and cold lay upon completion.

Chiselling				Installation				Water Strikes					
From (m)	To (m)	Duration	Remarks	Top (m)	Base (m)	Type	Dia (mm)	Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks

STRATA GEOTECHNICS

Contract Name:	Client:	Borehole ID:
A46 Walsgrave	Octavius	BH103

Contract Number:	Date Started:	Date Completed:	Logged:	Checked:	Status:	Sheet 1 of 2
G230651	03/05/2023	04/05/2023	WG	CD	FINAL	

Cable Percussion Borehole Log	Easting:	Northing:	Ground Level:	Plant Used:	Print Date:	Scale:
	438414.2	279145.3	73.65m (OD)	Dando 3000	21/12/2023	1:50

Weather: Fine | Rig Crew: Ryan Hayes | Termination: Target Depth | SPT Hammer: AR1859 Energy Ratio: 65%

Samples & In Situ Testing			Strata Details				Groundwater	
Depth	Sample ID	Test Result	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
			73.55	0.10		MADE GROUND: Black BITUMINOUS MATERIAL.		
				(0.30)		MADE GROUND: Dark brown fine to coarse subangular GRAVEL of concrete.		
0.40 - 0.50	B1		73.25	0.40		Dark grey becoming brown gravelly fine to coarse SAND. Gravel is fine to coarse angular to rounded chert. [ALLUVIUM]		
0.50	ES			(0.50)				
0.50	ES2							
0.80	D4							
0.80	ES3		72.75	0.90		*0.70 - 0.90: Becoming clayey from 0.7m*		
0.90 - 1.00	B5					Firm reddish brown slightly sandy slightly gravelly CLAY. Sand is fine. Gravel is fine to coarse, subangular to subrounded chert [ALLUVIUM]		
1.00	D6							
1.00	ES			(1.00)				
1.00	ES7	SPT(S) 1.50m, N=29 (1,1/2,3,7,17)						
1.30	D8							
1.50 - 1.95	D9							
1.80	D10		71.75	1.90		Firm dark brown slightly sandy slightly gravelly SILT. Sand is fine. Gravel is fine to medium subangular to subrounded chert. [ALLUVIUM]		
1.80	ES11							
1.85 - 2.10	B12			(0.60)				
2.10	D13							
2.40	D14	SPT(S) 2.50m, N=40	71.15	2.50		Dense reddish brown SAND and GRAVEL. Sand is fine to coarse. Gravel is fine to coarse angular to subangular chert. [Bagington Sand and Gravel Formation]		
2.40	ES15	(5,6/10,10,10,10)						
2.50 - 2.95	D16							
2.70 - 2.80	B17							
2.80	D18							
3.00	D19							
3.00	ES20							
3.50 - 3.60	B22	SPT(S) 3.50m, N=40 (4,5/8,10,11,11)		(2.00)				
3.50 - 3.95	D21							
3.60	D23							
4.00	D24							
4.00	ES25							
4.00 - 4.20	B26							
4.50 - 4.60	B28	Ublows = 32	69.15	4.50		Stiff, brown mottled grey slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is fine to coarse rounded chert and mudstone. (Partially Weathered Mercia Mudstone - Grade IVa)		
4.50 - 4.95	UT27	Recovery = 100%						
4.60	D29							
4.60	ES30							
5.00	D31							
5.00 - 5.10	B32							
5.50	D34	SPT(S) 5.50m, N=15 (1,2/2,3,5,5)						
5.50	ES35							
5.50 - 5.95	D33							
6.00	D36							
6.00 - 6.10	B37							
6.50	D38							
6.50	ES39							
7.00	D	Ublows = 48						
7.00	D41	Recovery = 100%						
7.00 - 7.10	B42			(5.95)				
7.00 - 7.45	UT40							
7.50	D43							
7.50	ES44							
8.00	D45							
8.00 - 8.10	B46							
8.50	D48	SPT(S) 8.50m, N=24 (2,3/4,6,6,8)						
8.50	ES49							
8.50 - 8.95	D47							
9.00	D50							
9.00 - 9.10	B51							
9.50	ES52							
10.00	D53							

Start & End of Shift Observations

Date	Time	Depth (m)	Casing (m)	Water (m)
03-05-2023	19:30			
03-05-2023	23:55	4.50	4.00	
04-05-2023	20:00	10.45	4.00	
04-05-2023	23:55	0.00		

Borehole Diameter

Depth (m)	Dia (mm)

Casing Diameter

Depth (m)	Dia (mm)
5.00	200

Remarks:

Position was cleared by Octavius prior to being cored to 0.4m bgl by Holemasters. Inspection pit was dug to 1.2m bgl . No water strikes were encountered during drilling. Position was backfilled with bentonite and reinstated using cement and cold lay upon completion.

Chiselling

From (m)	To (m)	Duration	Remarks

Installation

Top (m)	Base (m)	Type	Dia (mm)

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks

STRATA GEOTECHNICS	Contract Name: A46 Walsgrave		Client: Octavius				Borehole ID: BH103
	Contract Number: G230651	Date Started: 03/05/2023	Date Completed: 04/05/2023	Logged: WG	Checked: CD	Status: FINAL	Sheet 2 of 2
Cable Percussion Borehole Log	Easting: 438414.2	Northing: 279145.3	Ground Level: 73.65m (OD)	Plant Used: Dando 3000		Print Date: 21/12/2023	Scale: 1:50
Weather: Fine	Rig Crew: Ryan Hayes	Termination: Target Depth		SPT Hammer: AR1859 Energy Ratio: 65%			

Samples & In Situ Testing			Strata Details				Groundwater	
Depth	Sample ID	Test Result	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
10.00 - 10.45	UT54	Ublows = 76 Recovery = 100%	63.20	10.45		Stiff, brown mottled grey slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is fine to coarse rounded chert and mudstone. (Partially Weathered Mercia Mudstone - Grade IVa)		
						End of Borehole at 10.45m		

11 12 13 14 15 16 17 18 19 20

Start & End of Shift Observations					Borehole Diameter		Casing Diameter		Remarks
Date	Time	Depth (m)	Casing (m)	Water (m)	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)	Position was cleared by Octavius prior to being cored to 0.4m bgl by Holemasters. Inspection pit was dug to 1.2m bgl . No water strikes were encountered during drilling. Position was backfilled with bentonite and reinstated using cement and cold lay upon completion.
							5.00	200	

Chiselling				Installation				Water Strikes					
From (m)	To (m)	Duration	Remarks	Top (m)	Base (m)	Type	Dia (mm)	Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks

STRATA GEOTECHNICS	Contract Name: A46 Walsgrave		Client: Octavius			Borehole ID: BH104
	Contract Number: G230651	Date Started: 20/06/2023	Date Completed: 22/06/2023	Logged: TLY	Checked: IL	Status: FINAL
						Sheet 1 of 1
Cable Percussion Borehole Log	Easting: 438269.3	Northing: 279257.6	Ground Level: 70.91m (OD)	Plant Used: Dando 2500	Print Date: 21/12/2023	Scale: 1:50
Weather: Sunny	Rig Crew: Curtis Thrasher	Termination: Refusal		SPT Hammer: AR2297 Energy Ratio: 63%		

Samples & In Situ Testing			Strata Details				Groundwater	
Depth	Sample ID	Test Result	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
0.10	D4					TOPSOIL: Soft to firm brown slightly gravelly very sandy CLAY. Sand is fine to coarse. Gravel is subangular to rounded fine to coarse of quartzite		
0.10	ES2							
0.10	ESVE0			(0.60)				
	423062							
	0001		70.31	0.60				
0.10 - 0.30	B8			(0.30)		Firm orangish brown slightly gravelly sandy CLAY. Sand is fine to coarse. Gravel is subangular to rounded fine to coarse of quartzite [ALLUVIUM]		
0.40	D5		70.01	0.90				
0.50	ES3							
0.70	D6	SPT(S) 1.20m, N=8 (2,1/2,2,2,2)		(0.60)		Firm orangish brown slightly sandy slightly CLAY. Sand is fine to coarse. Gravels are subrounded to rounded fine to coarse of quartzite. [ALLUVIUM]		
0.70 - 0.80	B9							
1.00	D7		69.41	1.50				
1.00	ES3							
1.00	ESVE0							
	423062					Firm reddish brown slightly gravelly sandy CLAY with occasional rootlets. Sand is fine to coarse. Gravel is subrounded to rounded fine to coarse of quartzite and siltstone [ALLUVIUM]		
	0002	Ublows = 8						
1.00 - 1.20	B10	Recovery = 100%		(1.25)				
1.20 - 1.65	D11							
1.50	ES12							
1.80 - 2.00	B13							
2.00	ES14		68.16	2.75				
2.00 - 2.45	UT15					Firm becoming stiff reddish brown slightly sandy slightly gravelly CLAY with occasional bluish grey pockets of clay. Sand is fine to coarse. Gravels are subrounded to rounded fine to coarse quartzite. [ALLUVIUM]		
2.45 - 2.50	D16	SPT(S) 3.00m, N=7 (1,2/1,2,2,2)						
2.80 - 3.00	B17			(0.75)				
3.00 - 3.55	D18							
			67.41	3.50		Firm to stiff reddish brown slightly sandy CLAY with occasional bluish grey specks (Fully Weathered Mercia Mudstone Grade IVb)		
3.80 - 4.00	B19							
4.00 - 4.45	UT20	Ublows = 25 Recovery = 100%						
				(1.70)				
4.45 - 4.50	D21							
4.80 - 5.00	B22							
5.00 - 5.45	D23	SPT(S) 5.00m, N=37 (3,5/7,10,10,10)						
			65.71	5.20		Stiff reddish brown mottled bluish grey slightly sandy CLAY. Sand is fine to coarse. (Fully Weathered Mercia Mudstone Grade IVb)		
				(0.60)				
			65.11	5.80		Stiff reddish brown slightly sandy CLAY. Sand is fine to coarse. (Fully Weathered Mercia Mudstone Grade IVb)		
5.90 - 6.10	B24					*6.00 - 6.05: Gravel of siltstone*		
6.50 - 6.95	D25	SPT(S) 6.50m, N=44 (3,7/8,8,13,15)		(1.40)				
			63.71	7.20		Stiff reddish brown slightly sandy CLAY. Sand is fine to coarse. (Fully Weathered Mercia Mudstone Grade IVb)		
7.30 - 7.50	B26							
8.00 - 8.45	D27	SPT(S) 8.00m, N=75 (4,10/12,15,20,28)						
				(2.59)				
8.80 - 9.00	B28							
9.50 - 9.79	D29	SPT(S) 9.50m, 100 (25 for 70mm/100 for 220mm)						
			61.12	9.79		*9.75 - 9.79: Pocket of gypsum crystals* End of Borehole at 9.79m		

Start & End of Shift Observations

Date	Time	Depth (m)	Casing (m)	Water (m)
20-06-2023	07:30	0.00	0.00	
20-06-2023	17:30	6.50	6.00	
21-06-2023	07:30	6.50	6.00	
21-06-2023	18:00	8.00	6.00	
22-06-2023	07:30	8.00	6.00	1.50
22-06-2023	18:00	9.79	9.00	

Borehole Diameter

Depth (m)	Dia (mm)
9.79	180

Casing Diameter

Depth (m)	Dia (mm)
9.00	200

Remarks:

Position was cleared by Octavius prior to excavation. Inspection pit was dug to 1.2m bgl Groundwater was encountered at 1.00m bgl and remained at 1.00m bgl after 20 minutes. Position was installed upon completion with plain and slotted pipe, bentonite, gravel and cold lay upon completion.

Chiselling

From (m)	To (m)	Duration	Remarks

Installation

Top (m)	Base (m)	Type	Dia (mm)
0.00	5.50	PLAIN	50
5.50	9.50	SLOTTED	50
5.50	9.79	SLOTTED	50

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
1.00	0.00	1.20	20	1.00	Seepage

STRATA GEOTECHNICS	Contract Name: A46 Walsgrave		Client: Octavius			Borehole ID: BH105
	Contract Number: G230651	Date Started: 12/05/2023	Date Completed: 23/05/2023	Logged: TLYH/ SY/AH	Checked: IL	Status: FINAL
Cable Percussion Borehole Log	Easting: 438162.4	Northing: 279402.1	Ground Level: 72.55m (OD)	Plant Used: Dando 3000/ Comacchio 405	Print Date: 21/12/2023	Scale: 1:50
Weather: Fine	Rig Crew: RH JW	Termination: Target Depth		SPT Hammer: AR1859/AR2501 Energy Ratio: 65/67%		Sheet 1 of 2

Depth	Sample ID	Test Result	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
0.10	ES1		72.15	(0.40)		TOPSOIL: Firm dark brown slightly sandy slightly gravelly CLAY. Sand is fine. Gravel is fine to coarse subrounded to round Quartzite.		
0.10 - 0.20	D2			0.40		Firm dark reddish brown slightly gravelly sandy CLAY. Sand is fine to medium. Gravel is fine to coarse subrounded to rounded quartzite. [ALLUVIUM]		
0.10 - 0.20	D4							
0.10 - 0.30	B3							
0.10 - 0.30	B7			(0.60)				
0.50	B							
0.50	ES2		71.55	1.00				
0.50	ES4					Firm to stiff dark reddish brown silty sandy gravelly CLAY. Sand is fine to coarse. Gravel is fine to coarse subrounded quartzite. [ALLUVIUM]		
0.50 - 0.60	D5	SPT(S) 1.20m, N=10 (1,1/1,2,3,4)						
0.50 - 0.70	B6							
0.50 - 0.70	B8							
1.00	ES3							
1.00	ES7							
1.00 - 1.10	D6							
1.00 - 1.10	D8	Ublows = 32		(2.20)				
1.00 - 1.20	B9	Recovery = 100%						
1.20 - 1.65	D10							
1.70	ES11							
1.70 - 2.00	B12							
1.70 - 2.00	B13							
1.90	D							
1.90 - 2.00	D13	SPT(S) 3.00m, N=20 (2,2/3,5,6,6)						
1.90 - 2.00	D14		69.35	3.20		Firm reddish brown slightly sandy silty CLAY with occasional bands of weak grey siltstone (Fully Weathered Mercia Mudstone Grade IVb).		
2.00	ES12							
2.00	ES14							
2.00 - 2.45	UT15							
2.45 - 2.50	D16							
2.70 - 3.00	B17							
3.00 - 3.45	D18	Ublows = 91						
3.70 - 4.00	B19	Recovery = 100%						
3.90 - 4.00	D20							
4.00 - 4.45	UT21							
4.45 - 4.50	D22							
4.70 - 5.00	B23							
5.00 - 5.45	D24	SPT(S) 5.00m, N=76 (5,5/7,12,26,31)		(3.70)				
5.50 - 5.90	B25							
5.60 - 5.90	B25							
6.00 - 6.20	D26							
6.20 - 6.50	B27							
6.50 - 6.90	D28	SPT(S) 6.50m, 100 (4,8/100 for 245mm)						
			65.65	6.90		Very weak reddish brown MUDSTONE. Discontinuities at 0 to 10 degrees are very closely to medium spaced (50/150/300) planar smooth and clean (Partially Weathered Mercia Mudstone Grade II).		
7.50 - 7.80	CSS42							
7.00 - 8.50	C1	Fracture, TCR 100, SCR 67, RQD 53, FI = 5						
8.25 - 8.40	CSS43			(2.90)				
8.90 - 9.10	CSS44							
8.50 - 10.00	C2	Fracture, TCR 100, SCR 100, RQD 70						
9.45 - 9.60	CSS45							
			62.75	9.80		Very weak grey SILTSTONE. Discontinuities at 0 to10 degrees are very closely to closely spaced (50/70/70) planar smooth clean (Partially Weathered Mercia Mudstone Grade II)		
10.00 - 10.41	D3	Fracture, FI = 14						

Start & End of Shift Observations

Date	Time	Depth (m)	Casing (m)	Water (m)
12-05-2023	07:30	0.00	0.00	0.00
12-05-2023	15:30	4.50	2.00	
15-05-2023	03:30	4.50	2.00	1.70
15-05-2023	16:00	6.90	2.00	6.00
22-05-2023	08:00			
22-05-2023	17:25	10.00	10.00	7.00

Borehole Diameter

Depth (m)	Dia (mm)
6.90	180
10.41	146

Casing Diameter

Depth (m)	Dia (mm)
2.00	200

Remarks:

Position was cleared by Octavius prior to excavation. Inspection pit was dug to 1.2m bgl Groundwater was encountered at 7.15m bgl and dropped to 7.20m bgl. Coordinates are taken as as-builts. Position was installed upon completion with plain and slotted pipe, bentonite and gravel upon completion.

Chiselling

From (m)	To (m)	Duration	Remarks

Installation

Top (m)	Base (m)	Type	Dia (mm)
0.00	3.50	PLAIN	50
3.50	10.00	SLOTTED	50

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
7.15			20	7.20	
			0	0.00	

STRATA GEOTECHNICS	Contract Name: A46 Walsgrave		Client: Octavius				Borehole ID: BH105
	Contract Number: G230651	Date Started: 12/05/2023	Date Completed: 23/05/2023	Logged: TLYH/ SY/AH	Checked: IL	Status: FINAL	Sheet 2 of 2
Rotary Core Drilling Log	Easting: 438162.4	Northing: 279402.1	Ground Level: 72.55m (OD)	Plant Used: Dando 3000/ Comacchio 405		Print Date: 21/12/2023	Scale: 1:50
Weather: Fine	Rig Crew: RH JW	Termination: Target Depth		SPT Hammer: AR1859/AR2501 Energy Ratio: 65/67%			

Samples & In Situ Testing							Strata Details				Groundwater	
Depth	Sample	Test Result	TCR	SCR	RQD	FI/If	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
		SPT(S) 10.00m, N=80 (25 for 110mm/17,24,24,15)					62.14	(0.61) 10.41		End of Borehole at 10.41m		

Start & End of Shift Observations

Date	Time	Depth (m)	Casing (m)	Water (m)
23-05-23	07:30	10.41	10.00	6.00
23-05-23	10:00			

Flush Return Information

Top	Base	Min %	Max %	Type	Colour
0.00	7.00	100	100		red
7.00	8.50	100	100		red
8.50	10.00	100	100		red

Remarks:

Position was cleared by Octavius prior to excavation. Inspection pit was dug to 1.2m bgl Groundwater was encountered at 7.15m bgl and dropped to 7.20m bgl. Coordinates are taken as as-builts. Position was installed upon completion with plain and slotted pipe, bentonite and gravel upon

Water Strike

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks

Borehole Diameter

Depth (m)	Dia (mm)
6.90	180
10.41	146

Casing Diameter

Depth (m)	Dia (mm)
2.00	200

Coring Information

Top (m)	Base (m)	Dia (mm)	Barrel Type
7.00	8.50	102	
8.50	10.00	102	

Fracture Index (FI) - Fractures per meter, Fracture Spacing (If) - reported in mm as Min, Average and Max values. TCR, SCR and RQD reported as %. Hand vane (HV) reports Undrained Shear Strength (Su). Pocket penetrometer (PP) reports Unconfined Compressive Strength (UCS)

STRATA GEOTECHNICS	Contract Name: A46 Walsgrave		Client: Octavius			Borehole ID: BH106
	Contract Number: G230651	Date Started: 12/05/2023	Date Completed: 24/05/2023	Logged: JW/JH	Checked: IL	Status: FINAL
Cable Percussion Borehole Log	Easting: 438268.9	Northing: 279366.9	Ground Level: 75.85m (OD)	Plant Used: Dando 2000/ Comacchio 405	Print Date: 21/12/2023	Scale: 1:50
Weather: Sunny	Rig Crew: MH JW	Termination: Target Depth		SPT Hammer: AR3573/AR2501 Energy Ratio: 67/56%		Sheet 1 of 2

Samples & In Situ Testing							Strata Details				Groundwater	
Depth	Sample ID	Test Result	TCR	SCR	RQD	Fracture	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
0.10	D1						75.35	(0.50)		TOPSOIL: Firm, dark brown, slightly sandy, slightly gravelly CLAY. Sand is fine. Gravel is fine to coarse, subrounded to round quartzite.		
0.10 - 0.40	B2							0.50		Stiff reddish brown slightly sandy slighty gravelly CLAY with occasional rootlets and rare pockets (2-3mm) of blue grey silt. Sand is subangular fine to coarse. Gravel is rounded to subrounded fine to medium of quartzite. [ALLUVIUM]		
0.30	ES3											
0.40	D4											
0.50	ES5											
0.50 - 1.00	B6											
0.60	D7											
0.80 - 0.90	D8											
0.90	D8											
1.00	ES9											
1.20	D10	SPT(S) 1.50m, N=15 (2,2/3,4,4,4)										
1.50	ES11											
1.50 - 1.95	D12							(2.45)				
1.50 - 2.00	B13											
2.00	ES14											
2.20	D											
2.20	D15											
2.50 - 2.95	UT16	Ublows = 35 Recovery = 100%										
3.00	D18						72.90	2.95		Stiff reddish brown locally mottled blue grey slighty gravelly slightly sandy CLAY. Sand is subangular fine to coarse. Gravel is rounded to subrounded fine of quartzite. (Fully Weathered Mercia Mudstone Grade IVa)		
3.00 - 3.50	B17											
3.50 - 3.95	D19	SPT(S) 3.50m, N=31 (3,3/6,7,7,11)										
3.50 - 4.00	B20							(1.55)				
4.20	D21											
4.50 - 4.95	UT22	Ublows = 39 Recovery = 100%					71.35	4.50		Stiff, reddish brown, slightly gravelly, thinly laminated CLAY with occasional thin bands of weak light grey weak siltstone. (Fully Weathered Mercia Mudstone Grade IVa)		
5.00	D23											
5.20	D24											
5.50 - 5.95	D25	SPT(S) 5.50m, N=25 (4,4/4,4,6,11)										
5.50 - 6.00	B26											
6.20	D27							(3.35)				
6.50 - 6.80	UT28	Ublows = 80 Recovery = 50%										
6.50 - 6.80	UT29											
6.80 - 7.00	D29											
7.20	D30											
7.50 - 7.85	D31	SPT(S) 7.50m, 100 (8,18/100 for 200mm)										
7.50 - 9.00	C32							7.85				
7.75 - 7.85	CSS35						68.00			Very weak reddish brown MUDSTONE. Discontinuities at 0-10 degrees are very closely spaced to medium spaced (50/250/300) planar smooth clean (Partially Weathered Mercia Mudstone Grade II)		
7.50 - 9.00						FI = 4						
8.30 - 8.60	CSS36		93	87	80	FI = 15						
9.10 - 9.30	CSS37	UCS - 9.10m 2.8MPa	100	100	86	FI = 4		(1.85)				
9.00 - 10.40	C33						66.15	9.70		Moderately weak reddish brown MUDSTONE. Discontinuities at 0-10 degrees are very closely spaced to medium spaced (50/250/300) planar smooth clean (Partially Weathered Mercia Mudstone Grade II)		
10.00 - 10.20	CSS38							(0.50)		*9.70 - 9.90: Discontinuities 80-90 degrees planar smooth and clean.*		

Start & End of Shift Observations

Date	Time	Depth (m)	Casing (m)	Water (m)
12-05-2023	07:30	0.00	0.00	0.00
12-05-2023	18:00	4.50	4.20	4.40
15-05-2023	12:00	4.50	4.20	4.00
15-05-2023	18:00	7.85	7.20	6.80
23-05-2023	16:35	10.40	7.50	
24-05-2023	07:30	10.40	7.50	

Borehole Diameter

Depth (m)	Dia (mm)
7.85	180
10.79	146

Casing Diameter

Depth (m)	Dia (mm)
7.50	202
10.40	146

Remarks:

Position was cleared by Octavius prior to excavation. Inspection pit was dug to 1.2m bgl Groundwater was encountered at 3.50m bgl and rose to 2.85m bgl. Position was installed upon completion. Coordinates are taken as as-builts. Installed upon completion with plain pipe, slotted pipe, bentonite and gravel upon completion.

Chiselling

From (m)	To (m)	Duration	Remarks

Installation

Top (m)	Base (m)	Type	Dia (mm)
0.00	3.50	PLAIN	50
3.50	10.40	SLOTTED	50

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
3.50	2.20		20	2.81	Fast

STRATA GEOTECHNICS	Contract Name: A46 Walsgrave		Client: Octavius			Borehole ID: BH106
	Contract Number: G230651	Date Started: 12/05/2023	Date Completed: 24/05/2023	Logged: JW/JH	Checked: IL	Status: FINAL
Rotary Core Drilling Log	Easting: 438268.9	Northing: 279366.9	Ground Level: 75.85m (OD)	Plant Used: Dando 2000/ Comacchio 405	Print Date: 21/12/2023	Scale: 1:50
Weather: Sunny	Rig Crew: MH JW	Termination: Target Depth		SPT Hammer: AR3573/AR2501 Energy Ratio: 67/56%		Sheet 2 of 2

Samples & In Situ Testing							Strata Details				Groundwater	
Depth	Sample	Test Result	TCR	SCR	RQD	FI/If	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
10.40 - 10.78	D34	SPT(S) 10.40m, 100 (25 for 105mm/100 for 275mm)				FI = 24	65.65 65.06	10.20 (0.59) 10.79		Moderately weak reddish brown MUDSTONE. Discontinuities at 0-10 degrees are very closely spaced (40/50/50) planar smooth clean (Partially Weathered Mercia Mudstone Grade II) *10.20 - 10.40: Discontinuities 80-90 degrees are planar smooth and clean.* End of Borehole at 10.79m		

Start & End of Shift Observations				
Date	Time	Depth (m)	Casing (m)	Water (m)
24-05-23	17:00	10.79	7.50	

Flush Return Information					
Top	Base	Min %	Max %	Type	Colour
7.50	9.00	100	100		red
9.00	10.40	100	100		red

Remarks:

Position was cleared by Octavius prior to excavation. Inspection pit was dug to 1.2m bgl Groundwater was encountered at 3.50m bgl and rose to 2.85m bgl. Position was installed upon completion. Coordinates are taken as as-builts. Installed upon completion with plain pipe, slotted pipe, bentonite and

Borehole Diameter	
Depth (m)	Dia (mm)
7.85	180
10.79	146

Casing Diameter	
Depth (m)	Dia (mm)
7.50	202
10.40	146

Coring Information			
Top (m)	Base (m)	Dia (mm)	Barrel Type
7.50	9.00	102	
9.00	10.40	102	

Water Strike

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks

Fracture Index (FI) - Fractures per meter, Fracture Spacing (If) - reported in mm as Min, Average and Max values. TCR, SCR and RQD reported as %. Hand vane (HV) reports Undrained Shear Strength (Su). Pocket penetrometer (PP) reports Unconfined Compressive Strength (UCS)

STRATA GEOTECHNICS	Contract Name: A46 Walsgrave		Client: Octavius	Borehole ID: BH107
	Contract Number: G230651	Date Started: 22/06/2023	Date Completed: 23/06/2023	Logged: JAW / Checked: IL / Status: FINAL
Cable Percussion Borehole Log	Easting: 438481.4	Northing: 279359.1	Ground Level: 76.75m (OD)	Plant Used: Dando 2000 / Print Date: 21/12/2023 / Scale: 1:50
Weather: Fine	Rig Crew: Matthew Higginson	Termination: Target Depth	SPT Hammer: AR3573 Energy Ratio: 67%	Sheet 1 of 1

Depth	Sample ID	Test Result	Level (mAOD)	Depth (m) (Thickness)	Strata Description
0.10	D1			(0.40)	Firm dark brown slightly gravelly sandy CLAY with frequent rootlets. Sand is fine to coarse. Gravel is subangular to rounded fine to coarse of quartzite. [ALLUVIUM]
0.30	D2	PID 0.30m, 2.0ppm	76.35	0.40	
0.30	ES3	PID 0.50m, 1.9ppm			Dark greyish brown slightly clayey very gravelly fine to coarse SAND. Gravel is rounded to subangular of quartzite. [ALLUVIUM]
0.30	ESVE1 023062 2003			(0.70)	
0.50	B5	PID 1.00m, 0.0ppm	75.65	1.10	
0.50	ES4				Firm dark greyish brown slightly gravelly sandy CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse of quartzite. [ALLUVIUM]
0.50	ESVE1 023062 2004	SPT(C) 1.50m, N=15 (1,2/4,3,4,4) PID 1.50m, 1.1ppm		(0.50)	
0.80	D6		75.15	1.60	
1.00	B7				Firm dark greyish brown slightly sandy slightly gravelly CLAY with low cobbel content. Sand is fine to coarse. Gravel is subangular to rounded fine to coarse of quartzite. Cobbles are subrounded of quartzite [ALLUVIUM]
1.00	ES8	PID 2.00m, 0.0ppm		(0.60)	
1.10 - 1.50	B14		74.55	2.20	
1.20	D9				Very stiff reddish brown mottled greenish grey slightly sandy gravelly CLAY. Sand is fine to coarse. Gravel is subrounded to subangular fine to coarse of siltstone & mudstone (Partially Weathered Mercia Mudstone Grade IVa)
1.50	ES11				
1.50	ESVE1 023062 2011	Ublows = 21 Recovery = 100%			
1.50 - 2.00	B10				
2.00	ES12				
2.20	D13				
2.20 - 2.50	B15				
2.50 - 2.95	U16	SPT(S) 3.50m, N=70 (4,8/12,17,20,21)		(2.70)	
3.00	D17				
3.20	D18				
3.50 - 3.95	D19				
3.50 - 4.00	B20				
4.20	D21				
4.50 - 4.88	D22	SPT(S) 4.50m, N=58 (25 for 76mm/26,11,9,12)			
4.50 - 5.00	B23				
			71.85	4.90	
5.20	D24				Very stiff reddish brown mottled greenish grey slightly sandy gravelly CLAY. Sand is fine to coarse. Gravel is subrounded to subangular fine to medium of siltstone & mudstone (Partially Weathered Mercia Mudstone Grade IVa)
5.50 - 5.95	D25	SPT(S) 5.50m, N=40 (4,4/9,10,10,11)			
5.50 - 6.00	B26				
6.50	D27				
7.00	D28				
7.50 - 7.87	D29	SPT(S) 7.50m, 100 (8,17/100 for 225mm)		(5.10)	
7.50 - 8.00	B30				
8.50	D31				
9.50 - 10.00	B33	SPT(S) 9.50m, N=82 (25 for 140mm/14,19,18,31)			
9.50 - 9.94	D32				
			66.75	10.00	End of Borehole at 10.00m

Groundwater: Water Strike; Backfill/Installation

Start & End of Shift Observations

Date	Time	Depth (m)	Casing (m)	Water (m)
22-06-2023	07:10	0.00	0.00	
22-06-2023	18:00	10.00	7.00	

Borehole Diameter

Depth (m)	Dia (mm)
10.00	180

Casing Diameter

Depth (m)	Dia (mm)
7.00	200

Remarks

Position was cleared by Octavius prior to excavation. Inspection pit was dug to 1.2m bgl. No Groundwater was encountered. Coordinates taken as as-builts. Position was installed upon completion with plain and slotted pipe, bentonite, gravel and cold lay upon completion.

Chiselling

From (m)	To (m)	Duration	Remarks
7.80	8.00	00:30	

Installation

Top (m)	Base (m)	Type	Dia (mm)
0.00	0.60	PLAIN	50
0.60	2.20	SLOTTED	50

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks

STRATA GEOTECHNICS	Contract Name: A46 Walsgrave	Client: Octavius		Borehole ID: BH108
	Contract Number: G230651	Date Started: 24/05/2023	Date Completed: 25/05/2023	Logged: TLY / Checked: SW / Status: FINAL
Cable Percussion Borehole Log	Easting: 438392.7	Northing: 279404.3	Ground Level: 76.71m (OD)	Plant Used: Dando 3000/ Comacchio 405 / Print Date: 21/12/2023 / Scale: 1:50
Weather: Sunny	Rig Crew: RH JW	Termination: Target Depth		SPT Hammer: AR1859/AR2501 Energy Ratio: 65/67%

Sheet 1 of 2

Depth	Sample ID	Test Result	Level (mAOD)	Depth (m) (Thickness)	Strata Description	Water Strike	Backfill/ Installation
0.10	ES			(0.30)	TOPSOIL: Firm, brown sandy gravelly CLAY. Sand is fine. Gravel is fine to coarse subrounded to rounded quartzite.		
0.10 - 0.20	B2		76.41	0.30			
0.10 - 0.20	D3				Medium dense brown clayey gravelly fine to coarse SAND. Gravel is fine to coarse subangular quartzite. [Bagington Sand and Gravel Formation]		
0.50	ES						
0.50 - 0.60	D5						
0.50 - 0.70	B6			(1.20)			
1.00	ES7						
1.00 - 1.10	D8	SPT(S) 1.20m, N=18 (7,5/5,5,4,4)					
1.00 - 1.20	B9						
1.20 - 1.65	D10		75.21	1.50			
1.50	ES11				Firm to stiff reddish brown slightly gravelly sandy CLAY. Sand is fine to coarse. Gravel is fine to coarse subrounded to rounded quartzite. (Fully Weathered Mercia Mudstone Grade IVa)		
1.70 - 1.90	B12						
1.90	D13						
2.00	ES						
2.10 - 2.55	UT15	Ublows = 32 Recovery = 100%					
2.55 - 2.60	D16						
2.70 - 3.00	B17			(2.70)			
3.00 - 3.45	D18	SPT(S) 3.00m, N=18 (4,4/4,4,5,5)					
3.60 - 3.90	B19						
3.95	D20						
4.00 - 4.45	UT21	Ublows = 57 Recovery = 100%					
			72.51	4.20			
4.50	D22				Stiff reddish brown slightly sandy CLAY with occasional bands of weak grey siltstone. Sand is fine. (Fully Weathered Mercia Mudstone Grade IVb).		
4.60 - 4.90	B23						
5.00 - 5.45	D24	SPT(S) 5.00m, N=44 (3,7/13,13,9,9)					
5.60 - 5.90	B25						
6.20 - 6.30	D26			(4.13)			
6.50 - 6.95	UT27	Ublows = 72 Recovery = 100%					
7.00	D28						
7.20 - 7.50	B29						
7.70 - 7.80	D30						
8.00 - 8.33	D31	SPT(S) 8.00m, 100 (8,2/100 for 180mm)					
8.30 - 8.40	D41		68.38				
8.55 - 8.70	CSS42		68.16	8.55	Very stiff reddish brown mottled grey slightly sandy gravelly CLAY. Gravel is angular fine to coarse of Mudstone (Partially Weathered Mercia Mudstone Grade IVa).		
8.30 - 9.50					Extremely weak reddish brown MUDSTONE. Discontinuities at 0-10 degrees are closely spaced to widely spaced (50/130/800) planar smooth clean. Locally very stiff sandy gravelly CLAY. Sand is fine to coarse. Gravel is angular to subangular fine to coarse of mudstone (Partially Weathered Mercia Mudstone Grade II).		
9.05 - 9.35	CSS43	UCS - 9.05m 1.2MPa					
9.05 - 9.35	CSS43a			(2.45)			

Fracture	TCR	SCR	RQD	FI
	100	100	75	6

Start & End of Shift Observations

Date	Time	Depth (m)	Casing (m)	Water (m)
16-05-2023	07:00	0.00	0.00	
16-05-2023	17:00	8.33	8.00	7.50
24-05-2023	13:30	8.33	8.00	
24-05-2023	17:00	11.37	8.00	
25-05-2023	07:30	11.00	8.00	9.00
25-05-2023	17:00	20.00	8.00	9.00

Borehole Diameter

Depth (m)	Dia (mm)
8.33	180
20.00	145

Casing Diameter

Depth (m)	Dia (mm)
8.00	200
8.00	202
20.00	146

Remarks:

Position was cleared by Octavius prior to excavation. Inspection pit was dug to 1.2m bgl Groundwater was encountered at 1.2m bgl and rose to 0.9m bgl. Position was backfilled with bentonite. Coordinates are taken as as-builts.

Chiselling

From (m)	To (m)	Duration	Remarks

Installation

Top (m)	Base (m)	Type	Dia (mm)

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
1.20	0.00		20	0.90	Seepage

STRATA GEOTECHNICS	Contract Name: A46 Walsgrave		Client: Octavius			Borehole ID: BH108
	Contract Number: G230651	Date Started: 24/05/2023	Date Completed: 25/05/2023	Logged: TLY	Checked: SW	Status: FINAL
						Sheet 2 of 2
Rotary Core Drilling Log	Easting: 438392.7	Northing: 279404.3	Ground Level: 76.71m (OD)	Plant Used: Dando 3000/ Comacchio 405	Print Date: 21/12/2023	Scale: 1:50

Weather: Sunny | Rig Crew: RH JW | Termination: Target Depth | SPT Hammer: AR1859/AR2501 Energy Ratio: 65/67%

Samples & In Situ Testing							Strata Details				Groundwater	
Depth	Sample	Test Result	TCR	SCR	RQD	FI/If	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
10.00 - 10.25	CSS44											
9.50 - 11.00			80	80	77	FI = 1						
10.75 - 10.85	CSS45	UCS - 10.75m 1.1MPa										
11.00 - 11.37	D34	SPT(S) 11.00m, 100 (8,9/100 for 215mm)					65.71	11.00	NR NR NI NR NR NR NR NI NR NR NR NR NI NR NR NR NR NI NR NR NR NR NI NR NR NR NR NI NR NR	No Recovery (AZCL) Driller notes normal drilling.		
								(1.55)				
			56	56	45		64.16	12.55		Very weak reddish brown MUDSTONE. Discontinuities at 0-10 degrees are closely spaced (100/100/150) planar smooth clean (Partially Weathered Mercia Mudstone Grade II)		
12.00 - 13.25										*12.55 - 12.75: Recovered NI*		
12.75 - 12.85	CSS46					FI = 12		(0.70)				
13.15 - 13.25	CSS47						63.46	13.25		Extremely weak reddish brown MUDSTONE. Discontinuities at 0-10 degrees are closely spaced to medium spaced (NI/300/300) planar smooth clean. Locally very stiff sandy gravelly CLAY. Sand is fine to coarse. Gravel is angular to subangular fine to coarse of mudstone (Partially Weathered Mercia Mudstone Grade II)		
13.40 - 13.50	CSS48	UCS - 13.40m 1.2MPa										
13.40 - 13.50	CSS48a		100	73	73	FI = 2		(0.75)				
13.25 - 14.00												
13.70 - 14.00	CSS49						62.71	14.00		Extremely weak grey SILTSTONE. Discontinuities at 0-10 degrees are very closely spaced to closely spaced (50/50/150) planar smooth clean (Partially Weathered Mercia Mudstone Grade II)		
		SPT(C) 14.00m, 100 (23 for 115mm/100 for 240mm)				FI = 14		(0.35)				
14.45 - 14.55	CSS50						62.36	14.35		Extremely weak to very weak reddish brown MUDSTONE. Discontinuities at 0-10 degrees are closely spaced (100/100/150) planar smooth clean (Partially Weathered Mercia Mudstone Grade II)		
14.00 - 15.50			100	100	80							
15.35 - 15.50	CSS51					FI = 7		(2.25)				
16.00 - 16.30	CSS52	UCS - 16.00m 1.1MPa										
16.00 - 16.30	CSS52a		100	100	100							
15.50 - 17.00							60.11	16.60		Very weak to weak reddish brown MUDSTONE with closely spaced gypsum bands (<30mm) at <10 degrees and closely spaced gypsum bands (<10mm) at 40 degrees. Discontinuities at 0-10 degrees are closely spaced (100/100/150) planar smooth clean (Partially Weathered Mercia Mudstone Grade II)		
16.87 - 16.97	CSS53									*17.20 - 17.38: Discontinuities (90) undulating smooth clean*		
		SPT(C) 17.00m, 100 (25 for 125mm/100 for 225mm)						(1.90)		*17.33 - 17.38: Extremely weak light grey siltstone.*		
17.00 - 18.50			100	100	47							
17.82 - 18.00	CSS54									*18.10 - 18.20: Discontinuities (60) planar smooth clean.*		
										18.34 - 18.38: Extremely weak light grey siltstone.		
18.50 - 18.80	CSS55						58.21	18.50		Strong grey MUDSTONE. Discontinuities at 0-10 degrees are medium to widely spaced (600/600/600) planar smooth clean (Unweathered Mercia Mudstone Grade I)		
								(0.60)		*18.50 - 18.55: Extremely weak light grey siltstone.*		
							57.61	19.10		Moderately strong to strong reddish brown MUDSTONE with medium spaced gypsum (<300mm) at <10 degrees and closely spaced gypsum bands (<10mm) at 40 degrees. Discontinuities at 0-10 degrees are closely spaced (60/25/200) planar smooth clean (Unweathered Mercia Mudstone Grade I)		
18.50 - 20.00			100	100	93							
								(0.90)				
19.75 - 20.00	CSS56	UCS - 19.75m 1.1MPa								*19.70 - 19.75: Moderately strong grey mudstone.*		
							56.71	20.00		End of Borehole at 20.00m		

Start & End of Shift Observations

Date	Time	Depth (m)	Casing (m)	Water (m)

Flush Return Information

Top	Base	Min %	Max %	Type	Colour
8.30	9.50	100	100		red
9.50	11.00	100	100		red
11.00	12.50	0	0		No return
12.50	13.25	100	100		red
13.25	14.00	100	100		red
14.00	15.50	100	100		red

Remarks:

Position was cleared by Octavius prior to excavation. Inspection pit was dug to 1.2m bgl Groundwater was encountered at 1.2m bgl and rose to 0.9m bgl. Position was backfilled with bentonite. Coordinates are taken as as-builts.

Water Strike

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks

Borehole Diameter

Depth (m)	Dia (mm)
8.33	180
20.00	145

Casing Diameter

Depth (m)	Dia (mm)
8.00	200
8.00	202
20.00	146

Coring Information

Top (m)	Base (m)	Dia (mm)	Barrel Type
8.30	9.50	102	
9.50	11.00	102	
12.00	13.25	102	

Fracture Index (FI) - Fractures per meter, Fracture Spacing (If) - reported in mm as Min, Average and Max values. TCR, SCR and RQD reported as %. Hand vane (HV) reports Undrained Shear Strength (Su). Pocket penetrometer (PP) reports Unconfined Compressive Strength (UCS)

STRATA GEOTECHNICS	Contract Name: A46 Walsgrave		Client: Octavius			Borehole ID: BH109
	Contract Number: G230651	Date Started: 25/05/2023	Date Completed: 30/05/2023	Logged: TLY	Checked: IL SW	Status: FINAL
Cable Percussion Borehole Log	Easting: 438450.0	Northing: 279447.9	Ground Level: 79.10m (OD)	Plant Used: Dando 3000/ Comacchio 405	Print Date: 21/12/2023	Scale: 1:50
Weather: Fine	Rig Crew: RH JW	Termination: Target depth.		SPT Hammer: AR1859/AR2501 Energy Ratio: 65/67%		Sheet 1 of 3

Depth	Sample ID	Test Result	TCR	SCR	RQD	Fracture	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
0.10	D4	HV 0.10m, 40/20kPa										
0.10	ES1											
0.30 - 0.60	B8	HV 0.40m, 60/25kPa										
0.40	D5	HV 0.45m, 66/27kPa						(0.90)		MADE GROUND: Dark brown slightly gravelly, sandy silty CLAY. Sand is fine to coarse. Gravel is subrounded to rounded fine to coarse of quartzite with occasional brick fragments.		
0.50	ES2											
0.50	ESVE01 2305180 02						78.20	0.90				
0.70	D6	SPT(S) 1.20m, N=10 (2,2/3,5,1,1)								Loose to medium dense orangish brown, slightly gravelly fine to coarse SAND. Gravel is subrounded to subangular fine to coarse of quartzite. [Bagington Sand and Gravel Formation]		
1.00	D7											
1.00	ES3											
1.00	ESVE01 2305180 03									*1.80: No gravel*		
1.00 - 1.20	B9	SPT(S) 2.00m, N=12 (1,2/2,3,3,4)										
1.20 - 1.65	D10							(2.60)				
1.50	ES11									*2.50: Becoming slightly gravelly.*		
1.50	ESVE01 2305180 12											
1.70 - 2.00	B12											
2.00	ES13											
2.00 - 2.45	B14											
2.80	D15											
3.00 - 3.45	B16						75.60	3.50				
3.60	D17									Loose orangish brown silty clayey SAND and GRAVEL. Sand is fine to coarse. Gravel is subrounded to rounded fine to coarse of quartzite. [Bagington Sand and Gravel Formation]		
3.70 - 4.00	B18							(0.70)				
4.00 - 4.45	D19	SPT(S) 4.00m, N=6 (1,1/1,2,2,1)										
							74.90	4.20		Firm orangish brown locally mottled blueish grey sandy gravelly CLAY. Sand is fine to coarse. Gravel is subrounded to rounded fine to coarse of quartzite. [Bagington Sand and Gravel Formation]		
4.50 - 4.70	B20							(0.40)				
4.90	D21						74.50	4.60		Firm to stiff blueish grey mottled brown slightly sandy, CLAY. (Fully Weathered Mercia Mudstone Grade IVa)		
5.00 - 5.45	UT22	Ublows = 52 Recovery = 100%								*5.00: Becoming stiff.*		
5.45 - 5.50	D23											
5.70 - 6.00	B24							(2.40)				
6.20	D25											
6.50 - 6.93	D26	SPT(S) 6.50m, 100 (6,10/100 for 275mm)										
~~7.00 - 7.20~~	~~ES32~~	~~PID 7.00m, 3.8ppm~~						~~7.00~~				
7.30 - 7.48	CSS38						72.10			Extremely weak reddish brown MUDSTONE. Discontinuities at 0-10 degrees are closely spaced (70/80/100) planar smooth clean. (Partially Weathered Mercia Mudstone Grade II)		
7.50 - 7.70	ES33	PID 7.50m, 2.6ppm								*7.20 - 7.35: Discontinuities (80-90) undulating smooth clean*		
7.00 - 8.50			100	97	40	FI = 12		(1.25)				
8.00 - 8.18	CSS29											
8.30 - 8.50	ES34	PID 8.30m, 2.0ppm				FI = 20	70.85	8.25		Weak grey SILTSTONE. Discontinuities at 0-10 degrees are very closely spaced (NI/50/50) planar rough clean. (Partially Weathered Mercia Mudstone Grade II)		
								(0.90)		*8.50 - 9.00: AZCL - driller notes normal drilling*		
9.00 - 9.20	ES35	PID 9.00m, 5.1ppm				FI = 20				*9.05 - 9.25: Discontinuities (80-90) planar smooth clean.*		
9.15 - 9.45	CSS30						69.95	9.15		Extremely weak to weak reddish brown MUDSTONE. Discontinuites at 0-10 degrees are very closely to widely spaced (50/150/650) planar smooth clean. (Partially Weathered Mercia Mudstone Grade II)		
8.50 - 10.00			67	67	57							
9.50 - 9.70	ES37	PID 9.50m, 1.0ppm				FI = 2		(1.35)				
9.80 - 9.95	CSS31											
10.00 - 10.34	~~D29~~					FI = 6						

Start & End of Shift Observations

Date	Time	Depth (m)	Casing (m)	Water (m)
18-05-2023	07:00	0.00	0.00	
18-05-2023	17:00	3.50	3.00	
19-05-2023	07:00	3.50	3.00	3.10
19-05-2023	13:30	6.93	6.00	6.00
25-05-2023	17:00	10.00	6.00	7.50
26-05-2023	07:00	10.00	6.00	7.20

Borehole Diameter

Depth (m)	Dia (mm)
6.93	180
20.50	146

Casing Diameter

Depth (m)	Dia (mm)
6.00	200
6.00	202
20.00	146

Remarks:

Position was cleared by Octavius prior to excavation. Inspection pit was dug to 1.2m bgl Groundwater was not encountered during drilling. Rotary core follow on from 7.0m BGL. Coordinates are taken as as-builts. Position was installed upon completion with plain and slotted pipe, bentonite and gravel upon completion.

Chiselling

From (m)	To (m)	Duration	Remarks

Installation

Top (m)	Base (m)	Type	Dia (mm)
0.00	1.90	PLAIN	50
1.90	4.20	SLOTTED	50

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks

STRATA GEOTECHNICS	Contract Name: A46 Walsgrave		Client: Octavius		Borehole ID: BH109
	Contract Number: G230651	Date Started: 25/05/2023	Date Completed: 30/05/2023	Logged: TLY / Checked: IL SW / Status: FINAL	Sheet 2 of 3
Rotary Core Drilling Log	Easting: 438450.0	Northing: 279447.9	Ground Level: 79.10m (OD)	Plant Used: Dando 3000/ Comacchio 405	Print Date: 21/12/2023 / Scale: 1:50

Weather: Fine | Rig Crew: RH JW | Termination: Target depth. | SPT Hammer: AR1859/AR2501 Energy Ratio: 65/67%

Depth	Sample	Test Result	TCR	SCR	RQD	FI/If	Level (mAOD)	Depth (m) (Thickness)	Strata Description	Water Strike	Backfill/ Installation
		SPT(S) 10.00m, 100 (7,10/100 for 190mm)				FI = 20					
10.50 - 10.70	ES36	PID 10.50m, 0.4ppm					68.60	10.50	Firm to stiff reddish brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is angular fine to coarse of mudstone. (Partially Weathered Mercia Mudstone Grade IVa)		
10.00 - 11.50			67	53	30						
10.80 - 11.00	CSS38							(1.00)	*10.90 - 11.00: Firm grey sandy CLAY.*		
11.30 - 11.50	ES39	PID 11.30m, 0.0ppm									
11.60 - 11.90	CSS40					FI = 10	67.60	11.50	Very weak to weak reddish brown mottled grey MUDSTONE. Discontinuities at 0-10 degrees are very closely to medium spaced (50/150/500) planar smooth clean (Partially Weathered Mercia Mudstone Grade II)		
11.50 - 12.25			100	100	67	FI = 2					
12.00 - 12.20	ES41	PID 12.00m, 0.0ppm						(1.10)	*11.50 - 11.60: Discontinuities (80-90) planar smooth clean.*		
12.30 - 12.50	CSS42					FI = 8			*12.40 - 13.00: Discontinuities (80-90) undulating smooth clean.*		
12.50 - 12.70	ES43	PID 12.50m, 0.0ppm									
12.25 - 13.00			100	100	27		66.50	12.60	Extremely weak reddish brown MUDSTONE. Discontinuities at 0-10 degree very closely spaced (50/50/50) planar smooth clean (Partially Weathered Mercia Mudstone Grade II)		
						FI = 20		(0.40)	*12.90 - 13.10: Discontinuities (80-90) planar smooth clean*		
13.00 - 13.20	ES44	SPT(C) 13.00m, 101 (8,9/101 for 280mm)					66.10	13.00	Very weak to weak reddish brown MUDSTONE. Discontinuities at 0-10 degrees are very closely spaced to closely spaced (50/150/300) planar smooth clean (Partially Weathered Mercia Mudstone Grade II)		
13.43 - 13.64	CSS45	PID 13.00m, 0.0ppm							*13.30 - 13.35: Fracture at 30 degrees is planar rough with no fill.*		
13.70 - 13.90	ES46	PID 13.70m, 0.0ppm							*13.80 - 13.85: Grey band within mudstone*		
13.00 - 14.50			100	100	80						
14.40 - 14.50	CSS48										
14.50 - 14.70	ES47	PID 14.50m, 0.0ppm				FI = 12			*14.70 - 15.00: Discontinuities (80-90) planar smooth clean.*		
15.00 - 15.20	ES49	PID 15.00m, 0.0ppm									
15.20 - 15.50	CSS50										
14.50 - 16.00			100	100	93			(4.50)			
		SPT(C) 16.00m, 100 (10,14/100 for 265mm)									
16.25 - 16.35	CSS51					FI = 4					
16.00 - 17.50			83	83	67	FI = 15			*16.70 - 17.05: Discontinuities (80-90) planar smooth clean.*		
						FI = 4			*17.15 - 17.35: Discontinuities (80-90) planar smooth clean.*		
17.35 - 17.50	CSS52					FI = 4	61.60	17.50	Extremely weak reddish brown MUDSTONE. Discontinuities at 0-10 degrees are very closely spaced (50/50/50 planar smooth clean (Partially Weathered Mercia Mudstone Grade II)		
						FI = 20		(0.40)	*17.50 - 17.90: Discontinuities (80-90) planar smooth clean.*		
18.10 - 18.20	CSS53						61.20	17.90	Weak to moderately weak reddish brown MUDSTONE. Discontinuities at 0-10 degrees are very closely spaced to closely spaced (50/150/300) planar smooth clean (Partially Weathered Mercia Mudstone Grade II)		
17.50 - 19.00			100	100	43	FI = 12			*18.10 - 18.15: Moderately weak grey MUDSTONE.*		
18.60 - 18.90	CSS54					FI = 4			*18.25 - 18.30: Moderately weak grey MUDSTONE.*		
		SPT(C) 19.00m, 100 (25 for 110mm/100 for 215mm)						(2.15)	*18.25 - 18.60: Discontinuities (80-90) planar smooth clean.*		
19.30 - 19.40	CSS55					FI = 8			*18.90 - 20.00: Moderately weak grey MUDSTONE.*		
			100	77	77	FI = 4					
19.00 - 20.50											
19.85 - 20.05	CSS56					FI = 5	59.05	20.05			

Start & End of Shift Observations

Date	Time	Depth (m)	Casing (m)	Water (m)
26-05-23	15:30	20.50	6.00	7.00
30-05-23	07:30	20.50	6.00	7.00

Flush Return Information

Top	Base	Min %	Max %	Type	Colour
7.00	8.50	80	80	Air/Mist	red
8.50	8.80	40	40	Air/Mist	red
8.80	10.00	100	100	Air/Mist	red
10.00	11.50	100	100	Air/Mist	red
11.50	12.25	100	100	Air/Mist	red
12.25	13.00	100	100	Air/Mist	red

Remarks:

Position was cleared by Octavius prior to excavation. Inspection pit was dug to 1.2m bgl Groundwater was not encountered during drilling. Rotary core follow on from 7.0m BGL. Coordinates are taken as as-builts. Position was installed upon completion with plain and slotted pipe, bentonite and gravel

Water Strike

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks

Borehole Diameter

Depth (m)	Dia (mm)
6.93	180
20.50	146

Casing Diameter

Depth (m)	Dia (mm)
6.00	200
6.00	202
20.00	146

Coring Information

Top (m)	Base (m)	Dia (mm)	Barrel Type
7.00	8.50	102	
8.50	10.00	102	
10.00	11.50	102	

Fracture Index (FI) - Fractures per meter, Fracture Spacing (If) - reported in mm as Min, Average and Max values. TCR, SCR and RQD reported as %. Hand vane (HV) reports Undrained Shear Strength (Su). Pocket penetrometer (PP) reports Unconfined Compressive Strength (UCS)

STRATA GEOTECHNICS	Contract Name: A46 Walsgrave		Client: Octavius			Borehole ID: BH109
	Contract Number: G230651	Date Started: 25/05/2023	Date Completed: 30/05/2023	Logged: TLY	Checked: IL SW	Status: FINAL
Rotary Core Drilling Log	Easting: 438450.0	Northing: 279447.9	Ground Level: 79.10m (OD)	Plant Used: Dando 3000/ Comacchio 405	Print Date: 21/12/2023	Scale: 1:50
Weather: Fine	Rig Crew: RH JW	Termination: Target depth.		SPT Hammer: AR1859/AR2501 Energy Ratio: 65/67%		Sheet 3 of 3

Samples & In Situ Testing							Strata Details				Groundwater	
Depth	Sample	Test Result	TCR	SCR	RQD	FI/If	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
						FI = 10		(0.45)		Extremely weak reddish brown MUDSTONE. Discontinuities at 0-10 degrees are very closely spaced (NI/50/50) planar smooth clean (Partially Weathered Mercia Mudstone Grade II)		
						FI = 20	58.60	20.50		*20.15 - 20.50: Mudstone recovered NI*		
										End of Borehole at 20.50m		

21 22 23 24 25 26 27 28 29 30

Start & End of Shift Observations

Date	Time	Depth (m)	Casing (m)	Water (m)

Flush Return Information

Top	Base	Min %	Max %	Type	Colour
13.00	14.50	100	100	Air/Mist	red
14.50	16.00	100	100	Air/Mist	red
16.00	17.50	100	100	Air/Mist	red
17.50	19.00	100	100	Air/Mist	red
19.00	20.50	100	100	Air/Mist	red

Remarks:
upon completion.

Water Strike

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks

Borehole Diameter

Depth (m)	Dia (mm)

Casing Diameter

Depth (m)	Dia (mm)

Coring Information

Top (m)	Base (m)	Dia (mm)	Barrel Type
7.00	8.50	102	
8.50	10.00	102	
10.00	11.50	102	

Fracture Index (FI) - Fractures per meter, Fracture Spacing (If) - reported in mm as Min, Average and Max values. TCR, SCR and RQD reported as %. Hand vane (HV) reports Undrained Shear Strength (Su). Pocket penetrometer (PP) reports Unconfined Compressive Strength (UCS)

STRATA GEOTECHNICS	Contract Name: A46 Walsgrave	Client: Octavius		Borehole ID: BH110
	Contract Number: G230651	Date Started: 30/05/2023	Date Completed: 31/05/2023	Logged: JW/ ASH / Checked: IL / Status: FINAL
				Sheet 1 of 3
Cable Percussion Borehole Log	Easting: 438488.9	Northing: 279520.3	Ground Level: 78.98m (OD)	Plant Used: Dando 2000/ Comacchio 405 / Print Date: 21/12/2023 / Scale: 1:50
Weather: Fine	Rig Crew: MH JW	Termination: Refusal		SPT Hammer: AR3573/AR2501 Energy Ratio: 67/56%

Samples & In Situ Testing			Strata Details				Groundwater	
Depth	Sample ID	Test Result	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
0.10	D1			(0.30)		TOPSOIL: Dark brown slightly clayey gravelly fine to coarse SAND. Gravel is rounded to subangular fine to coarse of quartzite.		
0.30	ES		78.68	0.30		Dark orangish brown slightly clayey slightly gravelly fine to coarse SAND. Gravel is rounded to subangular fine to medium of quartzite. [Bagington Sand and Gravel Formation]		
0.50	B3			(0.70)				
0.50	B4							
0.50	ES							
0.50	ES3		77.98	1.00		Medium dense orangish brown slightly clayey very sandy rounded to subangular fine to coarse GRAVEL of quartzite. Sand is subangular fine to coarse. [Bagington Sand and Gravel Formation]		
0.80	D5							
1.00	B6							
1.00	B7							
1.00	ES6	SPT(C) 1.50m, N=22 (1,3/3,5,7,7)		(1.20)				
1.00	ES7							
1.20	D							
1.20	D8							
1.20 - 1.50	B9							
1.50	ES10		76.78	2.20		Loose orangish brown slightly clayey very sandy rounded to subangular fine to coarse GRAVEL of quartzite with occasional lenses of clay (25-50mm). Sand is subangular fine to coarse. [Bagington Sand and Gravel Formation]		
1.50	ES11							
1.50 - 2.00	B10	SPT(C) 2.50m, N=7 (3,4/2,2,2,1)						
1.50 - 2.00	B11			(1.00)				
2.00	ES							
2.20	D							
2.20	D13							
2.50 - 3.00	B14		75.78	3.20		Stiff to very stiff dark reddish brown mottled green grey slightly sandy CLAY. Sand is fine to coarse. (Fully Weathered Mercia Mudstone - Grade IVb).		
3.20	D15							
3.50 - 3.95	D16	SPT(S) 3.50m, N=27 (3,5/5,6,7,9)						
3.50 - 4.00	B17							
						4.00 - 13.00: Becomes very stiff		
4.20	D18							
4.50 - 4.95	UT19	Ublows = 60 Recovery = 56%						
5.00	D							
5.00	D20							
5.20	D21							
5.50 - 5.95	D22	SPT(S) 5.50m, N=47 (3,5/8,15,15,9)						
5.50 - 6.00	B23							
6.20	D24							
6.50 - 6.95	D25	SPT(S) 6.50m, N=51 (4,8/10,13,14,14)		(9.80)				
6.50 - 7.00	B26							
7.20	D27							
7.50 - 7.95	D28	SPT(S) 7.50m, N=64 (5,5/16,21,12,15)						
7.50 - 8.00	B29							
8.20	D30							
8.50 - 8.95	UT31	Ublows = 52 Recovery = 78%						
9.00	D32							
9.20	D33							
9.50 - 10.00	B35	SPT(S) 9.50m, N=70						
9.50 - 9.95	D34	(8,11/14,20,20,16)						

Start & End of Shift Observations

Date	Time	Depth (m)	Casing (m)	Water (m)
16-05-2023	07:30	0.00	0.00	0.00
16-05-2023	18:00	10.00	9.00	7.80
17-05-2023	07:30	10.00	9.00	7.80
17-05-2023	18:00	12.93	10.60	11.80
30-05-2023	17:00	20.00	10.60	8.20
31-05-2023	07:30	20.15	10.60	8.20

Borehole Diameter

Depth (m)	Dia (mm)
12.93	180
12.93	200
20.15	146

Casing Diameter

Depth (m)	Dia (mm)
10.60	202

Remarks:

Position was cleared by Octavius prior to excavation. Inspection pit was dug to 1.2m bgl. Groundwater was encountered at 7.40m bgl and rose to 7.00m bgl. Rotary core follow on from 13.00m. Coordinates are taken as as-builts. Position was installed upon completion with plain and slotted pipe, bentonite and gravel upon completion.

Chiselling

From (m)	To (m)	Duration	Remarks

Installation

Top (m)	Base (m)	Type	Dia (mm)
0.00	5.50	PLAIN	50
5.50	20.00	SLOTTED	50

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
7.40	4.50	8.60	20	7.00	Medium

STRATA GEOTECHNICS	Contract Name: A46 Walsgrave		Client: Octavius			Borehole ID: BH110
	Contract Number: G230651	Date Started: 30/05/2023	Date Completed: 31/05/2023	Logged: JW/ ASH	Checked: IL	Status: FINAL
Cable Percussion Borehole Log	Easting: 438488.9	Northing: 279520.3	Ground Level: 78.98m (OD)	Plant Used: Dando 2000/ Comacchio 405	Print Date: 21/12/2023	Scale: 1:50
Weather: Fine	Rig Crew: MH JW	Termination: Refusal		SPT Hammer: AR3573/AR2501 Energy Ratio: 67/56%		Sheet 2 of 3

Samples & In Situ Testing							Strata Details				Groundwater	
Depth	Sample ID	Test Result	Fracture	TCR	SCR	RQD	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
10.50	D36									Stiff to very stiff dark reddish brown mottled green grey slightly sandy CLAY. Sand is fine to coarse. (Fully Weathered Mercia Mudstone - Grade IVb).		
11.00 - 11.45	UT	Ublows = 55										
11.00 - 11.45	UT37	Recovery = 0%										
11.00 - 11.50	B37	Ublows = 55										
11.00 - 11.50	B38	Recovery = 0%										
12.00	D38											
12.00	D39											
12.50 - 12.93	D39	SPT(S) 12.50m, 100 (10,12/100 for 275mm)										
12.50 - 12.93	D40											
							65.98	13.00				
13.30 - 13.40	D55							(0.60)		Firm reddish brown slightly sandy gravelly CLAY with bands up to 5cm of extremely weak reddish brown mudstone. Sand is fine to coarse. Gravel is fine to coarse angular of mudstone (Partially Weathered Mercia Mudstone Grade IVa).		
13.70 - 13.80	CSS56			100	60	20	65.38	13.60		Extremely weak to very weak reddish brown MUDSTONE. Discontinuities at 0-10 degrees are medium spaced (250/300/300) undulating smooth and clean (Partially Weathered Mercia Mudstone Grade II).		
13.00 - 14.50	C40									*13.60 - 14.50: Discontinuities at 80-90 degrees are undulating smooth and clean.*		
14.40 - 14.50	CSS57	UCS - 14.50m 2.0MPa								*13.60 - 16.00: Becomes very weak at 14.5m.*		
14.85 - 15.15	CSS58							(2.50)				
14.50 - 16.00	C41			100	100	27						
15.30 - 15.40	CSS59									*15.50 - 16.00: Discontinuities at 80-90 degrees are undulating smooth and clean.*		
		SPT(C) 16.00m, N=99 (10,12/15,12,35,37)					62.88	16.10		*16.00 - 16.10: AZCL* Extremely weak reddish brown MUDSTONE. Discontinuities at 0-10 degrees are very closely to closely spaced (50/100/200) undulating smooth and clean (Partially Weathered Mercia Mudstone Grade II).		
16.50 - 16.70	CSS60											
16.00 - 17.50	C42			93	80	30				*16.80 - 17.30: Discontinuities are 80-90 undulating smooth and clean.*		
								(1.85)		*17.05 - 17.30: Extremely weak grey MUDSTONE. Discontinuities at 0-10 degrees are extremely closely spaced placed smooth with clay infill*		
17.41 - 17.50	CSS61	UCS - 17.50m 2.1MPa										
17.67 - 17.97	CSS62						61.03	17.95		Very stiff reddish brown slightly sandy gravelly CLAY. Sand is fine to coarse. Gravel is fine to coarse angular of mudstone (Partially Weathered Mercia Mudstone Grade IVa.)		
17.50 - 19.00	C43			100	100	33		(0.45)				
							60.58	18.40		Extremely weak reddish brown MUDSTONE. Discontinuities at 0-10 degrees are very closely to closely spaced (50/100/200) undulating smooth and clean (Partially Weathered Mercia Mudstone Grade II).		
18.90 - 19.00	CSS63	SPT(C) 19.00m, 100 (9,13/100 for 285mm)						(1.00)		*18.40 - 18.50: Extremely weak grey mudstone* *18.40 - 18.60: Discontinuities at 40-60 are undulating smooth and clean* *19.20 - 19.50: Discontinuities at 80-90 degrees are planar smooth and clean*		
19.50 - 19.80	CSS64	UCS - 19.00m 1.4MPa		100	100	83	59.58	19.40		Very weak reddish brown MUDSTONE (Unweathered Mercia Mudstone Grade I).		
19.00 - 20.15	C44							(0.75)				

Start & End of Shift Observations					Borehole Diameter		Casing Diameter		Remarks
Date	Time	Depth (m)	Casing (m)	Water (m)	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)	Position was cleared by Octavius prior to excavation. Inspection pit was dug to 1.2m bgl. Groundwater was encountered at 7.40m bgl and rose to 7.00m bgl. Rotary core follow on from 13.00m. Coordinates are taken as as-builts. Position was installed upon completion with plain and slotted pipe, bentonite and gravel upon completion.
					12.93	180	10.60	202	
					12.93	200			
					20.15	146			

Chiselling				Installation				Water Strikes					
From (m)	To (m)	Duration	Remarks	Top (m)	Base (m)	Type	Dia (mm)	Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks

STRATA GEOTECHNICS	Contract Name: A46 Walsgrave		Client: Octavius			Borehole ID: BH110
	Contract Number: G230651	Date Started: 30/05/2023	Date Completed: 31/05/2023	Logged: JW/ ASH	Checked: IL	Status: FINAL
Rotary Core Drilling Log	Easting: 438488.9	Northing: 279520.3	Ground Level: 78.98m (OD)	Plant Used: Dando 2000/ Comacchio 405	Print Date: 21/12/2023	Scale: 1:50
Weather: Fine	Rig Crew: MH JW	Termination: Refusal		SPT Hammer: AR3573/AR2501 Energy Ratio: 67/56%		Sheet 3 of 3

Samples & In Situ Testing							Strata Details				Groundwater	
Depth	Sample	Test Result	TCR	SCR	RQD	FI/If	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
20.00 - 20.15	CSS65						58.83	20.15		End of Borehole at 20.15m		

21 22 23 24 25 26 27 28 29 30

Start & End of Shift Observations

Date	Time	Depth (m)	Casing (m)	Water (m)

Flush Return Information

Top	Base	Min %	Max %	Type	Colour
12.90	13.00	100	100	Air/Mist	red
13.00	14.50	100	100	Air/Mist	red
14.50	16.00	100	100	Air/Mist	red
16.00	17.50	100	100	Air/Mist	red
17.50	19.00	100	100	Air/Mist	red
19.00	20.00	100	100	Air/Mist	red

Remarks:

Position was cleared by Octavius prior to excavation. Inspection pit was dug to 1.2m bgl. Groundwater was encountered at 7.40m bgl and rose to 7.00m bgl. Rotary core follow on from 13.00m. Coordinates are taken as as-builts. Position was installed upon completion with plain and slotted pipe, bentonite

Water Strike

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks

Borehole Diameter

Depth (m)	Dia (mm)
12.93	180
12.93	200
20.15	146

Casing Diameter

Depth (m)	Dia (mm)
10.60	202

Coring Information

Top (m)	Base (m)	Dia (mm)	Barrel Type
13.00	14.50	102	
14.50	16.00	102	
16.00	17.50	102	

Fracture Index (FI) - Fractures per meter, Fracture Spacing (If) - reported in mm as Min, Average and Max values. TCR, SCR and RQD reported as %. Hand vane (HV) reports Undrained Shear Strength (Su). Pocket penetrometer (PP) reports Unconfined Compressive Strength (UCS)

STRATA GEOTECHNICS	Contract Name: A46 Walsgrave		Client: Octavius			Borehole ID: BH111
	Contract Number: G230651	Date Started: 18/05/2023	Date Completed: 22/05/2023	Logged: JAW	Checked: SW	Status: FINAL
Cable Percussion Borehole Log	Easting: 438544.6	Northing: 279583.3	Ground Level: 78.17m (OD)	Plant Used: Dando 2000	Print Date: 21/12/2023	Scale: 1:50
Weather: Fine	Rig Crew: Matthew Higginson	Termination: Target Depth		SPT Hammer: AR3573 Energy Ratio: 67%		Sheet 1 of 2

Samples & In Situ Testing			Strata Details				Groundwater	
Depth	Sample ID	Test Result	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
0.00 - 0.30	B4	PID 0.10m, 0.0ppm				Dark brown slightly clayey gravelly fine to coarse SAND with frequent rootlets. Gravel is rounded to subangular fine to coarse of quartzite. [Bagington Sand and Gravel Formation]		
0.10	D1							
0.30	D2	PID 0.30m, 0.1ppm		(0.80)				
0.30	ES3	PID 0.50m, 0.1ppm						
0.50	B5							
0.50	ES6		77.37	0.80				
0.80	D					Medium dense dark orangish brown slightly clayey slightly gravelly fine to carse SAND. Gravel is rounded to subangular fine to medium of quartzite [Bagington Sand and Gravel Formation]		
0.80	D7	PID 1.00m, 0.1ppm						
1.00	B8							
1.00	ES9			(1.20)				
1.20	D10	SPT(S) 1.50m, N=17 (2,3/4,4,4,5)						
1.50	ES12	PID 1.50m, 0.9ppm						
1.50 - 1.95	D11							
1.50 - 2.00	B14							
2.00	ES13	PID 2.00m, 1.2ppm	76.17	2.00		Loose to medium dense orangish brown slightly clayey very sandy rounded to subangular fine to coarse GRAVEL of quartzite with occasional lenses of clay (25-50mm). Sand is fine to coarse. [Bagington Sand and Gravel Formation]		
2.20	D							
2.20	D15							
2.50 - 3.00	B16	SPT(C) 2.50m, N=27 (4,5/5,7,7,8)						
				(1.80)				
3.20	D17							
3.50 - 4.00	B18	SPT(C) 3.50m, N=12 (6,6/5,2,1,4)						
			74.37	3.80		Stiff dark reddish brown mottled greenish grey slightly sandy CLAY. Sand is fine to coarse (Partially Weathered Mercia Mudstone Grade IVb)		
4.00 - 4.50	B20							
4.20	D							
4.20	D19							
4.50 - 4.95	UT21	Ublows = 39 Recovery = 67%						
5.00	D22					*5.00: Becoming very stiff.*		
5.10 - 5.50	B23							
5.50 - 5.95	D24	SPT(S) 5.50m, N=32 (3,5/7,7,8,10)						
5.50 - 6.00	B25							
6.50	D							
6.50	D26							
				(6.20)				
7.00 - 7.45	D27	SPT(S) 7.00m, N=36 (3,4/5,8,8,15)						
7.00 - 7.50	B28							
8.00	D29							
8.50 - 8.60	UT	Ublows = 50						
8.50 - 9.00	B30	Recovery = 0%						
9.20	D31							
9.50 - 10.00	B33	SPT(S) 9.50m, N=65						
9.50 - 9.95	D32	(7,10/12,15,17,21)						
			68.17	10.00				

Start & End of Shift Observations

Date	Time	Depth (m)	Casing (m)	Water (m)
18-05-2023	07:30	0.00	0.00	
18-05-2023	18:00	10.00	9.00	9.50
19-05-2023	07:30	10.00	9.00	9.00
19-05-2023	18:00	10.00	9.00	9.00
22-05-2023	07:30	10.00	9.00	3.40
22-05-2023	12:30	10.00	9.00	3.40

Borehole Diameter

Depth (m)	Dia (mm)
10.00	180

Casing Diameter

Depth (m)	Dia (mm)
9.00	200

Remarks:

Position was cleared by Octavius prior to excavation. Inspection pit was dug to 1.2m bgl Groundwater was encountered at 5.40m bgl and rose to 5.14m bgl. Coordinates are taken as as-builts. Position was installed upon completion with plain and slotted pipe, bentonite and gravel upon completion.

Chiselling

From (m)	To (m)	Duration	Remarks

Installation

Top (m)	Base (m)	Type	Dia (mm)
0.00	1.80	PLAIN	50
1.80	3.80	SLOTTED	50

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
5.40	4.50	8.00	20	5.14	Very Slow

STRATA GEOTECHNICS

Contract Name:	Client:	Borehole ID:
A46 Walsgrave	Octavius	BH111

Contract Number:	Date Started:	Date Completed:	Logged:	Checked:	Status:	Sheet 2 of 2
G230651	18/05/2023	22/05/2023	JAW	SW	FINAL	

Cable Percussion Borehole Log	Easting:	Northing:	Ground Level:	Plant Used:	Print Date:	Scale:
	438544.6	279583.3	78.17m (OD)	Dando 2000	21/12/2023	1:50

Weather: Fine | Rig Crew: Matthew Higginson | Termination: Target Depth | SPT Hammer: AR3573 Energy Ratio: 67%

Samples & In Situ Testing			Strata Details				Groundwater	
Depth	Sample ID	Test Result	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
						End of Borehole at 10.00m		

11 12 13 14 15 16 17 18 19 20

Start & End of Shift Observations

Date	Time	Depth (m)	Casing (m)	Water (m)

Borehole Diameter

Depth (m)	Dia (mm)
10.00	180

Casing Diameter

Depth (m)	Dia (mm)
9.00	200

Remarks:

Position was cleared by Octavius prior to excavation. Inspection pit was dug to 1.2m bgl Groundwater was encountered at 5.40m bgl and rose to 5.14m bgl. Coordinates are taken as as-builts. Position was installed upon completion with plain and slotted pipe, bentonite and gravel upon completion.

Chiselling

From (m)	To (m)	Duration	Remarks

Installation

Top (m)	Base (m)	Type	Dia (mm)

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks

STRATA GEOTECHNICS	Contract Name: A46 Walsgrave		Client: Octavius			Borehole ID: BH112
	Contract Number: G230651	Date Started: 20/06/2023	Date Completed: 21/06/2023	Logged: JAW	Checked: IL	Status: FINAL — Sheet 1 of 1
Cable Percussion Borehole Log	Easting: 438648.2	Northing: 279580.1	Ground Level: 77.36m (OD)	Plant Used: Dando 2000	Print Date: 21/12/2023	Scale: 1:50
Weather: Sunny	Rig Crew: Matthew Higginson	Termination: Target Depth		SPT Hammer: AR3573 Energy Ratio: 67%		

Samples & In Situ Testing			Strata Details				Groundwater	
Depth	Sample ID	Test Result	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
0.10	D1			(0.40)		Firm dark brown slightly gravelly sandy CLAY with frequent rootlets. Sand is fine to coarse. Gravel is rounded to subangular fine to coarse of quartzite. [Bagington Sand and Gravel Formation]		
0.30	D2	PID 0.30m, 0.1ppm	76.96	0.40				
0.30	ES1	PID 0.50m, 0.4ppm				Yellowish brown slightly gravelly fine to coarse SAND. Gravel is rounded to subangular of quartzite. [Bagington Sand and Gravel Formation]		
0.30	ES3							
0.50	B5							
0.50	ES1							
0.50	ES4	PID 1.00m, 0.0ppm						
0.80	D6							
1.00	B7							
1.00	ES8	SPT(S) 1.50m, N=18 (2,5/4,4,4,6)						
1.20	D9	PID 1.50m, 44.7ppm		(2.40)				
1.50	ES12							
1.50 - 1.95	D10							
1.50 - 2.00	B11	PID 2.00m, 52.1ppm						
2.00	ES13							
2.20	D14							
2.50 - 2.95	D15	SPT(S) 2.50m, N=13 (1,2/2,3,4,4)						
2.50 - 3.00	B16							
			74.56	2.80		Dense dark yellowish brown slightly clayey gravelly fine to coarse SAND with occasional subrounded to rounded fine cobbles of quartzite. Gravel is subangular to rounded of quartzite. [Bagington Sand and Gravel Formation]		
3.00 - 3.50	B17			(1.00)				
3.50 - 3.80	B18	SPT(C) 3.50m, N=33 (4,5/7,7,9,10)						
3.80 - 4.20	B19		73.56	3.80		Dark greyish brown slightly sandy subangular to rounded fine to coarse GRAVEL of quartzite with low cobble content. Sand is fine to coarse. Cobbles are subrounded to rounded of quartzite. [Bagington Sand and Gravel Formation]		
4.50 - 5.00	B20	SPT(C) 4.50m, N=13 (1,1/3,3,4,3)		(1.30)				
			72.26	5.10		Stiff reddish brown mottled green grey slightly sandy gravelly CLAY with occasional gypsum veins 10-20mm. Sand is fine to coarse. Gravel is subangular to angular fine to coarse of mudstone (Fully Weathered Mercia Mudstone Grade IVb)		
5.20	D21							
5.50 - 5.95	U22	Ublows = 76 Recovery = 100%						
6.00	D23							
7.00	D24			(3.90)				
7.50 - 7.95	D25	SPT(S) 7.50m, N=38 (2,4/6,10,10,12)						
7.50 - 8.00	B26							
8.50	D27					*8.50: Becomes very stiff*		
			68.36	9.00		Recovered as fragments of extremely weak reddish brown locally mottled green grey MUDSTONE (Partially Weathered Mercia Mudstone Grade III)		
9.50 - 10.00	B29	SPT(S) 9.50m, 99 (25 for 135mm/99 for 225mm)		(1.00)				
9.50 - 9.82	D28							
			67.36	10.00		End of Borehole at 10.00m		

Start & End of Shift Observations

Date	Time	Depth (m)	Casing (m)	Water (m)
20-06-2023	14:00	0.00	0.00	
20-06-2023	18:00	3.50	3.30	
21-06-2023	08:00	3.50	3.30	
21-06-2023	18:00	10.00	8.00	

Borehole Diameter

Depth (m)	Dia (mm)
10.00	180

Casing Diameter

Depth (m)	Dia (mm)
8.00	200

Remarks:

Position was cleared by Octavius prior to excavation. Inspection pit was dug to 1.2m bgl Groundwater was not encountered at position. Position was installed upon completion with plain and slotted pipe, bentonite, gravel and cold lay upon completion.

Chiselling

From (m)	To (m)	Duration	Remarks
9.80	10.00	00:30	

Installation

Top (m)	Base (m)	Type	Dia (mm)
0.00	1.40	PLAIN	50
1.40	5.10	SLOTTED	50

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks

STRATA GEOTECHNICS	Contract Name: A46 Walsgrave		Client: Octavius			Borehole ID: BH113
	Contract Number: G230651	Date Started: 31/05/2023	Date Completed: 01/06/2023	Logged: TLY	Checked: SW	Status: FINAL
Cable Percussion Borehole Log	Easting: 438560.5	Northing: 279690.3	Ground Level: 77.28m (OD)	Plant Used: Dando 3000/ Comacchio 405	Print Date: 21/12/2023	Scale: 1:50
Weather: Sunny	Rig Crew: RH JW	Termination: Refusal		SPT Hammer: AR1859 Energy Ratio: 65%		Sheet 1 of 2

Depth	Sample ID	Test Result	Level (mAOD)	Depth (m) (Thickness)	Strata Description	Water Strike	Backfill/ Installation
0.10	D4				TOPSOIL: Firm brown sandy, slightly gravelly CLAY. Sand is fine to coarse. Gravel is subrounded to rounded fine to coarse of quartzite		
0.10 - 0.30	B8	HV 0.20m, 25/22kPa		(0.60)			
0.30	ES1	PID 0.30m, 0.0ppm					
0.40	D5	HV 0.40m, 41/24kPa					
0.50	ES2	PID 0.50m, 0.6ppm	76.68	0.60	Loose to medium dense orangish brown slightly clayey gravelly fine to coarse SAND. Gravel is subrounded to rounded of quartzite. [Bagington Sand and Gravel Formation]		
0.70	D6						
0.80 - 1.00	B9						
1.00	D7	PID 1.00m, 7.2ppm		(0.90)			
1.00	ES3	SPT(S) 1.20m, N=14 (2,2/2,3,3,6)					
1.20 - 1.65	D10						
1.50	ES12	PID 1.50m, 3.1ppm	75.78	1.50	Medium dense orangish brown slightly gravelly silty fine to coarse SAND. Gravel is medium to coarse rounded to subrounded of quartzite. [Bagington Sand and Gravel Formation]		
1.70 - 2.00	B11			(0.60)			
2.00	ES13	SPT(S) 2.00m, N=28 (4,5/8,8,7,5)					
2.00 - 2.45	B14	PID 2.00m, 4.7ppm	75.18	2.10	Medium dense dark orangish brown very gravelly silty fine to coarse SAND. Gravel is rounded medium to coarse of quartzite. [Bagington Sand and Gravel Formation]		
2.80	D15			(1.40)			
3.00 - 3.50	D16	SPT(S) 3.00m, N=23 (3,4/5,5,6,7)					
			73.78	3.50	Medium dense orangish brown silty SAND and GRAVEL. Sand is fine to coarse. Gravel is subrounded to rounded fine to coarse of quartzite. [Bagington Sand and Gravel Formation]		
3.70 - 3.90	B17			(0.70)			
		SPT(C) 4.00m, N=28 (3,4/4,7,9,8)					
4.10	D18		73.08	4.20	Firm to stiff orangish brown gravelly slightly sandy silty CLAY. Sand is fine to coarse. Gravel is subrounded to rounded fine to coarse of quartzite. (Fully Weathered Mercia Mudstone - Grade IVb)		
4.40 - 4.60	B19			(0.45)			
			72.63	4.65	Firm to stiff orangish brown gravelly mottled bluish grey slightly sandy slightly gravelly silty CLAY. Gravel is fine to medium sub rounded to rounded quartzite. (Fully Weathered Mercia Mudstone - Grade IVb)		
4.90	D20				*4.65 - 4.70: Becoming locally mottled blueish grey.*		
5.00 - 5.45	U21	Ublows = 65 Recovery = 100%					
5.45 - 5.50	D22			(1.85)			
5.70 - 5.90	B23						
6.20	D24						
6.50 - 6.95	D25	SPT(S) 6.50m, N=46 (2,3/5,8,11,22)	70.78	6.50	Stiff, orangish brown slightly sandy silty CLAY with occasional bluish grey reduction spots (Fully Weathered Mercia Mudstone - Grade IVb)		
7.10 - 7.30	B26			(1.70)			
7.70	D27						
8.00 - 8.20	D28	SPT(S) 8.00m, 100 (24,24/100 for 50mm)					
			69.08	8.20	Very weak reddish brown MUDSTONE. Discontinuities at 0-10 degrees are medium spaced (250/300/400) planar smooth with no infill. (Partially Weathered Mercia Mudstone - Grade II)		
8.50 - 8.80	CSS29						
8.20 - 9.70				(3.00)	*9.27 - 9.37: Very weak grey mudstone*		
9.60 - 9.70	CSS30	UCS - 9.60m 1.8MPa					

Fracture	TCR	SCR	RQD	FI
	93	87	87	FI = 10
				FI = 3

Start & End of Shift Observations

Date	Time	Depth (m)	Casing (m)	Water (m)
23-05-2023	09:00	0.00	0.00	
23-05-2023	17:30	3.45	3.00	3.20
24-05-2023	07:00	3.45	3.00	3.00
24-05-2023	15:00	8.20	7.00	8.00
31-05-2023	17:20	10.20	7.00	
01-06-2023	07:30	10.00	7.00	

Borehole Diameter

Depth (m)	Dia (mm)
8.20	180
11.20	146

Casing Diameter

Depth (m)	Dia (mm)
7.00	200
7.00	202
10.20	146

Remarks:

Position was cleared by Octavius prior to excavation. Inspection pit was dug to 1.2m bgl Groundwater was encountered at 2.10m bgl and rose to 1.90m bgl. Position backfilled with bentonite and arisings upon completion. Coordinates are taken as as-builts.

Chiselling

From (m)	To (m)	Duration	Remarks

Installation

Top (m)	Base (m)	Type	Dia (mm)

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
2.10	2.00		20	1.90	Seepage

STRATA GEOTECHNICS	Contract Name: A46 Walsgrave		Client: Octavius			Borehole ID: BH113
	Contract Number: G230651	Date Started: 31/05/2023	Date Completed: 01/06/2023	Logged: TLY	Checked: SW	Status: FINAL
Rotary Core Drilling Log	Easting: 438560.5	Northing: 279690.3	Ground Level: 77.28m (OD)	Plant Used: Dando 3000/ Comacchio 405	Print Date: 21/12/2023	Scale: 1:50
Weather: Sunny	Rig Crew: RH JW	Termination: Refusal		SPT Hammer: AR1859 Energy Ratio: 65%		Sheet 2 of 2

Samples & In Situ Testing							Strata Details				Groundwater	
Depth	Sample	Test Result	TCR	SCR	RQD	FI/If	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
10.20 - 10.50	CSS31		100	100	100							
9.70 - 11.20												
11.10 - 11.20	CSS32						66.08	11.20		End of Borehole at 11.20m		

11 12 13 14 15 16 17 18 19 20

Start & End of Shift Observations

Date	Time	Depth (m)	Casing (m)	Water (m)
01-06-23	09:00	11.20	7.00	

Flush Return Information

Top	Base	Min %	Max %	Type	Colour
8.20	9.20	100	100		red
9.20	10.20	100	100		red

Remarks:

Position was cleared by Octavius prior to excavation. Inspection pit was dug to 1.2m bgl Groundwater was encountered at 2.10m bgl and rose to 1.90m bgl. Position backfilled with bentonite and arisings upon completion. Coordinates are taken as as-builts.

Borehole Diameter

Depth (m)	Dia (mm)
8.20	180
11.20	146

Casing Diameter

Depth (m)	Dia (mm)
7.00	200
7.00	202
10.20	146

Coring Information

Top (m)	Base (m)	Dia (mm)	Barrel Type
8.20	9.70	102	
9.70	11.20	102	

Water Strike

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks

Fracture Index (FI) - Fractures per meter, Fracture Spacing (If) - reported in mm as Min, Average and Max values. TCR, SCR and RQD reported as %. Hand vane (HV) reports Undrained Shear Strength (Su). Pocket penetrometer (PP) reports Unconfined Compressive Strength (UCS)

STRATA GEOTECHNICS	Contract Name: A46 Walsgrave		Client: Octavius				Borehole ID: BH114
	Contract Number: G230651	Date Started: 22/05/2023	Date Completed: 23/05/2023	Logged: JAW	Checked: SW	Status: FINAL	Sheet 1 of 1
Cable Percussion Borehole Log	Easting: 438628.4	Northing: 279737.9	Ground Level: 77.04m (OD)	Plant Used: Dando 2000		Print Date: 21/12/2023	Scale: 1:50
Weather: Sunny	Rig Crew: Matthew Higginson	Termination: Target Depth.		SPT Hammer: AR3573 Energy Ratio: 67%			

Samples & In Situ Testing			Strata Details				Groundwater	
Depth	Sample ID	Test Result	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
0.10	D1					Firm dark brown slightly gravelly sandy CLAY with frequent rootlets. Sand is subangular fine to coarse. Gravel is rounded to subangular fine to coarse of quartzite.		
0.10 - 0.50	B4			(0.55)				
0.30	D3	PID 0.30m, 0.6ppm						
0.30	ES2	HV 0.50m, 66/26kPa	76.49	0.55		[Bagington Sand and Gravel Formation]		
0.50	ES5	PID 0.50m, 0.8ppm				Light orangish brown mottled grey slightly clayey slightly gravelly subangular fine to carse SAND. Gravel is rounded to subangular fine to medium of quartzite. [Bagington Sand and Gravel Formation]		
0.80	D	HV 0.52m, 70/26kPa						
0.80	D6	HV 0.54m, 64/26kPa						
0.80 - 1.00	B7	PID 1.00m, 0.3ppm						
1.00	ES8							
1.20	D9							
1.50	ES11	SPT(S) 1.50m, N=13 (2,2/3,3,3,4)		(1.95)				
1.50 - 1.95	D10	PID 1.50m, 3.9ppm						
1.50 - 2.00	B13							
2.00	ES12	PID 2.00m, 8.6ppm						
2.20	D14							
2.50 - 2.95	D15	SPT(S) 2.50m, N=14 (2,3/3,3,4,4)	74.54	2.50		Stiff dark reddish brown locally mottled greenish grey slightly sandy CLAY. (Fully Weathered Mercia Mudstone - Grade IVa)		
2.50 - 3.00	B16							
3.20	D							
3.20	D17							
3.50 - 3.95	UT18	Ublows = 27 Recovery = 100%				*3.50: Too friable to HSV*		
4.00	D19					*4.00: Becoming mottled green grey.*		
4.20	D20							
4.50 - 4.95	D21	SPT(S) 4.50m, N=20 (2,3/4,4,5,7)				*4.50: Becoming very stiff.*		
4.50 - 5.00	B22							
5.20	D23							
5.50 - 5.95	UT	Ublows = 60						
5.50 - 5.95	UT24	Recovery = 100%						
6.00	D25			(7.29)				
6.50	D26							
7.00 - 7.45	D27	SPT(S) 7.00m, N=70						
7.00 - 7.50	B28	(8,11/14,18,20,18)						
8.00	D29					*8.00: Too friable to HSV*		
8.50 - 8.95	UT30	Ublows = 75 Recovery = 100%						
9.00	D31							
9.50 - 9.79	D32	SPT(S) 9.50m, 100 (25 for 120mm/100 for 170mm)	67.25	9.79		End of Borehole at 9.79m		

1 2 3 4 5 6 7 8 9 10

Start & End of Shift Observations

Date	Time	Depth (m)	Casing (m)	Water (m)
22-05-2023	12:30	0.00	0.00	
22-05-2023	18:00	9.79	9.79	
23-05-2023	07:30	9.79	4.50	
23-05-2023	18:00	0.00	0.00	

Borehole Diameter

Depth (m)	Dia (mm)
9.79	180

Casing Diameter

Depth (m)	Dia (mm)
4.50	200

Remarks:

Position was cleared by Octavius prior to excavation. Inspection pit was dug to 1.2m bgl Groundwater was encountered at 4.30m bgl and rose to 4.26m bgl. Position was backfilled with bentonite. Coordinates are taken as as-builts.

Chiselling

From (m)	To (m)	Duration	Remarks

Installation

Top (m)	Base (m)	Type	Dia (mm)

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
4.30	4.00	4.40	20	4.26	Seepage

STRATA GEOTECHNICS	Contract Name: A46 Walsgrave		Client: Octavius			Borehole ID: BH115
	Contract Number: G230651	Date Started: 24/05/2023	Date Completed: 25/05/2023	Logged: TLYH	Checked: IL	Status: FINAL — Sheet 1 of 1
Cable Percussion Borehole Log	Easting: 438572.6	Northing: 279793.7	Ground Level: 75.07m (OD)	Plant Used: Dando 3000	Print Date: 21/12/2023	Scale: 1:50
Weather: Sunny	Rig Crew: Ryan Hayes	Termination: Target Depth		SPT Hammer: AR1859 Energy Ratio: 65%		

Depth	Sample ID	Test Result	Level (mAOD)	Depth (m) (Thickness)	Strata Description	Water Strike	Backfill/ Installation
0.10	D4	HV 0.10m, 47/19kPa					
0.10	ES1	PID 0.10m, 0.0ppm					
0.20 - 0.40	B7			(0.60)	TOPSOIL: Firm, dark brown, sandy, gravelly CLAY. Sand is fine. Gravel is fine to coarse, subrounded to rounded quartzite		
0.50	D5	PID 0.50m, 0.0ppm					
0.50	ES2	HV 0.70m, 48/22kPa	74.47	0.60			
0.70 - 1.00	B8				Firm to stiff, orangish brown mottled grey and yellow, slightly silty, gravelly CLAY. Gravel is fine to coarse, subangular to subrounded quartzite and rare greenish grey siltstone. (Fully Weathered Mercia Mudstone Grade IVb)		
1.00	D6	PID 1.00m, 0.1ppm		(0.60)			
1.00	ES3						
1.20 - 1.65	D9	SPT(S) 1.20m, N=8 (2,2/2,2,2,2)	73.87	1.20			
1.50	ES10	PID 1.50m, 3.6ppm			Firm to stiff, orangish brown, slightly gravelly, sandy CLAY. Sand is fine to coarse. Gravel is fine to medium, subangular to rounded, greenish grey siltstone. (Fully Weathered Mercia Mudstone Grade IVb)		
1.70 - 1.80	B11						
1.90	D12						
2.00	ES13	PID 2.00m, 0.4ppm					
2.00 - 2.45	UT14	Ublows = 32 Recovery = 100%					
2.45 - 2.50	D						
2.70 - 2.90	B16				*2.50 - 3.20: Occasional rootlets found throughout*		
3.00 - 3.45	D17	SPT(S) 3.00m, N=25 (3,3/4,5,6,10)		(3.80)			
3.70 - 3.90	B18						
4.00 - 4.45	UT19	Ublows = 52 Recovery = 100%					
4.45 - 4.50	D20						
5.00 - 5.45	D21	SPT(S) 5.00m, N=42 (6,7/9,9,10,14)	70.07	5.00	Very stiff, orangish brown, slightly sandy, slightly gravelly CLAY with occasional grey speckles. Sand is fine. Gravel is fine to medium, subangular siltstone. (Fully Weathered Mercia Mudstone Grade IVb)		
5.80 - 6.00	B22						
6.20	D						
6.50 - 6.95	UT24	Ublows = 51 Recovery = 100%					
6.95 - 7.00	D25						
7.50 - 7.80	B26			(4.85)			
8.00 - 8.45	D27	SPT(S) 8.00m, N=87 (8,8/16,22,24,25)					
8.70 - 8.90	B28						
9.20	D29						
9.50 - 9.85	D30	SPT(S) 9.50m, 100 (14,14/100 for 200mm)					
			65.22	9.85	End of Borehole at 9.85m		

Start & End of Shift Observations

Date	Time	Depth (m)	Casing (m)	Water (m)
24-05-2023	07:00			
24-05-2023	17:30	1.20	0.00	
25-05-2023	07:00	1.20	0.00	
25-05-2023	17:30	9.85		

Borehole Diameter

Depth (m)	Dia (mm)
9.85	200

Casing Diameter

Depth (m)	Dia (mm)
5.00	200

Remarks:

Position was cleared by Octavius prior to excavation. Inspection pit was dug to 1.2m bgl No groundwater was encountered during drilling. Position was backfilled with bentonite. Coordinates are taken as as-builts.

Chiselling

From (m)	To (m)	Duration	Remarks

Installation

Top (m)	Base (m)	Type	Dia (mm)

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks

STRATA GEOTECHNICS	Contract Name: A46 Walsgrave		Client: Octavius			Borehole ID: BH116
	Contract Number: G230651	Date Started: 19/06/2023	Date Completed: 20/06/2023	Logged: JAW	Checked: IL	Status: FINAL
						Sheet 1 of 2
Cable Percussion Borehole Log	Easting: 438739.3	Northing: 279819.1	Ground Level: 74.46m (OD)	Plant Used: Dando 2000	Print Date: 21/12/2023	Scale: 1:50
Weather: Sunny	Rig Crew: Matthew Higginson	Termination: Target Depth		SPT Hammer: AR3920 Energy Ratio: 65%		

Samples & In Situ Testing			Strata Details				Groundwater	
Depth	Sample ID	Test Result	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
0.10	D1			(0.40)		Firm dark brown slightly gravelly sandy CLAY with frequent rootlets. Sand is fine to coarse. Gravel is rounded to angular fine to coarse of quartzite & flint. [WOLSTON GLACIGENIC FORMATION]		
0.30	D2	PID 0.30m, 0.2ppm	74.06	0.40				
0.30	ES1	PID 0.50m, 0.5ppm				Firm dark brown slightly gravelly sandy CLAY with frequent rootlets. Sand is fine to coarse. Gravel is rounded to subangular fine to coarse of quartzite. [WOLSTON GLACIGENIC FORMATION]		
0.30	ES3							
0.50	B5							
0.50	ES1							
0.50	ES4	PID 1.00m, 1.0ppm						
0.80	D6			(1.55)				
1.00	B7							
1.00	ES8	PID 1.50m, 0.1ppm						
1.20	D9	Ublows = 27						
1.50	ES12	Recovery = 100%						
1.50 - 1.95	UT10							
2.00	D11	PID 2.00m, 3.7ppm	72.51	1.95		Dark reddish brown clayey gravelly fine to coarse SAND with frequent clay lenses (50-70mm) and low cobble content. Gravel is rounded to subangular of quartzite. Cobbles are rounded to subrounded of quartzite. [Bagington Sand and Gravel Formation]		
2.00	ES1							
2.00	ES13							
2.20	D14							
2.50 - 2.95	D15	SPT(S) 2.50m, N=15 (2,2/3,4,4,4)		(1.15)				
2.50 - 3.00	B16							
3.10 - 3.50	B17		71.36	3.10		Stiff reddish brown slightly sandy gravelly CLAY with low cobble content. Sand is fine to coarse. Gravel is angular to subangular fine to coarse of quartzite. Cobles are subrounded of quartzite. [Bagington Sand and Gravel Formation]		
3.50 - 3.95	UT18	Ublows = 57 Recovery = 100%		(0.75)				
4.00	D19		70.61	3.85		Stiff reddish brown locally mottled greenish grey slightly sandy gravelly CLAY. Sand is fine to coarse. Gravel is angular to subangular fine to coarse of mudstone. (Fully Weathered Mercia Mudstone Grade IVb)		
4.00 - 4.50	B20							
4.50 - 4.95	D21	SPT(S) 4.50m, N=17 (1,2/2,3,4,8)						
4.50 - 5.00	B22							
5.20	D23			(2.65)				
5.50 - 5.95	D24	SPT(S) 5.50m, N=35 (6,8/8,7,8,12)						
5.50 - 6.00	B25							
6.50	D26		67.96	6.50		Very stiff reddish brown locally mottled greenish grey slightly sandy gravelly CLAY. Sand is fine to coarse. Gravel is angular to subangular fine to coarse of mudstone. (Partially Weathered Mercia Mudstone Grade IVa)		
7.50 - 7.84	D27	SPT(S) 7.50m, 100 (10,15/100 for 190mm)						
7.50 - 8.00	B28							
8.50	D29			(3.87)				
9.00 - 9.45	D30	SPT(S) 9.00m, N=61 (7,9/21,17,13,10)						
9.00 - 9.50	B31							
9.80	D32							
10.00 - 10.37	D33							

Start & End of Shift Observations

Date	Time	Depth (m)	Casing (m)	Water (m)
19-06-2023	13:30	0.00	0.00	
19-06-2023	18:00	6.50	6.20	
20-06-2023	07:30	6.50	6.20	6.00
20-06-2023	13:50	10.37	8.50	

Borehole Diameter

Depth (m)	Dia (mm)
10.37	180

Casing Diameter

Depth (m)	Dia (mm)
8.50	200

Remarks:

Position was cleared by Octavius prior to excavation. Inspection pit was dug to 1.2m bgl No groundwater was encountered during drilling. Position was backfilled with bentonite.

Chiselling

From (m)	To (m)	Duration	Remarks
7.70	8.00	00:40	

Installation

Top (m)	Base (m)	Type	Dia (mm)

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks

STRATA GEOTECHNICS	Contract Name: A46 Walsgrave		Client: Octavius				Borehole ID: BH116
	Contract Number: G230651	Date Started: 19/06/2023	Date Completed: 20/06/2023	Logged: JAW	Checked: IL	Status: FINAL	Sheet 2 of 2
Cable Percussion Borehole Log	Easting: 438739.3	Northing: 279819.1	Ground Level: 74.46m (OD)	Plant Used: Dando 2000		Print Date: 21/12/2023	Scale: 1:50
Weather: Sunny	Rig Crew: Matthew Higginson	Termination: Target Depth		SPT Hammer: AR3920 Energy Ratio: 65%			

Samples & In Situ Testing			Strata Details				Groundwater	
Depth	Sample ID	Test Result	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
		SPT(S) 10.00m, 100 (9,14/100 for 220mm)	64.09	10.37		Very stiff reddish brown locally mottled greenish grey slightly sandy gravelly CLAY. Sand is fine to coarse. Gravel is angular to subangular fine to coarse of mudstone. (Partially Weathered Mercia Mudstone Grade IVa)		
						End of Borehole at 10.37m		

Start & End of Shift Observations					Borehole Diameter		Casing Diameter		Remarks:
Date	Time	Depth (m)	Casing (m)	Water (m)	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)	Position was cleared by Octavius prior to excavation. Inspection pit was dug to 1.2m bgl No groundwater was encountered during drilling. Position was backfilled with bentonite.
					10.37	180	8.50	200	

Chiselling				Installation				Water Strikes					
From (m)	To (m)	Duration	Remarks	Top (m)	Base (m)	Type	Dia (mm)	Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks

STRATA GEOTECHNICS	Contract Name: A46 Walsgrave		Client: Octavius			Borehole ID: BH117
	Contract Number: G230651	Date Started: 06/06/2023	Date Completed: 01/06/2023	Logged: JAW/ ASH	Checked: IL	Status: FINAL
Cable Percussion Borehole Log	Easting: 438616.7	Northing: 279889.7	Ground Level: 73.80m (OD)	Plant Used: Dando 3000/ Comacchio 602	Print Date: 21/12/2023	Scale: 1:50
Weather: Sunny	Rig Crew: RH AF	Termination: Target Depth		SPT Hammer: AR1859/AR935 Energy Ratio: 65/63.5%		Sheet 1 of 2

Depth	Sample ID	Test Result	Level (mAOD)	Depth (m) (Thickness)	Strata Description
0.10	D4				
0.10	ES1	HV 0.20m, 41/21kPa		(0.55)	MADE GROUND: Firm brown sandy gravelly CLAY. Gravel is fine to coarse subrounded to rounded of quartzite with occasional brick fragments.
0.10 - 0.30	B8				
0.40	D5		73.25	0.55	
0.50	ES2				MADE GROUND: Firm to stiff orangish brown mottled grey and yellow very sandy slightly gravelly CLAY. Gravel is fine to coarse subrounded to rounded of quartzite with occasional brick fragments.
0.60 - 0.90	B9	HV 0.80m, 55/22kPa			
0.70	D6				
1.00	D7			(1.15)	
1.00	ES3	SPT(S) 1.20m, N=6 (1,1/1,1,2,2)			
1.20 - 1.65	D10				
1.50	ES11				
1.60 - 1.70	B12		72.10	1.70	
1.90	D13			(0.40)	Firm orangish brown very sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is fine to medium subrounded to rounded of quartzite. [WOLSTON GLACIGENIC FORMATION]
2.00	ES14	Ublows = 4			
2.00 - 2.45	B15	Recovery = 0%	71.70	2.10	
2.00 - 2.45	UT				Very loose orangish brown slightly gravelly clayey SAND. Sand is fine to coarse. Gravel is fine to medium subrounded to rounded of quartzite. [WOLSTON GLACIGENIC FORMATION]
2.70	D16				
				(1.50)	
3.00 - 3.45	D17	SPT(S) 3.00m, N=3 (0,0/1,0,1,1)			
			70.20	3.60	
3.70 - 3.90	B18				Firm orangish brown very sandy CLAY. Sand is fine to coarse. [WOLSTON GLACIGENIC FORMATION]
4.00 - 4.45	D19	SPT(S) 4.00m, N=21 (2,3/4,5,6,6)		(1.00)	
4.60 - 4.80	B20		69.20	4.60	
5.00 - 5.45	D21	SPT(S) 5.00m, N=18 (3,4/4,4,4,6)			Firm to stiff orangish brown very sandy CLAY. Sand is fine to coarse. [WOLSTON GLACIGENIC FORMATION]
5.70 - 5.90	B22			(2.10)	
6.50 - 6.95	D23	SPT(S) 6.50m, N=47 (3,3/5,14,14,14)			
			67.10	6.70	
7.30 - 7.60	B24			(1.10)	Very stiff orangish brown gravelly sandy CLAY. Sand is fine to coarse. Gravel is fine to coarse subrounded to rounded of quartzite and mudstone. [WOLSTON GLACIGENIC FORMATION]
7.80	D25		66.00	7.80	Very stiff reddish brown mottled grey slightly sandy gravelly CLAY. Sand is fine to coarse. Gravel is fine to medium subangular to subrounded of siltstone. [WOLSTON GLACIGENIC FORMATION]
8.00 - 8.43	D26	SPT(S) 8.00m, 106 (3,4/106 for 280mm)	65.80	8.00	
8.00 - 9.50	C1			(0.80)	Very dense orange brown silty fine to medium SAND. [Bagington Sand and Gravel Formation]
8.30 - 8.40	D32				
8.00 - 9.50	C1		65.00	8.80	
8.80 - 9.00	D33		64.80	9.00	Orangish brown slightly gravelly silty SAND. Sand is fine to coarse. Gravel is fine to coarse angular to rounded of quartz. [Bagington Sand and Gravel Formation]
9.00 - 9.10	D34		64.65	9.15	
9.15 - 9.30	CSS35	Fracture: TCR 100, SCR 67, RQD 27, FI = 6			
				(1.45)	
9.70 - 10.00	CSS36	FI = 20			Very stiff reddish brown mottled grey slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is fine to coarse angular of mudstone. (Partially Weathered Mercia Mudstone Grade IVa)

Groundwater: Water Strike; Backfill/ Installation

Start & End of Shift Observations

Date	Time	Depth (m)	Casing (m)	Water (m)
01-06-2023	17:30	8.43	8.00	4.90
06-06-2023	17:00	15.50	15.50	

Borehole Diameter

Depth (m)	Dia (mm)
15.50	146

Casing Diameter

Depth (m)	Dia (mm)
8.10	200

Remarks:

Position was cleared by Octavius prior to excavation. Inspection pit was dug to 1.2m bgl. Groundwater was encountered at 4.1m bgl and rose to 3.55m bgl. Coordinates are taken as as-builts. Position was installed upon completion with plain and slotted pipe, bentonite and gravel upon completion.

Chiselling

From (m)	To (m)	Duration	Remarks

Installation

Top (m)	Base (m)	Type	Dia (mm)
0.00	2.10	PLAIN	50
2.10	6.70	SLOTTED	50

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
4.10	4.00		20	3.55	Slow

STRATA GEOTECHNICS	Contract Name: A46 Walsgrave		Client: Octavius			Borehole ID: BH117
	Contract Number: G230651	Date Started: 06/06/2023	Date Completed: 01/06/2023	Logged: JAW/ ASH	Checked: IL	Status: FINAL
Rotary Core Drilling Log	Easting: 438616.7	Northing: 279889.7	Ground Level: 73.80m (OD)	Plant Used: Dando 3000/ Comacchio 602	Print Date: 21/12/2023	Scale: 1:50
Weather: Sunny	Rig Crew: RH AF	Termination: Target Depth		SPT Hammer: AR1859/AR935 Energy Ratio: 65/63.5%		Sheet 2 of 2

Samples & In Situ Testing							Strata Details				Groundwater	
Depth	Sample	Test Result	TCR	SCR	RQD	FI/If	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
9.50 - 11.00	C2		100	100	90	FI = 2				Extremely weak to very weak reddish brown mottled grey thinly bedded MUDSTONE. Discontinuities at 0-10 degrees are very closely to widely spaced (50/200/900), planar smooth and clean with occasional light grey specs. (Partially Weathered Mercia Mudstone Grade II)		
10.70 - 10.80	CSS37					FI = 5	63.20	10.60 (0.40)		*10.15 - 10.15: 5mm greyish blue siltstone seam.*		
		SPT(C) 11.00m, 50 (25 for 100mm/50 for 90mm)				FI = 12	62.80	11.00		Very weak to weak thinly bedded reddish brown MUDSTONE. Discontinuities at 0-10 are closely to medium spaced (60/120/300) planar clean and smooth, with occasional light grey specs and occasional gypsum crystals. (Partially Weathered Mercia Mudstone Grade II)		
11.70 - 12.00	CSS38		100	100	93	FI = 5		(1.30)		Extremely weak thinly bedded reddish brown MUDSTONE. Fractures are closely to medium spaced (60/120/300) undulating rough, with occasional greyish blue specs and greyish blue silt pockets. (Partially Weathered Mercia Mudstone Grade II)		
11.00 - 12.50	C3									*11.00 - 11.10: Recovered Non intact.*		
12.30 - 12.40	CSS39						61.50	12.30		Extremely weak to weak thinly bedded reddish brown MUDSTONE. Fractures are medium spaced (60/120/300) undulating rough. With occasional greyish blue specs and greyish blue silty pockets. (Partially Weathered Mercia Mudstone Grade II)		
12.70 - 12.80	CSS40					FI = 12						
12.50 - 14.00	C4		100	100	93	FI = 4		(1.60)				
13.50 - 13.75	CSS41						59.90	13.90		Weak thinly bedded reddish brown MUDSTONE. Fractures are closely spaced (60/120/300) undulating rough. With rare greyish blue specs and rare greyish silt pockets. (Partially Weathered Mercia Mudstone Grade II)		
		SPT(C) 14.00m, 50 (25 for 85mm/50 for 140mm)				FI = 10						
14.50 - 14.70	CSS42					FI = 7						
14.00 - 15.50	C5		93	93	67			(1.60)				
15.30 - 15.40	CSS43					FI = 15	58.30	15.50		End of Borehole at 15.50m		

Start & End of Shift Observations				
Date	Time	Depth (m)	Casing (m)	Water (m)

Flush Return Information					
Top	Base	Min %	Max %	Type	Colour
8.00	9.50	100	100	Air/Mist	Red
9.50	11.00	100	100	Air/Mist	Red
11.00	12.50	100	100	Air/Mist	Red
12.50	14.00	100	100	Air/Mist	Red
14.00	15.50	100	100	Air/Mist	Red

Remarks:

Position was cleared by Octavius prior to excavation. Inspection pit was dug to 1.2m bgl. Groundwater was encountered at 4.1m bgl and rose to 3.55m bgl. Coordinates are taken as as-builts. Position was installed upon completion with plain and slotted pipe, bentonite and gravel upon

Water Strike					
Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks

Borehole Diameter	
Depth (m)	Dia (mm)
15.50	146

Casing Diameter	
Depth (m)	Dia (mm)
8.10	200

Coring Information			
Top (m)	Base (m)	Dia (mm)	Barrel Type
8.00	9.50	102	Geobore S (146)
9.50	11.00	102	
11.00	12.50	102	

Fracture Index (FI) - Fractures per meter, Fracture Spacing (If) - reported in mm as Min, Average and Max values. TCR, SCR and RQD reported as %. Hand vane (HV) reports Undrained Shear Strength (Su). Pocket penetrometer (PP) reports Unconfined Compressive Strength (UCS)

STRATA GEOTECHNICS	Contract Name: A46 Walsgrave		Client: Octavius			Borehole ID: BH118
	Contract Number: G230651	Date Started: 01/06/2023	Date Completed: 01/06/2023	Logged: TLY/ AH	Checked: SW	Status: FINAL
Cable Percussion Borehole Log	Easting: 438686.5	Northing: 279873.1	Ground Level: 75.23m (OD)	Plant Used: Dando 3000/ Comacchio 405	Print Date: 21/12/2023	Scale: 1:50
Weather: Sunny	Rig Crew: RH JW	Termination: Refusal		SPT Hammer: AR2501 Energy Ratio: 67%		Sheet 1 of 1

Depth	Sample ID	Test Result	TCR	SCR	RQD	Fracture	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
0.10	D4	HV 0.10m, 35/42kPa								TOPSOIL: Firm dark brown sandy gravelly CLAY. Sand is fine to coarse. Gravel is fine to coarse subrounded to rounded of quartzite.		
0.10	ES1	PID 0.10m, 0.0ppm						(0.60)		*0.00 - 1.20: Rare pockets of yellow silt.*		
0.10 - 0.30	B8											
0.40	D5	PID 0.50m, 0.0ppm					74.63	0.60		Stiff reddish brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is fine to coarse subrounded to rounded of quartzite with occasional black rootlets. [WOLSTON GLACIGENIC FORMATION]		
0.50	ES2	HV 0.70m, 65/62kPa										
0.70	D											
0.70	D6											
0.80 - 1.00	B9	PID 1.00m, 0.1ppm										
1.00	D7	SPT(S) 1.20m, N=8 (1,1/1,2,3,2)										
1.00	ES1											
1.00	ES3	PID 1.50m, 3.6ppm						(1.80)				
1.20 - 1.65	B10											
1.50	ES0											
1.80	D11											
2.00	ES12	PID 2.00m, 0.4ppm										
2.00 - 2.45	UT13	Ublows = 28 Recovery = 100%										
2.45 - 3.00	D						72.83	2.40		Stiff orangish brown slightly gravelly very sandy CLAY. Sand is fine to coarse. Gravel is fine to coarse subrounded to rounded of quartzite. [WOLSTON GLACIGENIC FORMATION]		
2.45 - 3.00	D14							(0.60)				
2.70 - 3.00	B15											
3.00 - 3.45	D16	SPT(S) 3.00m, N=32 (3,4/4,7,9,12)					72.23	3.00		Stiff reddish brown slightly sandy gravelly CLAY. Sand is fine to coarse. Gravel is fine to medium subrounded to rounded of quartzite and siltstone with occasional pockets of bluish grey silt. [WOLSTON GLACIGENIC FORMATION]		
3.60 - 3.90	B17							(1.50)				
4.00 - 4.45	D18	SPT(S) 4.00m, N=60 (5,8/8,9,15,28)										
4.70 - 5.00	B19						70.73	4.50		Dense orangish brown clayey, sandy GRAVEL. Sand is fine to coarse. Gravel is fine to coarse subrounded to rounded of quartzite and siltstone with low cobble content of subrounded siltstone. [Bagington Sand and Gravel Formation]		
5.00 - 5.45	D20	SPT(S) 5.00m, N=47 (4,7/9,11,13,14)						(1.00)				
5.60 - 5.90	B21						69.73	5.50		Dense orangish brown slightly clayey SAND and GRAVEL. Sand is fine to coarse. Gravel is fine to coarse subrounded to rounded of quartzite and siltstone with low cobble content of siltstone. [Bagington Sand and Gravel Formation]		
6.20 - 6.65	D22							(0.90)				
6.70 - 7.00	B23						68.83	6.40		Stiff reddish brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is fine to coarse subrounded to rounded of siltstone. Low cobble content of siltstone and occasional pockets of grey silt. (Partially Weathered Mercia Mudstone Grade IVa).		
7.20 - 8.70		1.7MPa	43	20	7	FI = 20 FI = 10	68.03	7.20 (1.90)		Very weak reddish brown MUDSTONE. Discontinuities at 0-10 degrees are very closely spaced to closely spaced (NI/50/70) planar smooth clean (Partially Weathered Mercia Mudstone Grade II).		
						FI = 20				*8.20 - 8.70: Discontinuities are 80-90 undulating smooth clean*		
9.10 - 9.35	CSS25						66.13	9.10		Very weak to weak reddish brown MUDSTONE. Discontinuities at 0-10 degrees are very closely to medium spaced (50/250/250) planar smooth clean (Partially Weathered Mercia Mudstone Grade II).		
8.70 - 10.00			85	77	69	FI = 5		(0.90)		*9.60 - 9.80: Weak grey mudstone.*		
9.90 - 10.00	CSS26	UCS - 9.90m				FI = 20	65.23	10.00		End of Borehole at 10.00m		

Start & End of Shift Observations

Date	Time	Depth (m)	Casing (m)	Water (m)
26-05-2023	07:00	0.00	0.00	0.00
26-05-2023	14:00	5.50	5.50	5.30
01-06-2023	11:30	10.00	5.50	5.30

Borehole Diameter

Depth (m)	Dia (mm)
7.20	180
10.00	146

Casing Diameter

Depth (m)	Dia (mm)
5.50	200
7.00	202
10.00	146

Remarks:

Position was cleared by Octavius prior to excavation. Inspection pit was dug to 1.2m bgl. Water strike was encountered at 4.0m, rising to 3.90m. Position was backfilled with bentonite. Coordinates are taken as as-builts.

Chiselling

From (m)	To (m)	Duration	Remarks
7.00	7.20	00:20	

Installation

Top (m)	Base (m)	Type	Dia (mm)

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
4.00	3.00	3.00	20	3.90	Seepage

STRATA GEOTECHNICS	Contract Name: A46 Walsgrave		Client: Octavius				Borehole ID: BH119
	Contract Number: G230651	Date Started: 15/06/2023	Date Completed: 19/06/2023	Logged: JAW	Checked: SW	Status: FINAL	Sheet 1 of 2
Cable Percussion Borehole Log	Easting: 438783.9	Northing: 279876.1	Ground Level: 74.84m (OD)	Plant Used: Dando 2000		Print Date: 21/12/2023	Scale: 1:50
Weather: Sunny	Rig Crew: Matthew Higginson	Termination: Target depth		SPT Hammer: AR3573 Energy Ratio: 67%			

Samples & In Situ Testing			Strata Details				Groundwater	
Depth	Sample ID	Test Result	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
0.10	D1			(0.30)		TOPSOIL: Brown gravelly fine to coarse SAND. Gravel is subrounded to rounded fine to coarse of quartzite and rare flint. Occasional pockets of sandy clay. Rootlets frequent throughout (40x2x2mm).		
0.30	ES2	PID 0.30m, 0.1ppm	74.54	0.30				
0.40	D3	HV 0.50m, 96/50kPa	74.34	0.50		Reddish brown slightly gravelly clayey SAND. Sand is fine to coarse. Gravel is subrounded to rounded, fine to coarse of quartzite. [WOLSTON GLACIGENIC FORMATION]		
0.50	B4	PID 0.50m, 0.4ppm						
0.50	ES5							
0.80	D6			(0.80)				
1.00	B7	HV 1.00m, 140/0kPa						
1.00	ES8	PID 1.00m, 0.0ppm						
1.20	D9		73.54	1.30		Stiff reddish brown slightly gravelly sandy CLAY. Sand is fine to coarse. Gravel is subrounded to rounded, fine to coarse of quartzite. [WOLSTON GLACIGENIC FORMATION]		
1.50	ES12	SPT(S) 1.50m, N=4 (1,0/0,1,1,2)						
1.50 - 1.95	D10	PID 1.50m, 44.7ppm		(0.70)				
1.50 - 2.00	B11							
2.00	ES13	PID 2.00m, 52.1ppm	72.84	2.00		Loose dark reddish brown very clayey SAND. Sand is fine to medium. [WOLSTON GLACIGENIC FORMATION]		
2.20	D14					Medium dense reddish brown, slightly clayey SAND. Sand is fine to medium. [WOLSTON GLACIGENIC FORMATION]		
2.50 - 2.95	D15	SPT(S) 2.50m, N=27 (4,4/6,6,6,9)		(1.10)				
2.50 - 3.00	B16							
			71.74	3.10				
3.20	D17					Stiff reddish brown very sandy CLAY. Sand is fine to coarse. [WOLSTON GLACIGENIC FORMATION]		
3.50 - 3.95	D18	SPT(S) 3.50m, N=39 (8,6/8,8,10,13)						
3.50 - 4.00	B19			(1.40)				
4.20	D20							
4.50 - 5.00	B21	SPT(C) 4.50m, N=59 (6,8/19,11,11,18)	70.34	4.50				
				(0.50)		Very dense reddish brown locally mottled grey, gravelly clayey SAND. Sand is fine to coarse. Gravel is subrounded to rounded, fine to coarse of sandstone. Common cobbles are subrounded to rounded of sandstone and mudstone. Redox throughout (grey mottling). (Fully Weathered Mercia Mudstone Grade IVb)		
5.00 - 5.50	B22		69.84	5.00				
5.50 - 5.95	D23	SPT(S) 5.50m, N=29 (1,3/7,7,8,7)		(1.20)		Firm to stiff reddish brown mottled grey, sandy gravelly CLAY. Sand is fine to coarse. Gravel is subrounded to rounded, fine to coarse of quartzite. Low cobble content cobbles of mudstone. (Fully Weathered Mercia Mudstone Grade IVa)		
			68.64	6.20				
6.50	D24					Stiff, reddish brown mottled grey, slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is subrounded to subangular, fine to coarse of mudstone. Rare cobbles of mudstone (Partially Weathered Mercia Mudstone Grade IVa).		
				(1.30)				
7.50 - 7.84	D25	SPT(S) 7.50m, 100 (25 for 140mm/100 for 200mm)	67.34	7.50		Stiff reddish brown mottled grey slightly sandy gravelly CLAY. Sand is fine to coarse. Gravel is subangular to angular fine to coarse of mudstone. (Partially Weathered Mercia Mudstone Grade IVa).		
7.50 - 8.00	B26							
8.50	D27							
				(2.74)				
9.00 - 9.37	D28	SPT(S) 9.00m, 90 (12,13/90 for 215mm)						
9.00 - 9.50	B29							
9.80	D30							
10.00 - 10.24	D31							

Start & End of Shift Observations

Date	Time	Depth (m)	Casing (m)	Water (m)
16-06-2023	07:30	0.00		
16-06-2023	18:00	7.50	7.20	7.00
19-06-2023	07:30	7.50	7.20	3.00
19-06-2023	13:30	10.24		

Borehole Diameter

Depth (m)	Dia (mm)
7.50	200
10.24	146

Casing Diameter

Depth (m)	Dia (mm)
7.20	200

Remarks:

Position was cleared by Octavius prior to excavation. Inspection pit was dug to 1.2m bgl. Water strike was encountered at 3.6m, rising to 3.37m. Position was backfilled with bentonite and arisings. Coordinates taken as as-builts.

Chiselling

From (m)	To (m)	Duration	Remarks
7.60	7.90	00:45	
9.50	9.80	00:40	

Installation

Top (m)	Base (m)	Type	Dia (mm)

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
3.60	3.20		20	3.37	Very Slow

STRATA GEOTECHNICS	Contract Name: A46 Walsgrave		Client: Octavius				Borehole ID: BH119
	Contract Number: G230651	Date Started: 15/06/2023	Date Completed: 19/06/2023	Logged: JAW	Checked: SW	Status: FINAL	Sheet 2 of 2
Cable Percussion Borehole Log	Easting: 438783.9	Northing: 279876.1	Ground Level: 74.84m (OD)	Plant Used: Dando 2000		Print Date: 21/12/2023	Scale: 1:50
Weather: Sunny	Rig Crew: Matthew Higginson	Termination: Target depth		SPT Hammer: AR3573 Energy Ratio: 67%			

Samples & In Situ Testing			Strata Details				Groundwater	
Depth	Sample ID	Test Result	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
		SPT(S) 10.00m, 100 (25 for 100mm/100 for 140mm)	64.60	10.24		Stiff reddish brown mottled grey slightly sandy gravelly CLAY. Sand is fine to coarse. Gravel is subangular to angular fine to coarse of mudstone. (Partially Weathered Mercia Mudstone Grade IVa).		
						End of Borehole at 10.24m		

11 12 13 14 15 16 17 18 19 20

Start & End of Shift Observations					Borehole Diameter		Casing Diameter		Remarks:
Date	Time	Depth (m)	Casing (m)	Water (m)	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)	Position was cleared by Octavius prior to excavation. Inspection pit was dug to 1.2m bgl. Water strike was encountered at 3.6m, rising to 3.37m. Position was backfilled with bentonite and arisings. Coordinates taken as as-builts.
					7.50 10.24	200 146	7.20	200	

Chiselling				Installation				Water Strikes					
From (m)	To (m)	Duration	Remarks	Top (m)	Base (m)	Type	Dia (mm)	Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks

STRATA GEOTECHNICS	Contract Name: A46 Walsgrave		Client: Octavius				Borehole ID: BH120
	Contract Number: G230651	Date Started: 05/06/2023	Date Completed: 07/06/2023	Logged: TLY/ ASH	Checked: SW	Status: FINAL	Sheet 1 of 3
Cable Percussion Borehole Log	Easting: 438717.3	Northing: 279964.1	Ground Level: 74.67m (OD)	Plant Used: Dando 3000/ Comacchio 405		Print Date: 21/12/2023	Scale: 1:50
Weather: Sunny	Rig Crew: RH JW	Termination: Target depth.		SPT Hammer: AR1859/AR2501 Energy Ratio: 65/67%			

Depth	Sample ID	Test Result	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
0.10	D4							
0.10	ES1	HV 0.20m, 27/18kPa		(0.55)		TOPSOIL: Firm brown slightly sandy gravelly CLAY. Sand is fine to coarse. Gravel is subrounded to rounded of quartzite.		
0.10 - 0.30	B8							
0.50	D5		74.12	0.55				
0.50	ES2	HV 0.70m, 62/20kPa				Firm to stiff brown mottled grey gravelly slightly sandy CLAY. Sand is fine to coarse. Gravel is subrounded to rounded fine to coarse of quartzite and siltstone. [WOLSTON GLACIGENIC FORMATION]		
0.50	ESVE01 2305310 02			(1.15)				
0.70 - 1.00	B9	SPT(S) 1.20m, N=10 (1,1/1,2,3,4)						
0.80	D6							
1.00	ES3							
1.00	ESVE01 2305310 03		72.97	1.70		Stiff reddish brown slightly gravelly sandy CLAY with occasional pockets of greyish blue silt. Sand is fine to coarse. Gravel is subrounded to rounded fine to coarse of quartzite and siltstone. [WOLSTON GLACIGENIC FORMATION]		
1.10	D7	SPT(S) 2.00m, N=18 (2,2/3,4,5,6)						
1.20 - 1.65	D10							
1.50	ES11							
1.70 - 2.00	B12			(1.70)				
2.00	ES14							
2.00	ESVE01 2305310 14	Ublows = 34 Recovery = 100%						
2.00 - 2.45	D13							
2.00 - 2.45	D130		71.27	3.40		Loose to medium dense orangish brown slightly gravelly slightly clayey fine to coarse SAND. Gravel is angular to subrounded to rounded fine to coarse of quartzite. [Bagington Sand and Gravel Formation]		
2.60 - 2.80	B15			(0.40)				
2.90	D16		70.87	3.80		Firm to stiff orangish brown very sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is subrounded to rounded fine to medium of quartzite. [Bagington Sand and Gravel Formation]		
3.00 - 3.45	UT17							
3.45 - 3.50	D18							
3.80 - 4.00	B19	SPT(S) 4.00m, N=24 (2,3/4,6,6,8)						
4.00 - 4.45	D20			(1.10)				
4.60 - 4.80	B21							
5.00 - 5.45	B22	Ublows = 11 Recovery = 0%	69.77	4.90		Firm to stiff orangish brown very sandy CLAY with occasional pockets of clayey sand. Sand is fine to coarse. [Bagington Sand and Gravel Formation]		
5.00 - 5.45	UT							
				(1.30)				
5.90	D23							
6.30 - 6.50	B24		68.47	6.20		Dense orangish brown slightly clayey gravelly fine to coarse SAND. Gravel is subrounded to rounded fine to coarse of quartzite and siltstone. [Bagington Sand and Gravel Formation]		
6.50 - 6.95	D25	SPT(S) 6.50m, N=43 (3,6/9,10,11,13)						
				(1.00)				
			67.47	7.20		Very dense orangish brown slightly clayey SAND and GRAVEL. Gravel is subrounded to rounded fine to coarse of quartzite and flint with low cobble content of flint. [Bagington Sand and Gravel Formation]		
7.50 - 7.70	B26							
7.50 - 7.70	B260							
8.00 - 8.45	D27	SPT(S) 8.00m, N=58 (3,3/3,3,10,42)		(1.40)				
8.60 - 8.90	B28		66.07	8.60		Stiff orangish brown mottled blueish grey slightly sandy slightly gravelly CLAY. Sand is fine to coarse. gravel is subrounded to rounded fine to coarse of quartzite and siltstone. (Fully Weathered Mercia Mudstone Grade IVb)		
9.00 - 9.29	D29	SPT(S) 9.00m, 100 (13,26/100 for 140mm)		(0.69)		Stiff friable red brown sandy slightly gravelly CLAY. Gravel is angular fine to coarse of mudstone (Partially Weathered Mercia Mudstone Grade IVa)		
9.30 - 9.40	D30		65.38	9.29				
9.30 - 10.50				(0.41)				
9.95 - 10.10	CSS31	Fracture 112 112 38 FI = 5 TCR SCR RQD	64.97	9.70		Very weak to weak red brown MUDSTONE. Discontinuities at 0-10 degrees are closely to medium spaced		

Start & End of Shift Observations

Date	Time	Depth (m)	Casing (m)	Water (m)
31-05-2023	07:00	0.00	0.00	
31-05-2023	18:00	9.29	9.00	8.00
05-06-2023	13:00	9.30	9.00	2.50
05-06-2023	17:00	15.00	9.00	2.50
06-06-2023	07:30	15.00	9.00	2.00
06-06-2023	08:00	15.00	9.00	2.00

Borehole Diameter

Depth (m)	Dia (mm)
9.29	180
15.00	146
25.00	146

Casing Diameter

Depth (m)	Dia (mm)
9.00	200
9.00	202
15.00	146
25.00	146

Remarks:

Position was cleared by Octavius prior to excavation. Inspection pit was dug to 1.2m bgl . Water strike was encountered at 3.15m BGL and rose to 2.40m BGL in 20 minutes. Position backfilled with bentonite ad arisings. Rotary coring advanced to completion of borehole. Coordinates are taken as as-builts.

Chiselling

From (m)	To (m)	Duration	Remarks
8.50	8.55	00:30	

Installation

Top (m)	Base (m)	Type	Dia (mm)

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
3.15	3.00		20	2.40	Slow

STRATA GEOTECHNICS	Contract Name: A46 Walsgrave		Client: Octavius			Borehole ID: BH120
	Contract Number: G230651	Date Started: 05/06/2023	Date Completed: 07/06/2023	Logged: TLY/ ASH	Checked: SW	Status: FINAL
Rotary Core Drilling Log	Easting: 438717.3	Northing: 279964.1	Ground Level: 74.67m (OD)	Plant Used: Dando 3000/ Comacchio 405	Print Date: 21/12/2023	Scale: 1:50
Weather: Sunny	Rig Crew: RH JW	Termination: Target depth.		SPT Hammer: AR1859/AR2501 Energy Ratio: 65/67%		Sheet 2 of 3

Depth	Sample	Test Result	TCR	SCR	RQD	FI/If	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
										(100/100/300) planar smooth clean (Partially Weathered Mercia Mudstone Grade II)		
										10.15 - 10.50: Discontinuities are (80-90) undulating smooth clean.		
10.50 - 10.60	CSS32					FI = 11				*10.58 - 10.59: 5mm planar gypsum band (0-10 degrees)*		
						FI = 4				*11.00 - 11.01: Planar Gypsum band (0-10 degrees)*	11	
10.50 - 12.00			100	100	67					*11.07 - 11.08: Planar Gypsum band (0-10 degrees)*		
						FI = 20				*11.15 - 11.20: Discontinuities are (40-60 degrees) planar smooth clean.*		
11.70 - 12.00	CSS33					FI = 3				*11.17 - 11.22: 5mm undulating Gypsum band (0-90 degrees)*		
										11.30 - 11.70: Discontinuities are (80-90 degrees) planar smooth clean.		
		SPT(C) 12.00m, N=101 (7,9/15,24,25,37)						(4.20)		*11.49 - 11.50: 10mm planar Gypsum band (0-10 degrees)*	12	
										11.54 - 11.56: 20mm planar Gypsum band (0-10 degrees)		
						FI = 11				*12.27 - 12.30: 20mm planar Gypsum band (0-10 degrees)*		
12.45 - 12.55	CSS34									*12.30 - 12.40: weak grey MUDSTONE.*		
12.00 - 13.50			93	93	77					*12.60 - 12.93: Incipient discontinuities are (80-90 degrees) planar smooth clean.*		
13.00 - 13.30	CSS35					FI = 2				*12.94 - 12.97: 30mm planar Gypsum band (20-40 degrees)*	13	
										13.30 - 13.38: Discontinuities are (80-90 degrees) planar smooth clean		
						FI = 15				*13.43 - 13.45: 25mm planar Gypsum band (20-40 degrees)*		
										13.45 - 13.50: Discontinuities are (80-90 degrees) planar smooth clean		
							60.77	13.90		*13.50 - 13.75: AZCL - assumed weaker than surrounding material*		
14.10 - 14.25	CSS36					FI = 15				Very weak red brown MUDSTONE. Discontinuities at 0-10 degrees very closely to closely spaced (50/50/150) planar smooth clean (Partially Weathered Mercia Mudstone Grade II)	14	
13.50 - 15.00			73	73	35	FI = 10						
						FI = 4		(1.10)				
14.70 - 14.85	CSS37					FI = 15				*14.70 - 14.72: 20mm planar Gypsum band (10-20 degrees)*		
		SPT(C) 15.00m, 100 (25 for 115mm/100 for 245mm)				FI = 7	59.67	15.00	NR NR NR NR NR NR NR NR	*14.96 - 15.00: 40mm planar Gypsum band (0-10 degrees)*	15	
15.00 - 15.50			0	0	0	FI = 20		(0.50)		No Recovery: Recovery destroyed by harder core jamming barrel.		
						FI = 20	59.17	15.50		Very weak red brown MUDSTONE. Discontinuities at 0-10 degrees are closely spaced (50/50/50) planar smooth clean (Partially Weathered Mercia Mudstone Grade II)		
15.70 - 16.00	CSS38						58.97	15.70		Weak to moderately weak red brown MUDSTONE. Discontinuities at 0-10 degrees are very closely to widely spaced (50/350/700) planar smooth clean (Partially Weathered Mercia Mudstone Grade II)		
15.50 - 16.50			100	100	80	FI = 2					16	
16.40 - 16.50	CSS39											
						FI = 14		(1.80)		*16.51 - 16.56: Light grey siltstone ban*		
16.70 - 17.00	CSS40									*16.63 - 16.65: Light grey siltstone ban*		
										16.70 - 16.80: Mudstone is occasionally bluish grey		
						FI = 2					17	
16.50 - 18.00			100	100	87							
17.50 - 17.65	CSS41					FI = 4	57.17	17.50		*17.40 - 17.50: Extremely to very weak red brown MUDSTONE.*		
						FI = 40				Very weak to weak red brown MUDSTONE. Discontinuities at 0-10 degrees are closely to widely spaced (100/200/700) planar smooth clean (Partially Weathered Mercia Mudstone Grade II)		
		SPT(C) 18.00m, 100 (25,/100 for 90mm)				FI = 20					18	
						FI = 5				*17.65 - 17.80: Incipient discontinuities are (80-90 degrees) planar smooth clean*		
						FI = 4		(1.90)		*18.00 - 18.10: Very weak red brown MUDSTONE*		
18.60 - 18.90	CSS42									*18.55 - 18.60: Very weak red brown MUDSTONE*		
18.00 - 19.50			100	100	90							
						FI = 2					19	
										Very stiff grey gravelly CLAY (Partially Weathered Mercia Mudstone Grade IVa)		
19.30 - 19.40	CSS43					FI = 10	55.27	19.40		*19.84 - 19.85: 8mm planar Gypsum band (20-40 degrees)*		
								(0.45)		Very weak grey MUDSTONE. Discontinuities at 0-10 degrees are very closely to closely spaced (40/90/200) planar smooth clean (Partially Weathered Mercia Mudstone Grade II)		
19.90 - 20.15	CSS44					FI = 20	54.82	19.85			20	

Start & End of Shift Observations

Date	Time	Depth (m)	Casing (m)	Water (m)
06-06-23	16:00	25.00	9.00	2.00
06-06-23	17:00	25.00	9.00	2.00
07-06-23	07:30	25.00	9.00	0.00

Flush Return Information

Top	Base	Min %	Max %	Type	Colour
9.30	10.50	100	100	Air/Mist	red
10.50	12.00	100	100	Air/Mist	red
12.00	13.50	100	100	Air/Mist	red
13.50	15.00	100	100	Air/Mist	red
15.00	15.50	100	100	Air/Mist	red
15.50	16.50	100	100	Air/Mist	red

Remarks:

Position was cleared by Octavius prior to excavation. Inspection pit was dug to 1.2m bgl . Water strike was encountered at 3.15m BGL and rose to 2.40m BGL in 20 minutes. Position backfilled with bentonite ad arisings. Rotary coring advanced to completion of borehole. Coordinates are taken

Water Strike

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks

Borehole Diameter

Depth (m)	Dia (mm)
9.29	180
15.00	146
25.00	146

Casing Diameter

Depth (m)	Dia (mm)
9.00	200
9.00	202
15.00	146

Coring Information

Top (m)	Base (m)	Dia (mm)	Barrel Type
9.30	10.50	102	Geobore S
10.50	12.00	102	(146)
12.00	13.50	102	Geobore S

Fracture Index (FI) - Fractures per meter, Fracture Spacing (If) - reported in mm as Min, Average and Max values. TCR, SCR and RQD reported as %. Hand vane (HV) reports Undrained Shear Strength (Su). Pocket penetrometer (PP) reports Unconfined Compressive Strength (UCS)

STRATA GEOTECHNICS	Contract Name: A46 Walsgrave	Client: Octavius		Borehole ID: BH120
	Contract Number: G230651	Date Started: 05/06/2023	Date Completed: 07/06/2023	Logged: TLY/ ASH / Checked: SW / Status: FINAL / Sheet 3 of 3
Rotary Core Drilling Log	Easting: 438717.3	Northing: 279964.1	Ground Level: 74.67m (OD)	Plant Used: Dando 3000/ Comacchio 405 / Print Date: 21/12/2023 / Scale: 1:50
Weather: Sunny	Rig Crew: RH JW	Termination: Target depth.	SPT Hammer: AR1859/AR2501 Energy Ratio: 65/67%	

Samples & In Situ Testing							Strata Details				Groundwater	
Depth	Sample	Test Result	TCR	SCR	RQD	FI/If	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
19.50 - 21.00			93	93	70	FI = 4 FI = 15 FI = 5	54.27	(0.55) 20.40		Weak to moderately weak grey MUDSTONE with bands of sandstone up to 50mm. Discontinuities at 0-10 degrees are very closely to closely spaced (40/90/200) planar smooth clean (Partially Weathered Mercia Mudstone Grade II)		
21.42 - 21.58	CSS45	SPT(C) 21.00m, 100 (25 for 65mm/100 for 100mm)				FI = 20 FI = 12		(2.20)				
21.00 - 22.50			100	100	93	FI = 7 FI = 7 FI = 4 FI = 11						
22.40 - 22.50	CSS46											
22.64 - 22.94	CSS47					FI = 5	52.07	22.60		Weak to moderately red brown mottled grey MUDSTONE. Discontinuities at 0-10 degrees are closely spaced (90/100/200) planar smooth clean (Partially Weathered Mercia Mudstone Grade II)		
22.50 - 24.00			100	100	87			(1.40)				
23.84 - 23.85	CSS48					FI = 12						
24.00 - 25.00		SPT(C) 24.00m, 100 (25 for 85mm/100 for 190mm)	90	65	27	FI = 30 FI = 7	50.67	24.00 (1.00)		Moderately weak red brown mottled grey SANDSTONE with bands of sandy mudstone. Discontinuities at 0-10 degrees are very closely to closely spaced (NI/150/150) planar smooth clean (Partially Weathered Mercia Mudstone Grade II) *24.40 - 24.45: Weak red brown MUDSTONE* *24.82 - 24.90: Weak red brown MUDSTONE*		
24.68 - 24.82	CSS49					FI = 11	49.67	25.00		End of Borehole at 25.00m		

Start & End of Shift Observations				
Date	Time	Depth (m)	Casing (m)	Water (m)

Flush Return Information					
Top	Base	Min %	Max %	Type	Colour
16.00	25.00	100	100	Air/Mist	red

Remarks:
as as-builts.

Borehole Diameter	
Depth (m)	Dia (mm)

Casing Diameter	
Depth (m)	Dia (mm)
25.00	146

Coring Information			
Top (m)	Base (m)	Dia (mm)	Barrel Type
9.30	10.50	102	Geobore S
10.50	12.00	102	(146)
12.00	13.50	102	Geobore S

Water Strike

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks

Fracture Index (FI) - Fractures per meter, Fracture Spacing (If) - reported in mm as Min, Average and Max values. TCR, SCR and RQD reported as %. Hand vane (HV) reports Undrained Shear Strength (Su). Pocket penetrometer (PP) reports Unconfined Compressive Strength (UCS)

STRATA GEOTECHNICS	Contract Name: A46 Walsgrave		Client: Octavius			Borehole ID: BH121
	Contract Number: G230651	Date Started: 02/06/2023	Date Completed: 05/06/2023	Logged: ASH/ TLY	Checked: IL SW	Status: FINAL
Cable Percussion Borehole Log	Easting: 438645.0	Northing: 280011.8	Ground Level: 73.49m (OD)	Plant Used: Commachio 602/ Dando 3000	Print Date: 21/12/2023	Scale: 1:50
Weather: Fine	Rig Crew: RH AF	Termination: Target Depth.		SPT Hammer: AR3920/AR1859 Energy Ratio: 65%		Sheet 1 of 2

Depth	Sample ID	Test Result	TCR	SCR	RQD	Fracture	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
0.10	D4									TOPSOIL: Firm brown gravelly sandy CLAY with occasional cobbles of quartzite. Sand is fine to coarse. Gravel is fine to coarse subrounded to rounded of quartzite.		
0.10	ES1							(0.35)				
0.10 - 0.30	B8						73.14	0.35				
0.40	D5									Firm to stiff orangish brown mottled greyish yellow slightly sandy gravelly CLAY. Sand is fine to coarse. Gravel is fine to coarse subangular to subrounded of quartzite with occasional rootlets. [WOLSTON GLACIGENIC FORMATION]		
0.50	ES4											
0.70	D6											
0.70 - 1.00	B9											
1.00	D9							(1.30)				
1.00	ES5	SPT(S) 1.20m, N=7 (1,1/1,1,2,3)										
1.20 - 1.65	B10											
1.50	D13											
1.50	ES11						71.84	1.65				
1.70	D12											
2.00	ES13	Ublows = 31								Stiff orangish brown mottled grey and yellow sandy gravelly CLAY. Sand is fine to coarse. Gravel is fine to coarse subrounded to rounded of quartzite and siltstone. [WOLSTON GLACIGENIC FORMATION]		
2.00 - 2.45	UT14	Recovery = 100%										
2.45 - 2.50	D15										▼	
2.70 - 3.00	B18											
3.00 - 3.45	D17	SPT(S) 3.00m, N=30 (3,5/5,5,10,10)						(2.95)				
3.80 - 4.00	B20											
4.00 - 4.45	D1	SPT(S) 4.00m, N=52 (2,5/8,10,17,17)								Stiff orangish brown slightly sandy slightly gravelly CLAY with occasional bluish grey silt pockets and gypsum crystals. Gravels are subangular fine to medium of siltstone. [Bagington Sand and Gravel Formation]		
4.60 - 4.90	B22						68.89	4.60		Very dense orangish brown clayey gravelly fine to coarse SAND. Gravel is fine to medium subangular to subrounded of quartzite, mudstone and siltstone. [Bagington Sand and Gravel Formation]		
4.90 - 5.35	D23	SPT(S) 4.90m, N=56 (8,8/9,11,16,20)						(0.40)				
							68.49	5.00		Stiff orangish brown slightly sandy CLAY with occasional black specks and fine gypsum crystals. Sand is fine to coarse.		
								(0.40)				
5.45 - 5.60	B24						68.09	5.40		Very stiff reddish brown mottled grey slightly sandy CLAY with occasional bluish grey silt pockets. Sand is fine to coarse. (Fully Weathered Mercia Mudstone - Grade IVb)		
5.70 - 6.15	D25						67.84	5.65				
6.20 - 6.30	D26											
6.00 - 7.00			100	100	60			(1.35)				
6.90 - 7.00	CSS27											
7.00 - 7.30	CSS28	UCS - 7.00m 1.7MPa					66.49	7.00				
7.00 - 7.43	D26					FI = 4		(0.30)		Very weak thinly bedded reddish brown MUDSTONE. Discontinuities at 0-10 degrees are medium spaced (300/300/300) planar smooth and clean (Partially Weathered Mercia Mudstone - Grade II).		
						FI = 30	66.19	7.30				
								(0.30)				
							65.89	7.60		*7.10 - 7.30: Gypsum veins*		
7.00 - 8.50			100	100	80	FI = 2				Extremely weak thinly bedded reddish brown MUDSTONE. Discontinuities at 0-10 degrees are extremely to very closely spaced (NI/10/30) planar smooth clay infill with occasional bluish grey specks and coarse gypsum crystals (Partially Weathered Mercia Mudstone - Grade II)		
8.37 - 8.47	CSS29					FI = 6						
						FI = 33		(2.10)		Very weak reddIsh brown MUDSTONE. Discontinuities at 0-10 degrees are medium spaced (NI/200/570) planar smooth and clean (Partially Weathered Mercia Mudstone - Grade II).		
						FI = 10						
8.92 - 9.22	CSS30					FI = 50				*8.25 - 8.48: Frequent planar white gypsum bands between 5-10mm at 10-40 degrees.*		
8.50 - 10.00			100	100	83	FI = 4				*8.65 - 8.67: Undulating 5mm white gypsum bands at 10-20 degrees.*		
						FI = 20				*8.67 - 9.53: Very stiff mottled grey slightly sandy gravelly clay.*		
9.70 - 9.80	CSS31					FI = 4	63.79	9.70		*8.92 - 9.46: Common planar white gypsum bands between 20-50mm at 0-60 degrees.*		
										Very weak to weak reddish brown MUDSTONE. Discontinuities at 0-10 degrees are very closely to closely spaced (20/150/150) planar smooth and clean (Partially		

Start & End of Shift Observations

Date	Time	Depth (m)	Casing (m)	Water (m)
02-06-2023	08:00	0.00	0.00	
02-06-2023	18:00	3.45	3.00	
05-06-2023	08:00	3.00	3.00	
05-06-2023	08:30	3.45	3.00	
07-06-2023	13:00	0.00	0.00	
07-06-2023	17:00	16.00	3.00	2.00

Borehole Diameter

Depth (m)	Dia (mm)
3.00	140
16.00	101

Casing Diameter

Depth (m)	Dia (mm)
3.00	200

Remarks:

Position was cleared by Octavius prior to a hand dug Inspection pit to 1.2m bgl . Water strike encountered at 2.5m no rise after 20 minutes. Coordinates are taken as as-builts. Position was installed upon completion with plain and slotted pipe, bentonite and gravel upon completion.

Chiselling

From (m)	To (m)	Duration	Remarks

Installation

Top (m)	Base (m)	Type	Dia (mm)
0.00	6.50	PLAIN	50
6.50	16.00	SLOTTED	50

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
2.50	2.00	2.60	20	2.50	DNR

STRATA GEOTECHNICS	Contract Name: A46 Walsgrave		Client: Octavius				Borehole ID: BH121
	Contract Number: G230651	Date Started: 02/06/2023	Date Completed: 05/06/2023	Logged: ASH/ TLY	Checked: IL SW	Status: FINAL	Sheet 2 of 2
Rotary Core Drilling Log	Easting: 438645.0	Northing: 280011.8	Ground Level: 73.49m (OD)	Plant Used: Commachio 602/ Dando 3000		Print Date: 21/12/2023	Scale: 1:50
Weather: Fine	Rig Crew: RH AF	Termination: Target Depth.		SPT Hammer: AR3920/AR1859 Energy Ratio: 65%			

Samples & In Situ Testing							Strata Details				Groundwater	
Depth	Sample	Test Result	TCR	SCR	RQD	FI/If	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
						FI = 10				Weathered Mercia Mudstone - Grade II)		
10.45 - 10.60	CSS32									*10.35 - 11.17: Occasional planar white gypsum bands between 5-20mm at 10-60 degrees.*		
10.00 - 11.50			97	97	60	FI = 7		(1.80)				
11.25 - 11.40	CSS33											
							61.99	11.50		Extremely weak reddish brown locally mottled grey MUDSTONE. Discontinuities at 0-10 degrees are extremely to closely spaced (NI/60/150) planar smooth with clay infill (Partially Weathered Mercia Mudstone - Grade II).		
11.65 - 11.75	CSS34									*11.50 - 11.55: Very stiff reddish brown mottled grey slightly sandy gravelly clay.*		
11.50 - 13.00			100	100	27	FI = 20		(1.55)		*11.55 - 12.84: Common planar white gypsum bands between 20-40mm at 0-20 degrees.* *11.65 - 11.80: Very weak grey mudstone.* *11.87 - 12.65: Discontinuities at 80-90 degrees are undulating smooth and clean.*		
12.94 - 13.00	CSS35									*12.84 - 12.90: Very stiff reddish brown mottled grey slightly sandy gravelly clay.*		
13.10 - 13.35	CSS36					FI = 12	60.44	13.05		Very weak to weak reddish brown MUDSTONE. Discontinuities are 0-10 degrees very closely to medium spaced (NI/150/300) planar smooth and clean (Partially Weathered Mercia Mudstone - Grade II).		
13.00 - 14.50			100	100	73	FI = 5				*13.29 - 14.30: Common planar white gypsum bands between 10-30mm at 0-5 degrees.* *13.40 - 14.40: Occasional very stiff reddish brown mottled grey slightly sandy gravelly clay.*		
14.07 - 14.22	CSS37											
						FI = 5						
						FI = 10		(2.95)				
14.70 - 14.80	CSS38									*14.60 - 14.95: Frequent very stiff reddish brown mottled grey slightly sandy gravelly clay.*		
						FI = 5				*14.86 - 14.87: Planar white gypsum bands of 10mm at 0-5 degrees.*		
14.50 - 16.00			100	100	67							
						FI = 7						
15.70 - 16.00	CSS39											
							57.49	16.00		End of Borehole at 16.00m		

Start & End of Shift Observations				
Date	Time	Depth (m)	Casing (m)	Water (m)

Flush Return Information						
Top	Base	Min %	Max %	Type	Colour
6.00	7.00	100		Air/Mist	Red
7.00	8.50	100		Air/Mist	Red
8.50	10.00	100		Air/Mist	Red
10.00	11.50	100		Air/Mist	Red
11.50	13.00	100		Air/Mist	Red
13.00	14.50	100		Air/Mist	Red

Remarks:

Position was cleared by Octavius prior to a hand dug Inspection pit to 1.2m bgl . Water strike encountered at 2.5m no rise after 20 minutes. Coordinates are taken as as-builts. Position was installed upon completion with plain and slotted pipe, bentonite and gravel upon completion.

Water Strike					
Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks

Borehole Diameter	
Depth (m)	Dia (mm)
3.00	140
16.00	101

Casing Diameter	
Depth (m)	Dia (mm)
3.00	200

Coring Information			
Top (m)	Base (m)	Dia (mm)	Barrel Type
6.00	7.00	102	
7.00	8.50	102	
8.50	10.00	102	

Fracture Index (FI) - Fractures per meter, Fracture Spacing (If) - reported in mm as Min, Average and Max values. TCR, SCR and RQD reported as %. Hand vane (HV) reports Undrained Shear Strength (Su). Pocket penetrometer (PP) reports Unconfined Compressive Strength (UCS)

STRATA GEOTECHNICS	Contract Name: A46 Walsgrave		Client: Octavius			Borehole ID: BH122
	Contract Number: G230651	Date Started: 12/06/2023	Date Completed: 14/06/2023	Logged: MN	Checked: IL	Status: FINAL
Cable Percussion Borehole Log	Easting: 438797.6	Northing: 279941.6	Ground Level: 76.29m (OD)	Plant Used: Dando 2000/ Comacchio 405	Print Date: 21/12/2023	Scale: 1:50
Weather: Sunny	Rig Crew: MH JW	Termination: Target depth.				SPT Hammer: AR3573/AR2501 Energy Ratio: 67%

Depth	Sample ID	Test Result	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Groundwater: Water Strike	Groundwater: Backfill/ Installation
0.10	D1			(0.40)		TOPSOIL: Firm dark brown slightly gravelly CLAY with frequent rootlets. Sand is fine to coarse. Gravel is rounded to subangular, fine to coarse of quartzite.		
0.30	D2	PID 0.30m, 0.0ppm	75.89	0.40		Stiff dark greyish brown sandy slightly gravelly CLAY with frequent black specks (5 - 10cm) and frequent rootlets. Sand is fine to coarse. Gravel is rounded to subrounded, fine to medium of quartzite. [WOLSTON GLACIGENIC FORMATION]		
0.30	ES3							
0.50	B5	PP 0.50m, 384kPa						
0.50	ES4	HV 0.50m, 140/62kPa						
0.80	D6	PID 0.50m, 0.0ppm						
1.00	B7	PP 1.00m, 384kPa						
1.00	ES8	HV 1.00m, 140/49kPa						
1.20	D9	PID 1.00m, 0.1ppm		(1.60)				
1.50	ES12	PID 1.50m, 9.2ppm						
1.50 - 1.95	UT10	Ublows = 10 Recovery = 78%						
2.00	D11	PID 2.00m, 0.0ppm	74.29	2.00		Stiff dark orangish brown sandy slightly gravelly CLAY with occasional sand lenses (10 - 50mm) and black specks (2 - 5mm). Sand is fine to coarse. Gravel is rounded to subrounded, fine to medium of quartzite, sandstone and mudstone. [WOLSTON GLACIGENIC FORMATION]		
2.00	ES13							
2.20	D14							
2.50 - 2.95	D15	SPT(S) 2.50m, N=18 (2,3/3,3,5,7)						
2.50 - 3.00	B16							
3.20	D17			(2.20)				
3.50 - 3.95	D18	SPT(S) 3.50m, N=21 (4,4/6,6,5,4)						
3.50 - 4.00	B19							
4.20	D20		72.09	4.20		Medium dense reddish brown silty slightly gravelly SAND. Sand is fine to coarse. Gravel is subrounded, fine to medium of mudstone and quartzite. [WOLSTON GLACIGENIC FORMATION]		
4.50 - 4.95	D21	SPT(S) 4.50m, N=49 (6,7/7,8,13,21)		(0.40)				
4.50 - 5.00	B22		71.69	4.60				
				(0.40)		Stiff dark brown sandy slightly gravelly CLAY with occasional sand lenses (10 - 50mm). Sand is fine to coarse. Gravel is rounded to subrounded, fine to medium of quartzite, sandstone and quartzite. [WOLSTON GLACIGENIC FORMATION]		
5.20	23		71.29	5.00				
5.20	D23							
5.50 - 6.00	B24	SPT(C) 5.50m, N=20 (3,5/2,5,5,8)				Medium dense reddish brown silty slightly gravelly SAND. Sand is fine to coarse. Gravel is subrounded to subangular, fine to medium of mudstone and quartzite. [WOLSTON GLACIGENIC FORMATION]		
6.50	D25			(3.00)				
7.00 - 7.50	B26	SPT(C) 7.00m, N=24 (3,3/4,6,7,7)						
8.00	D27		68.29	8.00		Very stiff reddish brown slightly gravelly sandy CLAY with occasional sand and gravel lenses (10 - 20mm). Sand is fine to coarse. Gravel is rounded to subrounded, fine to medium of quartzite, sandstone and mudstone (Fully Weathered Mercia Mudstone Grade IVa)		
8.00 - 8.50	B28							
8.60 - 8.80	B29							
9.00 - 9.50	B30	SPT(C) 9.00m, N=80 (8,12/12,13,22,33)		(2.80)				
10.00	D31							

Start & End of Shift Observations

Date	Time	Depth (m)	Casing (m)	Water (m)
02-06-2023	07:30	0.00	0.00	
02-06-2023	18:00	8.00	8.00	6.80
06-06-2023	07:30	8.00	8.00	3.50
06-06-2023	18:00	14.70	14.50	8.90
12-06-2023	16:00	14.70	14.50	0.00
13-06-2023	08:00	14.70	14.50	4.00

Borehole Diameter

Depth (m)	Dia (mm)
14.70	140
25.16	146

Casing Diameter

Depth (m)	Dia (mm)
8.00	200
14.50	202

Remarks:

Position was cleared by Octavius prior to a hand dug Inspection pit to 1.2m bgl. Water strike encountered at 5m rising to 4.52m bgl after 20 minutes. Position was backfilled with bentonite. Coordinates are taken as as-builts.

Chiselling

From (m)	To (m)	Duration	Remarks
8.50	8.80	00:40	
9.80	10.00	00:46	
12.20	12.50	00:40	

Installation

Top (m)	Base (m)	Type	Dia (mm)

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
5.00	5.00	6.20	20	4.52	Medium

STRATA GEOTECHNICS	Contract Name: A46 Walsgrave		Client: Octavius			Borehole ID: BH122
	Contract Number: G230651	Date Started: 12/06/2023	Date Completed: 14/06/2023	Logged: MN	Checked: IL	Status: FINAL
Cable Percussion Borehole Log	Easting: 438797.6	Northing: 279941.6	Ground Level: 76.29m (OD)	Plant Used: Dando 2000/ Comacchio 405	Print Date: 21/12/2023	Scale: 1:50
Weather: Sunny	Rig Crew: MH JW	Termination: Target depth.		SPT Hammer: AR3573/AR2501 Energy Ratio: 67%		Sheet 2 of 3

Depth	Sample ID	Test Result	TCR	SCR	RQD	FI	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
10.50 - 11.00	B32	SPT(C) 10.50m, N=49 (4,5/9,10,16,14)								Very stiff reddish brown slightly gravelly sandy CLAY with occasional sand and gravel lenses (10 - 20mm). Sand is fine to coarse. Gravel is rounded to subrounded, fine to medium of quartzite, sandstone and mudstone (Fully Weathered Mercia Mudstone Grade IVa)		
							65.49	10.80				
								(0.60)		Very stiff reddish brown locally mottled green grey slightly sandy gravelly CLAY with rare gypsum (5 - 10mm). Sand is fine to coarse of mudstone. (Partially Weathered Mercia Mudstone - Grade IVa)		
							64.89	11.40				
11.50 11.50	33 D33									Very dense reddish brown slightly clayey sandy GRAVEL. Gravel is fine to coarse and angular of mudstone. Sand is fine to coarse. (Partially Weathered Mercia Mudstone - Grade III)		
12.00 - 12.45 12.00 - 12.50	D34 B35	SPT(S) 12.00m, N=77 (4,9/16,14,22,25)										
13.00	D36							(3.60)				
13.50 - 14.00	D37	Ublows = 100 Recovery = 90%										
14.00	D38											
14.50 14.50 - 14.70	D39 D40	SPT(S) 14.50m, 100 (25 for 75mm/100 for 125mm)										
~~15.00 - 15.08~~	~~CSS41~~					~~FI = 15~~	61.29	~~15.00~~		Extremely weak to very weak reddish brown MUDSTONE. Discontinues at 0-10 degrees are extremely close to closely spaced (NI/80/170) planar smooth clean (Partially weathered Mercia Mudstone Grade II.)		
15.00 - 16.00 15.65 - 15.80	CSS42		100	60	60	FI = 5		(1.00)				
							60.29	16.00		Firm reddish brown sandy slightly gravelly CLAY. Gravel is angular fine to coarse of mudstone (Partially Weathered Mercia Mudstone Grade IVa)		
							60.04	16.25		Extremely weak to very weak reddish brown mottled grey MUDSTONE. Discontinues at 0-10 degrees are extremely closely to closely spaced (NI/150/200) planar smooth clean (Partially Weathered Mercia Mudstone Grade III.)		
16.59 - 16.77 16.00 - 17.50	CSS43		100	100	40	FI = 8						
								(1.65)		*16.90 - 17.00: Stiff reddish brown mottled grey slightly sandy slightly gravelly CLAY.* *17.05 - 17.35: Discontinuities (80-90 degrees undulating smooth clean.*		
17.40 - 17.50	CSS44	SPT(C) 17.50m, 100 (25 for 50mm/100 for 85mm)				FI = 12				*17.40 - 17.41: Gypsum band* *17.50 - 17.75: Discontinuities (80-90 degrees planar smooth clean.*		
17.80 - 17.90	CSS45					FI = 12	58.39	17.90				
								(0.30)		Stiff reddish brown sandy slightly gravelly CLAY. Gravel is angular fine to coarse of Mudstone (Partially weathered Mercia Mudstone Grade IVa).		
17.50 - 19.00			100	100	83		58.09	18.20		Moderately weak to moderately strong reddish brown MUDSTONE. Discontinues at 0-10 degrees are Closely to Medium spaced (150/200/450) planar smooth clean (Partially weathered Mercia Mudstone Grade II)		
18.55 - 18.85	CSS46					FI = 3						
19.00 - 19.10	CSS47					FI = 7				*19.32 - 19.39: Planar 70mm Gypsum* *19.35 - 19.65: Occational grey bands within mudstone*		
19.70 - 20.00 19.00 - 20.50	CSS48		100	100	94	FI = 4						
		Fracture	TCR	SCR	RQD							

Start & End of Shift Observations					Borehole Diameter		Casing Diameter		Remarks
Date	Time	Depth (m)	Casing (m)	Water (m)	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)	Position was cleared by Octavius prior to a hand dug Inspection pit to 1.2m bgl. Water strike encountered at 5m rising to 4.52m bgl after 20 minutes. Position was backfilled with bentonite. Coordinates are taken as as-builts.
13-06-2023	17:00	23.50	14.50	4.00	14.70	140	8.00	200	
14-06-2023	07:30	25.16	14.50	4.00	25.16	146	14.50	202	

Chiselling				Installation				Water Strikes					
From (m)	To (m)	Duration	Remarks	Top (m)	Base (m)	Type	Dia (mm)	Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
14.30	14.50	01:00											

STRATA GEOTECHNICS	Contract Name: A46 Walsgrave		Client: Octavius			Borehole ID: BH122
	Contract Number: G230651	Date Started: 12/06/2023	Date Completed: 14/06/2023	Logged: MN	Checked: IL	Status: FINAL
Rotary Core Drilling Log	Easting: 438797.6	Northing: 279941.6	Ground Level: 76.29m (OD)	Plant Used: Dando 2000/ Comacchio 405	Print Date: 21/12/2023	Scale: 1:50
						Sheet 3 of 3

Weather: Sunny | Rig Crew: MH JW | Termination: Target depth. | SPT Hammer: AR3573/AR2501 Energy Ratio: 67%

Samples & In Situ Testing							Strata Details				Groundwater	
Depth	Sample	Test Result	TCR	SCR	RQD	FI/If	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
						FI = 12				*20.32 - 20.35: Planar 30mm Gypsum* *20.41 - 20.50: Moderately weak red brown very sandy MUDSTONE* *20.50 - 20.60: AZCL*		
		SPT(C) 20.50m, 100 (25 for 55mm/100 for 105mm)				FI = 12						
21.15 - 21.30 20.50 - 22.00	CSS49		93	93	59	FI = 20				*20.95 - 21.05: Stiff red brown mottled grey slightly sandy slightly gravelly CLAY. Gravel is angular of mudstone*		
						FI = 6		(4.95)				
21.80 - 22.00	CSS50									*22.00 - 22.60: AZCL Driller notes normal dril*		
22.60 - 22.80 22.00 - 23.50	CSS51		60	60	35	FI = 5						
						FI = 33						
						FI = 7	53.14	23.15				
23.40 - 23.50	CSS52					FI = 20	52.89	23.40		Very weak grey MUDSTONE. Discontinues at 0-10 degrees are extremely closely to closely spaced (NI/50/100) planar smooth clean (Partially weathered Mercia Mudstone Grade II) *23.38 - 23.40: 23.38m to 23.40m Discontinuities (80-90 degrees planar smooth clean.*		
		SPT(C) 23.50m, 100 (25 for 50mm/100 for 100mm)				FI = 12		(1.32)		Moderately strong grey fine to medium partially weathered SANDSTONE. Discontinues at 0-10 degrees are closely spaced (100/100/120) planar smooth clean. (Partially Weathered Mercia Mudstone (Grade II). *23.50 - 24.38: AZCL Driller notes normal drilling* *24.42 - 24.48: Discontinuities (80-90 degrees planar smooth clean.*		
23.50 - 25.00			48	35	35	FI = 25						
						FI = 10	51.57	24.72		Moderately weak grey MUDSTONE. Discontinues at 0-10 degrees are closely spaced (80/100/200) planar smooth clean (Partially Weathered Mercia Mudstone Grade II)		
24.80 - 25.00	CSS53					FI = 11		(0.44)				
		SPT(C) 25.00m, 100 (25 for 55mm/100 for 105mm)				FI = 9	51.13	25.16		End of Borehole at 25.16m		
						FI = 5						

21 22 23 24 25 26 27 28 29 30

Start & End of Shift Observations

Date	Time	Depth (m)	Casing (m)	Water (m)

Flush Return Information

Top	Base	Min %	Max %	Type	Colour
15.00	16.00	100	100	Air/Mist	red
16.00	17.50	100	100	Air/Mist	red
17.50	19.00	100	100	Air/Mist	red
19.00	20.50	100	100	Air/Mist	red
20.50	22.00	100	100	Air/Mist	red
22.00	23.50	100	100	Air/Mist	red

Remarks:

Position was cleared by Octavius prior to a hand dug Inspection pit to 1.2m bgl. Water strike encountered at 5m rising to 4.52m bgl after 20 minutes. Position was backfilled with bentonite. Coordinates are taken as as-builts.

Water Strike

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks

Borehole Diameter

Depth (m)	Dia (mm)
14.70	140
25.16	146

Casing Diameter

Depth (m)	Dia (mm)
8.00	200
14.50	202

Coring Information

Top (m)	Base (m)	Dia (mm)	Barrel Type
15.00	16.00	102	Geobore S (146)
16.00	17.50	102	
17.50	19.00	102	

Fracture Index (FI) - Fractures per meter, Fracture Spacing (If) - reported in mm as Min, Average and Max values. TCR, SCR and RQD reported as %. Hand vane (HV) reports Undrained Shear Strength (Su). Pocket penetrometer (PP) reports Unconfined Compressive Strength (UCS)

STRATA GEOTECHNICS	Contract Name: A46 Walsgrave		Client: Octavius				Borehole ID: BH123
	Contract Number: G230651	Date Started: 07/06/2023	Date Completed: 08/06/2023	Logged: JW	Checked: SW	Status: FINAL	Sheet 1 of 2
Cable Percussion Borehole Log	Easting: 438842.3	Northing: 279941.6	Ground Level: 76.29m (OD)	Plant Used: Dando 2000		Print Date: 21/12/2023	Scale: 1:50
Weather: Sunny	Rig Crew: Matthew Higginson	Termination: Target Depth		SPT Hammer: AR3573 Energy Ratio: 67%			

Samples & In Situ Testing			Strata Details				Groundwater	
Depth	Sample ID	Test Result	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
0.10	D1			(0.35)		TOSPOIL: Firm dark brown slightly gravelly sandy CLAY with frequent rootlets. Sand is fine to coarse. Gravel is rounded to subangular fine to coarse of quartzite.		
0.30	D2	PID 0.30m, 0.0ppm	75.94	0.35		Stiff dark greyish brown sandy slightly gravelly CLAY with frequent black specs (5-10mm) and frequent rootlets. Sand is fine to coarse. Gravel is rounded to subrounded fine to medium of quartzite. [WOLSTON GLACIGENIC FORMATION]		
0.30	ES1	HV 0.50m, 140/58kPa						
0.30	ES3	PID 0.50m, 0.0ppm						
0.50	B5							
0.50	ES1							
0.50	ES4	HV 1.00m, 110/58kPa						
0.80	D6	PID 1.00m, 0.2ppm						
1.00	B7							
1.00	ES8			(2.05)				
1.20	D9	PID 1.50m, 0.4ppm						
1.50	ES1	Ublows = 22						
1.50	ES12	Recovery = 0%						
1.50 - 1.95	UT	PID 2.00m, 0.0ppm						
1.50 - 2.00	B10							
2.00	D11							
2.00	ES13		73.89	2.40				
2.20	D14	SPT(S) 2.50m, N=19 (2,3/3,4,5,7)		(0.40)		Stiff dark orangish brown sandy slightly gravelly CLAY with occasional sand lenses (30-50mm) and black specs (2-5mm). Sand is fine to coarse. Gravel is rounded to subrounded fine to medium of quartzite, sandstone and mudstone. [WOLSTON GLACIGENIC FORMATION]		
2.40	D15		73.49	2.80				
2.50 - 2.95	D16							
2.50 - 3.00	B17							
3.20	D18					Dense reddish brown clayey slightly gravelly subangular fine to coarse SAND. Gravel is subrounded fine to medium of mudstone and quartzite. [WOLSTON GLACIGENIC FORMATION]		
3.50 - 3.95	D19	SPT(S) 3.50m, N=39 (3,7/9,9,9,12)						
3.50 - 4.00	B20							
4.00 - 4.50	B21			(2.60)		*3.95: Becoming very clayey.*		
4.50 - 4.95	D22	SPT(S) 4.50m, N=39 (9,5/8,8,11,12)						
4.50 - 5.00	B23							
5.20	D24							
5.50 - 6.00	B25	SPT(C) 5.50m, N=66 (3,5/17,26,10,13)	70.89	5.40		Very dense reddish brown clayey gravelly fine to coarse SAND with occasional cobbles. Gravel is rounded to subrounded fine to coarse of mudstone, quartzite and siltstone. Cobbles are rounded to subangular of siltstone and quarzite. (Fully Weathered Mercia Mudstone Grade IVa)		
6.50	D26							
7.50 - 7.95	U27	Ublows = 65 Recovery = 100%		(3.50)				
8.00	D28							
8.00 - 8.50	B29							
8.50	D30							
9.00 - 9.45	D31	SPT(S) 9.00m, N=75 (8,12/13,15,21,26)	67.39	8.90		Very stiff dark greyish brown slightly gravelly sandy CLAY with occasional sand and gravel lenses (10-20mm). Sand is fine to coarse. Gravel is rounded to subrounded fine to medium of quartzite, sandstone and mudstone. (Fully Weathered Mercia Mudstone Grade IVa)		
9.00 - 9.50	B32			(2.00)				
10.00	D33							

Start & End of Shift Observations

Date	Time	Depth (m)	Casing (m)	Water (m)
07-06-2023	07:30	0.00	0.00	
07-06-2023	18:00	11.45	10.20	
08-06-2023	07:30	11.45	10.20	10.60
08-06-2023	18:00	13.37	10.20	

Borehole Diameter

Depth (m)	Dia (mm)
13.37	200

Casing Diameter

Depth (m)	Dia (mm)
10.20	200

Remarks:

Position was cleared by Octavius prior to excavation. Inspection pit was dug to 1.2m bgl Groundwater was encountered at 7.50m bgl and rose to 6.95m bgl. Coordinates are taken as as-builts. Position was installed upon completion with plain and slotted pipe, bentonite, gravel and cold lay upon completion.

Chiselling

From (m)	To (m)	Duration	Remarks
11.20	11.50	00:46	
12.70	13.00	00:40	

Installation

Top (m)	Base (m)	Type	Dia (mm)
0.00	3.20	PLAIN	50
3.20	8.90	SLOTTED	50

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
7.50	7.20	9.80	20	6.95	Medium

STRATA GEOTECHNICS	Contract Name: A46 Walsgrave		Client: Octavius				Borehole ID: BH123
	Contract Number: G230651	Date Started: 07/06/2023	Date Completed: 08/06/2023	Logged: JW	Checked: SW	Status: FINAL	Sheet 2 of 2
Cable Percussion Borehole Log	Easting: 438842.3	Northing: 279941.6	Ground Level: 76.29m (OD)	Plant Used: Dando 2000		Print Date: 21/12/2023	Scale: 1:50
Weather: Sunny	Rig Crew: Matthew Higginson	Termination: Target Depth		SPT Hammer: AR3573 Energy Ratio: 67%			

Samples & In Situ Testing			Strata Details				Groundwater	
Depth	Sample ID	Test Result	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
10.50 - 10.95	U34	Ublows = 102 Recovery = 100%				Very stiff dark greyish brown slightly gravelly sandy CLAY with occasional sand and gravel lenses (10-20mm). Sand is fine to coarse. Gravel is rounded to subrounded fine to medium of quartzite, sandstone and mudstone. (Fully Weathered Mercia Mudstone Grade IVa)		
11.00	D35		65.39	10.90		Very dense reddish brown slightly clayey sandy angular fine to coarse GRAVEL of mudstone. Sand is fine to coarse. (Fully Weathered Mercia Mudstone Grade IVa)		
11.20 - 11.45 11.20 - 11.50	D36 B37	SPT(S) 11.20m, 100 (25 for 75mm/100 for 170mm)						
12.00	D38			(2.47)				
12.50 - 12.88 12.50 - 13.00	D39 B40	SPT(S) 12.50m, 100 (10,14/100 for 227mm)						
13.00 - 13.37	D41	SPT(S) 13.00m, 100 (11,13/100 for 220mm)						
			62.92	13.37		End of Borehole at 13.37m		

Start & End of Shift Observations				
Date	Time	Depth (m)	Casing (m)	Water (m)

Borehole Diameter		Casing Diameter	
Depth (m)	Dia (mm)	Depth (m)	Dia (mm)
13.37	200	10.20	200

Remarks:

Position was cleared by Octavius prior to excavation. Inspection pit was dug to 1.2m bgl Groundwater was encountered at 7.50m bgl and rose to 6.95m bgl. Coordinates are taken as as-builts. Position was installed upon completion with plain and slotted pipe, bentonite, gravel and cold lay upon completion.

Chiselling			
From (m)	To (m)	Duration	Remarks

Installation			
Top (m)	Base (m)	Type	Dia (mm)

Water Strikes					
Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks

STRATA GEOTECHNICS	Contract Name: A46 Walsgrave		Client: Octavius			Borehole ID: BH124
	Contract Number: G230651	Date Started: 08/06/2023	Date Completed: 12/06/2023	Logged: JAW/ ASH	Checked: IL SW	Status: FINAL — Sheet 1 of 3
Cable Percussion Borehole Log	Easting: 438805.5	Northing: 279952.7	Ground Level: 76.38m (OD)	Plant Used: Dando 2000/ Comacchio 405	Print Date: 21/12/2023	Scale: 1:50
Weather: Sunny	Rig Crew: MH JW	Termination: Target Depth.		SPT Hammer: AR2501 Energy Ratio: 67%		

Samples & In Situ Testing			Strata Details				Groundwater	
Depth	Sample ID	Test Result	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
0.10	D1			(0.35)		TOPSOIL: Firm dark brown slightly gravelly sandy CLAY with frequent roots. Sand is subangular fine to coarse. Gravel is rounded to subangular fine to coarse of quartzite.		
0.30	D2	PID 0.30m, 0.0ppm	76.03	0.35		Stiff dark brown sandy slightly gravelly CLAY with frequent black specs (5-10mm) and frequent rootlets. Sand is fine to coarse. Gravel is rounded to subrounded fine to medium of quartzite. [WOLSTON GLACIGENIC FORMATION]		
0.30	ES3	HV 0.50m, 120/62kPa						
0.50	B5	PID 0.50m, 0.0ppm						
0.50	ES4							
0.80	D6							
1.00	B7	PID 1.00m, 0.0ppm						
1.00	ES8							
1.20	D9			(1.95)				
1.50	ES12	PID 1.50m, 0.0ppm						
1.50 - 1.95	UT10	Ublows = 31 Recovery = 100%						
2.00	D11	PID 2.00m, 0.0ppm						
2.00	ES13							
2.20	D14		74.08	2.30		Stiff dark brown sandy slightly gravelly CLAY with occasional sand lenses (105-mm) and black specs (2-5mm). Sand is fine to coarse. Gravel is fine to medium rounded to subrounded of quartzite, sandstone and mudstone. [WOLSTON GLACIGENIC FORMATION]		
2.50 - 2.95	D15	SPT(S) 2.50m, N=27 (2,4/5,5,8,9)						
2.50 - 3.00	B16	HV 2.50m, 138/30kPa		(0.70)				
3.00 - 3.50	B17		73.38	3.00		Dense reddish brown slightly gravelly silty SAND. Sand is fine to coarse. Gravel is fine to medium subrounded of mudstone and quartzite. [WOLSTON GLACIGENIC FORMATION]		
				(0.60)				
3.50 - 3.95	D18	SPT(S) 3.50m, N=63 (7,9/13,16,16,18)						
3.50 - 4.00	B19		72.78	3.60		Stiff dark brown sandy slightly gravelly CLAY with occasional sand lenses (10-50mm). Sand is fine to coarse. Gravel is fine to medium rounded to subrounded of quartzite, sandstone and mudstone. [WOLSTON GLACIGENIC FORMATION]		
				(0.35)				
4.00 - 4.50	B20		72.43	3.95		Very dense reddish brown silty slightly gravelly fine to coarse SAND. Gravel is subrounded to subangular fine to medium of mudstone and quartzite. [WOLSTON GLACIGENIC FORMATION]		
4.50 - 4.95	D21	SPT(S) 4.50m, N=56						
4.50 - 5.00	B24	(8,14/16,12,13,15)						
				(1.85)				
5.20	D22							
5.50 - 5.95	D23	SPT(S) 5.50m, N=70 (4,8/21,14,18,17)						
5.50 - 6.00	B25							
			70.58	5.80		Very stiff reddish brown slightly gravelly sandy CLAY. Sand is fine to coarse. Gravel is fine to medium rounded to subrounded of quartzite, sandstone and mudstone. [WOLSTON GLACIGENIC FORMATION]		
6.50	D26							
				(2.00)				
7.00 - 7.23	D27	SPT(S) 7.00m, 100 (11,14/100 for 85mm)						
7.00 - 7.50	B28							
			68.58	7.80		Dense reddish brown clayey gravelly fine to coarse SAND with a medium cobble content. Gravel is fine to coarse rounded to subangular of mudstone and quartzite. Cobbles are subrounded of quartzite. [WOLSTON GLACIGENIC FORMATION]		
8.00	D29							
8.50 - 9.00	B30	SPT(C) 8.50m, N=30 (3,7/8,10,6,6)						
				(2.20)				
9.50	D31							
10.00 - 10.50	B32	SPT(C) 10.00m, N=15 (2,2/3,4,4,4)	66.38	10.00				

Start & End of Shift Observations

Date	Time	Depth (m)	Casing (m)	Water (m)
31-05-2023	18:00	12.00	12.00	11.00
01-06-2023	07:30	12.00	12.00	11.00
01-06-2023	18:00	17.97	17.50	5.90
08-06-2023	17:00	18.00	17.50	0.00
09-06-2023	07:30	18.00	17.50	4.30
09-06-2023	14:30	23.50	17.50	4.50

Borehole Diameter

Depth (m)	Dia (mm)
17.97	146
25.00	146

Casing Diameter

Depth (m)	Dia (mm)
12.00	200
17.50	202
18.00	146

Remarks:

Position was cleared by Octavius prior to excavation. Inspection pit was dug to 1.2m bgl Groundwater was encountered first at 5.6m bgl and rose to 4.76m bgl, and was encountered again at 10.00m bgl and rose to 8.10m bgl. Position was backfilled with bentonite. Coordinates are taken as as-builts.

Chiselling

From (m)	To (m)	Duration	Remarks
7.20	7.50	00:40	
8.00	8.10	00:30	
13.70	14.00	00:40	

Installation

Top (m)	Base (m)	Type	Dia (mm)

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
5.60	4.80		20	4.76	Slow
10.00	10.00		20	8.10	Medium

STRATA GEOTECHNICS	Contract Name: A46 Walsgrave		Client: Octavius			Borehole ID: BH124
	Contract Number: G230651	Date Started: 08/06/2023	Date Completed: 12/06/2023	Logged: JAW/ ASH	Checked: IL SW	Status: FINAL
Cable Percussion Borehole Log	Easting: 438805.5	Northing: 279952.7	Ground Level: 76.38m (OD)	Plant Used: Dando 2000/ Comacchio 405	Print Date: 21/12/2023	Scale: 1:50
Weather: Sunny	Rig Crew: MH JW	Termination: Target Depth.		SPT Hammer: AR2501 Energy Ratio: 67%		Sheet 2 of 3

Samples & In Situ Testing			Strata Details				Groundwater	
Depth	Sample ID	Test Result	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
				(1.50)		Medium dense brownish grey very gravelly fine to coarse SAND. Gravel is fine to coarse rounded to subangular of mudstone and quartzite. [WOLSTON GLACIGENIC FORMATION]		
11.50	D33		64.88	11.50		Stiff reddish brown sandy CLAY. Sand is fine to coarse. [WOLSTON GLACIGENIC FORMATION]		
12.00 - 12.45	U34	Ublows = 85						
12.00 - 12.45	UT34	Recovery = 89%						
12.50	D35			(2.20)				
13.00	D36							
13.50 - 13.96	D37	SPT(S) 13.50m, N=87						
13.50 - 14.00	B38	(5,12/12,15,29,31)	62.68	13.70		Very stiff reddish brown locally mottled green grey slightly sandy gravelly CLAY with rare gypsum veins (5-10mm). Sand is fine to coarse. Gravel is angular to subangular fine to coarse of mudstone (Partially Weathered Mercia Mudstone Grade III).		
14.50	D39							
15.00 - 15.45	U40	Ublows = 100						
		Recovery = 56%		(3.30)				
15.50	D41							
16.20 - 16.70	B42	SPT(C) 16.20m, N=83 (9,11/14,15,24,30)						
			59.38	17.00		Very dense reddish brown slightly clayey sandy GRAVEL. Sand is fine to coarse. Gravel is fine to coarse angular of mudstone (Partially Weathered Mercia Mudstone Grade III).		
17.50 - 17.75	D43	SPT(S) 17.50m, 100 (25 for 75mm/100 for 170mm) SPT(C) 17.75m, 100 (25 for 80mm/100 for 140mm)		(0.97)				
			58.41					
			58.18	18.20		Very stiff reddish brown slightly gravelly sandy CLAY. Sand is fine to coarse. Gravel is fine to coarse angular of mudstone. (Partially Weathered Mercia Mudstone - Grade IVa)		
18.40 - 18.50	CSS44			(0.50)		*18.17 - 18.18: 5mm gypsum band at 10-20 degrees*		
18.00 - 19.00								
18.70 - 19.00	CSS45	UCS - 18.70m 6.5MPa	57.68	18.70		Extremely weak to very weak reddish brown MUDSTONE. Discontinuities at 0-10 degrees are closely to medium spaced (100/300/400) planar smooth and clean (Fully Weathered Mercia Mudstone Grade IVb).		
				(0.30)		*18.67 - 18.70: 30mm gypsum band at 10-20 degrees*		
			57.38	19.00		Very weak reddish brown MUDSTONE. Discontinuities at 0-10 degrees closely to medium spaced (100/300/400) planar smooth clean (Partially Weathered Mercia Mudstone Grade II).		
			57.23	19.15				
19.70 - 20.00	CSS46							
19.00 - 20.50								

Fracture	TCR	SCR	RQD	
	100	100	100	FI = 3
	90	90	73	FI = 5
				FI = 12
				FI = 3

Start & End of Shift Observations

Date	Time	Depth (m)	Casing (m)	Water (m)
12-06-2023	08:00	25.00	17.50	3.00

Borehole Diameter

Depth (m)	Dia (mm)
17.97	146
25.00	146

Casing Diameter

Depth (m)	Dia (mm)
12.00	200
17.50	202
18.00	146

Remarks:

Position was cleared by Octavius prior to excavation. Inspection pit was dug to 1.2m bgl Groundwater was encountered first at 5.6m bgl and rose to 4.76m bgl, and was encountered again at 10.00m bgl and rose to 8.10m bgl. Position was backfilled with bentonite. Coordinates are taken as as-builts.

Chiselling

From (m)	To (m)	Duration	Remarks
15.80	16.00	00:30	
16.00	16.20	00:35	
17.50	17.70	01:00	

Installation

Top (m)	Base (m)	Type	Dia (mm)

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks

STRATA GEOTECHNICS	Contract Name: A46 Walsgrave		Client: Octavius			Borehole ID: BH124
	Contract Number: G230651	Date Started: 08/06/2023	Date Completed: 12/06/2023	Logged: JAW/ ASH	Checked: IL SW	Status: FINAL — Sheet 3 of 3
Rotary Core Drilling Log	Easting: 438805.5	Northing: 279952.7	Ground Level: 76.38m (OD)	Plant Used: Dando 2000/ Comacchio 405	Print Date: 21/12/2023	Scale: 1:50
Weather: Sunny	Rig Crew: MH JW	Termination: Target Depth.		SPT Hammer: AR2501 Energy Ratio: 67%		

Samples & In Situ Testing							Strata Details				Groundwater	
Depth	Sample	Test Result	TCR	SCR	RQD	FI/If	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
20.37 - 20.50	CSS47					FI = 4				AZCL : Inferred as zone of weaker material. Very weak reddish brown MUDSTONE. Discontinuities at 0-10 degrees closely to medium spaced (100/300/400) planar smooth clean (Partially Weathered Mercia Mudstone Grade II). *20.10 - 20.15: Occasional bands of grey* *20.32 - 20.37: Multiple undulating 5mm gypsum bands.* *20.85 - 21.00: Stiff red brown sandy gravelly clay*		
21.05 - 21.32	CSS48	UCS - 21.05m 7.7MPa				FI = 12						
20.50 - 22.00			100	100	80			(3.50)				
						FI = 5						
21.85 - 22.00	CSS49											
22.15 - 22.24	CSS51	UCS - 22.15m 7.5MPa				FI = 15				*22.30 - 22.65: Discontinuities are (80-90) degrees) planar smooth clean*		
							53.73	22.65				
22.00 - 23.50			93	93	40	FI = 20				Very weak grey MUDSTONE. Discontinuities at 0-10 degrees are medium spaced (NI/300/400) planar smooth and clean. (Partially Weathered Mercia Mudstone Grade II)		
22.90 - 23.10	CSS50					FI = 5		(0.65)				
						FI = 4	53.08	23.30				
							52.98	23.40		Very weak grey fine SANDSTONE. Discontinuities at 0-10 degrees are medium spaced (200/200/300) planar smooth and clean (Partially Weathered Mercia Mudstone Grade II) *23.30 - 23.35: Stiff grey slightly sandy clay with inclusions of gypsum*		
						FI = 10		(0.40)				
						FI = 10	52.58	23.80		Very weak grey SANDSTONE. Discontinuities at 0-10 degrees are medium spaced (200/200/300) planar smooth and clean (Partially Weathered Mercia Mudstone Grade II)		
						FI = 10		(0.50)				
23.50 - 25.00			93	93	53	FI = 5	52.08	24.30		Weak grey MUDSTONE. Discontinuities at 0-10 degrees are closely spaced (NI/100/190) planar smooth and clean (Partially Weathered Mercia Mudstone Grade II)		
								(0.70)				
						FI = 20	51.38	25.00		Weak to moderately weak grey sandy MUDSTONE, Discontinuities at 0-10 degrees are very closely to closely spaced (50/100/190) planar smooth and clean (Partially Weathered Mercia Mudstone Grade II) *24.30 - 24.65: Discontinuities at 80-90 are planar smooth and clean.*		
										End of Borehole at 25.00m		

21 22 23 24 25 26 27 28 29 30

Start & End of Shift Observations

Date	Time	Depth (m)	Casing (m)	Water (m)
31-05-23	18:00	12.00	12.00	11.00
01-06-23	07:30	12.00	12.00	11.00
01-06-23	18:00	17.97	17.50	5.90
08-06-23	17:00	18.00	17.50	0.00
09-06-23	07:30	18.00	17.50	4.30
09-06-23	14:30	23.50	17.50	4.50

Flush Return Information

Top	Base	Min %	Max %	Type	Colour
17.97	18.00	100	100	Air/Mist	red
18.00	19.00	100	100	Air/Mist	red
19.00	20.50	100	100	Air/Mist	red
20.50	22.00	100	100	Air/Mist	red
22.00	23.50	100	100	Air/Mist	red
23.50	25.00	100	100	Air/Mist	green

Borehole Diameter

Depth (m)	Dia (mm)
17.97	146
25.00	146

Casing Diameter

Depth (m)	Dia (mm)
12.00	200
17.50	202
18.00	146

Coring Information

Top (m)	Base (m)	Dia (mm)	Barrel Type
18.00	19.00	102	Geobore S (146)
19.00	20.50	102	
20.50	22.00	102	

Remarks:

Position was cleared by Octavius prior to excavation. Inspection pit was dug to 1.2m bgl Groundwater was encountered first at 5.6m bgl and rose to 4.76m bgl, and was encountered again at 10.00m bgl and rose to 8.10m bgl. Position was backfilled with bentonite. Coordinates are taken as as-

Water Strike

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
5.60	4.80		20	4.76	Slow
10.00	10.00		20	8.10	Medium

Fracture Index (FI) - Fractures per meter, Fracture Spacing (If) - reported in mm as Min, Average and Max values. TCR, SCR and RQD reported as %. Hand vane (HV) reports Undrained Shear Strength (Su). Pocket penetrometer (PP) reports Unconfined Compressive Strength (UCS)

STRATA GEOTECHNICS	Contract Name: A46 Walsgrave	Client: Octavius		Borehole ID: BH125
	Contract Number: G230651	Date Started: 24/05/2023	Date Completed: 24/05/2023	Logged: JW / Checked: IL / Status: FINAL
				Sheet 1 of 1
Cable Percussion Borehole Log	Easting: 438729.1	Northing: 279982.0	Ground Level: 70.44m (OD)	Plant Used: Hand Tools / Print Date: 21/12/2023 / Scale: 1:50
Weather: Sunny	Rig Crew: Matthew Higginson	Termination: Service Encountered		

Samples & In Situ Testing			Strata Details				Groundwater	
Depth	Sample ID	Test Result	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
0.10	D1			(0.40)		TOPSOIL: Firm dark brown slightly gravelly sandy CLAY with frequent rootlets. Sand is fine to coarse. Gravel is rounded to subangular fine to coarse of quartzite.		
0.30	D2		70.04	0.40		End of Borehole at 0.40m		
0.30	ES3							

1 2 3 4 5 6 7 8 9 10

Start & End of Shift Observations				
Date	Time	Depth (m)	Casing (m)	Water (m)
24-05-2023	07:30	0.00	0.00	
24-05-2023	12:00	0.40	0.00	

Borehole Diameter		Casing Diameter	
Depth (m)	Dia (mm)	Depth (m)	Dia (mm)

Remarks:

Land drain was encountered at 0.4m below ground level. New position was marked out and denoted BH125A. Position backfilled with bentonite.

Chiselling			
From (m)	To (m)	Duration	Remarks

Installation			
Top (m)	Base (m)	Type	Dia (mm)

Water Strikes					
Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks

STRATA GEOTECHNICS	Contract Name: A46 Walsgrave		Client: Octavius			Borehole ID: BH125A
	Contract Number: G230651	Date Started: 05/06/2023	Date Completed: 25/05/2023	Logged: JW/ AH	Checked: SW	Status: FINAL
Cable Percussion Borehole Log	Easting: 438725.6	Northing: 279981.9	Ground Level: 70.45m (OD)	Plant Used: Dando 2000/ Comacchio 405	Print Date: 21/12/2023	Scale: 1:50
Weather: Fine	Rig Crew: MH, JW	Termination: Target Depth		SPT Hammer: AR3573/AR2501 Energy Ratio: 67/62%		Sheet 1 of 3

Depth	Sample ID	Test Result	Level (mAOD)	Depth (m) (Thickness)	Strata Description
0.10	D1			(0.50)	TOPSOIL: Firm dark brown slightly gravelly sandy CLAY. Sand is fine to coarse. Gravel is fine to coarse rounded to subangular of quartzite with frequent rootlets.
0.30	D2	PID 0.30m, 0.1ppm			
0.30	ES3	HV 0.50m, 136/48kPa	69.95	0.50	
0.50	B4	PID 0.50m, 0.1ppm			Stiff thinly laminated reddish brown slightly gravelly sandy CLAY with frequent black specs (5-10mm). Sand is fine to coarse. Gravel is fine to medium rounded to subrounded of quartzite. [WOLSTON GLACIGENIC FORMATION]
0.50	ES5				
0.80	D6				
1.00	B7	PID 1.00m, 0.1ppm			
1.00	ES8				
1.20	D9				
1.50	ES11	PID 1.50m, 1.7ppm			
1.50 - 1.95	UT10	Ublows = 20 Recovery = 100%		(2.70)	
2.00	D12	PID 2.00m, 1.6ppm			
2.00	ES13				
2.20	D14				
2.50 - 2.95	D15	SPT(S) 2.50m, N=56 (7,15/17,12,7,20)			
2.50 - 3.00	B16	HV 2.50m, 140/38kPa			
3.20	D17		67.25	3.20	Dense to very dense reddish brown gravelly fine to coarse SAND. Gravel is fine to coarse rounded to subangular of quartzite. [Bagington Sand and Gravel Formation]
3.50 - 3.95	D18	SPT(S) 3.50m, N=33 (3,5/6,8,8,11)			
3.50 - 4.00	B19				
4.20	D20				
4.50 - 4.95	D21	SPT(S) 4.50m, N=52 (5,8/9,14,14,15)		(2.60)	
4.50 - 5.00	B				
4.50 - 5.00	B22				
5.20	D23				
5.50 - 5.95	D24	SPT(S) 5.50m, N=30 (3,5/5,5,7,13)			
5.50 - 6.00	B25				
			64.65	5.80	Orangish brown very sandy silty GRAVEL. Sand is fine to coarse. Gravel is fine to coarse rounded to subangular of quartzite. [Bagington Sand and Gravel Formation]
6.20	D26				
7.00 - 7.80	B	SPT(C) 7.00m, N=14 (2,2/3,3,3,5)		(2.20)	
7.00 - 7.80	B27				
8.00 - 8.50	B28		62.45	8.00	Stiff reddish brown mottled greenish grey slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is fine to coarse angular to subangular of mudstone (Partially Weathered Mercia Mudstone Grade IVa).
				(0.50)	
8.50 - 8.81	D29	SPT(S) 8.50m, 100 (25 for 100mm/100 for 205mm)	61.95	8.50	Very stiff reddish brown mottled greenish grey slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is fine to coarse angular to subangular of mudstone (Partially Weathered Mercia Mudstone Grade IVa).
8.50 - 9.00	B30				
				(2.10)	
9.50	D				
9.50	D31				
		SPT(C) 9.80m, 100 (25 for 75mm/100 for 190mm)			

Start & End of Shift Observations

Date	Time	Depth (m)	Casing (m)	Water (m)
24-05-2023	18:00	7.80	7.80	2.00
25-05-2023	07:30	7.50	7.50	3.10
25-05-2023	13:30	10.60	9.50	
05-06-2023	17:00	15.00	9.00	2.50
06-06-2023	07:30	15.00	9.00	2.00
06-06-2023	17:00	25.00	9.00	2.00

Borehole Diameter

Depth (m)	Dia (mm)
3.00	200
7.00	150
25.00	146

Casing Diameter

Depth (m)	Dia (mm)
3.00	200
7.80	150
9.00	202
25.00	146

Remarks:

Position was cleared by Octavius prior to excavation. Inspection pit was dug to 1.2m bgl Groundwater was encountered at 3.50 m bgl and rose to 2.70m bgl. Position was installed upon completion with plain and slotted pipe, bentonite and gravel upon completion. Coordinates are taken as as-builts.

Chiselling

From (m)	To (m)	Duration	Remarks
8.50	8.70	00:40	
9.50	9.80	01:00	

Installation

Top (m)	Base (m)	Type	Dia (mm)
0.00	3.60	PLAIN	50
3.60	8.00	SLOTTED	50

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
3.50	3.20		20	2.70	Medium

STRATA GEOTECHNICS	Contract Name: A46 Walsgrave		Client: Octavius			Borehole ID: BH125A
	Contract Number: G230651	Date Started: 05/06/2023	Date Completed: 25/05/2023	Logged: JW/ AH	Checked: SW	Status: FINAL
Cable Percussion Borehole Log	Easting: 438725.6	Northing: 279981.9	Ground Level: 70.45m (OD)	Plant Used: Dando 2000/ Comacchio 405	Print Date: 21/12/2023	Scale: 1:50
Weather: Fine	Rig Crew: MH, JW	Termination: Target Depth		SPT Hammer: AR3573/AR2501 Energy Ratio: 67/62%		Sheet 2 of 3

Samples & In Situ Testing							Strata Details				Groundwater	
Depth	Sample ID	Test Result					Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
										Very stiff reddish brown mottled greenish grey slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is fine to coarse angular to subangular of mudstone (Partially Weathered Mercia Mudstone Grade IVa).		
							59.85	10.60		Extremely weak to weak reddish brown MUDSTONE. Discontinuities at 0-10 are closely to medium spaced planar smooth and clean (Partially Weathered Mercia Mudstone Grade III).		
11.20 - 11.50 10.50 - 12.00	CSS32		80	73	67	FI = 4				*10.60 - 10.80: AZCL* *11.17 - 11.20: 30mm thick gypsum band at 20-30 degrees*		
11.80 - 11.90	CSS33					FI =				*11.92 - 11.93: 5mm thick gypsum band at 0-10 degrees.*		
		SPT(C) 12.00m, N=101 (7,9/15,24,25,37)				15		(3.30)				
12.40 - 12.70	CSS34	UCS - 12.40m 3.2MPa										
12.00 - 13.50			100	97	87					*12.78 - 12.88: Occasional white gypsum veins at 0-10 degrees.* *12.80 - 12.81: Very weak reddish brown mudstone.*		
						FI = 3						
13.40 - 13.50	CSS35											
						FI =	56.55	13.90		Weak to moderately weak reddish brown MUDSTONE. Discontinuities at 0-10 degrees are very closely to medium spaced (50/470/470) planar smooth and clean (Partially Weathered Mercia Mudstone Grade III).		
14.03 - 14.18	CSS36	UCS - 14.03m 2.6MPa				20						
13.50 - 15.00			93	93	67	FI = 10						
14.45 - 14.75	CSS37					FI = 6		(1.10)		*13.98 - 14.27: Occasional white gypsum band at 0-10 degrees.* *14.30 - 14.45: Discontinuities at 80-90 degrees are planar smooth and clean.*		
						FI = 2						
						FI =				*14.85 - 14.92: White gypsum band at 0-10 degrees.*		
15.00 - 15.25	CSS38	SPT(C) 15.00m, 100 (25 for 115mm/100 for 245mm)				25	55.45	15.00		Moderately strong reddish brown mottled grey MUDSTONE with gypsum bands between 2mm and 40mm. Discontinuities at 0-10 degrees are medium to widely spaced (250/250/700) planar smooth and clean (Partially Weathered Mercia Mudstone Grade II).		
15.00 - 15.50			100	100	100	FI = 15						
15.60 - 15.95	CSS39	UCS - 15.60m 2.3MPa				FI = 8						
						FI = 4				*15.10 - 15.11: White gypsum band at 0-10 degrees.* *15.50 - 15.60: AZCL*		
15.50 - 16.50			90	90	88	FI = 3				*16.00 - 16.01: Gypsum band*		
						FI = 6						
						FI =				*16.36 - 16.37: Common white gypsum band at 0-10 degrees.*		
						5				*16.55 - 16.60: Gypsum Band*		
						FI = 6						
16.90 - 17.00	CSS40					FI = 50		(3.70)				
16.50 - 18.00			100	100	100	FI = 20						
17.50 - 17.80	CSS41					FI = 3				*17.40 - 17.45: Gypsum Band*		
						FI =						
		SPT(C) 18.00m, 100 (25,/100 for 90mm)				10						
18.40 - 18.70	CSS42					FI = 2						
18.00 - 19.50			100	100	70	FI =	51.75	18.70		Weak to moderately weak reddish brown MUDSTONE. Discontinuities at 0-10 degrees are closely to medium spaced (80/100/350) planar smooth and clean (Partially Weathered Mercia Mudstone Grade II).		
						15						
19.10 - 19.20	CSS43					FI = 4				*18.70 - 18.90: Very weak reddish brown mudstone.* *19.40 - 19.50: Moderately strong grey mudstone.*		
						FI =				*19.50 - 19.60: AZCL*		
						10				*19.60 - 19.85: Very weak reddish brown mudstone.*		
						FI = 12						
19.85 - 19.95	CSS44					FI =						
						14						
		Fracture	TCR	SCR	RQD							

Start & End of Shift Observations					Borehole Diameter		Casing Diameter		Remarks
Date	Time	Depth (m)	Casing (m)	Water (m)	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)	Position was cleared by Octavius prior to excavation. Inspection pit was dug to 1.2m bgl Groundwater was encountered at 3.50 m bgl and rose to 2.70m bgl. Position was installed upon completion with plain and slotted pipe, bentonite and gravel upon completion. Coordinates are taken as as-builts.
					3.00 7.00 25.00	200 150 146	3.00 7.80 9.00 25.00	200 150 202 146	

Chiselling				Installation				Water Strikes					
From (m)	To (m)	Duration	Remarks	Top (m)	Base (m)	Type	Dia (mm)	Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks

STRATA GEOTECHNICS	Contract Name: A46 Walsgrave		Client: Octavius			Borehole ID: BH125A
	Contract Number: G230651	Date Started: 05/06/2023	Date Completed: 25/05/2023	Logged: JW/ AH	Checked: SW	Status: FINAL
Rotary Core Drilling Log	Easting: 438725.6	Northing: 279981.9	Ground Level: 70.45m (OD)	Plant Used: Dando 2000/ Comacchio 405	Print Date: 21/12/2023	Scale: 1:50
Weather: Fine	Rig Crew: MH, JW	Termination: Target Depth		SPT Hammer: AR3573/AR2501 Energy Ratio: 67/62%		Sheet 3 of 3

Samples & In Situ Testing							Strata Details				Groundwater	
Depth	Sample	Test Result	TCR	SCR	RQD	FI/If	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
19.50 - 21.00						FI = 4				*20.15 - 20.20: Discontinuities at 80-90 degrees are planar smooth and clean.*		
20.60 - 20.90	CSS45	UCS - 20.60m 2.6MPa	93	77	60	FI = 20 FI = 4						
		SPT(C) 21.00m, 100 (25 for 65mm/100 for 100mm)				FI = 20 FI = 5		(3.35)		*20.95 - 21.00: Discontinuities at 80-90 degrees are planar smooth and clean.* *21.05 - 22.05: Mudstone becomes grey* *21.30 - 21.40: Discontinuities at 80-90 degrees are planar smooth and clean.*		
21.55 - 21.75	CSS46					FI = 20						
21.00 - 22.50			100	100	47	FI = 5				*21.70 - 22.15: Discontinuities at 80-90 degrees are planar smooth and clean.*		
						FI = 20	48.40	22.05		*21.99 - 22.00: White gypsum band at 0-10 degrees.* Weak grey predominately fine and medium to coarse SANDSTONE. Discontinuities at 0-10 degrees are very closely to closely spaced (50/70/80) planar smooth and clean (Partially Weathered Mercia Mudstone Grade II).		
22.25 - 22.35	CSS47					FI = 14						
22.80 - 23.05	CSS48	UCS - 22.80m 4.8MPa				FI = 10		(1.45)				
22.50 - 24.00			100	100	93	FI = 2						
23.65 - 23.82	CSS49					FI = 6	46.95	23.50		*23.48 - 24.00: Bands of fine sandstone up to 50mm.* Weak grey MUDSTONE with bands of fine sandstone. Discontinuities at 0-10 are closely to medium spaced (100/400/520) planar smooth and clean (Partially Weathered Mercia Mudstone Grade II).		
						FI = 50		(0.50)				
24.10 - 24.35	CSS50	SPT(C) 24.00m, 100 (25 for 85mm/100 for 190mm)				FI = 12	46.45	24.00		Weak to moderately weak reddish brown MUDSTONE. Discontinuities at 0-10 degrees are closely to medium spaced (80/200/250) planar smooth and clean (Partially Weathered Mercia Mudstone Grade II).		
24.00 - 25.00			100	100	85	FI = 5	45.85	24.60				
						FI = 10	45.60	24.85		Weak to moderately weak grey MUDSTONE. Discontinuities at 0-10 degrees are very closely to medium spaced (40/200/250) planar smooth and clean (Partially Weathered Mercia Mudstone Grade II).		
24.85 - 25.00	CSS51	UCS - 24.85m 2.3MPa				FI = 20 FI = 5 FI = 20 FI = 6	45.45	25.00		Weak grey predominately fine to coarse SANDSTONE with bands of predominantly coarse material up to 30mm. (Partially Weathered Mercia Mudstone Grade II). *24.85 - 25.00: Bands of fine to coarse sandstone of up to 30mm.* End of Borehole at 25.00m		

Start & End of Shift Observations				
Date	Time	Depth (m)	Casing (m)	Water (m)

Flush Return Information					
Top	Base	Min %	Max %	Type	Colour
9.30	10.50	100	100	Air/Mist	Red
10.50	12.00	100	100	Air/Mist	Red
12.00	13.50	100	100	Air/Mist	Red
13.50	15.00	100	100	Air/Mist	Red
15.00	15.50	100	100	Air/Mist	Red
15.50	16.50	100	100	Air/Mist	Red

Remarks:

Position was cleared by Octavius prior to excavation. Inspection pit was dug to 1.2m bgl Groundwater was encountered at 3.50 m bgl and rose to 2.70m bgl. Position was installed upon completion with plain and slotted pipe, bentonite and gravel upon completion. Coordinates are taken as as-builts.

Water Strike					
Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks

Borehole Diameter		Casing Diameter	
Depth (m)	Dia (mm)	Depth (m)	Dia (mm)
3.00	200	3.00	200
7.00	150	7.80	150
25.00	146	9.00	202

Coring Information			
Top (m)	Base (m)	Dia (mm)	Barrel Type
10.50	12.00	102	Geobore S
12.00	13.50	102	(146)
13.50	15.00	102	Geobore S

Fracture Index (FI) - Fractures per meter, Fracture Spacing (If) - reported in mm as Min, Average and Max values. TCR, SCR and RQD reported as %. Hand vane (HV) reports Undrained Shear Strength (Su). Pocket penetrometer (PP) reports Unconfined Compressive Strength (UCS)

STRATA GEOTECHNICS	Contract Name: A46 Walsgrave		Client: Octavius			Borehole ID: BH126
	Contract Number: G230651	Date Started: 09/06/2023	Date Completed: 14/06/2023	Logged: JAW	Checked: SW	Status: FINAL — Sheet 1 of 2
Cable Percussion Borehole Log	Easting: 438818.8	Northing: 280016.8	Ground Level: 72.58m (OD)	Plant Used: Dando 2000	Print Date: 21/12/2023	Scale: 1:50
Weather: Sunny	Rig Crew: Matthew Higginson	Termination: Target depth		SPT Hammer: AR3573 Energy Ratio: 67%		

Samples & In Situ Testing			Strata Details				Groundwater	
Depth	Sample ID	Test Result	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
0.10	D1			(0.35)		TOPSOIL: Firm dark brown slightly gravelly sandy CLAY with frequent rootlets. Sand is fine to coarse. Gravel is rounded to subangular fine to coarse of quartzite.		
0.30	D2	PID 0.30m, 4.4ppm	72.23	0.35		Stiff dark greyish brown sandy slightly gravelly CLAY with frequent black specs (5-10mm) and frequent rootlets. Sand is fine to coarse. Gravel is rounded to subrounded fine to medium of quartzite. [WOLSTON GLACIGENIC FORMATION]		
0.30	ES3	PID 0.50m, 1.7ppm						
0.50	B5							
0.50	ES4							
0.80	D6							
1.00	B7	HV 1.00m, 106/40kPa						
1.00	ES8	PID 1.00m, 0.2ppm						
1.20	D9							
1.50	ES12	PID 1.50m, 15.0ppm						
1.50 - 1.95	UT10							
2.00	D11	PID 2.00m, 4.4ppm		(3.55)				
2.00	ES13							
2.20	D14							
2.50 - 2.95	D15	SPT(S) 2.50m, N=19 (1,2/4,4,4,7)						
2.50 - 3.00	B16							
3.20	D17							
3.50 - 3.95	UT18	Ublows = 55 Recovery = 100%						
4.00	D19		68.68	3.90		Stiff dark orangish brown sandy slightly gravelly CLAY with occasional sand lenses (30-50mm) and black specs (2-5mm). Sand is fine to coarse. Gravel is rounded to subrounded fine to medium of quartzite, sandstone and mudstone. [WOLSTON GLACIGENIC FORMATION]		
4.00 - 4.50	B21							
4.20	D20							
4.50 - 4.95	D22	SPT(S) 4.50m, N=41 (6,6/8,9,11,13)						
4.50 - 5.00	B23			(1.50)				
5.20	D24							
5.50 - 5.95	D25	SPT(S) 5.50m, N=38 (3,7/9,9,10,10)	67.18	5.40		Dense to very dense reddish brown very clayey slightly gravelly fine to coarse SAND. Gravel is subrounded fine to medium of mudstone and quartzite. [WOLSTON GLACIGENIC FORMATION]		
5.50 - 6.00	B26							
6.20	D27			(2.40)				
7.50 - 7.95	D28	SPT(S) 7.50m, N=59						
7.50 - 8.00	B29	(9,13/22,15,9,13)						
8.50	D30		64.78	7.80		Very stiff dark greyish brown slightly gravelly sandy CLAY with occasional sand and gravel lenses (10-20mm). Sand is fine to coarse. Gravel is rounded to subrounded fine to medium of quartzite, sandstone mudstone. [WOLSTON GLACIGENIC FORMATION]		
9.00	D31	SPT(S) 9.00m, N=94	63.58	9.00		Very stiff reddish brown locally mottled green grey slightly sandy gravelly CLAY. Sand is fine to coarse. Gravel is angular to subangular fine to coarse of mudstone (Partially Weathered Mercia Mudstone Grade IVa)		
9.00 - 9.45	D32	(5,17/19,21,24,30)						
9.00 - 9.50	B33			(1.69)				

Start & End of Shift Observations

Date	Time	Depth (m)	Casing (m)	Water (m)
09-06-2023	07:30	0.00	0.00	
09-06-2023	18:00	8.00	7.20	
12-06-2023	07:30	8.00	7.20	4.30
12-06-2023	18:05	8.00	7.50	7.00
13-06-2023	07:30	8.00	8.00	6.90
13-06-2023	18:00	10.69	10.20	5.80

Borehole Diameter

Depth (m)	Dia (mm)
8.00	180
10.69	146

Casing Diameter

Depth (m)	Dia (mm)
10.20	200

Remarks:

Position was cleared by Octavius prior to excavation. Inspection pit was dug to 1.2m bgl Groundwater was encountered first at 5.2m bgl and rose to 4.55m bgl, and was encountered again at 10.2m bgl and rose to 6.5m bgl. Position was installed upon completion with plain and slotted pipe, bentonite, gravel and cold lay upon completion. Coordinates are taken as as-builts.

Chiselling

From (m)	To (m)	Duration	Remarks

Installation

Top (m)	Base (m)	Type	Dia (mm)
0.00	5.80	PLAIN	50
5.80	7.80	SLOTTED	50

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
5.20	5.00	7.00	20	4.55	Medium
10.20	9.20		20	6.50	Fast

STRATA GEOTECHNICS	Contract Name: A46 Walsgrave		Client: Octavius				Borehole ID: BH126
	Contract Number: G230651	Date Started: 09/06/2023	Date Completed: 14/06/2023	Logged: JAW	Checked: SW	Status: FINAL	Sheet 2 of 2
Cable Percussion Borehole Log	Easting: 438818.8	Northing: 280016.8	Ground Level: 72.58m (OD)	Plant Used: Dando 2000		Print Date: 21/12/2023	Scale: 1:50
Weather: Sunny	Rig Crew: Matthew Higginson	Termination: Target depth		SPT Hammer: AR3573 Energy Ratio: 67%			

Samples & In Situ Testing			Strata Details				Groundwater	
Depth	Sample ID	Test Result	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
10.50 - 10.69	D34	SPT(S) 10.50m, 100 (25 for 115mm/100 for 70mm)	61.89	10.69		Very stiff reddish brown locally mottled green grey slightly sandy gravelly CLAY. Sand is fine to coarse. Gravel is angular to subangular fine to coarse of mudstone (Partially Weathered Mercia Mudstone Grade IVa)		
						End of Borehole at 10.69m		

11 12 13 14 15 16 17 18 19 20

Start & End of Shift Observations					Borehole Diameter		Casing Diameter		Remarks:
Date	Time	Depth (m)	Casing (m)	Water (m)	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)	
					8.00 10.69	180 146	10.20	200	Position was cleared by Octavius prior to excavation. Inspection pit was dug to 1.2m bgl Groundwater was encountered first at 5.2m bgl and rose to 4.55m bgl, and was encountered again at 10.2m bgl and rose to 6.5m bgl. Position was installed upon completion with plain and slotted pipe, bentonite, gravel and cold lay upon completion. Coordinates are taken as as-builts.

Chiselling				Installation				Water Strikes					
From (m)	To (m)	Duration	Remarks	Top (m)	Base (m)	Type	Dia (mm)	Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks

STRATA GEOTECHNICS	Contract Name: A46 Walsgrave		Client: Octavius			Borehole ID: BH127
	Contract Number: G230651	Date Started: 25/05/2023	Date Completed: 30/05/2023	Logged: JAW	Checked: SW	Status: FINAL — Sheet 1 of 1
Cable Percussion Borehole Log	Easting: 438749.9	Northing: 280056.1	Ground Level: 74.72m (OD)	Plant Used: Dando 2000	Print Date: 21/12/2023	Scale: 1:50
Weather: Sunny	Rig Crew: Matthew Higginson	Termination: Refusal.		SPT Hammer: AR3673 Energy Ratio: 67%		

Depth	Sample ID	Test Result	Level (mAOD)	Depth (m) (Thickness)	Strata Description	Water Strike	Backfill/ Installation
0.10	D1			(0.40)	TOPSOIL: Firm dark brown slightly gravelly sandy CLAY with frequent rootlets. Sand is fine to coarse. Gravel is rounded to subangular fine to coarse of quartzite.		
0.30	D2	PID 0.30m, 0.1ppm	74.32	0.40	Stiff reddish brown sandy slightly gravelly CLAY with frequent black specs (5-10mm) and common rootlets. Sand is fine to coarse. Gravel is rounded to subrounded fine to medium of quartzite. [WOLSTON GLACIGENIC FORMATION]		
0.30	ES3	HV 0.50m, 112/64kPa					
0.50	B5	PID 0.50m, 0.0ppm					
0.50	ES4						
0.80	D6						
1.00	B8	PID 1.00m, 0.0ppm					
1.00	ES7						
1.20	D9						
1.50	ES11	PID 1.50m, 0.0ppm					
1.50 - 1.95	UT	Ublows = 25					
1.50 - 2.00	B10	Recovery = 0%					
2.00	ES12	PID 2.00m, 0.2ppm					
2.20	D13			(3.80)			
2.50 - 2.95	D14	SPT(S) 2.50m, N=15 (3,3/3,3,4,5)					
2.50 - 3.00	B	HV 2.50m, 140/46kPa					
2.50 - 3.00	B15						
3.20	D16						
3.50 - 3.95	UT17	Ublows = 35 Recovery = 100%					
4.00	D18						
4.20	D19		70.52	4.20	Dense reddish brown very clayey gravelly fine to coarse SAND. Gravel is rounded to subangular fine to coarse of quartzite. [Bagington Sand and Gravel Formation]		
4.50 - 4.95	D20	SPT(S) 4.50m, N=40 (3,4/7,8,10,15)					
4.50 - 5.00	B21						
5.50	D			(1.80)			
5.50	D22						
6.00 - 6.50	B23	SPT(C) 6.00m, N=23 (1,2/4,5,7,7)	68.72	6.00	Stiff reddish brown slightly sandy gravelly CLAY with a low cobble content. Sand is fine to coarse. Gravel is rounded to subangular fine to coarse of quartzite. Cobbles are subrounded of quartzite.		
7.00	D24		67.82	6.90	Very stiff reddish brown locally mottled greenish grey sandy slightly gravelly CLAY with rare gypsum veins (1-20mm). Sand is fine to coarse. Gravel is angular to subangular fine to coarse of mudstone. (Partially Weathered Mercia Mudstone Grade IVa)		
7.50 - 7.95	D25	SPT(S) 7.50m, N=47 (4,6/8,9,15,15)					
7.50 - 8.00	B26						
8.50	D			(2.96)			
8.50	D27				*8.50: Grey siltstone band. Heavy water ingress.*		
8.60 - 8.90	B28						
8.90 - 9.20	B30	SPT(S) 8.90m, 100 (8,14/100 for 225mm)					
8.90 - 9.28	D29						
9.50 - 9.86	D31	SPT(S) 9.50m, 100 (25 for 130mm/100 for 230mm)	64.86	9.86	End of Borehole at 9.86m		

Start & End of Shift Observations

Date	Time	Depth (m)	Casing (m)	Water (m)
25-05-2023	13:30	0.00	0.00	
25-05-2023	18:00	6.00	4.90	
26-05-2023	07:20	6.00	4.90	
26-05-2023	18:00	9.86	7.80	1.90
30-05-2023	07:30	9.86	7.80	1.80
30-05-2023	12:00	9.86	7.80	1.80

Borehole Diameter

Depth (m)	Dia (mm)
6.00	180
9.86	146

Casing Diameter

Depth (m)	Dia (mm)
4.90	200

Remarks:

Position was cleared by Octavius prior to excavation. Inspection pit was dug to 1.2m bgl . Groundwater was encountered at 8.50m bgl and rose to 2.0m bgl in 20 minutes. Position was installed upon completion with plain and slotted pipe, bentonite and gravel upon completion.. Coordinates are taken as as-builts

Chiselling

From (m)	To (m)	Duration	Remarks

Installation

Top (m)	Base (m)	Type	Dia (mm)
0.00	7.40	PLAIN	50
7.40	9.50	SLOTTED	50

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
8.50	7.50		20	2.00	Rapid Inflow

STRATA GEOTECHNICS	Contract Name: A46 Walsgrave		Client: Octavius			Borehole ID: BH128
	Contract Number: G230651	Date Started: 14/06/2023	Date Completed: 15/06/2023	Logged: JAW	Checked: SW	Status: FINAL
Cable Percussion Borehole Log	Easting: 438845.0	Northing: 280126.1	Ground Level: 74.37m (OD)	Plant Used: Dando 2000	Print Date: 21/12/2023	Scale: 1:50
Weather: Sunny	Rig Crew: Matthew Higginson	Termination: Target Depth		SPT Hammer: AR3573 Energy Ratio: 67%		Sheet 1 of 2

Samples & In Situ Testing			Strata Details				Groundwater	
Depth	Sample ID	Test Result	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
0.10	D1		74.17	0.20		TOPSOIL: Firm dark brown slightly gravelly sandy CLAY with frequent rootlets. Gravel is rounded to subangular fine to coarse of quartzite. Sand is fine to coarse		
0.30	D2	PID 0.30m, 3.1ppm				Stiff dark reddish brown locally mottled greenish grey slightly gravelly sandy CLAY with frequent rootlets. Sand is fine to coarse. Gravel is rounded to subrounded fine to medium of quartzite and mudstone. [WOLSTON GLACIGENIC FORMATION]		
0.30	ES3	PID 0.50m, 1.2ppm						
0.30	ESVE1 023061 403							
0.50	B5	PID 1.00m, 1.0ppm						
0.50	ES4							
0.50	ESVE1 023061 404	PID 1.50m, 3.6ppm						
		Ublows = 31						
0.80	D6	Recovery = 98%						
1.00	B8							
1.00	ES9	PID 2.00m, 1.0ppm						
1.20	D7							
1.50	ES12							
1.50 - 1.95	UT10	SPT(S) 2.50m, N=19 (3,3/4,4,5,6)		(4.50)				
2.00	D11							
2.00	ES13							
2.00	ESVE1 023061 4013							
2.20	D14							
2.50 - 2.95	D15							
2.50 - 3.00	B16	Ublows = 41						
3.20	D17	Recovery = 82%						
3.50 - 3.95	UT18							
4.00	D19							
4.20	D20							
4.50 - 4.95	D21	SPT(S) 4.50m, N=17 (1,2/2,5,5,5)						
4.50 - 5.00	B22		69.67	4.70				
						Stiff reddish brown slightly gravelly sandy CLAY with occasional sand lenses (30-50mm). Sand is fine to coarse. Gravel is rounded to subrounded fine to medium of quartzite, sandstone and mudstone. [WOLSTON GLACIGENIC FORMATION]		
5.20	D23			(1.20)				
5.50 - 5.95	UT24	Ublows = 47 Recovery = 100%						
			68.47	5.90				
6.00	D25					Reddish brown slightly gravelly very clayey fine to coarse SAND with occasional bands of clay (50-100mm). Gravel is subrounded fine to medium of mudstone and quartzite. [WOLSTON GLACIGENIC FORMATION]		
				(0.60)				
6.50	D26		67.87	6.50				
6.50 - 7.00	B27					Very stiff Dark greyish brown slightly gravelly sandy CLAY with occasional pockets of sand and gravel (10-20mm). Sand is fine to coarse. Gravel is rounded to subrounded fine to medium of quartzite, sandstone and mudstone. [WOLSTON GLACIGENIC FORMATION]		
7.50 - 7.95	D28	SPT(S) 7.50m, N=29 (5,5/5,6,9,9)						
7.50 - 8.00	B29			(2.40)				
8.50	D30							
			65.47	8.90				
9.00 - 9.45	U31	Ublows = 76 Recovery = 98%				Stiff becoming very stiff reddish brown locally mottled greenish grey slightly sandy gravelly CLAY with occasional gypsum veins 10-20mm. Sand is fine to coarse Gravel is angular to subangular fine to coarse of mudstone (Partially Weathered Mercia Mudstone Grade IVa).		
9.50	D32							
9.50 - 10.00	B33							

Start & End of Shift Observations

Date	Time	Depth (m)	Casing (m)	Water (m)
14-06-2023	13:30			
14-06-2023	17:50	5.50	5.20	
15-06-2023	07:30	5.50	5.20	
15-06-2023	16:30	11.91	5.20	

Borehole Diameter

Depth (m)	Dia (mm)
5.50	200
11.91	146

Casing Diameter

Depth (m)	Dia (mm)
5.20	200

Remarks:

Position was cleared by Octavius prior to excavation. Inspection pit was dug to 1.2m bgl . Groundwater was encountered at 5.95m BGL and rose to 5.35m BGL in 20 minutes. Borehole backfilled with bentonite upon completion. Coordinates are taken as as-builts

Chiselling

From (m)	To (m)	Duration	Remarks
10.50	10.80	00:40	
11.30	11.50	00:31	

Installation

Top (m)	Base (m)	Type	Dia (mm)

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
5.95	5.20		20	5.35	Slow

STRATA GEOTECHNICS	Contract Name: A46 Walsgrave		Client: Octavius				Borehole ID: BH128
	Contract Number: G230651	Date Started: 14/06/2023	Date Completed: 15/06/2023	Logged: JAW	Checked: SW	Status: FINAL	Sheet 2 of 2
Cable Percussion Borehole Log	Easting: 438845.0	Northing: 280126.1	Ground Level: 74.37m (OD)	Plant Used: Dando 2000		Print Date: 21/12/2023	Scale: 1:50
Weather: Sunny	Rig Crew: Matthew Higginson	Termination: Target Depth		SPT Hammer: AR3573 Energy Ratio: 67%			

Samples & In Situ Testing			Strata Details				Groundwater	
Depth	Sample ID	Test Result	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
10.20	D34					Stiff becoming very stiff reddish brown locally mottled greenish grey slightly sandy gravelly CLAY with occasional gypsum veins 10-20mm. Sand is fine to coarse Gravel is angular to subangular fine to coarse of mudstone (Partially Weathered Mercia Mudstone Grade IVa).		
10.50 - 10.71	D35	SPT(S) 10.50m, 90 (25 for 85mm/90 for 120mm)						
10.50 - 11.00	B36							
				(3.01)				
11.50 - 11.91	D37	SPT(S) 11.50m, N=85 (25 for 105mm/15,6,10,54)						
			62.46	11.91		End of Borehole at 11.91m		

11 12 13 14 15 16 17 18 19 20

Start & End of Shift Observations					Borehole Diameter		Casing Diameter		Remarks:
Date	Time	Depth (m)	Casing (m)	Water (m)	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)	Position was cleared by Octavius prior to excavation. Inspection pit was dug to 1.2m bgl . Groundwater was encountered at 5.95m BGL and rose to 5.35m BGL in 20 minutes. Borehole backfilled with bentonite upon completion. Coordinates are taken as as-builts
					5.50 11.91	200 146	5.20	200	

Chiselling				Installation				Water Strikes					
From (m)	To (m)	Duration	Remarks	Top (m)	Base (m)	Type	Dia (mm)	Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks

STRATA GEOTECHNICS	Contract Name: A46 Walsgrave		Client: Octavius			Trial Pit ID: TP101
	Contract Number: G230651	Date Started: 22/05/2023	Logged By: MN	Checked By: SW	Status: FINAL	Sheet 1 of 1
Trial Pit Log	Easting: 438150.9	Northing: 279412.3	Ground Level: 71.94mOD	Plant Used: JCB 3CX	Date Printed: 21/12/2023	Scale: 1:50
Weather: Sunny	Stability: Stable		Services Encountered: None		Hole Termination: Stiff clay.	

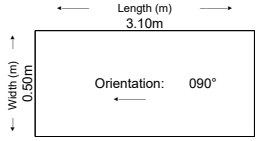
Samples & In Situ Testing			Strata Details				Water	Backfill
Depths	Sample ID	Test Result	Reduced Level	Depth (m) (Thickness)	Legend	Strata Description		
0.10	B			(0.30)		TOPSOIL: Dark brown slightly clayey slightly gravely SAND. Sand is fine to coarse. Frequent rootlets (60mm x 2mm x 2mm). Gravel is fine to coarse well rounded composed of quartzite and flint.		
0.10	ES		71.64	0.30		Moderately stiff reddish brown mottled grey CLAY.		
0.30	D							
0.50	B							
0.50	ES							
0.60	D							
0.90	D							
1.00	B			(1.50)				
1.00	ES							
1.20	D							
1.50	B							
1.50	D							
1.50	ES		70.14	1.80		Stiff reddish brown mottled grey CLAY.		
1.80	D							
2.00	B			(0.50)				
2.00	ES							
2.10	D		69.64	2.30		Very stiff reddish brown mottled grey CLAY.		
2.30	D		69.54	2.40		End of Trial Pit at 2.40m		
2.40	B							
2.40	D							
2.40	ES							

1 2 3 4 5

Trial Pit Photographs/Sketches

Dimensions of Trial Pit:

Final Depth: 2.40m



Inclination: 90°

Remarks:

TP101 terminated at 2.4m. Dug with a 3CX excavator. No water strike. Backfilled with arisings. Coordinates taken as as-builts.

Water Strike

Strike	Time (mins)	Rose to (m)	Remarks
	0	0.00	No water strike.

STRATA GEOTECHNICS	Contract Name: A46 Walsgrave		Client: Octavius			Trial Pit ID: TP102
	Contract Number: G230651	Date Started: 23/05/2023	Logged By: MN	Checked By: SW	Status: FINAL	Sheet 1 of 1
Trial Pit Log	Easting: 438634.7	Northing: 279788.4	Ground Level: 75.36mOD	Plant Used: JCB 3CX	Date Printed: 21/12/2023	Scale: 1:50
Weather: Sunny	Stability: Unstable		Services Encountered: None		Hole Termination: Collapse	

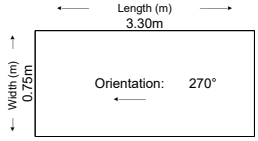
Samples & In Situ Testing			Strata Details				Water	Backfill
Depths	Sample ID	Test Result	Reduced Level	Depth (m) (Thickness)	Legend	Strata Description		
0.10	B			(0.40)		TOPSOIL: slightly clayey slightly gravely SAND. Sand is fine to coarse. Gravel is fine to coarse well rounded composed of quartzite and flint. Frequent rootlets: 60mm x 2mm x 2mm.		
0.10	ES							
0.10	ES		74.96	0.40		Orangish brown slightly clayey SAND. Sand is fine to coarse. [WOLSTON GLACIGENIC FORMATION]		
0.30	D							
0.50	B							
0.50	ES							
0.60	D			(1.10)				
0.90	D							
1.00	B							
1.00	ES							
1.20	D		73.86	1.50		Firm orangish brown mottled grey sandy CLAY. Sand is fine to coarse. [WOLSTON GLACIGENIC FORMATION]		
1.50	B							
1.50	D							
1.50	ES							
1.80	D			(1.00)				
2.00	B							
2.00	ES							
2.10	D							
2.50	B		72.86	2.50		End of Trial Pit at 2.50m		
2.50	D							
2.50	ES							

1 2 3 4 5

Trial Pit Photographs/Sketches

Dimensions of Trial Pit:

Final Depth: 2.50m



Inclination: 90°

Remarks:

TP102 terminated at 2.5m. Dug with 3CX excavator. Water strike at encountered 2.5m, no rise after 20 minutes, Backfilled with arisings. Coordinates taken as as-builts. Trial pit walls collapsed during construction.

Water Strike

Strike	Time (mins)	Rose to (m)	Remarks
2.50	20	2.50	Water strike at 2.5m.

STRATA GEOTECHNICS	Contract Name: A46 Walsgrave		Client: Octavius			Trial Pit ID: TP103
	Contract Number: G230651	Date Started: 24/05/2023	Logged By: MN	Checked By: SW	Status: FINAL	Sheet 1 of 1
Trial Pit Log	Easting: 438768.6	Northing: 280139.0	Ground Level: 74.60mOD	Plant Used: JCB 3CX	Date Printed: 21/12/2023	Scale: 1:50
Weather: Sunny	Stability: Stable		Services Encountered: None		Hole Termination: Stiff clay.	

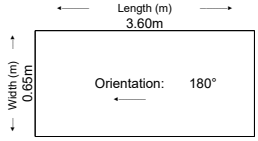
Samples & In Situ Testing			Strata Details					
Depths	Sample ID	Test Result	Reduced Level	Depth (m) (Thickness)	Legend	Strata Description	Water	Backfill
0.10	B					TOPSOIL: Dark brown slightly clayey, slightly gravelly SAND. Sand is fine to coarse. Gravel is fine to coarse, composed of quartzite and flint. Frequent rootlets (60mm x 2mm x 2mm.		
0.10	ES			(0.50)				
0.30	D							
0.50	ES		74.10	0.50		Stiff orangish brown mottled grey slightly sandy CLAY. Sand is fine to coarse. [WOLSTON GLACIGENIC FORMATION]		
0.50 - 1.00	B							
0.60	D			(0.70)				
0.90	D							
1.00	ES							
1.00 - 1.50	B		73.40	1.20		Stiff, orangish brown mottled grey slightly sandy CLAY. Sand is fine to coarse. [WOLSTON GLACIGENIC FORMATION]		
1.20 - 12.00	D							
1.50	D			(0.80)				
1.50	ES							
1.50 - 2.00	B							
1.80	D							
2.00	ES		72.60	2.00		Very stiff orangish brown mottled grey slightly sandy CLAY. Sand is fine to coarse. [WOLSTON GLACIGENIC FORMATION]		
2.00 - 2.50	B			(0.50)				
2.10	D							
2.50	D		72.10	2.50		End of Trial Pit at 2.50m		
2.50	ES							

1 2 3 4 5

Trial Pit Photographs/Sketches

Dimensions of Trial Pit:

Final Depth: 2.50m



Inclination: 90°

Remarks:

TP103 terminated at 2.5m . Dug with a 3CX excavator. No water strike. Backfilled with arisings. Coordinates taken as as-builts.

Water Strike

Strike	Time (mins)	Rose to (m)	Remarks
	0	0.00	No water strike.

STRATA GEOTECHNICS	Contract Name: A46 Walsgrave		Client: Octavius			Borehole ID: WS102
	Contract Number: G230651	Date Started: 15/06/2023	Date Completed: 16/06/2023	Logged: TLY	Checked: IL	Status: FINAL — Sheet 1 of 1
Dynamic Sample Drilling Log	Easting: 438445.2	Northing: 279246.8	Ground Level: 71.43m (OD)	Plant Used: Dart 351	Print Date: 21/12/2023	Scale: 1:50
Weather: Sunny	Rig Crew: Jack Woodhead	Termination: Target Depth		SPT Hammer: DART351 Energy Ratio: 62%		

Samples & In Situ Testing							Strata Details				Groundwater	
Depth	Sample	Test Result	TCR	SCR	RQD	FI/If	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
0.10	D12							(0.30)		MADE GROUND: Dark brown slightly clayey very gravelly fine to coarse SAND with occasional rootlets. Gravel is subangular to rounded fine to coarse of quartzite and brick.		
0.10	ES7						71.13	0.30				
0.10 - 0.25	B22											
0.40	D13	PP 0.50m, 144kPa						(0.60)		Firm dark brown sandy gravelly CLAY with occasional rootlets. Sand is fine to coarse. Gravel is subrounded to rounded fine to coarse of quartzite. [ALLUVIUM]		
0.50	ES8											
0.50 - 0.70	B23											
0.70	D14						70.53	0.90				
1.00	D15											
1.00	ES9	SPT(S) 1.20m, N=4 (1,1/1,1,1,1)								Soft becoming firm brown mottled grey slightly sandy CLAY. Sand is fine to coarse. Organic odour noted. [ALLUVIUM]		
1.20 - 1.65	D1											
1.50	ES10											
1.70 - 2.00	B24	PP 1.80m, 96kPa						(1.85)				
2.00	ES11											
2.00 - 2.50	UT2		100									
2.45 - 2.50	D16											
2.80	D17						68.68	2.75				
3.00 - 3.45	D3	SPT(S) 3.00m, N=9 (1,1/1,3,2,3)					68.53	2.90		Medium dense slightly clayey very sandy fine to coarse subrounded to rounded fine to coarse GRAVEL of quartzite. Sand is fine to medium. [Bagington Sand and Gravel Formation]		
								(0.50)				
3.50 - 3.60	D18						68.03	3.40		Firm orangish brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is subrounded to rounded fine to coarse of quartzite [Bagington Sand and Gravel Formation]		
3.70 - 3.80	D19							(0.30)				
4.00 - 4.45	D4	SPT(S) 4.00m, N=15 (6,5/4,3,4,4)					67.73	3.70		Medium dense brown slightly clayey very sandy subrounded to rounded fine to medium GRAVEL of quartzite. Sand is fine to coarse. [Bagington Sand and Gravel Formation]		
4.80	D20									Firm becoming stiff reddish brown mottled grey slightly sandy CLAY, Sand is fine to coarse. (Fully Weathered Mercia Mudstone Grade IVa)		
5.00 - 5.45	D5	SPT(S) 5.00m, N=22 (4,5/5,6,5,6)						(2.75)				
5.80	D21											
6.00 - 6.45	D6	SPT(S) 6.00m, N=57 (6,7/13,13,15,16)										
							64.98	6.45		End of Borehole at 6.45m		

Start & End of Shift Observations

Date	Time	Depth (m)	Casing (m)	Water (m)
15-06-23	13:00	0.00	0.00	
15-06-23	17:00	2.00	0.00	
16-06-23	07:30	2.00	0.00	1.40
16-06-23	14:00	6.45	0.00	1.40

Flush Return Information

Top	Base	Min %	Max %	Type	Colour

Remarks:

Position was cleared by Octavius prior to excavation. Inspection pit was dug to 1.2m bgl . Groundwater was not encountered. Position was installed upon completion with plain and slotted pipe, bentonite and gravel upon completion. Coordinates taken as as-builts.

Water Strike

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks

Borehole Diameter

Depth (m)	Dia (mm)
4.00	87
6.45	77

Casing Diameter

Depth (m)	Dia (mm)
4.00	100

Coring Information

Top (m)	Base (m)	Dia (mm)	Barrel Type

Fracture Index (FI) - Fractures per meter, Fracture Spacing (If) - reported in mm as Min, Average and Max values. TCR, SCR and RQD reported as %. Hand vane (HV) reports Undrained Shear Strength (Su). Pocket penetrometer (PP) reports Unconfined Compressive Strength (UCS)

STRATA GEOTECHNICS	Contract Name: A46 Walsgrave	Client: Octavius		Borehole ID: WS103
	Contract Number: G230651	Date Started: 14/06/2023	Date Completed: 15/06/2023	Logged: TLY / Checked: IL / Status: FINAL
Dynamic Sample Drilling Log	Easting: 438545.0	Northing: 279426.5	Ground Level: 77.69m (OD)	Plant Used: Dart 351 / Print Date: 21/12/2023 / Scale: 1:50
Weather: Sunny	Rig Crew: Jack Woodhead	Termination: Refusal	SPT Hammer: DART351 Energy Ratio: 62%	Sheet 1 of 1

Depth	Sample	Test Result	TCR	SCR	RQD	FI/If	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
0.10	D14									MADE GROUND: Loose brown slightly clayey gravelly fine to coarse SAND. Gravel is subangular to rounded, fine to coarse of quartzite and brick.		
0.10	ES10											
0.10 - 0.40	B18							(0.80)				
0.40	D15											
0.50	ES11											
0.50 - 0.70	B19						76.89	0.80				
0.70	D16							(0.40)		MADE GROUND: Orangish brown slightly clayey gravelly fine to coarse SAND. Gravels is fine to coarse subangular to rounded, fine to medium of quartzite and brick.		
1.00	D17											
1.00	ES12	SPT(S) 1.20m, N=12 (3,3/3,3,3,3)					76.49	1.20				
1.00 - 1.20	B20						76.29	1.40		Firm orangish brown mottled grey sandy gravelly CLAY. Sand is fine to coarse. Gravels is subrounded to rounded fine to coarse of quartzite. [Bagington Sand and Gravel Formation]		
1.20 - 1.65	D1		100									
1.20 - 2.00	L6	PP 1.70m, 144kPa					76.04	1.65				
1.70 - 1.90	B21						75.79	1.90				
2.00	ES13	SPT(S) 2.00m, N=9 (6,4/2,2,4,1)						(0.40)		Medium dense reddish brown slightly clayey gravelly fine to coarse SAND. Gravels is subrounded to rounded fine to coarse of quartzite. [Bagington Sand and Gravel Formation]		
2.00 - 2.45	D2						75.39	2.30				
2.00 - 3.00	L7		100					(0.45)		Firm orangish brown mottled grey sandy slightly gravelly CLAY. Sand is fine to coarse. Gravels is subrounded to rounded fine to coarse of quartzite. [Bagington Sand and Gravel Formation]		
2.80 - 3.00	B22						74.94	2.75				
3.00 - 3.50	UT3	Ublow=100						(0.70)		Loose orangish brown gravelly very clayey SAND with occasional pockets of very sandy CLAY. Gravel is subrounded to sounded fine to coarse of quartzite. [Bagington Sand and Gravel Formation]		
			90									
3.45 - 3.50	D24						74.24	3.45				
3.00 - 4.00	L8											
3.50 - 4.00	B23	PP 3.70m, 336kPa								Firm reddish brown gravelly very sandy CLAY. Sand is fine to coarse with occasional pockets of very clayey sand. Gravel is fine to coarse subrounded to rounded of quartzite. [Bagington Sand and Gravel Formation]		
4.00 - 4.45	D4	SPT(S) 4.00m, N=72 (11,12/13,12,23,24)						(1.60)				
4.00 - 4.60	L9		100									
4.60 - 5.05	D5	SPT(S) 4.60m, N=79 (12,13/20,16,20,23)								Firm becoming stiff greenish grey mottled brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to medium quartzite. (Fully Weathered Mercia Mudstone Grade IVa)		
							72.64	5.05		[Bagington Sand and Gravel Formation]		
										Stiff reddish brown slightly sandy CLAY. Sand is fine to coarse (Fully Weathered Mercia Mudstone Grade IVa)		
										End of Borehole at 5.05m		

Start & End of Shift Observations

Date	Time	Depth (m)	Casing (m)	Water (m)
14-06-23	13:00	0.00	0.00	
14-06-23	17:00	1.20	0.00	
15-06-23	07:30	1.20	0.00	
15-06-23	12:00	5.05	0.00	

Flush Return Information

Top	Base	Min %	Max %	Type	Colour

Remarks:

Position was cleared by Octavius prior to excavation. Inspection pit was dug to 1.2m bgl . Groundwater was not encountered. Position was installed upon completion with plain and slotted pipe, bentonite and gravel upon completion. Coordinates taken as as-builts.

Water Strike

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks

Borehole Diameter

Depth (m)	Dia (mm)
2.00	101
4.00	87
5.05	77

Casing Diameter

Depth (m)	Dia (mm)
0.00	0

Coring Information

Top (m)	Base (m)	Dia (mm)	Barrel Type

Fracture Index (FI) - Fractures per meter, Fracture Spacing (If) - reported in mm as Min, Average and Max values. TCR, SCR and RQD reported as %. Hand vane (HV) reports Undrained Shear Strength (Su). Pocket penetrometer (PP) reports Unconfined Compressive Strength (UCS)

STRATA GEOTECHNICS	Contract Name: A46 Walsgrave		Client: Octavius			Borehole ID: WS104
	Contract Number: G230651	Date Started: 16/05/2023	Date Completed: 17/05/2023	Logged: SY/AH	Checked: IL	Status: FINAL / Sheet 1 of 2
Dynamic Sample Drilling Log	Easting: 438648.6	Northing: 279815.1	Ground Level: 75.29m (OD)	Plant Used: Dart 351	Print Date: 21/12/2023	Scale: 1:50
Weather: Fine	Rig Crew: Tom Shotter	Termination: Refusal		SPT Hammer: DART351 Energy Ratio: 62%		

Depth	Sample	Test Result	TCR	SCR	RQD	FI/If	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
0.00 - 0.40	B3	PID 0.10m, 0.1ppm						(0.40)		TOPSOIL: Dark brown, sandy CLAY. Sand is fine to coarse		
0.10 - 0.20	D2											
0.10 - 0.20	ES1						74.89	0.40		Orangish brown, silty, gravelly, fine to coarse SAND. Gravel is fine to coarse, subrounded quartzite [WOLSTON GLACIGENIC FORMATION]		
0.50 - 0.60	ES4	PID 0.50m, 0.0ppm										
0.70 - 0.80	D5							(0.80)				
1.00	ES	PID 1.00m, 0.5ppm										
1.00 - 1.20	B	SPT(S) 1.20m, N=24 (2,5/6,6,6,6)	50				74.09	1.20		Stiff becoming firm, reddish brown, slightly gravelly, sandy CLAY. Sand is fine. Gravel is fine to coarse, angular to rounded quartzite and mudstone [WOLSTON GLACIGENIC FORMATION]		
1.00 - 1.20	B7											
1.10 - 1.20	D8											
1.20 - 1.65	D											
1.20 - 1.65	D18											
1.20 - 2.00	B9											
1.50 - 1.60	ES10	SPT(S) 2.00m, N=5 (1,1/2,1,1,1)	75					(1.55)				
1.80 - 1.90	D11											
2.00 - 2.45	D19											
2.50 - 2.60	ES12											
2.60 - 2.75	D13											
2.75 - 3.00	D						72.54	2.75		Stiff becoming firm, reddish brown, slightly gravelly, sandy CLAY. Sand is fine. Gravel is fine to coarse, angular to rounded quartzite and mudstone [Bagington Sand and Gravel Formation]		
2.75 - 3.00	D14											
3.00 - 3.40	D15	SPT(S) 3.00m, N=28 (3,4/7,7,7,7)					72.29	3.00				
								(0.40)				
3.40 - 3.70	B16						71.89	3.40		Medium dense orangish brown, silty, sandy GRAVEL of fine to coarse, subangular to rounded quartzite [Bagington Sand and Gravel Formation]		
3.50 - 3.60	D17											
								(0.50)				
3.90 - 4.29	D	SPT(S) 3.90m, 50 (7,9/50 for 245mm)	20				71.39	3.90		Stiff, reddish brown, slightly gravelly, sandy CLAY. Sand is fine. Gravel is fine to coarse, subangular to rounded quartzite and mudstone. (Partially Weathered Mercia Mudstone Grade IVb).		
3.90 - 4.29	D20									End of Borehole at 3.90m		

Start & End of Shift Observations

Date	Time	Depth (m)	Casing (m)	Water (m)
16-05-23	07:30	0.00	0.00	0.00
16-05-23	15:30	3.90	2.00	1.20
17-05-23	07:30	3.90	2.00	1.20
17-05-23	12:15	3.90	2.00	1.20
17-05-23	13:30	0.00	0.00	0.00

Flush Return Information

Top	Base	Min %	Max %	Type	Colour

Borehole Diameter

Depth (m)	Dia (mm)
3.90	87

Casing Diameter

Depth (m)	Dia (mm)
2.00	87

Coring Information

Top (m)	Base (m)	Dia (mm)	Barrel Type

Remarks:

Position was cleared by Octavius prior to excavation. Inspection pit was dug to 1.2m bgl . Groundwater was encountered at 2.0m bgl but rose to 1.2m bgl. Position was installed upon completion with plain and slotted pipe, bentonite and gravel upon completion. Coordinates are taken as

Water Strike

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
2.00	2.00	2.00	20	1.20	

Fracture Index (FI) - Fractures per meter, Fracture Spacing (If) - reported in mm as Min, Average and Max values. TCR, SCR and RQD reported as %. Hand vane (HV) reports Undrained Shear Strength (Su). Pocket penetrometer (PP) reports Unconfined Compressive Strength (UCS)

STRATA GEOTECHNICS	Contract Name: A46 Walsgrave		Client: Octavius	Borehole ID: WS104
	Contract Number: G230651	Date Started: 16/05/2023	Date Completed: 17/05/2023	Logged: SY/AH / Checked: IL / Status: FINAL
Dynamic Sample Drilling Log	Easting: 438648.6	Northing: 279815.1	Ground Level: 75.29m (OD)	Plant Used: Dart 351 / Print Date: 21/12/2023 / Scale: 1:50
Weather: Fine	Rig Crew: Tom Shotter	Termination: Refusal	SPT Hammer: DART351 Energy Ratio: 62%	Sheet 2 of 2

Samples & In Situ Testing							Strata Details				Groundwater	
Depth	Sample	Test Result	TCR	SCR	RQD	FI/If	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation

11 12 13 14 15 16 17 18 19 20

Start & End of Shift Observations				
Date	Time	Depth (m)	Casing (m)	Water (m)

Flush Return Information					
Top	Base	Min %	Max %	Type	Colour

Remarks:
as-builts

Water Strike					
Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks

Borehole Diameter		Casing Diameter	
Depth (m)	Dia (mm)	Depth (m)	Dia (mm)

Coring Information			
Top (m)	Base (m)	Dia (mm)	Barrel Type

Fracture Index (FI) - Fractures per meter, Fracture Spacing (If) - reported in mm as Min, Average and Max values. TCR, SCR and RQD reported as %. Hand vane (HV) reports Undrained Shear Strength (Su). Pocket penetrometer (PP) reports Unconfined Compressive Strength (UCS)

STRATA GEOTECHNICS	Contract Name: A46 Walsgrave		Client: Octavius				Borehole ID: WS105
	Contract Number: G230651	Date Started: 24/05/2023	Date Completed: 25/05/2023	Logged: LJ	Checked: IL	Status: FINAL	Sheet 1 of 1
Dynamic Sample Drilling Log	Easting: 438763.4	Northing: 280131.1	Ground Level: 74.48m (OD)	Plant Used: DART 351		Print Date: 21/12/2023	Scale: 1:50
Weather: Sunny	Rig Crew: TS, SJ	Termination: Refusal					

Samples & In Situ Testing							Strata Details				Groundwater	
Depth	Sample	Test Result	TCR	SCR	RQD	FI/If	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
0.00 - 0.10	ES11							(0.30)		TOPSOIL: Brown firm sandy gravelly CLAY. Sand is fine to coarse, gravel is fine to coarse rounded of quartzite and angular to subangular of flint. Frequent hay approx 3cm in length and roots approx 15cm in length.		
0.00 - 0.30	BB1						74.18	0.30				
0.20 - 0.30	DD1						73.98	0.50		TOPSOIL: Dark brown firm sandy gravelly CLAY. Sand is fine to coarse, gravel is fine to coarse angular to rounded of quartzite with frequent hay approx 3cm in length and rare red brick fragments		
0.30 - 0.50	BB2							(0.30)				
0.40	ES						73.68	0.80				
0.40 - 0.50	ES13							(0.40)		TOPSOIL: Dark brown stiff slightly gravelly sandy CLAY. Sand is fine to coarse, gravel is fine to coarse angular to subangular of quartzite		
0.50 - 0.60	DD2						73.28	1.20		Soft reddish brown mottled grey very stiff slightly sandy slightly gravelly CLAY. Sand is fine to coarse, gravel is fine angular of sandstone . Occasional rootlets and hay approx 3cm in length [WOLSTON GLACIGENIC FORMATION]		
0.50 - 0.80	BB3											
0.80 - 0.90	DD3											
0.80 - 1.20	BB4											
0.90 - 1.00	ES14	PID 1.50m, 0.0ppm										
1.10 - 1.20	DD4											
1.40 - 1.50	D12											
1.50	ES											
1.50 - 1.70	ES13	PID 2.00m, 0.0ppm										
1.90 - 2.00	D14											
2.00 - 2.20	ES15											
2.50 - 2.60	D16							(2.70)		Firm reddish brown mottled grey very stiff slightly sandy slightly gravelly CLAY. Gravel is angular of sandstone and coal [WOLSTON GLACIGENIC FORMATION]		
2.90 - 3.00	D17											
3.50 - 3.70	D18											
3.70 - 3.90	D19						70.58	3.90		End of Borehole at 3.90m		

1 2 3 4 5 6 7 8 9 10

Start & End of Shift Observations

Date	Time	Depth (m)	Casing (m)	Water (m)
24-05-23	14:00	1.20		
24-05-23	16:00	3.90		
25-05-23	08:00	3.90		
25-05-23	09:00	1.20		
25-05-23	10:00	0.00		

Flush Return Information

Top	Base	Min %	Max %	Type	Colour

Borehole Diameter

Depth (m)	Dia (mm)
3.90	97

Casing Diameter

Depth (m)	Dia (mm)
2.00	97

Coring Information

Top (m)	Base (m)	Dia (mm)	Barrel Type

Remarks:

Position was cleared by Octavius prior to excavation. Inspection pit was dug to 1.2m bgl. Position was installed upon completion with plain and slotted pipe, bentonite and gravel upon completion.. No groundwater was encountered. Coordinates taken as as-builts.

Water Strike

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks

Fracture Index (FI) - Fractures per meter, Fracture Spacing (If) - reported in mm as Min, Average and Max values. TCR, SCR and RQD reported as %. Hand vane (HV) reports Undrained Shear Strength (Su). Pocket penetrometer (PP) reports Unconfined Compressive Strength (UCS)

STRATA GEOTECHNICS	Contract Name: A46 Walsgrave		Client: Octavius				Borehole ID: WS106
	Contract Number: G230651	Date Started: 07/06/2023	Date Completed: 08/06/2023	Logged: ASH	Checked: SW	Status: FINAL	Sheet 1 of 2
Dynamic Sample Drilling Log	Easting: 438881.9	Northing: 280221.2	Ground Level: 72.57m (OD)	Plant Used: DART 351		Print Date: 21/12/2023	Scale: 1:50
Weather: Sunny	Rig Crew: TS SJ	Termination: Target Depth.		SPT Hammer: DART351 Energy Ratio: 7/62%			

Samples & In Situ Testing							Strata Details				Groundwater	
Depth	Sample	Test Result	TCR	SCR	RQD	FI/If	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
0.10	ES11									Dark brown slightly clayey fine to coarse SAND. [WOLSTON GLACIGENIC FORMATION]		
0.20	D12							(0.40)				
0.30	B13						72.17	0.40		Soft to firm dark brown silty CLAY. [WOLSTON GLACIGENIC FORMATION]		
0.50	B18											
0.50	ES14											
0.60	D16							(0.80)				
0.90	D17											
1.00	B19											
1.00	ES15	SPT(S) 1.20m, N=20 (2,3/3,4,6,7)					71.37	1.20		Very stiff reddish brown mottled grey slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is angular fine to coarse of sandstone, coal and mudstone. (Fully Weathered Mercia Mudstone Grade IVa)		
1.10	D20											
1.20	D21							(0.80)				
1.20 - 1.65	D1											
1.50 - 1.70	ES5											
1.70 - 1.80	D6											
2.00 - 2.50	UT2		90				70.57	2.00		Very stiff poorly laminated in places reddish brown mottled grey slightly sandy CLAY with occasional angular to subangular gravel of sandstone, mudstone and coal. Sand is fine to coarse. (Fully Weathered Mercia Mudstone Grade IVa)		
2.50	UT22											
2.50 - 2.70	ES7											
2.70 - 2.80	D8											
3.00	D23	SPT(S) 3.00m, N=26 (4,4/6,6,6,8)										
3.00 - 3.45	D3							(2.50)				
3.50 - 3.70	D9											
4.00 - 4.50	UT4		20									
4.50 - 4.70	D10						68.07	4.50		Very stiff reddish brown mottled grey slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is angular, fine to coarse of sandstone, coal and mudstone. (Fully Weathered Mercia Mudstone Grade IVa)		
								(0.50)				
5.00	D24						67.57	5.00		End of Borehole at 5.00m		

1 2 3 4 5 6 7 8 9 10

Start & End of Shift Observations

Date	Time	Depth (m)	Casing (m)	Water (m)
07-06-23	11:00	0.00	0.00	
07-06-23	17:00	1.20	0.00	
08-06-23	07:30	1.20	0.00	
08-06-23	15:00	5.00	0.00	

Flush Return Information

Top	Base	Min %	Max %	Type	Colour

Borehole Diameter

Depth (m)	Dia (mm)
2.00	101
5.00	87

Casing Diameter

Depth (m)	Dia (mm)

Coring Information

Top (m)	Base (m)	Dia (mm)	Barrel Type

Remarks:

Position was cleared by Octavius prior to excavation. Inspection pit was dug to 1.2m bgl. Groundwater was not encountered during drilling. Position was installed upon completion with plain and slotted pipe, bentonite and gravel upon completion. Coordinates are taken as as-

Water Strike

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks

Fracture Index (FI) - Fractures per meter, Fracture Spacing (If) - reported in mm as Min, Average and Max values. TCR, SCR and RQD reported as %. Hand vane (HV) reports Undrained Shear Strength (Su). Pocket penetrometer (PP) reports Unconfined Compressive Strength (UCS)

STRATA GEOTECHNICS	Contract Name: A46 Walsgrave		Client: Octavius				Borehole ID: WS106
	Contract Number: G230651	Date Started: 07/06/2023	Date Completed: 08/06/2023	Logged: ASH	Checked: SW	Status: FINAL	Sheet 2 of 2
Dynamic Sample Drilling Log	Easting: 438881.9	Northing: 280221.2	Ground Level: 72.57m (OD)	Plant Used: DART 351		Print Date: 21/12/2023	Scale: 1:50
Weather: Sunny	Rig Crew: TS SJ	Termination: Target Depth.		SPT Hammer: DART351 Energy Ratio: 7/62%			

Samples & In Situ Testing							Strata Details				Groundwater	
Depth	Sample	Test Result	TCR	SCR	RQD	FI/If	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation

11 12 13 14 15 16 17 18 19 20

Start & End of Shift Observations				
Date	Time	Depth (m)	Casing (m)	Water (m)

Flush Return Information					
Top	Base	Min %	Max %	Type	Colour

Remarks:
builts.

Water Strike					
Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks

Borehole Diameter		Casing Diameter	
Depth (m)	Dia (mm)	Depth (m)	Dia (mm)

Coring Information			
Top (m)	Base (m)	Dia (mm)	Barrel Type

Fracture Index (FI) - Fractures per meter, Fracture Spacing (If) - reported in mm as Min, Average and Max values. TCR, SCR and RQD reported as %. Hand vane (HV) reports Undrained Shear Strength (Su). Pocket penetrometer (PP) reports Unconfined Compressive Strength (UCS)

STRATA GEOTECHNICS	Contract Name: A46 Walsgrave		Client: Octavius			Borehole ID: WS107
	Contract Number: G230651	Date Started: 18/05/2023	Date Completed: 18/05/2023	Logged: SY	Checked: SW	Status: FINAL
Dynamic Sample Drilling Log	Easting: 438560.8	Northing: 279856.5	Ground Level: 74.62m (OD)	Plant Used: Dart 351	Print Date: 21/12/2023	Scale: 1:50
Weather: Sunny	Rig Crew: Tom Shotter	Termination: Refusal.		SPT Hammer: DART 351 Energy Ratio: 62%		Sheet 1 of 1

Samples & In Situ Testing							Strata Details				Groundwater	
Depth	Sample	Test Result	TCR	SCR	RQD	FI/If	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
0.10 - 0.20	ES1							(0.40)		Soft dark brown gravelly CLAY. Gravel is subrounded to rounded fine to coarse of chert and quartzite. [ALLUVIUM]		
0.20 - 0.30	B7											
0.30 - 0.40	D3						74.22	0.40		Orangish brown clayey gravelly SAND. Sand is fine to coarse. Gravel is subrounded to rounded fine to coarse of quartzite and chert. [ALLUVIUM]		
0.50 - 0.60	B8							(0.50)				
0.50 - 0.60	ES2											
0.60 - 0.70	D4											
0.90 - 1.00	D6						73.72	0.90		Firm orange brown mottled grey slightly sandy CLAY. Sand is fine to coarse. [ALLUVIUM]		
1.00 - 1.10	B9											
1.00 - 1.10	ES5	HV 1.20m, 10/0kPa						(0.60)				
1.20 - 1.30	D10											
1.20 - 1.70	B13	PID 1.50m, 0.3ppm					73.12	1.50		Firm brown sandy CLAY with rootlets. Sand is fine to coarse. [ALLUVIUM]		
1.50 - 1.70	ES11	PID 1.70m, 0.3ppm						(0.50)				
1.90 - 2.00	D12											
2.00 - 2.40	ES14	SPT(S) 2.00m, N=16 (3,4/4,4,4,4) HV 2.00m, 20/0kPa					72.62	2.00		Medium dense orange brown very silty fine to medium SAND. [Bagington Sand and Gravel Formation]		
2.50 - 2.60	D15	PID 2.00m, 1.7ppm						(0.90)				
2.60 - 2.90	B16											
2.90 - 3.00	D17						71.72	2.90		Firm brown sandy CLAY. Sand is fine to coarse. [Bagington Sand and Gravel Formation]		
3.00 - 3.50	D18	SPT(S) 3.00m, N=20 (5,5/5,5,5,5) HV 3.00m, 20/0kPa					71.62	3.00		Medium dense orangish brown fine to coarse SAND. [Bagington Sand and Gravel Formation]		
										3.50 - 4.00: No recovery - driller notes normal drilling		
								(1.45)				
		SPT(S) 4.00m, N=14 (3,4/3,3,5,3)										
							70.17	4.45		End of Borehole at 4.45m		

Groundwater: Water Strike ▼ at 1 m

Start & End of Shift Observations				
Date	Time	Depth (m)	Casing (m)	Water (m)
18-05-23	00:00	3.00	0.00	1.00
18-05-23	17:00	4.45	2.00	1.00

Flush Return Information					
Top	Base	Min %	Max %	Type	Colour

Remarks:

Position was cleared by Octavius prior to excavation. Inspection pit was dug to 1.2m bgl Groundwater was encountered at 1.0m and did not rise. Position was backfilled with bentonite. Coordinates are taken as as-builts.

Water Strike					
Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
1.00	0.00	2.00	20	1.00	

Borehole Diameter	
Depth (m)	Dia (mm)
1.20	200
3.00	87
4.45	77

Casing Diameter	
Depth (m)	Dia (mm)
2.00	150

Coring Information			
Top (m)	Base (m)	Dia (mm)	Barrel Type

Fracture Index (FI) - Fractures per meter, Fracture Spacing (If) - reported in mm as Min, Average and Max values. TCR, SCR and RQD reported as %. Hand vane (HV) reports Undrained Shear Strength (Su). Pocket penetrometer (PP) reports Unconfined Compressive Strength (UCS)

STRATA GEOTECHNICS	Contract Name: A46 Walsgrave		Client: Octavius				Borehole ID: WS108
	Contract Number: G230651	Date Started: 18/05/2023	Date Completed: 18/05/2023	Logged: SY	Checked: IL	Status: FINAL	Sheet 1 of 1
Dynamic Sample Drilling Log	Easting: 438500.0	Northing: 279892.5	Ground Level: 73.00m (OD)	Plant Used: Dart 351		Print Date: 21/12/2023	Scale: 1:50
Weather: Sunny	Rig Crew: TS	Termination: Refusal		SPT Hammer: DART 351 Energy Ratio: 62%			

Samples & In Situ Testing							Strata Details				Groundwater	
Depth	Sample	Test Result	TCR	SCR	RQD	FI/If	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
0.10	ES1							(0.40)		TOPSOIL: Dark brown sandy gravelly CLAY with rootlets. Sand is fine to coarse. Gravel is fine to coarse of quartzite.		
0.10 - 0.20	BB1											
0.10 - 0.20	ES10						72.60	0.40		Orangish brown gravelly CLAY. Gravel is fine to coarse sub angular of quartzite.		
0.30 - 0.40	DD1							(0.40)				
0.50	ES2									[Bagington Sand and Gravel Formation]		
0.50 - 0.60	BB2						72.20	0.80		Oragnish brown slightly clayey subangular gravelly SAND. Gravel is subangular fine to coarse of quartzite.		
0.50 - 0.60	ES12							(0.40)				
0.60 - 0.70	DD2									[Bagington Sand and Gravel Formation]		
0.90 - 1.00	DD3						71.80	1.20		Orangish brown clayey sandy angular to rounded fine to coarse GRAVEL of quartz and sandstone with bands (<50mm) of firm brown sandy gravelly clay. Sand is fine to coarse.		
1.00 - 1.10	BB3											
1.00 - 1.10	ES15	PID 1.50m, 0.4ppm						(0.70)				
1.20 - 1.30	DD4											
1.30 - 1.90	BB4									[Bagington Sand and Gravel Formation]		
1.50	ES4						71.10	1.90		Firm brown sandy very gravelly CLAY. Gravel is angular fine to coarse of mudstone. (Fully Weathered Mercia Mudstone Grade IVa)		
1.50 - 1.70	ES16											
1.90 - 2.00	DD5											
2.50	ES5	PID 2.50m, 0.7ppm										
2.50 - 2.70	ES17							(1.60)				
3.00 - 3.50	B5	SPT(S) 3.00m, N=38 (1,4/6,7,13,12)										
3.00 - 3.50	BB5											
3.30 - 3.40	DD6											
		SPT(S) 3.50m, 50 (4,5/50 for 250mm)					69.50	3.50		End of Borehole at 3.50m		

1 2 3 4 5 6 7 8 9 10

Start & End of Shift Observations

Date	Time	Depth (m)	Casing (m)	Water (m)
18-05-23	00:00	0.00	0.00	
18-05-23	08:00	3.50	2.00	

Flush Return Information

Top	Base	Min %	Max %	Type	Colour

Remarks:

Position was cleared by Octavius prior to excavation. Inspection pit was dug to 1.2m bgl . Groundwater was not encountered during drilling. Borehole was backfilled with arisings upon completion. Coordinates are taken as as-builts

Water Strike

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks

Borehole Diameter

Depth (m)	Dia (mm)
2.00	97
3.50	87

Casing Diameter

Depth (m)	Dia (mm)
2.00	100

Coring Information

Top (m)	Base (m)	Dia (mm)	Barrel Type

Fracture Index (FI) - Fractures per meter, Fracture Spacing (If) - reported in mm as Min, Average and Max values. TCR, SCR and RQD reported as %. Hand vane (HV) reports Undrained Shear Strength (Su). Pocket penetrometer (PP) reports Unconfined Compressive Strength (UCS)

STRATA GEOTECHNICS	Contract Name: A46 Walsgrave		Client: Octavius				Borehole ID: WS109
	Contract Number: G230651	Date Started: 19/05/2023	Date Completed: 22/05/2023	Logged: SY / ASH	Checked: SW	Status: FINAL	Sheet 1 of 1
Dynamic Sample Drilling Log	Easting: 438434.9	Northing: 279931.0	Ground Level: 71.04m (OD)	Plant Used: Dart 351		Print Date: 21/12/2023	Scale: 1:50
Weather: Sunny	Rig Crew: Tom Shotter	Termination: Collapsed to 3.00m				SPT Hammer: DART 351 Energy Ratio: 62%	

Samples & In Situ Testing							Strata Details				Groundwater	
Depth	Sample	Test Result	TCR	SCR	RQD	FI/If	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
0.10 - 0.20	D3							(0.30)		Soft dark brown slightly silty CLAY. [ALLUVIUM]		
0.10 - 0.20	ES9						70.74	0.30		Soft orangish brown CLAY [ALLUVIUM]		
0.20 - 0.30	B1											
0.40 - 0.50	D4											
0.50 - 0.60	ES10											
0.70 - 0.80	D5											
0.90 - 1.00	B2							(1.20)				
0.90 - 1.00	BB2											
1.00 - 1.10	D6	HV 1.20m, 25/10kPa										
1.00 - 1.10	ES11											
1.20	ES	PID 1.20m, 0.2ppm					69.54	1.50		Soft brown sandy CLAY. Sand is fine to coarse. [ALLUVIUM]		
1.20 - 1.40	ES12	PID 1.50m, 0.1ppm					69.34	1.70		Firm fibrous brown sandy PEAT. Sand is fine to coarse. [ALLUVIUM]		
1.40 - 1.50	D7	PID 1.70m, 0.3ppm						(0.30)				
1.50 - 1.70	ES13						69.04	2.00		Firm dark red brown mottled grey sandy gravelly CLAY. Sand is fine to coarse. Gravel is subangular to rounded fine to coarse of quartz [ALLUVIUM]		
1.70	ES	SPT(S) 2.00m, N=9 (4,2/2,2,3,2)										
1.70 - 2.00	ES14							(0.60)				
2.00 - 2.50	ES15	HV 2.00m, 35/10kPa										
2.00 - 2.50	UT17											
2.60 - 2.80	D8	PID 2.00m, 0.5ppm					68.44	2.60		Orangish brown clayey sandy angular to rounded fine to coarse GRAVEL of quartz and sandstone. Sand is fine to coarse. [RIVER TERRACE DEPOSITS]		
2.80 - 3.00	ES16	PID 2.80m, 7.0ppm						(0.40)				
		SPT(S) 3.00m, N=50 (4,10/11,13,16,10)					68.04	3.00		End of Borehole at 3.00m		

1 2 3 4 5 6 7 8 9 10

Start & End of Shift Observations

Date	Time	Depth (m)	Casing (m)	Water (m)
19-05-23	00:00	0.00	0.00	
19-05-23	08:00	1.20	0.00	
22-05-23	00:00	3.00	2.00	

Flush Return Information

Top	Base	Min %	Max %	Type	Colour

Remarks:

Position was cleared by Octavius prior to excavation. Inspection pit was dug to 1.2m bgl. Position was installed upon completion with plain and slotted pipe, bentonite and gravel upon completion. Groundwater was not encountered during drilling. Coordinates are taken as as-builts.

Water Strike

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks

Borehole Diameter

Depth (m)	Dia (mm)
3.00	97

Casing Diameter

Depth (m)	Dia (mm)
2.00	100

Coring Information

Top (m)	Base (m)	Dia (mm)	Barrel Type

Fracture Index (FI) - Fractures per meter, Fracture Spacing (If) - reported in mm as Min, Average and Max values. TCR, SCR and RQD reported as %. Hand vane (HV) reports Undrained Shear Strength (Su). Pocket penetrometer (PP) reports Unconfined Compressive Strength (UCS)

Appendix C: Infiltration Results

SOIL INFILTRATION RATE TEST

In accordance with BRE Digest 365 (1991 with amendments in 2003, 2007, 2016)

Date	22/05/2023	Pit ID:	TP101
Client: Octavius Infrastructure	Job No:	G230651	Engineer MN
Job A46 Walsgrave Junction	Time to fill pit:	2 minutes	Time at start of test: 09:35:00

Trial pit filled with gravel to prevent instability?: No

Pit Dimensions (m)	
Length	2.00
Width	0.50
Depth	3.00
Water level prior to test	0.63

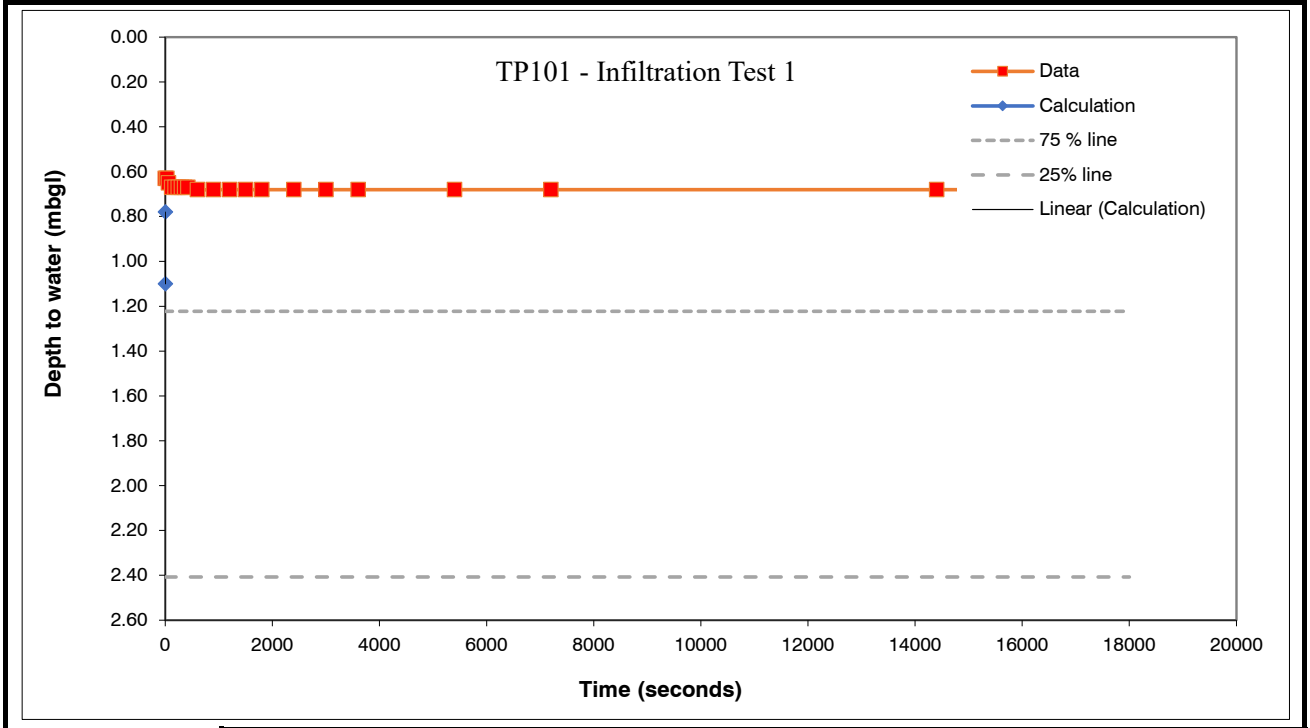
	Depth of water (mbgl)		Time (s)
Start depth / time for calculations:	75%	0.78	NA
End depth for time calculations:	25%	1.10	NA

Infilling 1

Soil Infiltration Rate (f)

Test not completed

Elapsed Time		Depth recorded on dip meter	Depth of water from base
Minutes	Seconds	(m bgl)	(m)
0	0	0.63	2.37
0.5	30	0.63	2.37
1	60	0.65	2.35
2	120	0.67	2.33
3	180	0.67	2.33
4	240	0.67	2.33
5	300	0.67	2.33
6	360	0.67	2.33
7	420	0.67	2.33
10	600	0.68	2.32
15	900	0.68	2.32
20	1200	0.68	2.32
25	1500	0.68	2.32
30	1800	0.68	2.32
40	2400	0.68	2.32
50	3000	0.68	2.32
60	3600	0.68	2.32
90	5400	0.68	2.32
120	7200	0.68	2.32
240	14400	0.68	2.32
300	18000	0.68	2.32



Remarks: No additonal soaks undertaken. No further drain in 24h

Appendix D: Laboratory Results

[redacted]

i2 Analytical Ltd.
7 Woodshots Meadow,
Croxley Green
Business Park,
Watford,
Herts,
WD18 8YS

t: [redacted]
e: [redacted]

t: 01923 225404
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e: reception@i2analytical.com

Analytical Report Number : 23-32866

Project / Site name:	A46 Walsgrave	**Samples received on:**	05/05/2023
Your job number:	G230651	**Samples instructed on/ Analysis started on:**	09/05/2023
Your order number:	VE297338	**Analysis completed by:**	18/05/2023
Report Issue Number:	1	**Report issued on:**	18/05/2023
Samples Analysed:	5 leachate samples - 5 soil samples		

[redacted]

For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41-711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils	- 4 weeks from reporting
leachates	- 2 weeks from reporting
waters	- 2 weeks from reporting
asbestos	- 6 months from reporting

Excel copies of reports are only valid when accompanied by this PDF certificate.

Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement.
Application of uncertainty of measurement would provide a range within which the true result lies.
An estimate of measurement uncertainty can be provided on request.

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report relate only to the sample(s) submitted for testing.

Analytical Report Number: 23-32866
Project / Site name: A46 Walsgrave
Your Order No: VE297338

Lab Sample Number				2673772	2673773	2673774	2673775	2673776
Sample Reference				BH102	BH102	BH102	BH103	BH103
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				1.10-1.20	1.60-1.70	2.30-2.40	0.50-0.60	1.00-1.10
Date Sampled				04/05/2023	04/05/2023	04/05/2023	04/05/2023	04/05/2023
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Stone Content	%	0.1	NONE	87	87	42	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	2.4	16	15	5.4	9.4
Total mass of sample received	kg	0.001	NONE	1.5	1.5	1.5	1.5	1.5
Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	-	Chrysotile	Chrysotile	-	-
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Detected	Detected	Not-detected	-
Asbestos Quantification (Stage 2)	%	0.001	ISO 17025	-	0.695	< 0.001	-	-
Asbestos Quantification Total	%	0.001	ISO 17025	-	0.695	< 0.001	-	-
Asbestos Analyst ID	N/A	N/A	N/A	MJN	MJN	MJN	MJN	N/A
General Inorganics								
pH - Automated	pH Units	N/A	MCERTS	9.2	7.5	7.2	9.5	7.8
Total Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Complex Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Free Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total Sulphate as SO4	mg/kg	50	MCERTS	95	1200	2500	97	670
Total Organic Carbon (TOC) - Automated	%	0.1	MCERTS	< 0.1	1.3	1	0.4	0.3
Total Phenols								
Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Speciated PAHs								
Naphthalene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Fluorene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Phenanthrene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05	0.17	< 0.05
Anthracene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Fluoranthene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05	0.4	0.06
Pyrene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05	0.38	0.07
Benzo(a)anthracene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05	0.15	< 0.05
Chrysene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05	0.16	< 0.05
Benzo(b)fluoranthene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05	0.17	< 0.05
Benzo(k)fluoranthene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(a)pyrene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05	0.12	< 0.05
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Total PAH								
Speciated Total EPA-16 PAHs	mg/kg	0.8	NONE	< 0.80	< 0.80	< 0.80	1.55	< 0.80

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The results included within the report relate only to the sample(s) submitted for testing.

Analytical Report Number: 23-32866
Project / Site name: A46 Walsgrave
Your Order No: VE297338

Lab Sample Number				2673772	2673773	2673774	2673775	2673776
Sample Reference				BH102	BH102	BH102	BH103	BH103
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				1.10-1.20	1.60-1.70	2.30-2.40	0.50-0.60	1.00-1.10
Date Sampled				04/05/2023	04/05/2023	04/05/2023	04/05/2023	04/05/2023
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	2.8	78	200	2.3	9
Boron (water soluble)	mg/kg	0.2	MCERTS	< 0.2	0.5	1.7	0.4	0.4
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	3.7	31	< 0.2	< 0.2
Chromium (hexavalent)	mg/kg	1.8	MCERTS	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8
Chromium (III)	mg/kg	1	NONE	10	220	480	11	23
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	11	220	480	11	23
Copper (aqua regia extractable)	mg/kg	1	MCERTS	29	580	5100	33	12
Lead (aqua regia extractable)	mg/kg	1	MCERTS	14	300	1700	9.5	11
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	15	400	1100	10	22
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	2.4	< 1.0	< 1.0
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	60	260	8100	44	58
Monoaromatics & Oxygenates								
Benzene##	µg/kg	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Toluene##	µg/kg	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Ethylbenzene	µg/kg	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
p & m-xylene	µg/kg	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
o-xylene###	µg/kg	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Petroleum Hydrocarbons								
TPH-CWG - Aliphatic >EC5 - EC6 $_{HS_1D_AL}$	mg/kg	0.001	NONE	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC6 - EC8 $_{HS_1D_AL}$	mg/kg	0.001	NONE	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC8 - EC10 $_{HS_1D_AL}$	mg/kg	0.001	NONE	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC10 - EC12 $_{EH_CU_1D_AL}$	mg/kg	1	NONE	< 1.0	9	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16 $_{EH_CU_1D_AL}$	mg/kg	2	NONE	< 2.0	77	< 2.0	< 2.0	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21 $_{EH_CU_1D_AL}$	mg/kg	8	NONE	9.4	570	40	< 8.0	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35 $_{EH_CU_1D_AL}$	mg/kg	8	NONE	17	1400	180	29	< 8.0
TPH-CWG - Aliphatic (EC5 - EC35) $_{EH_CU+HS_1D_AL}$	mg/kg	10	NONE	26	2000	220	33	< 10
TPH-CWG - Aromatic >EC5 - EC7 $_{HS_1D_AR}$	mg/kg	0.001	NONE	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC7 - EC8 $_{HS_1D_AR}$	mg/kg	0.001	NONE	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC8 - EC10 $_{HS_1D_AR}$	mg/kg	0.001	NONE	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC10 - EC12 $_{EH_CU_1D_AR}$	mg/kg	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >EC12 - EC16 $_{EH_CU_1D_AR}$	mg/kg	2	NONE	< 2.0	27	< 2.0	< 2.0	< 2.0
TPH-CWG - Aromatic >EC16 - EC21 $_{EH_CU_1D_AR}$	mg/kg	10	NONE	< 10	270	54	< 10	< 10
TPH-CWG - Aromatic >EC21 - EC35 $_{EH_CU_1D_AR}$	mg/kg	10	NONE	12	580	260	23	< 10
TPH-CWG - Aromatic (EC5 - EC35) $_{EH_CU+HS_1D_AR}$	mg/kg	10	NONE	17	870	310	25	< 10

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

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The results included within the report relate only to the sample(s) submitted for testing.

Analytical Report Number: 23-32866
Project / Site name: A46 Walsgrave
Your Order No: VE297338

Certificate of Analysis - Asbestos Quantification

Methods:

Qualitative Analysis

The samples were analysed qualitatively for asbestos by polarising light and dispersion staining as described by the Health and Safety Executive in HSG 248.

Quantitative Analysis

The analysis was carried out using our documented in-house method A006-PL based on HSE Contract Research Report No: 83/1996: Development and Validation of an analytical method to determine the amount of asbestos in soils and loose aggregates (Davies et al, 1996) and HSG 248. Our method includes initial examination of the entire representative sample, then fractionation and detailed analysis of each fraction, with quantification by hand picking and weighing.

The limit of detection (reporting limit) of this method is 0.001 %.

The method has been validated using samples of at least 100 g, results for samples smaller than this should be interpreted with caution.

Both Qualitative and Quantitative Analyses are UKAS accredited.

Sample Number	Sample ID	Sample Depth (m)	Sample Weight (g)	Asbestos Containing Material Types Detected (ACM)	PLM Results	Asbestos by hand picking/weighing (%)	Total % Asbestos in Sample
2673773	BH102	1.60-1.70	124	Asbestos Cement	**Chrysotile**	0.695	**0.695**
2673774	BH102	2.30-2.40	103	Loose Fibres	**Chrysotile**	< 0.001	**< 0.001**

Opinions and interpretations expressed herein are outside the scope of UKAS accreditation.

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The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 23-32866
Project / Site name: A46 Walsgrave

Your Order No: VE297338

Lab Sample Number				2673777	2673778	2673779	2673780	2673781
Sample Reference				BH102	BH102	BH102	BH103	BH103
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				1.10-1.20	1.60-1.70	2.30-2.40	0.50-0.60	1.00-1.10
Date Sampled				04/05/2023	04/05/2023	04/05/2023	04/05/2023	04/05/2023
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Leachate Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
General Inorganics								
pH (automated)	pH Units	N/A	ISO 17025	7.5	7.4	7.6	8.5	7.7
Total Cyanide (Low Level 1 µg/l)	mg/l	0.001	ISO 17025	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Complex Cyanide (Low Level)	mg/l	0.001	ISO 17025	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Free Cyanide (Low Level 1 µg/l)	mg/l	0.001	ISO 17025	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Sulphate as SO_4	mg/l	0.1	ISO 17025	1.1	7.6	11.4	3.1	44.2
Ammoniacal Nitrogen as N	mg/l	0.015	NONE	0.055	0.052	0.061	0.11	0.22
Ammoniacal Nitrogen as NH3	mg/l	0.015	NONE	0.067	0.064	0.074	0.14	0.26
Ammoniacal Nitrogen as NH3	mg/l	0.015	NONE	0.067	0.064	0.074	0.14	0.26
Ammoniacal Nitrogen as NH4	mg/l	0.015	NONE	0.071	0.067	0.078	0.15	0.28
Total Phenols								
Total Phenols (monohydric)	mg/l	0.001	ISO 17025	0.0017	< 0.001	0.00.2	0.002	0.0018
Speciated PAHs								
Naphthalene	mg/l	0.00001	ISO 17025	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Acenaphthylene	mg/l	0.00001	ISO 17025	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Acenaphthene	mg/l	0.00001	ISO 17025	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Fluorene	mg/l	0.00001	ISO 17025	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Phenanthrene	mg/l	0.00001	ISO 17025	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Anthracene	mg/l	0.00001	ISO 17025	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Fluoranthene	mg/l	0.00001	ISO 17025	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Pyrene	mg/l	0.00001	ISO 17025	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Benzo(a)anthracene	mg/l	0.00001	ISO 17025	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Chrysene	mg/l	0.00001	ISO 17025	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Benzo(b)fluoranthene	mg/l	0.00001	ISO 17025	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Benzo(k)fluoranthene	mg/l	0.00001	ISO 17025	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Benzo(a)pyrene	mg/l	0.00001	ISO 17025	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Indeno(1,2,3-cd)pyrene	mg/l	0.00001	NONE	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Dibenz(a,h)anthracene	mg/l	0.00001	NONE	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Benzo(ghi)perylene	mg/l	0.00001	NONE	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Total PAH								
Total EPA-16 PAHs	mg/l	0.0002	NONE	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
Heavy Metals / Metalloids								
Arsenic (dissolved)	mg/l	0.001	ISO 17025	0.003	0.002	0.002	0.004	0.003
Boron (dissolved)	mg/l	0.01	ISO 17025	< 0.01	< 0.01	0.03	0.01	0.01
Cadmium (dissolved)	mg/l	0.00008	ISO 17025	< 0.00008	< 0.00008	< 0.00008	< 0.00008	< 0.00008
Chromium (dissolved)	mg/l	0.0004	ISO 17025	0.0011	0.0029	0.0008	< 0.0004	0.0019
Copper (dissolved)	mg/l	0.0007	ISO 17025	0.0072	0.0179	0.0114	0.0035	0.0113
Lead (dissolved)	mg/l	0.001	ISO 17025	< 0.001	0.003	0.004	0.001	0.001
Mercury - CV-AFS	mg/l	0.000007	ISO 17025	< 0.000007	< 0.000007	< 0.000007	< 0.000007	< 0.000007
Nickel (dissolved)	mg/l	0.0003	ISO 17025	0.0009	0.0195	0.0121	< 0.0003	0.0023
Selenium (dissolved)	mg/l	0.004	ISO 17025	< 0.004	< 0.004	< 0.004	< 0.004	< 0.004
Zinc (dissolved)	mg/l	0.0004	ISO 17025	0.0078	0.0223	0.0419	0.0022	0.011

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Analytical Report Number: 23-32866
Project / Site name: A46 Walsgrave

Your Order No: VE297338

Lab Sample Number				2673777	2673778	2673779	2673780	2673781
Sample Reference				BH102	BH102	BH102	BH103	BH103
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				1.10-1.20	1.60-1.70	2.30-2.40	0.50-0.60	1.00-1.10
Date Sampled				04/05/2023	04/05/2023	04/05/2023	04/05/2023	04/05/2023
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Leachate Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Monoaromatics & Oxygenates								
Benzene	mg/l	0.003	ISO 17025	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003
Toluene	mg/l	0.003	ISO 17025	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003
Ethylbenzene	mg/l	0.003	ISO 17025	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003
p & m-xylene	mg/l	0.003	ISO 17025	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003
o-xylene	mg/l	0.003	ISO 17025	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003
MTBE (Methyl Tertiary Butyl Ether)	mg/l	0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Petroleum Hydrocarbons								
TPH-CWG - Aliphatic## >C5 - C6 $_{HS_1D_AL}$	mg/l	0.001	ISO 17025	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >C6 - C8 $_{HS_1D_AL}$	mg/l	0.001	ISO 17025	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic## >C8 - C10 $_{HS_1D_AL}$	mg/l	0.001	ISO 17025	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >C10 - C12 $_{EH_1D_AL_MS}$	mg/l	0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
TPH-CWG - Aliphatic >C12 - C16 $_{EH_1D_AL_MS}$	mg/l	0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
TPH-CWG - Aliphatic >C16 - C21 $_{EH_1D_AL_MS}$	mg/l	0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
TPH-CWG - Aliphatic >C21 - C35 $_{EH_1D_AL_MS}$	mg/l	0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
TPH-CWG - Aliphatic (C5 - C35) $_{HS+EH_1D_AL_MS}$	mg/l	0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
TPH-CWG - Aromatic >C5 - C7 $_{HS_1D_AR}$	mg/l	0.001	ISO 17025	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >C7 - C8 $_{HS_1D_AR}$	mg/l	0.001	ISO 17025	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >C8 - C10 $_{HS_1D_AR}$	mg/l	0.001	ISO 17025	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >C10 - C12 $_{EH_1D_AR_MS}$	mg/l	0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
TPH-CWG - Aromatic >C12 - C16 $_{EH_1D_AR_MS}$	mg/l	0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
TPH-CWG - Aromatic >C16 - C21 $_{EH_1D_AR_MS}$	mg/l	0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
TPH-CWG - Aromatic >C21 - C35 $_{EH_1D_AR_MS}$	mg/l	0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
TPH-CWG - Aromatic (C5 - C35) $_{HS+EH_1D_AR_MS}$	mg/l	0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

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Analytical Report Number : 23-32866
Project / Site name: A46 Walsgrave

* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and loam (MCERTS) soil types. Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
2673772	BH102	None Supplied	1.10-1.20	Brown gravelly sand with stones.
2673773	BH102	None Supplied	1.60-1.70	Brown gravely sand with clinker and gravel
2673774	BH102	None Supplied	2.30-2.40	Brown gravelly sand with stones.
2673775	BH103	None Supplied	0.50-0.60	Brown gravelly sand.
2673776	BH103	None Supplied	1.00-1.10	Brown clay and sand with gravel.

Analytical Report Number : 23-32866
Project / Site name: A46 Walsgrave

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
BS EN 12457-2 (10:1) Leachate Prep	10:1 (as recieved, moisture adjusted) end over end extraction with water for 24 hours. Eluate filtered prior to analysis.	In-house method based on BSEN12457-2.	L043-PL	W	NONE
Asbestos identification in soil	Asbestos Identification with the use of polarised light microscopy in conjunction with dispersion staining techniques.	In house method based on HSG 248	A001-PL	D	ISO 17025
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES.	In-house method based on Second Site Properties version 3	L038-PL	D	MCERTS
Complex cyanide (Low level) in leachate	Determination of complex cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	ISO 17025
Complex Cyanide in soil	Determination of complex cyanide by calculation.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Free cyanide in soil	Determination of free cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
Monohydric phenols in leachate - LOW LEVEL 1 ug/l	Determination of phenols in leachate by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	ISO 17025
Monohydric phenols in soil	Determination of phenols in soil by extraction with sodium hydroxide followed by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	MCERTS
Speciated EPA-16 PAHs in leachate	Determination of PAH compounds in leachate by extraction in dichloromethane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L102B-PL	W	ISO 17025
Speciated EPA-16 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L064-PL	D	NONE
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In house method.	L099-PL	D	MCERTS
pH at 20oC in leachate (automated)	Determination of pH in leachate by electrometric measurement.	In house method.	L099B	W	ISO 17025
Total sulphate (as SO4 in soil)	Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES.	In house method.	L038-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
TPHCWG (Leachates)	Determination of dichloromethane extractable hydrocarbons in leachate by GC-MS.	In-house method	L070-PL	W	ISO 17025

Analytical Report Number : 23-32866
Project / Site name: A46 Walsgrave

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Total cyanide in soil	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Total organic carbon (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In house method.	L009-PL	D	MCERTS
BTEX and MTBE in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS. Individual components MCERTS accredited	In-house method based on USEPA8260	L073B-PL	W	NONE
BTEX and MTBE in leachates (Monoaromatics)	Determination of BTEX and MTBE in leachates by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	ISO 17025
Ammonia as NH3 in leachate	Determination of Ammonium/Ammonia/ Ammoniacal Nitrogen by the colorimetric salicylate/nitroprusside method.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082-PL	W	NONE
Ammoniacal Nitrogen as N in leachate	Determination of Ammonium/Ammonia/ Ammoniacal Nitrogen by the discrete analyser (colorimetric) salicylate/nitroprusside method.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082-PL	W	NONE
Metals by ICP-OES in leachate	Determination of metals in leachate by acidification followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L039-PL	W	ISO 17025
Boron in leachate	Determination of boron in leachate. Sample acidified and followed by ICP-OES.	In-house method based on MEWAM	L039-PL	W	ISO 17025
Cr (III) in soil	In-house method by calculation from total Cr and Cr VI.	In-house method by calculation	L080-PL	W	NONE
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method with silica gel split/clean up.	L088/76-PL	W	NONE
Free cyanide in leachate	Determination of free cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	ISO 17025
Total cyanide in leachate - 1µg/l	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L080-PL	W	ISO 17025
Asbestos Quantification - Gravimetric	Asbestos quantification by gravimetric method - in house method based on references.	HSE Report No: 83/1996, HSG 248, HSG 264 & SCA Blue Book (draft).	A006-PL	D	ISO 17025
Ammonium as NH4 in leachate	Determination of ammonium in leachate by addition of buffer solution followed by ion selective electrode.	In-house method	L035-PL	W	NONE
Sulphate in leachates	Determination of sulphate in leachate by acidification followed by ICP-OES.	In-house method based on MEWAM 1986 Methods for the Determination of Metals in Soil""	L039-PL	W	ISO 17025
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in NaOH and addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	MCERTS
D.O. for Gravimetric Quant if Screen/ID positive	Dependent option for Gravimetric Quant if Screen/ID positive scheduled.	In house asbestos methods A001 & A006.	A006-PL	D	NONE

Analytical Report Number : 23-32866
Project / Site name: A46 Walsgrave

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Mercury Low Level in leachate	Mercury in leachate by CV-AFS,	In-house method based on USEPA method 1631	L085-PL	W	ISO 17025

For method numbers ending in 'UK or A' analysis have been carried out in our laboratory in the United Kingdom (WATFORD).
For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).
For method numbers ending in 'PL or B' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.
Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

Information in Support of Analytical Results

List of HWOL Acronyms and Operators

Acronym	Descriptions
HS	Headspace Analysis
MS	Mass spectrometry
FID	Flame Ionisation Detector
GC	Gas Chromatography
EH	Extractable Hydrocarbons (i.e. everything extracted by the solvent(s))
CU	Clean-up - e.g. by Florisil®, silica gel
1D	GC - Single coil/column gas chromatography
2D	GC-GC - Double coil/column gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics
AR	Aromatics
#1	EH_2D_Total but with humics mathematically subtracted
#2	EH_2D_Total but with fatty acids mathematically subtracted
_	Operator - understore to separate acronyms (exception for +)
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total

[redacted]

[redacted]

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Analytical Report Number : 23-32868

Project / Site name:	A46 Walsgrave	**Samples received on:**	05/05/2023
Your job number:	G230651	**Samples instructed on/ Analysis started on:**	09/05/2023
Your order number:	VE297338	**Analysis completed by:**	17/05/2023
Report Issue Number:	1	**Report issued on:**	17/05/2023
Samples Analysed:	2 10:1 WAC Samples		

[redacted]

For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41-711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils	- 4 weeks from reporting
leachates	- 2 weeks from reporting
waters	- 2 weeks from reporting
asbestos	- 6 months from reporting

Excel copies of reports are only valid when accompanied by this PDF certificate.

Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement.
Application of uncertainty of measurement would provide a range within which the true result lies.
An estimate of measurement uncertainty can be provided on request.

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Waste Acceptance Criteria Analytical Results

Report No:	**23-32868**						
					Client:	**VAN ELLE**	
Location	**A46 Walsgrave**				**Landfill Waste Acceptance Criteria**		
Lab Reference (Sample Number)	2673810 / 2673811				**Limits**		
Sampling Date	04/05/2023				Inert Waste Landfill	Stable Non-reactive HAZARDOUS waste in non-hazardous Landfill	Hazardous Waste Landfill
Sample ID	BH102						
Depth (m)	1.60-1.70						
Solid Waste Analysis							
TOC (%)**	1.3				3%	5%	6%
Loss on Ignition (%) **	7.2				--	--	10%
BTEX (µg/kg)###	< 5.0				6000	--	--
Sum of PCBs (mg/kg)	0.24				1	--	--
Mineral Oil (mg/kg) EH_1D_CU_AL	2100				500	--	--
Total PAH (WAC-17) (mg/kg)	< 0.85				100	--	--
pH (units)**	7.8				--	>6	--
Acid Neutralisation Capacity (mmol / kg)	2.9				--	To be evaluated	To be evaluated
Eluate Analysis	10:1			10:1	Limit values for compliance leaching test		
(BS EN 12457 - 2 preparation utilising end over end leaching procedure)	mg/l			mg/kg	using BS EN 12457-2 at L/S 10 l/kg (mg/kg)		
Arsenic *	< 0.0010			< 0.0100	0.5	2	25
Barium *	0.329			3.03	20	100	300
Cadmium *	< 0.0001			< 0.0008	0.04	1	5
Chromium *	0.0009			0.0081	0.5	10	70
Copper *	0.0034			0.031	2	50	100
Mercury *	< 0.0005			< 0.0050	0.01	0.2	2
Molybdenum *	0.0344			0.317	0.5	10	30
Nickel *	0.0091			0.084	0.4	10	40
Lead *	< 0.0010			< 0.010	0.5	10	50
Antimony *	0.014			0.13	0.06	0.7	5
Selenium *	< 0.0040			< 0.040	0.1	0.5	7
Zinc *	0.0031			0.029	4	50	200
Chloride *	16			150	800	15000	25000
Fluoride*	0.22			2.0	10	150	500
Sulphate *	13			120	1000	20000	50000
TDS*	96			880	4000	60000	100000
Phenol Index (Monohydric Phenols) *	< 0.010			< 0.10	1	-	-
DOC	5.60			51.6	500	800	1000
Leach Test Information							
Stone Content (%)	87						
Sample Mass (kg)	1.5						
Dry Matter (%)	84						
Moisture (%)	16						

Results are expressed on a dry weight basis, after correction for moisture content where applicable.

*= UKAS accredited (liquid eluate analysis only)

Stated limits are for guidance only and i2 cannot be held responsible for any discrepencies with current legislation

** = MCERTS accredited

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes as defined by the Waste (England and Wales) Regulations 2011 (as amended) and EA Guidance WM3.
This analysis is only applicable for landfill acceptance criteria (The Environmental Permitting (England and Wales) Regulations) and does not give any indication as to whether a waste may be hazardous or non-hazardous.

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Waste Acceptance Criteria Analytical Results

Report No:	**23-32868**						
					Client:	**VAN ELLE**	
Location	**A46 Walsgrave**						
Lab Reference (Sample Number)	2673812 / 2673813				**Landfill Waste Acceptance Criteria Limits**		
Sampling Date	04/05/2023				Inert Waste Landfill	Stable Non-reactive HAZARDOUS waste in non-hazardous Landfill	Hazardous Waste Landfill
Sample ID	BH102						
Depth (m)	2.30-2.40						
Solid Waste Analysis							
TOC (%)**	1.0				3%	5%	6%
Loss on Ignition (%) **	5.8				--	--	10%
BTEX (µg/kg)###	< 5.0				6000	--	--
Sum of PCBs (mg/kg)	0.027				1	--	--
Mineral Oil (mg/kg) EH_1D_CU_AL	250				500	--	--
Total PAH (WAC-17) (mg/kg)	< 0.85				100	--	--
pH (units)**	7.6				--	>6	--
Acid Neutralisation Capacity (mmol / kg)	2.6				--	To be evaluated	To be evaluated
Eluate Analysis (BS EN 12457 - 2 preparation utilising end over end leaching procedure)	10:1 mg/l			10:1 mg/kg	Limit values for compliance leaching test using BS EN 12457-2 at L/S 10 l/kg (mg/kg)		
Arsenic *	0.0030			0.0230	0.5	2	25
Barium *	0.321			2.43	20	100	300
Cadmium *	0.0004			0.0030	0.04	1	5
Chromium *	0.0005			< 0.0040	0.5	10	70
Copper *	0.0058			0.044	2	50	100
Mercury *	< 0.0005			< 0.0050	0.01	0.2	2
Molybdenum *	0.0054			0.0409	0.5	10	30
Nickel *	0.0097			0.074	0.4	10	40
Lead *	0.012			0.090	0.5	10	50
Antimony *	< 0.0017			< 0.017	0.06	0.7	5
Selenium *	< 0.0040			< 0.040	0.1	0.5	7
Zinc *	0.029			0.22	4	50	200
Chloride *	12			88	800	15000	25000
Fluoride*	0.20			1.5	10	150	500
Sulphate *	14			110	1000	20000	50000
TDS*	95			720	4000	60000	100000
Phenol Index (Monohydric Phenols) *	< 0.010			< 0.10	1	-	-
DOC	3.33			25.2	500	800	1000
Leach Test Information							
Stone Content (%)	42						
Sample Mass (kg)	1.5						
Dry Matter (%)	85						
Moisture (%)	15						

Results are expressed on a dry weight basis, after correction for moisture content where applicable.

*= UKAS accredited (liquid eluate analysis only)

Stated limits are for guidance only and i2 cannot be held responsible for any discrepencies with current legislation

** = MCERTS accredited

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes as defined by the Waste (England and Wales) Regulations 2011 (as amended) and EA Guidance WM3.
This analysis is only applicable for landfill acceptance criteria (The Environmental Permitting (England and Wales) Regulations) and does not give any indication as to whether a waste may be hazardous or non-hazardous.

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Analytical Report Number : 23-32868
Project / Site name: A46 Walsgrave

* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and loam (MCERTS) soil types. Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
2673810	BH102	None Supplied	1.60-1.70	Brown gravely sand with clinker and gravel
2673812	BH102	None Supplied	2.30-2.40	Brown gravelly sand with stones.

Analytical Report Number : 23-32868
Project / Site name: A46 Walsgrave

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
BS EN 12457-2 (10:1) Leachate Prep	10:1 (as recieved, moisture adjusted) end over end extraction with water for 24 hours. Eluate filtered prior to analysis.	In-house method based on BSEN12457-2.	L043-PL	W	NONE
Acid neutralisation capacity of soil	Determination of acid neutralisation capacity by addition of acid or alkali followed by electronic probe.	In-house method based on Guidance an Sampling and Testing of Wastes to Meet Landfill Waste Acceptance""	L046-PL	W	NONE
Loss on ignition of soil @ 450oC	Determination of loss on ignition in soil by gravimetrically with the sample being ignited in a muffle furnace.	In house method.	L047-PL	D	MCERTS
Mineral Oil (Soil) C10 - C40	Determination of mineral oil fraction extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method with silica gel split/clean up.	L076-PL	D	NONE
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
Speciated WAC-17 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270.	L064-PL	D	NONE
PCB's By GC-MS in soil	Determination of PCB by extraction with acetone and hexane followed by GC-MS.	In-house method based on USEPA 8082	L027-PL	D	NONE
pH at 20oC in soil	Determination of pH in soil by addition of water followed by electrometric measurement.	In house method.	L005-PL	W	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Total organic carbon (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In house method.	L009-PL	D	MCERTS
BTEX in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS. Individual components MCERTS accredited	In-house method based on USEPA8260	L073B-PL	W	NONE
Total BTEX in soil (Poland)	Determination of BTEX in soil by headspace GC-MS. Individual components MCERTS accredited	In-house method based on USEPA8260	L073-PL	W	NONE
Metals in leachate by ICP-OES	Determination of metals in leachate by acidification followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil""	L039-PL	W	ISO 17025
Chloride 10:1 WAC	Determination of Chloride colorimetrically by discrete analyser.	In house based on MEWAM Method ISBN 0117516260.	L082-PL	W	ISO 17025
Fluoride 10:1 WAC	Determination of fluoride in leachate by 1:1ratio with a buffer solution followed by Ion Selective Electrode.	In-house method based on Use of Total Ionic Strength Adjustment Buffer for Electrode Determination"	L033B-PL	W	ISO 17025
Sulphate 10:1 WAC	Determination of sulphate in leachate by ICP-OES	In-house method based on MEWAM 1986 Methods for the Determination of Metals in Soil""	L039-PL	W	ISO 17025

Analytical Report Number : 23-32868
Project / Site name: A46 Walsgrave

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Total dissolved solids 10:1 WAC	Determination of total dissolved solids in water by EC probe using a factor of 0.6.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L031	W	ISO 17025
Monohydric phenols 10:1 WAC	Determination of phenols in leachate by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L080-PL	W	ISO 17025
Dissolved organic carbon 10:1 WAC	Determination of dissolved inorganic carbon in leachate by TOC/DOC NDIR Analyser.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L037-PL	W	NONE

For method numbers ending in 'UK or A' analysis have been carried out in our laboratory in the United Kingdom (WATFORD).
For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).
For method numbers ending in 'PL or B' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.
Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

Information in Support of Analytical Results

List of HWOL Acronyms and Operators

Acronym	Descriptions
HS	Headspace Analysis
MS	Mass spectrometry
FID	Flame Ionisation Detector
GC	Gas Chromatography
EH	Extractable Hydrocarbons (i.e. everything extracted by the solvent(s))
CU	Clean-up - e.g. by Florisil®, silica gel
1D	GC - Single coil/column gas chromatography
2D	GC-GC - Double coil/column gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics
AR	Aromatics
#1	EH_2D_Total but with humics mathematically subtracted
#2	EH_2D_Total but with fatty acids mathematically subtracted
_	Operator - understore to separate acronyms (exception for +)
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total

- Quality control parameter failure associated with this result; other checks applied prior to reporting the data have been accepted. The result should be considered as being deviating and may be compromised.

[redacted]

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Analytical Report Number : 23-34274

Project / Site name:	A46 Walsgrave	**Samples received on:**	16/05/2023
Your job number:	G230651	**Samples instructed on/ Analysis started on:**	17/05/2023
Your order number:	VE297719	**Analysis completed by:**	29/05/2023
Report Issue Number:	1	**Report issued on:**	29/05/2023
Samples Analysed:	2 leachate samples - 2 soil samples		

[redacted]

For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41-711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils	- 4 weeks from reporting
leachates	- 2 weeks from reporting
waters	- 2 weeks from reporting
asbestos	- 6 months from reporting

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Analytical Report Number: 23-34274
Project / Site name: A46 Walsgrave
Your Order No: VE297719

Lab Sample Number				2682211	2682212
Sample Reference				BH106	BH106
Sample Number				3	14
Depth (m)				0.30-0.30	2.00-2.00
Date Sampled				12/05/2023	12/05/2023
Time Taken				None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**		
Stone Content	%	0.1	NONE	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	15	12
Total mass of sample received	kg	0.001	NONE	1.2	1.2
General Inorganics					
pH - Automated	pH Units	N/A	MCERTS	7.4	8.4
Total Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0
Complex Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0
Free Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0
Total Sulphate as SO4	mg/kg	50	MCERTS	450	270
Total Organic Carbon (TOC) - Automated	%	0.1	MCERTS	1.8	< 0.1
Total Phenols					
Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0
Speciated PAHs					
Naphthalene	mg/kg	0.05	NONE	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	NONE	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	NONE	< 0.05	< 0.05
Fluorene	mg/kg	0.05	NONE	< 0.05	< 0.05
Phenanthrene	mg/kg	0.05	NONE	< 0.05	< 0.05
Anthracene	mg/kg	0.05	NONE	< 0.05	< 0.05
Fluoranthene	mg/kg	0.05	NONE	0.05	< 0.05
Pyrene	mg/kg	0.05	NONE	0.05	< 0.05
Benzo(a)anthracene	mg/kg	0.05	NONE	< 0.05	< 0.05
Chrysene	mg/kg	0.05	NONE	< 0.05	< 0.05
Benzo(b)fluoranthene	mg/kg	0.05	NONE	0.06	< 0.05
Benzo(k)fluoranthene	mg/kg	0.05	NONE	< 0.05	< 0.05
Benzo(a)pyrene	mg/kg	0.05	NONE	< 0.05	< 0.05
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	NONE	< 0.05	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	NONE	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	NONE	< 0.05	< 0.05
Total PAH					
Speciated Total EPA-16 PAHs	mg/kg	0.8	NONE	< 0.80	< 0.80
Heavy Metals / Metalloids					
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	6.4	9.4
Boron (water soluble)	mg/kg	0.2	MCERTS	0.7	0.3
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2
Chromium (hexavalent)	mg/kg	1.8	MCERTS	< 1.8	< 1.8
Chromium (III)	mg/kg	1	NONE	17	28
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	17	29
Copper (aqua regia extractable)	mg/kg	1	MCERTS	13	9.5
Lead (aqua regia extractable)	mg/kg	1	MCERTS	25	13
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	14	28
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	67	81

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Analytical Report Number: 23-34274
Project / Site name: A46 Walsgrave
Your Order No: VE297719

Lab Sample Number				2682211	2682212
Sample Reference				BH106	BH106
Sample Number				3	14
Depth (m)				0.30-0.30	2.00-2.00
Date Sampled				12/05/2023	12/05/2023
Time Taken				None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**		
Monoaromatics & Oxygenates					
Benzene	µg/kg	5	NONE	< 5.0	< 5.0
Toluene	µg/kg	5	NONE	< 5.0	< 5.0
Ethylbenzene	µg/kg	5	NONE	< 5.0	< 5.0
p & m-xylene	µg/kg	5	NONE	< 5.0	< 5.0
o-xylene	µg/kg	5	NONE	< 5.0	< 5.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	NONE	< 5.0	< 5.0
Petroleum Hydrocarbons					
TPH-CWG - Aliphatic >EC5 - EC6 $_{HS_1D_AL}$	mg/kg	0.001	NONE	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC6 - EC8 $_{HS_1D_AL}$	mg/kg	0.001	NONE	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC8 - EC10 $_{HS_1D_AL}$	mg/kg	0.001	NONE	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC10 - EC12 $_{EH_CU_1D_AL}$	mg/kg	1	NONE	< 1.0	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16 $_{EH_CU_1D_AL}$	mg/kg	2	NONE	< 2.0	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21 $_{EH_CU_1D_AL}$	mg/kg	8	NONE	< 8.0	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35 $_{EH_CU_1D_AL}$	mg/kg	8	NONE	< 8.0	< 8.0
TPH-CWG - Aliphatic (EC5 - EC35) $_{EH_CU+HS_1D_AL}$	mg/kg	10	NONE	< 10	< 10
TPH-CWG - Aromatic >EC5 - EC7 $_{HS_1D_AR}$	mg/kg	0.001	NONE	< 0.001	< 0.001
TPH-CWG - Aromatic >EC7 - EC8 $_{HS_1D_AR}$	mg/kg	0.001	NONE	< 0.001	< 0.001
TPH-CWG - Aromatic >EC8 - EC10 $_{HS_1D_AR}$	mg/kg	0.001	NONE	< 0.001	< 0.001
TPH-CWG - Aromatic >EC10 - EC12 $_{EH_CU_1D_AR}$	mg/kg	1	NONE	< 1.0	< 1.0
TPH-CWG - Aromatic >EC12 - EC16 $_{EH_CU_1D_AR}$	mg/kg	2	NONE	< 2.0	< 2.0
TPH-CWG - Aromatic >EC16 - EC21 $_{EH_CU_1D_AR}$	mg/kg	10	NONE	< 10	< 10
TPH-CWG - Aromatic >EC21 - EC35 $_{EH_CU_1D_AR}$	mg/kg	10	NONE	< 10	< 10
TPH-CWG - Aromatic (EC5 - EC35) $_{EH_CU+HS_1D_AR}$	mg/kg	10	NONE	< 10	< 10

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

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UKAS TESTING
4041

Analytical i2 Environmental Science

Analytical Report Number: 23-34274
Project / Site name: A46 Walsgrave

Your Order No: VE297719

Lab Sample Number				2682213	2682214
Sample Reference				BH106	BH106
Sample Number				3	14
Depth (m)				0.30-0.30	2.00-2.00
Date Sampled				12/05/2023	12/05/2023
Time Taken				None Supplied	None Supplied
Analytical Parameter (Leachate Analysis)	**Units**	**Limit of detection**	**Accreditation Status**		
General Inorganics					
pH (automated)	pH Units	N/A	ISO 17025	7.9	8.1
Total Cyanide (Low Level 1 µg/l)	µg/l	1	ISO 17025	< 1.0	< 1.0
Complex Cyanide (Low Level)	µg/l	1	ISO 17025	< 1.0	< 1.0
Free Cyanide (Low Level 1 µg/l)	µg/l	1	ISO 17025	< 1	< 1
Sulphate as SO_4	mg/l	0.1	ISO 17025	5.1	3.4
Ammoniacal Nitrogen as N	µg/l	15	NONE	21	< 15
Ammoniacal Nitrogen as NH3	µg/l	15	NONE	26	< 15
Ammoniacal Nitrogen as NH3	mg/l	0.015	NONE	0.026	< 0.015
Ammoniacal Nitrogen as NH4	mg/l	0.015	NONE	0.027	< 0.015
Total Phenols					
Total Phenols (monohydric)	µg/l	1	ISO 17025	1.8	1.2
Speciated PAHs					
Naphthalene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Acenaphthylene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Acenaphthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Fluorene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Phenanthrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Benzo(a)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Chrysene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Benzo(b)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Benzo(k)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Benzo(a)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Indeno(1,2,3-cd)pyrene	µg/l	0.01	NONE	< 0.01	< 0.01
Dibenz(a,h)anthracene	µg/l	0.01	NONE	< 0.01	< 0.01
Benzo(ghi)perylene	µg/l	0.01	NONE	< 0.01	< 0.01
Total PAH					
Total EPA-16 PAHs	µg/l	0.2	NONE	< 0.2	< 0.2
Heavy Metals / Metalloids					
Arsenic (dissolved)	mg/l	0.001	ISO 17025	0.002	< 0.001
Boron (dissolved)	mg/l	0.01	ISO 17025	0.02	< 0.01
Cadmium (dissolved)	mg/l	0.00008	ISO 17025	< 0.0001	< 0.0001
Chromium (dissolved)	mg/l	0.0004	ISO 17025	0.0013	0.0014
Copper (dissolved)	mg/l	0.0007	ISO 17025	0.0121	0.0016
Lead (dissolved)	mg/l	0.001	ISO 17025	< 0.001	< 0.001
Mercury - CV-AFS	µg/l	0.007	ISO 17025	< 0.0070	< 0.0070
Nickel (dissolved)	mg/l	0.0003	ISO 17025	0.0014	< 0.0003
Selenium (dissolved)	mg/l	0.004	ISO 17025	< 0.004	< 0.004
Zinc (dissolved)	mg/l	0.0004	ISO 17025	0.0076	0.0033

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Analytical Report Number: 23-34274
Project / Site name: A46 Walsgrave

Your Order No: VE297719

Lab Sample Number				2682213	2682214
Sample Reference				BH106	BH106
Sample Number				3	14
Depth (m)				0.30-0.30	2.00-2.00
Date Sampled				12/05/2023	12/05/2023
Time Taken				None Supplied	None Supplied
Analytical Parameter (Leachate Analysis)	**Units**	**Limit of detection**	**Accreditation Status**		
Monoaromatics & Oxygenates					
Benzene	µg/l	3	ISO 17025	< 3.0	< 3.0
Toluene	µg/l	3	ISO 17025	< 3.0	< 3.0
Ethylbenzene	µg/l	3	ISO 17025	< 3.0	< 3.0
p & m-xylene	µg/l	3	ISO 17025	< 3.0	< 3.0
o-xylene	µg/l	3	ISO 17025	< 3.0	< 3.0
MTBE (Methyl Tertiary Butyl Ether)	µg/l	10	NONE	< 10	< 10
Petroleum Hydrocarbons					
TPH-CWG - Aliphatic >C5 - C6## $_{HS_1D_AL}$	µg/l	1	ISO 17025	< 1.0	< 1.0
TPH-CWG - Aliphatic >C6 - C8## $_{HS_1D_AL}$	µg/l	1	ISO 17025	< 1.0	< 1.0
TPH-CWG - Aliphatic >C8 - C10## $_{HS_1D_AL}$	µg/l	1	ISO 17025	< 1.0	< 1.0
TPH-CWG - Aliphatic >C10 - C12 $_{EH_1D_AL_MS}$	µg/l	10	NONE	< 10	< 10
TPH-CWG - Aliphatic >C12 - C16 $_{EH_1D_AL_MS}$	µg/l	10	NONE	< 10	< 10
TPH-CWG - Aliphatic >C16 - C21 $_{EH_1D_AL_MS}$	µg/l	10	NONE	< 10	< 10
TPH-CWG - Aliphatic >C21 - C35 $_{EH_1D_AL_MS}$	µg/l	10	NONE	< 10	< 10
TPH-CWG - Aliphatic (C5 - C35) $_{HS+EH_1D_AL_MS}$	µg/l	10	NONE	< 10	< 10
TPH-CWG - Aromatic >C5 - C7 $_{HS_1D_AR}$	µg/l	1	ISO 17025	< 1.0	< 1.0
TPH-CWG - Aromatic >C7 - C8 $_{HS_1D_AR}$	µg/l	1	ISO 17025	< 1.0	< 1.0
TPH-CWG - Aromatic >C8 - C10 $_{HS_1D_AR}$	µg/l	1	ISO 17025	< 1.0	< 1.0
TPH-CWG - Aromatic >C10 - C12 $_{EH_1D_AR_MS}$	µg/l	10	NONE	< 10	< 10
TPH-CWG - Aromatic >C12 - C16 $_{EH_1D_AR_MS}$	µg/l	10	NONE	< 10	< 10
TPH-CWG - Aromatic >C16 - C21 $_{EH_1D_AR_MS}$	µg/l	10	NONE	< 10	< 10
TPH-CWG - Aromatic >C21 - C35 $_{EH_1D_AR_MS}$	µg/l	10	NONE	< 10	< 10
TPH-CWG - Aromatic (C5 - C35) $_{HS+EH_1D_AR_MS}$	µg/l	10	NONE	< 10	< 10

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

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Analytical Report Number : 23-34274
Project / Site name: A46 Walsgrave

* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and loam (MCERTS) soil types. Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
2682211	BH106	3	0.30-0.30	Brown clay and loam with vegetation.
2682212	BH106	14	2.00-2.00	Brown clay.

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Analytical Report Number : 23-34274
Project / Site name: A46 Walsgrave

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
BS EN 12457-2 (10:1) Leachate Prep	10:1 (as recieved, moisture adjusted) end over end extraction with water for 24 hours. Eluate filtered prior to analysis.	In-house method based on BSEN12457-2.	L043-PL	W	NONE
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES.	In-house method based on Second Site Properties version 3	L038-PL	D	MCERTS
Complex cyanide (Low level) in leachate	Determination of complex cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	ISO 17025
Complex Cyanide in soil	Determination of complex cyanide by calculation.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Free cyanide in soil	Determination of free cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
Monohydric phenols in leachate - LOW LEVEL 1 ug/l	Determination of phenols in leachate by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	ISO 17025
Monohydric phenols in soil	Determination of phenols in soil by extraction with sodium hydroxide followed by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	MCERTS
Speciated EPA-16 PAHs in leachate	Determination of PAH compounds in leachate by extraction in dichloromethane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L102B-PL	W	ISO 17025
Speciated EPA-16 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L064-PL	D	NONE
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In house method.	L099-PL	D	MCERTS
pH at 20oC in leachate (automated)	Determination of pH in leachate by electrometric measurement.	In house method.	L099B	W	ISO 17025
Total sulphate (as SO4 in soil)	Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES.	In house method.	L038-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
TPHCWG (Leachates)	Determination of dichloromethane extractable hydrocarbons in leachate by GC-MS.	In-house method	L070-PL	W	ISO 17025
Total cyanide in soil	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS

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Analytical Report Number : 23-34274
Project / Site name: A46 Walsgrave

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Total organic carbon (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In house method.	L009-PL	D	MCERTS
BTEX and MTBE in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS. Individual components MCERTS accredited	In-house method based on USEPA8260	L073B-PL	W	NONE
BTEX and MTBE in leachates (Monoaromatics)	Determination of BTEX and MTBE in leachates by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	ISO 17025
Ammonia as NH3 in leachate	Determination of Ammonium/Ammonia/ Ammoniacal Nitrogen by the colorimetric salicylate/nitroprusside method.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082-PL	W	NONE
Ammoniacal Nitrogen as N in leachate	Determination of Ammonium/Ammonia/ Ammoniacal Nitrogen by the discrete analyser (colorimetric) salicylate/nitroprusside method.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082-PL	W	NONE
Metals by ICP-OES in leachate	Determination of metals in leachate by acidification followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L039-PL	W	ISO 17025
Boron in leachate	Determination of boron in leachate. Sample acidified and followed by ICP-OES.	In-house method based on MEWAM	L039-PL	W	ISO 17025
Cr (III) in soil	In-house method by calculation from total Cr and Cr VI.	In-house method by calculation	L080-PL	W	NONE
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method with silica gel split/clean up.	L088/76-PL	W	NONE
Free cyanide in leachate	Determination of free cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	ISO 17025
Total cyanide in leachate - 1µg/l	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L080-PL	W	ISO 17025
Ammonium as NH4 in leachate	Determination of ammonium in leachate by addition of buffer solution followed by ion selective electrode.	In-house method	L035-PL	W	NONE
Sulphate in leachates	Determination of sulphate in leachate by acidification followed by ICP-OES.	In-house method based on MEWAM 1986 Methods for the Determination of Metals in Soil""	L039-PL	W	ISO 17025
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in NaOH and addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	MCERTS
Mercury Low Level in leachate	Mercury in leachate by CV-AFS,	In-house method based on USEPA method 1631	L085-PL	W	ISO 17025

For method numbers ending in 'UK or A' analysis have been carried out in our laboratory in the United Kingdom (WATFORD).
For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).
For method numbers ending in 'PL or B' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.
Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

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Analytical Report Number : 23-34274
Project / Site name: A46 Walsgrave

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status

Information in Support of Analytical Results

List of HWOL Acronyms and Operators

Acronym	Descriptions
HS	Headspace Analysis
MS	Mass spectrometry
FID	Flame Ionisation Detector
GC	Gas Chromatography
EH	Extractable Hydrocarbons (i.e. everything extracted by the solvent(s))
CU	Clean-up - e.g. by Florisil®, silica gel
1D	GC - Single coil/column gas chromatography
2D	GC-GC - Double coil/column gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics
AR	Aromatics
#1	EH_2D_Total but with humics mathematically subtracted
#2	EH_2D_Total but with fatty acids mathematically subtracted
_	Operator - understore to separate acronyms (exception for +)
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total

Quality control parameter has recovery high (outside of limit) however associated result is below the reporting limit, other checks applied prior to reporting the data have been accepted. The result should be considered as being deviating and may be compromised.

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[redacted]
t:
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Analytical Report Number : 23-34663

Project / Site name:	A46 Walsgrave	**Samples received on:**	18/05/2023
Your job number:	G230651	**Samples instructed on/ Analysis started on:**	18/05/2023
Your order number:	VE297719	**Analysis completed by:**	26/05/2023
Report Issue Number:	1	**Report issued on:**	29/05/2023
Samples Analysed:	5 leachate samples - 7 soil samples		

[redacted]
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41-711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils - 4 weeks from reporting
leachates - 2 weeks from reporting
waters - 2 weeks from reporting
asbestos - 6 months from reporting

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Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement.
Application of uncertainty of measurement would provide a range within which the true result lies.
An estimate of measurement uncertainty can be provided on request.

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Analytical Report Number: 23-34663
Project / Site name: A46 Walsgrave
Your Order No: VE297719

Lab Sample Number				2684348	2684349	2684350	2684351	2684352
Sample Reference				BH108	BH108	BH108	BH110	BH110
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.10-0.10	0.50-0.50	2.00-2.00	0.30-0.30	0.50-0.50
Date Sampled				16/05/2023	16/05/2023	16/05/2023	16/05/2023	16/05/2023
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Stone Content	%	0.1	NONE	49	43	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	11	5.8	14	11	3.8
Total mass of sample received	kg	0.001	NONE	1.7	1.7	1.7	1.5	1.7
General Inorganics								
pH - Automated	pH Units	N/A	MCERTS	6.5	6.9	8.2	7.7	8.3
Total Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Complex Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Free Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total Sulphate as SO4	mg/kg	50	MCERTS	430	380	200	400	140
Total Organic Carbon (TOC) - Automated	%	0.1	MCERTS	1.4	1.5	0.1	1.4	0.4
Total Phenols								
Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Speciated PAHs								
Naphthalene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Fluorene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Phenanthrene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Anthracene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Fluoranthene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05	0.16	< 0.05
Pyrene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05	0.17	< 0.05
Benzo(a)anthracene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05	0.13	< 0.05
Chrysene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05	0.14	< 0.05
Benzo(b)fluoranthene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05	0.22	< 0.05
Benzo(k)fluoranthene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05	0.1	< 0.05
Benzo(a)pyrene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05	0.19	< 0.05
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05	0.15	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05	0.21	< 0.05
Total PAH								
Speciated Total EPA-16 PAHs	mg/kg	0.8	NONE	< 0.80	< 0.80	< 0.80	1.47	< 0.80
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	5.4	5.7	8.8	6.9	5.4
Boron (water soluble)	mg/kg	0.2	MCERTS	0.6	0.7	0.4	1	0.4
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	0.3	< 0.2
Chromium (hexavalent)	mg/kg	1.8	MCERTS	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8
Chromium (III)	mg/kg	1	NONE	14	10	30	15	5.8
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	15	11	30	15	6.6
Copper (aqua regia extractable)	mg/kg	1	MCERTS	12	14	13	16	8.6
Lead (aqua regia extractable)	mg/kg	1	MCERTS	24	23	15	33	9.5
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	12	7.6	30	10	6
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	58	44	90	75	34

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Analytical Report Number: 23-34663
Project / Site name: A46 Walsgrave
Your Order No: VE297719

Lab Sample Number				2684348	2684349	2684350	2684351	2684352
Sample Reference				BH108	BH108	BH108	BH110	BH110
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.10-0.10	0.50-0.50	2.00-2.00	0.30-0.30	0.50-0.50
Date Sampled				16/05/2023	16/05/2023	16/05/2023	16/05/2023	16/05/2023
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Monoaromatics & Oxygenates								
Benzene	µg/kg	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Toluene	µg/kg	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Ethylbenzene	µg/kg	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
p & m-xylene	µg/kg	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
o-xylene	µg/kg	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Petroleum Hydrocarbons								
TPH-CWG - Aliphatic >EC5 - EC6 $_{HS_1D_AL}$	mg/kg	0.001	NONE	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC6 - EC8 $_{HS_1D_AL}$	mg/kg	0.001	NONE	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC8 - EC10 $_{HS_1D_AL}$	mg/kg	0.001	NONE	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC10 - EC12 $_{EH_CU_1D_AL}$	mg/kg	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16 $_{EH_CU_1D_AL}$	mg/kg	2	NONE	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21 $_{EH_CU_1D_AL}$	mg/kg	8	NONE	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35 $_{EH_CU_1D_AL}$	mg/kg	8	NONE	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic (EC5 - EC35) $_{EH_CU+HS_1D_AL}$	mg/kg	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >EC5 - EC7 $_{HS_1D_AR}$	mg/kg	0.001	NONE	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC7 - EC8 $_{HS_1D_AR}$	mg/kg	0.001	NONE	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC8 - EC10 $_{HS_1D_AR}$	mg/kg	0.001	NONE	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC10 - EC12 $_{EH_CU_1D_AR}$	mg/kg	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >EC12 - EC16 $_{EH_CU_1D_AR}$	mg/kg	2	NONE	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
TPH-CWG - Aromatic >EC16 - EC21 $_{EH_CU_1D_AR}$	mg/kg	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >EC21 - EC35 $_{EH_CU_1D_AR}$	mg/kg	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic (EC5 - EC35) $_{EH_CU+HS_1D_AR}$	mg/kg	10	NONE	< 10	< 10	< 10	< 10	< 10

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

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Analytical Report Number: 23-34663
Project / Site name: A46 Walsgrave
Your Order No: VE297719

Lab Sample Number				2684353	2684354
Sample Reference				BH110	WS104
Sample Number				None Supplied	None Supplied
Depth (m)				2.00-2.00	1.00-1.10
Date Sampled				16/05/2023	16/05/2023
Time Taken				None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**		
Stone Content	%	0.1	NONE	62	< 0.1
Moisture Content	%	0.01	NONE	9.4	13
Total mass of sample received	kg	0.001	NONE	1.7	1.7
General Inorganics					
pH - Automated	pH Units	N/A	MCERTS	8.5	7.6
Total Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0
Complex Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0
Free Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0
Total Sulphate as SO4	mg/kg	50	MCERTS	210	180
Total Organic Carbon (TOC) - Automated	%	0.1	MCERTS	< 0.1	0.2
Total Phenols					
Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0
Speciated PAHs					
Naphthalene	mg/kg	0.05	NONE	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	NONE	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	NONE	< 0.05	< 0.05
Fluorene	mg/kg	0.05	NONE	< 0.05	< 0.05
Phenanthrene	mg/kg	0.05	NONE	< 0.05	< 0.05
Anthracene	mg/kg	0.05	NONE	< 0.05	< 0.05
Fluoranthene	mg/kg	0.05	NONE	< 0.05	< 0.05
Pyrene	mg/kg	0.05	NONE	< 0.05	< 0.05
Benzo(a)anthracene	mg/kg	0.05	NONE	< 0.05	< 0.05
Chrysene	mg/kg	0.05	NONE	< 0.05	< 0.05
Benzo(b)fluoranthene	mg/kg	0.05	NONE	< 0.05	< 0.05
Benzo(k)fluoranthene	mg/kg	0.05	NONE	< 0.05	< 0.05
Benzo(a)pyrene	mg/kg	0.05	NONE	< 0.05	< 0.05
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	NONE	< 0.05	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	NONE	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	NONE	< 0.05	< 0.05
Total PAH					
Speciated Total EPA-16 PAHs	mg/kg	0.8	NONE	< 0.80	< 0.80
Heavy Metals / Metalloids					
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	3.9	12
Boron (water soluble)	mg/kg	0.2	MCERTS	0.4	0.8
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2
Chromium (hexavalent)	mg/kg	1.8	MCERTS	< 1.8	< 1.8
Chromium (III)	mg/kg	1	NONE	5.6	27
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	5.8	27
Copper (aqua regia extractable)	mg/kg	1	MCERTS	6.2	18
Lead (aqua regia extractable)	mg/kg	1	MCERTS	6.6	13
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	7.2	25
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	17	62

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Analytical Report Number: 23-34663
Project / Site name: A46 Walsgrave
Your Order No: VE297719

Lab Sample Number				2684353	2684354
Sample Reference				BH110	WS104
Sample Number				None Supplied	None Supplied
Depth (m)				2.00-2.00	1.00-1.10
Date Sampled				16/05/2023	16/05/2023
Time Taken				None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**		
Monoaromatics & Oxygenates					
Benzene	µg/kg	5	NONE	< 5.0	< 5.0
Toluene	µg/kg	5	NONE	< 5.0	< 5.0
Ethylbenzene	µg/kg	5	NONE	< 5.0	< 5.0
p & m-xylene	µg/kg	5	NONE	< 5.0	< 5.0
o-xylene	µg/kg	5	NONE	< 5.0	< 5.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	NONE	< 5.0	< 5.0
Petroleum Hydrocarbons					
TPH-CWG - Aliphatic >EC5 - EC6 $_{HS_1D_AL}$	mg/kg	0.001	NONE	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC6 - EC8 $_{HS_1D_AL}$	mg/kg	0.001	NONE	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC8 - EC10 $_{HS_1D_AL}$	mg/kg	0.001	NONE	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC10 - EC12 $_{EH_CU_1D_AL}$	mg/kg	1	NONE	< 1.0	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16 $_{EH_CU_1D_AL}$	mg/kg	2	NONE	< 2.0	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21 $_{EH_CU_1D_AL}$	mg/kg	8	NONE	< 8.0	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35 $_{EH_CU_1D_AL}$	mg/kg	8	NONE	< 8.0	< 8.0
TPH-CWG - Aliphatic (EC5 - EC35) $_{EH_CU+HS_1D_AL}$	mg/kg	10	NONE	< 10	< 10
TPH-CWG - Aromatic >EC5 - EC7 $_{HS_1D_AR}$	mg/kg	0.001	NONE	< 0.001	< 0.001
TPH-CWG - Aromatic >EC7 - EC8 $_{HS_1D_AR}$	mg/kg	0.001	NONE	< 0.001	< 0.001
TPH-CWG - Aromatic >EC8 - EC10 $_{HS_1D_AR}$	mg/kg	0.001	NONE	< 0.001	< 0.001
TPH-CWG - Aromatic >EC10 - EC12 $_{EH_CU_1D_AR}$	mg/kg	1	NONE	< 1.0	2.8
TPH-CWG - Aromatic >EC12 - EC16 $_{EH_CU_1D_AR}$	mg/kg	2	NONE	< 2.0	< 2.0
TPH-CWG - Aromatic >EC16 - EC21 $_{EH_CU_1D_AR}$	mg/kg	10	NONE	< 10	< 10
TPH-CWG - Aromatic >EC21 - EC35 $_{EH_CU_1D_AR}$	mg/kg	10	NONE	< 10	< 10
TPH-CWG - Aromatic (EC5 - EC35) $_{EH_CU+HS_1D_AR}$	mg/kg	10	NONE	< 10	< 10

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

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Analytical Report Number: 23-34663
Project / Site name: A46 Walsgrave

Your Order No: VE297719

Lab Sample Number				2684355	2684356	2684357	2684358	2684359
Sample Reference				BH108	BH108	BH110	BH110	WS104
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.10-0.10	2.00-2.00	0.50-0.50	2.00-2.00	1.00-1.10
Date Sampled				16/05/2023	16/05/2023	16/05/2023	16/05/2023	16/05/2023
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Leachate Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
General Inorganics								
pH (automated)	pH Units	N/A	ISO 17025	7.2	7.9	7.9	7.8	7.3
Total Cyanide (Low Level 1 µg/l)	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Complex Cyanide (Low Level)	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Free Cyanide (Low Level 1 µg/l)	µg/l	1	ISO 17025	< 1	< 1	< 1	< 1	< 1
Sulphate as SO_4	mg/l	0.1	ISO 17025	3.9	3	2.2	1.1	3.4
Ammoniacal Nitrogen as N	µg/l	15	NONE	45	26	40	16	< 15
Ammoniacal Nitrogen as NH3	mg/l	0.015	NONE	0.054	0.032	0.048	0.02	< 0.015
Ammoniacal Nitrogen as NH4	mg/l	0.015	NONE	0.057	0.034	0.051	0.021	< 0.015
Total Phenols								
Total Phenols (monohydric)	µg/l	1	ISO 17025	1.5	1.7	1.2	1.2	1.7
Speciated PAHs								
Naphthalene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Acenaphthylene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Acenaphthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Fluorene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Phenanthrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(a)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Chrysene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(b)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(k)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(a)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Indeno(1,2,3-cd)pyrene	µg/l	0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Dibenz(a,h)anthracene	µg/l	0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(ghi)perylene	µg/l	0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Total PAH								
Total EPA-16 PAHs	µg/l	0.2	NONE	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Heavy Metals / Metalloids								
Arsenic (dissolved)	mg/l	0.001	ISO 17025	< 0.001	0.003	0.002	0.002	< 0.001
Boron (dissolved)	mg/l	0.01	ISO 17025	0.02	0.01	0.01	< 0.01	0.02
Cadmium (dissolved)	mg/l	0.00008	ISO 17025	< 0.00008	< 0.00008	< 0.00008	< 0.00008	< 0.00008
Chromium (dissolved)	mg/l	0.0004	ISO 17025	0.0025	0.0007	0.0012	0.0019	0.0015
Copper (dissolved)	mg/l	0.0007	ISO 17025	0.019	0.0022	0.0096	0.0035	< 0.0007
Lead (dissolved)	mg/l	0.001	ISO 17025	0.003	< 0.001	< 0.001	< 0.001	< 0.001
Mercury - CV-AFS	µg/l	0.007	ISO 17025	0.0174	< 0.0070	0.0091	< 0.0070	0.0081
Nickel (dissolved)	mg/l	0.0003	ISO 17025	0.0022	0.0008	0.0012	0.0016	0.001
Selenium (dissolved)	mg/l	0.004	ISO 17025	0.007	0.007	< 0.004	< 0.004	< 0.004
Zinc (dissolved)	mg/l	0.0004	ISO 17025	0.01	0.0025	0.0031	0.0065	0.0038

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Analytical Report Number: 23-34663
Project / Site name: A46 Walsgrave

Your Order No: VE297719

Lab Sample Number				2684355	2684356	2684357	2684358	2684359
Sample Reference				BH108	BH108	BH110	BH110	WS104
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.10-0.10	2.00-2.00	0.50-0.50	2.00-2.00	1.00-1.10
Date Sampled				16/05/2023	16/05/2023	16/05/2023	16/05/2023	16/05/2023
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Leachate Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Monoaromatics & Oxygenates								
Benzene	µg/l	3	ISO 17025	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0
Toluene##	µg/l	3	ISO 17025	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0
Ethylbenzene	µg/l	3	ISO 17025	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0
p & m-xylene	µg/l	3	ISO 17025	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0
o-xylene	µg/l	3	ISO 17025	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0
MTBE (Methyl Tertiary Butyl Ether)	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
Petroleum Hydrocarbons								
TPH-CWG - Aliphatic >C5 - C6## HS_1D_AL	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >C6 - C8## HS_1D_AL	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >C8 - C10## HS_1D_AL	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >C10 - C12 EH_1D_AL_MS	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C12 - C16 EH_1D_AL_MS	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C16 - C21 EH_1D_AL_MS	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C21 - C35 EH_1D_AL_MS	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic (C5 - C35) HS+EH_1D_AL_MS	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C5 - C7 HS_1D_AR	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >C7 - C8 HS_1D_AR	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >C8 - C10 HS_1D_AR	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >C10 - C12 EH_1D_AR_MS	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C12 - C16 EH_1D_AR_MS	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C16 - C21 EH_1D_AR_MS	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C21 - C35 EH_1D_AR_MS	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic (C5 - C35) HS+EH_1D_AR_MS	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

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Analytical Report Number : 23-34663
Project / Site name: A46 Walsgrave

* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and loam (MCERTS) soil types. Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
2684348	BH108	None Supplied	0.10-0.10	Brown loam and sand with stones and vegetation.
2684349	BH108	None Supplied	0.50-0.50	Brown loam and sand with stones and vegetation.
2684350	BH108	None Supplied	2.00-2.00	Brown clay with gravel.
2684351	BH110	None Supplied	0.30-0.30	Brown loam and sand with gravel and vegetation.
2684352	BH110	None Supplied	0.50-0.50	Brown sand with gravel.
2684353	BH110	None Supplied	2.00-2.00	Brown sand with gravel and stones.
2684354	WS104	None Supplied	1.00-1.10	Brown clay and sand with gravel.

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Analytical Report Number : 23-34663
Project / Site name: A46 Walsgrave

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
BS EN 12457-2 (10:1) Leachate Prep	10:1 (as recieved, moisture adjusted) end over end extraction with water for 24 hours. Eluate filtered prior to analysis.	In-house method based on BSEN12457-2.	L043-PL	W	NONE
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES.	In-house method based on Second Site Properties version 3	L038-PL	D	MCERTS
Complex cyanide (Low level) in leachate	Determination of complex cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	ISO 17025
Complex Cyanide in soil	Determination of complex cyanide by calculation.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Free cyanide in soil	Determination of free cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
Monohydric phenols in leachate - LOW LEVEL 1 ug/l	Determination of phenols in leachate by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	ISO 17025
Monohydric phenols in soil	Determination of phenols in soil by extraction with sodium hydroxide followed by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	MCERTS
Speciated EPA-16 PAHs in leachate	Determination of PAH compounds in leachate by extraction in dichloromethane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L102B-PL	W	ISO 17025
Speciated EPA-16 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L064-PL	D	NONE
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In house method.	L099-PL	D	MCERTS
pH at 20oC in leachate (automated)	Determination of pH in leachate by electrometric measurement.	In house method.	L099B	W	ISO 17025
Total sulphate (as SO4 in soil)	Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES.	In house method.	L038-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
TPHCWG (Leachates)	Determination of dichloromethane extractable hydrocarbons in leachate by GC-MS.	In-house method	L070-PL	W	ISO 17025
Total cyanide in soil	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS

Analytical Report Number : 23-34663
Project / Site name: A46 Walsgrave

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Total organic carbon (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In house method.	L009-PL	D	MCERTS
BTEX and MTBE in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS. Individual components MCERTS accredited	In-house method based on USEPA8260	L073B-PL	W	NONE
BTEX and MTBE in leachates (Monoaromatics)	Determination of BTEX and MTBE in leachates by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	ISO 17025
Ammonia as NH3 in leachate	Determination of Ammonium/Ammonia/ Ammoniacal Nitrogen by the colorimetric salicylate/nitroprusside method.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082-PL	W	NONE
Ammoniacal Nitrogen as N in leachate	Determination of Ammonium/Ammonia/ Ammoniacal Nitrogen by the discrete analyser (colorimetric) salicylate/nitroprusside method.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082-PL	W	NONE
Metals by ICP-OES in leachate	Determination of metals in leachate by acidification followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L039-PL	W	ISO 17025
Boron in leachate	Determination of boron in leachate. Sample acidified and followed by ICP-OES.	In-house method based on MEWAM	L039-PL	W	ISO 17025
Cr (III) in soil	In-house method by calculation from total Cr and Cr VI.	In-house method by calculation	L080-PL	W	NONE
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method with silica gel split/clean up.	L088/76-PL	W	NONE
Free cyanide in leachate	Determination of free cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	ISO 17025
Total cyanide in leachate - 1µg/l	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L080-PL	W	ISO 17025
Ammonium as NH4 in leachate	Determination of ammonium in leachate by addition of buffer solution followed by ion selective electrode.	In-house method	L035-PL	W	NONE
Sulphate in leachates	Determination of sulphate in leachate by acidification followed by ICP-OES.	In-house method based on MEWAM 1986 Methods for the Determination of Metals in Soil""	L039-PL	W	ISO 17025
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in NaOH and addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	MCERTS

Analytical Report Number : 23-34663
Project / Site name: A46 Walsgrave

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Mercury Low Level in leachate	Mercury in leachate by CV-AFS,	In-house method based on USEPA method 1631	L085-PL	W	ISO 17025

For method numbers ending in 'UK or A' analysis have been carried out in our laboratory in the United Kingdom (WATFORD).
For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).
For method numbers ending in 'PL or B' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.
Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

Information in Support of Analytical Results

List of HWOL Acronyms and Operators

Acronym	Descriptions
HS	Headspace Analysis
MS	Mass spectrometry
FID	Flame Ionisation Detector
GC	Gas Chromatography
EH	Extractable Hydrocarbons (i.e. everything extracted by the solvent(s))
CU	Clean-up - e.g. by Florisil®, silica gel
1D	GC - Single coil/column gas chromatography
2D	GC-GC - Double coil/column gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics
AR	Aromatics
#1	EH_2D_Total but with humics mathematically subtracted
#2	EH_2D_Total but with fatty acids mathematically subtracted
_	Operator - understore to separate acronyms (exception for +)
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total

##Quality control parameter has a high recovery (outside of limit); however the associated result is below the reporting limit, other checks applied prior to reporting the data have been accepted. The result should be considered as being deviating and may be compromised.

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[redacted]
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Analytical Report Number : 23-35459

Project / Site name:	A46 Walsgrave	**Samples received on:**	23/05/2023
Your job number:	G230651	**Samples instructed on/ Analysis started on:**	23/05/2023
Your order number:	VE292904	**Analysis completed by:**	31/05/2023
Report Issue Number:	1	**Report issued on:**	31/05/2023
Samples Analysed:	2 leachate samples - 2 soil samples		

[redacted]
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41-711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils	- 4 weeks from reporting
leachates	- 2 weeks from reporting
waters	- 2 weeks from reporting
asbestos	- 6 months from reporting

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Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement.
Application of uncertainty of measurement would provide a range within which the true result lies.
An estimate of measurement uncertainty can be provided on request.

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Analytical Report Number: 23-35459
Project / Site name: A46 Walsgrave

Lab Sample Number				2689556	2689557
Sample Reference				BH111	BH111
Sample Number				3	12
Depth (m)				0.30	1.50
Date Sampled				18/05/2023	18/05/2023
Time Taken				None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**		
Stone Content	%	0.1	NONE	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	8.9	13
Total mass of sample received	kg	0.001	NONE	2	2
General Inorganics					
pH - Automated	pH Units	N/A	MCERTS	7.4	8
Total Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0
Complex Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0
Free Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0
Total Sulphate as SO4	mg/kg	50	MCERTS	340	280
Total Organic Carbon (TOC) - Automated	%	0.1	MCERTS	1.8	0.5
Total Phenols					
Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0
Speciated PAHs					
Naphthalene	mg/kg	0.05	NONE	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	NONE	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	NONE	< 0.05	< 0.05
Fluorene	mg/kg	0.05	NONE	< 0.05	< 0.05
Phenanthrene	mg/kg	0.05	NONE	< 0.05	< 0.05
Anthracene	mg/kg	0.05	NONE	< 0.05	< 0.05
Fluoranthene	mg/kg	0.05	NONE	< 0.05	< 0.05
Pyrene	mg/kg	0.05	NONE	< 0.05	< 0.05
Benzo(a)anthracene	mg/kg	0.05	NONE	< 0.05	< 0.05
Chrysene	mg/kg	0.05	NONE	< 0.05	< 0.05
Benzo(b)fluoranthene	mg/kg	0.05	NONE	< 0.05	< 0.05
Benzo(k)fluoranthene	mg/kg	0.05	NONE	< 0.05	< 0.05
Benzo(a)pyrene	mg/kg	0.05	NONE	< 0.05	< 0.05
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	NONE	< 0.05	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	NONE	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	NONE	< 0.05	< 0.05
Total PAH					
Speciated Total EPA-16 PAHs	mg/kg	0.8	NONE	< 0.80	< 0.80
Heavy Metals / Metalloids					
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	6.7	11
Boron (water soluble)	mg/kg	0.2	MCERTS	0.4	0.9
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2
Chromium (hexavalent)	mg/kg	1.8	MCERTS	< 1.8	< 1.8
Chromium (III)	mg/kg	1	NONE	17	22
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	17	22
Copper (aqua regia extractable)	mg/kg	1	MCERTS	13	17
Lead (aqua regia extractable)	mg/kg	1	MCERTS	25	14
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	12	21
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	60	66

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Analytical Report Number: 23-35459
Project / Site name: A46 Walsgrave

Lab Sample Number				2689556	2689557
Sample Reference				BH111	BH111
Sample Number				3	12
Depth (m)				0.30	1.50
Date Sampled				18/05/2023	18/05/2023
Time Taken				None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**		
Monoaromatics & Oxygenates					
Benzene	µg/kg	5	NONE	< 5.0	< 5.0
Toluene	µg/kg	5	NONE	< 5.0##	< 5.0##
Ethylbenzene	µg/kg	5	NONE	< 5.0	< 5.0
p & m-xylene	µg/kg	5	NONE	< 5.0##	< 5.0##
o-xylene	µg/kg	5	NONE	< 5.0	< 5.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	NONE	< 5.0	< 5.0
Petroleum Hydrocarbons					
TPH-CWG - Aliphatic >EC5 - EC6 $_{HS_1D_AL}$	mg/kg	0.001	NONE	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC6 - EC8 $_{HS_1D_AL}$	mg/kg	0.001	NONE	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC8 - EC10 $_{HS_1D_AL}$	mg/kg	0.001	NONE	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC10 - EC12 $_{EH_CU_1D_AL}$	mg/kg	1	NONE	< 1.0	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16 $_{EH_CU_1D_AL}$	mg/kg	2	NONE	< 2.0	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21 $_{EH_CU_1D_AL}$	mg/kg	8	NONE	< 8.0	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35 $_{EH_CU_1D_AL}$	mg/kg	8	NONE	< 8.0	< 8.0
TPH-CWG - Aliphatic (EC5 - EC35) $_{EH_CU+HS_1D_AL}$	mg/kg	10	NONE	< 10	< 10
TPH-CWG - Aromatic >EC5 - EC7 $_{HS_1D_AR}$	mg/kg	0.001	NONE	< 0.001	< 0.001
TPH-CWG - Aromatic >EC7 - EC8 $_{HS_1D_AR}$	mg/kg	0.001	NONE	< 0.001	< 0.001
TPH-CWG - Aromatic >EC8 - EC10 $_{HS_1D_AR}$	mg/kg	0.001	NONE	< 0.001	< 0.001
TPH-CWG - Aromatic >EC10 - EC12 $_{EH_CU_1D_AR}$	mg/kg	1	NONE	< 1.0	< 1.0
TPH-CWG - Aromatic >EC12 - EC16 $_{EH_CU_1D_AR}$	mg/kg	2	NONE	2.4	< 2.0
TPH-CWG - Aromatic >EC16 - EC21 $_{EH_CU_1D_AR}$	mg/kg	10	NONE	< 10	< 10
TPH-CWG - Aromatic >EC21 - EC35 $_{EH_CU_1D_AR}$	mg/kg	10	NONE	< 10	< 10
TPH-CWG - Aromatic (EC5 - EC35) $_{EH_CU+HS_1D_AR}$	mg/kg	10	NONE	< 10	< 10

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

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Analytical Report Number: 23-35459
Project / Site name: A46 Walsgrave

Lab Sample Number				2689558	2689559
Sample Reference				BH111	BH111
Sample Number				3	12
Depth (m)				0.30	1.50
Date Sampled				18/05/2023	18/05/2023
Time Taken				None Supplied	None Supplied
Analytical Parameter (Leachate Analysis)	**Units**	**Limit of detection**	**Accreditation Status**		
General Inorganics					
pH (automated)	pH Units	N/A	ISO 17025	7.1	7.5
Total Cyanide (Low Level 1 µg/l)	µg/l	1	ISO 17025	< 1.0	< 1.0
Complex Cyanide (Low Level)	µg/l	1	ISO 17025	< 1.0	< 1.0
Free Cyanide (Low Level 1 µg/l)	µg/l	1	ISO 17025	< 1	< 1
Sulphate as SO_4	mg/l	0.1	ISO 17025	5.6	1.9
Ammoniacal Nitrogen as N	µg/l	15	NONE	< 15	70
Ammoniacal Nitrogen as NH3	µg/l	15	NONE	< 15	85
Ammoniacal Nitrogen as NH3	mg/l	0.015	NONE	< 0.015	0.085
Ammoniacal Nitrogen as NH4	mg/l	0.015	NONE	< 0.015	0.09
Total Phenols					
Total Phenols (monohydric)	µg/l	1	ISO 17025	< 1.0	< 1.0
Speciated PAHs					
Naphthalene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Acenaphthylene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Acenaphthene	µg/l	0.01	ISO 17025	0.2	< 0.01
Fluorene	µg/l	0.01	ISO 17025	0.18	< 0.01
Phenanthrene	µg/l	0.01	ISO 17025	0.9	< 0.01
Anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Fluoranthene	µg/l	0.01	ISO 17025	0.26	< 0.01
Pyrene	µg/l	0.01	ISO 17025	0.18	< 0.01
Benzo(a)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Chrysene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Benzo(b)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Benzo(k)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Benzo(a)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Indeno(1,2,3-cd)pyrene	µg/l	0.01	NONE	< 0.01	< 0.01
Dibenz(a,h)anthracene	µg/l	0.01	NONE	< 0.01	< 0.01
Benzo(ghi)perylene	µg/l	0.01	NONE	< 0.01	< 0.01
Total PAH					
Total EPA-16 PAHs	µg/l	0.2	NONE	1.7	< 0.2
Heavy Metals / Metalloids					
Arsenic (dissolved)	mg/l	0.001	ISO 17025	< 0.001	< 0.001
Boron (dissolved)	mg/l	0.01	ISO 17025	< 0.01	< 0.01
Cadmium (dissolved)	mg/l	0.00008	ISO 17025	< 0.00008	< 0.00008
Chromium (dissolved)	mg/l	0.0004	ISO 17025	0.0007	0.001
Copper (dissolved)	mg/l	0.0007	ISO 17025	0.0083	0.0038
Lead (dissolved)	mg/l	0.001	ISO 17025	0.001	< 0.001
Mercury - CV-AFS	µg/l	0.007	ISO 17025	0.0071	< 0.0070
Nickel (dissolved)	mg/l	0.0003	ISO 17025	0.0005	< 0.0003
Selenium (dissolved)	mg/l	0.004	ISO 17025	< 0.004	< 0.004
Zinc (dissolved)	mg/l	0.0004	ISO 17025	0.0078	0.0041

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Analytical Report Number: 23-35459
Project / Site name: A46 Walsgrave

Lab Sample Number				2689558	2689559
Sample Reference				BH111	BH111
Sample Number				3	12
Depth (m)				0.30	1.50
Date Sampled				18/05/2023	18/05/2023
Time Taken				None Supplied	None Supplied
Analytical Parameter (Leachate Analysis)	**Units**	**Limit of detection**	**Accreditation Status**		
Monoaromatics & Oxygenates%					
Benzene	µg/l	3	NONE	< 3.0	< 3.0
Toluene	µg/l	3	NONE	< 3.0	< 3.0
Ethylbenzene	µg/l	3	NONE	< 3.0	< 3.0
p & m-xylene	µg/l	3	NONE	< 3.0	< 3.0
o-xylene	µg/l	3	NONE	< 3.0	< 3.0
MTBE (Methyl Tertiary Butyl Ether)	µg/l	10	NONE	< 10	< 10
Petroleum Hydrocarbons					
TPH-CWG - Aliphatic >C5 - C6 $_{HS_1D_AL}$	µg/l	1	ISO 17025	< 1.0	< 1.0
TPH-CWG - Aliphatic >C6 - C8 $_{HS_1D_AL}$	µg/l	1	ISO 17025	< 1.0	< 1.0
TPH-CWG - Aliphatic >C8 - C10 $_{HS_1D_AL}$	µg/l	1	ISO 17025	< 1.0	< 1.0
TPH-CWG - Aliphatic >C10 - C12 $_{EH_1D_AL_MS}$	µg/l	10	NONE	< 10	< 10
TPH-CWG - Aliphatic >C12 - C16 $_{EH_1D_AL_MS}$	µg/l	10	NONE	< 10	< 10
TPH-CWG - Aliphatic >C16 - C21 $_{EH_1D_AL_MS}$	µg/l	10	NONE	< 10	< 10
TPH-CWG - Aliphatic >C21 - C35 $_{EH_1D_AL_MS}$	µg/l	10	NONE	< 10	< 10
TPH-CWG - Aliphatic (C5 - C35) $_{HS+EH_1D_AL_MS}$	µg/l	10	NONE	< 10	< 10
TPH-CWG - Aromatic >C5 - C7 $_{HS_1D_AR}$	µg/l	1	ISO 17025	< 1.0	< 1.0
TPH-CWG - Aromatic >C7 - C8 $_{HS_1D_AR}$	µg/l	1	ISO 17025	< 1.0	< 1.0
TPH-CWG - Aromatic >C8 - C10 $_{HS_1D_AR}$	µg/l	1	ISO 17025	< 1.0	< 1.0
TPH-CWG - Aromatic >C10 - C12 $_{EH_1D_AR_MS}$	µg/l	10	NONE	< 10	< 10
TPH-CWG - Aromatic >C12 - C16 $_{EH_1D_AR_MS}$	µg/l	10	NONE	< 10	< 10
TPH-CWG - Aromatic >C16 - C21 $_{EH_1D_AR_MS}$	µg/l	10	NONE	< 10	< 10
TPH-CWG - Aromatic >C21 - C35 $_{EH_1D_AR_MS}$	µg/l	10	NONE	< 10	< 10
TPH-CWG - Aromatic (C5 - C35) $_{HS+EH_1D_AR_MS}$	µg/l	10	NONE	< 10	< 10

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

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Analytical Report Number : 23-35459
Project / Site name: A46 Walsgrave

* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and loam (MCERTS) soil types. Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
2689556	BH111	3	0.3	Brown sandy loam with gravel.
2689557	BH111	12	1.5	Brown clay and sand.

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Analytical Report Number : 23-35459
Project / Site name: A46 Walsgrave

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
BS EN 12457-2 (10:1) Leachate Prep	10:1 (as recieved, moisture adjusted) end over end extraction with water for 24 hours. Eluate filtered prior to analysis.	In-house method based on BSEN12457-2.	L043-PL	W	NONE
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES.	In-house method based on Second Site Properties version 3	L038-PL	D	MCERTS
Complex cyanide (Low level) in leachate	Determination of complex cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	ISO 17025
Complex Cyanide in soil	Determination of complex cyanide by calculation.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Free cyanide in soil	Determination of free cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
Monohydric phenols in leachate - LOW LEVEL 1 ug/l	Determination of phenols in leachate by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	ISO 17025
Monohydric phenols in soil	Determination of phenols in soil by extraction with sodium hydroxide followed by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	MCERTS
Speciated EPA-16 PAHs in leachate	Determination of PAH compounds in leachate by extraction in dichloromethane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L102B-PL	W	ISO 17025
Speciated EPA-16 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L064-PL	D	NONE
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In house method.	L099-PL	D	MCERTS
pH at 20oC in leachate (automated)	Determination of pH in leachate by electrometric measurement.	In house method.	L099B	W	ISO 17025
Total sulphate (as SO4 in soil)	Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES.	In house method.	L038-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
TPHCWG (Leachates)	Determination of dichloromethane extractable hydrocarbons in leachate by GC-MS.	In-house method	L070-PL	W	ISO 17025
Total cyanide in soil	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS

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Analytical Report Number : 23-35459
Project / Site name: A46 Walsgrave

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Total organic carbon (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In house method.	L009-PL	D	MCERTS
BTEX and MTBE in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS. Individual components MCERTS accredited	In-house method based on USEPA8260	L073B-PL	W	NONE
BTEX and MTBE in leachates (Monoaromatics)	Determination of BTEX and MTBE in leachates by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	NONE
Ammonia as NH3 in leachate	Determination of Ammonium/Ammonia/ Ammoniacal Nitrogen by the colorimetric salicylate/nitroprusside method.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082-PL	W	NONE
Ammoniacal Nitrogen as N in leachate	Determination of Ammonium/Ammonia/ Ammoniacal Nitrogen by the discrete analyser (colorimetric) salicylate/nitroprusside method.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082-PL	W	NONE
Metals by ICP-OES in leachate	Determination of metals in leachate by acidification followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L039-PL	W	ISO 17025
Boron in leachate	Determination of boron in leachate. Sample acidified and followed by ICP-OES.	In-house method based on MEWAM	L039-PL	W	ISO 17025
Cr (III) in soil	In-house method by calculation from total Cr and Cr VI.	In-house method by calculation	L080-PL	W	NONE
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method with silica gel split/clean up.	L088/76-PL	W	NONE
Free cyanide in leachate	Determination of free cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	ISO 17025
Total cyanide in leachate - 1µg/l	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L080-PL	W	ISO 17025
Ammonium as NH4 in leachate	Determination of ammonium in leachate by addition of buffer solution followed by ion selective electrode.	In-house method	L035-PL	W	NONE
Sulphate in leachates	Determination of sulphate in leachate by acidification followed by ICP-OES.	In-house method based on MEWAM 1986 Methods for the Determination of Metals in Soil""	L039-PL	W	ISO 17025
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in NaOH and addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	MCERTS
Mercury Low Level in leachate	Mercury in leachate by CV-AFS,	In-house method based on USEPA method 1631	L085-PL	W	ISO 17025

For method numbers ending in 'UK or A' analysis have been carried out in our laboratory in the United Kingdom (WATFORD).
For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).
For method numbers ending in 'PL or B' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.
Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

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Analytical Report Number : 23-35459
Project / Site name: A46 Walsgrave

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status

Information in Support of Analytical Results

List of HWOL Acronyms and Operators

Acronym	Descriptions
HS	Headspace Analysis
MS	Mass spectrometry
FID	Flame Ionisation Detector
GC	Gas Chromatography
EH	Extractable Hydrocarbons (i.e. everything extracted by the solvent(s))
CU	Clean-up - e.g. by Florisil®, silica gel
1D	GC - Single coil/column gas chromatography
2D	GC-GC - Double coil/column gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics
AR	Aromatics
#1	EH_2D_Total but with humics mathematically subtracted
#2	EH_2D_Total but with fatty acids mathematically subtracted
_	Operator - understore to separate acronyms (exception for +)
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total

##Quality control parameter has a high recovery (outside of limit); however the associated result is below the reporting limit, other checks applied prior to reporting the data have been accepted. The result should be considered as being deviating and may be compromised.
% Data reported unaccredited due to quality control parameter failure associated with this result; The result should be considered as being deviating and may be compromised.

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[redacted]
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Analytical Report Number : 23-36563

Project / Site name:	A46 Walsgrave	**Samples received on:**	23/05/2023
Your job number:	G230651 ENV 06	**Samples instructed on/ Analysis started on:**	31/05/2023
Your order number:	G230651	**Analysis completed by:**	07/06/2023
Report Issue Number:	1	**Report issued on:**	07/06/2023
Samples Analysed:	3 leachate samples - 3 soil samples		

[redacted]

For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41-711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils	- 4 weeks from reporting
leachates	- 2 weeks from reporting
waters	- 2 weeks from reporting
asbestos	- 6 months from reporting

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Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement.
Application of uncertainty of measurement would provide a range within which the true result lies.
An estimate of measurement uncertainty can be provided on request.

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Analytical Report Number: 23-36563
Project / Site name: A46 Walsgrave
Your Order No: G230651

Lab Sample Number				2695954	2695955	2695956
Sample Reference				VE01230518002	VE01230518003	VE01230518012
Sample Number				BH109	BH109	BH109
Depth (m)				0.50-0.50	1.00-1.00	1.50-1.50
Date Sampled				18/05/2023	18/05/2023	18/05/2023
Time Taken				None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**			
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	7.4	6.8	5.9
Total mass of sample received	kg	0.001	NONE	0.8	1.3	1
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	SCA	SCA	SCA
General Inorganics						
pH - Automated	pH Units	N/A	MCERTS	6.9	7.5	7.6
Total Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
Complex Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
Free Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
Total Sulphate as SO4	mg/kg	50	MCERTS	370	240	100
Total Organic Carbon (TOC) - Automated	%	0.1	MCERTS	1.4	1	0.2
Total Phenols						
Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
Speciated PAHs						
Naphthalene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05
Fluorene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05
Phenanthrene	mg/kg	0.05	NONE	0.11	< 0.05	< 0.05
Anthracene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05
Fluoranthene	mg/kg	0.05	NONE	0.17	< 0.05	< 0.05
Pyrene	mg/kg	0.05	NONE	0.15	< 0.05	< 0.05
Benzo(a)anthracene	mg/kg	0.05	NONE	0.06	< 0.05	< 0.05
Chrysene	mg/kg	0.05	NONE	0.1	< 0.05	< 0.05
Benzo(b)fluoranthene	mg/kg	0.05	NONE	0.11	< 0.05	< 0.05
Benzo(k)fluoranthene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05
Benzo(a)pyrene	mg/kg	0.05	NONE	0.08	< 0.05	< 0.05
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	NONE	0.05	< 0.05	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	NONE	0.08	< 0.05	< 0.05
Total PAH						
Speciated Total EPA-16 PAHs	mg/kg	0.8	NONE	0.91	< 0.80	< 0.80
Heavy Metals / Metalloids						
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	6.8	6.1	3.2
Boron (water soluble)	mg/kg	0.2	MCERTS	0.6	0.4	0.3
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	0.4	< 0.2	< 0.2
Chromium (hexavalent)	mg/kg	1.8	MCERTS	< 1.8	< 1.8	< 1.8
Chromium (III)	mg/kg	1	NONE	13	14	6.5
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	13	15	7
Copper (aqua regia extractable)	mg/kg	1	MCERTS	24	25	23
Lead (aqua regia extractable)	mg/kg	1	MCERTS	120	47	14
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	11	13	6.5
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	88	68	29
Monoaromatics & Oxygenates						

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Analytical Report Number: 23-36563
Project / Site name: A46 Walsgrave
Your Order No: G230651

Lab Sample Number				2695954	2695955	2695956
Sample Reference				VE01230518002	VE01230518003	VE01230518012
Sample Number				BH109	BH109	BH109
Depth (m)				0.50-0.50	1.00-1.00	1.50-1.50
Date Sampled				18/05/2023	18/05/2023	18/05/2023
Time Taken				None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**			
Benzene	µg/kg	5	NONE	< 5.0	< 5.0	< 5.0
Toluene##	µg/kg	5	NONE	< 5.0	< 5.0	< 5.0
Ethylbenzene##	µg/kg	5	NONE	< 5.0	< 5.0	< 5.0
p & m-xylene##	µg/kg	5	NONE	< 5.0	< 5.0	< 5.0
o-xylene	µg/kg	5	NONE	< 5.0	< 5.0	< 5.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	NONE	< 5.0	< 5.0	< 5.0

Petroleum Hydrocarbons

TPH-CWG - Aliphatic >EC5 - EC6 $_{HS_1D_AL}$	mg/kg	0.001	NONE	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC6 - EC8 $_{HS_1D_AL}$	mg/kg	0.001	NONE	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC8 - EC10 $_{HS_1D_AL}$	mg/kg	0.001	NONE	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC10 - EC12 $_{EH_CU_1D_AL}$	mg/kg	1	NONE	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16 $_{EH_CU_1D_AL}$	mg/kg	2	NONE	< 2.0	< 2.0	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21 $_{EH_CU_1D_AL}$	mg/kg	8	NONE	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35 $_{EH_CU_1D_AL}$	mg/kg	8	NONE	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic (EC5 - EC35) $_{EH_CU+HS_1D_AL}$	mg/kg	10	NONE	< 10	< 10	< 10

TPH-CWG - Aromatic >EC5 - EC7 $_{HS_1D_AR}$	mg/kg	0.001	NONE	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC7 - EC8 $_{HS_1D_AR}$	mg/kg	0.001	NONE	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC8 - EC10 $_{HS_1D_AR}$	mg/kg	0.001	NONE	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC10 - EC12 $_{EH_CU_1D_AR}$	mg/kg	1	NONE	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >EC12 - EC16 $_{EH_CU_1D_AR}$	mg/kg	2	NONE	< 2.0	< 2.0	< 2.0
TPH-CWG - Aromatic >EC16 - EC21 $_{EH_CU_1D_AR}$	mg/kg	10	NONE	< 10	< 10	< 10
TPH-CWG - Aromatic >EC21 - EC35 $_{EH_CU_1D_AR}$	mg/kg	10	NONE	< 10	< 10	< 10
TPH-CWG - Aromatic (EC5 - EC35) $_{EH_CU+HS_1D_AR}$	mg/kg	10	NONE	< 10	< 10	< 10

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

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UKAS TESTING
4041

Analytical i2 Environmental Science

Analytical Report Number: 23-36563
Project / Site name: A46 Walsgrave

Your Order No: G230651

Lab Sample Number				2695957	2695958	2695959
Sample Reference				VE01230518002	VE01230518003	VE01230518012
Sample Number				BH109	BH109	BH109
Depth (m)				0.50-0.50	1.00-1.00	1.50-1.50
Date Sampled				18/05/2023	18/05/2023	18/05/2023
Time Taken				None Supplied	None Supplied	None Supplied
Analytical Parameter (Leachate Analysis)	**Units**	**Limit of detection**	**Accreditation Status**			
General Inorganics						
pH (automated)	pH Units	N/A	ISO 17025	7.5	7.8	7.6
Total Cyanide (Low Level 1 µg/l)	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
Complex Cyanide (Low Level)	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
Free Cyanide (Low Level 1 µg/l)	µg/l	1	ISO 17025	< 1	< 1	< 1
Sulphate as SO_4	mg/l	0.1	ISO 17025	1.5	1.5	0.8
Ammoniacal Nitrogen as N	µg/l	15	NONE	400	46	61
Ammoniacal Nitrogen as NH3	mg/l	0.015	NONE	0.48	0.056	0.074
Ammoniacal Nitrogen as NH4	mg/l	0.015	NONE	0.51	0.059	0.078
Total Phenols						
Total Phenols (monohydric)	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
Speciated PAHs						
Naphthalene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01
Acenaphthylene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01
Acenaphthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01
Fluorene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01
Phenanthrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01
Anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01
Fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01
Pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01
Benzo(a)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01
Chrysene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01
Benzo(b)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01
Benzo(k)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01
Benzo(a)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01
Indeno(1,2,3-cd)pyrene	µg/l	0.01	NONE	< 0.01	< 0.01	< 0.01
Dibenz(a,h)anthracene	µg/l	0.01	NONE	< 0.01	< 0.01	< 0.01
Benzo(ghi)perylene	µg/l	0.01	NONE	< 0.01	< 0.01	< 0.01
Total PAH						
Total EPA-16 PAHs	µg/l	0.2	NONE	< 0.2	< 0.2	< 0.2
Heavy Metals / Metalloids						
Arsenic (dissolved)	mg/l	0.001	ISO 17025	< 0.001	0.004	0.004
Boron (dissolved)	mg/l	0.01	ISO 17025	0.01	< 0.01	< 0.01
Cadmium (dissolved)	mg/l	0.00008	ISO 17025	< 0.00008	< 0.00008	< 0.00008
Chromium (dissolved)	mg/l	0.0004	ISO 17025	0.0008	0.0011	< 0.0004
Copper (dissolved)	mg/l	0.0007	ISO 17025	0.016	0.0152	0.0105
Lead (dissolved)	mg/l	0.001	ISO 17025	0.007	0.004	0.004
Mercury - CV-AFS	µg/l	0.007	ISO 17025	0.032	0.0108	0.0087
Nickel (dissolved)	mg/l	0.0003	ISO 17025	0.0018	0.0011	0.0005
Selenium (dissolved)	mg/l	0.004	ISO 17025	< 0.004	< 0.004	< 0.004
Zinc (dissolved)	mg/l	0.0004	ISO 17025	0.0135	0.0073	0.0062

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Analytical i2 Environmental Science

Analytical Report Number: 23-36563
Project / Site name: A46 Walsgrave

Your Order No: G230651

Lab Sample Number				2695957	2695958	2695959
Sample Reference				VE01230518002	VE01230518003	VE01230518012
Sample Number				BH109	BH109	BH109
Depth (m)				0.50-0.50	1.00-1.00	1.50-1.50
Date Sampled				18/05/2023	18/05/2023	18/05/2023
Time Taken				None Supplied	None Supplied	None Supplied
Analytical Parameter (Leachate Analysis)	**Units**	**Limit of detection**	**Accreditation Status**			
Monoaromatics & Oxygenates						
Benzene	µg/l	3	ISO 17025	< 3.0	< 3.0	< 3.0
Toluene	µg/l	3	ISO 17025	< 3.0	< 3.0	< 3.0
Ethylbenzene	µg/l	3	ISO 17025	< 3.0	< 3.0	< 3.0
p & m-xylene	µg/l	3	ISO 17025	< 3.0	< 3.0	< 3.0
o-xylene	µg/l	3	ISO 17025	< 3.0	< 3.0	< 3.0
MTBE (Methyl Tertiary Butyl Ether)	µg/l	10	NONE	< 10	< 10	< 10
Petroleum Hydrocarbons						
TPH-CWG - Aliphatic >C5 - C6 $_{HS_1D_AL}$	µg/l	1	ISO 17025	< 1.0	< 1.0#	< 1.0#
TPH-CWG - Aliphatic >C6 - C8 $_{HS_1D_AL}$	µg/l	1	ISO 17025	< 1.0	< 1.0#	< 1.0#
TPH-CWG - Aliphatic >C8 - C10 $_{HS_1D_AL}$	µg/l	1	ISO 17025	< 1.0	< 1.0#	< 1.0#
TPH-CWG - Aliphatic >C10 - C12 $_{EH_1D_AL_MS}$	µg/l	10	NONE	< 10	< 10	< 10
TPH-CWG - Aliphatic >C12 - C16 $_{EH_1D_AL_MS}$	µg/l	10	NONE	< 10	< 10	< 10
TPH-CWG - Aliphatic >C16 - C21 $_{EH_1D_AL_MS}$	µg/l	10	NONE	< 10	< 10	< 10
TPH-CWG - Aliphatic >C21 - C35 $_{EH_1D_AL_MS}$	µg/l	10	NONE	< 10	< 10	< 10
TPH-CWG - Aliphatic (C5 - C35) $_{HS+EH_1D_AL_MS}$	µg/l	10	NONE	< 10	< 10	< 10
TPH-CWG - Aromatic >C5 - C7 $_{HS_1D_AR}$	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >C7 - C8 $_{HS_1D_AR}$	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >C8 - C10 $_{HS_1D_AR}$	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >C10 - C12 $_{EH_1D_AR_MS}$	µg/l	10	NONE	< 10	< 10	< 10
TPH-CWG - Aromatic >C12 - C16 $_{EH_1D_AR_MS}$	µg/l	10	NONE	< 10	< 10	< 10
TPH-CWG - Aromatic >C16 - C21 $_{EH_1D_AR_MS}$	µg/l	10	NONE	< 10	< 10	< 10
TPH-CWG - Aromatic >C21 - C35 $_{EH_1D_AR_MS}$	µg/l	10	NONE	< 10	< 10	< 10
TPH-CWG - Aromatic (C5 - C35) $_{HS+EH_1D_AR_MS}$	µg/l	10	NONE	< 10	< 10	< 10

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

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Analytical Report Number : 23-36563
Project / Site name: A46 Walsgrave

* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and loam (MCERTS) soil types. Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
2695954	VE01230518002	BH109	0.50-0.50	Brown loam and sand with gravel and vegetation.
2695955	VE01230518003	BH109	1.00-1.00	Brown sand with gravel.
2695956	VE01230518012	BH109	1.50-1.50	Brown sand with gravel.

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Analytical Report Number : 23-36563
Project / Site name: A46 Walsgrave

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
BS EN 12457-2 (10:1) Leachate Prep	10:1 (as recieved, moisture adjusted) end over end extraction with water for 24 hours. Eluate filtered prior to analysis.	In-house method based on BSEN12457-2.	L043-PL	W	NONE
Asbestos identification in soil	Asbestos Identification with the use of polarised light microscopy in conjunction with dispersion staining techniques.	In house method based on HSG 248	A001-PL	D	ISO 17025
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES.	In-house method based on Second Site Properties version 3	L038-PL	D	MCERTS
Complex cyanide (Low level) in leachate	Determination of complex cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	ISO 17025
Complex Cyanide in soil	Determination of complex cyanide by calculation.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Free cyanide in soil	Determination of free cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
Monohydric phenols in leachate - LOW LEVEL 1 ug/l	Determination of phenols in leachate by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	ISO 17025
Monohydric phenols in soil	Determination of phenols in soil by extraction with sodium hydroxide followed by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	MCERTS
Speciated EPA-16 PAHs in leachate	Determination of PAH compounds in leachate by extraction in dichloromethane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L102B-PL	W	ISO 17025
Speciated EPA-16 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L064-PL	D	NONE
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In house method.	L099-PL	D	MCERTS
pH at 20oC in leachate (automated)	Determination of pH in leachate by electrometric measurement.	In house method.	L099B	W	ISO 17025
Total sulphate (as SO4 in soil)	Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES.	In house method.	L038-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
TPHCWG (Leachates)	Determination of dichloromethane extractable hydrocarbons in leachate by GC-MS.	In-house method	L070-PL	W	ISO 17025

Analytical Report Number : 23-36563
Project / Site name: A46 Walsgrave

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Total cyanide in soil	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Total organic carbon (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In house method.	L009-PL	D	MCERTS
BTEX and MTBE in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS. Individual components MCERTS accredited	In-house method based on USEPA8260	L073B-PL	W	NONE
BTEX and MTBE in leachates (Monoaromatics)	Determination of BTEX and MTBE in leachates by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	ISO 17025
Ammonia as NH3 in leachate	Determination of Ammonium/Ammonia/ Ammoniacal Nitrogen by the colorimetric salicylate/nitroprusside method.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082-PL	W	NONE
Ammoniacal Nitrogen as N in leachate	Determination of Ammonium/Ammonia/ Ammoniacal Nitrogen by the discrete analyser (colorimetric) salicylate/nitroprusside method.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082-PL	W	NONE
Metals by ICP-OES in leachate	Determination of metals in leachate by acidification followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L039-PL	W	ISO 17025
Boron in leachate	Determination of boron in leachate. Sample acidified and followed by ICP-OES.	In-house method based on MEWAM	L039-PL	W	ISO 17025
Cr (III) in soil	In-house method by calculation from total Cr and Cr VI.	In-house method by calculation	L080-PL	W	NONE
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method with silica gel split/clean up.	L088/76-PL	W	NONE
Free cyanide in leachate	Determination of free cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	ISO 17025
Total cyanide in leachate - 1µg/l	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L080-PL	W	ISO 17025
Ammonium as NH4 in leachate	Determination of ammonium in leachate by addition of buffer solution followed by ion selective electrode.	In-house method	L035-PL	W	NONE
Sulphate in leachates	Determination of sulphate in leachate by acidification followed by ICP-OES.	In-house method based on MEWAM 1986 Methods for the Determination of Metals in Soil""	L039-PL	W	ISO 17025
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in NaOH and addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	MCERTS

Analytical Report Number : 23-36563
Project / Site name: A46 Walsgrave

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Mercury Low Level in leachate	Mercury in leachate by CV-AFS,	In-house method based on USEPA method 1631	L085-PL	W	ISO 17025

For method numbers ending in 'UK or A' analysis have been carried out in our laboratory in the United Kingdom (WATFORD).
For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).
For method numbers ending in 'PL or B' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.
Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

Information in Support of Analytical Results

List of HWOL Acronyms and Operators

Acronym	Descriptions
HS	Headspace Analysis
MS	Mass spectrometry
FID	Flame Ionisation Detector
GC	Gas Chromatography
EH	Extractable Hydrocarbons (i.e. everything extracted by the solvent(s))
CU	Clean-up - e.g. by Florisil®, silica gel
1D	GC - Single coil/column gas chromatography
2D	GC-GC - Double coil/column gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics
AR	Aromatics
#1	EH_2D_Total but with humics mathematically subtracted
#2	EH_2D_Total but with fatty acids mathematically subtracted
_	Operator - understore to separate acronyms (exception for +)
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total

#Data reported unaccredited due to quality control parameter failure associated with this result; other checks applied prior to reporting the data have been accepted. The result should be considered as being deviating and therefore may be compromised.
##Quality control parameter has a high recovery (outside of limit); however the associated result is below the reporting limit, other checks applied prior to reporting the data have been accepted. The result should be considered as being deviating and may be compromised.

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Analytical Report Number : 23-36563
Project / Site name: A46 Walsgrave

This deviation report indicates the sample and test deviations that apply to the samples submitted for analysis.Please note that the associated result(s) may be unreliable and should be interpreted with care.

Key: a - No sampling date b - Incorrect container c - Holding time d - Headspace e - Temperature

Sample ID	Other ID	Sample Type	Lab Sample Number	Sample Deviation	Test Name	Test Ref	Test Deviation
VE01230518002	BH109	S	2695954	c	Free cyanide in soil	L080-PL	c
VE01230518002	BH109	S	2695954	c	Complex Cyanide in soil	L080-PL	c
VE01230518002	BH109	S	2695954	c	Total cyanide in soil	L080-PL	c
VE01230518003	BH109	S	2695955	c	Free cyanide in soil	L080-PL	c
VE01230518003	BH109	S	2695955	c	Complex Cyanide in soil	L080-PL	c
VE01230518003	BH109	S	2695955	c	Total cyanide in soil	L080-PL	c
VE01230518012	BH109	S	2695956	c	Free cyanide in soil	L080-PL	c
VE01230518012	BH109	S	2695956	c	Complex Cyanide in soil	L080-PL	c
VE01230518012	BH109	S	2695956	c	Total cyanide in soil	L080-PL	c

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[redacted]
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Analytical Report Number : 23-36564

Project / Site name:	A46 Walsgrave	**Samples received on:**	23/05/2023
Your job number:	G230651 ENV 06	**Samples instructed on/ Analysis started on:**	31/05/2023
Your order number:	G230651	**Analysis completed by:**	06/06/2023
Report Issue Number:	1	**Report issued on:**	06/06/2023
Samples Analysed:	10:1 WAC sample		

[redacted]
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41-711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils - 4 weeks from reporting
leachates - 2 weeks from reporting
waters - 2 weeks from reporting
asbestos - 6 months from reporting

Excel copies of reports are only valid when accompanied by this PDF certificate.

Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement.
Application of uncertainty of measurement would provide a range within which the true result lies.
An estimate of measurement uncertainty can be provided on request.

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Waste Acceptance Criteria Analytical Results

Report No:	**23-36564**						
					Client: VAN ELLE		
Location	**A46 Walsgrave**						
Lab Reference (Sample Number)	2695960 / 2695961				**Landfill Waste Acceptance Criteria Limits**		
Sampling Date	18/05/2023				Inert Waste Landfill	Stable Non-reactive HAZARDOUS waste in non-hazardous Landfill	Hazardous Waste Landfill
Sample ID	VE01230518002 BH109						
Depth (m)	0.50-0.50						
Solid Waste Analysis							
TOC (%)**	1.4				3%	5%	6%
Loss on Ignition (%) **	3.2				--	--	10%
BTEX (µg/kg)##	< 5.0				6000	--	--
Sum of PCBs (mg/kg)	< 0.007				1	--	--
Mineral Oil (mg/kg) EH_1D_CU_AL	< 10				500	--	--
Total PAH (WAC-17) (mg/kg)	< 0.85				100	--	--
pH (units)**	7.0				--	>6	--
Acid Neutralisation Capacity (mmol / kg)	0.00				--	To be evaluated	To be evaluated
Eluate Analysis (BS EN 12457 - 2 preparation utilising end over end leaching procedure)	10:1 mg/l			10:1 mg/kg	Limit values for compliance leaching test using BS EN 12457-2 at L/S 10 l/kg (mg/kg)		
Arsenic *	0.0044			0.0386	0.5	2	25
Barium *	0.0417			0.362	20	100	300
Cadmium *	< 0.0001			< 0.0008	0.04	1	5
Chromium *	0.0029			0.025	0.5	10	70
Copper *	0.017			0.14	2	50	100
Mercury *	< 0.0005			< 0.0050	0.01	0.2	2
Molybdenum *	0.0014			0.0124	0.5	10	30
Nickel *	0.0042			0.037	0.4	10	40
Lead *	0.0073			0.064	0.5	10	50
Antimony *	< 0.0017			< 0.017	0.06	0.7	5
Selenium *	< 0.0040			< 0.040	0.1	0.5	7
Zinc *	0.013			0.12	4	50	200
Chloride *	0.84			7.3	800	15000	25000
Fluoride*	0.36			3.1	10	150	500
Sulphate *	1.9			16	1000	20000	50000
TDS*	65			570	4000	60000	100000
Phenol Index (Monohydric Phenols) *	< 0.010			< 0.10	1	-	-
DOC	18.5			161	500	800	1000
Leach Test Information							
Stone Content (%)	< 0.1						
Sample Mass (kg)	0.80						
Dry Matter (%)	93						
Moisture (%)	7.4						

Results are expressed on a dry weight basis, after correction for moisture content where applicable.

*= UKAS accredited (liquid eluate analysis only)

Stated limits are for guidance only and i2 cannot be held responsible for any discrepencies with current legislation

** = MCERTS accredited

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes as defined by the Waste (England and Wales) Regulations 2011 (as amended) and EA Guidance WM3.
This analysis is only applicable for landfill acceptance criteria (The Environmental Permitting (England and Wales) Regulations) and does not give any indication as to whether a waste may be hazardous or non-hazardous.

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The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number : 23-36564
Project / Site name: A46 Walsgrave

* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and loam (MCERTS) soil types. Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
2695960	VE01230518002	BH109	0.50-0.50	Brown loam and sand with gravel and vegetation.

Analytical Report Number : 23-36564
Project / Site name: A46 Walsgrave

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
BS EN 12457-2 (10:1) Leachate Prep	10:1 (as recieved, moisture adjusted) end over end extraction with water for 24 hours. Eluate filtered prior to analysis.	In-house method based on BSEN12457-2.	L043-PL	W	NONE
Acid neutralisation capacity of soil	Determination of acid neutralisation capacity by addition of acid or alkali followed by electronic probe.	In-house method based on Guidance an Sampling and Testing of Wastes to Meet Landfill Waste Acceptance""	L046-PL	W	NONE
Loss on ignition of soil @ 450oC	Determination of loss on ignition in soil by gravimetrically with the sample being ignited in a muffle furnace.	In house method.	L047-PL	D	MCERTS
Mineral Oil (Soil) C10 - C40	Determination of mineral oil fraction extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method with silica gel split/clean up.	L076-PL	D	NONE
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
Speciated WAC-17 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270.	L064-PL	D	NONE
PCB's By GC-MS in soil	Determination of PCB by extraction with acetone and hexane followed by GC-MS.	In-house method based on USEPA 8082	L027-PL	D	NONE
pH at 20oC in soil	Determination of pH in soil by addition of water followed by electrometric measurement.	In house method.	L005-PL	W	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Total organic carbon (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In house method.	L009-PL	D	MCERTS
BTEX in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS. Individual components MCERTS accredited	In-house method based on USEPA8260	L073B-PL	W	NONE
Total BTEX in soil (Poland)	Determination of BTEX in soil by headspace GC-MS. Individual components MCERTS accredited	In-house method based on USEPA8260	L073-PL	W	NONE
Metals in leachate by ICP-OES	Determination of metals in leachate by acidification followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil""	L039-PL	W	ISO 17025
Chloride 10:1 WAC	Determination of Chloride colorimetrically by discrete analyser.	In house based on MEWAM Method ISBN 0117516260.	L082-PL	W	ISO 17025
Fluoride 10:1 WAC	Determination of fluoride in leachate by 1:1ratio with a buffer solution followed by Ion Selective Electrode.	In-house method based on Use of Total Ionic Strength Adjustment Buffer for Electrode Determination"	L033B-PL	W	ISO 17025
Sulphate 10:1 WAC	Determination of sulphate in leachate by ICP-OES	In-house method based on MEWAM 1986 Methods for the Determination of Metals in Soil""	L039-PL	W	ISO 17025
Total dissolved solids 10:1 WAC	Determination of total dissolved solids in water by EC probe using a factor of 0.6.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L031	W	ISO 17025

Analytical Report Number : 23-36564
Project / Site name: A46 Walsgrave

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Monohydric phenols 10:1 WAC	Determination of phenols in leachate by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L080-PL	W	ISO 17025
Dissolved organic carbon 10:1 WAC	Determination of dissolved inorganic carbon in leachate by TOC/DOC NDIR Analyser.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L037-PL	W	NONE

For method numbers ending in 'UK or A' analysis have been carried out in our laboratory in the United Kingdom (WATFORD).
For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).
For method numbers ending in 'PL or B' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.
Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

Information in Support of Analytical Results

List of HWOL Acronyms and Operators

Acronym	Descriptions
HS	Headspace Analysis
MS	Mass spectrometry
FID	Flame Ionisation Detector
GC	Gas Chromatography
EH	Extractable Hydrocarbons (i.e. everything extracted by the solvent(s))
CU	Clean-up - e.g. by Florisil®, silica gel
1D	GC - Single coil/column gas chromatography
2D	GC-GC - Double coil/column gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics
AR	Aromatics
#1	EH_2D_Total but with humics mathematically subtracted
#2	EH_2D_Total but with fatty acids mathematically subtracted
_	Operator - understore to separate acronyms (exception for +)
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total

- Quality control parameter has a high recovery (outside of limit); however the associated result is below the reporting limit, other checks applied prior to reporting the data have been accepted. The result should be considered as being deviating and may be compromised.

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Analytical Report Number : 23-36510

Project / Site name:	A46 Walsgrave	**Samples received on:**	30/05/2023
Your job number:	G230651	**Samples instructed on/ Analysis started on:**	30/05/2023
Your order number:	VE298636	**Analysis completed by:**	07/06/2023
Report Issue Number:	1	**Report issued on:**	07/06/2023
Samples Analysed:	2 leachate samples - 3 soil samples		

[redacted]
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41-711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils - 4 weeks from reporting
leachates - 2 weeks from reporting
waters - 2 weeks from reporting
asbestos - 6 months from reporting

Excel copies of reports are only valid when accompanied by this PDF certificate.

Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement.
Application of uncertainty of measurement would provide a range within which the true result lies.
An estimate of measurement uncertainty can be provided on request.

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The results included within the report relate only to the sample(s) submitted for testing.

Analytical Report Number: 23-36510
Project / Site name: A46 Walsgrave

Lab Sample Number				2695713	2695714	2695715
Sample Reference				BH114	BH114	BH114
Sample Number				2	8	12
Depth (m)				0.30	1.00	2.00
Date Sampled				22/05/2023	22/05/2023	22/05/2023
Time Taken				None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**			
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	11	13	13
Total mass of sample received	kg	0.001	NONE	1.3	1.3	1.3
General Inorganics						
pH - Automated	pH Units	N/A	MCERTS	6.7	7.9	7.9
Total Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
Complex Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
Free Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
Total Sulphate as SO4	mg/kg	50	MCERTS	350	< 50	73
Total Organic Carbon (TOC) - Automated	%	0.1	MCERTS	1.5	0.2	1.6
Total Phenols						
Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
Speciated PAHs						
Naphthalene	mg/kg	0.05	NONE	< 0.05	< 0.05	0.29
Acenaphthylene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05
Fluorene	mg/kg	0.05	NONE	< 0.05	< 0.05	0.08
Phenanthrene	mg/kg	0.05	NONE	< 0.05	< 0.05	0.23
Anthracene	mg/kg	0.05	NONE	< 0.05	< 0.05	0.06
Fluoranthene	mg/kg	0.05	NONE	0.12	< 0.05	0.14
Pyrene	mg/kg	0.05	NONE	0.11	< 0.05	0.17
Benzo(a)anthracene	mg/kg	0.05	NONE	0.05	< 0.05	0.06
Chrysene	mg/kg	0.05	NONE	0.05	< 0.05	< 0.05
Benzo(b)fluoranthene	mg/kg	0.05	NONE	0.06	< 0.05	< 0.05
Benzo(k)fluoranthene	mg/kg	0.05	NONE	0.06	< 0.05	< 0.05
Benzo(a)pyrene	mg/kg	0.05	NONE	0.05	< 0.05	< 0.05
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05
Total PAH						
Speciated Total EPA-16 PAHs	mg/kg	0.8	NONE	< 0.80	< 0.80	1.03
Heavy Metals / Metalloids						
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	6.8	1.1	2.5
Boron (water soluble)	mg/kg	0.2	MCERTS	0.5	< 0.2	< 0.2
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	0.3
Chromium (hexavalent)	mg/kg	1.8	MCERTS	< 1.8	< 1.8	< 1.8
Chromium (III)	mg/kg	1	NONE	13	3.4	8.1
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	14	3.5	8.6
Copper (aqua regia extractable)	mg/kg	1	MCERTS	19	8.3	18
Lead (aqua regia extractable)	mg/kg	1	MCERTS	26	1.9	6
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	9.3	3.5	6.4
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	54	11	20

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Analytical Report Number: 23-36510
Project / Site name: A46 Walsgrave

Lab Sample Number				2695713	2695714	2695715
Sample Reference				BH114	BH114	BH114
Sample Number				2	8	12
Depth (m)				0.30	1.00	2.00
Date Sampled				22/05/2023	22/05/2023	22/05/2023
Time Taken				None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**			
Monoaromatics & Oxygenates						
Benzene	µg/kg	5	NONE	< 5.0	< 5.0	< 5.0
Toluene	µg/kg	5	NONE	< 5.0	< 5.0	< 5.0
Ethylbenzene	µg/kg	5	NONE	< 5.0	< 5.0	< 5.0
p & m-xylene	µg/kg	5	NONE	< 5.0	< 5.0	< 5.0
o-xylene	µg/kg	5	NONE	< 5.0	< 5.0	< 5.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	NONE	< 5.0	< 5.0	< 5.0
Petroleum Hydrocarbons						
TPH-CWG - Aliphatic >EC5 - EC6 $_{HS_1D_AL}$	mg/kg	0.001	NONE	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC6 - EC8 $_{HS_1D_AL}$	mg/kg	0.001	NONE	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC8 - EC10 $_{HS_1D_AL}$	mg/kg	0.001	NONE	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC10 - EC12 $_{EH_CU_1D_AL}$	mg/kg	1	NONE	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16 $_{EH_CU_1D_AL}$	mg/kg	2	NONE	< 2.0	< 2.0	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21 $_{EH_CU_1D_AL}$	mg/kg	8	NONE	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35 $_{EH_CU_1D_AL}$	mg/kg	8	NONE	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic (EC5 - EC35) $_{EH_CU+HS_1D_AL}$	mg/kg	10	NONE	< 10	< 10	< 10
TPH-CWG - Aromatic >EC5 - EC7 $_{HS_1D_AR}$	mg/kg	0.001	NONE	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC7 - EC8 $_{HS_1D_AR}$	mg/kg	0.001	NONE	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC8 - EC10 $_{HS_1D_AR}$	mg/kg	0.001	NONE	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC10 - EC12 $_{EH_CU_1D_AR}$	mg/kg	1	NONE	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >EC12 - EC16 $_{EH_CU_1D_AR}$	mg/kg	2	NONE	< 2.0	< 2.0	< 2.0
TPH-CWG - Aromatic >EC16 - EC21 $_{EH_CU_1D_AR}$	mg/kg	10	NONE	< 10	< 10	< 10
TPH-CWG - Aromatic >EC21 - EC35 $_{EH_CU_1D_AR}$	mg/kg	10	NONE	< 10	< 10	< 10
TPH-CWG - Aromatic (EC5 - EC35) $_{EH_CU+HS_1D_AR}$	mg/kg	10	NONE	< 10	< 10	< 10

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

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Analytical Report Number: 23-36510
Project / Site name: A46 Walsgrave

Lab Sample Number				2695716	2695717
Sample Reference				BH114	BH114
Sample Number				2	8
Depth (m)				0.30	1.00
Date Sampled				22/05/2023	22/05/2023
Time Taken				None Supplied	None Supplied
Analytical Parameter (Leachate Analysis)	**Units**	**Limit of detection**	**Accreditation Status**		
General Inorganics					
pH (automated)	pH Units	N/A	ISO 17025	7.1	7
Total Cyanide (Low Level 1 µg/l)	mg/l	0.001	ISO 17025	< 0.001	< 0.001
Complex Cyanide (Low Level)	mg/l	0.001	ISO 17025	< 0.001	< 0.001
Free Cyanide (Low Level 1 µg/l)	mg/l	0.001	ISO 17025	< 0.001	< 0.001
Sulphate as SO_4	mg/l	0.1	ISO 17025	5.3	0.7
Ammoniacal Nitrogen as N	mg/l	0.015	NONE	0.055	0.032
Ammoniacal Nitrogen as NH3	mg/l	0.015	NONE	0.066	0.038
Ammoniacal Nitrogen as NH4	mg/l	0.015	NONE	0.07	0.041
Total Phenols					
Total Phenols (monohydric)	mg/l	0.001	ISO 17025	0.0017	0.0017
Speciated PAHs					
Naphthalene	mg/l	0.00001	ISO 17025	< 0.00001	< 0.00001
Acenaphthylene	mg/l	0.00001	ISO 17025	< 0.00001	< 0.00001
Acenaphthene	mg/l	0.00001	ISO 17025	< 0.00001	< 0.00001
Fluorene	mg/l	0.00001	ISO 17025	< 0.00001	< 0.00001
Phenanthrene	mg/l	0.00001	ISO 17025	< 0.00001	< 0.00001
Anthracene	mg/l	0.00001	ISO 17025	< 0.00001	< 0.00001
Fluoranthene	mg/l	0.00001	ISO 17025	< 0.00001	< 0.00001
Pyrene	mg/l	0.00001	ISO 17025	< 0.00001	< 0.00001
Benzo(a)anthracene	mg/l	0.00001	ISO 17025	< 0.00001	< 0.00001
Chrysene	mg/l	0.00001	ISO 17025	< 0.00001	< 0.00001
Benzo(b)fluoranthene	mg/l	0.00001	ISO 17025	< 0.00001	< 0.00001
Benzo(k)fluoranthene	mg/l	0.00001	ISO 17025	< 0.00001	< 0.00001
Benzo(a)pyrene	mg/l	0.00001	ISO 17025	< 0.00001	< 0.00001
Indeno(1,2,3-cd)pyrene	mg/l	0.00001	NONE	< 0.00001	< 0.00001
Dibenz(a,h)anthracene	mg/l	0.00001	NONE	< 0.00001	< 0.00001
Benzo(ghi)perylene	mg/l	0.00001	NONE	< 0.00001	< 0.00001
Total PAH					
Total EPA-16 PAHs	mg/l	0.0002	NONE	< 0.0002	< 0.0002
Heavy Metals / Metalloids					
Arsenic (dissolved)	mg/l	0.001	ISO 17025	0.003	< 0.001
Boron (dissolved)	mg/l	0.01	ISO 17025	0.01	< 0.01
Cadmium (dissolved)	mg/l	0.00008	ISO 17025	< 0.00008	< 0.00008
Chromium (dissolved)	mg/l	0.0004	ISO 17025	0.0006	< 0.0004
Copper (dissolved)	mg/l	0.0007	ISO 17025	0.0136	0.0043
Lead (dissolved)	mg/l	0.001	ISO 17025	< 0.001	< 0.001
Mercury - CV-AFS	mg/l	0.000007	ISO 17025	0.0000136	0.0000123
Nickel (dissolved)	mg/l	0.0003	ISO 17025	0.0017	< 0.0003
Selenium (dissolved)	mg/l	0.004	ISO 17025	< 0.004	< 0.004
Zinc (dissolved)	mg/l	0.0004	ISO 17025	0.0064	0.0037

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Analytical Report Number: 23-36510
Project / Site name: A46 Walsgrave

Lab Sample Number				2695716	2695717
Sample Reference				BH114	BH114
Sample Number				2	8
Depth (m)				0.30	1.00
Date Sampled				22/05/2023	22/05/2023
Time Taken				None Supplied	None Supplied
Analytical Parameter (Leachate Analysis)	**Units**	**Limit of detection**	**Accreditation Status**		
Monoaromatics & Oxygenates					
Benzene	mg/l	0.003	ISO 17025	< 0.003	< 0.003
Toluene##	mg/l	0.003	ISO 17025	< 0.003	< 0.003
Ethylbenzene	mg/l	0.003	ISO 17025	< 0.003	< 0.003
p & m-xylene##	mg/l	0.003	ISO 17025	< 0.003	< 0.003
o-xylene	mg/l	0.003	ISO 17025	< 0.003	< 0.003
MTBE (Methyl Tertiary Butyl Ether)	mg/l	0.01	NONE	< 0.01	< 0.01
Petroleum Hydrocarbons					
TPH-CWG - Aliphatic >C5 - C6# $_{HS_1D_AL}$	mg/l	0.001	NONE	< 0.001	< 0.001
TPH-CWG - Aliphatic >C6 - C8# $_{HS_1D_AL}$	mg/l	0.001	NONE	< 0.001	< 0.001
TPH-CWG - Aliphatic >C8 - C10# $_{HS_1D_AL}$	mg/l	0.001	NONE	< 0.001	< 0.001
TPH-CWG - Aliphatic >C10 - C12 $_{EH_1D_AL_MS}$	mg/l	0.01	NONE	< 0.01	< 0.01
TPH-CWG - Aliphatic >C12 - C16 $_{EH_1D_AL_MS}$	mg/l	0.01	NONE	< 0.01	< 0.01
TPH-CWG - Aliphatic >C16 - C21 $_{EH_1D_AL_MS}$	mg/l	0.01	NONE	< 0.01	< 0.01
TPH-CWG - Aliphatic >C21 - C35 $_{EH_1D_AL_MS}$	mg/l	0.01	NONE	< 0.01	< 0.01
TPH-CWG - Aliphatic (C5 - C35) $_{HS+EH_1D_AL_MS}$	mg/l	0.01	NONE	< 0.01	< 0.01
TPH-CWG - Aromatic >C5 - C7 $_{HS_1D_AR}$	mg/l	0.001	ISO 17025	< 0.001	< 0.001
TPH-CWG - Aromatic >C7 - C8 $_{HS_1D_AR}$	mg/l	0.001	ISO 17025	< 0.001	< 0.001
TPH-CWG - Aromatic >C8 - C10 $_{HS_1D_AR}$	mg/l	0.001	ISO 17025	< 0.001	< 0.001
TPH-CWG - Aromatic >C10 - C12 $_{EH_1D_AR_MS}$	mg/l	0.01	NONE	< 0.01	< 0.01
TPH-CWG - Aromatic >C12 - C16 $_{EH_1D_AR_MS}$	mg/l	0.01	NONE	< 0.01	< 0.01
TPH-CWG - Aromatic >C16 - C21 $_{EH_1D_AR_MS}$	mg/l	0.01	NONE	< 0.01	< 0.01
TPH-CWG - Aromatic >C21 - C35 $_{EH_1D_AR_MS}$	mg/l	0.01	NONE	< 0.01	< 0.01
TPH-CWG - Aromatic (C5 - C35) $_{HS+EH_1D_AR_MS}$	mg/l	0.01	NONE	< 0.01	< 0.01

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

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* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and loam (MCERTS) soil types. Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
2695713	BH114	2	0.3	Brown loam and sand with gravel and vegetation.
2695714	BH114	8	1	Brown sand.
2695715	BH114	12	2	Brown sand.

Analytical Report Number : 23-36510
Project / Site name: A46 Walsgrave

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
BS EN 12457-2 (10:1) Leachate Prep	10:1 (as recieved, moisture adjusted) end over end extraction with water for 24 hours. Eluate filtered prior to analysis.	In-house method based on BSEN12457-2.	L043-PL	W	NONE
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES.	In-house method based on Second Site Properties version 3	L038-PL	D	MCERTS
Complex cyanide (Low level) in leachate	Determination of complex cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	ISO 17025
Complex Cyanide in soil	Determination of complex cyanide by calculation.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Free cyanide in soil	Determination of free cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
Monohydric phenols in leachate - LOW LEVEL 1 ug/l	Determination of phenols in leachate by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	ISO 17025
Monohydric phenols in soil	Determination of phenols in soil by extraction with sodium hydroxide followed by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	MCERTS
Speciated EPA-16 PAHs in leachate	Determination of PAH compounds in leachate by extraction in dichloromethane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L102B-PL	W	ISO 17025
Speciated EPA-16 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L064-PL	D	NONE
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In house method.	L099-PL	D	MCERTS
pH at 20oC in leachate (automated)	Determination of pH in leachate by electrometric measurement.	In house method.	L099B	W	ISO 17025
Total sulphate (as SO4 in soil)	Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES.	In house method.	L038-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
TPHCWG (Leachates)	Determination of dichloromethane extractable hydrocarbons in leachate by GC-MS.	In-house method	L070-PL	W	ISO 17025

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Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Total cyanide in soil	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Total organic carbon (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In house method.	L009-PL	D	MCERTS
BTEX and MTBE in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS. Individual components MCERTS accredited	In-house method based on USEPA8260	L073B-PL	W	NONE
BTEX and MTBE in leachates (Monoaromatics)	Determination of BTEX and MTBE in leachates by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	ISO 17025
Ammonia as NH3 in leachate	Determination of Ammonium/Ammonia/ Ammoniacal Nitrogen by the colorimetric salicylate/nitroprusside method.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082-PL	W	NONE
Ammoniacal Nitrogen as N in leachate	Determination of Ammonium/Ammonia/ Ammoniacal Nitrogen by the discrete analyser (colorimetric) salicylate/nitroprusside method.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082-PL	W	NONE
Metals by ICP-OES in leachate	Determination of metals in leachate by acidification followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L039-PL	W	ISO 17025
Boron in leachate	Determination of boron in leachate. Sample acidified and followed by ICP-OES.	In-house method based on MEWAM	L039-PL	W	ISO 17025
Cr (III) in soil	In-house method by calculation from total Cr and Cr VI.	In-house method by calculation	L080-PL	W	NONE
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method with silica gel split/clean up.	L088/76-PL	W	NONE
Free cyanide in leachate	Determination of free cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	ISO 17025
Total cyanide in leachate - 1µg/l	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L080-PL	W	ISO 17025
Ammonium as NH4 in leachate	Determination of ammonium in leachate by addition of buffer solution followed by ion selective electrode.	In-house method	L035-PL	W	NONE
Sulphate in leachates	Determination of sulphate in leachate by acidification followed by ICP-OES.	In-house method based on MEWAM 1986 Methods for the Determination of Metals in Soil""	L039-PL	W	ISO 17025
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in NaOH and addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	MCERTS

Analytical Report Number : 23-36510
Project / Site name: A46 Walsgrave

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Mercury Low Level in leachate	Mercury in leachate by CV-AFS,	In-house method based on USEPA method 1631	L085-PL	W	ISO 17025

For method numbers ending in 'UK or A' analysis have been carried out in our laboratory in the United Kingdom (WATFORD).
For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).
For method numbers ending in 'PL or B' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.
Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

Information in Support of Analytical Results

List of HWOL Acronyms and Operators

Acronym	Descriptions
HS	Headspace Analysis
MS	Mass spectrometry
FID	Flame Ionisation Detector
GC	Gas Chromatography
EH	Extractable Hydrocarbons (i.e. everything extracted by the solvent(s))
CU	Clean-up - e.g. by Florisil®, silica gel
1D	GC - Single coil/column gas chromatography
2D	GC-GC - Double coil/column gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics
AR	Aromatics
#1	EH_2D_Total but with humics mathematically subtracted
#2	EH_2D_Total but with fatty acids mathematically subtracted
_	Operator - understore to separate acronyms (exception for +)
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total

#Data reported unaccredited due to quality control parameter failure associated with this result; other checks applied prior to reporting the data have been accepted. The result should be considered as being deviating and therefore may be compromised.
##Quality control parameter has a high recovery (outside of limit); however the associated result is below the reporting limit, other checks applied prior to reporting the data have been accepted. The result should be considered as being deviating and may be compromised.

Sample Deviation Report

Analytical Report Number : 23-36510

Project / Site name: A46 Walsgrave

This deviation report indicates the sample and test deviations that apply to the samples submitted for analysis.Please note that the associated result(s) may be unreliable and should be interpreted with care.

Key: a - No sampling date b - Incorrect container c - Holding time d - Headspace e - Temperature

Sample ID	Other ID	Sample Type	Lab Sample Number	Sample Deviation	Test Name	Test Ref	Test Deviation
BH114	12	S	2695715	c	Free cyanide in soil	L080-PL	c
BH114	12	S	2695715	c	Complex Cyanide in soil	L080-PL	c
BH114	12	S	2695715	c	Total cyanide in soil	L080-PL	c
BH114	2	S	2695713	c	Free cyanide in soil	L080-PL	c
BH114	2	S	2695713	c	Complex Cyanide in soil	L080-PL	c
BH114	2	S	2695713	c	Total cyanide in soil	L080-PL	c
BH114	8	S	2695714	c	Free cyanide in soil	L080-PL	c
BH114	8	S	2695714	c	Complex Cyanide in soil	L080-PL	c
BH114	8	S	2695714	c	Total cyanide in soil	L080-PL	c

[redacted]
t:
e:

i2 Analytical Ltd.
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WD18 8YS

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Analytical Report Number : 23-36544

Project / Site name:	A46 Walsgrave	**Samples received on:**	24/05/2023
Your job number:	G230651	**Samples instructed on/ Analysis started on:**	30/05/2023
Your order number:		**Analysis completed by:**	06/06/2023
Report Issue Number:	1	**Report issued on:**	06/06/2023
Samples Analysed:	8 leachate samples - 11 soil samples		

[redacted]
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41-711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils - 4 weeks from reporting
leachates - 2 weeks from reporting
waters - 2 weeks from reporting
asbestos - 6 months from reporting

Excel copies of reports are only valid when accompanied by this PDF certificate.

Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement.
Application of uncertainty of measurement would provide a range within which the true result lies.
An estimate of measurement uncertainty can be provided on request.

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The results included within the report relate only to the sample(s) submitted for testing.

Analytical Report Number: 23-36544
Project / Site name: A46 Walsgrave

Lab Sample Number				2695852	2695853	2695854	2695855	2695856
Sample Reference				TP101	TP101	TP101	TP102	TP102
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.10	1.00	2.00	0.20	1.00
Date Sampled				Deviating	Deviating	Deviating	Deviating	Deviating
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	17	13	12	14	12
Total mass of sample received	kg	0.001	NONE	1.3	1.3	2	1.3	1.3
General Inorganics								
pH - Automated	pH Units	N/A	MCERTS	7	8.5	8.5	6.5	8.2
Total Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Complex Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Free Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total Sulphate as SO4	mg/kg	50	MCERTS	730	370	370	460	75
Total Organic Carbon (TOC) - Automated	%	0.1	MCERTS	2.2	< 0.1	< 0.1	1.7	< 0.1
Total Phenols								
Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Speciated PAHs								
Naphthalene	mg/kg	0.05	NONE	0.65	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Fluorene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Phenanthrene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Anthracene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Fluoranthene	mg/kg	0.05	NONE	0.08	< 0.05	< 0.05	0.1	< 0.05
Pyrene	mg/kg	0.05	NONE	0.08	< 0.05	< 0.05	0.1	< 0.05
Benzo(a)anthracene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05	0.06	< 0.05
Chrysene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05	0.06	< 0.05
Benzo(b)fluoranthene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05	0.1	< 0.05
Benzo(k)fluoranthene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05	0.05	< 0.05
Benzo(a)pyrene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05	0.08	< 0.05
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Total PAH								
Speciated Total EPA-16 PAHs	mg/kg	0.8	NONE	0.81	< 0.80	< 0.80	< 0.80	< 0.80
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	6.6	5.2	5.2	7.3	10
Boron (water soluble)	mg/kg	0.2	MCERTS	1.8	0.2	0.3	0.3	< 0.2
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Chromium (hexavalent)	mg/kg	1.8	MCERTS	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8
Chromium (III)	mg/kg	1	NONE	28	29	27	14	11
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	28	29	27	15	11
Copper (aqua regia extractable)	mg/kg	1	MCERTS	16	12	8.1	14	10
Lead (aqua regia extractable)	mg/kg	1	MCERTS	27	7.9	7.6	25	5.8
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	30	26	23	11	12
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	290	98	86	50	31

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Analytical Report Number: 23-36544
Project / Site name: A46 Walsgrave

Lab Sample Number				2695852	2695853	2695854	2695855	2695856
Sample Reference				TP101	TP101	TP101	TP102	TP102
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.10	1.00	2.00	0.20	1.00
Date Sampled				Deviating	Deviating	Deviating	Deviating	Deviating
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Monoaromatics & Oxygenates								
Benzene	µg/kg	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Toluene	µg/kg	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Ethylbenzene	µg/kg	5	NONE	< 5.0	< 5.0	< 5.0##	< 5.0	< 5.0
p & m-xylene	µg/kg	5	NONE	< 5.0	< 5.0	< 5.0##	< 5.0	< 5.0
o-xylene	µg/kg	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Petroleum Hydrocarbons								
TPH-CWG - Aliphatic >EC5 - EC6 $_{HS_1D_AL}$	mg/kg	0.001	NONE	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC6 - EC8 $_{HS_1D_AL}$	mg/kg	0.001	NONE	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC8 - EC10 $_{HS_1D_AL}$	mg/kg	0.001	NONE	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC10 - EC12 $_{EH_CU_1D_AL}$	mg/kg	1	NONE	1.6	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16 $_{EH_CU_1D_AL}$	mg/kg	2	NONE	5.6	< 2.0	< 2.0	< 2.0	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21 $_{EH_CU_1D_AL}$	mg/kg	8	NONE	13	< 8.0	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35 $_{EH_CU_1D_AL}$	mg/kg	8	NONE	67	< 8.0	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic (EC5 - EC35) $_{EH_CU+HS_1D_AL}$	mg/kg	10	NONE	87	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >EC5 - EC7 $_{HS_1D_AR}$	mg/kg	0.001	NONE	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC7 - EC8 $_{HS_1D_AR}$	mg/kg	0.001	NONE	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC8 - EC10 $_{HS_1D_AR}$	mg/kg	0.001	NONE	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC10 - EC12 $_{EH_CU_1D_AR}$	mg/kg	1	NONE	11	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >EC12 - EC16 $_{EH_CU_1D_AR}$	mg/kg	2	NONE	19	< 2.0	< 2.0	< 2.0	< 2.0
TPH-CWG - Aromatic >EC16 - EC21 $_{EH_CU_1D_AR}$	mg/kg	10	NONE	28	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >EC21 - EC35 $_{EH_CU_1D_AR}$	mg/kg	10	NONE	79	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic (EC5 - EC35) $_{EH_CU+HS_1D_AR}$	mg/kg	10	NONE	140	< 10	< 10	< 10	< 10

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

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The results included within the report relate only to the sample(s) submitted for testing.

Analytical Report Number: 23-36544
Project / Site name: A46 Walsgrave

Lab Sample Number				2695857	2695858	2695859	2695860	2695861
Sample Reference				TP102	TP102	TP103	TP103	TP103
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				2.00	2.50	0.10	1.00	2.00
Date Sampled				Deviating	Deviating	Deviating	Deviating	Deviating
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	15	13	13	14	12
Total mass of sample received	kg	0.001	NONE	1.3	1.3	1.3	1.3	1.3
General Inorganics								
pH - Automated	pH Units	N/A	MCERTS	7.5	8.3	6.7	8.3	8.3
Total Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Complex Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Free Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total Sulphate as SO4	mg/kg	50	MCERTS	75	210	460	530	890
Total Organic Carbon (TOC) - Automated	%	0.1	MCERTS	< 0.1	< 0.1	1.7	0.2	0.2
Total Phenols								
Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Speciated PAHs								
Naphthalene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Fluorene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Phenanthrene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Anthracene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Fluoranthene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Pyrene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(a)anthracene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Chrysene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(b)fluoranthene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(k)fluoranthene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(a)pyrene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Total PAH								
Speciated Total EPA-16 PAHs	mg/kg	0.8	NONE	< 0.80	< 0.80	< 0.80	< 0.80	< 0.80
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	56	5.9	8.6	7.8	9.8
Boron (water soluble)	mg/kg	0.2	MCERTS	0.3	0.4	0.7	0.7	0.8
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Chromium (hexavalent)	mg/kg	1.8	MCERTS	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8
Chromium (III)	mg/kg	1	NONE	19	27	29	34	32
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	19	28	29	34	32
Copper (aqua regia extractable)	mg/kg	1	MCERTS	14	16	21	23	21
Lead (aqua regia extractable)	mg/kg	1	MCERTS	8.5	8.1	24	12	11
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	21	27	21	33	33
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	58	89	65	54	60

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Analytical Report Number: 23-36544
Project / Site name: A46 Walsgrave

Lab Sample Number				2695857	2695858	2695859	2695860	2695861
Sample Reference				TP102	TP102	TP103	TP103	TP103
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				2.00	2.50	0.10	1.00	2.00
Date Sampled				Deviating	Deviating	Deviating	Deviating	Deviating
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Monoaromatics & Oxygenates								
Benzene	µg/kg	5	NONE	< 5.0	< 5.0	< 5.0##	< 5.0	< 5.0
Toluene	µg/kg	5	NONE	< 5.0	< 5.0	< 5.0##	< 5.0	< 5.0
Ethylbenzene	µg/kg	5	NONE	< 5.0##	< 5.0##	< 5.0	< 5.0##	< 5.0##
p & m-xylene	µg/kg	5	NONE	< 5.0##	< 5.0##	< 5.0##	< 5.0##	< 5.0##
o-xylene	µg/kg	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Petroleum Hydrocarbons								
TPH-CWG - Aliphatic >EC5 - EC6 $_{HS_1D_AL}$	mg/kg	0.001	NONE	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC6 - EC8 $_{HS_1D_AL}$	mg/kg	0.001	NONE	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC8 - EC10 $_{HS_1D_AL}$	mg/kg	0.001	NONE	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC10 - EC12 $_{EH_CU_1D_AL}$	mg/kg	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16 $_{EH_CU_1D_AL}$	mg/kg	2	NONE	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21 $_{EH_CU_1D_AL}$	mg/kg	8	NONE	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35 $_{EH_CU_1D_AL}$	mg/kg	8	NONE	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic (EC5 - EC35) $_{EH_CU+HS_1D_AL}$	mg/kg	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >EC5 - EC7 $_{HS_1D_AR}$	mg/kg	0.001	NONE	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC7 - EC8 $_{HS_1D_AR}$	mg/kg	0.001	NONE	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC8 - EC10 $_{HS_1D_AR}$	mg/kg	0.001	NONE	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC10 - EC12 $_{EH_CU_1D_AR}$	mg/kg	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >EC12 - EC16 $_{EH_CU_1D_AR}$	mg/kg	2	NONE	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
TPH-CWG - Aromatic >EC16 - EC21 $_{EH_CU_1D_AR}$	mg/kg	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >EC21 - EC35 $_{EH_CU_1D_AR}$	mg/kg	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic (EC5 - EC35) $_{EH_CU+HS_1D_AR}$	mg/kg	10	NONE	< 10	< 10	< 10	< 10	< 10

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

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Analytical Report Number: 23-36544
Project / Site name: A46 Walsgrave

Lab Sample Number				2695862
Sample Reference				TP103
Sample Number				None Supplied
Depth (m)				2.50
Date Sampled				Deviating
Time Taken				None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**	
Stone Content	%	0.1	NONE	< 0.1
Moisture Content	%	0.01	NONE	13
Total mass of sample received	kg	0.001	NONE	1.3

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	8.3
Total Cyanide	mg/kg	1	MCERTS	< 1.0
Complex Cyanide	mg/kg	1	MCERTS	< 1.0
Free Cyanide	mg/kg	1	MCERTS	< 1.0
Total Sulphate as SO4	mg/kg	50	MCERTS	520
Total Organic Carbon (TOC) - Automated	%	0.1	MCERTS	0.2

Total Phenols

Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0

Speciated PAHs

Naphthalene	mg/kg	0.05	NONE	< 0.05
Acenaphthylene	mg/kg	0.05	NONE	< 0.05
Acenaphthene	mg/kg	0.05	NONE	< 0.05
Fluorene	mg/kg	0.05	NONE	< 0.05
Phenanthrene	mg/kg	0.05	NONE	< 0.05
Anthracene	mg/kg	0.05	NONE	< 0.05
Fluoranthene	mg/kg	0.05	NONE	< 0.05
Pyrene	mg/kg	0.05	NONE	< 0.05
Benzo(a)anthracene	mg/kg	0.05	NONE	< 0.05
Chrysene	mg/kg	0.05	NONE	< 0.05
Benzo(b)fluoranthene	mg/kg	0.05	NONE	< 0.05
Benzo(k)fluoranthene	mg/kg	0.05	NONE	< 0.05
Benzo(a)pyrene	mg/kg	0.05	NONE	< 0.05
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	NONE	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	NONE	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	NONE	< 0.05

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	NONE	< 0.80

Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	9.7
Boron (water soluble)	mg/kg	0.2	MCERTS	1.4
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2
Chromium (hexavalent)	mg/kg	1.8	MCERTS	< 1.8
Chromium (III)	mg/kg	1	NONE	37
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	37
Copper (aqua regia extractable)	mg/kg	1	MCERTS	23
Lead (aqua regia extractable)	mg/kg	1	MCERTS	14
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	36
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	58

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Analytical Report Number: 23-36544
Project / Site name: A46 Walsgrave

Lab Sample Number				2695862
Sample Reference				TP103
Sample Number				None Supplied
Depth (m)				2.50
Date Sampled				Deviating
Time Taken				None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**	
Monoaromatics & Oxygenates				
Benzene	µg/kg	5	NONE	< 5.0
Toluene	µg/kg	5	NONE	< 5.0
Ethylbenzene	µg/kg	5	NONE	< 5.0##
p & m-xylene	µg/kg	5	NONE	< 5.0##
o-xylene	µg/kg	5	NONE	< 5.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	NONE	< 5.0

Petroleum Hydrocarbons

TPH-CWG - Aliphatic >EC5 - EC6 $_{HS_1D_AL}$	mg/kg	0.001	NONE	< 0.001
TPH-CWG - Aliphatic >EC6 - EC8 $_{HS_1D_AL}$	mg/kg	0.001	NONE	< 0.001
TPH-CWG - Aliphatic >EC8 - EC10 $_{HS_1D_AL}$	mg/kg	0.001	NONE	< 0.001
TPH-CWG - Aliphatic >EC10 - EC12 $_{EH_CU_1D_AL}$	mg/kg	1	NONE	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16 $_{EH_CU_1D_AL}$	mg/kg	2	NONE	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21 $_{EH_CU_1D_AL}$	mg/kg	8	NONE	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35 $_{EH_CU_1D_AL}$	mg/kg	8	NONE	< 8.0
TPH-CWG - Aliphatic (EC5 - EC35) $_{EH_CU+HS_1D_AL}$	mg/kg	10	NONE	< 10

TPH-CWG - Aromatic >EC5 - EC7 $_{HS_1D_AR}$	mg/kg	0.001	NONE	< 0.001
TPH-CWG - Aromatic >EC7 - EC8 $_{HS_1D_AR}$	mg/kg	0.001	NONE	< 0.001
TPH-CWG - Aromatic >EC8 - EC10 $_{HS_1D_AR}$	mg/kg	0.001	NONE	< 0.001
TPH-CWG - Aromatic >EC10 - EC12 $_{EH_CU_1D_AR}$	mg/kg	1	NONE	< 1.0
TPH-CWG - Aromatic >EC12 - EC16 $_{EH_CU_1D_AR}$	mg/kg	2	NONE	< 2.0
TPH-CWG - Aromatic >EC16 - EC21 $_{EH_CU_1D_AR}$	mg/kg	10	NONE	< 10
TPH-CWG - Aromatic >EC21 - EC35 $_{EH_CU_1D_AR}$	mg/kg	10	NONE	< 10
TPH-CWG - Aromatic (EC5 - EC35) $_{EH_CU+HS_1D_AR}$	mg/kg	10	NONE	< 10

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

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Analytical Report Number: 23-36544
Project / Site name: A46 Walsgrave

Lab Sample Number				2695863	2695864	2695865	2695866	2695867
Sample Reference				TP101	TP101	TP102	TP102	TP102
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				1.00	2.00	1.00	2.00	2.50
Date Sampled				Deviating	Deviating	Deviating	Deviating	Deviating
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Leachate Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
General Inorganics								
pH (automated)	pH Units	N/A	ISO 17025	7.6	8.3	7.9	7.8	8
Total Cyanide (Low Level 1 µg/l)	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Complex Cyanide (Low Level)	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Free Cyanide (Low Level 1 µg/l)	µg/l	1	ISO 17025	< 1	< 1	< 1	< 1	< 1
Sulphate as SO_4	mg/l	0.1	ISO 17025	4.2	1.4	1.8	2.1	1.6
Ammoniacal Nitrogen as N	µg/l	15	NONE	23	< 15	19	< 15	280
Ammoniacal Nitrogen as NH3	µg/l	15	NONE	28	16	24	< 15	340
Ammoniacal Nitrogen as NH3	mg/l	0.015	NONE	0.028	0.016	0.024	< 0.015	0.34
Ammoniacal Nitrogen as NH4	mg/l	0.015	NONE	0.03	0.017	0.025	< 0.015	0.36
Total Phenols								
Total Phenols (monohydric)	µg/l	1	ISO 17025	1.8	2.1	2.4	2.1	2.1
Speciated PAHs								
Naphthalene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Acenaphthylene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Acenaphthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Fluorene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Phenanthrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(a)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Chrysene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(b)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(k)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(a)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Indeno(1,2,3-cd)pyrene	µg/l	0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Dibenz(a,h)anthracene	µg/l	0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(ghi)perylene	µg/l	0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Total PAH								
Total EPA-16 PAHs	µg/l	0.2	NONE	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Heavy Metals / Metalloids								
Arsenic (dissolved)	mg/l	0.001	ISO 17025	0.005	0.003	0.003	0.005	< 0.001
Boron (dissolved)	mg/l	0.01	ISO 17025	0.02	0.01	< 0.01	0.01	< 0.01
Cadmium (dissolved)	mg/l	0.00008	ISO 17025	< 0.00008	0.0001	< 0.00008	0.0001	< 0.0001
Chromium (dissolved)	mg/l	0.0004	ISO 17025	0.0013	0.001	0.0007	0.0021	0.0005
Copper (dissolved)	mg/l	0.0007	ISO 17025	0.0104	0.0024	0.0051	0.0057	0.002
Lead (dissolved)	mg/l	0.001	ISO 17025	0.003	0.002	0.003	0.004	< 0.001
Mercury - CV-AFS	µg/l	0.007	ISO 17025	0.0115	< 0.0070	< 0.0070	< 0.0070	< 0.0070
Nickel (dissolved)	mg/l	0.0003	ISO 17025	0.0016	0.0007	0.0009	0.0012	0.0011
Selenium (dissolved)	mg/l	0.004	ISO 17025	< 0.004	< 0.004	< 0.004	< 0.004	< 0.004
Zinc (dissolved)	mg/l	0.0004	ISO 17025	0.0116	0.006	0.0076	0.0075	0.0114

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Analytical Report Number: 23-36544
Project / Site name: A46 Walsgrave

Lab Sample Number				2695863	2695864	2695865	2695866	2695867
Sample Reference				TP101	TP101	TP102	TP102	TP102
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				1.00	2.00	1.00	2.00	2.50
Date Sampled				Deviating	Deviating	Deviating	Deviating	Deviating
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Leachate Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Monoaromatics & Oxygenates								
Benzene	µg/l	3	ISO 17025	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0
Toluene	µg/l	3	ISO 17025	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0
Ethylbenzene	µg/l	3	ISO 17025	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0
p & m-xylene	µg/l	3	ISO 17025	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0
o-xylene	µg/l	3	ISO 17025	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0
MTBE (Methyl Tertiary Butyl Ether)	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
Petroleum Hydrocarbons								
TPH-CWG - Aliphatic >C5 - C6 HS_1D_AL	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >C6 - C8 HS_1D_AL	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >C8 - C10 HS_1D_AL	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >C10 - C12 EH_1D_AL_MS	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C12 - C16 EH_1D_AL_MS	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C16 - C21 EH_1D_AL_MS	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C21 - C35 EH_1D_AL_MS	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic (C5 - C35) HS+EH_1D_AL_MS	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C5 - C7 HS_1D_AR	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >C7 - C8 HS_1D_AR	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >C8 - C10 HS_1D_AR	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >C10 - C12 EH_1D_AR_MS	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C12 - C16 EH_1D_AR_MS	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C16 - C21 EH_1D_AR_MS	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C21 - C35 EH_1D_AR_MS	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic (C5 - C35) HS+EH_1D_AR_MS	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

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Analytical Report Number: 23-36544
Project / Site name: A46 Walsgrave

Lab Sample Number				2695868	2695869	2695870
Sample Reference				TP103	TP103	TP103
Sample Number				None Supplied	None Supplied	None Supplied
Depth (m)				1.00	2.00	2.50
Date Sampled				Deviating	Deviating	Deviating
Time Taken				None Supplied	None Supplied	None Supplied
Analytical Parameter (Leachate Analysis)	**Units**	**Limit of detection**	**Accreditation Status**			
General Inorganics						
pH (automated)	pH Units	N/A	ISO 17025	8.1	8.3	8.1
Total Cyanide (Low Level 1 µg/l)	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
Complex Cyanide (Low Level)	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
Free Cyanide (Low Level 1 µg/l)	µg/l	1	ISO 17025	< 1	< 1	< 1
Sulphate as SO_4	mg/l	0.1	ISO 17025	23.5	40	24.2
Ammoniacal Nitrogen as N	µg/l	15	NONE	< 15	17	< 15
Ammoniacal Nitrogen as NH3	µg/l	15	NONE	< 15	20	< 15
Ammoniacal Nitrogen as NH3	mg/l	0.015	NONE	< 0.015	0.02	< 0.015
Ammoniacal Nitrogen as NH4	mg/l	0.015	NONE	< 0.015	0.021	< 0.015
Total Phenols						
Total Phenols (monohydric)	µg/l	1	ISO 17025	2.6	2	2.3
Speciated PAHs						
Naphthalene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01
Acenaphthylene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01
Acenaphthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01
Fluorene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01
Phenanthrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01
Anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01
Fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01
Pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01
Benzo(a)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01
Chrysene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01
Benzo(b)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01
Benzo(k)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01
Benzo(a)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01
Indeno(1,2,3-cd)pyrene	µg/l	0.01	NONE	< 0.01	< 0.01	< 0.01
Dibenz(a,h)anthracene	µg/l	0.01	NONE	< 0.01	< 0.01	< 0.01
Benzo(ghi)perylene	µg/l	0.01	NONE	< 0.01	< 0.01	< 0.01
Total PAH						
Total EPA-16 PAHs	µg/l	0.2	NONE	< 0.2	< 0.2	< 0.2
Heavy Metals / Metalloids						
Arsenic (dissolved)	mg/l	0.001	ISO 17025	< 0.001	< 0.001	0.003
Boron (dissolved)	mg/l	0.01	ISO 17025	0.04	0.04	0.04
Cadmium (dissolved)	mg/l	0.00008	ISO 17025	< 0.00008	< 0.00008	< 0.00008
Chromium (dissolved)	mg/l	0.0004	ISO 17025	0.0009	0.0006	0.0013
Copper (dissolved)	mg/l	0.0007	ISO 17025	0.0022	0.0023	0.0017
Lead (dissolved)	mg/l	0.001	ISO 17025	0.002	0.002	0.001
Mercury - CV-AFS	µg/l	0.007	ISO 17025	< 0.0070	< 0.0070	0.0083
Nickel (dissolved)	mg/l	0.0003	ISO 17025	0.0011	0.0013	0.0022
Selenium (dissolved)	mg/l	0.004	ISO 17025	< 0.004	< 0.004	< 0.004
Zinc (dissolved)	mg/l	0.0004	ISO 17025	0.0057	0.0041	0.0107

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Analytical Report Number: 23-36544
Project / Site name: A46 Walsgrave

Lab Sample Number				2695868	2695869	2695870
Sample Reference				TP103	TP103	TP103
Sample Number				None Supplied	None Supplied	None Supplied
Depth (m)				1.00	2.00	2.50
Date Sampled				Deviating	Deviating	Deviating
Time Taken				None Supplied	None Supplied	None Supplied
Analytical Parameter (Leachate Analysis)	**Units**	**Limit of detection**	**Accreditation Status**			
Monoaromatics & Oxygenates						
Benzene	µg/l	3	ISO 17025	< 3.0	< 3.0	< 3.0
Toluene	µg/l	3	ISO 17025	< 3.0	< 3.0	< 3.0
Ethylbenzene	µg/l	3	ISO 17025	< 3.0	< 3.0	< 3.0
p & m-xylene	µg/l	3	ISO 17025	< 3.0	< 3.0	< 3.0
o-xylene	µg/l	3	ISO 17025	< 3.0	< 3.0	< 3.0
MTBE (Methyl Tertiary Butyl Ether)	µg/l	10	NONE	< 10	< 10	< 10
Petroleum Hydrocarbons						
TPH-CWG - Aliphatic >C5 - C6 HS_1D_AL	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >C6 - C8 HS_1D_AL	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >C8 - C10 HS_1D_AL	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >C10 - C12 EH_1D_AL_MS	µg/l	10	NONE	< 10	< 10	< 10
TPH-CWG - Aliphatic >C12 - C16 EH_1D_AL_MS	µg/l	10	NONE	< 10	< 10	< 10
TPH-CWG - Aliphatic >C16 - C21 EH_1D_AL_MS	µg/l	10	NONE	< 10	< 10	< 10
TPH-CWG - Aliphatic >C21 - C35 EH_1D_AL_MS	µg/l	10	NONE	< 10	< 10	< 10
TPH-CWG - Aliphatic (C5 - C35) HS+EH_1D_AL_MS	µg/l	10	NONE	< 10	< 10	< 10
TPH-CWG - Aromatic >C5 - C7 HS_1D_AR	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >C7 - C8 HS_1D_AR	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >C8 - C10 HS_1D_AR	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >C10 - C12 EH_1D_AR_MS	µg/l	10	NONE	< 10	< 10	< 10
TPH-CWG - Aromatic >C12 - C16 EH_1D_AR_MS	µg/l	10	NONE	< 10	< 10	< 10
TPH-CWG - Aromatic >C16 - C21 EH_1D_AR_MS	µg/l	10	NONE	< 10	< 10	< 10
TPH-CWG - Aromatic >C21 - C35 EH_1D_AR_MS	µg/l	10	NONE	< 10	< 10	< 10
TPH-CWG - Aromatic (C5 - C35) HS+EH_1D_AR_MS	µg/l	10	NONE	< 10	< 10	< 10

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

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Analytical Report Number : 23-36544
Project / Site name: A46 Walsgrave

* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and loam (MCERTS) soil types. Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
2695852	TP101	None Supplied	0.1	Brown clay and loam with gravel and vegetation.
2695853	TP101	None Supplied	1	Brown clay and sand with gravel.
2695854	TP101	None Supplied	2	Brown clay and sand with gravel.
2695855	TP102	None Supplied	0.2	Brown clay and loam with gravel and vegetation.
2695856	TP102	None Supplied	1	Brown sand with gravel.
2695857	TP102	None Supplied	2	Brown clay and sand with gravel.
2695858	TP102	None Supplied	2.5	Brown clay and sand with gravel.
2695859	TP103	None Supplied	0.1	Brown clay and loam with gravel and vegetation.
2695860	TP103	None Supplied	1	Brown clay with gravel.
2695861	TP103	None Supplied	2	Brown clay with gravel.
2695862	TP103	None Supplied	2.5	Brown clay.

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Analytical Report Number : 23-36544
Project / Site name: A46 Walsgrave

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
BS EN 12457-2 (10:1) Leachate Prep	10:1 (as recieved, moisture adjusted) end over end extraction with water for 24 hours. Eluate filtered prior to analysis.	In-house method based on BSEN12457-2.	L043-PL	W	NONE
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES.	In-house method based on Second Site Properties version 3	L038-PL	D	MCERTS
Complex cyanide (Low level) in leachate	Determination of complex cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	ISO 17025
Complex Cyanide in soil	Determination of complex cyanide by calculation.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Free cyanide in soil	Determination of free cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
Monohydric phenols in leachate - LOW LEVEL 1 ug/l	Determination of phenols in leachate by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	ISO 17025
Monohydric phenols in soil	Determination of phenols in soil by extraction with sodium hydroxide followed by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	MCERTS
Speciated EPA-16 PAHs in leachate	Determination of PAH compounds in leachate by extraction in dichloromethane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L102B-PL	W	ISO 17025
Speciated EPA-16 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L064-PL	D	NONE
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In house method.	L099-PL	D	MCERTS
pH at 20oC in leachate (automated)	Determination of pH in leachate by electrometric measurement.	In house method.	L099B	W	ISO 17025
Total sulphate (as SO4 in soil)	Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES.	In house method.	L038-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
TPHCWG (Leachates)	Determination of dichloromethane extractable hydrocarbons in leachate by GC-MS.	In-house method	L070-PL	W	ISO 17025
Total cyanide in soil	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS

Analytical Report Number : 23-36544
Project / Site name: A46 Walsgrave

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Total organic carbon (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In house method.	L009-PL	D	MCERTS
BTEX and MTBE in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS. Individual components MCERTS accredited	In-house method based on USEPA8260	L073B-PL	W	NONE
BTEX and MTBE in leachates (Monoaromatics)	Determination of BTEX and MTBE in leachates by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	ISO 17025
Ammonia as NH3 in leachate	Determination of Ammonium/Ammonia/ Ammoniacal Nitrogen by the colorimetric salicylate/nitroprusside method.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082-PL	W	NONE
Ammoniacal Nitrogen as N in leachate	Determination of Ammonium/Ammonia/ Ammoniacal Nitrogen by the discrete analyser (colorimetric) salicylate/nitroprusside method.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082-PL	W	NONE
Metals by ICP-OES in leachate	Determination of metals in leachate by acidification followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L039-PL	W	ISO 17025
Boron in leachate	Determination of boron in leachate. Sample acidified and followed by ICP-OES.	In-house method based on MEWAM	L039-PL	W	ISO 17025
Cr (III) in soil	In-house method by calculation from total Cr and Cr VI.	In-house method by calculation	L080-PL	W	NONE
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method with silica gel split/clean up.	L088/76-PL	W	NONE
Free cyanide in leachate	Determination of free cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	ISO 17025
Total cyanide in leachate - 1µg/l	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L080-PL	W	ISO 17025
Ammonium as NH4 in leachate	Determination of ammonium in leachate by addition of buffer solution followed by ion selective electrode.	In-house method	L035-PL	W	NONE
Sulphate in leachates	Determination of sulphate in leachate by acidification followed by ICP-OES.	In-house method based on MEWAM 1986 Methods for the Determination of Metals in Soil""	L039-PL	W	ISO 17025
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in NaOH and addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	MCERTS
Mercury Low Level in leachate	Mercury in leachate by CV-AFS,	In-house method based on USEPA method 1631	L085-PL	W	ISO 17025

For method numbers ending in 'UK or A' analysis have been carried out in our laboratory in the United Kingdom (WATFORD).
For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).
For method numbers ending in 'PL or B' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.
Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

Information in Support of Analytical Results

Analytical Report Number : 23-36544
Project / Site name: A46 Walsgrave

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status

List of HWOL Acronyms and Operators

Acronym	Descriptions
HS	Headspace Analysis
MS	Mass spectrometry
FID	Flame Ionisation Detector
GC	Gas Chromatography
EH	Extractable Hydrocarbons (i.e. everything extracted by the solvent(s))
CU	Clean-up - e.g. by Florisil®, silica gel
1D	GC - Single coil/column gas chromatography
2D	GC-GC - Double coil/column gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics
AR	Aromatics
#1	EH_2D_Total but with humics mathematically subtracted
#2	EH_2D_Total but with fatty acids mathematically subtracted
_	Operator - understore to separate acronyms (exception for +)
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total

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Analytical Report Number : 23-36544
Project / Site name: A46 Walsgrave

This deviation report indicates the sample and test deviations that apply to the samples submitted for analysis.Please note that the associated result(s) may be unreliable and should be interpreted with care.

Key: a - No sampling date b - Incorrect container c - Holding time d - Headspace e - Temperature

Sample ID	Other ID	Sample Type	Lab Sample Number	Sample Deviation	Test Name	Test Ref	Test Deviation
TP101	None Supplied	L	2695863	a	None Supplied	None Supplied	None Supplied
TP101	None Supplied	L	2695864	a	None Supplied	None Supplied	None Supplied
TP101	None Supplied	S	2695852	a	None Supplied	None Supplied	None Supplied
TP101	None Supplied	S	2695853	a	None Supplied	None Supplied	None Supplied
TP101	None Supplied	S	2695854	ab	BTEX and MTBE in soil (Monoaromatics)	L073B-PL	b
TP101	None Supplied	S	2695854	ab	Monohydric phenols in soil	L080-PL	b
TP101	None Supplied	S	2695854	ab	Speciated EPA-16 PAHs in soil	L064-PL	b
TP101	None Supplied	S	2695854	ab	TPHCWG (Soil)	L088/76-PL	b
TP102	None Supplied	L	2695865	a	None Supplied	None Supplied	None Supplied
TP102	None Supplied	L	2695866	a	None Supplied	None Supplied	None Supplied
TP102	None Supplied	L	2695867	a	None Supplied	None Supplied	None Supplied
TP102	None Supplied	S	2695855	a	None Supplied	None Supplied	None Supplied
TP102	None Supplied	S	2695856	a	None Supplied	None Supplied	None Supplied
TP102	None Supplied	S	2695857	a	None Supplied	None Supplied	None Supplied
TP102	None Supplied	S	2695858	a	None Supplied	None Supplied	None Supplied
TP103	None Supplied	L	2695868	a	None Supplied	None Supplied	None Supplied
TP103	None Supplied	L	2695869	a	None Supplied	None Supplied	None Supplied
TP103	None Supplied	L	2695870	a	None Supplied	None Supplied	None Supplied
TP103	None Supplied	S	2695859	a	None Supplied	None Supplied	None Supplied
TP103	None Supplied	S	2695860	a	None Supplied	None Supplied	None Supplied
TP103	None Supplied	S	2695861	a	None Supplied	None Supplied	None Supplied
TP103	None Supplied	S	2695862	a	None Supplied	None Supplied	None Supplied

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Analytical Report Number : 23-36543

Project / Site name:	A46 Walsgrave	**Samples received on:**	23/05/2023
Your job number:	G230651	**Samples instructed on/ Analysis started on:**	30/05/2023
Your order number:		**Analysis completed by:**	06/06/2023
Report Issue Number:	1	**Report issued on:**	06/06/2023
Samples Analysed:	2 leachate samples - 4 soil samples		

[redacted]
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41-711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils	- 4 weeks from reporting
leachates	- 2 weeks from reporting
waters	- 2 weeks from reporting
asbestos	- 6 months from reporting

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Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement.
Application of uncertainty of measurement would provide a range within which the true result lies.
An estimate of measurement uncertainty can be provided on request.

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Analytical Report Number: 23-36543
Project / Site name: A46 Walsgrave

Lab Sample Number				2695846	2695847	2695848	2695849
Sample Reference				WS108	WS108	WS108	WS108
Sample Number				1	2	4	5
Depth (m)				0.10-0.20	0.50-0.60	1.50-1.70	2.50-2.70
Date Sampled				19/05/2023	19/05/2023	19/05/2023	19/05/2023
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**				
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	56
Moisture Content	%	0.01	NONE	14	13	12	7.2
Total mass of sample received	kg	0.001	NONE	2	2	2	2
General Inorganics							
pH - Automated	pH Units	N/A	MCERTS	6.5	7.8	8.3	8.3
Total Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0
Complex Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0
Free Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0
Total Sulphate as SO4	mg/kg	50	MCERTS	300	120	730	1100
Total Organic Carbon (TOC) - Automated	%	0.1	MCERTS	1.6	0.2	< 0.1	< 0.1
Total Phenols							
Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0
Speciated PAHs							
Naphthalene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
Fluorene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
Phenanthrene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
Anthracene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
Fluoranthene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
Pyrene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(a)anthracene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
Chrysene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(b)fluoranthene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(k)fluoranthene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(a)pyrene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
Total PAH							
Speciated Total EPA-16 PAHs	mg/kg	0.8	NONE	< 0.80	< 0.80	< 0.80	< 0.80
Heavy Metals / Metalloids							
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	11	15	25	27
Boron (water soluble)	mg/kg	0.2	MCERTS	0.5	0.6	0.3	0.3
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2
Chromium (hexavalent)	mg/kg	1.8	MCERTS	< 1.8	< 1.8	< 1.8	< 1.8
Chromium (III)	mg/kg	1	NONE	19	30	24	18
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	20	30	24	18
Copper (aqua regia extractable)	mg/kg	1	MCERTS	20	37	39	29
Lead (aqua regia extractable)	mg/kg	1	MCERTS	25	12	12	15
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	16	31	35	33
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	78	61	94	110

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Analytical Report Number: 23-36543
Project / Site name: A46 Walsgrave

Lab Sample Number				2695846	2695847	2695848	2695849
Sample Reference				WS108	WS108	WS108	WS108
Sample Number				1	2	4	5
Depth (m)				0.10-0.20	0.50-0.60	1.50-1.70	2.50-2.70
Date Sampled				19/05/2023	19/05/2023	19/05/2023	19/05/2023
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**				
Monoaromatics & Oxygenates							
Benzene	µg/kg	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0
Toluene	µg/kg	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0
Ethylbenzene	µg/kg	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0
p & m-xylene	µg/kg	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0
o-xylene	µg/kg	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0
Petroleum Hydrocarbons							
TPH-CWG - Aliphatic >EC5 - EC6 $_{HS_1D_AL}$	mg/kg	0.001	NONE	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC6 - EC8 $_{HS_1D_AL}$	mg/kg	0.001	NONE	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC8 - EC10 $_{HS_1D_AL}$	mg/kg	0.001	NONE	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC10 - EC12 $_{EH_CU_1D_AL}$	mg/kg	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16 $_{EH_CU_1D_AL}$	mg/kg	2	NONE	< 2.0	< 2.0	< 2.0	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21 $_{EH_CU_1D_AL}$	mg/kg	8	NONE	< 8.0	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35 $_{EH_CU_1D_AL}$	mg/kg	8	NONE	< 8.0	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic (EC5 - EC35) $_{EH_CU+HS_1D_AL}$	mg/kg	10	NONE	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >EC5 - EC7 $_{HS_1D_AR}$	mg/kg	0.001	NONE	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC7 - EC8 $_{HS_1D_AR}$	mg/kg	0.001	NONE	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC8 - EC10 $_{HS_1D_AR}$	mg/kg	0.001	NONE	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC10 - EC12 $_{EH_CU_1D_AR}$	mg/kg	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >EC12 - EC16 $_{EH_CU_1D_AR}$	mg/kg	2	NONE	< 2.0	< 2.0	< 2.0	< 2.0
TPH-CWG - Aromatic >EC16 - EC21 $_{EH_CU_1D_AR}$	mg/kg	10	NONE	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >EC21 - EC35 $_{EH_CU_1D_AR}$	mg/kg	10	NONE	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic (EC5 - EC35) $_{EH_CU+HS_1D_AR}$	mg/kg	10	NONE	< 10	< 10	< 10	< 10

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

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Analytical Report Number: 23-36543
Project / Site name: A46 Walsgrave

Lab Sample Number				2695850	2695851
Sample Reference				WS108	WS108
Sample Number				2	5
Depth (m)				0.50-0.60	2.50-2.70
Date Sampled				19/05/2023	19/05/2023
Time Taken				None Supplied	None Supplied
Analytical Parameter (Leachate Analysis)	**Units**	**Limit of detection**	**Accreditation Status**		
General Inorganics					
pH (automated)	pH Units	N/A	ISO 17025	7.5	8.1
Total Cyanide (Low Level 1 µg/l)	µg/l	1	ISO 17025	< 1.0	< 1.0
Complex Cyanide (Low Level)	µg/l	1	ISO 17025	< 1.0	< 1.0
Free Cyanide (Low Level 1 µg/l)	µg/l	1	ISO 17025	< 1	< 1
Sulphate as SO_4	mg/l	0.1	ISO 17025	0.9	38.1
Ammoniacal Nitrogen as N	µg/l	15	NONE	< 15	30
Ammoniacal Nitrogen as NH3	mg/l	0.015	NONE	0.017	0.036
Ammoniacal Nitrogen as NH4	mg/l	0.015	NONE	0.018	0.038
Total Phenols					
Total Phenols (monohydric)	µg/l	1	ISO 17025	1.4	1.6
Speciated PAHs					
Naphthalene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Acenaphthylene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Acenaphthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Fluorene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Phenanthrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Benzo(a)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Chrysene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Benzo(b)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Benzo(k)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Benzo(a)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Indeno(1,2,3-cd)pyrene	µg/l	0.01	NONE	< 0.01	< 0.01
Dibenz(a,h)anthracene	µg/l	0.01	NONE	< 0.01	< 0.01
Benzo(ghi)perylene	µg/l	0.01	NONE	< 0.01	< 0.01
Total PAH					
Total EPA-16 PAHs	µg/l	0.2	NONE	< 0.2	< 0.2
Heavy Metals / Metalloids					
Arsenic (dissolved)	mg/l	0.001	ISO 17025	< 0.001	0.001
Boron (dissolved)	mg/l	0.01	ISO 17025	0.03	0.02
Cadmium (dissolved)	mg/l	0.00008	ISO 17025	< 0.00008	< 0.00008
Chromium (dissolved)	mg/l	0.0004	ISO 17025	0.0017	0.0016
Copper (dissolved)	mg/l	0.0007	ISO 17025	0.0027	0.0042
Lead (dissolved)	mg/l	0.001	ISO 17025	< 0.001	0.001
Mercury - CV-AFS	µg/l	0.007	ISO 17025	< 0.0070	< 0.0070
Nickel (dissolved)	mg/l	0.0003	ISO 17025	0.0005	0.0022
Selenium (dissolved)	mg/l	0.004	ISO 17025	< 0.004	< 0.004
Zinc (dissolved)	mg/l	0.0004	ISO 17025	0.003	0.0097

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Analytical Report Number: 23-36543
Project / Site name: A46 Walsgrave

Lab Sample Number				2695850	2695851
Sample Reference				WS108	WS108
Sample Number				2	5
Depth (m)				0.50-0.60	2.50-2.70
Date Sampled				19/05/2023	19/05/2023
Time Taken				None Supplied	None Supplied
Analytical Parameter (Leachate Analysis)	**Units**	**Limit of detection**	**Accreditation Status**		
Monoaromatics & Oxygenates					
Benzene	µg/l	3	ISO 17025	< 3.0	< 3.0
Toluene	µg/l	3	ISO 17025	< 3.0	< 3.0
Ethylbenzene	µg/l	3	ISO 17025	< 3.0	< 3.0
p & m-xylene	µg/l	3	ISO 17025	< 3.0	< 3.0
o-xylene	µg/l	3	ISO 17025	< 3.0	< 3.0
MTBE (Methyl Tertiary Butyl Ether)	µg/l	10	NONE	< 10	< 10
Petroleum Hydrocarbons					
TPH-CWG - Aliphatic >C5 - C6 HS_1D_AL	µg/l	1	ISO 17025	< 1.0	< 1.0
TPH-CWG - Aliphatic >C6 - C8 HS_1D_AL	µg/l	1	ISO 17025	< 1.0	< 1.0
TPH-CWG - Aliphatic >C8 - C10 HS_1D_AL	µg/l	1	ISO 17025	< 1.0	< 1.0
TPH-CWG - Aliphatic >C10 - C12 EH_1D_AL_MS	µg/l	10	NONE	< 10	< 10
TPH-CWG - Aliphatic >C12 - C16 EH_1D_AL_MS	µg/l	10	NONE	< 10	< 10
TPH-CWG - Aliphatic >C16 - C21 EH_1D_AL_MS	µg/l	10	NONE	< 10	< 10
TPH-CWG - Aliphatic >C21 - C35 EH_1D_AL_MS	µg/l	10	NONE	< 10	< 10
TPH-CWG - Aliphatic (C5 - C35) HS+EH_1D_AL_MS	µg/l	10	NONE	< 10	< 10
TPH-CWG - Aromatic >C5 - C7 HS_1D_AR	µg/l	1	ISO 17025	< 1.0	< 1.0
TPH-CWG - Aromatic >C7 - C8 HS_1D_AR	µg/l	1	ISO 17025	< 1.0	< 1.0
TPH-CWG - Aromatic >C8 - C10 HS_1D_AR	µg/l	1	ISO 17025	< 1.0	< 1.0
TPH-CWG - Aromatic >C10 - C12 EH_1D_AR_MS	µg/l	10	NONE	< 10	< 10
TPH-CWG - Aromatic >C12 - C16 EH_1D_AR_MS	µg/l	10	NONE	< 10	< 10
TPH-CWG - Aromatic >C16 - C21 EH_1D_AR_MS	µg/l	10	NONE	< 10	< 10
TPH-CWG - Aromatic >C21 - C35 EH_1D_AR_MS	µg/l	10	NONE	< 10	< 10
TPH-CWG - Aromatic (C5 - C35) HS+EH_1D_AR_MS	µg/l	10	NONE	< 10	< 10

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

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Analytical Report Number : 23-36543
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* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and loam (MCERTS) soil types. Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
2695846	WS108	1	0.10-0.20	Brown loam and sand with gravel and vegetation.
2695847	WS108	2	0.50-0.60	Brown clay and loam with gravel and vegetation.
2695848	WS108	4	1.50-1.70	Brown clay and sand with gravel.
2695849	WS108	5	2.50-2.70	Brown clay and sand with gravel and stones.

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Analytical Report Number : 23-36543
Project / Site name: A46 Walsgrave

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
BS EN 12457-2 (10:1) Leachate Prep	10:1 (as recieved, moisture adjusted) end over end extraction with water for 24 hours. Eluate filtered prior to analysis.	In-house method based on BSEN12457-2.	L043-PL	W	NONE
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES.	In-house method based on Second Site Properties version 3	L038-PL	D	MCERTS
Complex cyanide (Low level) in leachate	Determination of complex cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	ISO 17025
Complex Cyanide in soil	Determination of complex cyanide by calculation.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Free cyanide in soil	Determination of free cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
Monohydric phenols in leachate - LOW LEVEL 1 ug/l	Determination of phenols in leachate by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	ISO 17025
Monohydric phenols in soil	Determination of phenols in soil by extraction with sodium hydroxide followed by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	MCERTS
Speciated EPA-16 PAHs in leachate	Determination of PAH compounds in leachate by extraction in dichloromethane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L102B-PL	W	ISO 17025
Speciated EPA-16 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L064-PL	D	NONE
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In house method.	L099-PL	D	MCERTS
pH at 20oC in leachate (automated)	Determination of pH in leachate by electrometric measurement.	In house method.	L099B	W	ISO 17025
Total sulphate (as SO4 in soil)	Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES.	In house method.	L038-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
TPHCWG (Leachates)	Determination of dichloromethane extractable hydrocarbons in leachate by GC-MS.	In-house method	L070-PL	W	ISO 17025
Total cyanide in soil	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS

Analytical Report Number : 23-36543
Project / Site name: A46 Walsgrave

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Total organic carbon (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In house method.	L009-PL	D	MCERTS
BTEX and MTBE in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS. Individual components MCERTS accredited	In-house method based on USEPA8260	L073B-PL	W	NONE
BTEX and MTBE in leachates (Monoaromatics)	Determination of BTEX and MTBE in leachates by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	ISO 17025
Ammonia as NH3 in leachate	Determination of Ammonium/Ammonia/ Ammoniacal Nitrogen by the colorimetric salicylate/nitroprusside method.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082-PL	W	NONE
Ammoniacal Nitrogen as N in leachate	Determination of Ammonium/Ammonia/ Ammoniacal Nitrogen by the discrete analyser (colorimetric) salicylate/nitroprusside method.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082-PL	W	NONE
Metals by ICP-OES in leachate	Determination of metals in leachate by acidification followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L039-PL	W	ISO 17025
Boron in leachate	Determination of boron in leachate. Sample acidified and followed by ICP-OES.	In-house method based on MEWAM	L039-PL	W	ISO 17025
Cr (III) in soil	In-house method by calculation from total Cr and Cr VI.	In-house method by calculation	L080-PL	W	NONE
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method with silica gel split/clean up.	L088/76-PL	W	NONE
Free cyanide in leachate	Determination of free cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	ISO 17025
Total cyanide in leachate - 1µg/l	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L080-PL	W	ISO 17025
Ammonium as NH4 in leachate	Determination of ammonium in leachate by addition of buffer solution followed by ion selective electrode.	In-house method	L035-PL	W	NONE
Sulphate in leachates	Determination of sulphate in leachate by acidification followed by ICP-OES.	In-house method based on MEWAM 1986 Methods for the Determination of Metals in Soil""	L039-PL	W	ISO 17025
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in NaOH and addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	MCERTS
Mercury Low Level in leachate	Mercury in leachate by CV-AFS,	In-house method based on USEPA method 1631	L085-PL	W	ISO 17025

For method numbers ending in 'UK or A' analysis have been carried out in our laboratory in the United Kingdom (WATFORD).
For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).
For method numbers ending in 'PL or B' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.
Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

Information in Support of Analytical Results

Analytical Report Number : 23-36543
Project / Site name: A46 Walsgrave

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status

List of HWOL Acronyms and Operators

Acronym	Descriptions
HS	Headspace Analysis
MS	Mass spectrometry
FID	Flame Ionisation Detector
GC	Gas Chromatography
EH	Extractable Hydrocarbons (i.e. everything extracted by the solvent(s))
CU	Clean-up - e.g. by Florisil®, silica gel
1D	GC - Single coil/column gas chromatography
2D	GC-GC - Double coil/column gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics
AR	Aromatics
#1	EH_2D_Total but with humics mathematically subtracted
#2	EH_2D_Total but with fatty acids mathematically subtracted
_	Operator - understore to separate acronyms (exception for +)
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total

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Analytical Report Number : 23-36543
Project / Site name: A46 Walsgrave

This deviation report indicates the sample and test deviations that apply to the samples submitted for analysis.Please note that the associated result(s) may be unreliable and should be interpreted with care.

Key: a - No sampling date b - Incorrect container c - Holding time d - Headspace e - Temperature

Sample ID	Other ID	Sample Type	Lab Sample Number	Sample Deviation	Test Name	Test Ref	Test Deviation
WS108	1	S	2695846	c	Free cyanide in soil	L080-PL	c
WS108	1	S	2695846	c	Complex Cyanide in soil	L080-PL	c
WS108	1	S	2695846	c	Total cyanide in soil	L080-PL	c
WS108	2	S	2695847	c	Free cyanide in soil	L080-PL	c
WS108	2	S	2695847	c	Complex Cyanide in soil	L080-PL	c
WS108	2	S	2695847	c	Total cyanide in soil	L080-PL	c
WS108	4	S	2695848	c	Free cyanide in soil	L080-PL	c
WS108	4	S	2695848	c	Complex Cyanide in soil	L080-PL	c
WS108	4	S	2695848	c	Total cyanide in soil	L080-PL	c
WS108	5	S	2695849	c	Free cyanide in soil	L080-PL	c
WS108	5	S	2695849	c	Complex Cyanide in soil	L080-PL	c
WS108	5	S	2695849	c	Total cyanide in soil	L080-PL	c

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[redacted]
t:
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WD18 8YS

t: 01923 225404
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Analytical Report Number : 23-36503

Project / Site name:	A46 Walsgrave	**Samples received on:**	26/05/2023
Your job number:	G230651	**Samples instructed on/ Analysis started on:**	30/05/2023
Your order number:		**Analysis completed by:**	06/06/2023
Report Issue Number:	1	**Report issued on:**	06/06/2023
Samples Analysed:	1 leachate sample - 3 soil samples		

[redacted]
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41-711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils	- 4 weeks from reporting
leachates	- 2 weeks from reporting
waters	- 2 weeks from reporting
asbestos	- 6 months from reporting

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Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement.
Application of uncertainty of measurement would provide a range within which the true result lies.
An estimate of measurement uncertainty can be provided on request.

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Analytical Report Number: 23-36503
Project / Site name: A46 Walsgrave

Lab Sample Number				2695684	2695685	2695686
Sample Reference				BH115	BH115	BH115
Sample Number				2	3	13
Depth (m)				0.50	1.00	2.00
Date Sampled				24/05/2023	24/05/2023	25/05/2023
Time Taken				None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**			
Stone Content	%	0.1	NONE	< 0.1	25	< 0.1
Moisture Content	%	0.01	NONE	11	9.1	9.4
Total mass of sample received	kg	0.001	NONE	1.3	1.3	1.3
General Inorganics						
pH - Automated	pH Units	N/A	MCERTS	7	7.8	8.4
Total Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
Complex Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
Free Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
Total Sulphate as SO4	mg/kg	50	MCERTS	390	130	270
Total Organic Carbon (TOC) - Automated	%	0.1	MCERTS	1.7	0.4	0.2
Total Phenols						
Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
Speciated PAHs						
Naphthalene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05
Fluorene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05
Phenanthrene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05
Anthracene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05
Fluoranthene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05
Pyrene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05
Benzo(a)anthracene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05
Chrysene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05
Benzo(b)fluoranthene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05
Benzo(k)fluoranthene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05
Benzo(a)pyrene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05
Total PAH						
Speciated Total EPA-16 PAHs	mg/kg	0.8	NONE	< 0.80	< 0.80	< 0.80
Heavy Metals / Metalloids						
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	9	9.3	8.9
Boron (water soluble)	mg/kg	0.2	MCERTS	0.4	0.6	0.2
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2
Chromium (hexavalent)	mg/kg	1.8	MCERTS	< 1.8	< 1.8	< 1.8
Chromium (III)	mg/kg	1	NONE	19	20	24
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	19	20	24
Copper (aqua regia extractable)	mg/kg	1	MCERTS	16	11	15
Lead (aqua regia extractable)	mg/kg	1	MCERTS	30	9.3	8.2
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	13	11	23
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	67	27	72

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Analytical Report Number: 23-36503
Project / Site name: A46 Walsgrave

Lab Sample Number				2695684	2695685	2695686
Sample Reference				BH115	BH115	BH115
Sample Number				2	3	13
Depth (m)				0.50	1.00	2.00
Date Sampled				24/05/2023	24/05/2023	25/05/2023
Time Taken				None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**			
Monoaromatics & Oxygenates						
Benzene	µg/kg	5	NONE	< 5.0	< 5.0	< 5.0
Toluene	µg/kg	5	NONE	< 5.0	< 5.0	< 5.0
Ethylbenzene	µg/kg	5	NONE	< 5.0	< 5.0	< 5.0
p & m-xylene	µg/kg	5	NONE	< 5.0	< 5.0	< 5.0
o-xylene	µg/kg	5	NONE	< 5.0	< 5.0	< 5.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	NONE	< 5.0	< 5.0	< 5.0
Petroleum Hydrocarbons						
TPH-CWG - Aliphatic >EC5 - EC6 $_{HS_1D_AL}$	mg/kg	0.001	NONE	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC6 - EC8 $_{HS_1D_AL}$	mg/kg	0.001	NONE	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC8 - EC10 $_{HS_1D_AL}$	mg/kg	0.001	NONE	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC10 - EC12 $_{EH_CU_1D_AL}$	mg/kg	1	NONE	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16 $_{EH_CU_1D_AL}$	mg/kg	2	NONE	< 2.0	< 2.0	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21 $_{EH_CU_1D_AL}$	mg/kg	8	NONE	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35 $_{EH_CU_1D_AL}$	mg/kg	8	NONE	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic (EC5 - EC35) $_{EH_CU+HS_1D_AL}$	mg/kg	10	NONE	< 10	< 10	< 10
TPH-CWG - Aromatic >EC5 - EC7 $_{HS_1D_AR}$	mg/kg	0.001	NONE	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC7 - EC8 $_{HS_1D_AR}$	mg/kg	0.001	NONE	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC8 - EC10 $_{HS_1D_AR}$	mg/kg	0.001	NONE	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC10 - EC12 $_{EH_CU_1D_AR}$	mg/kg	1	NONE	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >EC12 - EC16 $_{EH_CU_1D_AR}$	mg/kg	2	NONE	< 2.0	< 2.0	< 2.0
TPH-CWG - Aromatic >EC16 - EC21 $_{EH_CU_1D_AR}$	mg/kg	10	NONE	< 10	< 10	< 10
TPH-CWG - Aromatic >EC21 - EC35 $_{EH_CU_1D_AR}$	mg/kg	10	NONE	< 10	< 10	< 10
TPH-CWG - Aromatic (EC5 - EC35) $_{EH_CU+HS_1D_AR}$	mg/kg	10	NONE	< 10	< 10	< 10

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

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The results included within the report relate only to the sample(s) submitted for testing.

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Analytical Report Number: 23-36503
Project / Site name: A46 Walsgrave

Lab Sample Number				2695687
Sample Reference				BH115
Sample Number				3
Depth (m)				1.00
Date Sampled				24/05/2023
Time Taken				None Supplied
Analytical Parameter (Leachate Analysis)	**Units**	**Limit of detection**	**Accreditation Status**	
General Inorganics				
pH (automated)	pH Units	N/A	ISO 17025	7.3
Total Cyanide (Low Level 1 µg/l)	µg/l	1	ISO 17025	< 1.0
Complex Cyanide (Low Level)	µg/l	1	ISO 17025	< 1.0
Free Cyanide (Low Level 1 µg/l)	µg/l	1	ISO 17025	< 1
Sulphate as SO_4	mg/l	0.1	ISO 17025	1.8
Ammoniacal Nitrogen as N	µg/l	15	NONE	< 15
Ammoniacal Nitrogen as NH3	mg/l	0.015	NONE	0.016
Ammoniacal Nitrogen as NH4	mg/l	0.015	NONE	0.017
Total Phenols				
Total Phenols (monohydric)	µg/l	1	ISO 17025	2
Speciated PAHs				
Naphthalene	µg/l	0.01	ISO 17025	< 0.01
Acenaphthylene	µg/l	0.01	ISO 17025	< 0.01
Acenaphthene	µg/l	0.01	ISO 17025	< 0.01
Fluorene	µg/l	0.01	ISO 17025	< 0.01
Phenanthrene	µg/l	0.01	ISO 17025	< 0.01
Anthracene	µg/l	0.01	ISO 17025	< 0.01
Fluoranthene	µg/l	0.01	ISO 17025	< 0.01
Pyrene	µg/l	0.01	ISO 17025	< 0.01
Benzo(a)anthracene	µg/l	0.01	ISO 17025	< 0.01
Chrysene	µg/l	0.01	ISO 17025	< 0.01
Benzo(b)fluoranthene	µg/l	0.01	ISO 17025	< 0.01
Benzo(k)fluoranthene	µg/l	0.01	ISO 17025	< 0.01
Benzo(a)pyrene	µg/l	0.01	ISO 17025	< 0.01
Indeno(1,2,3-cd)pyrene	µg/l	0.01	NONE	< 0.01
Dibenz(a,h)anthracene	µg/l	0.01	NONE	< 0.01
Benzo(ghi)perylene	µg/l	0.01	NONE	< 0.01
Total PAH				
Total EPA-16 PAHs	µg/l	0.2	NONE	< 0.2
Heavy Metals / Metalloids				
Arsenic (dissolved)	mg/l	0.001	ISO 17025	< 0.001
Boron (dissolved)	mg/l	0.01	ISO 17025	0.02
Cadmium (dissolved)	mg/l	0.00008	ISO 17025	< 0.00008
Chromium (dissolved)	mg/l	0.0004	ISO 17025	0.0006
Copper (dissolved)	mg/l	0.0007	ISO 17025	0.0063
Lead (dissolved)	mg/l	0.001	ISO 17025	< 0.001
Mercury - CV-AFS	µg/l	0.007	ISO 17025	0.0137
Nickel (dissolved)	mg/l	0.0003	ISO 17025	< 0.0003
Selenium (dissolved)	mg/l	0.004	ISO 17025	< 0.004
Zinc (dissolved)	mg/l	0.0004	ISO 17025	0.0048

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Analytical Report Number: 23-36503
Project / Site name: A46 Walsgrave

Lab Sample Number				2695687
Sample Reference				BH115
Sample Number				3
Depth (m)				1.00
Date Sampled				24/05/2023
Time Taken				None Supplied
Analytical Parameter (Leachate Analysis)	**Units**	**Limit of detection**	**Accreditation Status**	
Monoaromatics & Oxygenates				
Benzene	µg/l	3	ISO 17025	< 3.0
Toluene##	µg/l	3	ISO 17025	< 3.0
Ethylbenzene	µg/l	3	ISO 17025	< 3.0
p & m-xylene##	µg/l	3	ISO 17025	< 3.0
o-xylene	µg/l	3	ISO 17025	< 3.0
MTBE (Methyl Tertiary Butyl Ether)	µg/l	10	NONE	< 10
Petroleum Hydrocarbons				
TPH-CWG - Aliphatic >C5 - C6## HS_1D_AL	µg/l	1	ISO 17025	< 1.0
TPH-CWG - Aliphatic >C6 - C8## HS_1D_AL	µg/l	1	ISO 17025	< 1.0
TPH-CWG - Aliphatic >C8 - C10## HS_1D_AL	µg/l	1	ISO 17025	< 1.0
TPH-CWG - Aliphatic >C10 - C12 EH_1D_AL_MS	µg/l	10	NONE	< 10
TPH-CWG - Aliphatic >C12 - C16 EH_1D_AL_MS	µg/l	10	NONE	< 10
TPH-CWG - Aliphatic >C16 - C21 EH_1D_AL_MS	µg/l	10	NONE	< 10
TPH-CWG - Aliphatic >C21 - C35 EH_1D_AL_MS	µg/l	10	NONE	< 10
TPH-CWG - Aliphatic (C5 - C35) HS+EH_1D_AL_MS	µg/l	10	NONE	< 10
TPH-CWG - Aromatic >C5 - C7 HS_1D_AR	µg/l	1	ISO 17025	< 1.0
TPH-CWG - Aromatic >C7 - C8 HS_1D_AR	µg/l	1	ISO 17025	< 1.0
TPH-CWG - Aromatic >C8 - C10 HS_1D_AR	µg/l	1	ISO 17025	< 1.0
TPH-CWG - Aromatic >C10 - C12 EH_1D_AR_MS	µg/l	10	NONE	< 10
TPH-CWG - Aromatic >C12 - C16 EH_1D_AR_MS	µg/l	10	NONE	< 10
TPH-CWG - Aromatic >C16 - C21 EH_1D_AR_MS	µg/l	10	NONE	< 10
TPH-CWG - Aromatic >C21 - C35 EH_1D_AR_MS	µg/l	10	NONE	< 10
TPH-CWG - Aromatic (C5 - C35) HS+EH_1D_AR_MS	µg/l	10	NONE	< 10

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

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Analytical Report Number : 23-36503
Project / Site name: A46 Walsgrave

* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and loam (MCERTS) soil types. Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
2695684	BH115	2	0.5	Brown loam and sand with gravel and vegetation.
2695685	BH115	3	1	Brown clay and sand with stones.
2695686	BH115	13	2	Brown clay and sand with gravel.

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Analytical Report Number : 23-36503
Project / Site name: A46 Walsgrave

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
BS EN 12457-2 (10:1) Leachate Prep	10:1 (as recieved, moisture adjusted) end over end extraction with water for 24 hours. Eluate filtered prior to analysis.	In-house method based on BSEN12457-2.	L043-PL	W	NONE
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES.	In-house method based on Second Site Properties version 3	L038-PL	D	MCERTS
Complex cyanide (Low level) in leachate	Determination of complex cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	ISO 17025
Complex Cyanide in soil	Determination of complex cyanide by calculation.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Free cyanide in soil	Determination of free cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
Monohydric phenols in leachate - LOW LEVEL 1 ug/l	Determination of phenols in leachate by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	ISO 17025
Monohydric phenols in soil	Determination of phenols in soil by extraction with sodium hydroxide followed by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	MCERTS
Speciated EPA-16 PAHs in leachate	Determination of PAH compounds in leachate by extraction in dichloromethane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L102B-PL	W	ISO 17025
Speciated EPA-16 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L064-PL	D	NONE
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In house method.	L099-PL	D	MCERTS
pH at 20oC in leachate (automated)	Determination of pH in leachate by electrometric measurement.	In house method.	L099B	W	ISO 17025
Total sulphate (as SO4 in soil)	Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES.	In house method.	L038-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
TPHCWG (Leachates)	Determination of dichloromethane extractable hydrocarbons in leachate by GC-MS.	In-house method	L070-PL	W	ISO 17025
Total cyanide in soil	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS

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Analytical Report Number : 23-36503
Project / Site name: A46 Walsgrave

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Total organic carbon (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In house method.	L009-PL	D	MCERTS
BTEX and MTBE in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS. Individual components MCERTS accredited	In-house method based on USEPA8260	L073B-PL	W	NONE
BTEX and MTBE in leachates (Monoaromatics)	Determination of BTEX and MTBE in leachates by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	ISO 17025
Ammonia as NH3 in leachate	Determination of Ammonium/Ammonia/ Ammoniacal Nitrogen by the colorimetric salicylate/nitroprusside method.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082-PL	W	NONE
Ammoniacal Nitrogen as N in leachate	Determination of Ammonium/Ammonia/ Ammoniacal Nitrogen by the discrete analyser (colorimetric) salicylate/nitroprusside method.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082-PL	W	NONE
Metals by ICP-OES in leachate	Determination of metals in leachate by acidification followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L039-PL	W	ISO 17025
Boron in leachate	Determination of boron in leachate. Sample acidified and followed by ICP-OES.	In-house method based on MEWAM	L039-PL	W	ISO 17025
Cr (III) in soil	In-house method by calculation from total Cr and Cr VI.	In-house method by calculation	L080-PL	W	NONE
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method with silica gel split/clean up.	L088/76-PL	W	NONE
Free cyanide in leachate	Determination of free cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	ISO 17025
Total cyanide in leachate - 1µg/l	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L080-PL	W	ISO 17025
Ammonium as NH4 in leachate	Determination of ammonium in leachate by addition of buffer solution followed by ion selective electrode.	In-house method	L035-PL	W	NONE
Sulphate in leachates	Determination of sulphate in leachate by acidification followed by ICP-OES.	In-house method based on MEWAM 1986 Methods for the Determination of Metals in Soil""	L039-PL	W	ISO 17025
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in NaOH and addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	MCERTS

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Analytical Report Number : 23-36503
Project / Site name: A46 Walsgrave

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Mercury Low Level in leachate	Mercury in leachate by CV-AFS,	In-house method based on USEPA method 1631	L085-PL	W	ISO 17025

For method numbers ending in 'UK or A' analysis have been carried out in our laboratory in the United Kingdom (WATFORD).
For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).
For method numbers ending in 'PL or B' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.
Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

Information in Support of Analytical Results

List of HWOL Acronyms and Operators

Acronym	Descriptions
HS	Headspace Analysis
MS	Mass spectrometry
FID	Flame Ionisation Detector
GC	Gas Chromatography
EH	Extractable Hydrocarbons (i.e. everything extracted by the solvent(s))
CU	Clean-up - e.g. by Florisil®, silica gel
1D	GC - Single coil/column gas chromatography
2D	GC-GC - Double coil/column gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics
AR	Aromatics
#1	EH_2D_Total but with humics mathematically subtracted
#2	EH_2D_Total but with fatty acids mathematically subtracted
_	Operator - understore to separate acronyms (exception for +)
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total

- Quality control parameter has a high recovery (outside of limit); however the associated result is below the reporting limit, other checks applied prior to reporting the data have been accepted. The result should be considered as being deviating and may be compromised.

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[redacted]
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Analytical Report Number : 23-36672

Project / Site name:	A46 Walsgrave	**Samples received on:**	26/05/2023
Your job number:	G230651	**Samples instructed on/ Analysis started on:**	31/05/2023
Your order number:	VE298636	**Analysis completed by:**	07/06/2023
Report Issue Number:	1	**Report issued on:**	07/06/2023
Samples Analysed:	4 leachate samples - 4 soil samples		

[redacted]
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41-711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils - 4 weeks from reporting
leachates - 2 weeks from reporting
waters - 2 weeks from reporting
asbestos - 6 months from reporting

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Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement.
Application of uncertainty of measurement would provide a range within which the true result lies.
An estimate of measurement uncertainty can be provided on request.

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Analytical Report Number: 23-36672
Project / Site name: A46 Walsgrave
Your Order No: VE298636

Lab Sample Number				2696579	2696580	2696581	2696582
Sample Reference				WS105	WS105	WS109	WS109
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.40-0.50	1.50-1.70	1.20-1.40	1.70-2.00
Date Sampled				24/05/2023	24/05/2023	19/05/2023	19/05/2023
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**				
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	12	14	26	65
Total mass of sample received	kg	0.001	NONE	1.4	1.4	1.4	1.4
General Inorganics							
pH - Automated	pH Units	N/A	MCERTS	7.2	8.3	7.1	4.5
Total Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0
Complex Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0
Free Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0
Total Sulphate as SO4	mg/kg	50	MCERTS	440	580	470	9000
Organic Matter	%	0.1	MCERTS	-	-	-	20
Total Organic Carbon (TOC) - Automated	%	0.1	MCERTS	1.3	0.3	0.6	-
Total Organic Carbon (TOC) – Manual	%	0.1	MCERTS	-	-	-	12
Total Phenols							
Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0
Speciated PAHs							
Naphthalene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
Fluorene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
Phenanthrene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
Anthracene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
Fluoranthene	mg/kg	0.05	NONE	0.05	< 0.05	< 0.05	< 0.05
Pyrene	mg/kg	0.05	NONE	0.06	< 0.05	< 0.05	< 0.05
Benzo(a)anthracene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
Chrysene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(b)fluoranthene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(k)fluoranthene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(a)pyrene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
Total PAH							
Speciated Total EPA-16 PAHs	mg/kg	0.8	NONE	< 0.80	< 0.80	< 0.80	< 0.80
Heavy Metals / Metalloids							
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	8.3	8.3	17	7.8
Boron (water soluble)	mg/kg	0.2	MCERTS	0.6	0.4	0.4	4.5
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	0.3	< 0.2	< 0.2	0.5
Chromium (hexavalent)	mg/kg	1.8	MCERTS	< 1.8	< 1.8	< 1.8	< 1.8
Chromium (III)	mg/kg	1	NONE	28	33	34	9.3
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	30	34	34	11
Copper (aqua regia extractable)	mg/kg	1	MCERTS	19	24	15	12
Lead (aqua regia extractable)	mg/kg	1	MCERTS	29	11	17	6.2
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	22	31	28	14
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	62	64	96	57
Monoaromatics & Oxygenates							
Benzene	µg/kg	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0
Toluene	µg/kg	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0

Analytical Report Number: 23-36672
Project / Site name: A46 Walsgrave
Your Order No: VE298636

Lab Sample Number				2696579	2696580	2696581	2696582
Sample Reference				WS105	WS105	WS109	WS109
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.40-0.50	1.50-1.70	1.20-1.40	1.70-2.00
Date Sampled				24/05/2023	24/05/2023	19/05/2023	19/05/2023
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**				
Ethylbenzene	µg/kg	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0
p & m-xylene	µg/kg	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0
o-xylene##	µg/kg	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0
Petroleum Hydrocarbons							
TPH-CWG - Aliphatic >EC5 - EC6 HS_1D_AL	mg/kg	0.001	NONE	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC6 - EC8 HS_1D_AL	mg/kg	0.001	NONE	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC8 - EC10 HS_1D_AL	mg/kg	0.001	NONE	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC10 - EC12 EH_CU_1D_AL	mg/kg	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16 EH_CU_1D_AL	mg/kg	2	NONE	< 2.0	< 2.0	< 2.0	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21 EH_CU_1D_AL	mg/kg	8	NONE	< 8.0	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35 EH_CU_1D_AL	mg/kg	8	NONE	< 8.0	< 8.0	< 8.0	22
TPH-CWG - Aliphatic (EC5 - EC35) EH_CU+HS_1D_AL	mg/kg	10	NONE	< 10	< 10	< 10	30
TPH-CWG - Aromatic >EC5 - EC7 HS_1D_AR	mg/kg	0.001	NONE	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC7 - EC8 HS_1D_AR	mg/kg	0.001	NONE	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC8 - EC10 HS_1D_AR	mg/kg	0.001	NONE	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC10 - EC12 EH_CU_1D_AR	mg/kg	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >EC12 - EC16 EH_CU_1D_AR	mg/kg	2	NONE	< 2.0	< 2.0	< 2.0	< 2.0
TPH-CWG - Aromatic >EC16 - EC21 EH_CU_1D_AR	mg/kg	10	NONE	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >EC21 - EC35 EH_CU_1D_AR	mg/kg	10	NONE	< 10	< 10	< 10	16
TPH-CWG - Aromatic (EC5 - EC35) EH_CU+HS_1D_AR	mg/kg	10	NONE	< 10	< 10	< 10	16

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

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Analytical Report Number: 23-36672
Project / Site name: A46 Walsgrave

Your Order No: VE298636

Lab Sample Number				2696583	2696584	2696585	2696586
Sample Reference				WS105	WS105	WS109	WS109
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.40-0.50	1.50-1.70	1.20-1.40	1.70-2.00
Date Sampled				24/05/2023	24/05/2023	19/05/2023	19/05/2023
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Leachate Analysis)	**Units**	**Limit of detection**	**Accreditation Status**				
General Inorganics							
pH (automated)	pH Units	N/A	ISO 17025	7.6	8.3	7.6	4.1
Total Cyanide (Low Level 1 µg/l)	µg/l	1	ISO 17025	2.4	< 1.0	< 1.0	< 1.0
Complex Cyanide (Low Level)	µg/l	1	ISO 17025	2.4	< 1.0	< 1.0	< 1.0
Free Cyanide (Low Level 1 µg/l)	µg/l	1	ISO 17025	< 1	< 1	< 1	< 1
Sulphate as SO_4	mg/l	0.1	ISO 17025	4.8	19.2	25.3	731
Ammoniacal Nitrogen as N	µg/l	15	NONE	17	17	< 15	27
Ammoniacal Nitrogen as NH3	mg/l	0.015	NONE	0.02	0.02	0.017	0.033
Ammoniacal Nitrogen as NH4	mg/l	0.015	NONE	0.021	0.021	0.018	0.034
Total Phenols							
Total Phenols (monohydric)	µg/l	1	ISO 17025	7.3	6.1	1.3	< 1.0
Speciated PAHs							
Naphthalene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01
Acenaphthylene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01
Acenaphthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01
Fluorene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01
Phenanthrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01
Anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01
Fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01
Pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(a)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01
Chrysene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(b)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(k)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(a)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01
Indeno(1,2,3-cd)pyrene	µg/l	0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01
Dibenz(a,h)anthracene	µg/l	0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(ghi)perylene	µg/l	0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01
Total PAH							
Total EPA-16 PAHs	µg/l	0.2	NONE	< 0.2	< 0.2	< 0.2	< 0.2
Heavy Metals / Metalloids							
Arsenic (dissolved)	mg/l	0.001	ISO 17025	< 0.001	0.002	< 0.001	< 0.001
Boron (dissolved)	mg/l	0.01	ISO 17025	0.05	0.04	0.02	0.18
Cadmium (dissolved)	mg/l	0.00008	ISO 17025	< 0.00008	< 0.00008	< 0.00008	0.0052
Chromium (dissolved)	mg/l	0.0004	ISO 17025	0.0029	0.0025	0.0017	< 0.0004
Copper (dissolved)	mg/l	0.0007	ISO 17025	0.0155	0.004	0.0037	0.0204
Lead (dissolved)	mg/l	0.001	ISO 17025	0.002	0.003	0.001	0.002
Mercury - CV-AFS	µg/l	0.007	ISO 17025	< 0.0070	< 0.0070	0.0098	< 0.0070
Nickel (dissolved)	mg/l	0.0003	ISO 17025	0.0032	0.0016	0.0007	0.081
Selenium (dissolved)	mg/l	0.004	ISO 17025	< 0.004	< 0.004	< 0.004	< 0.004
Zinc (dissolved)	mg/l	0.0004	ISO 17025	0.0027	0.0029	0.0087	0.4508

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Analytical Report Number: 23-36672
Project / Site name: A46 Walsgrave

Your Order No: VE298636

Lab Sample Number				2696583	2696584	2696585	2696586
Sample Reference				WS105	WS105	WS109	WS109
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.40-0.50	1.50-1.70	1.20-1.40	1.70-2.00
Date Sampled				24/05/2023	24/05/2023	19/05/2023	19/05/2023
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Leachate Analysis)	**Units**	**Limit of detection**	**Accreditation Status**				
Monoaromatics & Oxygenates							
Benzene	µg/l	3	ISO 17025	< 3.0	< 3.0	< 3.0	< 3.0
Toluene	µg/l	3	ISO 17025	< 3.0	< 3.0	< 3.0	< 3.0
Ethylbenzene	µg/l	3	ISO 17025	< 3.0	< 3.0	< 3.0	< 3.0
p & m-xylene	µg/l	3	ISO 17025	< 3.0	< 3.0	< 3.0	< 3.0
o-xylene	µg/l	3	ISO 17025	< 3.0	< 3.0	< 3.0	< 3.0
MTBE (Methyl Tertiary Butyl Ether)	µg/l	10	NONE	< 10	< 10	< 10	< 10
Petroleum Hydrocarbons							
TPH-CWG - Aliphatic >C5 - C6## HS_1D_AL	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >C6 - C8## HS_1D_AL	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >C8 - C10## HS_1D_AL	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >C10 - C12 EH_1D_AL_MS	µg/l	10	NONE	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C12 - C16 EH_1D_AL_MS	µg/l	10	NONE	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C16 - C21 EH_1D_AL_MS	µg/l	10	NONE	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C21 - C35 EH_1D_AL_MS	µg/l	10	NONE	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic (C5 - C35) HS+EH_1D_AL_MS	µg/l	10	NONE	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C5 - C7 HS_1D_AR	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >C7 - C8 HS_1D_AR	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >C8 - C10 HS_1D_AR	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >C10 - C12 EH_1D_AR_MS	µg/l	10	NONE	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C12 - C16 EH_1D_AR_MS	µg/l	10	NONE	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C16 - C21 EH_1D_AR_MS	µg/l	10	NONE	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C21 - C35 EH_1D_AR_MS	µg/l	10	NONE	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic (C5 - C35) HS+EH_1D_AR_MS	µg/l	10	NONE	< 10	< 10	< 10	< 10

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

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Analytical Report Number : 23-36672
Project / Site name: A46 Walsgrave

* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and loam (MCERTS) soil types. Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
2696579	WS105	None Supplied	0.40-0.50	Brown clay and loam with gravel and vegetation.
2696580	WS105	None Supplied	1.50-1.70	Brown clay.
2696581	WS109	None Supplied	1.20-1.40	Brown clay and sand with gravel.
2696582	WS109	None Supplied	1.70-2.00	Brown clay and sand with gravel.

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Analytical Report Number : 23-36672
Project / Site name: A46 Walsgrave

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
BS EN 12457-2 (10:1) Leachate Prep	10:1 (as recieved, moisture adjusted) end over end extraction with water for 24 hours. Eluate filtered prior to analysis.	In-house method based on BSEN12457-2.	L043-PL	W	NONE
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES.	In-house method based on Second Site Properties version 3	L038-PL	D	MCERTS
Complex cyanide (Low level) in leachate	Determination of complex cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	ISO 17025
Complex Cyanide in soil	Determination of complex cyanide by calculation.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Free cyanide in soil	Determination of free cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
Monohydric phenols in leachate - LOW LEVEL 1 ug/l	Determination of phenols in leachate by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	ISO 17025
Monohydric phenols in soil	Determination of phenols in soil by extraction with sodium hydroxide followed by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	MCERTS
Organic matter in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In house method.	L023-PL	D	MCERTS
Speciated EPA-16 PAHs in leachate	Determination of PAH compounds in leachate by extraction in dichloromethane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L102B-PL	W	ISO 17025
Speciated EPA-16 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L064-PL	D	NONE
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In house method.	L099-PL	D	MCERTS
pH at 20oC in leachate (automated)	Determination of pH in leachate by electrometric measurement.	In house method.	L099B	W	ISO 17025
Total sulphate (as SO4 in soil)	Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES.	In house method.	L038-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
TPHCWG (Leachates)	Determination of dichloromethane extractable hydrocarbons in leachate by GC-MS.	In-house method	L070-PL	W	ISO 17025

Analytical Report Number : 23-36672
Project / Site name: A46 Walsgrave

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Total cyanide in soil	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Total organic carbon (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In house method.	L009-PL	D	MCERTS
BTEX and MTBE in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS. Individual components MCERTS accredited	In-house method based on USEPA8260	L073B-PL	W	NONE
BTEX and MTBE in leachates (Monoaromatics)	Determination of BTEX and MTBE in leachates by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	ISO 17025
Ammonia as NH3 in leachate	Determination of Ammonium/Ammonia/ Ammoniacal Nitrogen by the colorimetric salicylate/nitroprusside method.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082-PL	W	NONE
Ammoniacal Nitrogen as N in leachate	Determination of Ammonium/Ammonia/ Ammoniacal Nitrogen by the discrete analyser (colorimetric) salicylate/nitroprusside method.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082-PL	W	NONE
Metals by ICP-OES in leachate	Determination of metals in leachate by acidification followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L039-PL	W	ISO 17025
Boron in leachate	Determination of boron in leachate. Sample acidified and followed by ICP-OES.	In-house method based on MEWAM	L039-PL	W	ISO 17025
Cr (III) in soil	In-house method by calculation from total Cr and Cr VI.	In-house method by calculation	L080-PL	W	NONE
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method with silica gel split/clean up.	L088/76-PL	W	NONE
Total organic carbon in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In house method.	L023-PL	D	MCERTS
Free cyanide in leachate	Determination of free cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	ISO 17025
Total cyanide in leachate - 1µg/l	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L080-PL	W	ISO 17025
Ammonium as NH4 in leachate	Determination of ammonium in leachate by addition of buffer solution followed by ion selective electrode.	In-house method	L035-PL	W	NONE
Sulphate in leachates	Determination of sulphate in leachate by acidification followed by ICP-OES.	In-house method based on MEWAM 1986 Methods for the Determination of Metals in Soil""	L039-PL	W	ISO 17025
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in NaOH and addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	MCERTS

Analytical Report Number : 23-36672
Project / Site name: A46 Walsgrave

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Mercury Low Level in leachate	Mercury in leachate by CV-AFS,	In-house method based on USEPA method 1631	L085-PL	W	ISO 17025

For method numbers ending in 'UK or A' analysis have been carried out in our laboratory in the United Kingdom (WATFORD).
For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).
For method numbers ending in 'PL or B' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.
Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

Information in Support of Analytical Results

List of HWOL Acronyms and Operators

Acronym	Descriptions
HS	Headspace Analysis
MS	Mass spectrometry
FID	Flame Ionisation Detector
GC	Gas Chromatography
EH	Extractable Hydrocarbons (i.e. everything extracted by the solvent(s))
CU	Clean-up - e.g. by Florisil®, silica gel
1D	GC - Single coil/column gas chromatography
2D	GC-GC - Double coil/column gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics
AR	Aromatics
#1	EH_2D_Total but with humics mathematically subtracted
#2	EH_2D_Total but with fatty acids mathematically subtracted
_	Operator - understore to separate acronyms (exception for +)
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total

- Quality control parameter has a high recovery (outside of limit); however the associated result is below the reporting limit, other checks applied prior to reporting the data have been accepted. The result should be considered as being deviating and may be compromised.

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Analytical Report Number : 23-36672

Project / Site name: A46 Walsgrave

This deviation report indicates the sample and test deviations that apply to the samples submitted for analysis.Please note that the associated result(s) may be unreliable and should be interpreted with care.

Key: a - No sampling date b - Incorrect container c - Holding time d - Headspace e - Temperature

Sample ID	Other ID	Sample Type	Lab Sample Number	Sample Deviation	Test Name	Test Ref	Test Deviation
WS105	None Supplied	S	2696579	c	Free cyanide in soil	L080-PL	c
WS105	None Supplied	S	2696579	c	Complex Cyanide in soil	L080-PL	c
WS105	None Supplied	S	2696579	c	Total cyanide in soil	L080-PL	c
WS105	None Supplied	S	2696580	c	Free cyanide in soil	L080-PL	c
WS105	None Supplied	S	2696580	c	Complex Cyanide in soil	L080-PL	c
WS105	None Supplied	S	2696580	c	Total cyanide in soil	L080-PL	c
WS109	None Supplied	S	2696581	c	Free cyanide in soil	L080-PL	c
WS109	None Supplied	S	2696581	c	Complex Cyanide in soil	L080-PL	c
WS109	None Supplied	S	2696581	c	Total cyanide in soil	L080-PL	c
WS109	None Supplied	S	2696582	c	Free cyanide in soil	L080-PL	c
WS109	None Supplied	S	2696582	c	Complex Cyanide in soil	L080-PL	c
WS109	None Supplied	S	2696582	c	Total cyanide in soil	L080-PL	c

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[redacted]
t:
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Analytical Report Number : 23-37345

Project / Site name:	A46 Walsgrave	**Samples received on:**	31/05/2023
Your job number:	G230651	**Samples instructed on/ Analysis started on:**	31/05/2023
Your order number:	298636	**Analysis completed by:**	12/06/2023
Report Issue Number:	1	**Report issued on:**	12/06/2023
Samples Analysed:	1 leachate sample - 1 soil sample		

[redacted]

For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41-711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils	- 4 weeks from reporting
leachates	- 2 weeks from reporting
waters	- 2 weeks from reporting
asbestos	- 6 months from reporting

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Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement.
Application of uncertainty of measurement would provide a range within which the true result lies.
An estimate of measurement uncertainty can be provided on request.

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Analytical Report Number: 23-37345
Project / Site name: A46 Walsgrave

Lab Sample Number				2701020
Sample Reference				BH118
Sample Number				VE01230526003
Depth (m)				1.00-1.00
Date Sampled				26/05/2023
Time Taken				None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**	
Stone Content	%	0.1	NONE	< 0.1
Moisture Content	%	0.01	NONE	12
Total mass of sample received	kg	0.001	NONE	0.8

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	7.7
Total Cyanide	mg/kg	1	MCERTS	< 1.0
Complex Cyanide	mg/kg	1	MCERTS	< 1.0
Free Cyanide	mg/kg	1	MCERTS	< 1.0
Total Sulphate as SO4	mg/kg	50	MCERTS	310
Total Organic Carbon (TOC) - Automated	%	0.1	MCERTS	0.9

Total Phenols

Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0

Speciated PAHs

Naphthalene	mg/kg	0.05	NONE	< 0.05
Acenaphthylene	mg/kg	0.05	NONE	< 0.05
Acenaphthene	mg/kg	0.05	NONE	< 0.05
Fluorene	mg/kg	0.05	NONE	< 0.05
Phenanthrene	mg/kg	0.05	NONE	< 0.05
Anthracene	mg/kg	0.05	NONE	< 0.05
Fluoranthene	mg/kg	0.05	NONE	< 0.05
Pyrene	mg/kg	0.05	NONE	< 0.05
Benzo(a)anthracene	mg/kg	0.05	NONE	< 0.05
Chrysene	mg/kg	0.05	NONE	< 0.05
Benzo(b)fluoranthene	mg/kg	0.05	NONE	< 0.05
Benzo(k)fluoranthene	mg/kg	0.05	NONE	< 0.05
Benzo(a)pyrene	mg/kg	0.05	NONE	< 0.05
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	NONE	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	NONE	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	NONE	< 0.05

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	NONE	< 0.80

Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	7.7
Boron (water soluble)	mg/kg	0.2	MCERTS	0.5
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2
Chromium (hexavalent)	mg/kg	1.8	MCERTS	< 1.8
Chromium (III)	mg/kg	1	NONE	21
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	22
Copper (aqua regia extractable)	mg/kg	1	MCERTS	17
Lead (aqua regia extractable)	mg/kg	1	MCERTS	15
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	18
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	50

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Analytical Report Number: 23-37345
Project / Site name: A46 Walsgrave

Lab Sample Number				2701020
Sample Reference				BH118
Sample Number				VE01230526003
Depth (m)				1.00-1.00
Date Sampled				26/05/2023
Time Taken				None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**	
Monoaromatics & Oxygenates				
Benzene	mg/kg	0.005	NONE	< 0.005
Toluene	mg/kg	0.005	NONE	< 0.005
Ethylbenzene	mg/kg	0.005	NONE	< 0.005
p & m-xylene	mg/kg	0.005	NONE	< 0.005
o-xylene	mg/kg	0.005	NONE	< 0.005
MTBE (Methyl Tertiary Butyl Ether)	mg/kg	0.005	NONE	< 0.005
Petroleum Hydrocarbons				
TPH-CWG - Aliphatic >EC5 - EC6 $_{HS_1D_AL}$	mg/kg	0.001	NONE	< 0.001
TPH-CWG - Aliphatic >EC6 - EC8 $_{HS_1D_AL}$	mg/kg	0.001	NONE	< 0.001
TPH-CWG - Aliphatic >EC8 - EC10 $_{HS_1D_AL}$	mg/kg	0.001	NONE	< 0.001
TPH-CWG - Aliphatic >EC10 - EC12 $_{EH_CU_1D_AL}$	mg/kg	1	NONE	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16 $_{EH_CU_1D_AL}$	mg/kg	2	NONE	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21 $_{EH_CU_1D_AL}$	mg/kg	8	NONE	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35 $_{EH_CU_1D_AL}$	mg/kg	8	NONE	< 8.0
TPH-CWG - Aliphatic (EC5 - EC35) $_{EH_CU+HS_1D_AL}$	mg/kg	10	NONE	< 10
TPH-CWG - Aromatic >EC5 - EC7 $_{HS_1D_AR}$	mg/kg	0.001	NONE	< 0.001
TPH-CWG - Aromatic >EC7 - EC8 $_{HS_1D_AR}$	mg/kg	0.001	NONE	< 0.001
TPH-CWG - Aromatic >EC8 - EC10 $_{HS_1D_AR}$	mg/kg	0.001	NONE	< 0.001
TPH-CWG - Aromatic >EC10 - EC12 $_{EH_CU_1D_AR}$	mg/kg	1	NONE	< 1.0
TPH-CWG - Aromatic >EC12 - EC16 $_{EH_CU_1D_AR}$	mg/kg	2	NONE	< 2.0
TPH-CWG - Aromatic >EC16 - EC21 $_{EH_CU_1D_AR}$	mg/kg	10	NONE	< 10
TPH-CWG - Aromatic >EC21 - EC35 $_{EH_CU_1D_AR}$	mg/kg	10	NONE	< 10
TPH-CWG - Aromatic (EC5 - EC35) $_{EH_CU+HS_1D_AR}$	mg/kg	10	NONE	< 10

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

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The results included within the report relate only to the sample(s) submitted for testing.

Analytical Report Number: 23-37345
Project / Site name: A46 Walsgrave

Lab Sample Number				2701021
Sample Reference				BH118
Sample Number				VE01230526003
Depth (m)				1.00-1.00
Date Sampled				26/05/2023
Time Taken				None Supplied
Analytical Parameter (Leachate Analysis)	**Units**	**Limit of detection**	**Accreditation Status**	
General Inorganics				
pH (automated)	pH Units	N/A	ISO 17025	7
Total Cyanide (Low Level 1 µg/l)	mg/l	0.001	ISO 17025	< 0.001
Complex Cyanide (Low Level)	mg/l	0.001	ISO 17025	< 0.001
Free Cyanide (Low Level 1 µg/l)	mg/l	0.001	ISO 17025	< 0.001
Sulphate as SO_4	mg/l	0.1	ISO 17025	2.2
Ammoniacal Nitrogen as N	mg/l	0.015	NONE	< 0.015
Ammoniacal Nitrogen as NH3	mg/l	0.015	NONE	< 0.015
Ammoniacal Nitrogen as NH4	mg/l	0.015	NONE	< 0.015
Total Phenols				
Total Phenols (monohydric)	mg/l	0.001	ISO 17025	< 0.001
Speciated PAHs				
Naphthalene	mg/l	0.00001	ISO 17025	< 0.00001
Acenaphthylene	mg/l	0.00001	ISO 17025	< 0.00001
Acenaphthene	mg/l	0.00001	ISO 17025	< 0.00001
Fluorene	mg/l	0.00001	ISO 17025	< 0.00001
Phenanthrene	mg/l	0.00001	ISO 17025	< 0.00001
Anthracene	mg/l	0.00001	ISO 17025	< 0.00001
Fluoranthene	mg/l	0.00001	ISO 17025	< 0.00001
Pyrene	mg/l	0.00001	ISO 17025	< 0.00001
Benzo(a)anthracene	mg/l	0.00001	ISO 17025	< 0.00001
Chrysene	mg/l	0.00001	ISO 17025	< 0.00001
Benzo(b)fluoranthene	mg/l	0.00001	ISO 17025	< 0.00001
Benzo(k)fluoranthene	mg/l	0.00001	ISO 17025	< 0.00001
Benzo(a)pyrene	mg/l	0.00001	ISO 17025	< 0.00001
Indeno(1,2,3-cd)pyrene	mg/l	0.00001	NONE	< 0.00001
Dibenz(a,h)anthracene	mg/l	0.00001	NONE	< 0.00001
Benzo(ghi)perylene	mg/l	0.00001	NONE	< 0.00001
Total PAH				
Total EPA-16 PAHs	mg/l	0.0002	NONE	< 0.0002
Heavy Metals / Metalloids				
Arsenic (dissolved)	mg/l	0.001	ISO 17025	0.002
Boron (dissolved)	mg/l	0.01	ISO 17025	0.02
Cadmium (dissolved)	mg/l	0.00008	ISO 17025	< 0.00008
Chromium (dissolved)	mg/l	0.0004	ISO 17025	< 0.0004
Copper (dissolved)	mg/l	0.0007	ISO 17025	0.0084
Lead (dissolved)	mg/l	0.001	ISO 17025	0.001
Mercury - CV-AFS	mg/l	0.000007	ISO 17025	< 0.0000070
Nickel (dissolved)	mg/l	0.0003	ISO 17025	0.0007
Selenium (dissolved)	mg/l	0.004	ISO 17025	< 0.004
Zinc (dissolved)	mg/l	0.0004	ISO 17025	0.0041

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Analytical Report Number: 23-37345
Project / Site name: A46 Walsgrave

Lab Sample Number				2701021
Sample Reference				BH118
Sample Number				VE01230526003
Depth (m)				1.00-1.00
Date Sampled				26/05/2023
Time Taken				None Supplied
Analytical Parameter (Leachate Analysis)	**Units**	**Limit of detection**	**Accreditation Status**	
Monoaromatics & Oxygenates				
Benzene	mg/l	0.003	ISO 17025	< 0.003
Toluene	mg/l	0.003	ISO 17025	< 0.003
Ethylbenzene	mg/l	0.003	ISO 17025	< 0.003##
p & m-xylene	mg/l	0.003	ISO 17025	< 0.003
o-xylene	mg/l	0.003	ISO 17025	< 0.003
MTBE (Methyl Tertiary Butyl Ether)	mg/l	0.01	NONE	< 0.01
Petroleum Hydrocarbons				
TPH-CWG - Aliphatic >C5 - C6 $_{HS_1D_AL}$	mg/l	0.001	NONE	< 0.001^
TPH-CWG - Aliphatic >C6 - C8 $_{HS_1D_AL}$	mg/l	0.001	NONE	< 0.001^
TPH-CWG - Aliphatic >C8 - C10 $_{HS_1D_AL}$	mg/l	0.001	NONE	< 0.001^
TPH-CWG - Aliphatic >C10 - C12 $_{EH_1D_AL_MS}$	mg/l	0.01	NONE	< 0.01
TPH-CWG - Aliphatic >C12 - C16 $_{EH_1D_AL_MS}$	mg/l	0.01	NONE	< 0.01
TPH-CWG - Aliphatic >C16 - C21 $_{EH_1D_AL_MS}$	mg/l	0.01	NONE	< 0.01
TPH-CWG - Aliphatic >C21 - C35 $_{EH_1D_AL_MS}$	mg/l	0.01	NONE	< 0.01
TPH-CWG - Aliphatic (C5 - C35) $_{HS+EH_1D_AL_MS}$	mg/l	0.01	NONE	< 0.01
TPH-CWG - Aromatic >C5 - C7 $_{HS_1D_AR}$	mg/l	0.001	NONE	< 0.001#
TPH-CWG - Aromatic >C7 - C8 $_{HS_1D_AR}$	mg/l	0.001	NONE	< 0.001#
TPH-CWG - Aromatic >C8 - C10 $_{HS_1D_AR}$	mg/l	0.001	NONE	< 0.001#
TPH-CWG - Aromatic >C10 - C12 $_{EH_1D_AR_MS}$	mg/l	0.01	NONE	< 0.01
TPH-CWG - Aromatic >C12 - C16 $_{EH_1D_AR_MS}$	mg/l	0.01	NONE	< 0.01
TPH-CWG - Aromatic >C16 - C21 $_{EH_1D_AR_MS}$	mg/l	0.01	NONE	< 0.01
TPH-CWG - Aromatic >C21 - C35 $_{EH_1D_AR_MS}$	mg/l	0.01	NONE	< 0.01
TPH-CWG - Aromatic (C5 - C35) $_{HS+EH_1D_AR_MS}$	mg/l	0.01	NONE	< 0.01

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

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Analytical Report Number : 23-37345
Project / Site name: A46 Walsgrave

* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and loam (MCERTS) soil types. Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
2701020	BH118	VE01230526003	1.00-1.00	Brown clay and loam with gravel and vegetation.

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Analytical Report Number : 23-37345
Project / Site name: A46 Walsgrave

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
BS EN 12457-2 (10:1) Leachate Prep	10:1 (as recieved, moisture adjusted) end over end extraction with water for 24 hours. Eluate filtered prior to analysis.	In-house method based on BSEN12457-2.	L043-PL	W	NONE
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES.	In-house method based on Second Site Properties version 3	L038-PL	D	MCERTS
Complex cyanide (Low level) in leachate	Determination of complex cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	ISO 17025
Complex Cyanide in soil	Determination of complex cyanide by calculation.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Free cyanide in soil	Determination of free cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
Monohydric phenols in leachate - LOW LEVEL 1 ug/l	Determination of phenols in leachate by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	ISO 17025
Monohydric phenols in soil	Determination of phenols in soil by extraction with sodium hydroxide followed by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	MCERTS
Speciated EPA-16 PAHs in leachate	Determination of PAH compounds in leachate by extraction in dichloromethane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L102B-PL	W	ISO 17025
Speciated EPA-16 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L064-PL	D	NONE
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In house method.	L099-PL	D	MCERTS
pH at 20oC in leachate (automated)	Determination of pH in leachate by electrometric measurement.	In house method.	L099B	W	ISO 17025
Total sulphate (as SO4 in soil)	Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES.	In house method.	L038-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
TPHCWG (Leachates)	Determination of dichloromethane extractable hydrocarbons in leachate by GC-MS.	In-house method	L070-PL	W	ISO 17025
Total cyanide in soil	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS

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Analytical Report Number : 23-37345
Project / Site name: A46 Walsgrave

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Total organic carbon (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In house method.	L009-PL	D	MCERTS
BTEX and MTBE in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS. Individual components MCERTS accredited	In-house method based on USEPA8260	L073B-PL	W	NONE
BTEX and MTBE in leachates (Monoaromatics)	Determination of BTEX and MTBE in leachates by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	ISO 17025
Ammonia as NH3 in leachate	Determination of Ammonium/Ammonia/ Ammoniacal Nitrogen by the colorimetric salicylate/nitroprusside method.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082-PL	W	NONE
Ammoniacal Nitrogen as N in leachate	Determination of Ammonium/Ammonia/ Ammoniacal Nitrogen by the discrete analyser (colorimetric) salicylate/nitroprusside method.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082-PL	W	NONE
Metals by ICP-OES in leachate	Determination of metals in leachate by acidification followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L039-PL	W	ISO 17025
Boron in leachate	Determination of boron in leachate. Sample acidified and followed by ICP-OES.	In-house method based on MEWAM	L039-PL	W	ISO 17025
Cr (III) in soil	In-house method by calculation from total Cr and Cr VI.	In-house method by calculation	L080-PL	W	NONE
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method with silica gel split/clean up.	L088/76-PL	W	NONE
Free cyanide in leachate	Determination of free cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	ISO 17025
Total cyanide in leachate - 1µg/l	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L080-PL	W	ISO 17025
Ammonium as NH4 in leachate	Determination of ammonium in leachate by addition of buffer solution followed by ion selective electrode.	In-house method	L035-PL	W	NONE
Sulphate in leachates	Determination of sulphate in leachate by acidification followed by ICP-OES.	In-house method based on MEWAM 1986 Methods for the Determination of Metals in Soil""	L039-PL	W	ISO 17025
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in NaOH and addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	MCERTS

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Analytical Report Number : 23-37345
Project / Site name: A46 Walsgrave

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Mercury Low Level in leachate	Mercury in leachate by CV-AFS,	In-house method based on USEPA method 1631	L085-PL	W	ISO 17025

For method numbers ending in 'UK or A' analysis have been carried out in our laboratory in the United Kingdom (WATFORD).
For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).
For method numbers ending in 'PL or B' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.
Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

Information in Support of Analytical Results

List of HWOL Acronyms and Operators

Acronym	Descriptions
HS	Headspace Analysis
MS	Mass spectrometry
FID	Flame Ionisation Detector
GC	Gas Chromatography
EH	Extractable Hydrocarbons (i.e. everything extracted by the solvent(s))
CU	Clean-up - e.g. by Florisil®, silica gel
1D	GC - Single coil/column gas chromatography
2D	GC-GC - Double coil/column gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics
AR	Aromatics
#1	EH_2D_Total but with humics mathematically subtracted
#2	EH_2D_Total but with fatty acids mathematically subtracted
_	Operator - understore to separate acronyms (exception for +)
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total

#Data reported unaccredited due to quality control parameter failure associated with this result; other checks applied prior to reporting the data have been accepted. The result should be considered as being deviating and therefore may be compromised.
##Quality control parameter has a high recovery (outside of limit); however the associated result is below the reporting limit, other checks applied prior to reporting the data have been accepted. The result should be considered as being deviating and may be compromised.
^ Data reported unaccredited due to quality control parameter failure associated with this result; The result should be considered as being deviating and may be compromised.

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Analytical Report Number : 23-37345
Project / Site name: A46 Walsgrave

This deviation report indicates the sample and test deviations that apply to the samples submitted for analysis.Please note that the associated result(s) may be unreliable and should be interpreted with care.

Key: a - No sampling date b - Incorrect container c - Holding time d - Headspace e - Temperature

Sample ID	Other ID	Sample Type	Lab Sample Number	Sample Deviation	Test Name	Test Ref	Test Deviation
BH118	VE01230526003	S	2701020	c	Free cyanide in soil	L080-PL	c
BH118	VE01230526003	S	2701020	c	Complex Cyanide in soil	L080-PL	c
BH118	VE01230526003	S	2701020	c	Total cyanide in soil	L080-PL	c

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[redacted]
t:
e:

i2 Analytical Ltd.
7 Woodshots Meadow,
Croxley Green
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Watford,
Herts,
WD18 8YS

t: 01923 225404
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e: reception@i2analytical.com

Analytical Report Number : 23-37307

Project / Site name:	A46 Walsgrave	**Samples received on:**	26/05/2023
Your job number:	G230651	**Samples instructed on/ Analysis started on:**	05/06/2023
Your order number:		**Analysis completed by:**	12/06/2023
Report Issue Number:	1	**Report issued on:**	12/06/2023
Samples Analysed:	1 leachate sample - 2 soil samples		

[redacted]
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41-711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils - 4 weeks from reporting
leachates - 2 weeks from reporting
waters - 2 weeks from reporting
asbestos - 6 months from reporting

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Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement.
Application of uncertainty of measurement would provide a range within which the true result lies.
An estimate of measurement uncertainty can be provided on request.

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Analytical Report Number: 23-37307
Project / Site name: A46 Walsgrave

Lab Sample Number				2700841	2700842
Sample Reference				BH127	BH127
Sample Number				3	7
Depth (m)				0.30-0.30	1.00-1.00
Date Sampled				25/05/2023	25/05/2023
Time Taken				None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**		
Stone Content	%	0.1	NONE	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	10	13
Total mass of sample received	kg	0.001	NONE	0.5	0.8
General Inorganics					
pH - Automated	pH Units	N/A	MCERTS	7.4	8.2
Total Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0
Complex Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0
Free Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0
Total Sulphate as SO4	mg/kg	50	MCERTS	580	820
Total Organic Carbon (TOC) - Automated	%	0.1	MCERTS	1.5	0.1
Total Phenols					
Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0
Speciated PAHs					
Naphthalene	mg/kg	0.05	NONE	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	NONE	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	NONE	< 0.05	< 0.05
Fluorene	mg/kg	0.05	NONE	< 0.05	< 0.05
Phenanthrene	mg/kg	0.05	NONE	< 0.05	0.09
Anthracene	mg/kg	0.05	NONE	< 0.05	< 0.05
Fluoranthene	mg/kg	0.05	NONE	< 0.05	0.25
Pyrene	mg/kg	0.05	NONE	< 0.05	0.25
Benzo(a)anthracene	mg/kg	0.05	NONE	< 0.05	0.16
Chrysene	mg/kg	0.05	NONE	< 0.05	0.18
Benzo(b)fluoranthene	mg/kg	0.05	NONE	< 0.05	0.21
Benzo(k)fluoranthene	mg/kg	0.05	NONE	< 0.05	0.09
Benzo(a)pyrene	mg/kg	0.05	NONE	< 0.05	0.16
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	NONE	< 0.05	0.09
Dibenz(a,h)anthracene	mg/kg	0.05	NONE	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	NONE	< 0.05	0.13
Total PAH					
Speciated Total EPA-16 PAHs	mg/kg	0.8	NONE	< 0.80	1.61
Heavy Metals / Metalloids					
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	11	9.9
Boron (water soluble)	mg/kg	0.2	MCERTS	0.7	1.3
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2
Chromium (hexavalent)	mg/kg	1.8	MCERTS	< 1.8	< 1.8
Chromium (III)	mg/kg	1	NONE	30	37
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	30	37
Copper (aqua regia extractable)	mg/kg	1	MCERTS	24	21
Lead (aqua regia extractable)	mg/kg	1	MCERTS	31	13
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	23	34
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	74	58

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Analytical Report Number: 23-37307
Project / Site name: A46 Walsgrave

Lab Sample Number				2700841	2700842
Sample Reference				BH127	BH127
Sample Number				3	7
Depth (m)				0.30-0.30	1.00-1.00
Date Sampled				25/05/2023	25/05/2023
Time Taken				None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**		
Monoaromatics & Oxygenates					
Benzene	µg/kg	5	NONE	< 5.0	< 5.0
Toluene	µg/kg	5	NONE	< 5.0	< 5.0
Ethylbenzene	µg/kg	5	NONE	< 5.0	< 5.0
p & m-xylene	µg/kg	5	NONE	< 5.0	< 5.0
o-xylene	µg/kg	5	NONE	< 5.0	< 5.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	NONE	< 5.0	< 5.0
Petroleum Hydrocarbons					
TPH-CWG - Aliphatic >EC5 - EC6 $_{HS_1D_AL}$	mg/kg	0.001	NONE	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC6 - EC8 $_{HS_1D_AL}$	mg/kg	0.001	NONE	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC8 - EC10 $_{HS_1D_AL}$	mg/kg	0.001	NONE	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC10 - EC12 $_{EH_CU_1D_AL}$	mg/kg	1	NONE	< 1.0	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16 $_{EH_CU_1D_AL}$	mg/kg	2	NONE	< 2.0	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21 $_{EH_CU_1D_AL}$	mg/kg	8	NONE	< 8.0	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35 $_{EH_CU_1D_AL}$	mg/kg	8	NONE	< 8.0	< 8.0
TPH-CWG - Aliphatic (EC5 - EC35) $_{EH_CU+HS_1D_AL}$	mg/kg	10	NONE	< 10	< 10
TPH-CWG - Aromatic >EC5 - EC7 $_{HS_1D_AR}$	mg/kg	0.001	NONE	< 0.001	< 0.001
TPH-CWG - Aromatic >EC7 - EC8 $_{HS_1D_AR}$	mg/kg	0.001	NONE	< 0.001	< 0.001
TPH-CWG - Aromatic >EC8 - EC10 $_{HS_1D_AR}$	mg/kg	0.001	NONE	< 0.001	< 0.001
TPH-CWG - Aromatic >EC10 - EC12 $_{EH_CU_1D_AR}$	mg/kg	1	NONE	< 1.0	< 1.0
TPH-CWG - Aromatic >EC12 - EC16 $_{EH_CU_1D_AR}$	mg/kg	2	NONE	< 2.0	< 2.0
TPH-CWG - Aromatic >EC16 - EC21 $_{EH_CU_1D_AR}$	mg/kg	10	NONE	< 10	< 10
TPH-CWG - Aromatic >EC21 - EC35 $_{EH_CU_1D_AR}$	mg/kg	10	NONE	< 10	< 10
TPH-CWG - Aromatic (EC5 - EC35) $_{EH_CU+HS_1D_AR}$	mg/kg	10	NONE	< 10	< 10

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

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The results included within the report relate only to the sample(s) submitted for testing.

Analytical Report Number: 23-37307
Project / Site name: A46 Walsgrave

Lab Sample Number				2700843
Sample Reference				BH127
Sample Number				7
Depth (m)				1.00-1.00
Date Sampled				25/05/2023
Time Taken				None Supplied
Analytical Parameter (Leachate Analysis)	**Units**	**Limit of detection**	**Accreditation Status**	
General Inorganics				
pH (automated)	pH Units	N/A	ISO 17025	7.9
Total Cyanide (Low Level 1 µg/l)	mg/l	0.001	ISO 17025	< 0.001
Complex Cyanide (Low Level)	mg/l	0.001	ISO 17025	< 0.001
Free Cyanide (Low Level 1 µg/l)	mg/l	0.001	ISO 17025	< 0.001
Sulphate as SO_4	mg/l	0.1	ISO 17025	70.4
Ammoniacal Nitrogen as N	mg/l	0.015	NONE	0.054
Ammoniacal Nitrogen as NH3	mg/l	0.015	NONE	0.066
Ammoniacal Nitrogen as NH4	mg/l	0.015	NONE	0.07
Total Phenols				
Total Phenols (monohydric)	mg/l	0.001	ISO 17025	< 0.001
Speciated PAHs				
Naphthalene	mg/l	0.00001	ISO 17025	< 0.00001
Acenaphthylene	mg/l	0.00001	ISO 17025	< 0.00001
Acenaphthene	mg/l	0.00001	ISO 17025	< 0.00001
Fluorene	mg/l	0.00001	ISO 17025	< 0.00001
Phenanthrene	mg/l	0.00001	ISO 17025	< 0.00001
Anthracene	mg/l	0.00001	ISO 17025	< 0.00001
Fluoranthene	mg/l	0.00001	ISO 17025	< 0.00001
Pyrene	mg/l	0.00001	ISO 17025	< 0.00001
Benzo(a)anthracene	mg/l	0.00001	ISO 17025	< 0.00001
Chrysene	mg/l	0.00001	ISO 17025	< 0.00001
Benzo(b)fluoranthene	mg/l	0.00001	ISO 17025	< 0.00001
Benzo(k)fluoranthene	mg/l	0.00001	ISO 17025	< 0.00001
Benzo(a)pyrene	mg/l	0.00001	ISO 17025	< 0.00001
Indeno(1,2,3-cd)pyrene	mg/l	0.00001	NONE	< 0.00001
Dibenz(a,h)anthracene	mg/l	0.00001	NONE	< 0.00001
Benzo(ghi)perylene	mg/l	0.00001	NONE	< 0.00001
Total PAH				
Total EPA-16 PAHs	mg/l	0.0002	NONE	< 0.00002
Heavy Metals / Metalloids				
Arsenic (dissolved)	mg/l	0.001	ISO 17025	< 0.001
Boron (dissolved)	mg/l	0.01	ISO 17025	0.04
Cadmium (dissolved)	mg/l	0.00008	ISO 17025	< 0.00008
Chromium (dissolved)	mg/l	0.0004	ISO 17025	< 0.0004
Copper (dissolved)	mg/l	0.0007	ISO 17025	0.0088
Lead (dissolved)	mg/l	0.001	ISO 17025	< 0.001
Mercury - CV-AFS	mg/l	0.000007	ISO 17025	< 0.0000070
Nickel (dissolved)	mg/l	0.0003	ISO 17025	0.0016
Selenium (dissolved)	mg/l	0.004	ISO 17025	< 0.004
Zinc (dissolved)	mg/l	0.0004	ISO 17025	0.0106

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Analytical Report Number: 23-37307
Project / Site name: A46 Walsgrave

Lab Sample Number				2700843
Sample Reference				BH127
Sample Number				7
Depth (m)				1.00-1.00
Date Sampled				25/05/2023
Time Taken				None Supplied
Analytical Parameter (Leachate Analysis)	**Units**	**Limit of detection**	**Accreditation Status**	
Monoaromatics & Oxygenates				
Benzene	mg/l	0.003	ISO 17025	< 0.003
Toluene	mg/l	0.003	ISO 17025	< 0.003
Ethylbenzene	mg/l	0.003	ISO 17025	< 0.003##
p & m-xylene	mg/l	0.003	ISO 17025	< 0.003
o-xylene	mg/l	0.003	ISO 17025	< 0.003
MTBE (Methyl Tertiary Butyl Ether)	mg/l	0.01	NONE	< 0.01
Petroleum Hydrocarbons				
TPH-CWG - Aliphatic >C5 - C6 $_{HS_1D_AL}$	mg/l	0.001	NONE	< 0.001#
TPH-CWG - Aliphatic >C6 - C8 $_{HS_1D_AL}$	mg/l	0.001	NONE	< 0.0001#
TPH-CWG - Aliphatic >C8 - C10 $_{HS_1D_AL}$	mg/l	0.001	NONE	< 0.001#
TPH-CWG - Aliphatic >C10 - C12 $_{EH_1D_AL_MS}$	mg/l	0.01	NONE	< 0.01
TPH-CWG - Aliphatic >C12 - C16 $_{EH_1D_AL_MS}$	mg/l	0.01	NONE	< 0.01
TPH-CWG - Aliphatic >C16 - C21 $_{EH_1D_AL_MS}$	mg/l	0.01	NONE	< 0.01
TPH-CWG - Aliphatic >C21 - C35 $_{EH_1D_AL_MS}$	mg/l	0.01	NONE	< 0.01
TPH-CWG - Aliphatic (C5 - C35) $_{HS+EH_1D_AL_MS}$	mg/l	0.01	NONE	< 0.01
TPH-CWG - Aromatic >C5 - C7 $_{HS_1D_AR}$	mg/l	0.001	ISO 17025	< 0.001
TPH-CWG - Aromatic >C7 - C8 $_{HS_1D_AR}$	mg/l	0.001	ISO 17025	< 0.001
TPH-CWG - Aromatic >C8 - C10 $_{HS_1D_AR}$	mg/l	0.001	ISO 17025	< 0.001
TPH-CWG - Aromatic >C10 - C12 $_{EH_1D_AR_MS}$	mg/l	0.01	NONE	< 0.01
TPH-CWG - Aromatic >C12 - C16 $_{EH_1D_AR_MS}$	mg/l	0.01	NONE	< 0.01
TPH-CWG - Aromatic >C16 - C21 $_{EH_1D_AR_MS}$	mg/l	0.01	NONE	< 0.01
TPH-CWG - Aromatic >C21 - C35 $_{EH_1D_AR_MS}$	mg/l	0.01	NONE	< 0.01
TPH-CWG - Aromatic (C5 - C35) $_{HS+EH_1D_AR_MS}$	mg/l	0.01	NONE	< 0.01

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

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Analytical Report Number : 23-37307
Project / Site name: A46 Walsgrave

* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and loam (MCERTS) soil types. Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
2700841	BH127	3	0.30-0.30	Brown clay with vegetation.
2700842	BH127	7	1.00-1.00	Brown clay.

Analytical Report Number : 23-37307
Project / Site name: A46 Walsgrave

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
BS EN 12457-2 (10:1) Leachate Prep	10:1 (as recieved, moisture adjusted) end over end extraction with water for 24 hours. Eluate filtered prior to analysis.	In-house method based on BSEN12457-2.	L043-PL	W	NONE
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES.	In-house method based on Second Site Properties version 3	L038-PL	D	MCERTS
Complex cyanide (Low level) in leachate	Determination of complex cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	ISO 17025
Complex Cyanide in soil	Determination of complex cyanide by calculation.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Free cyanide in soil	Determination of free cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
Monohydric phenols in leachate - LOW LEVEL 1 ug/l	Determination of phenols in leachate by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	ISO 17025
Monohydric phenols in soil	Determination of phenols in soil by extraction with sodium hydroxide followed by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	MCERTS
Speciated EPA-16 PAHs in leachate	Determination of PAH compounds in leachate by extraction in dichloromethane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L102B-PL	W	ISO 17025
Speciated EPA-16 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L064-PL	D	NONE
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In house method.	L099-PL	D	MCERTS
pH at 20oC in leachate (automated)	Determination of pH in leachate by electrometric measurement.	In house method.	L099B	W	ISO 17025
Total sulphate (as SO4 in soil)	Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES.	In house method.	L038-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
TPHCWG (Leachates)	Determination of dichloromethane extractable hydrocarbons in leachate by GC-MS.	In-house method	L070-PL	W	ISO 17025

Analytical Report Number : 23-37307
Project / Site name: A46 Walsgrave

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Total cyanide in soil	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Total organic carbon (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In house method.	L009-PL	D	MCERTS
BTEX and MTBE in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS. Individual components MCERTS accredited	In-house method based on USEPA8260	L073B-PL	W	NONE
BTEX and MTBE in leachates (Monoaromatics)	Determination of BTEX and MTBE in leachates by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	ISO 17025
Ammonia as NH3 in leachate	Determination of Ammonium/Ammonia/ Ammoniacal Nitrogen by the colorimetric salicylate/nitroprusside method.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082-PL	W	NONE
Ammoniacal Nitrogen as N in leachate	Determination of Ammonium/Ammonia/ Ammoniacal Nitrogen by the discrete analyser (colorimetric) salicylate/nitroprusside method.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082-PL	W	NONE
Metals by ICP-OES in leachate	Determination of metals in leachate by acidification followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L039-PL	W	ISO 17025
Boron in leachate	Determination of boron in leachate. Sample acidified and followed by ICP-OES.	In-house method based on MEWAM	L039-PL	W	ISO 17025
Cr (III) in soil	In-house method by calculation from total Cr and Cr VI.	In-house method by calculation	L080-PL	W	NONE
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method with silica gel split/clean up.	L088/76-PL	W	NONE
Free cyanide in leachate	Determination of free cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	ISO 17025
Total cyanide in leachate - 1µg/l	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L080-PL	W	ISO 17025
Ammonium as NH4 in leachate	Determination of ammonium in leachate by addition of buffer solution followed by ion selective electrode.	In-house method	L035-PL	W	NONE
Sulphate in leachates	Determination of sulphate in leachate by acidification followed by ICP-OES.	In-house method based on MEWAM 1986 Methods for the Determination of Metals in Soil""	L039-PL	W	ISO 17025
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in NaOH and addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	MCERTS

Analytical Report Number : 23-37307
Project / Site name: A46 Walsgrave

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Mercury Low Level in leachate	Mercury in leachate by CV-AFS,	In-house method based on USEPA method 1631	L085-PL	W	ISO 17025

For method numbers ending in 'UK or A' analysis have been carried out in our laboratory in the United Kingdom (WATFORD).
For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).
For method numbers ending in 'PL or B' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.
Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

Information in Support of Analytical Results

List of HWOL Acronyms and Operators

Acronym	Descriptions
HS	Headspace Analysis
MS	Mass spectrometry
FID	Flame Ionisation Detector
GC	Gas Chromatography
EH	Extractable Hydrocarbons (i.e. everything extracted by the solvent(s))
CU	Clean-up - e.g. by Florisil®, silica gel
1D	GC - Single coil/column gas chromatography
2D	GC-GC - Double coil/column gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics
AR	Aromatics
#1	EH_2D_Total but with humics mathematically subtracted
#2	EH_2D_Total but with fatty acids mathematically subtracted
_	Operator - understore to separate acronyms (exception for +)
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total

#Data reported unaccredited due to quality control parameter failure associated with this result; other checks applied prior to reporting the data have been accepted. The result should be considered as being deviating and therefore may be compromised.
##Quality control parameter has a high recovery (outside of limit); however the associated result is below the reporting limit, other checks applied prior to reporting the data have been accepted. The result should be considered as being deviating and may be compromised.

Sample Deviation Report

Analytical Report Number : 23-37307
Project / Site name: A46 Walsgrave

This deviation report indicates the sample and test deviations that apply to the samples submitted for analysis.Please note that the associated result(s) may be unreliable and should be interpreted with care.

Key: a - No sampling date b - Incorrect container c - Holding time d - Headspace e - Temperature

Sample ID	Other ID	Sample Type	Lab Sample Number	Sample Deviation	Test Name	Test Ref	Test Deviation
BH127	3	S	2700841	c	Free cyanide in soil	L080-PL	c
BH127	3	S	2700841	c	Complex Cyanide in soil	L080-PL	c
BH127	3	S	2700841	c	Total cyanide in soil	L080-PL	c
BH127	7	S	2700842	c	Free cyanide in soil	L080-PL	c
BH127	7	S	2700842	c	Complex Cyanide in soil	L080-PL	c
BH127	7	S	2700842	c	Total cyanide in soil	L080-PL	c

[redacted]
t:
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Analytical Report Number : 23-37523

Project / Site name:	A46 Walsgrave	**Samples received on:**	01/06/2023
Your job number:	G230651 ENV17	**Samples instructed on/ Analysis started on:**	06/06/2023
Your order number:	G230651	**Analysis completed by:**	12/06/2023
Report Issue Number:	1	**Report issued on:**	13/06/2023
Samples Analysed:	3 leachate samples - 3 soil samples		

[redacted]

For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41-711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils - 4 weeks from reporting
leachates - 2 weeks from reporting
waters - 2 weeks from reporting
asbestos - 6 months from reporting

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Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement.
Application of uncertainty of measurement would provide a range within which the true result lies.
An estimate of measurement uncertainty can be provided on request.

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Analytical Report Number: 23-37523
Project / Site name: A46 Walsgrave
Your Order No: G230651

Lab Sample Number				2702559	2702560	2702561
Sample Reference				VE01230531002	VE01230531003	VE01230531014
Sample Number				BH120	BH120	BH120
Depth (m)				0.50-0.50	1.00-1.00	2.00-2.00
Date Sampled				31/05/2023	31/05/2023	31/05/2023
Time Taken				None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**			
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	11	14	11
Total mass of sample received	kg	0.001	NONE	1.7	1.7	1.7
General Inorganics						
pH - Automated	pH Units	N/A	MCERTS	7.8	7.9	8.3
Total Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
Complex Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
Free Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
Total Sulphate as SO4	mg/kg	50	MCERTS	510	510	690
Total Organic Carbon (TOC) - Automated	%	0.1	MCERTS	0.4	0.2	0.2
Total Phenols						
Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
Speciated PAHs						
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Benzo(a)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Chrysene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	< 0.05	< 0.05	< 0.05
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	< 0.05	< 0.05	< 0.05
Benzo(a)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Total PAH						
Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	< 0.80	< 0.80	< 0.80
Heavy Metals / Metalloids						
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	7.9	9.2	11
Boron (water soluble)	mg/kg	0.2	MCERTS	0.6	0.3	0.3
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2
Chromium (hexavalent)	mg/kg	1.8	MCERTS	< 1.8	< 1.8	< 1.8
Chromium (III)	mg/kg	1	NONE	27	28	22
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	27	29	22
Copper (aqua regia extractable)	mg/kg	1	MCERTS	15	17	33
Lead (aqua regia extractable)	mg/kg	1	MCERTS	15	12	9.2
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	21	28	24
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	46	49	61

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Analytical Report Number: 23-37523
Project / Site name: A46 Walsgrave
Your Order No: G230651

Lab Sample Number				2702559	2702560	2702561
Sample Reference				VE01230531002	VE01230531003	VE01230531014
Sample Number				BH120	BH120	BH120
Depth (m)				0.50-0.50	1.00-1.00	2.00-2.00
Date Sampled				31/05/2023	31/05/2023	31/05/2023
Time Taken				None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**			
Monoaromatics & Oxygenates						
Benzene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0
Toluene	µg/kg	5	MCERTS	< 5.0##	< 5.0##	< 5.0##
Ethylbenzene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0
p & m-xylene	µg/kg	5	MCERTS	< 5.0##	< 5.0##	< 5.0##
o-xylene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	NONE	< 5.0	< 5.0	< 5.0
Petroleum Hydrocarbons						
TPH-CWG - Aliphatic >EC5 - EC6 $_{HS_1D_AL}$	mg/kg	0.001	NONE	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC6 - EC8 $_{HS_1D_AL}$	mg/kg	0.001	NONE	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC8 - EC10 $_{HS_1D_AL}$	mg/kg	0.001	NONE	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC10 - EC12 $_{EH_CU_1D_AL}$	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16 $_{EH_CU_1D_AL}$	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21 $_{EH_CU_1D_AL}$	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35 $_{EH_CU_1D_AL}$	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic (EC5 - EC35) $_{EH_CU+HS_1D_AL}$	mg/kg	10	NONE	< 10	< 10	< 10
TPH-CWG - Aromatic >EC5 - EC7 $_{HS_1D_AR}$	mg/kg	0.001	NONE	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC7 - EC8 $_{HS_1D_AR}$	mg/kg	0.001	NONE	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC8 - EC10 $_{HS_1D_AR}$	mg/kg	0.001	NONE	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC10 - EC12 $_{EH_CU_1D_AR}$	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >EC12 - EC16 $_{EH_CU_1D_AR}$	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0
TPH-CWG - Aromatic >EC16 - EC21 $_{EH_CU_1D_AR}$	mg/kg	10	MCERTS	< 10	< 10	< 10
TPH-CWG - Aromatic >EC21 - EC35 $_{EH_CU_1D_AR}$	mg/kg	10	MCERTS	< 10	< 10	< 10
TPH-CWG - Aromatic (EC5 - EC35) $_{EH_CU+HS_1D_AR}$	mg/kg	10	NONE	< 10	< 10	< 10

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

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Analytical Report Number: 23-37523
Project / Site name: A46 Walsgrave

Your Order No: G230651

Lab Sample Number				2702562	2702563	2702564
Sample Reference				VE01230531002	VE01230531003	VE01230531014
Sample Number				BH120	BH120	BH120
Depth (m)				0.50-0.50	1.00-1.00	2.00-2.00
Date Sampled				31/05/2023	31/05/2023	31/05/2023
Time Taken				None Supplied	None Supplied	None Supplied
Analytical Parameter (Leachate Analysis)	**Units**	**Limit of detection**	**Accreditation Status**			
General Inorganics						
pH (automated)	pH Units	N/A	ISO 17025	7.9	7.9	8
Total Cyanide (Low Level 1 µg/l)	mg/l	0.001	ISO 17025	< 0.001	< 0.001	< 0.001
Complex Cyanide (Low Level)	mg/l	0.001	ISO 17025	< 0.001	< 0.001	< 0.001
Free Cyanide (Low Level 1 µg/l)	mg/l	0.001	ISO 17025	< 0.001	< 0.001	< 0.001
Sulphate as SO_4	mg/l	0.1	ISO 17025	6.5	4.4	4.5
Ammoniacal Nitrogen as N	mg/l	0.015	NONE	< 0.015	< 0.015	< 0.015
Ammoniacal Nitrogen as NH3	mg/l	0.015	NONE	< 0.015	< 0.015	< 0.015
Ammoniacal Nitrogen as NH4	mg/l	0.015	NONE	< 0.015	< 0.015	< 0.015
Total Phenols						
Total Phenols (monohydric)	mg/l	0.001	ISO 17025	< 0.001	< 0.001	0.001
Speciated PAHs						
Naphthalene	mg/l	0.00001	ISO 17025	< 0.00001	< 0.00001	< 0.00001
Acenaphthylene	mg/l	0.00001	ISO 17025	< 0.00001	< 0.00001	< 0.00001
Acenaphthene	mg/l	0.00001	ISO 17025	< 0.00001	< 0.00001	< 0.00001
Fluorene	mg/l	0.00001	ISO 17025	< 0.00001	< 0.00001	< 0.00001
Phenanthrene	mg/l	0.00001	ISO 17025	< 0.00001	< 0.00001	< 0.00001
Anthracene	mg/l	0.00001	ISO 17025	< 0.00001	< 0.00001	< 0.00001
Fluoranthene	mg/l	0.00001	ISO 17025	< 0.00001	< 0.00001	< 0.00001
Pyrene	mg/l	0.00001	ISO 17025	< 0.00001	< 0.00001	< 0.00001
Benzo(a)anthracene	mg/l	0.00001	ISO 17025	< 0.00001	< 0.00001	< 0.00001
Chrysene	mg/l	0.00001	ISO 17025	< 0.00001	< 0.00001	< 0.00001
Benzo(b)fluoranthene	mg/l	0.00001	ISO 17025	< 0.00001	< 0.00001	< 0.00001
Benzo(k)fluoranthene	mg/l	0.00001	ISO 17025	< 0.00001	< 0.00001	< 0.00001
Benzo(a)pyrene	mg/l	0.00001	ISO 17025	< 0.00001	< 0.00001	< 0.00001
Indeno(1,2,3-cd)pyrene	mg/l	0.00001	NONE	< 0.00001	< 0.00001	< 0.00001
Dibenz(a,h)anthracene	mg/l	0.00001	NONE	< 0.00001	< 0.00001	< 0.00001
Benzo(ghi)perylene	mg/l	0.00001	NONE	< 0.00001	< 0.00001	< 0.00001
Total PAH						
Total EPA-16 PAHs	mg/l	0.0002	NONE	< 0.0002	< 0.0002	< 0.0002
Heavy Metals / Metalloids						
Arsenic (dissolved)	mg/l	0.001	ISO 17025	0.002	0.004	0.006
Boron (dissolved)	mg/l	0.01	ISO 17025	0.02	0.01	< 0.01
Cadmium (dissolved)	mg/l	0.00008	ISO 17025	< 0.00008	< 0.00008	< 0.00008
Chromium (dissolved)	mg/l	0.0004	ISO 17025	0.001	0.0017	< 0.0004
Copper (dissolved)	mg/l	0.0007	ISO 17025	0.0126	0.0074	0.0046
Lead (dissolved)	mg/l	0.001	ISO 17025	< 0.001	< 0.001	< 0.001
Mercury - CV-AFS	mg/l	0.000007	ISO 17025	< 0.000007	< 0.000007	< 0.000007
Nickel (dissolved)	mg/l	0.0003	ISO 17025	0.0012	0.0013	0.0005
Selenium (dissolved)	mg/l	0.004	ISO 17025	< 0.004	< 0.004	< 0.004
Zinc (dissolved)	mg/l	0.0004	ISO 17025	0.0093	0.0077	0.0027

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Analytical Report Number: 23-37523
Project / Site name: A46 Walsgrave

Your Order No: G230651

Lab Sample Number				2702562	2702563	2702564
Sample Reference				VE01230531002	VE01230531003	VE01230531014
Sample Number				BH120	BH120	BH120
Depth (m)				0.50-0.50	1.00-1.00	2.00-2.00
Date Sampled				31/05/2023	31/05/2023	31/05/2023
Time Taken				None Supplied	None Supplied	None Supplied
Analytical Parameter (Leachate Analysis)	**Units**	**Limit of detection**	**Accreditation Status**			
Monoaromatics & Oxygenates						
Benzene	mg/l	0.003	ISO 17025	< 0.003	< 0.003	< 0.003
Toluene	mg/l	0.003	ISO 17025	< 0.003	< 0.003	< 0.003
Ethylbenzene	mg/l	0.003	ISO 17025	< 0.003	< 0.003	< 0.003
p & m-xylene	mg/l	0.003	ISO 17025	< 0.003	< 0.003	< 0.003
o-xylene	mg/l	0.003	ISO 17025	< 0.003##	< 0.003##	< 0.003##
MTBE (Methyl Tertiary Butyl Ether)	mg/l	0.01	NONE	< 0.01	< 0.01	< 0.01
Petroleum Hydrocarbons						
TPH-CWG - Aliphatic >C5 - C6 $_{HS_1D_AL}$	mg/l	0.001	ISO 17025	< 0.001##	< 0.001##	< 0.001##
TPH-CWG - Aliphatic >C6 - C8 $_{HS_1D_AL}$	mg/l	0.001	ISO 17025	< 0.001##	< 0.001##	< 0.001##
TPH-CWG - Aliphatic >C8 - C10 $_{HS_1D_AL}$	mg/l	0.001	ISO 17025	< 0.001##	< 0.001##	< 0.001##
TPH-CWG - Aliphatic >C10 - C12 $_{EH_1D_AL_MS}$	mg/l	0.01	NONE	< 0.01	< 0.01	< 0.01
TPH-CWG - Aliphatic >C12 - C16 $_{EH_1D_AL_MS}$	mg/l	0.01	NONE	< 0.01	< 0.01	< 0.01
TPH-CWG - Aliphatic >C16 - C21 $_{EH_1D_AL_MS}$	mg/l	0.01	NONE	< 0.01	< 0.01	< 0.01
TPH-CWG - Aliphatic >C21 - C35 $_{EH_1D_AL_MS}$	mg/l	0.01	NONE	< 0.01	< 0.01	< 0.01
TPH-CWG - Aliphatic (C5 - C35) $_{HS+EH_1D_AL_MS}$	mg/l	0.01	NONE	< 0.01	< 0.01	< 0.01
TPH-CWG - Aromatic >C5 - C7 $_{HS_1D_AR}$	mg/l	0.001	ISO 17025	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >C7 - C8 $_{HS_1D_AR}$	mg/l	0.001	ISO 17025	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >C8 - C10 $_{HS_1D_AR}$	mg/l	0.001	ISO 17025	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >C10 - C12 $_{EH_1D_AR_MS}$	mg/l	0.01	NONE	< 0.01	< 0.01	< 0.01
TPH-CWG - Aromatic >C12 - C16 $_{EH_1D_AR_MS}$	mg/l	0.01	NONE	< 0.01	< 0.01	< 0.01
TPH-CWG - Aromatic >C16 - C21 $_{EH_1D_AR_MS}$	mg/l	0.01	NONE	< 0.01	< 0.01	< 0.01
TPH-CWG - Aromatic >C21 - C35 $_{EH_1D_AR_MS}$	mg/l	0.01	NONE	< 0.01	< 0.01	< 0.01
TPH-CWG - Aromatic (C5 - C35) $_{HS+EH_1D_AR_MS}$	mg/l	0.01	NONE	< 0.01	< 0.01	< 0.01

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

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Analytical Report Number : 23-37523
Project / Site name: A46 Walsgrave

* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and loam (MCERTS) soil types. Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
2702559	VE01230531002	BH120	0.50-0.50	Brown clay.
2702560	VE01230531003	BH120	1.00-1.00	Brown clay.
2702561	VE01230531014	BH120	2.00-2.00	Brown clay.

Analytical Report Number : 23-37523
Project / Site name: A46 Walsgrave

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
BS EN 12457-2 (10:1) Leachate Prep	10:1 (as recieved, moisture adjusted) end over end extraction with water for 24 hours. Eluate filtered prior to analysis.	In-house method based on BSEN12457-2.	L043-PL	W	NONE
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES.	In-house method based on Second Site Properties version 3	L038-PL	D	MCERTS
Complex cyanide (Low level) in leachate	Determination of complex cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	ISO 17025
Complex Cyanide in soil	Determination of complex cyanide by calculation.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Free cyanide in soil	Determination of free cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
Monohydric phenols in leachate - LOW LEVEL 1 ug/l	Determination of phenols in leachate by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	ISO 17025
Monohydric phenols in soil	Determination of phenols in soil by extraction with sodium hydroxide followed by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	MCERTS
Speciated EPA-16 PAHs in leachate	Determination of PAH compounds in leachate by extraction in dichloromethane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L102B-PL	W	ISO 17025
Speciated EPA-16 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In house method.	L099-PL	D	MCERTS
pH at 20oC in leachate (automated)	Determination of pH in leachate by electrometric measurement.	In house method.	L099B	W	ISO 17025
Total sulphate (as SO4 in soil)	Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES.	In house method.	L038-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
TPHCWG (Leachates)	Determination of dichloromethane extractable hydrocarbons in leachate by GC-MS.	In-house method	L070-PL	W	ISO 17025
Total cyanide in soil	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS

Analytical Report Number : 23-37523
Project / Site name: A46 Walsgrave

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Total organic carbon (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In house method.	L009-PL	D	MCERTS
BTEX and MTBE in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS. Individual components MCERTS accredited	In-house method based on USEPA8260	L073B-PL	W	MCERTS
BTEX and MTBE in leachates (Monoaromatics)	Determination of BTEX and MTBE in leachates by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	ISO 17025
Ammonia as NH3 in leachate	Determination of Ammonium/Ammonia/ Ammoniacal Nitrogen by the colorimetric salicylate/nitroprusside method.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082-PL	W	NONE
Ammoniacal Nitrogen as N in leachate	Determination of Ammonium/Ammonia/ Ammoniacal Nitrogen by the discrete analyser (colorimetric) salicylate/nitroprusside method.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082-PL	W	NONE
Metals by ICP-OES in leachate	Determination of metals in leachate by acidification followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L039-PL	W	ISO 17025
Boron in leachate	Determination of boron in leachate. Sample acidified and followed by ICP-OES.	In-house method based on MEWAM	L039-PL	W	ISO 17025
Cr (III) in soil	In-house method by calculation from total Cr and Cr VI.	In-house method by calculation	L080-PL	W	NONE
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method with silica gel split/clean up.	L088/76-PL	W	MCERTS
Free cyanide in leachate	Determination of free cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	ISO 17025
Total cyanide in leachate - 1µg/l	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L080-PL	W	ISO 17025
Ammonium as NH4 in leachate	Determination of ammonium in leachate by addition of buffer solution followed by ion selective electrode.	In-house method	L035-PL	W	NONE
Sulphate in leachates	Determination of sulphate in leachate by acidification followed by ICP-OES.	In-house method based on MEWAM 1986 Methods for the Determination of Metals in Soil""	L039-PL	W	ISO 17025
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in NaOH and addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	MCERTS

Analytical Report Number : 23-37523
Project / Site name: A46 Walsgrave

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Mercury Low Level in leachate	Mercury in leachate by CV-AFS,	In-house method based on USEPA method 1631	L085-PL	W	ISO 17025

For method numbers ending in 'UK or A' analysis have been carried out in our laboratory in the United Kingdom (WATFORD).
For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).
For method numbers ending in 'PL or B' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.
Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

Information in Support of Analytical Results

List of HWOL Acronyms and Operators

Acronym	Descriptions
HS	Headspace Analysis
MS	Mass spectrometry
FID	Flame Ionisation Detector
GC	Gas Chromatography
EH	Extractable Hydrocarbons (i.e. everything extracted by the solvent(s))
CU	Clean-up - e.g. by Florisil®, silica gel
1D	GC - Single coil/column gas chromatography
2D	GC-GC - Double coil/column gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics
AR	Aromatics
#1	EH_2D_Total but with humics mathematically subtracted
#2	EH_2D_Total but with fatty acids mathematically subtracted
_	Operator - understore to separate acronyms (exception for +)
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total

- Quality control parameter has a high recovery (outside of limit); however the associated result is below the reporting limit, other checks applied prior to reporting the data have been accepted. The result should be considered as being deviating and may be compromised.

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Analytical Report Number : 23-37902

Project / Site name:	A46 Walsgrave	**Samples received on:**	31/05/2023
Your job number:	G230651	**Samples instructed on/ Analysis started on:**	07/06/2023
Your order number:	298636	**Analysis completed by:**	15/06/2023
Report Issue Number:	1	**Report issued on:**	20/07/2023
Samples Analysed:	3 leachate samples - 3 soil samples		

[redacted]
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41-711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils	- 4 weeks from reporting
leachates	- 2 weeks from reporting
waters	- 2 weeks from reporting
asbestos	- 6 months from reporting

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Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement.
Application of uncertainty of measurement would provide a range within which the true result lies.
An estimate of measurement uncertainty can be provided on request.

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The results included within the report relate only to the sample(s) submitted for testing.

Analytical Report Number: 23-37902
Project / Site name: A46 Walsgrave
Your Order No: 298636

Lab Sample Number				2704969	2704970	2704971
Sample Reference				BH109	BH109	BH109
Sample Number				33	34	37
Depth (m)				7.50-7.70	8.30-8.50	9.50-9.70
Date Sampled				26/05/2023	26/05/2023	26/05/2023
Time Taken				None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**			
Stone Content	%	0.1	NONE	96	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	6.9	8.1	12
Total mass of sample received	kg	0.001	NONE	1.3	1.3	1.3
General Inorganics						
pH - Automated	pH Units	N/A	MCERTS	8.7	8.8	8.6
Total Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
Complex Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
Free Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
Total Sulphate as SO4	mg/kg	50	MCERTS	320	430	580
Total Organic Carbon (TOC) - Automated	%	0.1	MCERTS	< 0.1	< 0.1	< 0.1
Total Phenols						
Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
Speciated PAHs						
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Benzo(a)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Chrysene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	< 0.05	< 0.05	< 0.05
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	< 0.05	< 0.05	< 0.05
Benzo(a)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Total PAH						
Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	< 0.80	< 0.80	< 0.80
Heavy Metals / Metalloids						
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	9	3.5	11
Boron (water soluble)	mg/kg	0.2	MCERTS	0.4	0.3	0.3
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2
Chromium (hexavalent)	mg/kg	1.8	MCERTS	< 1.8	< 1.8	< 1.8
Chromium (III)	mg/kg	1	NONE	22	23	27
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	22	24	27
Copper (aqua regia extractable)	mg/kg	1	MCERTS	7.9	26	11
Lead (aqua regia extractable)	mg/kg	1	MCERTS	10	2.2	10
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	21	20	25
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	65	64	85

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Analytical Report Number: 23-37902
Project / Site name: A46 Walsgrave
Your Order No: 298636

Lab Sample Number				2704969	2704970	2704971
Sample Reference				BH109	BH109	BH109
Sample Number				33	34	37
Depth (m)				7.50-7.70	8.30-8.50	9.50-9.70
Date Sampled				26/05/2023	26/05/2023	26/05/2023
Time Taken				None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**			
Monoaromatics & Oxygenates						
Benzene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0
Toluene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0
Ethylbenzene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0
p & m-xylene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0
o-xylene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	NONE	< 5.0	< 5.0	< 5.0
Petroleum Hydrocarbons						
TPH-CWG - Aliphatic >EC5 - EC6 $_{HS_1D_AL}$	mg/kg	0.1	NONE	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC6 - EC8 $_{HS_1D_AL}$	mg/kg	0.1	NONE	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC8 - EC10 $_{HS_1D_AL}$	mg/kg	0.1	NONE	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC10 - EC12 $_{EH_CU_1D_AL}$	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16 $_{EH_CU_1D_AL}$	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21 $_{EH_CU_1D_AL}$	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35 $_{EH_CU_1D_AL}$	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic (EC5 - EC35) $_{EH_CU+HS_1D_AL}$	mg/kg	10	NONE	< 10	< 10	< 10
TPH-CWG - Aromatic >EC5 - EC7 $_{HS_1D_AR}$	mg/kg	0.1	NONE	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC7 - EC8 $_{HS_1D_AR}$	mg/kg	0.1	NONE	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC8 - EC10 $_{HS_1D_AR}$	mg/kg	0.1	NONE	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC10 - EC12 $_{EH_CU_1D_AR}$	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >EC12 - EC16 $_{EH_CU_1D_AR}$	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0
TPH-CWG - Aromatic >EC16 - EC21 $_{EH_CU_1D_AR}$	mg/kg	10	MCERTS	< 10	< 10	< 10
TPH-CWG - Aromatic >EC21 - EC35 $_{EH_CU_1D_AR}$	mg/kg	10	MCERTS	< 10	< 10	< 10
TPH-CWG - Aromatic (EC5 - EC35) $_{EH_CU+HS_1D_AR}$	mg/kg	10	NONE	< 10	< 10	< 10

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

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UKAS TESTING
4041

Analytical i2 Environmental Science

Analytical Report Number: 23-37902
Project / Site name: A46 Walsgrave

Your Order No: 298636

Lab Sample Number				2704972	2704973	2704974
Sample Reference				BH109	BH109	BH109
Sample Number				33	34	37
Depth (m)				7.50-7.70	8.30-8.50	9.50-9.70
Date Sampled				26/05/2023	26/05/2023	26/05/2023
Time Taken				None Supplied	None Supplied	None Supplied
Analytical Parameter (Leachate Analysis)	**Units**	**Limit of detection**	**Accreditation Status**			
General Inorganics						
pH (automated)	pH Units	N/A	ISO 17025	8.6	7.8	8.6
Total Cyanide (Low Level 1 µg/l)	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
Complex Cyanide (Low Level)	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
Free Cyanide (Low Level 1 µg/l)	µg/l	1	ISO 17025	< 1	< 1	< 1
Sulphate as SO_4	mg/l	0.1	ISO 17025	1.4	1.2	1.7
Ammoniacal Nitrogen as N	µg/l	15	NONE	< 15	77	< 15
Ammoniacal Nitrogen as NH3	mg/l	0.015	NONE	< 0.015	0.094	< 0.015
Ammoniacal Nitrogen as NH4	mg/l	0.015	NONE	< 0.015	0.1	0.015
Total Phenols						
Total Phenols (monohydric)	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
Speciated PAHs						
Naphthalene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01
Acenaphthylene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01
Acenaphthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01
Fluorene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01
Phenanthrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01
Anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01
Fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01
Pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01
Benzo(a)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01
Chrysene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01
Benzo(b)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01
Benzo(k)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01
Benzo(a)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01
Indeno(1,2,3-cd)pyrene	µg/l	0.01	NONE	< 0.01	< 0.01	< 0.01
Dibenz(a,h)anthracene	µg/l	0.01	NONE	< 0.01	< 0.01	< 0.01
Benzo(ghi)perylene	µg/l	0.01	NONE	< 0.01	< 0.01	< 0.01
Total PAH						
Total EPA-16 PAHs	µg/l	0.2	NONE	< 0.2	< 0.2	< 0.2
Heavy Metals / Metalloids						
Arsenic (dissolved)	mg/l	0.001	ISO 17025	0.003	0.011	0.007
Boron (dissolved)	mg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01
Cadmium (dissolved)	mg/l	0.00008	ISO 17025	< 0.00008	< 0.00008	< 0.00008
Chromium (dissolved)	mg/l	0.0004	ISO 17025	< 0.0004	0.0005	0.0024
Copper (dissolved)	mg/l	0.0007	ISO 17025	0.0015	0.0013	0.002
Lead (dissolved)	mg/l	0.001	ISO 17025	< 0.001	< 0.001	0.003
Mercury - CV-AFS	µg/l	0.007	ISO 17025	< 0.0070	< 0.0070	< 0.0070
Nickel (dissolved)	mg/l	0.0003	ISO 17025	0.0006	0.0008	0.0018
Selenium (dissolved)	mg/l	0.004	ISO 17025	< 0.004	< 0.004	< 0.004
Zinc (dissolved)	mg/l	0.0004	ISO 17025	0.0015	0.0013	0.0077

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Analytical Report Number: 23-37902
Project / Site name: A46 Walsgrave

Your Order No: 298636

Lab Sample Number				2704972	2704973	2704974
Sample Reference				BH109	BH109	BH109
Sample Number				33	34	37
Depth (m)				7.50-7.70	8.30-8.50	9.50-9.70
Date Sampled				26/05/2023	26/05/2023	26/05/2023
Time Taken				None Supplied	None Supplied	None Supplied
Analytical Parameter (Leachate Analysis)	**Units**	**Limit of detection**	**Accreditation Status**			
Monoaromatics & Oxygenates						
Benzene	µg/l	3	ISO 17025	< 3.0	< 3.0	< 3.0
Toluene	µg/l	3	ISO 17025	< 3.0	< 3.0	< 3.0
Ethylbenzene	µg/l	3	ISO 17025	< 3.0	< 3.0	< 3.0
p & m-xylene	µg/l	3	ISO 17025	< 3.0	< 3.0	< 3.0
o-xylene	µg/l	3	ISO 17025	< 3.0	< 3.0	< 3.0
MTBE (Methyl Tertiary Butyl Ether)	µg/l	10	NONE	< 10	< 10	< 10
Petroleum Hydrocarbons						
TPH-CWG - Aliphatic >C5 - C6 $_{HS_1D_AL}$	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >C6 - C8 $_{HS_1D_AL}$	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >C8 - C10 $_{HS_1D_AL}$	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >C10 - C12 $_{EH_1D_AL_MS}$	µg/l	10	NONE	< 10	< 10	< 10
TPH-CWG - Aliphatic >C12 - C16 $_{EH_1D_AL_MS}$	µg/l	10	NONE	< 10	< 10	< 10
TPH-CWG - Aliphatic >C16 - C21 $_{EH_1D_AL_MS}$	µg/l	10	NONE	< 10	< 10	< 10
TPH-CWG - Aliphatic >C21 - C35 $_{EH_1D_AL_MS}$	µg/l	10	NONE	< 10	< 10	< 10
TPH-CWG - Aliphatic (C5 - C35) $_{HS+EH_1D_AL_MS}$	µg/l	10	NONE	< 10	< 10	< 10
TPH-CWG - Aromatic >C5 - C7 $_{HS_1D_AR}$	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >C7 - C8 $_{HS_1D_AR}$	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >C8 - C10 $_{HS_1D_AR}$	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >C10 - C12 $_{EH_1D_AR_MS}$	µg/l	10	NONE	< 10	< 10	< 10
TPH-CWG - Aromatic >C12 - C16 $_{EH_1D_AR_MS}$	µg/l	10	NONE	< 10	< 10	< 10
TPH-CWG - Aromatic >C16 - C21 $_{EH_1D_AR_MS}$	µg/l	10	NONE	< 10	< 10	< 10
TPH-CWG - Aromatic >C21 - C35 $_{EH_1D_AR_MS}$	µg/l	10	NONE	< 10	< 10	< 10
TPH-CWG - Aromatic (C5 - C35) $_{HS+EH_1D_AR_MS}$	µg/l	10	NONE	< 10	< 10	< 10

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

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Analytical Report Number : 23-37902
Project / Site name: A46 Walsgrave

* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and loam (MCERTS) soil types. Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
2704969	BH109	33	7.50-7.70	Brown clay and sand with gravel and stones.
2704970	BH109	34	8.30-8.50	Brown clay and sand.
2704971	BH109	37	9.50-9.70	Brown clay and sand with gravel.

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Analytical Report Number : 23-37902
Project / Site name: A46 Walsgrave

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
BS EN 12457-2 (10:1) Leachate Prep	10:1 (as recieved, moisture adjusted) end over end extraction with water for 24 hours. Eluate filtered prior to analysis.	In-house method based on BSEN12457-2.	L043-PL	W	NONE
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES.	In-house method based on Second Site Properties version 3	L038-PL	D	MCERTS
Complex cyanide (Low level) in leachate	Determination of complex cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	ISO 17025
Complex Cyanide in soil	Determination of complex cyanide by calculation.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Free cyanide in soil	Determination of free cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
Monohydric phenols in leachate - LOW LEVEL 1 ug/l	Determination of phenols in leachate by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	ISO 17025
Monohydric phenols in soil	Determination of phenols in soil by extraction with sodium hydroxide followed by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	MCERTS
Speciated EPA-16 PAHs in leachate	Determination of PAH compounds in leachate by extraction in dichloromethane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L102B-PL	W	ISO 17025
Speciated EPA-16 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In house method.	L099-PL	D	MCERTS
pH at 20oC in leachate (automated)	Determination of pH in leachate by electrometric measurement.	In house method.	L099B	W	ISO 17025
Total sulphate (as SO4 in soil)	Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES.	In house method.	L038-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
TPHCWG (Leachates)	Determination of dichloromethane extractable hydrocarbons in leachate by GC-MS.	In-house method	L070-PL	W	ISO 17025
Total cyanide in soil	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS

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Analytical Report Number : 23-37902
Project / Site name: A46 Walsgrave

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Total organic carbon (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In house method.	L009-PL	D	MCERTS
BTEX and MTBE in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS. Individual components MCERTS accredited	In-house method based on USEPA8260	L073B-PL	W	MCERTS
BTEX and MTBE in leachates (Monoaromatics)	Determination of BTEX and MTBE in leachates by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	ISO 17025
Ammonia as NH3 in leachate	Determination of Ammonium/Ammonia/ Ammoniacal Nitrogen by the colorimetric salicylate/nitroprusside method.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082-PL	W	NONE
Ammoniacal Nitrogen as N in leachate	Determination of Ammonium/Ammonia/ Ammoniacal Nitrogen by the discrete analyser (colorimetric) salicylate/nitroprusside method.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082-PL	W	NONE
Metals by ICP-OES in leachate	Determination of metals in leachate by acidification followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L039-PL	W	ISO 17025
Boron in leachate	Determination of boron in leachate. Sample acidified and followed by ICP-OES.	In-house method based on MEWAM	L039-PL	W	ISO 17025
Cr (III) in soil	In-house method by calculation from total Cr and Cr VI.	In-house method by calculation	L080-PL	W	NONE
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method with silica gel split/clean up.	L088/76-PL	W	MCERTS
Free cyanide in leachate	Determination of free cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	ISO 17025
Total cyanide in leachate - 1µg/l	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L080-PL	W	ISO 17025
Ammonium as NH4 in leachate	Determination of ammonium in leachate by addition of buffer solution followed by ion selective electrode.	In-house method	L035-PL	W	NONE
Sulphate in leachates	Determination of sulphate in leachate by acidification followed by ICP-OES.	In-house method based on MEWAM 1986 Methods for the Determination of Metals in Soil""	L039-PL	W	ISO 17025
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in NaOH and addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	MCERTS

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Analytical Report Number : 23-37902
Project / Site name: A46 Walsgrave

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Mercury Low Level in leachate	Mercury in leachate by CV-AFS,	In-house method based on USEPA method 1631	L085-PL	W	ISO 17025

For method numbers ending in 'UK or A' analysis have been carried out in our laboratory in the United Kingdom (WATFORD).
For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).
For method numbers ending in 'PL or B' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.
Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

Information in Support of Analytical Results

List of HWOL Acronyms and Operators

Acronym	Descriptions
HS	Headspace Analysis
MS	Mass spectrometry
FID	Flame Ionisation Detector
GC	Gas Chromatography
EH	Extractable Hydrocarbons (i.e. everything extracted by the solvent(s))
CU	Clean-up - e.g. by Florisil®, silica gel
1D	GC - Single coil/column gas chromatography
2D	GC-GC - Double coil/column gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics
AR	Aromatics
#1	EH_2D_Total but with humics mathematically subtracted
#2	EH_2D_Total but with fatty acids mathematically subtracted
_	Operator - understore to separate acronyms (exception for +)
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total

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The results included within the report relate only to the sample(s) submitted for testing.

Analytical Report Number : 23-37902
Project / Site name: A46 Walsgrave

This deviation report indicates the sample and test deviations that apply to the samples submitted for analysis.Please note that the associated result(s) may be unreliable and should be interpreted with care.

Key: a - No sampling date b - Incorrect container c - Holding time d - Headspace e - Temperature

Sample ID	Other ID	Sample Type	Lab Sample Number	Sample Deviation	Test Name	Test Ref	Test Deviation
BH109	33	S	2704969	c	Free cyanide in soil	L080-PL	c
BH109	33	S	2704969	c	Complex Cyanide in soil	L080-PL	c
BH109	33	S	2704969	c	Total cyanide in soil	L080-PL	c
BH109	34	S	2704970	c	Free cyanide in soil	L080-PL	c
BH109	34	S	2704970	c	Complex Cyanide in soil	L080-PL	c
BH109	34	S	2704970	c	Total cyanide in soil	L080-PL	c
BH109	37	S	2704971	c	Free cyanide in soil	L080-PL	c
BH109	37	S	2704971	c	Complex Cyanide in soil	L080-PL	c
BH109	37	S	2704971	c	Total cyanide in soil	L080-PL	c

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The results included within the report relate only to the sample(s) submitted for testing.

[redacted]
t:
e:

i2 Analytical Ltd.
7 Woodshots Meadow,
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Business Park,
Watford,
Herts,
WD18 8YS

t: 01923 225404
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Analytical Report Number : 23-38086

Project / Site name:	A46 Walsgrave	**Samples received on:**	05/06/2023
Your job number:	G230651	**Samples instructed on/ Analysis started on:**	08/06/2023
Your order number:		**Analysis completed by:**	15/06/2023
Report Issue Number:	1	**Report issued on:**	15/06/2023
Samples Analysed:	4 leachate samples - 5 soil samples		

[redacted]
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41-711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils	- 4 weeks from reporting
leachates	- 2 weeks from reporting
waters	- 2 weeks from reporting
asbestos	- 6 months from reporting

Excel copies of reports are only valid when accompanied by this PDF certificate.

Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement.
Application of uncertainty of measurement would provide a range within which the true result lies.
An estimate of measurement uncertainty can be provided on request.

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The results included within the report relate only to the sample(s) submitted for testing.

Analytical Report Number: 23-38086
Project / Site name: A46 Walsgrave

Lab Sample Number				2706006	2706007	2706008	2706009	2706010
Sample Reference				BH117	BH117	BH117	BH124	BH124
Sample Number				2	11	14	4	12
Depth (m)				0.50-0.50	1.50-1.50	2.00-2.00	0.50-0.50	1.50-1.50
Date Sampled				01/06/2023	01/06/2023	01/06/2023	31/05/2023	31/05/2023
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Stone Content	%	0.1	NONE	< 0.1	82	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	10	10	18	14	12
Total mass of sample received	kg	0.001	NONE	1.3	1.3	1.3	1.3	1.3
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	-	-	-
Asbestos Analyst ID	N/A	N/A	N/A	IZJ	IZJ	N/A	N/A	N/A
General Inorganics								
pH - Automated	pH Units	N/A	MCERTS	7.1	8.3	8	7.9	8.5
Total Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Complex Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Free Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total Sulphate as SO4	mg/kg	50	MCERTS	430	130	140	320	510
Total Organic Carbon (TOC) - Automated	%	0.1	MCERTS	1.3	0.2	0.4	0.4	0.1
Total Phenols								
Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	0.1	< 0.05	< 0.05	< 0.05	< 0.05
Pyrene	mg/kg	0.05	MCERTS	0.09	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(a)anthracene	mg/kg	0.05	MCERTS	0.05	< 0.05	< 0.05	< 0.05	< 0.05
Chrysene	mg/kg	0.05	MCERTS	0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	0.09	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(a)pyrene	mg/kg	0.05	MCERTS	0.06	< 0.05	< 0.05	< 0.05	< 0.05
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Total PAH								
Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	< 0.80	< 0.80	< 0.80	< 0.80	< 0.80
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	10	5.8	2.3	10	7.1
Boron (water soluble)	mg/kg	0.2	MCERTS	< 0.2	0.5	0.4	1.1	0.3
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Chromium (hexavalent)	mg/kg	1.8	MCERTS	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8
Chromium (III)	mg/kg	1	NONE	26	13	13	38	23
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	26	13	13	38	23
Copper (aqua regia extractable)	mg/kg	1	MCERTS	33	11	15	24	16
Lead (aqua regia extractable)	mg/kg	1	MCERTS	27	8.5	5.4	19	9.1
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	21	12	13	38	23
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

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Analytical Report Number: 23-38086
Project / Site name: A46 Walsgrave

Lab Sample Number				2706006	2706007	2706008	2706009	2706010
Sample Reference				BH117	BH117	BH117	BH124	BH124
Sample Number				2	11	14	4	12
Depth (m)				0.50-0.50	1.50-1.50	2.00-2.00	0.50-0.50	1.50-1.50
Date Sampled				01/06/2023	01/06/2023	01/06/2023	31/05/2023	31/05/2023
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	66	32	33	64	44
Monoaromatics & Oxygenates								
Benzene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Toluene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Ethylbenzene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
p & m-xylene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
o-xylene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Petroleum Hydrocarbons								
TPH-CWG - Aliphatic >EC5 - EC6 $_{HS_1D_AL}$	mg/kg	0.001	NONE	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC6 - EC8 $_{HS_1D_AL}$	mg/kg	0.001	NONE	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC8 - EC10 $_{HS_1D_AL}$	mg/kg	0.001	NONE	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC10 - EC12 $_{EH_CU_1D_AL}$	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16 $_{EH_CU_1D_AL}$	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21 $_{EH_CU_1D_AL}$	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35 $_{EH_CU_1D_AL}$	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic (EC5 - EC35) $_{EH_CU+HS_1D_AL}$	mg/kg	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >EC5 - EC7 $_{HS_1D_AR}$	mg/kg	0.001	NONE	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC7 - EC8 $_{HS_1D_AR}$	mg/kg	0.001	NONE	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC8 - EC10 $_{HS_1D_AR}$	mg/kg	0.001	NONE	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC10 - EC12 $_{EH_CU_1D_AR}$	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >EC12 - EC16 $_{EH_CU_1D_AR}$	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
TPH-CWG - Aromatic >EC16 - EC21 $_{EH_CU_1D_AR}$	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >EC21 - EC35 $_{EH_CU_1D_AR}$	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic (EC5 - EC35) $_{EH_CU+HS_1D_AR}$	mg/kg	10	NONE	< 10	< 10	< 10	< 10	< 10

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

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Analytical Report Number: 23-38086
Project / Site name: A46 Walsgrave

Lab Sample Number				2706011	2706012	2706013	2706014
Sample Reference				BH117	BH117	BH124	BH124
Sample Number				2	11	4	12
Depth (m)				0.50-0.50	1.50-1.50	0.50-0.50	1.50-1.50
Date Sampled				01/06/2023	01/06/2023	31/05/2023	31/05/2023
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Leachate Analysis)	**Units**	**Limit of detection**	**Accreditation Status**				
General Inorganics							
pH (automated)	pH Units	N/A	ISO 17025	7.5	7.3	7.6	7.6
Total Cyanide (Low Level 1 µg/l)	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Complex Cyanide (Low Level)	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Free Cyanide (Low Level 1 µg/l)	µg/l	1	ISO 17025	< 1	< 1	< 1	< 1
Sulphate as SO_4	mg/l	0.1	ISO 17025	2.5	1.7	2.8	8.1
Ammoniacal Nitrogen as N	µg/l	15	NONE	33	< 15	< 15	30
Ammoniacal Nitrogen as NH3	µg/l	15	NONE	40	< 15	< 15	36
Ammoniacal Nitrogen as NH3	mg/l	0.015	NONE	0.04	< 0.015	< 0.015	0.036
Ammoniacal Nitrogen as NH4	mg/l	0.015	NONE	0.042	< 0.015	< 0.015	0.038
Total Phenols							
Total Phenols (monohydric)	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Speciated PAHs							
Naphthalene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01
Acenaphthylene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01
Acenaphthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01
Fluorene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01
Phenanthrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01
Anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01
Fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01
Pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(a)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01
Chrysene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(b)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(k)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(a)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01
Indeno(1,2,3-cd)pyrene	µg/l	0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01
Dibenz(a,h)anthracene	µg/l	0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(ghi)perylene	µg/l	0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01
Total PAH							
Total EPA-16 PAHs	µg/l	0.2	NONE	< 0.2	< 0.2	< 0.2	< 0.2
Heavy Metals / Metalloids							
Arsenic (dissolved)	mg/l	0.001	ISO 17025	0.003	< 0.001	< 0.001	< 0.001
Boron (dissolved)	mg/l	0.01	ISO 17025	0.02	< 0.01	0.04	< 0.01
Cadmium (dissolved)	mg/l	0.00008	ISO 17025	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Chromium (dissolved)	mg/l	0.0004	ISO 17025	0.0039	0.0006	0.0019	0.0014
Copper (dissolved)	mg/l	0.0007	ISO 17025	0.0221	0.0024	0.0096	0.0051
Lead (dissolved)	mg/l	0.001	ISO 17025	0.004	0.002	0.002	0.003
Mercury - CV-AFS	µg/l	0.007	ISO 17025	0.0072	< 0.0070	< 0.0070	< 0.0070
Nickel (dissolved)	mg/l	0.0003	ISO 17025	0.0037	0.0008	0.0021	0.0012
Selenium (dissolved)	mg/l	0.004	ISO 17025	< 0.004	< 0.004	< 0.004	< 0.004
Zinc (dissolved)	mg/l	0.0004	ISO 17025	0.0197	0.0045	0.0075	0.0078

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Analytical Report Number: 23-38086
Project / Site name: A46 Walsgrave

Lab Sample Number				2706011	2706012	2706013	2706014
Sample Reference				BH117	BH117	BH124	BH124
Sample Number				2	11	4	12
Depth (m)				0.50-0.50	1.50-1.50	0.50-0.50	1.50-1.50
Date Sampled				01/06/2023	01/06/2023	31/05/2023	31/05/2023
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Leachate Analysis)	**Units**	**Limit of detection**	**Accreditation Status**				
Monoaromatics & Oxygenates							
Benzene	µg/l	3	ISO 17025	< 3.0	< 3.0	< 3.0	< 3.0
Toluene	µg/l	3	ISO 17025	< 3.0	< 3.0	< 3.0	< 3.0
Ethylbenzene	µg/l	3	ISO 17025	< 3.0	< 3.0	< 3.0	< 3.0
p & m-xylene	µg/l	3	ISO 17025	< 3.0	< 3.0	< 3.0	< 3.0
o-xylene#	µg/l	3	NONE	< 3.0	< 3.0	< 3.0	< 3.0
MTBE (Methyl Tertiary Butyl Ether)	µg/l	10	NONE	< 10	< 10	< 10	< 10
Petroleum Hydrocarbons							
TPH-CWG - Aliphatic## >C5 - C6 $_{HS_1D_AL}$	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic## >C6 - C8 $_{HS_1D_AL}$	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic## >C8 - C10 $_{HS_1D_AL}$	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >C10 - C12 $_{EH_1D_AL_MS}$	µg/l	10	NONE	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C12 - C16 $_{EH_1D_AL_MS}$	µg/l	10	NONE	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C16 - C21 $_{EH_1D_AL_MS}$	µg/l	10	NONE	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C21 - C35 $_{EH_1D_AL_MS}$	µg/l	10	NONE	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic (C5 - C35) $_{HS+EH_1D_AL_MS}$	µg/l	10	NONE	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C5 - C7 $_{HS_1D_AR}$	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >C7 - C8 $_{HS_1D_AR}$	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >C8 - C10 $_{HS_1D_AR}$	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >C10 - C12 $_{EH_1D_AR_MS}$	µg/l	10	NONE	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C12 - C16 $_{EH_1D_AR_MS}$	µg/l	10	NONE	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C16 - C21 $_{EH_1D_AR_MS}$	µg/l	10	NONE	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C21 - C35 $_{EH_1D_AR_MS}$	µg/l	10	NONE	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic (C5 - C35) $_{HS+EH_1D_AR_MS}$	µg/l	10	NONE	< 10	< 10	< 10	< 10

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

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Analytical Report Number : 23-38086
Project / Site name: A46 Walsgrave

* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and loam (MCERTS) soil types. Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
2706006	BH117	2	0.50-0.50	Brown clay and sand with gravel.
2706007	BH117	11	1.50-1.50	Brown clay and sand with gravel and stones.
2706008	BH117	14	2.00-2.00	Brown clay and sand.
2706009	BH124	4	0.50-0.50	Brown clay and sand.
2706010	BH124	12	1.50-1.50	Brown clay.

Analytical Report Number : 23-38086
Project / Site name: A46 Walsgrave

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
BS EN 12457-2 (10:1) Leachate Prep	10:1 (as recieved, moisture adjusted) end over end extraction with water for 24 hours. Eluate filtered prior to analysis.	In-house method based on BSEN12457-2.	L043-PL	W	NONE
Asbestos identification in soil	Asbestos Identification with the use of polarised light microscopy in conjunction with dispersion staining techniques.	In house method based on HSG 248	A001-PL	D	ISO 17025
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES.	In-house method based on Second Site Properties version 3	L038-PL	D	MCERTS
Complex cyanide (Low level) in leachate	Determination of complex cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	ISO 17025
Complex Cyanide in soil	Determination of complex cyanide by calculation.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Free cyanide in soil	Determination of free cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
Monohydric phenols in leachate - LOW LEVEL 1 ug/l	Determination of phenols in leachate by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	ISO 17025
Monohydric phenols in soil	Determination of phenols in soil by extraction with sodium hydroxide followed by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	MCERTS
Speciated EPA-16 PAHs in leachate	Determination of PAH compounds in leachate by extraction in dichloromethane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L102B-PL	W	ISO 17025
Speciated EPA-16 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In house method.	L099-PL	D	MCERTS
pH at 20oC in leachate (automated)	Determination of pH in leachate by electrometric measurement.	In house method.	L099B	W	ISO 17025
Total sulphate (as SO4 in soil)	Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES.	In house method.	L038-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE

Analytical Report Number : 23-38086
Project / Site name: A46 Walsgrave

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
TPHCWG (Leachates)	Determination of dichloromethane extractable hydrocarbons in leachate by GC-MS.	In-house method	L070-PL	W	ISO 17025
Total cyanide in soil	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Total organic carbon (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In house method.	L009-PL	D	MCERTS
BTEX and MTBE in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS. Individual components MCERTS accredited	In-house method based on USEPA8260	L073B-PL	W	MCERTS
BTEX and MTBE in leachates (Monoaromatics)	Determination of BTEX and MTBE in leachates by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	ISO 17025
Ammonia as NH3 in leachate	Determination of Ammonium/Ammonia/ Ammoniacal Nitrogen by the colorimetric salicylate/nitroprusside method.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082-PL	W	NONE
Ammoniacal Nitrogen as N in leachate	Determination of Ammonium/Ammonia/ Ammoniacal Nitrogen by the discrete analyser (colorimetric) salicylate/nitroprusside method.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082-PL	W	NONE
Metals by ICP-OES in leachate	Determination of metals in leachate by acidification followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L039-PL	W	ISO 17025
Boron in leachate	Determination of boron in leachate. Sample acidified and followed by ICP-OES.	In-house method based on MEWAM	L039-PL	W	ISO 17025
Cr (III) in soil	In-house method by calculation from total Cr and Cr VI.	In-house method by calculation	L080-PL	W	NONE
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method with silica gel split/clean up.	L088/76-PL	W	MCERTS
Free cyanide in leachate	Determination of free cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	ISO 17025
Total cyanide in leachate - 1µg/l	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L080-PL	W	ISO 17025
Ammonium as NH4 in leachate	Determination of ammonium in leachate by addition of buffer solution followed by ion selective electrode.	In-house method	L035-PL	W	NONE
Sulphate in leachates	Determination of sulphate in leachate by acidification followed by ICP-OES.	In-house method based on MEWAM 1986 Methods for the Determination of Metals in Soil""	L039-PL	W	ISO 17025

Analytical Report Number : 23-38086
Project / Site name: A46 Walsgrave

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in NaOH and addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	MCERTS
Mercury Low Level in leachate	Mercury in leachate by CV-AFS,	In-house method based on USEPA method 1631	L085-PL	W	ISO 17025

For method numbers ending in 'UK or A' analysis have been carried out in our laboratory in the United Kingdom (WATFORD).
For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).
For method numbers ending in 'PL or B' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.
Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

Information in Support of Analytical Results

List of HWOL Acronyms and Operators

Acronym	Descriptions
HS	Headspace Analysis
MS	Mass spectrometry
FID	Flame Ionisation Detector
GC	Gas Chromatography
EH	Extractable Hydrocarbons (i.e. everything extracted by the solvent(s))
CU	Clean-up - e.g. by Florisil®, silica gel
1D	GC - Single coil/column gas chromatography
2D	GC-GC - Double coil/column gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics
AR	Aromatics
#1	EH_2D_Total but with humics mathematically subtracted
#2	EH_2D_Total but with fatty acids mathematically subtracted
_	Operator - understore to separate acronyms (exception for +)
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total

- Data reported unaccredited due to quality control parameter failure associated with this result; other checks applied prior to reporting the data have been accepted. The result should be considered as being deviating and may be compromised.

- Quality control parameter has a high recovery (outside of limit); however the associated result is below the reporting limit, other checks applied prior to reporting the data have been accepted. The result should be considered as being deviating and may be compromised.

Sample Deviation Report

Analytical Report Number : 23-38086
Project / Site name: A46 Walsgrave

This deviation report indicates the sample and test deviations that apply to the samples submitted for analysis.Please note that the associated result(s) may be unreliable and should be interpreted with care.

Key: a - No sampling date b - Incorrect container c - Holding time d - Headspace e - Temperature

Sample ID	Other ID	Sample Type	Lab Sample Number	Sample Deviation	Test Name	Test Ref	Test Deviation
BH124	12	S	2706010	c	Free cyanide in soil	L080-PL	c
BH124	12	S	2706010	c	Complex Cyanide in soil	L080-PL	c
BH124	12	S	2706010	c	Total cyanide in soil	L080-PL	c
BH124	4	S	2706009	c	Free cyanide in soil	L080-PL	c
BH124	4	S	2706009	c	Complex Cyanide in soil	L080-PL	c
BH124	4	S	2706009	c	Total cyanide in soil	L080-PL	c

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Analytical Report Number : 23-39732

Project / Site name:	A46 Walsgrave	**Samples received on:**	05/06/2023
Your job number:	G230651	**Samples instructed on/ Analysis started on:**	16/06/2023
Your order number:	VE298636	**Analysis completed by:**	23/06/2023
Report Issue Number:	1	**Report issued on:**	25/06/2023
Samples Analysed:	2 leachate samples - 3 soil samples		

[redacted]

For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41-711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils	- 4 weeks from reporting
leachates	- 2 weeks from reporting
waters	- 2 weeks from reporting
asbestos	- 6 months from reporting

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Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement.
Application of uncertainty of measurement would provide a range within which the true result lies.
An estimate of measurement uncertainty can be provided on request.

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The results included within the report relate only to the sample(s) submitted for testing.

Analytical Report Number: 23-39732
Project / Site name: A46 Walsgrave

Lab Sample Number				2716694	2716695	2716696
Sample Reference				BH121	BH121	BH121
Sample Number				1	4	13
Depth (m)				0.10	0.50	2.00
Date Sampled				02/06/2023	08/06/2023	02/06/2023
Time Taken				None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**			
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	12	12	16
Total mass of sample received	kg	0.001	NONE	1.3	1.3	1.3
General Inorganics						
pH - Automated	pH Units	N/A	MCERTS	6.6	8.4	8.3
Total Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
Complex Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
Free Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
Total Sulphate as SO4	mg/kg	50	MCERTS	430	480	750
Total Organic Carbon (TOC) - Automated	%	0.1	MCERTS	1.7	0.4	0.3
Total Phenols						
Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
Speciated PAHs						
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Benzo(a)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Chrysene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	< 0.05	< 0.05	< 0.05
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	< 0.05	< 0.05	< 0.05
Benzo(a)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Total PAH						
Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	< 0.80	< 0.80	< 0.80
Heavy Metals / Metalloids						
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	10	9.5	19
Boron (water soluble)	mg/kg	0.2	MCERTS	0.4	0.5	0.3
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2
Chromium (hexavalent)	mg/kg	1.8	MCERTS	< 1.8	< 1.8	< 1.8
Chromium (III)	mg/kg	1	NONE	28	31	25
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	29	32	25
Copper (aqua regia extractable)	mg/kg	1	MCERTS	28	24	20
Lead (aqua regia extractable)	mg/kg	1	MCERTS	39	10	8.9
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	20	29	23
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	72	55	55

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Analytical Report Number: 23-39732
Project / Site name: A46 Walsgrave

Lab Sample Number				2716694	2716695	2716696
Sample Reference				BH121	BH121	BH121
Sample Number				1	4	13
Depth (m)				0.10	0.50	2.00
Date Sampled				02/06/2023	08/06/2023	02/06/2023
Time Taken				None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**			
Monoaromatics & Oxygenates						
Benzene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0
Toluene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0
Ethylbenzene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0
p & m-xylene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0
o-xylene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	NONE	< 5.0	< 5.0	< 5.0
Petroleum Hydrocarbons						
TPH-CWG - Aliphatic >EC5 - EC6 $_{HS_1D_AL}$	mg/kg	0.001	NONE	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC6 - EC8 $_{HS_1D_AL}$	mg/kg	0.001	NONE	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC8 - EC10 $_{HS_1D_AL}$	mg/kg	0.001	NONE	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC10 - EC12 $_{EH_CU_1D_AL}$	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16 $_{EH_CU_1D_AL}$	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21 $_{EH_CU_1D_AL}$	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35 $_{EH_CU_1D_AL}$	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic (EC5 - EC35) $_{EH_CU+HS_1D_AL}$	mg/kg	10	NONE	< 10	< 10	< 10
TPH-CWG - Aromatic >EC5 - EC7 $_{HS_1D_AR}$	mg/kg	0.001	NONE	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC7 - EC8 $_{HS_1D_AR}$	mg/kg	0.001	NONE	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC8 - EC10 $_{HS_1D_AR}$	mg/kg	0.001	NONE	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC10 - EC12 $_{EH_CU_1D_AR}$	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >EC12 - EC16 $_{EH_CU_1D_AR}$	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0
TPH-CWG - Aromatic >EC16 - EC21 $_{EH_CU_1D_AR}$	mg/kg	10	MCERTS	< 10	< 10	< 10
TPH-CWG - Aromatic >EC21 - EC35 $_{EH_CU_1D_AR}$	mg/kg	10	MCERTS	< 10	< 10	< 10
TPH-CWG - Aromatic (EC5 - EC35) $_{EH_CU+HS_1D_AR}$	mg/kg	10	NONE	< 10	< 10	< 10

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

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Analytical Report Number: 23-39732
Project / Site name: A46 Walsgrave

Lab Sample Number				2716697	2716698
Sample Reference				BH121	BH121
Sample Number				4	13
Depth (m)				0.50	2.00
Date Sampled				08/06/2023	02/06/2023
Time Taken				None Supplied	None Supplied
Analytical Parameter (Leachate Analysis)	**Units**	**Limit of detection**	**Accreditation Status**		
General Inorganics					
pH (automated)	pH Units	N/A	ISO 17025	7.8	7.8
Total Cyanide (Low Level 1 µg/l)	µg/l	1	ISO 17025	< 1.0	< 1.0
Complex Cyanide (Low Level)	µg/l	1	ISO 17025	< 1.0	< 1.0
Free Cyanide (Low Level 1 µg/l)	µg/l	1	ISO 17025	< 1	< 1
Sulphate as SO_4	mg/l	0.1	ISO 17025	3	12.9
Ammoniacal Nitrogen as N	µg/l	15	NONE	41	25
Ammoniacal Nitrogen as NH3	mg/l	0.015	NONE	0.05	0.03
Ammoniacal Nitrogen as NH4	mg/l	0.015	NONE	0.053	0.032
Total Phenols					
Total Phenols (monohydric)	µg/l	1	ISO 17025	< 1.0	< 1.0
Speciated PAHs					
Naphthalene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Acenaphthylene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Acenaphthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Fluorene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Phenanthrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Benzo(a)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Chrysene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Benzo(b)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Benzo(k)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Benzo(a)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Indeno(1,2,3-cd)pyrene	µg/l	0.01	NONE	< 0.01	< 0.01
Dibenz(a,h)anthracene	µg/l	0.01	NONE	< 0.01	< 0.01
Benzo(ghi)perylene	µg/l	0.01	NONE	< 0.01	< 0.01
Total PAH					
Total EPA-16 PAHs	µg/l	0.2	NONE	< 0.2	< 0.2
Heavy Metals / Metalloids					
Arsenic (dissolved)	mg/l	0.001	ISO 17025	0.003	0.004
Boron (dissolved)	mg/l	0.01	ISO 17025	0.03	0.02
Cadmium (dissolved)	mg/l	0.00008	ISO 17025	< 0.00008	< 0.00008
Chromium (dissolved)	mg/l	0.0004	ISO 17025	0.0016	0.0022
Copper (dissolved)	mg/l	0.0007	ISO 17025	0.0187	0.0066
Lead (dissolved)	mg/l	0.001	ISO 17025	< 0.001	< 0.001
Mercury - CV-AFS	µg/l	0.007	ISO 17025	< 0.0070	< 0.0070
Nickel (dissolved)	mg/l	0.0003	ISO 17025	0.0018	0.0014
Selenium (dissolved)	mg/l	0.004	ISO 17025	< 0.004	< 0.004
Zinc (dissolved)	mg/l	0.0004	ISO 17025	0.0188	0.0087

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Analytical Report Number: 23-39732
Project / Site name: A46 Walsgrave

Lab Sample Number				2716697	2716698
Sample Reference				BH121	BH121
Sample Number				4	13
Depth (m)				0.50	2.00
Date Sampled				08/06/2023	02/06/2023
Time Taken				None Supplied	None Supplied
Analytical Parameter (Leachate Analysis)	**Units**	**Limit of detection**	**Accreditation Status**		
Monoaromatics & Oxygenates					
Benzene	µg/l	3	ISO 17025	< 3.0	< 3.0
Toluene	µg/l	3	ISO 17025	< 3.0	< 3.0
Ethylbenzene	µg/l	3	ISO 17025	< 3.0	< 3.0
p & m-xylene	µg/l	3	ISO 17025	< 3.0	< 3.0
o-xylene	µg/l	3	ISO 17025	< 3.0	< 3.0
MTBE (Methyl Tertiary Butyl Ether)	µg/l	10	NONE	< 10	< 10
Petroleum Hydrocarbons					
TPH-CWG - Aliphatic >C5 - C6 $_{HS_1D_AL}$	µg/l	1	ISO 17025	< 1.0	< 1.0
TPH-CWG - Aliphatic >C6 - C8 $_{HS_1D_AL}$	µg/l	1	ISO 17025	< 1.0	< 1.0
TPH-CWG - Aliphatic >C8 - C10 $_{HS_1D_AL}$	µg/l	1	ISO 17025	< 1.0	< 1.0
TPH-CWG - Aliphatic >C10 - C12 $_{EH_1D_AL_MS}$	µg/l	10	NONE	< 10	< 10
TPH-CWG - Aliphatic >C12 - C16 $_{EH_1D_AL_MS}$	µg/l	10	NONE	< 10	< 10
TPH-CWG - Aliphatic >C16 - C21 $_{EH_1D_AL_MS}$	µg/l	10	NONE	< 10	< 10
TPH-CWG - Aliphatic >C21 - C35 $_{EH_1D_AL_MS}$	µg/l	10	NONE	< 10	< 10
TPH-CWG - Aliphatic (C5 - C35) $_{HS+EH_1D_AL_MS}$	µg/l	10	NONE	< 10	< 10
TPH-CWG - Aromatic >C5 - C7 $_{HS_1D_AR}$	µg/l	1	ISO 17025	< 1.0	< 1.0
TPH-CWG - Aromatic >C7 - C8 $_{HS_1D_AR}$	µg/l	1	ISO 17025	< 1.0	< 1.0
TPH-CWG - Aromatic >C8 - C10 $_{HS_1D_AR}$	µg/l	1	ISO 17025	< 1.0	< 1.0
TPH-CWG - Aromatic >C10 - C12 $_{EH_1D_AR_MS}$	µg/l	10	NONE	< 10	< 10
TPH-CWG - Aromatic >C12 - C16 $_{EH_1D_AR_MS}$	µg/l	10	NONE	< 10	< 10
TPH-CWG - Aromatic >C16 - C21 $_{EH_1D_AR_MS}$	µg/l	10	NONE	< 10	< 10
TPH-CWG - Aromatic >C21 - C35 $_{EH_1D_AR_MS}$	µg/l	10	NONE	< 10	< 10
TPH-CWG - Aromatic (C5 - C35) $_{HS+EH_1D_AR_MS}$	µg/l	10	NONE	< 10	< 10

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

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Analytical Report Number : 23-39732
Project / Site name: A46 Walsgrave

* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and loam (MCERTS) soil types. Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
2716694	BH121	1	0.1	Brown sandy clay with gravel and vegetation.
2716695	BH121	4	0.5	Brown clay with gravel and vegetation.
2716696	BH121	13	2	Brown clay with gravel and vegetation.

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Project / Site name: A46 Walsgrave

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
BS EN 12457-2 (10:1) Leachate Prep	10:1 (as recieved, moisture adjusted) end over end extraction with water for 24 hours. Eluate filtered prior to analysis.	In-house method based on BSEN12457-2.	L043-PL	W	NONE
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES.	In-house method based on Second Site Properties version 3	L038-PL	D	MCERTS
Complex cyanide (Low level) in leachate	Determination of complex cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	ISO 17025
Complex Cyanide in soil	Determination of complex cyanide by calculation.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Free cyanide in soil	Determination of free cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
Monohydric phenols in leachate - LOW LEVEL 1 ug/l	Determination of phenols in leachate by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	ISO 17025
Monohydric phenols in soil	Determination of phenols in soil by extraction with sodium hydroxide followed by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	MCERTS
Speciated EPA-16 PAHs in leachate	Determination of PAH compounds in leachate by extraction in dichloromethane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L102B-PL	W	ISO 17025
Speciated EPA-16 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In house method.	L099-PL	D	MCERTS
pH at 20oC in leachate (automated)	Determination of pH in leachate by electrometric measurement.	In house method.	L099B	W	ISO 17025
Total sulphate (as SO4 in soil)	Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES.	In house method.	L038-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
TPHCWG (Leachates)	Determination of dichloromethane extractable hydrocarbons in leachate by GC-MS.	In-house method	L070-PL	W	ISO 17025

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Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Total cyanide in soil	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Total organic carbon (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In house method.	L009-PL	D	MCERTS
BTEX and MTBE in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS. Individual components MCERTS accredited	In-house method based on USEPA8260	L073B-PL	W	MCERTS
BTEX and MTBE in leachates (Monoaromatics)	Determination of BTEX and MTBE in leachates by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	ISO 17025
Ammonia as NH3 in leachate	Determination of Ammonium/Ammonia/ Ammoniacal Nitrogen by the colorimetric salicylate/nitroprusside method.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082-PL	W	NONE
Ammoniacal Nitrogen as N in leachate	Determination of Ammonium/Ammonia/ Ammoniacal Nitrogen by the discrete analyser (colorimetric) salicylate/nitroprusside method.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082-PL	W	NONE
Metals by ICP-OES in leachate	Determination of metals in leachate by acidification followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L039-PL	W	ISO 17025
Boron in leachate	Determination of boron in leachate. Sample acidified and followed by ICP-OES.	In-house method based on MEWAM	L039-PL	W	ISO 17025
Cr (III) in soil	In-house method by calculation from total Cr and Cr VI.	In-house method by calculation	L080-PL	W	NONE
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method with silica gel split/clean up.	L088/76-PL	W	MCERTS
Free cyanide in leachate	Determination of free cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	ISO 17025
Total cyanide in leachate - 1µg/l	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L080-PL	W	ISO 17025
Ammonium as NH4 in leachate	Determination of ammonium in leachate by addition of buffer solution followed by ion selective electrode.	In-house method	L035-PL	W	NONE
Sulphate in leachates	Determination of sulphate in leachate by acidification followed by ICP-OES.	In-house method based on MEWAM 1986 Methods for the Determination of Metals in Soil""	L039-PL	W	ISO 17025
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in NaOH and addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	MCERTS

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Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Mercury Low Level in leachate	Mercury in leachate by CV-AFS,	In-house method based on USEPA method 1631	L085-PL	W	ISO 17025

For method numbers ending in 'UK or A' analysis have been carried out in our laboratory in the United Kingdom (WATFORD).
For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).
For method numbers ending in 'PL or B' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.
Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

Information in Support of Analytical Results

List of HWOL Acronyms and Operators

Acronym	Descriptions
HS	Headspace Analysis
MS	Mass spectrometry
FID	Flame Ionisation Detector
GC	Gas Chromatography
EH	Extractable Hydrocarbons (i.e. everything extracted by the solvent(s))
CU	Clean-up - e.g. by Florisil®, silica gel
1D	GC - Single coil/column gas chromatography
2D	GC-GC - Double coil/column gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics
AR	Aromatics
#1	EH_2D_Total but with humics mathematically subtracted
#2	EH_2D_Total but with fatty acids mathematically subtracted
_	Operator - understore to separate acronyms (exception for +)
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total

Sample Deviation Report

Analytical Report Number : 23-39732
Project / Site name: A46 Walsgrave

This deviation report indicates the sample and test deviations that apply to the samples submitted for analysis.Please note that the associated result(s) may be unreliable and should be interpreted with care.

Key: a - No sampling date b - Incorrect container c - Holding time d - Headspace e - Temperature

Sample ID	Other ID	Sample Type	Lab Sample Number	Sample Deviation	Test Name	Test Ref	Test Deviation
BH121	1	S	2716694	c	Free cyanide in soil	L080-PL	c
BH121	1	S	2716694	c	Complex Cyanide in soil	L080-PL	c
BH121	1	S	2716694	c	Total cyanide in soil	L080-PL	c
BH121	13	S	2716696	c	Free cyanide in soil	L080-PL	c
BH121	13	S	2716696	c	Complex Cyanide in soil	L080-PL	c
BH121	13	S	2716696	c	Total cyanide in soil	L080-PL	c
BH121	4	S	2716695	c	Free cyanide in soil	L080-PL	c
BH121	4	S	2716695	c	Complex Cyanide in soil	L080-PL	c
BH121	4	S	2716695	c	Total cyanide in soil	L080-PL	c

[redacted]
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Analytical Report Number : 23-39671

Project / Site name:	A46 Walsgrave	**Samples received on:**	08/06/2023
Your job number:	G230651	**Samples instructed on/ Analysis started on:**	16/06/2023
Your order number:	VE298636	**Analysis completed by:**	23/06/2023
Report Issue Number:	1	**Report issued on:**	23/06/2023
Samples Analysed:	2 leachate samples - 3 soil samples		

[redacted]
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41-711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils	- 4 weeks from reporting
leachates	- 2 weeks from reporting
waters	- 2 weeks from reporting
asbestos	- 6 months from reporting

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Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement.
Application of uncertainty of measurement would provide a range within which the true result lies.
An estimate of measurement uncertainty can be provided on request.

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Analytical Report Number: 23-39671
Project / Site name: A46 Walsgrave

Lab Sample Number				2716249	2716250	2716251
Sample Reference				BH123	BH123	BH123
Sample Number				VE10230607003	VE10230607004	VE10230607012
Depth (m)				0.30	0.50	1.50
Date Sampled				07/06/2023	07/06/2023	07/06/2023
Time Taken				None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**			
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	7.2	12	14
Total mass of sample received	kg	0.001	NONE	1.3	1.3	1.3
General Inorganics						
pH - Automated	pH Units	N/A	MCERTS	7.4	7.6	8.5
Total Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
Complex Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
Free Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
Total Sulphate as SO4	mg/kg	50	MCERTS	350	820	490
Total Organic Carbon (TOC) - Automated	%	0.1	MCERTS	1.9	1.4	0.3
Total Phenols						
Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
Speciated PAHs						
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Benzo(a)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Chrysene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	< 0.05	< 0.05	< 0.05
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	< 0.05	< 0.05	< 0.05
Benzo(a)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Total PAH						
Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	< 0.80	< 0.80	< 0.80
Heavy Metals / Metalloids						
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	9.4	9.9	8.6
Boron (water soluble)	mg/kg	0.2	MCERTS	1.5	0.8	0.2
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	0.4	0.4	< 0.2
Chromium (hexavalent)	mg/kg	1.8	MCERTS	< 1.8	< 1.8	< 1.8
Chromium (III)	mg/kg	1	NONE	28	31	33
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	29	31	33
Copper (aqua regia extractable)	mg/kg	1	MCERTS	23	25	23
Lead (aqua regia extractable)	mg/kg	1	MCERTS	31	30	12
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	23	28	33
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	66	67	57

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Analytical Report Number: 23-39671
Project / Site name: A46 Walsgrave

Lab Sample Number				2716249	2716250	2716251
Sample Reference				BH123	BH123	BH123
Sample Number				VE10230607003	VE10230607004	VE10230607012
Depth (m)				0.30	0.50	1.50
Date Sampled				07/06/2023	07/06/2023	07/06/2023
Time Taken				None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**			
Monoaromatics & Oxygenates						
Benzene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0
Toluene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0
Ethylbenzene#	µg/kg	5	NONE	< 5.0	< 5.0	< 5.0
p & m-xylene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0#
o-xylene#	µg/kg	5	NONE	< 5.0	< 5.0	< 5.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	NONE	< 5.0	< 5.0	< 5.0
Petroleum Hydrocarbons						
TPH-CWG - Aliphatic >EC5 - EC6 $_{HS_1D_AL}$	mg/kg	0.001	NONE	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC6 - EC8 $_{HS_1D_AL}$	mg/kg	0.001	NONE	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC8 - EC10 $_{HS_1D_AL}$	mg/kg	0.001	NONE	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC10 - EC12 $_{EH_CU_1D_AL}$	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16 $_{EH_CU_1D_AL}$	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21 $_{EH_CU_1D_AL}$	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35 $_{EH_CU_1D_AL}$	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic (EC5 - EC35) $_{EH_CU+HS_1D_AL}$	mg/kg	10	NONE	< 10	< 10	< 10
TPH-CWG - Aromatic >EC5 - EC7 $_{HS_1D_AR}$	mg/kg	0.001	NONE	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC7 - EC8 $_{HS_1D_AR}$	mg/kg	0.001	NONE	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC8 - EC10 $_{HS_1D_AR}$	mg/kg	0.001	NONE	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC10 - EC12 $_{EH_CU_1D_AR}$	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >EC12 - EC16 $_{EH_CU_1D_AR}$	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0
TPH-CWG - Aromatic >EC16 - EC21 $_{EH_CU_1D_AR}$	mg/kg	10	MCERTS	< 10	< 10	< 10
TPH-CWG - Aromatic >EC21 - EC35 $_{EH_CU_1D_AR}$	mg/kg	10	MCERTS	< 10	< 10	< 10
TPH-CWG - Aromatic (EC5 - EC35) $_{EH_CU+HS_1D_AR}$	mg/kg	10	NONE	< 10	< 10	< 10

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

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Analytical Report Number: 23-39671
Project / Site name: A46 Walsgrave

Lab Sample Number				2716252	2716253
Sample Reference				BH123	BH123
Sample Number				VE10230607004	VE10230607012
Depth (m)				0.50	1.50
Date Sampled				07/06/2023	07/06/2023
Time Taken				None Supplied	None Supplied
Analytical Parameter (Leachate Analysis)	**Units**	**Limit of detection**	**Accreditation Status**		
General Inorganics					
pH (automated)	pH Units	N/A	ISO 17025	7.6	8.2
Total Cyanide (Low Level 1 µg/l)	µg/l	1	ISO 17025	< 1.0	< 1.0
Complex Cyanide (Low Level)	µg/l	1	ISO 17025	< 1.0	< 1.0
Free Cyanide (Low Level 1 µg/l)	µg/l	1	ISO 17025	< 1	< 1
Sulphate as SO_4	mg/l	0.1	ISO 17025	2.3	7.5
Ammoniacal Nitrogen as N	µg/l	15	NONE	28	30
Ammoniacal Nitrogen as NH3	µg/l	15	NONE	34	36
Ammoniacal Nitrogen as NH3	mg/l	0.015	NONE	0.034	0.036
Ammoniacal Nitrogen as NH4	mg/l	0.015	NONE	0.036	0.038
Total Phenols					
Total Phenols (monohydric)	µg/l	1	ISO 17025	< 1.0	< 1.0
Speciated PAHs					
Naphthalene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Acenaphthylene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Acenaphthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Fluorene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Phenanthrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Benzo(a)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Chrysene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Benzo(b)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Benzo(k)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Benzo(a)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Indeno(1,2,3-cd)pyrene	µg/l	0.01	NONE	< 0.01	< 0.01
Dibenz(a,h)anthracene	µg/l	0.01	NONE	< 0.01	< 0.01
Benzo(ghi)perylene	µg/l	0.01	NONE	< 0.01	< 0.01
Total PAH					
Total EPA-16 PAHs	µg/l	0.2	NONE	< 0.2	< 0.2
Heavy Metals / Metalloids					
Arsenic (dissolved)	mg/l	0.001	ISO 17025	0.004	0.003
Boron (dissolved)	mg/l	0.01	ISO 17025	0.03	< 0.01
Cadmium (dissolved)	mg/l	0.00008	ISO 17025	< 0.0001	< 0.0001
Chromium (dissolved)	mg/l	0.0004	ISO 17025	0.0005	< 0.0004
Copper (dissolved)	mg/l	0.0007	ISO 17025	0.0047	0.0092
Lead (dissolved)	mg/l	0.001	ISO 17025	< 0.001	< 0.001
Mercury - CV-AFS	µg/l	0.007	ISO 17025	< 0.0070	< 0.0070
Nickel (dissolved)	mg/l	0.0003	ISO 17025	0.0022	0.0009
Selenium (dissolved)	mg/l	0.004	ISO 17025	< 0.004	< 0.004
Zinc (dissolved)	mg/l	0.0004	ISO 17025	0.0174	0.0045

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Analytical Report Number: 23-39671
Project / Site name: A46 Walsgrave

Lab Sample Number				2716252	2716253
Sample Reference				BH123	BH123
Sample Number				VE10230607004	VE10230607012
Depth (m)				0.50	1.50
Date Sampled				07/06/2023	07/06/2023
Time Taken				None Supplied	None Supplied
Analytical Parameter (Leachate Analysis)	**Units**	**Limit of detection**	**Accreditation Status**		
Monoaromatics & Oxygenates					
Benzene	µg/l	3	ISO 17025	< 3.0	< 3.0
Toluene	µg/l	3	ISO 17025	< 3.0	< 3.0
Ethylbenzene	µg/l	3	ISO 17025	< 3.0	< 3.0
p & m-xylene	µg/l	3	ISO 17025	< 3.0	< 3.0
o-xylene	µg/l	3	ISO 17025	< 3.0	< 3.0
MTBE (Methyl Tertiary Butyl Ether)	µg/l	10	NONE	< 10	< 10
Petroleum Hydrocarbons					
TPH-CWG - Aliphatic >C5 - C6## $_{HS_1D_AL}$	µg/l	1	ISO 17025	< 1.0	< 1.0
TPH-CWG - Aliphatic >C6 - C8## $_{HS_1D_AL}$	µg/l	1	ISO 17025	< 1.0	< 1.0
TPH-CWG - Aliphatic >C8 - C10 $_{HS_1D_AL}$	µg/l	1	ISO 17025	< 1.0	< 1.0
TPH-CWG - Aliphatic >C10 - C12 $_{EH_1D_AL_MS}$	µg/l	10	NONE	< 10	< 10
TPH-CWG - Aliphatic >C12 - C16 $_{EH_1D_AL_MS}$	µg/l	10	NONE	< 10	< 10
TPH-CWG - Aliphatic >C16 - C21 $_{EH_1D_AL_MS}$	µg/l	10	NONE	< 10	< 10
TPH-CWG - Aliphatic >C21 - C35 $_{EH_1D_AL_MS}$	µg/l	10	NONE	< 10	< 10
TPH-CWG - Aliphatic (C5 - C35) $_{HS+EH_1D_AL_MS}$	µg/l	10	NONE	< 10	< 10
TPH-CWG - Aromatic >C5 - C7 $_{HS_1D_AR}$	µg/l	1	ISO 17025	< 1.0	< 1.0
TPH-CWG - Aromatic >C7 - C8 $_{HS_1D_AR}$	µg/l	1	ISO 17025	< 1.0	< 1.0
TPH-CWG - Aromatic >C8 - C10 $_{HS_1D_AR}$	µg/l	1	ISO 17025	< 1.0	< 1.0
TPH-CWG - Aromatic >C10 - C12 $_{EH_1D_AR_MS}$	µg/l	10	NONE	< 10	< 10
TPH-CWG - Aromatic >C12 - C16 $_{EH_1D_AR_MS}$	µg/l	10	NONE	< 10	< 10
TPH-CWG - Aromatic >C16 - C21 $_{EH_1D_AR_MS}$	µg/l	10	NONE	< 10	< 10
TPH-CWG - Aromatic >C21 - C35 $_{EH_1D_AR_MS}$	µg/l	10	NONE	< 10	< 10
TPH-CWG - Aromatic (C5 - C35) $_{HS+EH_1D_AR_MS}$	µg/l	10	NONE	< 10	< 10

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

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Analytical Report Number : 23-39671
Project / Site name: A46 Walsgrave

* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and loam (MCERTS) soil types. Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
2716249	BH123	VE10230607003	0.3	Brown loam and clay with gravel and vegetation.
2716250	BH123	VE10230607004	0.5	Brown clay and loam with gravel and vegetation.
2716251	BH123	VE10230607012	1.5	Brown clay with vegetation.

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Project / Site name: A46 Walsgrave

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
BS EN 12457-2 (10:1) Leachate Prep	10:1 (as recieved, moisture adjusted) end over end extraction with water for 24 hours. Eluate filtered prior to analysis.	In-house method based on BSEN12457-2.	L043-PL	W	NONE
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES.	In-house method based on Second Site Properties version 3	L038-PL	D	MCERTS
Complex cyanide (Low level) in leachate	Determination of complex cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	ISO 17025
Complex Cyanide in soil	Determination of complex cyanide by calculation.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Free cyanide in soil	Determination of free cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
Monohydric phenols in leachate - LOW LEVEL 1 ug/l	Determination of phenols in leachate by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	ISO 17025
Monohydric phenols in soil	Determination of phenols in soil by extraction with sodium hydroxide followed by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	MCERTS
Speciated EPA-16 PAHs in leachate	Determination of PAH compounds in leachate by extraction in dichloromethane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L102B-PL	W	ISO 17025
Speciated EPA-16 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In house method.	L099-PL	D	MCERTS
pH at 20oC in leachate (automated)	Determination of pH in leachate by electrometric measurement.	In house method.	L099B	W	ISO 17025
Total sulphate (as SO4 in soil)	Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES.	In house method.	L038-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
TPHCWG (Leachates)	Determination of dichloromethane extractable hydrocarbons in leachate by GC-MS.	In-house method	L070-PL	W	ISO 17025

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Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Total cyanide in soil	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Total organic carbon (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In house method.	L009-PL	D	MCERTS
BTEX and MTBE in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS. Individual components MCERTS accredited	In-house method based on USEPA8260	L073B-PL	W	MCERTS
BTEX and MTBE in leachates (Monoaromatics)	Determination of BTEX and MTBE in leachates by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	ISO 17025
Ammonia as NH3 in leachate	Determination of Ammonium/Ammonia/ Ammoniacal Nitrogen by the colorimetric salicylate/nitroprusside method.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082-PL	W	NONE
Ammoniacal Nitrogen as N in leachate	Determination of Ammonium/Ammonia/ Ammoniacal Nitrogen by the discrete analyser (colorimetric) salicylate/nitroprusside method.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082-PL	W	NONE
Metals by ICP-OES in leachate	Determination of metals in leachate by acidification followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L039-PL	W	ISO 17025
Boron in leachate	Determination of boron in leachate. Sample acidified and followed by ICP-OES.	In-house method based on MEWAM	L039-PL	W	ISO 17025
Cr (III) in soil	In-house method by calculation from total Cr and Cr VI.	In-house method by calculation	L080-PL	W	NONE
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method with silica gel split/clean up.	L088/76-PL	W	MCERTS
Free cyanide in leachate	Determination of free cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	ISO 17025
Total cyanide in leachate - 1µg/l	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L080-PL	W	ISO 17025
Ammonium as NH4 in leachate	Determination of ammonium in leachate by addition of buffer solution followed by ion selective electrode.	In-house method	L035-PL	W	NONE
Sulphate in leachates	Determination of sulphate in leachate by acidification followed by ICP-OES.	In-house method based on MEWAM 1986 Methods for the Determination of Metals in Soil""	L039-PL	W	ISO 17025
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in NaOH and addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	MCERTS

Analytical Report Number : 23-39671
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Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Mercury Low Level in leachate	Mercury in leachate by CV-AFS,	In-house method based on USEPA method 1631	L085-PL	W	ISO 17025

For method numbers ending in 'UK or A' analysis have been carried out in our laboratory in the United Kingdom (WATFORD).
For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).
For method numbers ending in 'PL or B' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.
Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

Information in Support of Analytical Results

List of HWOL Acronyms and Operators

Acronym	Descriptions
HS	Headspace Analysis
MS	Mass spectrometry
FID	Flame Ionisation Detector
GC	Gas Chromatography
EH	Extractable Hydrocarbons (i.e. everything extracted by the solvent(s))
CU	Clean-up - e.g. by Florisil®, silica gel
1D	GC - Single coil/column gas chromatography
2D	GC-GC - Double coil/column gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics
AR	Aromatics
#1	EH_2D_Total but with humics mathematically subtracted
#2	EH_2D_Total but with fatty acids mathematically subtracted
_	Operator - understore to separate acronyms (exception for +)
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total

- Data reported unaccredited due to quality control parameter failure associated with this result; other checks applied prior to reporting the data have been accepted. The result should be considered as being deviating and may be compromised.
- Quality control parameter has a high recovery (outside of limit); however the associated result is below the reporting limit, other checks applied prior to reporting the data have been accepted. The result should be considered as being deviating and may be compromised.

Sample Deviation Report

Analytical Report Number : 23-39671
Project / Site name: A46 Walsgrave

This deviation report indicates the sample and test deviations that apply to the samples submitted for analysis.Please note that the associated result(s) may be unreliable and should be interpreted with care.

Key: a - No sampling date b - Incorrect container c - Holding time d - Headspace e - Temperature

Sample ID	Other ID	Sample Type	Lab Sample Number	Sample Deviation	Test Name	Test Ref	Test Deviation
BH123	VE10230607003	S	2716249	c	Free cyanide in soil	L080-PL	c
BH123	VE10230607003	S	2716249	c	Complex Cyanide in soil	L080-PL	c
BH123	VE10230607003	S	2716249	c	Total cyanide in soil	L080-PL	c
BH123	VE10230607004	S	2716250	c	Free cyanide in soil	L080-PL	c
BH123	VE10230607004	S	2716250	c	Complex Cyanide in soil	L080-PL	c
BH123	VE10230607004	S	2716250	c	Total cyanide in soil	L080-PL	c
BH123	VE10230607012	S	2716251	c	Free cyanide in soil	L080-PL	c
BH123	VE10230607012	S	2716251	c	Complex Cyanide in soil	L080-PL	c
BH123	VE10230607012	S	2716251	c	Total cyanide in soil	L080-PL	c

[redacted]
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Analytical Report Number : 23-39660

Project / Site name:	A46 Walsgrave	**Samples received on:**	14/06/2023
Your job number:	G230651	**Samples instructed on/ Analysis started on:**	16/06/2023
Your order number:	VE298636	**Analysis completed by:**	23/06/2023
Report Issue Number:	1	**Report issued on:**	23/06/2023
Samples Analysed:	2 leachate samples - 3 soil samples		

[redacted]
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41-711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils	- 4 weeks from reporting
leachates	- 2 weeks from reporting
waters	- 2 weeks from reporting
asbestos	- 6 months from reporting

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Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement.
Application of uncertainty of measurement would provide a range within which the true result lies.
An estimate of measurement uncertainty can be provided on request.

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Analytical Report Number: 23-39660
Project / Site name: A46 Walsgrave

Lab Sample Number				2716172	2716173	2716174
Sample Reference				WS106	WS106	WS106
Sample Number				11	14	5
Depth (m)				0.10	0.50	1.50-1.70
Date Sampled				Deviating	Deviating	Deviating
Time Taken				None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**			
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	13	16	12
Total mass of sample received	kg	0.001	NONE	1.3	1.3	1.3
General Inorganics						
pH - Automated	pH Units	N/A	MCERTS	6.6	7.9	8.6
Total Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
Complex Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
Free Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
Total Sulphate as SO4	mg/kg	50	MCERTS	720	330	780
Total Organic Carbon (TOC) - Automated	%	0.1	MCERTS	2.3	0.4	0.3
Total Phenols						
Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
Speciated PAHs						
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.21
Anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.18
Pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.14
Benzo(a)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.05
Chrysene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.07
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	< 0.05	< 0.05	< 0.05
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	< 0.05	< 0.05	< 0.05
Benzo(a)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Total PAH						
Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	< 0.80	< 0.80	< 0.80
Heavy Metals / Metalloids						
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	9.2	12	8.7
Boron (water soluble)	mg/kg	0.2	MCERTS	0.5	1.1	0.5
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2
Chromium (hexavalent)	mg/kg	1.8	MCERTS	< 1.8	< 1.8	< 1.8
Chromium (III)	mg/kg	1	NONE	30	38	28
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	30	38	28
Copper (aqua regia extractable)	mg/kg	1	MCERTS	25	22	22
Lead (aqua regia extractable)	mg/kg	1	MCERTS	28	16	12
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	20	40	29
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	69	58	54

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Analytical Report Number: 23-39660
Project / Site name: A46 Walsgrave

Lab Sample Number				2716172	2716173	2716174
Sample Reference				WS106	WS106	WS106
Sample Number				11	14	5
Depth (m)				0.10	0.50	1.50-1.70
Date Sampled				Deviating	Deviating	Deviating
Time Taken				None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**			
Monoaromatics & Oxygenates						
Benzene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0
Toluene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0
Ethylbenzene#	µg/kg	5	NONE	< 5.0	< 5.0	< 5.0
p & m-xylene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0
o-xylene#	µg/kg	5	NONE	< 5.0	< 5.0	< 5.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	NONE	< 5.0	< 5.0	< 5.0
Petroleum Hydrocarbons						
TPH-CWG - Aliphatic >EC5 - EC6 $_{HS_1D_AL}$	mg/kg	0.001	NONE	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC6 - EC8 $_{HS_1D_AL}$	mg/kg	0.001	NONE	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC8 - EC10 $_{HS_1D_AL}$	mg/kg	0.001	NONE	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC10 - EC12 $_{EH_CU_1D_AL}$	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16 $_{EH_CU_1D_AL}$	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21 $_{EH_CU_1D_AL}$	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35 $_{EH_CU_1D_AL}$	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic (EC5 - EC35) $_{EH_CU+HS_1D_AL}$	mg/kg	10	NONE	< 10	< 10	< 10
TPH-CWG - Aromatic >EC5 - EC7 $_{HS_1D_AR}$	mg/kg	0.001	NONE	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC7 - EC8 $_{HS_1D_AR}$	mg/kg	0.001	NONE	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC8 - EC10 $_{HS_1D_AR}$	mg/kg	0.001	NONE	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC10 - EC12 $_{EH_CU_1D_AR}$	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >EC12 - EC16 $_{EH_CU_1D_AR}$	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0
TPH-CWG - Aromatic >EC16 - EC21 $_{EH_CU_1D_AR}$	mg/kg	10	MCERTS	< 10	< 10	< 10
TPH-CWG - Aromatic >EC21 - EC35 $_{EH_CU_1D_AR}$	mg/kg	10	MCERTS	< 10	< 10	< 10
TPH-CWG - Aromatic (EC5 - EC35) $_{EH_CU+HS_1D_AR}$	mg/kg	10	NONE	< 10	< 10	< 10

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

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Analytical Report Number: 23-39660
Project / Site name: A46 Walsgrave

Lab Sample Number				2716175	2716176
Sample Reference				WS106	WS106
Sample Number				14	5
Depth (m)				0.50	1.50-1.70
Date Sampled				Deviating	Deviating
Time Taken				None Supplied	None Supplied
Analytical Parameter (Leachate Analysis)	**Units**	**Limit of detection**	**Accreditation Status**		
General Inorganics					
pH (automated)	pH Units	N/A	ISO 17025	7.4	8.3
Total Cyanide (Low Level 1 µg/l)	mg/l	0.001	ISO 17025	< 0.001	< 0.001
Complex Cyanide (Low Level)	mg/l	0.001	ISO 17025	< 0.001	< 0.001
Free Cyanide (Low Level 1 µg/l)	mg/l	0.001	ISO 17025	< 0.001	< 0.001
Sulphate as SO_4	mg/l	0.1	ISO 17025	6.1	12.7
Ammoniacal Nitrogen as N	mg/l	0.015	NONE	0.036	0.021
Ammoniacal Nitrogen as NH3	mg/l	0.015	NONE	0.044	0.025
Ammoniacal Nitrogen as NH3	mg/l	0.015	NONE	0.044	0.025
Ammoniacal Nitrogen as NH4	mg/l	0.015	NONE	0.046	0.027
Total Phenols					
Total Phenols (monohydric)	mg/l	0.001	ISO 17025	< 0.001	< 0.001
Speciated PAHs					
Naphthalene	mg/l	0.00001	ISO 17025	< 0.00001	< 0.00001
Acenaphthylene	mg/l	0.00001	ISO 17025	< 0.00001	< 0.00001
Acenaphthene	mg/l	0.00001	ISO 17025	< 0.00001	< 0.00001
Fluorene	mg/l	0.00001	ISO 17025	< 0.00001	< 0.00001
Phenanthrene	mg/l	0.00001	ISO 17025	< 0.00001	< 0.00001
Anthracene	mg/l	0.00001	ISO 17025	< 0.00001	< 0.00001
Fluoranthene	mg/l	0.00001	ISO 17025	< 0.00001	< 0.00001
Pyrene	mg/l	0.00001	ISO 17025	< 0.00001	< 0.00001
Benzo(a)anthracene	mg/l	0.00001	ISO 17025	< 0.00001	< 0.00001
Chrysene	mg/l	0.00001	ISO 17025	< 0.00001	< 0.00001
Benzo(b)fluoranthene	mg/l	0.00001	ISO 17025	< 0.00001	< 0.00001
Benzo(k)fluoranthene	mg/l	0.00001	ISO 17025	< 0.00001	< 0.00001
Benzo(a)pyrene	mg/l	0.00001	ISO 17025	< 0.00001	< 0.00001
Indeno(1,2,3-cd)pyrene	mg/l	0.00001	ISO 17025	< 0.00001	< 0.00001
Dibenz(a,h)anthracene	mg/l	0.00001	ISO 17025	< 0.00001	< 0.00001
Benzo(ghi)perylene	mg/l	0.00001	ISO 17025	< 0.00001	< 0.00001
Total PAH					
Total EPA-16 PAHs	mg/l	0.0002	NONE	< 0.0002	< 0.0002
Heavy Metals / Metalloids					
Arsenic (dissolved)	mg/l	0.001	ISO 17025	0.005	0.006
Boron (dissolved)	mg/l	0.01	ISO 17025	0.03	< 0.01
Cadmium (dissolved)	mg/l	0.00008	ISO 17025	< 0.0001	< 0.0001
Chromium (dissolved)	mg/l	0.0004	ISO 17025	0.0005	< 0.0004
Copper (dissolved)	mg/l	0.0007	ISO 17025	0.0056	0.007
Lead (dissolved)	mg/l	0.001	ISO 17025	< 0.001	< 0.001
Mercury - CV-AFS	µg/l	0.007	ISO 17025	< 0.0070	< 0.0070
Nickel (dissolved)	mg/l	0.0003	ISO 17025	0.0014	0.0016
Selenium (dissolved)	mg/l	0.004	ISO 17025	< 0.004	< 0.004
Zinc (dissolved)	mg/l	0.0004	ISO 17025	0.0092	0.0078

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The results included within the report relate only to the sample(s) submitted for testing.

Analytical Report Number: 23-39660
Project / Site name: A46 Walsgrave

Lab Sample Number				2716175	2716176
Sample Reference				WS106	WS106
Sample Number				14	5
Depth (m)				0.50	1.50-1.70
Date Sampled				Deviating	Deviating
Time Taken				None Supplied	None Supplied
Analytical Parameter (Leachate Analysis)	**Units**	**Limit of detection**	**Accreditation Status**		
Monoaromatics & Oxygenates					
Benzene	mg/l	0.003	ISO 17025	< 0.003	< 0.003
Toluene	mg/l	0.003	ISO 17025	< 0.003	< 0.003
Ethylbenzene	mg/l	0.003	ISO 17025	< 0.003	< 0.003
p & m-xylene	mg/l	0.003	ISO 17025	< 0.003	< 0.003
o-xylene	mg/l	0.003	ISO 17025	< 0.003	< 0.003
MTBE (Methyl Tertiary Butyl Ether)	mg/l	0.01	NONE	< 0.01	< 0.01
Petroleum Hydrocarbons					
TPH-CWG - Aliphatic >C5 - C6## $_{HS_1D_AL}$	mg/l	0.001	ISO 17025	< 0.001	< 0.001
TPH-CWG - Aliphatic >C6 - C8## $_{HS_1D_AL}$	mg/l	0.001	ISO 17025	< 0.001	< 0.001
TPH-CWG - Aliphatic >C8 - C10## $_{HS_1D_AL}$	mg/l	0.001	ISO 17025	< 0.001	< 0.001
TPH-CWG - Aliphatic >C10 - C12 $_{EH_1D_AL_MS}$	mg/l	0.01	NONE	< 0.01	< 0.01
TPH-CWG - Aliphatic >C12 - C16 $_{EH_1D_AL_MS}$	mg/l	0.01	NONE	< 0.01	< 0.01
TPH-CWG - Aliphatic >C16 - C21 $_{EH_1D_AL_MS}$	mg/l	0.01	NONE	< 0.01	< 0.01
TPH-CWG - Aliphatic >C21 - C35 $_{EH_1D_AL_MS}$	mg/l	0.01	NONE	< 0.01	< 0.01
TPH-CWG - Aliphatic (C5 - C35) $_{HS+EH_1D_AL_MS}$	mg/l	0.01	NONE	< 0.01	< 0.01
TPH-CWG - Aromatic >C5 - C7 $_{HS_1D_AR}$	mg/l	0.001	ISO 17025	< 0.001	< 0.001
TPH-CWG - Aromatic >C7 - C8 $_{HS_1D_AR}$	mg/l	0.001	ISO 17025	< 0.001	< 0.001
TPH-CWG - Aromatic >C8 - C10 $_{HS_1D_AR}$	mg/l	0.001	ISO 17025	< 0.001	< 0.001
TPH-CWG - Aromatic >C10 - C12 $_{EH_1D_AR_MS}$	mg/l	0.01	NONE	< 0.01	< 0.01
TPH-CWG - Aromatic >C12 - C16 $_{EH_1D_AR_MS}$	mg/l	0.01	NONE	< 0.01	< 0.01
TPH-CWG - Aromatic >C16 - C21 $_{EH_1D_AR_MS}$	mg/l	0.01	NONE	< 0.01	< 0.01
TPH-CWG - Aromatic >C21 - C35 $_{EH_1D_AR_MS}$	mg/l	0.01	NONE	< 0.01	< 0.01
TPH-CWG - Aromatic (C5 - C35) $_{HS+EH_1D_AR_MS}$	mg/l	0.01	NONE	< 0.01	< 0.01

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

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Analytical Report Number : 23-39660
Project / Site name: A46 Walsgrave

* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and loam (MCERTS) soil types. Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
2716172	WS106	11	0.1	Brown loam and sand with gravel and vegetation.
2716173	WS106	14	0.5	Brown clay.
2716174	WS106	5	1.50-1.70	Brown clay.

Analytical Report Number : 23-39660
Project / Site name: A46 Walsgrave

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
BS EN 12457-2 (10:1) Leachate Prep	10:1 (as recieved, moisture adjusted) end over end extraction with water for 24 hours. Eluate filtered prior to analysis.	In-house method based on BSEN12457-2.	L043-PL	W	NONE
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES.	In-house method based on Second Site Properties version 3	L038-PL	D	MCERTS
Complex cyanide (Low level) in leachate	Determination of complex cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	ISO 17025
Complex Cyanide in soil	Determination of complex cyanide by calculation.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Free cyanide in soil	Determination of free cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
Monohydric phenols in leachate - LOW LEVEL 1 ug/l	Determination of phenols in leachate by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	ISO 17025
Monohydric phenols in soil	Determination of phenols in soil by extraction with sodium hydroxide followed by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	MCERTS
Speciated EPA-16 PAHs in leachate	Determination of PAH compounds in leachate by extraction in dichloromethane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L102B-PL	W	ISO 17025
Speciated EPA-16 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In house method.	L099-PL	D	MCERTS
pH at 20oC in leachate (automated)	Determination of pH in leachate by electrometric measurement.	In house method.	L099B	W	ISO 17025
Total sulphate (as SO4 in soil)	Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES.	In house method.	L038-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
TPHCWG (Leachates)	Determination of dichloromethane extractable hydrocarbons in leachate by GC-MS.	In-house method	L070-PL	W	ISO 17025

Analytical Report Number : 23-39660
Project / Site name: A46 Walsgrave

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Total cyanide in soil	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Total organic carbon (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In house method.	L009-PL	D	MCERTS
BTEX and MTBE in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS. Individual components MCERTS accredited	In-house method based on USEPA8260	L073B-PL	W	MCERTS
BTEX and MTBE in leachates (Monoaromatics)	Determination of BTEX and MTBE in leachates by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	ISO 17025
Ammonia as NH3 in leachate	Determination of Ammonium/Ammonia/ Ammoniacal Nitrogen by the colorimetric salicylate/nitroprusside method.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082-PL	W	NONE
Ammoniacal Nitrogen as N in leachate	Determination of Ammonium/Ammonia/ Ammoniacal Nitrogen by the discrete analyser (colorimetric) salicylate/nitroprusside method.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082-PL	W	NONE
Metals by ICP-OES in leachate	Determination of metals in leachate by acidification followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L039-PL	W	ISO 17025
Boron in leachate	Determination of boron in leachate. Sample acidified and followed by ICP-OES.	In-house method based on MEWAM	L039-PL	W	ISO 17025
Cr (III) in soil	In-house method by calculation from total Cr and Cr VI.	In-house method by calculation	L080-PL	W	NONE
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method with silica gel split/clean up.	L088/76-PL	W	MCERTS
Free cyanide in leachate	Determination of free cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	ISO 17025
Total cyanide in leachate - 1µg/l	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L080-PL	W	ISO 17025
Ammonium as NH4 in leachate	Determination of ammonium in leachate by addition of buffer solution followed by ion selective electrode.	In-house method	L035-PL	W	NONE
Sulphate in leachates	Determination of sulphate in leachate by acidification followed by ICP-OES.	In-house method based on MEWAM 1986 Methods for the Determination of Metals in Soil""	L039-PL	W	ISO 17025
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in NaOH and addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	MCERTS

Analytical Report Number : 23-39660
Project / Site name: A46 Walsgrave

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Mercury Low Level in leachate	Mercury in leachate by CV-AFS,	In-house method based on USEPA method 1631	L085-PL	W	ISO 17025

For method numbers ending in 'UK or A' analysis have been carried out in our laboratory in the United Kingdom (WATFORD).
For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).
For method numbers ending in 'PL or B' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.
Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

Information in Support of Analytical Results

List of HWOL Acronyms and Operators

Acronym	Descriptions
HS	Headspace Analysis
MS	Mass spectrometry
FID	Flame Ionisation Detector
GC	Gas Chromatography
EH	Extractable Hydrocarbons (i.e. everything extracted by the solvent(s))
CU	Clean-up - e.g. by Florisil®, silica gel
1D	GC - Single coil/column gas chromatography
2D	GC-GC - Double coil/column gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics
AR	Aromatics
#1	EH_2D_Total but with humics mathematically subtracted
#2	EH_2D_Total but with fatty acids mathematically subtracted
_	Operator - understore to separate acronyms (exception for +)
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total

Sample Deviation Report

Analytical Report Number : 23-39660
Project / Site name: A46 Walsgrave

This deviation report indicates the sample and test deviations that apply to the samples submitted for analysis.Please note that the associated result(s) may be unreliable and should be interpreted with care.

Key: a - No sampling date b - Incorrect container c - Holding time d - Headspace e - Temperature

Sample ID	Other ID	Sample Type	Lab Sample Number	Sample Deviation	Test Name	Test Ref	Test Deviation
WS106	11	S	2716172	a	None Supplied	None Supplied	None Supplied
WS106	14	L	2716175	a	None Supplied	None Supplied	None Supplied
WS106	14	S	2716173	a	None Supplied	None Supplied	None Supplied
WS106	5	L	2716176	a	None Supplied	None Supplied	None Supplied
WS106	5	S	2716174	a	None Supplied	None Supplied	None Supplied

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WD18 8YS

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Analytical Report Number : 23-40918

Project / Site name:	A46 Walsgrave	**Samples received on:**	15/06/2023
Your job number:	G230651	**Samples instructed on/ Analysis started on:**	22/06/2023
Your order number:		**Analysis completed by:**	29/06/2023
Report Issue Number:	1	**Report issued on:**	29/06/2023
Samples Analysed:	2 leachate samples - 3 soil samples		

[redacted]
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41-711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils - 4 weeks from reporting
leachates - 2 weeks from reporting
waters - 2 weeks from reporting
asbestos - 6 months from reporting

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Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement.
Application of uncertainty of measurement would provide a range within which the true result lies.
An estimate of measurement uncertainty can be provided on request.

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Analytical Report Number: 23-40918
Project / Site name: A46 Walsgrave

Lab Sample Number				2723835	2723836	2723837
Sample Reference				BH126	BH126	BH126
Sample Number				4	8	12
Depth (m)				0.50	1.00	1.50
Date Sampled				09/06/2023	09/06/2023	09/06/2023
Time Taken				None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**			
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	11	13	12
Total mass of sample received	kg	0.001	NONE	1.7	1.7	1.7
General Inorganics						
pH - Automated	pH Units	N/A	MCERTS	8.1	8.5	8.7
Total Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
Complex Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
Free Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
Total Sulphate as SO4	mg/kg	50	MCERTS	280	280	700
Total Organic Carbon (TOC) - Automated	%	0.1	MCERTS	0.7	0.6	0.2
Total Phenols						
Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
Speciated PAHs						
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Benzo(a)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Chrysene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	< 0.05	< 0.05	< 0.05
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	< 0.05	< 0.05	< 0.05
Benzo(a)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Total PAH						
Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	< 0.80	< 0.80	< 0.80
Heavy Metals / Metalloids						
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	13	11	6.9
Boron (water soluble)	mg/kg	0.2	MCERTS	1.7	1.3	0.2
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2
Chromium (hexavalent)	mg/kg	1.8	MCERTS	< 1.8	< 1.8	< 1.8
Chromium (III)	mg/kg	1	NONE	39	40	27
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	39	40	27
Copper (aqua regia extractable)	mg/kg	1	MCERTS	21	22	18
Lead (aqua regia extractable)	mg/kg	1	MCERTS	20	17	10
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	40	40	27
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	64	62	50

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Analytical Report Number: 23-40918
Project / Site name: A46 Walsgrave

Lab Sample Number				2723835	2723836	2723837
Sample Reference				BH126	BH126	BH126
Sample Number				4	8	12
Depth (m)				0.50	1.00	1.50
Date Sampled				09/06/2023	09/06/2023	09/06/2023
Time Taken				None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**			
Monoaromatics & Oxygenates						
Benzene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0
Toluene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0
Ethylbenzene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0
p & m-xylene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0
o-xylene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	NONE	< 5.0	< 5.0	< 5.0
Petroleum Hydrocarbons						
TPH-CWG - Aliphatic >EC5 - EC6 $_{HS_1D_AL}$	mg/kg	0.001	NONE	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC6 - EC8 $_{HS_1D_AL}$	mg/kg	0.001	NONE	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC8 - EC10 $_{HS_1D_AL}$	mg/kg	0.001	NONE	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC10 - EC12 $_{EH_CU_1D_AL}$	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16 $_{EH_CU_1D_AL}$	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21 $_{EH_CU_1D_AL}$	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35 $_{EH_CU_1D_AL}$	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic (EC5 - EC35) $_{EH_CU+HS_1D_AL}$	mg/kg	10	NONE	< 10	< 10	< 10
TPH-CWG - Aromatic >EC5 - EC7 $_{HS_1D_AR}$	mg/kg	0.001	NONE	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC7 - EC8 $_{HS_1D_AR}$	mg/kg	0.001	NONE	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC8 - EC10 $_{HS_1D_AR}$	mg/kg	0.001	NONE	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC10 - EC12 $_{EH_CU_1D_AR}$	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >EC12 - EC16 $_{EH_CU_1D_AR}$	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0
TPH-CWG - Aromatic >EC16 - EC21 $_{EH_CU_1D_AR}$	mg/kg	10	MCERTS	< 10	< 10	< 10
TPH-CWG - Aromatic >EC21 - EC35 $_{EH_CU_1D_AR}$	mg/kg	10	MCERTS	< 10	< 10	< 10
TPH-CWG - Aromatic (EC5 - EC35) $_{EH_CU+HS_1D_AR}$	mg/kg	10	NONE	< 10	< 10	< 10

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

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Analytical Report Number: 23-40918
Project / Site name: A46 Walsgrave

Lab Sample Number				2723838	2723839
Sample Reference				BH126	BH126
Sample Number				4	12
Depth (m)				0.50	1.50
Date Sampled				09/06/2023	09/06/2023
Time Taken				None Supplied	None Supplied
Analytical Parameter (Leachate Analysis)	**Units**	**Limit of detection**	**Accreditation Status**		
General Inorganics					
pH (automated)	pH Units	N/A	ISO 17025	8.5	8.5
Total Cyanide (Low Level 1 µg/l)	µg/l	1	ISO 17025	< 1.0	< 1.0
Complex Cyanide (Low Level)	µg/l	1	ISO 17025	< 1.0	< 1.0
Free Cyanide (Low Level 1 µg/l)	µg/l	1	ISO 17025	< 1	< 1
Sulphate as SO_4	mg/l	0.1	ISO 17025	3.5	17
Ammoniacal Nitrogen as N	µg/l	15	NONE	< 15	< 15
Ammoniacal Nitrogen as NH3	µg/l	15	NONE	< 15	< 15
Ammoniacal Nitrogen as NH3	mg/l	0.015	NONE	< 0.015	< 0.015
Ammoniacal Nitrogen as NH4	mg/l	0.015	NONE	< 0.015	< 0.015
Total Phenols					
Total Phenols (monohydric)	µg/l	1	ISO 17025	1.1	< 1.0
Speciated PAHs					
Naphthalene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Acenaphthylene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Acenaphthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Fluorene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Phenanthrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Benzo(a)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Chrysene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Benzo(b)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Benzo(k)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Benzo(a)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Indeno(1,2,3-cd)pyrene	µg/l	0.01	NONE	< 0.01	< 0.01
Dibenz(a,h)anthracene	µg/l	0.01	NONE	< 0.01	< 0.01
Benzo(ghi)perylene	µg/l	0.01	NONE	< 0.01	< 0.01
Total PAH					
Total EPA-16 PAHs	µg/l	0.2	NONE	< 0.2	< 0.2
Heavy Metals / Metalloids					
Arsenic (dissolved)	mg/l	0.001	ISO 17025	0.007	0.001
Boron (dissolved)	mg/l	0.01	ISO 17025	0.05	< 0.01
Cadmium (dissolved)	mg/l	0.00008	ISO 17025	< 0.00008	< 0.00008
Chromium (dissolved)	mg/l	0.0004	ISO 17025	0.0059	< 0.0004
Copper (dissolved)	mg/l	0.0007	ISO 17025	0.013	0.005
Lead (dissolved)	mg/l	0.001	ISO 17025	0.003	0.002
Mercury - CV-AFS	µg/l	0.007	ISO 17025	< 0.0070	< 0.0070
Nickel (dissolved)	mg/l	0.0003	ISO 17025	0.004	< 0.0003
Selenium (dissolved)	mg/l	0.004	ISO 17025	< 0.004	< 0.004
Zinc (dissolved)	mg/l	0.0004	ISO 17025	0.0098	0.0072

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Analytical Report Number: 23-40918
Project / Site name: A46 Walsgrave

Lab Sample Number				2723838	2723839
Sample Reference				BH126	BH126
Sample Number				4	12
Depth (m)				0.50	1.50
Date Sampled				09/06/2023	09/06/2023
Time Taken				None Supplied	None Supplied
Analytical Parameter (Leachate Analysis)	**Units**	**Limit of detection**	**Accreditation Status**		
Monoaromatics & Oxygenates					
Benzene	µg/l	3	ISO 17025	< 3.0	< 3.0
Toluene##	µg/l	3	ISO 17025	< 3.0	< 3.0
Ethylbenzene##	µg/l	3	ISO 17025	< 3.0	< 3.0
p & m-xylene##	µg/l	3	ISO 17025	< 3.0	< 3.0
o-xylene	µg/l	3	ISO 17025	< 3.0	< 3.0
MTBE (Methyl Tertiary Butyl Ether)	µg/l	10	NONE	< 10	< 10
Petroleum Hydrocarbons					
TPH-CWG - Aliphatic >C5 - C6## $_{HS_1D_AL}$	µg/l	1	ISO 17025	< 1.0	< 1.0
TPH-CWG - Aliphatic >C6 - C8## $_{HS_1D_AL}$	µg/l	1	ISO 17025	< 1.0	< 1.0
TPH-CWG - Aliphatic >C8 - C10## $_{HS_1D_AL}$	µg/l	1	ISO 17025	< 1.0	< 1.0
TPH-CWG - Aliphatic >C10 - C12 $_{EH_1D_AL_MS}$	µg/l	10	NONE	< 10	< 10
TPH-CWG - Aliphatic >C12 - C16 $_{EH_1D_AL_MS}$	µg/l	10	NONE	< 10	< 10
TPH-CWG - Aliphatic >C16 - C21 $_{EH_1D_AL_MS}$	µg/l	10	NONE	< 10	< 10
TPH-CWG - Aliphatic >C21 - C35 $_{EH_1D_AL_MS}$	µg/l	10	NONE	< 10	< 10
TPH-CWG - Aliphatic (C5 - C35) $_{HS+EH_1D_AL_MS}$	µg/l	10	NONE	< 10	< 10
TPH-CWG - Aromatic >C5 - C7 $_{HS_1D_AR}$	µg/l	1	ISO 17025	< 1.0	< 1.0
TPH-CWG - Aromatic >C7 - C8 $_{HS_1D_AR}$	µg/l	1	ISO 17025	< 1.0	< 1.0
TPH-CWG - Aromatic >C8 - C10 $_{HS_1D_AR}$	µg/l	1	ISO 17025	< 1.0	< 1.0
TPH-CWG - Aromatic >C10 - C12 $_{EH_1D_AR_MS}$	µg/l	10	NONE	< 10	< 10
TPH-CWG - Aromatic >C12 - C16 $_{EH_1D_AR_MS}$	µg/l	10	NONE	< 10	< 10
TPH-CWG - Aromatic >C16 - C21 $_{EH_1D_AR_MS}$	µg/l	10	NONE	< 10	< 10
TPH-CWG - Aromatic >C21 - C35 $_{EH_1D_AR_MS}$	µg/l	10	NONE	< 10	< 10
TPH-CWG - Aromatic (C5 - C35) $_{HS+EH_1D_AR_MS}$	µg/l	10	NONE	< 10	< 10

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

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Analytical Report Number : 23-40918
Project / Site name: A46 Walsgrave

* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and loam (MCERTS) soil types. Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
2723835	BH126	4	0.5	Brown clay with vegetation.
2723836	BH126	8	1	Brown clay with vegetation.
2723837	BH126	12	1.5	Brown clay.

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Analytical Report Number : 23-40918
Project / Site name: A46 Walsgrave

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
BS EN 12457-2 (10:1) Leachate Prep	10:1 (as recieved, moisture adjusted) end over end extraction with water for 24 hours. Eluate filtered prior to analysis.	In-house method based on BSEN12457-2.	L043-PL	W	NONE
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES.	In-house method based on Second Site Properties version 3	L038-PL	D	MCERTS
Complex cyanide (Low level) in leachate	Determination of complex cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	ISO 17025
Complex Cyanide in soil	Determination of complex cyanide by calculation.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Free cyanide in soil	Determination of free cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
Monohydric phenols in leachate - LOW LEVEL 1 ug/l	Determination of phenols in leachate by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	ISO 17025
Monohydric phenols in soil	Determination of phenols in soil by extraction with sodium hydroxide followed by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	MCERTS
Speciated EPA-16 PAHs in leachate	Determination of PAH compounds in leachate by extraction in dichloromethane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L102B-PL	W	ISO 17025
Speciated EPA-16 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In house method.	L099-PL	D	MCERTS
pH at 20oC in leachate (automated)	Determination of pH in leachate by electrometric measurement.	In house method.	L099B	W	ISO 17025
Total sulphate (as SO4 in soil)	Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES.	In house method.	L038-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
TPHCWG (Leachates)	Determination of dichloromethane extractable hydrocarbons in leachate by GC-MS.	In-house method	L070-PL	W	ISO 17025
Total cyanide in soil	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS

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Analytical Report Number : 23-40918
Project / Site name: A46 Walsgrave

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Total organic carbon (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In house method.	L009-PL	D	MCERTS
BTEX and MTBE in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS. Individual components MCERTS accredited	In-house method based on USEPA8260	L073B-PL	W	MCERTS
BTEX and MTBE in leachates (Monoaromatics)	Determination of BTEX and MTBE in leachates by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	ISO 17025
Ammonia as NH3 in leachate	Determination of Ammonium/Ammonia/ Ammoniacal Nitrogen by the colorimetric salicylate/nitroprusside method.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082-PL	W	NONE
Ammoniacal Nitrogen as N in leachate	Determination of Ammonium/Ammonia/ Ammoniacal Nitrogen by the discrete analyser (colorimetric) salicylate/nitroprusside method.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082-PL	W	NONE
Metals by ICP-OES in leachate	Determination of metals in leachate by acidification followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L039-PL	W	ISO 17025
Boron in leachate	Determination of boron in leachate. Sample acidified and followed by ICP-OES.	In-house method based on MEWAM	L039-PL	W	ISO 17025
Cr (III) in soil	In-house method by calculation from total Cr and Cr VI.	In-house method by calculation	L080-PL	W	NONE
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method with silica gel split/clean up.	L088/76-PL	W	MCERTS
Free cyanide in leachate	Determination of free cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	ISO 17025
Total cyanide in leachate - 1µg/l	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L080-PL	W	ISO 17025
Ammonium as NH4 in leachate	Determination of ammonium in leachate by addition of buffer solution followed by ion selective electrode.	In-house method	L035-PL	W	NONE
Sulphate in leachates	Determination of sulphate in leachate by acidification followed by ICP-OES.	In-house method based on MEWAM 1986 Methods for the Determination of Metals in Soil""	L039-PL	W	ISO 17025
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in NaOH and addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	MCERTS

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Analytical Report Number : 23-40918
Project / Site name: A46 Walsgrave

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Mercury Low Level in leachate	Mercury in leachate by CV-AFS,	In-house method based on USEPA method 1631	L085-PL	W	ISO 17025

For method numbers ending in 'UK or A' analysis have been carried out in our laboratory in the United Kingdom (WATFORD).
For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).
For method numbers ending in 'PL or B' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.
Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

Information in Support of Analytical Results

List of HWOL Acronyms and Operators

Acronym	Descriptions
HS	Headspace Analysis
MS	Mass spectrometry
FID	Flame Ionisation Detector
GC	Gas Chromatography
EH	Extractable Hydrocarbons (i.e. everything extracted by the solvent(s))
CU	Clean-up - e.g. by Florisil®, silica gel
1D	GC - Single coil/column gas chromatography
2D	GC-GC - Double coil/column gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics
AR	Aromatics
#1	EH_2D_Total but with humics mathematically subtracted
#2	EH_2D_Total but with fatty acids mathematically subtracted
_	Operator - understore to separate acronyms (exception for +)
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total

##Quality control parameter has a high recovery (outside of limit); however the associated result is below the reporting limit, other checks applied prior to reporting the data have been accepted. The result should be considered as being deviating and may be compromised

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Analytical Report Number : 23-40918
Project / Site name: A46 Walsgrave

This deviation report indicates the sample and test deviations that apply to the samples submitted for analysis.Please note that the associated result(s) may be unreliable and should be interpreted with care.

Key: a - No sampling date b - Incorrect container c - Holding time d - Headspace e - Temperature

Sample ID	Other ID	Sample Type	Lab Sample Number	Sample Deviation	Test Name	Test Ref	Test Deviation
BH126	12	S	2723837	c	Free cyanide in soil	L080-PL	c
BH126	12	S	2723837	c	Complex Cyanide in soil	L080-PL	c
BH126	12	S	2723837	c	Total cyanide in soil	L080-PL	c
BH126	4	S	2723835	c	Free cyanide in soil	L080-PL	c
BH126	4	S	2723835	c	Complex Cyanide in soil	L080-PL	c
BH126	4	S	2723835	c	Total cyanide in soil	L080-PL	c
BH126	8	S	2723836	c	Free cyanide in soil	L080-PL	c
BH126	8	S	2723836	c	Complex Cyanide in soil	L080-PL	c
BH126	8	S	2723836	c	Total cyanide in soil	L080-PL	c

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[redacted]
t:
e:

i2 Analytical Ltd.
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Croxley Green
Business Park,
Watford,
Herts,
WD18 8YS

t: 01923 225404
f: 01923 237404
e: reception@i2analytical.com

Analytical Report Number : 23-41372

Project / Site name:	A46 Walsgrave	**Samples received on:**	20/06/2023
Your job number:	G230651	**Samples instructed on/ Analysis started on:**	27/06/2023
Your order number:		**Analysis completed by:**	04/07/2023
Report Issue Number:	1	**Report issued on:**	04/07/2023
Samples Analysed:	2 leachate samples - 3 soil samples		

[redacted]

For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41-711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils - 4 weeks from reporting
leachates - 2 weeks from reporting
waters - 2 weeks from reporting
asbestos - 6 months from reporting

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Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement.
Application of uncertainty of measurement would provide a range within which the true result lies.
An estimate of measurement uncertainty can be provided on request.

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Analytical Report Number: 23-41372
Project / Site name: A46 Walsgrave

Lab Sample Number				2726452	2726453	2726454
Sample Reference				BH119	BH119	BH119
Sample Number				2	8	13
Depth (m)				0.30	1.00	2.00
Date Sampled				16/06/2023	16/06/2023	16/06/2023
Time Taken				None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**			
General Inorganics						
pH - Automated	pH Units	N/A	MCERTS	7.3	7.7	8.1
Total Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
Complex Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
Free Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
Total Sulphate as SO4	mg/kg	50	MCERTS	380	170	450
Total Organic Carbon (TOC) - Automated	%	0.1	MCERTS	1.7	0.5	0.2
Total Phenols						
Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
Speciated PAHs						
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Benzo(a)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Chrysene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	< 0.05	< 0.05	< 0.05
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	< 0.05	< 0.05	< 0.05
Benzo(a)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Total PAH						
Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	< 0.80	< 0.80	< 0.80
Heavy Metals / Metalloids						
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	11	8.2	9.5
Boron (water soluble)	mg/kg	0.2	MCERTS	0.4	0.3	< 0.2
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2
Chromium (hexavalent)	mg/kg	1.8	MCERTS	< 1.8	< 1.8	< 1.8
Chromium (III)	mg/kg	1	NONE	26	25	18
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	27	25	18
Copper (aqua regia extractable)	mg/kg	1	MCERTS	20	15	15
Lead (aqua regia extractable)	mg/kg	1	MCERTS	29	13	7.3
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	19	22	19
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	65	42	43

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Analytical Report Number: 23-41372
Project / Site name: A46 Walsgrave

Lab Sample Number				2726452	2726453	2726454
Sample Reference				BH119	BH119	BH119
Sample Number				2	8	13
Depth (m)				0.30	1.00	2.00
Date Sampled				16/06/2023	16/06/2023	16/06/2023
Time Taken				None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**			
Monoaromatics & Oxygenates						
Benzene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0
Toluene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0
Ethylbenzene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0
p & m-xylene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0
o-xylene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	NONE	< 5.0	< 5.0	< 5.0
Petroleum Hydrocarbons						
TPH-CWG - Aliphatic >EC5 - EC6 $_{HS_1D_AL}$	mg/kg	0.001	NONE	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC6 - EC8 $_{HS_1D_AL}$	mg/kg	0.001	NONE	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC8 - EC10 $_{HS_1D_AL}$	mg/kg	0.001	NONE	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC10 - EC12 $_{EH_CU_1D_AL}$	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16 $_{EH_CU_1D_AL}$	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21 $_{EH_CU_1D_AL}$	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35 $_{EH_CU_1D_AL}$	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic (EC5 - EC35) $_{EH_CU+HS_1D_AL}$	mg/kg	10	NONE	< 10	< 10	< 10
TPH-CWG - Aromatic >EC5 - EC7 $_{HS_1D_AR}$	mg/kg	0.001	NONE	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC7 - EC8 $_{HS_1D_AR}$	mg/kg	0.001	NONE	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC8 - EC10 $_{HS_1D_AR}$	mg/kg	0.001	NONE	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC10 - EC12 $_{EH_CU_1D_AR}$	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >EC12 - EC16 $_{EH_CU_1D_AR}$	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0
TPH-CWG - Aromatic >EC16 - EC21 $_{EH_CU_1D_AR}$	mg/kg	10	MCERTS	< 10	< 10	< 10
TPH-CWG - Aromatic >EC21 - EC35 $_{EH_CU_1D_AR}$	mg/kg	10	MCERTS	< 10	< 10	< 10
TPH-CWG - Aromatic (EC5 - EC35) $_{EH_CU+HS_1D_AR}$	mg/kg	10	NONE	< 10	< 10	< 10

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

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4041

Analytical Report Number: 23-41372
Project / Site name: A46 Walsgrave

Lab Sample Number				2726455	2726456
Sample Reference				BH119	BH119
Sample Number				8	13
Depth (m)				1.00	2.00
Date Sampled				16/06/2023	16/06/2023
Time Taken				None Supplied	None Supplied
Analytical Parameter (Leachate Analysis)	**Units**	**Limit of detection**	**Accreditation Status**		
General Inorganics					
pH (automated)	pH Units	N/A	ISO 17025	8.8	8.8
Total Cyanide (Low Level 1 µg/l)	µg/l	1	ISO 17025	< 1.0	< 1.0
Complex Cyanide (Low Level)	µg/l	1	ISO 17025	< 1.0	< 1.0
Free Cyanide (Low Level 1 µg/l)	µg/l	1	ISO 17025	< 1	< 1
Sulphate as SO_4	mg/l	0.1	ISO 17025	13.4	25.2
Ammoniacal Nitrogen as N	µg/l	15	NONE	< 15	< 15
Ammoniacal Nitrogen as NH3	µg/l	15	NONE	< 15	< 15
Ammoniacal Nitrogen as NH3	mg/l	0.015	NONE	< 0.015	< 0.015
Ammoniacal Nitrogen as NH4	mg/l	0.015	NONE	< 0.015	< 0.015
Total Phenols					
Total Phenols (monohydric)	µg/l	1	ISO 17025	< 1.0	< 1.0
Speciated PAHs					
Naphthalene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Acenaphthylene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Acenaphthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Fluorene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Phenanthrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Benzo(a)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Chrysene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Benzo(b)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Benzo(k)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Benzo(a)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Indeno(1,2,3-cd)pyrene	µg/l	0.01	NONE	< 0.01	< 0.01
Dibenz(a,h)anthracene	µg/l	0.01	NONE	< 0.01	< 0.01
Benzo(ghi)perylene	µg/l	0.01	NONE	< 0.01	< 0.01
Total PAH					
Total EPA-16 PAHs	µg/l	0.2	NONE	< 0.2	< 0.2
Heavy Metals / Metalloids					
Arsenic (dissolved)	mg/l	0.001	ISO 17025	< 0.001	< 0.001
Boron (dissolved)	mg/l	0.01	ISO 17025	0.02	0.02
Cadmium (dissolved)	mg/l	0.00008	ISO 17025	< 0.0001	< 0.0001
Chromium (dissolved)	mg/l	0.0004	ISO 17025	0.0011	0.002
Copper (dissolved)	mg/l	0.0007	ISO 17025	0.008	0.0039
Lead (dissolved)	mg/l	0.001	ISO 17025	< 0.001	< 0.001
Mercury - CV-AFS	µg/l	0.007	ISO 17025	< 0.0070	< 0.0070
Nickel (dissolved)	mg/l	0.0003	ISO 17025	0.0046	0.0006
Selenium (dissolved)	mg/l	0.004	ISO 17025	< 0.004	< 0.004
Zinc (dissolved)	mg/l	0.0004	ISO 17025	0.0102	0.0051

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4041

Analytical Report Number: 23-41372
Project / Site name: A46 Walsgrave

Lab Sample Number				2726455	2726456
Sample Reference				BH119	BH119
Sample Number				8	13
Depth (m)				1.00	2.00
Date Sampled				16/06/2023	16/06/2023
Time Taken				None Supplied	None Supplied
Analytical Parameter (Leachate Analysis)	**Units**	**Limit of detection**	**Accreditation Status**		
Monoaromatics & Oxygenates					
Benzene	µg/l	3	ISO 17025	< 3.0	< 3.0
Toluene##	µg/l	3	ISO 17025	< 3.0	< 3.0
Ethylbenzene	µg/l	3	ISO 17025	< 3.0	< 3.0
p & m-xylene	µg/l	3	ISO 17025	< 3.0	< 3.0
o-xylene	µg/l	3	ISO 17025	< 3.0	< 3.0
MTBE (Methyl Tertiary Butyl Ether)	µg/l	10	NONE	< 10	< 10
Petroleum Hydrocarbons					
TPH-CWG - Aliphatic >C5 - C6 $_{HS_1D_AL}$	µg/l	1	ISO 17025	< 1.0	< 1.0
TPH-CWG - Aliphatic >C6 - C8 $_{HS_1D_AL}$	µg/l	1	ISO 17025	< 1.0	< 1.0
TPH-CWG - Aliphatic >C8 - C10## $_{HS_1D_AL}$	µg/l	1	ISO 17025	< 1.0	< 1.0
TPH-CWG - Aliphatic >C10 - C12 $_{EH_1D_AL_MS}$	µg/l	10	NONE	< 10	< 10
TPH-CWG - Aliphatic >C12 - C16 $_{EH_1D_AL_MS}$	µg/l	10	NONE	< 10	< 10
TPH-CWG - Aliphatic >C16 - C21 $_{EH_1D_AL_MS}$	µg/l	10	NONE	< 10	< 10
TPH-CWG - Aliphatic >C21 - C35 $_{EH_1D_AL_MS}$	µg/l	10	NONE	< 10	< 10
TPH-CWG - Aliphatic (C5 - C35) $_{HS+EH_1D_AL_MS}$	µg/l	10	NONE	< 10	< 10
TPH-CWG - Aromatic >C5 - C7 $_{HS_1D_AR}$	µg/l	1	ISO 17025	< 1.0	< 1.0
TPH-CWG - Aromatic >C7 - C8 $_{HS_1D_AR}$	µg/l	1	ISO 17025	< 1.0	< 1.0
TPH-CWG - Aromatic >C8 - C10 $_{HS_1D_AR}$	µg/l	1	ISO 17025	< 1.0	< 1.0
TPH-CWG - Aromatic >C10 - C12 $_{EH_1D_AR_MS}$	µg/l	10	NONE	< 10	< 10
TPH-CWG - Aromatic >C12 - C16 $_{EH_1D_AR_MS}$	µg/l	10	NONE	< 10	< 10
TPH-CWG - Aromatic >C16 - C21 $_{EH_1D_AR_MS}$	µg/l	10	NONE	< 10	< 10
TPH-CWG - Aromatic >C21 - C35 $_{EH_1D_AR_MS}$	µg/l	10	NONE	< 10	< 10
TPH-CWG - Aromatic (C5 - C35) $_{HS+EH_1D_AR_MS}$	µg/l	10	NONE	< 10	< 10

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

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Analytical Report Number : 23-41372
Project / Site name: A46 Walsgrave

* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and loam (MCERTS) soil types. Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
2726452	BH119	2	0.3	Brown loam and sand with gravel and vegetation.
2726453	BH119	8	1	Brown clay and sand with gravel.
2726454	BH119	13	2	Brown sandy clay.

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Analytical Report Number : 23-41372
Project / Site name: A46 Walsgrave

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
BS EN 12457-2 (10:1) Leachate Prep	10:1 (as recieved, moisture adjusted) end over end extraction with water for 24 hours. Eluate filtered prior to analysis.	In-house method based on BSEN12457-2.	L043-PL	W	NONE
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES.	In-house method based on Second Site Properties version 3	L038-PL	D	MCERTS
Complex cyanide (Low level) in leachate	Determination of complex cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	ISO 17025
Complex Cyanide in soil	Determination of complex cyanide by calculation.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Free cyanide in soil	Determination of free cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
Monohydric phenols in leachate - LOW LEVEL 1 ug/l	Determination of phenols in leachate by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	ISO 17025
Monohydric phenols in soil	Determination of phenols in soil by extraction with sodium hydroxide followed by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	MCERTS
Speciated EPA-16 PAHs in leachate	Determination of PAH compounds in leachate by extraction in dichloromethane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L102B-PL	W	ISO 17025
Speciated EPA-16 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In house method.	L099-PL	D	MCERTS
pH at 20oC in leachate (automated)	Determination of pH in leachate by electrometric measurement.	In house method.	L099B	W	ISO 17025
Total sulphate (as SO4 in soil)	Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES.	In house method.	L038-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
TPHCWG (Leachates)	Determination of dichloromethane extractable hydrocarbons in leachate by GC-MS.	In-house method	L070-PL	W	ISO 17025
Total cyanide in soil	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS

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Analytical Report Number : 23-41372
Project / Site name: A46 Walsgrave

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Total organic carbon (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In house method.	L009-PL	D	MCERTS
BTEX and MTBE in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS. Individual components MCERTS accredited	In-house method based on USEPA8260	L073B-PL	W	MCERTS
BTEX and MTBE in leachates (Monoaromatics)	Determination of BTEX and MTBE in leachates by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	ISO 17025
Ammonia as NH3 in leachate	Determination of Ammonium/Ammonia/ Ammoniacal Nitrogen by the colorimetric salicylate/nitroprusside method.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082-PL	W	NONE
Ammoniacal Nitrogen as N in leachate	Determination of Ammonium/Ammonia/ Ammoniacal Nitrogen by the discrete analyser (colorimetric) salicylate/nitroprusside method.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082-PL	W	NONE
Metals by ICP-OES in leachate	Determination of metals in leachate by acidification followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L039-PL	W	ISO 17025
Boron in leachate	Determination of boron in leachate. Sample acidified and followed by ICP-OES.	In-house method based on MEWAM	L039-PL	W	ISO 17025
Cr (III) in soil	In-house method by calculation from total Cr and Cr VI.	In-house method by calculation	L080-PL	W	NONE
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method with silica gel split/clean up.	L088/76-PL	W	MCERTS
Free cyanide in leachate	Determination of free cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	ISO 17025
Total cyanide in leachate - 1µg/l	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L080-PL	W	ISO 17025
Ammonium as NH4 in leachate	Determination of ammonium in leachate by addition of buffer solution followed by ion selective electrode.	In-house method	L035-PL	W	NONE
Sulphate in leachates	Determination of sulphate in leachate by acidification followed by ICP-OES.	In-house method based on MEWAM 1986 Methods for the Determination of Metals in Soil""	L039-PL	W	ISO 17025
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in NaOH and addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	MCERTS
Mercury Low Level in leachate	Mercury in leachate by CV-AFS,	In-house method based on USEPA method 1631	L085-PL	W	ISO 17025

For method numbers ending in 'UK or A' analysis have been carried out in our laboratory in the United Kingdom (WATFORD).
For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).
For method numbers ending in 'PL or B' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.
Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

Information in Support of Analytical Results

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Analytical Report Number : 23-41372
Project / Site name: A46 Walsgrave

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status

List of HWOL Acronyms and Operators

Acronym	Descriptions
HS	Headspace Analysis
MS	Mass spectrometry
FID	Flame Ionisation Detector
GC	Gas Chromatography
EH	Extractable Hydrocarbons (i.e. everything extracted by the solvent(s))
CU	Clean-up - e.g. by Florisil®, silica gel
1D	GC - Single coil/column gas chromatography
2D	GC-GC - Double coil/column gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics
AR	Aromatics
#1	EH_2D_Total but with humics mathematically subtracted
#2	EH_2D_Total but with fatty acids mathematically subtracted
_	Operator - understore to separate acronyms (exception for +)
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total

- Quality control parameter has a high recovery (outside of limit); however the associated result is below the reporting limit, other checks applied prior to reporting the data have been accepted. The result should be considered as being deviating and may be compromised.

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Analytical Report Number : 23-41372
Project / Site name: A46 Walsgrave

This deviation report indicates the sample and test deviations that apply to the samples submitted for analysis.Please note that the associated result(s) may be unreliable and should be interpreted with care.

Key: a - No sampling date b - Incorrect container c - Holding time d - Headspace e - Temperature

Sample ID	Other ID	Sample Type	Lab Sample Number	Sample Deviation	Test Name	Test Ref	Test Deviation
BH119	13	S	2726454	c	Free cyanide in soil	L080-PL	c
BH119	13	S	2726454	c	Complex Cyanide in soil	L080-PL	c
BH119	13	S	2726454	c	Total cyanide in soil	L080-PL	c
BH119	2	S	2726452	c	Free cyanide in soil	L080-PL	c
BH119	2	S	2726452	c	Complex Cyanide in soil	L080-PL	c
BH119	2	S	2726452	c	Total cyanide in soil	L080-PL	c
BH119	8	S	2726453	c	Free cyanide in soil	L080-PL	c
BH119	8	S	2726453	c	Complex Cyanide in soil	L080-PL	c
BH119	8	S	2726453	c	Total cyanide in soil	L080-PL	c

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[redacted]
t:
e:

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WD18 8YS

t: 01923 225404
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Analytical Report Number : 23-41388

Project / Site name:	A46 Walsgrave	**Samples received on:**	15/06/2023
Your job number:	G230651 ENV 26	**Samples instructed on/ Analysis started on:**	27/06/2023
Your order number:	G230651	**Analysis completed by:**	04/07/2023
Report Issue Number:	1	**Report issued on:**	04/07/2023
Samples Analysed:	2 leachate samples - 3 soil samples		

[redacted]

For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41-711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils - 4 weeks from reporting
leachates - 2 weeks from reporting
waters - 2 weeks from reporting
asbestos - 6 months from reporting

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Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement.
Application of uncertainty of measurement would provide a range within which the true result lies.
An estimate of measurement uncertainty can be provided on request.

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Analytical Report Number: 23-41388
Project / Site name: A46 Walsgrave
Your Order No: G230651

Lab Sample Number				2726543	2726544	2726545
Sample Reference				VE1023061403	VE1023061404	VE10230614013
Sample Number				BH128	BH128	BH128
Depth (m)				0.30-0.30	0.50-0.50	2.00-2.00
Date Sampled				14/06/2023	14/06/2023	14/06/2023
Time Taken				None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**			
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	12	12	15
Total mass of sample received	kg	0.001	NONE	2	2	2
General Inorganics						
pH - Automated	pH Units	N/A	MCERTS	8.5	8.6	8.4
Total Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
Complex Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
Free Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
Total Sulphate as SO4	mg/kg	50	MCERTS	480	640	900
Total Organic Carbon (TOC) - Automated	%	0.1	MCERTS	0.5	0.4	0.5
Total Phenols						
Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
Speciated PAHs						
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Benzo(a)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Chrysene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	< 0.05	< 0.05	< 0.05
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	< 0.05	< 0.05	< 0.05
Benzo(a)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Total PAH						
Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	< 0.80	< 0.80	< 0.80
Heavy Metals / Metalloids						
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	10	9.8	10
Boron (water soluble)	mg/kg	0.2	MCERTS	1.2	0.3	< 0.2
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2
Chromium (hexavalent)	mg/kg	1.8	MCERTS	< 1.8	< 1.8	< 1.8
Chromium (III)	mg/kg	1	NONE	35	33	28
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	35	33	30
Copper (aqua regia extractable)	mg/kg	1	MCERTS	24	23	20
Lead (aqua regia extractable)	mg/kg	1	MCERTS	14	12	12
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	33	31	30
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	59	56	61

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Analytical Report Number: 23-41388
Project / Site name: A46 Walsgrave
Your Order No: G230651

Lab Sample Number				2726543	2726544	2726545
Sample Reference				VE1023061403	VE1023061404	VE10230614013
Sample Number				BH128	BH128	BH128
Depth (m)				0.30-0.30	0.50-0.50	2.00-2.00
Date Sampled				14/06/2023	14/06/2023	14/06/2023
Time Taken				None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**			
Monoaromatics & Oxygenates						
Benzene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0
Toluene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0
Ethylbenzene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0
p & m-xylene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0
o-xylene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	NONE	< 5.0	< 5.0	< 5.0
Petroleum Hydrocarbons						
TPH-CWG - Aliphatic >EC5 - EC6 $_{HS_1D_AL}$	mg/kg	0.001	NONE	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC6 - EC8 $_{HS_1D_AL}$	mg/kg	0.001	NONE	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC8 - EC10 $_{HS_1D_AL}$	mg/kg	0.001	NONE	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC10 - EC12 $_{EH_CU_1D_AL}$	mg/kg	1	MCERTS	< 1.0	< 1.0	4
TPH-CWG - Aliphatic >EC12 - EC16 $_{EH_CU_1D_AL}$	mg/kg	2	MCERTS	< 2.0	< 2.0	9.7
TPH-CWG - Aliphatic >EC16 - EC21 $_{EH_CU_1D_AL}$	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35 $_{EH_CU_1D_AL}$	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic (EC5 - EC35) $_{EH_CU+HS_1D_AL}$	mg/kg	10	NONE	< 10	< 10	14
TPH-CWG - Aromatic >EC5 - EC7 $_{HS_1D_AR}$	mg/kg	0.001	NONE	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC7 - EC8 $_{HS_1D_AR}$	mg/kg	0.001	NONE	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC8 - EC10 $_{HS_1D_AR}$	mg/kg	0.001	NONE	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC10 - EC12 $_{EH_CU_1D_AR}$	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >EC12 - EC16 $_{EH_CU_1D_AR}$	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0
TPH-CWG - Aromatic >EC16 - EC21 $_{EH_CU_1D_AR}$	mg/kg	10	MCERTS	< 10	< 10	< 10
TPH-CWG - Aromatic >EC21 - EC35 $_{EH_CU_1D_AR}$	mg/kg	10	MCERTS	< 10	< 10	< 10
TPH-CWG - Aromatic (EC5 - EC35) $_{EH_CU+HS_1D_AR}$	mg/kg	10	NONE	< 10	< 10	< 10

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

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Analytical Report Number: 23-41388
Project / Site name: A46 Walsgrave

Your Order No: G230651

Lab Sample Number				2726546	2726547
Sample Reference				VE1023061404	VE10230614013
Sample Number				BH128	BH128
Depth (m)				0.50-0.50	2.00-2.00
Date Sampled				14/06/2023	14/06/2023
Time Taken				None Supplied	None Supplied
Analytical Parameter (Leachate Analysis)	**Units**	**Limit of detection**	**Accreditation Status**		
General Inorganics					
pH (automated)	pH Units	N/A	ISO 17025	8.8	8.9
Total Cyanide (Low Level 1 µg/l)	µg/l	1	ISO 17025	< 1.0	< 1.0
Complex Cyanide (Low Level)	µg/l	1	ISO 17025	< 1.0	< 1.0
Free Cyanide (Low Level 1 µg/l)	µg/l	1	ISO 17025	< 1	< 1
Sulphate as SO_4	mg/l	0.1	ISO 17025	2.8	32.9
Ammoniacal Nitrogen as N	µg/l	15	NONE	< 15	< 15
Ammoniacal Nitrogen as NH3	µg/l	15	NONE	< 15	< 15
Ammoniacal Nitrogen as NH3	mg/l	0.015	NONE	< 0.015	< 0.015
Ammoniacal Nitrogen as NH4	mg/l	0.015	NONE	< 0.015	< 0.015
Total Phenols					
Total Phenols (monohydric)	µg/l	1	ISO 17025	< 1.0	< 1.0
Speciated PAHs					
Naphthalene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Acenaphthylene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Acenaphthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Fluorene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Phenanthrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Benzo(a)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Chrysene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Benzo(b)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Benzo(k)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Benzo(a)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Indeno(1,2,3-cd)pyrene	µg/l	0.01	NONE	< 0.01	< 0.01
Dibenz(a,h)anthracene	µg/l	0.01	NONE	< 0.01	< 0.01
Benzo(ghi)perylene	µg/l	0.01	NONE	< 0.01	< 0.01
Total PAH					
Total EPA-16 PAHs	µg/l	0.2	NONE	< 0.2	< 0.2
Heavy Metals / Metalloids					
Arsenic (dissolved)	mg/l	0.001	ISO 17025	< 0.001	< 0.001
Boron (dissolved)	mg/l	0.01	ISO 17025	0.04	0.03
Cadmium (dissolved)	mg/l	0.00008	ISO 17025	< 0.0001	< 0.0001
Chromium (dissolved)	mg/l	0.0004	ISO 17025	0.0016	< 0.0004
Copper (dissolved)	mg/l	0.0007	ISO 17025	0.0074	0.0076
Lead (dissolved)	mg/l	0.001	ISO 17025	< 0.001	< 0.001
Mercury - CV-AFS	µg/l	0.007	ISO 17025	< 0.0070	< 0.0070
Nickel (dissolved)	mg/l	0.0003	ISO 17025	0.0008	< 0.0003
Selenium (dissolved)	mg/l	0.004	ISO 17025	< 0.004	< 0.004
Zinc (dissolved)	mg/l	0.0004	ISO 17025	0.0053	0.0034

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Analytical Report Number: 23-41388
Project / Site name: A46 Walsgrave

Your Order No: G230651

Lab Sample Number				2726546	2726547
Sample Reference				VE1023061404	VE10230614013
Sample Number				BH128	BH128
Depth (m)				0.50-0.50	2.00-2.00
Date Sampled				14/06/2023	14/06/2023
Time Taken				None Supplied	None Supplied
Analytical Parameter (Leachate Analysis)	**Units**	**Limit of detection**	**Accreditation Status**		
Monoaromatics & Oxygenates					
Benzene	µg/l	3	ISO 17025	< 3.0	< 3.0
Toluene##	µg/l	3	ISO 17025	< 3.0	< 3.0
Ethylbenzene	µg/l	3	ISO 17025	< 3.0	< 3.0
p & m-xylene	µg/l	3	ISO 17025	< 3.0	< 3.0
o-xylene	µg/l	3	ISO 17025	< 3.0	< 3.0
MTBE (Methyl Tertiary Butyl Ether)	µg/l	10	NONE	< 10	< 10
Petroleum Hydrocarbons					
TPH-CWG - Aliphatic >C5 - C6 HS_1D_AL	µg/l	1	ISO 17025	< 1.0	< 1.0
TPH-CWG - Aliphatic >C6 - C8 HS_1D_AL	µg/l	1	ISO 17025	< 1.0	< 1.0
TPH-CWG - Aliphatic >C8 - C10## HS_1D_AL	µg/l	1	ISO 17025	< 1.0	< 1.0
TPH-CWG - Aliphatic >C10 - C12 EH_1D_AL_MS	µg/l	10	NONE	< 10	< 10
TPH-CWG - Aliphatic >C12 - C16 EH_1D_AL_MS	µg/l	10	NONE	< 10	< 10
TPH-CWG - Aliphatic >C16 - C21 EH_1D_AL_MS	µg/l	10	NONE	< 10	< 10
TPH-CWG - Aliphatic >C21 - C35 EH_1D_AL_MS	µg/l	10	NONE	< 10	< 10
TPH-CWG - Aliphatic (C5 - C35) HS+EH_1D_AL_MS	µg/l	10	NONE	< 10	< 10
TPH-CWG - Aromatic >C5 - C7 HS_1D_AR	µg/l	1	ISO 17025	< 1.0	< 1.0
TPH-CWG - Aromatic >C7 - C8 HS_1D_AR	µg/l	1	ISO 17025	< 1.0	< 1.0
TPH-CWG - Aromatic >C8 - C10 HS_1D_AR	µg/l	1	ISO 17025	< 1.0	< 1.0
TPH-CWG - Aromatic >C10 - C12 EH_1D_AR_MS	µg/l	10	NONE	< 10	< 10
TPH-CWG - Aromatic >C12 - C16 EH_1D_AR_MS	µg/l	10	NONE	< 10	< 10
TPH-CWG - Aromatic >C16 - C21 EH_1D_AR_MS	µg/l	10	NONE	< 10	< 10
TPH-CWG - Aromatic >C21 - C35 EH_1D_AR_MS	µg/l	10	NONE	< 10	< 10
TPH-CWG - Aromatic (C5 - C35) HS+EH_1D_AR_MS	µg/l	10	NONE	< 10	< 10

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

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Analytical Report Number : 23-41388
Project / Site name: A46 Walsgrave

* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and loam (MCERTS) soil types. Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
2726543	VE1023061403	BH128	0.30-0.30	Brown clay.
2726544	VE1023061404	BH128	0.50-0.50	Brown clay.
2726545	VE10230614013	BH128	2.00-2.00	Brown clay.

Analytical Report Number : 23-41388
Project / Site name: A46 Walsgrave

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
BS EN 12457-2 (10:1) Leachate Prep	10:1 (as recieved, moisture adjusted) end over end extraction with water for 24 hours. Eluate filtered prior to analysis.	In-house method based on BSEN12457-2.	L043-PL	W	NONE
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES.	In-house method based on Second Site Properties version 3	L038-PL	D	MCERTS
Complex cyanide (Low level) in leachate	Determination of complex cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	ISO 17025
Complex Cyanide in soil	Determination of complex cyanide by calculation.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Free cyanide in soil	Determination of free cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
Monohydric phenols in leachate - LOW LEVEL 1 ug/l	Determination of phenols in leachate by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	ISO 17025
Monohydric phenols in soil	Determination of phenols in soil by extraction with sodium hydroxide followed by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	MCERTS
Speciated EPA-16 PAHs in leachate	Determination of PAH compounds in leachate by extraction in dichloromethane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L102B-PL	W	ISO 17025
Speciated EPA-16 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In house method.	L099-PL	D	MCERTS
pH at 20oC in leachate (automated)	Determination of pH in leachate by electrometric measurement.	In house method.	L099B	W	ISO 17025
Total sulphate (as SO4 in soil)	Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES.	In house method.	L038-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
TPHCWG (Leachates)	Determination of dichloromethane extractable hydrocarbons in leachate by GC-MS.	In-house method	L070-PL	W	ISO 17025
Total cyanide in soil	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS

Analytical Report Number : 23-41388
Project / Site name: A46 Walsgrave

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Total organic carbon (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In house method.	L009-PL	D	MCERTS
BTEX and MTBE in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS. Individual components MCERTS accredited	In-house method based on USEPA8260	L073B-PL	W	MCERTS
BTEX and MTBE in leachates (Monoaromatics)	Determination of BTEX and MTBE in leachates by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	ISO 17025
Ammonia as NH3 in leachate	Determination of Ammonium/Ammonia/ Ammoniacal Nitrogen by the colorimetric salicylate/nitroprusside method.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082-PL	W	NONE
Ammoniacal Nitrogen as N in leachate	Determination of Ammonium/Ammonia/ Ammoniacal Nitrogen by the discrete analyser (colorimetric) salicylate/nitroprusside method.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082-PL	W	NONE
Metals by ICP-OES in leachate	Determination of metals in leachate by acidification followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L039-PL	W	ISO 17025
Boron in leachate	Determination of boron in leachate. Sample acidified and followed by ICP-OES.	In-house method based on MEWAM	L039-PL	W	ISO 17025
Cr (III) in soil	In-house method by calculation from total Cr and Cr VI.	In-house method by calculation	L080-PL	W	NONE
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method with silica gel split/clean up.	L088/76-PL	W	MCERTS
Free cyanide in leachate	Determination of free cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	ISO 17025
Total cyanide in leachate - 1µg/l	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L080-PL	W	ISO 17025
Ammonium as NH4 in leachate	Determination of ammonium in leachate by addition of buffer solution followed by ion selective electrode.	In-house method	L035-PL	W	NONE
Sulphate in leachates	Determination of sulphate in leachate by acidification followed by ICP-OES.	In-house method based on MEWAM 1986 Methods for the Determination of Metals in Soil""	L039-PL	W	ISO 17025
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in NaOH and addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	MCERTS
Mercury Low Level in leachate	Mercury in leachate by CV-AFS,	In-house method based on USEPA method 1631	L085-PL	W	ISO 17025

For method numbers ending in 'UK or A' analysis have been carried out in our laboratory in the United Kingdom (WATFORD).
For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).
For method numbers ending in 'PL or B' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.
Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

Information in Support of Analytical Results

Analytical Report Number : 23-41388
Project / Site name: A46 Walsgrave

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status

List of HWOL Acronyms and Operators

Acronym	Descriptions
HS	Headspace Analysis
MS	Mass spectrometry
FID	Flame Ionisation Detector
GC	Gas Chromatography
EH	Extractable Hydrocarbons (i.e. everything extracted by the solvent(s))
CU	Clean-up - e.g. by Florisil®, silica gel
1D	GC - Single coil/column gas chromatography
2D	GC-GC - Double coil/column gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics
AR	Aromatics
#1	EH_2D_Total but with humics mathematically subtracted
#2	EH_2D_Total but with fatty acids mathematically subtracted
_	Operator - understore to separate acronyms (exception for +)
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total

- Quality control parameter has a high recovery (outside of limit); however the associated result is below the reporting limit, other checks applied prior to reporting the data have been accepted. The result should be considered as being deviating and may be compromised.

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Analytical Report Number : 23-41388
Project / Site name: A46 Walsgrave

This deviation report indicates the sample and test deviations that apply to the samples submitted for analysis.Please note that the associated result(s) may be unreliable and should be interpreted with care.

Key: a - No sampling date b - Incorrect container c - Holding time d - Headspace e - Temperature

Sample ID	Other ID	Sample Type	Lab Sample Number	Sample Deviation	Test Name	Test Ref	Test Deviation
VE10230614013	BH128	S	2726545	bc	Free cyanide in soil	L080-PL	c
VE10230614013	BH128	S	2726545	bc	BTEX and MTBE in soil (Monoaromatics)	L073B-PL	b
VE10230614013	BH128	S	2726545	bc	Complex Cyanide in soil	L080-PL	c
VE10230614013	BH128	S	2726545	bc	TPHCWG (Soil)	L088/76-PL	b
VE10230614013	BH128	S	2726545	bc	Total cyanide in soil	L080-PL	c
VE1023061403	BH128	S	2726543	bc	Free cyanide in soil	L080-PL	c
VE1023061403	BH128	S	2726543	bc	BTEX and MTBE in soil (Monoaromatics)	L073B-PL	b
VE1023061403	BH128	S	2726543	bc	Complex Cyanide in soil	L080-PL	c
VE1023061403	BH128	S	2726543	bc	TPHCWG (Soil)	L088/76-PL	b
VE1023061403	BH128	S	2726543	bc	Total cyanide in soil	L080-PL	c
VE1023061404	BH128	S	2726544	bc	Free cyanide in soil	L080-PL	c
VE1023061404	BH128	S	2726544	bc	BTEX and MTBE in soil (Monoaromatics)	L073B-PL	b
VE1023061404	BH128	S	2726544	bc	Complex Cyanide in soil	L080-PL	c
VE1023061404	BH128	S	2726544	bc	TPHCWG (Soil)	L088/76-PL	b
VE1023061404	BH128	S	2726544	bc	Total cyanide in soil	L080-PL	c

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[redacted]
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Analytical Report Number : 23-41627

Project / Site name:	A46 Walsgrave	**Samples received on:**	20/06/2023
Your job number:	G230651ENV27	**Samples instructed on/ Analysis started on:**	27/06/2023
Your order number:	VE298636	**Analysis completed by:**	05/07/2023
Report Issue Number:	1	**Report issued on:**	05/07/2023
Samples Analysed:	5 leachate samples - 5 soil samples		

[redacted]
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41-711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils - 4 weeks from reporting
leachates - 2 weeks from reporting
waters - 2 weeks from reporting
asbestos - 6 months from reporting

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Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement.
Application of uncertainty of measurement would provide a range within which the true result lies.
An estimate of measurement uncertainty can be provided on request.

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The results included within the report relate only to the sample(s) submitted for testing.

Analytical Report Number: 23-41627
Project / Site name: A46 Walsgrave

Lab Sample Number				2727992	2727993	2727994	2727995	2727996
Sample Reference				WS102	WS102	WS103	WS103	WS103
Sample Number				7	8	10	12	13
Depth (m)				0.10	0.50	0.10	1.00	2.00
Date Sampled				15/06/2023	15/06/2023	15/06/2023	15/06/2023	15/06/2023
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	70	< 0.1
Moisture Content	%	0.01	NONE	5.1	6.3	24	5.7	9.6
Total mass of sample received	kg	0.001	NONE	2	2	2	2	2
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	-	Not-detected	Not-detected	-
Asbestos Analyst ID	N/A	N/A	N/A	ASE	N/A	ASE	ASE	N/A
General Inorganics								
pH - Automated	pH Units	N/A	MCERTS	7.3	7.5	6.7	7.6	7.9
Total Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Complex Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Free Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total Sulphate as SO4	mg/kg	50	MCERTS	670	500	490	180	240
Total Organic Carbon (TOC) - Automated	%	0.1	MCERTS	2.3	1.2	1.9	0.2	0.1
Total Phenols								
Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.22	< 0.05	< 0.05
Anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.08	< 0.05	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.2	< 0.05	< 0.05
Pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.2	< 0.05	< 0.05
Benzo(a)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.13	< 0.05	< 0.05
Chrysene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.1	< 0.05	< 0.05
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	< 0.05	< 0.05	0.14	< 0.05	< 0.05
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	< 0.05	< 0.05	0.05	< 0.05	< 0.05
Benzo(a)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.09	< 0.05	< 0.05
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Total PAH								
Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	< 0.80	< 0.80	1.21	< 0.80	< 0.80
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	9	12	5	4.4	4.6
Boron (water soluble)	mg/kg	0.2	MCERTS	2.8	0.6	0.4	0.2	0.3
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	0.2	< 0.2	< 0.2
Chromium (hexavalent)	mg/kg	1.8	MCERTS	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8
Chromium (III)	mg/kg	1	NONE	21	28	11	8.4	15
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	21	28	12	8.6	15
Copper (aqua regia extractable)	mg/kg	1	MCERTS	21	20	21	13	17
Lead (aqua regia extractable)	mg/kg	1	MCERTS	18	17	23	6.7	7.9
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	19	24	8	6.5	13
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	64	70	45	16	28

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Analytical Report Number: 23-41627
Project / Site name: A46 Walsgrave

Lab Sample Number				2727992	2727993	2727994	2727995	2727996
Sample Reference				WS102	WS102	WS103	WS103	WS103
Sample Number				7	8	10	12	13
Depth (m)				0.10	0.50	0.10	1.00	2.00
Date Sampled				15/06/2023	15/06/2023	15/06/2023	15/06/2023	15/06/2023
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Monoaromatics & Oxygenates~								
Benzene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Toluene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Ethylbenzene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
p & m-xylene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
o-xylene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Petroleum Hydrocarbons								
TPH-CWG - Aliphatic >EC5 - EC6 $_{HS_1D_AL}$	mg/kg	0.001	NONE	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC6 - EC8 $_{HS_1D_AL}$	mg/kg	0.001	NONE	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC8 - EC10 $_{HS_1D_AL}$	mg/kg	0.001	NONE	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC10 - EC12 $_{EH_CU_1D_AL}$	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16 $_{EH_CU_1D_AL}$	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21 $_{EH_CU_1D_AL}$	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35 $_{EH_CU_1D_AL}$	mg/kg	8	MCERTS	< 8.0	< 8.0	10	< 8.0	8.8
TPH-CWG - Aliphatic (EC5 - EC35) $_{EH_CU+HS_1D_AL}$	mg/kg	10	NONE	11	< 10	11	< 10	< 10
TPH-CWG - Aromatic >EC5 - EC7 $_{HS_1D_AR}$	mg/kg	0.001	NONE	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC7 - EC8 $_{HS_1D_AR}$	mg/kg	0.001	NONE	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC8 - EC10 $_{HS_1D_AR}$	mg/kg	0.001	NONE	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC10 - EC12 $_{EH_CU_1D_AR}$	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >EC12 - EC16 $_{EH_CU_1D_AR}$	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
TPH-CWG - Aromatic >EC16 - EC21 $_{EH_CU_1D_AR}$	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >EC21 - EC35 $_{EH_CU_1D_AR}$	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic (EC5 - EC35) $_{EH_CU+HS_1D_AR}$	mg/kg	10	NONE	< 10	< 10	< 10	< 10	< 10

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

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Analytical Report Number: 23-41627
Project / Site name: A46 Walsgrave

Lab Sample Number				2727997	2727998	2727999	2728000	2728001
Sample Reference				WS102	WS102	WS103	WS103	WS103
Sample Number				7	8	10	12	13
Depth (m)				0.10	0.50	0.10	1.00	2.00
Date Sampled				15/06/2023	15/06/2023	15/06/2023	15/06/2023	15/06/2023
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Leachate Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
General Inorganics								
pH (automated)	pH Units	N/A	ISO 17025	7.5	8.1	7	7.2	7.3
Total Cyanide (Low Level 1 µg/l)	mg/l	0.001	ISO 17025	< 0.001	< 0.001	< 0.001	0.007	< 0.001
Complex Cyanide (Low Level)	mg/l	0.001	ISO 17025	< 0.001	< 0.001	< 0.001	0.007	< 0.001
Free Cyanide (Low Level 1 µg/l)	mg/l	0.001	ISO 17025	< 1	< 1	< 1	< 1	< 1
Sulphate as SO_4	mg/l	0.1	ISO 17025	2.5	1.8	1.5	1	2
Ammoniacal Nitrogen as N	mg/l	0.015	NONE	< 0.015	< 0.015	< 0.015	< 0.015	< 0.015
Ammoniacal Nitrogen as NH3	mg/l	0.015	NONE	< 0.015	< 0.015	< 0.015	< 0.015	< 0.015
Ammoniacal Nitrogen as NH3	mg/l	0.015	NONE	< 0.015	< 0.015	< 0.015	< 0.015	< 0.015
Ammoniacal Nitrogen as NH4	mg/l	0.015	NONE	< 0.015	< 0.015	< 0.015	< 0.015	< 0.015
Total Phenols								
Total Phenols (monohydric)	mg/l	0.001	ISO 17025	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Speciated PAHs								
Naphthalene	mg/l	0.00001	ISO 17025	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Acenaphthylene	mg/l	0.00001	ISO 17025	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Acenaphthene	mg/l	0.00001	ISO 17025	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Fluorene	mg/l	0.00001	ISO 17025	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Phenanthrene	mg/l	0.00001	ISO 17025	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Anthracene	mg/l	0.00001	ISO 17025	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Fluoranthene	mg/l	0.00001	ISO 17025	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Pyrene	mg/l	0.00001	ISO 17025	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Benzo(a)anthracene	mg/l	0.00001	ISO 17025	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Chrysene	mg/l	0.00001	ISO 17025	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Benzo(b)fluoranthene	mg/l	0.00001	ISO 17025	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Benzo(k)fluoranthene	mg/l	0.00001	ISO 17025	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Benzo(a)pyrene	mg/l	0.00001	ISO 17025	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Indeno(1,2,3-cd)pyrene	mg/l	0.00001	NONE	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Dibenz(a,h)anthracene	mg/l	0.00001	NONE	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Benzo(ghi)perylene	mg/l	0.00001	NONE	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Total PAH								
Total EPA-16 PAHs	mg/l	0.0002	NONE	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
Heavy Metals / Metalloids								
Arsenic (dissolved)	mg/l	0.001	ISO 17025	0.001	0.003	0.006	0.007	0.004
Boron (dissolved)	mg/l	0.01	ISO 17025	0.05	0.03	0.01	< 0.01	< 0.01
Cadmium (dissolved)	mg/l	0.00008	ISO 17025	< 0.00008	< 0.00008	< 0.00008	< 0.00008	0.0002
Chromium (dissolved)	mg/l	0.0004	ISO 17025	0.0014	< 0.0004	0.0015	0.0046	0.0005
Copper (dissolved)	mg/l	0.0007	ISO 17025	0.029	0.0173	0.04	0.0247	0.0073
Lead (dissolved)	mg/l	0.001	ISO 17025	0.001	0.008	0.001	0.003	0.002
Mercury - CV-AFS	mg/l	0.000007	ISO 17025	< 0.0000070	< 0.0000070	0.000001	0.000001	< 0.0000070
Nickel (dissolved)	mg/l	0.0003	ISO 17025	0.0018	0.0004	0.0027	0.0035	0.0008
Selenium (dissolved)	mg/l	0.004	ISO 17025	< 0.004	< 0.004	< 0.004	< 0.004	< 0.004
Zinc (dissolved)	mg/l	0.0004	ISO 17025	0.0154	0.0419	0.0603	0.0508	0.0023

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Lab Sample Number				2727997	2727998	2727999	2728000	2728001
Sample Reference				WS102	WS102	WS103	WS103	WS103
Sample Number				7	8	10	12	13
Depth (m)				0.10	0.50	0.10	1.00	2.00
Date Sampled				15/06/2023	15/06/2023	15/06/2023	15/06/2023	15/06/2023
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Leachate Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Monoaromatics & Oxygenates								
Benzene	mg/l	0.003	ISO 17025	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003
Toluene	mg/l	0.003	ISO 17025	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003
Ethylbenzene	mg/l	0.003	ISO 17025	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003
p & m-xylene	mg/l	0.003	ISO 17025	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003
o-xylene	mg/l	0.003	ISO 17025	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003
MTBE (Methyl Tertiary Butyl Ether)	mg/l	0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Petroleum Hydrocarbons								
TPH-CWG - Aliphatic >C5 - C6## $_{HS_1D_AL}$	mg/l	0.001	ISO 17025	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >C6 - C8## $_{HS_1D_AL}$	mg/l	0.001	ISO 17025	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >C8 - C10## $_{HS_1D_AL}$	mg/l	0.001	ISO 17025	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >C10 - C12 $_{EH_1D_AL_MS}$	mg/l	0.001	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
TPH-CWG - Aliphatic >C12 - C16 $_{EH_1D_AL_MS}$	mg/l	0.001	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
TPH-CWG - Aliphatic >C16 - C21 $_{EH_1D_AL_MS}$	mg/l	0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
TPH-CWG - Aliphatic >C21 - C35 $_{EH_1D_AL_MS}$	mg/l	0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
TPH-CWG - Aliphatic (C5 - C35) $_{HS+EH_1D_AL_MS}$	mg/l	0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
TPH-CWG - Aromatic >C5 - C7 $_{HS_1D_AR}$	mg/l	0.001	ISO 17025	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >C7 - C8 $_{HS_1D_AR}$	mg/l	0.001	ISO 17025	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >C8 - C10 $_{HS_1D_AR}$	mg/l	0.001	ISO 17025	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >C10 - C12 $_{EH_1D_AR_MS}$	mg/l	0.001	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
TPH-CWG - Aromatic >C12 - C16 $_{EH_1D_AR_MS}$	mg/l	0.001	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
TPH-CWG - Aromatic >C16 - C21 $_{EH_1D_AR_MS}$	mg/l	0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
TPH-CWG - Aromatic >C21 - C35 $_{EH_1D_AR_MS}$	mg/l	0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
TPH-CWG - Aromatic (C5 - C35) $_{HS+EH_1D_AR_MS}$	mg/l	0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

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* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and loam (MCERTS) soil types. Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
2727992	WS102	7	0.1	Brown loam and sand with gravel and vegetation.
2727993	WS102	8	0.5	Brown loam and sand with gravel and vegetation.
2727994	WS103	10	0.1	Brown silt with gravel.^^
2727995	WS103	12	1	Brown sand with stones.
2727996	WS103	13	2	Brown sandy clay with gravel.

Analytical Report Number : 23-41627
Project / Site name: A46 Walsgrave

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
BS EN 12457-2 (10:1) Leachate Prep	10:1 (as recieved, moisture adjusted) end over end extraction with water for 24 hours. Eluate filtered prior to analysis.	In-house method based on BSEN12457-2.	L043-PL	W	NONE
Asbestos identification in soil	Asbestos Identification with the use of polarised light microscopy in conjunction with dispersion staining techniques.	In house method based on HSG 248	A001-PL	D	ISO 17025
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES.	In-house method based on Second Site Properties version 3	L038-PL	D	MCERTS
Complex cyanide (Low level) in leachate	Determination of complex cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	ISO 17025
Complex Cyanide in soil	Determination of complex cyanide by calculation.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Free cyanide in soil	Determination of free cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
Monohydric phenols in leachate - LOW LEVEL 1 ug/l	Determination of phenols in leachate by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	ISO 17025
Monohydric phenols in soil	Determination of phenols in soil by extraction with sodium hydroxide followed by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	MCERTS
Speciated EPA-16 PAHs in leachate	Determination of PAH compounds in leachate by extraction in dichloromethane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L102B-PL	W	ISO 17025
Speciated EPA-16 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In house method.	L099-PL	D	MCERTS
pH at 20oC in leachate (automated)	Determination of pH in leachate by electrometric measurement.	In house method.	L099B	W	ISO 17025
Total sulphate (as SO4 in soil)	Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES.	In house method.	L038-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE

Analytical Report Number : 23-41627
Project / Site name: A46 Walsgrave

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
TPHCWG (Leachates)	Determination of dichloromethane extractable hydrocarbons in leachate by GC-MS.	In-house method	L070-PL	W	ISO 17025
Total cyanide in soil	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Total organic carbon (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In house method.	L009-PL	D	MCERTS
BTEX and MTBE in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS. Individual components MCERTS accredited	In-house method based on USEPA8260	L073B-PL	W	MCERTS
BTEX and MTBE in leachates (Monoaromatics)	Determination of BTEX and MTBE in leachates by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	ISO 17025
Ammonia as NH3 in leachate	Determination of Ammonium/Ammonia/ Ammoniacal Nitrogen by the colorimetric salicylate/nitroprusside method.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082-PL	W	NONE
Ammoniacal Nitrogen as N in leachate	Determination of Ammonium/Ammonia/ Ammoniacal Nitrogen by the discrete analyser (colorimetric) salicylate/nitroprusside method.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082-PL	W	NONE
Metals by ICP-OES in leachate	Determination of metals in leachate by acidification followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L039-PL	W	ISO 17025
Boron in leachate	Determination of boron in leachate. Sample acidified and followed by ICP-OES.	In-house method based on MEWAM	L039-PL	W	ISO 17025
Cr (III) in soil	In-house method by calculation from total Cr and Cr VI.	In-house method by calculation	L080-PL	W	NONE
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method with silica gel split/clean up.	L088/76-PL	W	MCERTS
Free cyanide in leachate	Determination of free cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	ISO 17025
Total cyanide in leachate - 1µg/l	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L080-PL	W	ISO 17025
Ammonium as NH4 in leachate	Determination of ammonium in leachate by addition of buffer solution followed by ion selective electrode.	In-house method	L035-PL	W	NONE
Sulphate in leachates	Determination of sulphate in leachate by acidification followed by ICP-OES.	In-house method based on MEWAM 1986 Methods for the Determination of Metals in Soil""	L039-PL	W	ISO 17025
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in NaOH and addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	MCERTS

Analytical Report Number : 23-41627
Project / Site name: A46 Walsgrave

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
D.O. for Gravimetric Quant if Screen/ID positive	Dependent option for Gravimetric Quant if Screen/ID positive scheduled.	In house asbestos methods A001 & A006.	A006-PL	D	NONE
Mercury Low Level in leachate	Mercury in leachate by CV-AFS,	In-house method based on USEPA method 1631	L085-PL	W	ISO 17025

For method numbers ending in 'UK or A' analysis have been carried out in our laboratory in the United Kingdom (WATFORD).
For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).
For method numbers ending in 'PL or B' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.
Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

Information in Support of Analytical Results

List of HWOL Acronyms and Operators

Acronym	Descriptions
HS	Headspace Analysis
MS	Mass spectrometry
FID	Flame Ionisation Detector
GC	Gas Chromatography
EH	Extractable Hydrocarbons (i.e. everything extracted by the solvent(s))
CU	Clean-up - e.g. by Florisil®, silica gel
1D	GC - Single coil/column gas chromatography
2D	GC-GC - Double coil/column gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics
AR	Aromatics
#1	EH_2D_Total but with humics mathematically subtracted
#2	EH_2D_Total but with fatty acids mathematically subtracted
_	Operator - understore to separate acronyms (exception for +)
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total

^^UNACCREDITED SAMPLE MATRIX
~ - Quality control surrogate recovery outside of limits, other checks applied prior to reporting the data have been accepted. The result should be considered as being deviating and may be compromised.
- Quality control parameter has a high recovery (outside of limit); however the associated result is below the reporting limit, other checks applied prior to reporting the data have been accepted. The result should be considered as being deviating and may be compromised.

Sample Deviation Report

Analytical Report Number : 23-41627

Project / Site name: A46 Walsgrave

This deviation report indicates the sample and test deviations that apply to the samples submitted for analysis.Please note that the associated result(s) may be unreliable and should be interpreted with care.

Key: a - No sampling date b - Incorrect container c - Holding time d - Headspace e - Temperature

Sample ID	Other ID	Sample Type	Lab Sample Number	Sample Deviation	Test Name	Test Ref	Test Deviation
WS102	7	S	2727992	bc	Free cyanide in soil	L080-PL	c
WS102	7	S	2727992	bc	BTEX and MTBE in soil (Monoaromatics)	L073B-PL	b
WS102	7	S	2727992	bc	Complex Cyanide in soil	L080-PL	c
WS102	7	S	2727992	bc	TPHCWG (Soil)	L088/76-PL	b
WS102	7	S	2727992	bc	Total cyanide in soil	L080-PL	c
WS102	8	S	2727993	bc	Free cyanide in soil	L080-PL	c
WS102	8	S	2727993	bc	BTEX and MTBE in soil (Monoaromatics)	L073B-PL	b
WS102	8	S	2727993	bc	Complex Cyanide in soil	L080-PL	c
WS102	8	S	2727993	bc	TPHCWG (Soil)	L088/76-PL	b
WS102	8	S	2727993	bc	Total cyanide in soil	L080-PL	c
WS103	10	S	2727994	c	Free cyanide in soil	L080-PL	c
WS103	10	S	2727994	c	Complex Cyanide in soil	L080-PL	c
WS103	10	S	2727994	c	Total cyanide in soil	L080-PL	c
WS103	12	S	2727995	c	Free cyanide in soil	L080-PL	c
WS103	12	S	2727995	c	Complex Cyanide in soil	L080-PL	c
WS103	12	S	2727995	c	Total cyanide in soil	L080-PL	c
WS103	13	S	2727996	c	Free cyanide in soil	L080-PL	c
WS103	13	S	2727996	c	Complex Cyanide in soil	L080-PL	c
WS103	13	S	2727996	c	Total cyanide in soil	L080-PL	c

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Analytical Report Number : 23-41629

Project / Site name:	A46 Walsgrave	**Samples received on:**	20/06/2023
Your job number:	G230651ENV27	**Samples instructed on/ Analysis started on:**	27/06/2023
Your order number:		**Analysis completed by:**	04/07/2023
Report Issue Number:	1	**Report issued on:**	04/07/2023
Samples Analysed:	2 10:1 WAC samples		

[redacted]

For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41-711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils - 4 weeks from reporting
leachates - 2 weeks from reporting
waters - 2 weeks from reporting
asbestos - 6 months from reporting

Excel copies of reports are only valid when accompanied by this PDF certificate.

Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement.
Application of uncertainty of measurement would provide a range within which the true result lies.
An estimate of measurement uncertainty can be provided on request.

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report relate only to the sample(s) submitted for testing.

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Waste Acceptance Criteria Analytical Results

Report No:	**23-41629**						
					Client: VAN ELLE		
Location	**A46 Walsgrave**						
Lab Reference (Sample Number)	2728045 / 2728046				**Landfill Waste Acceptance Criteria Limits**		
Sampling Date	15/06/2023				Inert Waste Landfill	Stable Non-reactive HAZARDOUS waste in non-hazardous Landfill	Hazardous Waste Landfill
Sample ID	WS102 7						
Depth (m)	0.10						
Solid Waste Analysis							
TOC (%)**	2.3				3%	5%	6%
Loss on Ignition (%) **	5.3				--	--	10%
BTEX (µg/kg)**~	< 5.0				6000	--	--
Sum of PCBs (mg/kg)**	< 0.007				1	--	--
Mineral Oil (mg/kg) EH_1D_CU_AL	< 10				500	--	--
Total PAH (WAC-17) (mg/kg)	< 0.85				100	--	--
pH (units)**	7.0				--	>6	--
Acid Neutralisation Capacity (mmol / kg)	0.00				--	To be evaluated	To be evaluated
Eluate Analysis (BS EN 12457 - 2 preparation utilising end over end leaching procedure)	10:1 mg/l			10:1 mg/kg	Limit values for compliance leaching test using BS EN 12457-2 at L/S 10 l/kg (mg/kg)		
Arsenic *	0.0020			0.0182	0.5	2	25
Barium *	0.0507			0.474	20	100	300
Cadmium *	< 0.0001			< 0.0008	0.04	1	5
Chromium *	0.0016			0.015	0.5	10	70
Copper *	0.026			0.24	2	50	100
Mercury *	< 0.0005			< 0.0050	0.01	0.2	2
Molybdenum *	0.0004			< 0.0040	0.5	10	30
Nickel *	0.0030			0.028	0.4	10	40
Lead *	< 0.0010			< 0.010	0.5	10	50
Antimony *	0.0039			0.036	0.06	0.7	5
Selenium *	< 0.0040			< 0.040	0.1	0.5	7
Zinc *	0.0076			0.071	4	50	200
Chloride *	1.2			11	800	15000	25000
Fluoride*	0.25			2.3	10	150	500
Sulphate *	3.1			29	1000	20000	50000
TDS*	56			520	4000	60000	100000
Phenol Index (Monohydric Phenols) *	< 0.010			< 0.10	1	-	-
DOC	7.63			71.4	500	800	1000
Leach Test Information							
Stone Content (%)	< 0.1						
Sample Mass (kg)	2.0						
Dry Matter (%)	95						
Moisture (%)	5.1						

Results are expressed on a dry weight basis, after correction for moisture content where applicable. *= UKAS accredited (liquid eluate analysis only)

Stated limits are for guidance only and i2 cannot be held responsible for any discrepencies with current legislation ** = MCERTS accredited

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes as defined by the Waste (England and Wales) Regulations 2011 (as amended) and EA Guidance WM3.
This analysis is only applicable for landfill acceptance criteria (The Environmental Permitting (England and Wales) Regulations) and does not give any indication as to whether a waste may be hazardous or non-hazardous.

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

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Waste Acceptance Criteria Analytical Results

Report No:	**23-41629**						
					Client: VAN ELLE		
Location	**A46 Walsgrave**						
Lab Reference (Sample Number)	2728047 / 2728048				**Landfill Waste Acceptance Criteria Limits**		
Sampling Date	15/06/2023				Inert Waste Landfill	Stable Non-reactive HAZARDOUS waste in non-hazardous Landfill	Hazardous Waste Landfill
Sample ID	WS103 12						
Depth (m)	1.00						
Solid Waste Analysis							
TOC (%)**	0.2				3%	5%	6%
Loss on Ignition (%) **	0.9				--	--	10%
BTEX (µg/kg)**~	< 5.0				6000	--	--
Sum of PCBs (mg/kg)**	< 0.007				1	--	--
Mineral Oil (mg/kg) EH_1D_CU_AL	< 10				500	--	--
Total PAH (WAC-17) (mg/kg)	< 0.85				100	--	--
pH (units)**	7.5				--	>6	--
Acid Neutralisation Capacity (mmol / kg)	0.83				--	To be evaluated	To be evaluated
Eluate Analysis (BS EN 12457 - 2 preparation utilising end over end leaching procedure)	10:1 mg/l			10:1 mg/kg	Limit values for compliance leaching test using BS EN 12457-2 at L/S 10 l/kg (mg/kg)		
Arsenic *	< 0.0010			< 0.0100	0.5	2	25
Barium *	0.0172			0.158	20	100	300
Cadmium *	< 0.0001			< 0.0008	0.04	1	5
Chromium *	0.0048			0.044	0.5	10	70
Copper *	0.023			0.22	2	50	100
Mercury *	< 0.0005			< 0.0050	0.01	0.2	2
Molybdenum *	0.0009			0.0083	0.5	10	30
Nickel *	0.0038			0.035	0.4	10	40
Lead *	< 0.0010			< 0.010	0.5	10	50
Antimony *	0.0034			0.031	0.06	0.7	5
Selenium *	< 0.0040			< 0.040	0.1	0.5	7
Zinc *	0.014			0.13	4	50	200
Chloride *	0.45			4.1	800	15000	25000
Fluoride*	0.17			1.6	10	150	500
Sulphate *	1.3			12	1000	20000	50000
TDS*	17			150	4000	60000	100000
Phenol Index (Monohydric Phenols) *	< 0.010			< 0.10	1	-	-
DOC	6.37			58.8	500	800	1000
Leach Test Information							
Stone Content (%)	70						
Sample Mass (kg)	2.0						
Dry Matter (%)	94						
Moisture (%)	5.7						

Results are expressed on a dry weight basis, after correction for moisture content where applicable.

*= UKAS accredited (liquid eluate analysis only)

Stated limits are for guidance only and i2 cannot be held responsible for any discrepencies with current legislation

** = MCERTS accredited

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes as defined by the Waste (England and Wales) Regulations 2011 (as amended) and EA Guidance WM3.
This analysis is only applicable for landfill acceptance criteria (The Environmental Permitting (England and Wales) Regulations) and does not give any indication as to whether a waste may be hazardous or non-hazardous.

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Analytical Report Number : 23-41629
Project / Site name: A46 Walsgrave

* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and loam (MCERTS) soil types. Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
2728045	WS102	7	0.1	Brown loam and sand with gravel and vegetation.
2728047	WS103	12	1	Brown sand with stones.

Analytical Report Number : 23-41629
Project / Site name: A46 Walsgrave

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
BS EN 12457-2 (10:1) Leachate Prep	10:1 (as recieved, moisture adjusted) end over end extraction with water for 24 hours. Eluate filtered prior to analysis.	In-house method based on BSEN12457-2.	L043-PL	W	NONE
Acid neutralisation capacity of soil	Determination of acid neutralisation capacity by addition of acid or alkali followed by electronic probe.	In-house method based on Guidance an Sampling and Testing of Wastes to Meet Landfill Waste Acceptance""	L046-PL	W	NONE
Loss on ignition of soil @ 450oC	Determination of loss on ignition in soil by gravimetrically with the sample being ignited in a muffle furnace.	In house method.	L047-PL	D	MCERTS
Mineral Oil (Soil) C10 - C40	Determination of mineral oil fraction extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method with silica gel split/clean up.	L076-PL	D	NONE
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
Speciated WAC-17 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270.	L064-PL	D	MCERTS
PCB's By GC-MS in soil	Determination of PCB by extraction with acetone and hexane followed by GC-MS.	In-house method based on USEPA 8082	L027-PL	D	MCERTS
pH at 20oC in soil	Determination of pH in soil by addition of water followed by electrometric measurement.	In house method.	L005-PL	W	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Total organic carbon (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In house method.	L009-PL	D	MCERTS
BTEX in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS. Individual components MCERTS accredited	In-house method based on USEPA8260	L073B-PL	W	MCERTS
Total BTEX in soil (Poland)	Determination of BTEX in soil by headspace GC-MS. Individual components MCERTS accredited	In-house method based on USEPA8260	L073-PL	W	MCERTS
Metals in leachate by ICP-OES	Determination of metals in leachate by acidification followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil""	L039-PL	W	ISO 17025
Chloride 10:1 WAC	Determination of Chloride colorimetrically by discrete analyser.	In house based on MEWAM Method ISBN 0117516260.	L082-PL	W	ISO 17025
Fluoride 10:1 WAC	Determination of fluoride in leachate by 1:1ratio with a buffer solution followed by Ion Selective Electrode.	In-house method based on Use of Total Ionic Strength Adjustment Buffer for Electrode Determination"	L033B-PL	W	ISO 17025
Sulphate 10:1 WAC	Determination of sulphate in leachate by ICP-OES	In-house method based on MEWAM 1986 Methods for the Determination of Metals in Soil""	L039-PL	W	ISO 17025
Total dissolved solids 10:1 WAC	Determination of total dissolved solids in water by EC probe using a factor of 0.6.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L031	W	ISO 17025

Analytical Report Number : 23-41629
Project / Site name: A46 Walsgrave

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Monohydric phenols 10:1 WAC	Determination of phenols in leachate by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L080-PL	W	ISO 17025
Dissolved organic carbon 10:1 WAC	Determination of dissolved inorganic carbon in leachate by TOC/DOC NDIR Analyser.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L037-PL	W	NONE

For method numbers ending in 'UK or A' analysis have been carried out in our laboratory in the United Kingdom (WATFORD).
For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).
For method numbers ending in 'PL or B' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.
Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

Information in Support of Analytical Results

List of HWOL Acronyms and Operators

Acronym	Descriptions
HS	Headspace Analysis
MS	Mass spectrometry
FID	Flame Ionisation Detector
GC	Gas Chromatography
EH	Extractable Hydrocarbons (i.e. everything extracted by the solvent(s))
CU	Clean-up - e.g. by Florisil®, silica gel
1D	GC - Single coil/column gas chromatography
2D	GC-GC - Double coil/column gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics
AR	Aromatics
#1	EH_2D_Total but with humics mathematically subtracted
#2	EH_2D_Total but with fatty acids mathematically subtracted
_	Operator - understore to separate acronyms (exception for +)
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total

~ - Quality control surrogate recovery outside of limits, other checks applied prior to reporting the data have been accepted. The result should be considered as being deviating and may be compromised.

Sample Deviation Report

Analytical Report Number : 23-41629

Project / Site name: A46 Walsgrave

This deviation report indicates the sample and test deviations that apply to the samples submitted for analysis.Please note that the associated result(s) may be unreliable and should be interpreted with care.

Key: a - No sampling date b - Incorrect container c - Holding time d - Headspace e - Temperature

Sample ID	Other ID	Sample Type	Lab Sample Number	Sample Deviation	Test Name	Test Ref	Test Deviation
WS102	7	S	2728045	b	BTEX in soil (Monoaromatics)	L073B-PL	b
WS102	7	S	2728045	b	Total BTEX in soil (Poland)	L073-PL	b

Sample Deviation Report

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Analytical Report Number : 23-41920

Replaces Analytical Report Number: 23-41920, issue no. 1
Client references/information amended.
Sample depth changed on sample 2729697 as per clients request

Project / Site name:	A46 Walsgrave	**Samples received on:**	22/06/2023
Your job number:	G23061ENV28	**Samples instructed on/ Analysis started on:**	28/06/2023
Your order number:		**Analysis completed by:**	05/07/2023
Report Issue Number:	2	**Report issued on:**	01/08/2023
Samples Analysed:	3 leachate samples - 7 soil samples		

[redacted]
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41-711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils - 4 weeks from reporting
leachates - 2 weeks from reporting
waters - 2 weeks from reporting
asbestos - 6 months from reporting

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Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement.
Application of uncertainty of measurement would provide a range within which the true result lies.
An estimate of measurement uncertainty can be provided on request.

Sample Deviation Report

Analytical Report Number: 23-41920
Project / Site name: A46 Walsgrave

Lab Sample Number				2729696	2729697	2729698	2729699	2729700
Sample Reference				BH104	BH104	BH112	BH112	BH116
Sample Number				VE04230620001	VE04230620002	VE10230620010	VE10230620011	VE10230619010
Depth (m)				0.10	1.00	0.30	0.50	0.30
Date Sampled				20/06/2023	20/06/2023	20/06/2023	20/06/2023	19/06/2023
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	15	15	12	5.1	10
Total mass of sample received	kg	0.001	NONE	1.3	1.3	1.3	1.3	1.3
General Inorganics								
pH - Automated	pH Units	N/A	MCERTS	6.7	7.5	6.4	7.3	6.9
Total Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Complex Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Free Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total Sulphate as SO4	mg/kg	50	MCERTS	400	260	380	180	400
Total Organic Carbon (TOC) - Automated	%	0.1	MCERTS	1.4	0.7	1.9	0.6	1.2
Total Phenols								
Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	0.05	< 0.05	0.07	< 0.05	< 0.05
Anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	0.06	< 0.05	0.11	< 0.05	< 0.05
Pyrene	mg/kg	0.05	MCERTS	0.09	< 0.05	0.13	< 0.05	< 0.05
Benzo(a)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.06	< 0.05	< 0.05
Chrysene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	0.08	< 0.05	0.09	< 0.05	< 0.05
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(a)pyrene	mg/kg	0.05	MCERTS	0.05	< 0.05	0.05	< 0.05	< 0.05
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Total PAH								
Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	< 0.80	< 0.80	< 0.80	< 0.80	< 0.80
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	8.3	25	6.6	4.6	7.3
Boron (water soluble)	mg/kg	0.2	MCERTS	0.3	0.8	0.3	0.3	0.4
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Chromium (hexavalent)	mg/kg	1.8	MCERTS	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8
Chromium (III)	mg/kg	1	NONE	22	34	8.8	11	15
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	22	35	9.6	12	15
Copper (aqua regia extractable)	mg/kg	1	MCERTS	27	17	15	15	15
Lead (aqua regia extractable)	mg/kg	1	MCERTS	37	16	17	13	19
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	0.8	< 0.3	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	17	30	6.9	8.3	10
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	75	85	48	41	46

Sample Deviation Report

Analytical Report Number: 23-41920
Project / Site name: A46 Walsgrave

Lab Sample Number				2729696	2729697	2729698	2729699	2729700
Sample Reference				BH104	BH104	BH112	BH112	BH116
Sample Number				VE04230620001	VE04230620002	VE10230620010	VE10230620011	VE10230619010
Depth (m)				0.10	1.00	0.30	0.50	0.30
Date Sampled				20/06/2023	20/06/2023	20/06/2023	20/06/2023	19/06/2023
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Monoaromatics & Oxygenates								
Benzene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Toluene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Ethylbenzene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
p & m-xylene	µg/kg	5	MCERTS	< 5.0##	< 5.0##	< 5.0	< 5.0	< 5.0
o-xylene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Petroleum Hydrocarbons								
TPH-CWG - Aliphatic >EC5 - EC6 $_{HS_1D_AL}$	mg/kg	0.1	NONE	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC6 - EC8 $_{HS_1D_AL}$	mg/kg	0.1	NONE	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC8 - EC10 $_{HS_1D_AL}$	mg/kg	0.1	NONE	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC10 - EC12 $_{EH_CU_1D_AL}$	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16 $_{EH_CU_1D_AL}$	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21 $_{EH_CU_1D_AL}$	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35 $_{EH_CU_1D_AL}$	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic (EC5 - EC35) $_{EH_CU+HS_1D_AL}$	mg/kg	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >EC5 - EC7 $_{HS_1D_AR}$	mg/kg	0.1	NONE	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC7 - EC8 $_{HS_1D_AR}$	mg/kg	0.1	NONE	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC8 - EC10 $_{HS_1D_AR}$	mg/kg	0.1	NONE	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC10 - EC12 $_{EH_CU_1D_AR}$	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >EC12 - EC16 $_{EH_CU_1D_AR}$	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
TPH-CWG - Aromatic >EC16 - EC21 $_{EH_CU_1D_AR}$	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >EC21 - EC35 $_{EH_CU_1D_AR}$	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic (EC5 - EC35) $_{EH_CU+HS_1D_AR}$	mg/kg	10	NONE	< 10	< 10	< 10	< 10	< 10

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

Sample Deviation Report

Analytical Report Number: 23-41920
Project / Site name: A46 Walsgrave

Lab Sample Number				2729701	2729702
Sample Reference				BH116	BH116
Sample Number				VE10230619011	VE10230619020
Depth (m)				0.50	2.00
Date Sampled				19/06/2023	19/06/2023
Time Taken				None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**		
Stone Content	%	0.1	NONE	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	12	16
Total mass of sample received	kg	0.001	NONE	1.3	1.3

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	7.1	7.6
Total Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0
Complex Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0
Free Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0
Total Sulphate as SO4	mg/kg	50	MCERTS	110	160
Total Organic Carbon (TOC) - Automated	%	0.1	MCERTS	0.2	< 0.1

Total Phenols

Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05
Anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05
Pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05
Benzo(a)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05
Chrysene	mg/kg	0.05	MCERTS	< 0.05	< 0.05
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	< 0.05	< 0.05
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	< 0.05	< 0.05
Benzo(a)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	< 0.80	< 0.80

Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	9.3	8.9
Boron (water soluble)	mg/kg	0.2	MCERTS	0.2	0.2
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2
Chromium (hexavalent)	mg/kg	1.8	MCERTS	< 1.8	< 1.8
Chromium (III)	mg/kg	1	NONE	23	18
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	23	18
Copper (aqua regia extractable)	mg/kg	1	MCERTS	20	26
Lead (aqua regia extractable)	mg/kg	1	MCERTS	9.9	12
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	24	20
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	57	55

Sample Deviation Report

Analytical Report Number: 23-41920
Project / Site name: A46 Walsgrave

Lab Sample Number				2729701	2729702
Sample Reference				BH116	BH116
Sample Number				VE10230619011	VE10230619020
Depth (m)				0.50	2.00
Date Sampled				19/06/2023	19/06/2023
Time Taken				None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**		
Monoaromatics & Oxygenates					
Benzene	µg/kg	5	MCERTS	< 5.0	< 5.0
Toluene	µg/kg	5	MCERTS	< 5.0	< 5.0
Ethylbenzene	µg/kg	5	MCERTS	< 5.0	< 5.0
p & m-xylene	µg/kg	5	MCERTS	< 5.0	< 5.0
o-xylene	µg/kg	5	MCERTS	< 5.0	< 5.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	NONE	< 5.0	< 5.0
Petroleum Hydrocarbons					
TPH-CWG - Aliphatic >EC5 - EC6 $_{HS_1D_AL}$	mg/kg	0.1	NONE	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC6 - EC8 $_{HS_1D_AL}$	mg/kg	0.1	NONE	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC8 - EC10 $_{HS_1D_AL}$	mg/kg	0.1	NONE	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC10 - EC12 $_{EH_CU_1D_AL}$	mg/kg	1	MCERTS	< 1.0	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16 $_{EH_CU_1D_AL}$	mg/kg	2	MCERTS	< 2.0	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21 $_{EH_CU_1D_AL}$	mg/kg	8	MCERTS	< 8.0	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35 $_{EH_CU_1D_AL}$	mg/kg	8	MCERTS	< 8.0	< 8.0
TPH-CWG - Aliphatic (EC5 - EC35) $_{EH_CU+HS_1D_AL}$	mg/kg	10	NONE	< 10	< 10
TPH-CWG - Aromatic >EC5 - EC7 $_{HS_1D_AR}$	mg/kg	0.1	NONE	< 0.001	< 0.001
TPH-CWG - Aromatic >EC7 - EC8 $_{HS_1D_AR}$	mg/kg	0.1	NONE	< 0.001	< 0.001
TPH-CWG - Aromatic >EC8 - EC10 $_{HS_1D_AR}$	mg/kg	0.1	NONE	< 0.001	< 0.001
TPH-CWG - Aromatic >EC10 - EC12 $_{EH_CU_1D_AR}$	mg/kg	1	MCERTS	< 1.0	< 1.0
TPH-CWG - Aromatic >EC12 - EC16 $_{EH_CU_1D_AR}$	mg/kg	2	MCERTS	< 2.0	< 2.0
TPH-CWG - Aromatic >EC16 - EC21 $_{EH_CU_1D_AR}$	mg/kg	10	MCERTS	< 10	< 10
TPH-CWG - Aromatic >EC21 - EC35 $_{EH_CU_1D_AR}$	mg/kg	10	MCERTS	< 10	< 10
TPH-CWG - Aromatic (EC5 - EC35) $_{EH_CU+HS_1D_AR}$	mg/kg	10	NONE	< 10	< 10

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

Sample Deviation Report

Analytical Report Number: 23-41920
Project / Site name: A46 Walsgrave

Lab Sample Number				2729703	2729704	2729705
Sample Reference				BH104	BH112	BH116
Sample Number				VE04230620001	VE10230620010	VE10230619010
Depth (m)				0.10	0.30	0.30
Date Sampled				20/06/2023	20/06/2023	19/06/2023
Time Taken				None Supplied	None Supplied	None Supplied
Analytical Parameter (Leachate Analysis)	**Units**	**Limit of detection**	**Accreditation Status**			
General Inorganics						
pH (automated)	pH Units	N/A	ISO 17025	7.3	7.4	7.2
Total Cyanide (Low Level 1 µg/l)	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
Complex Cyanide (Low Level)	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
Free Cyanide (Low Level 1 µg/l)	µg/l	1	ISO 17025	< 1	< 1	< 1
Sulphate as SO_4	mg/l	0.1	ISO 17025	1.1	3.2	2.2
Ammoniacal Nitrogen as N	µg/l	15	NONE	< 15	< 15	< 15
Ammoniacal Nitrogen as NH3	mg/l	0.015	NONE	< 0.015	< 0.015	< 0.015
Ammoniacal Nitrogen as NH4	mg/l	0.015	NONE	0.015	0.015	< 0.015
Total Phenols						
Total Phenols (monohydric)	µg/l	1	ISO 17025	1.7	1.6	1.7
Speciated PAHs						
Naphthalene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01
Acenaphthylene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01
Acenaphthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01
Fluorene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01
Phenanthrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01
Anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01
Fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01
Pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01
Benzo(a)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01
Chrysene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01
Benzo(b)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01
Benzo(k)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01
Benzo(a)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01
Indeno(1,2,3-cd)pyrene	µg/l	0.01	NONE	< 0.01	< 0.01	< 0.01
Dibenz(a,h)anthracene	µg/l	0.01	NONE	< 0.01	< 0.01	< 0.01
Benzo(ghi)perylene	µg/l	0.01	NONE	< 0.01	< 0.01	< 0.01
Total PAH						
Total EPA-16 PAHs	µg/l	0.2	NONE	< 0.2	< 0.2	< 0.2
Heavy Metals / Metalloids						
Arsenic (dissolved)	mg/l	0.001	ISO 17025	< 0.001	0.002	0.001
Boron (dissolved)	mg/l	0.01	ISO 17025	0.02	0.03	0.03
Cadmium (dissolved)	mg/l	0.00008	ISO 17025	< 0.00008	< 0.00008	< 0.00008
Chromium (dissolved)	mg/l	0.0004	ISO 17025	0.001	0.0019	0.0012
Copper (dissolved)	mg/l	0.0007	ISO 17025	0.0249	0.0477	0.025
Lead (dissolved)	mg/l	0.001	ISO 17025	0.002	0.002	0.001
Mercury - CV-AFS	µg/l	0.007	ISO 17025	0.0603	0.0093	0.0079
Nickel (dissolved)	mg/l	0.0003	ISO 17025	0.0025	0.0027	0.0015
Selenium (dissolved)	mg/l	0.004	ISO 17025	< 0.004	< 0.004	< 0.004
Zinc (dissolved)	mg/l	0.0004	ISO 17025	0.0203	0.0216	0.0173

Sample Deviation Report

Analytical Report Number: 23-41920
Project / Site name: A46 Walsgrave

Lab Sample Number				2729703	2729704	2729705
Sample Reference				BH104	BH112	BH116
Sample Number				VE04230620001	VE10230620010	VE10230619010
Depth (m)				0.10	0.30	0.30
Date Sampled				20/06/2023	20/06/2023	19/06/2023
Time Taken				None Supplied	None Supplied	None Supplied
Analytical Parameter (Leachate Analysis)	**Units**	**Limit of detection**	**Accreditation Status**			
Monoaromatics & Oxygenates						
Benzene	µg/l	3	ISO 17025	< 3.0	< 3.0	< 3.0
Toluene	µg/l	3	ISO 17025	< 3.0	< 3.0	< 3.0
Ethylbenzene	µg/l	3	ISO 17025	< 3.0	< 3.0	< 3.0
p & m-xylene	µg/l	3	ISO 17025	< 3.0	< 3.0	< 3.0
o-xylene	µg/l	3	ISO 17025	< 3.0	< 3.0	< 3.0
MTBE (Methyl Tertiary Butyl Ether)	µg/l	10	NONE	< 10	< 10	< 10
Petroleum Hydrocarbons						
TPH-CWG - Aliphatic >C5 - C6 HS_1D_AL	µg/l	1	ISO 17025	< 1.0##	< 1.0##	< 1.0##
TPH-CWG - Aliphatic >C6 - C8 HS_1D_AL	µg/l	1	ISO 17025	< 1.0##	< 1.0##	< 1.0##
TPH-CWG - Aliphatic >C8 - C10 HS_1D_AL	µg/l	1	ISO 17025	< 1.0##	< 1.0##	< 1.0##
TPH-CWG - Aliphatic >C10 - C12 EH_1D_AL_MS	µg/l	10	NONE	< 10	< 10	< 10
TPH-CWG - Aliphatic >C12 - C16 EH_1D_AL_MS	µg/l	10	NONE	< 10	< 10	< 10
TPH-CWG - Aliphatic >C16 - C21 EH_1D_AL_MS	µg/l	10	NONE	< 10	< 10	< 10
TPH-CWG - Aliphatic >C21 - C35 EH_1D_AL_MS	µg/l	10	NONE	< 10	< 10	< 10
TPH-CWG - Aliphatic (C5 - C35) HS+EH_1D_AL_MS	µg/l	10	NONE	< 10	< 10	< 10
TPH-CWG - Aromatic >C5 - C7 HS_1D_AR	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >C7 - C8 HS_1D_AR	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >C8 - C10 HS_1D_AR	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >C10 - C12 EH_1D_AR_MS	µg/l	10	NONE	< 10	< 10	< 10
TPH-CWG - Aromatic >C12 - C16 EH_1D_AR_MS	µg/l	10	NONE	< 10	< 10	< 10
TPH-CWG - Aromatic >C16 - C21 EH_1D_AR_MS	µg/l	10	NONE	< 10	< 10	< 10
TPH-CWG - Aromatic >C21 - C35 EH_1D_AR_MS	µg/l	10	NONE	< 10	< 10	< 10
TPH-CWG - Aromatic (C5 - C35) HS+EH_1D_AR_MS	µg/l	10	NONE	< 10	< 10	< 10

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

Sample Deviation Report

Analytical Report Number : 23-41920
Project / Site name: A46 Walsgrave

* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and loam (MCERTS) soil types. Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
2729696	BH104	VE04230620001	0.1	Brown loam and sand with gravel and vegetation.
2729697	BH104	VE04230620002	1	Brown clay and sand with gravel.
2729698	BH112	VE10230620010	0.3	Brown loam with gravel and vegetation.
2729699	BH112	VE10230620011	0.5	Brown sand with gravel and vegetation.
2729700	BH116	VE10230619010	0.3	Brown loam with gravel and vegetation.
2729701	BH116	VE10230619011	0.5	Brown clay and sand with gravel.
2729702	BH116	VE10230619020	2	Brown sandy clay with gravel.

Sample Deviation Report

Analytical Report Number : 23-41920
Project / Site name: A46 Walsgrave

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
BS EN 12457-2 (10:1) Leachate Prep	10:1 (as recieved, moisture adjusted) end over end extraction with water for 24 hours. Eluate filtered prior to analysis.	In-house method based on BSEN12457-2.	L043-PL	W	NONE
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES.	In-house method based on Second Site Properties version 3	L038-PL	D	MCERTS
Complex cyanide (Low level) in leachate	Determination of complex cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	ISO 17025
Complex Cyanide in soil	Determination of complex cyanide by calculation.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Free cyanide in soil	Determination of free cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
Monohydric phenols in leachate - LOW LEVEL 1 ug/l	Determination of phenols in leachate by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	ISO 17025
Monohydric phenols in soil	Determination of phenols in soil by extraction with sodium hydroxide followed by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	MCERTS
Speciated EPA-16 PAHs in leachate	Determination of PAH compounds in leachate by extraction in dichloromethane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L102B-PL	W	ISO 17025
Speciated EPA-16 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In house method.	L099-PL	D	MCERTS
pH at 20oC in leachate (automated)	Determination of pH in leachate by electrometric measurement.	In house method.	L099B	W	ISO 17025
Total sulphate (as SO4 in soil)	Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES.	In house method.	L038-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
TPHCWG (Leachates)	Determination of dichloromethane extractable hydrocarbons in leachate by GC-MS.	In-house method	L070-PL	W	ISO 17025
Total cyanide in soil	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS

Sample Deviation Report

Analytical Report Number : 23-41920
Project / Site name: A46 Walsgrave

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Total organic carbon (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In house method.	L009-PL	D	MCERTS
BTEX and MTBE in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS. Individual components MCERTS accredited	In-house method based on USEPA8260	L073B-PL	W	MCERTS
BTEX and MTBE in leachates (Monoaromatics)	Determination of BTEX and MTBE in leachates by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	ISO 17025
Ammonia as NH3 in leachate	Determination of Ammonium/Ammonia/ Ammoniacal Nitrogen by the colorimetric salicylate/nitroprusside method.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082-PL	W	NONE
Ammoniacal Nitrogen as N in leachate	Determination of Ammonium/Ammonia/ Ammoniacal Nitrogen by the discrete analyser (colorimetric) salicylate/nitroprusside method.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082-PL	W	NONE
Metals by ICP-OES in leachate	Determination of metals in leachate by acidification followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L039-PL	W	ISO 17025
Boron in leachate	Determination of boron in leachate. Sample acidified and followed by ICP-OES.	In-house method based on MEWAM	L039-PL	W	ISO 17025
Cr (III) in soil	In-house method by calculation from total Cr and Cr VI.	In-house method by calculation	L080-PL	W	NONE
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method with silica gel split/clean up.	L088/76-PL	W	MCERTS
Free cyanide in leachate	Determination of free cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	ISO 17025
Total cyanide in leachate - 1µg/l	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L080-PL	W	ISO 17025
Ammonium as NH4 in leachate	Determination of ammonium in leachate by addition of buffer solution followed by ion selective electrode.	In-house method	L035-PL	W	NONE
Sulphate in leachates	Determination of sulphate in leachate by acidification followed by ICP-OES.	In-house method based on MEWAM 1986 Methods for the Determination of Metals in Soil""	L039-PL	W	ISO 17025
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in NaOH and addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	MCERTS

Sample Deviation Report

Analytical Report Number : 23-41920
Project / Site name: A46 Walsgrave

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Mercury Low Level in leachate	Mercury in leachate by CV-AFS,	In-house method based on USEPA method 1631	L085-PL	W	ISO 17025

For method numbers ending in 'UK or A' analysis have been carried out in our laboratory in the United Kingdom (WATFORD).
For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).
For method numbers ending in 'PL or B' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.
Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

Information in Support of Analytical Results

List of HWOL Acronyms and Operators

Acronym	Descriptions
HS	Headspace Analysis
MS	Mass spectrometry
FID	Flame Ionisation Detector
GC	Gas Chromatography
EH	Extractable Hydrocarbons (i.e. everything extracted by the solvent(s))
CU	Clean-up - e.g. by Florisil®, silica gel
1D	GC - Single coil/column gas chromatography
2D	GC-GC - Double coil/column gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics
AR	Aromatics
#1	EH_2D_Total but with humics mathematically subtracted
#2	EH_2D_Total but with fatty acids mathematically subtracted
_	Operator - understore to separate acronyms (exception for +)
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total

- Quality control parameter has a high recovery (outside of limit); however the associated result is below the reporting limit, other checks applied prior to reporting the data have been accepted. The result should be considered as being deviating and may be compromised.

Sample Deviation Report

Analytical Report Number : 23-41920
Project / Site name: A46 Walsgrave

This deviation report indicates the sample and test deviations that apply to the samples submitted for analysis.Please note that the associated result(s) may be unreliable and should be interpreted with care.

Key: a - No sampling date b - Incorrect container c - Holding time d - Headspace e - Temperature

Sample ID	Other ID	Sample Type	Lab Sample Number	Sample Deviation	Test Name	Test Ref	Test Deviation
BH104	VE04230620001	S	2729696	c	Free cyanide in soil	L080-PL	c
BH104	VE04230620001	S	2729696	c	Complex Cyanide in soil	L080-PL	c
BH104	VE04230620001	S	2729696	c	Total cyanide in soil	L080-PL	c
BH104	VE04230620002	S	2729697	c	Free cyanide in soil	L080-PL	c
BH104	VE04230620002	S	2729697	c	Complex Cyanide in soil	L080-PL	c
BH104	VE04230620002	S	2729697	c	Total cyanide in soil	L080-PL	c
BH112	VE10230620010	S	2729698	c	Free cyanide in soil	L080-PL	c
BH112	VE10230620010	S	2729698	c	Complex Cyanide in soil	L080-PL	c
BH112	VE10230620010	S	2729698	c	Total cyanide in soil	L080-PL	c
BH112	VE10230620011	S	2729699	c	Free cyanide in soil	L080-PL	c
BH112	VE10230620011	S	2729699	c	Complex Cyanide in soil	L080-PL	c
BH112	VE10230620011	S	2729699	c	Total cyanide in soil	L080-PL	c
BH116	VE10230619010	S	2729700	c	Free cyanide in soil	L080-PL	c
BH116	VE10230619010	S	2729700	c	Complex Cyanide in soil	L080-PL	c
BH116	VE10230619010	S	2729700	c	Total cyanide in soil	L080-PL	c
BH116	VE10230619011	S	2729701	c	Free cyanide in soil	L080-PL	c
BH116	VE10230619011	S	2729701	c	Complex Cyanide in soil	L080-PL	c
BH116	VE10230619011	S	2729701	c	Total cyanide in soil	L080-PL	c
BH116	VE10230619020	S	2729702	c	Free cyanide in soil	L080-PL	c
BH116	VE10230619020	S	2729702	c	Complex Cyanide in soil	L080-PL	c
BH116	VE10230619020	S	2729702	c	Total cyanide in soil	L080-PL	c

[redacted]
t:
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Analytical Report Number : 23-42531

Project / Site name:	A46 Walsgrave	**Samples received on:**	22/06/2023
Your job number:	G230651ENV29	**Samples instructed on/ Analysis started on:**	03/07/2023
Your order number:	VE298636	**Analysis completed by:**	10/07/2023
Report Issue Number:	1	**Report issued on:**	10/07/2023
Samples Analysed:	2 leachate samples - 3 soil samples		

[redacted]

For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41-711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils - 4 weeks from reporting
leachates - 2 weeks from reporting
waters - 2 weeks from reporting
asbestos - 6 months from reporting

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Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement.
Application of uncertainty of measurement would provide a range within which the true result lies.
An estimate of measurement uncertainty can be provided on request.

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The results included within the report relate only to the sample(s) submitted for testing.

Analytical Report Number: 23-42531
Project / Site name: A46 Walsgrave
Your Order No: VE298636

Lab Sample Number				2733367	2733368	2733369
Sample Reference				VE10230622003	VE10230622004	VE10230622011
Sample Number				BH107	BH107	BH107
Depth (m)				0.30-0.30	0.50-0.50	1.50-1.50
Date Sampled				22/06/2023	22/06/2023	22/06/2023
Time Taken				None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**			
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	11	6.6	9.9
Total mass of sample received	kg	0.001	NONE	1.3	1.3	1.3
General Inorganics						
pH - Automated	pH Units	N/A	MCERTS	7.9	7.4	7.9
Total Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
Complex Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
Free Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
Total Sulphate as SO4	mg/kg	50	MCERTS	470	230	230
Total Organic Carbon (TOC) - Automated	%	0.1	MCERTS	1.8	1.2	0.8
Total Phenols						
Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
Speciated PAHs						
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.21
Phenanthrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	1.3
Anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.33
Fluoranthene	mg/kg	0.05	MCERTS	0.09	< 0.05	1.8
Pyrene	mg/kg	0.05	MCERTS	0.09	< 0.05	1.5
Benzo(a)anthracene	mg/kg	0.05	MCERTS	0.05	< 0.05	0.97
Chrysene	mg/kg	0.05	MCERTS	0.05	< 0.05	0.99
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	< 0.05	< 0.05	0.9
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	< 0.05	< 0.05	0.36
Benzo(a)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.6
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.27
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.12
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.29
Total PAH						
Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	< 0.80	< 0.80	9.67
Heavy Metals / Metalloids						
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	11	6.7	6
Boron (water soluble)	mg/kg	0.2	MCERTS	0.5	< 0.2	0.7
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2
Chromium (hexavalent)	mg/kg	1.8	MCERTS	< 1.8	< 1.8	< 1.8
Chromium (III)	mg/kg	1	NONE	20	15	22
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	21	15	22
Copper (aqua regia extractable)	mg/kg	1	MCERTS	39	16	16
Lead (aqua regia extractable)	mg/kg	1	MCERTS	35	22	18
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	16	11	23
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	79	50	58

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Analytical Report Number: 23-42531
Project / Site name: A46 Walsgrave
Your Order No: VE298636

Lab Sample Number				2733367	2733368	2733369
Sample Reference				VE10230622003	VE10230622004	VE10230622011
Sample Number				BH107	BH107	BH107
Depth (m)				0.30-0.30	0.50-0.50	1.50-1.50
Date Sampled				22/06/2023	22/06/2023	22/06/2023
Time Taken				None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**			
Monoaromatics & Oxygenates						
Benzene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0
Toluene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0
Ethylbenzene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0
p & m-xylene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0
o-xylene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	NONE	< 5.0	< 5.0	< 5.0
Petroleum Hydrocarbons						
TPH-CWG - Aliphatic >EC5 - EC6 $_{HS_1D_AL}$	mg/kg	0.001	NONE	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC6 - EC8 $_{HS_1D_AL}$	mg/kg	0.001	NONE	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC8 - EC10 $_{HS_1D_AL}$	mg/kg	0.001	NONE	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC10 - EC12 $_{EH_CU_1D_AL}$	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16 $_{EH_CU_1D_AL}$	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21 $_{EH_CU_1D_AL}$	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35 $_{EH_CU_1D_AL}$	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic (EC5 - EC35) $_{EH_CU+HS_1D_AL}$	mg/kg	10	NONE	< 10	< 10	< 10
TPH-CWG - Aromatic >EC5 - EC7 $_{HS_1D_AR}$	mg/kg	0.001	NONE	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC7 - EC8 $_{HS_1D_AR}$	mg/kg	0.001	NONE	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC8 - EC10 $_{HS_1D_AR}$	mg/kg	0.001	NONE	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC10 - EC12 $_{EH_CU_1D_AR}$	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >EC12 - EC16 $_{EH_CU_1D_AR}$	mg/kg	2	MCERTS	< 2.0	< 2.0	2.4
TPH-CWG - Aromatic >EC16 - EC21 $_{EH_CU_1D_AR}$	mg/kg	10	MCERTS	< 10	< 10	< 10
TPH-CWG - Aromatic >EC21 - EC35 $_{EH_CU_1D_AR}$	mg/kg	10	MCERTS	< 10	< 10	11
TPH-CWG - Aromatic (EC5 - EC35) $_{EH_CU+HS_1D_AR}$	mg/kg	10	NONE	< 10	< 10	19

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

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The results included within the report relate only to the sample(s) submitted for testing.

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Analytical Report Number: 23-42531
Project / Site name: A46 Walsgrave

Your Order No: VE298636

Lab Sample Number				2733370	2733371
Sample Reference				VE10230622003	VE10230622004
Sample Number				BH107	BH107
Depth (m)				0.30-0.30	0.50-0.50
Date Sampled				22/06/2023	22/06/2023
Time Taken				None Supplied	None Supplied
Analytical Parameter (Leachate Analysis)	**Units**	**Limit of detection**	**Accreditation Status**		
General Inorganics					
pH (automated)	pH Units	N/A	ISO 17025	7	7.5
Total Cyanide (Low Level 1 µg/l)	µg/l	1	ISO 17025	< 1.0	< 1.0
Complex Cyanide (Low Level)	µg/l	1	ISO 17025	< 1.0	< 1.0
Free Cyanide (Low Level 1 µg/l)	µg/l	1	ISO 17025	< 1	< 1
Sulphate as SO_4	mg/l	0.1	ISO 17025	0.7	1.9
Ammoniacal Nitrogen as N	µg/l	15	NONE	92	51
Ammoniacal Nitrogen as NH3	mg/l	0.015	NONE	0.11	0.062
Ammoniacal Nitrogen as NH4	mg/l	0.015	NONE	0.12	0.065
Total Phenols					
Total Phenols (monohydric)	µg/l	1	ISO 17025	< 1.0	< 1.0
Speciated PAHs					
Naphthalene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Acenaphthylene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Acenaphthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Fluorene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Phenanthrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Benzo(a)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Chrysene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Benzo(b)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Benzo(k)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Benzo(a)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Indeno(1,2,3-cd)pyrene	µg/l	0.01	NONE	< 0.01	< 0.01
Dibenz(a,h)anthracene	µg/l	0.01	NONE	< 0.01	< 0.01
Benzo(ghi)perylene	µg/l	0.01	NONE	< 0.01	< 0.01
Total PAH					
Total EPA-16 PAHs	µg/l	0.2	NONE	< 0.2	< 0.2
Heavy Metals / Metalloids					
Arsenic (dissolved)	mg/l	0.001	ISO 17025	< 0.001	< 0.001
Boron (dissolved)	mg/l	0.01	ISO 17025	0.01	0.01
Cadmium (dissolved)	mg/l	0.00008	ISO 17025	< 0.00008	< 0.00008
Chromium (dissolved)	mg/l	0.0004	ISO 17025	0.0027	0.0022
Copper (dissolved)	mg/l	0.0007	ISO 17025	0.0392	0.0363
Lead (dissolved)	mg/l	0.001	ISO 17025	0.005	0.064
Mercury - CV-AFS	µg/l	0.007	ISO 17025	0.022	0.0194
Nickel (dissolved)	mg/l	0.0003	ISO 17025	0.0018	0.0017
Selenium (dissolved)	mg/l	0.004	ISO 17025	< 0.004	< 0.004
Zinc (dissolved)	mg/l	0.0004	ISO 17025	0.0162	0.0155

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The results included within the report relate only to the sample(s) submitted for testing.

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Analytical Report Number: 23-42531
Project / Site name: A46 Walsgrave

Your Order No: VE298636

Lab Sample Number				2733370	2733371
Sample Reference				VE10230622003	VE10230622004
Sample Number				BH107	BH107
Depth (m)				0.30-0.30	0.50-0.50
Date Sampled				22/06/2023	22/06/2023
Time Taken				None Supplied	None Supplied
Analytical Parameter (Leachate Analysis)	**Units**	**Limit of detection**	**Accreditation Status**		
Monoaromatics & Oxygenates					
Benzene	µg/l	3	NONE	< 3.0^	< 3.0
Toluene	µg/l	3	NONE	< 3.0^	< 3.0
Ethylbenzene	µg/l	3	NONE	< 3.0^	< 3.0
p & m-xylene	µg/l	3	NONE	< 3.0^	< 3.0
o-xylene	µg/l	3	NONE	< 3.0^	< 3.0
MTBE (Methyl Tertiary Butyl Ether)	µg/l	10	NONE	< 10^	< 10
Petroleum Hydrocarbons					
TPH-CWG - Aliphatic >C5 - C6 $_{HS_1D_AL}$	µg/l	1	ISO 17025	< 1.0##	< 1.0##
TPH-CWG - Aliphatic >C6 - C8 $_{HS_1D_AL}$	µg/l	1	ISO 17025	< 1.0##	< 1.0##
TPH-CWG - Aliphatic >C8 - C10 $_{HS_1D_AL}$	µg/l	1	ISO 17025	< 1.0##	< 1.0##
TPH-CWG - Aliphatic >C10 - C12 $_{EH_1D_AL_MS}$	µg/l	10	NONE	< 10	< 10
TPH-CWG - Aliphatic >C12 - C16 $_{EH_1D_AL_MS}$	µg/l	10	NONE	< 10	< 10
TPH-CWG - Aliphatic >C16 - C21 $_{EH_1D_AL_MS}$	µg/l	10	NONE	< 10	< 10
TPH-CWG - Aliphatic >C21 - C35 $_{EH_1D_AL_MS}$	µg/l	10	NONE	< 10	< 10
TPH-CWG - Aliphatic (C5 - C35) $_{HS+EH_1D_AL_MS}$	µg/l	10	NONE	< 10	< 10
TPH-CWG - Aromatic >C5 - C7 $_{HS_1D_AR}$	µg/l	1	ISO 17025	< 1.0	< 1.0
TPH-CWG - Aromatic >C7 - C8 $_{HS_1D_AR}$	µg/l	1	ISO 17025	< 1.0	< 1.0
TPH-CWG - Aromatic >C8 - C10 $_{HS_1D_AR}$	µg/l	1	ISO 17025	< 1.0	< 1.0
TPH-CWG - Aromatic >C10 - C12 $_{EH_1D_AR_MS}$	µg/l	10	NONE	< 10	< 10
TPH-CWG - Aromatic >C12 - C16 $_{EH_1D_AR_MS}$	µg/l	10	NONE	< 10	< 10
TPH-CWG - Aromatic >C16 - C21 $_{EH_1D_AR_MS}$	µg/l	10	NONE	< 10	< 10
TPH-CWG - Aromatic >C21 - C35 $_{EH_1D_AR_MS}$	µg/l	10	NONE	< 10	< 10
TPH-CWG - Aromatic (C5 - C35) $_{HS+EH_1D_AR_MS}$	µg/l	10	NONE	< 10	< 10

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

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Analytical Report Number : 23-42531
Project / Site name: A46 Walsgrave

* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and loam (MCERTS) soil types. Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
2733367	VE10230622003	BH107	0.30-0.30	Brown sandy clay with gravel and vegetation.
2733368	VE10230622004	BH107	0.50-0.50	Brown sand with gravel and vegetation.
2733369	VE10230622011	BH107	1.50-1.50	Brown sandy clay with gravel.

Analytical Report Number : 23-42531
Project / Site name: A46 Walsgrave

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
BS EN 12457-2 (10:1) Leachate Prep	10:1 (as recieved, moisture adjusted) end over end extraction with water for 24 hours. Eluate filtered prior to analysis.	In-house method based on BSEN12457-2.	L043-PL	W	NONE
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES.	In-house method based on Second Site Properties version 3	L038-PL	D	MCERTS
Complex cyanide (Low level) in leachate	Determination of complex cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	ISO 17025
Complex Cyanide in soil	Determination of complex cyanide by calculation.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Free cyanide in soil	Determination of free cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
Monohydric phenols in leachate - LOW LEVEL 1 ug/l	Determination of phenols in leachate by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	ISO 17025
Monohydric phenols in soil	Determination of phenols in soil by extraction with sodium hydroxide followed by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	MCERTS
Speciated EPA-16 PAHs in leachate	Determination of PAH compounds in leachate by extraction in dichloromethane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L102B-PL	W	ISO 17025
Speciated EPA-16 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In house method.	L099-PL	D	MCERTS
pH at 20oC in leachate (automated)	Determination of pH in leachate by electrometric measurement.	In house method.	L099B	W	ISO 17025
Total sulphate (as SO4 in soil)	Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES.	In house method.	L038-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
TPHCWG (Leachates)	Determination of dichloromethane extractable hydrocarbons in leachate by GC-MS.	In-house method	L070-PL	W	ISO 17025
Total cyanide in soil	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS

Analytical Report Number : 23-42531
Project / Site name: A46 Walsgrave

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Total organic carbon (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In house method.	L009-PL	D	MCERTS
BTEX and MTBE in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS. Individual components MCERTS accredited	In-house method based on USEPA8260	L073B-PL	W	MCERTS
BTEX and MTBE in leachates (Monoaromatics)	Determination of BTEX and MTBE in leachates by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	ISO 17025
Ammonia as NH3 in leachate	Determination of Ammonium/Ammonia/ Ammoniacal Nitrogen by the colorimetric salicylate/nitroprusside method.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082-PL	W	NONE
Ammoniacal Nitrogen as N in leachate	Determination of Ammonium/Ammonia/ Ammoniacal Nitrogen by the discrete analyser (colorimetric) salicylate/nitroprusside method.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082-PL	W	NONE
Metals by ICP-OES in leachate	Determination of metals in leachate by acidification followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L039-PL	W	ISO 17025
Boron in leachate	Determination of boron in leachate. Sample acidified and followed by ICP-OES.	In-house method based on MEWAM	L039-PL	W	ISO 17025
Cr (III) in soil	In-house method by calculation from total Cr and Cr VI.	In-house method by calculation	L080-PL	W	NONE
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method with silica gel split/clean up.	L088/76-PL	W	MCERTS
Free cyanide in leachate	Determination of free cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	ISO 17025
Total cyanide in leachate - 1µg/l	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L080-PL	W	ISO 17025
Ammonium as NH4 in leachate	Determination of ammonium in leachate by addition of buffer solution followed by ion selective electrode.	In-house method	L035-PL	W	NONE
Sulphate in leachates	Determination of sulphate in leachate by acidification followed by ICP-OES.	In-house method based on MEWAM 1986 Methods for the Determination of Metals in Soil""	L039-PL	W	ISO 17025
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in NaOH and addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	MCERTS

Analytical Report Number : 23-42531
Project / Site name: A46 Walsgrave

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Mercury Low Level in leachate	Mercury in leachate by CV-AFS,	In-house method based on USEPA method 1631	L085-PL	W	ISO 17025

For method numbers ending in 'UK or A' analysis have been carried out in our laboratory in the United Kingdom (WATFORD).
For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).
For method numbers ending in 'PL or B' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.
Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

Information in Support of Analytical Results

List of HWOL Acronyms and Operators

Acronym	Descriptions
HS	Headspace Analysis
MS	Mass spectrometry
FID	Flame Ionisation Detector
GC	Gas Chromatography
EH	Extractable Hydrocarbons (i.e. everything extracted by the solvent(s))
CU	Clean-up - e.g. by Florisil®, silica gel
1D	GC - Single coil/column gas chromatography
2D	GC-GC - Double coil/column gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics
AR	Aromatics
#1	EH_2D_Total but with humics mathematically subtracted
#2	EH_2D_Total but with fatty acids mathematically subtracted
_	Operator - understore to separate acronyms (exception for +)
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total

- Quality control parameter has a high recovery (outside of limit); however the associated result is below the reporting limit, other checks applied prior to reporting the data have been accepted. The result should be considered as being deviating and may be compromised.
^ - Data reported unaccredited due to quality control parameter failure associated with this result; The result should be considered as being deviating and may be compromised.

Sample Deviation Report

Analytical Report Number : 23-42531
Project / Site name: A46 Walsgrave

This deviation report indicates the sample and test deviations that apply to the samples submitted for analysis.Please note that the associated result(s) may be unreliable and should be interpreted with care.

Key: a - No sampling date b - Incorrect container c - Holding time d - Headspace e - Temperature

Sample ID	Other ID	Sample Type	Lab Sample Number	Sample Deviation	Test Name	Test Ref	Test Deviation
VE10230622003	BH107	S	2733367	c	Free cyanide in soil	L080-PL	c
VE10230622003	BH107	S	2733367	c	Complex Cyanide in soil	L080-PL	c
VE10230622003	BH107	S	2733367	c	Total cyanide in soil	L080-PL	c
VE10230622004	BH107	S	2733368	c	Free cyanide in soil	L080-PL	c
VE10230622004	BH107	S	2733368	c	Complex Cyanide in soil	L080-PL	c
VE10230622004	BH107	S	2733368	c	Total cyanide in soil	L080-PL	c
VE10230622011	BH107	S	2733369	c	Free cyanide in soil	L080-PL	c
VE10230622011	BH107	S	2733369	c	Complex Cyanide in soil	L080-PL	c
VE10230622011	BH107	S	2733369	c	Total cyanide in soil	L080-PL	c

LABORATORY REPORT

Contract Number: PSL23/3984

Report Date: 06 July 2023

Client's Reference: G230651

Client Name: Strata Geotechnics
Kirkby Lane
Pinxton
Nottinghamshire
NG16 6JA

For the attention of: Izaac Lovatt

Contract Title: A46 Walsgrave

Date Received: 25/5/2023
Date Commenced: 25/5/2023
Date Completed: 6/7/2023

Notes: Opinions and Interpretations are outside the UKAS Accreditation

A copy of the Laboratory Schedule of accredited tests as issued by UKAS is attached to this report. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced other than in full, without the prior written approval of the laboratory.

Checked and Approved Signatories:

[redacted]

(Director) (Quality Manager) (Laboratory Manager)

[redacted]

(Assistant Laboratory Manager) (Senior Technician) (Senior Technician)

5 – 7 Hexthorpe Road,
Hexthorpe,
Doncaster,
DN4 0AR
Tel: 01302 768098
Email: [redacted]

SUMMARY OF LABORATORY SOIL DESCRIPTIONS

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Description of Sample
BH102	22	B	4.50	5.00	Brown very sandy silty GRAVEL.
BH102	25	D	6.20	6.20	Reddish brown slightly gravelly sandy CLAY.
BH102	28	B	6.50	7.00	Reddish brown slightly gravelly sandy CLAY.
BH102	38	D	8.10	8.20	Reddish brown slightly gravelly very sandy CLAY.
BH102	32	B	8.80	9.00	Reddish brown slightly gravelly very sandy CLAY.
BH102	40	D	9.60	9.70	Reddish brown slightly gravelly silty CLAY.
BH103	5	B	0.90	1.00	Brown very gravelly very sandy CLAY.
BH103	8	D	1.30	1.30	Brown very gravelly very sandy CLAY.
BH103	14	D	2.40	2.40	Brown gravelly slightly clayey silty SAND.
BH103	22	B	3.50	3.60	Brown very gravelly silty SAND.
BH103	27	UT	4.50	4.95	Soft reddish brown gravelly sandy CLAY.
BH103	29	D	4.60	4.60	Reddish brown slightly gravelly sandy CLAY.
BH103	31	D	5.00	5.00	Reddish brown slightly gravelly sandy CLAY.
BH103	38	D	6.50	6.50	Reddish brown slightly gravelly sandy CLAY.
BH103	40	UT	7.00	7.45	Stiff reddish brown slightly gravelly sandy CLAY.
BH103	46	B	8.00	8.10	Reddish brown slightly gravelly sandy CLAY.
BH103	48	D	8.50	8.50	Reddish brown slightly gravelly sandy CLAY.
BH103	53	D	10.00	10.00	Reddish brown slightly gravelly sandy CLAY.
BH103	54	UT	10.00	10.45	Very stiff reddish brown gravelly sandy CLAY. Gravel is mudstone.

SUMMARY OF SOIL CLASSIFICATION TESTS

(BS1377 : PART 2 : 1990)

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Moisture Content % Clause 3.2	Linear Shrinkage % Clause 6.5	Particle Density Mg/m^3 Clause 8.2	Liquid Limit % Clause 4.3/4	Plastic Limit % Clause 5.3	Plasticity Index % Clause 5.4	Passing .425mm %	Remarks
BH102	25	D	6.20	6.20	12			39	20	19	97	Intermediate Plasticity CI
BH102	38	D	8.10	8.20	14			33	17	16	95	Low Plasticity CL
BH102	40	D	9.60	9.70	13			35	18	17	92	Intermediate Plasticity CI
BH103	8	D	1.30	1.30	10			27	13	14	59	Low Plasticity CL
BH103	14	D	2.40	2.40	9.6				NP			
BH103	29	D	4.60	4.60	27			48	23	25	93	Intermediate Plasticity CI
BH103	38	D	6.50	6.50	19			43	21	22	95	Intermediate Plasticity CI
BH103	48	D	8.50	8.50	18			39	19	20	97	Intermediate Plasticity CI
BH103	53	D	10.00	10.00	10			37	20	17	90	Intermediate Plasticity CI

SYMBOLS : NP : Non Plastic * : Liquid Limit and Plastic Limit Wet Sieved.

UKAS TESTING 4043

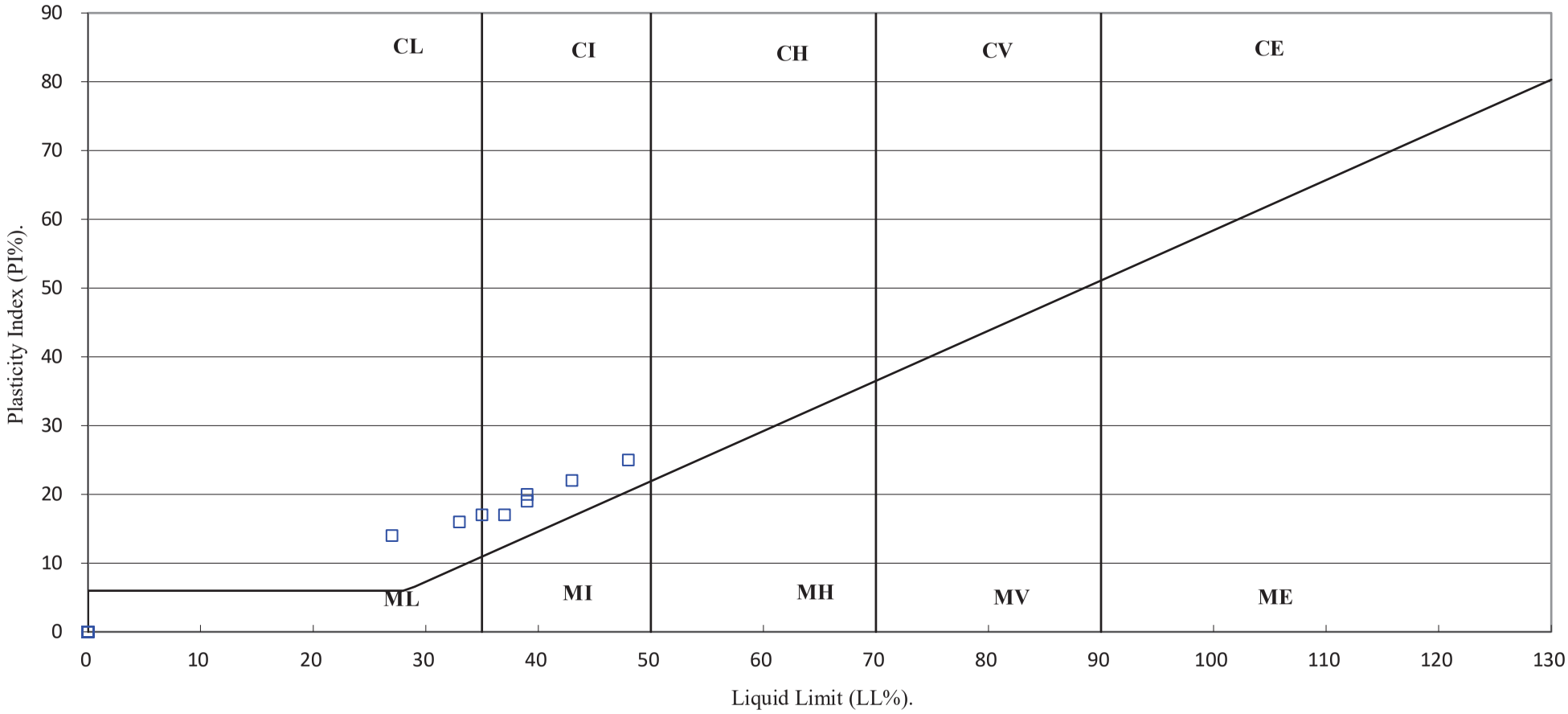
PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

Contract No: PSL23/3984

Client Ref: G230651

PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION.



UKAS TESTING 4043	PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY	A46 Walsgrave

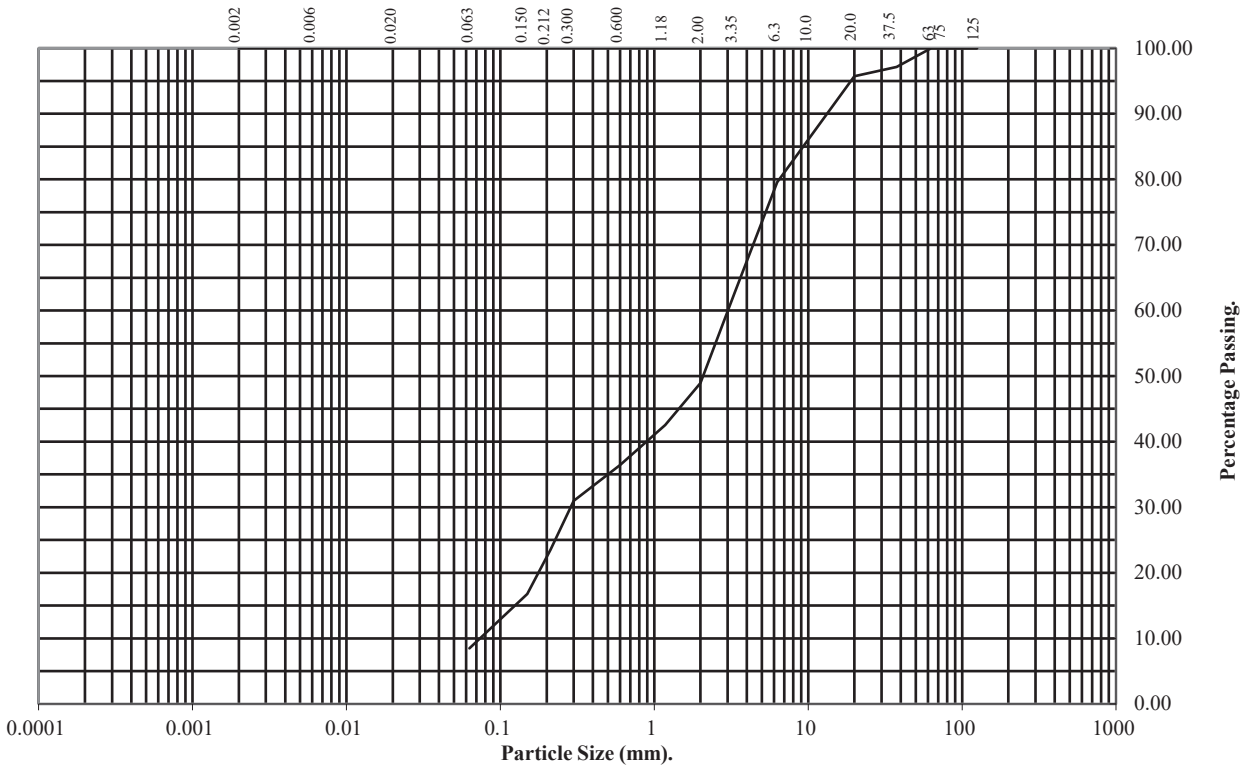
Contract No:
PSL23/3984
Client Ref:
G230651

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number:	**BH102**	**Top Depth (m):**	**4.50**
Sample Number:	**22**	**Base Depth(m):**	**5.00**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	97
20	96
10	86
6.3	80
3.35	63
2	49
1.18	43
0.6	36
0.3	31
0.212	24
0.15	17
0.063	8

Soil Fraction	Total Percentage
Cobbles	0
Gravel	51
Sand	41
Silt/Clay	8

Remarks:

See Summary of Soil Descriptions

UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

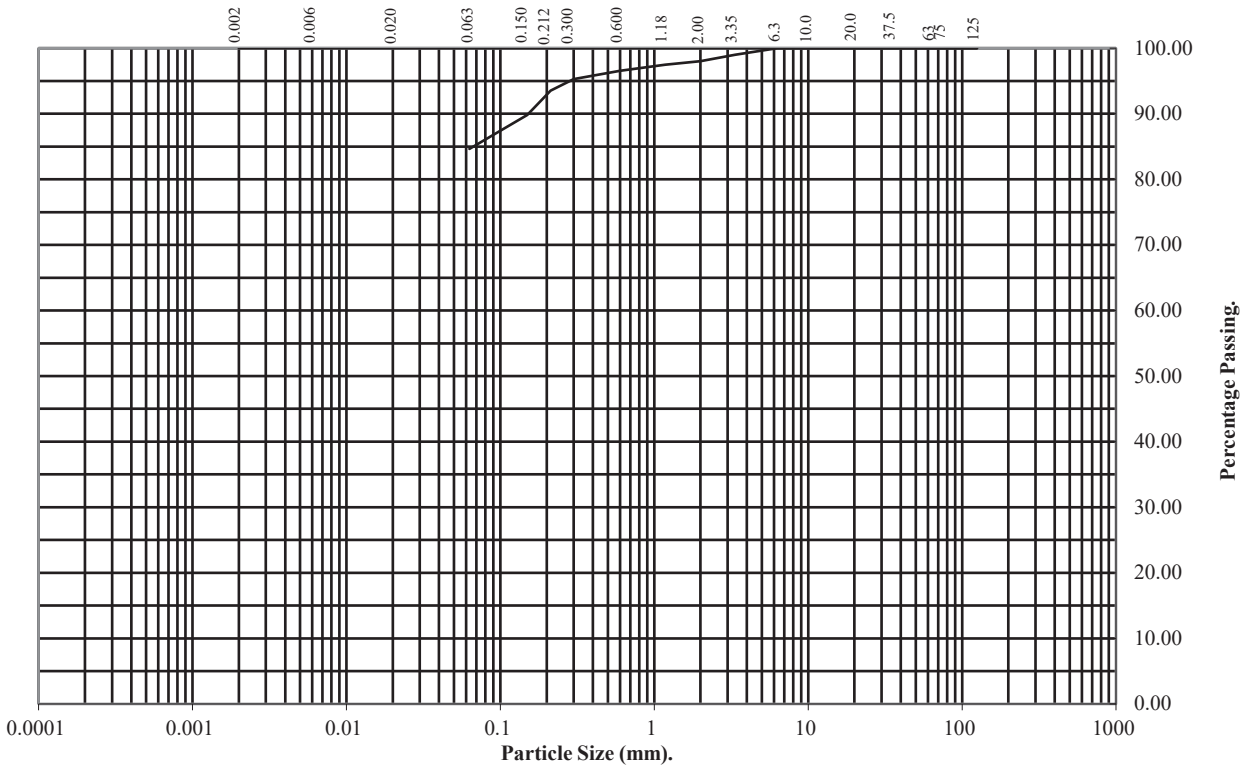
Contract No:
PSL23/3984
Client Ref:
G230651

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number:	**BH102**	**Top Depth (m):**	**6.50**
Sample Number:	**28**	**Base Depth(m):**	**7.00**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	100
6.3	100
3.35	99
2	98
1.18	97
0.6	97
0.3	95
0.212	94
0.15	90
0.063	85

Soil Fraction	Total Percentage
Cobbles	0
Gravel	2
Sand	13
Silt/Clay	85

Remarks:
See Summary of Soil Descriptions

UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

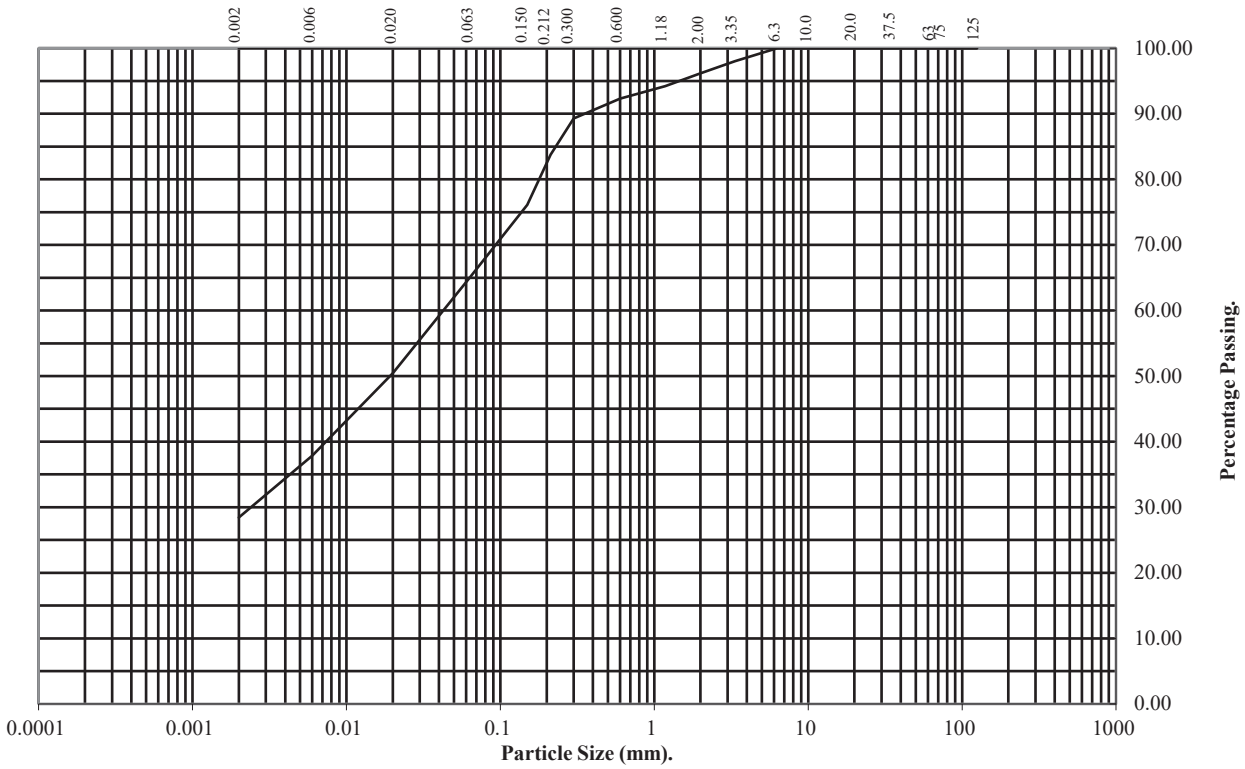
Contract No:	
PSL23/3984	
Client Ref:	
G230651	

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

Hole Number:	**BH102**	**Top Depth (m):**	**8.80**
Sample Number:	**32**	**Base Depth(m):**	**9.00**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	100
6.3	100
3.35	98
2	96
1.18	94
0.6	92
0.3	89
0.212	84
0.15	76
0.063	65

Particle Diameter	Percentage Passing
0.02	50
0.006	38
0.002	28

Soil Fraction	Total Percentage
Cobbles	0
Gravel	4
Sand	31
Silt	37
Clay	28

Remarks:
See Summary of Soil Descriptions

UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

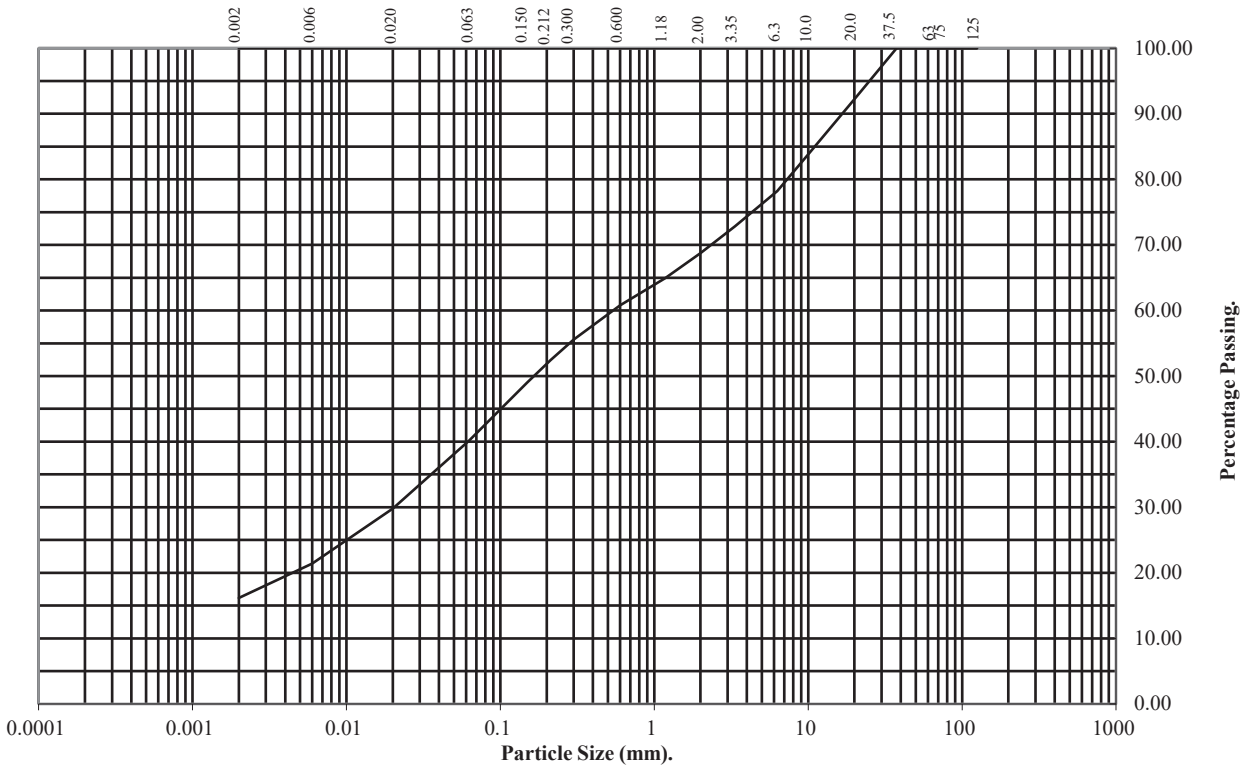
Contract No:
PSL23/3984
Client Ref:
G230651

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

Hole Number:	**BH103**	**Top Depth (m):**	**0.90**
Sample Number:	**5**	**Base Depth(m):**	**1.00**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	92
10	84
6.3	78
3.35	73
2	69
1.18	65
0.6	61
0.3	56
0.212	52
0.15	49
0.063	40

Particle Diameter	Percentage Passing
0.02	30
0.006	21
0.002	16

Soil Fraction	Total Percentage
Cobbles	0
Gravel	31
Sand	29
Silt	24
Clay	16

Remarks:
See Summary of Soil Descriptions

UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

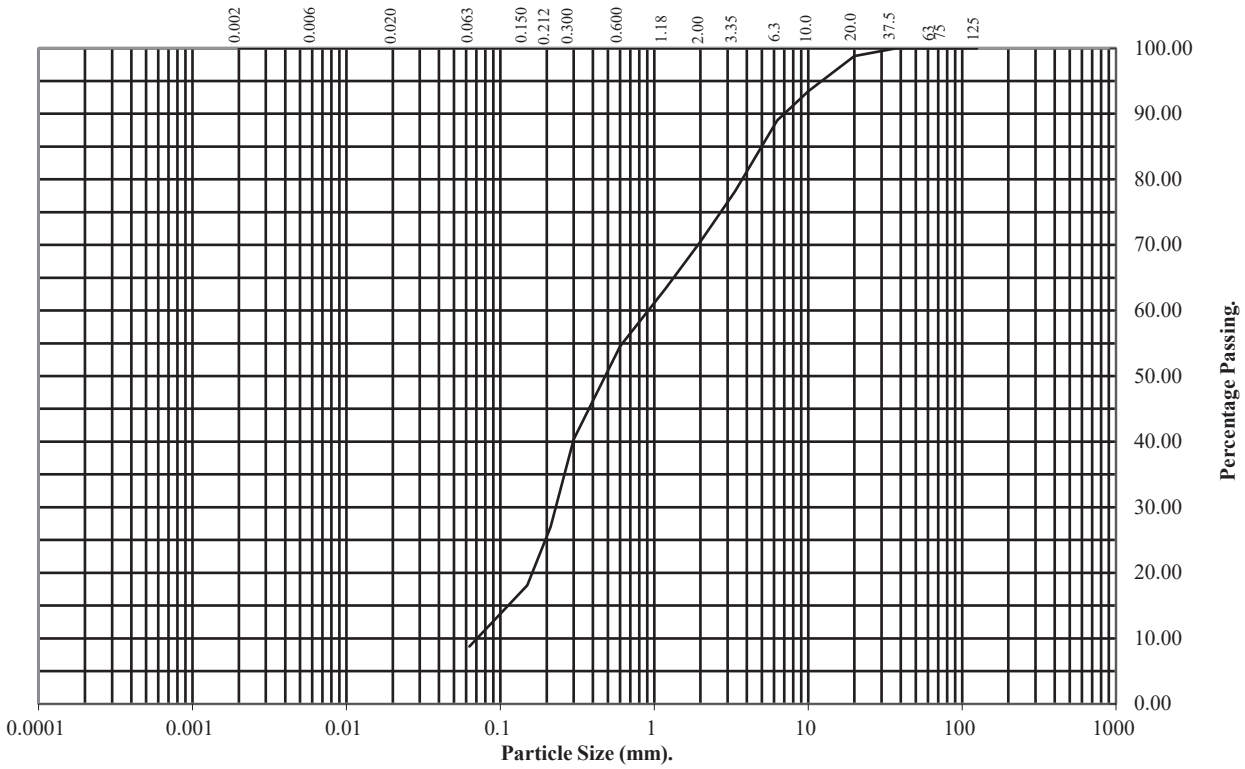
Contract No:
PSL23/3984
Client Ref:
G230651

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number:	**BH103**	**Top Depth (m):**	**3.50**
Sample Number:	**22**	**Base Depth(m):**	**3.60**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	99
10	93
6.3	89
3.35	78
2	70
1.18	63
0.6	55
0.3	40
0.212	27
0.15	18
0.063	9

Soil Fraction	Total Percentage
Cobbles	0
Gravel	30
Sand	61
Silt/Clay	9

Remarks:
See Summary of Soil Descriptions

UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

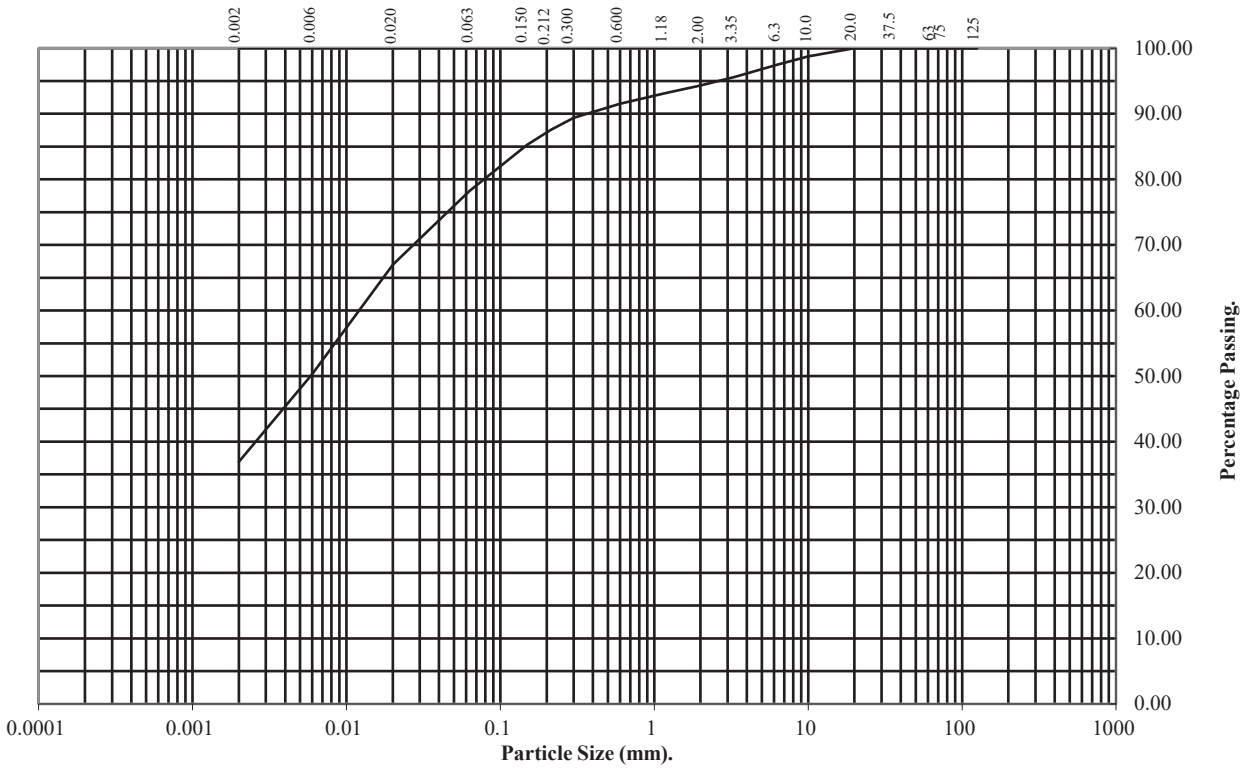
Contract No:
PSL23/3984
Client Ref:
G230651

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

Hole Number:	**BH103**	**Top Depth (m):**	**5.00**
Sample Number:	**31**	**Base Depth(m):**	**5.00**
Sample Type:	**D**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	99
6.3	97
3.35	96
2	94
1.18	93
0.6	92
0.3	89
0.212	88
0.15	85
0.063	78

Particle Diameter	Percentage Passing
0.02	67
0.006	50
0.002	37

Soil Fraction	Total Percentage
Cobbles	0
Gravel	6
Sand	16
Silt	41
Clay	37

Remarks:
See Summary of Soil Descriptions

UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

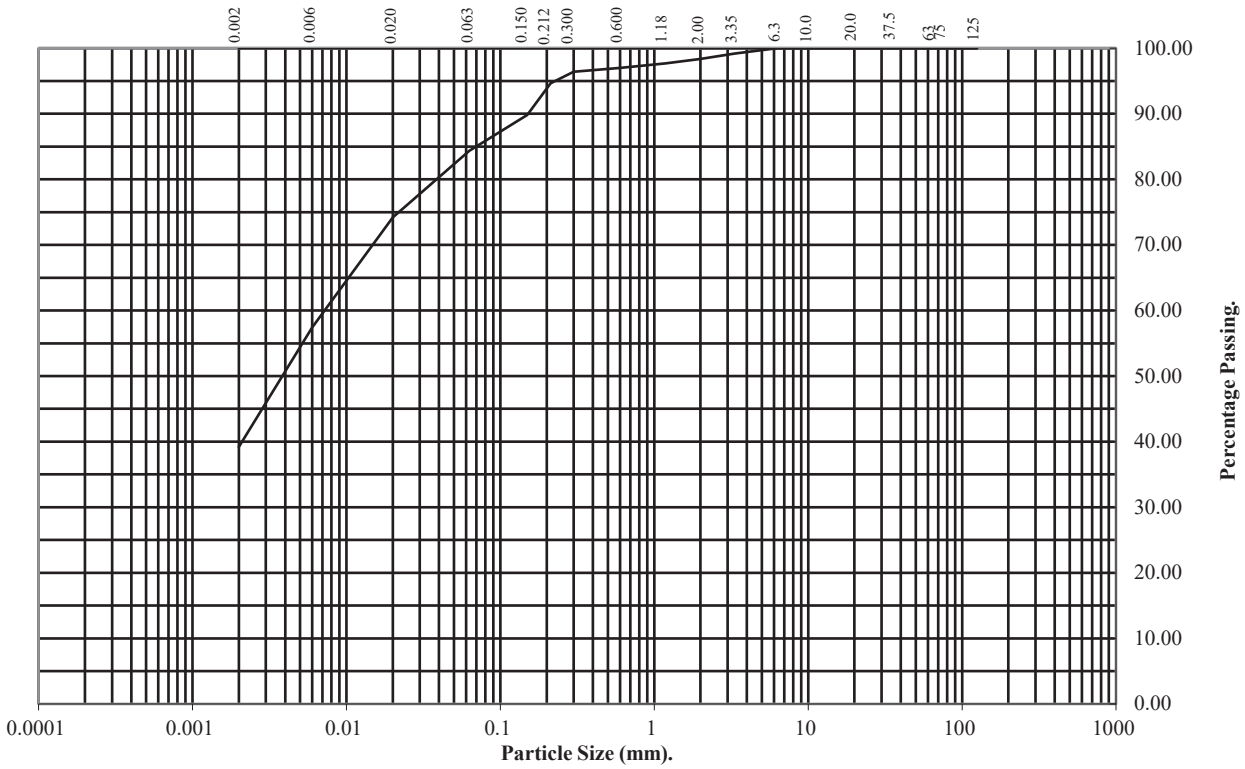
Contract No:
PSL23/3984
Client Ref:
G230651

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

Hole Number:	**BH103**	**Top Depth (m):**	**8.00**
Sample Number:	**46**	**Base Depth(m):**	**8.10**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	100
6.3	100
3.35	99
2	98
1.18	98
0.6	97
0.3	96
0.212	95
0.15	90
0.063	84

Particle Diameter	Percentage Passing
0.02	74
0.006	57
0.002	39

Soil Fraction	Total Percentage
Cobbles	0
Gravel	2
Sand	14
Silt	45
Clay	39

Remarks:
See Summary of Soil Descriptions

UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

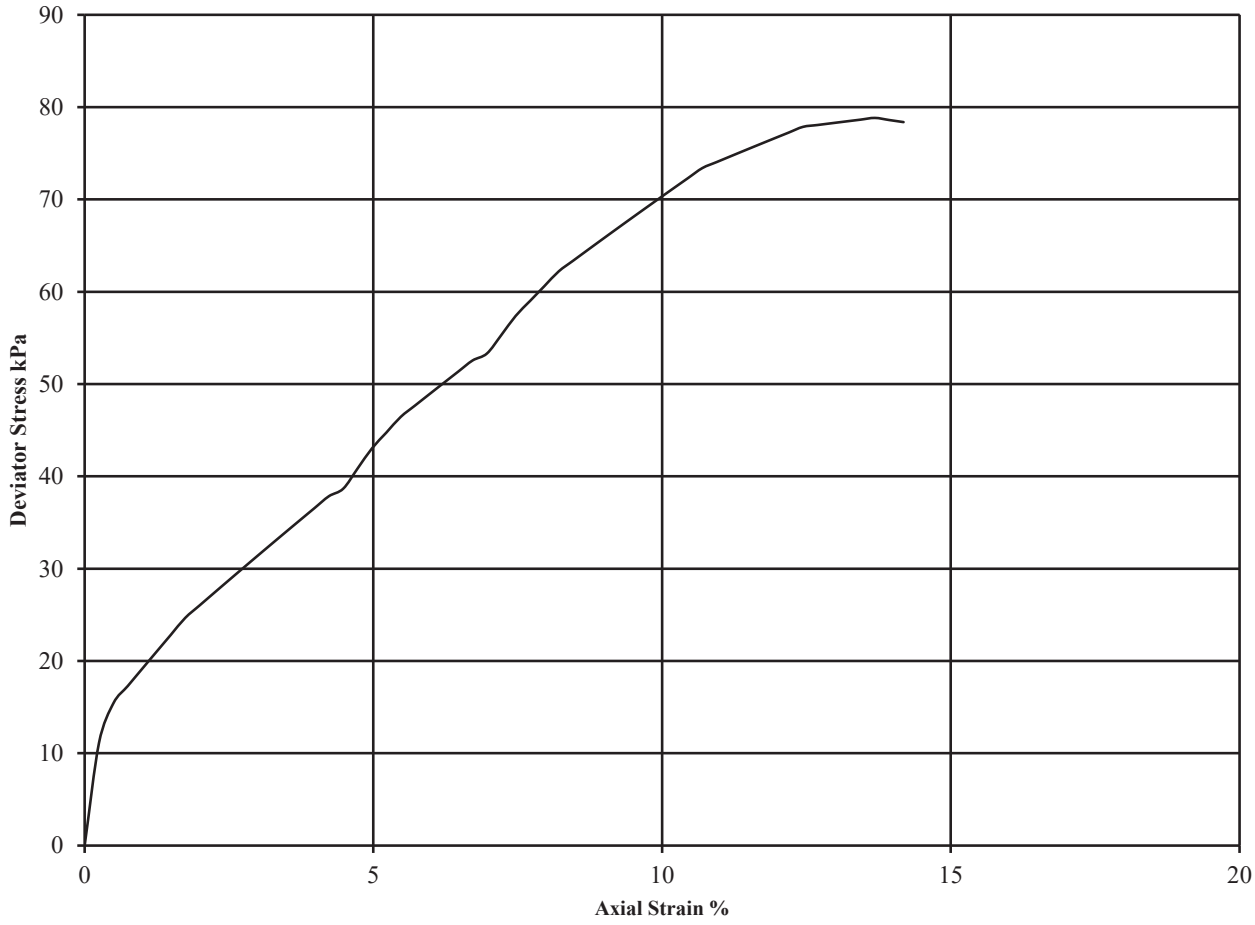
Contract No:
PSL23/3984
Client Ref:
G230651

UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION

WITHOUT MEASUREMENT OF PORE PRESSURE

BS1377 : Part7 : 1990: Clause 9

Hole Number:	**BH103**	**Top Depth (m):**	**4.50**
Sample Number:	**27**	**Base Depth (m):**	**4.95**
Sample Type	**UT**		



Diameter (mm):		103	Height (mm):		207	Test:	UU Multistage		Remarks
Specimen	Moisture Content (%)	Bulk Density (Mg/m3)	Dry Density (Mg/m3)	Cell Pressure (kPa) θ_3	Corr. Max. Deviator Stress (kPa) $(\theta_1-\theta_3)_f$	Shear Strength Cu (kPa) $^1/_2(\theta_1-\theta_3)_f$	Failure Strain (%)	Mode of Failure	Undisturbed Sample Sample taken from top of tube Rate of strain = 2 %/min Latex Membrane used 0.2 mm thick Membrane Correction applied (kPa)
1	22	2.10	1.71	45	39	19	4.5		0.36 0.36 0.34
				90	53	27	7.0		See summary of soil descriptions
				180	79	39	13.7	Plastic	

UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

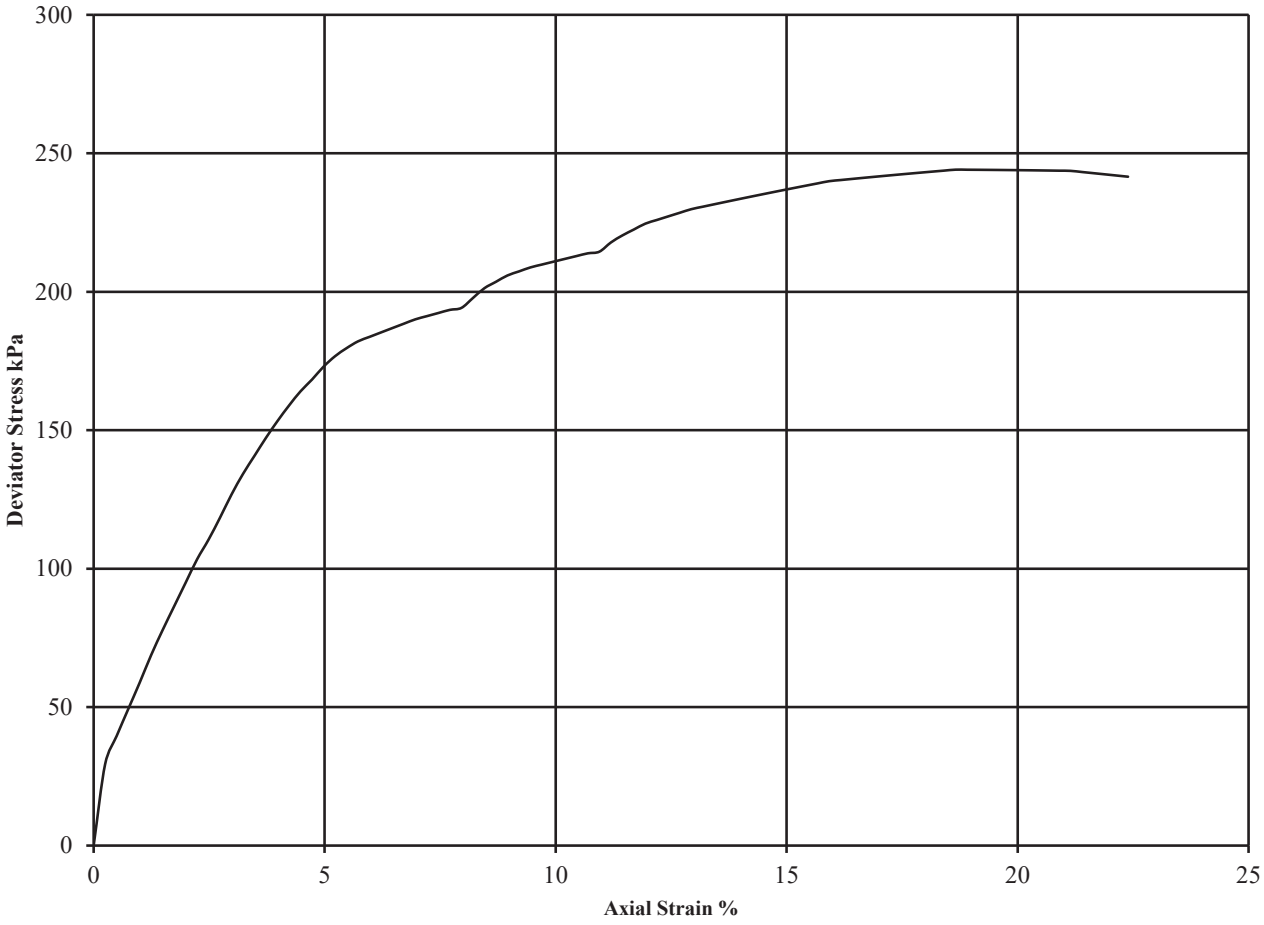
Contract No:
PSL23/3984
Client Ref:
G230651

UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION

WITHOUT MEASUREMENT OF PORE PRESSURE

BS1377 : Part7 : 1990: Clause 9

Hole Number:	**BH103**	**Top Depth (m):**	**7.00**
Sample Number:	**40**	**Base Depth (m):**	**7.45**
Sample Type	**UT**		



Diameter (mm):		103	Height (mm):		207	Test:	UU Multistage		Remarks
Specimen	Moisture Content (%)	Bulk Density (Mg/m3)	Dry Density (Mg/m3)	Cell Pressure (kPa) θ_3	Corr. Max. Deviator Stress (kPa) $(\theta_1-\theta_3)_f$	Shear Strength Cu (kPa) $^1/_2(\theta_1-\theta_3)_f$	Failure Strain (%)	Mode of Failure	Undisturbed Sample Sample taken from top of tube Rate of strain = 2 %/min Latex Membrane used 0.2 mm thick Membrane Correction applied (kPa)
1	19	2.16	1.82	75	194	97	8.0		0.35 0.35 0.33
				150	214	107	10.9		See summary of soil descriptions
				300	244	122	18.7	Plastic	

UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

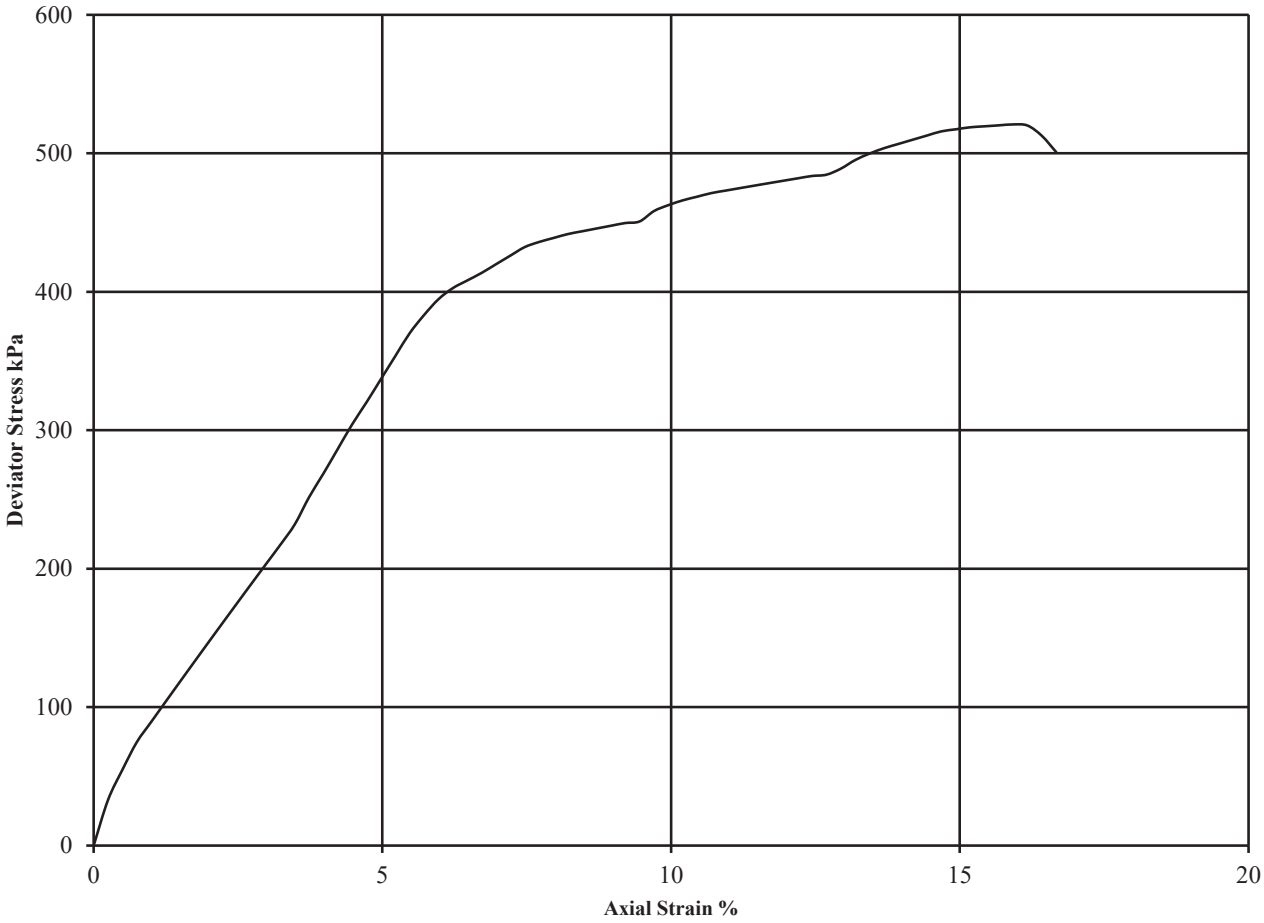
Contract No:
PSL23/3984
Client Ref:
G230651

UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION

WITHOUT MEASUREMENT OF PORE PRESSURE

BS1377 : Part7 : 1990: Clause 9

Hole Number:	**BH103**	**Top Depth (m):**	**10.00**
Sample Number:	**54**	**Base Depth (m):**	**10.45**
Sample Type	**UT**		



Diameter (mm):		103	Height (mm):		207	Test:	UU Multistage		Remarks
Specimen	Moisture Content (%)	Bulk Density (Mg/m3)	Dry Density (Mg/m3)	Cell Pressure (kPa) θ_3	Corr. Max. Deviator Stress (kPa) $(\theta_1-\theta_3)_f$	Shear Strength Cu (kPa) $^1/_2(\theta_1-\theta_3)_f$	Failure Strain (%)	Mode of Failure	Undisturbed Sample Sample taken from top of tube Rate of strain = 2 %/min Latex Membrane used 0.2 mm thick Membrane Correction applied (kPa)
1	13	2.17	1.92	100	451	225	9.5		0.35 0.34 0.34
				200	485	242	12.7		See summary of soil descriptions
				400	521	260	15.9	Brittle	

SUMMARY OF SOIL DENSITY RELATED TESTS

(BS1377 : PART 2 & 4 : 1990)

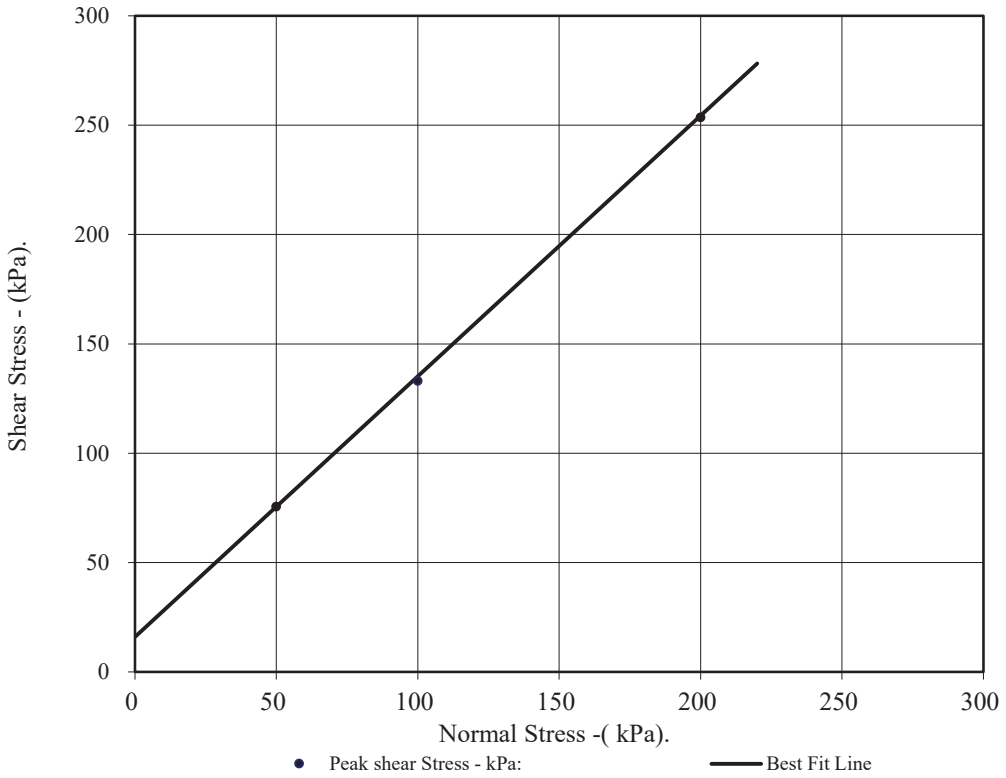
Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Moisture Content %	Bulk Density Mg/m^3	Dry Density Mg/m^3	Retained 20mm %	Retained 37.5mm %	Method of compaction kg	Maximum Dry Density Mg/m^3	Minimum Dry Density Mg/m^3	Remarks
BH102	22	B	4.50	5.00	5.6	1.99	1.88						
BH102	28	B	6.50	7.00	22	2.04	1.67						
BH103	5	B	0.90	1.00	15	2.22	1.93						
BH103	14	D	2.40	2.40	9.6	2.15	1.96						
BH103	31	D	5.00	5.00	20	2.09	1.74						
BH103	46	B	8.00	8.10	18	2.06	1.75						

CONSOLIDATED DRAINED SHEARBOX TEST

BS1377:Part 7:1990 Clause 5

Hole Number:	**BH102**		Top Depth:	**4.50**	
Sample Number:	**22**		Base Depth:	**5.00**	
Sample Conditions:	Dry		Sample Type	**B**	
Particle Density - Mg/m3:	2.65	Assumed	**Remarks:**		
Sample Preparation:	Material tested passing 20mm sieve Recompacted using hand tamped effort				
Sample Description:	**See summary of soil descriptions**				

STAGE	**1**	**2**	**3**
Initial Conditions			
Height - mm:	150	150	150
Length - mm:	300	300	300
Moisture Content - %:	5.6	5.6	5.6
Bulk Density - Mg/m3:	1.99	1.99	1.99
Dry Density - Mg/m3:	1.88	1.88	1.88
Voids Ratio:	0.407	0.407	0.407
Normal Pressure- kPa	50	100	200
Consolidation Stage			
Consolidated Height - mm:	149.53	149.12	148.70
Shearing Stage			
Rate of Strain (mm/min)	1.00	1.00	1.00
Displacement at peak shear stress (mm)	37.00	50.00	49.50
Peak shear Stress - kPa:	76	133	254
Final Consolidated Conditions			
Moisture Content - %:	5.5	5.3	5.6
Bulk Density - Mg/m3:	2.00	2.00	2.01
Dry Density - Mg/m3:	1.89	1.90	1.90
Peak			
Angle of Shearing Resistance:(~~θ~~)	**50**		
Effective Cohesion - kPa:	**16**		

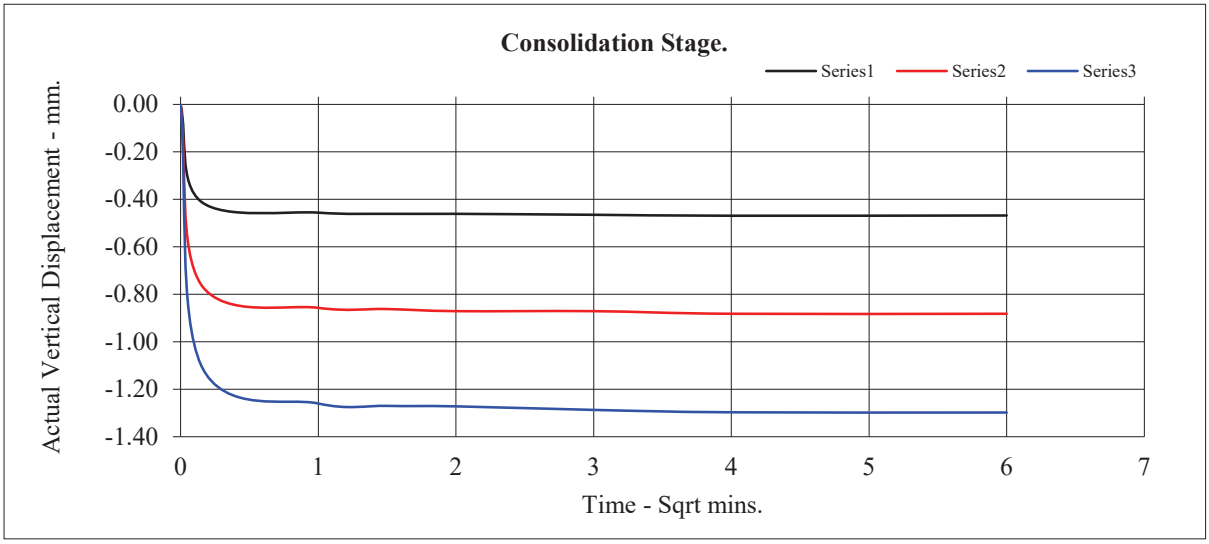


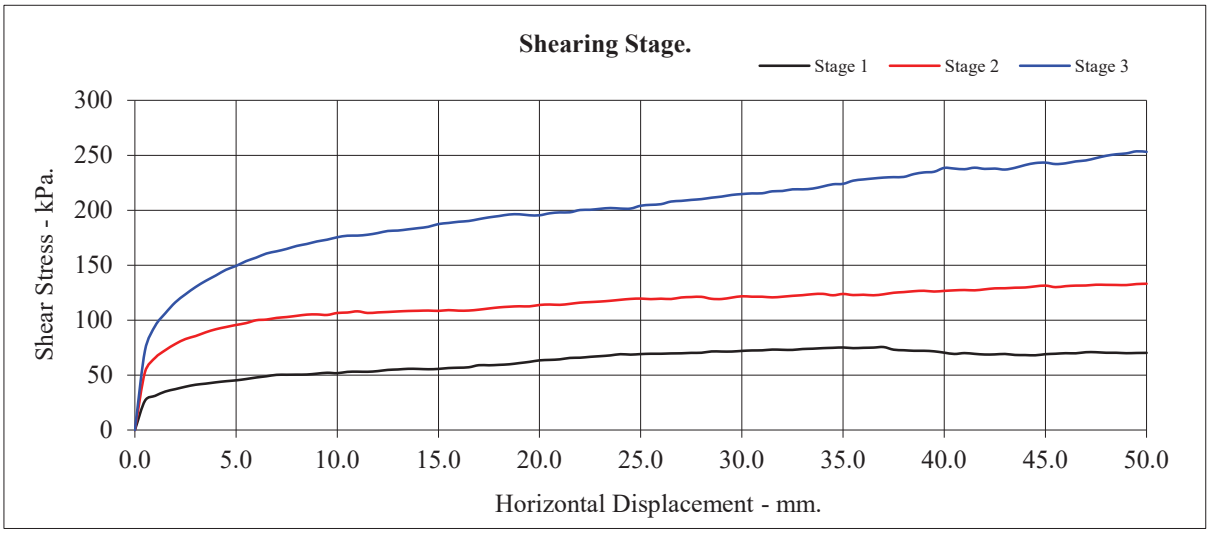
UKAS TESTING 4043 / PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY	**A46 Walsgrave**	**Contract No:** PSL23/3984 **Client Ref:** G230651

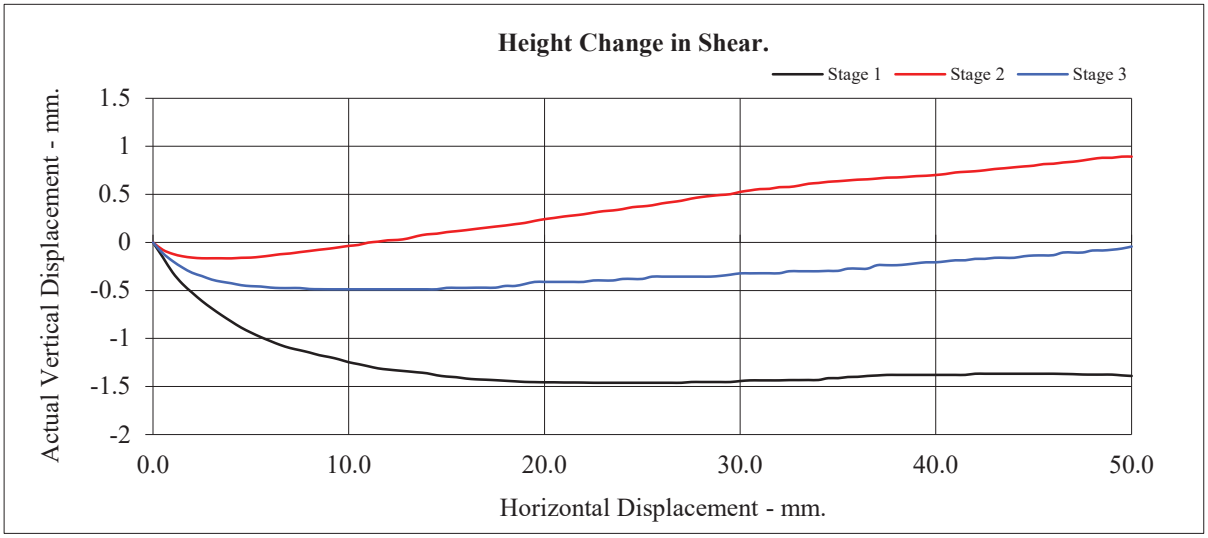
CONSOLIDATED DRAINED SHEARBOX TEST

BS1377:Part 7:1990 Clause 5

Hole Number:	**BH102**	Top Depth:	**4.50**
Sample Number:	**22**	Base Depth:	**5.00**







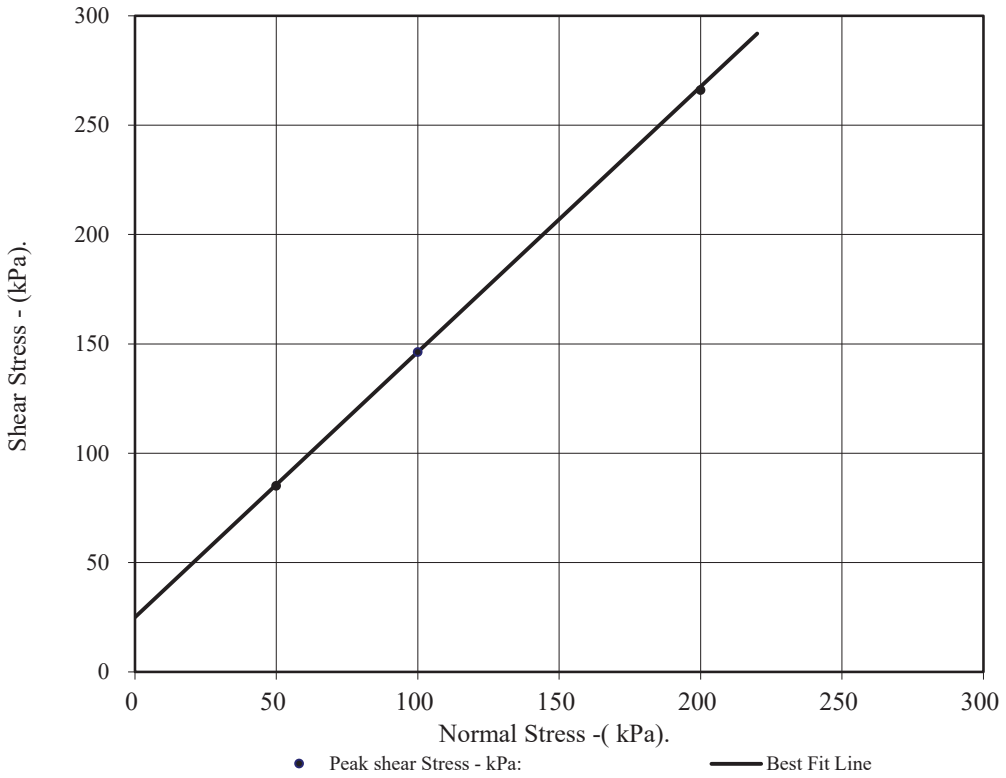
UKAS TESTING 4043 / PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY	**A46 Walsgrave**	**Contract No:** PSL23/3984 **Client Ref:** G230651

CONSOLIDATED DRAINED SHEARBOX TEST

BS1377:Part 7:1990 Clause 5

Hole Number:	**BH103**		Top Depth:	**3.50**
Sample Number:	**22**		Base Depth:	**3.60**
Sample Conditions:	Dry		Sample Type	**B**
Particle Density - Mg/m3:	2.65	Assumed	**Remarks:**	
Sample Preparation:	Material tested passing 20mm sieve Recompacted using hand tamped effort			
Sample Description:	**See summary of soil descriptions**			

STAGE	**1**	**2**	**3**
Initial Conditions			
Height - mm:	150	150	150
Length - mm:	300	300	300
Moisture Content - %:	7.9	7.9	7.9
Bulk Density - Mg/m3:	1.97	1.97	1.97
Dry Density - Mg/m3:	1.83	1.83	1.83
Voids Ratio:	0.451	0.451	0.451
Normal Pressure- kPa	50	100	200
Consolidation Stage			
Consolidated Height - mm:	147.95	145.87	143.99
Shearing Stage			
Rate of Strain (mm/min)	1.00	1.00	1.00
Displacement at peak shear stress (mm)	44.50	42.00	50.00
Peak shear Stress - kPa:	85	146	266
Final Consolidated Conditions			
Moisture Content - %:	8.0	7.3	6.8
Bulk Density - Mg/m3:	2.00	2.03	2.05
Dry Density - Mg/m3:	1.85	1.89	1.92
Peak			
Angle of Shearing Resistance:(~~θ~~)	**51**		
Effective Cohesion - kPa:	**25**		

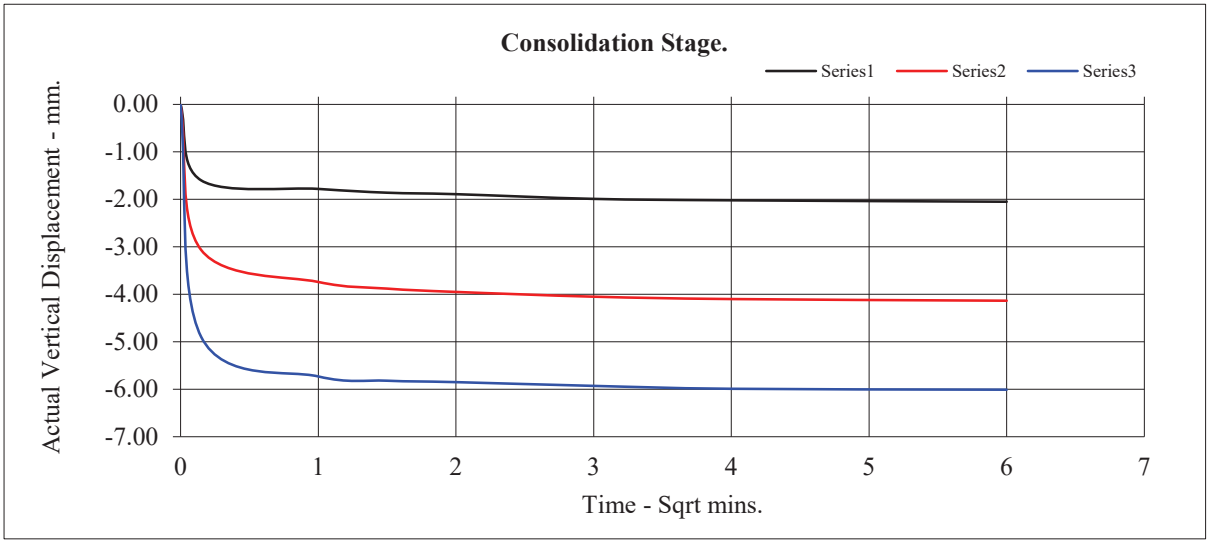


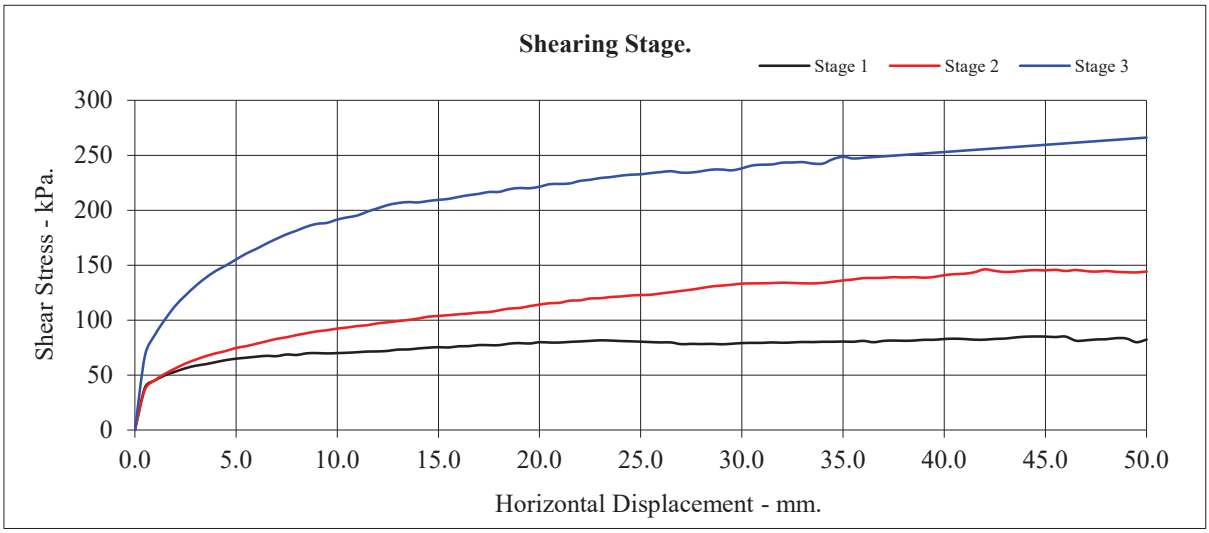
UKAS TESTING 4043 / PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY	**A46 Walsgrave**	**Contract No:** PSL23/3984 **Client Ref:** G230651

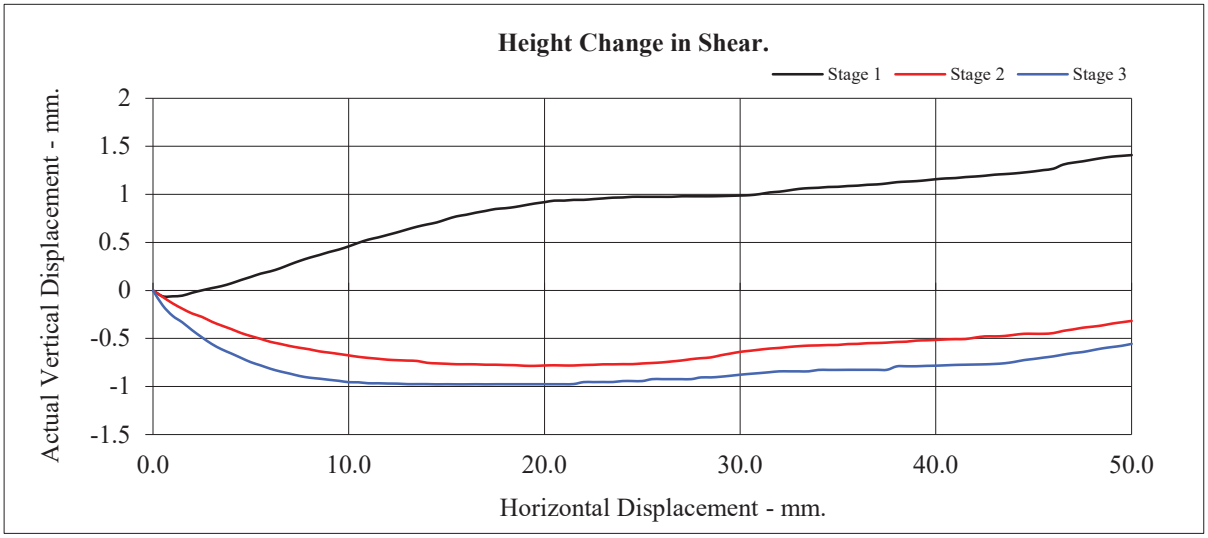
CONSOLIDATED DRAINED SHEARBOX TEST

BS1377:Part 7:1990 Clause 5

Hole Number:	**BH103**	Top Depth:	**3.50**
Sample Number:	**22**	Base Depth:	**3.60**







UKAS TESTING 4043 / PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY	**A46 Walsgrave**	**Contract No:** PSL23/3984 **Client Ref:** G230651

Certificate of Analysis

Certificate Number	23-14300	*Issued:*	26-Jun-23

Client Professional Soils Laboratory Ltd
5/7 Hexthorpe Road
Hexthorpe
DN4 0AR

Our Reference	23-14300
Client Reference	PSL23/3984
Order No	(not supplied)
Contract Title	A46 Walsgrave Geo Schedule 1
Description	3 Soil samples.
Date Received	16-Jun-23
Date Started	16-Jun-23
Date Completed	26-Jun-23
Test Procedures	Identified by prefix DETSn (details on request).

Notes Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

Approved By [redacted]
General Manager

2139

Summary of Chemical Analysis
Soil Samples

Our Ref 23-14300
Client Ref PSL23/3984
Contract Title A46 Walsgrave Geo Schedule 1

			Lab No	2188378	2188379	2188380
			.Sample ID	BH102	BH102	BH103
			Depth	4.00-4.20	7.50	7.00
			Other ID			
			Sample Type	D	D	D
			Sampling Date	n/s	n/s	n/s
			Sampling Time	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**			
Metals						
Magnesium Aqueous Extract (2:1)	DETSC 2076*	10	mg/l	< 10	< 10	< 10
Inorganics						
pH	DETSC 2008#		pH	8.2	8.5	8.5
Chloride Aqueous Extract (2:1)	DETSC 2055	1	mg/l	12	18	6.6
Nitrate Aqueous Extract as NO3 (2:1)	DETSC 2055	1	mg/l	< 1.0	3.9	2.1
Sulphate Aqueous Extract as SO4 (2:1)	DETSC 2076#	10	mg/l	18	18	28
Sulphur as S, Total	DETSC 2320	0.01	%	< 0.01	0.01	0.01
Sulphate as SO4, Total	DETSC 2321#	0.01	%	0.01	0.03	0.04

Key: * -not accredited. # -MCERTS (accreditation only applies if report carries the MCERTS logo). n/s -not supplied.

Information in Support of the Analytical Results

Our Ref 23-14300
Client Ref PSL23/3984
Contract A46 Walsgrave Geo Schedule 1

Containers Received & Deviating Samples

Lab No	Sample ID	Date Sampled	Containers Received	Holding time exceeded for tests	Inappropriate container for tests
2188378	BH102 4.00-4.20 SOIL		PT 1L	Sample date not supplied, Anions 2:1 (30 days), Total Sulphur ICP (7 days), Total Sulphate ICP (30 days), Metals ICP Prep (182 days), pH + Conductivity (7 days)	
2188379	BH102 7.50 SOIL		No containers logged	Sample date not supplied, Anions 2:1 (30 days), Total Sulphur ICP (7 days), Total Sulphate ICP (30 days), Metals ICP Prep (182 days), pH + Conductivity (7 days)	Cannot evaluate
2188380	BH103 7.00 SOIL		No containers logged	Sample date not supplied, Anions 2:1 (30 days), Total Sulphur ICP (7 days), Total Sulphate ICP (30 days), Metals ICP Prep (182 days), pH + Conductivity (7 days)	Cannot evaluate

Key: P-Plastic T-Tub

DETS cannot be held responsible for the integrity of samples received whereby the laboratory did not undertake the sampling. In this instance samples received may be deviating. Deviating Sample criteria are based on British and International standards and laboratory trials in conjunction with the UKAS note 'Guidance on Deviating Samples'. All samples received are listed above. However, those samples that have additional comments in relation to hold time, inappropriate containers etc are deviating due to the reasons stated. This means that the analysis is accredited where applicable, but results may be compromised due to sample deviations. If no sampled date (soils) or date+time (waters) has been supplied then samples are deviating. However, if you are able to supply a sampled date (and time for waters) this will prevent samples being reported as deviating where specific hold times are not exceeded and where the container supplied is suitable.

Soil Analysis Notes

Inorganic soil analysis was carried out on a dried sample, crushed to pass a 425µm sieve, in accordance with BS1377.

Organic soil analysis was carried out on an 'as received' sample. Organics results are corrected for moisture and expressed on a dry weight basis.

The Loss on Drying, used to express organics analysis on an air dried basis, is carried out at a temperature of 28°C +/-2°C.

Disposal

From the issue date of this test certificate, samples will be held for the following times prior to disposal :-

Soils - 1 month, Liquids - 2 weeks, Asbestos (test portion) - 6 months

End of Report

LABORATORY REPORT

Contract Number: PSL23/3983

Report Date: 22 June 2023

Client's Reference: G230651

Client Name: Strata Geotechnics
Kirkby Lane
Pinxton
Nottinghamshire
NG16 6JA

For the attention of: Izaac Lovatt

Contract Title: A46 Walsgrave

Date Received: 25/5/2023
Date Commenced: 25/5/2023
Date Completed: 22/6/2023

Notes: **Opinions and Interpretations are outside the UKAS Accreditation**

A copy of the Laboratory Schedule of accredited tests as issued by UKAS is attached to this report. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced other than in full, without the prior written approval of the laboratory.

Checked and Approved Signatories:

[redacted]

(Assistant Laboratory Manager) (Associate Director) (Laboratory Manager)

[redacted]

(Managing Director) (Senior Technical Coordinator) (Senior Technician)

5 – 7 Hexthorpe Road,
Hexthorpe,
Doncaster,
DN4 0AR
Tel: 01302 768098
Email: [redacted]

SUMMARY OF LABORATORY SOIL DESCRIPTIONS

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Description of Sample
BH105	5	D	0.50	0.60	Brown slightly gravelly sandy CLAY.
BH105	6	B	0.50	0.70	Brown slightly gravelly very sandy CLAY.
BH105	13	D	1.90	2.00	Brown mottled grey sandy CLAY.
BH105	15	UTF	2.00	2.45	Stiff reddish brown slightly gravelly sandy CLAY.
BH105	17	B	2.70	3.00	Reddish brown slightly gravelly sandy CLAY.
BH105	20	D	3.90	4.00	Reddish brown slightly gravelly very sandy CLAY.
BH105	21	UTF	4.00	4.45	Firm reddish brown slightly gravelly very sandy CLAY.
BH105	23	B	4.70	5.00	Reddish brown slightly gravelly sandy CLAY.
BH105	26	D	6.00	6.20	Reddish brown slightly gravelly very sandy CLAY.
BH106	1	D	0.10	0.10	Brown slightly gravelly very sandy CLAY.
BH106	2	B	0.10	0.40	Brown very gravelly very sandy CLAY.
BH106	8	D	0.80	0.90	Reddish brown sandy CLAY.
BH106	13	B	1.50	2.00	Reddish brown sandy CLAY.
BH106	16	UTF	2.50	2.95	Reddish brown sandy CLAY.
BH106	18	D	3.00	3.00	Brown mottled grey very sandy CLAY.
BH106	17	B	3.00	3.50	Brown mottled grey very gravelly very sandy CLAY.
BH106	21	D	4.20	4.20	Brown slightly gravelly sandy CLAY.
BH106	22	UTF	4.50	4.95	Reddish brown sandy CLAY.
BH106	26	B	5.50	6.00	Reddish brown slightly gravelly sandy CLAY.

SUMMARY OF LABORATORY SOIL DESCRIPTIONS

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Description of Sample
BH106	27	D	6.20	6.20	Reddish brown mottled grey slightly gravelly sandy CLAY.
BH106	29	UTF	6.50	6.80	Reddish brown mottled grey slightly gravelly sandy CLAY.

UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

Contract No: PSL23/3983

Client Ref: G230651

SUMMARY OF SOIL CLASSIFICATION TESTS

(BS1377 : PART 2 : 1990)

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Moisture Content % Clause 3.2	Linear Shrinkage % Clause 6.5	Particle Density Mg/m^3 Clause 8.2	Liquid Limit % Clause 4.3/4	Plastic Limit % Clause 5.3	Plasticity Index % Clause 5.4	Passing .425mm %	Remarks
BH105	5	D	0.50	0.60	25			45	24	21	98	Intermediate Plasticity CI
BH105	13	D	1.90	2.00	22			41	22	19	100	Intermediate Plasticity CI
BH105	20	D	3.90	4.00	14			33	16	17	91	Low Plasticity CL
BH105	26	D	6.00	6.20	12			25	15	10	92	Low Plasticity CL
BH106	1	D	0.10	0.10	23			37	19	18	95	Intermediate Plasticity CI
BH106	8	D	0.80	0.90	15			41	20	21	100	Intermediate Plasticity CI
BH106	18	D	3.00	3.00	11			32	16	16	100	Low Plasticity CL
BH106	21	D	4.20	4.20	27			39	20	19	100	Intermediate Plasticity CI
BH106	27	D	6.20	6.20	17			42	20	22	92	Intermediate Plasticity CI

SYMBOLS : **NP : Non Plastic** *** : Liquid Limit and Plastic Limit Wet Sieved.**

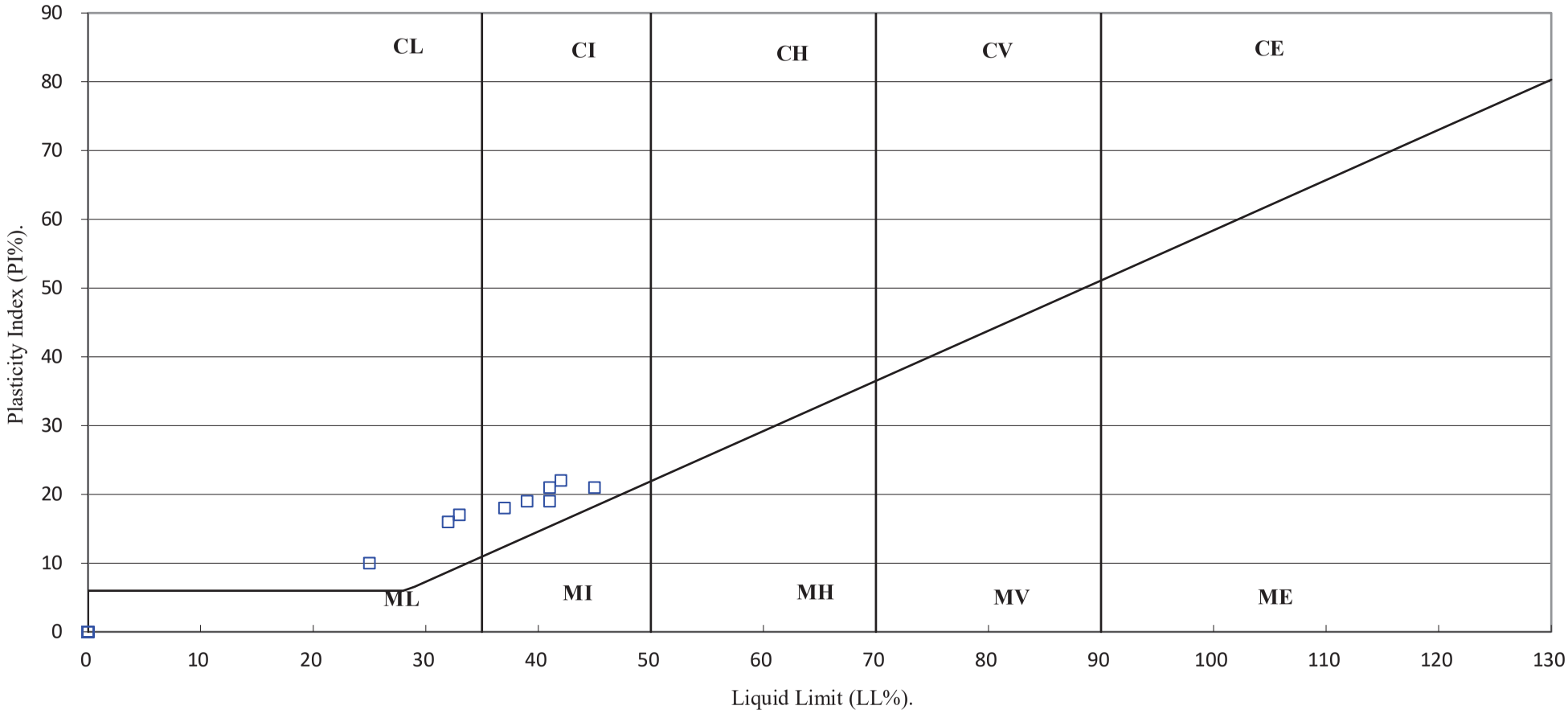
UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

Contract No:
PSL23/3983
Client Ref:
G230651

PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION.



UKAS TESTING 4043	PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY	A46 Walsgrave

Contract No:
PSL23/3983
Client Ref:
G230651

SUMMARY OF SOIL DENSITY RELATED TESTS

(BS1377 : PART 2 & 4 : 1990)

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Moisture Content %	Bulk Density Mg/m^3	Dry Density Mg/m^3	Retained 20mm %	Retained 37.5mm %	Method of compaction kg	Maximum Dry Density Mg/m^3	Minimum Dry Density Mg/m^3	Remarks
BH106	8	D	0.80	0.90	15	2.16	1.88						
BH106	13	B	1.50	2.00	19	2.08	1.75						
BH106	26	B	5.50	6.00	24	2.06	1.66						

UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

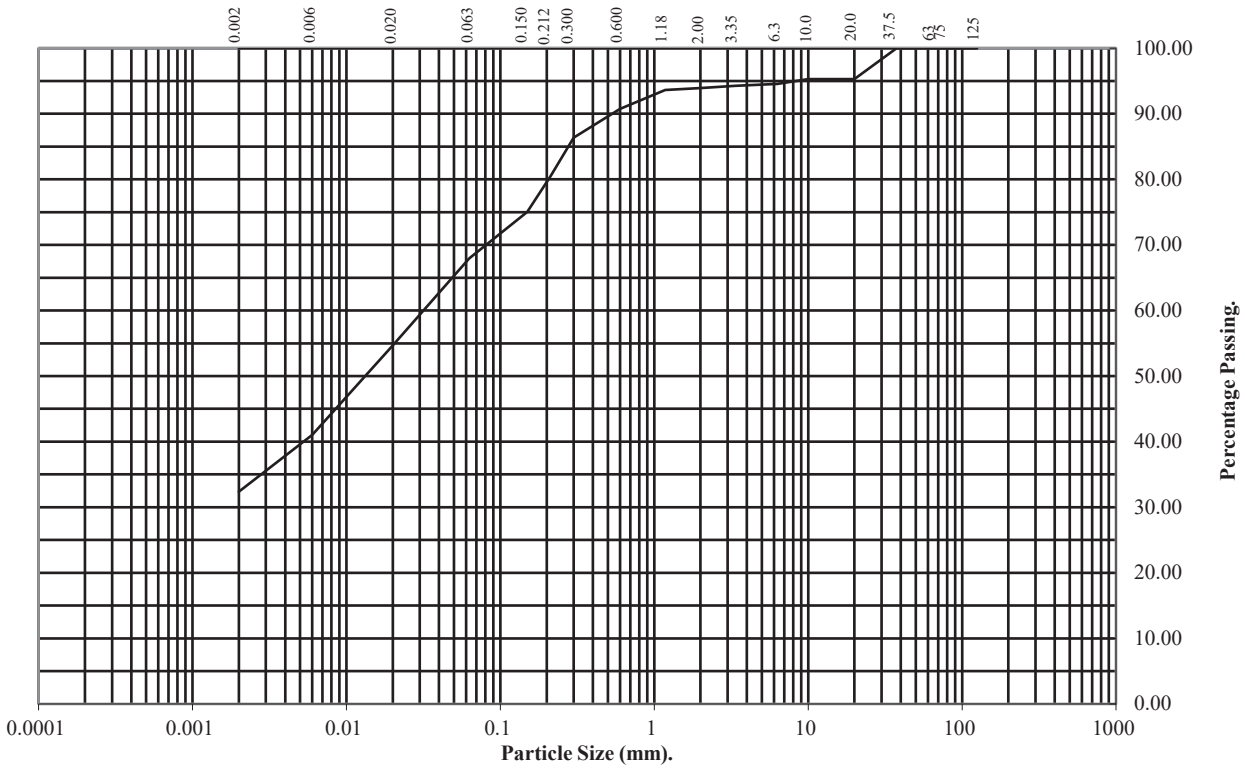
Contract No:
PSL23/3983
Client Ref:
G230651

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

Hole Number:	**BH105**	**Top Depth (m):**	**0.50**
Sample Number:	**6**	**Base Depth(m):**	**0.70**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	95
10	95
6.3	95
3.35	94
2	94
1.18	94
0.6	91
0.3	86
0.212	80
0.15	75
0.063	68

Particle Diameter	Percentage Passing
0.02	55
0.006	41
0.002	32

Soil Fraction	Total Percentage
Cobbles	0
Gravel	6
Sand	26
Silt	36
Clay	32

Remarks:
See Summary of Soil Descriptions

UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

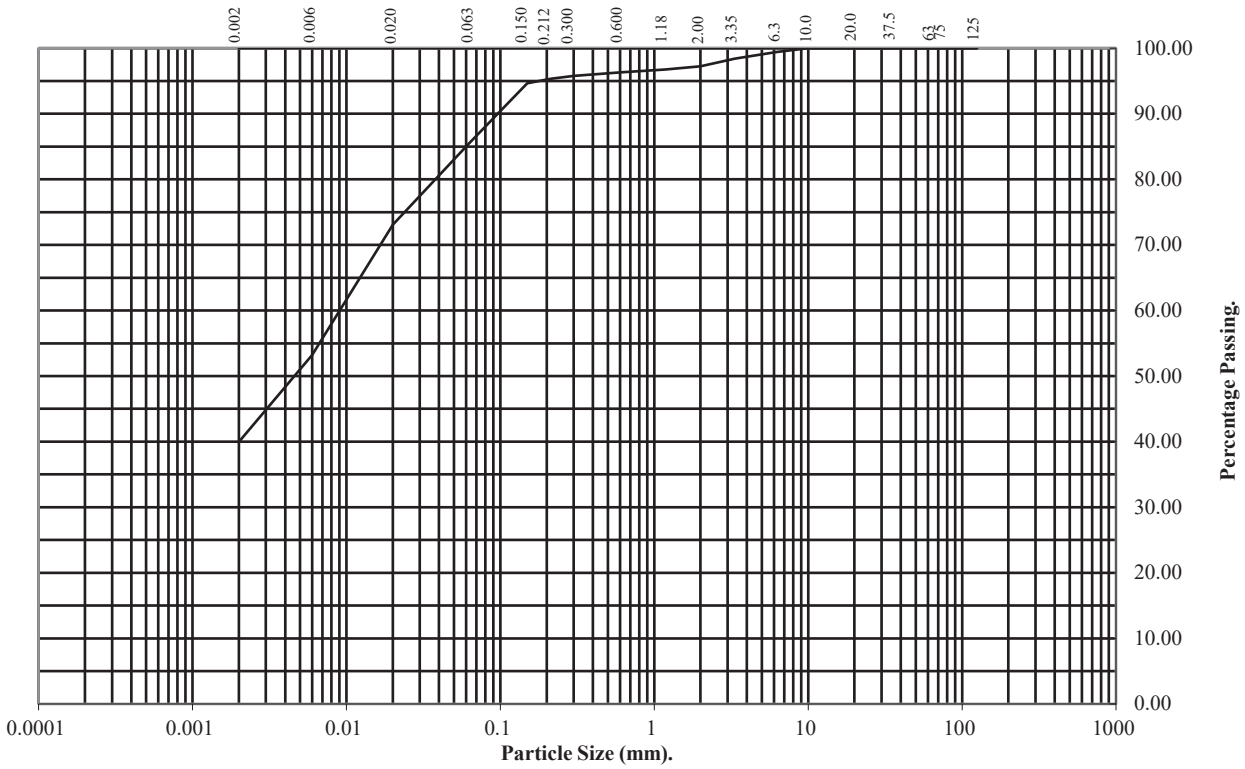
Contract No:
PSL23/3983
Client Ref:
G230651

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

Hole Number:	**BH105**	**Top Depth (m):**	**2.70**
Sample Number:	**17**	**Base Depth(m):**	**3.00**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	100
6.3	99
3.35	98
2	97
1.18	97
0.6	96
0.3	96
0.212	95
0.15	95
0.063	86

Particle Diameter	Percentage Passing
0.02	73
0.006	53
0.002	40

Soil Fraction	Total Percentage
Cobbles	0
Gravel	3
Sand	11
Silt	46
Clay	40

Remarks:
See Summary of Soil Descriptions

UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

Contract No:
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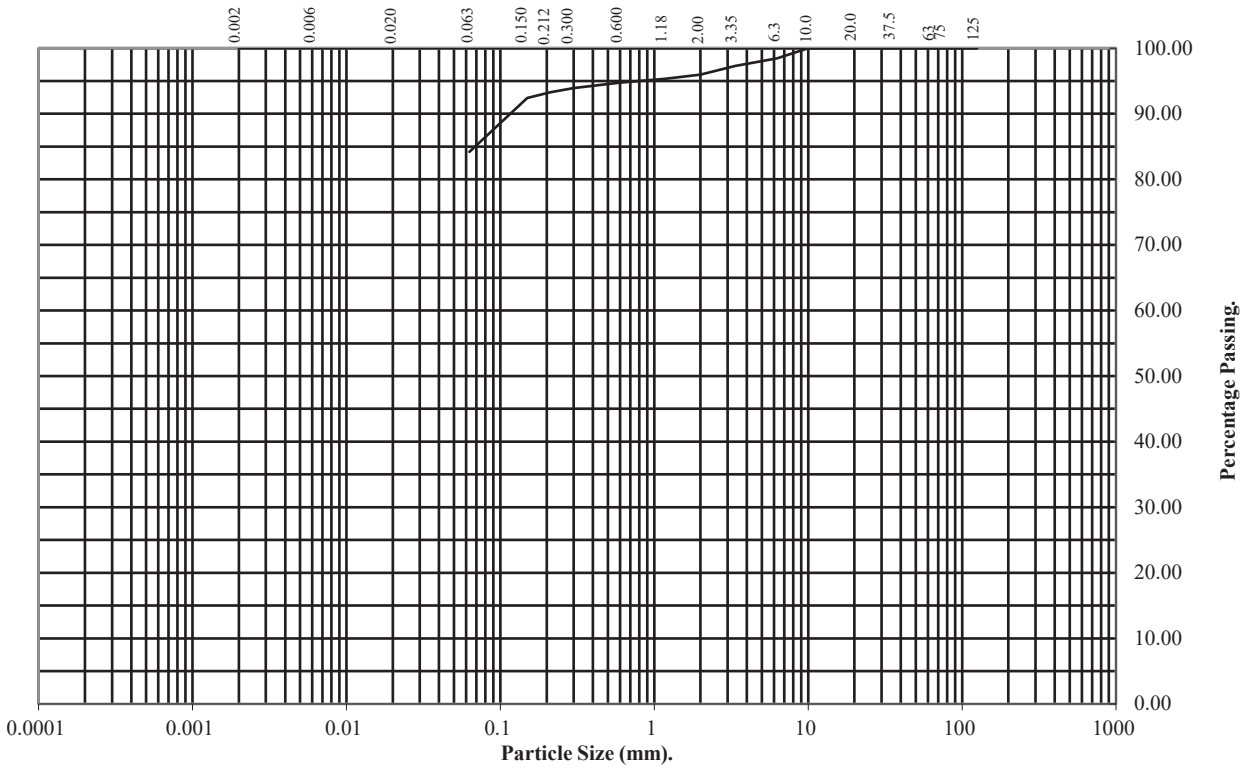
Client Ref:
G230651

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number:	**BH105**	**Top Depth (m):**	**4.70**
Sample Number:	**23**	**Base Depth(m):**	**5.00**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	100
6.3	98
3.35	97
2	96
1.18	95
0.6	95
0.3	94
0.212	93
0.15	92
0.063	84

Soil Fraction	Total Percentage
Cobbles	0
Gravel	4
Sand	12
Silt/Clay	84

Remarks:
See Summary of Soil Descriptions

UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

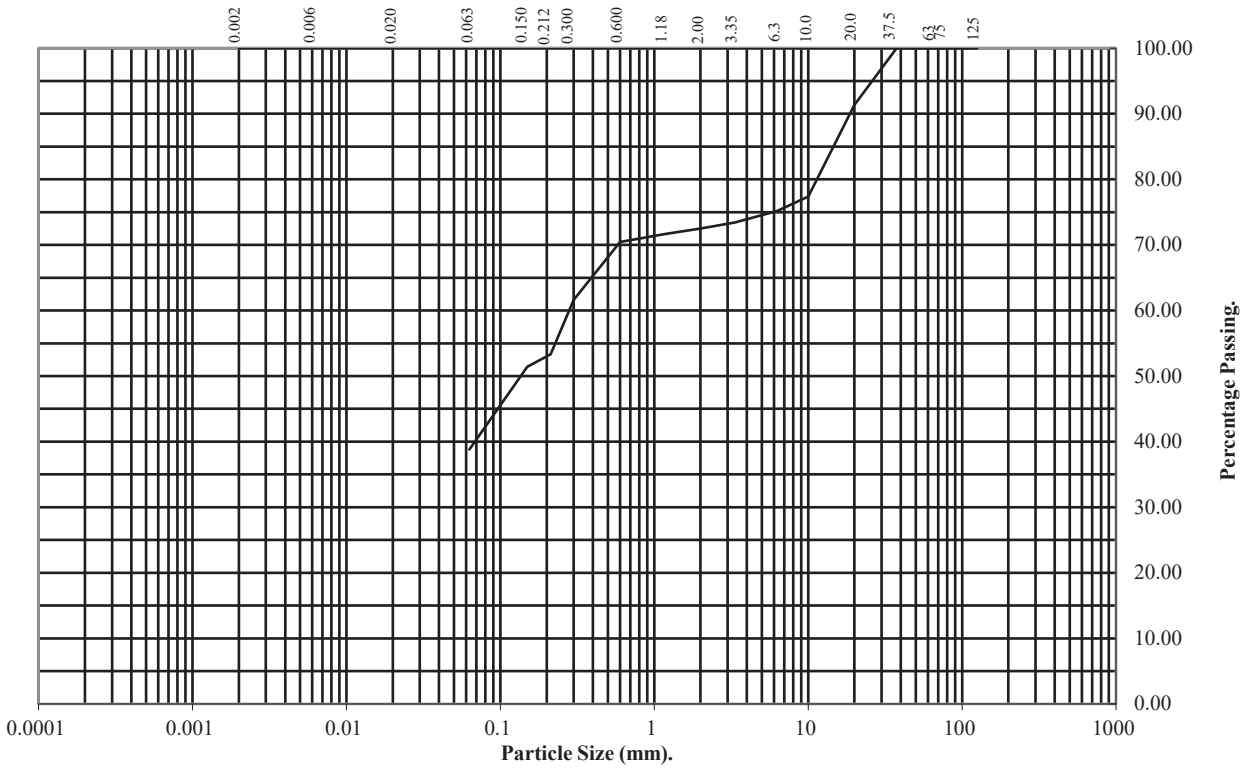
Contract No:	
PSL23/3983	
Client Ref:	
G230651	

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number:	**BH106**	**Top Depth (m):**	**0.10**
Sample Number:	**2**	**Base Depth(m):**	**0.40**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	91
10	77
6.3	75
3.35	73
2	72
1.18	72
0.6	70
0.3	62
0.212	53
0.15	51
0.063	39

Soil Fraction	Total Percentage
Cobbles	0
Gravel	28
Sand	33
Silt/Clay	39

Remarks:
See Summary of Soil Descriptions

UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

Contract No:
PSL23/3983
Client Ref:
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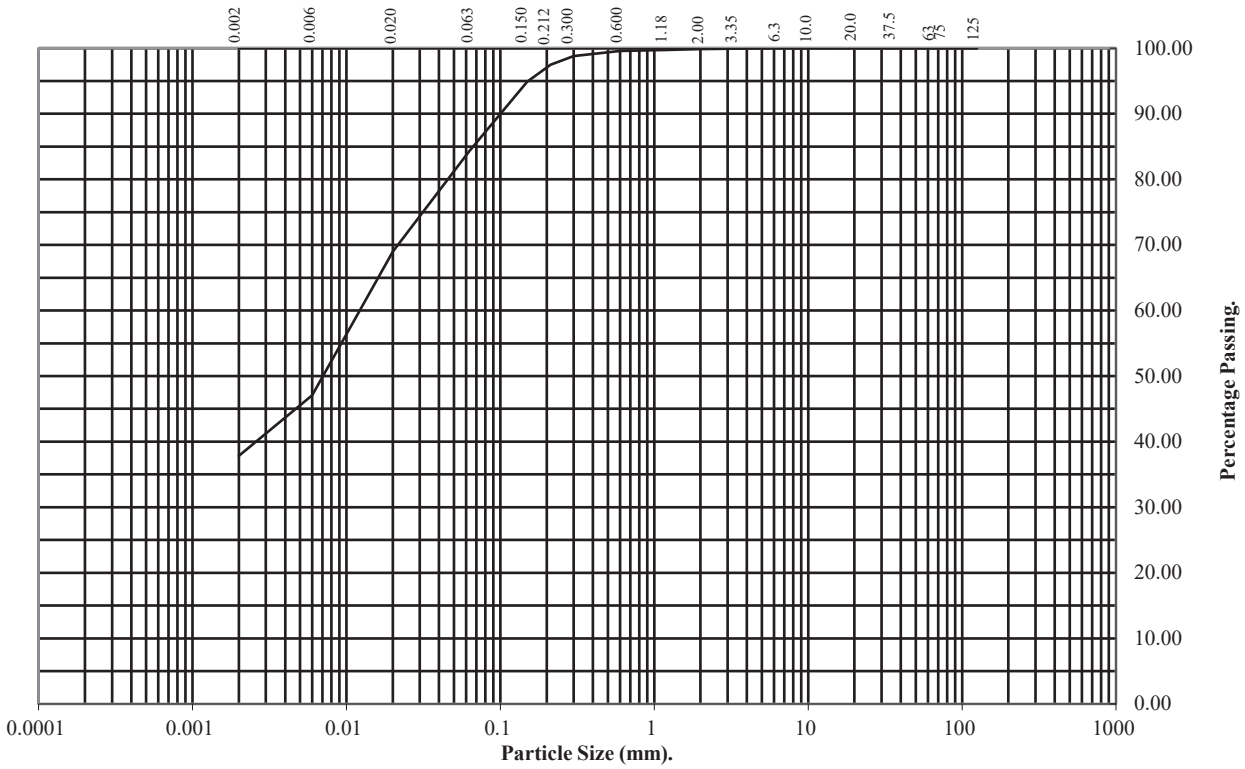
PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

Hole Number:	**BH106**	**Top Depth (m):**	**1.50**
Sample Number:	**13**	**Base Depth(m):**	**2.00**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	100
6.3	100
3.35	100
2	100
1.18	100
0.6	100
0.3	99
0.212	97
0.15	95
0.063	84

Particle Diameter	Percentage Passing
0.02	69
0.006	47
0.002	38

Soil Fraction	Total Percentage
Cobbles	0
Gravel	0
Sand	16
Silt	46
Clay	38

Remarks:
See Summary of Soil Descriptions

UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

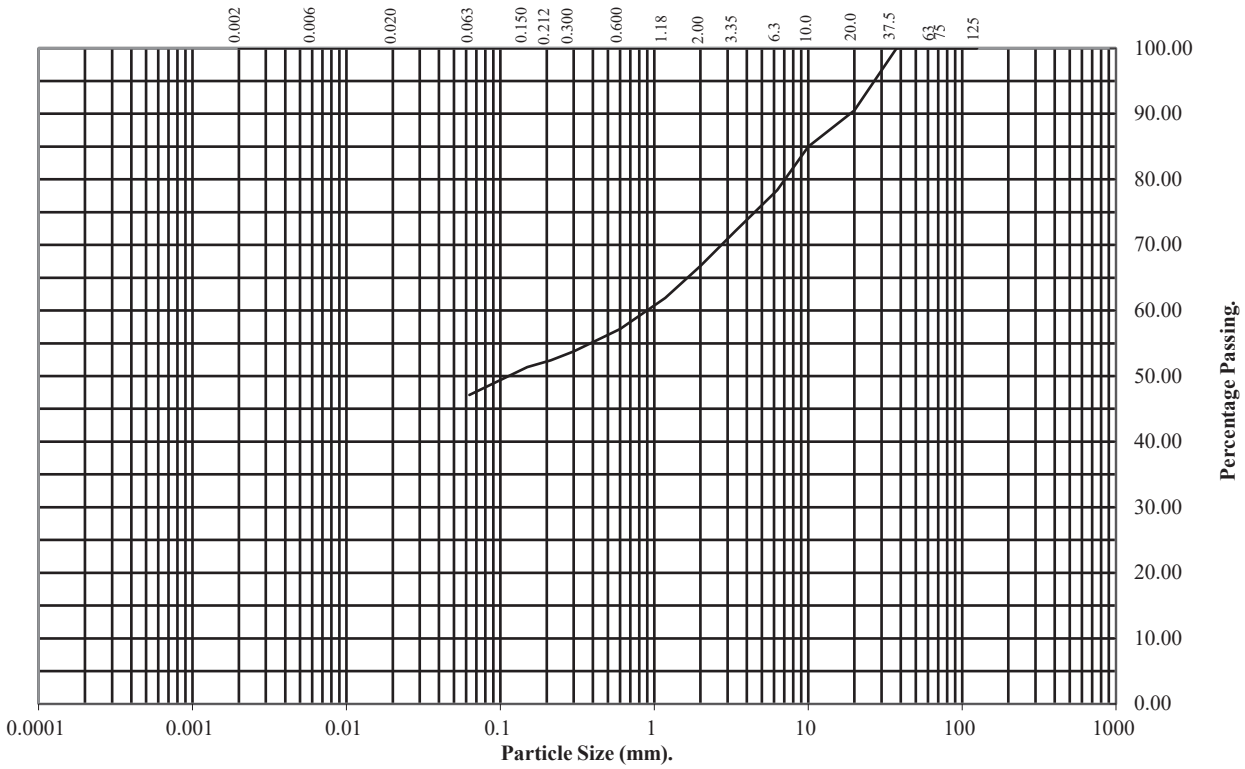
Contract No:
PSL23/3983
Client Ref:
G230651

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number:	**BH106**	**Top Depth (m):**	**3.00**
Sample Number:	**17**	**Base Depth(m):**	**3.50**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	91
10	85
6.3	78
3.35	72
2	67
1.18	62
0.6	57
0.3	54
0.212	52
0.15	51
0.063	47

Soil Fraction	Total Percentage
Cobbles	0
Gravel	33
Sand	20
Silt/Clay	47

Remarks:
See Summary of Soil Descriptions

UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

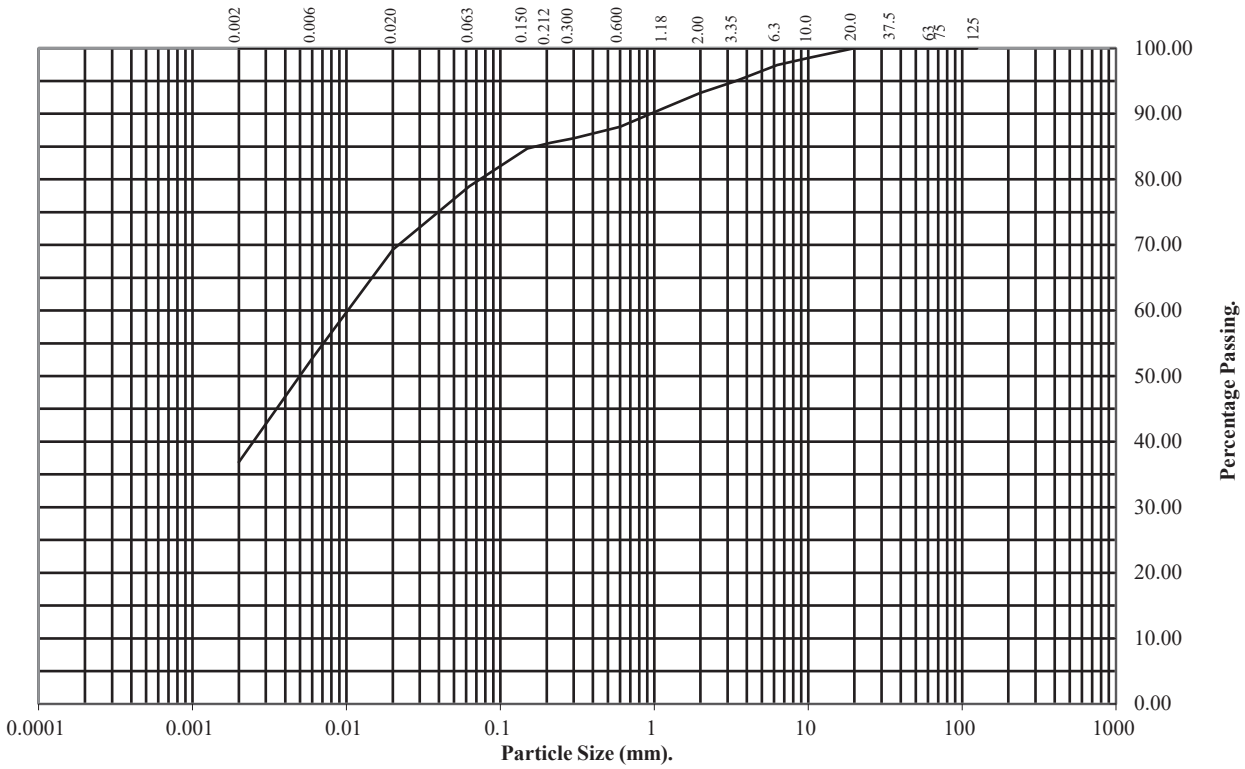
Contract No:	
PSL23/3983	
Client Ref:	
G230651	

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

Hole Number:	**BH106**	**Top Depth (m):**	**5.50**
Sample Number:	**26**	**Base Depth(m):**	**6.00**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	99
6.3	97
3.35	95
2	93
1.18	91
0.6	88
0.3	86
0.212	86
0.15	85
0.063	79

Particle Diameter	Percentage Passing
0.02	69
0.006	53
0.002	37

Soil Fraction	Total Percentage
Cobbles	0
Gravel	7
Sand	14
Silt	42
Clay	37

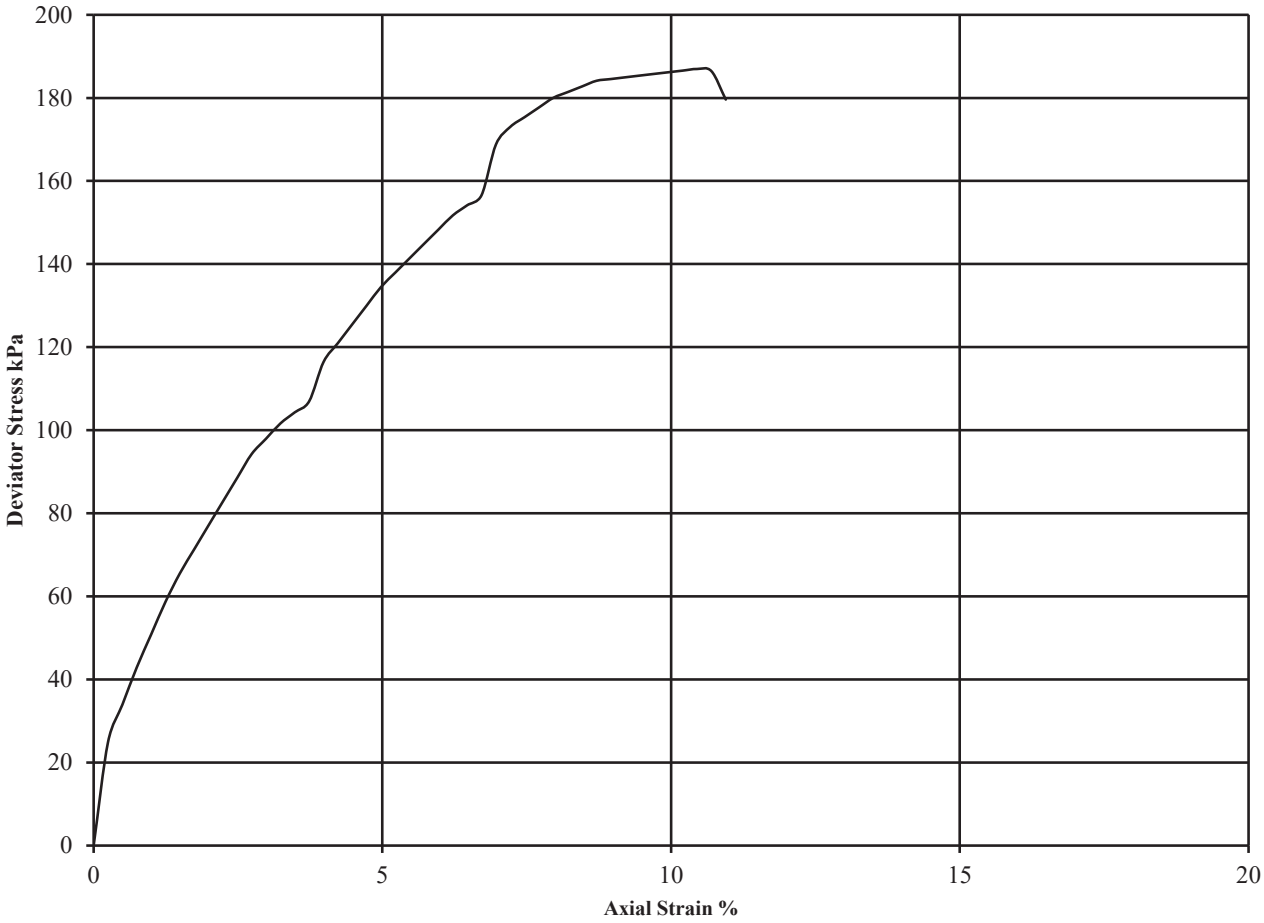
Remarks:
See Summary of Soil Descriptions

UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION

WITHOUT MEASUREMENT OF PORE PRESSURE

BS1377 : Part7 : 1990: Clause 9

Hole Number:	**BH105**	**Top Depth (m):**	**2.00**
Sample Number:	**15**	**Base Depth (m):**	**2.45**
Sample Type	**UTF**		



Diameter (mm):		103	Height (mm):		207	Test:	UU Multistage		Remarks
Specimen	Moisture Content (%)	Bulk Density (Mg/m3)	Dry Density (Mg/m3)	Cell Pressure (kPa) θ_3	Corr. Max. Deviator Stress (kPa) $(\theta_1-\theta_3)_f$	Shear Strength Cu (kPa) $^1/_2(\theta_1-\theta_3)_f$	Failure Strain (%)	Mode of Failure	Undisturbed Sample Sample taken from top of tube Rate of strain = 2 %/min Latex Membrane used 0.2 mm thick Membrane Correction applied (kPa)
1	19	2.05	1.71	25	107	53	3.7		0.36 0.36 0.35
				50	157	78	6.7		See summary of soil descriptions
				100	187	93	10.4	Brittle	

UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

Contract No: PSL23/3983

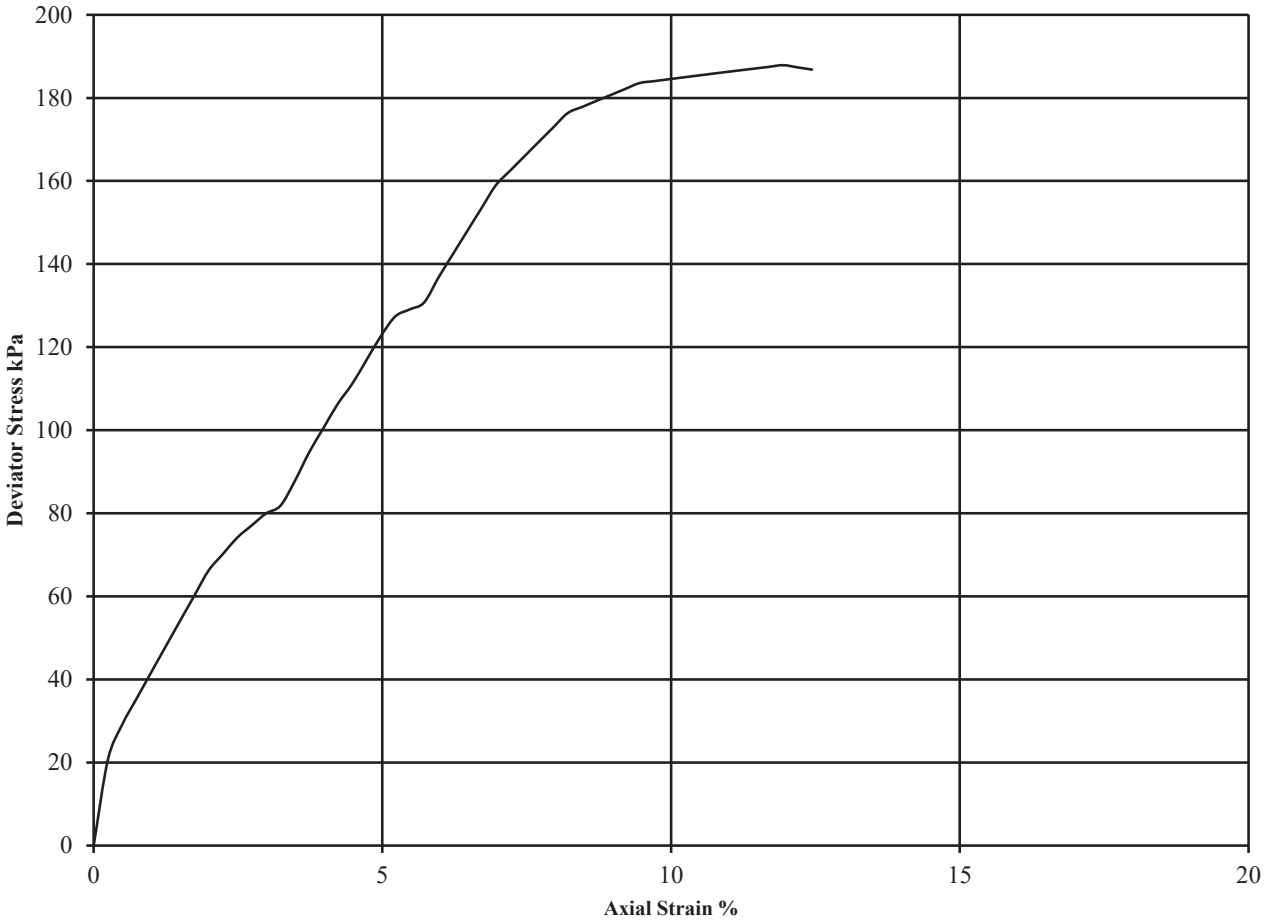
Client Ref: G230651

UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION

WITHOUT MEASUREMENT OF PORE PRESSURE

BS1377 : Part7 : 1990: Clause 9

Hole Number:	**BH105**	**Top Depth (m):**	**4.00**
Sample Number:	**21**	**Base Depth (m):**	**4.45**
Sample Type	**UTF**		



Diameter (mm):		103	Height (mm):		207	Test:	UU Multistage		Remarks
Specimen	Moisture Content (%)	Bulk Density (Mg/m3)	Dry Density (Mg/m3)	Cell Pressure (kPa) θ_3	Corr. Max. Deviator Stress (kPa) $(\theta_1-\theta_3)_f$	Shear Strength Cu (kPa) $^1/_2(\theta_1-\theta_3)_f$	Failure Strain (%)	Mode of Failure	Undisturbed Sample Sample taken from top of tube Rate of strain = 2 %/min Latex Membrane used 0.2 mm thick Membrane Correction applied (kPa)
1	16	2.08	1.80	40	82	41	3.2		0.36 0.36 0.35
				80	131	65	5.7		See summary of soil descriptions
				160	188	94	11.9	Intermediate	

UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

Contract No:
PSL23/3983
Client Ref:
G230651

SUMMARY OF LABORATORY HAND VANES

(BS1377 : PART 7 : 1990)

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Moisture Content %	Peak Shear Strength kPa	Residual Shear Strength kPa	Remarks
BH106	29	UTF	6.50	6.80	19	>140		

* This test is out of our UKAS scope

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

Contract No:
PSL23/3983
Client Ref:
G230651

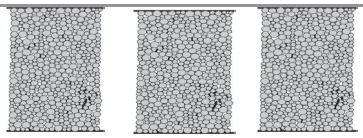
Effective Stress Triaxial Compression

Consolidated Undrained

Summary Report

Sample Details

sketch showing specimen location in original sample



			Spm. 1	2	3
Depth	2.50-2.95m UTF16				
Description	See summary of soil descriptions.				
Type	Undisturbed, vertical orientation.				
Initial Sample Length	L_0	(mm)	76.0	76.0	76.0
Initial Sample Diameter	D_0	(mm)	38.2	38.0	38.0
Initial Sample Weight	W_0	(gr)	191.1	189.1	188.3
Initial Bulk Density	ρ_0	(Mg/m3)	2.19	2.19	2.18
Particle Density	ρ_s	(Mg/m3)	2.66	2.66	2.66

Initial Conditions

			Spm. 1	2	3
Initial Cell Pressure	σ_{3i}	(kPa)	775	800	950
Initial Back Pressure	U_{bi}	(kPa)	750	750	850
Membrane Thickness	m_b	(mm)	0.400	0.400	0.400
Displacement Input	L_{IP}	(mm)	CH 2	CH 2	CH 2
Load Input	N_{IP}	(N)	CH 4	CH 1	CH 1
Pore Water Pressure Input	u_{pwp}	(kPa)	CH 3	CH 3	CH 3
Sample Volume	V	(cc)	CH 6	CH 6	CH 6
Initial Moisture	ω_i	(%)	15	14	14
Initial Dry Density	ρ_{di}	(Mg/m3)	1.91	1.93	1.92
Initial Voids Ratio	e_i	.	0.390	0.380	0.383
Initial Degree of Saturation	S_i	(%)	100	97	94
B Value	B	.	0.95	0.96	0.96

Final Conditions

			Spm. 1	2	3
Final Moisture	ω_f	(%)	18	18	18
Final Dry Density	ρ_{df}	(Mg/m3)	1.92	1.96	1.97
Final Voids Ratio	e_f	.	0.386	0.360	0.352
Final Degree of Saturation	S_f	(%)	100.0	100.0	100.0
Failure Criteria		.	Max. Dev. Stress	Max. Dev. Stress	Max. Dev. Stress
Strain At Failure	ε_f	(%)	9.30	13.51	19.01
Stress At Failure	$(\sigma_1-\sigma_3)_f$	(kPa)	127.3	139.4	199.3
Minor Stress At Failure	σ_3'	(kPa)	68.0	75.0	110.4
Major Stress At Failure	σ_1'	(kPa)	195.3	214.4	309.7
Principal Stress Ratio At Failure	σ_1'/σ_3'		2.872	2.858	2.805
PwP At Failure Criteria	u_f	(kPa)	707.0	725.0	839.6

Notes

Plastic

PSL PROFESSIONAL SOILS LABORATORY — A PHENNA GROUP COMPANY — UKAS TESTING 4043

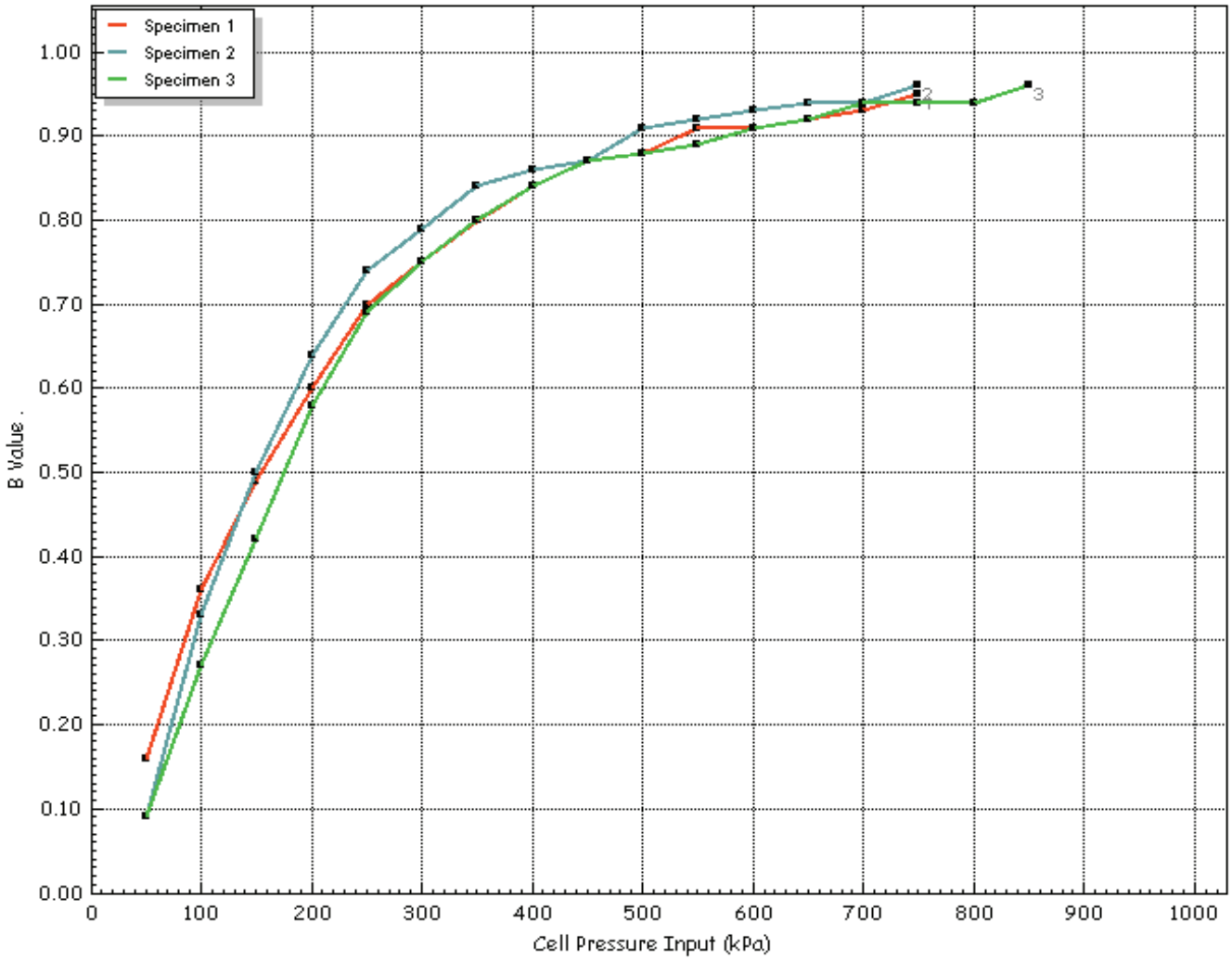
Test Method	BS1377-8 : 1990 : Clause 7	Test Name	BH106 2.50-2.95m UT-100
		Test Date	02/06/2023
		Borehole	BH106
Jobfile	A46 Walsgrave	Sample	2.50-2.95m UT100
Client	Strata Geotechnics	Depth	2.50-2.95m UTF16
Operator	[redacted]	Checked	[redacted]
		Approved	[redacted]

Effective Stress Triaxial Compression

Consolidated Undrained

Saturation Plots

			Spm. 1	2	3
Saturation Method			Stepped	Stepped	Stepped
Cell Pressure Input	σ	(kPa)	750	750	850
Pore Water Pressure Input	u pwp	(kPa)	726	725	834
B Value	B	.	0.95	0.96	0.96



PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY UKAS TESTING 4043	Test Method	BS1377-8 : 1990 : Clause 7		Test Name	BH106 2.50-2.95m UT-100
				Test Date	02/06/2023
				Borehole	BH106
	Jobfile	A46 Walsgrave		Sample	2.50-2.95m UT100
	Client	Strata Geotechnics		Depth	2.50-2.95m UTF16
	Operator	[redacted]	Checked [redacted]	Approved	[redacted]

Effective Stress Triaxial Compression

Consolidated Undrained

Consolidation Plots

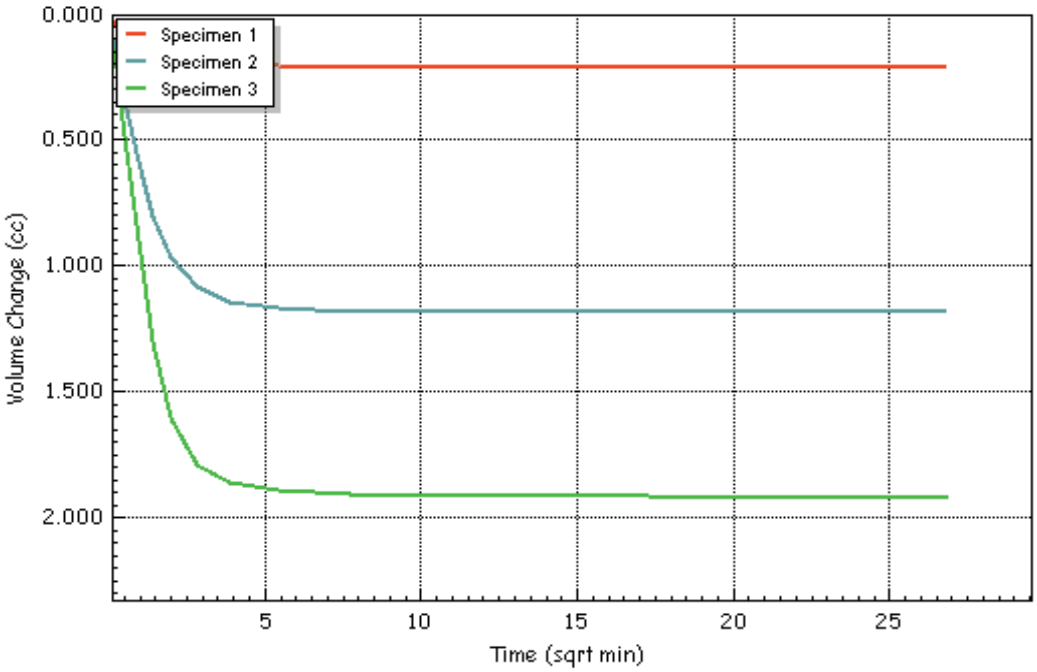
Initial Conditions

			Spm. 1	2	3
Initial Cell Pressure	σ_3	(kPa)	775	800	950
Initial Back Pressure	u_{bi}	(kPa)	750	750	851
Pore Water Pressure Input	u_{pwp}	(kPa)	754	770	928
Drainage Method			Radial+One End	Radial+One End	Radial+One End

Final Conditions

			Spm. 1	2	3
PWP Dissipation %	U%	(%)	100.00	100.00	100.00
Volumetric Strain	ε_v%	(%)	0.24	1.37	2.23
Corrected Length	L_C	(mm)	75.9	75.7	75.4
Corrected Area	A_C	(cm2)	11.44	11.24	11.17
Corrected Volume	V_C	(cc)	86.893	85.014	84.270
t100	t_{100}	(min)	4.38	7.68	5.47
Consolidation	c_V	(m2/year	0.069	0.038	0.054
Compressibility	m_V	(m2/MN)	0.601	0.670	0.285
Test Time	t_F	(h:m:s)	02:00:00	02:00:00	02:00:00
Estimated Strain to Failure	ε%	(%)	5.0	5.0	5.0
Shear Machine Speed	d_r	(mm/min	0.03164	0.03152	0.03143

Notes



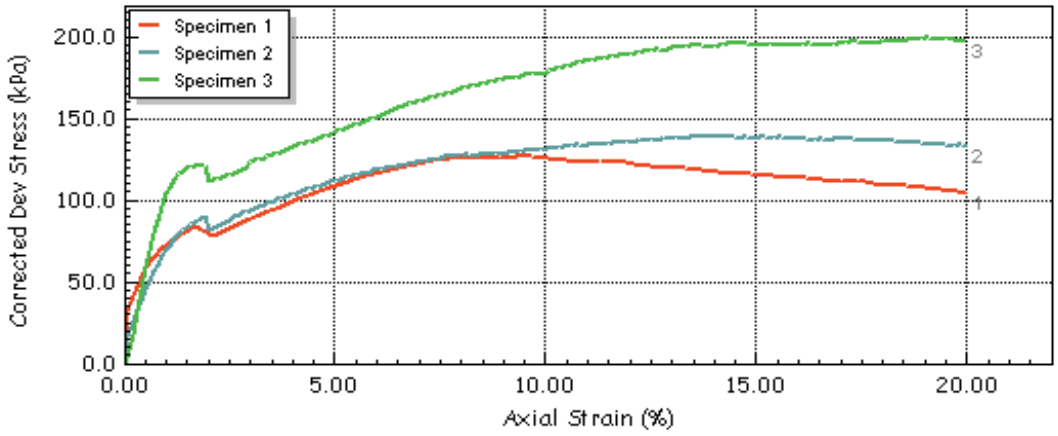
Test Method	BS1377-8 : 1990 : Clause 7	Test Name	BH106 2.50-2.95m UT-100
		Test Date	02/06/2023
		Borehole	BH106
Jobfile	A46 Walsgrave	Sample	2.50-2.95m UT100
Client	Strata Geotechnics	Depth	2.50-2.95m UTF16
Operator [redacted]	Checked [redacted]	Approved [redacted]	

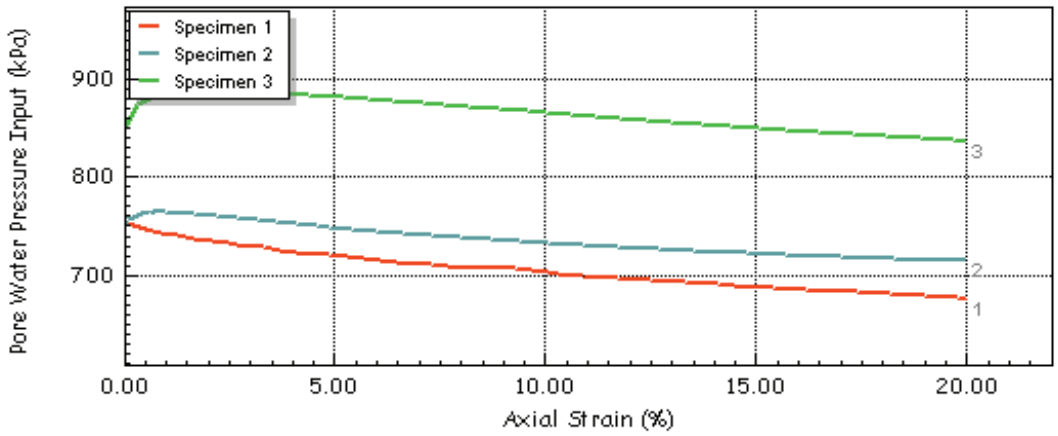
PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY
UKAS TESTING 4043

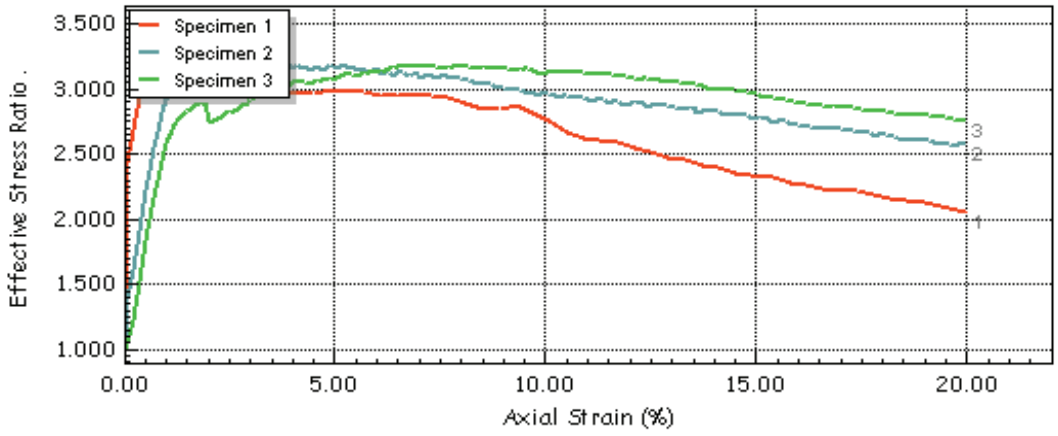
Effective Stress Triaxial Compression

Consolidated Undrained

Shear Stage Plots







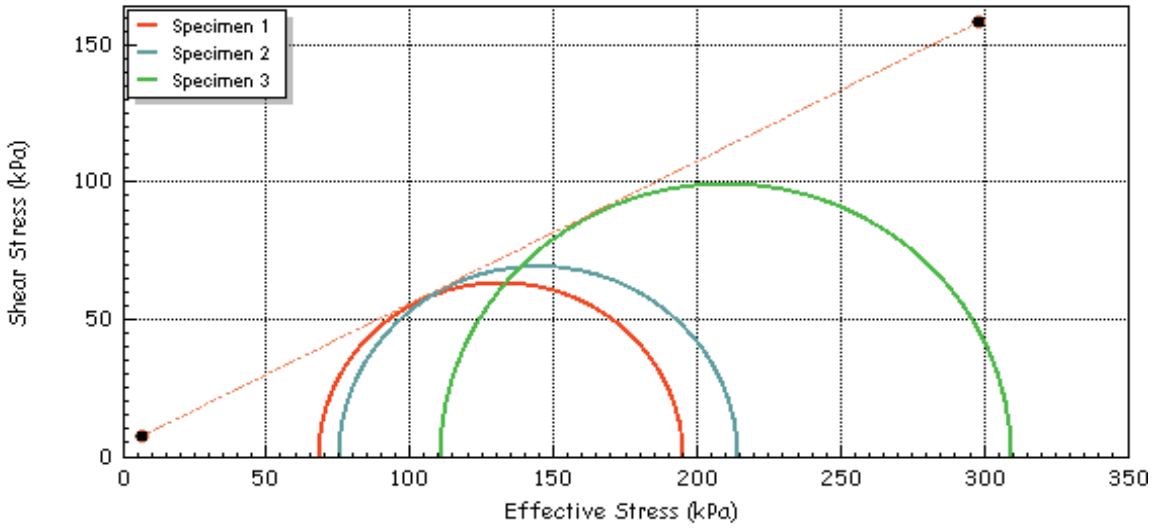
PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY UKAS TESTING 4043	Test Method	BS1377-8 : 1990 : Clause 7		Test Name	BH106 2.50-2.95m UT-100
				Test Date	02/06/2023
				Borehole	BH106
	Jobfile	A46 Walsgrave		Sample	2.50-2.95m UT100
	Client	Strata Geotechnics		Depth	2.50-2.95m UTF16
	Operator	[redacted]	Checked	[redacted]	Approved [redacted]

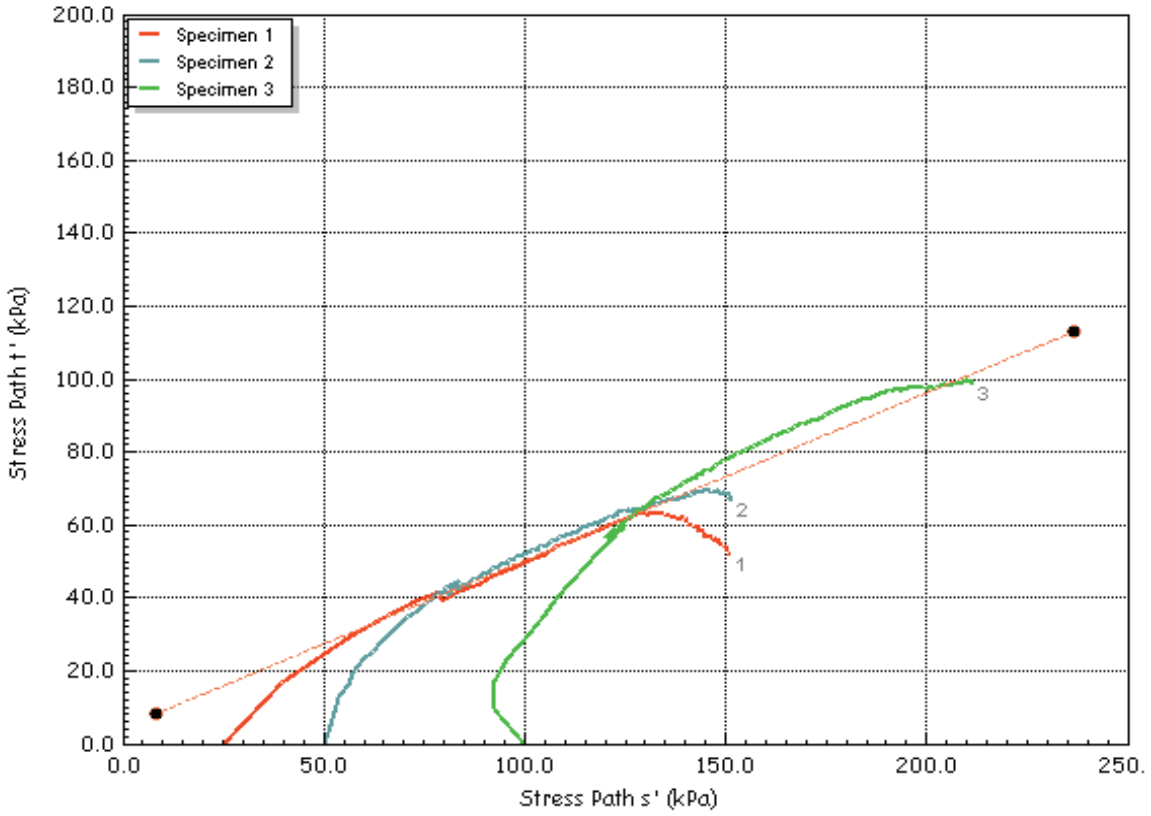
Effective Stress Triaxial Compression

Consolidated Undrained

Shear Stage Plots

Effective	c'	(kPa)	4.56	Effective Cohesion	c'	(kPa)	4.56
Effective Friction	ϕ'	(deg)	27.4	Effective Friction	ϕ'	(deg)	27.4



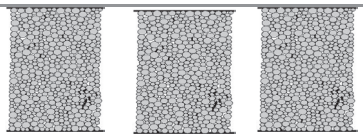


Test Method	BS1377-8 : 1990 : Clause 7	Test Name	BH106 2.50-2.95m UT-100
		Test Date	02/06/2023
		Borehole	BH106
Jobfile	A46 Walsgrave	Sample	2.50-2.95m UT100
Client	Strata Geotechnics	Depth	2.50-2.95m UTF16
Operator [redacted]	Checked [redacted]	Approved [redacted]	

Effective Stress Triaxial Compression

Consolidated Undrained

Summary Report

Sample Details	*sketch showing specimen location in original sample*				
Depth	4.50-4.95m UTF22				
Description	See summary of soil descriptions.				
Type	Undisturbed, vertical orientation.				
			Spm. 1	2	3
Initial Sample Length	L_0	(mm)	76.0	76.0	76.0
Initial Sample Diameter	D_0	(mm)	38.3	38.3	38.3
Initial Sample Weight	W_0	(gr)	183.7	184.0	183.5
Initial Bulk Density	ρ_0	(Mg/m3)	2.10	2.10	2.10
Particle Density	ρ_s	(Mg/m3)	2.66	2.66	2.66

Initial Conditions			Spm. 1	2	3
Initial Cell Pressure	σ_{3i}	(kPa)	1000	1050	1000
Initial Back Pressure	U_{bi}	(kPa)	950	950	800
Membrane Thickness	m_b	(mm)	0.600	0.600	0.600
Displacement Input	L_{IP}	(mm)	CH 2	CH 2	CH 2
Load Input	N_{IP}	(N)	CH 1	CH 1	CH 1
Pore Water Pressure Input	u_{pwp}	(kPa)	CH 3	CH 3	CH 3
Sample Volume	V	(cc)	CH 2	CH 2	CH 2
Initial Moisture	ω_i	(%)	19	19	19
Initial Dry Density	ρ_{di}	(Mg/m3)	1.77	1.76	1.76
Initial Voids Ratio	e_i	.	0.506	0.509	0.512
Initial Degree of Saturation	S_i	(%)	99	100	100
B Value	B	.	0.96	0.98	0.96

Final Conditions			Spm. 1	2	3
Final Moisture	ω_f	(%)	21	21	20
Final Dry Density	ρ_{df}	(Mg/m3)	1.77	1.78	1.78
Final Voids Ratio	e_f	.	0.504	0.495	0.492
Final Degree of Saturation	S_f	(%)	100.0	100.0	100.0
Failure Criteria		.	Max. Dev. Stress	Max. Dev. Stress	Max. Dev. Stress
Strain At Failure	ε_f	(%)	13.61	10.42	19.57
Stress At Failure	$(\sigma_1-\sigma_3)_f$	(kPa)	159.9	194.5	387.3
Minor Stress At Failure	σ_3'	(kPa)	76.8	95.0	200.4
Major Stress At Failure	σ_1'	(kPa)	236.7	289.5	587.7
Principal Stress Ratio At Failure	σ_1'/σ_3'		3.082	3.049	2.933
PwP At Failure Criteria	u_f	(kPa)	923.2	955.0	799.6

Notes

Plastic

PSL PROFESSIONAL SOILS LABORATORY — A PHENNA GROUP COMPANY — UKAS TESTING 4043

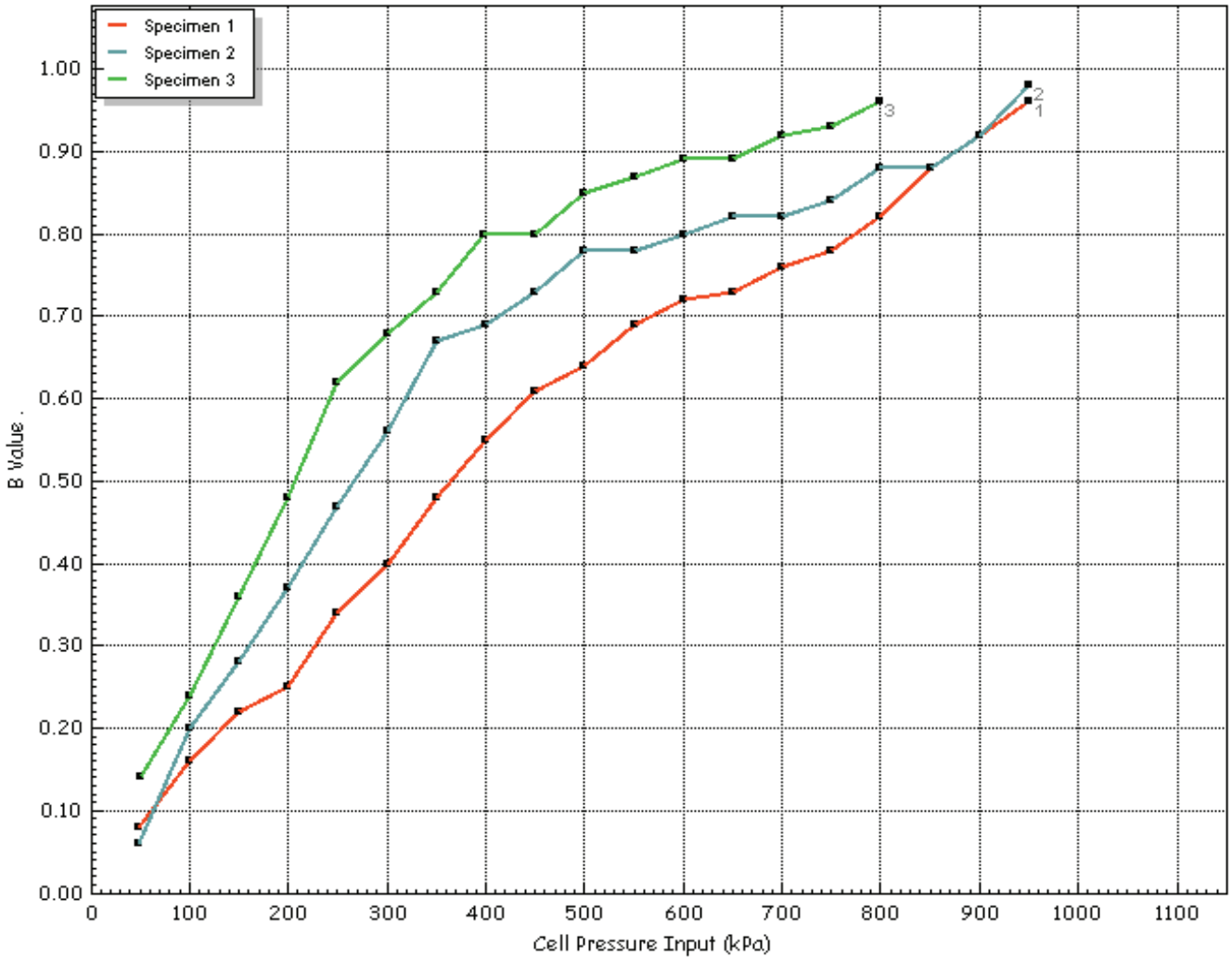
Test Method	BS1377-8 : 1990 : Clause 7	Test Name	BH106 4.50-4.95m
		Test Date	02/06/2023
		Borehole	BH106
Jobfile	A46 Walsgrave	Sample	4.50-4.95m
Client	Strata Geotechnics	Depth	4.50-4.95m UTF22
Operator	[redacted]	Checked	[redacted]
		Approved	[redacted]

Effective Stress Triaxial Compression

Consolidated Undrained

Saturation Plots

			Spm. 1	2	3
Saturation Method			Stepped	Stepped	Stepped
Cell Pressure Input	σ	(kPa)	950	950	800
Pore Water Pressure Input	u pwp	(kPa)	922	935	783
B Value	B	.	0.96	0.98	0.96



PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY UKAS TESTING 4043	Test Method	BS1377-8 : 1990 : Clause 7		Test Name	BH106 4.50-4.95m
				Test Date	02/06/2023
				Borehole	BH106
	Jobfile	A46 Walsgrave		Sample	4.50-4.95m
	Client	Strata Geotechnics		Depth	4.50-4.95m UTF22
	Operator	[redacted]	Checked	[redacted]	Approved [redacted]e

Effective Stress Triaxial Compression

Consolidated Undrained

Consolidation Plots

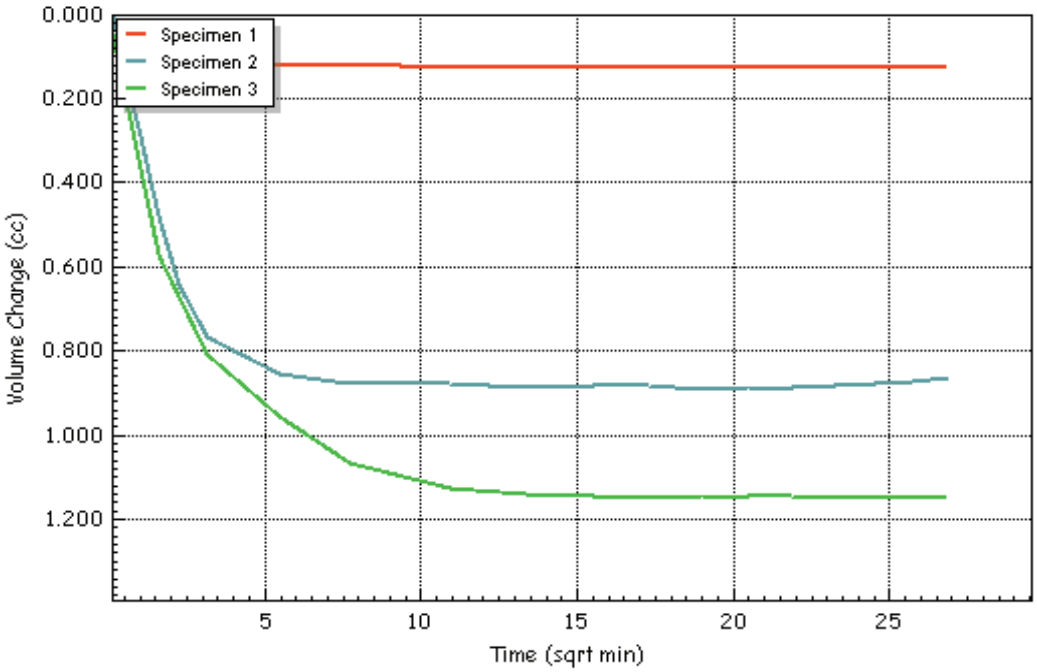
Initial Conditions

			Spm. 1	2	3
Initial Cell Pressure	σ_3	(kPa)	1000	1050	1000
Initial Back Pressure	u_{bi}	(kPa)	950	950	800
Pore Water Pressure Input	u_{pwp}	(kPa)	981	1023	962
Drainage Method			Radial+One End	Radial+One End	Radial+One End

Final Conditions

			Spm. 1	2	3
PWP Dissipation %	U%	(%)	100.00	100.00	100.00
Volumetric Strain	ε_v%	(%)	0.15	0.99	1.32
Corrected Length	L_C	(mm)	76.0	75.7	75.7
Corrected Area	A_C	(cm2)	11.50	11.45	11.39
Corrected Volume	V_C	(cc)	87.339	86.695	86.181
t100	t_{100}	(min)	14.04	10.29	10.55
Consolidation	c_V	(m2/year	0.022	0.030	0.029
Compressibility	m_V	(m2/MN)	0.048	0.135	0.091
Test Time	t_F	(h:m:s)	02:00:00	02:00:00	02:00:00
Estimated Strain to Failure	ε%	(%)	5.0	5.0	5.0
Shear Machine Speed	d_r	(mm/min	0.03165	0.03156	0.03153

Notes



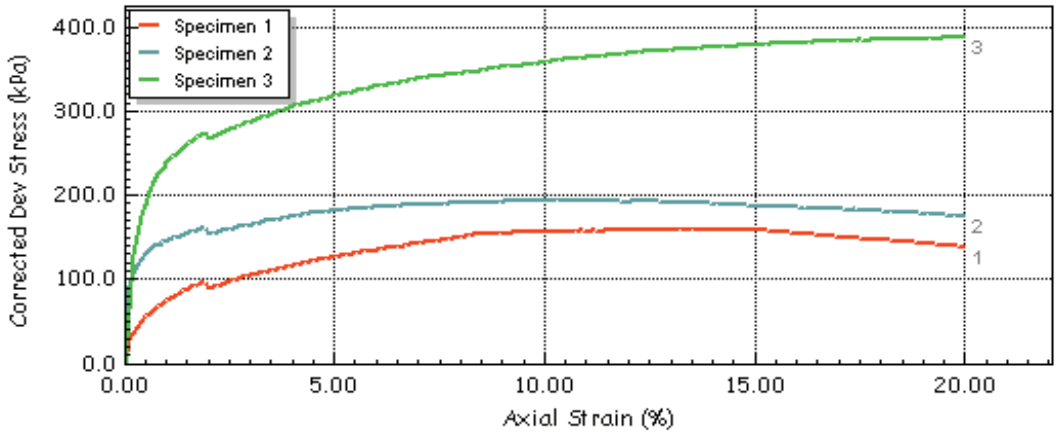
PSL PROFESSIONAL SOILS LABORATORY
A PHENNA GROUP COMPANY
UKAS TESTING 4043

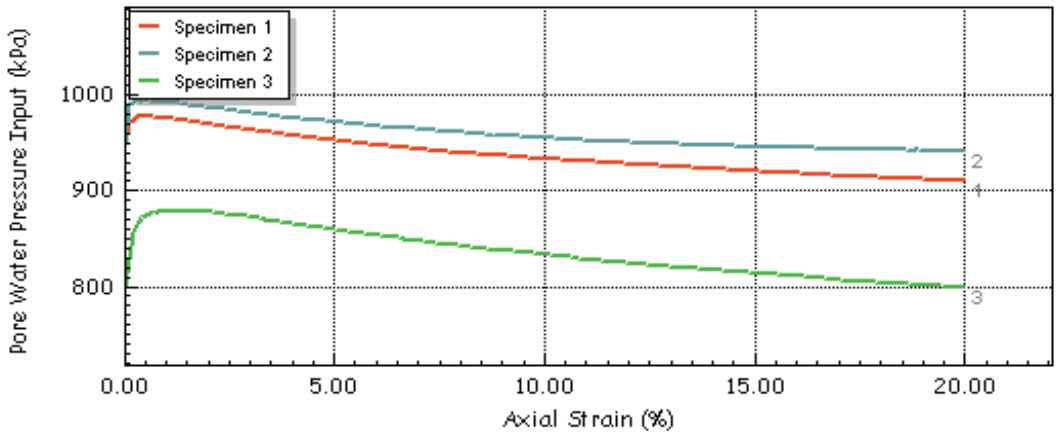
Test Method	BS1377-8 : 1990 : Clause 7	Test Name	BH106 4.50-4.95m
		Test Date	02/06/2023
		Borehole	BH106
Jobfile	A46 Walsgrave	Sample	4.50-4.95m
Client	Strata Geotechnics	Depth	4.50-4.95m UTF22
Operator [redacted]	Checked [redacted]	Approved [redacted]	

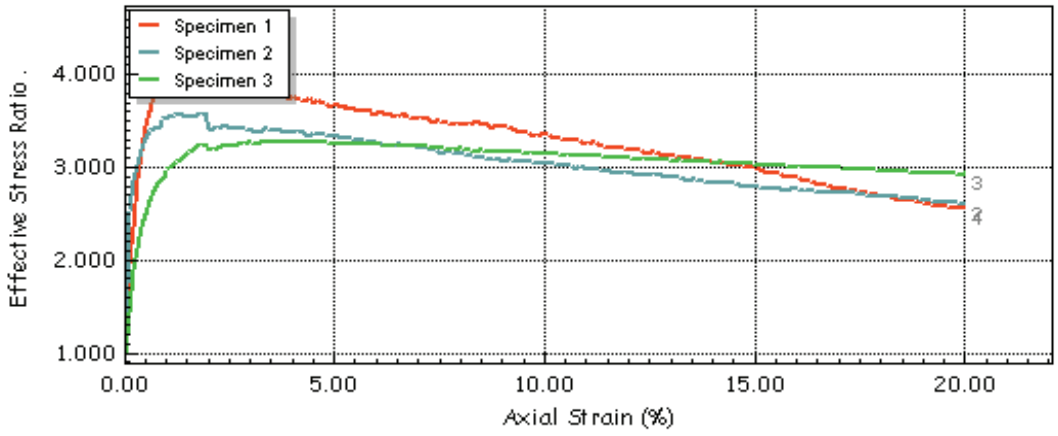
Effective Stress Triaxial Compression

Consolidated Undrained

Shear Stage Plots







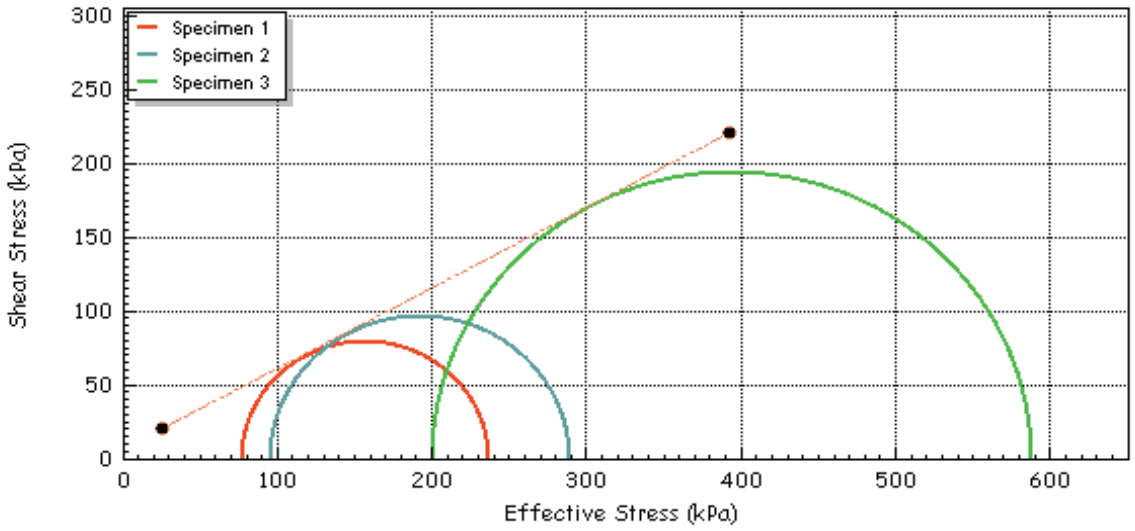
PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY UKAS TESTING 4043	Test Method	BS1377-8 : 1990 : Clause 7		Test Name	BH106 4.50-4.95m
				Test Date	02/06/2023
				Borehole	BH106
	Jobfile	A46 Walsgrave		Sample	4.50-4.95m
	Client	Strata Geotechnics		Depth	4.50-4.95m UTF22
	Operator	[redacted]	Checked	[redacted]	Approved [redacted]

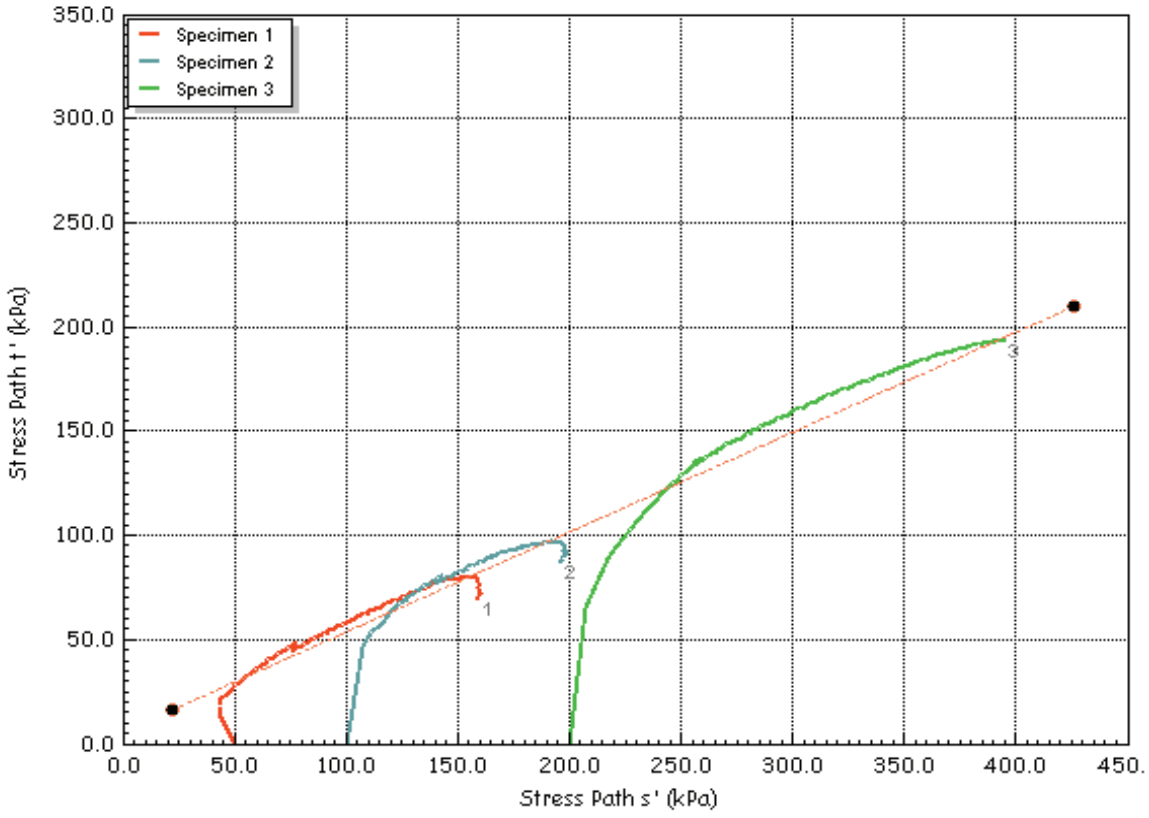
Effective Stress Triaxial Compression

Consolidated Undrained

Shear Stage Plots

Effective	c'	(kPa)	6.38	Effective Cohesion	c'	(kPa)	6.38
Effective Friction	ϕ'	(deg)	28.6	Effective Friction	ϕ'	(deg)	28.6





PSL PROFESSIONAL SOILS LABORATORY A PHOENIX GROUP COMPANY UKAS TESTING 4043	Test Method	BS1377-8 : 1990 : Clause 7	Test Name	BH106 4.50-4.95m	
			Test Date	02/06/2023	
	Jobfile	A46 Walsgrave	Borehole	BH106	
	Client	Strata Geotechnics	Sample	4.50-4.95m	
	Operator	[redacted]	Depth	4.50-4.95m UTF22	
		Checked [redacted]		Approved [redacted]	

Certificate of Analysis

Certificate Number	23-13125	*Issued:*	13-Jun-23

Client Professional Soils Laboratory Ltd
5/7 Hexthorpe Road
Hexthorpe
DN4 0AR

Our Reference	23-13125
Client Reference	PSL23/3983
Order No	(not supplied)
Contract Title	A46 WALSGRAVE
Description	3 Soil samples.
Date Received	05-Jun-23
Date Started	05-Jun-23
Date Completed	13-Jun-23
Test Procedures	Identified by prefix DETSn (details on request).
Notes	Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

Approved By [redacted]

ilac-MRA

UKAS TESTING
2139

Summary of Chemical Analysis
Soil Samples

Our Ref 23-13125
Client Ref PSL23/3983
Contract Title A46 WALSGRAVE

	Lab No	2181137	2181138	2181139
	.Sample ID	BH105	BH105	BH106
	Depth	0.50	1.90	2.20
	Other ID			
	Sample Type	B	D	D
	Sampling Date	12/05/2023	12/05/2023	12/05/2023
	Sampling Time	n/s	n/s	n/s

Test	Method	LOD	Units			
Metals						
Magnesium Aqueous Extract (2:1)	DETSC 2076*	10	mg/l	< 10	< 10	< 10
Inorganics						
pH	DETSC 2008#		pH	7.6	8.2	7.7
Organic matter	DETSC 2002#	0.1	%	0.5	1.3	0.6
Chloride Aqueous Extract (2:1)	DETSC 2055	1	mg/l	6.1	7.3	5.5
Nitrate Aqueous Extract as NO3 (2:1)	DETSC 2055	1	mg/l	9.8	12	3.0
Sulphate Aqueous Extract as SO4 (2:1)	DETSC 2076#	10	mg/l	16	24	27
Sulphur as S, Total	DETSC 2320	0.01	%	< 0.01	0.01	< 0.01
Sulphate as SO4, Total	DETSC 2321#	0.01	%	0.02	0.02	0.03

Key: * -not accredited. # -MCERTS (accreditation only applies if report carries the MCERTS logo). n/s -not supplied.

Information in Support of the Analytical Results

Our Ref 23-13125
Client Ref PSL23/3983
Contract A46 WALSGRAVE

Containers Received & Deviating Samples

Lab No	Sample ID	Date Sampled	Containers Received	Holding time exceeded for tests	Inappropriate container for tests
2181137	BH105 0.50 SOIL	12/05/23	PT 1L	Total Sulphur ICP (7 days), pH + Conductivity (7 days)	
2181138	BH105 1.90 SOIL	12/05/23	PT 1L	Total Sulphur ICP (7 days), pH + Conductivity (7 days)	
2181139	BH106 2.20 SOIL	12/05/23	PT 1L	Total Sulphur ICP (7 days), pH + Conductivity (7 days)	

Key: P-Plastic T-Tub

DETS cannot be held responsible for the integrity of samples received whereby the laboratory did not undertake the sampling. In this instance samples received may be deviating. Deviating Sample criteria are based on British and International standards and laboratory trials in conjunction with the UKAS note 'Guidance on Deviating Samples'. All samples received are listed above. However, those samples that have additional comments in relation to hold time, inappropriate containers etc are deviating due to the reasons stated. This means that the analysis is accredited where applicable, but results may be compromised due to sample deviations. If no sampled date (soils) or date+time (waters) has been supplied then samples are deviating. However, if you are able to supply a sampled date (and time for waters) this will prevent samples being reported as deviating where specific hold times are not exceeded and where the container supplied is suitable.

Soil Analysis Notes

Inorganic soil analysis was carried out on a dried sample, crushed to pass a 425µm sieve, in accordance with BS1377.

Organic soil analysis was carried out on an 'as received' sample. Organics results are corrected for moisture and expressed on a dry weight basis.

The Loss on Drying, used to express organics analysis on an air dried basis, is carried out at a temperature of 28°C +/-2°C.

Disposal

From the issue date of this test certificate, samples will be held for the following times prior to disposal :-

Soils - 1 month, Liquids - 2 weeks, Asbestos (test portion) - 6 months

End of Report

LABORATORY REPORT

Contract Number: PSL23/3981

Report Date: 27 June 2023

Client's Reference: G230651

Client Name: Strata Geotechnics
Kirkby Lane
Pinxton
Nottinghamshire
NG16 6JA

For the attention of: Izaac Lovatt

Contract Title: A46 Walsgrave

Date Received: 25/5/2023
Date Commenced: 25/5/2023
Date Completed: 27/6/2023

Notes: Opinions and Interpretations are outside the UKAS Accreditation

A copy of the Laboratory Schedule of accredited tests as issued by UKAS is attached to this report. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced other than in full, without the prior written approval of the laboratory.

Checked and Approved Signatories:

[redacted]

(Director) (Quality Manager) (Laboratory Manager)

[redacted]

(Assistant Laboratory Manager) (Senior Technician) (Senior Technician)

5 – 7 Hexthorpe Road,
Hexthorpe,
Doncaster,
DN4 0AR
Tel: 01302 768098
Email: [redacted]

SUMMARY OF LABORATORY SOIL DESCRIPTIONS

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Description of Sample
BH108	9	B	1.00	1.20	Brown slightly clayey silty SAND & GRAVEL.
BH108	13	D	1.90	1.90	Reddish brown gravelly very sandy CLAY.
BH108	15	UT	2.10	2.55	Reddish brown slightly gravelly sandy CLAY.
BH108	16	D	2.55	2.60	Reddish brown mottled grey sandy CLAY.
BH108	21	UT	4.00	4.45	Reddish brown mottled grey sandy CLAY.
BH108	22	D	4.50	4.50	Reddish brown mottled grey sandy CLAY.
BH108	24	D	5.00	5.45	Reddish brown mottled grey sandy CLAY.
BH108	27	UT	6.50	6.95	Very stiff reddish brown mottled grey sandy CLAY.
BH108	28	D	7.00	7.00	Reddish brown mottled grey sandy CLAY.

SUMMARY OF SOIL CLASSIFICATION TESTS

(BS1377 : PART 2 : 1990)

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Moisture Content % Clause 3.2	Linear Shrinkage % Clause 6.5	Particle Density Mg/m^3 Clause 8.2	Liquid Limit % Clause 4.3/4	Plastic Limit % Clause 5.3	Plasticity Index % Clause 5.4	Passing .425mm %	Remarks
BH108	13	D	1.90	1.90	11			28	13	15	83	Low Plasticity CL
BH108	22	D	4.50	4.50	15			37	19	18	100	Intermediate Plasticity CI
BH108	28	D	7.00	7.00	11			44	21	23	100	Intermediate Plasticity CI

SYMBOLS : **NP : Non Plastic** *** : Liquid Limit and Plastic Limit Wet Sieved.**

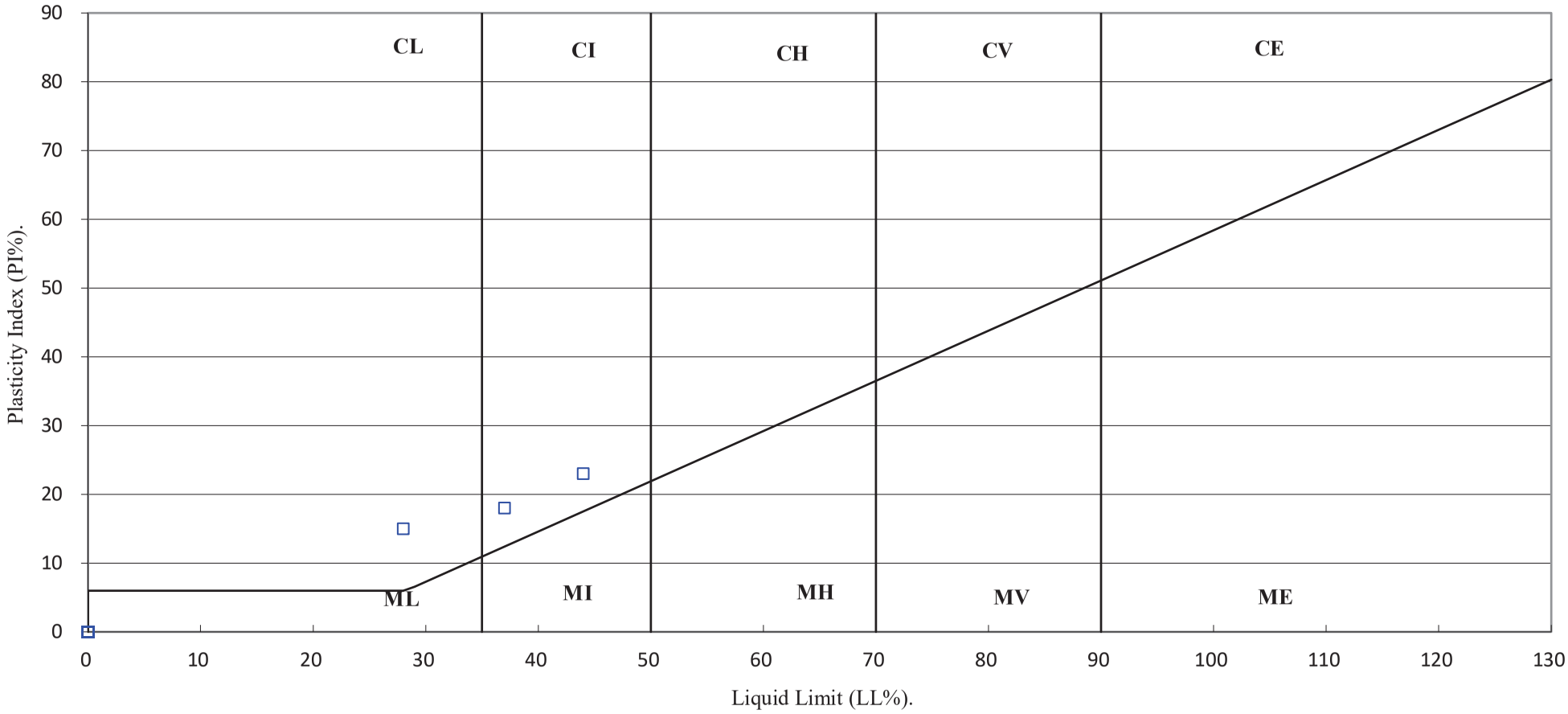
UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

Contract No:
PSL23/3981
Client Ref:
G230651

PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION.



UKAS TESTING 4043	PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY	A46 Walsgrave

Contract No:
PSL23/3981
Client Ref:
G230651

SUMMARY OF SOIL DENSITY RELATED TESTS

(BS1377 : PART 2 & 4 : 1990)

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Moisture Content %	Bulk Density Mg/m^3	Dry Density Mg/m^3	Retained 20mm %	Retained 37.5mm %	Method of compaction kg	Maximum Dry Density Mg/m^3	Minimum Dry Density Mg/m^3	Remarks
BH108	16	D	2.55	2.60	17	2.15	1.84						
BH108	24	D	5.00	5.45	16	2.18	1.88						

UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

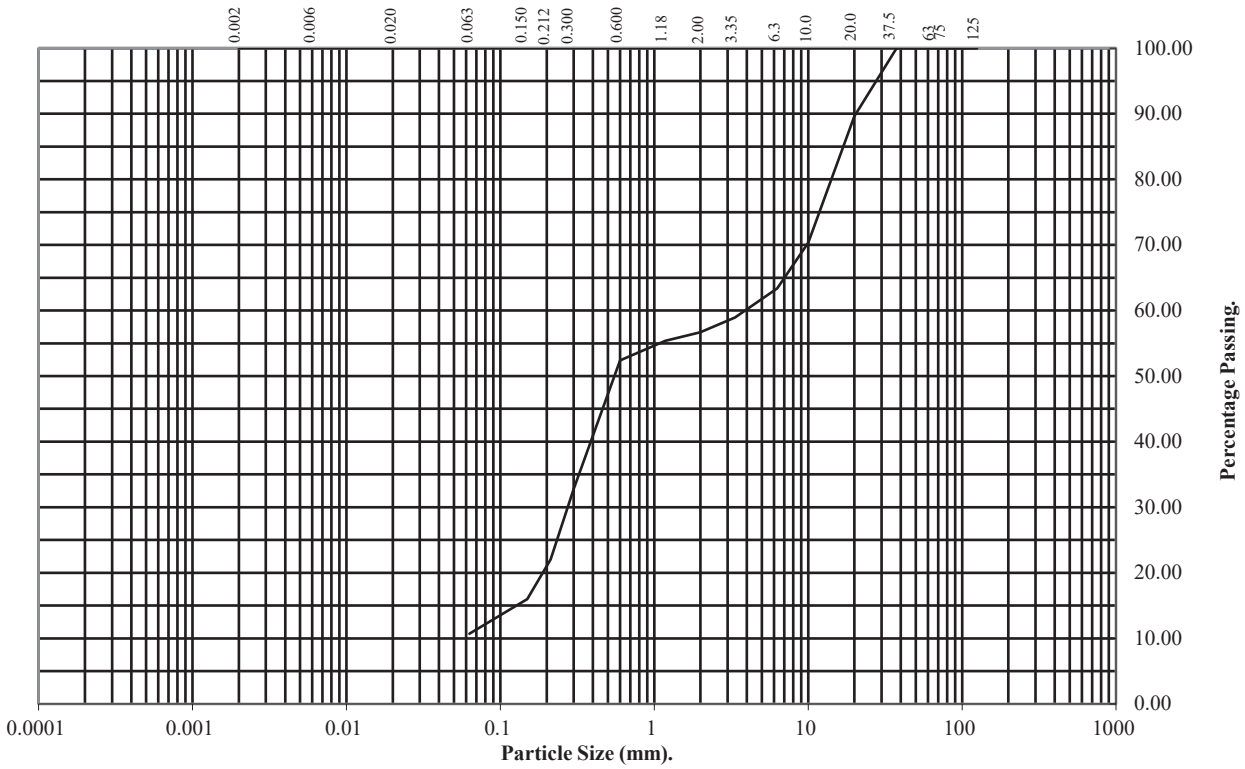
Contract No:
PSL23/3981
Client Ref:
G230651

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number:	**BH108**	**Top Depth (m):**	**1.00**
Sample Number:	**9**	**Base Depth(m):**	**1.20**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	90
10	70
6.3	63
3.35	59
2	57
1.18	55
0.6	52
0.3	33
0.212	22
0.15	16
0.063	11

Soil Fraction	Total Percentage
Cobbles	0
Gravel	43
Sand	46
Silt/Clay	11

Remarks:

See Summary of Soil Descriptions

UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

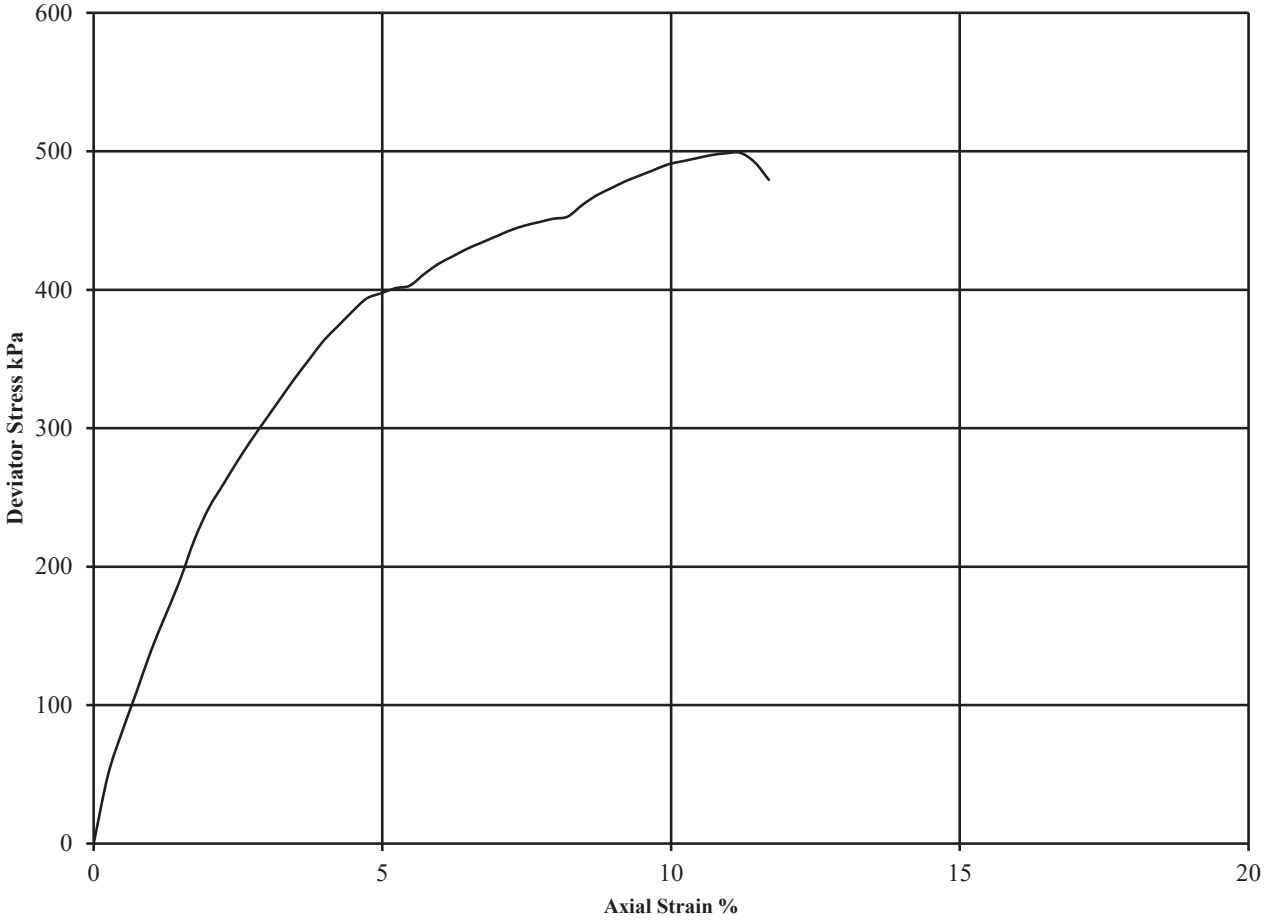
Contract No:
PSL23/3981
Client Ref:
G230651

UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION

WITHOUT MEASUREMENT OF PORE PRESSURE

BS1377 : Part7 : 1990: Clause 9

Hole Number:	**BH108**	**Top Depth (m):**	**6.50**
Sample Number:	**27**	**Base Depth (m):**	**6.95**
Sample Type	**UT**		



Diameter (mm):		103	Height (mm):		207	Test:	UU Multistage		Remarks
Specimen	Moisture Content (%)	Bulk Density (Mg/m3)	Dry Density (Mg/m3)	Cell Pressure (kPa) θ_3	Corr. Max. Deviator Stress (kPa) $(\theta_1-\theta_3)_f$	Shear Strength Cu (kPa) $^1/_2(\theta_1-\theta_3)_f$	Failure Strain (%)	Mode of Failure	Undisturbed Sample Sample taken from top of tube Rate of strain = 2 %/min Latex Membrane used 0.2 mm thick Membrane Correction applied (kPa)
1	14	2.26	1.98	65	403	201	5.5		0.36 0.35 0.35
				130	453	226	8.2		See summary of soil descriptions
				260	499	249	11.2	Brittle	

UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

Contract No: PSL23/3981

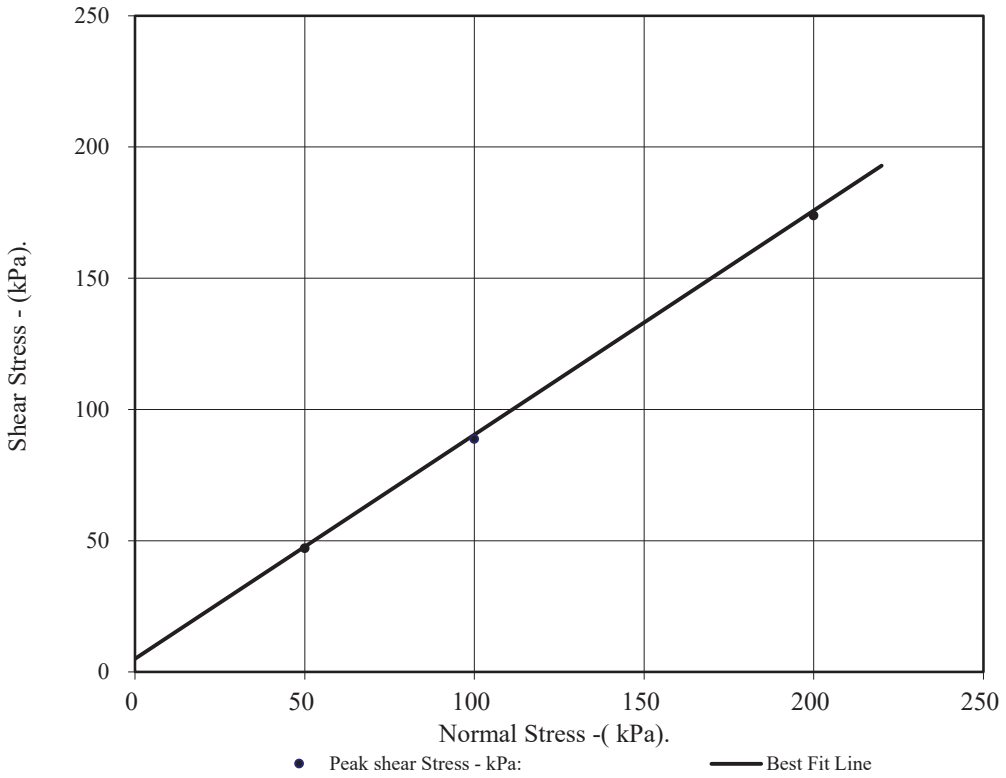
Client Ref: G230651

CONSOLIDATED DRAINED SHEARBOX TEST

BS1377:Part 7:1990 Clause 5 SHW Clause 636 Paragraph 2

Hole Number:	**BH108**		Top Depth:	**1.00**
Sample Number:	**9**		Base Depth:	**1.20**
Sample Conditions:	Dry		Sample Type	**B**
Particle Density - Mg/m3:	2.65	Assumed	**Remarks:**	
Sample Preparation:	Material tested passing 20mm sieve Recompacted using hand tamped effort			
Sample Description:	**See summary of soil descriptions**			

STAGE	**1**	**2**	**3**
Initial Conditions			
Height - mm:	150	150	150
Length - mm:	300	300	300
Moisture Content - %:	11	11	11
Bulk Density - Mg/m3:	2.17	2.17	2.17
Dry Density - Mg/m3:	1.95	1.95	1.95
Voids Ratio:	0.359	0.359	0.359
Normal Pressure- kPa	50	100	200
Consolidation Stage			
Consolidated Height - mm:	143.40	140.34	138.18
Shearing Stage			
Rate of Strain (mm/min)	1.00	1.00	1.00
Displacement at peak shear stress (mm)	22.55	20.55	26.05
Peak shear Stress - kPa:	47	89	174
Final Consolidated Conditions			
Moisture Content - %:	11	11	10
Bulk Density - Mg/m3:	2.25	2.32	2.36
Dry Density - Mg/m3:	2.03	2.10	2.14
Peak			
Angle of Shearing Resistance:(~~θ~~)	**41**		
Effective Cohesion - kPa:	**5**		



UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

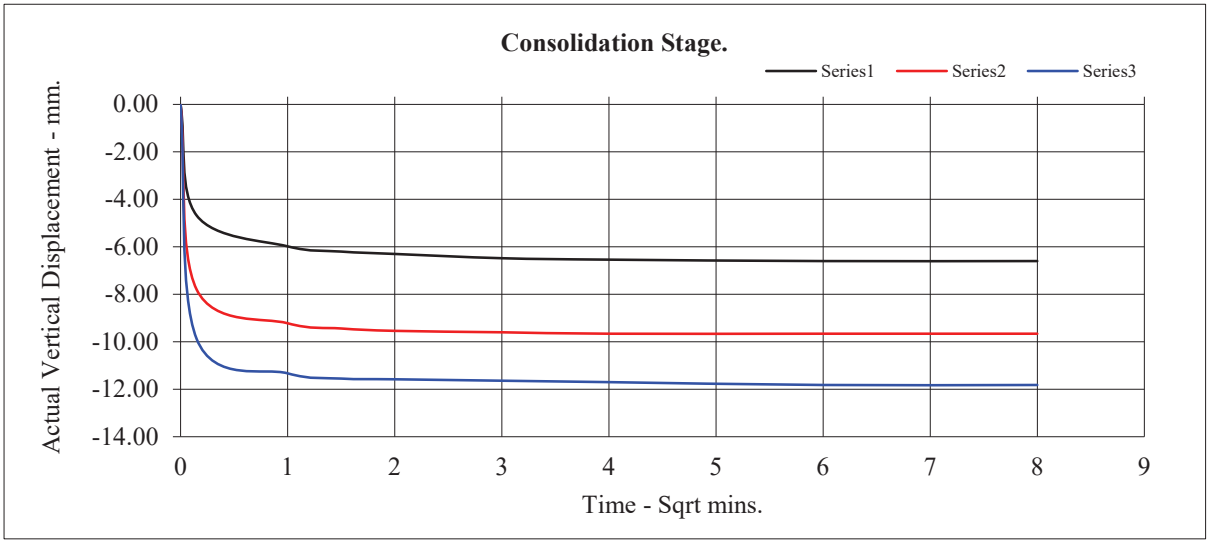
A46 Walsgrave

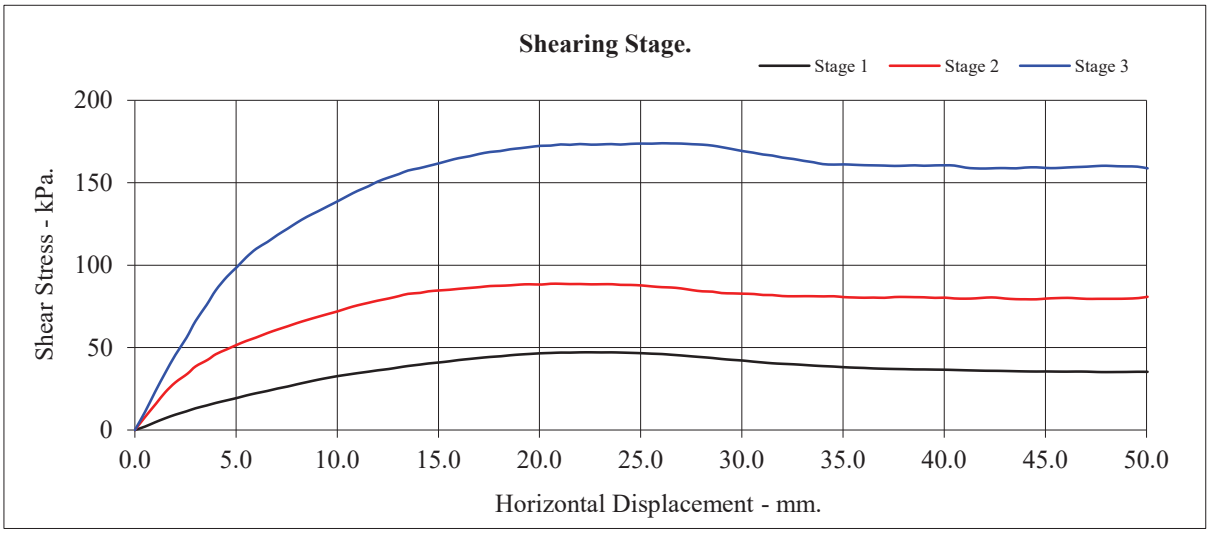
Contract No:
PSL23/3981
Client Ref:
G230651

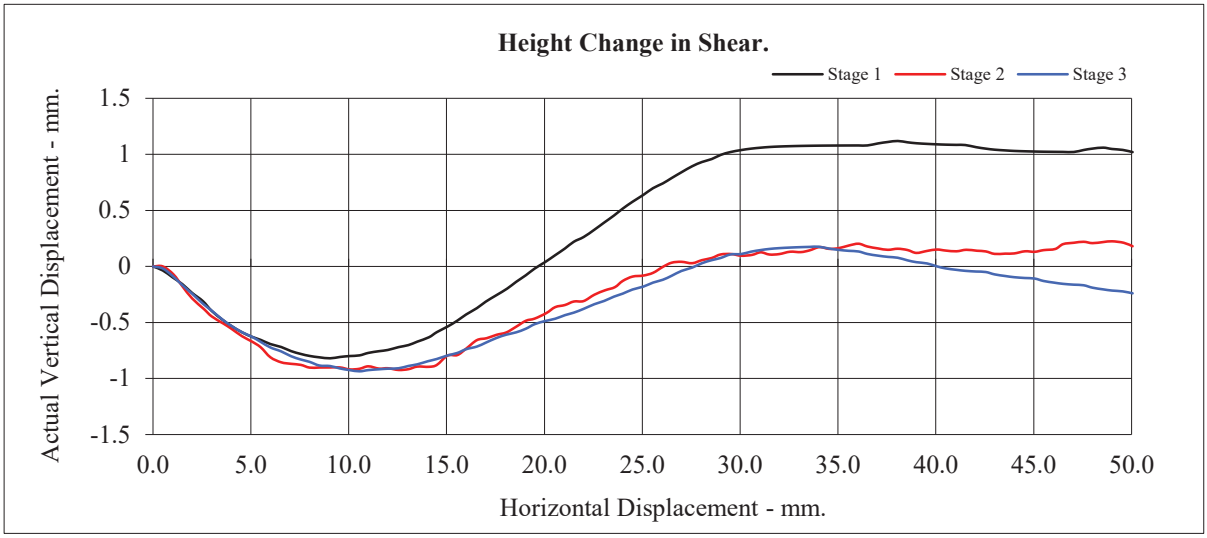
CONSOLIDATED DRAINED SHEARBOX TEST

BS1377:Part 7:1990 Clause 5 SHW Clause 636 Paragraph 2

Hole Number:	**BH108**	Top Depth:	**1.00**
Sample Number:	**9**	Base Depth:	**1.20**







UKAS TESTING 4043 / PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY	**A46 Walsgrave**	**Contract No:** PSL23/3981 **Client Ref:** G230651

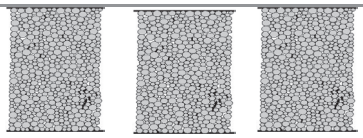
Effective Stress Triaxial Compression

Consolidated Undrained

Summary Report

Sample Details

sketch showing specimen location in original sample



Depth	2.10-2.55m UTF 15
Description	See summary of soil descriptions.
Type	Undisturbed, vertical orientation.

			Spm. 1	2	3
Initial Sample Length	L_0	(mm)	76.0	76.0	76.0
Initial Sample Diameter	D_0	(mm)	38.6	38.5	38.5
Initial Sample Weight	W_0	(gr)	186.8	186.2	186.4
Initial Bulk Density	ρ_0	(Mg/m3)	2.10	2.10	2.10
Particle Density	ρ_s	(Mg/m3)	2.66	2.66	2.66

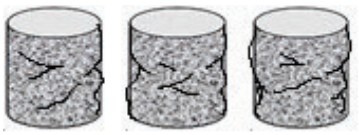
Initial Conditions

			Spm. 1	2	3
Initial Cell Pressure	σ_{3i}	(kPa)	475	700	1100
Initial Back Pressure	U_{bi}	(kPa)	450	650	1000
Membrane Thickness	m_b	(mm)	0.600	0.600	0.600
Displacement Input	L_{IP}	(mm)	CH 2	CH 2	CH 2
Load Input	N_{IP}	(N)	CH 4	CH 4	CH 4
Pore Water Pressure Input	u_{pwp}	(kPa)	CH 3	CH 3	CH 3
Sample Volume	V	(cc)	CH 6	CH 6	CH 6
Initial Moisture	ω_i	(%)	19	19	19
Initial Dry Density	ρ_{di}	(Mg/m3)	1.77	1.77	1.77
Initial Voids Ratio	e_i	.	0.502	0.507	0.501
Initial Degree of Saturation	S_i	(%)	99	100	99
B Value	B	.	0.97	0.96	0.98

Final Conditions

			Spm. 1	2	3
Final Moisture	ω_f	(%)	19	18	17
Final Dry Density	ρ_{df}	(Mg/m3)	1.78	1.79	1.81
Final Voids Ratio	e_f	.	0.495	0.485	0.468
Final Degree of Saturation	S_f	(%)	99.6	99.4	98.4
Failure Criteria		.	Max. Dev. Stress	Max. Dev. Stress	Max. Dev. Stress
Strain At Failure	ε_f	(%)	19.46	19.86	10.80
Stress At Failure	$(\sigma_1-\sigma_3)_f$	(kPa)	117.4	146.1	159.4
Minor Stress At Failure	σ_3'	(kPa)	52.4	70.0	77.3
Major Stress At Failure	σ_1'	(kPa)	169.8	216.1	236.6
Principal Stress Ratio At Failure	σ_1'/σ_3'		3.242	3.087	3.063
PwP At Failure Criteria	u_f	(kPa)	428.1	630.0	1022.9

Notes



Plastic

PSL PROFESSIONAL SOILS LABORATORY — A PHENNA GROUP COMPANY — UKAS TESTING 4043

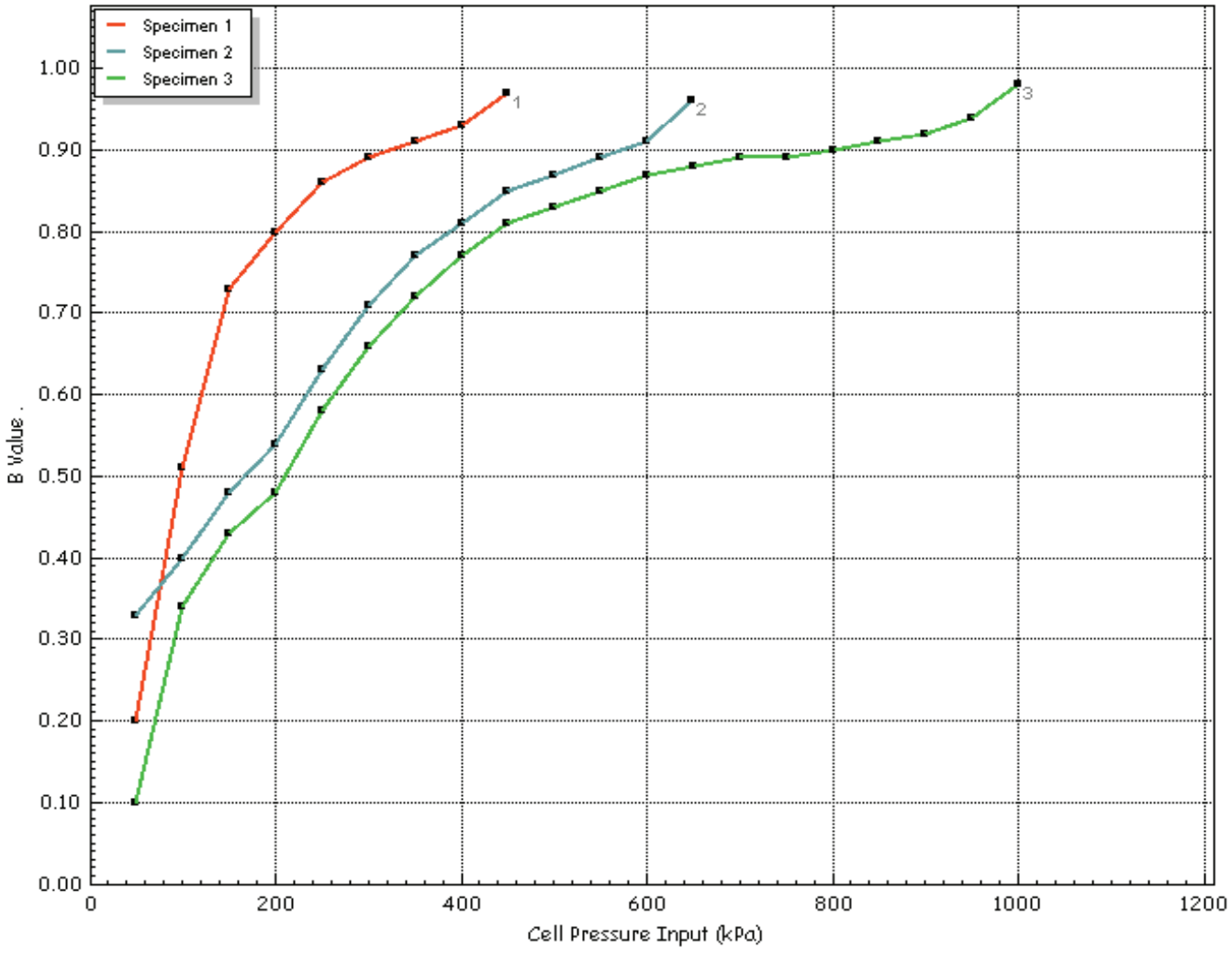
Test Method	BS1377-8 : 1990 : Clause 7	Test Name	BH108 2.10-2.55m
		Test Date	01/06/2023
		Borehole	BH108
Jobfile	A46 Walsgrave	Sample	2.10-2.55m
Client	Strata Geotechnics	Depth	2.10-2.55m UTF 15
Operator	[redacted]	Checked	[redacted]
		Approved	[redacted]

Effective Stress Triaxial Compression

Consolidated Undrained

Saturation Plots

			Spm. 1	2	3
Saturation Method			Stepped	Stepped	Stepped
Cell Pressure Input	σ	(kPa)	450	650	1000
Pore Water Pressure Input	u pwp	(kPa)	431	633	992
B Value	B	.	0.97	0.96	0.98



Test Method	BS1377-8 : 1990 : Clause 7	Test Name	BH108 2.10-2.55m
		Test Date	01/06/2023
		Borehole	BH108
Jobfile	A46 Walsgrave	Sample	2.10-2.55m
Client	Strata Geotechnics	Depth	2.10-2.55m UTF 15

[redacted]

Effective Stress Triaxial Compression

Consolidated Undrained

Consolidation Plots

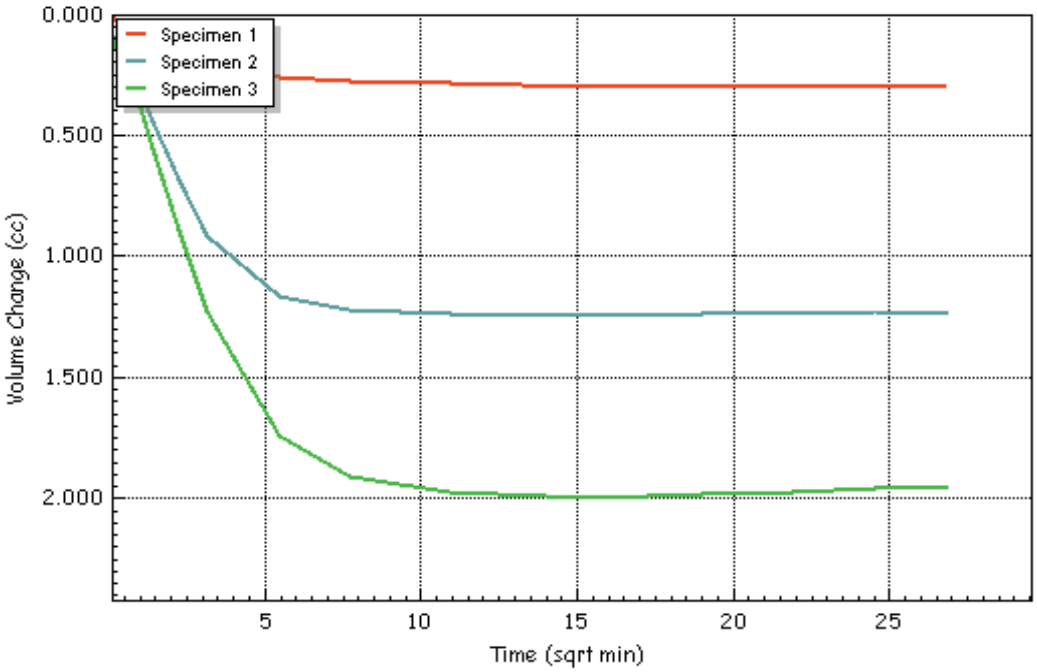
Initial Conditions

			Spm. 1	2	3
Initial Cell Pressure	σ_3	(kPa)	475	700	1100
Initial Back Pressure	u_{bi}	(kPa)	450	650	1000
Pore Water Pressure Input	u_{pwp}	(kPa)	462	696	1091
Drainage Method			Radial+One End	Radial+One End	Radial+One End

Final Conditions

			Spm. 1	2	3
PWP Dissipation %	U%	(%)	100.00	100.00	100.00
Volumetric Strain	ε_v%	(%)	0.34	1.39	2.20
Corrected Length	L_c	(mm)	75.9	75.6	75.4
Corrected Area	A_c	(cm2)	11.68	11.53	11.49
Corrected Volume	V_c	(cc)	88.635	87.245	86.711
t100	t_{100}	(min)	13.12	23.31	52.46
Consolidation	c_v	(m2/year	0.024	0.013	0.006
Compressibility	m_v	(m2/MN)	0.287	0.302	0.243
Test Time	t_F	(h:m:s)	02:00:00	02:00:00	02:00:00
Estimated Strain to Failure	ε%	(%)	5.0	5.0	5.0
Shear Machine Speed	d_r	(mm/min	0.03163	0.03152	0.03143

Notes



PSL PROFESSIONAL SOILS LABORATORY
UKAS TESTING 4043

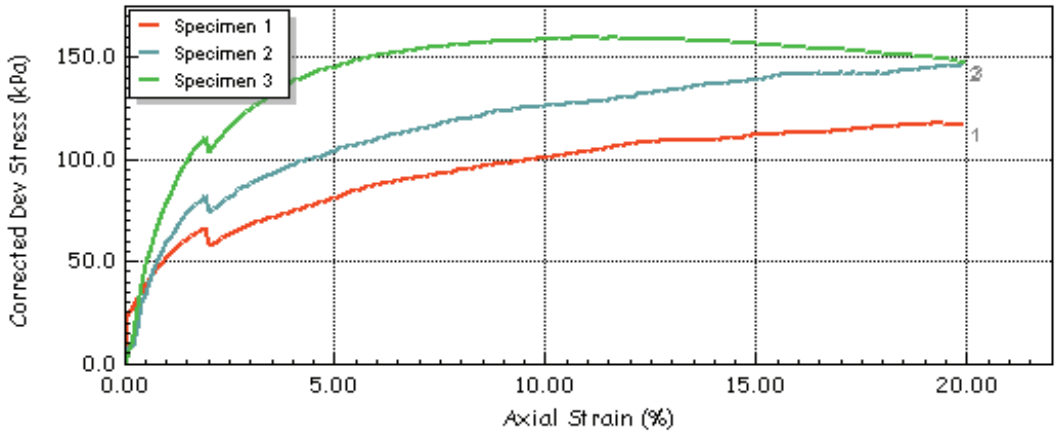
Test Method	BS1377-8 : 1990 : Clause 7	Test Name	BH108 2.10-2.55m
		Test Date	01/06/2023
		Borehole	BH108
Jobfile	A46 Walsgrave	Sample	2.10-2.55m
Client	Strata Geotechnics	Depth	2.10-2.55m UTF 15

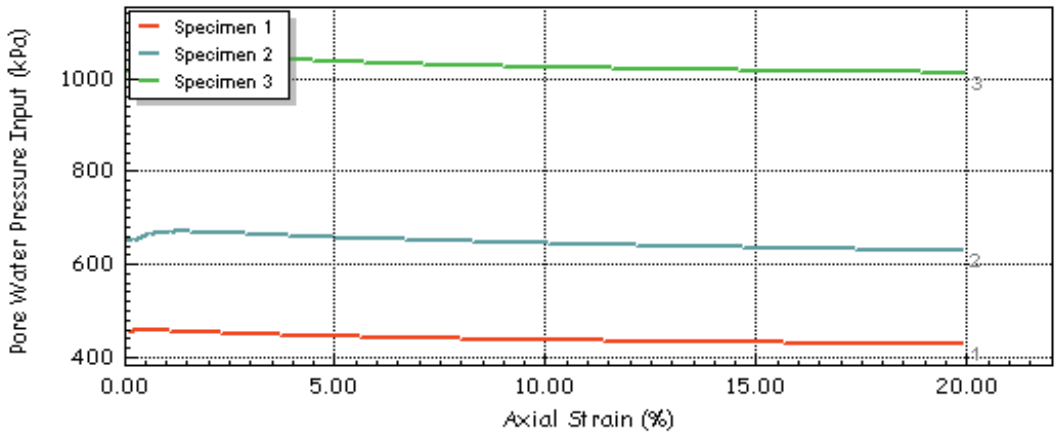
[redacted]

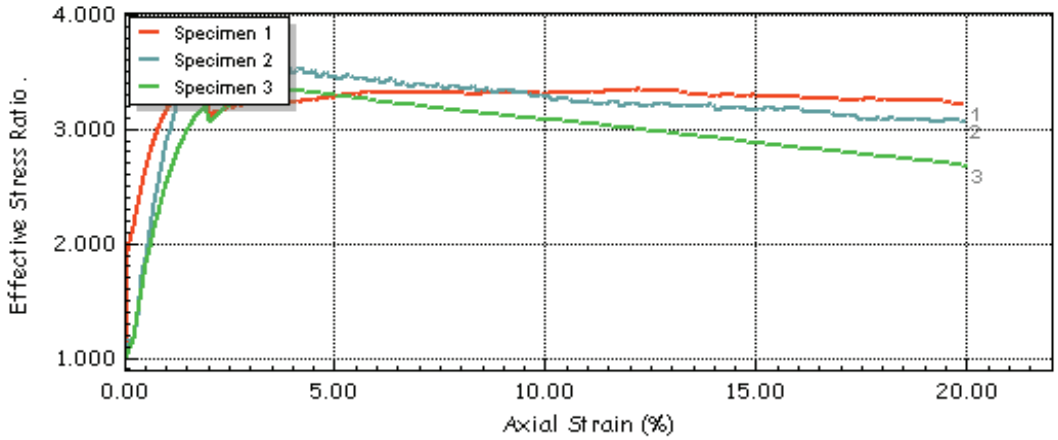
Effective Stress Triaxial Compression

Consolidated Undrained

Shear Stage Plots







Test Method	BS1377-8 : 1990 : Clause 7	Test Name	BH108 2.10-2.55m
		Test Date	01/06/2023
		Borehole	BH108
Jobfile	A46 Walsgrave	Sample	2.10-2.55m
Client	Strata Geotechnics	Depth	2.10-2.55m UTF 15

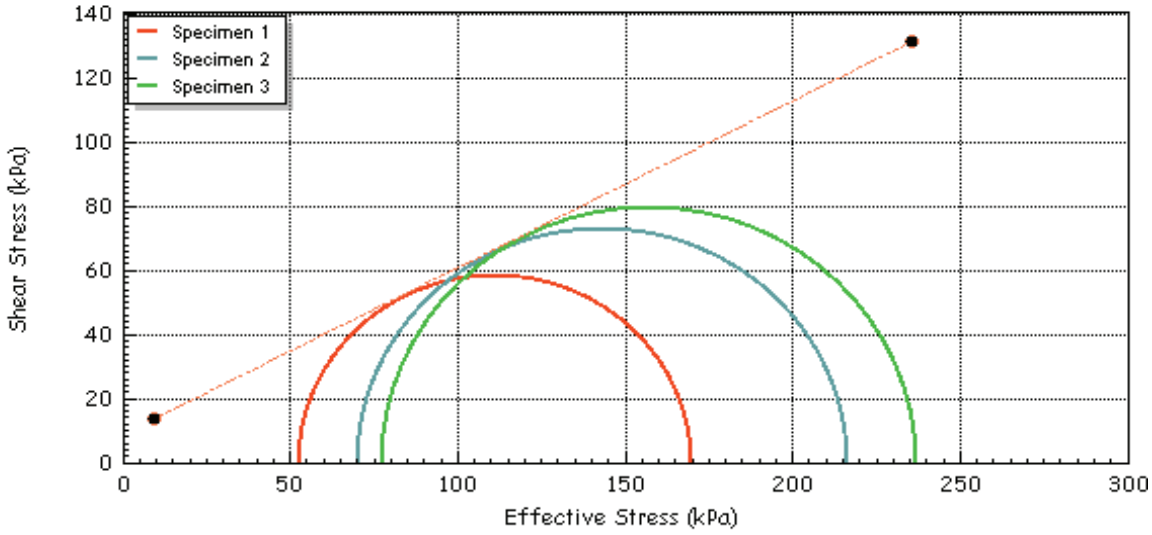
PSL PROFESSIONAL SOILS LABORATORY
UKAS TESTING 4043

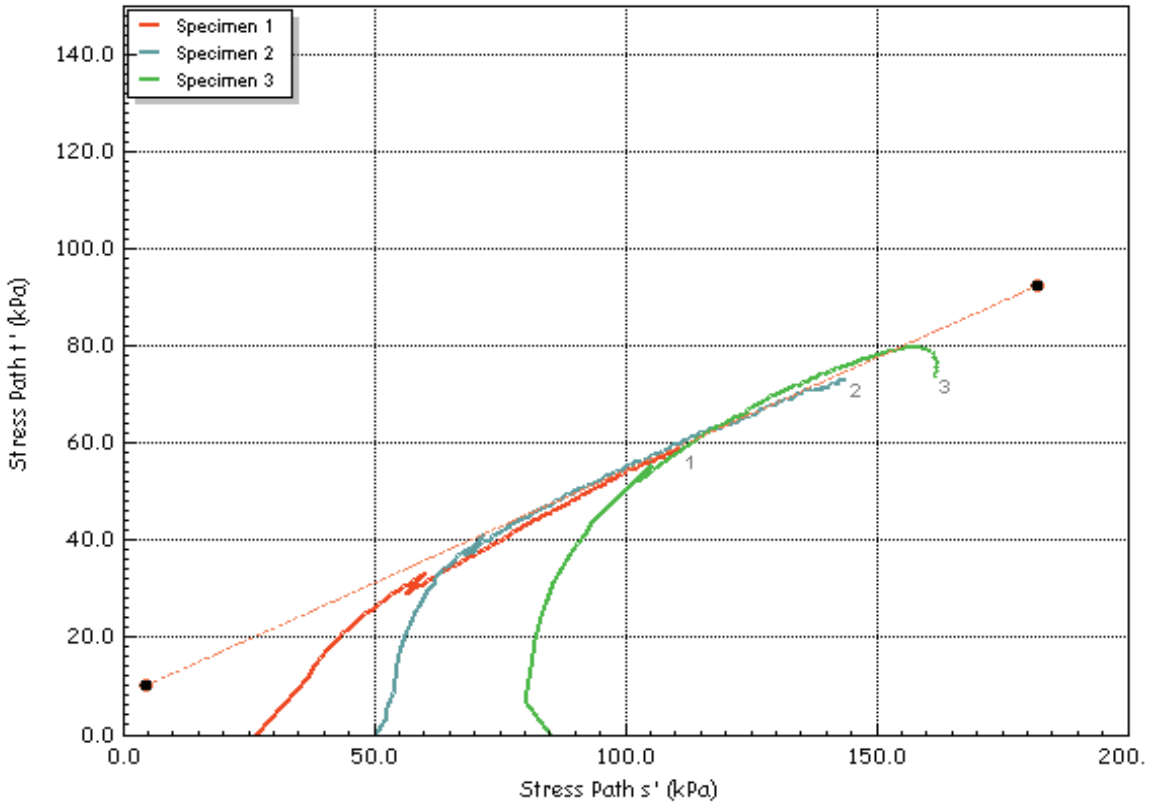
Effective Stress Triaxial Compression

Consolidated Undrained

Shear Stage Plots

Effective	c'	(kPa)	8.92	Effective Cohesion	c'	(kPa)	8.92
Effective Friction	ϕ'	(deg)	27.6	Effective Friction	ϕ'	(deg)	27.6





Test Method	BS1377-8 : 1990 : Clause 7	Test Name	BH108 2.10-2.55m
		Test Date	01/06/2023
		Borehole	BH108
Jobfile	A46 Walsgrave	Sample	2.10-2.55m
Client	Strata Geotechnics	Depth	2.10-2.55m UTF 15

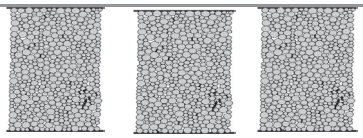
PSL PROFESSIONAL SOILS LABORATORY
UKAS TESTING 4043

Effective Stress Triaxial Compression

Consolidated Undrained

Summary Report

Sample Details *sketch showing specimen location in original sample*



			Spm. 1	2	3
Depth	4.00-4.45m UTF 21				
Description	See summary of soil descriptions.				
Type	Undisturbed, vertical orientation.				
Initial Sample Length	L_0	(mm)	76.0	76.0	76.0
Initial Sample Diameter	D_0	(mm)	38.1	38.3	38.2
Initial Sample Weight	W_0	(gr)	185.7	187.4	186.0
Initial Bulk Density	ρ_0	(Mg/m3)	2.14	2.14	2.14
Particle Density	ρ_s	(Mg/m3)	2.66	2.66	2.66

Initial Conditions

			Spm. 1	2	3
Initial Cell Pressure	σ_{3i}	(kPa)	750	750	850
Initial Back Pressure	U_{bi}	(kPa)	700	650	650
Membrane Thickness	m_b	(mm)	0.600	0.600	0.600
Displacement Input	L_{IP}	(mm)	CH 2	CH 2	CH 2
Load Input	N_{IP}	(N)	CH 4	CH 4	CH 4
Pore Water Pressure Input	u_{pwp}	(kPa)	CH 3	CH 3	CH 3
Sample Volume	V	(cc)	CH 6	CH 6	CH 6
Initial Moisture	ω_i	(%)	17	17	17
Initial Dry Density	ρ_{di}	(Mg/m3)	1.84	1.83	1.82
Initial Voids Ratio	e_i	.	0.448	0.451	0.458
Initial Degree of Saturation	S_i	(%)	99	99	99
B Value	B	.	0.95	0.96	0.97

Final Conditions

			Spm. 1	2	3
Final Moisture	ω_f	(%)	21	20	19
Final Dry Density	ρ_{df}	(Mg/m3)	1.86	1.88	1.90
Final Voids Ratio	e_f	.	0.433	0.414	0.397
Final Degree of Saturation	S_f	(%)	100.0	100.0	100.0
Failure Criteria		.	Max. Dev. Stress	Max. Dev. Stress	Max. Dev. Stress
Strain At Failure	ε_f	(%)	20.00	12.93	11.94
Stress At Failure	$(\sigma_1-\sigma_3)_f$	(kPa)	205.5	248.8	347.8
Minor Stress At Failure	σ_3'	(kPa)	108.2	134.1	194.0
Major Stress At Failure	σ_1'	(kPa)	313.7	382.9	541.8
Principal Stress Ratio At Failure	σ_1'/σ_3'		2.899	2.855	2.793
PwP At Failure Criteria	u_f	(kPa)	641.8	616.0	656.0

Notes

Plastic

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

UKAS TESTING 4043

Test Method	BS1377-8 : 1990 : Clause 7	Test Name	BH108 4.00-4.45m
		Test Date	01/06/2023
		Borehole	BH108
Jobfile	A46 Walsgrave	Sample	4.00-4.45m
Client	Strata Geotechnics	Depth	4.00-4.45m UTF 21

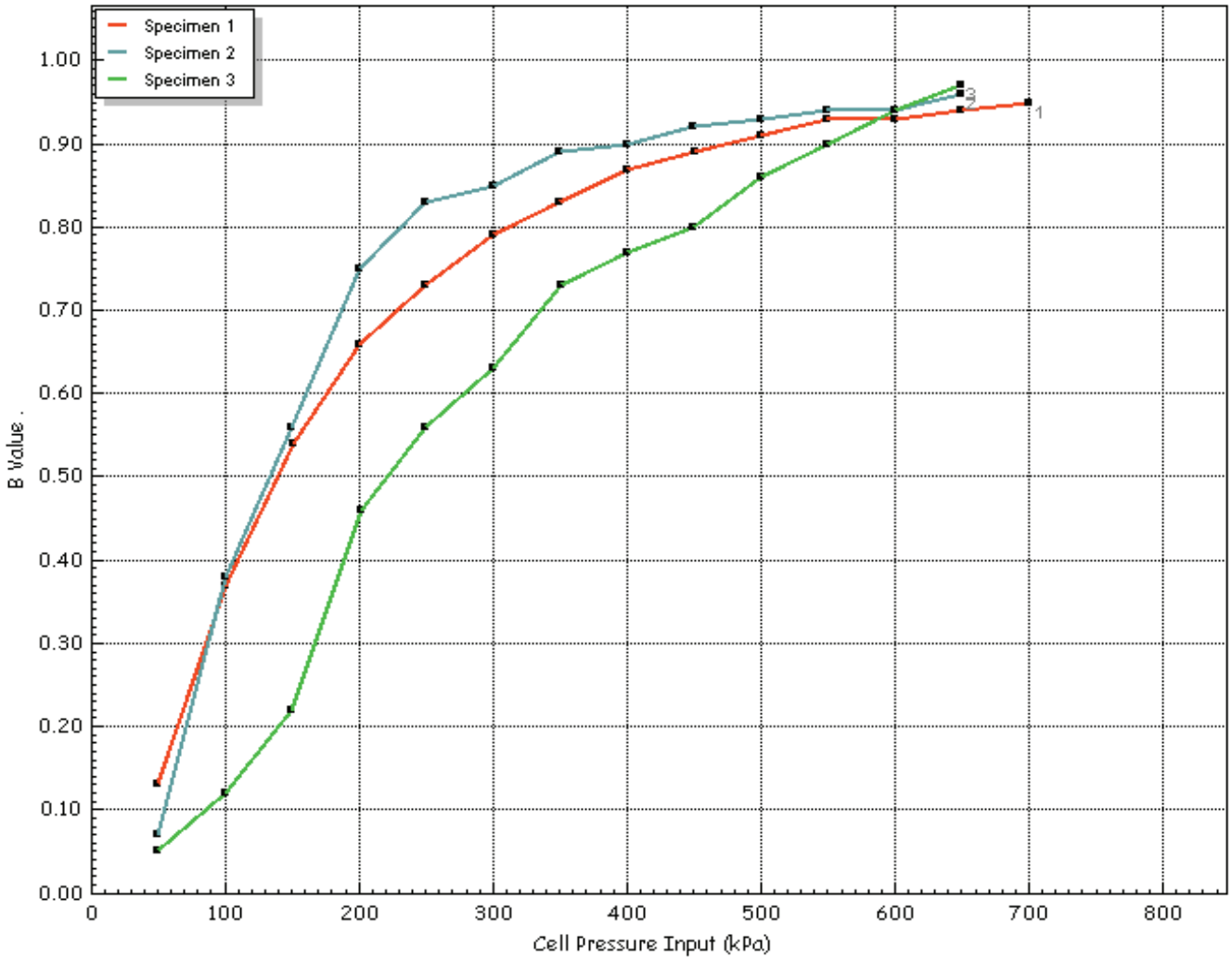
[redacted]

Effective Stress Triaxial Compression

Consolidated Undrained

Saturation Plots

			Spm. 1	2	3
Saturation Method			Stepped	Stepped	Stepped
Cell Pressure Input	σ	(kPa)	700	650	650
Pore Water Pressure Input	u pwp	(kPa)	680	640	638
B Value	B	.	0.95	0.96	0.97



Test Method	BS1377-8 : 1990 : Clause 7	Test Name	BH108 4.00-4.45m
		Test Date	01/06/2023
		Borehole	BH108
Jobfile	A46 Walsgrave	Sample	4.00-4.45m
Client	Strata Geotechnics	Depth	4.00-4.45m UTF 21

PSL PROFESSIONAL SOILS LABORATORY
UKAS TESTING 4043

[redacted]

Effective Stress Triaxial Compression

Consolidated Undrained

Consolidation Plots

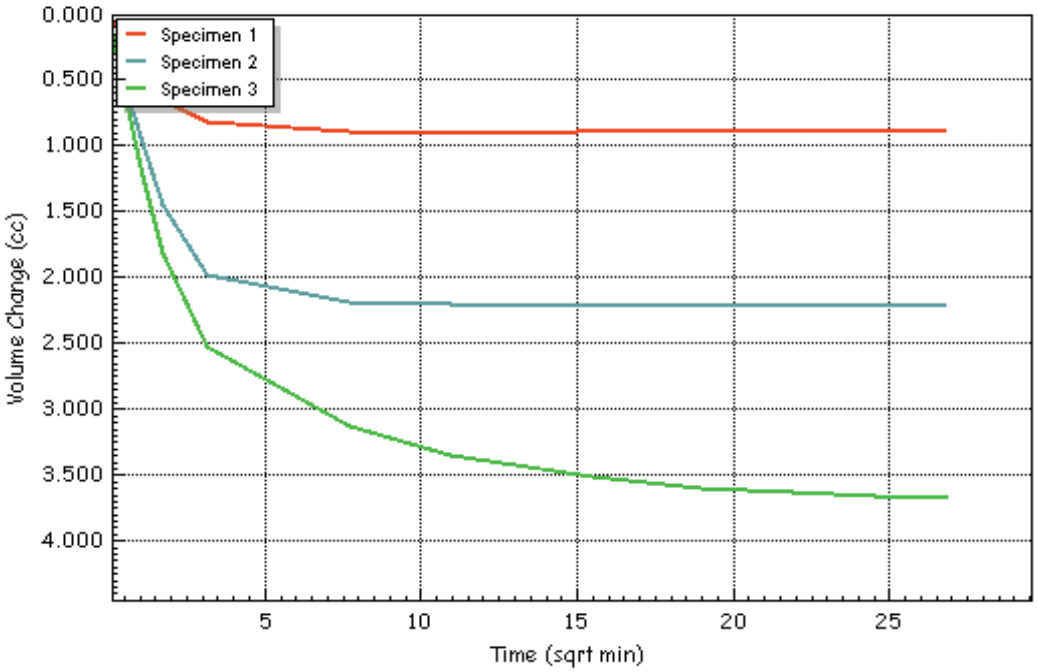
Initial Conditions

			Spm. 1	2	3
Initial Cell Pressure	σ_3	(kPa)	750	750	850
Initial Back Pressure	u_{bi}	(kPa)	700	650	650
Pore Water Pressure Input	u_{pwp}	(kPa)	723	730	837
Drainage Method			Radial+One End	Radial+One End	Radial+One End

Final Conditions

			Spm. 1	2	3
PWP Dissipation %	U%	(%)	100.00	100.00	100.00
Volumetric Strain	ε_v%	(%)	1.02	2.53	4.22
Corrected Length	L_c	(mm)	75.7	75.4	74.9
Corrected Area	A_c	(cm2)	11.32	11.33	11.14
Corrected Volume	V_c	(cc)	85.762	85.345	83.429
t100	t_{100}	(min)	14.54	13.79	55.45
Consolidation	c_v	(m2/year	0.021	0.022	0.005
Compressibility	m_v	(m2/MN)	0.443	0.316	0.225
Test Time	t_F	(h:m:s)	02:00:00	02:00:00	02:00:00
Estimated Strain to Failure	ε%	(%)	5.0	5.0	5.0
Shear Machine Speed	d_r	(mm/min	0.03156	0.03140	0.03122

Notes



PSL PROFESSIONAL SOILS LABORATORY
UKAS TESTING 4043

Test Method	BS1377-8 : 1990 : Clause 7	Test Name	BH108 4.00-4.45m
		Test Date	01/06/2023
Jobfile	A46 Walsgrave	Borehole	BH108
Client	Strata Geotechnics	Sample	4.00-4.45m
		Depth	4.00-4.45m UTF 21

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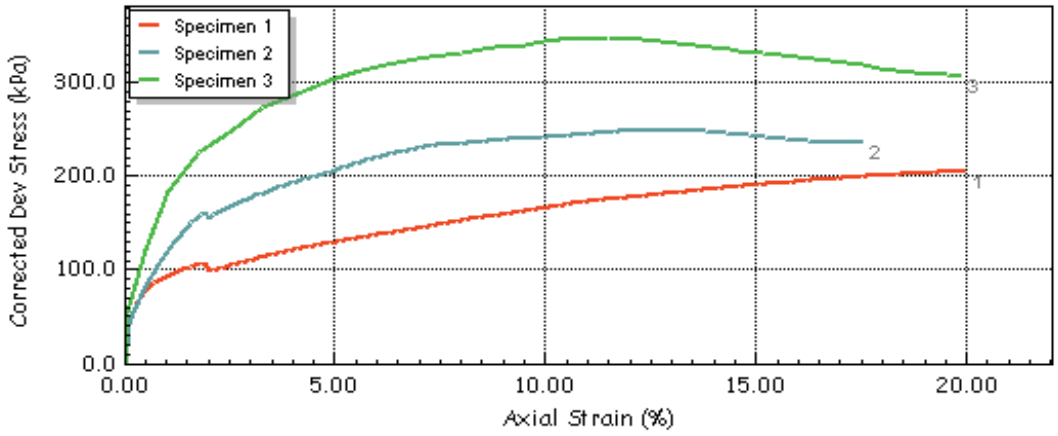
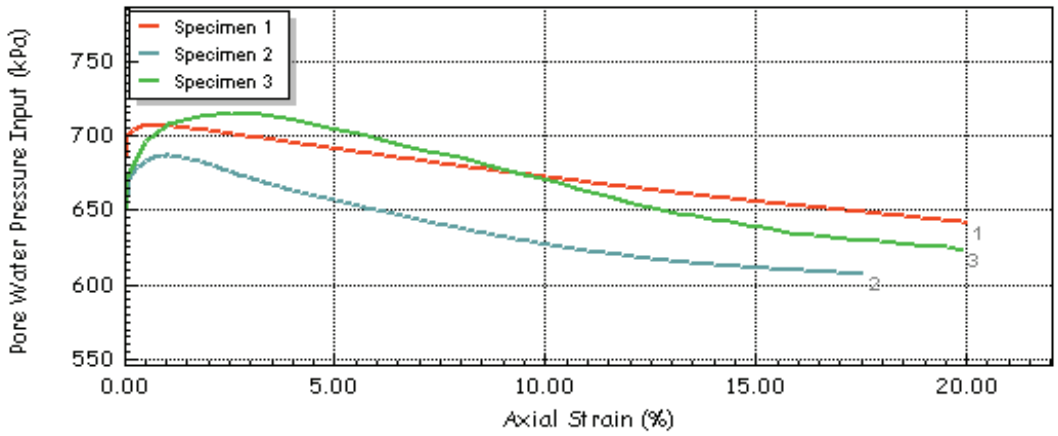
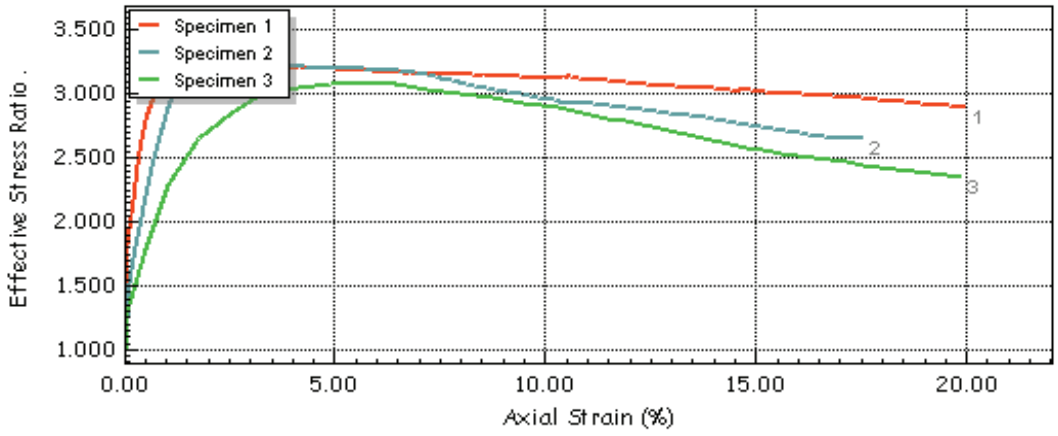
Effective Stress Triaxial Compression

Consolidated Undrained

Shear Stage Plots







Test Method	BS1377-8 : 1990 : Clause 7	Test Name	BH108 4.00-4.45m
		Test Date	01/06/2023
		Borehole	BH108
Jobfile	A46 Walsgrave	Sample	4.00-4.45m
Client	Strata Geotechnics	Depth	4.00-4.45m UTF 21

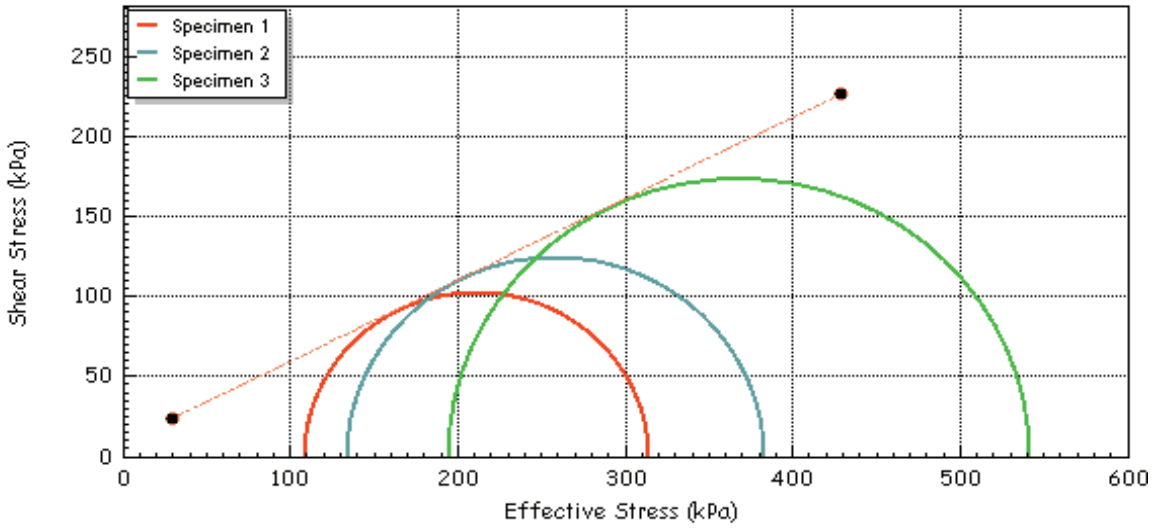
PSL PROFESSIONAL SOILS LABORATORY
UKAS TESTING 4043

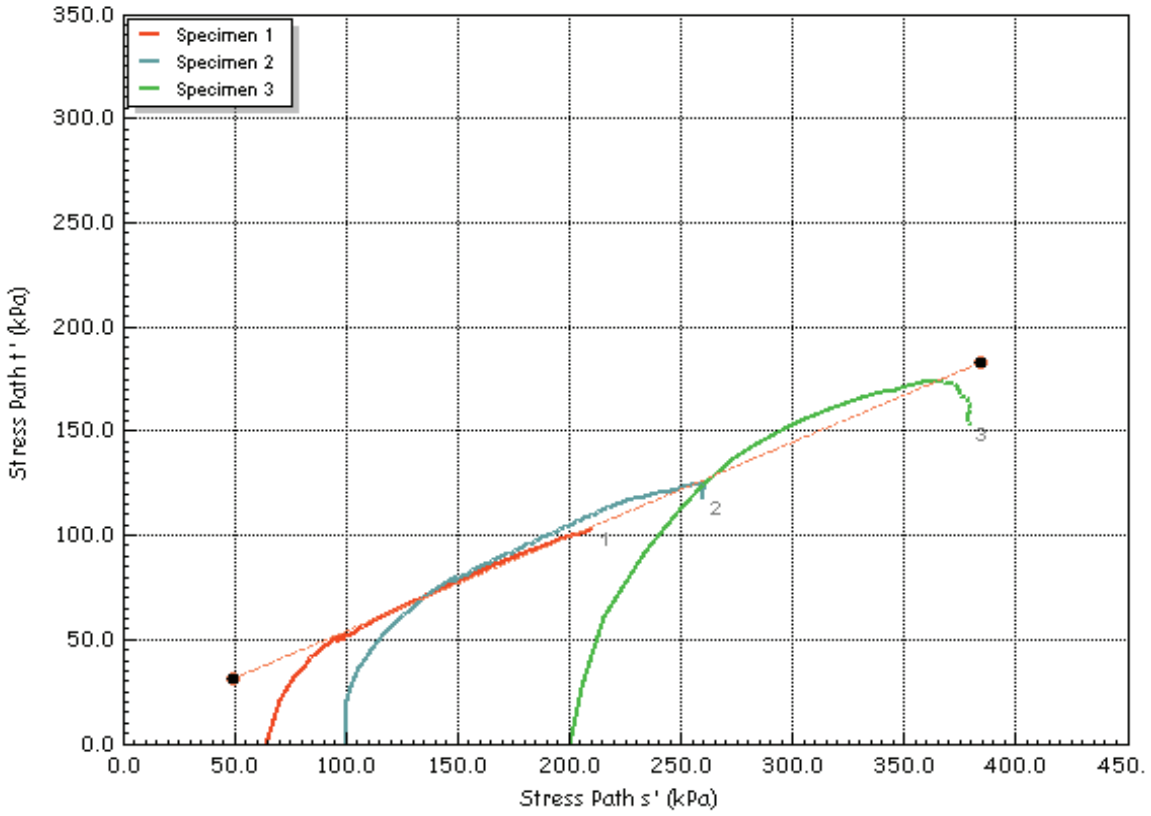
Effective Stress Triaxial Compression

Consolidated Undrained

Shear Stage Plots

Effective	c'	(kPa)	9.74	Effective Cohesion	c'	(kPa)	9.74
Effective Friction	ϕ'	(deg)	26.9	Effective Friction	ϕ'	(deg)	26.9





Test Method	BS1377-8 : 1990 : Clause 7	Test Name	BH108 4.00-4.45m
		Test Date	01/06/2023
		Borehole	BH108
Jobfile	A46 Walsgrave	Sample	4.00-4.45m
Client	Strata Geotechnics	Depth	4.00-4.45m UTF 21

PSL PROFESSIONAL SOILS LABORATORY
UKAS TESTING 4043

Certificate of Analysis

Certificate Number 23-13106 *Issued:* 12-Jun-23

Client Professional Soils Laboratory Ltd
5/7 Hexthorpe Road
Hexthorpe
DN4 0AR

Our Reference 23-13106

Client Reference PSL23/3981

Order No (not supplied)

Contract Title A46 WALSGRAVE

Description 3 Soil samples.

Date Received 02-Jun-23

Date Started 02-Jun-23

Date Completed 12-Jun-23

Test Procedures Identified by prefix DETSn (details on request).

Notes Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

Approved By [redacted]

ilac-MRA UKAS TESTING 2139

Summary of Chemical Analysis
Soil Samples

Our Ref 23-13106
Client Ref PSL23/3981
Contract Title A46 WALSGRAVE

			Lab No	2181003	2181004	2181005
			.Sample ID	BH108	BH108	BH108
			Depth	1.00-1.20	1.90	5.00-5.45
			Other ID			
			Sample Type	B	D	D
			Sampling Date	16/05/2023	16/04/2023	16/05/2023
			Sampling Time	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**			
Metals						
Magnesium Aqueous Extract (2:1)	DETSC 2076*	10	mg/l	< 10	< 10	< 10
Inorganics						
pH	DETSC 2008#		pH	7.0	7.6	8.5
Chloride Aqueous Extract (2:1)	DETSC 2055	1	mg/l	6.7	5.8	4.5
Nitrate Aqueous Extract as NO3 (2:1)	DETSC 2055	1	mg/l	11	15	10
Sulphate Aqueous Extract as SO4 (2:1)	DETSC 2076#	10	mg/l	15	13	19
Sulphur as S, Total	DETSC 2320	0.01	%	< 0.01	< 0.01	0.01
Sulphate as SO4, Total	DETSC 2321#	0.01	%	0.02	0.01	0.04

Key: * -not accredited. # -MCERTS (accreditation only applies if report carries the MCERTS logo). n/s -not supplied.

Information in Support of the Analytical Results

Our Ref 23-13106
Client Ref PSL23/3981
Contract A46 WALSGRAVE

Containers Received & Deviating Samples

Lab No	Sample ID	Date Sampled	Containers Received	Holding time exceeded for tests	Inappropriate container for tests
2181003	BH108 1.00-1.20 SOIL	16/05/23	PT 500ml	Total Sulphur ICP (7 days), pH + Conductivity (7 days)	
2181004	BH108 1.90 SOIL	16/04/23	PT 500ml	Anions 2:1 (30 days), Total Sulphur ICP (7 days), Total Sulphate ICP (30 days), pH + Conductivity (7 days)	
2181005	BH108 5.00-5.45 SOIL	16/05/23	PT 500ml	Total Sulphur ICP (7 days), pH + Conductivity (7 days)	

Key: P-Plastic T-Tub

DETS cannot be held responsible for the integrity of samples received whereby the laboratory did not undertake the sampling. In this instance samples received may be deviating. Deviating Sample criteria are based on British and International standards and laboratory trials in conjunction with the UKAS note 'Guidance on Deviating Samples'. All samples received are listed above. However, those samples that have additional comments in relation to hold time, inappropriate containers etc are deviating due to the reasons stated. This means that the analysis is accredited where applicable, but results may be compromised due to sample deviations. If no sampled date (soils) or date+time (waters) has been supplied then samples are deviating. However, if you are able to supply a sampled date (and time for waters) this will prevent samples being reported as deviating where specific hold times are not exceeded and where the container supplied is suitable.

Soil Analysis Notes

Inorganic soil analysis was carried out on a dried sample, crushed to pass a 425µm sieve, in accordance with BS1377.

Organic soil analysis was carried out on an 'as received' sample. Organics results are corrected for moisture and expressed on a dry weight basis.

The Loss on Drying, used to express organics analysis on an air dried basis, is carried out at a temperature of 28°C +/-2°C.

Disposal

From the issue date of this test certificate, samples will be held for the following times prior to disposal :-

Soils - 1 month, Liquids - 2 weeks, Asbestos (test portion) - 6 months

End of Report

LABORATORY REPORT

Contract Number: PSL23/4343

Report Date: 17 July 2023

Client's Reference: G230651/Geo 04B

Client Name: Strata Geotechnics
Kirkby Lane
Pinxton
Nottinghamshire
NG16 6JA

For the attention of: Izaac Lovatt

Contract Title: A46 Walsgrave

Date Received: 7/6/2023
Date Commenced: 7/6/2023
Date Completed: 17/7/2023

Notes: Opinions and Interpretations are outside the UKAS Accreditation

A copy of the Laboratory Schedule of accredited tests as issued by UKAS is attached to this report. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced other than in full, without the prior written approval of the laboratory.

Checked and Approved Signatories:

[redacted]

(Assistant Laboratory Manager) (Associate Director) (Laboratory Manager)

[redacted]

(Managing Director) (Senior Technical Coordinator) (Senior Technician)

5 – 7 Hexthorpe Road,
Hexthorpe,
Doncaster,
DN4 0AR
Tel: 01302 768098
Email: [redacted]

SUMMARY OF LABORATORY SOIL DESCRIPTIONS

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Description of Sample
BH110	5	D	0.80		Brown gravelly SAND.
BH110	8	D	1.20		Brown very gravelly clayey silty SAND.
BH110	11	B	1.50	2.00	Brown very sandy GRAVEL.
BH110	16	D	3.50	3.95	Reddish brown sandy CLAY.
BH110	17	B	3.50	4.00	Reddish brown mottled grey very gravelly very sandy CLAY.
BH110	19	UT	4.50	4.95	Reddish brown very sandy CLAY.
BH110	21	D	5.20		Reddish brown very sandy CLAY.
BH110	23	B	5.50	6.00	Reddish brown slightly gravelly very sandy CLAY.
BH110	26	B	6.50	7.00	Reddish brown mottled grey very gravelly very sandy CLAY.
BH110	27	D	7.20		Reddish brown mottled grey very gravelly sandy CLAY.
BH110	31	UT	8.50	8.95	Very stiff reddish brown slightly gravelly sandy CLAY.
BH110	32	D	9.00		Reddish brown sandy CLAY.
BH110	36	D	10.50		Reddish brown sandy CLAY.
BH110	40	D	12.50	12.93	Reddish brown sandy CLAY.
WS104	7	B	1.00	1.20	Brown gravelly very clayey SAND.
WS104	9	B	1.20	2.00	Brown gravelly very sandy CLAY.
WS104	17	D	3.50	3.60	Reddish brown slightly gravelly slightly sandy CLAY.

SUMMARY OF SOIL CLASSIFICATION TESTS

(BS1377 : PART 2 : 1990)

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Moisture Content % Clause 3.2	Linear Shrinkage % Clause 6.5	Particle Density Mg/m^3 Clause 8.2	Liquid Limit % Clause 4.3/4	Plastic Limit % Clause 5.3	Plasticity Index % Clause 5.4	Passing .425mm %	Remarks
BH110	5	D	0.80		10							
BH110	11	B	1.50	2.00	5.6							
BH110	16	D	3.50	3.95	15			35	18	17	91	Intermediate Plasticity CI
BH110	21	D	5.20		13			33	18	15	99	Low Plasticity CL
BH110	27	D	7.20		20			42	21	21	68	Intermediate Plasticity CI
BH110	32	D	9.00		15			37	19	18	100	Intermediate Plasticity CI
BH110	36	D	10.50		22			34	18	16	100	Low Plasticity CL
BH110	40	D	12.50	12.93	13			46	22	24	100	Intermediate Plasticity CI
WS104	17	D	3.50	3.60	9.6			59	25	34	100	High Plasticity CH

SYMBOLS : NP : Non Plastic * : Liquid Limit and Plastic Limit Wet Sieved.

UKAS TESTING 4043

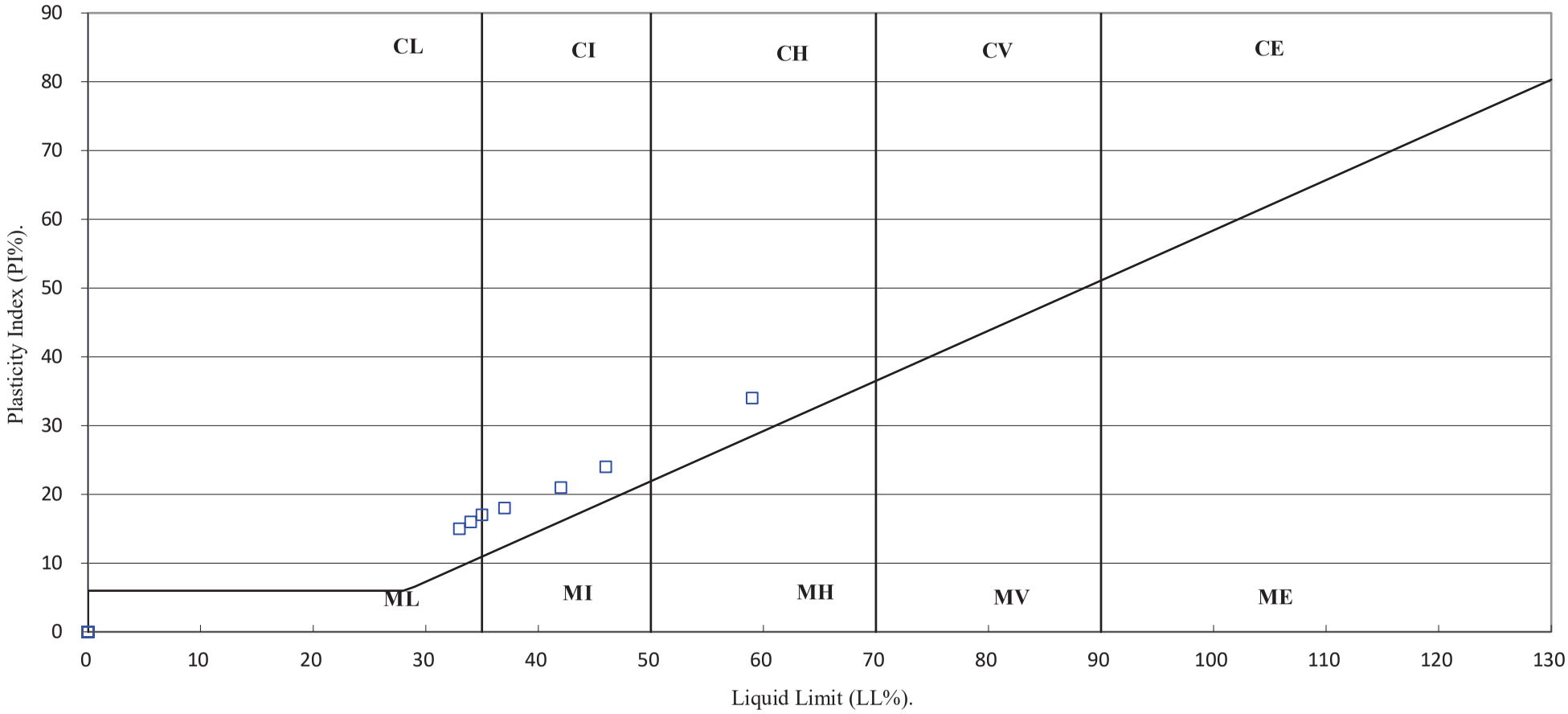
PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

Contract No: PSL23/4343

Client Ref: G230651

PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION.



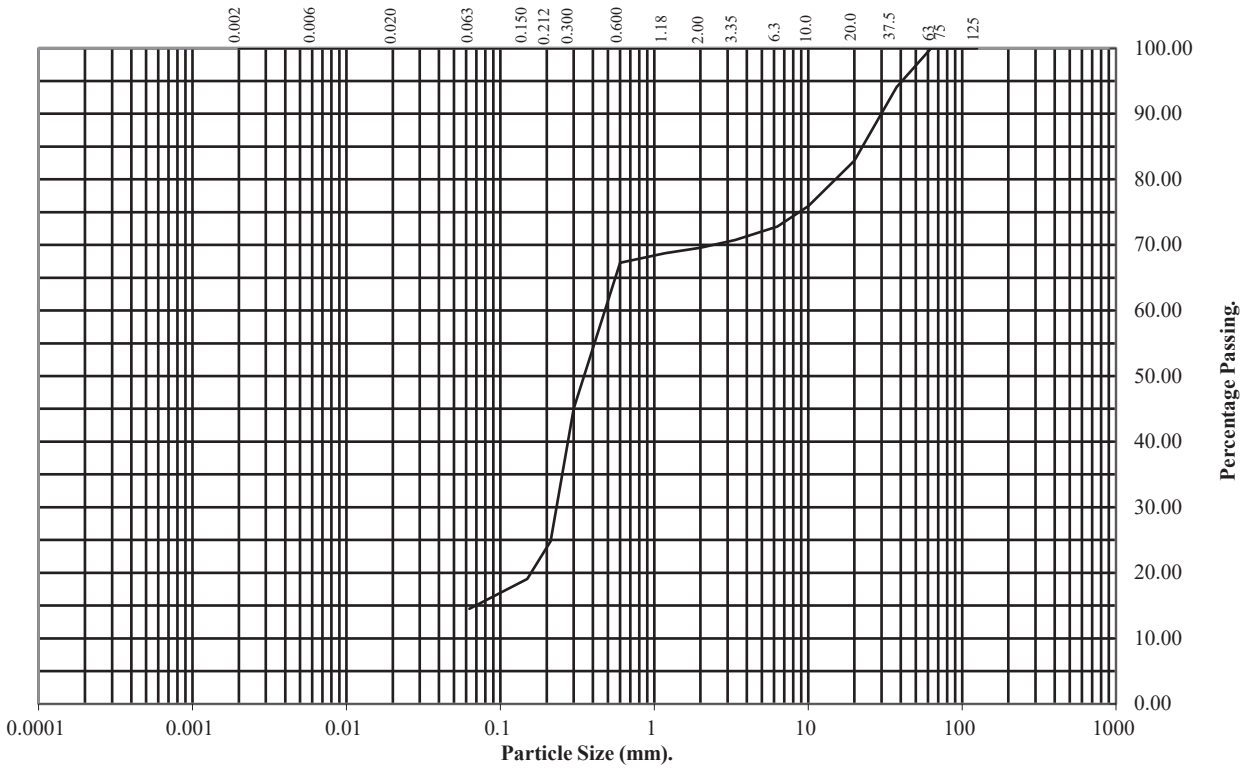
UKAS TESTING 4043 / PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY	A46 Walsgrave	Contract No: PSL23/4343 Client Ref: G230651

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number:	**BH110**	**Top Depth (m):**	**1.20**
Sample Number:	**8**	**Base Depth(m):**	
Sample Type:	**D**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	94
20	83
10	76
6.3	73
3.35	71
2	70
1.18	69
0.6	67
0.3	45
0.212	25
0.15	19
0.063	15

Soil Fraction	Total Percentage
Cobbles	0
Gravel	30
Sand	55
Silt/Clay	15

Remarks:
See Summary of Soil Descriptions

UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

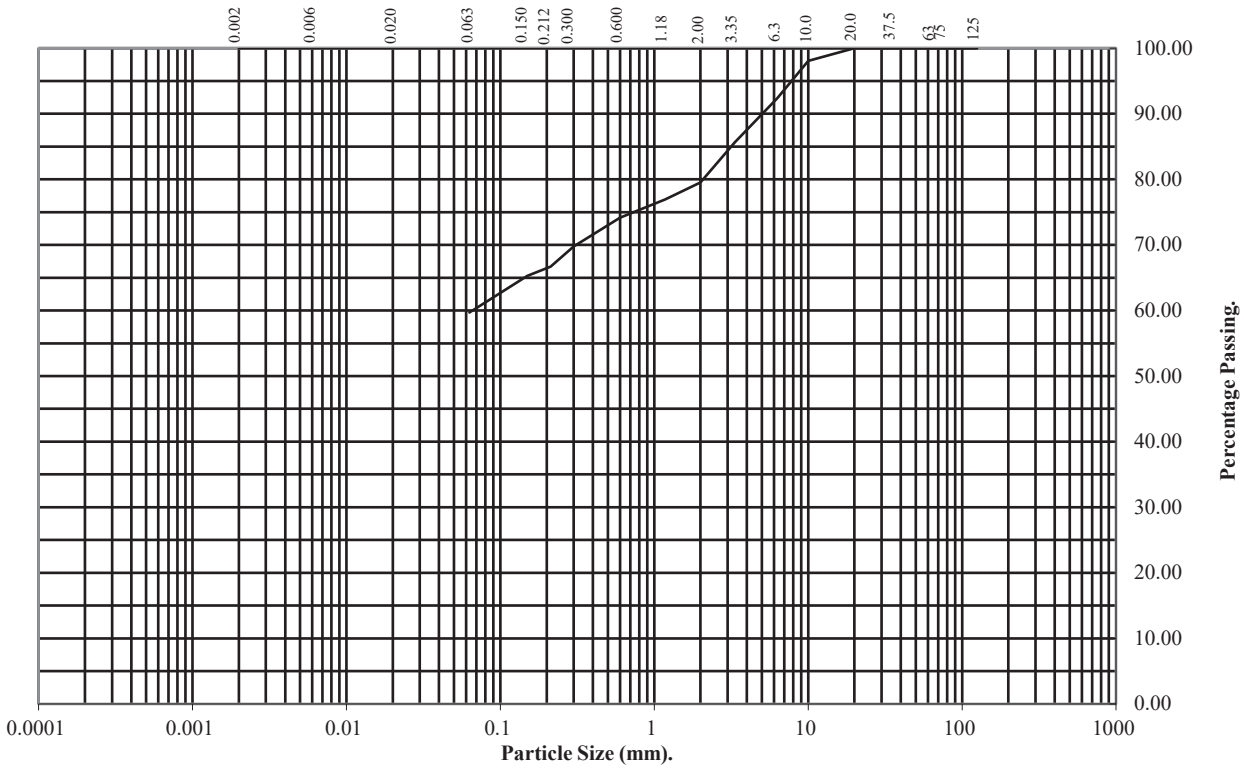
Contract No:
PSL23/4343
Client Ref:
G230651

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number:	**BH110**	**Top Depth (m):**	**3.50**
Sample Number:	**17**	**Base Depth(m):**	**4.00**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	98
6.3	92
3.35	86
2	80
1.18	77
0.6	74
0.3	70
0.212	67
0.15	65
0.063	60

Soil Fraction	Total Percentage
Cobbles	0
Gravel	20
Sand	20
Silt/Clay	60

Remarks:

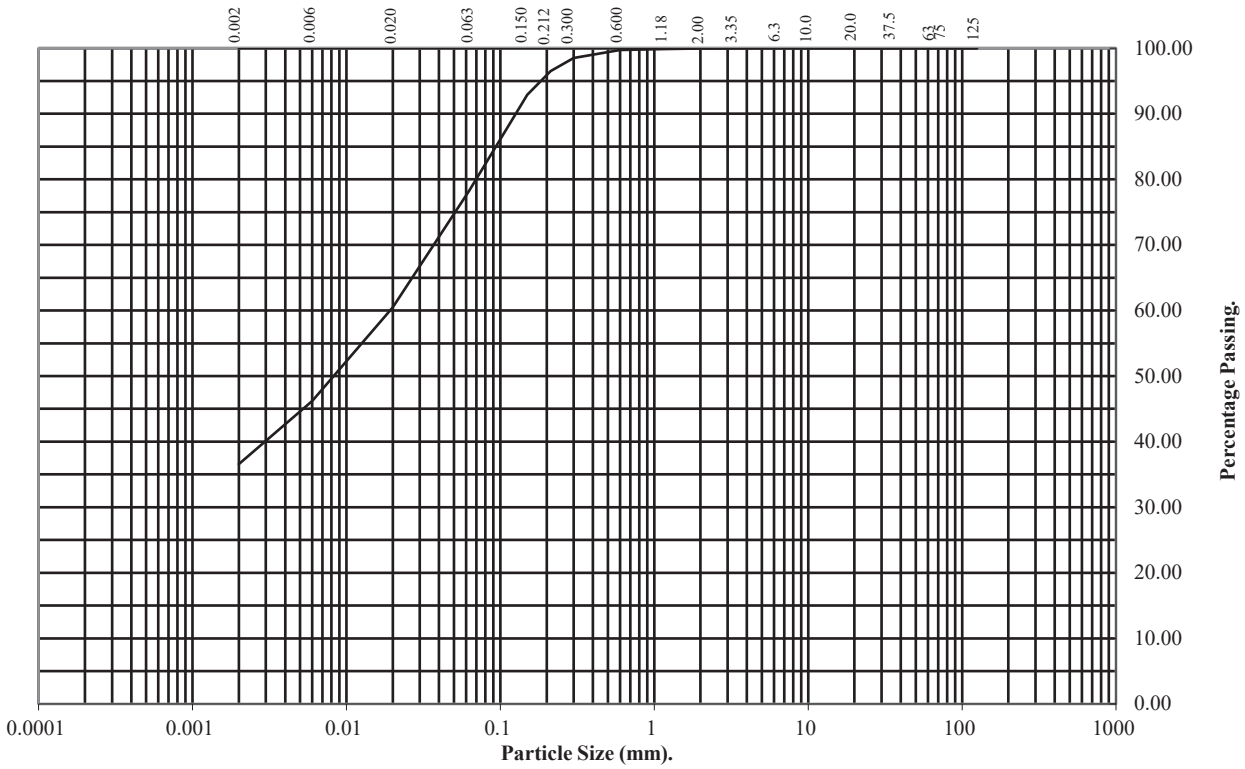
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

Hole Number:	**BH110**	**Top Depth (m):**	**5.20**
Sample Number:	**21**	**Base Depth(m):**	
Sample Type:	**D**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	100
6.3	100
3.35	100
2	100
1.18	100
0.6	100
0.3	99
0.212	97
0.15	93
0.063	78

Particle Diameter	Percentage Passing
0.02	60
0.006	46
0.002	37

Soil Fraction	Total Percentage
Cobbles	0
Gravel	0
Sand	22
Silt	41
Clay	37

Remarks:
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

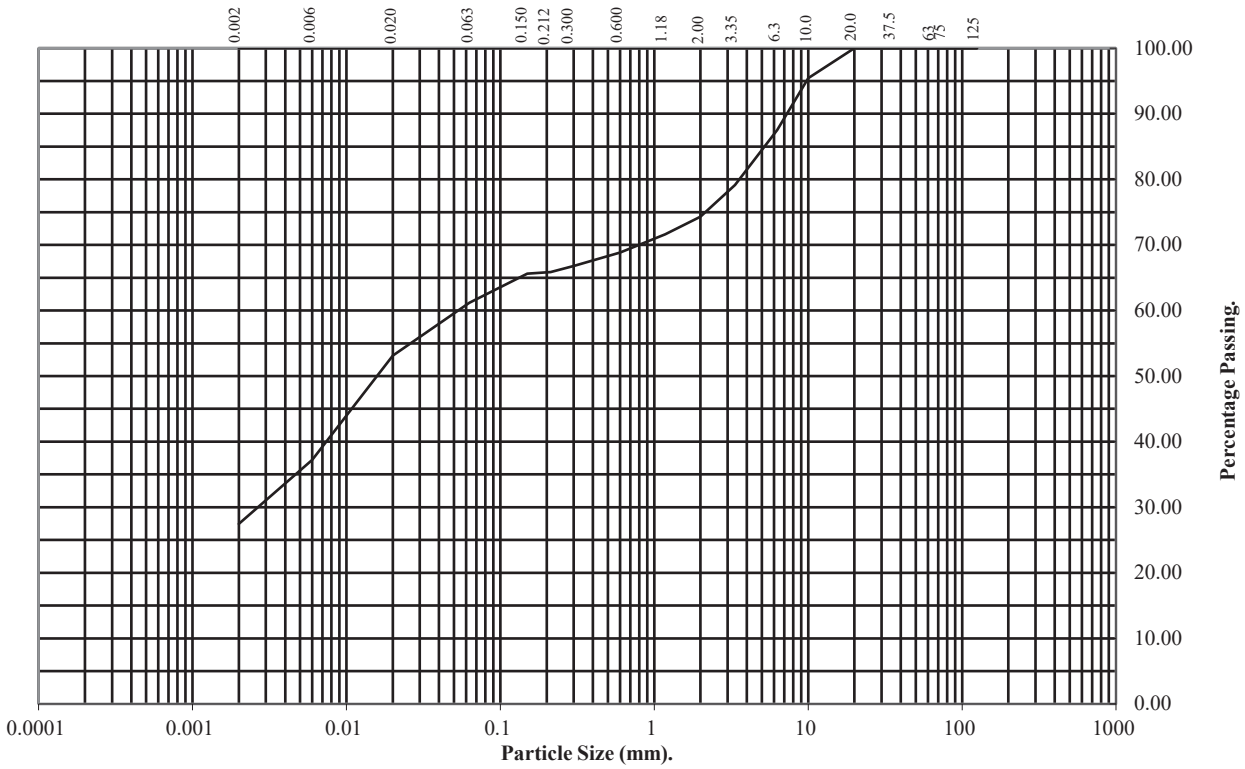
BS1377 : Part 2 : 1990

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

Hole Number: BH110 **Top Depth (m):** 7.20

Sample Number: 27 **Base Depth(m):**

Sample Type: D



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	95
6.3	88
3.35	79
2	74
1.18	72
0.6	69
0.3	67
0.212	66
0.15	66
0.063	61

Particle Diameter	Percentage Passing
0.02	53
0.006	37
0.002	27

Soil Fraction	Total Percentage
Cobbles	0
Gravel	26
Sand	13
Silt	34
Clay	27

Remarks:
See Summary of Soil Descriptions

UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

Contract No: PSL23/4343

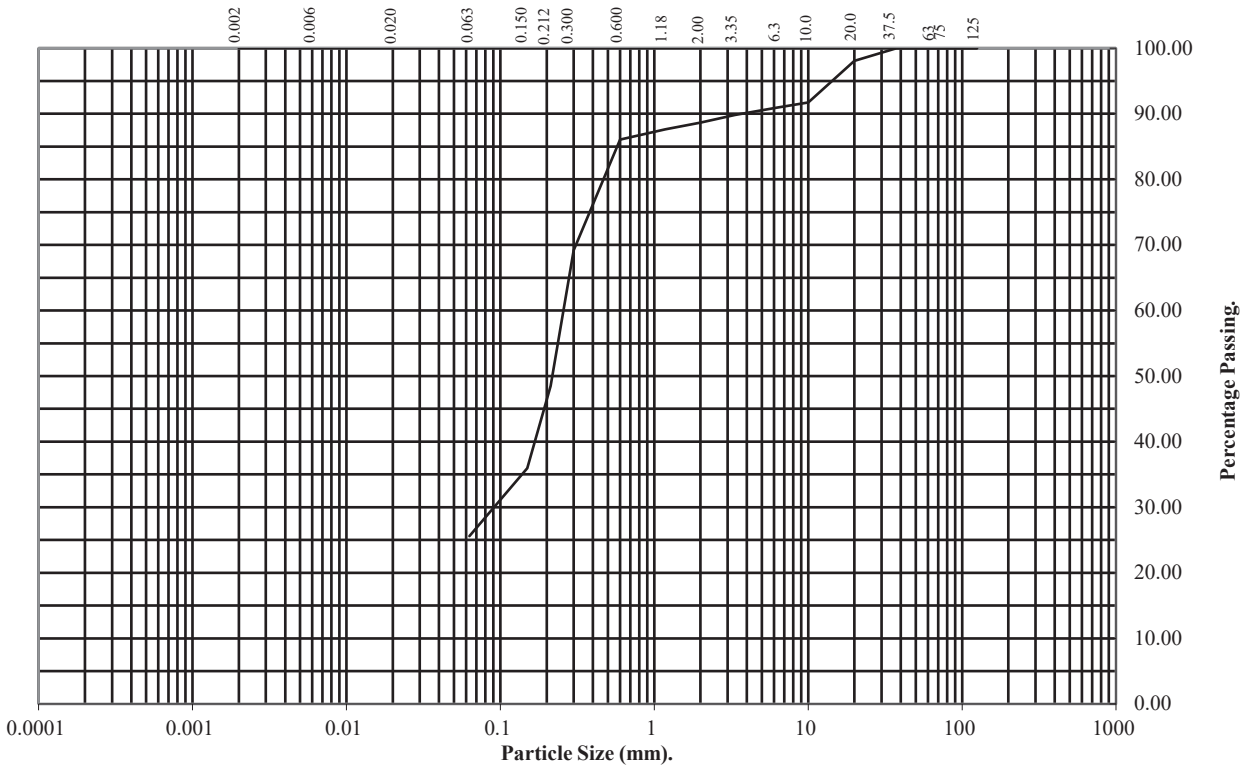
Client Ref: G230651

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number:	**WS104**	**Top Depth (m):**	**1.00**
Sample Number:	**7**	**Base Depth(m):**	**1.20**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	98
10	92
6.3	91
3.35	90
2	89
1.18	88
0.6	86
0.3	69
0.212	48
0.15	36
0.063	26

Soil Fraction	Total Percentage
Cobbles	0
Gravel	11
Sand	63
Silt/Clay	26

Remarks:
See Summary of Soil Descriptions

UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

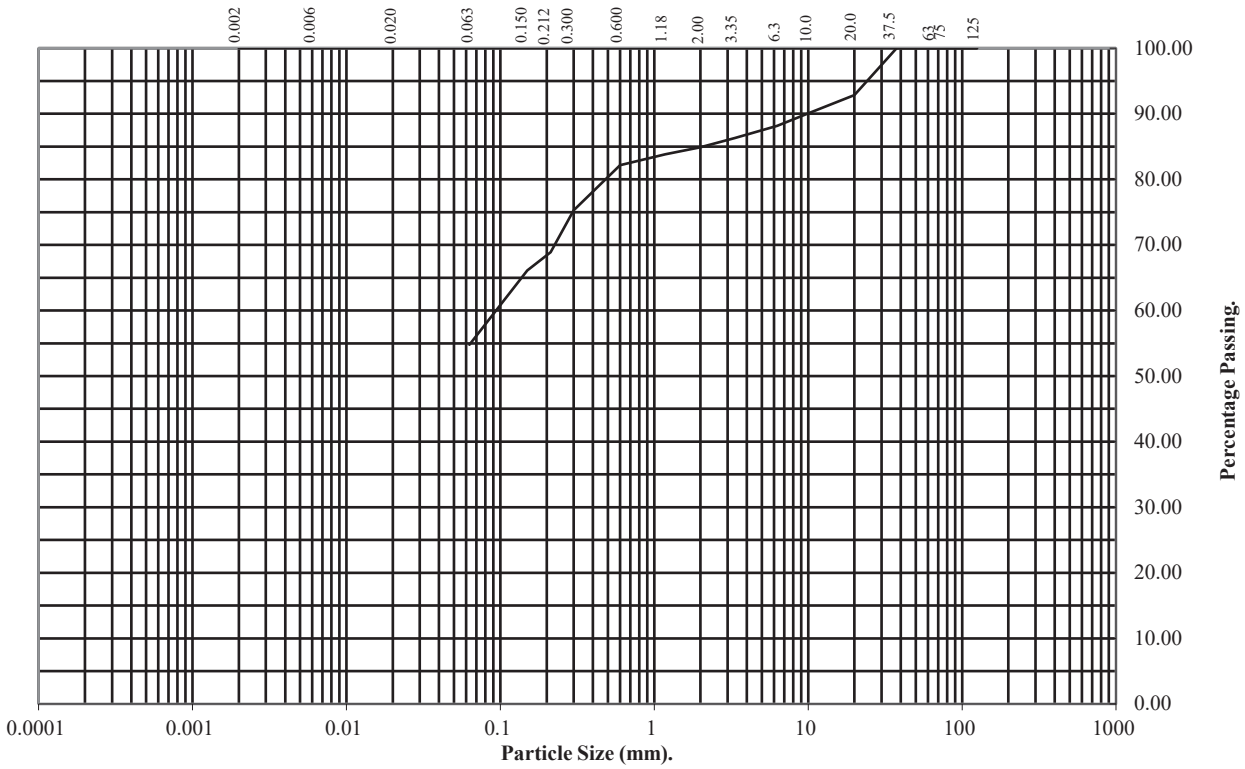
Contract No:
PSL23/4343
Client Ref:
G230651

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number:	**WS104**	**Top Depth (m):**	**1.20**
Sample Number:	**9**	**Base Depth(m):**	**2.00**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	93
10	90
6.3	88
3.35	86
2	85
1.18	84
0.6	82
0.3	75
0.212	69
0.15	66
0.063	55

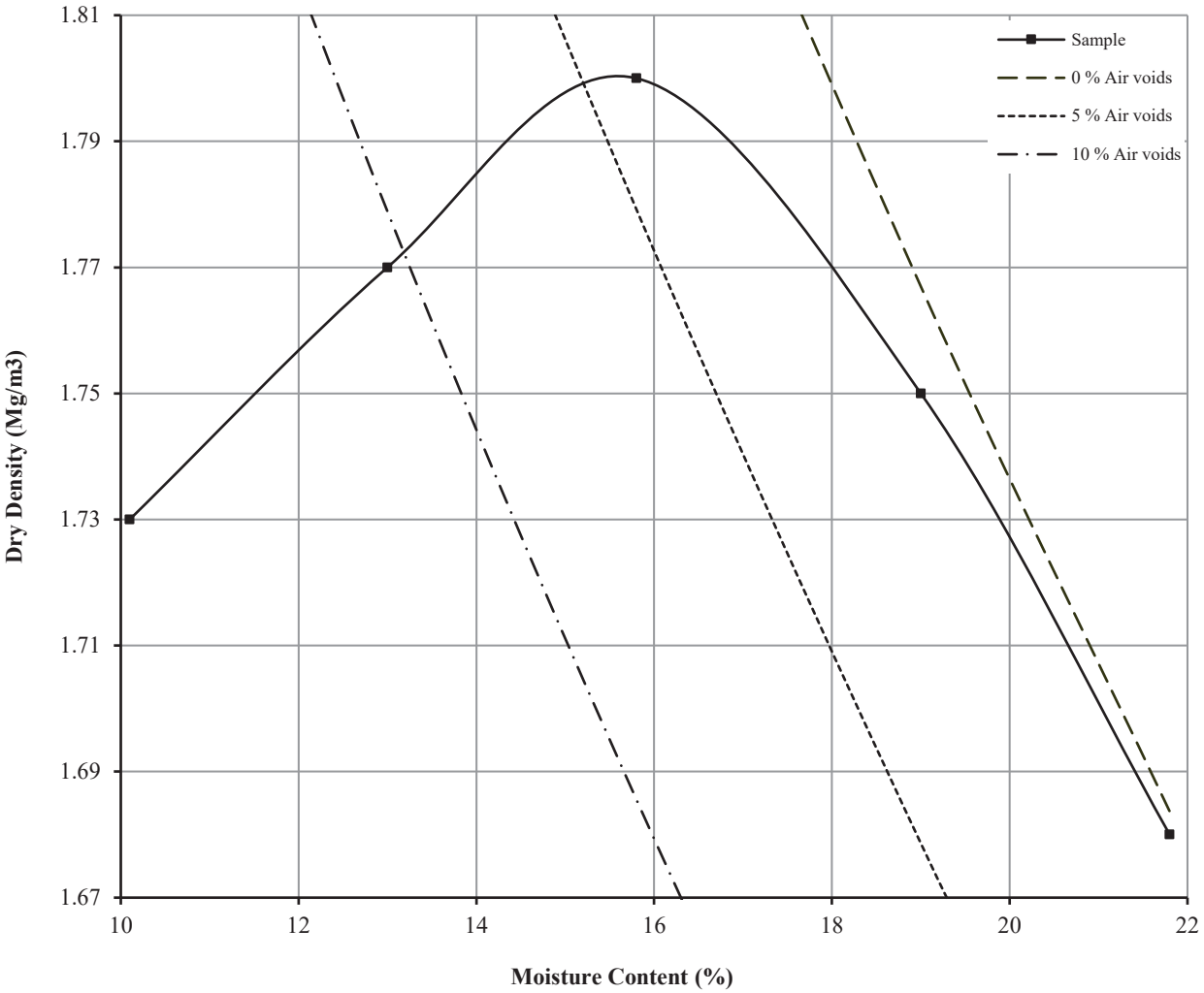
Soil Fraction	Total Percentage
Cobbles	0
Gravel	15
Sand	30
Silt/Clay	55

Remarks:
See Summary of Soil Descriptions

DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

BS 1377 : Part 4 : Clause 3.3 : 1990

Hole Number:	**BH110**	**Top Depth (m) :**	**3.50**
Sample Number:	**17**	**Base Depth (m) :**	**4.00**
Sample Type:	**B**		



Initial Moisture Content:		22	Method of Compaction:	2.5kg	Separate Samples
Particle Density (Mg/m3):	2.66	Assumed	Material Retained on 37.5 mm Test Sieve (%):		0
Maximum Dry Density (Mg/m3):		1.80	Material Retained on 20.0 mm Test Sieve (%):		0
Optimum Moisture Content (%):		16			
Remarks See summary of soil descriptions					

UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

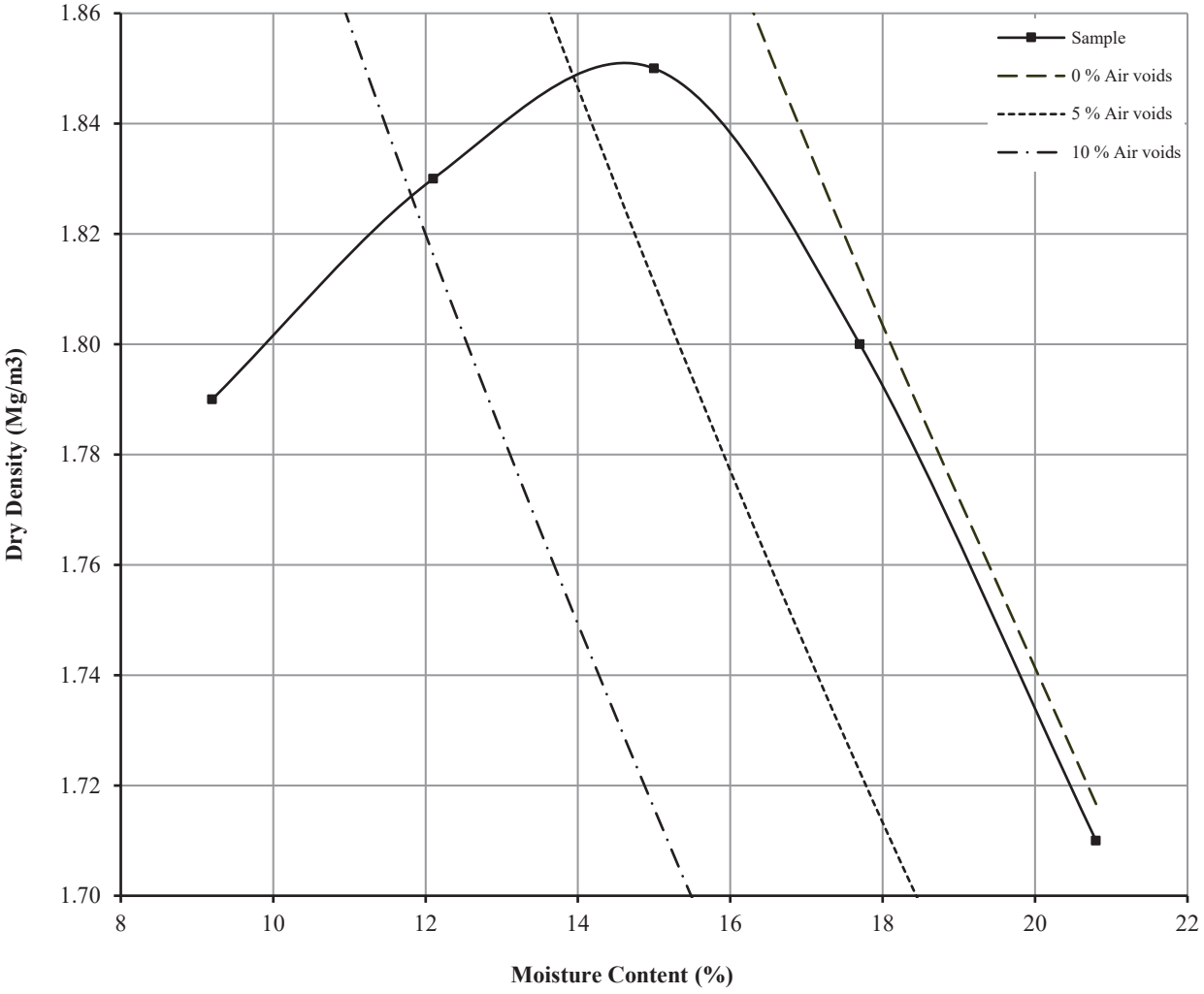
A46 Walsgrave

Contract
PSL23/4343
Client Ref
G230651

DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

BS 1377 : Part 4 : Clause 3.3 : 1990

Hole Number:	**BH110**	**Top Depth (m) :**	**5.50**
Sample Number:	**23**	**Base Depth (m) :**	**6.00**
Sample Type:	**B**		



Initial Moisture Content:		12	Method of Compaction:	2.5kg	Separate Samples
Particle Density (Mg/m3):	2.67	Assumed	Material Retained on 37.5 mm Test Sieve (%):		2
Maximum Dry Density (Mg/m3):		1.85	Material Retained on 20.0 mm Test Sieve (%):		2
Optimum Moisture Content (%):		15			
Remarks See summary of soil descriptions					

UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

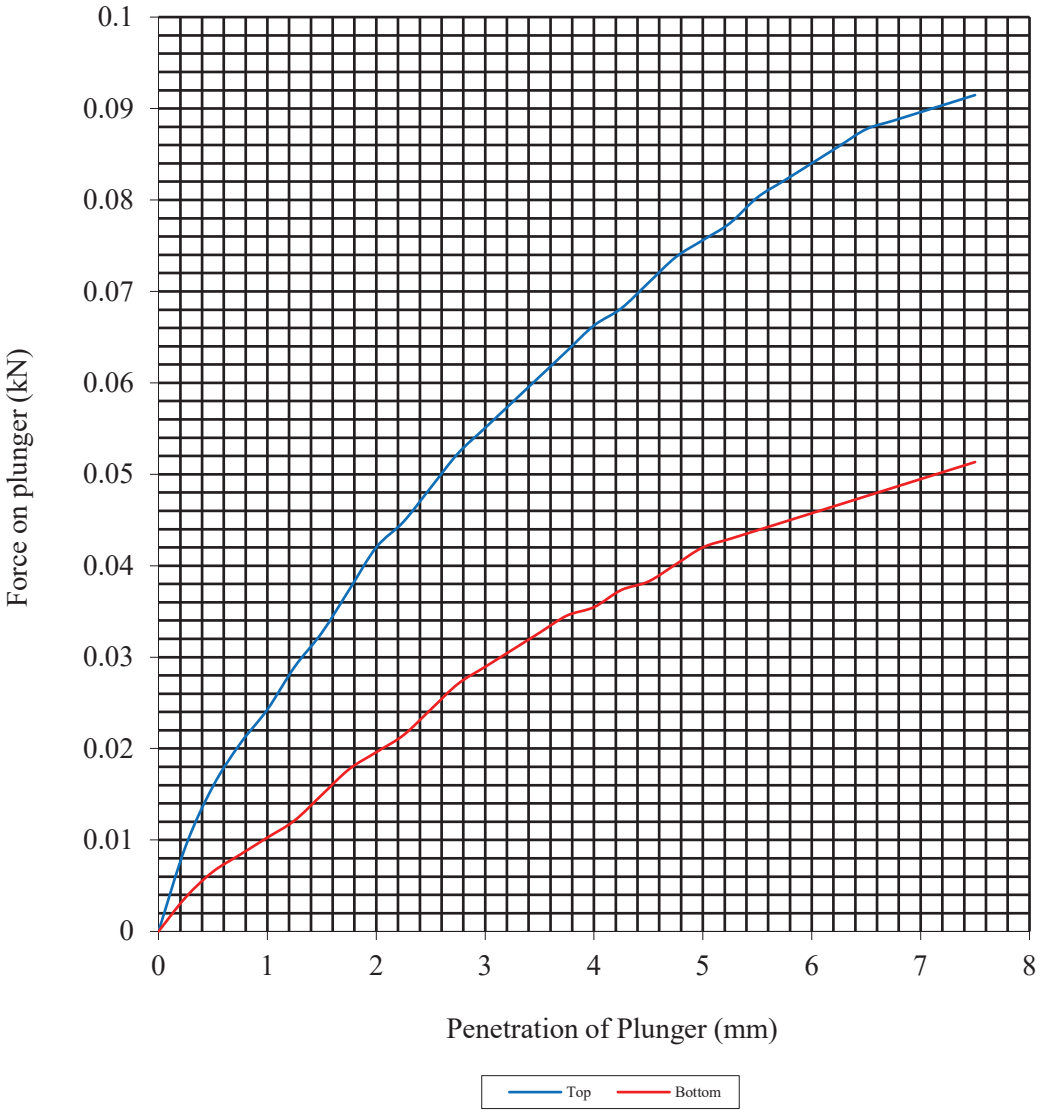
A46 Walsgrave

Contract
PSL23/4343
Client Ref
G230651

CALIFORNIA BEARING RATIO TEST

BS 1377 : Part 4 : 1990

Hole Number:	**BH110**	**Top Depth (m):**	**3.50**
Sample Number:	**17**	**Base Depth (m):**	**4.00**
Sample Type:	**B**		



Initial Sample Conditions		Sample Preparation		Final Moisture Content %		C.B.R. Value %	
Moisture Content:	22	Surcharge Kg:	4.20	Sample Top	22	Sample Top	0.4
Bulk Density Mg/m3:	2.04	Soaking Time hrs	0	Sample Bottom	22	Sample Bottom	0.2
Dry Density Mg/m3:	1.68	Swelling mm:	0.00	Remarks : See Summary of Soil Descriptions.			
Percentage retained on 20mm BS test sieve:			0				
Compaction Conditions		2.5kg					

UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

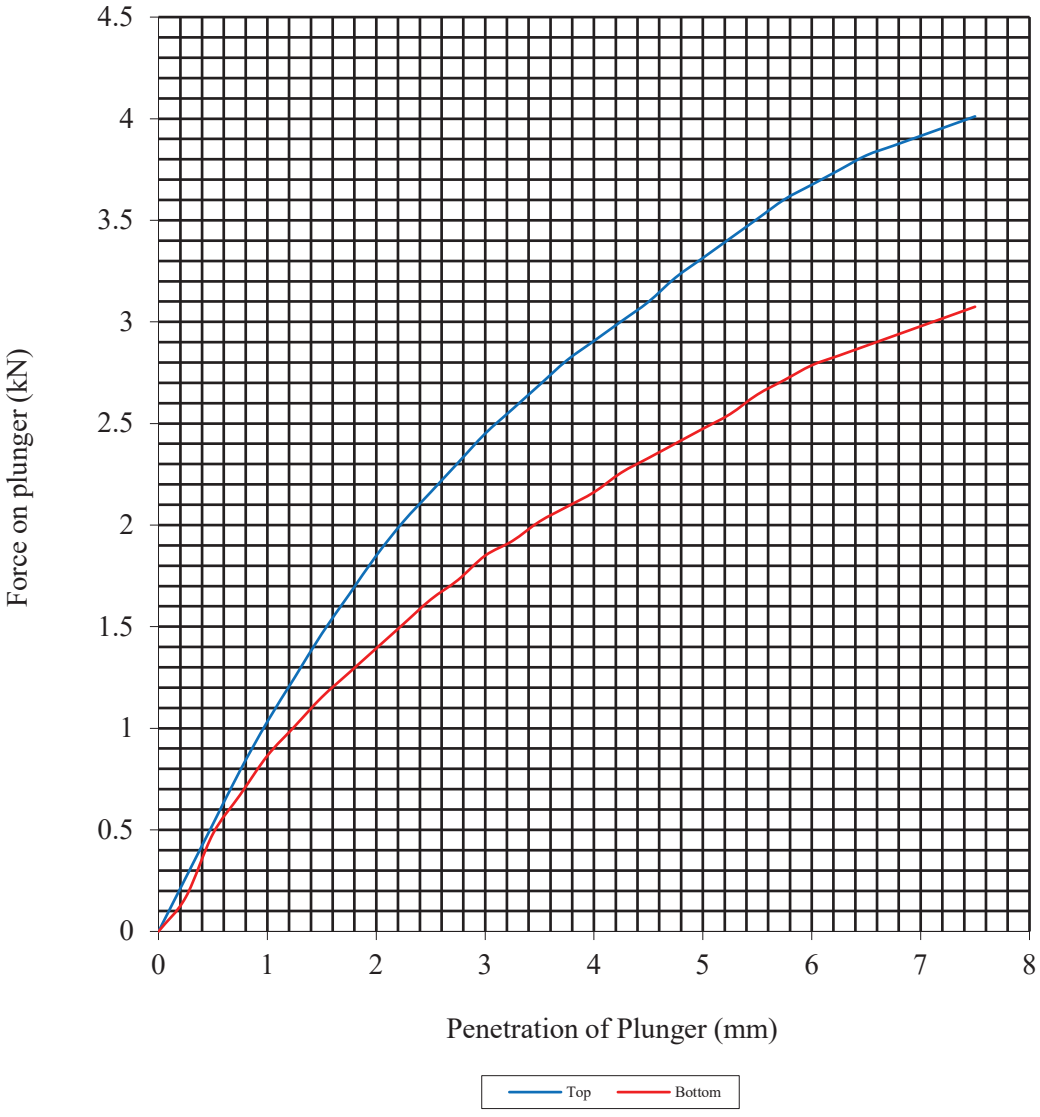
A46 Walsgrave

Contract No:
PSL23/4343
Client Ref:
G230651

CALIFORNIA BEARING RATIO TEST

BS 1377 : Part 4 : 1990

Hole Number:	**BH110**	**Top Depth (m):**	**5.50**
Sample Number:	**23**	**Base Depth (m):**	**6.00**
Sample Type:	**B**		



Initial Sample Conditions		Sample Preparation		Final Moisture Content %		C.B.R. Value %	
Moisture Content:	12	Surcharge Kg:	4.20	Sample Top	12	Sample Top	16.6
Bulk Density Mg/m3:	2.06	Soaking Time hrs	0	Sample Bottom	12	Sample Bottom	12.4
Dry Density Mg/m3:	1.83	Swelling mm:	0.00	Remarks : See Summary of Soil Descriptions.			
Percentage retained on 20mm BS test sieve:			0				
Compaction Conditions		2.5kg					

UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

Contract No: PSL23/4343

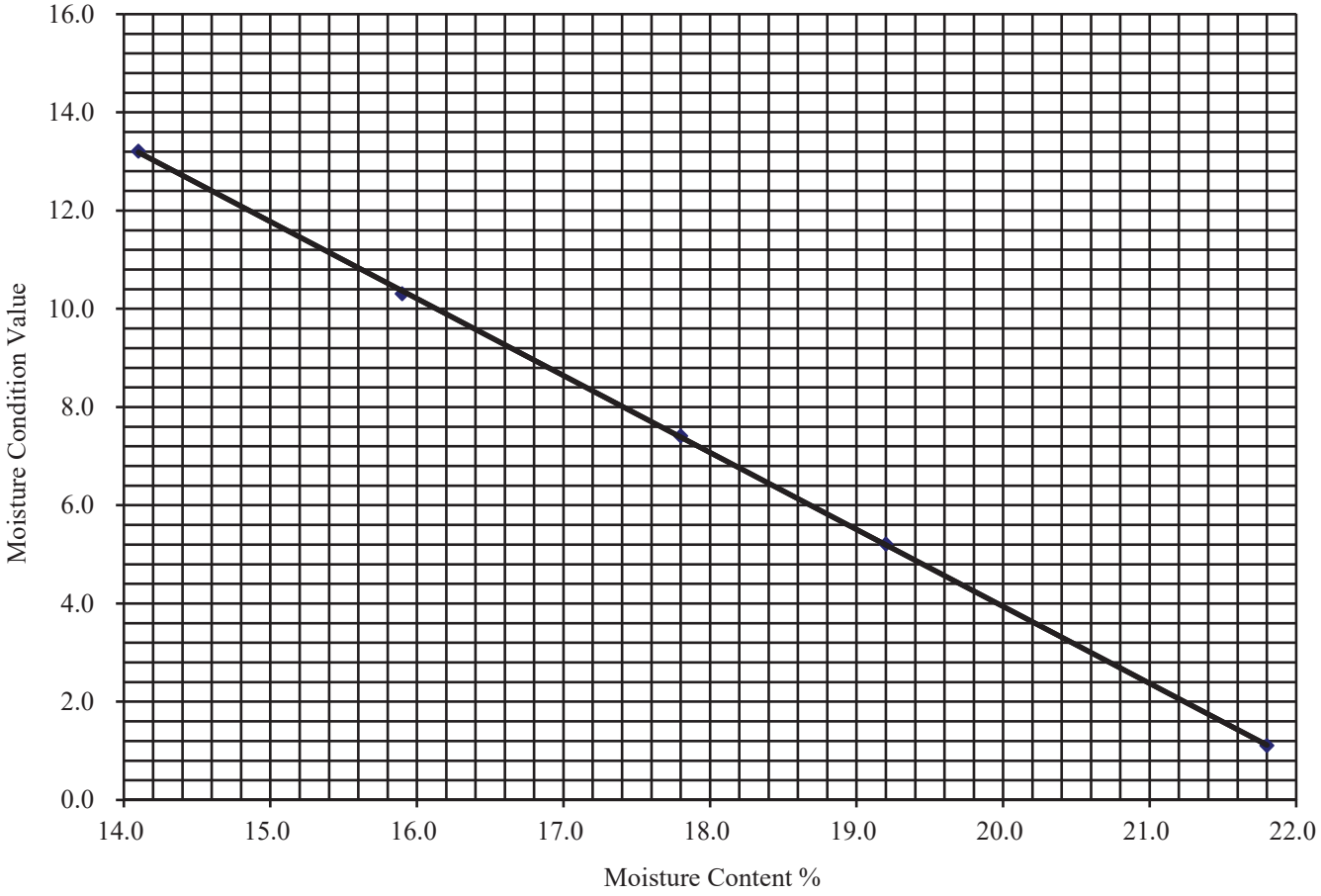
Client Ref: G230651

MOISTURE CONDITION VALUE CALIBRATION

BS1377 : Part 4 : 1990 Clause 5.5

Hole Number:	**BH110**	**Top Depth (m):**	**3.50**
Sample Number:	**17**	**Base Depth (m):**	**4.00**
Sample Type:	**B**		

Initial Moisture Content (%):	22
Single/Separate Samples Tested	Separate
Material Retained on the 20mm BS Test Sieve (%):	0



Test Results.

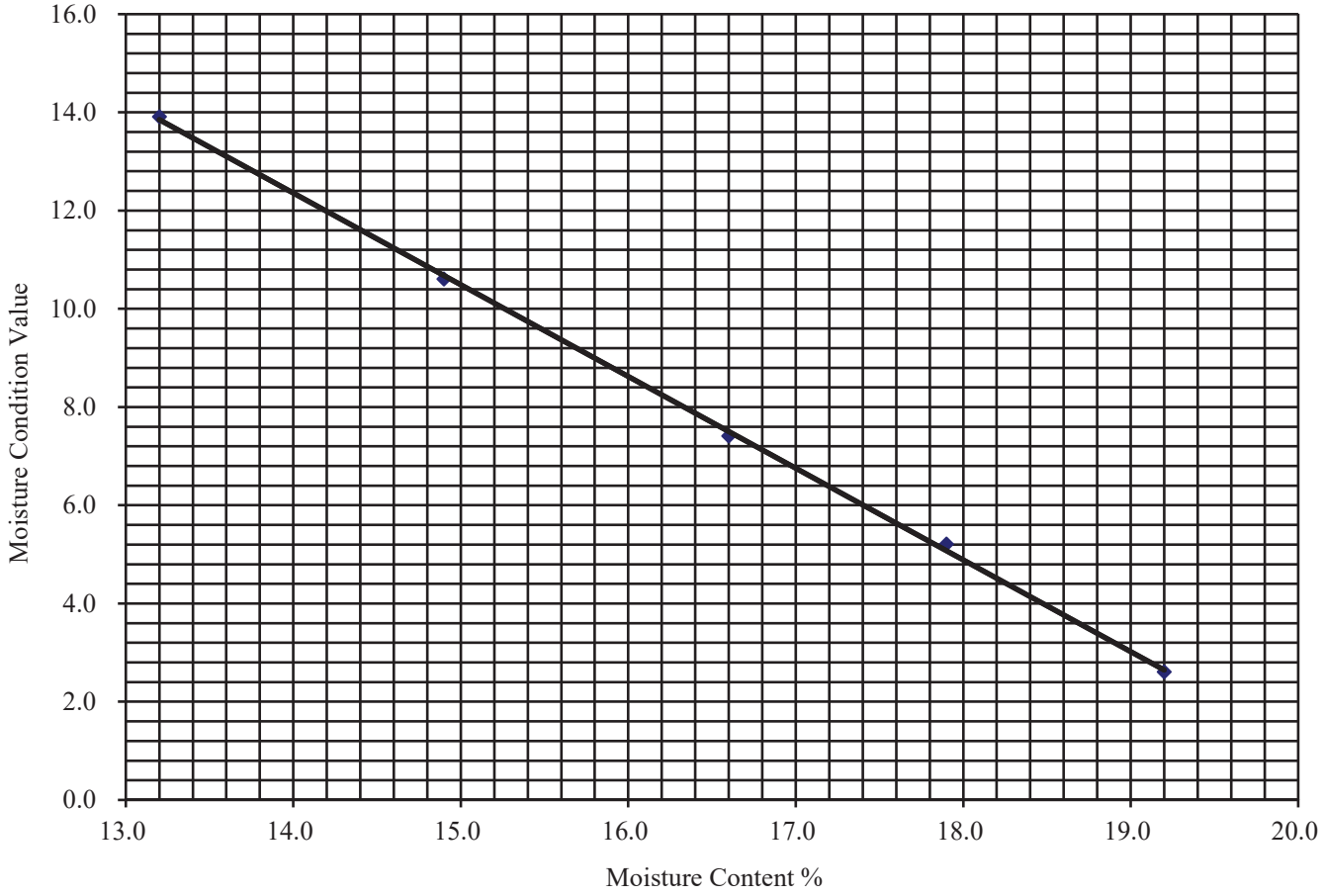
Test Number	1	2	3	4	5
Moisture Content (%)	14.1	15.9	17.8	19.2	21.8
MCV	13.2	10.3	7.4	5.2	1.1

MOISTURE CONDITION VALUE CALIBRATION

BS1377 : Part 4 : 1990 Clause 5.5

Hole Number:	**BH110**	**Top Depth (m):**	**5.50**
Sample Number:	**23**	**Base Depth (m):**	**6.00**
Sample Type:	**B**		

Initial Moisture Content (%):	12
Single/Separate Samples Tested	Separate
Material Retained on the 20mm BS Test Sieve (%):	4



Test Results.

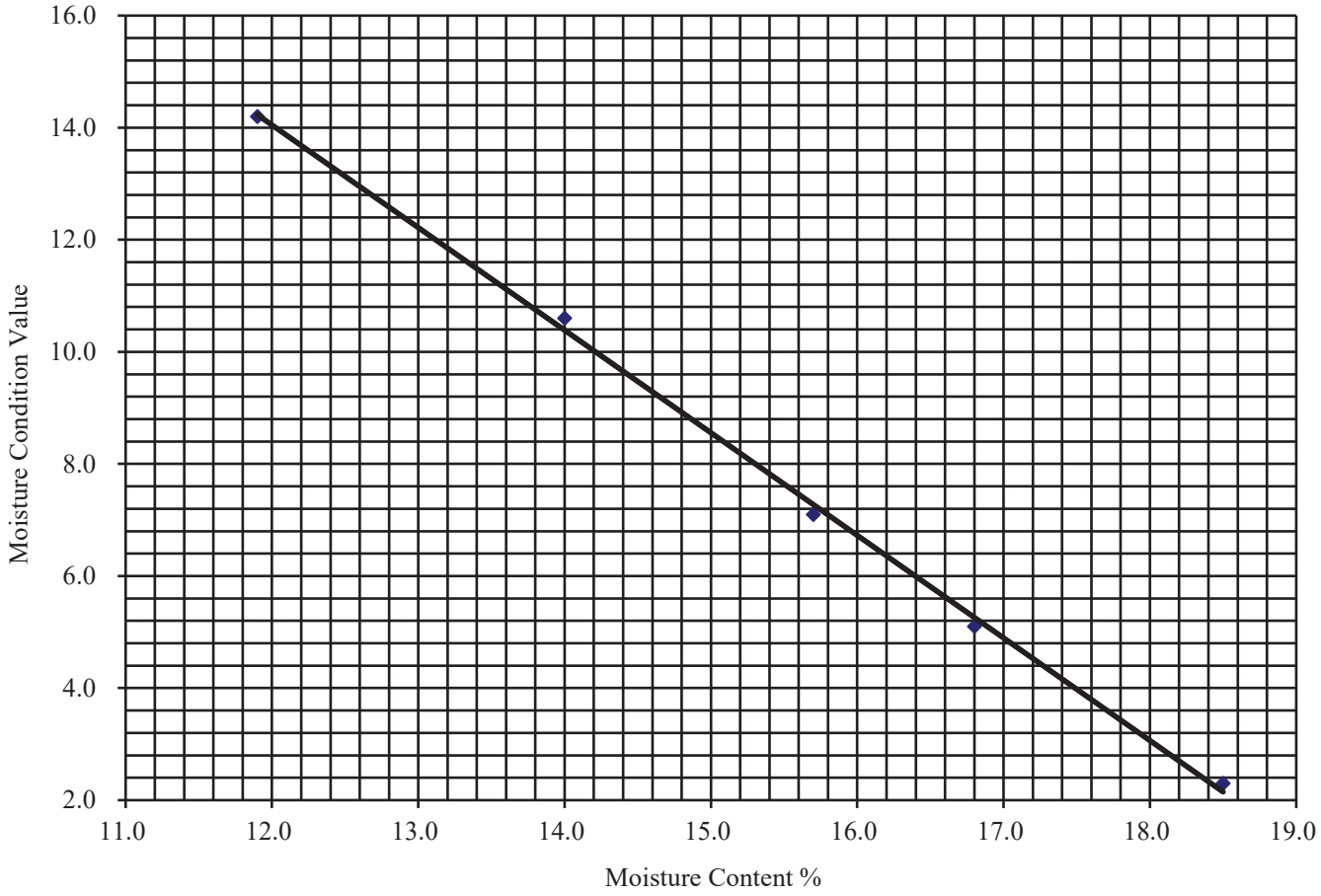
Test Number	1	2	3	4	5
Moisture Content (%)	13.2	14.9	16.6	17.9	19.2
MCV	13.9	10.6	7.4	5.2	2.6

MOISTURE CONDITION VALUE CALIBRATION

BS1377 : Part 4 : 1990 Clause 5.5

Hole Number:	**BH110**	**Top Depth (m):**	**6.50**
Sample Number:	**26**	**Base Depth (m):**	**7.00**
Sample Type:	**B**		

Initial Moisture Content (%):	17
Single/Separate Samples Tested	Separate
Material Retained on the 20mm BS Test Sieve (%):	0



Test Results.

Test Number	1	2	3	4	5
Moisture Content (%)	11.9	14.0	15.7	16.8	18.5
MCV	14.2	10.6	7.1	5.1	2.3

SUMMARY OF LABORATORY HAND VANES

(BS1377 : PART 7 : 1990)

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Moisture Content %	Peak Shear Strength kPa	Residual Shear Strength kPa	Remarks
BH110	17	B	3.50	4.00	22	9		
BH110	23	B	5.50	6.00	12	>150		
BH110	26	B	6.50	7.00	17	56		

* This test is out of our UKAS scope

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

Contract No:

PSL23/4343

Client Ref:

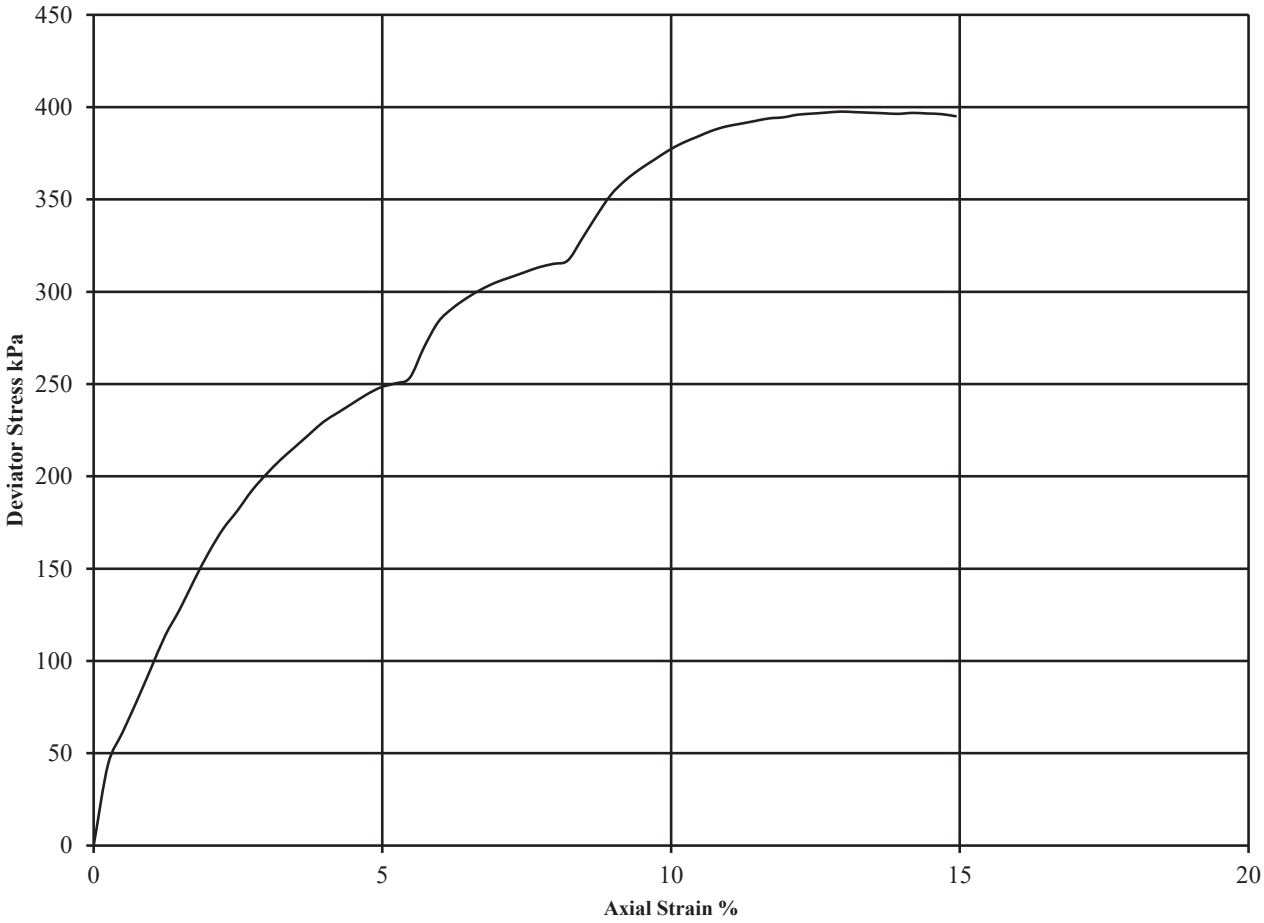
G230651

UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION

WITHOUT MEASUREMENT OF PORE PRESSURE

BS1377 : Part7 : 1990: Clause 9

Hole Number:	**BH110**	**Top Depth (m):**	**8.50**
Sample Number:	**31**	**Base Depth (m):**	**8.95**
Sample Type	**UT**		



Diameter (mm):		103	Height (mm):		207	Test:	UU Multistage		Remarks
Specimen	Moisture Content (%)	Bulk Density (Mg/m3)	Dry Density (Mg/m3)	Cell Pressure (kPa) θ_3	Corr. Max. Deviator Stress (kPa) $(\theta_1-\theta_3)_f$	Shear Strength Cu (kPa) $^1/_2(\theta_1-\theta_3)_f$	Failure Strain (%)	Mode of Failure	Undisturbed Sample Sample taken from top of tube Rate of strain = 2 %/min Latex Membrane used 0.2 mm thick Membrane Correction applied (kPa)
1	16	2.16	1.86	85	253	127	5.5		0.36 0.35 0.34
				160	317	158	8.2		See summary of soil descriptions
				330	398	199	12.9	Plastic	

UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

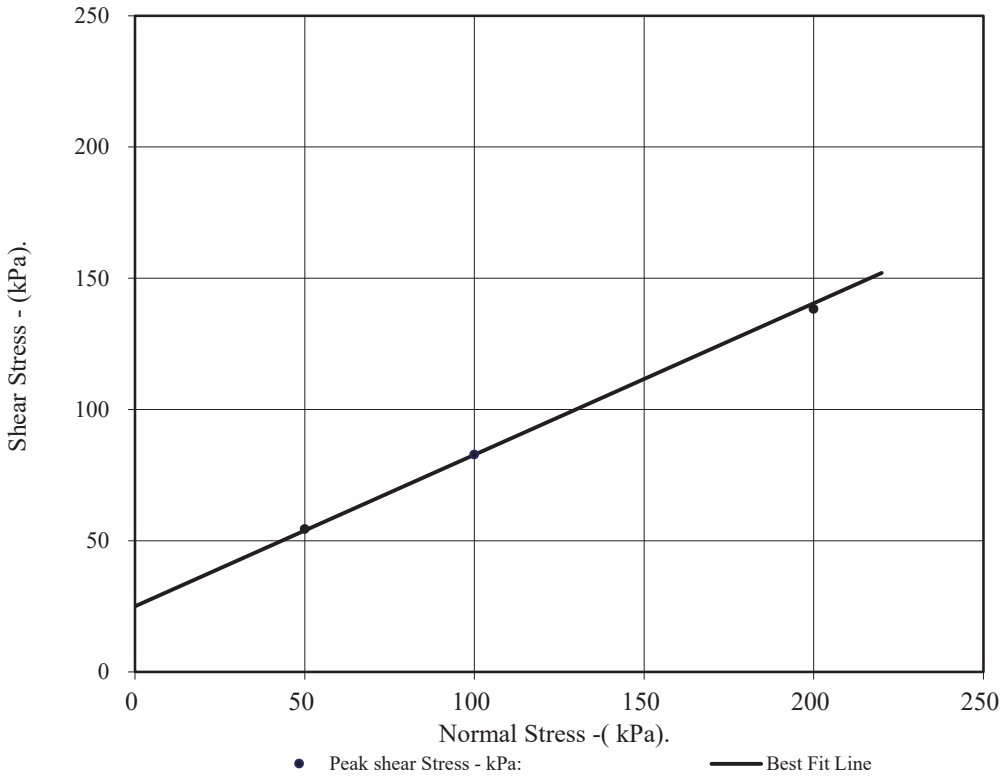
Contract No:
PSL23/4343
Client Ref:
G230651

CONSOLIDATED DRAINED SHEARBOX TEST

BS1377:Part 7:1990 Clause 4

Hole Number:	**BH110**		Top Depth:	**1.20**	
Sample Number:	**8**		Base Depth:	**1.20**	
Sample Conditions:	Dry		Sample Type	**D**	
Particle Density - Mg/m3:	2.65	Assumed	**Remarks:**		
Sample Preparation:	Material tested passing 2mm sieve Remoulded using hand tamped effort.				
Sample Description:	**See summary of soil descriptions.**				

STAGE	**1**	**2**	**3**
Initial Conditions			
Height - mm:	19.99	19.99	19.99
Length - mm:	60.05	60.05	60.05
Moisture Content - %:	14	14	14
Bulk Density - Mg/m3:	2.12	2.12	2.12
Dry Density - Mg/m3:	1.87	1.87	1.87
Voids Ratio:	0.419	0.419	0.419
Normal Pressure- kPa	50	100	200
Consolidation Stage			
Consolidated Height - mm:	19.54	19.24	19.16
Shearing Stage			
Rate of Strain - mm/min	0.60	0.60	0.60
Displacement at peak shear stress - mm	3.91	3.31	5.71
Peak shear Stress - kPa:	54	83	138
Final Consolidated Conditions			
Moisture Content - %:	14	13	13
Bulk Density - Mg/m3:	2.17	2.21	2.22
Dry Density - Mg/m3:	1.92	1.95	1.97
Peak			
Angle of Shearing Resistance:(~~θ~~)	**30**		
Effective Cohesion - kPa:	**25**		



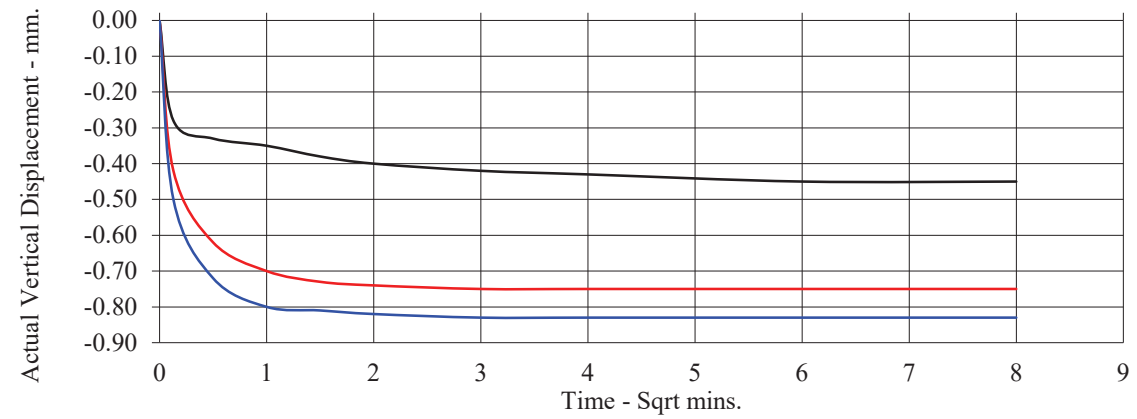
UKAS TESTING 4043 / PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY	**A46 Walsgrave**	**Contract No:** PSL23/4343 **Client Ref:** G230651

CONSOLIDATED DRAINED SHEARBOX TEST

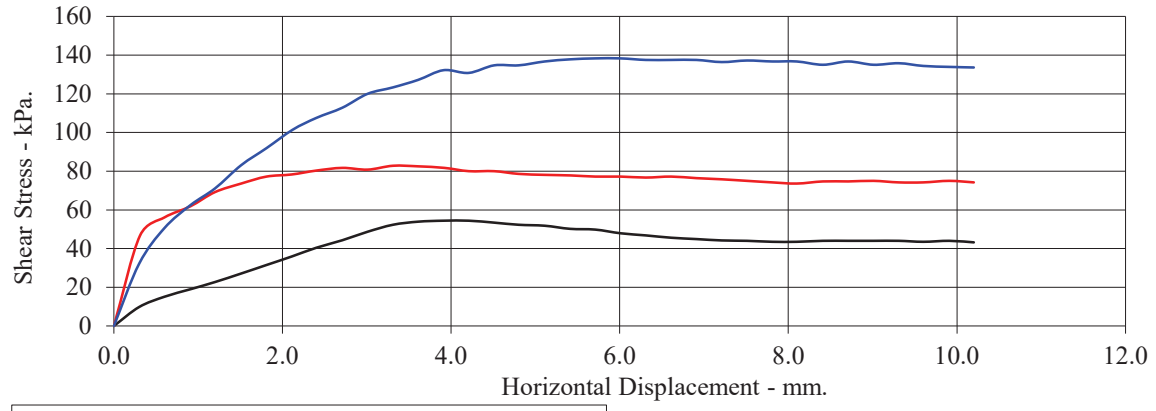
BS1377:Part 7:1990 Clause 4

Hole Number:	**BH110**	Top Depth:	**1.20**
Sample Number:	**8**	Base Depth:	**1.20**

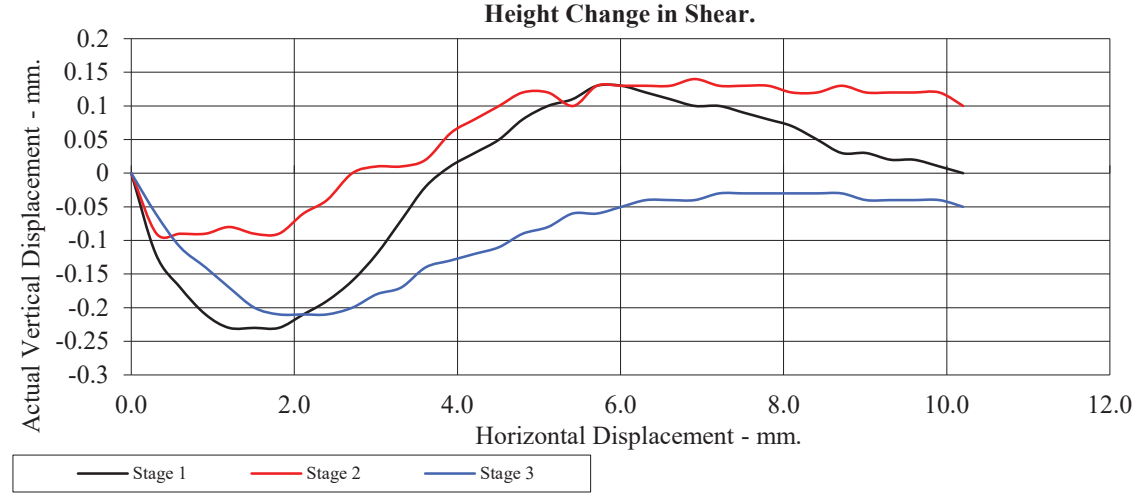
Consolidation Stage.



Shearing Stage.



Height Change in Shear.



UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

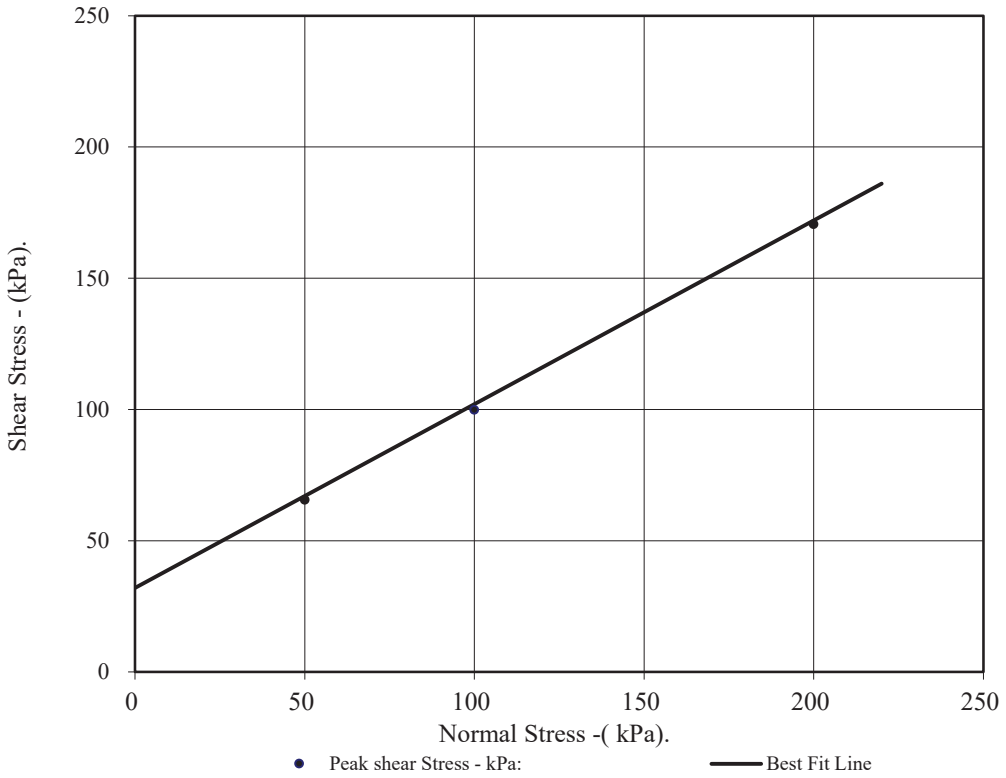
Contract No:
PSL23/4343
Client Ref:
G230651

CONSOLIDATED DRAINED SHEARBOX TEST

BS1377:Part 7:1990 Clause 5 SHW Clause 636 Paragraph 3

Hole Number:	**WS104**		Top Depth:	**1.00**
Sample Number:	**7**		Base Depth:	**1.20**
Sample Conditions:	Submerged		Sample Type	**B**
Particle Density - Mg/m3:	2.65	Assumed	**Remarks:**	
Sample Preparation:	Material tested passing 20mm sieve Recompacted using 2.5kg effort			
Sample Description:	**See summary of soil descriptions**			

STAGE	**1**	**2**	**3**
Initial Conditions			
Height - mm:	150	150	150
Length - mm:	300	300	300
Moisture Content - %:	15	15	15
Bulk Density - Mg/m3:	2.10	2.10	2.10
Dry Density - Mg/m3:	1.83	1.83	1.83
Voids Ratio:	0.445	0.445	0.445
Normal Pressure- kPa	50	100	200
Consolidation Stage			
Consolidated Height - mm:	149.10	148.51	148.14
Shearing Stage			
Rate of Strain (mm/min)	0.104	0.104	0.104
Displacement at peak shear stress (mm)	50.00	50.00	50.00
Peak shear Stress - kPa:	66	100	171
Final Consolidated Conditions			
Moisture Content - %:	16	15	15
Bulk Density - Mg/m3:	2.11	2.12	2.13
Dry Density - Mg/m3:	1.82	1.84	1.85
Peak			
Angle of Shearing Resistance:(~~θ~~)	**35**		
Effective Cohesion - kPa:	**32**		



UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

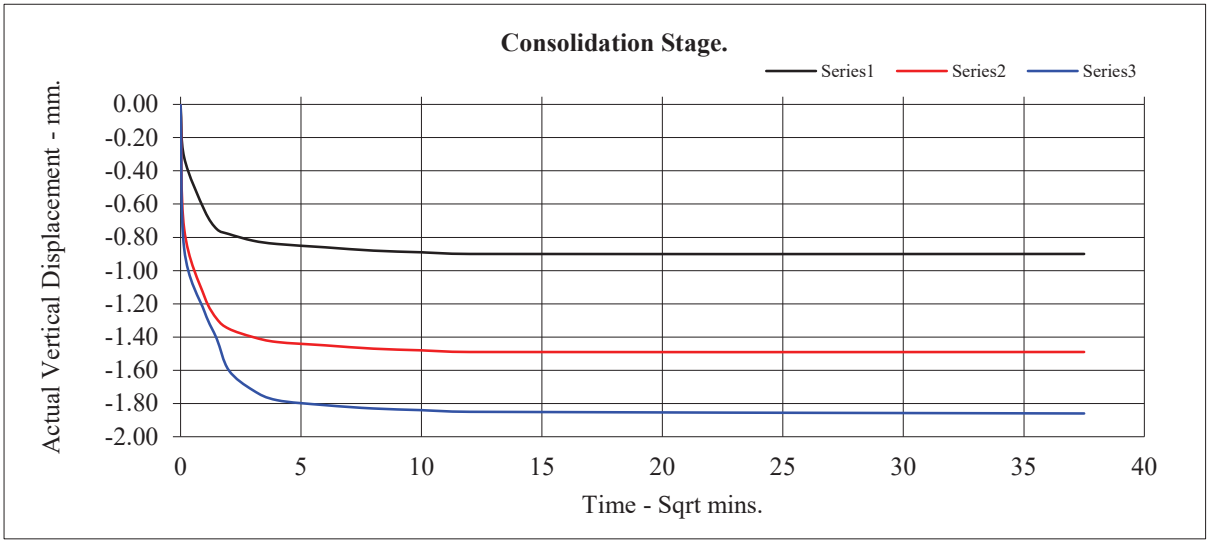
A46 Walsgrave

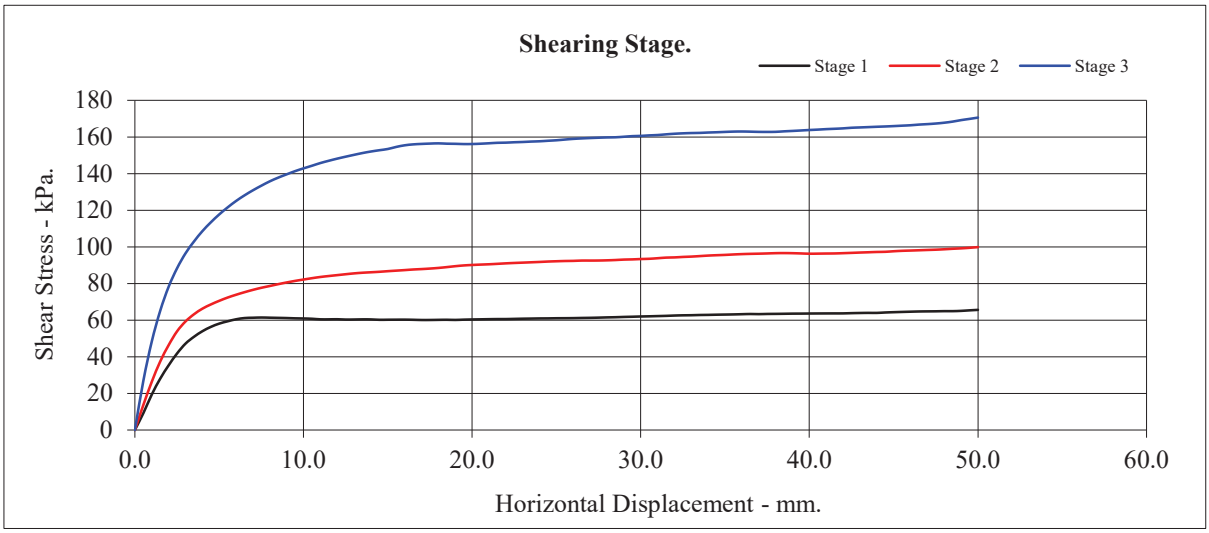
Contract No:
PSL23/4343
Client Ref:
G230651

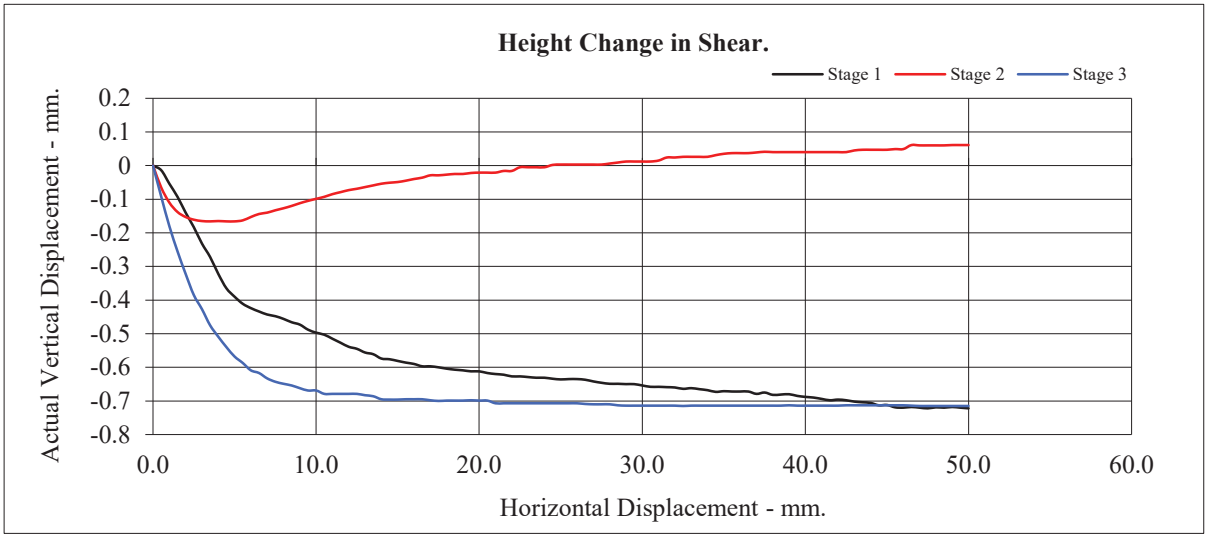
CONSOLIDATED DRAINED SHEARBOX TEST

BS1377:Part 7:1990 Clause 5 SHW Clause 636 Paragraph 3

Hole Number:	**WS104**	Top Depth:	**1.00**
Sample Number:	**7**	Base Depth:	**1.20**







UKAS TESTING 4043 / PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY	**A46 Walsgrave**	**Contract No:** PSL23/4343 **Client Ref:** G230651

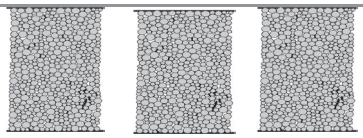
Effective Stress Triaxial Compression

Consolidated Undrained

Summary Report

Sample Details

sketch showing specimen location in original sample



			Spm. 1	2	3
Depth	4.50-4.95m UT19				
Description	See summary of soil descriptions.				
Type	Undisturbed, vertical orientation.				
Initial Sample Length	L_0	(mm)	76.0	76.0	76.0
Initial Sample Diameter	D_0	(mm)	38.0	38.0	38.0
Initial Sample Weight	W_0	(gr)	187.4	189.6	188.7
Initial Bulk Density	ρ_0	(Mg/m3)	2.17	2.20	2.19
Particle Density	ρ_s	(Mg/m3)	2.66	2.66	2.66

Initial Conditions

			Spm. 1	2	3
Initial Cell Pressure	σ_{3i}	(kPa)	995	1040	880
Initial Back Pressure	U_{bi}	(kPa)	950	949	700
Membrane Thickness	m_b	(mm)	0.600	0.600	0.600
Displacement Input	L_{IP}	(mm)	CH 2	CH 2	CH 2
Load Input	N_{IP}	(N)	CH 1	CH 1	CH 1
Pore Water Pressure Input	u_{pwp}	(kPa)	CH 3	CH 3	CH 3
Sample Volume	V	(cc)	CH 2	CH 2	CH 2
Initial Moisture	ω_i	(%)	13	13	13
Initial Dry Density	ρ_{di}	(Mg/m3)	1.93	1.94	1.93
Initial Voids Ratio	e_i	.	0.377	0.372	0.379
Initial Degree of Saturation	S_i	(%)	89	96	95
B Value	B	.	0.96	0.96	0.95

Final Conditions

			Spm. 1	2	3
Final Moisture	ω_f	(%)	17	16	13
Final Dry Density	ρ_{df}	(Mg/m3)	1.94	1.97	2.04
Final Voids Ratio	e_f	.	0.371	0.352	0.304
Final Degree of Saturation	S_f	(%)	100.0	100.0	100.0
Failure Criteria		.	Max. Dev. Stress	Max. Dev. Stress	Max. Dev. Stress
Strain At Failure	ε_f	(%)	17.01	20.00	10.60
Stress At Failure	$(\sigma_1-\sigma_3)_f$	(kPa)	211.4	337.0	435.8
Minor Stress At Failure	σ_3'	(kPa)	91.0	152.0	202.0
Major Stress At Failure	σ_1'	(kPa)	302.4	489.0	637.8
Principal Stress Ratio At Failure	σ_1'/σ_3'	(kPa)	3.323	3.217	3.157
PwP At Failure Criteria	u_f	(kPa)	909.0	888.0	678.0

Notes

Plastic

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

UKAS TESTING 4043

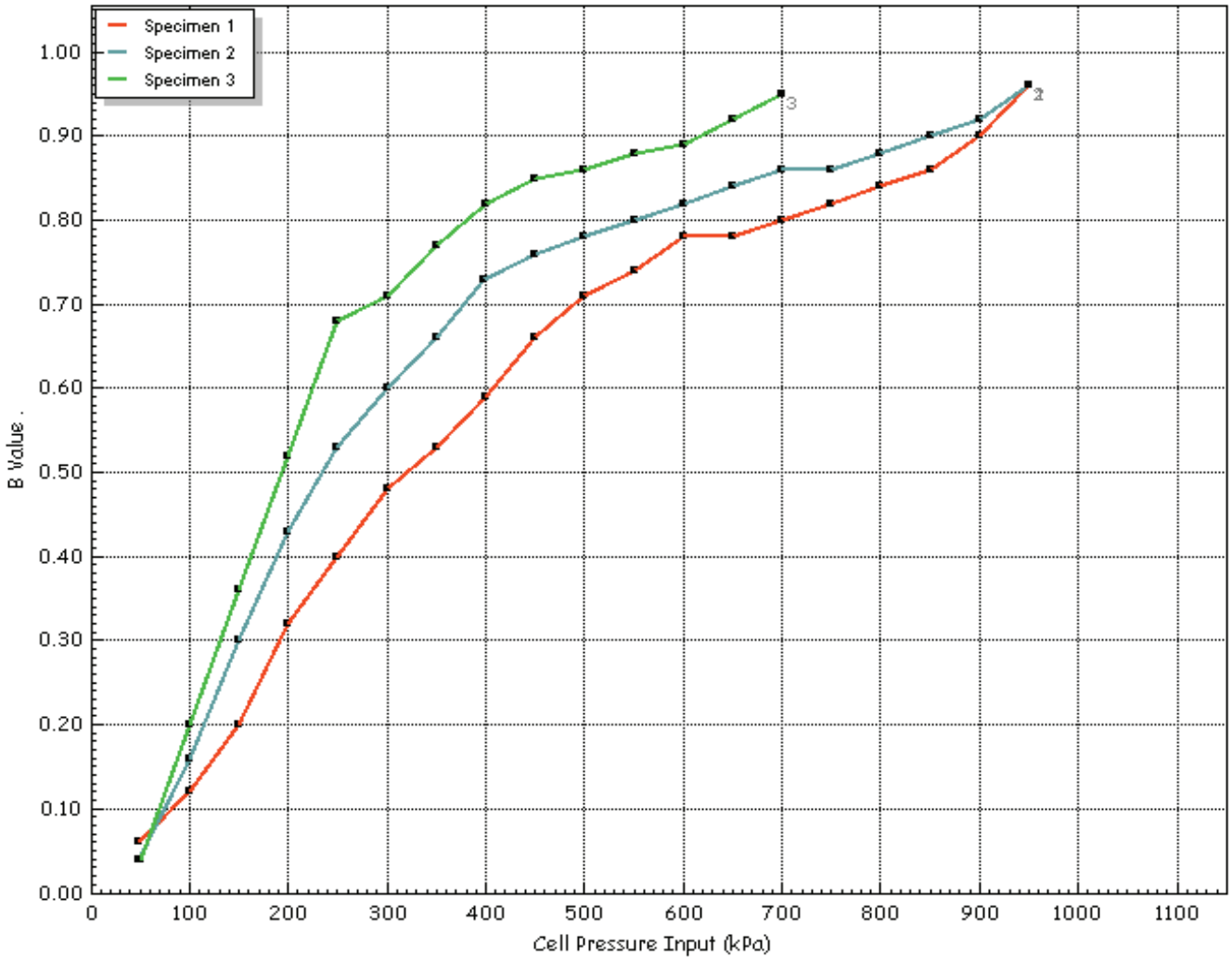
Test Method	BS1377-8 : 1990 : Clause 7	Test Name	BH110 4.50-4.95m
		Test Date	29/06/2023
		Borehole	BH110
Jobfile	A46 Walsgrave	Sample	4.50-4.95m
Client	Strata Geotechnics	Depth	4.50-4.95m UT19
O[redacted]		[redacted]	

Effective Stress Triaxial Compression

Consolidated Undrained

Saturation Plots

			Spm. 1	2	3
Saturation Method			Stepped	Stepped	Stepped
Cell Pressure Input	σ	(kPa)	950	950	700
Pore Water Pressure Input	u pwp	(kPa)	923	934	683
B Value	B	.	0.96	0.96	0.95



Test Method	BS1377-8 : 1990 : Clause 7	Test Name	BH110 4.50-4.95m
		Test Date	29/06/2023
		Borehole	BH110
Jobfile	A46 Walsgrave	Sample	4.50-4.95m
Client	Strata Geotechnics	Depth	4.50-4.95m UT19

PSL PROFESSIONAL SOILS LABORATORY
UKAS TESTING 4043

Effective Stress Triaxial Compression

Consolidated Undrained

Consolidation Plots

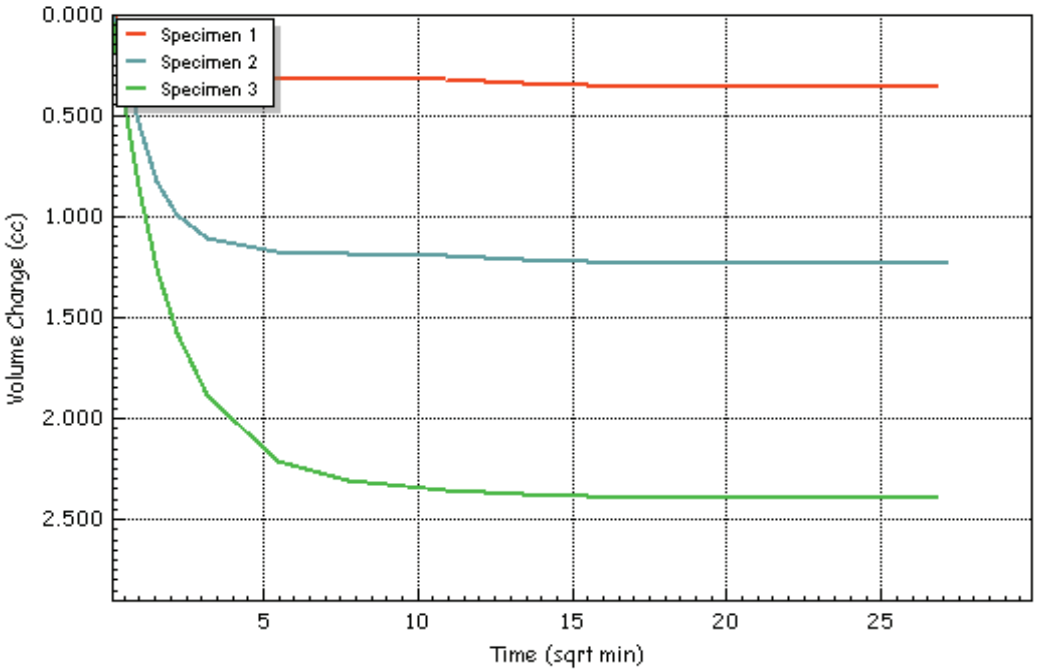
Initial Conditions

			Spm. 1	2	3
Initial Cell Pressure	σ_3	(kPa)	995	1040	880
Initial Back Pressure	u_{bi}	(kPa)	950	950	700
Pore Water Pressure Input	u_{pwp}	(kPa)	965	1020	850
Drainage Method			Radial+One End	Radial+One End	Radial+One End

Final Conditions

			Spm. 1	2	3
PWP Dissipation %	U%	(%)	100.00	100.00	100.00
Volumetric Strain	ε_v%	(%)	0.42	1.43	2.78
Corrected Length	L_c	(mm)	75.9	75.6	75.3
Corrected Area	A_c	(cm2)	11.31	11.23	11.13
Corrected Volume	V_c	(cc)	85.833	84.959	83.799
t100	t_{100}	(min)	6.70	8.46	22.66
Consolidation	c_v	(m2/year	0.044	0.035	0.013
Compressibility	m_v	(m2/MN)	0.278	0.205	0.185
Test Time	t_F	(h:m:s)	02:00:00	02:00:00	02:00:00
Estimated Strain to Failure	ε%	(%)	5.0	5.0	5.0
Shear Machine Speed	d_r	(mm/min	0.03162	0.03152	0.03137

Notes



PSL PROFESSIONAL SOILS LABORATORY
UKAS TESTING 4043

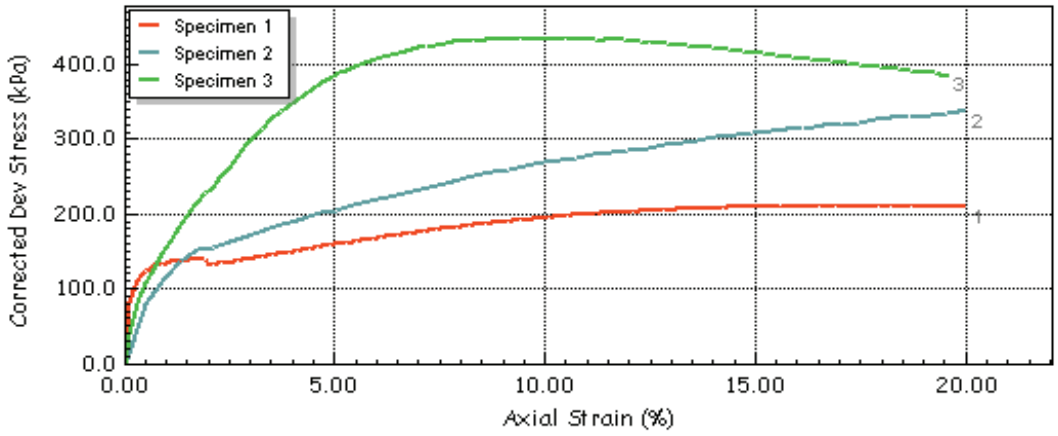
Test Method	BS1377-8 : 1990 : Clause 7	Test Name	BH110 4.50-4.95m
		Test Date	29/06/2023
		Borehole	BH110
Jobfile	A46 Walsgrave	Sample	4.50-4.95m
Client	Strata Geotechnics	Depth	4.50-4.95m UT19

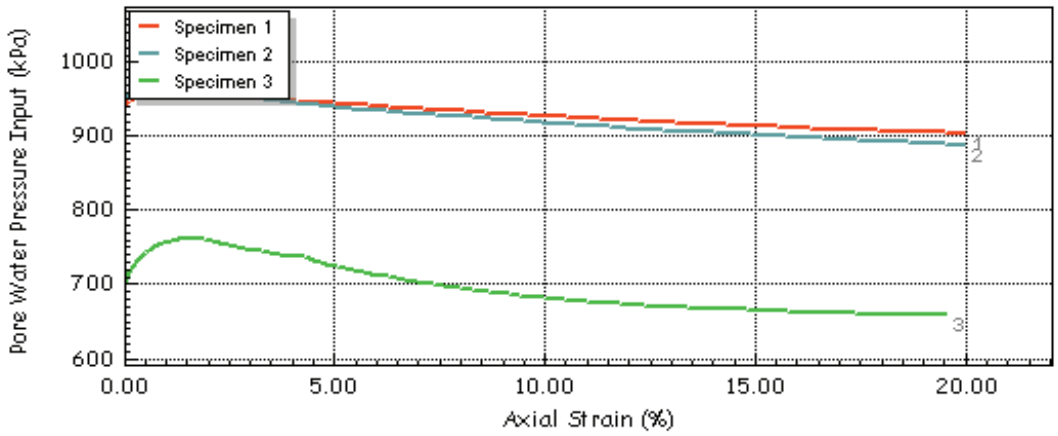
[redacted]

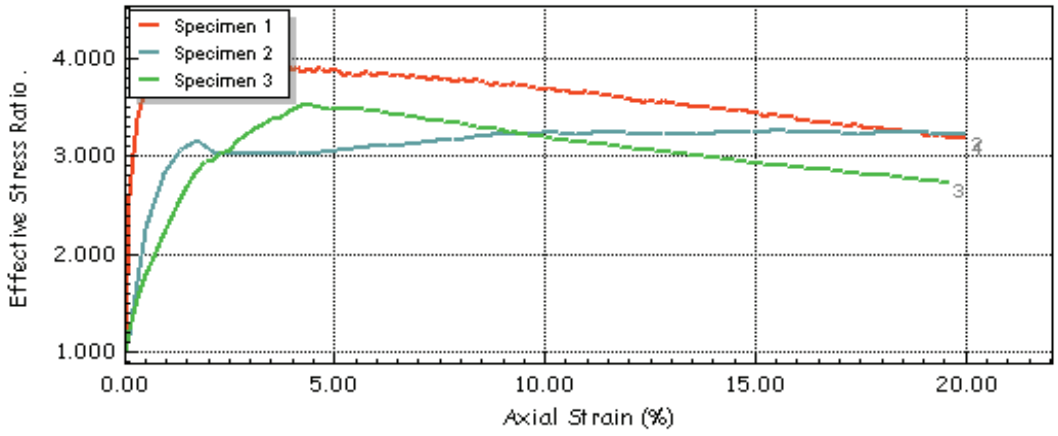
Effective Stress Triaxial Compression

Consolidated Undrained

Shear Stage Plots







Test Method	BS1377-8 : 1990 : Clause 7	Test Name	BH110 4.50-4.95m
		Test Date	29/06/2023
		Borehole	BH110
Jobfile	A46 Walsgrave	Sample	4.50-4.95m
Client	Strata Geotechnics	Depth	4.50-4.95m UT19

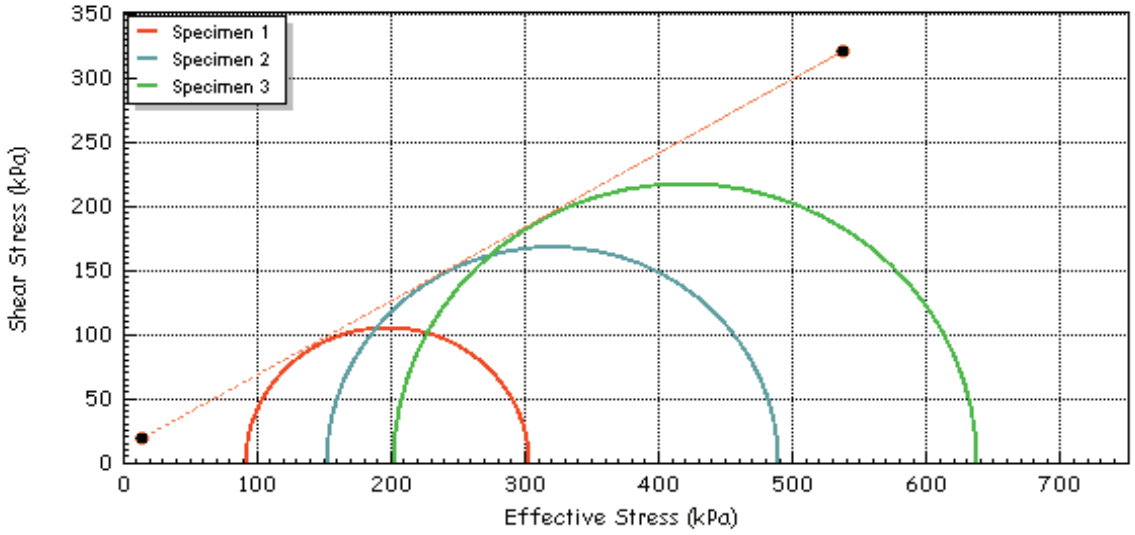
PSL PROFESSIONAL SOILS LABORATORY
UKAS TESTING 4043

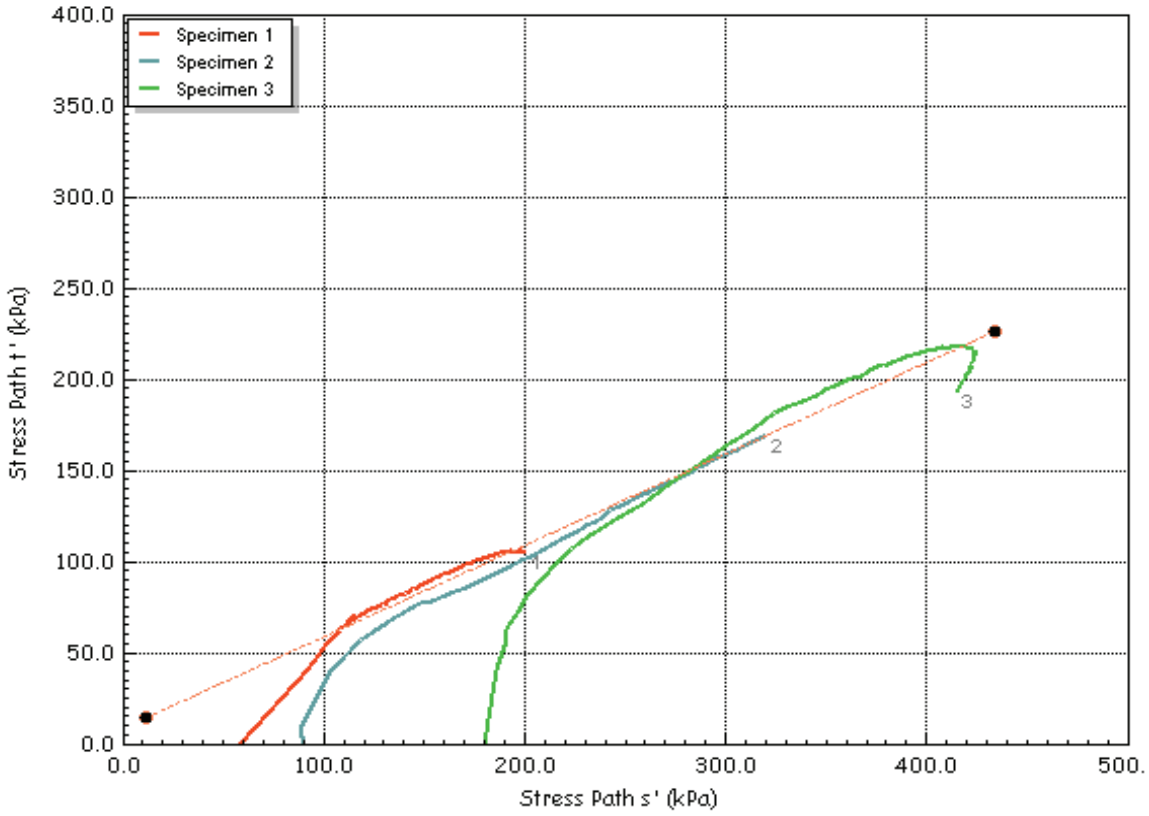
Effective Stress Triaxial Compression

Consolidated Undrained

Shear Stage Plots

Effective	c'	(kPa)	10.23	Effective Cohesion	c'	(kPa)	10.23
Effective Friction	ϕ'	(deg)	30.1	Effective Friction	ϕ'	(deg)	30.1





Test Method	BS1377-8 : 1990 : Clause 7	Test Name	BH110 4.50-4.95m
		Test Date	29/06/2023
		Borehole	BH110
Jobfile	A46 Walsgrave	Sample	4.50-4.95m
Client	Strata Geotechnics	Depth	4.50-4.95m UT19

PSL PROFESSIONAL SOILS LABORATORY
UKAS TESTING 4043

UKAS TESTING
2531

CHEMTECH environmental part of Cawood

ANALYTICAL TEST REPORT

Contract no: 124313

Contract name: A46 Walsgrave

Client reference: PSL23/4343

Clients name: Professional Soils Laboratory

Clients address: 5/7 Hexthorpe Road
Doncaster
DN4 0AR

Samples received: 30 June 2023

Analysis started: 30 June 2023

Analysis completed: 17 July 2023

Report issued: 17 July 2023

Key

U	UKAS accredited test
M	MCERTS & UKAS accredited test
$	Test carried out by an approved subcontractor
I/S	Insufficient sample to carry out test
N/S	Sample not suitable for testing

Approved by: [redacted]

Chemtech Environmental Limited

SOILS

Lab number			124313-1	124313-2	124313-3	124313-4	124313-5
Sample id			BH110	BH110	BH110	WS104	WS104
Depth (m)			1.20	2.20	5.00	1.00-1.20	3.90-4.29
Sample Type			D	D	D	B	D
Date sampled			16/05/2023	16/05/2023	16/05/2023	16/05/2023	16/05/2023
Test	**Method**	**Units**					
pH	CE004 [U]	units	8.6	8.0	8.5	7.6	8.8
Magnesium (2:1 water soluble)	CE061	mg/l Mg	<1	2.8	2.8	3.9	2.0
Chloride (2:1 water soluble)	CE049 [U]	mg/l Cl	25	9.5	5.4	4.4	3.4
Nitrate (2:1 water soluble)	CE049 [U]	mg/l NO_3	<1	2.4	7.1	7.6	<1
Sulphate (2:1 water soluble)	CE061 [U]	mg/l SO_4	<10	118	23	25	23
Sulphate (acid extractable)	CE062 [U]	mg/kg SO_4	<100	<100	266	149	256
Sulphate (acid extractable)	CE062 [U]	% w/w SO_4	<0.01	<0.01	0.03	0.01	0.03
Sulphur (total)	CE119	mg/kg S	<100	<100	<100	<100	1837
Sulphur (total)	CE119	% w/w S	<0.01	<0.01	<0.01	<0.01	0.18

Chemtech Environmental Limited

METHOD DETAILS

METHOD	SOILS	METHOD SUMMARY	SAMPLE	STATUS	LOD	UNITS
CE004	pH	Based on BS 1377, pH Meter	As received	U	-	units
CE061	Magnesium (2:1 water soluble)	Aqueous extraction, ICP-OES	Dry		1	mg/l Mg
CE049	Chloride (2:1 water soluble)	Aqueous extraction, IC-COND	Dry	U	1	mg/l Cl
CE049	Nitrate (2:1 water soluble)	Aqueous extraction, IC-COND	Dry	U	1	mg/l NO_3
CE061	Sulphate (2:1 water soluble)	Aqueous extraction, ICP-OES	Dry	U	10	mg/l SO_4
CE062	Sulphate (acid extractable)	HCl extract, analysed by ICP-OES	Dry	U	100	mg/kg SO4
CE062	Sulphate (acid extractable)	HCl extract, analysed by ICP-OES	Dry	U	0.01	% w/w SO4
CE119	Sulphur (total)	Aqua regia digest, analysed by ICP-OES	Dry		100	mg/kg S
CE119	Sulphur (total)	Aqua regia digest, analysed by ICP-OES	Dry		0.01	% w/w S

Chemtech Environmental Limited

DEVIATING SAMPLE INFORMATION

Comments
Sample deviation is determined in accordance with the UKAS note "Guidance on Deviating Samples" and based on reference standards and laboratory trials.
For samples identified as deviating, test result(s) may be compromised and may not be representative of the sample at the time of sampling.
Chemtech Environmental Ltd cannot be held responsible for the integrity of sample(s) received if Chemtech Environmental Ltd did not undertake the sampling. Such samples may be deviating.

Key

N	No (not deviating sample)
Y	Yes (deviating sample)
NSD	Sampling date not provided
NST	Sampling time not provided (waters only)
EHT	Sample exceeded holding time(s)
IC	Sample not received in appropriate containers
HP	Headspace present in sample container
NCF	Sample not chemically fixed (where appropriate)
OR	Other (specify)

Lab ref	Sample id	Depth (m)	Deviating	Tests (Reason for deviation)
124313-1	BH110	1.20	Y	All (NSD)
124313-2	BH110	2.20	Y	All (NSD)
124313-3	BH110	5.00	Y	All (NSD)
124313-4	WS104	1.00-1.20	Y	All (NSD)
124313-5	WS104	3.90-4.29	Y	All (NSD)

Chemtech Environmental Limited

ADDITIONAL INFORMATION

Notes

Opinions and interpretations expressed herein are outside the UKAS accreditation scope.

Unless otherwise stated, Chemtech Environmental Ltd was not responsible for sampling.

All testing carried out at Unit 6 Parkhead, Stanley, DH9 7YB, except for subcontracted testing.

Methods, procedures and performance data are available on request.

Results reported herein relate only to the material supplied to the laboratory.

This report shall not be reproduced except in full, without prior written approval.

Samples will be disposed of 4 weeks from initial receipt unless otherwise instructed.

For soils and solids, all results are reported on a dry basis. Samples dried at no more than 30°C in a drying cabinet.

Analytical results are inclusive of stones, where applicable.

LABORATORY REPORT

Contract Number: PSL23/4345

Report Date: 14 July 2023

Client's Reference: G230651/Geo 05B

Client Name: Strata Geotechnics
Kirkby Lane
Pinxton
Nottinghamshire
NG16 6JA

For the attention of: Izaac Lovatt

Contract Title: A46 Walsgrave

Date Received: 7/6/2023
Date Commenced: 7/6/2023
Date Completed: 14/7/2023

Notes: Opinions and Interpretations are outside the UKAS Accreditation

A copy of the Laboratory Schedule of accredited tests as issued by UKAS is attached to this report. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced other than in full, without the prior written approval of the laboratory.

Checked and Approved Signatories:

[redacted]

(Director) (Quality Manager) (Laboratory Manager)

[redacted]

(Assistant Laboratory Manager) (Senior Technician) (Senior Technician)

5 – 7 Hexthorpe Road,
Hexthorpe,
Doncaster,
DN4 0AR
Tel: 01302 768098
Email: [redacted]

SUMMARY OF LABORATORY SOIL DESCRIPTIONS

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Description of Sample
BH111	2	D	0.30		Brown very sandy very clayey GRAVEL.
BH111	5	B	0.50		Brown very sandy very clayey GRAVEL.
BH111	8	B	1.00		Brown very gravelly clayey SAND.
BH111	14	B	1.50	2.00	Brown very gravelly silty SAND.
BH111	16	B	2.50	3.00	Brown very gravelly silty SAND.
BH111	18	B	3.50	4.00	Brown very sandy clayey silty GRAVEL.
BH111	20	B	4.00	4.50	Reddish brown slightly gravelly very sandy CLAY.
BH111	21	UT	4.50	4.95	Reddish brown slightly gravelly very sandy CLAY.
BH111	25	B	5.50	6.00	Reddish brown slightly gravelly sandy CLAY.

SUMMARY OF SOIL CLASSIFICATION TESTS

(BS1377 : PART 2 : 1990)

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Moisture Content % Clause 3.2	Linear Shrinkage % Clause 6.5	Particle Density Mg/m^3 Clause 8.2	Liquid Limit % Clause 4.3/4	Plastic Limit % Clause 5.3	Plasticity Index % Clause 5.4	Passing .425mm %	Remarks
BH111	2	D	0.30		11							
BH111	8	B	1.00		7.6							
BH111	14	B	1.50	2.00	13							
BH111	16	B	2.50	3.00	16							

SYMBOLS : **NP : Non Plastic** *** : Liquid Limit and Plastic Limit Wet Sieved.**

UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

Contract No:
PSL23/4345
Client Ref:
G230651

SUMMARY OF LABORATORY HAND VANES

(BS1377 : PART 7 : 1990)

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Moisture Content %	Peak Shear Strength kPa	Residual Shear Strength kPa	Remarks
BH111	20	B	4.00	4.50	18	45		
BH111	25	B	5.50	6.00	21	33		

* This test is out of our UKAS scope

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY	A46 Walsgrave	Contract No: PSL23/4345 Client Ref: G230651

SUMMARY OF SOIL DENSITY RELATED TESTS

(BS1377 : PART 2 & 4 : 1990)

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Moisture Content %	Bulk Density Mg/m^3	Dry Density Mg/m^3	Retained 20mm %	Retained 37.5mm %	Method of compaction kg	Maximum Dry Density Mg/m^3	Minimum Dry Density Mg/m^3	Remarks
BH111	8	B	1.00		8.6	2.08	1.92						
BH111	16	B	2.50	3.00	16	2.17	1.87						

UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

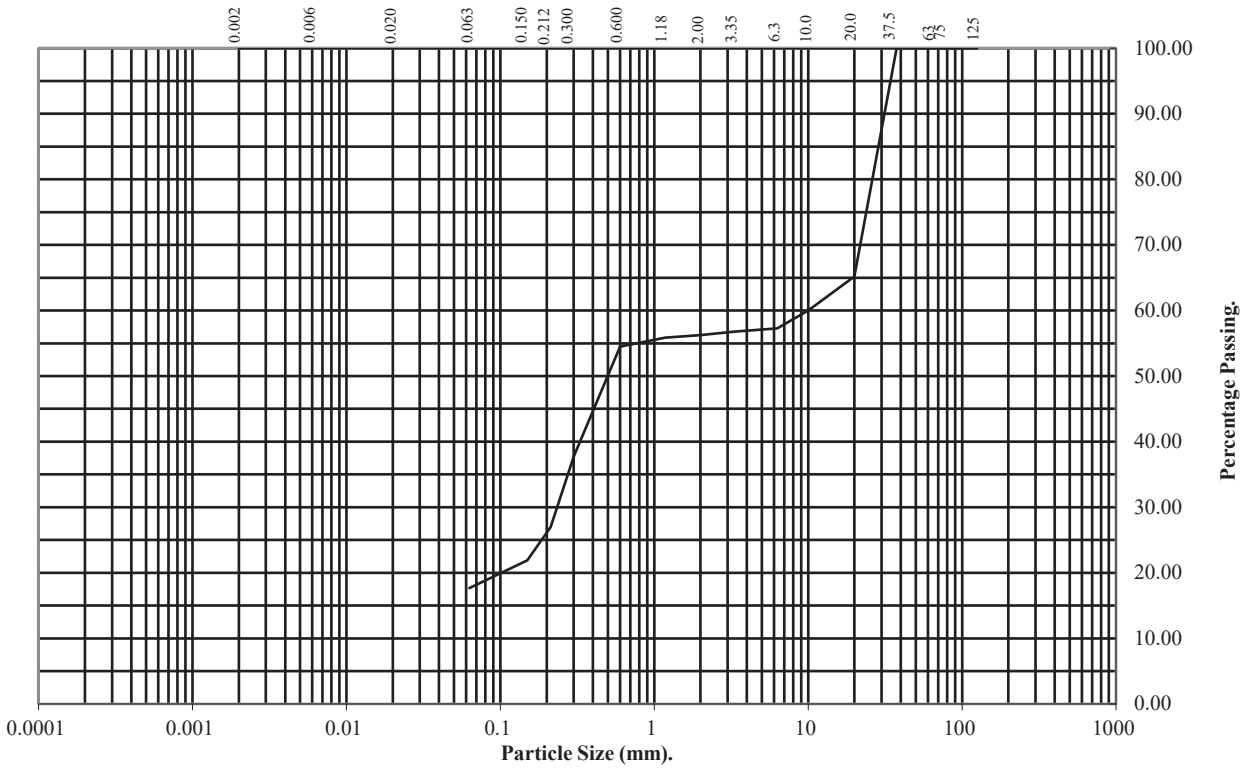
Contract No:
PSL23/4345
Client Ref:
G230651

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number:	**BH111**	**Top Depth (m):**	**0.50**
Sample Number:	**5**	**Base Depth(m):**	
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	65
10	60
6.3	57
3.35	57
2	56
1.18	56
0.6	54
0.3	38
0.212	27
0.15	22
0.063	18

Soil Fraction	Total Percentage
Cobbles	0
Gravel	44
Sand	38
Silt/Clay	18

Remarks:

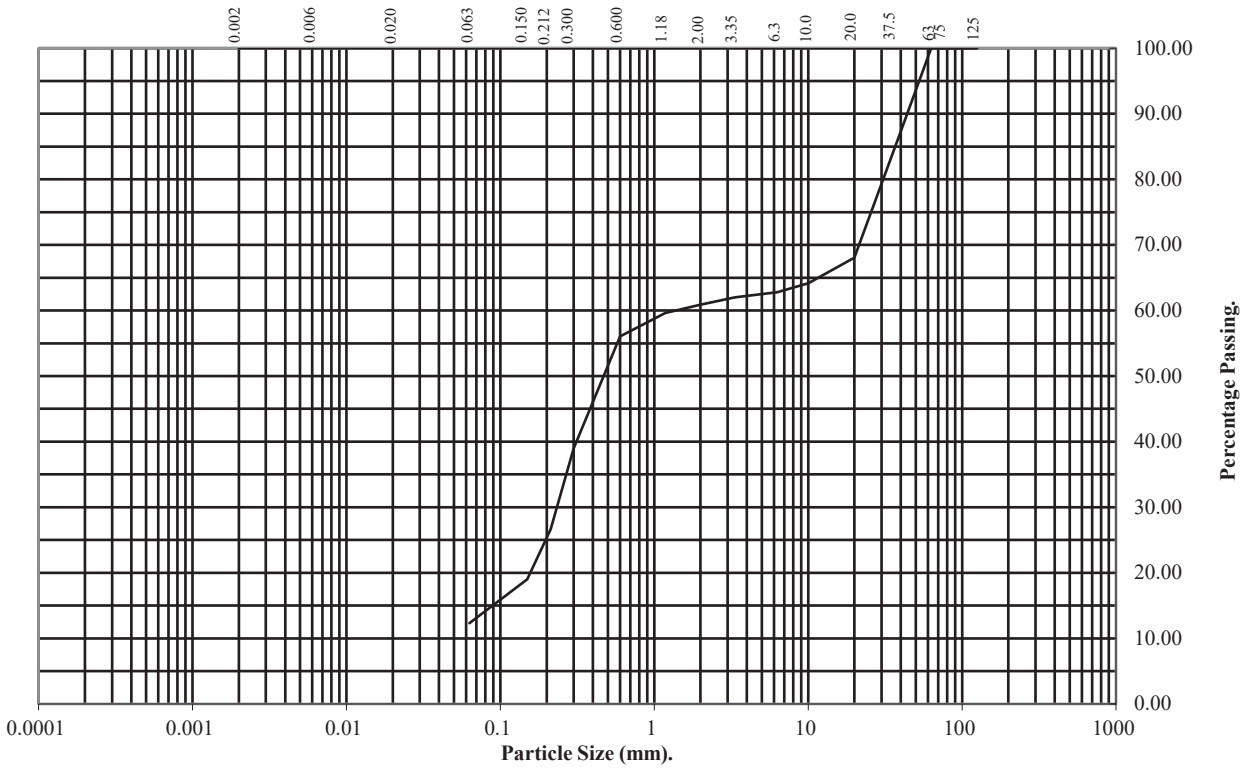
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number:	**BH111**	**Top Depth (m):**	**1.50**
Sample Number:	**14**	**Base Depth(m):**	**2.00**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	86
20	68
10	64
6.3	63
3.35	62
2	61
1.18	60
0.6	56
0.3	39
0.212	27
0.15	19
0.063	12

Soil Fraction	Total Percentage
Cobbles	0
Gravel	39
Sand	49
Silt/Clay	12

Remarks:
See Summary of Soil Descriptions

UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

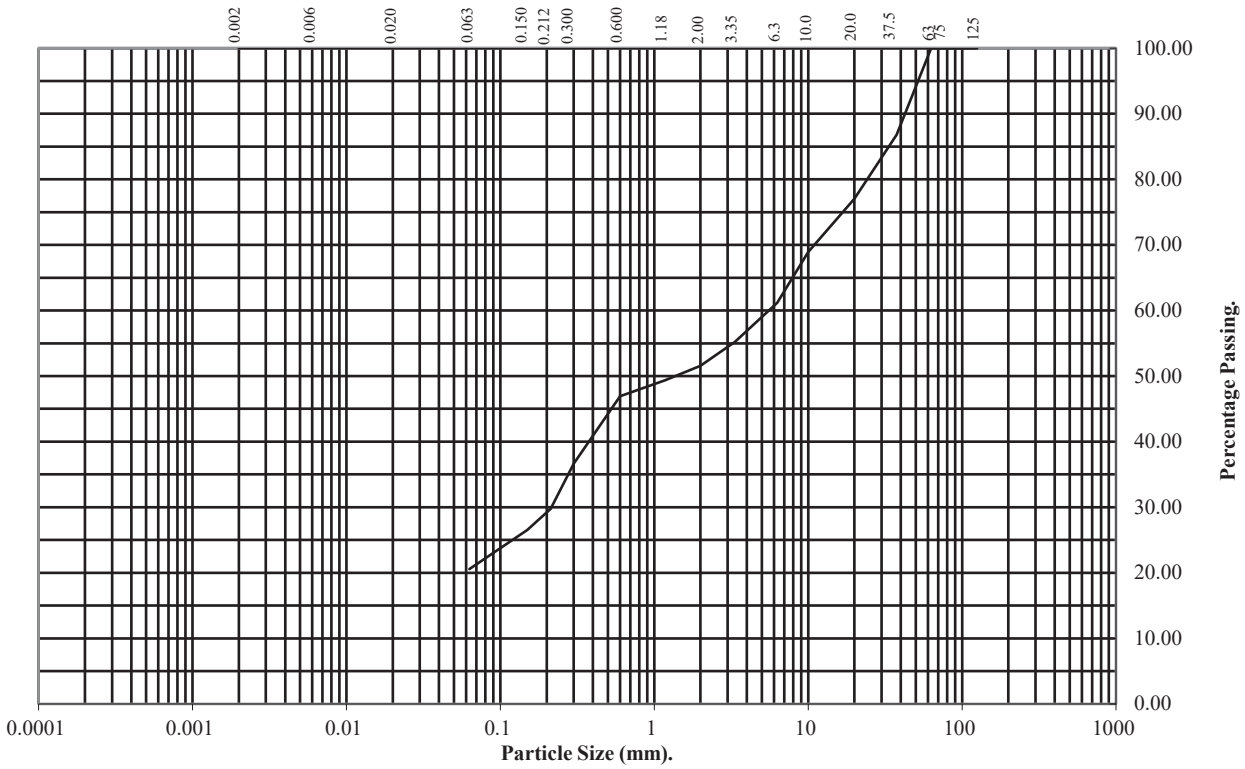
Contract No:
PSL23/4345
Client Ref:
G230651

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number:	**BH111**	**Top Depth (m):**	**3.50**
Sample Number:	**18**	**Base Depth(m):**	**4.00**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	87
20	77
10	69
6.3	61
3.35	55
2	52
1.18	49
0.6	47
0.3	37
0.212	30
0.15	27
0.063	21

Soil Fraction	Total Percentage
Cobbles	0
Gravel	48
Sand	31
Silt/Clay	21

Remarks:

See Summary of Soil Descriptions

UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

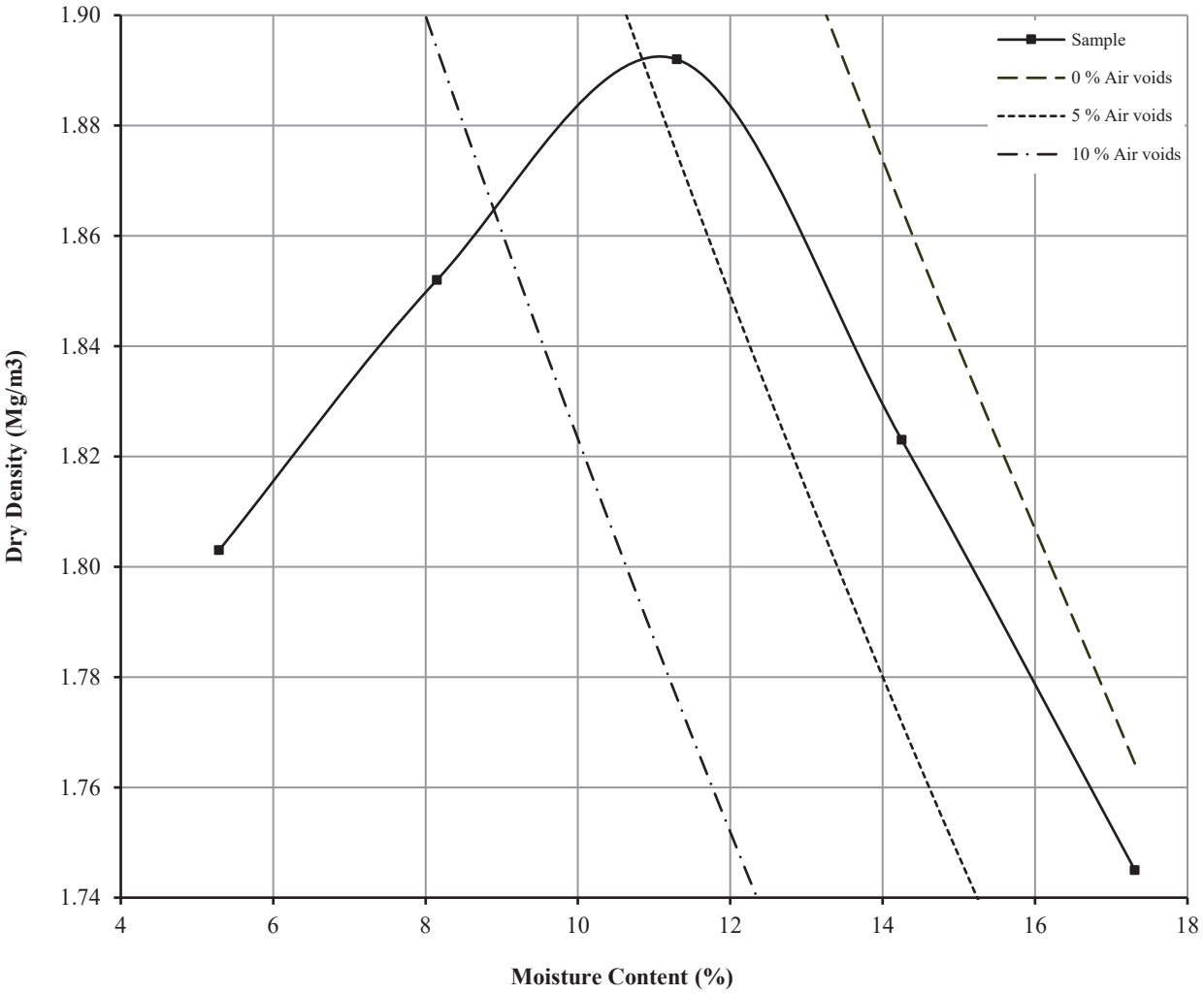
Contract No: PSL23/4345

Client Ref: G230651

DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

Non compliance with BS 1377 : Part 4 : Clause 3.6 : 1990

Hole Number:	**BH111**	**Top Depth (m) :**	**0.50**
Sample Number:	**5**	**Base Depth (m) :**	
Sample Type:	**B**		



Initial Moisture Content:		11	Method of Compaction:	4.5kg	Separate Samples
Particle Density (Mg/m3):	2.54	Assumed	Material Retained on 37.5 mm Test Sieve (%):		0
Maximum Dry Density (Mg/m3):		1.89	Material Retained on 20.0 mm Test Sieve (%):		35
Optimum Moisture Content (%):		11			
Remarks See summary of soil descriptions					

UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

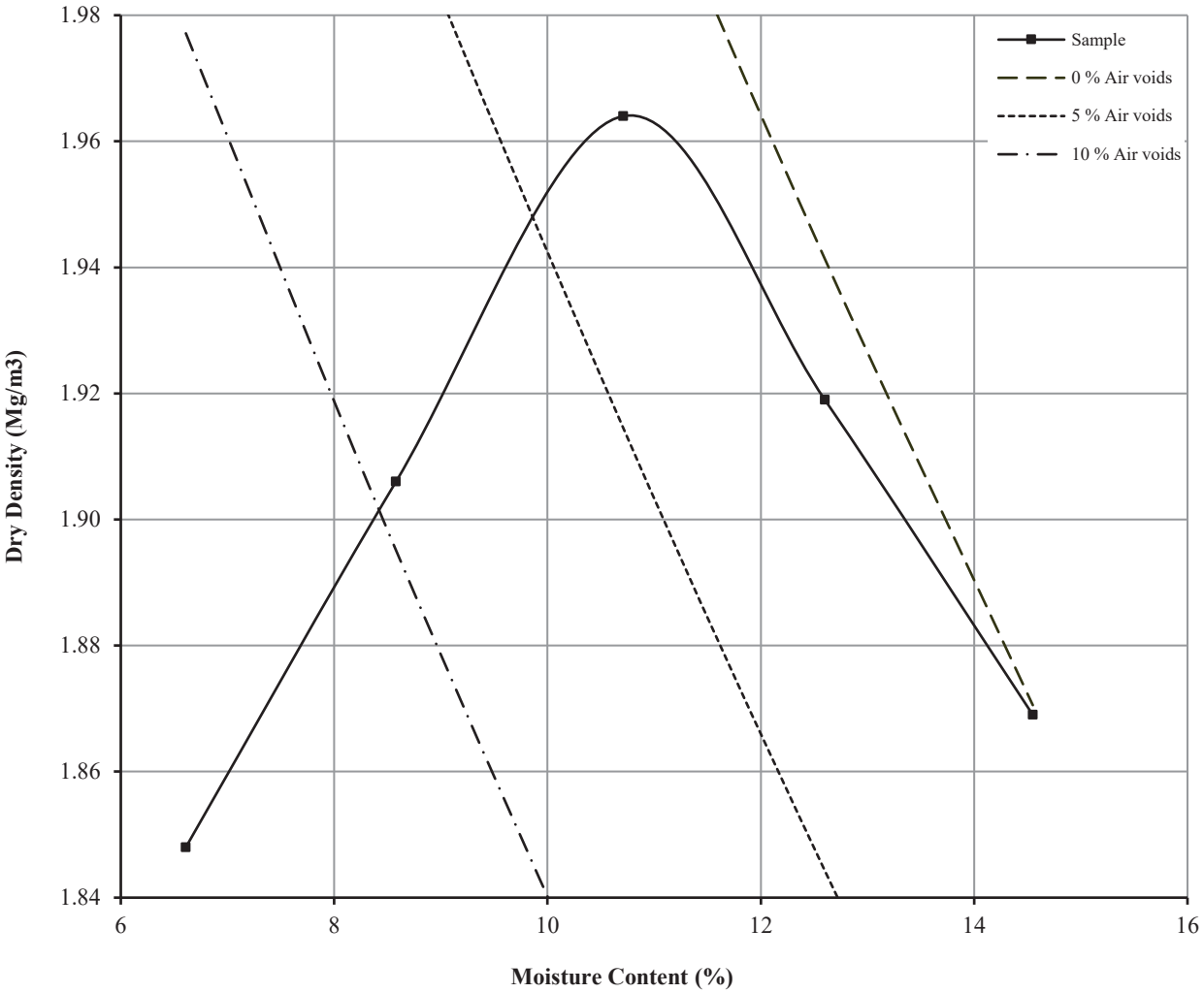
A46 Walsgrave

Contract
PSL23/4345
Client Ref
G230651

DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

Non compliance with BS 1377 : Part 4 : Clause 3.6 : 1990

Hole Number:	**BH111**	**Top Depth (m) :**	**1.50**
Sample Number:	**14**	**Base Depth (m) :**	**2.00**
Sample Type:	**B**		



Initial Moisture Content:		13	Method of Compaction:	4.5kg	Separate Samples
Particle Density (Mg/m3):	2.57	Assumed	Material Retained on 37.5 mm Test Sieve (%):		14
Maximum Dry Density (Mg/m3):		1.96	Material Retained on 20.0 mm Test Sieve (%):		18
Optimum Moisture Content (%):		11			
Remarks See summary of soil descriptions					

UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

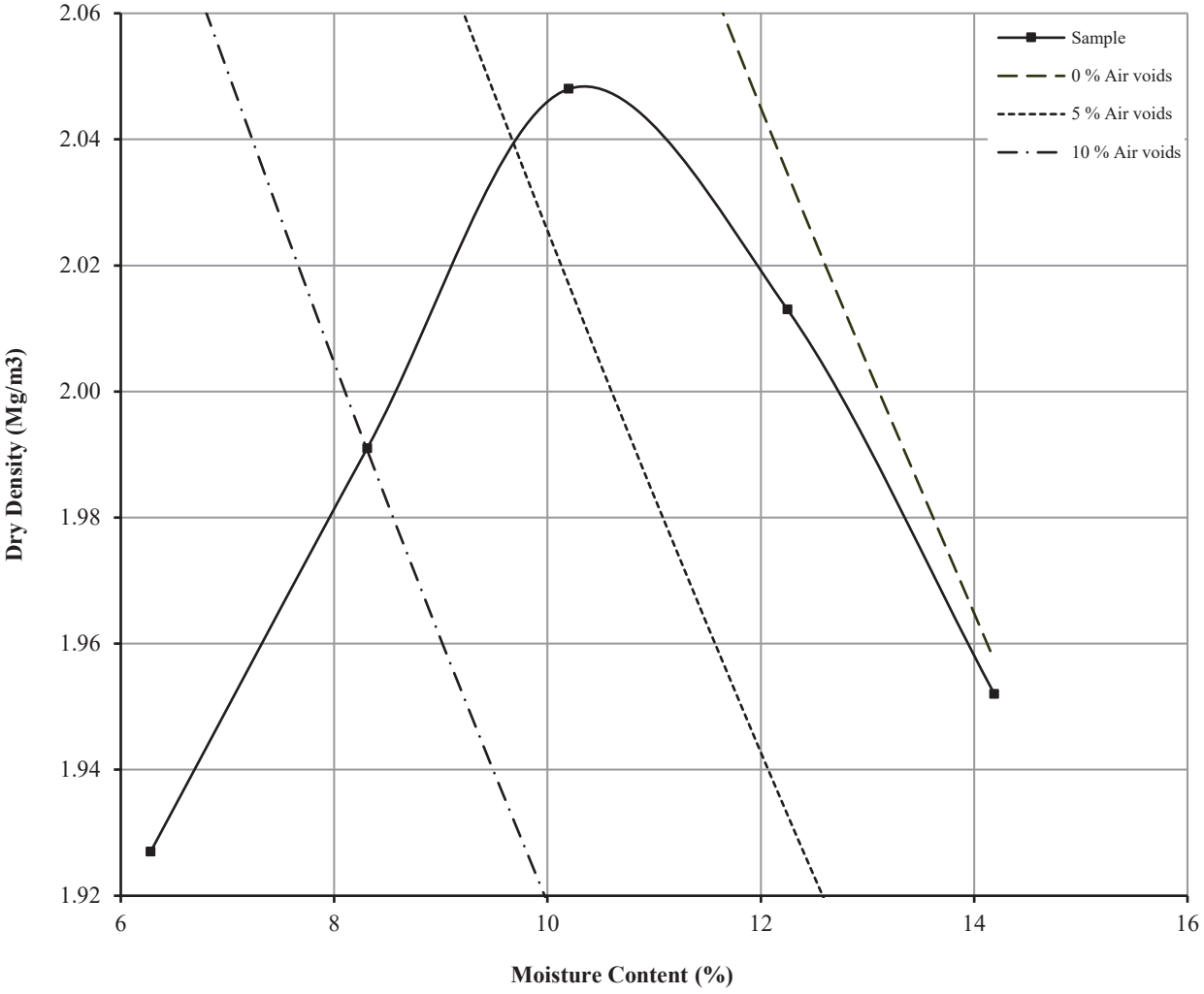
A46 Walsgrave

Contract
PSL23/4345
Client Ref
G230651

DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

BS 1377 : Part 4 : Clause 3.6 : 1990

Hole Number:	**BH111**	**Top Depth (m) :**	**2.50**
Sample Number:	**16**	**Base Depth (m) :**	**3.00**
Sample Type:	**B**		



Initial Moisture Content:		16	Method of Compaction:	4.5kg	Separate Samples
Particle Density (Mg/m3):	2.71	Assumed	Material Retained on 37.5 mm Test Sieve (%):		0
Maximum Dry Density (Mg/m3):		2.05	Material Retained on 20.0 mm Test Sieve (%):		15
Optimum Moisture Content (%):		10			
Remarks See summary of soil descriptions					

UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

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Contract
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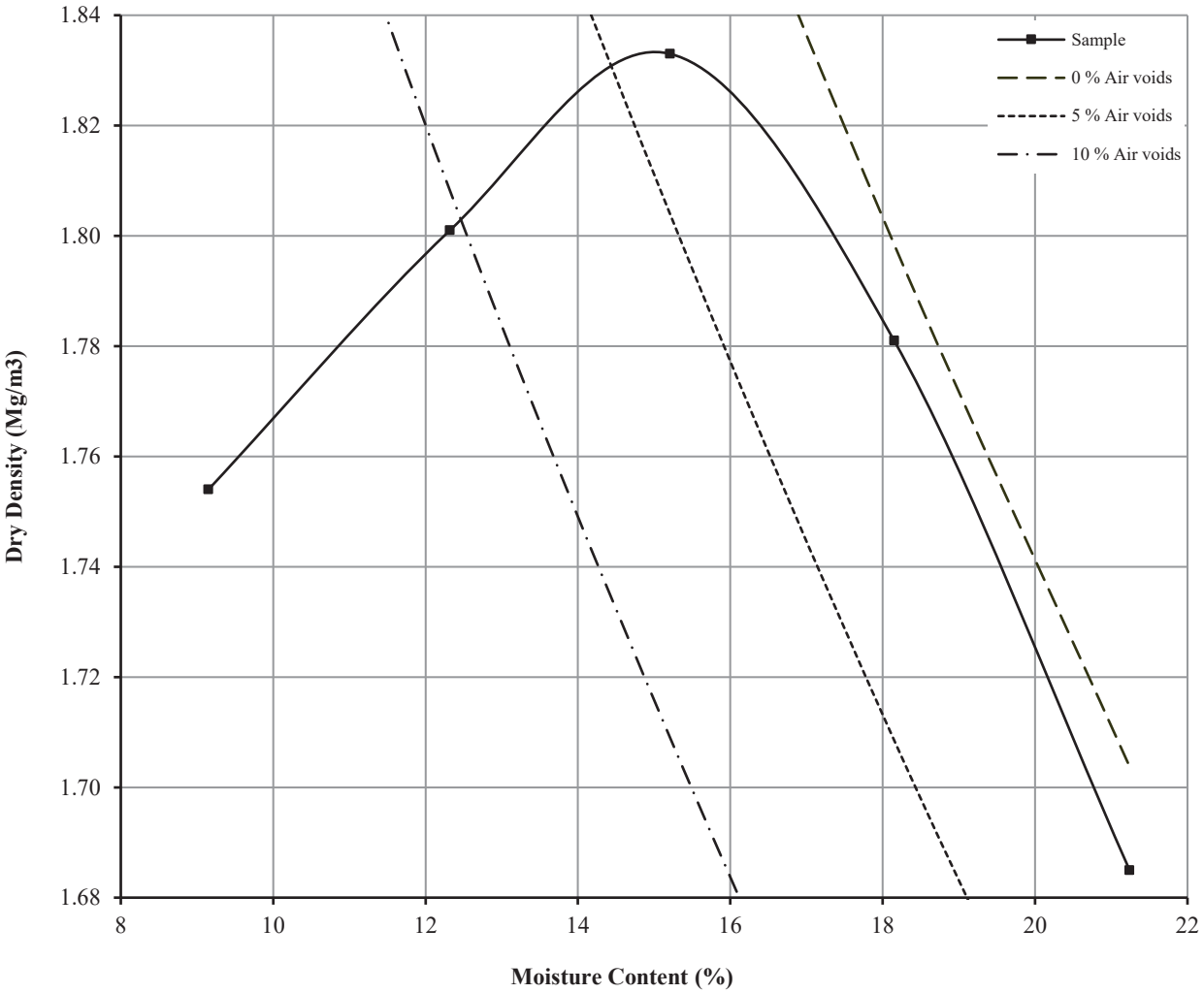
G230651

DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

BS 1377 : Part 4 : Clause 3.3 : 1990

Hole Number:	**BH111**	**Top Depth (m) :**	**4.00**
Sample Number:	**20**	**Base Depth (m) :**	**4.50**
Sample Type:	**B**		



Initial Moisture Content:		18	Method of Compaction:	2.5kg	Separate Samples
Particle Density (Mg/m3):	2.67	Assumed	Material Retained on 37.5 mm Test Sieve (%):		0
Maximum Dry Density (Mg/m3):		1.83	Material Retained on 20.0 mm Test Sieve (%):		0
Optimum Moisture Content (%):		15			
Remarks See summary of soil descriptions					

UKAS TESTING 4043

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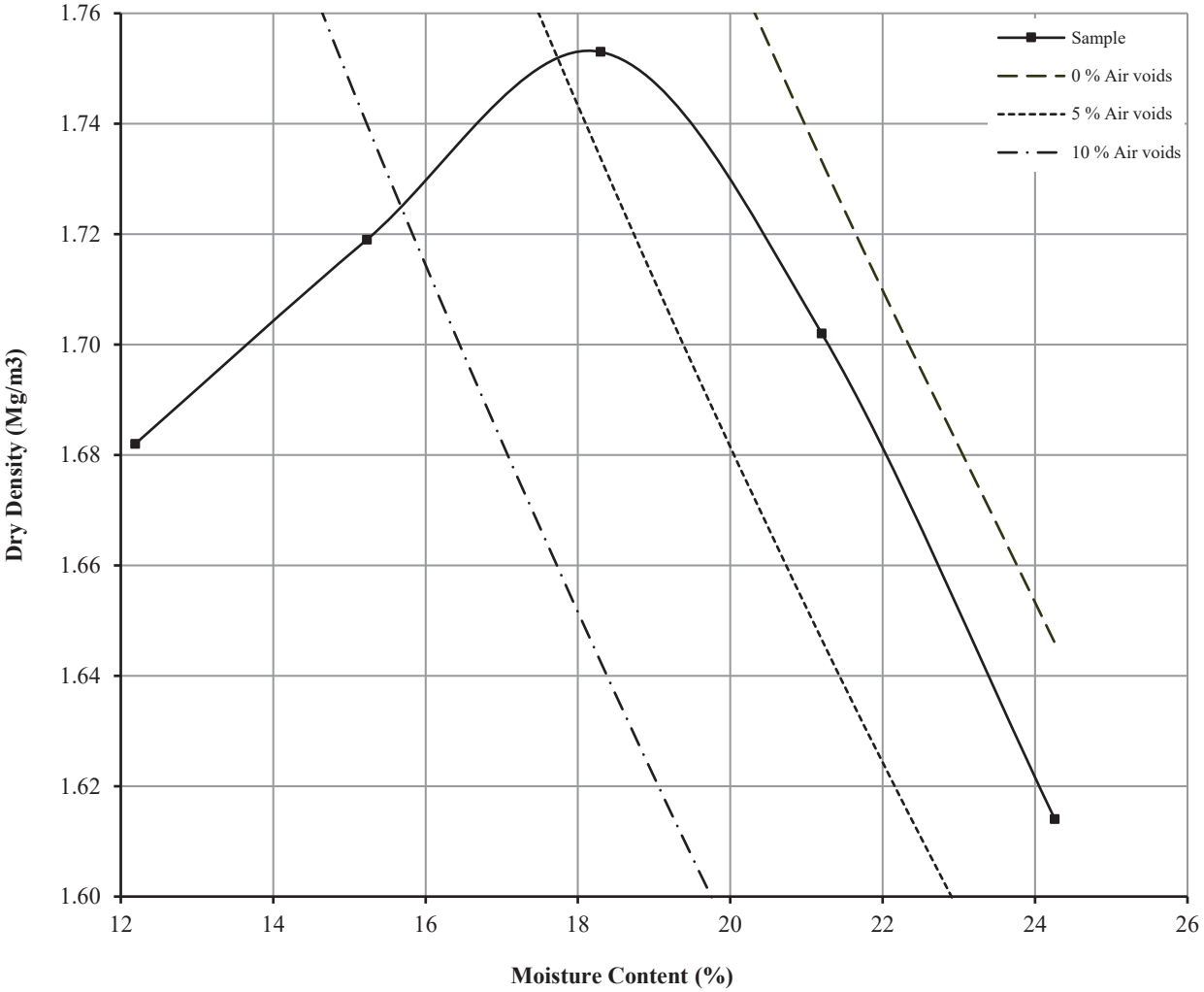
DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

BS 1377 : Part 4 : Clause 3.3 : 1990

Hole Number:	**BH111**	**Top Depth (m) :**	**5.50**
Sample Number:	**25**	**Base Depth (m) :**	**6.00**
Sample Type:	**B**		



Initial Moisture Content:		21	Method of Compaction:	2.5kg	Separate Samples
Particle Density (Mg/m3):	2.74	Assumed	Material Retained on 37.5 mm Test Sieve (%):		0
Maximum Dry Density (Mg/m3):		1.75	Material Retained on 20.0 mm Test Sieve (%):		0
Optimum Moisture Content (%):		18			
Remarks See summary of soil descriptions					

UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

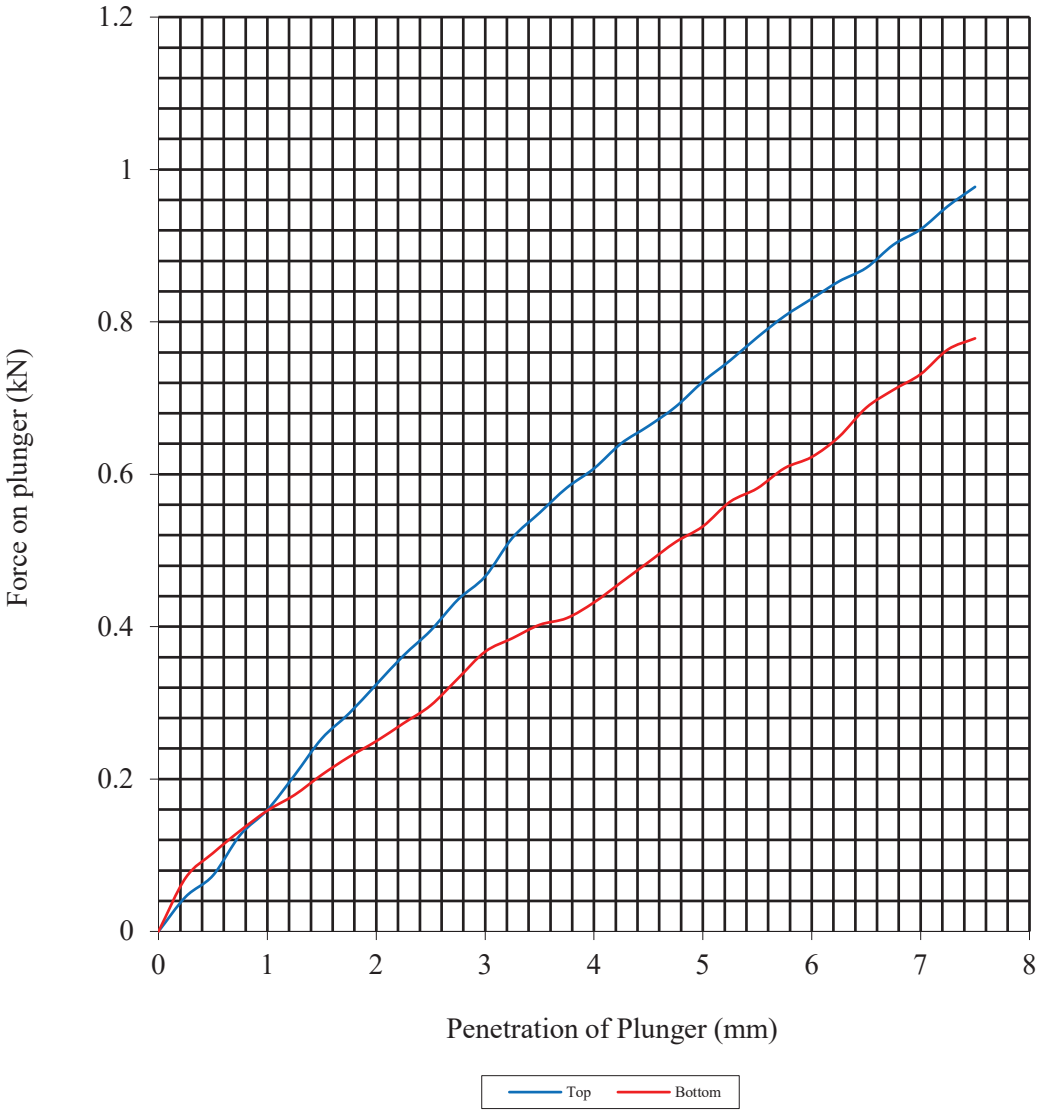
A46 Walsgrave

Contract
PSL23/4345
Client Ref
G230651

CALIFORNIA BEARING RATIO TEST

BS 1377 : Part 4 : 1990

Hole Number:	**BH111**	**Top Depth (m):**	**4.00**
Sample Number:	**20**	**Base Depth (m):**	**4.50**
Sample Type:	**B**		



Initial Sample Conditions		Sample Preparation		Final Moisture Content %		C.B.R. Value %	
Moisture Content:	18	Surcharge Kg:	4.00	Sample Top	18	Sample Top	3.6
Bulk Density Mg/m3:	2.10	Soaking Time hrs	0	Sample Bottom	18	Sample Bottom	2.7
Dry Density Mg/m3:	1.78	Swelling mm:	0	Remarks : See Summary of Soil Descriptions.			
Percentage retained on 20mm BS test sieve:			0				
Compaction Conditions		2.5kg					

UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

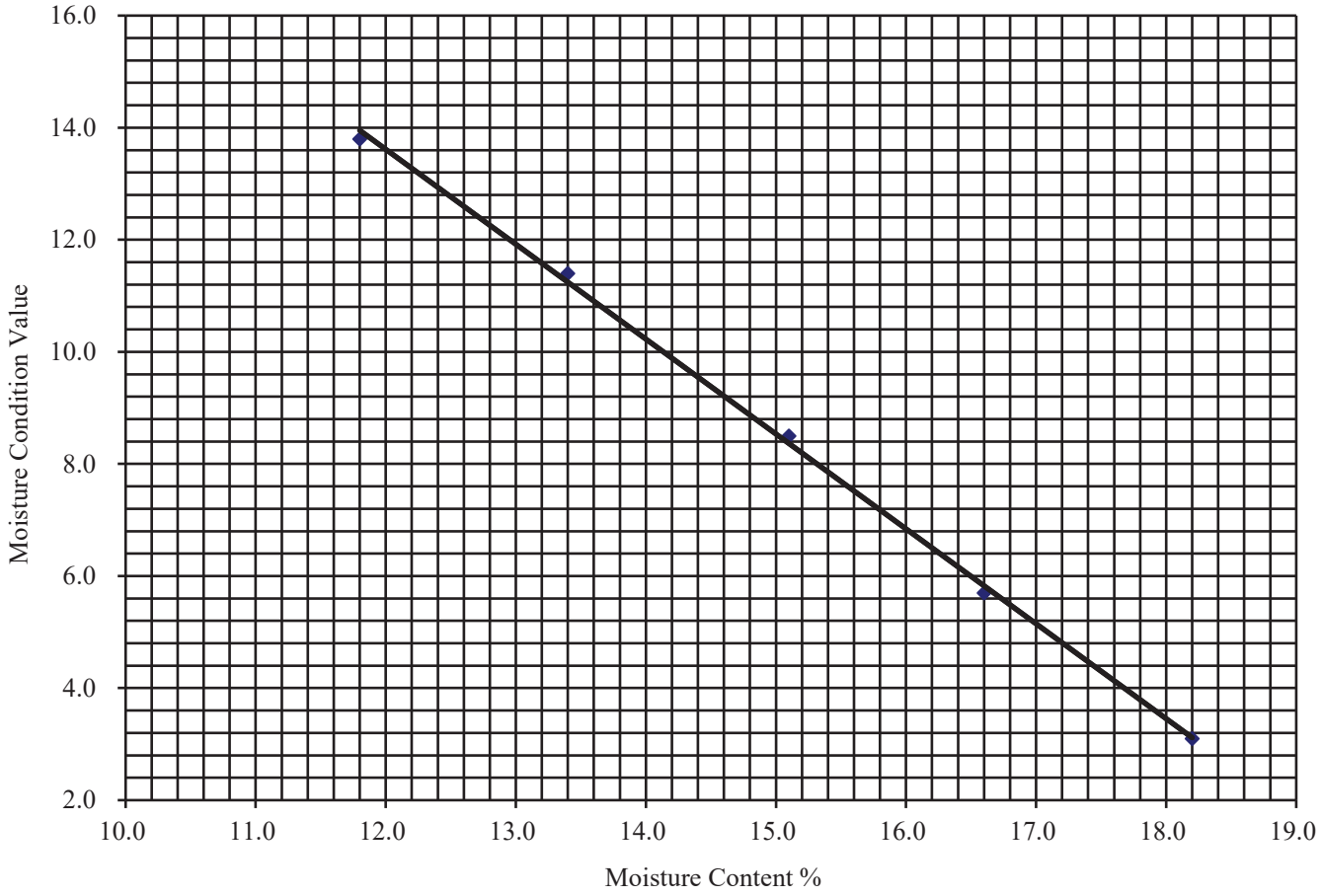
Contract No:
PSL23/4345
Client Ref:
G230651

MOISTURE CONDITION VALUE CALIBRATION

BS1377 : Part 4 : 1990 Clause 5.5

Hole Number:	**BH111**	**Top Depth (m):**	**4.00**
Sample Number:	**20**	**Base Depth (m):**	**4.50**
Sample Type:	**B**		

Initial Moisture Content (%):	18
Single/Separate Samples Tested	Separate
Material Retained on the 20mm BS Test Sieve (%):	0



Test Results.

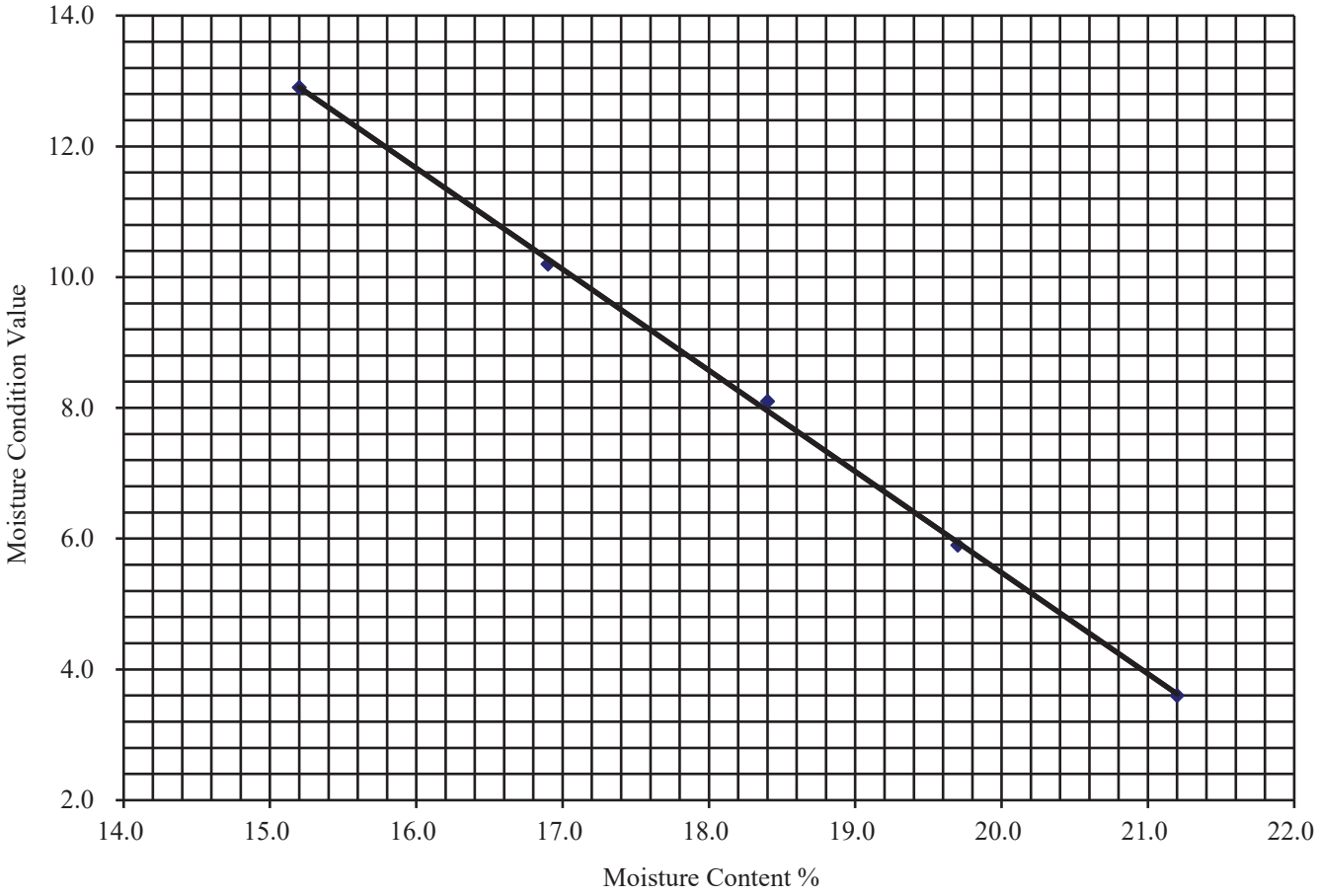
Test Number	1	2	3	4	5
Moisture Content (%)	11.8	13.4	15.1	16.6	18.2
MCV	13.8	11.4	8.5	5.7	3.1

MOISTURE CONDITION VALUE CALIBRATION

BS1377 : Part 4 : 1990 Clause 5.5

Hole Number:	**BH111**	**Top Depth (m):**	**5.50**
Sample Number:	**25**	**Base Depth (m):**	**6.00**
Sample Type:	**B**		

Initial Moisture Content (%):	21
Single/Separate Samples Tested	Separate
Material Retained on the 20mm BS Test Sieve (%):	0



Test Results.

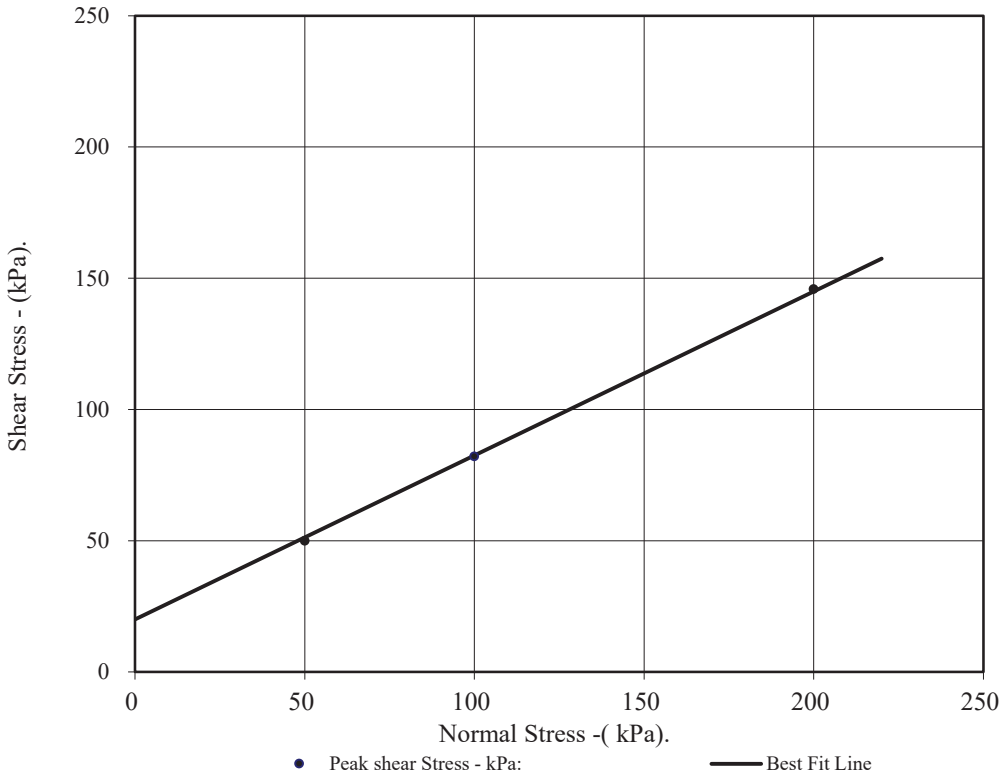
Test Number	1	2	3	4	5
Moisture Content (%)	15.2	16.9	18.4	19.7	21.2
MCV	12.9	10.2	8.1	5.9	3.6

CONSOLIDATED DRAINED SHEARBOX TEST

BS1377:Part 7:1990 Clause 5 SHW Clause 636 Paragraph 3

Hole Number:	**BH111**		Top Depth:	**0.50**
Sample Number:	**5**		Base Depth:	**0.50**
Sample Conditions:	Submerged		Sample Type	**B**
Particle Density - Mg/m3:	2.65	Assumed	**Remarks:**	
Sample Preparation:	Material tested passing 20mm sieve Remoulded using 2.5kg effort			
Sample Description:	**See summary of soil descriptions**			

STAGE	**1**	**2**	**3**
Initial Conditions			
Height - mm:	150	150	150
Length - mm:	300	300	300
Moisture Content - %:	11	11	11
Bulk Density - Mg/m3:	2.06	2.06	2.06
Dry Density - Mg/m3:	1.85	1.85	1.85
Voids Ratio:	0.434	0.434	0.434
Normal Pressure- kPa	50	100	200
Consolidation Stage			
Consolidated Height - mm:	145.67	142.46	138.60
Shearing Stage			
Rate of Strain (mm/min)	0.096	0.096	0.096
Displacement at peak shear stress (mm)	36.05	36.05	39.55
Peak shear Stress - kPa:	50	82	146
Final Consolidated Conditions			
Moisture Content - %:	17	16	15
Bulk Density - Mg/m3:	2.12	2.17	2.23
Dry Density - Mg/m3:	1.82	1.87	1.94
Peak			
Angle of Shearing Resistance:(~~θ~~)	**32**		
Effective Cohesion - kPa:	**20**		



UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

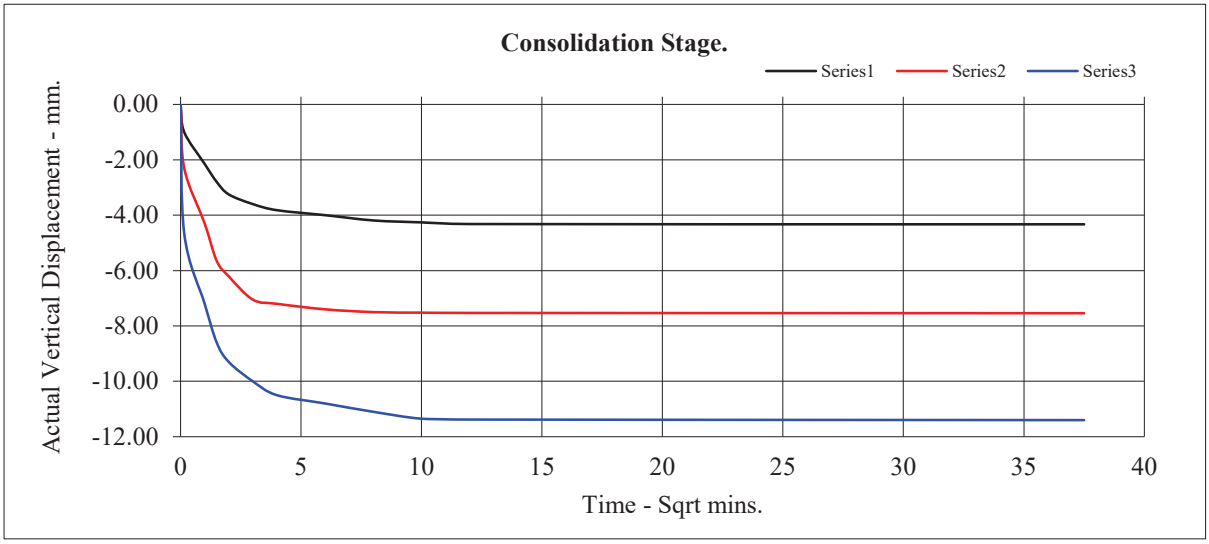
A46 Walsgrave

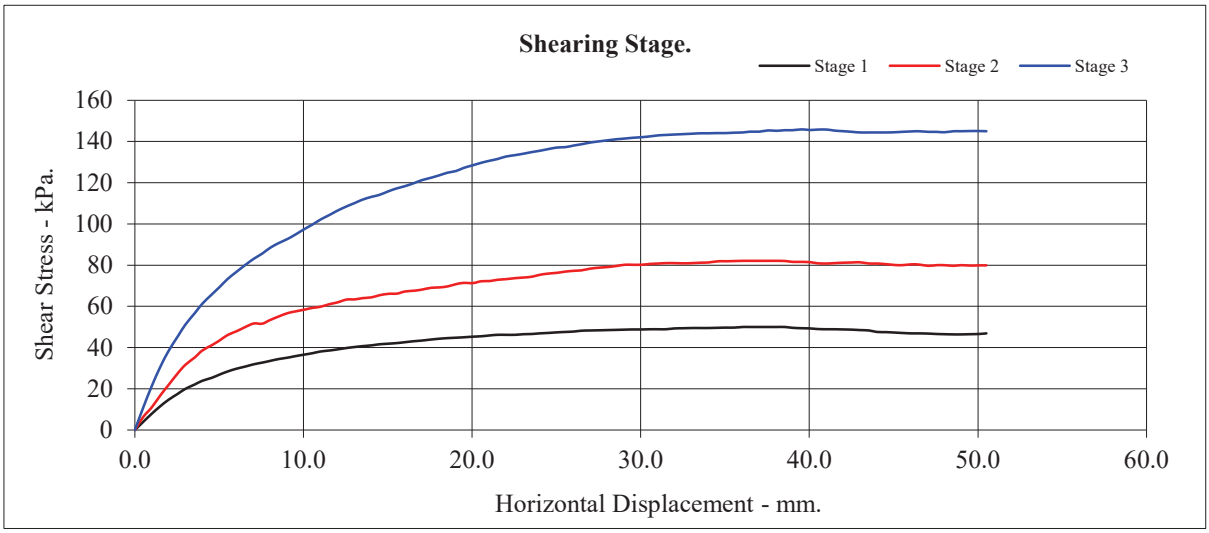
Contract No:
PSL23/4345
Client Ref:
G230651

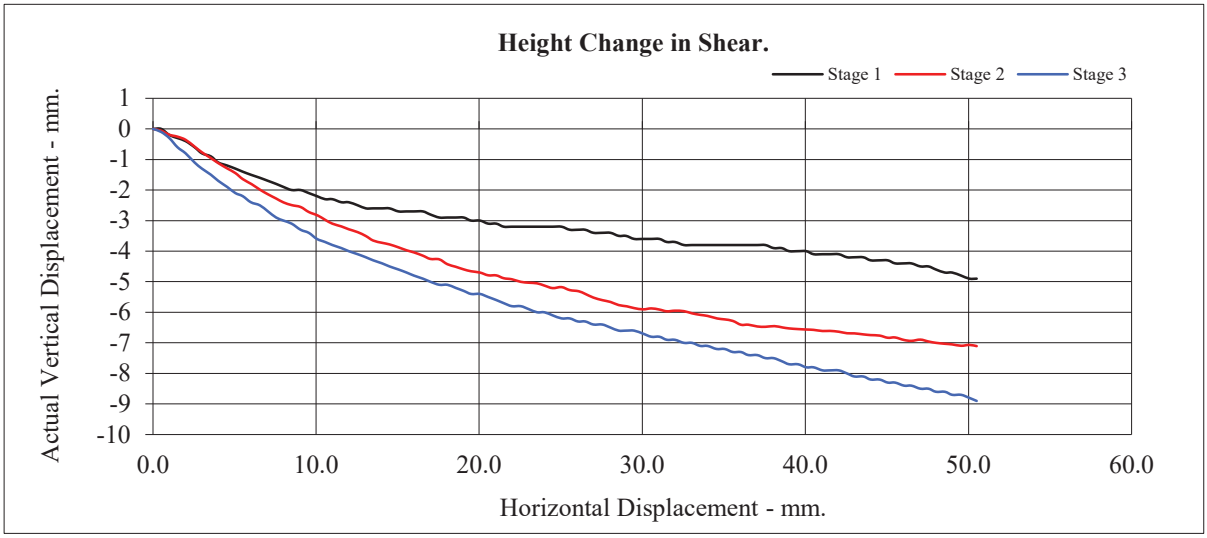
CONSOLIDATED DRAINED SHEARBOX TEST

BS1377:Part 7:1990 Clause 5 SHW Clause 636 Paragraph 3

Hole Number:	**BH111**	Top Depth:	**0.50**
Sample Number:	**5**	Base Depth:	**0.50**







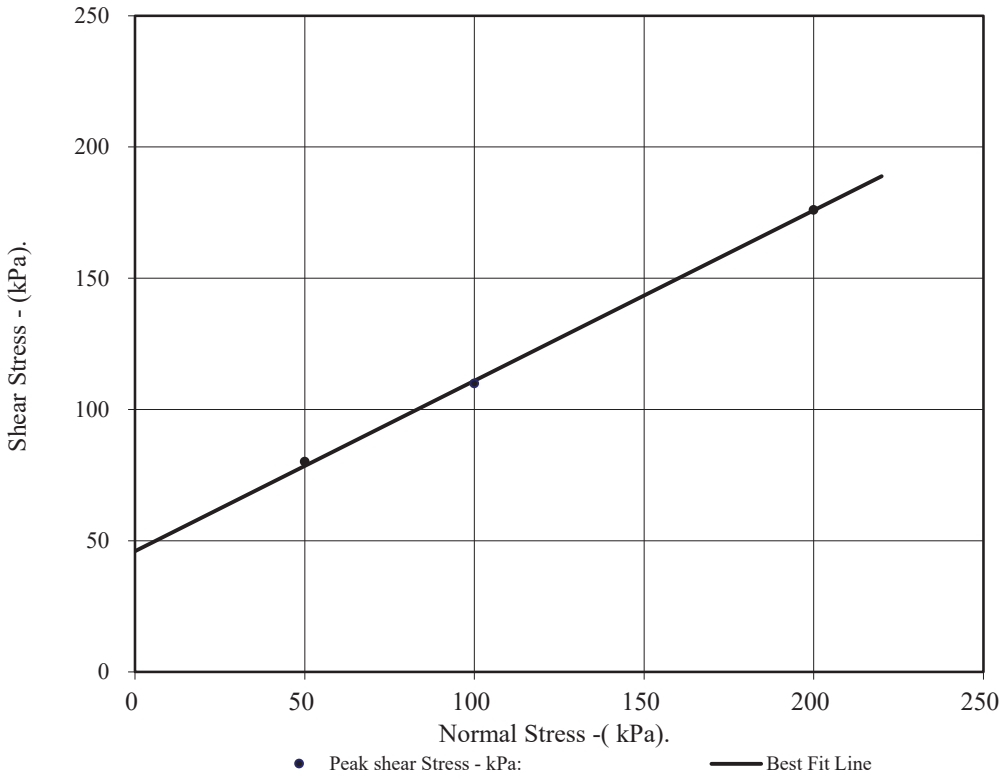
UKAS TESTING 4043 / PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY	**A46 Walsgrave**	**Contract No:** PSL23/4345 **Client Ref:** G230651

CONSOLIDATED DRAINED SHEARBOX TEST

BS1377:Part 7:1990 Clause 5 SHW Clause 636 Paragraph 2

Hole Number:	**BH111**		Top Depth:	**1.50**
Sample Number:	**14**		Base Depth:	**2.00**
Sample Conditions:	Dry		Sample Type	**B**
Particle Density - Mg/m3:	2.65	Assumed	**Remarks:**	
Sample Preparation:	Material tested passing 20mm sieve Recompacted using hand tamped effort			
Sample Description:	**See summary of soil descriptions**			

STAGE	**1**	**2**	**3**
Initial Conditions			
Height - mm:	150	150	150
Length - mm:	300	300	300
Moisture Content - %:	13	13	13
Bulk Density - Mg/m3:	2.15	2.15	2.15
Dry Density - Mg/m3:	1.91	1.91	1.91
Voids Ratio:	0.391	0.391	0.391
Normal Pressure- kPa	50	100	200
Consolidation Stage			
Consolidated Height - mm:	148.53	147.99	147.27
Shearing Stage			
Rate of Strain (mm/min)	1.00	1.00	1.00
Displacement at peak shear stress (mm)	51.00	51.00	51.00
Peak shear Stress - kPa:	80	110	176
Final Consolidated Conditions			
Moisture Content - %:	15	14	14
Bulk Density - Mg/m3:	2.17	2.18	2.19
Dry Density - Mg/m3:	1.89	1.91	1.93
Peak			
Angle of Shearing Resistance:(~~θ~~)	**33**		
Effective Cohesion - kPa:	**46**		



UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

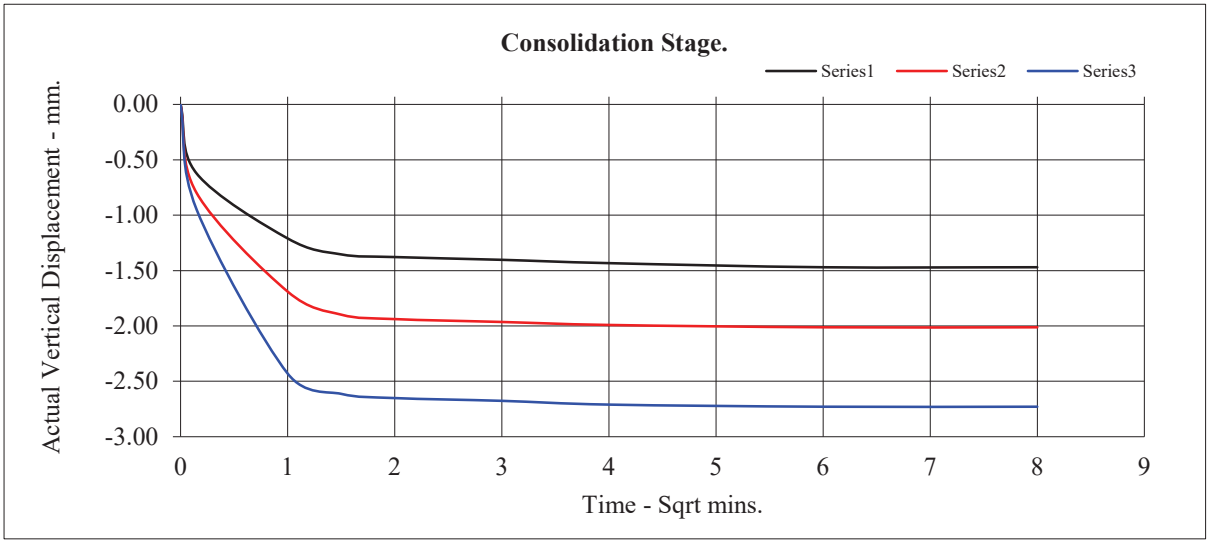
A46 Walsgrave

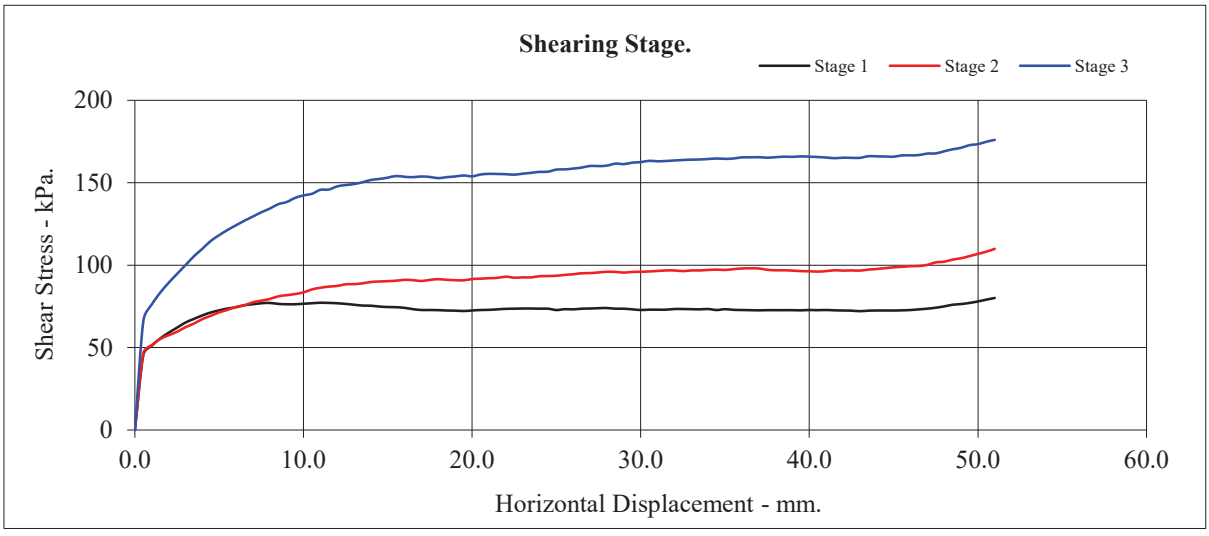
Contract No:
PSL23/4345
Client Ref:
G230651

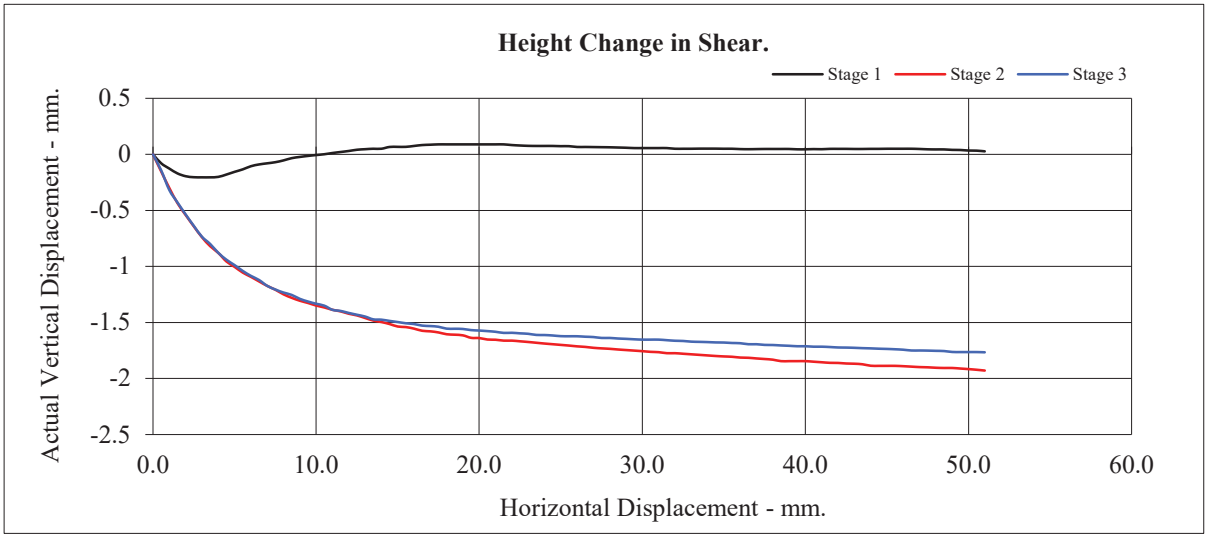
CONSOLIDATED DRAINED SHEARBOX TEST

BS1377:Part 7:1990 Clause 5 SHW Clause 636 Paragraph 2

Hole Number:	**BH111**	Top Depth:	**1.50**
Sample Number:	**14**	Base Depth:	**2.00**







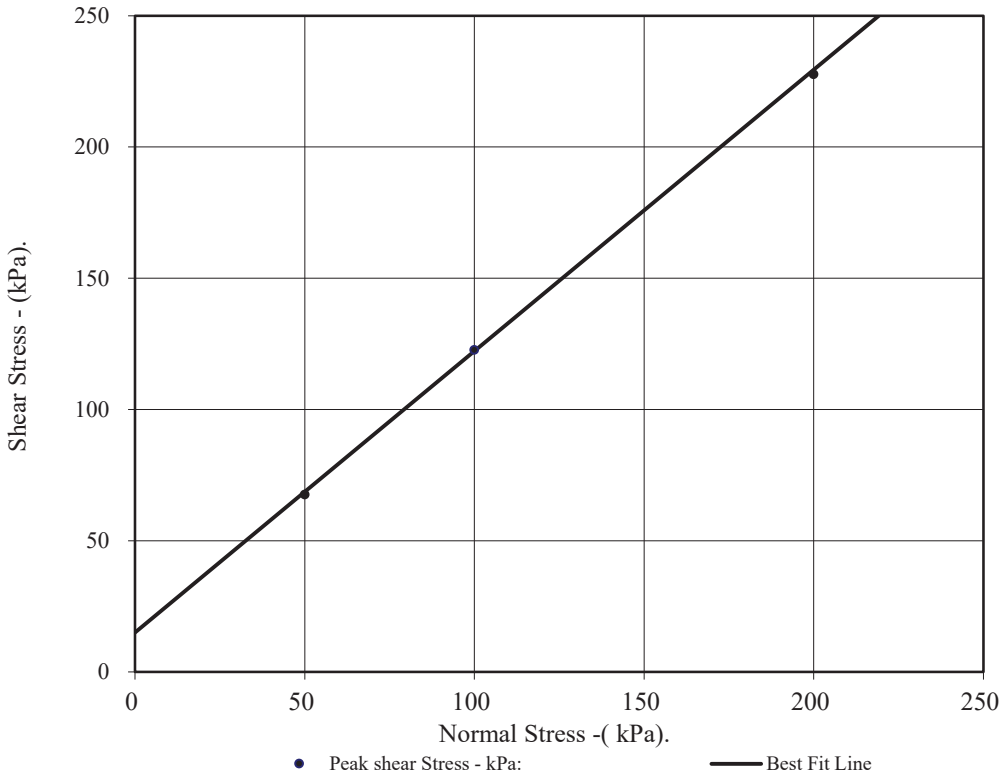
UKAS TESTING 4043 / PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY	**A46 Walsgrave**	**Contract No:** PSL23/4345 **Client Ref:** G230651

CONSOLIDATED DRAINED SHEARBOX TEST

BS1377:Part 7:1990 Clause 5 SHW Clause 636 Paragraph 2

Hole Number:	**BH111**		Top Depth:	**3.50**
Sample Number:	**18**		Base Depth:	**4.00**
Sample Conditions:	Dry		Sample Type	**B**
Particle Density - Mg/m3:	2.65	Assumed	**Remarks:**	
Sample Preparation:	Material tested passing 20mm sieve Recompacted using hand tamped effort			
Sample Description:	**See summary of soil descriptions**			

STAGE	**1**	**2**	**3**
Initial Conditions			
Height - mm:	150	150	150
Length - mm:	300	300	300
Moisture Content - %:	12	12	12
Bulk Density - Mg/m3:	2.15	2.15	2.15
Dry Density - Mg/m3:	1.92	1.92	1.92
Voids Ratio:	0.382	0.382	0.382
Normal Pressure- kPa	50	100	200
Consolidation Stage			
Consolidated Height - mm:	148.34	147.64	145.39
Shearing Stage			
Rate of Strain (mm/min)	1.00	1.00	1.00
Displacement at peak shear stress (mm)	50.99	50.99	51.00
Peak shear Stress - kPa:	68	123	228
Final Consolidated Conditions			
Moisture Content - %:	14	13	12
Bulk Density - Mg/m3:	2.17	2.18	2.22
Dry Density - Mg/m3:	1.91	1.93	1.98
Peak			
Angle of Shearing Resistance:(~~θ~~)	**47**		
Effective Cohesion - kPa:	**15**		



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PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

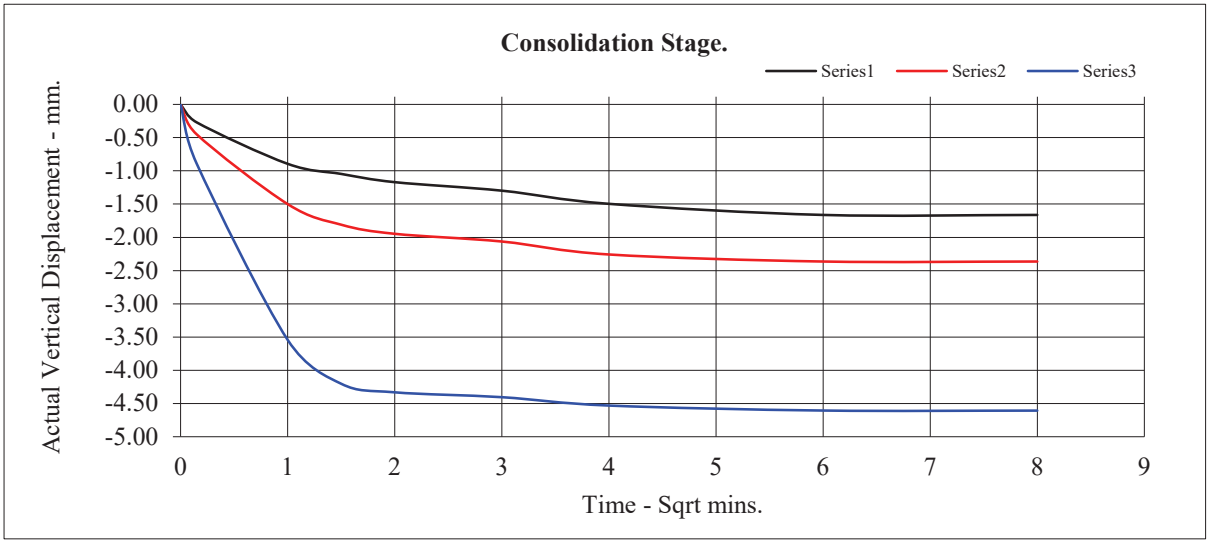
A46 Walsgrave

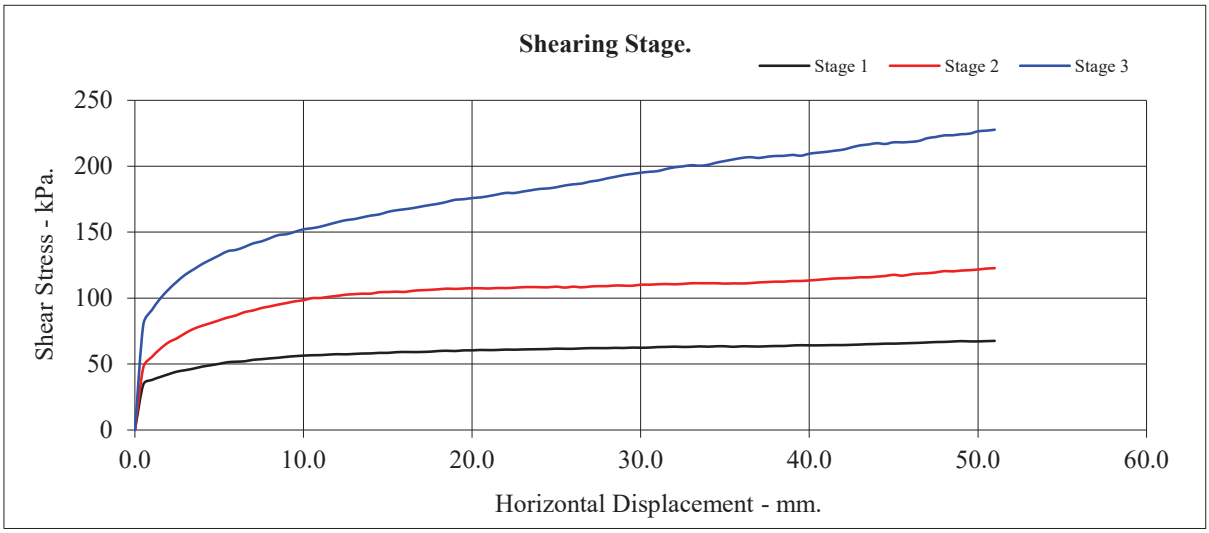
Contract No:
PSL23/4345
Client Ref:
G230651

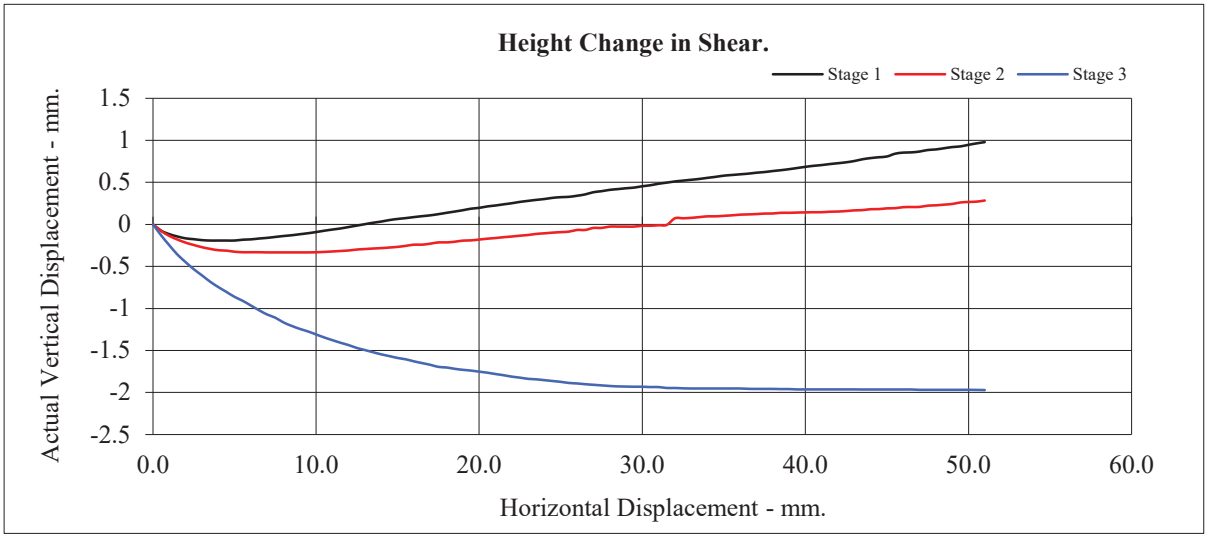
CONSOLIDATED DRAINED SHEARBOX TEST

BS1377:Part 7:1990 Clause 5 SHW Clause 636 Paragraph 2

Hole Number:	**BH111**	Top Depth:	**3.50**
Sample Number:	**18**	Base Depth:	**4.00**







UKAS TESTING 4043 / PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY	**A46 Walsgrave**	**Contract No:** PSL23/4345 **Client Ref:** G230651

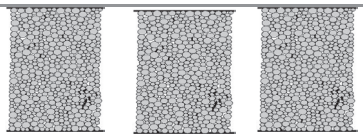
Effective Stress Triaxial Compression

Consolidated Undrained

Summary Report

Sample Details

sketch showing specimen location in original sample



Depth	4.50-4.95m UT21
Description	See summary of soil descriptions.
Type	Undisturbed, vertical orientation.

			Spm. 1	2	3
Initial Sample Length	L_0	(mm)	76.0	76.0	76.0
Initial Sample Diameter	D_0	(mm)	38.2	38.4	38.3
Initial Sample Weight	W_0	(gr)	188.5	190.1	190.4
Initial Bulk Density	ρ_0	(Mg/m3)	2.16	2.16	2.17
Particle Density	ρ_s	(Mg/m3)	2.66	2.66	2.66

Initial Conditions

			Spm. 1	2	3
Initial Cell Pressure	σ_{3i}	(kPa)	695	890	980
Initial Back Pressure	U_{bi}	(kPa)	650	800	800
Membrane Thickness	m_b	(mm)	0.600	0.600	0.600
Displacement Input	L_{IP}	(mm)	CH 2	CH 2	CH 2
Load Input	N_{IP}	(N)	CH 4	CH 4	CH 4
Pore Water Pressure Input	u_{pwp}	(kPa)	CH 3	CH 3	CH 3
Sample Volume	V	(cc)	CH 6	CH 6	CH 6
Initial Moisture	ω_i	(%)	16	16	15
Initial Dry Density	ρ_{di}	(Mg/m3)	1.86	1.87	1.89
Initial Voids Ratio	e_i	.	0.427	0.425	0.410
Initial Degree of Saturation	S_i	(%)	100	98	99
B Value	B	.	0.98	0.98	0.98

Final Conditions

			Spm. 1	2	3
Final Moisture	ω_f	(%)	18	16	15
Final Dry Density	ρ_{df}	(Mg/m3)	1.87	1.90	1.94
Final Voids Ratio	e_f	.	0.421	0.402	0.368
Final Degree of Saturation	S_f	(%)	100.0	100.0	100.0
Failure Criteria		.	Max. Dev. Stress	Max. Dev. Stress	Max. Dev. Stress
Strain At Failure	ε_f	(%)	19.20	13.80	14.62
Stress At Failure	$(\sigma_1-\sigma_3)_f$	(kPa)	143.4	213.5	351.9
Minor Stress At Failure	σ_3'	(kPa)	72.0	115.0	200.0
Major Stress At Failure	σ_1'	(kPa)	215.4	328.5	551.9
Principal Stress Ratio At Failure	σ_1'/σ_3'		2.991	2.857	2.760
PwP At Failure Criteria	u_f	(kPa)	623.0	775.0	780.0

Notes

Plastic

PSL PROFESSIONAL SOILS LABORATORY — A PHENNA GROUP COMPANY — UKAS TESTING 4043

Test Method	BS1377-8 : 1990 : Clause 7	Test Name	BH111 4.50-4.95m
		Test Date	29/06/2023
		Borehole	BH111
Jobfile	A46 Walsgrave	Sample	4.50-4.95m
Client	Strata Geotechnics	Depth	4.50-4.95m UT21

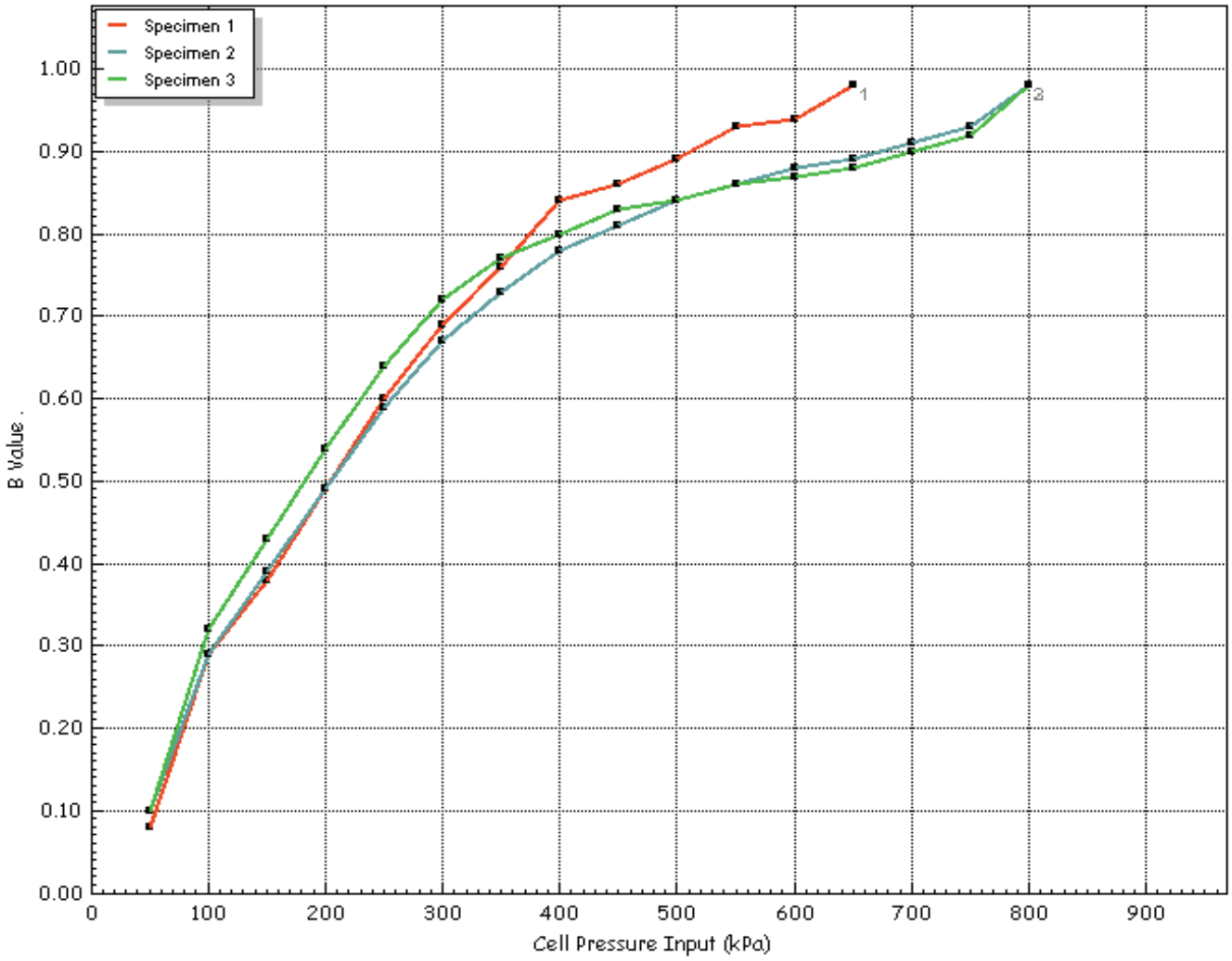
[redacted]

Effective Stress Triaxial Compression

Consolidated Undrained

Saturation Plots

			Spm. 1	2	3
Saturation Method			Stepped	Stepped	Stepped
Cell Pressure Input	σ	(kPa)	650	800	800
Pore Water Pressure Input	u pwp	(kPa)	634	785	792
B Value	B	.	0.98	0.98	0.98



Test Method	BS1377-8 : 1990 : Clause 7	Test Name	BH111 4.50-4.95m
		Test Date	29/06/2023
		Borehole	BH111
Jobfile	A46 Walsgrave	Sample	4.50-4.95m
Client	Strata Geotechnics	Depth	4.50-4.95m UT21

[redacted]

Effective Stress Triaxial Compression

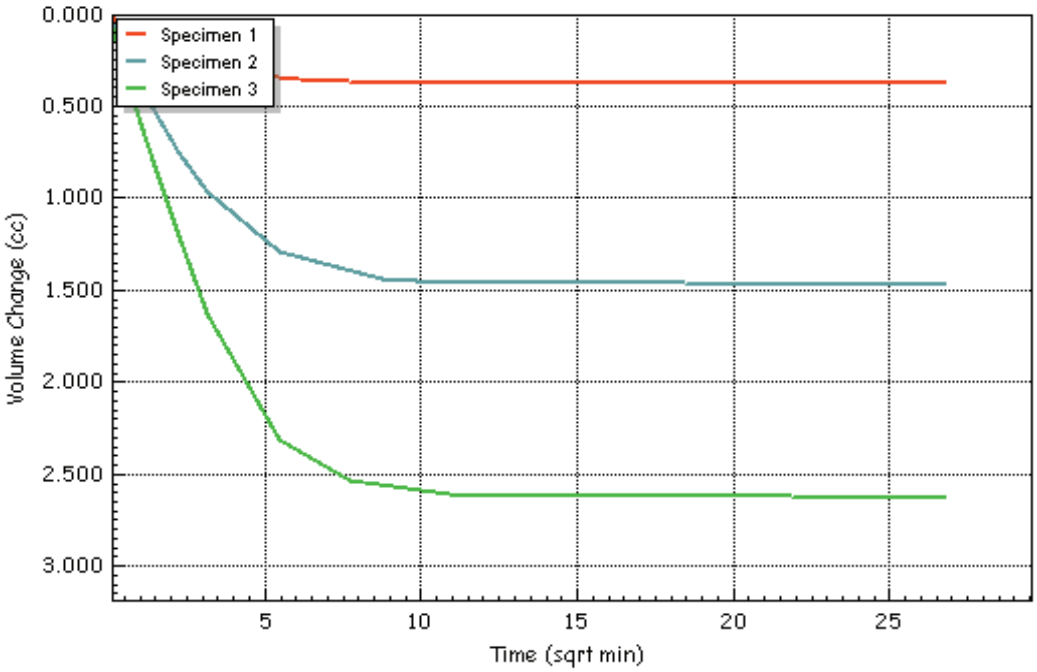
Consolidated Undrained

Consolidation Plots

Initial Conditions			Spm. 1	2	3
Initial Cell Pressure	σ_3	(kPa)	685	890	980
Initial Back Pressure	u_{bi}	(kPa)	650	800	800
Pore Water Pressure Input	u_{pwp}	(kPa)	675	822	957
Drainage Method			Radial+One End	Radial+One End	Radial+One End

Final Conditions			Spm. 1	2	3
PWP Dissipation %	U%	(%)	100.00	100.00	100.00
Volumetric Strain	ε_v%	(%)	0.43	1.67	3.00
Corrected Length	L_c	(mm)	75.9	75.6	75.2
Corrected Area	A_c	(cm2)	11.43	11.45	11.29
Corrected Volume	V_c	(cc)	86.731	86.543	84.929
t100	t_{100}	(min)	27.84	27.84	27.84
Consolidation	c_v	(m2/year	0.011	0.011	0.011
Compressibility	m_v	(m2/MN)	0.171	0.761	0.192
Test Time	t_F	(h:m:s)	02:00:00	02:00:00	02:00:00
Estimated Strain to Failure	ε%	(%)	5.0	5.0	5.0
Shear Machine Speed	d_r	(mm/min	0.03162	0.03149	0.03135

Notes



PSL PROFESSIONAL SOILS LABORATORY
A PHENNA GROUP COMPANY
UKAS TESTING 4043

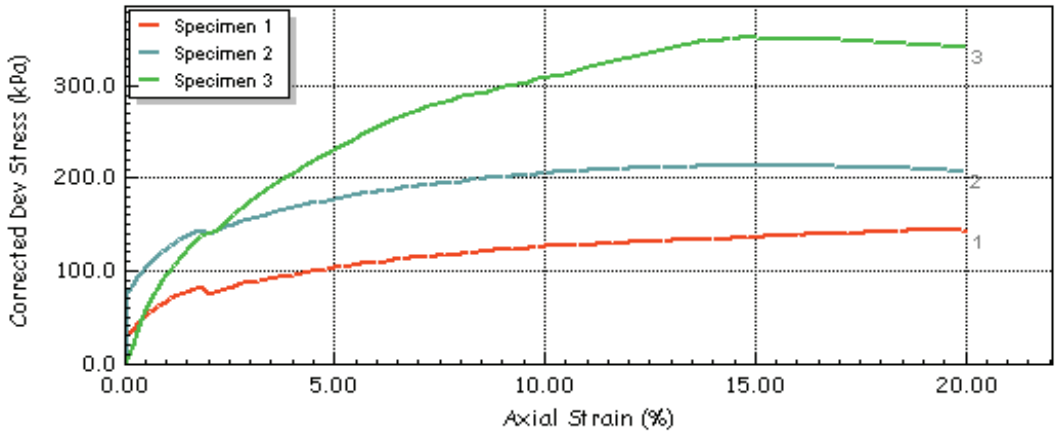
Test Method	BS1377-8 : 1990 : Clause 7	Test Name	BH111 4.50-4.95m
		Test Date	29/06/2023
		Borehole	BH111
Jobfile	A46 Walsgrave	Sample	4.50-4.95m
Client	Strata Geotechnics	Depth	4.50-4.95m UT21

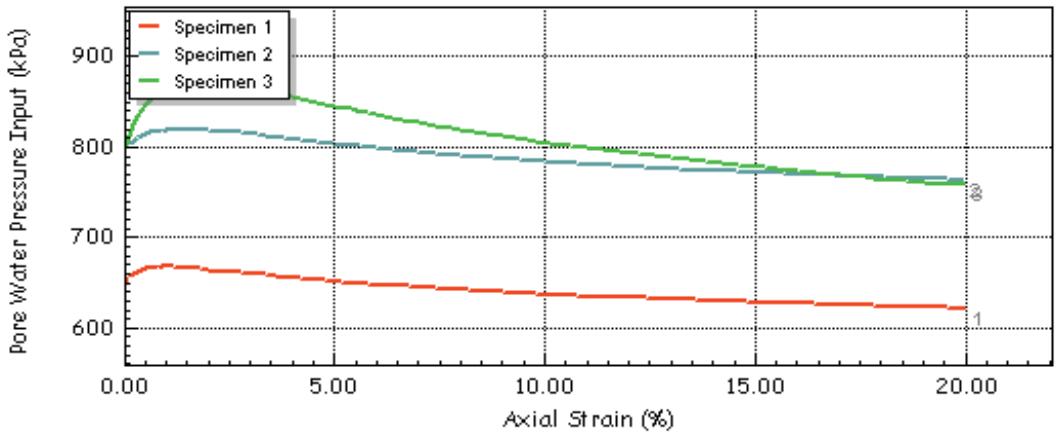
[redacted]

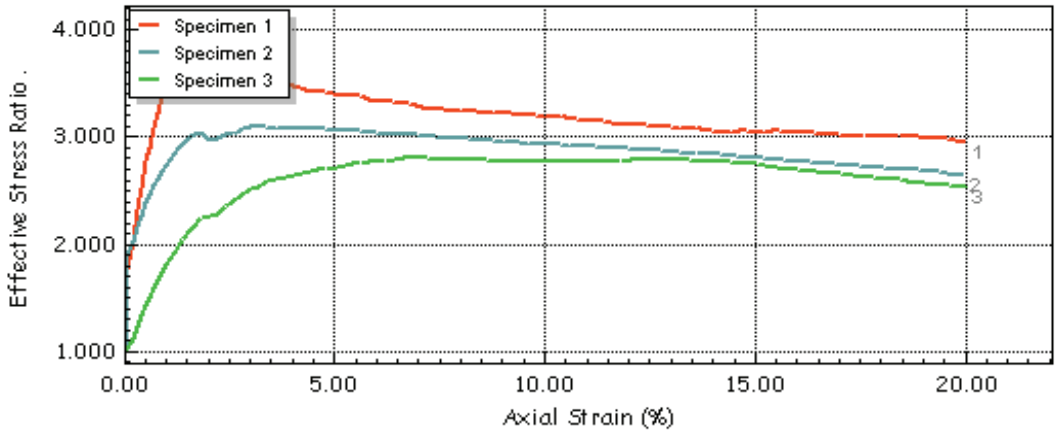
Effective Stress Triaxial Compression

Consolidated Undrained

Shear Stage Plots







Test Method	BS1377-8 : 1990 : Clause 7	Test Name	BH111 4.50-4.95m
		Test Date	29/06/2023
		Borehole	BH111
Jobfile	A46 Walsgrave	Sample	4.50-4.95m
Client	Strata Geotechnics	Depth	4.50-4.95m UT21

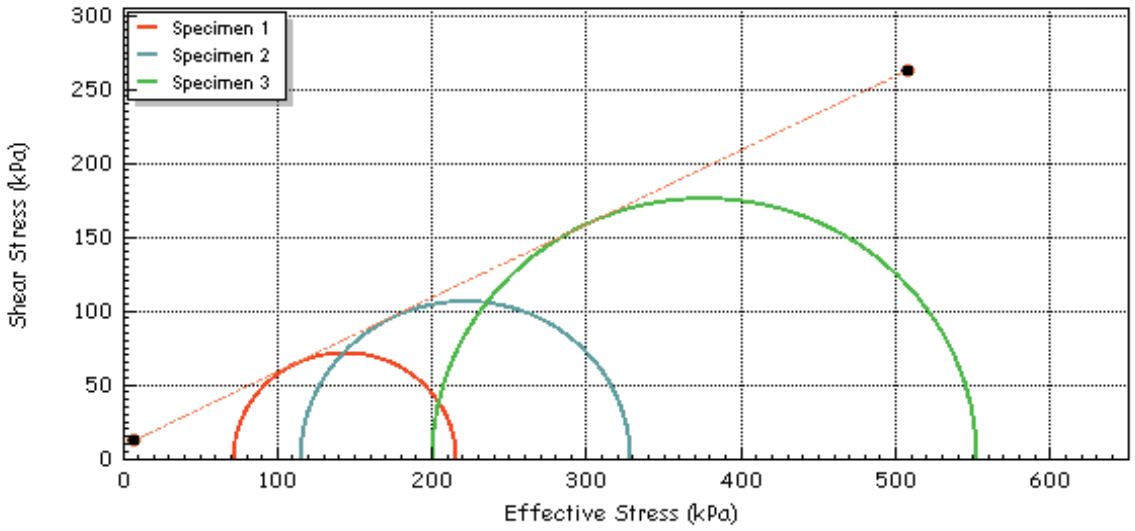
PSL PROFESSIONAL SOILS LABORATORY
UKAS TESTING 4043

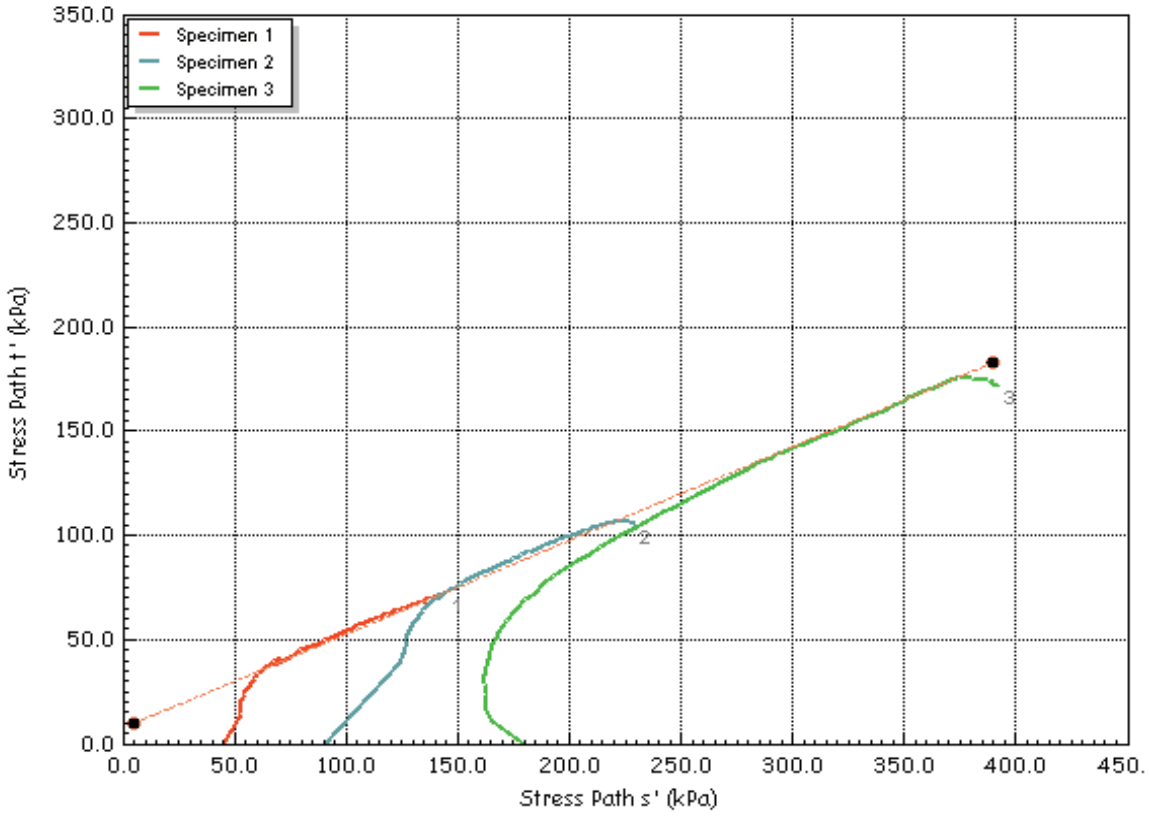
Effective Stress Triaxial Compression

Consolidated Undrained

Shear Stage Plots

Effective	c'	(kPa)	8.96	Effective Cohesion	c'	(kPa)	8.96
Effective Friction	ϕ'	(deg)	26.6	Effective Friction	ϕ'	(deg)	26.6





Test Method	BS1377-8 : 1990 : Clause 7	Test Name	BH111 4.50-4.95m
		Test Date	29/06/2023
		Borehole	BH111
Jobfile	A46 Walsgrave	Sample	4.50-4.95m
Client	Strata Geotechnics	Depth	4.50-4.95m UT21

PSL PROFESSIONAL SOILS LABORATORY
UKAS TESTING 4043

UKAS TESTING
2531

CHEMTECH environmental part of Cawood

ANALYTICAL TEST REPORT

Contract no: 124304

Contract name: A46 Walsgrave

Client reference: PSL23/4345

Clients name: Professional Soils Laboratory

Clients address: 5/7 Hexthorpe Road
Doncaster
DN4 0AR

Samples received: 30 June 2023

Analysis started: 30 June 2023

Analysis completed: 10 July 2023

Report issued: 10 July 2023

Key

U	UKAS accredited test
M	MCERTS & UKAS accredited test
$	Test carried out by an approved subcontractor
I/S	Insufficient sample to carry out test
N/S	Sample not suitable for testing

Approved by: [redacted]

Chemtech Environmental Limited

SOILS

Lab number			124304-1	124304-2	124304-3	124304-4
Sample id			BH111	BH111	BH111	BH111
Depth (m)			0.80	2.20	4.20	6.50
Sample Type			D	D	D	D
Date sampled			18/05/2023	18/05/2023	18/05/2023	18/05/2023
Test	**Method**	**Units**				
pH	CE004 U	units	7.1	7.6	8.5	8.5
Magnesium (2:1 water soluble)	CE061	mg/l Mg	2.8	1.4	1.4	2.3
Chloride (2:1 water soluble)	CE049 U	mg/l Cl	7.6	7.4	6.6	6.9
Nitrate (2:1 water soluble)	CE049 U	mg/l NO_3	6.4	<1	3.0	12
Sulphate (2:1 water soluble)	CE061 U	mg/l SO_4	<10	12	<10	<10
Sulphate (acid extractable)	CE062 U	mg/kg SO_4	146	<100	187	272
Sulphate (acid extractable)	CE062 U	% w/w SO_4	0.01	<0.01	0.02	0.03
Sulphur (total)	CE119	mg/kg S	191	<100	102	113
Sulphur (total)	CE119	% w/w S	0.02	<0.01	0.01	0.01

Chemtech Environmental Limited

METHOD DETAILS

METHOD	SOILS	METHOD SUMMARY	SAMPLE	STATUS	LOD	UNITS
CE004	pH	Based on BS 1377, pH Meter	As received	U	-	units
CE061	Magnesium (2:1 water soluble)	Aqueous extraction, ICP-OES	Dry		1	mg/l Mg
CE049	Chloride (2:1 water soluble)	Aqueous extraction, IC-COND	Dry	U	1	mg/l Cl
CE049	Nitrate (2:1 water soluble)	Aqueous extraction, IC-COND	Dry	U	1	mg/l NO_3
CE061	Sulphate (2:1 water soluble)	Aqueous extraction, ICP-OES	Dry	U	10	mg/l SO_4
CE062	Sulphate (acid extractable)	HCl extract, analysed by ICP-OES	Dry	U	100	mg/kg SO4
CE062	Sulphate (acid extractable)	HCl extract, analysed by ICP-OES	Dry	U	0.01	% w/w SO4
CE119	Sulphur (total)	Aqua regia digest, analysed by ICP-OES	Dry		100	mg/kg S
CE119	Sulphur (total)	Aqua regia digest, analysed by ICP-OES	Dry		0.01	% w/w S

Chemtech Environmental Limited

DEVIATING SAMPLE INFORMATION

Comments
Sample deviation is determined in accordance with the UKAS note "Guidance on Deviating Samples" and based on reference standards and laboratory trials.
For samples identified as deviating, test result(s) may be compromised and may not be representative of the sample at the time of sampling.
Chemtech Environmental Ltd cannot be held responsible for the integrity of sample(s) received if Chemtech Environmental Ltd did not undertake the sampling. Such samples may be deviating.

Key

N	No (not deviating sample)
Y	Yes (deviating sample)
NSD	Sampling date not provided
NST	Sampling time not provided (waters only)
EHT	Sample exceeded holding time(s)
IC	Sample not received in appropriate containers
HP	Headspace present in sample container
NCF	Sample not chemically fixed (where appropriate)
OR	Other (specify)

Lab ref	Sample id	Depth (m)	Deviating	Tests (Reason for deviation)
124304-1	BH111	0.80	Y	pH (EHT), Sulphur (EHT), 2:1 Mg (EHT), 2:1 Cl (EHT), 2:1 Ni (EHT)
124304-2	BH111	2.20	Y	pH (EHT), Sulphur (EHT), 2:1 Mg (EHT), 2:1 Cl (EHT), 2:1 Ni (EHT)
124304-3	BH111	4.20	Y	pH (EHT), Sulphur (EHT), 2:1 Mg (EHT), 2:1 Cl (EHT), 2:1 Ni (EHT)
124304-4	BH111	6.50	Y	pH (EHT), Sulphur (EHT), 2:1 Mg (EHT), 2:1 Cl (EHT), 2:1 Ni (EHT)

Chemtech Environmental Limited

ADDITIONAL INFORMATION

Notes

Opinions and interpretations expressed herein are outside the UKAS accreditation scope.

Unless otherwise stated, Chemtech Environmental Ltd was not responsible for sampling.

All testing carried out at Unit 6 Parkhead, Stanley, DH9 7YB, except for subcontracted testing.

Methods, procedures and performance data are available on request.

Results reported herein relate only to the material supplied to the laboratory.

This report shall not be reproduced except in full, without prior written approval.

Samples will be disposed of 4 weeks from initial receipt unless otherwise instructed.

For soils and solids, all results are reported on a dry basis. Samples dried at no more than 30°C in a drying cabinet.

Analytical results are inclusive of stones, where applicable.

LABORATORY REPORT

Contract Number: PSL23/4270

Report Date: 13 July 2023

Client's Reference: G230651/Geo 06B

Client Name: Strata Geotechnics
Kirkby Lane
Pinxton
Nottinghamshire
NG16 6JA

For the attention of: Izaac Lovatt

Contract Title: A46 Walsgrave

Date Received: 6/6/2023
Date Commenced: 6/6/2023
Date Completed: 13/7/2023

Notes: Opinions and Interpretations are outside the UKAS Accreditation

A copy of the Laboratory Schedule of accredited tests as issued by UKAS is attached to this report. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced other than in full, without the prior written approval of the laboratory.

Checked and Approved Signatories:

L Knight
(Assistant Laboratory Manager)

R Berriman
(Associate Director)

S Royle
(Laboratory Manager)

[redacted]

A Watkins
(Managing Director)

S Eyre
(Senior Technical Coordinator)

T Watkins
(Senior Technician)

5 – 7 Hexthorpe Road,
Hexthorpe,
Doncaster,
DN4 0AR
Tel: [redacted]
Email: [redacted]@prosoils.co.uk
[redacted]@prosoils.co.uk

SUMMARY OF LABORATORY SOIL DESCRIPTIONS

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Description of Sample
BH109	7	D	1.00		Brown slightly gravelly very silty SAND.
BH109	9	B	1.00	1.20	Brown slightly gravelly very silty SAND.
BH109	10	D	1.20	1.65	Reddish brown slightly gravelly SAND.
BH109	14	B	2.00	2.45	Reddish brown slightly gravelly clayey silty SAND.
BH109	15	D	2.80		Reddish brown slightly gravelly clayey SAND.
BH109	16	B	3.00	3.45	Reddish brown slightly gravelly clayey SAND.
BH109	17	D	3.60		Reddish brown clayey silty SAND.
BH109	18	B	3.70	4.00	Brown slightly silty SAND & GRAVEL.
BH109	22	UT	5.00	5.45	Reddish brown slightly gravelly very sandy CLAY.
BH109	23	D	5.45	5.50	Reddish brown slightly gravelly very sandy CLAY.
BH109	24	B	5.70	6.00	Reddish brown slightly gravelly very sandy CLAY.
BH109	25	D	6.20		Reddish brown slightly gravelly very sandy CLAY.
BH109	26	D	6.50	6.93	Reddish brown very sandy CLAY.

SUMMARY OF SOIL CLASSIFICATION TESTS

(BS1377 : PART 2 : 1990)

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Moisture Content % Clause 3.2	Linear Shrinkage % Clause 6.5	Particle Density Mg/m^3 Clause 8.2	Liquid Limit % Clause 4.3/4	Plastic Limit % Clause 5.3	Plasticity Index % Clause 5.4	Passing .425mm %	Remarks
BH109	7	D	1.00	1.00	13							
BH109	14	B	2.00	2.45	12							
BH109	16	B	3.00	3.45	11							
BH109	18	B	3.70	4.00	7.9							
BH109	24	B	5.70	6.00	16			25	15	10	96	Low Plasticity CL
BH109	26	D	6.50	6.93	10			27	16	11	100	Low Plasticity CL

SYMBOLS : **NP : Non Plastic** *** : Liquid Limit and Plastic Limit Wet Sieved.**

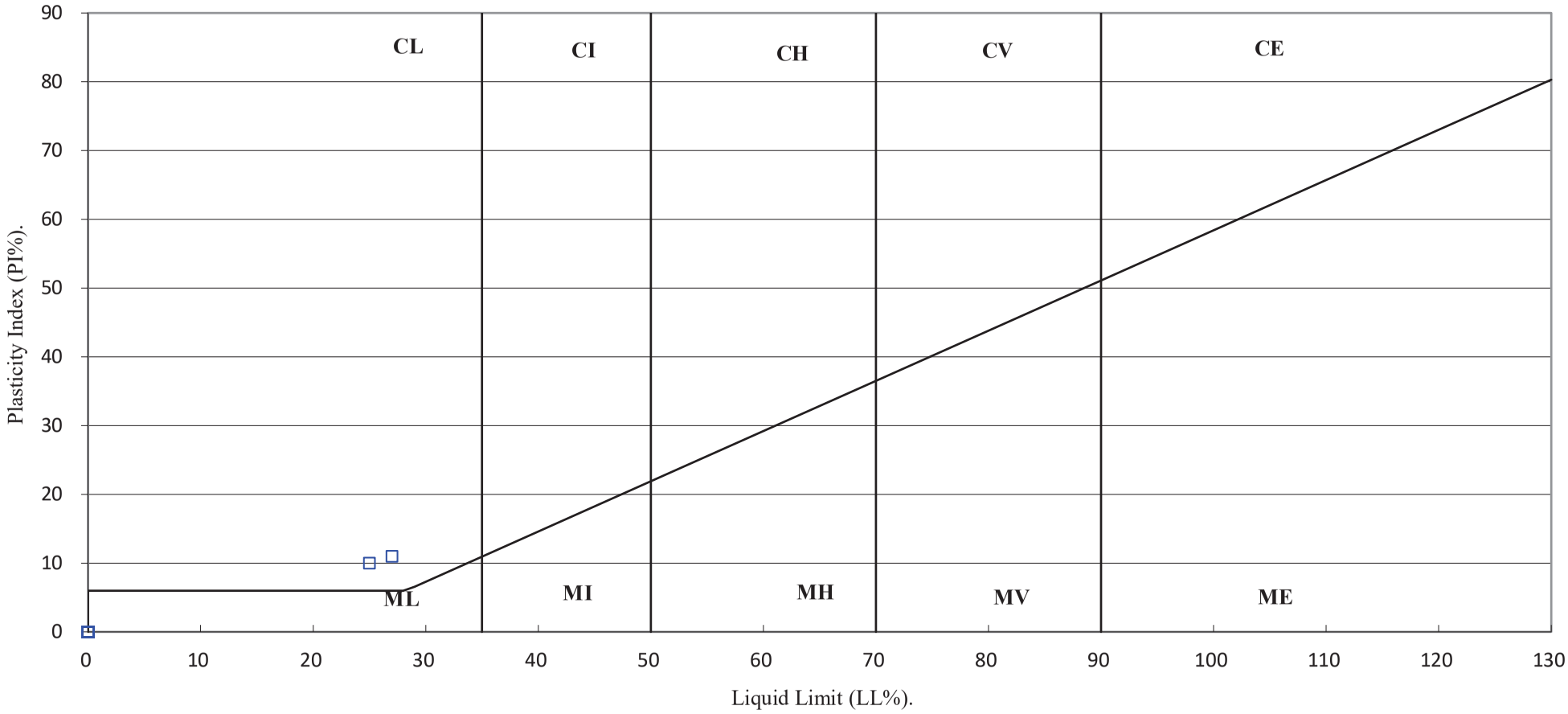
UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

Contract No:
PSL23/4270
Client Ref:
G230651

PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION.



UKAS TESTING 4043 / PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY	A46 Walsgrave	Contract No: PSL23/4270 Client Ref: G230651

SUMMARY OF SOIL DENSITY RELATED TESTS

(BS1377 : PART 2 & 4 : 1990)

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Moisture Content %	Bulk Density Mg/m^3	Dry Density Mg/m^3	Retained 20mm %	Retained 37.5mm %	Method of compaction kg	Maximum Dry Density Mg/m^3	Minimum Dry Density Mg/m^3	Remarks
BH109	10	D	1.20	1.65	5.8	1.88	1.78						
BH109	15	D	2.80		18	1.96	1.66						
BH109	17	D	3.60		8.5	2.08	1.92						
BH109	23	D	5.45	5.50	11	1.98	1.78						
BH109	25	D	6.20		12	1.99	1.78						

UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

Contract No:

PSL23/4270

Client Ref:

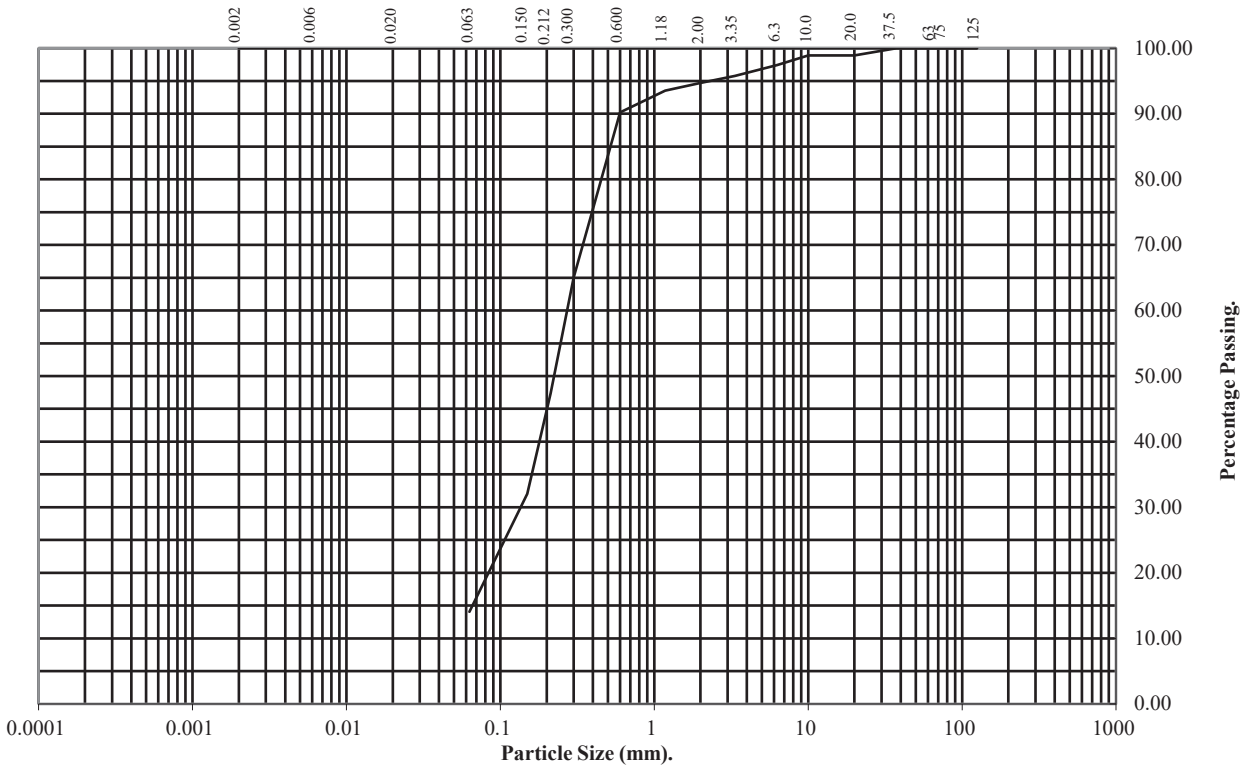
G230651

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number:	**BH109**	**Top Depth (m):**	**1.00**
Sample Number:	**9**	**Base Depth(m):**	**1.20**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	99
10	99
6.3	97
3.35	96
2	95
1.18	94
0.6	90
0.3	65
0.212	47
0.15	32
0.063	14

Soil Fraction	Total Percentage
Cobbles	0
Gravel	5
Sand	81
Silt/Clay	14

Remarks:
See Summary of Soil Descriptions

UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

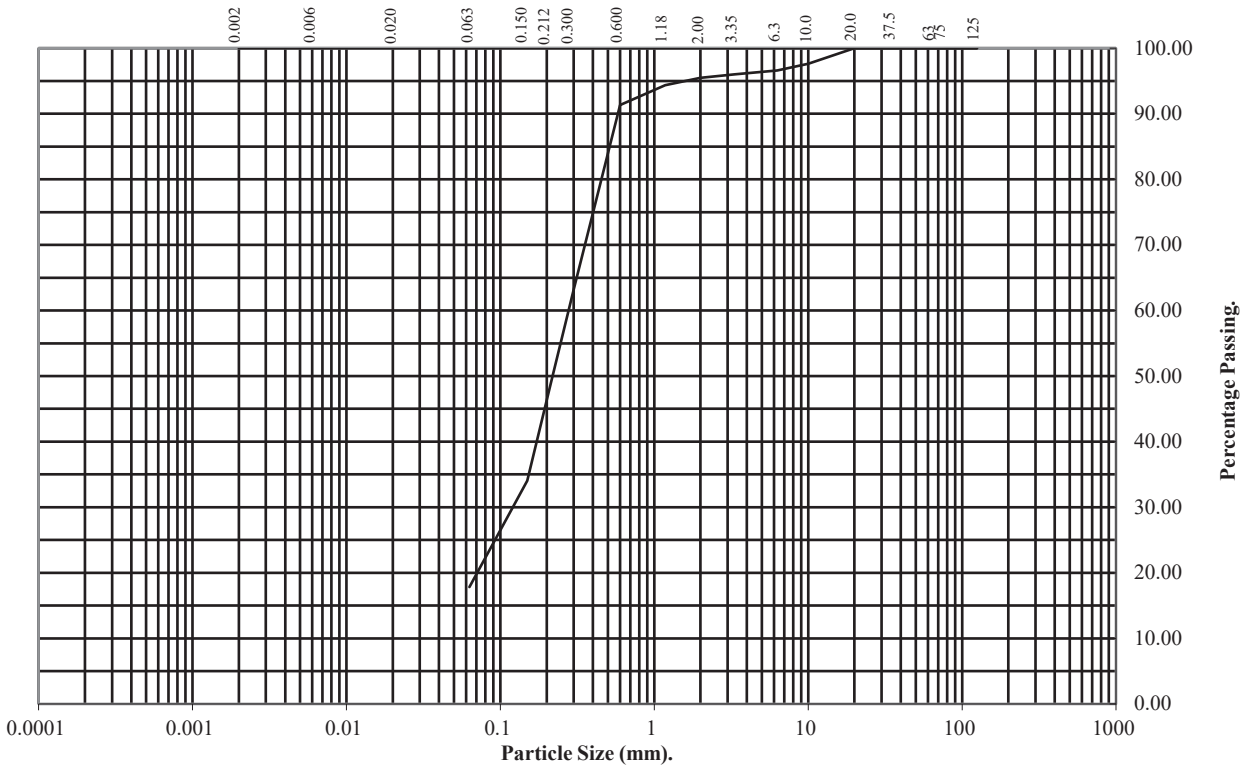
Contract No:
PSL23/4270
Client Ref:
G230651

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number:	**BH109**	**Top Depth (m):**	**2.00**
Sample Number:	**14**	**Base Depth(m):**	**2.45**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	98
6.3	97
3.35	96
2	95
1.18	94
0.6	91
0.3	63
0.212	49
0.15	34
0.063	18

Soil Fraction	Total Percentage
Cobbles	0
Gravel	5
Sand	77
Silt/Clay	18

Remarks:
See Summary of Soil Descriptions

UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

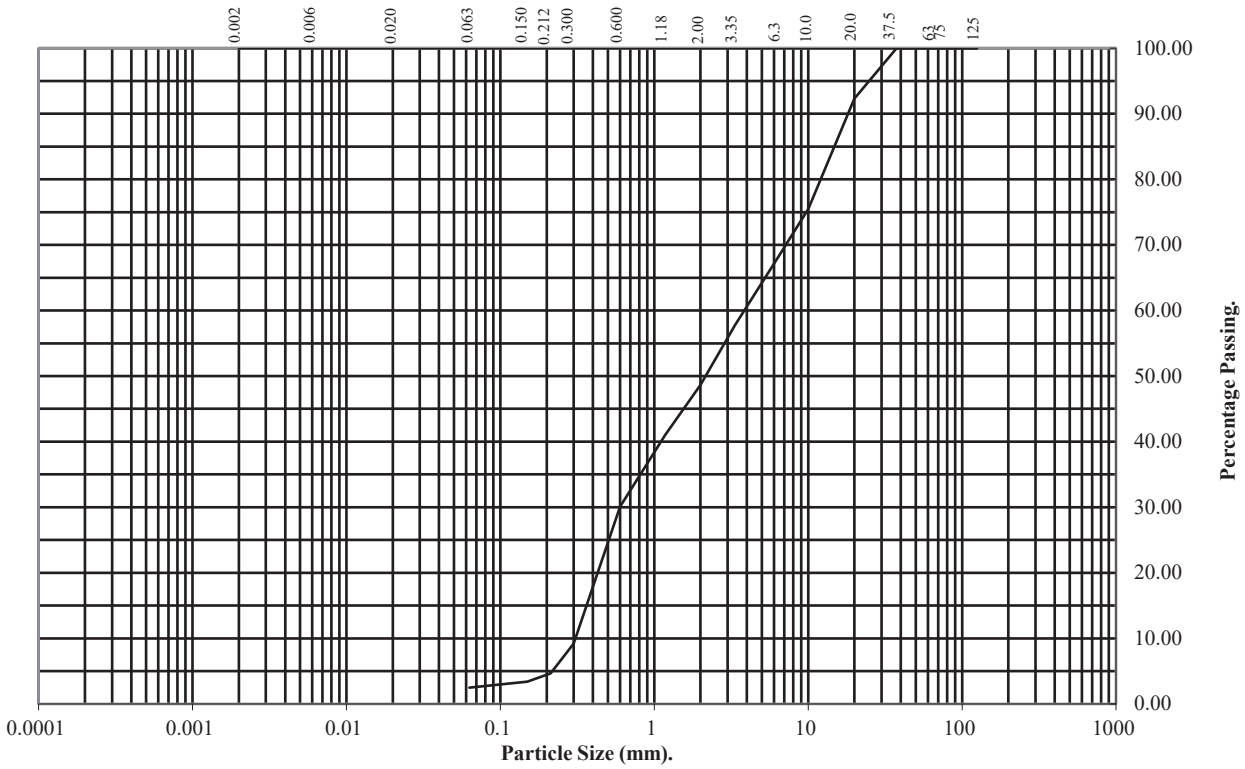
Contract No:
PSL23/4270
Client Ref:
G230651

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number:	**BH109**	**Top Depth (m):**	**3.70**
Sample Number:	**18**	**Base Depth(m):**	**4.00**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	92
10	75
6.3	68
3.35	58
2	49
1.18	41
0.6	30
0.3	9
0.212	5
0.15	3
0.063	2

Soil Fraction	Total Percentage
Cobbles	0
Gravel	51
Sand	47
Silt/Clay	2

Remarks:

See Summary of Soil Descriptions

UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

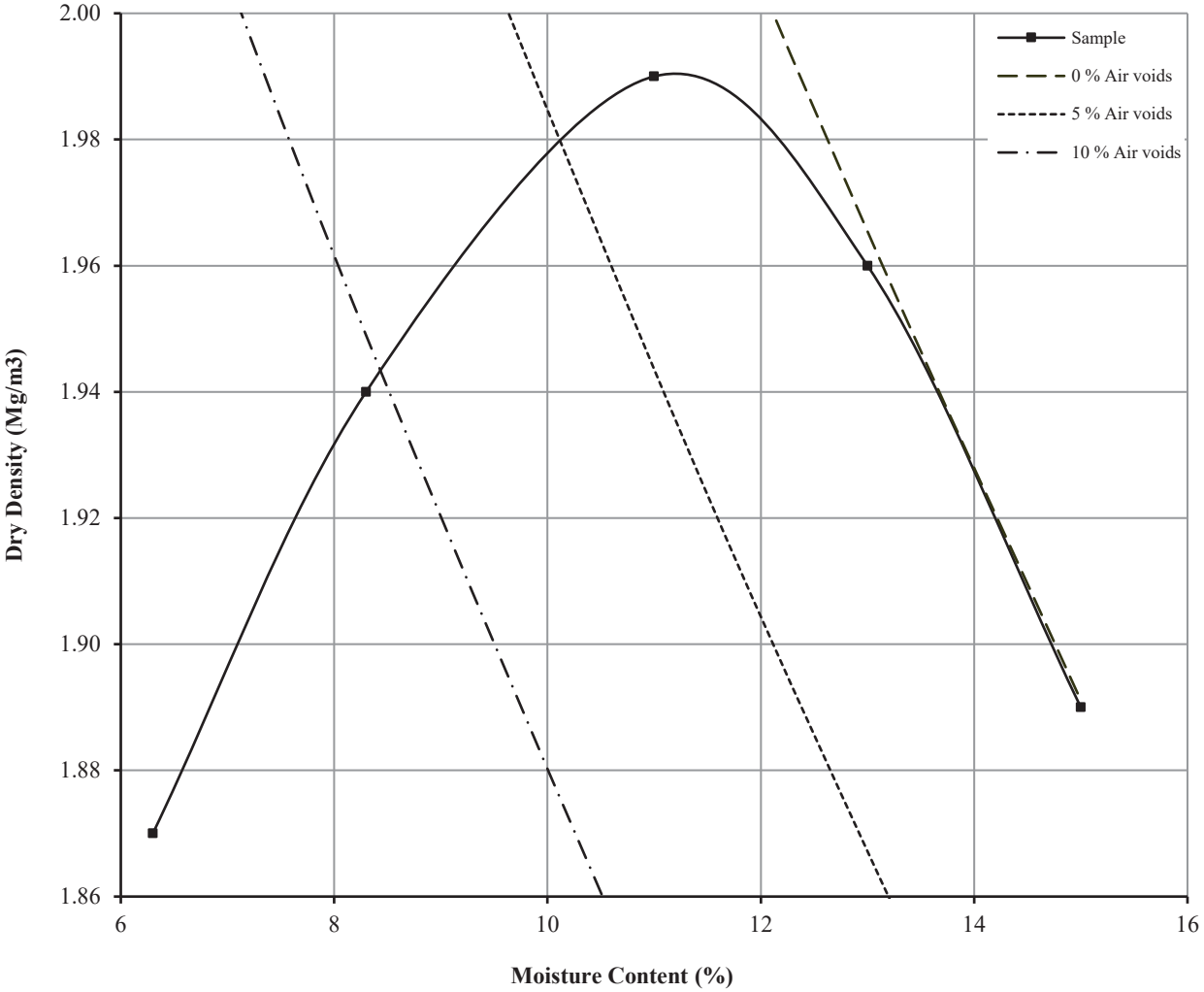
A46 Walsgrave

Contract No:
PSL23/4270
Client Ref:
G230651

DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

BS 1377 : Part 4 : Clause 3.5 : 1990

Hole Number:	**BH109**	**Top Depth (m) :**	**1.00**
Sample Number:	**9**	**Base Depth (m) :**	**1.20**
Sample Type:	**B**		



Initial Moisture Content:		13	Method of Compaction:	4.5kg	Separate Samples
Particle Density (Mg/m3):	2.64	Assumed	Material Retained on 37.5 mm Test Sieve (%):		0
Maximum Dry Density (Mg/m3):		1.99	Material Retained on 20.0 mm Test Sieve (%):		0
Optimum Moisture Content (%):		11			
Remarks See summary of soil descriptions					

UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

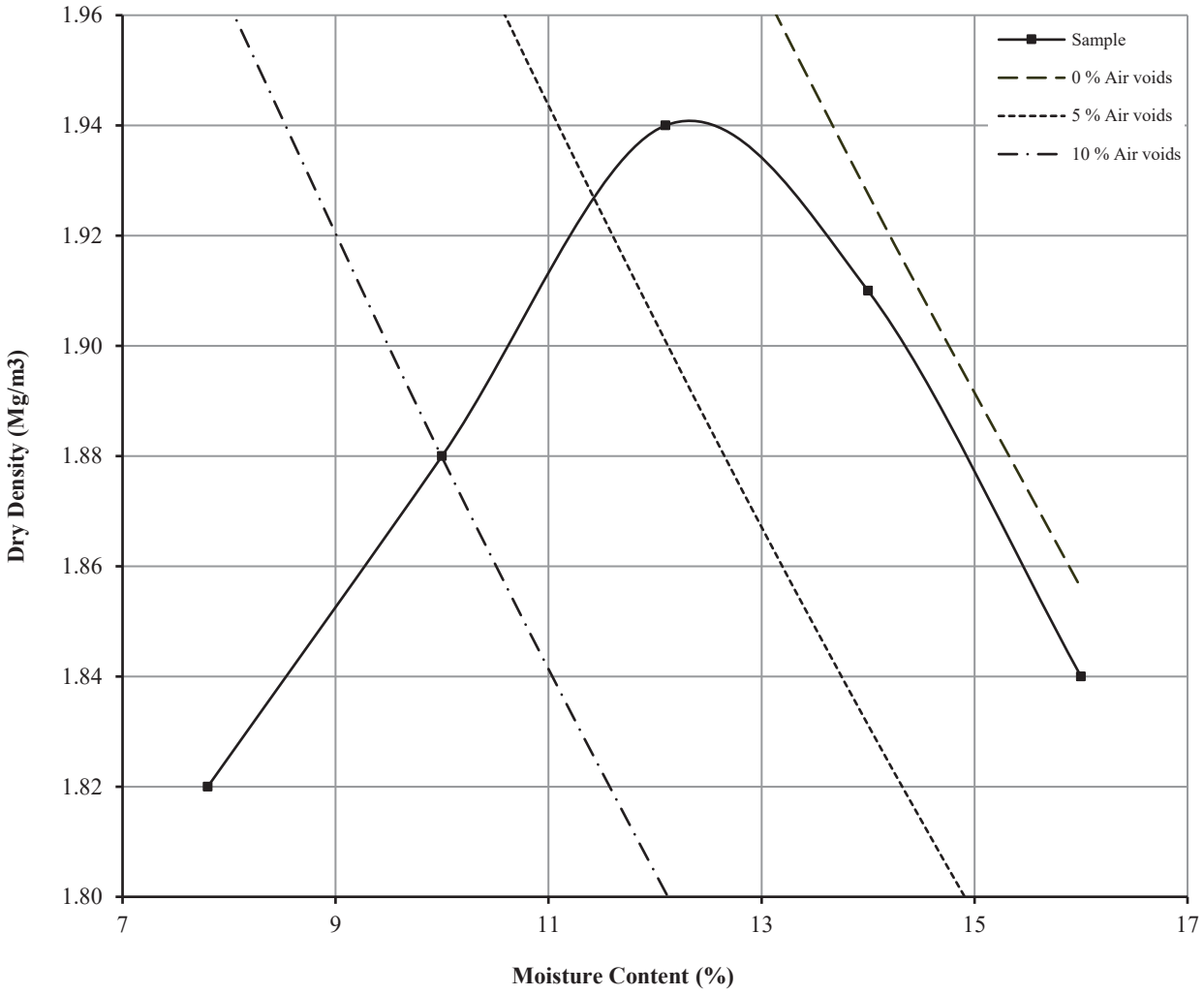
A46 Walsgrave

Contract
PSL23/4270
Client Ref
G230651

DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

BS 1377 : Part 4 : Clause 3.5 : 1990

Hole Number:	**BH109**	**Top Depth (m) :**	**2.00**
Sample Number:	**14**	**Base Depth (m) :**	**2.45**
Sample Type:	**B**		



Initial Moisture Content:		12	Method of Compaction:	4.5kg	Separate Samples
Particle Density (Mg/m3):	2.64	Assumed	Material Retained on 37.5 mm Test Sieve (%):		0
Maximum Dry Density (Mg/m3):		1.94	Material Retained on 20.0 mm Test Sieve (%):		0
Optimum Moisture Content (%):		12			
Remarks See summary of soil descriptions					

UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

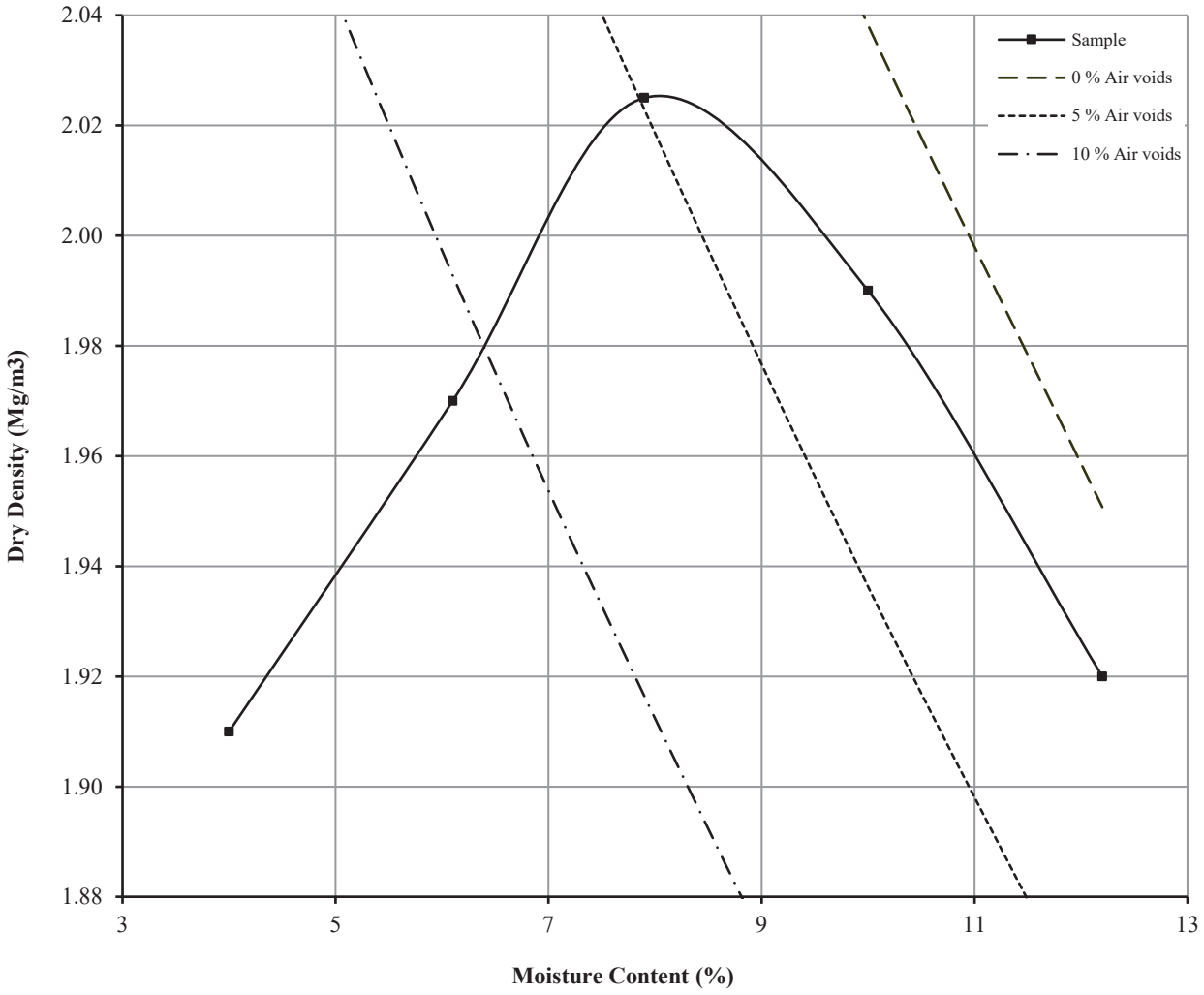
A46 Walsgrave

Contract
PSL23/4270
Client Ref
G230651

DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

BS 1377 : Part 4 : Clause 3.6 : 1990

Hole Number:	**BH109**	**Top Depth (m) :**	**3.70**
Sample Number:	**18**	**Base Depth (m) :**	**4.00**
Sample Type:	**B**		



Initial Moisture Content:		7.9	Method of Compaction:	4.5kg	Separate Samples
Particle Density (Mg/m3):	2.56	Assumed	Material Retained on 37.5 mm Test Sieve (%):		0
Maximum Dry Density (Mg/m3):		2.03	Material Retained on 20.0 mm Test Sieve (%):		8
Optimum Moisture Content (%):		8			
Remarks See summary of soil descriptions					

UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

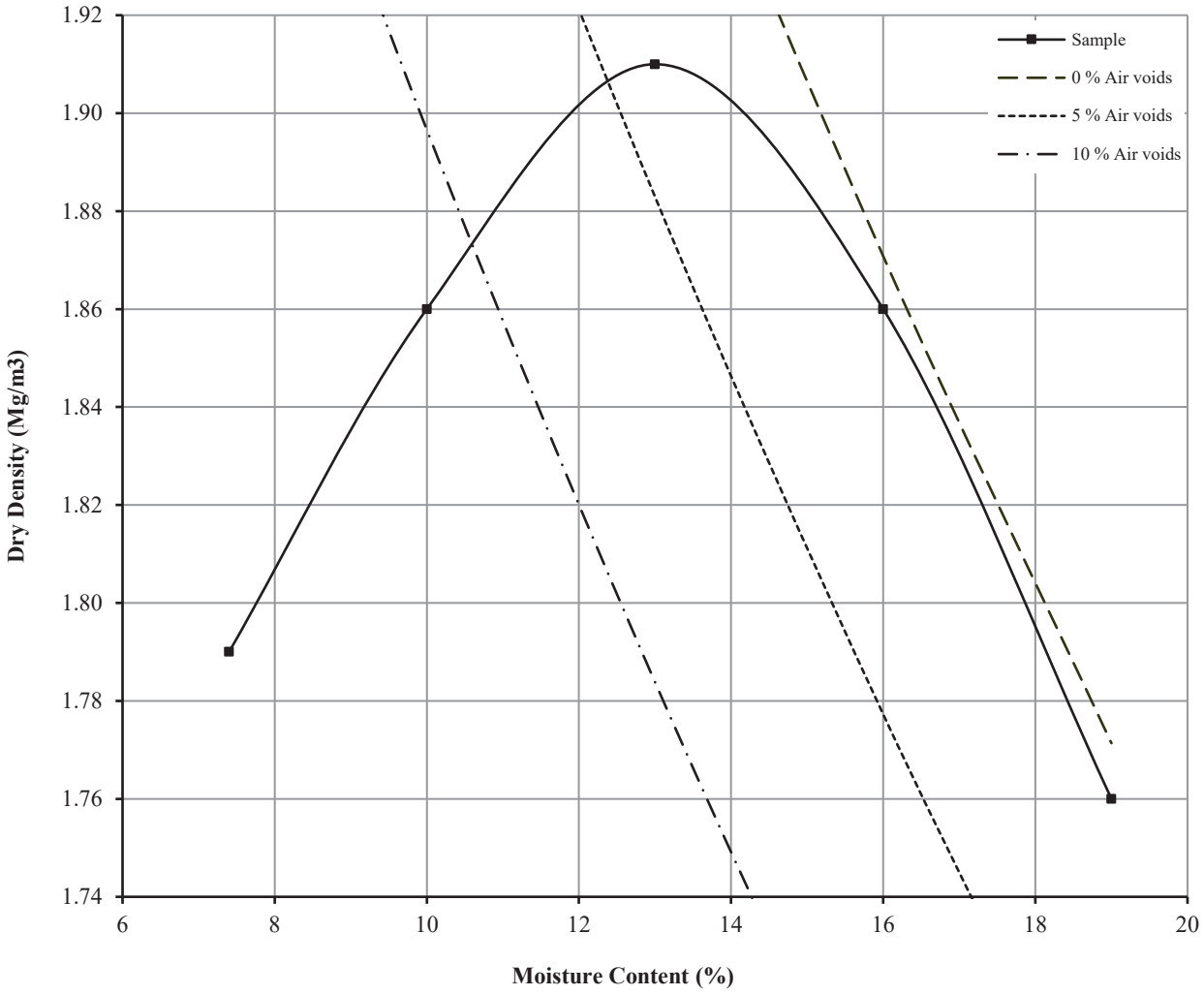
A46 Walsgrave

Contract
PSL23/4270
Client Ref
G230651

DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

BS 1377 : Part 4 : Clause 3.3 : 1990

Hole Number:	**BH109**	**Top Depth (m) :**	**5.70**
Sample Number:	**24**	**Base Depth (m) :**	**6.00**
Sample Type:	**B**		



Initial Moisture Content:		16	Method of Compaction:	2.5kg	Separate Samples
Particle Density (Mg/m3):	2.67	Assumed	Material Retained on 37.5 mm Test Sieve (%):		0
Maximum Dry Density (Mg/m3):		1.91	Material Retained on 20.0 mm Test Sieve (%):		0
Optimum Moisture Content (%):		13			
Remarks See summary of soil descriptions					

UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

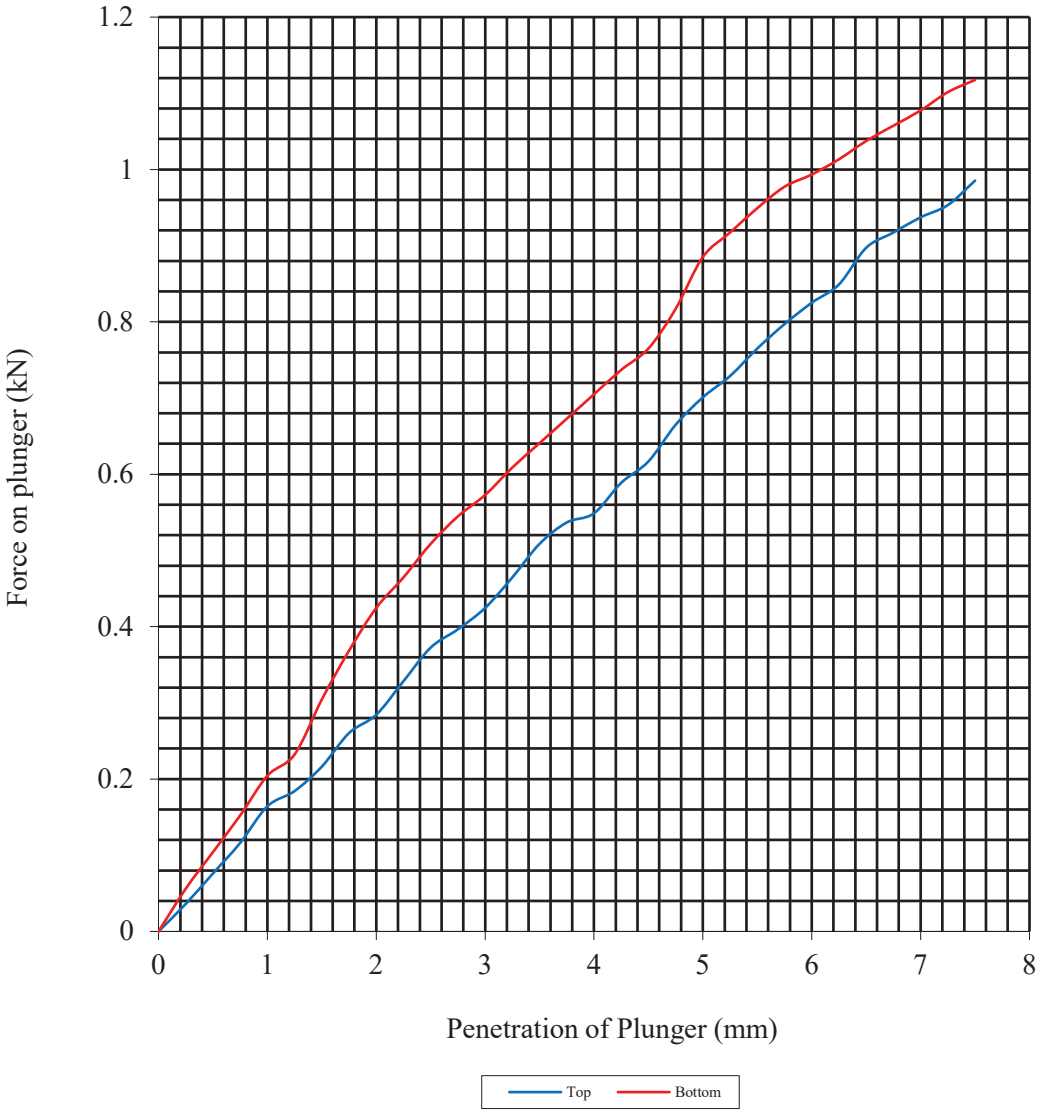
A46 Walsgrave

Contract
PSL23/4270
Client Ref
G230651

CALIFORNIA BEARING RATIO TEST

BS 1377 : Part 4 : 1990

Hole Number:	**BH109**	**Top Depth (m):**	**5.70**
Sample Number:	**24**	**Base Depth (m):**	**6.00**
Sample Type:	**B**		



Initial Sample Conditions		Sample Preparation		Final Moisture Content %		C.B.R. Value %	
Moisture Content:	16	Surcharge Kg:	4.20	Sample Top	16	Sample Top	3.5
Bulk Density Mg/m3:	2.15	Soaking Time hrs	0	Sample Bottom	16	Sample Bottom	4.4
Dry Density Mg/m3:	1.86	Swelling mm:	0.00	Remarks : See Summary of Soil Descriptions.			
Percentage retained on 20mm BS test sieve:			2				
Compaction Conditions		2.5kg					

UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

Contract No: PSL23/4270

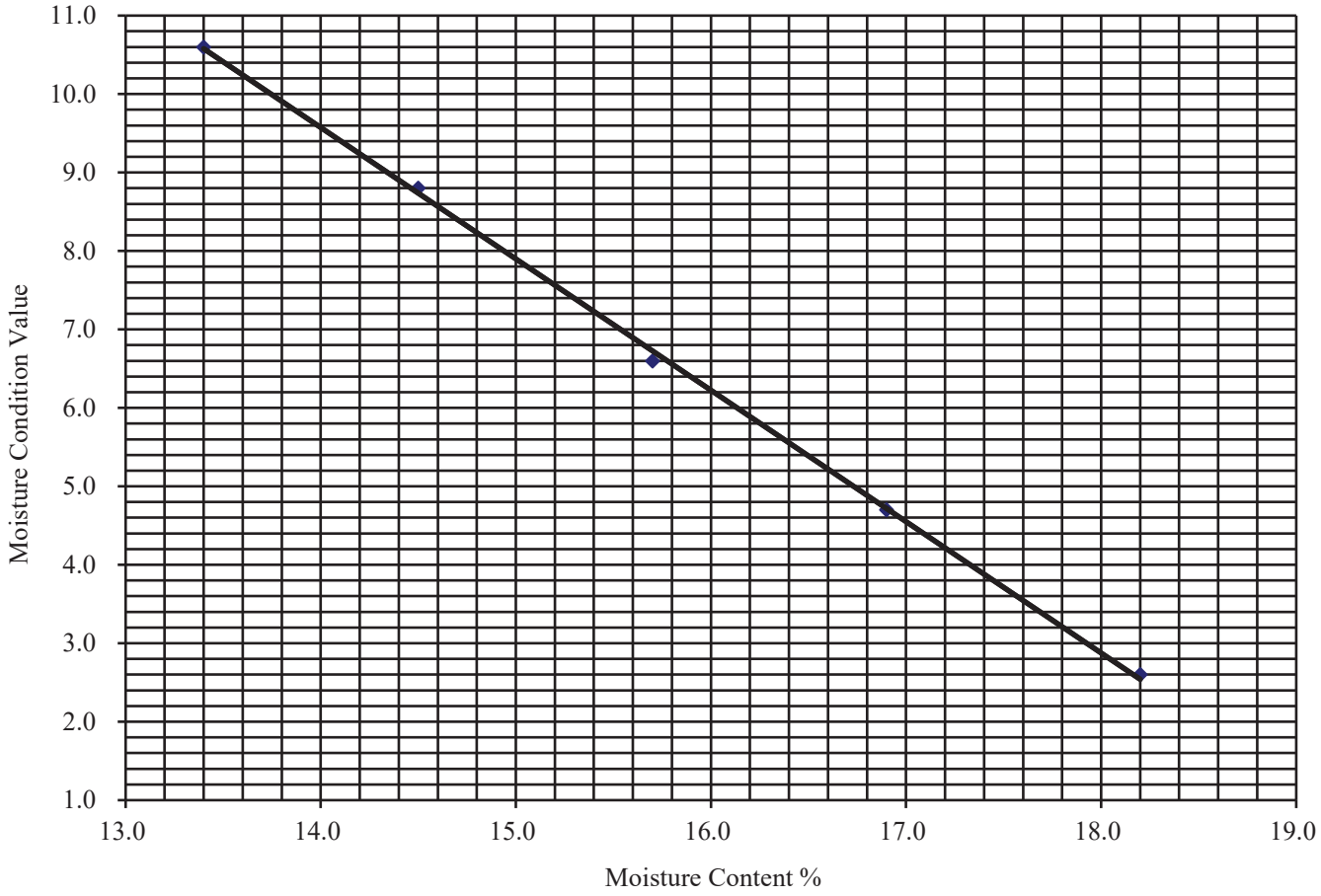
Client Ref: G230651

MOISTURE CONDITION VALUE CALIBRATION

BS1377 : Part 4 : 1990 Clause 5.5

Hole Number:	**BH109**	**Top Depth (m):**	**5.70**
Sample Number:	**24**	**Base Depth (m):**	**6.00**
Sample Type:	**B**		

Initial Moisture Content (%):	16
Single/Separate Samples Tested	Separate
Material Retained on the 20mm BS Test Sieve (%):	0



Test Results.

Test Number	1	2	3	4	5
Moisture Content (%)	13.4	14.5	15.7	16.9	18.2
MCV	10.6	8.8	6.6	4.7	2.6

SUMMARY OF LABORATORY HAND VANES

(BS1377 : PART 7 : 1990)

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Moisture Content %	Peak Shear Strength kPa	Residual Shear Strength kPa	Remarks
BH109	24	B	5.70	6.00	16	62		

* This test is out of our UKAS scope

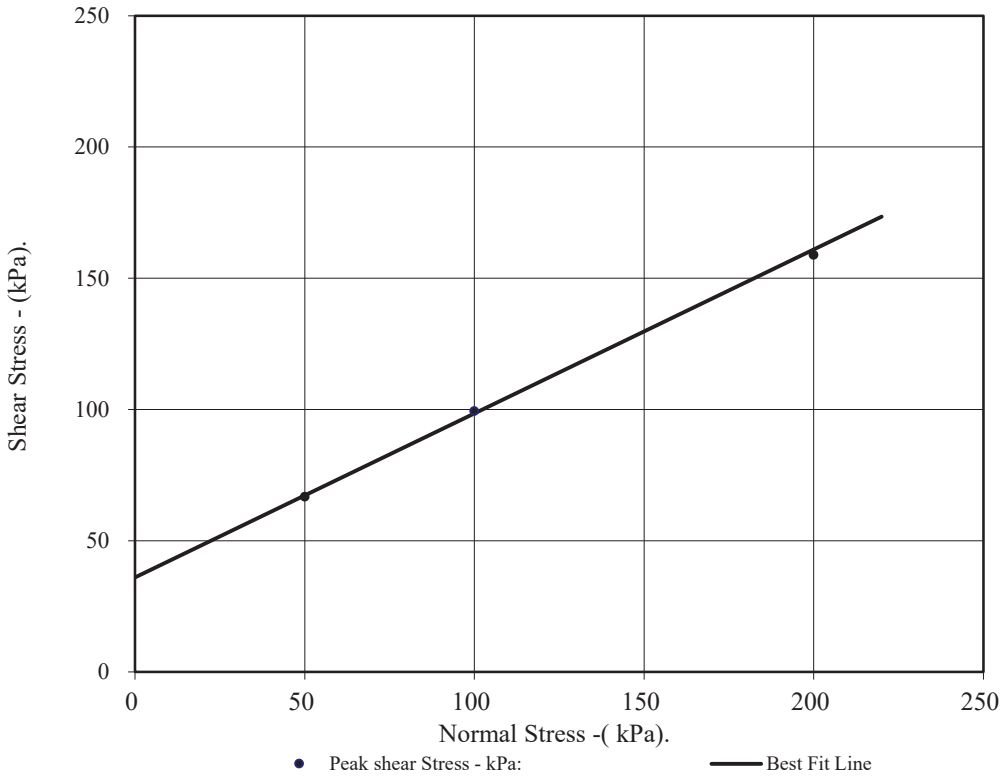
PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY	A46 Walsgrave	Contract No: PSL23/4270 Client Ref: G230651

CONSOLIDATED DRAINED SHEARBOX TEST

BS1377:Part 7:1990 Clause 5 SHW Clause 636 Paragraph 2

Hole Number:	**BH109**		Top Depth:	**1.00**
Sample Number:	**9**		Base Depth:	**1.20**
Sample Conditions:	Dry		Sample Type	**B**
Particle Density - Mg/m3:	2.65	Assumed	**Remarks:**	
Sample Preparation:	Material tested passing 20mm sieve Recompacted using hand tamped effort			
Sample Description:	**See summary of soil descriptions**			

STAGE	**1**	**2**	**3**
Initial Conditions			
Height - mm:	150	150	150
Length - mm:	300	300	300
Moisture Content - %:	13	13	13
Bulk Density - Mg/m3:	2.21	2.21	2.21
Dry Density - Mg/m3:	1.96	1.96	1.96
Voids Ratio:	0.353	0.353	0.353
Normal Pressure- kPa	50	100	200
Consolidation Stage			
Consolidated Height - mm:	147.97	147.68	146.94
Shearing Stage			
Rate of Strain (mm/min)	1.00	1.00	1.00
Displacement at peak shear stress (mm)	23.50	45.00	50.99
Peak shear Stress - kPa:	67	99	159
Final Consolidated Conditions			
Moisture Content - %:	13	12	12
Bulk Density - Mg/m3:	2.24	2.25	2.26
Dry Density - Mg/m3:	1.99	2.00	2.02
Peak			
Angle of Shearing Resistance:(~~θ~~)	**32**		
Effective Cohesion - kPa:	**36**		

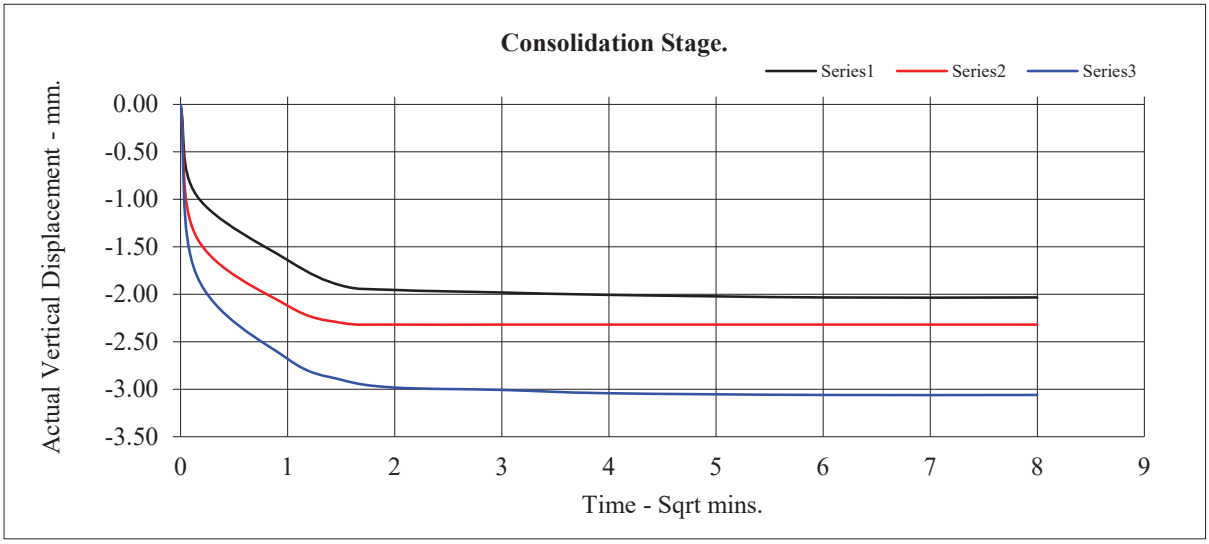


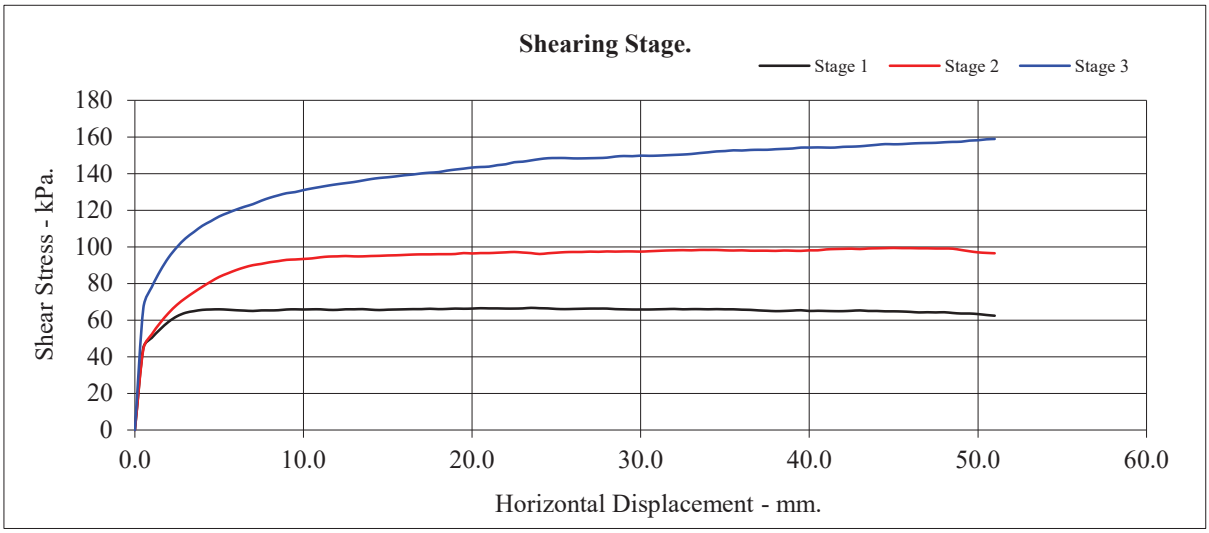
UKAS TESTING 4043 / PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY	**A46 Walsgrave**	**Contract No:** PSL23/4270 **Client Ref:** G230651

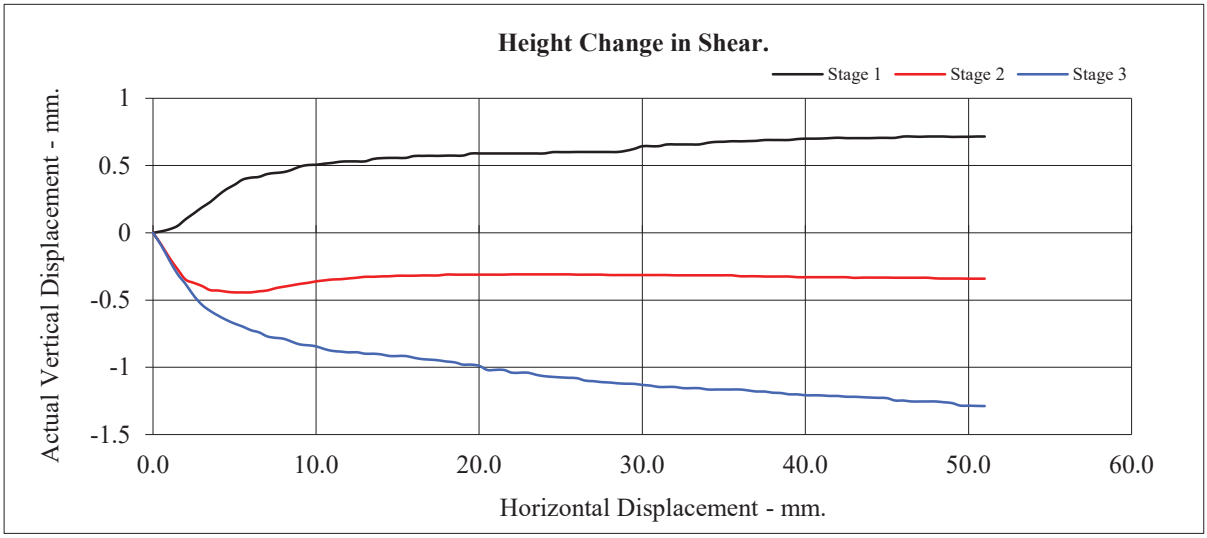
CONSOLIDATED DRAINED SHEARBOX TEST

BS1377:Part 7:1990 Clause 5 SHW Clause 636 Paragraph 2

Hole Number:	**BH109**	Top Depth:	**1.00**
Sample Number:	**9**	Base Depth:	**1.20**







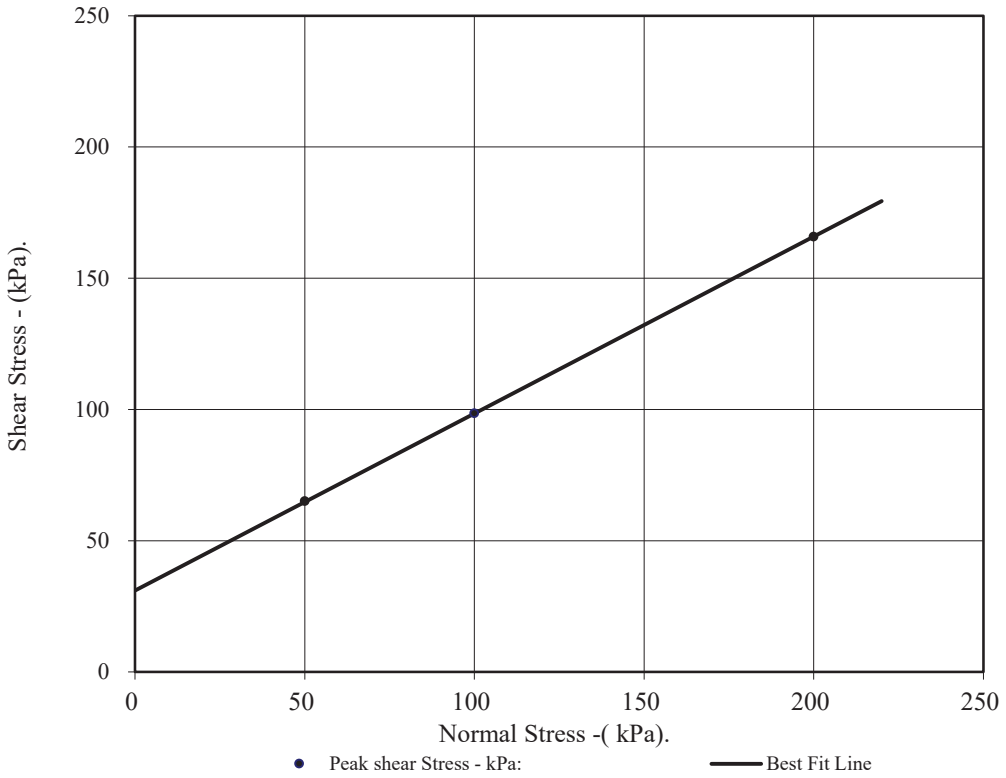
UKAS TESTING 4043 / PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY	**A46 Walsgrave**	**Contract No:** PSL23/4270 **Client Ref:** G230651

CONSOLIDATED DRAINED SHEARBOX TEST

BS1377:Part 7:1990 Clause 5 SHW Clause 636 Paragraph 2

Hole Number:	**BH109**		Top Depth:	**2.00**
Sample Number:	**14**		Base Depth:	**2.45**
Sample Conditions:	Dry		Sample Type	**B**
Particle Density - Mg/m3:	2.65	Assumed	**Remarks:**	
Sample Preparation:	Material tested passing 20mm sieve Recompacted using hand tamped effort			
Sample Description:	**See summary of soil descriptions**			

STAGE	**1**	**2**	**3**
Initial Conditions			
Height - mm:	150	150	150
Length - mm:	300	300	300
Moisture Content - %:	12	12	12
Bulk Density - Mg/m3:	2.17	2.17	2.17
Dry Density - Mg/m3:	1.94	1.94	1.94
Voids Ratio:	0.369	0.369	0.369
Normal Pressure- kPa	50	100	200
Consolidation Stage			
Consolidated Height - mm:	148.87	147.98	147.42
Shearing Stage			
Rate of Strain (mm/min)	1.00	1.00	1.00
Displacement at peak shear stress (mm)	50.00	50.00	50.00
Peak shear Stress - kPa:	65	99	166
Final Consolidated Conditions			
Moisture Content - %:	12	12	11
Bulk Density - Mg/m3:	2.19	2.20	2.21
Dry Density - Mg/m3:	1.96	1.97	1.98
Peak			
Angle of Shearing Resistance:(~~θ~~)	**34**		
Effective Cohesion - kPa:	**31**		



UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

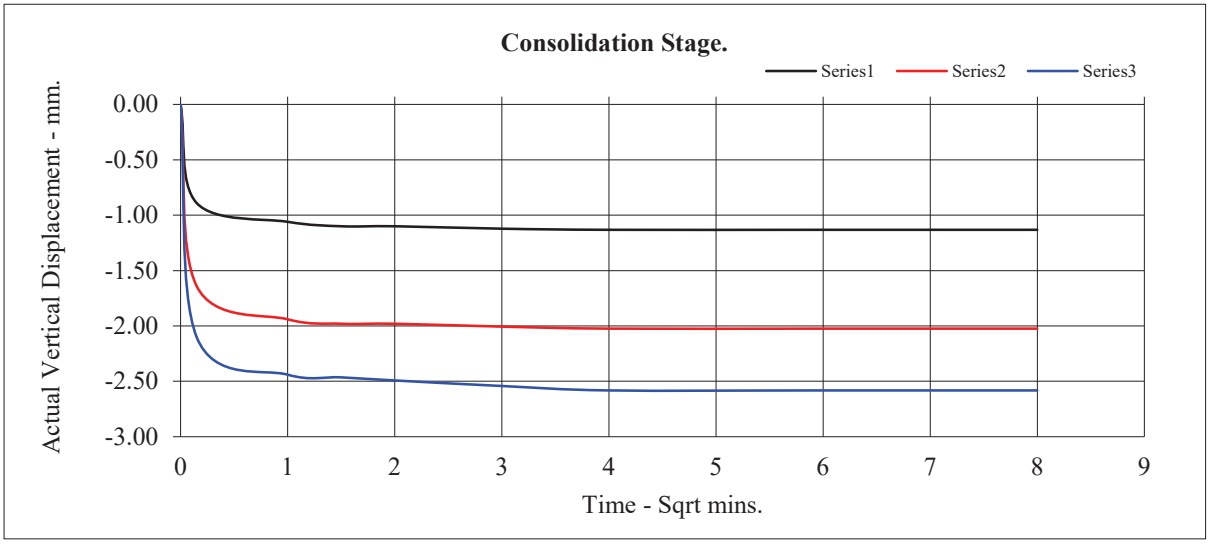
A46 Walsgrave

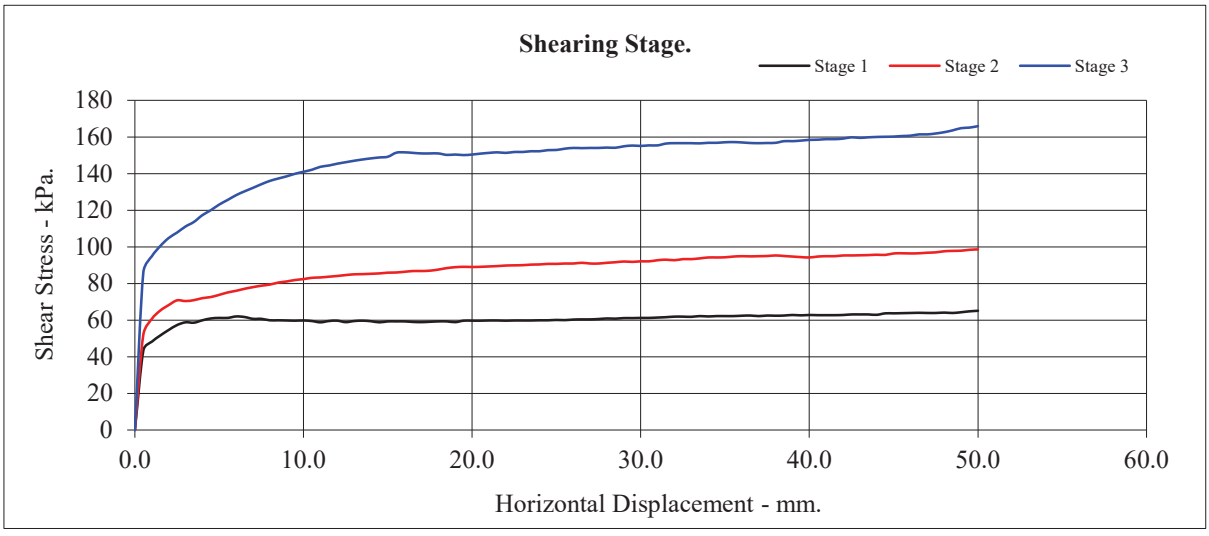
Contract No:
PSL23/4270
Client Ref:
G230651

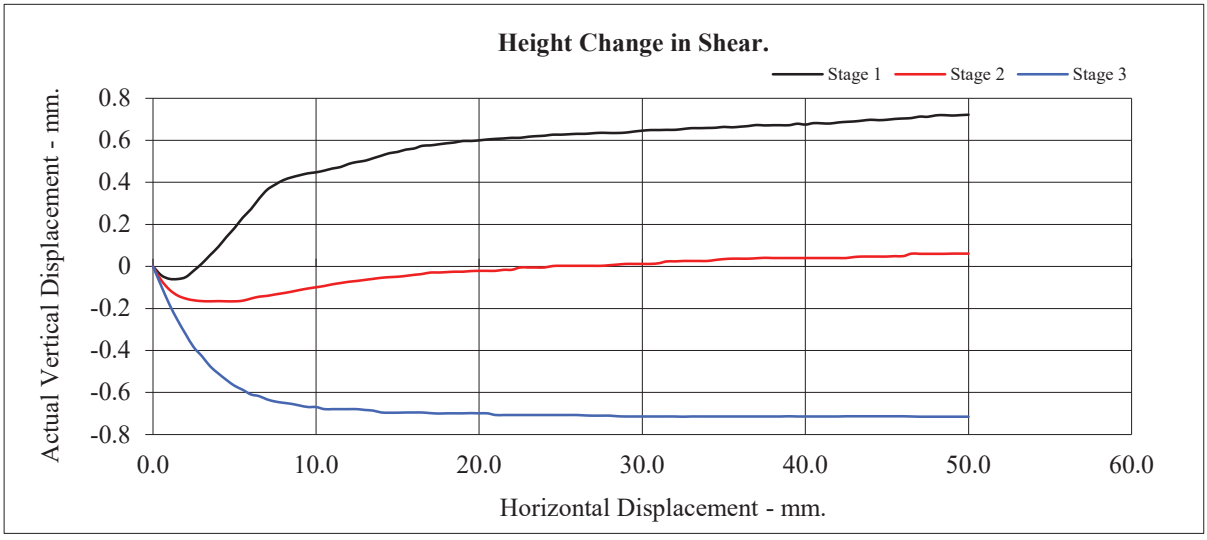
CONSOLIDATED DRAINED SHEARBOX TEST

BS1377:Part 7:1990 Clause 5 SHW Clause 636 Paragraph 2

Hole Number:	**BH109**	Top Depth:	**2.00**
Sample Number:	**14**	Base Depth:	**2.45**







UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

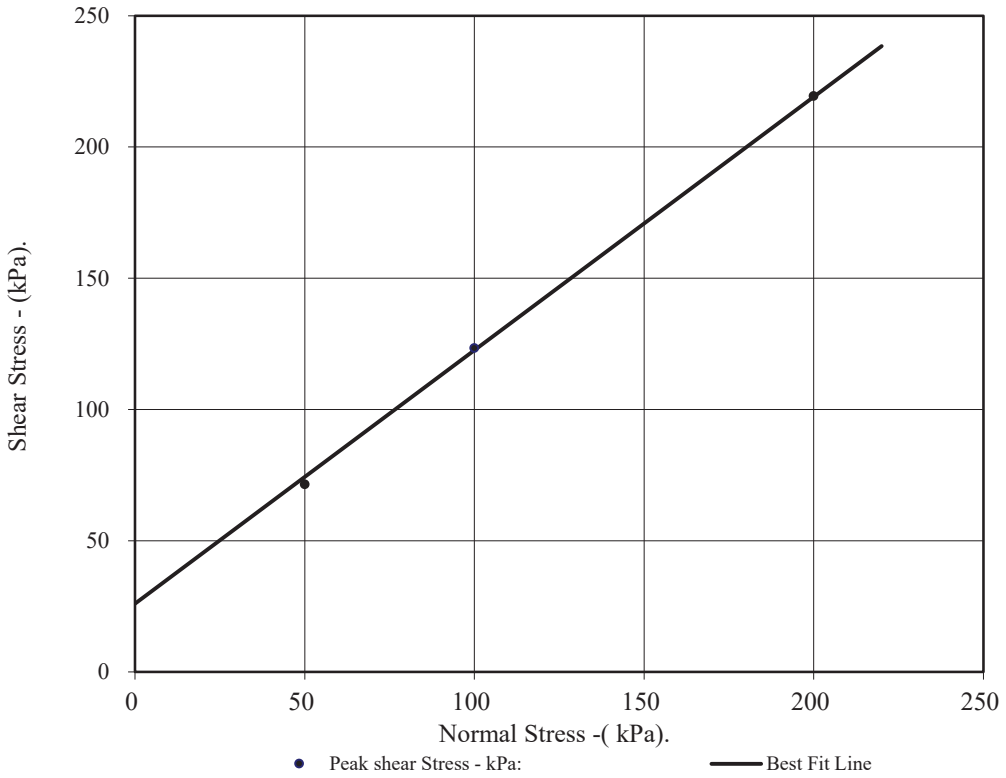
Contract No:
PSL23/4270
Client Ref:
G230651

CONSOLIDATED DRAINED SHEARBOX TEST

BS1377:Part 7:1990 Clause 5 SHW Clause 636 Paragraph 2

Hole Number:	**BH109**		Top Depth:	**3.70**
Sample Number:	**18**		Base Depth:	**4.00**
Sample Conditions:	Dry		Sample Type	**B**
Particle Density - Mg/m3:	2.65	Assumed	**Remarks:**	
Sample Preparation:	Material tested passing 20mm sieve Recompacted using hand tamped effort			
Sample Description:	**See summary of soil descriptions**			

STAGE	**1**	**2**	**3**
Initial Conditions			
Height - mm:	150	150	150
Length - mm:	300	300	300
Moisture Content - %:	7.9	7.9	7.9
Bulk Density - Mg/m3:	2.19	2.19	2.19
Dry Density - Mg/m3:	2.03	2.03	2.03
Voids Ratio:	0.305	0.305	0.305
Normal Pressure- kPa	50	100	200
Consolidation Stage			
Consolidated Height - mm:	148.47	146.25	145.55
Shearing Stage			
Rate of Strain (mm/min)	1.00	1.00	1.00
Displacement at peak shear stress (mm)	50.99	47.50	50.99
Peak shear Stress - kPa:	72	123	220
Final Consolidated Conditions			
Moisture Content - %:	7.7	7.4	7.1
Bulk Density - Mg/m3:	2.21	2.25	2.26
Dry Density - Mg/m3:	2.06	2.09	2.11
Peak			
Angle of Shearing Resistance:(~~θ~~)	**44**		
Effective Cohesion - kPa:	**26**		

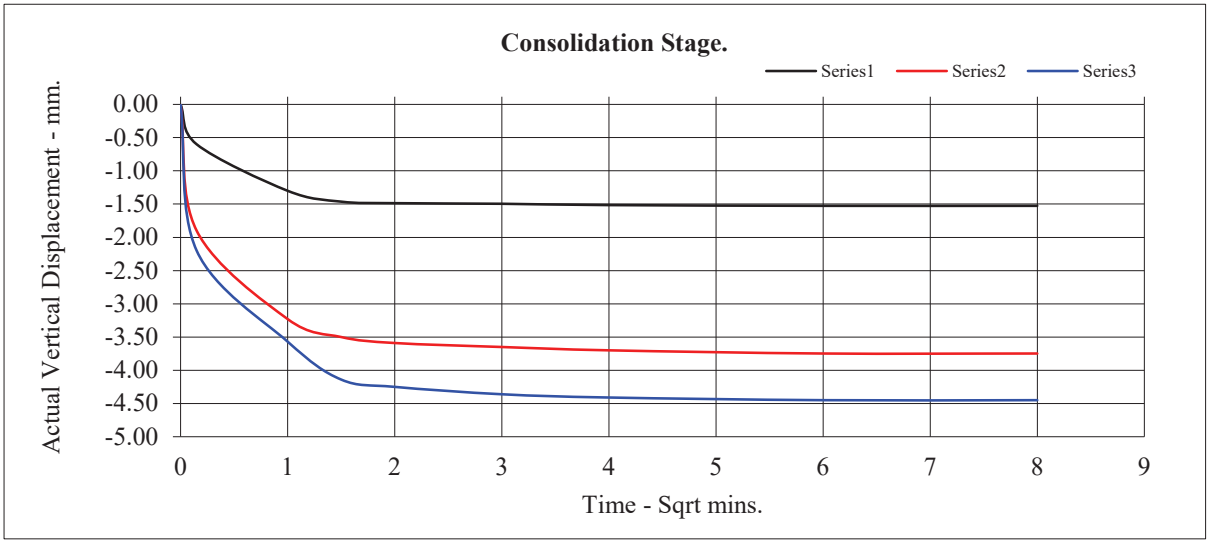


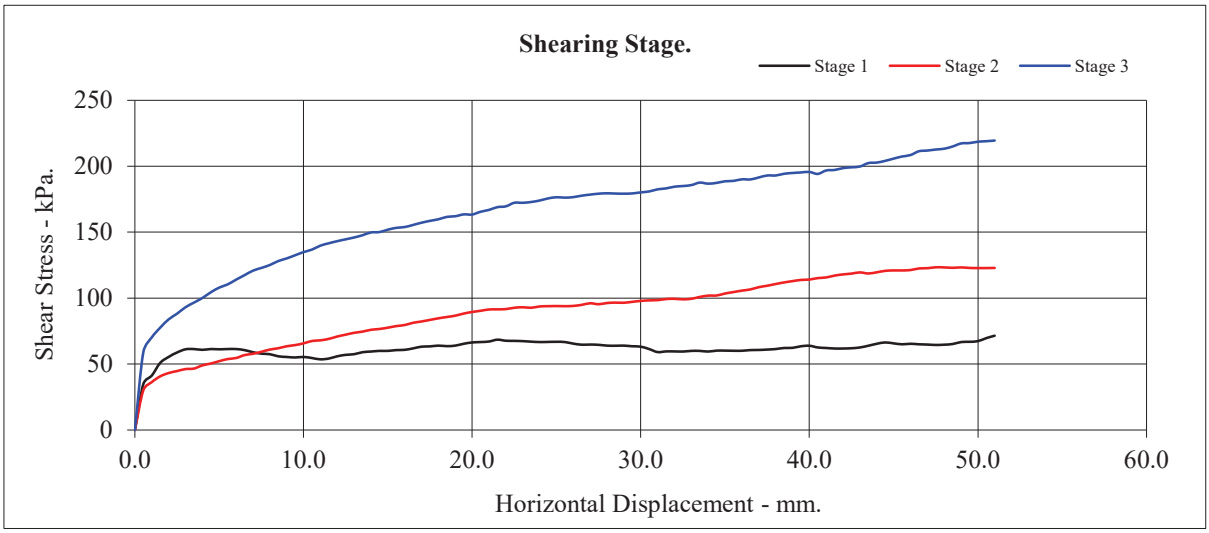
UKAS TESTING 4043 / PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY	**A46 Walsgrave**	**Contract No:** PSL23/4270 **Client Ref:** G230651

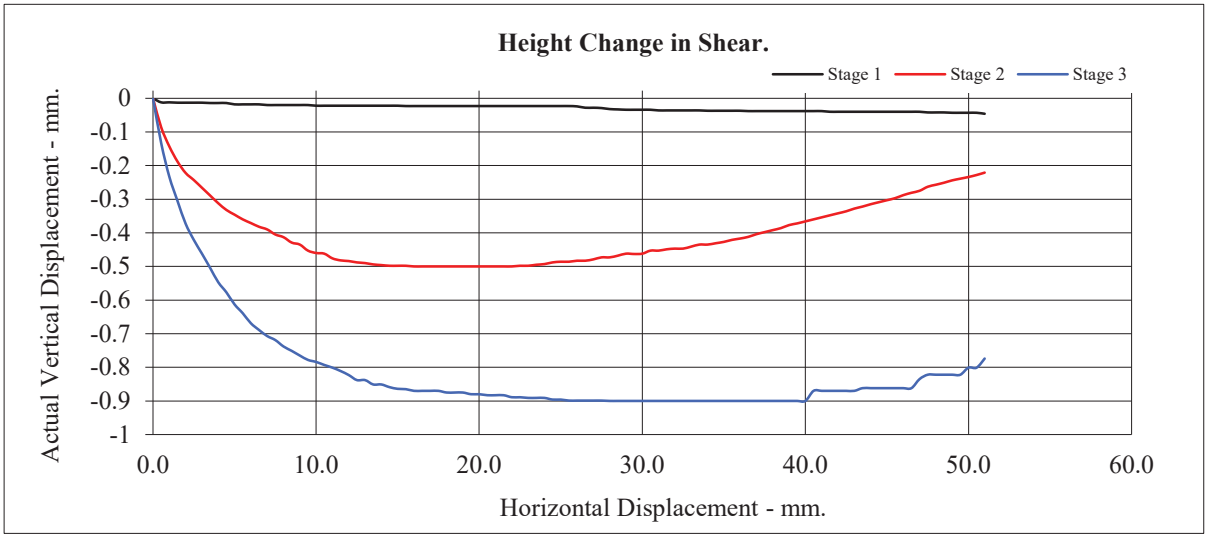
CONSOLIDATED DRAINED SHEARBOX TEST

BS1377:Part 7:1990 Clause 5 SHW Clause 636 Paragraph 2

Hole Number:	**BH109**	Top Depth:	**3.70**
Sample Number:	**18**	Base Depth:	**4.00**





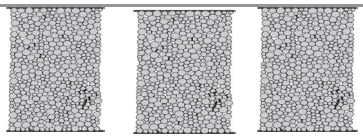


UKAS TESTING 4043 / PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY	**A46 Walsgrave**	**Contract No:** PSL23/4270 **Client Ref:** G230651

Effective Stress Triaxial Compression

Consolidated Undrained

Summary Report

Sample Details	*sketch showing specimen location in original sample*				
Depth	5.00-5.45m UT22				
Description	See summary of soil descriptions.				
Type	Undisturbed, vertical orientation.				
			Spm. 1	2	3
Initial Sample Length	L_0	(mm)	76.0	76.0	76.0
Initial Sample Diameter	D_0	(mm)	38.0	38.0	38.0
Initial Sample Weight	W_0	(gr)	191.4	188.2	190.5
Initial Bulk Density	ρ_0	(Mg/m3)	2.22	2.18	2.21
Particle Density	ρ_s	(Mg/m3)	2.66	2.66	2.66

Initial Conditions			Spm. 1	2	3
Initial Cell Pressure	σ_{3i}	(kPa)	900	950	1050
Initial Back Pressure	U_{bi}	(kPa)	850	850	850
Membrane Thickness	m_b	(mm)	0.400	0.400	0.400
Displacement Input	L_{IP}	(mm)	CH 2	CH 2	CH 2
Load Input	N_{IP}	(N)	CH 4	CH 1	CH 1
Pore Water Pressure Input	u_{pwp}	(kPa)	CH 3	CH 3	CH 3
Sample Volume	V	(cc)	CH 6	CH 6	CH 6
Initial Moisture	ω_i	(%)	13	13	13
Initial Dry Density	ρ_{di}	(Mg/m3)	1.97	1.94	1.95
Initial Voids Ratio	e_i	.	0.353	0.374	0.361
Initial Degree of Saturation	S_i	(%)	98	91	97
B Value	B	.	0.95	0.96	0.95

Final Conditions			Spm. 1	2	3
Final Moisture	ω_f	(%)	18	17	16
Final Dry Density	ρ_{df}	(Mg/m3)	1.98	1.98	2.04
Final Voids Ratio	e_f	.	0.341	0.341	0.307
Final Degree of Saturation	S_f	(%)	100.0	100.0	100.0
Failure Criteria		.	Max. Dev. Stress	Max. Dev. Stress	Max. Dev. Stress
Strain At Failure	ε_f	(%)	14.31	19.31	14.14
Stress At Failure	$(\sigma_1-\sigma_3)_f$	(kPa)	295.7	332.4	485.4
Minor Stress At Failure	σ_3'	(kPa)	123.5	140.0	209.7
Major Stress At Failure	σ_1'	(kPa)	419.2	472.4	695.1
Principal Stress Ratio At Failure	σ_1'/σ_3'		3.393	3.374	3.315
PwP At Failure Criteria	u_f	(kPa)	776.8	810.0	840.3

Notes

Plastic

PSL PROFESSIONAL SOILS LABORATORY — A PHENNA GROUP COMPANY — UKAS TESTING 4043

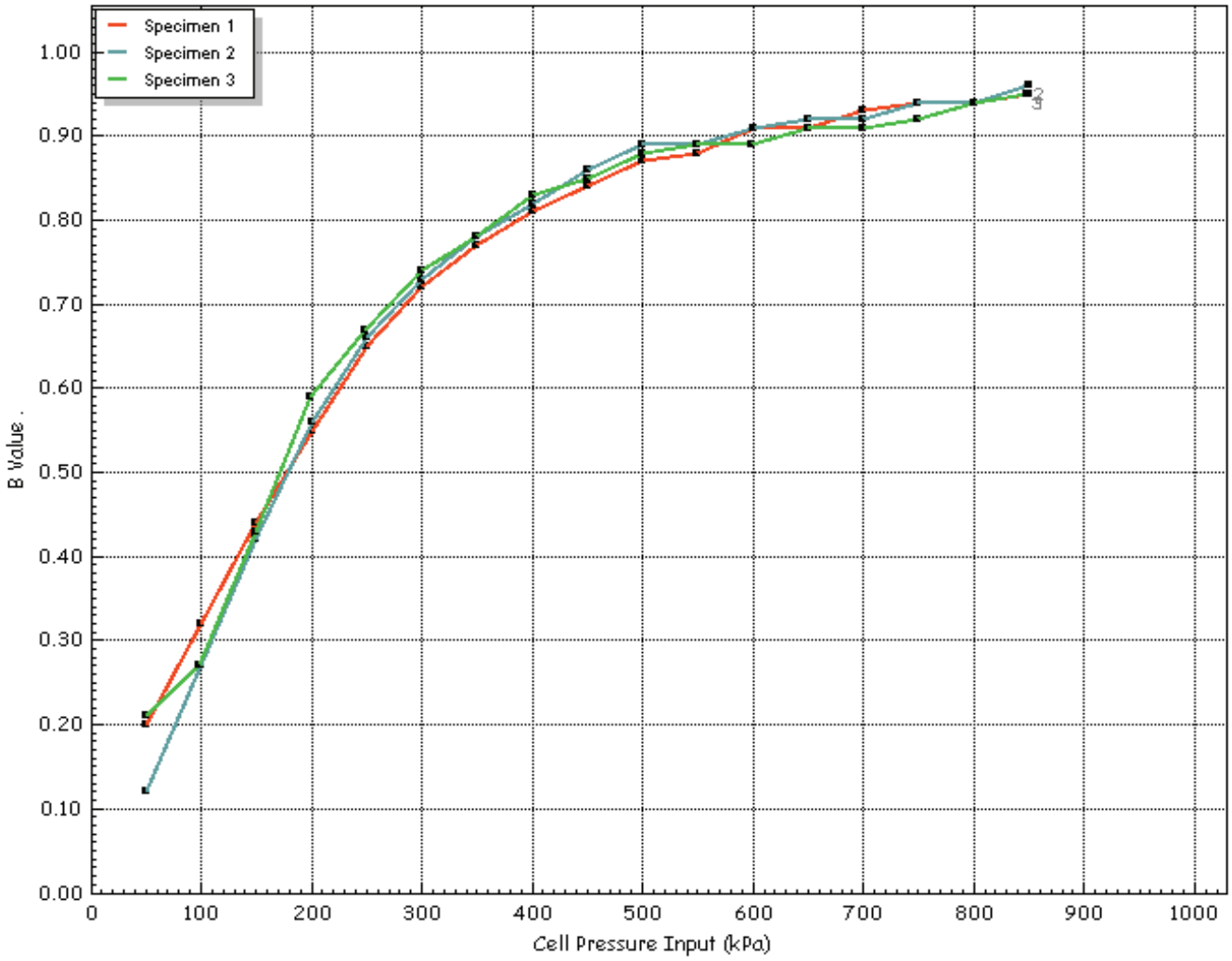
Test Method	BS1377-8 : 1990 : Clause 7			Test Name	BH109 5.00-5.45m UT
				Test Date	29/06/2023
				Borehole	BH109
Jobfile	A46 Walsgrave			Sample	5.00-5.45m UT
Client	Strata Geotechnics			Depth	5.00-5.45m UT22
Operator	D.Burton	Checked	S.Royle	Approved	S.Royle

Effective Stress Triaxial Compression

Consolidated Undrained

Saturation Plots

			Spm. 1	2	3
Saturation Method			Stepped	Stepped	Stepped
Cell Pressure Input	σ	(kPa)	850	850	849
Pore Water Pressure Input	u pwp	(kPa)	825	825	832
B Value	B	.	0.95	0.96	0.95



PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY UKAS TESTING 4043	Test Method	BS1377-8 : 1990 : Clause 7		Test Name	BH109 5.00-5.45m UT
				Test Date	29/06/2023
				Borehole	BH109
	Jobfile	A46 Walsgrave		Sample	5.00-5.45m UT
	Client	Strata Geotechnics		Depth	5.00-5.45m UT22
	Operator	D.Burton	Checked S.Royle	Approved	S.Royle

Effective Stress Triaxial Compression

Consolidated Undrained

Consolidation Plots

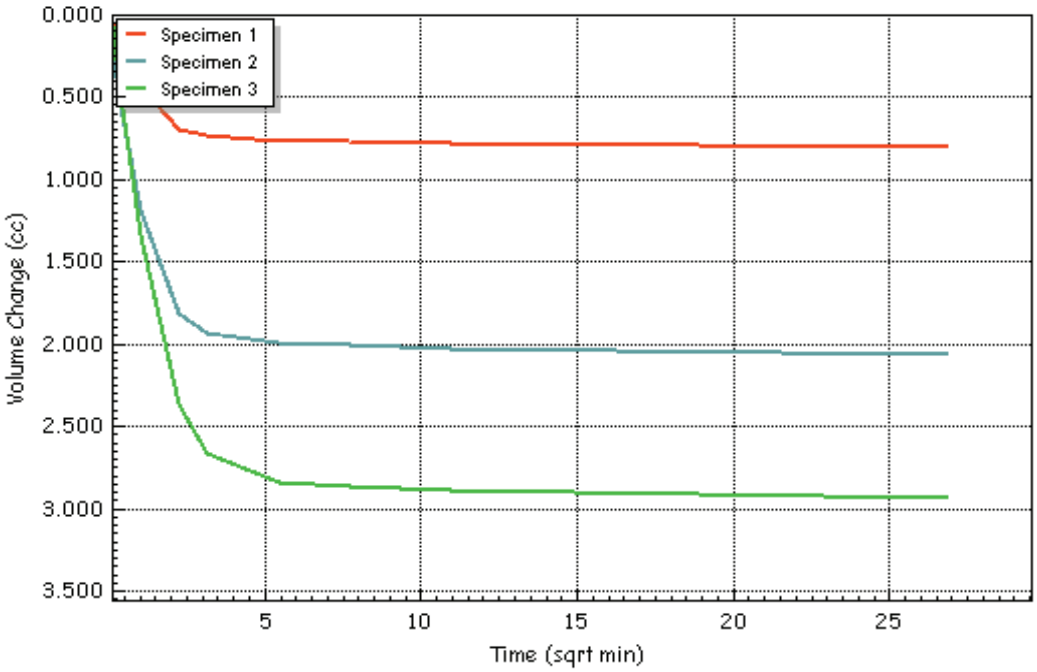
Initial Conditions

			Spm. 1	2	3
Initial Cell Pressure	σ_3	(kPa)	900	950	1050
Initial Back Pressure	u_{bi}	(kPa)	850	850	850
Pore Water Pressure Input	u_{pwp}	(kPa)	869	919	1025
Drainage Method			Radial+One End	Radial+One End	Radial+One End

Final Conditions

			Spm. 1	2	3
PWP Dissipation %	U%	(%)	100.00	100.00	100.00
Volumetric Strain	ε_v%	(%)	0.93	2.40	3.40
Corrected Length	L_c	(mm)	75.8	75.4	75.1
Corrected Area	A_c	(cm2)	11.27	11.16	11.08
Corrected Volume	V_c	(cc)	85.389	84.124	83.258
t100	t_{100}	(min)	2.93	3.52	4.18
Consolidation	c_v	(m2/year	0.101	0.083	0.070
Compressibility	m_v	(m2/MN)	0.497	0.348	0.194
Test Time	t_F	(h:m:s)	02:00:00	02:00:00	02:00:00
Estimated Strain to Failure	ε%	(%)	5.0	5.0	5.0
Shear Machine Speed	d_r	(mm/min	0.03157	0.03141	0.03131

Notes

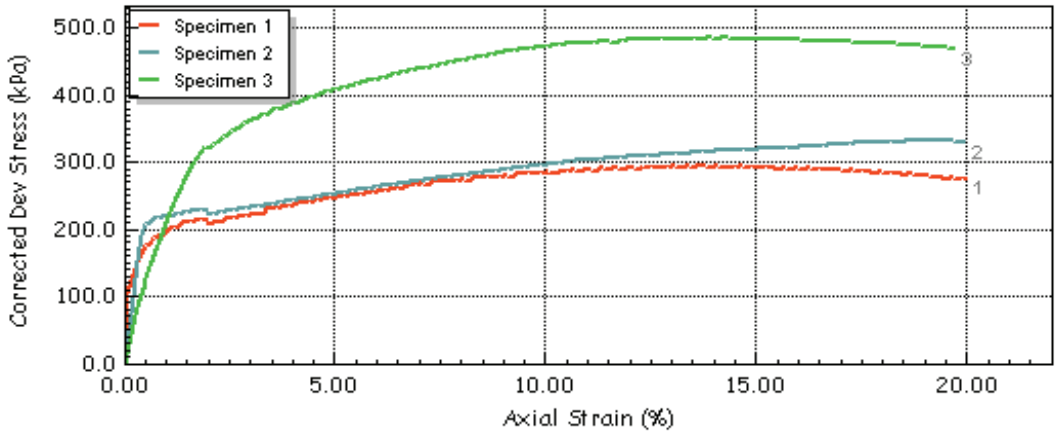


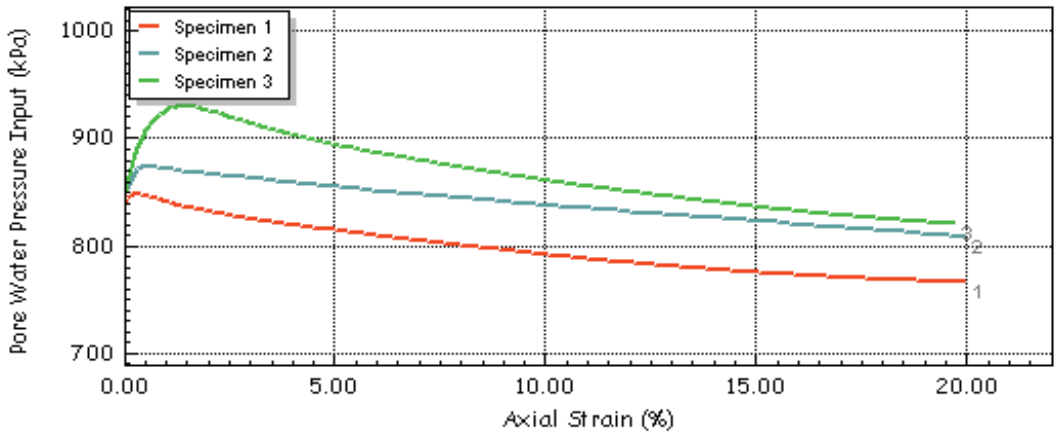
PSL PROFESSIONAL SOILS LABORATORY	Test Method	BS1377-8 : 1990 : Clause 7	Test Name	BH109 5.00-5.45m UT	
			Test Date	29/06/2023	
	Jobfile	A46 Walsgrave	Borehole	BH109	
	Client	Strata Geotechnics	Sample	5.00-5.45m UT	
UKAS TESTING 4043			Depth	5.00-5.45m UT22	
	Operator	D.Burton	Checked	S.Royle	Approved S.Royle

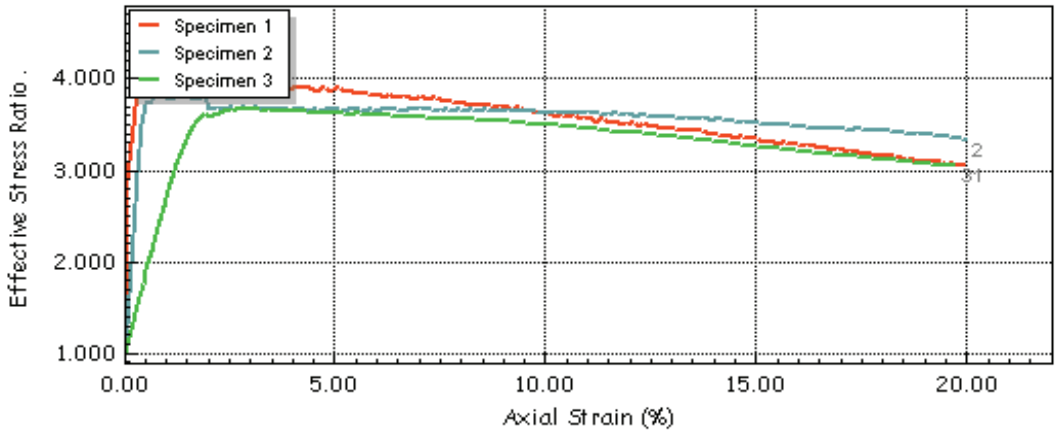
Effective Stress Triaxial Compression

Consolidated Undrained

Shear Stage Plots







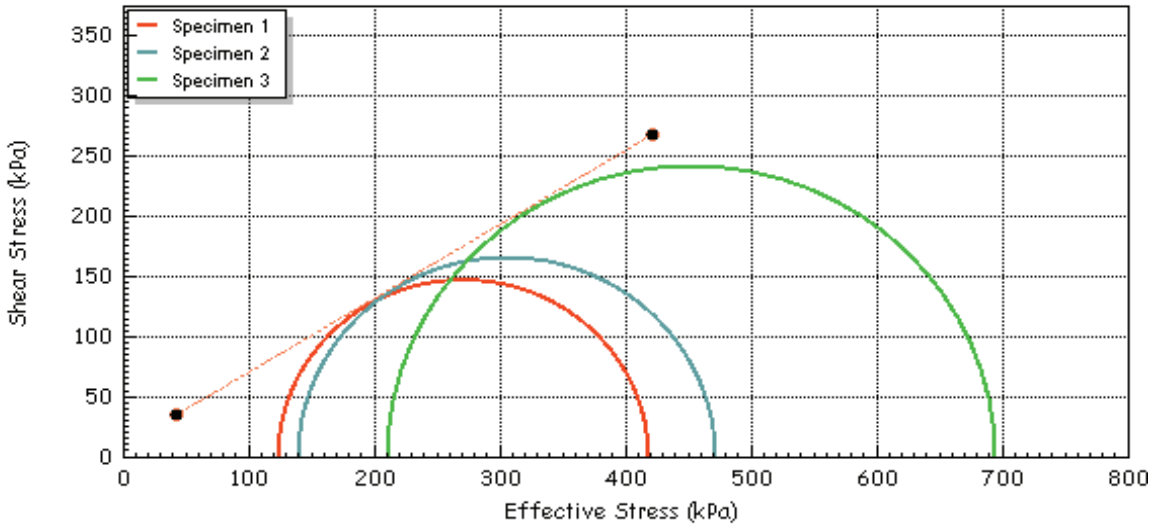
PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY UKAS TESTING 4043	Test Method	BS1377-8 : 1990 : Clause 7		Test Name	BH109 5.00-5.45m UT
				Test Date	29/06/2023
				Borehole	BH109
	Jobfile	A46 Walsgrave		Sample	5.00-5.45m UT
	Client	Strata Geotechnics		Depth	5.00-5.45m UT22
	Operator	D.Burton	Checked	S.Royle	Approved S.Royle

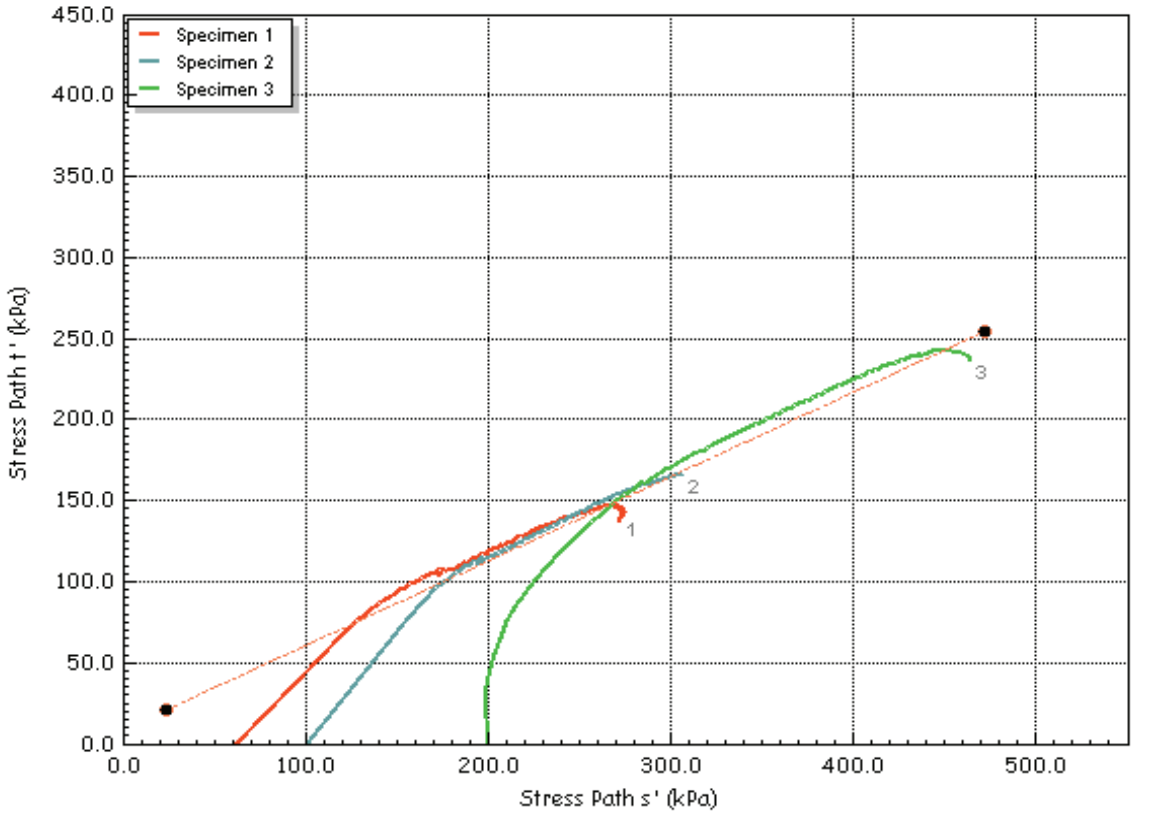
Effective Stress Triaxial Compression

Consolidated Undrained

Shear Stage Plots

Effective	c'	(kPa)	9.36	Effective Cohesion	c'	(kPa)	9.36
Effective Friction	ϕ'	(deg)	31.5	Effective Friction	ϕ'	(deg)	31.5





Test Method	BS1377-8 : 1990 : Clause 7			Test Name	BH109 5.00-5.45m UT
				Test Date	29/06/2023
				Borehole	BH109
Jobfile	A46 Walsgrave			Sample	5.00-5.45m UT
Client	Strata Geotechnics			Depth	5.00-5.45m UT22
Operator	D.Burton	Checked	S.Royle	Approved	S.Royle

LABORATORY REPORT

Contract Number: PSL23/4344

Report Date: 19 July 2023

Client's Reference: G230651/Geo 07B

Client Name: Strata Geotechnics
Kirkby Lane
Pinxton
Nottinghamshire
NG16 6JA

For the attention of: Izaac Lovatt

Contract Title: A46 Walsgrave

Date Received: 7/6/2023
Date Commenced: 7/6/2023
Date Completed: 19/7/2023

Notes: Opinions and Interpretations are outside the UKAS Accreditation

A copy of the Laboratory Schedule of accredited tests as issued by UKAS is attached to this report. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced other than in full, without the prior written approval of the laboratory.

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SUMMARY OF LABORATORY SOIL DESCRIPTIONS

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Description of Sample
BH114	7	B	0.80	1.00	Brown slightly gravelly clayey SAND.
BH114	10	D	1.50	1.95	Brown very clayey SAND.
BH114	13	B	1.50	2.00	Dark brown slightly gravelly clayey silty SAND.
BH114	16	B	2.50	3.00	Reddish brown slightly gravelly sandy CLAY.
BH114	18	UT	3.50	3.95	Stiff reddish brown slightly gravelly sandy CLAY.
BH114	19	D	4.00	4.00	Reddish brown very sandy CLAY.
BH114	22	B	4.50	5.00	Reddish brown slightly gravelly very sandy CLAY.
BH114	24	UT	5.50	5.95	Very stiff reddish brown slightly gravelly very sandy CLAY.
BH114	26	D	6.50	6.50	Reddish brown very sandy CLAY.
BH114	28	B	7.00	7.50	Reddish brown mottled grey slightly gravelly very sandy CLAY.
BH114	30	UT	8.50	8.95	Very stiff reddish brown slightly gravelly very sandy CLAY.
BH114	32	D	9.50	9.79	Brown very sandy CLAY.

SUMMARY OF SOIL CLASSIFICATION TESTS

(BS1377 : PART 2 : 1990)

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Moisture Content % Clause 3.2	Linear Shrinkage % Clause 6.5	Particle Density Mg/m^3 Clause 8.2	Liquid Limit % Clause 4.3/4	Plastic Limit % Clause 5.3	Plasticity Index % Clause 5.4	Passing .425mm %	Remarks
BH114	7	B	0.80	1.00	14							
BH114	13	B	1.50	2.00	15							
BH114	16	B	2.50	3.00	17			38	18	20	98	Intermediate Plasticity CI
BH114	22	B	4.50	5.00	16			36	17	19	94	Intermediate Plasticity CI
BH114	28	B	7.00	7.50	16			36	17	19	89	Intermediate Plasticity CI

SYMBOLS : **NP : Non Plastic** *** : Liquid Limit and Plastic Limit Wet Sieved.**

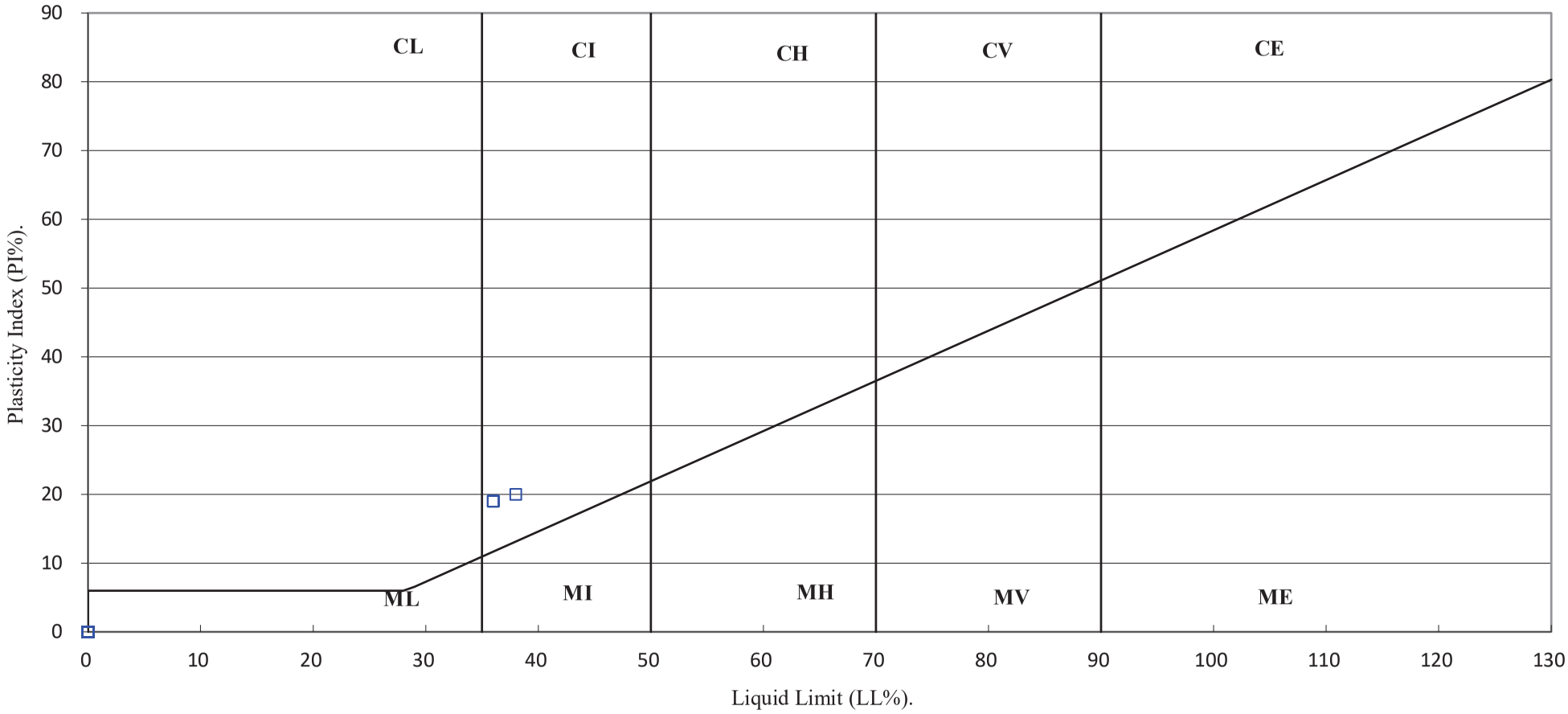
UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

Contract No:
PSL23/4344
Client Ref:
G230651

PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION.



UKAS TESTING 4043	A46 Walsgrave	Contract No: PSL23/4344
PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY		Client Ref: G230651

SUMMARY OF SOIL DENSITY RELATED TESTS

(BS1377 : PART 2 & 4 : 1990)

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Moisture Content %	Bulk Density Mg/m^3	Dry Density Mg/m^3	Retained 20mm %	Retained 37.5mm %	Method of compaction kg	Maximum Dry Density Mg/m^3	Minimum Dry Density Mg/m^3	Remarks
BH114	10	D	1.50	1.95	15	2.09	1.82						
BH114	19	D	4.00	4.00	14	2.13	1.87						
BH114	26	D	6.50	6.50	13	2.15	1.90						
BH114	32	D	9.50	9.79	7.7	2.21	2.05						

UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

Contract No:
PSL23/4344
Client Ref:
G230651

SUMMARY OF LABORATORY HAND VANES

(BS1377 : PART 7 : 1990)

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Moisture Content %	Peak Shear Strength kPa	Residual Shear Strength kPa	Remarks
BH114	16	B	2.50	3.00		106		
BH114	22	B	4.50	5.00		113		

* This test is out of our UKAS scope

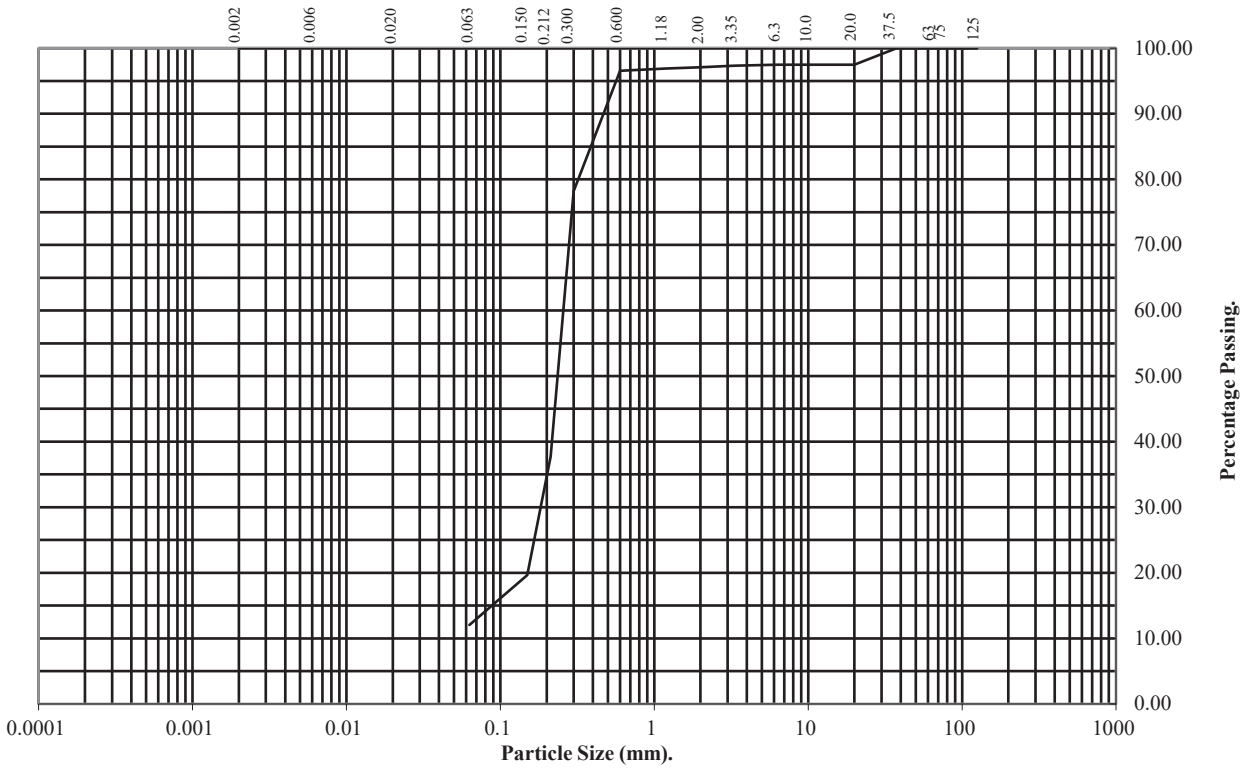
PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY	A46 Walsgrave	Contract No: PSL23/4344 Client Ref: G230651

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number:	**BH114**	**Top Depth (m):**	**0.80**
Sample Number:	**7**	**Base Depth(m):**	**1.00**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	97
10	97
6.3	97
3.35	97
2	97
1.18	97
0.6	97
0.3	78
0.212	38
0.15	20
0.063	12

Soil Fraction	Total Percentage
Cobbles	0
Gravel	3
Sand	85
Silt/Clay	12

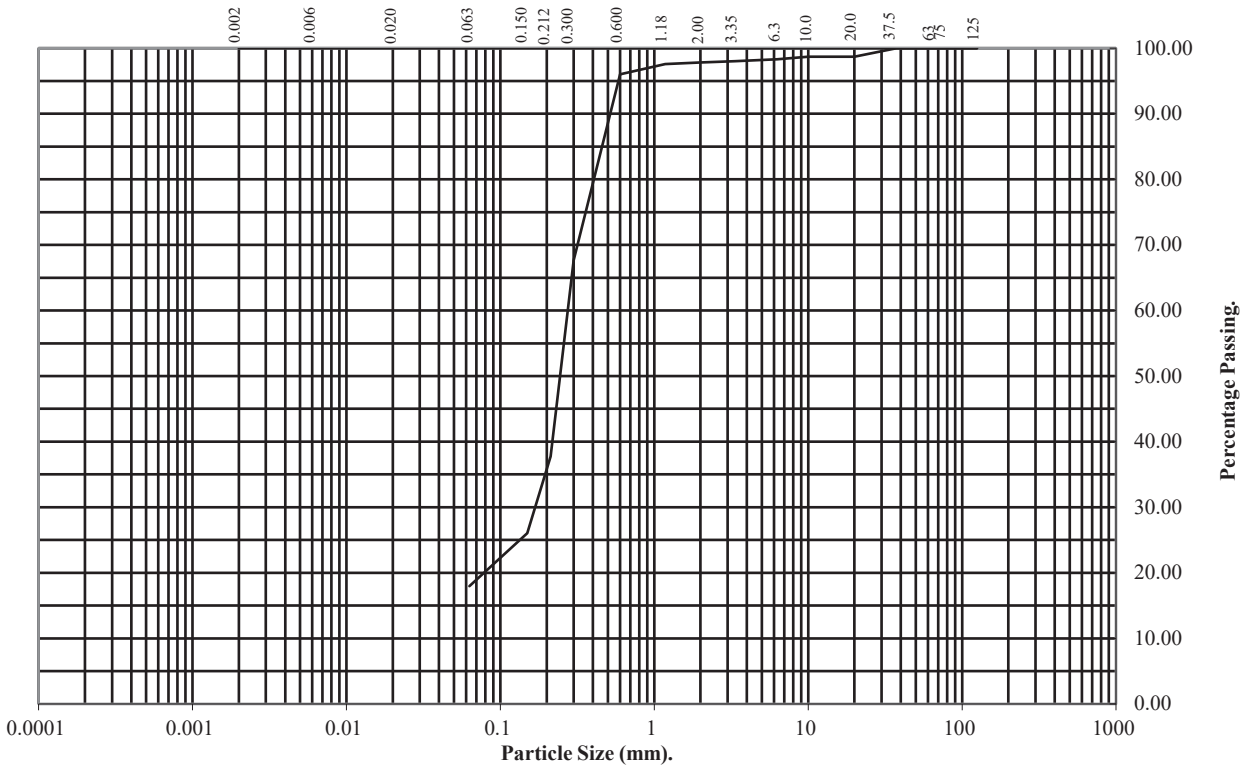
Remarks:
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number:	**BH114**	**Top Depth (m):**	**1.50**
Sample Number:	**13**	**Base Depth(m):**	**2.00**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	99
10	99
6.3	98
3.35	98
2	98
1.18	98
0.6	96
0.3	68
0.212	38
0.15	26
0.063	18

Soil Fraction	Total Percentage
Cobbles	0
Gravel	2
Sand	80
Silt/Clay	18

Remarks:
See Summary of Soil Descriptions

UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

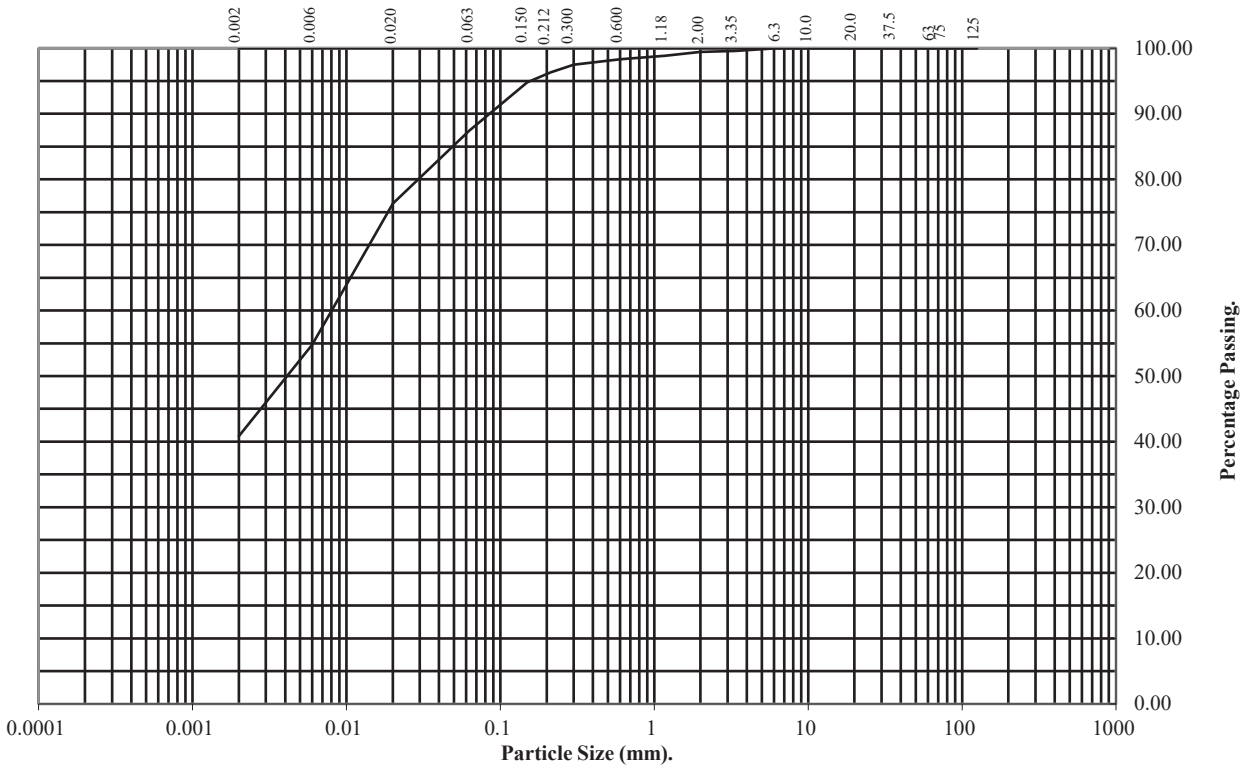
Contract No:
PSL23/4344
Client Ref:
G230651

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

Hole Number:	**BH114**	**Top Depth (m):**	**2.50**
Sample Number:	**16**	**Base Depth(m):**	**3.00**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	100
6.3	100
3.35	100
2	99
1.18	99
0.6	98
0.3	97
0.212	96
0.15	95
0.063	87

Particle Diameter	Percentage Passing
0.02	76
0.006	55
0.002	41

Soil Fraction	Total Percentage
Cobbles	0
Gravel	1
Sand	12
Silt	46
Clay	41

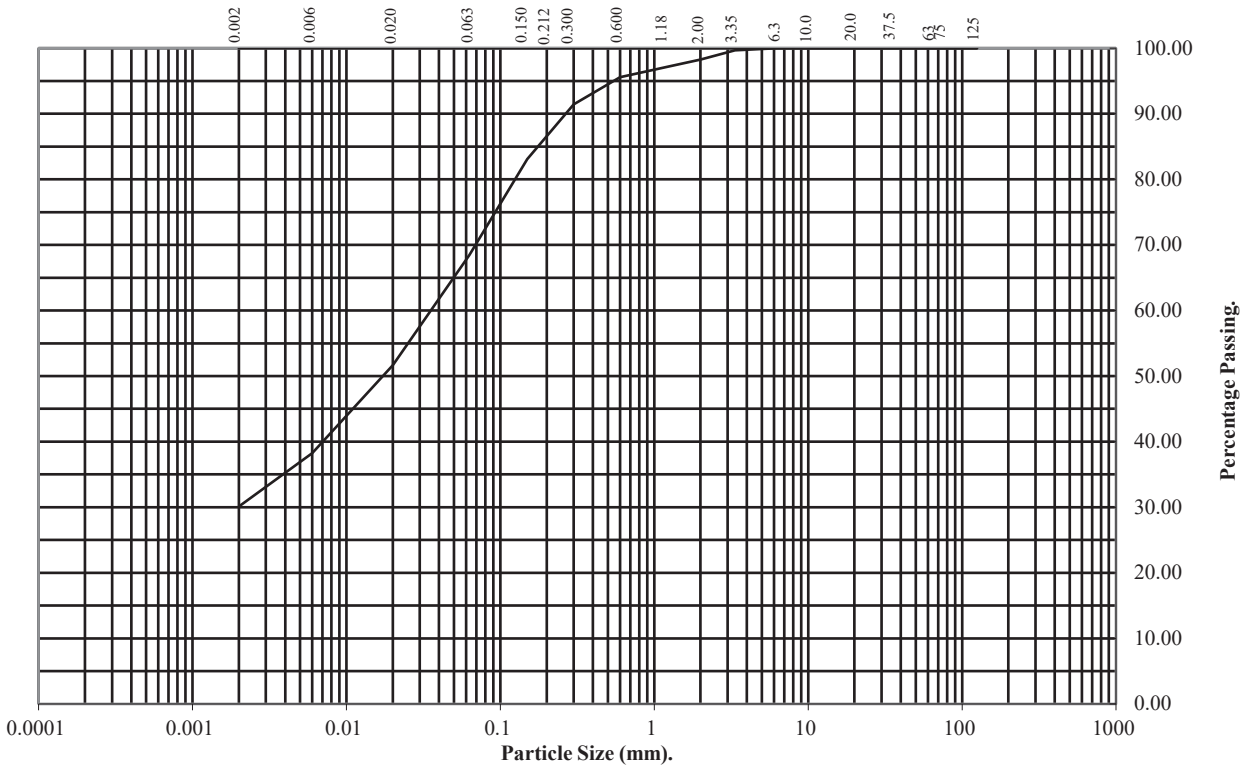
Remarks:
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

Hole Number:	**BH114**	**Top Depth (m):**	**4.50**
Sample Number:	**22**	**Base Depth(m):**	**5.00**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	100
6.3	100
3.35	100
2	98
1.18	97
0.6	96
0.3	91
0.212	87
0.15	83
0.063	68

Particle Diameter	Percentage Passing
0.02	52
0.006	38
0.002	30

Soil Fraction	Total Percentage
Cobbles	0
Gravel	2
Sand	30
Silt	38
Clay	30

Remarks:
See Summary of Soil Descriptions

UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

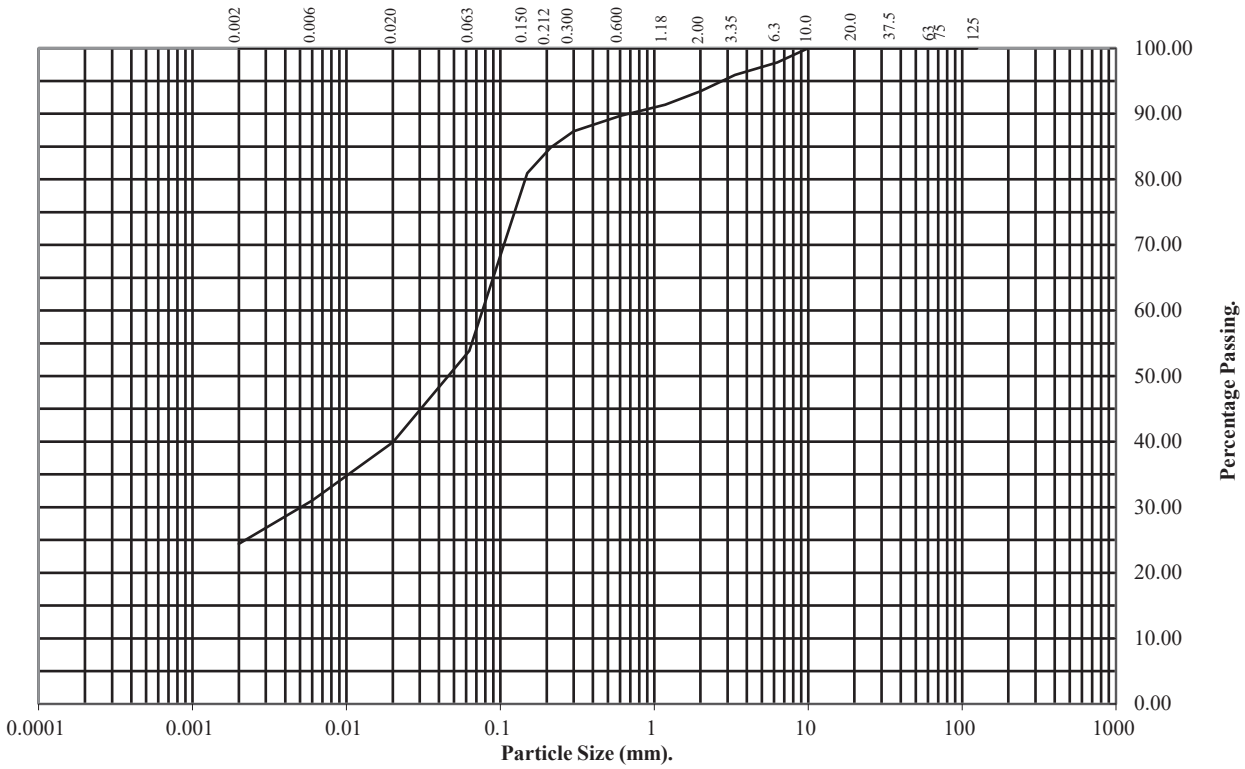
Contract No:
PSL23/4344
Client Ref:
G230651

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

Hole Number:	**BH114**	**Top Depth (m):**	**7.00**
Sample Number:	**28**	**Base Depth(m):**	**7.50**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	100
6.3	98
3.35	96
2	93
1.18	91
0.6	90
0.3	87
0.212	85
0.15	81
0.063	54

Particle Diameter	Percentage Passing
0.02	40
0.006	31
0.002	24

Soil Fraction	Total Percentage
Cobbles	0
Gravel	7
Sand	39
Silt	30
Clay	24

Remarks:
See Summary of Soil Descriptions

UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

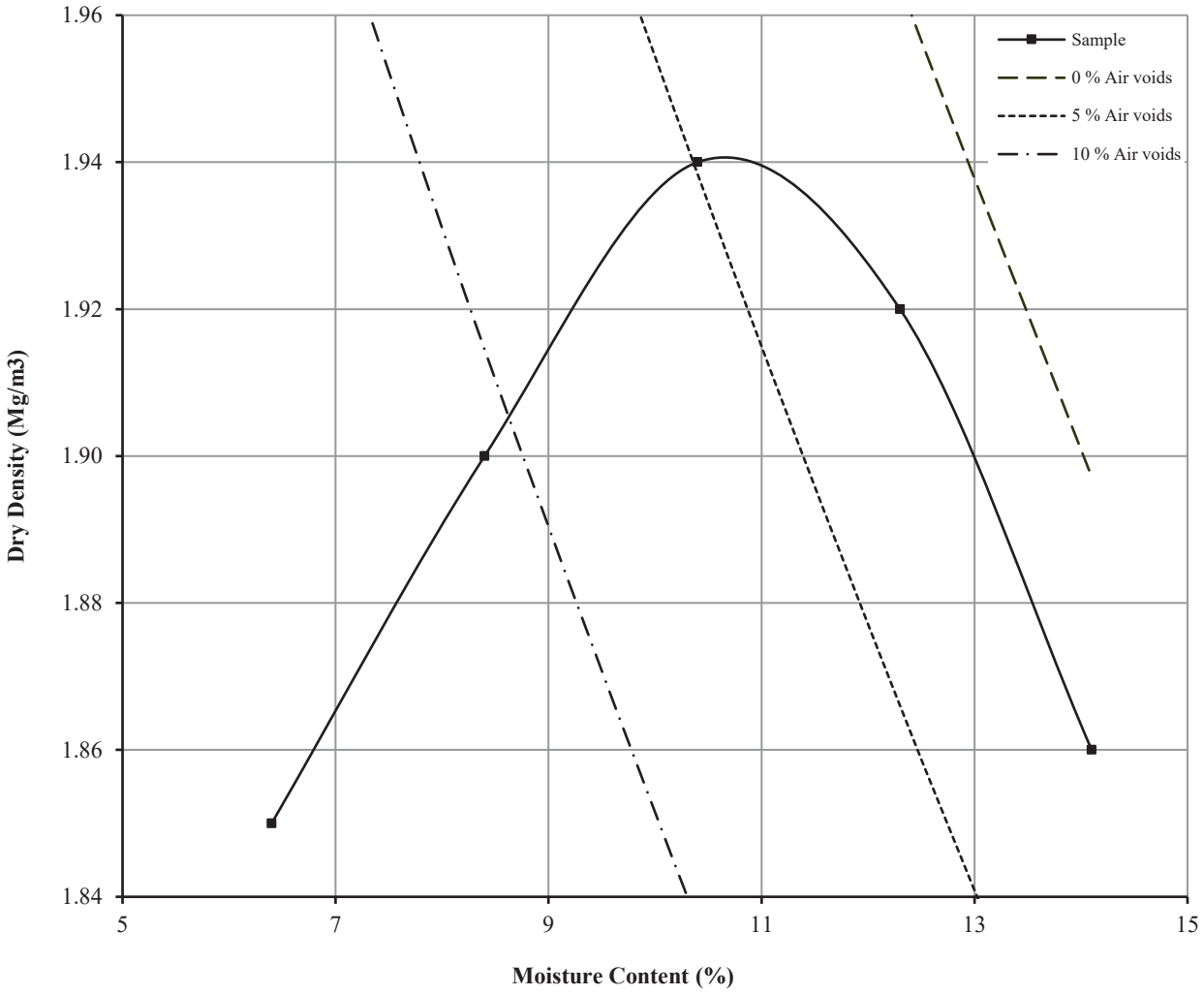
A46 Walsgrave

Contract No:
PSL23/4344
Client Ref:
G230651

DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

BS 1377 : Part 4 : Clause 3.5 : 1990

Hole Number:	**BH114**	**Top Depth (m) :**	**0.80**
Sample Number:	**7**	**Base Depth (m) :**	**1.00**
Sample Type:	**B**		



Initial Moisture Content:		14	Method of Compaction:	4.5kg	Separate Samples
Particle Density (Mg/m3):	2.59	Assumed	Material Retained on 37.5 mm Test Sieve (%):		0
Maximum Dry Density (Mg/m3):		1.94	Material Retained on 20.0 mm Test Sieve (%):		3
Optimum Moisture Content (%):		10			
Remarks See summary of soil descriptions					

UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

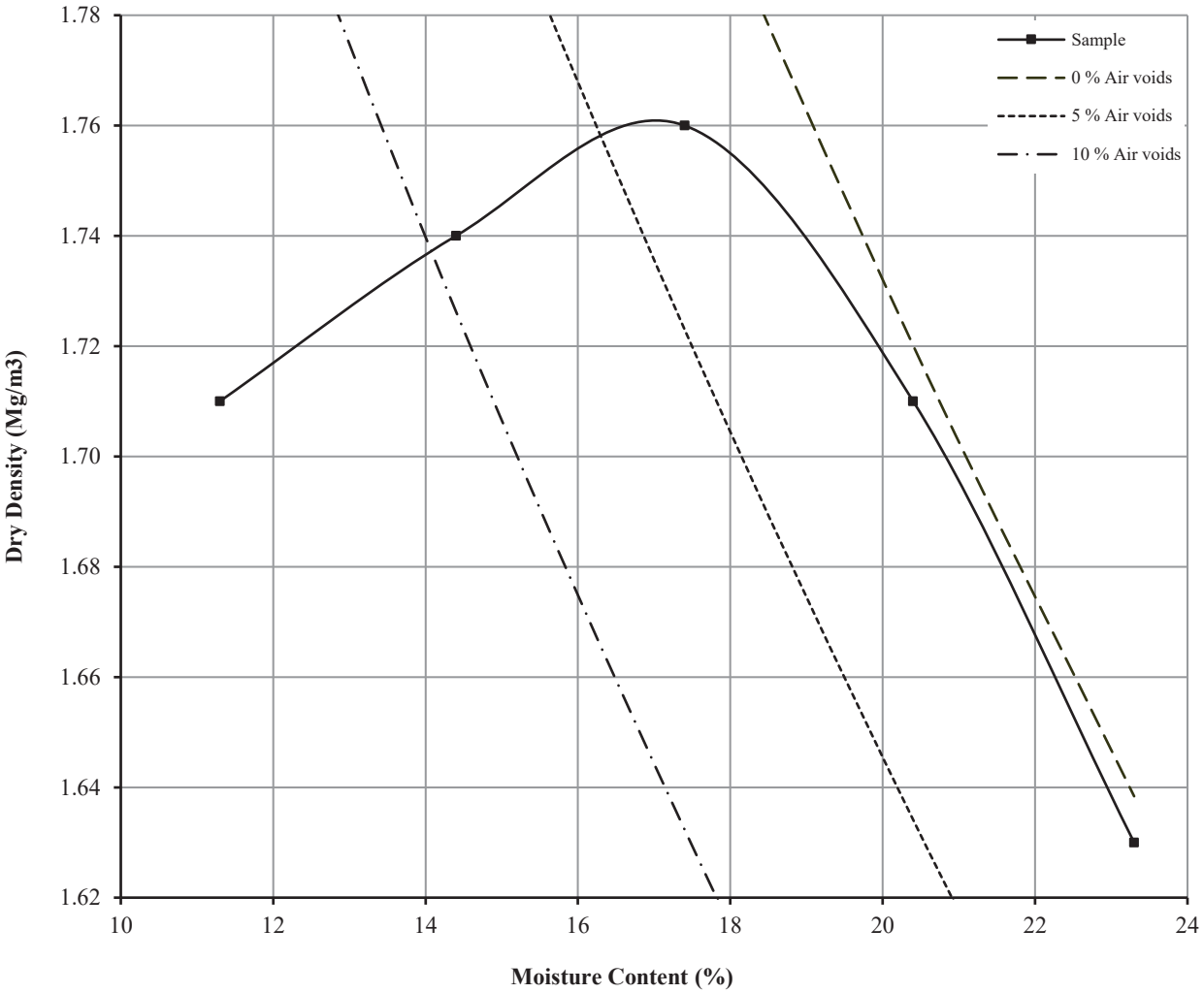
A46 Walsgrave

Contract
PSL23/4344
Client Ref
G230651

DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

BS 1377 : Part 4 : Clause 3.3 : 1990

Hole Number:	**BH114**	**Top Depth (m) :**	**2.50**
Sample Number:	**16**	**Base Depth (m) :**	**3.00**
Sample Type:	**B**		



Initial Moisture Content:		17	Method of Compaction:	2.5kg	Separate Samples
Particle Density (Mg/m3):	2.65	Assumed	Material Retained on 37.5 mm Test Sieve (%):		0
Maximum Dry Density (Mg/m3):		1.76	Material Retained on 20.0 mm Test Sieve (%):		0
Optimum Moisture Content (%):		17			
Remarks See summary of soil descriptions					

UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

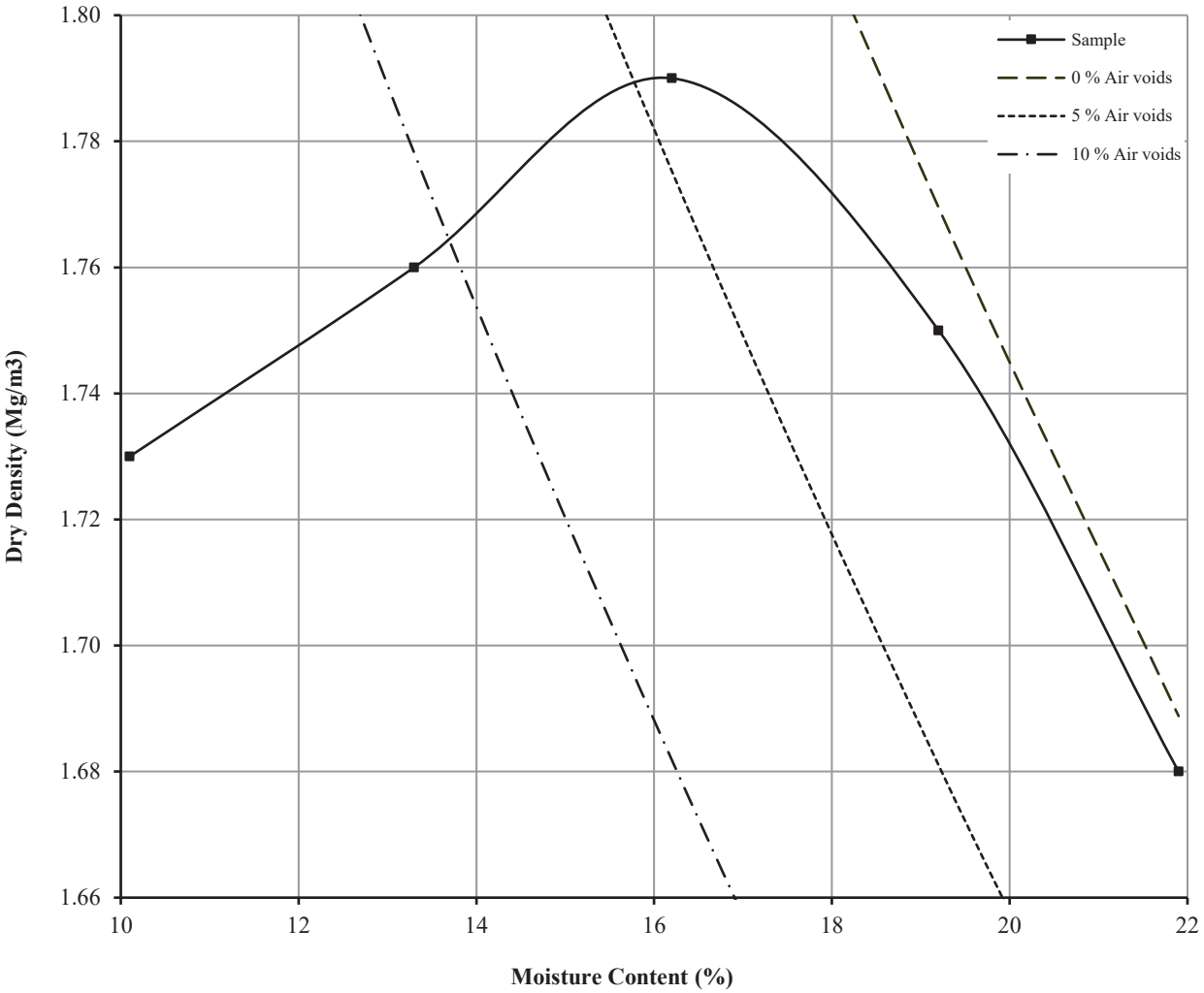
A46 Walsgrave

Contract
PSL23/4344
Client Ref
G230651

DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

BS 1377 : Part 4 : Clause 3.3 : 1990

Hole Number:	**BH114**	**Top Depth (m) :**	**4.50**
Sample Number:	**22**	**Base Depth (m) :**	**5.00**
Sample Type:	**B**		



Initial Moisture Content:		16	Method of Compaction:	2.5kg	Separate Samples
Particle Density (Mg/m3):	2.68	Assumed	Material Retained on 37.5 mm Test Sieve (%):		0
Maximum Dry Density (Mg/m3):		1.79	Material Retained on 20.0 mm Test Sieve (%):		0
Optimum Moisture Content (%):		16			
Remarks See summary of soil descriptions					

UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

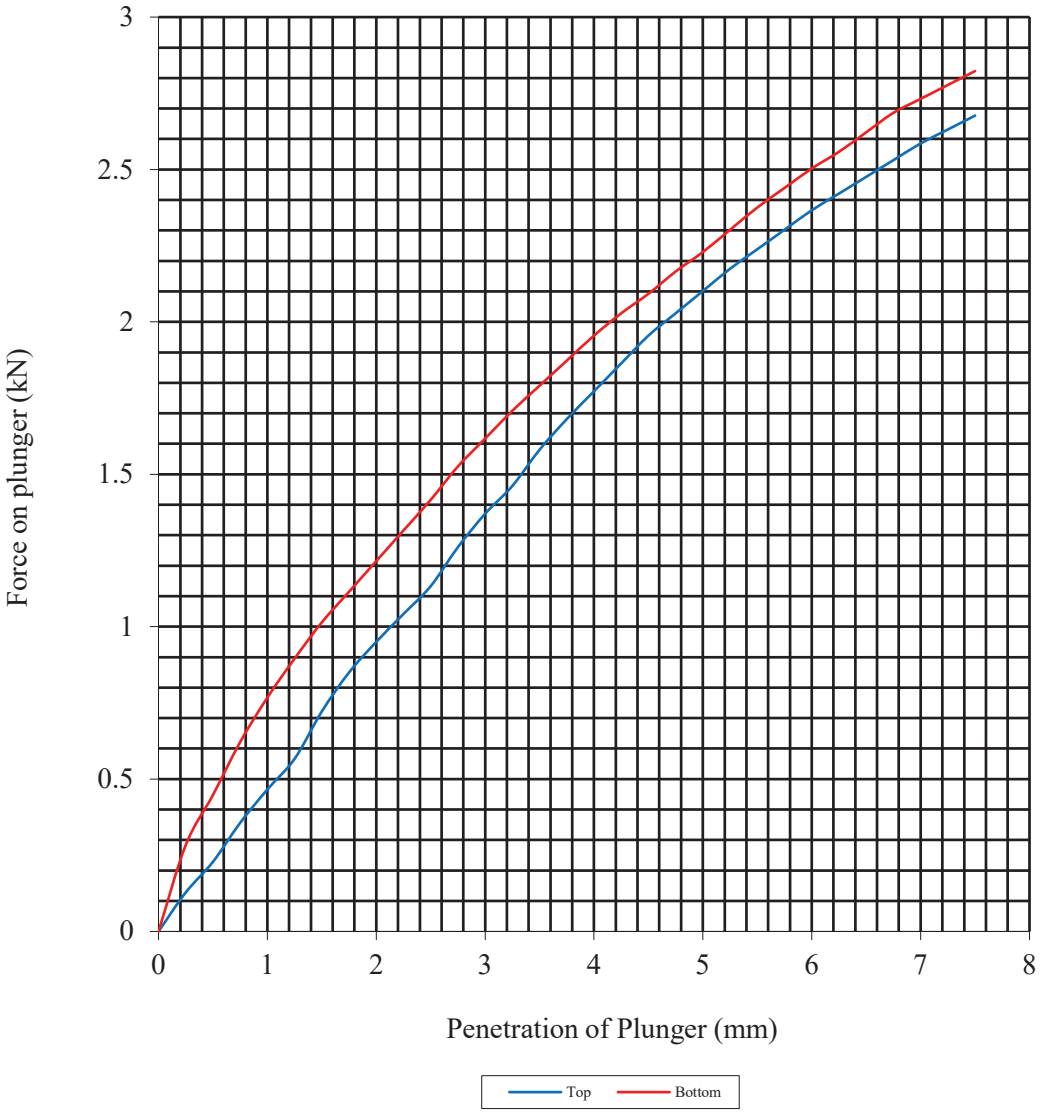
A46 Walsgrave

Contract
PSL23/4344
Client Ref
G230651

CALIFORNIA BEARING RATIO TEST

BS 1377 : Part 4 : 1990

Hole Number:	**BH114**	**Top Depth (m):**	**2.50**
Sample Number:	**16**	**Base Depth (m):**	**3.00**
Sample Type:	**B**		



Initial Sample Conditions		Sample Preparation		Final Moisture Content %		C.B.R. Value %	
Moisture Content:	17	Surcharge Kg:	4.20	Sample Top	17	Sample Top	10.5
Bulk Density Mg/m3:	2.07	Soaking Time hrs	0	Sample Bottom	17	Sample Bottom	11.1
Dry Density Mg/m3:	1.76	Swelling mm:	0.00	Remarks : See Summary of Soil Descriptions.			
Percentage retained on 20mm BS test sieve:			0				
Compaction Conditions		2.5kg					

UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

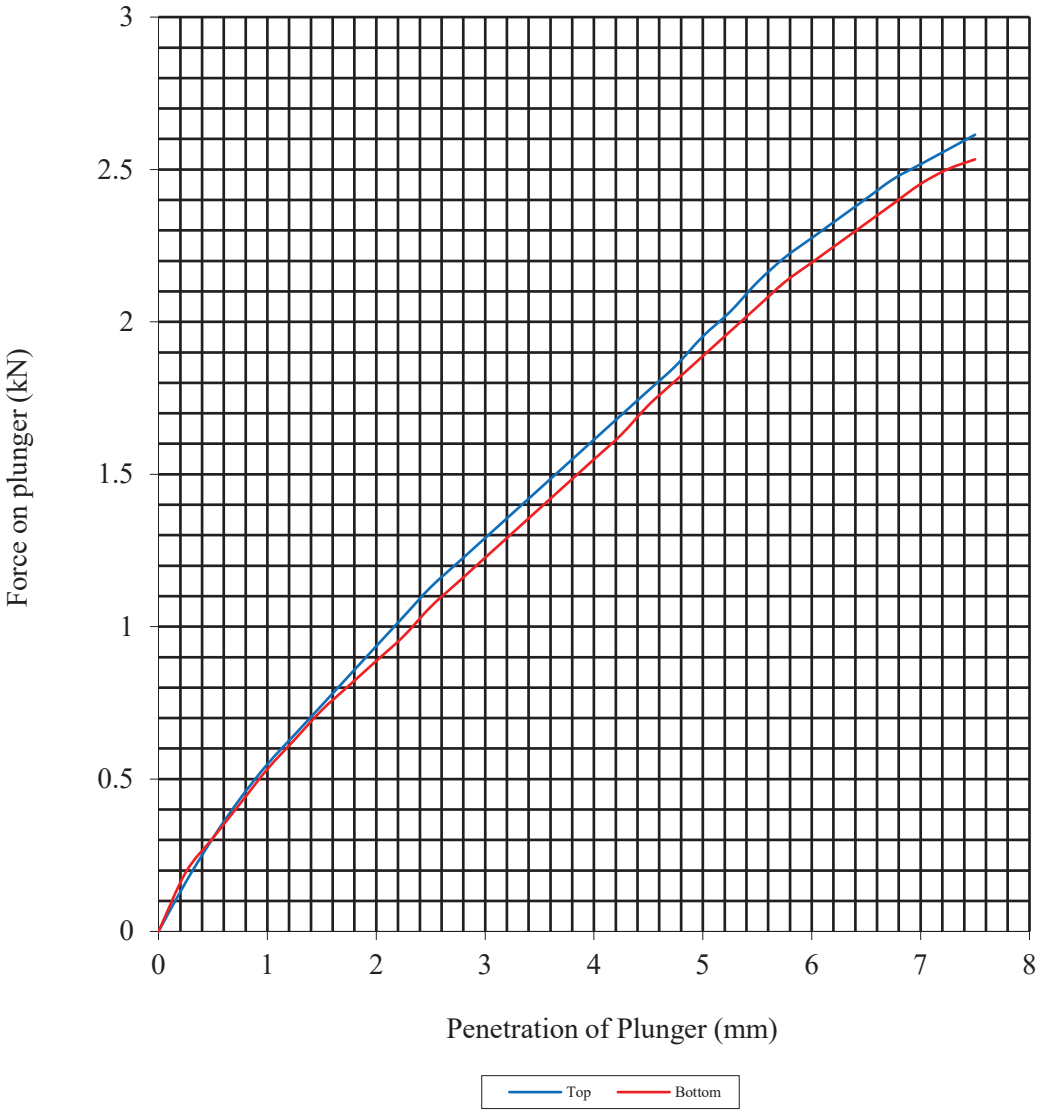
A46 Walsgrave

Contract No:
PSL23/4344
Client Ref:
G230651

CALIFORNIA BEARING RATIO TEST

BS 1377 : Part 4 : 1990

Hole Number:	**BH114**	**Top Depth (m):**	**4.50**
Sample Number:	**22**	**Base Depth (m):**	**5.00**
Sample Type:	**B**		



Initial Sample Conditions		Sample Preparation		Final Moisture Content %		C.B.R. Value %	
Moisture Content:	16	Surcharge Kg:	4.20	Sample Top	16	Sample Top	9.8
Bulk Density Mg/m3:	2.09	Soaking Time hrs	0	Sample Bottom	16	Sample Bottom	9.4
Dry Density Mg/m3:	1.79	Swelling mm:	0.00	Remarks : See Summary of Soil Descriptions.			
Percentage retained on 20mm BS test sieve:			0				
Compaction Conditions		2.5kg					

UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

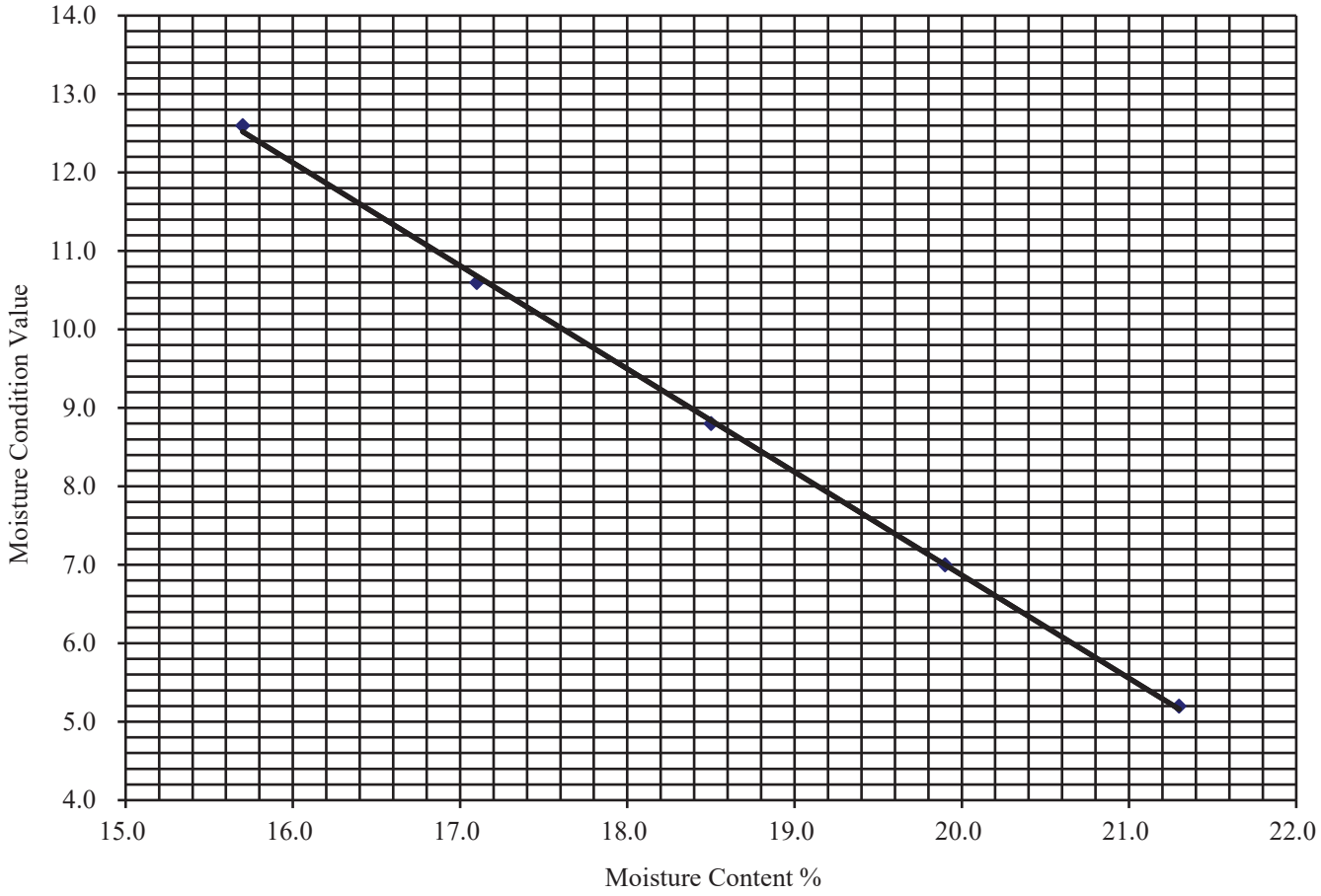
Contract No:
PSL23/4344
Client Ref:
G230651

MOISTURE CONDITION VALUE CALIBRATION

BS1377 : Part 4 : 1990 Clause 5.5

Hole Number:	**BH114**	**Top Depth (m):**	**2.50**
Sample Number:	**16**	**Base Depth (m):**	**3.00**
Sample Type:	**B**		

Initial Moisture Content (%):	17
Single/Separate Samples Tested	Separate
Material Retained on the 20mm BS Test Sieve (%):	0



Test Results.

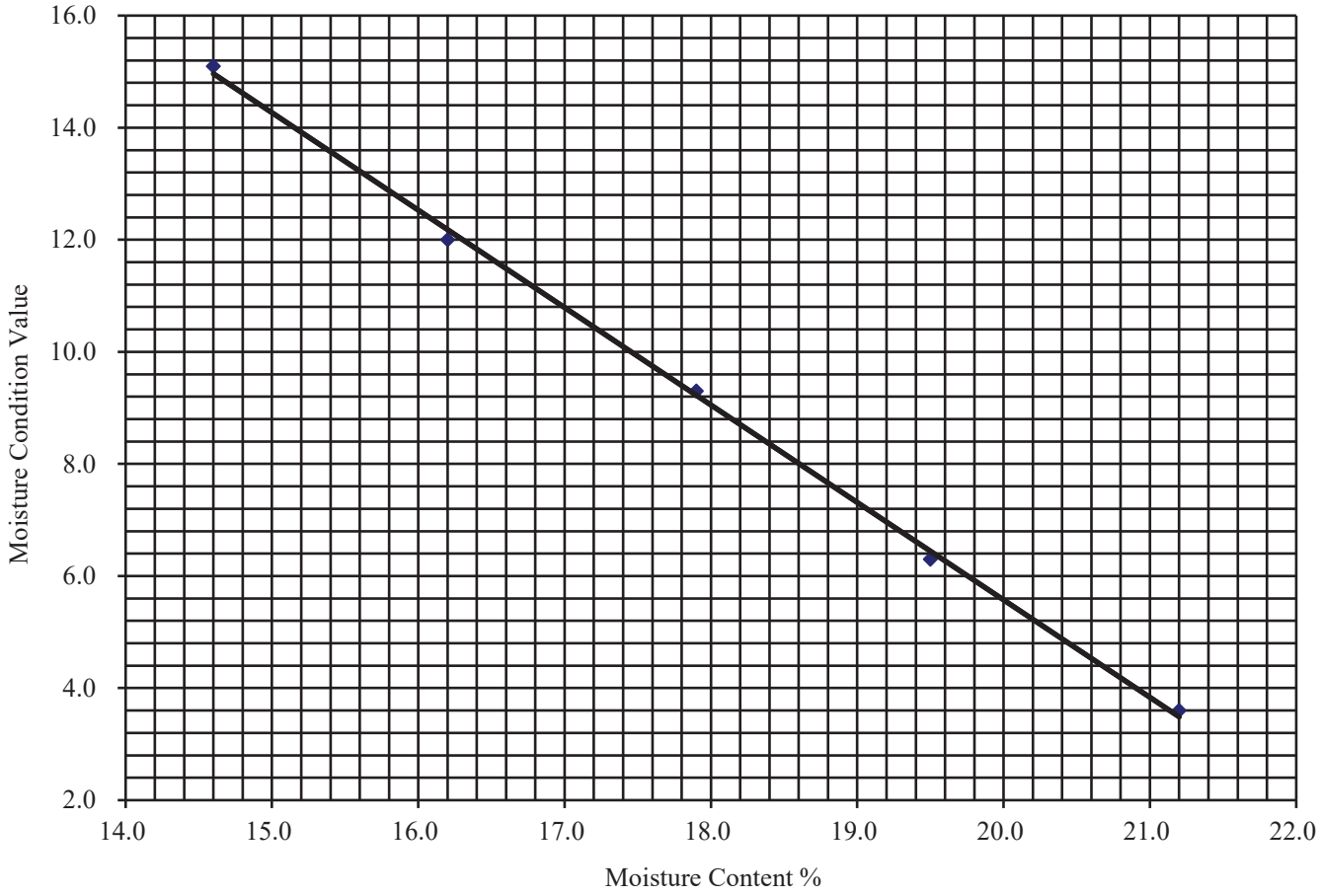
Test Number	1	2	3	4	5
Moisture Content (%)	15.7	17.1	18.5	19.9	21.3
MCV	12.6	10.6	8.8	7.0	5.2

MOISTURE CONDITION VALUE CALIBRATION

BS1377 : Part 4 : 1990 Clause 5.5

Hole Number:	**BH114**	**Top Depth (m):**	**4.50**
Sample Number:	**22**	**Base Depth (m):**	**5.00**
Sample Type:	**B**		

Initial Moisture Content (%):	16
Single/Separate Samples Tested	Separate
Material Retained on the 20mm BS Test Sieve (%):	0



Test Results.

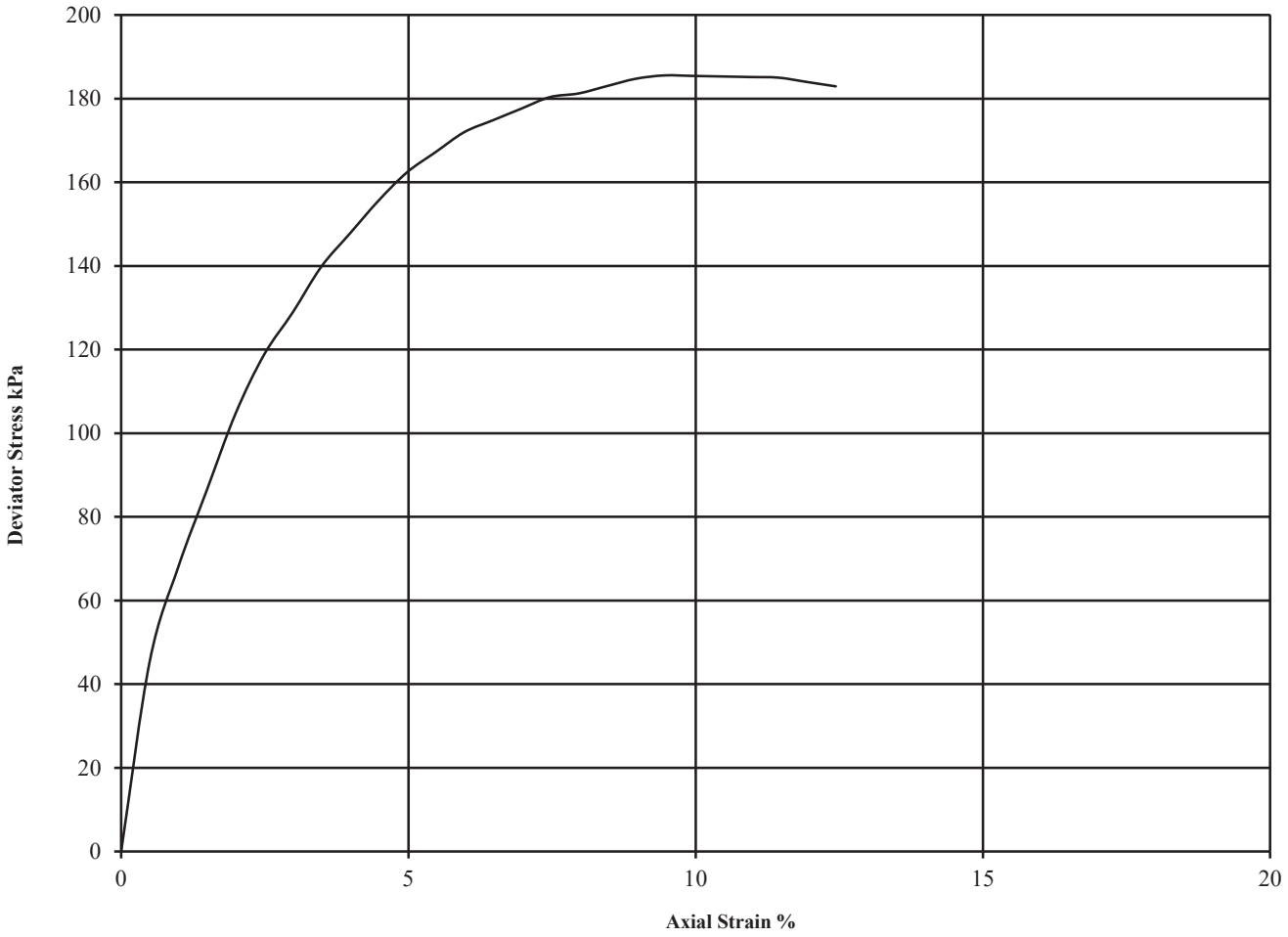
Test Number	1	2	3	4	5
Moisture Content (%)	14.6	16.2	17.9	19.5	21.2
MCV	15.1	12.0	9.3	6.3	3.6

UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION

WITHOUT MEASUREMENT OF PORE PRESSURE

BS1377 : Part7 : 1990: Clause 8

Hole Number:	**BH114**	**Top Depth (m):**	**3.50**
Sample Number:	**18**	**Base Depth (m):**	**3.95**
Sample Type	**UT**		



Diameter (mm):		103	Height (mm):		207	Test:	UU Single Stage		Remarks:
Specimen	Moisture Content (%)	Bulk Density (Mg/m3)	Dry Density (Mg/m3)	Cell Pressure (kPa) θ_3	Corr. Max. Deviator Stress (kPa) $(\theta_1-\theta_3)_f$	Shear Strength Cu (kPa) $^1/_2(\theta_1-\theta_3)_f$	Failure Strain (%)	Mode of Failure	Undisturbed Sample Sample taken from top of tube Rate of strain = 2 %/min Latex Membrane used 0.2 mm thick, Correction applied 0.35
1	16	2.18	1.87	100	186	93	9.5	Intermediate	See summary of soil descriptions

UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

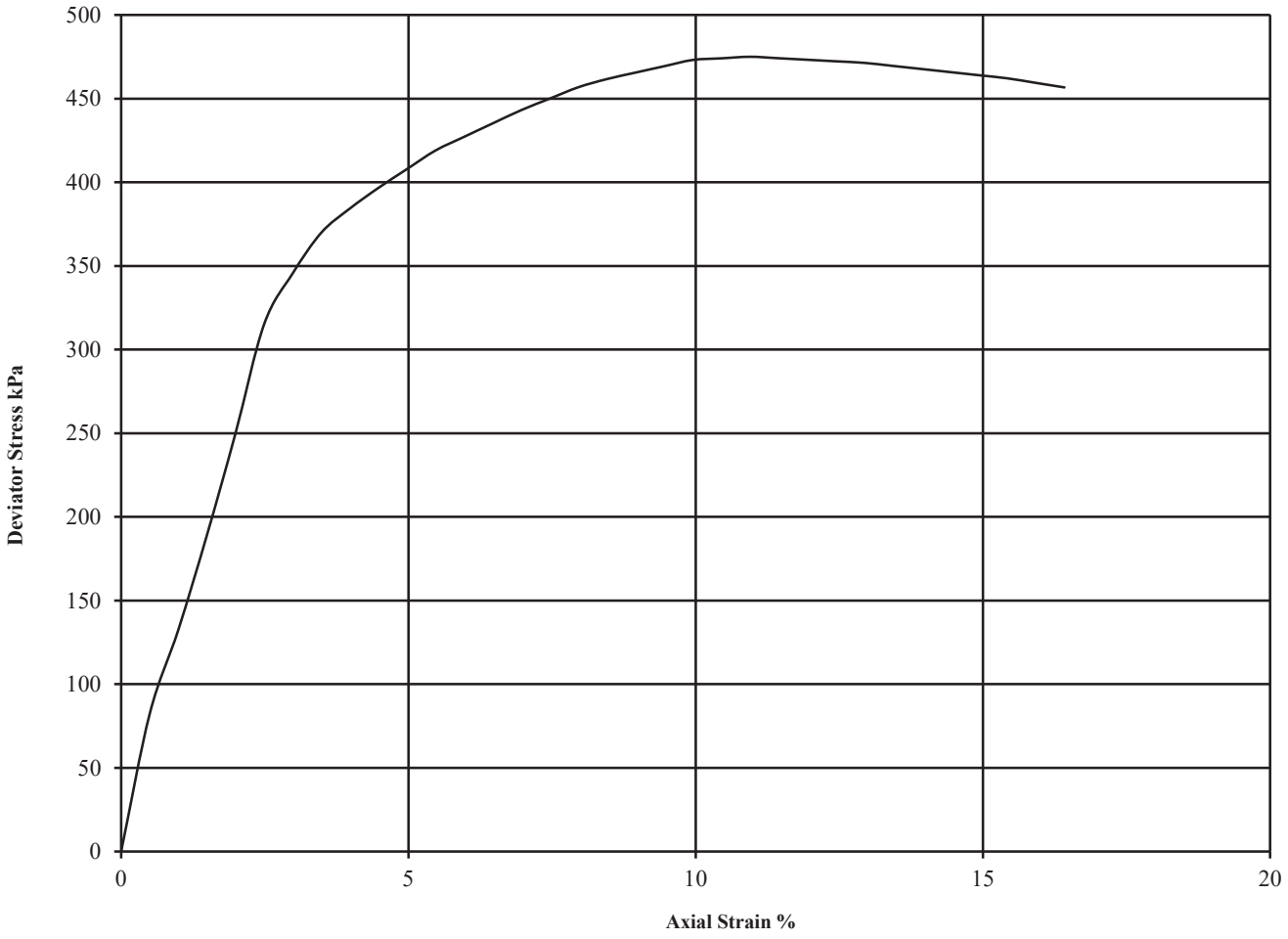
Contract No:
PSL23/4344
Client Ref:
G230651

UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION

WITHOUT MEASUREMENT OF PORE PRESSURE

BS1377 : Part7 : 1990: Clause 8

Hole Number:	**BH114**	**Top Depth (m):**	**5.50**
Sample Number:	**24**	**Base Depth (m):**	**5.95**
Sample Type	**UT**		



Diameter (mm):		103	Height (mm):		207	Test:	UU Single Stage		Remarks:
Specimen	Moisture Content (%)	Bulk Density (Mg/m3)	Dry Density (Mg/m3)	Cell Pressure (kPa) θ_3	Corr. Max. Deviator Stress (kPa) $(\theta_1-\theta_3)_f$	Shear Strength Cu (kPa) $^1/_2(\theta_1-\theta_3)_f$	Failure Strain (%)	Mode of Failure	Undisturbed Sample Sample taken from top of tube Rate of strain = 2 %/min Latex Membrane used 0.2 mm thick, Correction applied 0.35
1	11	2.24	2.02	100	475	238	10.9	Intermediate	See summary of soil descriptions

UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

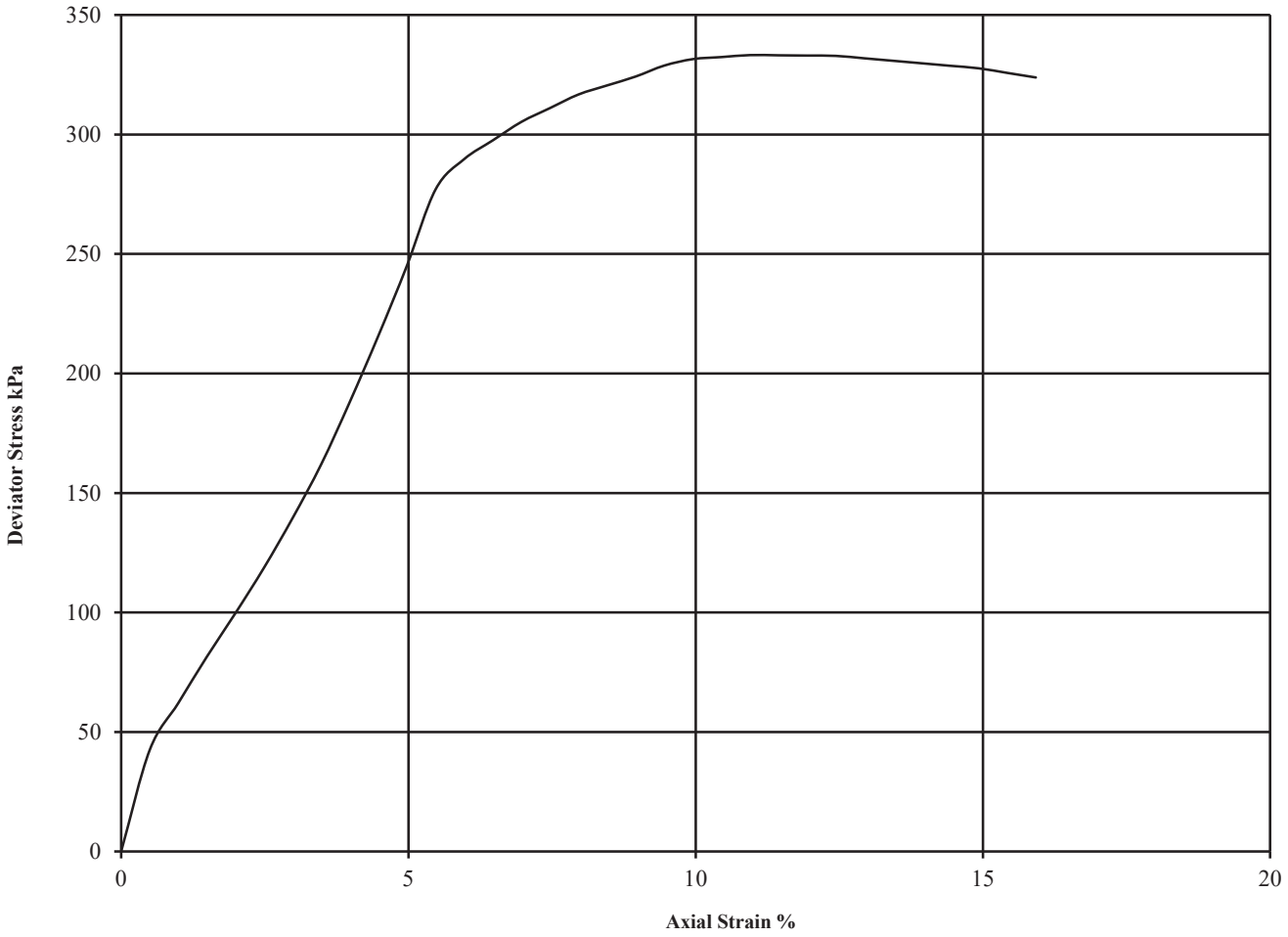
Contract No:
PSL23/4344
Client Ref:
G230651

UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION

WITHOUT MEASUREMENT OF PORE PRESSURE

BS1377 : Part7 : 1990: Clause 8

Hole Number:	**BH114**	**Top Depth (m):**	**8.50**
Sample Number:	**30**	**Base Depth (m):**	**8.95**
Sample Type	**UT**		



Diameter (mm):		103	Height (mm):		207	Test:	UU Single Stage		Remarks:
Specimen	Moisture Content (%)	Bulk Density (Mg/m3)	Dry Density (Mg/m3)	Cell Pressure (kPa) θ_3	Corr. Max. Deviator Stress (kPa) $(\theta_1-\theta_3)_f$	Shear Strength Cu (kPa) $^1/_2(\theta_1-\theta_3)_f$	Failure Strain (%)	Mode of Failure	Undisturbed Sample Sample taken from top of tube Rate of strain = 2 %/min Latex Membrane used 0.2 mm thick, Correction applied 0.35
1	10	2.12	1.92	100	333	167	10.9	Intermediate	See summary of soil descriptions

UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

Contract No: PSL23/4344

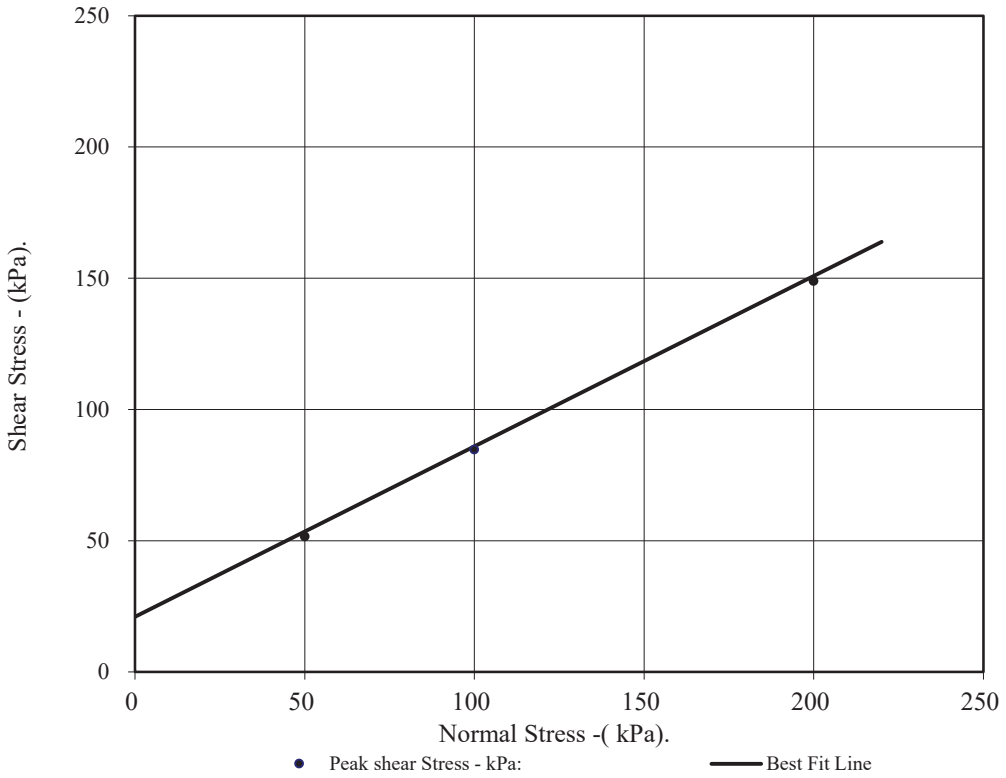
Client Ref: G230651

CONSOLIDATED DRAINED SHEARBOX TEST

BS1377:Part 7:1990 Clause 5

Hole Number:	**BH114**		Top Depth:	**0.80**
Sample Number:	**7**		Base Depth:	**1.00**
Sample Conditions:	Dry		Sample Type	**B**
Particle Density - Mg/m3:	2.65	Assumed	**Remarks:**	
Sample Preparation:	Material tested passing 20mm sieve Recompacted using hand tamped effort			
Sample Description:	**See summary of soil descriptions**			

STAGE	**1**	**2**	**3**
Initial Conditions			
Height - mm:	150	150	150
Length - mm:	300	300	300
Moisture Content - %:	14	14	14
Bulk Density - Mg/m3:	2.12	2.12	2.12
Dry Density - Mg/m3:	1.86	1.86	1.86
Voids Ratio:	0.427	0.427	0.427
Normal Pressure- kPa	50	100	200
Consolidation Stage			
Consolidated Height - mm:	148.43	146.31	145.49
Shearing Stage			
Rate of Strain (mm/min)	1.00	1.00	1.00
Displacement at peak shear stress (mm)	16.55	22.55	15.55
Peak shear Stress - kPa:	52	85	149
Final Consolidated Conditions			
Moisture Content - %:	14	13	13
Bulk Density - Mg/m3:	2.14	2.17	2.18
Dry Density - Mg/m3:	1.88	1.92	1.94
Peak			
Angle of Shearing Resistance:(~~θ~~)	**33**		
Effective Cohesion - kPa:	**21**		

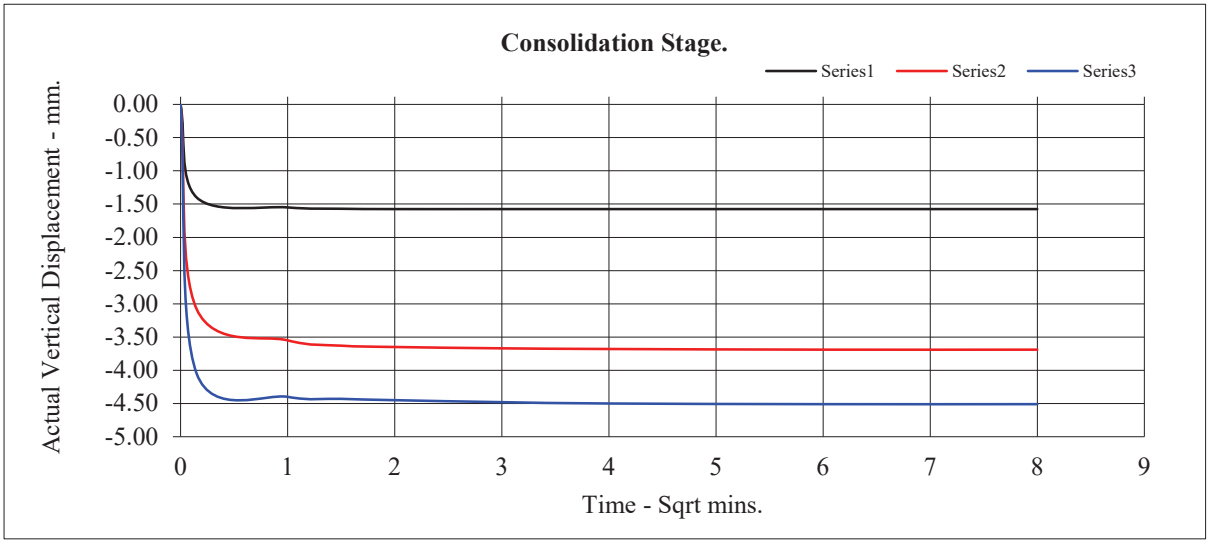


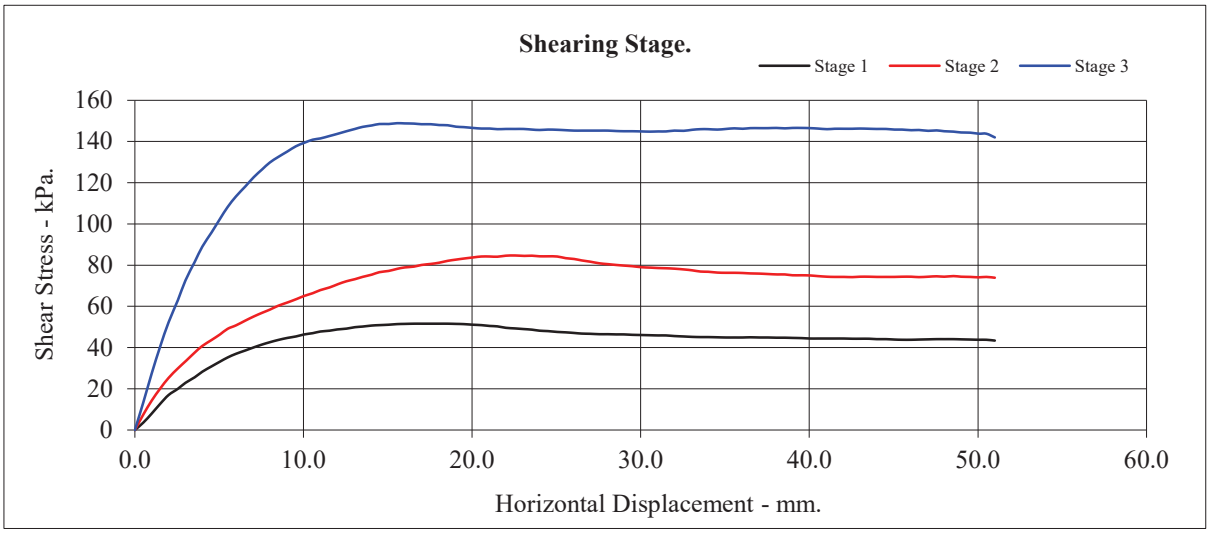
UKAS TESTING 4043 / PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY	**A46 Walsgrave**	**Contract No:** PSL23/4344 **Client Ref:** G230651

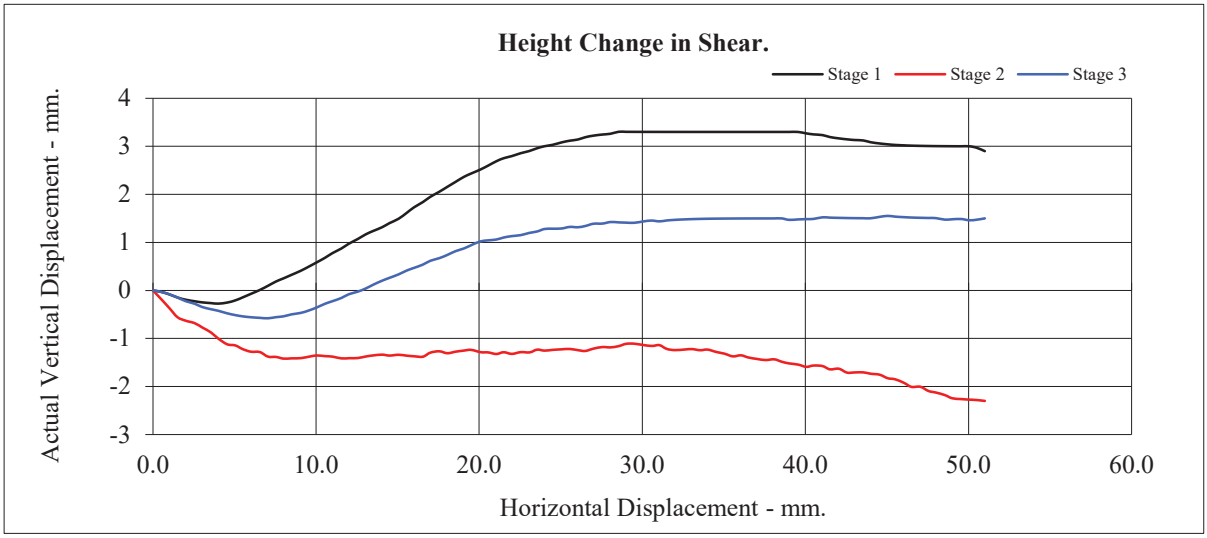
CONSOLIDATED DRAINED SHEARBOX TEST

BS1377:Part 7:1990 Clause 5

Hole Number:	**BH114**	Top Depth:	**0.80**
Sample Number:	**7**	Base Depth:	**1.00**







UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

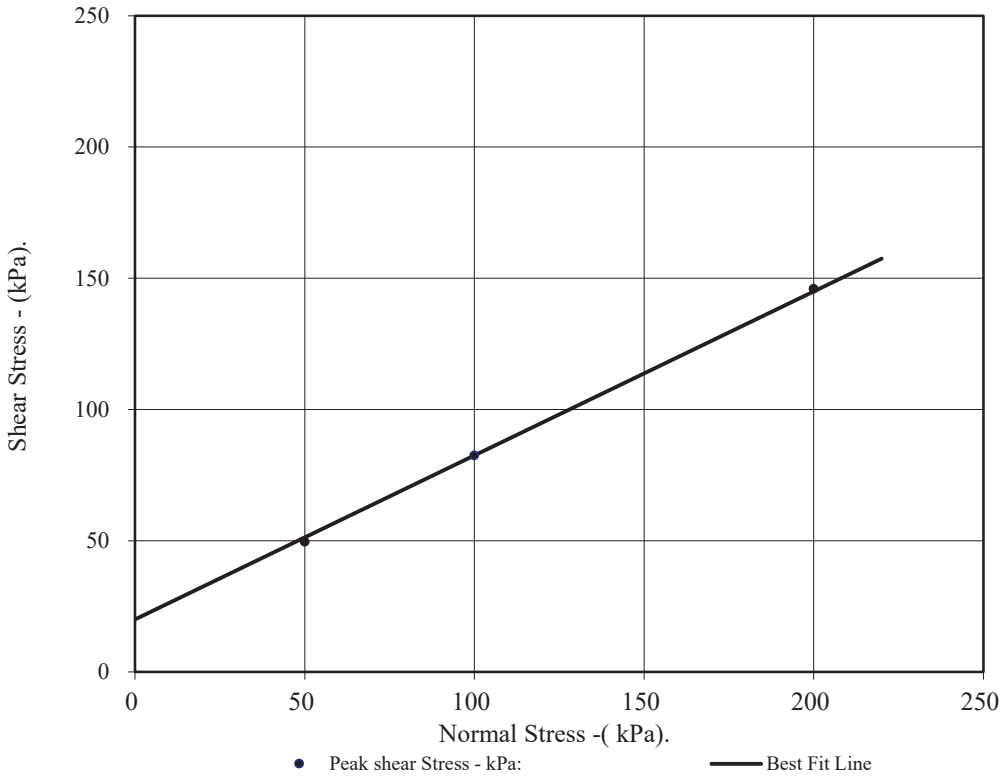
Contract No:
PSL23/4344
Client Ref:
G230651

CONSOLIDATED DRAINED SHEARBOX TEST

BS1377:Part 7:1990 Clause 5

Hole Number:	**BH114**		Top Depth:	**1.50**
Sample Number:	**13**		Base Depth:	**2.00**
Sample Conditions:	Dry		Sample Type	**B**
Particle Density - Mg/m3:	2.65	Assumed	**Remarks:**	
Sample Preparation:	Material tested passing 20mm sieve Recompacted using hand tamped effort			
Sample Description:	**See summary of soil descriptions**			

STAGE	**1**	**2**	**3**
Initial Conditions			
Height - mm:	150	150	150
Length - mm:	300	300	300
Moisture Content - %:	15	15	15
Bulk Density - Mg/m3:	2.05	2.05	2.05
Dry Density - Mg/m3:	1.78	1.78	1.78
Voids Ratio:	0.487	0.487	0.487
Normal Pressure- kPa	50	100	200
Consolidation Stage			
Consolidated Height - mm:	149.10	147.75	145.73
Shearing Stage			
Rate of Strain (mm/min)	1.00	1.00	1.00
Displacement at peak shear stress (mm)	11.55	20.05	15.55
Peak shear Stress - kPa:	50	83	146
Final Consolidated Conditions			
Moisture Content - %:	14	14	13
Bulk Density - Mg/m3:	2.06	2.08	2.11
Dry Density - Mg/m3:	1.81	1.83	1.86
Peak			
Angle of Shearing Resistance:(~~θ~~)	**32**		
Effective Cohesion - kPa:	**20**		

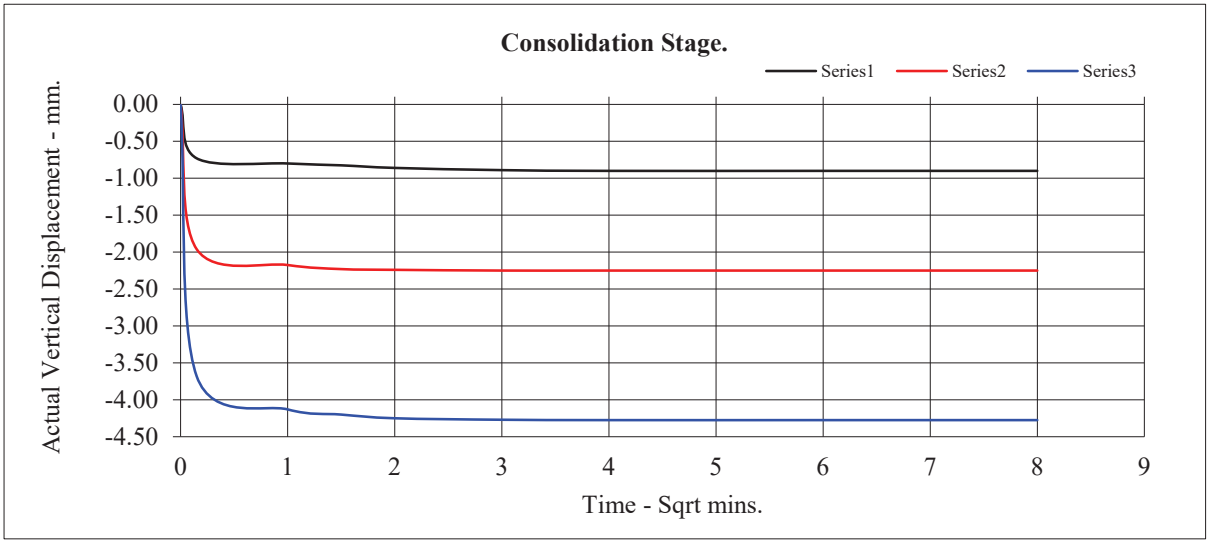


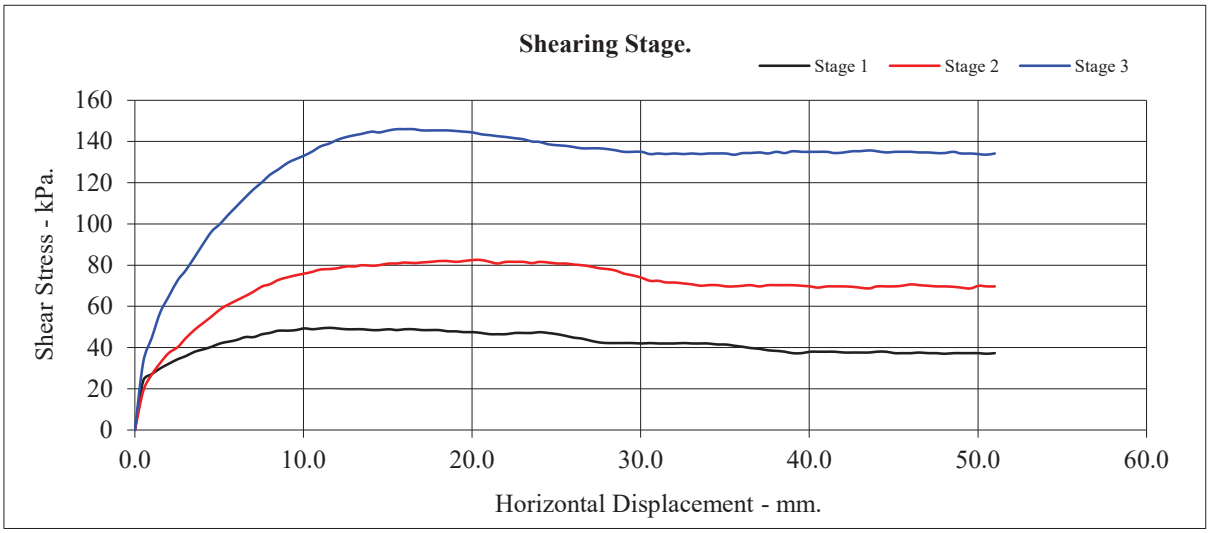
UKAS TESTING 4043 / PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY	**A46 Walsgrave**	**Contract No:** PSL23/4344 **Client Ref:** G230651

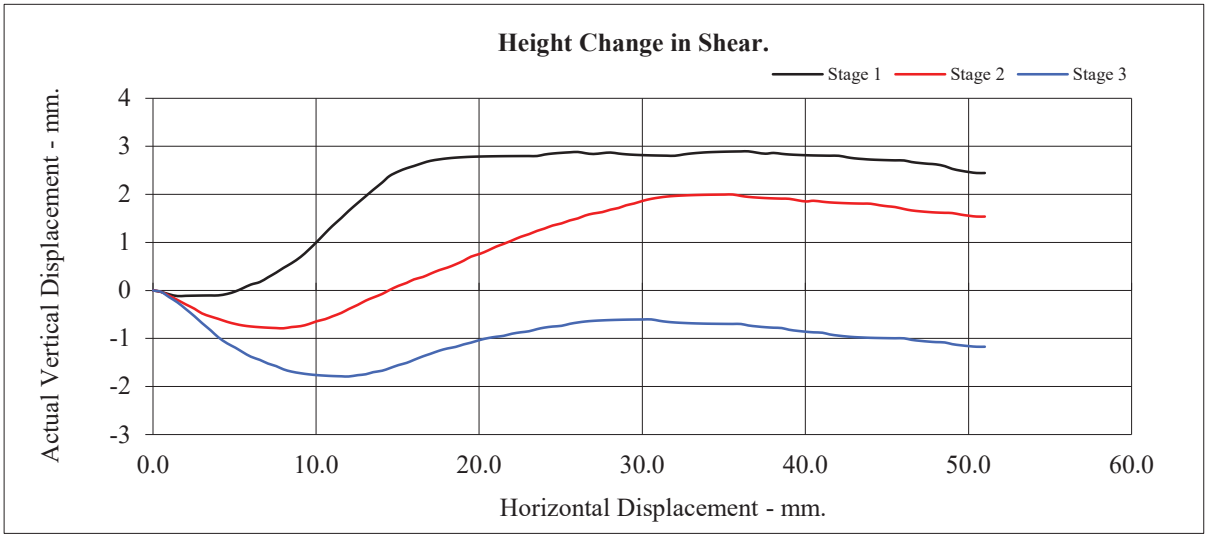
CONSOLIDATED DRAINED SHEARBOX TEST

BS1377:Part 7:1990 Clause 5

Hole Number:	**BH114**	Top Depth:	**1.50**
Sample Number:	**13**	Base Depth:	**2.00**







UKAS TESTING 4043 / PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY	**A46 Walsgrave**	**Contract No:** PSL23/4344 **Client Ref:** G230651

UKAS TESTING
2531

CHEMTECH environmental part of Cawood

ANALYTICAL TEST REPORT

Contract no: 124303

Contract name: A46 Walsgrave

Client reference: PSL23/4344

Clients name: Professional Soils Laboratory

Clients address: 5/7 Hexthorpe Road
Doncaster
DN4 0AR

Samples received: 30 June 2023

Analysis started: 30 June 2023

Analysis completed: 10 July 2023

Report issued: 10 July 2023

Key

U	UKAS accredited test
M	MCERTS & UKAS accredited test
$	Test carried out by an approved subcontractor
I/S	Insufficient sample to carry out test
N/S	Sample not suitable for testing

Approved by: [redacted]

Ellis McCulloch
Senior Reporting Administrator

Chemtech Environmental Limited

SOILS

Lab number			124303-1	124303-2	124303-3
Sample id			BH114	BH114	BH114
Depth (m)			0.80	3.20	5.50-5.95
Sample Type			D	D	UT
Date sampled			-	-	-
Test	**Method**	**Units**			
pH	CE004 [U]	units	7.8	8.4	9.0
Magnesium (2:1 water soluble)	CE061	mg/l Mg	2.3	1.8	1.3
Chloride (2:1 water soluble)	CE049 [U]	mg/l Cl	11	5.1	3.7
Nitrate (2:1 water soluble)	CE049 [U]	mg/l NO_3	7.2	<1	<1
Sulphate (2:1 water soluble)	CE061 [U]	mg/l SO_4	31	13	<10
Sulphate (acid extractable)	CE062 [U]	mg/kg SO_4	<100	390	343
Sulphate (acid extractable)	CE062 [U]	% w/w SO_4	<0.01	0.04	0.03
Sulphur (total)	CE119	mg/kg S	<100	149	109
Sulphur (total)	CE119	% w/w S	<0.01	0.01	0.01

Chemtech Environmental Limited

METHOD DETAILS

METHOD	SOILS	METHOD SUMMARY	SAMPLE	STATUS	LOD	UNITS
CE004	pH	Based on BS 1377, pH Meter	As received	U	-	units
CE061	Magnesium (2:1 water soluble)	Aqueous extraction, ICP-OES	Dry		1	mg/l Mg
CE049	Chloride (2:1 water soluble)	Aqueous extraction, IC-COND	Dry	U	1	mg/l Cl
CE049	Nitrate (2:1 water soluble)	Aqueous extraction, IC-COND	Dry	U	1	mg/l NO_3
CE061	Sulphate (2:1 water soluble)	Aqueous extraction, ICP-OES	Dry	U	10	mg/l SO_4
CE062	Sulphate (acid extractable)	HCl extract, analysed by ICP-OES	Dry	U	100	mg/kg SO4
CE062	Sulphate (acid extractable)	HCl extract, analysed by ICP-OES	Dry	U	0.01	% w/w SO4
CE119	Sulphur (total)	Aqua regia digest, analysed by ICP-OES	Dry		100	mg/kg S
CE119	Sulphur (total)	Aqua regia digest, analysed by ICP-OES	Dry		0.01	% w/w S

Chemtech Environmental Limited

DEVIATING SAMPLE INFORMATION

Comments
Sample deviation is determined in accordance with the UKAS note "Guidance on Deviating Samples" and based on reference standards and laboratory trials.
For samples identified as deviating, test result(s) may be compromised and may not be representative of the sample at the time of sampling.
Chemtech Environmental Ltd cannot be held responsible for the integrity of sample(s) received if Chemtech Environmental Ltd did not undertake the sampling. Such samples may be deviating.

Key

N	No (not deviating sample)
Y	Yes (deviating sample)
NSD	Sampling date not provided
NST	Sampling time not provided (waters only)
EHT	Sample exceeded holding time(s)
IC	Sample not received in appropriate containers
HP	Headspace present in sample container
NCF	Sample not chemically fixed (where appropriate)
OR	Other (specify)

Lab ref	Sample id	Depth (m)	Deviating	Tests (Reason for deviation)
124303-1	BH114	0.80	Y	pH (EHT), Sulphur (EHT), 2:1 Mg (EHT), 2:1 Cl (EHT), 2:1 Ni (EHT)
124303-2	BH114	3.20	Y	pH (EHT), Sulphur (EHT), 2:1 Mg (EHT), 2:1 Cl (EHT), 2:1 Ni (EHT)
124303-3	BH114	5.50-5.95	Y	pH (EHT), Sulphur (EHT), 2:1 Mg (EHT), 2:1 Cl (EHT), 2:1 Ni (EHT)

Chemtech Environmental Limited

ADDITIONAL INFORMATION

Notes

Opinions and interpretations expressed herein are outside the UKAS accreditation scope.

Unless otherwise stated, Chemtech Environmental Ltd was not responsible for sampling.

All testing carried out at Unit 6 Parkhead, Stanley, DH9 7YB, except for subcontracted testing.

Methods, procedures and performance data are available on request.

Results reported herein relate only to the material supplied to the laboratory.

This report shall not be reproduced except in full, without prior written approval.

Samples will be disposed of 4 weeks from initial receipt unless otherwise instructed.

For soils and solids, all results are reported on a dry basis. Samples dried at no more than 30°C in a drying cabinet.

Analytical results are inclusive of stones, where applicable.

LABORATORY REPORT

Contract Number: PSL23/4331

Report Date: 14 July 2023

Client's Reference: G230651/Geo 08

Client Name: Strata Geotechnics
Kirkby Lane
Pinxton
Nottinghamshire
NG16 6JA

For the attention of: Izaac Lovatt

Contract Title: A46 Walsgrave

Date Received: 7/6/2023
Date Commenced: 7/6/2023
Date Completed: 14/7/2023

Notes: Opinions and Interpretations are outside the UKAS Accreditation

A copy of the Laboratory Schedule of accredited tests as issued by UKAS is attached to this report. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced other than in full, without the prior written approval of the laboratory.

Checked and Approved Signatories:

L Knight
(Assistant Laboratory Manager)

R Berriman
(Associate Director)

S Royle
(Laboratory Manager)

[redacted]

A Watkins
(Managing Director)

S Eyre
(Senior Technical Coordinator)

T Watkins
(Senior Technician)

5 – 7 Hexthorpe Road,
Hexthorpe,
Doncaster,
DN4 0AR
Tel: [redacted]
Email: [redacted]@prosoils.co.uk
[redacted]@prosoils.co.uk

SUMMARY OF LABORATORY SOIL DESCRIPTIONS

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Description of Sample
BH113	5	D	0.40	0.40	Brown slightly gravelly very sandy CLAY.
BH113	10	D	1.20	1.65	Brown gravelly very silty SAND.
BH113	11	B	1.70	2.00	Brown very sandy silty GRAVEL.
BH113	16	D	3.00	3.50	Brown very sandy silty GRAVEL.
BH113	17	B	3.70	3.90	Brown very sandy silty GRAVEL.
BH113	20	D	4.90	4.90	Reddish brown very gravelly sandy CLAY.
BH113	21	U	5.00	5.45	Stiff reddish brown sandy CLAY.
BH113	24	D	6.20	6.20	Reddish brown slightly gravelly sandy CLAY.

UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

Contract No: PSL23/4331

Client Ref: G230651

SUMMARY OF SOIL CLASSIFICATION TESTS

(BS1377 : PART 2 : 1990)

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Moisture Content % Clause 3.2	Linear Shrinkage % Clause 6.5	Particle Density Mg/m^3 Clause 8.2	Liquid Limit % Clause 4.3/4	Plastic Limit % Clause 5.3	Plasticity Index % Clause 5.4	Passing .425mm %	Remarks
BH113	5	D	0.40	0.40	16			27	16	11	95	Low Plasticity CL
BH113	10	D	1.20	1.65	10							
BH113	16	D	3.00	3.50	11							
BH113	20	D	4.90	4.90	18			39	18	21	68	Intermediate Plasticity CI
BH113	24	D	6.20	6.20	16			36	18	18	98	Intermediate Plasticity CI

SYMBOLS : **NP : Non Plastic** *** : Liquid Limit and Plastic Limit Wet Sieved.**

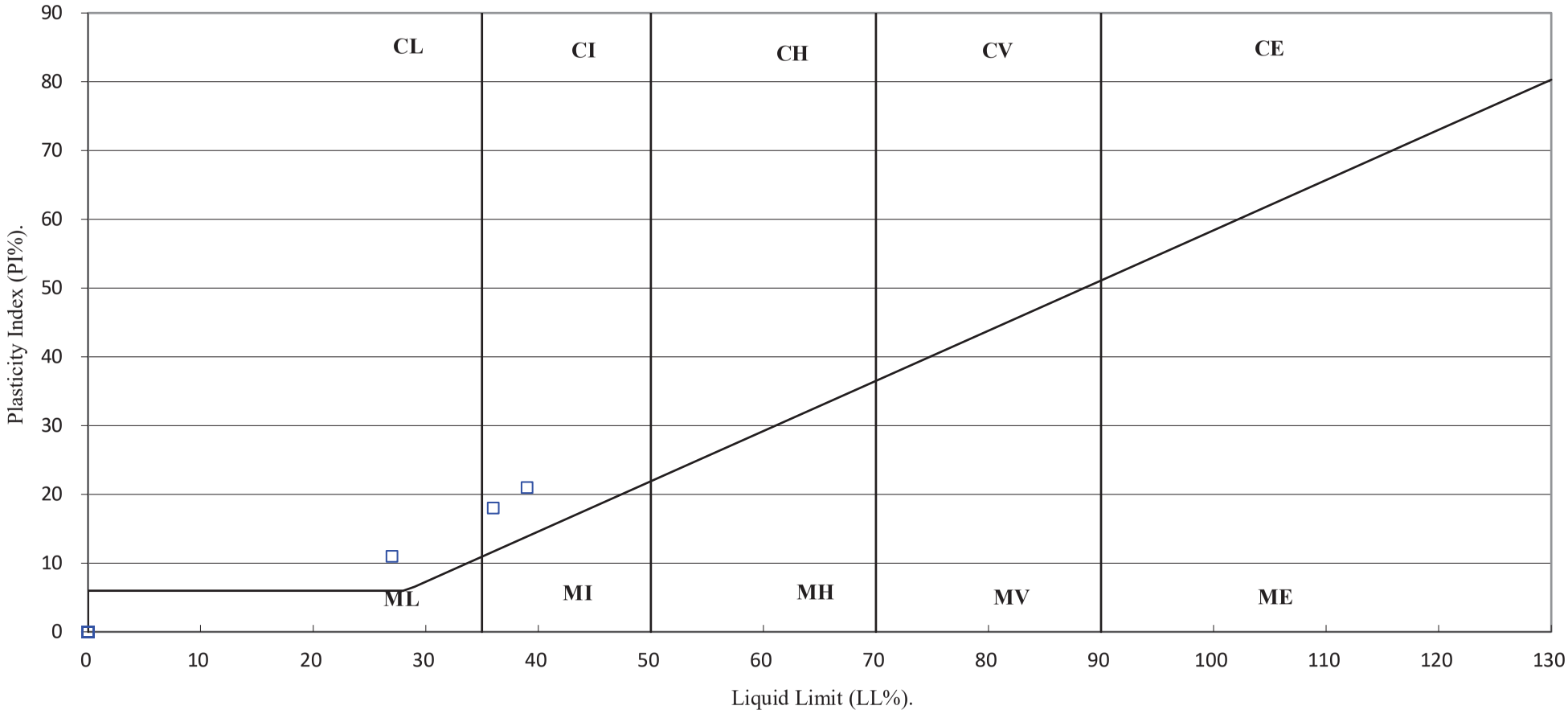
UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

Contract No:
PSL23/4331
Client Ref:
G230651

PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION.



UKAS TESTING 4043	PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY	A46 Walsgrave

Contract No:
PSL23/4331
Client Ref:
G230651

SUMMARY OF SOIL DENSITY RELATED TESTS

(BS1377 : PART 2 & 4 : 1990)

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Moisture Content %	Bulk Density Mg/m^3	Dry Density Mg/m^3	Retained 20mm %	Retained 37.5mm %	Method of compaction kg	Maximum Dry Density Mg/m^3	Minimum Dry Density Mg/m^3	Remarks
BH113	5	D	0.40	0.40	16	2.07	1.78						
BH113	10	D	1.20	1.65	10	2.01	1.83						
BH113	16	D	3.00	3.50	11	2.22	2.00						
BH113	20	D	4.90	4.90	18	2.13	1.81						
BH113	24	D	6.20	6.20	17	2.12	1.81						

UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

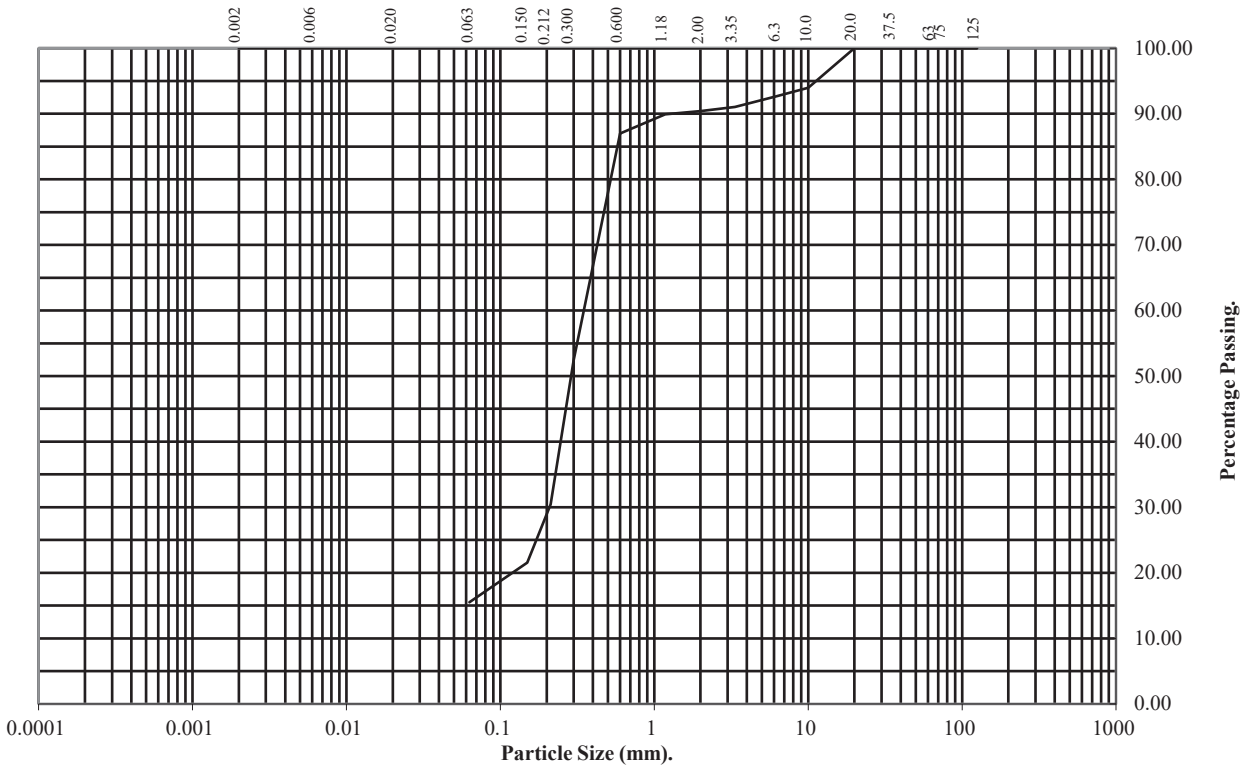
Contract No:
PSL23/4331
Client Ref:
G230651

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number:	**BH113**	**Top Depth (m):**	**1.20**
Sample Number:	**10**	**Base Depth(m):**	**1.65**
Sample Type:	**D**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	94
6.3	93
3.35	91
2	90
1.18	90
0.6	87
0.3	52
0.212	30
0.15	22
0.063	16

Soil Fraction	Total Percentage
Cobbles	0
Gravel	10
Sand	74
Silt/Clay	16

Remarks:

See Summary of Soil Descriptions

UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

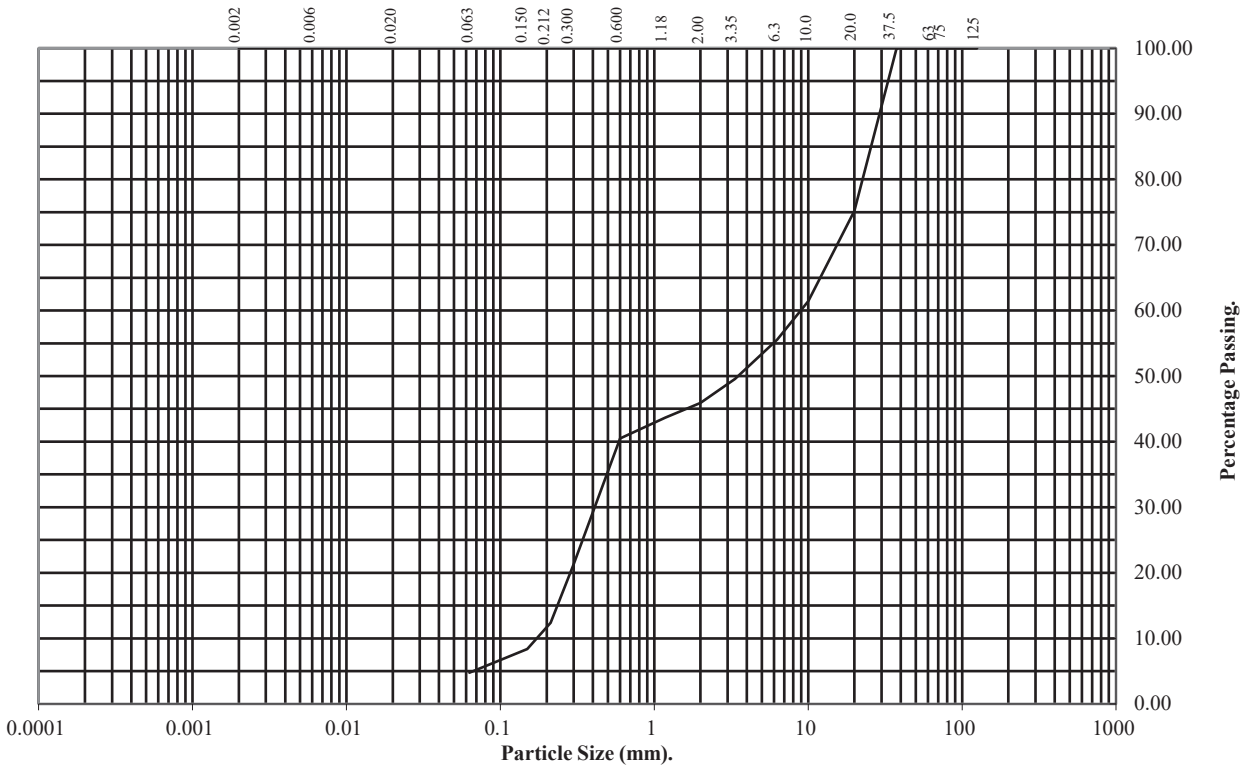
Contract No:
PSL23/4331
Client Ref:
G230651

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number:	**BH113**	**Top Depth (m):**	**3.00**
Sample Number:	**16**	**Base Depth(m):**	**3.50**
Sample Type:	**D**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	75
10	61
6.3	56
3.35	50
2	46
1.18	44
0.6	40
0.3	21
0.212	12
0.15	8
0.063	5

Soil Fraction	Total Percentage
Cobbles	0
Gravel	54
Sand	41
Silt/Clay	5

Remarks:

See Summary of Soil Descriptions

UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

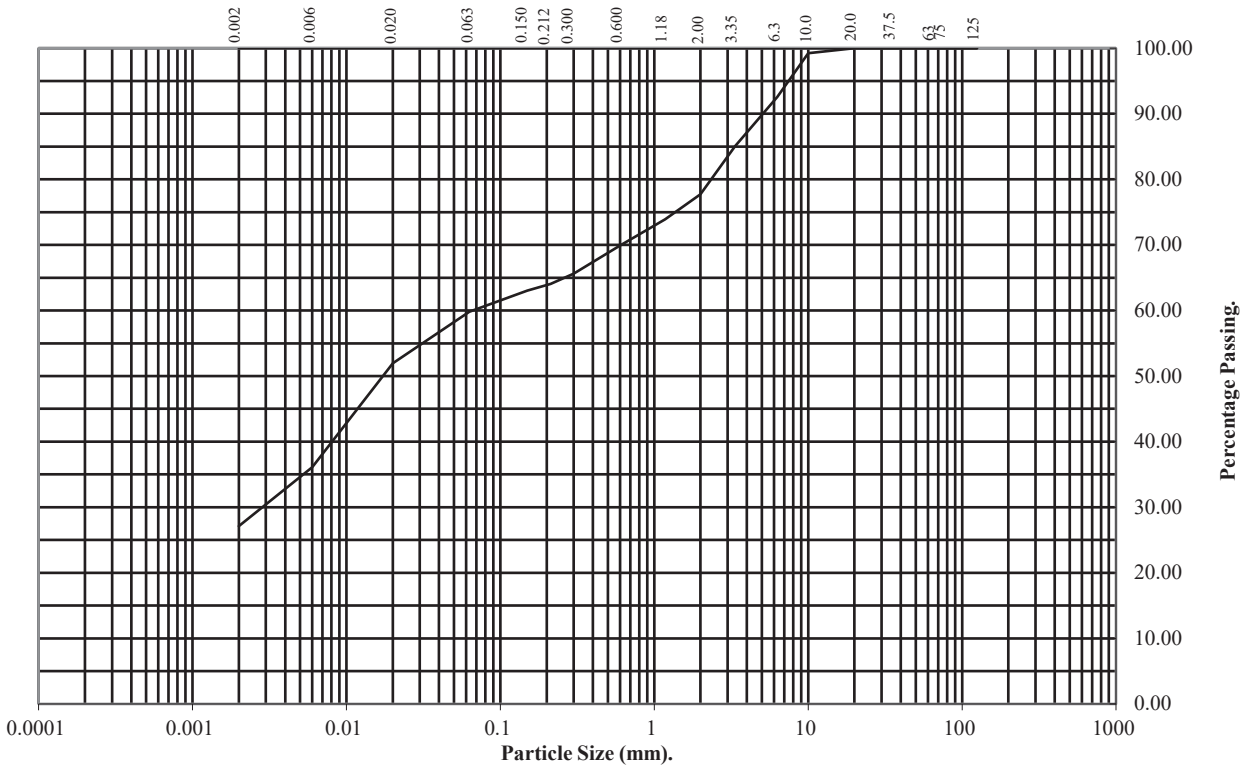
Contract No:
PSL23/4331
Client Ref:
G230651

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

Hole Number:	**BH113**	**Top Depth (m):**	**4.90**
Sample Number:	**20**	**Base Depth(m):**	**4.90**
Sample Type:	**D**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	99
6.3	93
3.35	85
2	78
1.18	74
0.6	70
0.3	66
0.212	64
0.15	63
0.063	60

Particle Diameter	Percentage Passing
0.02	52
0.006	36
0.002	27

Soil Fraction	Total Percentage
Cobbles	0
Gravel	22
Sand	18
Silt	33
Clay	27

Remarks:
See Summary of Soil Descriptions

UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

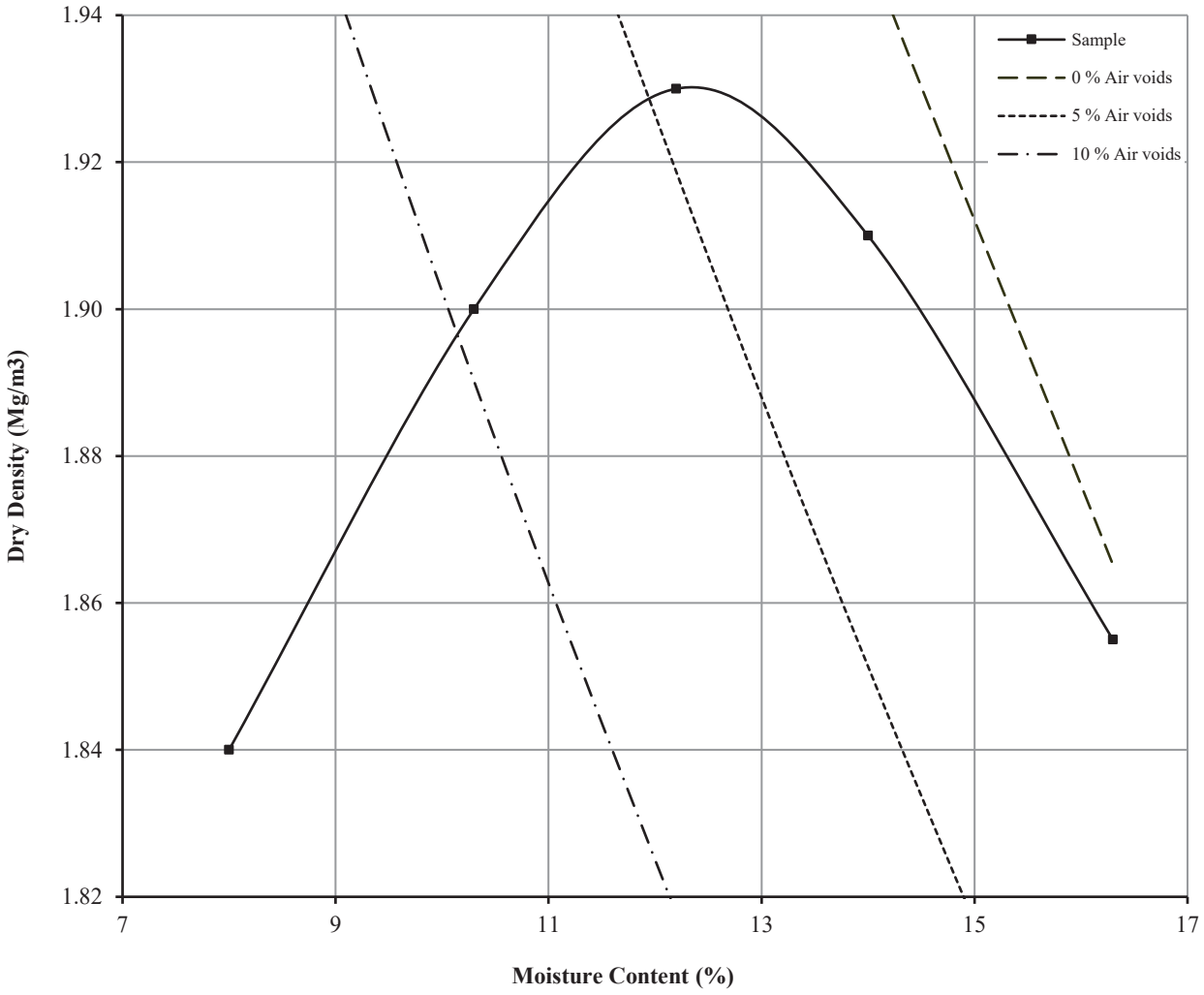
A46 Walsgrave

Contract No:
PSL23/4331
Client Ref:
G230651

DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

BS 1377 : Part 4 : Clause 3.4 : 1990

Hole Number:	**BH113**	**Top Depth (m) :**	**1.70**
Sample Number:	**11**	**Base Depth (m) :**	**2.00**
Sample Type:	**B**		



Initial Moisture Content:		14	Method of Compaction:	2.5kg	Separate Samples
Particle Density (Mg/m3):	2.68	Assumed	Material Retained on 37.5 mm Test Sieve (%):		0
Maximum Dry Density (Mg/m3):		1.93	Material Retained on 20.0 mm Test Sieve (%):		15
Optimum Moisture Content (%):		12			
Remarks See summary of soil descriptions					

UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

Contract
PSL23/4331
Client Ref
G230651

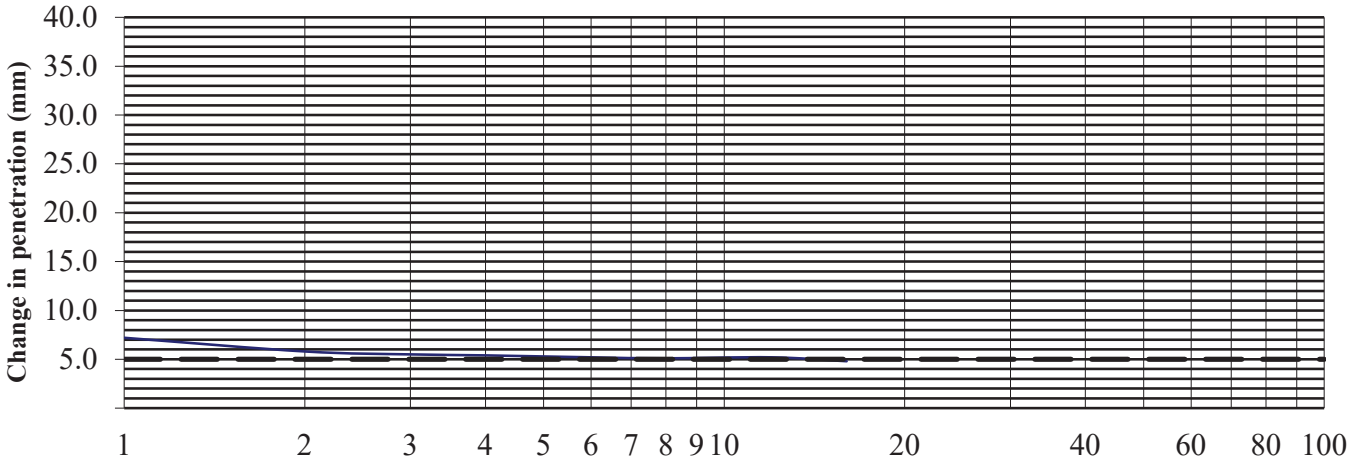
MOISTURE CONDITION VALUE

BS1377 : Part 4 : 1990 Clause 5.4

Hole Number:	**BH113**	**Top Depth (m):**	**1.70**
Sample Number:	**11**	**Base Depth (m):**	**2.00**
Sample Type:	**B**		

Material Retained on the 20mm BS Test Sieve (%):	15
Interpretation based on steepest straight line intercept with 5mm change in penetration.	

MCV Determination



Blows (N)	Penetration (mm)	n to 4n (mm)
1	51.6	7.2
2	45.9	5.8
3	45.1	5.5
4	44.4	5.4
6	41.5	5.2
8	40.1	5.1
12	39.6	5.2
16	39.0	4.8
24	36.3	
32	35.0	
48	34.4	
64	34.2	
96		
128		
192		
256		

Test Results.

Moisture Content (%)	14
MCV	8.2

SUMMARY OF LABORATORY HAND VANES

(BS1377 : PART 7 : 1990)

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Moisture Content %	Peak Shear Strength kPa	Residual Shear Strength kPa	Remarks
BH113	24	D	6.20	6.20	17	96		

* This test is out of our UKAS scope

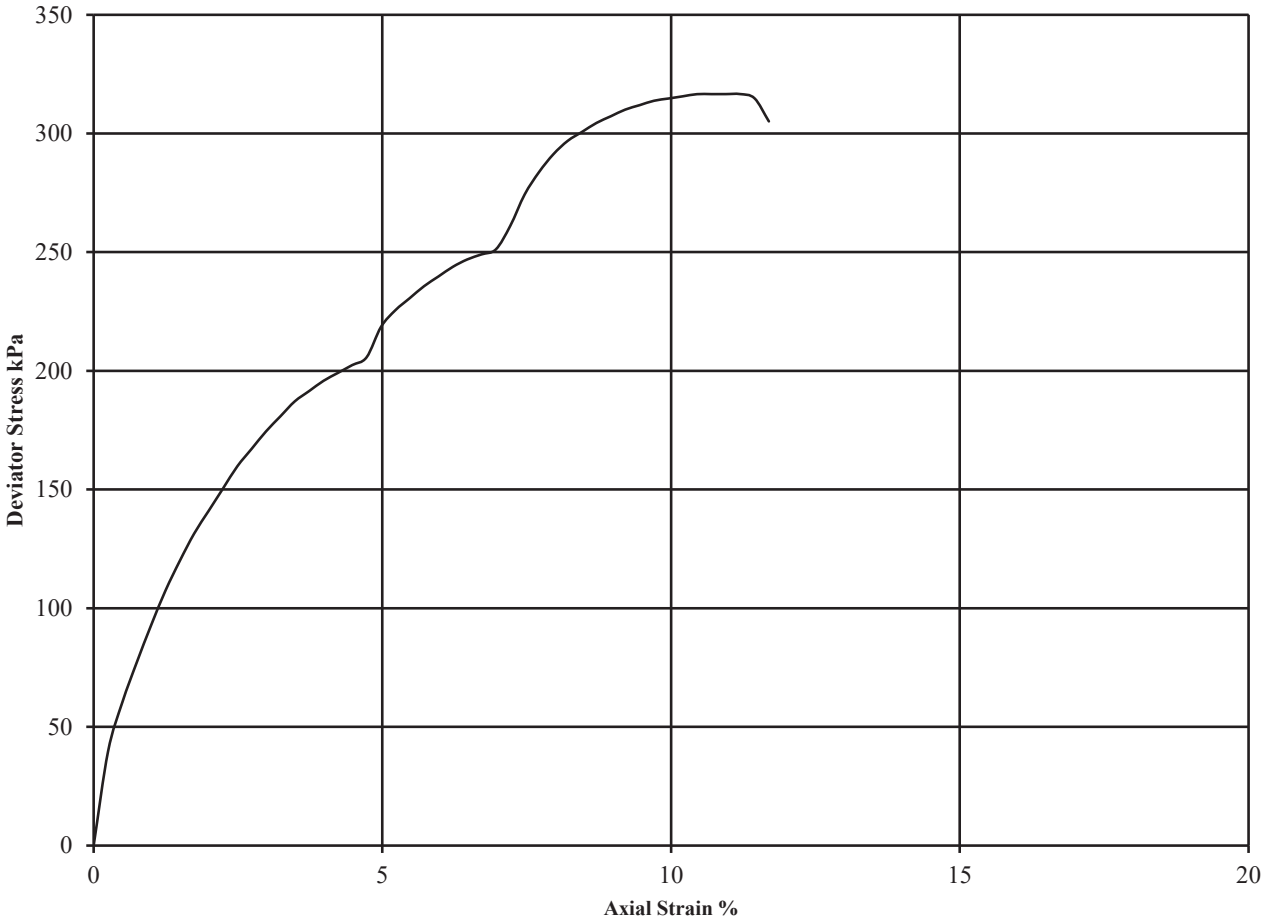
PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY	A46 Walsgrave	Contract No: PSL23/4331 Client Ref: G230651

UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION

WITHOUT MEASUREMENT OF PORE PRESSURE

BS1377 : Part7 : 1990: Clause 9

Hole Number:	**BH113**	**Top Depth (m):**	**5.00**
Sample Number:	**21**	**Base Depth (m):**	**5.45**
Sample Type	**U**		



Diameter (mm):		103	Height (mm):		207	Test:	UU Multistage		Remarks
Specimen	Moisture Content (%)	Bulk Density (Mg/m3)	Dry Density (Mg/m3)	Cell Pressure (kPa) θ_3	Corr. Max. Deviator Stress (kPa) $(\theta_1-\theta_3)_f$	Shear Strength Cu (kPa) $^1/_2(\theta_1-\theta_3)_f$	Failure Strain (%)	Mode of Failure	Undisturbed Sample Sample taken from top of tube Rate of strain = 2 %/min Latex Membrane used 0.2 mm thick Membrane Correction applied (kPa)
1	18	2.15	1.82	50	206	103	4.7		0.36 0.36 0.35
				100	251	126	7.0		See summary of soil descriptions
				200	317	158	11.2	Brittle	

UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

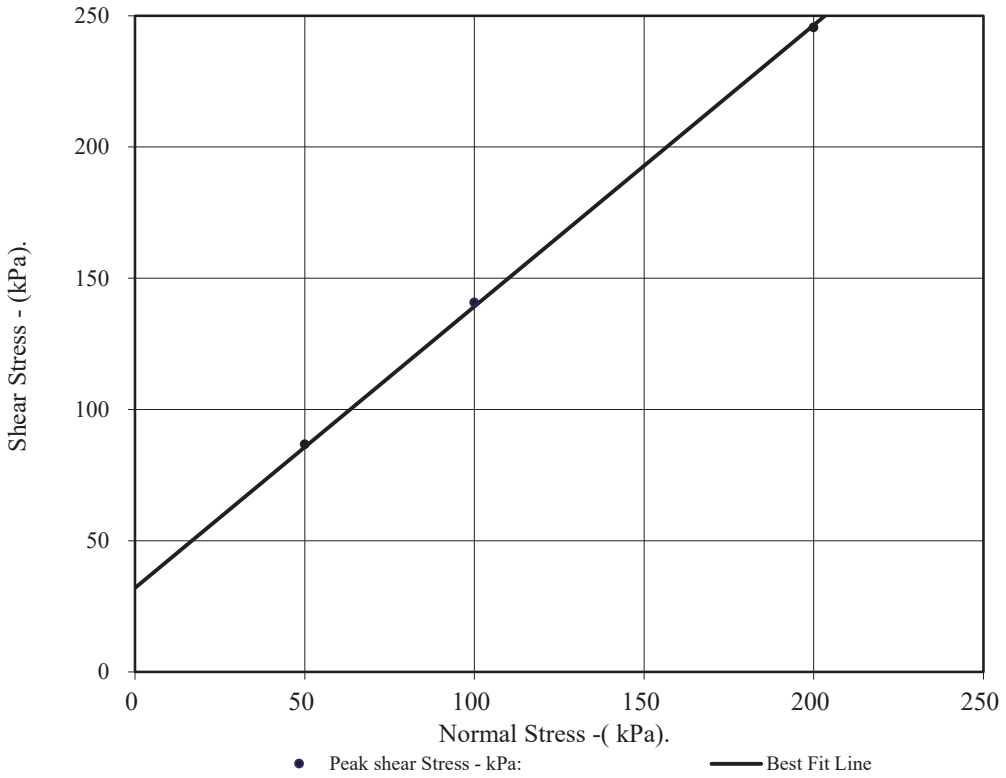
Contract No:
PSL23/4331
Client Ref:
G230651

CONSOLIDATED DRAINED SHEARBOX TEST

BS1377:Part 7:1990 Clause 5 SHW Clause 636 Paragraph 2

Hole Number:	**BH113**		Top Depth:	**1.70**
Sample Number:	**11**		Base Depth:	**2.00**
Sample Conditions:	Dry		Sample Type	**B**
Particle Density - Mg/m3:	2.65	Assumed	**Remarks:**	
Sample Preparation:	Material tested passing 20mm sieve Recompacted using hand tamped effort			
Sample Description:	**See summary of soil descriptions**			

STAGE	**1**	**2**	**3**
Initial Conditions			
Height - mm:	150	150	150
Length - mm:	300	300	300
Moisture Content - %:	14	14	14
Bulk Density - Mg/m3:	2.18	2.18	2.18
Dry Density - Mg/m3:	1.91	1.91	1.91
Voids Ratio:	0.388	0.388	0.388
Normal Pressure- kPa	50	100	200
Consolidation Stage			
Consolidated Height - mm:	149.16	148.82	147.71
Shearing Stage			
Rate of Strain (mm/min)	1.00	1.00	1.00
Displacement at peak shear stress (mm)	41.00	51.00	50.50
Peak shear Stress - kPa:	87	141	246
Final Consolidated Conditions			
Moisture Content - %:	13	13	12
Bulk Density - Mg/m3:	2.19	2.19	2.21
Dry Density - Mg/m3:	1.93	1.94	1.97
Peak			
Angle of Shearing Resistance:(~~θ~~)	**47**		
Effective Cohesion - kPa:	**32**		

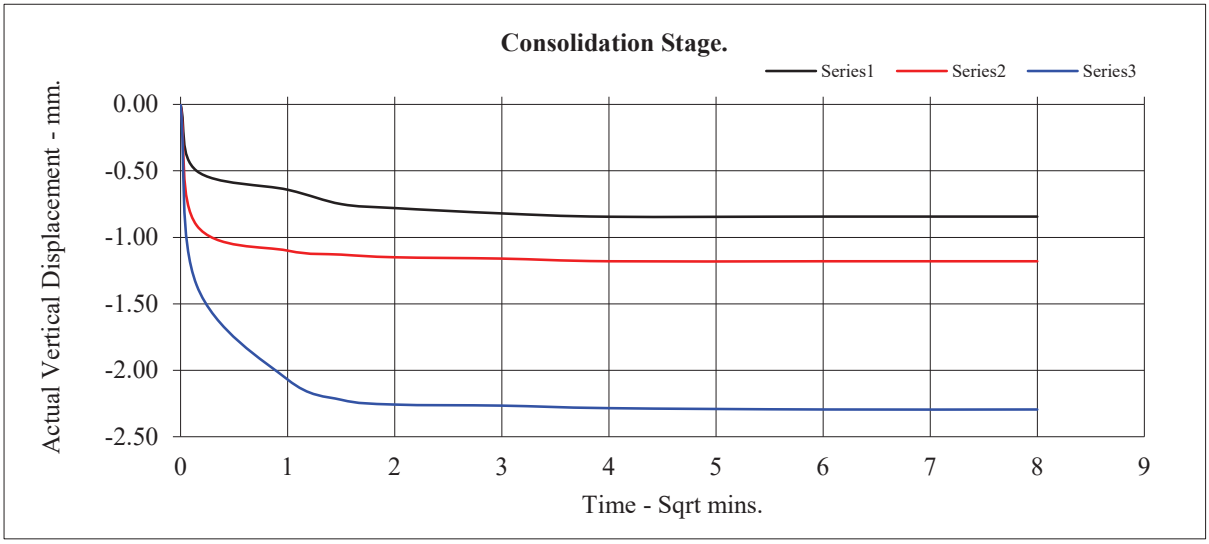


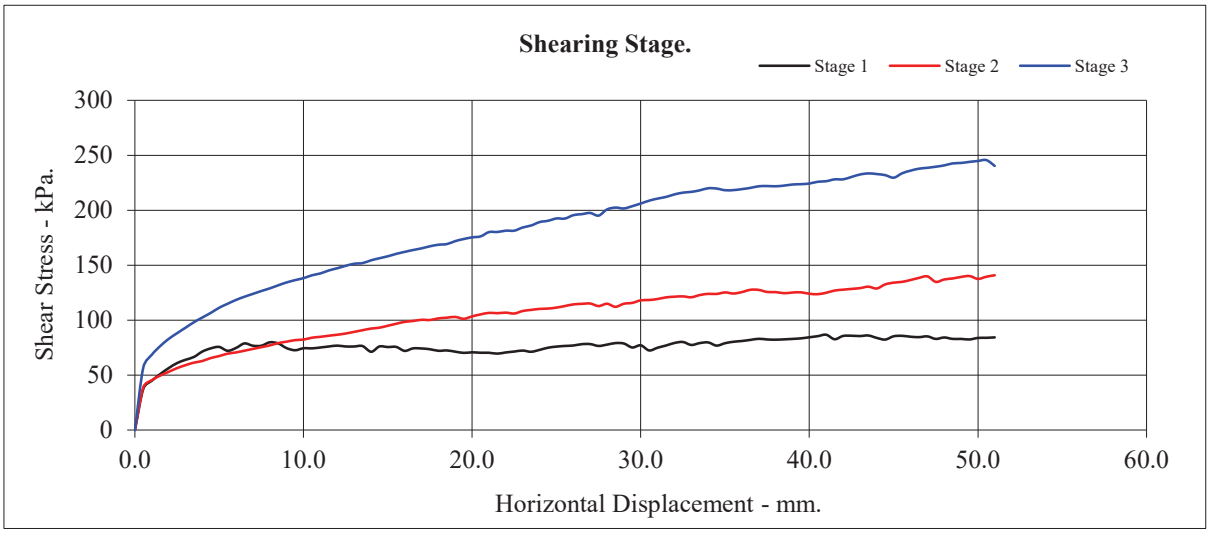
UKAS TESTING 4043	**A46 Walsgrave**	**Contract No:** PSL23/4331
PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY		**Client Ref:** G230651

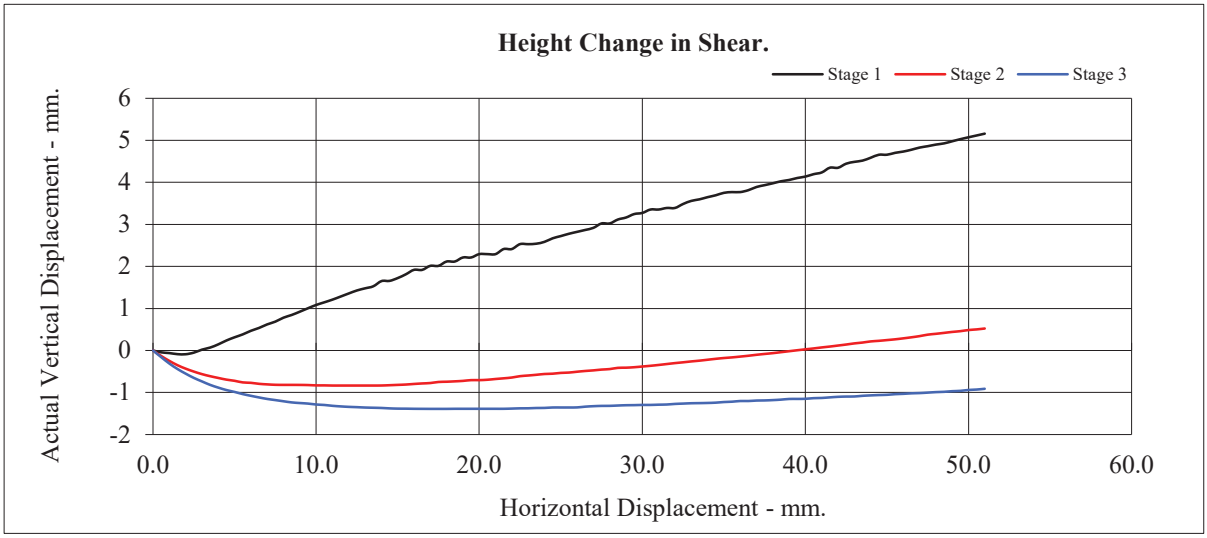
CONSOLIDATED DRAINED SHEARBOX TEST

BS1377:Part 7:1990 Clause 5 SHW Clause 636 Paragraph 2

Hole Number:	**BH113**	Top Depth:	**1.70**
Sample Number:	**11**	Base Depth:	**2.00**







UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

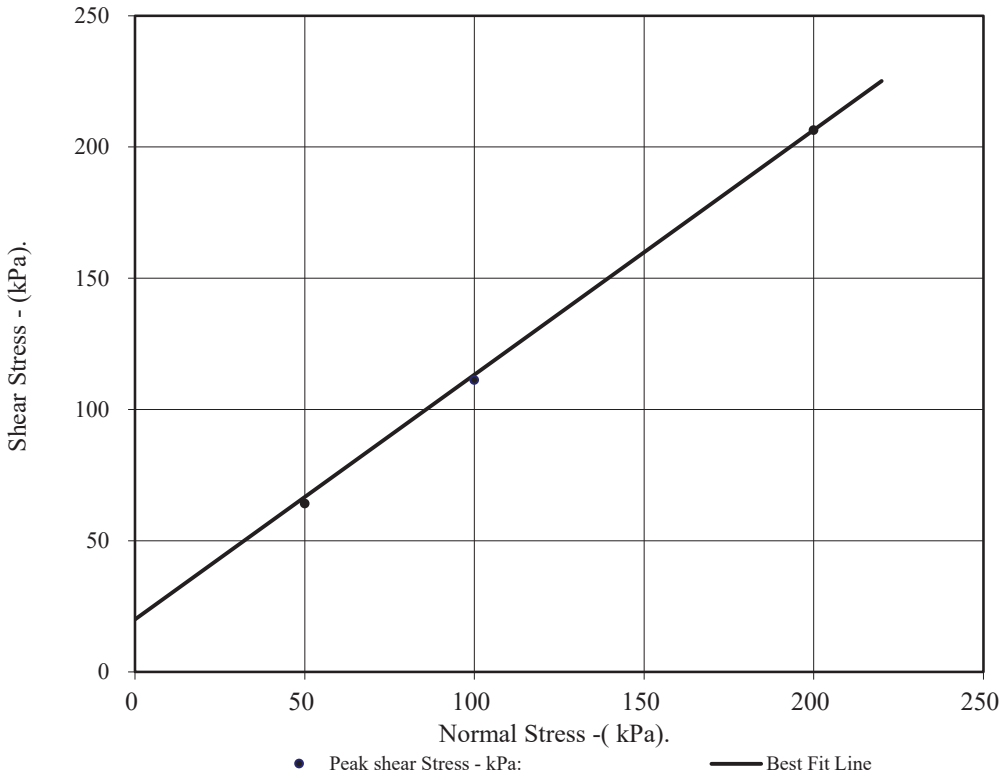
Contract No:
PSL23/4331
Client Ref:
G230651

CONSOLIDATED DRAINED SHEARBOX TEST

BS1377:Part 7:1990 Clause 5 SHW Clause 636 Paragraph 2

Hole Number:	**BH113**		Top Depth:	**3.70**
Sample Number:	**17**		Base Depth:	**3.90**
Sample Conditions:	Dry		Sample Type	**B**
Particle Density - Mg/m3:	2.65	Assumed	**Remarks:**	
Sample Preparation:	Material tested passing 20mm sieve Recompacted using hand tamped effort			
Sample Description:	**See summary of soil descriptions**			

STAGE	**1**	**2**	**3**
Initial Conditions			
Height - mm:	150	150	150
Length - mm:	300	300	300
Moisture Content - %:	12	12	12
Bulk Density - Mg/m3:	2.10	2.10	2.10
Dry Density - Mg/m3:	1.88	1.88	1.88
Voids Ratio:	0.407	0.407	0.407
Normal Pressure- kPa	50	100	200
Consolidation Stage			
Consolidated Height - mm:	149.00	147.88	147.55
Shearing Stage			
Rate of Strain (mm/min)	1.00	1.00	1.00
Displacement at peak shear stress (mm)	11.55	15.55	24.00
Peak shear Stress - kPa:	64	111	206
Final Consolidated Conditions			
Moisture Content - %:	11	11	10
Bulk Density - Mg/m3:	2.11	2.13	2.13
Dry Density - Mg/m3:	1.90	1.93	1.93
Peak			
Angle of Shearing Resistance:(~~θ~~)	**43**		
Effective Cohesion - kPa:	**20**		



UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

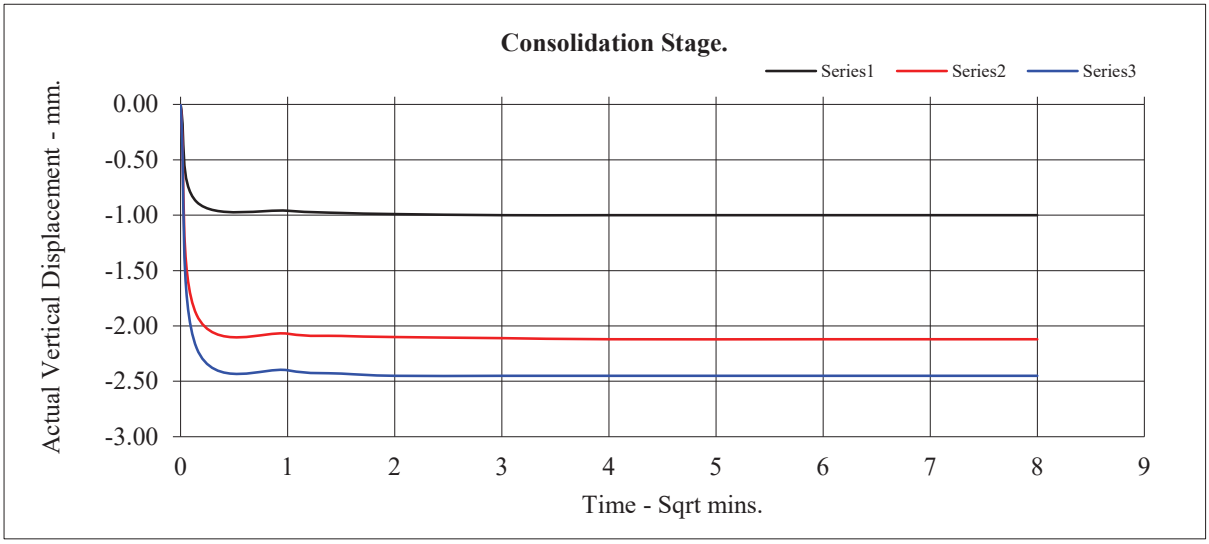
A46 Walsgrave

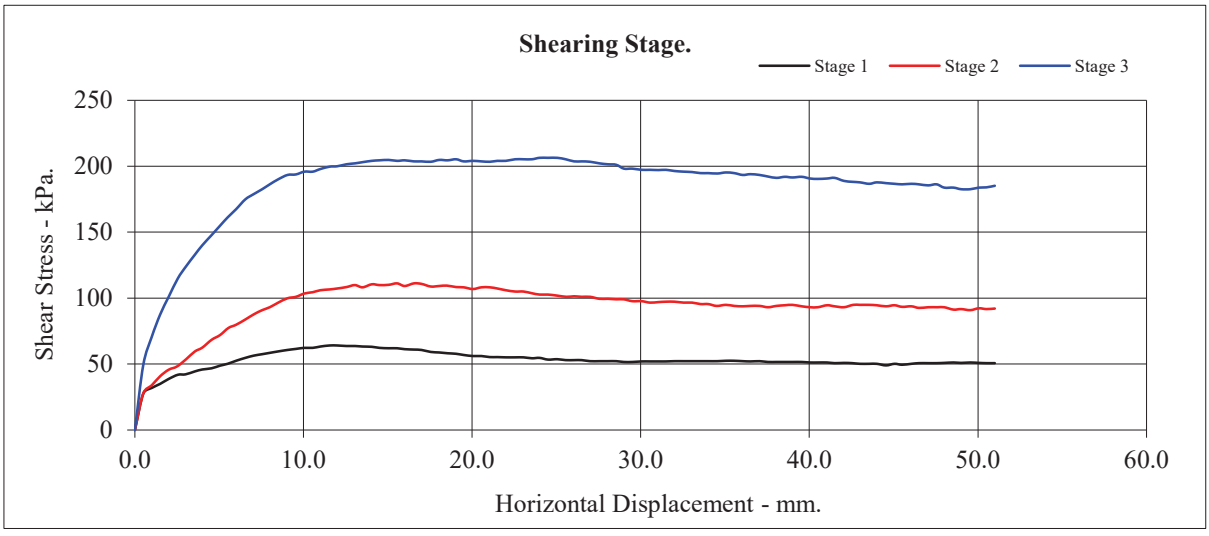
Contract No:
PSL23/4331
Client Ref:
G230651

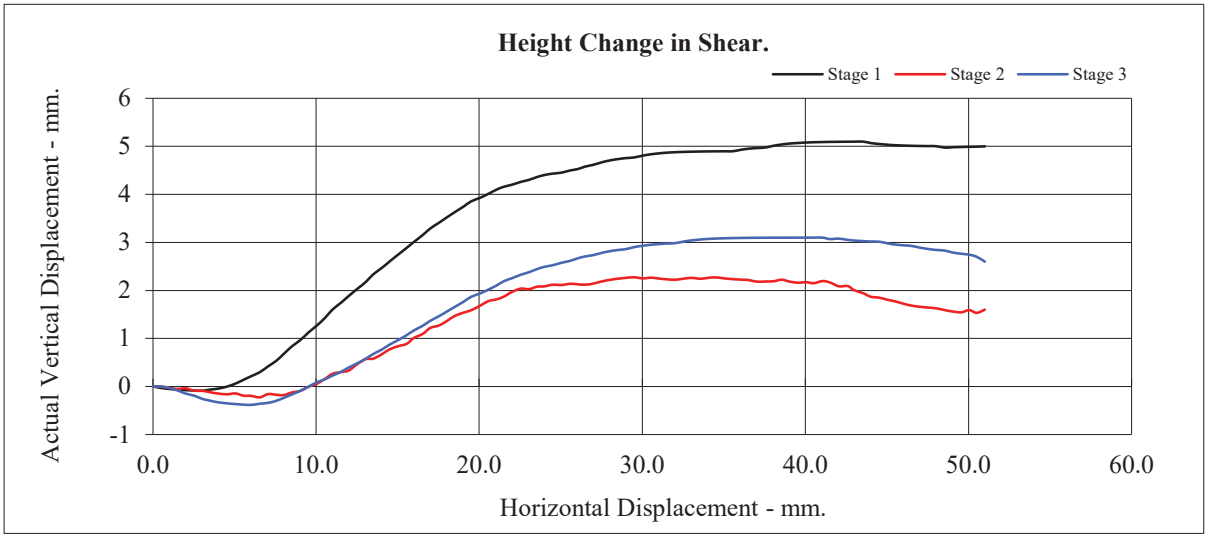
CONSOLIDATED DRAINED SHEARBOX TEST

BS1377:Part 7:1990 Clause 5 SHW Clause 636 Paragraph 2

Hole Number:	**BH113**	Top Depth:	**3.70**
Sample Number:	**17**	Base Depth:	**3.90**







UKAS TESTING 4043 / PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY	**A46 Walsgrave**	**Contract No:** PSL23/4331 **Client Ref:** G230651

LABORATORY REPORT

Contract Number: PSL23/4330

Report Date: 07 July 2023

Client's Reference: G230651/Geo 09

Client Name: Strata Geotechnics
Kirkby Lane
Pinxton
Nottinghamshire
NG16 6JA

For the attention of: Izaac Lovatt

Contract Title: A46 Walsgrave

Date Received: 7/6/2023
Date Commenced: 7/6/2023
Date Completed: 07/07/2023

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Checked and Approved Signatories:

A Watkins (Director)
R Berriman (Quality Manager)
S Royle (Laboratory Manager)
[redacted]
L Knight (Assistant Laboratory Manager)
S Eyre (Senior Technician)
M Fennell (Senior Technician)

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Doncaster,
DN4 0AR
Tel: [redacted]
Email: [redacted]@prosoils.co.uk
[redacted]@prosoils.co.uk

SUMMARY OF LABORATORY SOIL DESCRIPTIONS

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Description of Sample
WS107	8	B	0.50	0.60	Brown slightly gravelly sandy CLAY.
WS107	9	B	1.00	1.10	Brown slightly gravelly sandy CLAY.
WS107	16	B	2.60	2.90	Brown very sandy very silty CLAY.

UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

Contract No:
PSL23/4330
Client Ref:
G230651

SUMMARY OF SOIL CLASSIFICATION TESTS

(BS1377 : PART 2 : 1990)

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Moisture Content % Clause 3.2	Linear Shrinkage % Clause 6.5	Particle Density Mg/m^3 Clause 8.2	Liquid Limit % Clause 4.3/4	Plastic Limit % Clause 5.3	Plasticity Index % Clause 5.4	Passing .425mm %	Remarks
WS107	8	B	0.50	0.60	14			39	18	21	94	Intermediate Plasticity CI
WS107	9	B	1.00	1.10	24			41	20	21	99	Intermediate Plasticity CI
WS107	16	B	2.60	2.90	19							

SYMBOLS : **NP : Non Plastic** *** : Liquid Limit and Plastic Limit Wet Sieved.**

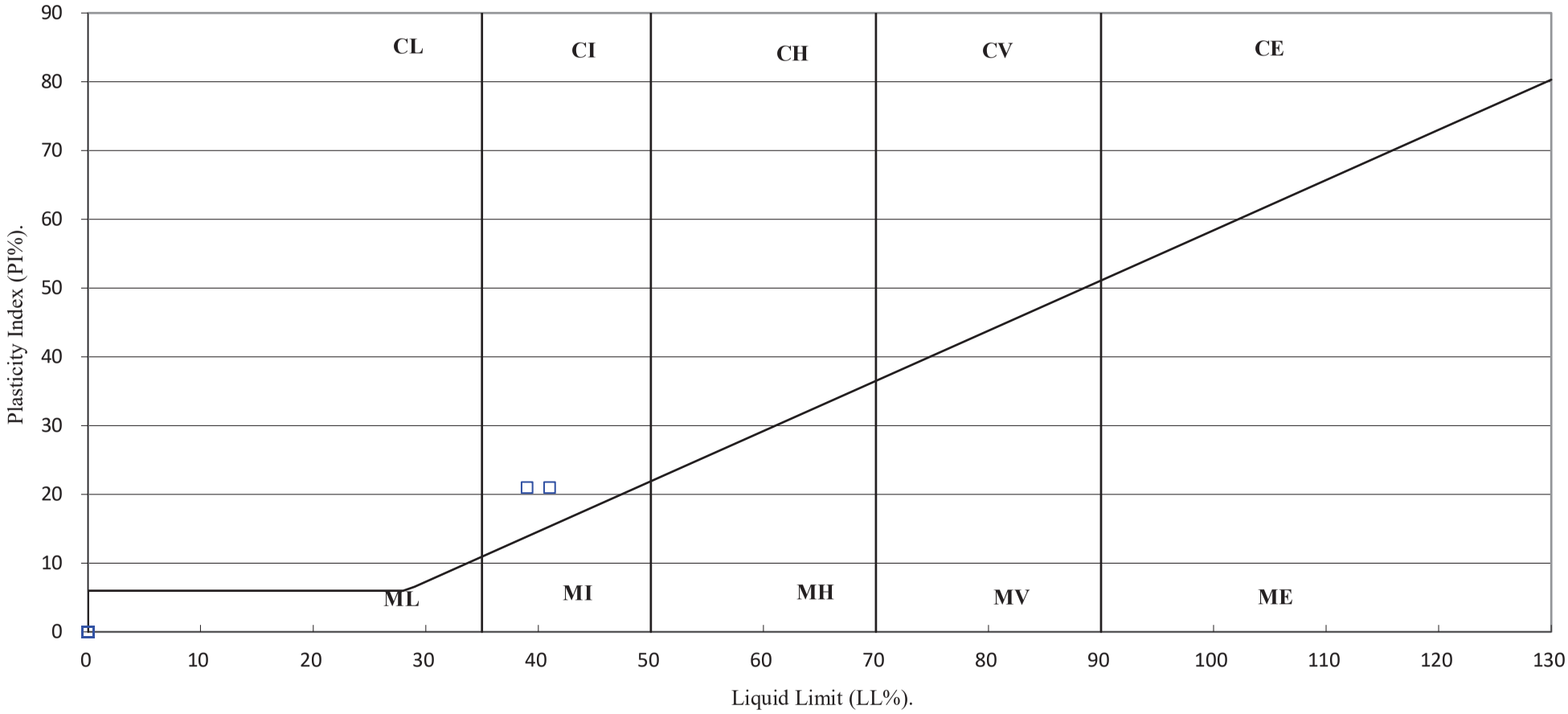
UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

Contract No:
PSL23/4330
Client Ref:
G230651

PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION.



UKAS TESTING 4043	PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY	**A46 Walsgrave**

Contract No:
PSL23/4330
Client Ref:
G230651

SUMMARY OF SOIL DENSITY RELATED TESTS

(BS1377 : PART 2 & 4 : 1990)

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Moisture Content %	Bulk Density Mg/m^3	Dry Density Mg/m^3	Retained 20mm %	Retained 37.5mm %	Method of compaction kg	Maximum Dry Density Mg/m^3	Minimum Dry Density Mg/m^3	Remarks
WS107	8	B	0.50	0.60	14	2.03	1.78						
WS107	16	B	2.60	2.90	19	1.99	1.67						

UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

Contract No:
PSL23/4330
Client Ref:
G230651

SUMMARY OF LABORATORY SOIL DESCRIPTIONS

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Description of Sample

UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

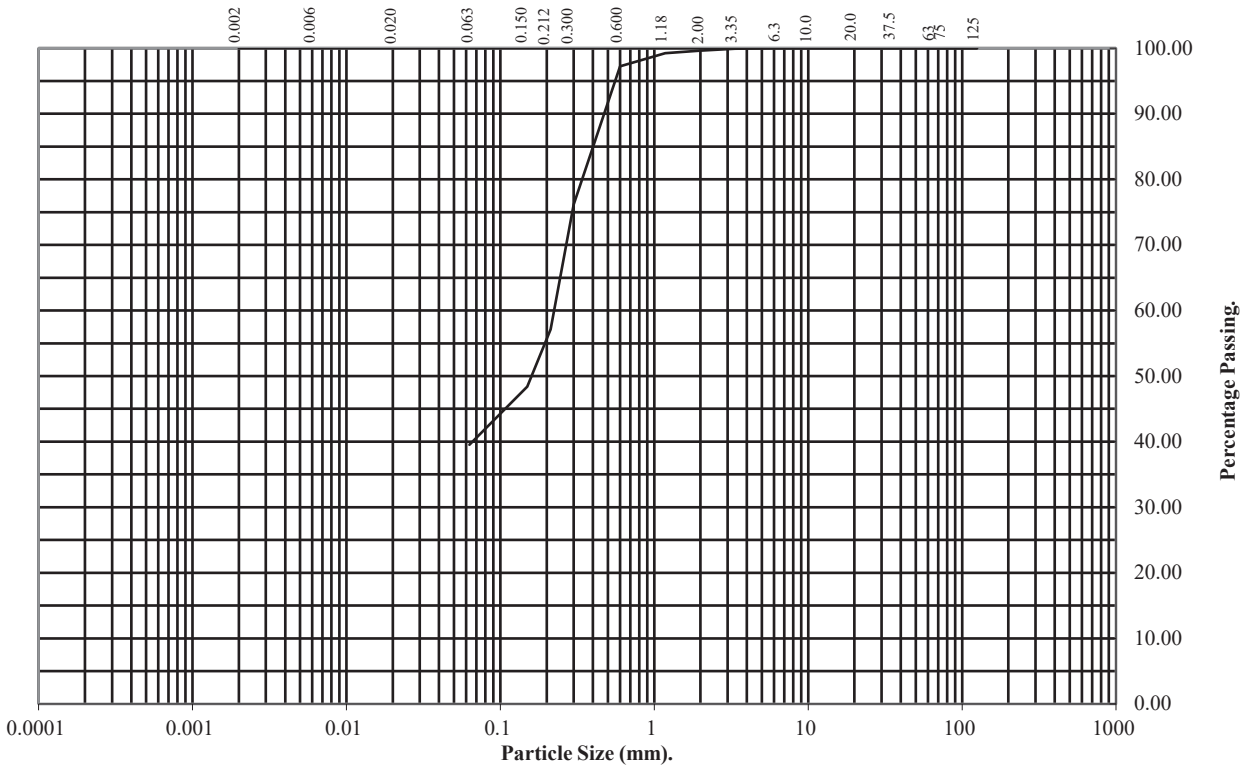
Contract No:
PSL23/4330
Client Ref:
G230651

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number:	**WS107**	**Top Depth (m):**	**2.60**
Sample Number:	**16**	**Base Depth(m):**	**2.90**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	100
6.3	100
3.35	100
2	100
1.18	99
0.6	97
0.3	76
0.212	57
0.15	48
0.063	40

Soil Fraction	Total Percentage
Cobbles	0
Gravel	0
Sand	60
Silt/Clay	40

Remarks:
See Summary of Soil Descriptions

SUMMARY OF LABORATORY HAND VANES

(BS1377 : PART 7 : 1990)

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Moisture Content %	Peak Shear Strength kPa	Residual Shear Strength kPa	Remarks
WS107	9	B	1.00	1.10	24	24		
WS107	9	B	1.00	1.10	24	34		
WS107	9	B	1.00	1.10	24	27		

* This test is out of our UKAS scope

PROFESSIONAL SOILS LABORATORY
A PHENNA GROUP COMPANY

A46 Walsgrave

Contract No:
PSL23/4330
Client Ref:
G230651

LABORATORY REPORT

Contract Number: PSL23/4335

Report Date: 26 June 2023

Client's Reference: G230651/Geo 10

Client Name: Strata Geotechnics
Kirkby Lane
Pinxton
Nottinghamshire
NG16 6JA

For the attention of: Izaac Lovatt

Contract Title: A46 Walsgrave

Date Received: 7/6/2023
Date Commenced: 7/6/2023
Date Completed: 26/6/2023

Notes: Opinions and Interpretations are outside the UKAS Accreditation

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Checked and Approved Signatories:

A Watkins (Director)	R Berriman (Quality Manager)	S Royle (Laboratory Manager)
[redacted] L Knight (Assistant Laboratory Manager)	S Eyre (Senior Technician)	T Watkins (Senior Technician)

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Tel: [redacted]
Email: [redacted]@prosoils.co.uk
[redacted]@prosoils.co.uk

SUMMARY OF LABORATORY SOIL DESCRIPTIONS

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Description of Sample
TP101		B	0.50	0.50	Reddish brown mottled grey slightly gravelly very sandy CLAY.
TP101		D	0.90	0.90	Reddish brown mottled grey slightly gravelly very sandy CLAY.
TP101		D	1.80	1.80	Reddish brown mottled grey slightly gravelly very sandy CLAY.
TP102		D	1.20	1.20	Brown slightly gravelly very sandy CLAY.
TP102		D	1.80	1.80	Brown slightly gravelly very sandy CLAY.
TP102		D	2.50	2.50	Reddish brown mottled grey slightly gravelly sandy CLAY.
TP103		B	1.00	1.50	Brown slightly gravelly sandy CLAY.
TP103		D	1.50	1.50	Brown slightly gravelly sandy CLAY.
TP103		B	2.00	2.50	Brown slightly gravelly sandy CLAY.
TP103		D	2.10	2.10	Reddish brown mottled grey slightly gravelly very sandy CLAY.

UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

Contract No: PSL23/4335

Client Ref: G230651

SUMMARY OF SOIL CLASSIFICATION TESTS

(BS1377 : PART 2 : 1990)

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Moisture Content % Clause 3.2	Linear Shrinkage % Clause 6.5	Particle Density Mg/m^3 Clause 8.2	Liquid Limit % Clause 4.3/4	Plastic Limit % Clause 5.3	Plasticity Index % Clause 5.4	Passing .425mm %	Remarks
TP101		B	0.50	0.50	18			35	17	18	95	Intermediate Plasticity CI
TP101		D	1.80	1.80	18			33	16	17	93	Low Plasticity CL
TP102		D	1.20	1.20	13							
TP102		D	1.80	1.80	16			28	13	15	93	Low Plasticity CL
TP102		D	2.50	2.50	20			37	18	19	97	Intermediate Plasticity CI
TP103		D	1.50	1.50	21			50	24	26	98	High Plasticity CH
TP103		D	2.10	2.10	13			31	16	15	94	Low Plasticity CL

SYMBOLS : **NP : Non Plastic** *** : Liquid Limit and Plastic Limit Wet Sieved.**

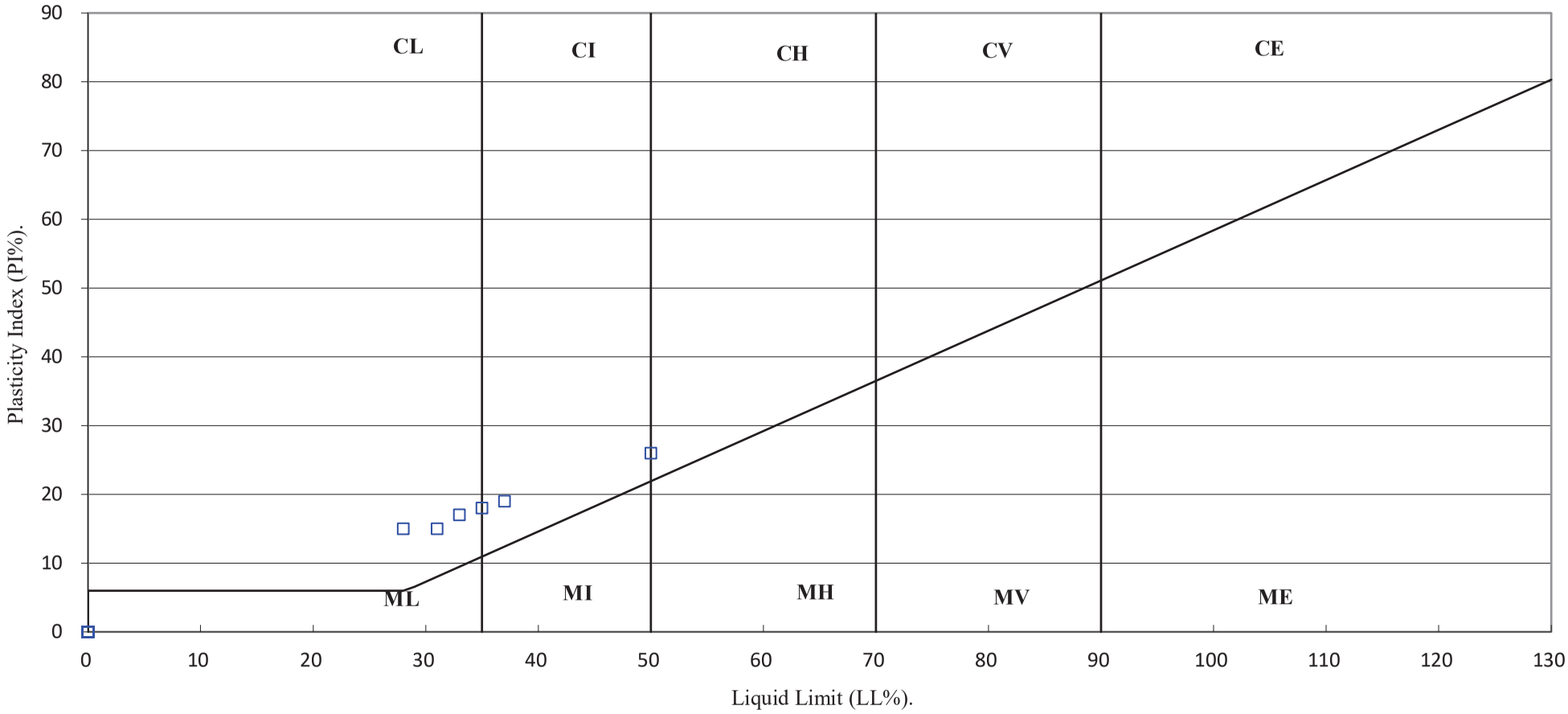
UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

Contract No:
PSL23/4335
Client Ref:
G230651

PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION.



UKAS TESTING 4043	A46 Walsgrave	Contract No: PSL23/4335
PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY		Client Ref: G230651

SUMMARY OF LABORATORY HAND VANES

(BS1377 : PART 7 : 1990)

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Moisture Content %	Peak Shear Strength kPa	Residual Shear Strength kPa	Remarks
TP101		D	0.90	0.90	19	57		
TP101		D	1.80	1.80	18	74		
TP102		D	2.50	2.50	20	63		
TP103		B	1.00	1.50	19	116		
TP103		B	2.00	2.50	14	85		

* This test is out of our UKAS scope

PROFESSIONAL SOILS LABORATORY
A PHENNA GROUP COMPANY

A46 Walsgrave

Contract No:
PSL23/4335
Client Ref:
G230651

UKAS TESTING
2531

CHEMTECH environmental part of Cawood

ANALYTICAL TEST REPORT

Contract no: 124158

Contract name: A46 Walsgrave

Client reference: PSL23/4335

Clients name: Professional Soils Laboratory

Clients address: 5/7 Hexthorpe Road
Doncaster
DN4 0AR

Samples received: 28 June 2023

Analysis started: 28 June 2023

Analysis completed: 07 July 2023

Report issued: 07 July 2023

Key

U	UKAS accredited test
M	MCERTS & UKAS accredited test
$	Test carried out by an approved subcontractor
I/S	Insufficient sample to carry out test
N/S	Sample not suitable for testing

Approved by: [redacted]

Ellis McCulloch
Senior Reporting Administrator

Chemtech Environmental Limited

SOILS

Lab number			124158-1	124158-2
Sample id			TP101	TP102
Depth (m)			2.10	2.50
Sample Type			D	D
Date sampled			-	-
Test	**Method**	**Units**		
pH	CE004 U	units	7.1	6.7
Magnesium (2:1 water soluble)	CE061	mg/l Mg	8.0	3.0
Chloride (2:1 water soluble)	CE049 U	mg/l Cl	4.3	6.8
Nitrate (2:1 water soluble)	CE049 U	mg/l NO_3	10	1.5
Sulphate (2:1 water soluble)	CE061 U	mg/l SO_4	128	16
Sulphate (acid extractable)	CE062 U	mg/kg SO_4	500	348
Sulphate (acid extractable)	CE062 U	% w/w SO_4	0.05	0.03
Sulphur (total)	CE119	mg/kg S	217	150
Sulphur (total)	CE119	% w/w S	0.02	0.01

Chemtech Environmental Limited

METHOD DETAILS

METHOD	SOILS	METHOD SUMMARY	SAMPLE	STATUS	LOD	UNITS
CE004	pH	Based on BS 1377, pH Meter	As received	U	-	units
CE061	Magnesium (2:1 water soluble)	Aqueous extraction, ICP-OES	Dry		1	mg/l Mg
CE049	Chloride (2:1 water soluble)	Aqueous extraction, IC-COND	Dry	U	1	mg/l Cl
CE049	Nitrate (2:1 water soluble)	Aqueous extraction, IC-COND	Dry	U	1	mg/l NO_3
CE061	Sulphate (2:1 water soluble)	Aqueous extraction, ICP-OES	Dry	U	10	mg/l SO_4
CE062	Sulphate (acid extractable)	HCl extract, analysed by ICP-OES	Dry	U	100	mg/kg SO4
CE062	Sulphate (acid extractable)	HCl extract, analysed by ICP-OES	Dry	U	0.01	% w/w SO4
CE119	Sulphur (total)	Aqua regia digest, analysed by ICP-OES	Dry		100	mg/kg S
CE119	Sulphur (total)	Aqua regia digest, analysed by ICP-OES	Dry		0.01	% w/w S

Chemtech Environmental Limited

DEVIATING SAMPLE INFORMATION

Comments
Sample deviation is determined in accordance with the UKAS note "Guidance on Deviating Samples" and based on reference standards and laboratory trials.
For samples identified as deviating, test result(s) may be compromised and may not be representative of the sample at the time of sampling.
Chemtech Environmental Ltd cannot be held responsible for the integrity of sample(s) received if Chemtech Environmental Ltd did not undertake the sampling. Such samples may be deviating.

Key

N	No (not deviating sample)
Y	Yes (deviating sample)
NSD	Sampling date not provided
NST	Sampling time not provided (waters only)
EHT	Sample exceeded holding time(s)
IC	Sample not received in appropriate containers
HP	Headspace present in sample container
NCF	Sample not chemically fixed (where appropriate)
OR	Other (specify)

Lab ref	Sample id	Depth (m)	Deviating	Tests (Reason for deviation)
124158-1	TP101	2.10	Y	All (NSD)
124158-2	TP102	2.50	Y	All (NSD)

Chemtech Environmental Limited

ADDITIONAL INFORMATION

Notes

Opinions and interpretations expressed herein are outside the UKAS accreditation scope.

Unless otherwise stated, Chemtech Environmental Ltd was not responsible for sampling.

All testing carried out at Unit 6 Parkhead, Stanley, DH9 7YB, except for subcontracted testing.

Methods, procedures and performance data are available on request.

Results reported herein relate only to the material supplied to the laboratory.

This report shall not be reproduced except in full, without prior written approval.

Samples will be disposed of 4 weeks from initial receipt unless otherwise instructed.

For soils and solids, all results are reported on a dry basis. Samples dried at no more than 30°C in a drying cabinet.

Analytical results are inclusive of stones, where applicable.

LABORATORY REPORT

Contract Number: PSL23/4332

Report Date: 28 June 2023

Client's Reference: G230651/Geo 11

Client Name: Strata Geotechnics
Kirkby Lane
Pinxton
Nottinghamshire
NG16 6JA

For the attention of: Izaac Lovatt

Contract Title: A46 Walsgrave

Date Received: 7/6/2023
Date Commenced: 7/6/2023
Date Completed: 28/06/2023

A copy of the Laboratory Schedule of accredited tests as issued by UKAS is attached to this report. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced other than in full, without the prior written approval of the laboratory.

Checked and Approved Signatories:

A Watkins (Director)
R Berriman (Quality Manager)
S Royle (Laboratory Manager)

[redacted]
M Fennell (Senior Technician)

L Knight (Assistant Laboratory Manager)
S Eyre (Senior Technician)

5 – 7 Hexthorpe Road,
Hexthorpe,
Doncaster,
DN4 0AR
Tel: [redacted]
Email: [redacted]@prosoils.co.uk
[redacted]@prosoils.co.uk

SUMMARY OF LABORATORY SOIL DESCRIPTIONS

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Description of Sample
WS108	5	B	3.00	3.50	Brown sandy clayey GRAVEL.

UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

Contract No: PSL23/4332

Client Ref: G230651

SUMMARY OF SOIL CLASSIFICATION TESTS

(BS1377 : PART 2 : 1990)

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Moisture Content % Clause 3.2	Linear Shrinkage % Clause 6.5	Particle Density Mg/m^3 Clause 8.2	Liquid Limit % Clause 4.3/4	Plastic Limit % Clause 5.3	Plasticity Index % Clause 5.4	Passing .425mm %	Remarks
WS108	5	B	3.00	3.50	15				NP			

SYMBOLS : **NP : Non Plastic** *** : Liquid Limit and Plastic Limit Wet Sieved.**

UKAS TESTING 4043 / PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY	**A46 Walsgrave**	**Contract No:** PSL23/4332 Client Ref: G230651

LABORATORY REPORT

Contract Number: PSL23/4339

Report Date: 13 July 2023

Client's Reference: G230651/Geo 12

Client Name: Strata Geotechnics
Kirkby Lane
Pinxton
Nottinghamshire
NG16 6JA

For the attention of: Izaac Lovatt

Contract Title: A46 Walsgrave

Date Received: 7/6/2023
Date Commenced: 7/6/2023
Date Completed: 13/7/2023

Notes: Opinions and Interpretations are outside the UKAS Accreditation

A copy of the Laboratory Schedule of accredited tests as issued by UKAS is attached to this report. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced other than in full, without the prior written approval of the laboratory.

Checked and Approved Signatories:

A Watkins (Director)	R Berriman (Quality Manager)	S Royle (Laboratory Manager)
[redacted] L Knight (Assistant Laboratory Manager)	S Eyre (Senior Technician)	T Watkins (Senior Technician)

5 – 7 Hexthorpe Road,
Hexthorpe,
Doncaster,
DN4 0AR
Tel: [redacted]
Email: [redacted]@prosoils.co.uk
[redacted]@prosoils.co.uk

SUMMARY OF LABORATORY SOIL DESCRIPTIONS

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Description of Sample
BH115	5	D	0.50		Brown slightly gravelly very sandy CLAY.
BH115	11	B	1.70	1.80	Brown mottled grey gravelly very sandy CLAY.
BH115	12	D	1.90		Brown slightly gravelly very sandy CLAY.
BH115	14	UT	2.00	2.45	Reddish brown mottled grey sandy CLAY.
BH115	17	D	3.00	3.45	Reddish brown mottled grey sandy CLAY.
BH115	19	UT	4.00	4.45	Reddish brown mottled grey sandy CLAY.
BH115	21	D	5.00	5.45	Brown mottled grey slightly gravelly sandy CLAY.
BH115	24	UT	6.50	6.95	Brown mottled grey slightly gravelly sandy CLAY.
BH115	27	D	8.00	8.45	Reddish brown slightly gravelly sandy CLAY.
BH115	30	D	9.50	9.85	Reddish brown slightly gravelly sandy CLAY.
BH125A	9	D	1.20		Brown slightly gravelly sandy CLAY.
BH125A	10	UT	1.50	1.95	Brown slightly gravelly sandy CLAY.
BH125A	14	D	2.20		Brown slightly gravelly very sandy CLAY.
BH125A	19	B	3.50	4.00	Brown slightly gravelly clayey silty SAND.
BH125A	22	B	4.50	5.00	Brown slightly gravelly slightly clayey silty SAND.
BH125A	27	B	7.00	7.80	Brown sandy slightly clayey silty GRAVEL.
BH125A	31	D	9.50		Brown slightly gravelly very sandy CLAY.

SUMMARY OF SOIL CLASSIFICATION TESTS

(BS1377 : PART 2 : 1990)

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Moisture Content % Clause 3.2	Linear Shrinkage % Clause 6.5	Particle Density Mg/m^3 Clause 8.2	Liquid Limit % Clause 4.3/4	Plastic Limit % Clause 5.3	Plasticity Index % Clause 5.4	Passing .425mm %	Remarks
BH115	5	D	0.50		18			34	16	18	98	Low Plasticity CL
BH115	12	D	1.90		17			31	15	16	87	Low Plasticity CL
BH115	17	D	3.00	3.45	11			42	20	22	100	Intermediate Plasticity CI
BH115	21	D	5.00	5.45	13			39	18	21	88	Intermediate Plasticity CI
BH115	27	D	8.00	8.45	10			41	21	20	95	Intermediate Plasticity CI
BH115	30	D	9.50	9.85	11			37	19	18	97	Intermediate Plasticity CI
BH125A	9	D	1.20		17			44	21	23	92	Intermediate Plasticity CI
BH125A	14	D	2.20		15			29	14	15	96	Low Plasticity CL
BH125A	19	B	3.50	4.00	22							
BH125A	22	B	4.50	5.00	12							
BH125A	31	D	9.50		11			34	16	18	90	Low Plasticity CL

SYMBOLS : NP : Non Plastic * : Liquid Limit and Plastic Limit Wet Sieved.

UKAS TESTING 4043

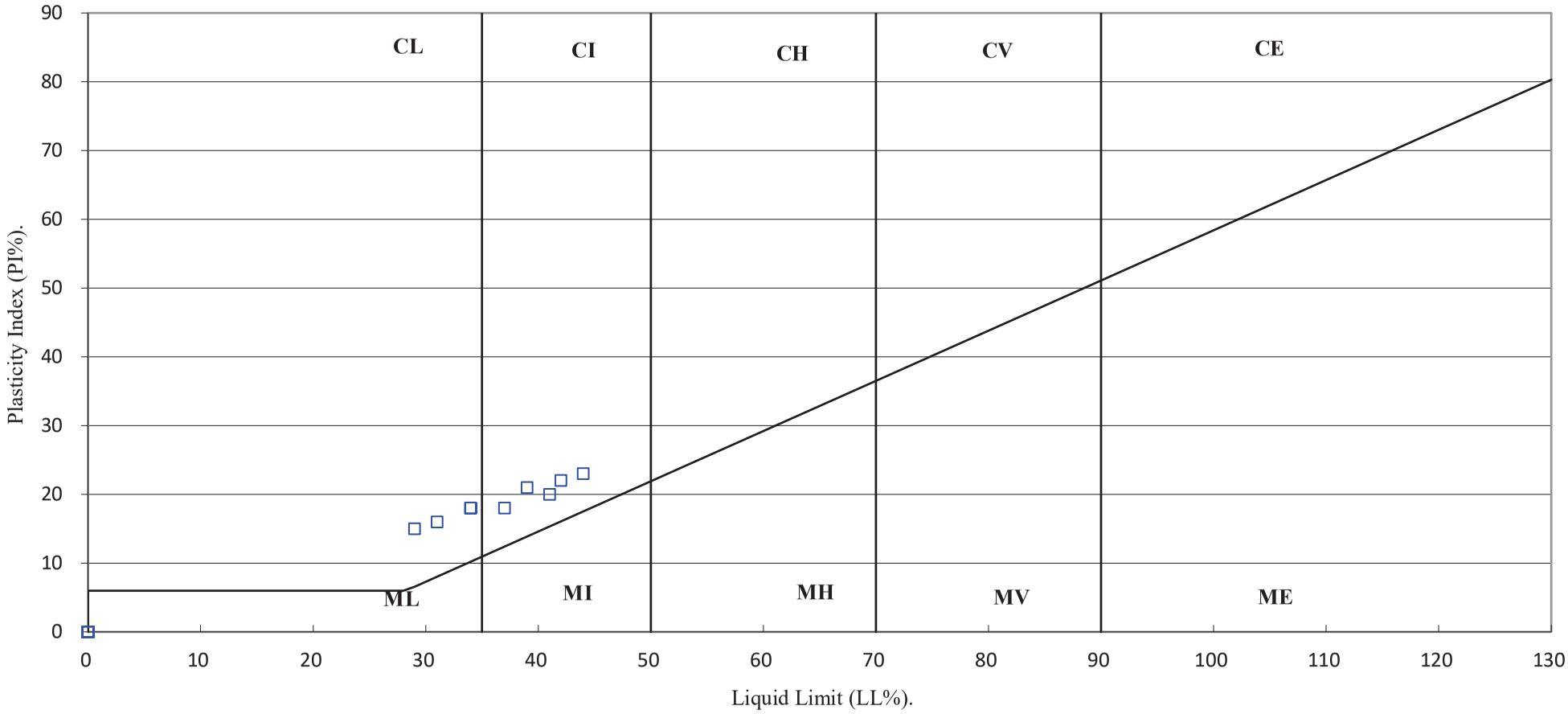
PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

Contract No: PSL23/4339

Client Ref: G230651

PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION.



UKAS TESTING 4043	A46 Walsgrave	Contract No: PSL23/4339
PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY		Client Ref: G230651

SUMMARY OF LABORATORY HAND VANES

(BS1377 : PART 7 : 1990)

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Moisture Content %	Peak Shear Strength kPa	Residual Shear Strength kPa	Remarks
BH115	11	B	1.70	1.80	14	127		
BH115	27	D	8.00	8.45	10	>150		

* This test is out of our UKAS scope

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY	A46 Walsgrave	Contract No: PSL23/4339 Client Ref: G230651

SUMMARY OF SOIL DENSITY RELATED TESTS

(BS1377 : PART 2 & 4 : 1990)

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Moisture Content %	Bulk Density Mg/m^3	Dry Density Mg/m^3	Retained 20mm %	Retained 37.5mm %	Method of compaction kg	Maximum Dry Density Mg/m^3	Minimum Dry Density Mg/m^3	Remarks
BH115	5	D	0.50		18	2.07	1.75						
BH115	12	D	1.90		17	2.09	1.79						
BH115	21	D	5.00	5.45	13	2.13	1.88						
BH125A	19	B	3.50	4.00	22	2.19	1.80						
BH125A	27	B	7.00	7.80	10	2.08	1.89						

UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

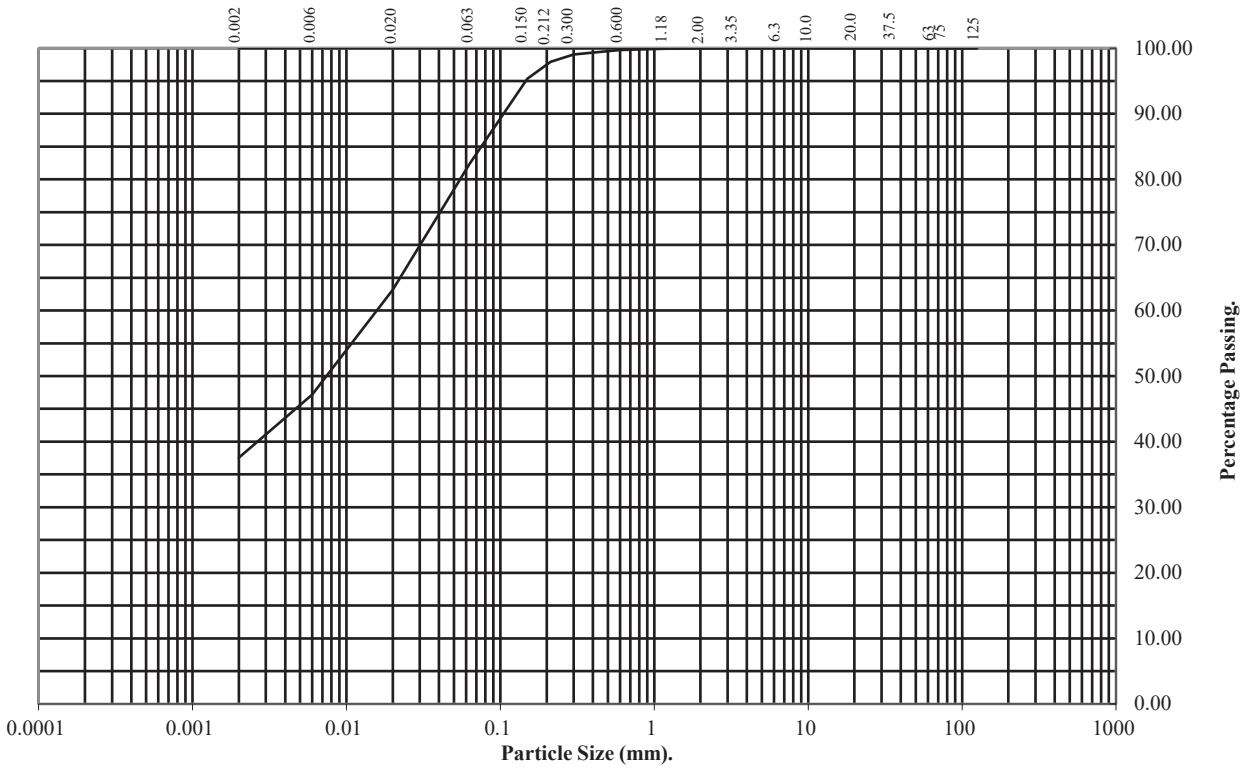
Contract No:
PSL23/4339
Client Ref:
G230651

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

Hole Number:	**BH115**	**Top Depth (m):**	**3.00**
Sample Number:	**17**	**Base Depth(m):**	**3.45**
Sample Type:	**D**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	100
6.3	100
3.35	100
2	100
1.18	100
0.6	100
0.3	99
0.212	98
0.15	95
0.063	82

Particle Diameter	Percentage Passing
0.02	63
0.006	47
0.002	38

Soil Fraction	Total Percentage
Cobbles	0
Gravel	0
Sand	18
Silt	44
Clay	38

Remarks:
See Summary of Soil Descriptions

UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

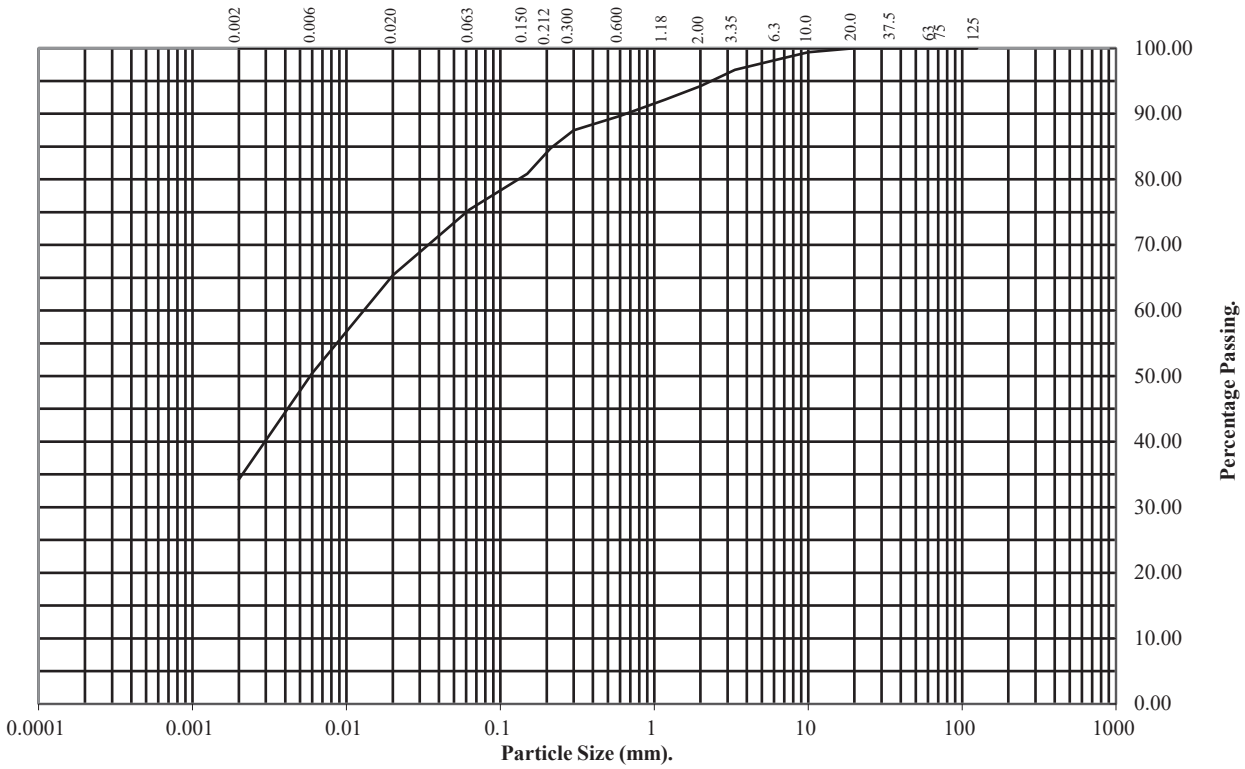
Contract No:
PSL23/4339
Client Ref:
G230651

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

Hole Number:	**BH115**	**Top Depth (m):**	**5.00**
Sample Number:	**21**	**Base Depth(m):**	**5.45**
Sample Type:	**D**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	99
6.3	98
3.35	97
2	94
1.18	92
0.6	90
0.3	87
0.212	85
0.15	81
0.063	75

Particle Diameter	Percentage Passing
0.02	65
0.006	50
0.002	34

Soil Fraction	Total Percentage
Cobbles	0
Gravel	6
Sand	19
Silt	41
Clay	34

Remarks:
See Summary of Soil Descriptions

UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

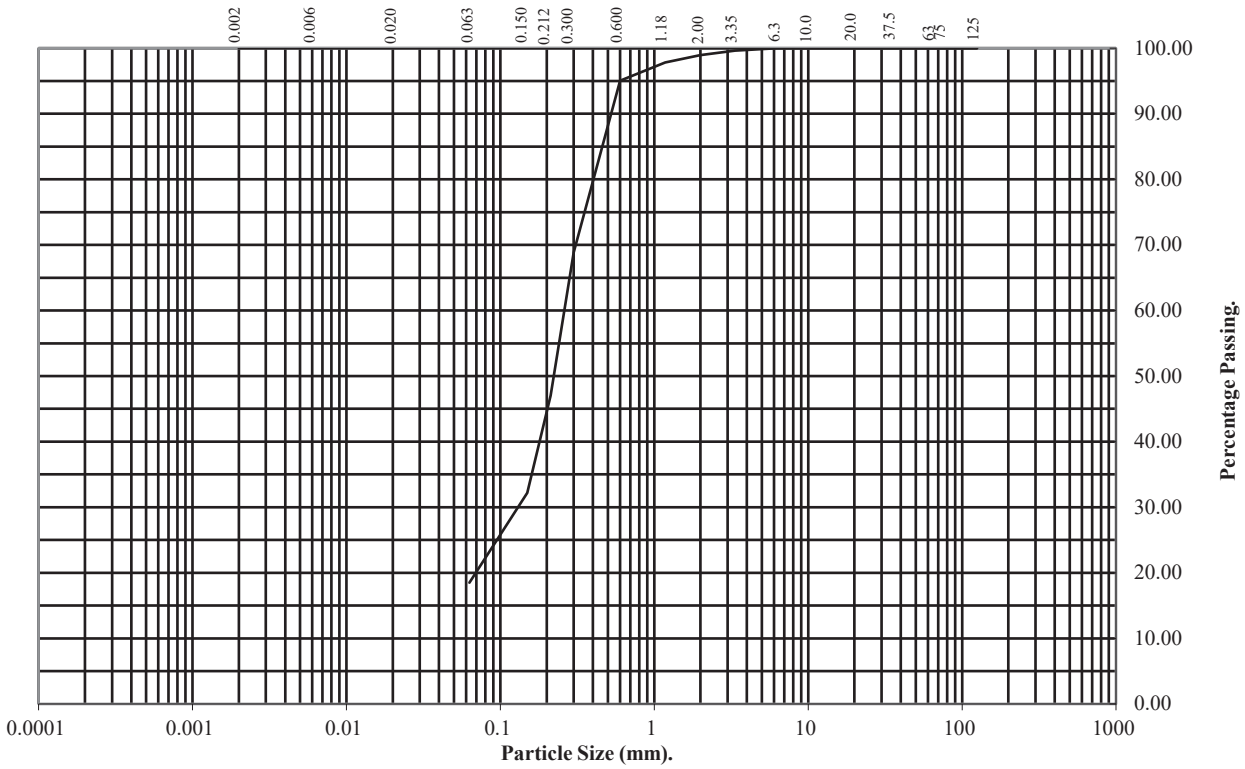
Contract No:
PSL23/4339
Client Ref:
G230651

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number:	**BH125A**	**Top Depth (m):**	**3.50**
Sample Number:	**19**	**Base Depth(m):**	**4.00**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	100
6.3	100
3.35	100
2	99
1.18	98
0.6	95
0.3	69
0.212	47
0.15	32
0.063	18

Soil Fraction	Total Percentage
Cobbles	0
Gravel	1
Sand	81
Silt/Clay	18

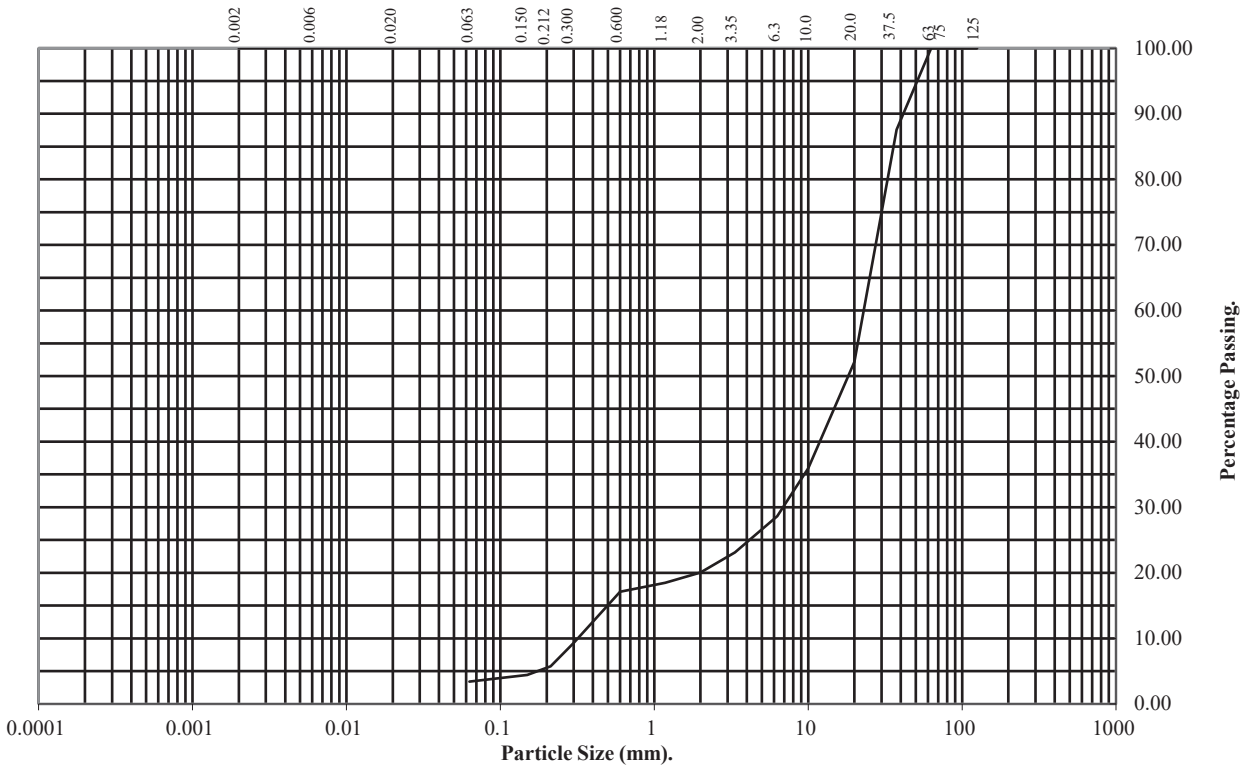
Remarks:
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number:	**BH125A**	**Top Depth (m):**	**7.00**
Sample Number:	**27**	**Base Depth(m):**	**7.80**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	88
20	52
10	36
6.3	29
3.35	23
2	20
1.18	18
0.6	17
0.3	9
0.212	6
0.15	4
0.063	3

Soil Fraction	Total Percentage
Cobbles	0
Gravel	80
Sand	17
Silt/Clay	3

Remarks:

See Summary of Soil Descriptions

UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

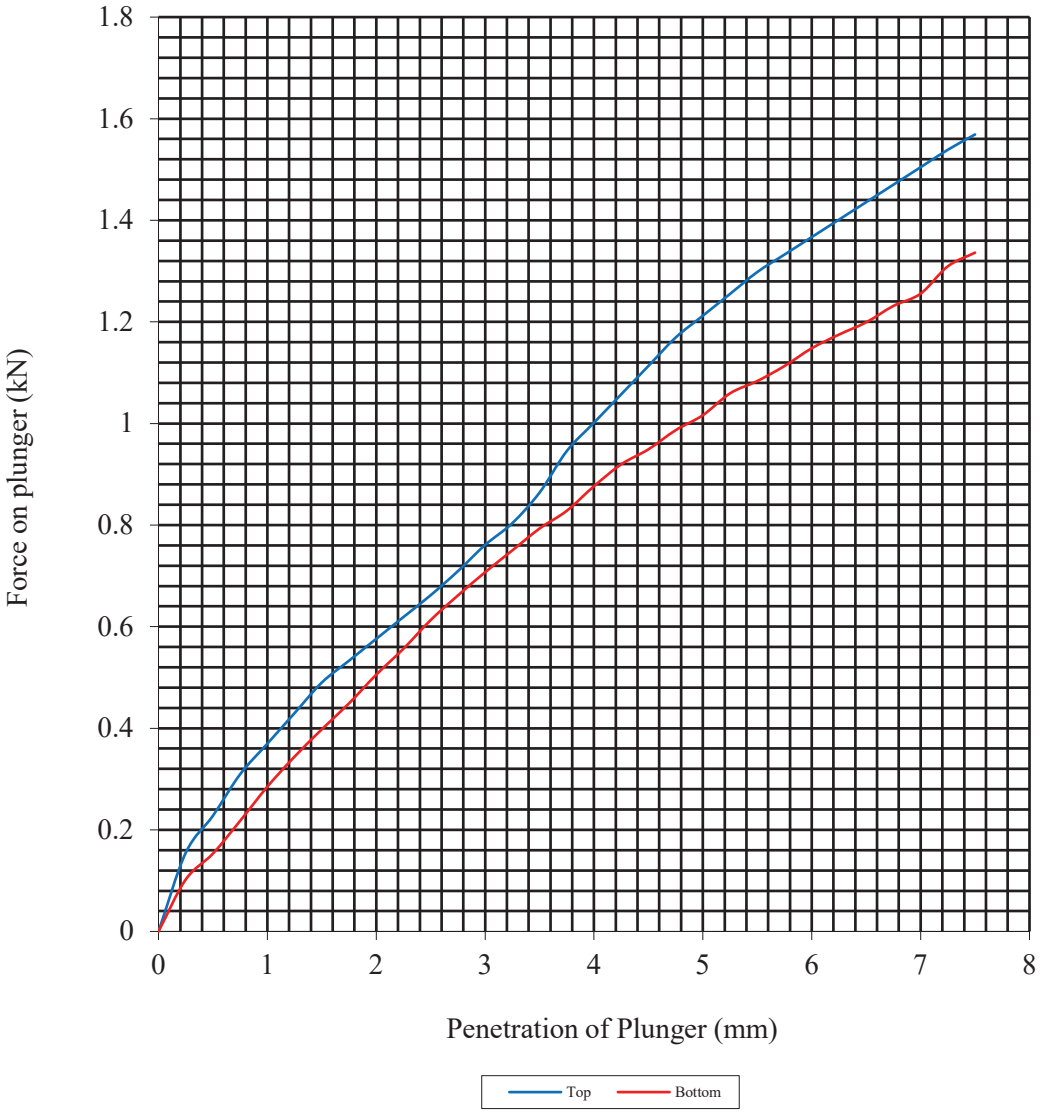
A46 Walsgrave

Contract No:
PSL23/4339
Client Ref:
G230651

CALIFORNIA BEARING RATIO TEST

BS 1377 : Part 4 : 1990

Hole Number:	**BH115**	**Top Depth (m):**	**1.70**
Sample Number:	**11**	**Base Depth (m):**	**1.80**
Sample Type:	**B**		



Initial Sample Conditions		Sample Preparation		Final Moisture Content %		C.B.R. Value %	
Moisture Content:	14	Surcharge Kg:	4.00	Sample Top	14	Sample Top	6.1
Bulk Density Mg/m3:	2.12	Soaking Time hrs	0	Sample Bottom	14	Sample Bottom	5.1
Dry Density Mg/m3:	1.85	Swelling mm:	0	Remarks : See Summary of Soil Descriptions.			
Percentage retained on 20mm BS test sieve:			17				
Compaction Conditions		2.5kg					

UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

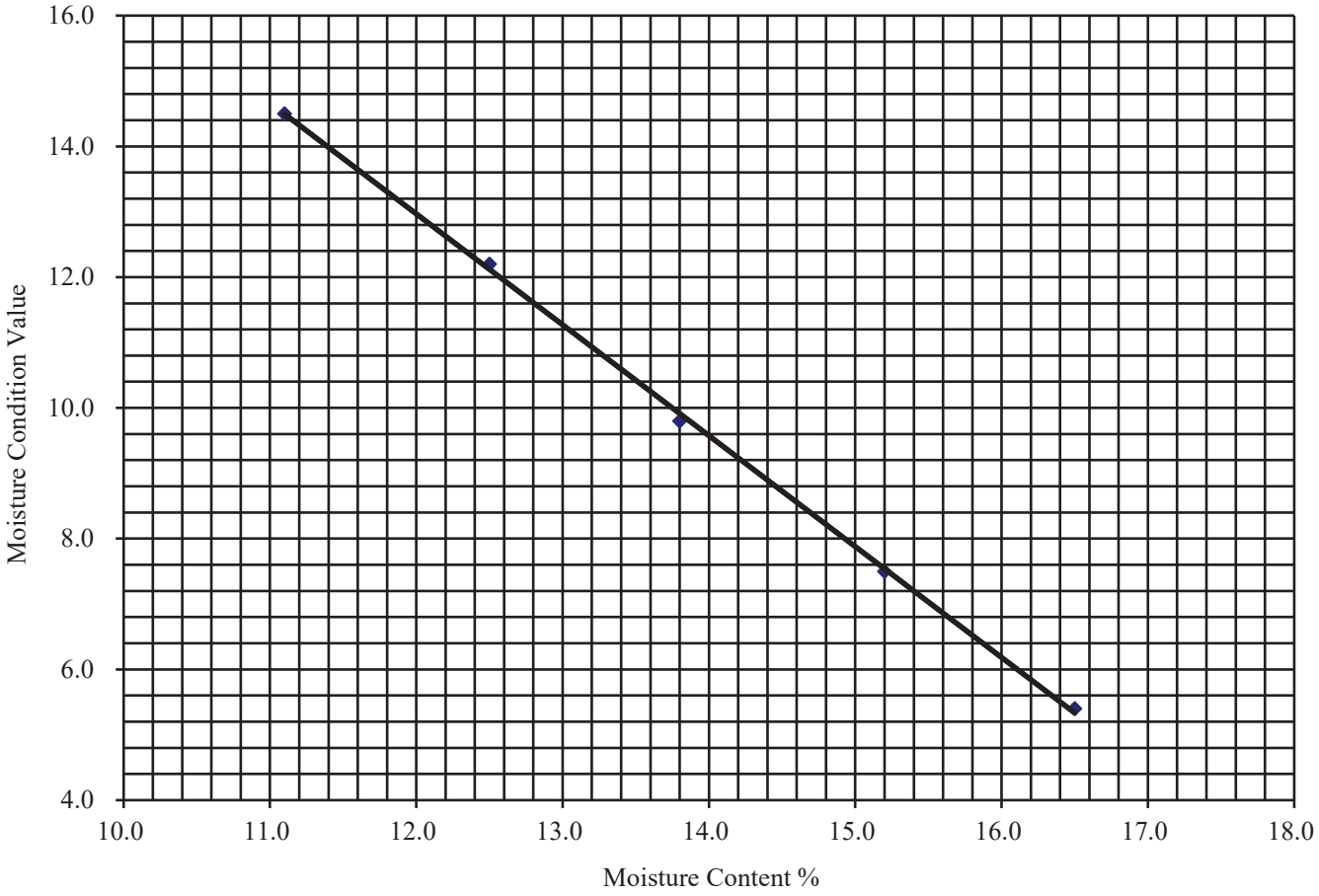
Contract No:
PSL23/4339
Client Ref:
G230651

MOISTURE CONDITION VALUE CALIBRATION

BS1377 : Part 4 : 1990 Clause 5.5

Hole Number:	**BH115**	**Top Depth (m):**	**1.70**
Sample Number:	**11**	**Base Depth (m):**	**1.80**
Sample Type:	**B**		

Initial Moisture Content (%):	14
Single/Separate Samples Tested	Separate
Material Retained on the 20mm BS Test Sieve (%):	17



Test Results.

Test Number	1	2	3	4	5
Moisture Content (%)	11.1	12.5	13.8	15.2	16.5
MCV	14.5	12.2	9.8	7.5	5.4

ONE DIMENSIONAL CONSOLIDATION TEST

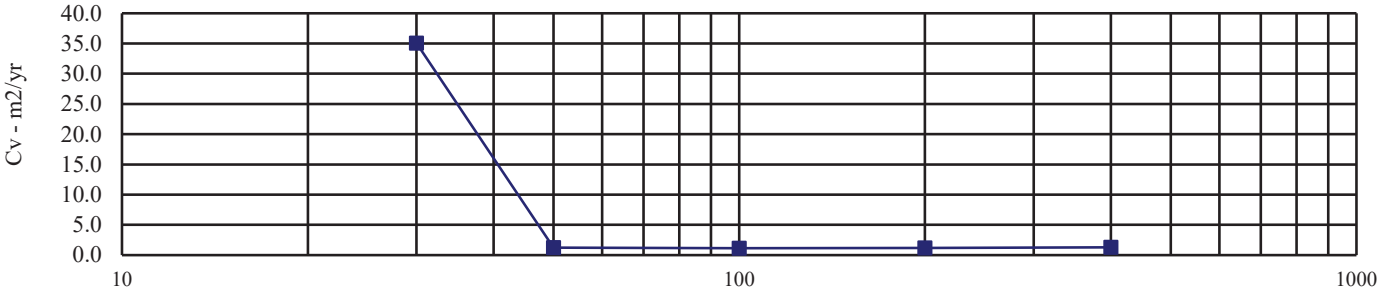
BS 1377: Part 5: 1990: Clause 3

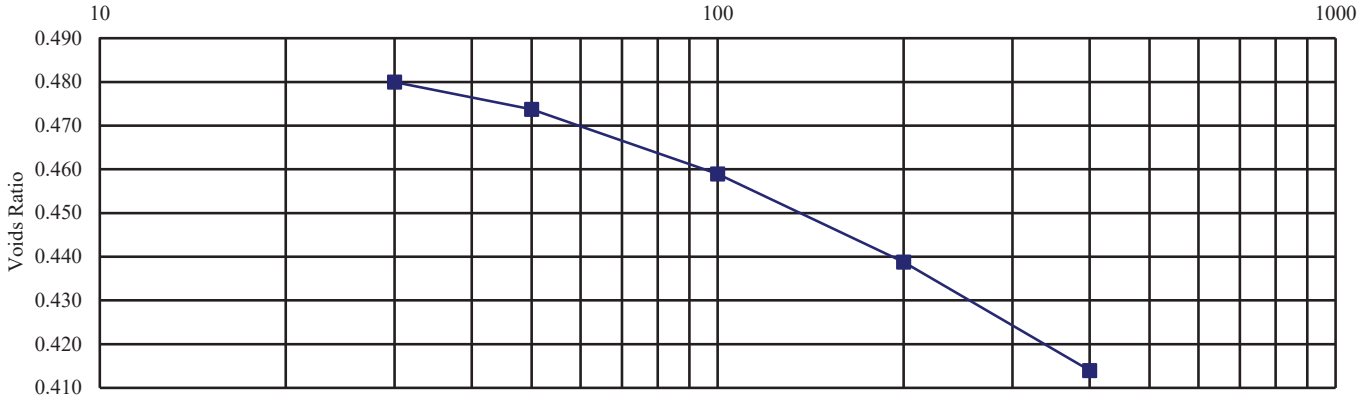
Hole Number: BH115 **Top Depth (m):** 2.00

Sample Number: 14 **Base Depth (m) :** 2.45

Sample Type: UT

Initial Conditions		Pressure Range kPa		Mv m2/MN	Cv m2/yr	Specimen location within tube:	Top
Moisture Content (%):	18						
Bulk Density (Mg/m3):	2.11	0	30	0.125	35.065	Method used to determine CV:	T90
Dry Density (Mg/m3):	1.78	30	50	0.211	1.241		
Voids Ratio:	0.486	50	100	0.200	1.142	Nominal temperature during test ' C:	20
Degree of saturation:	100.8	100	200	0.138	1.205		
Height (mm):	20.02	200	400	0.086	1.263	Remarks: See summary of soil descriptions	
Diameter (mm)	75.015						
Particle Density (Mg/m3): Assumed	2.65						





UKAS TESTING 4043 / PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY	A46 Walsgrave	Contract No: PSL23/4339 Client Ref: G230651

ONE DIMENSIONAL CONSOLIDATION TEST

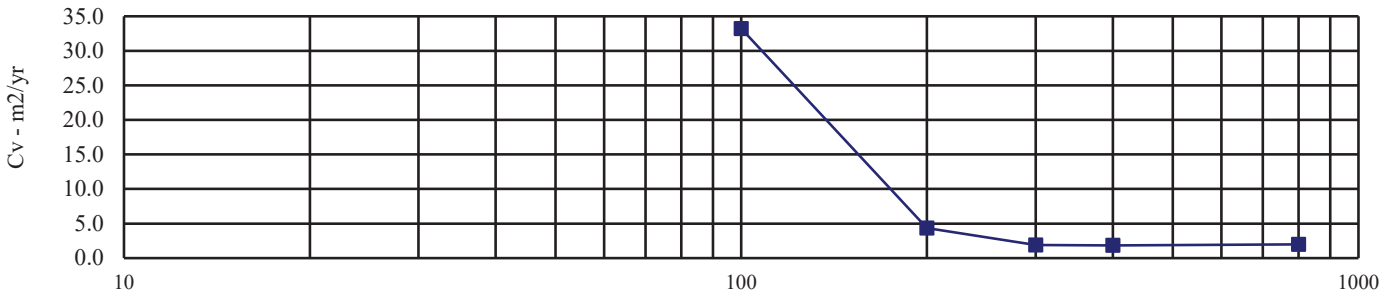
BS 1377: Part 5: 1990: Clause 3

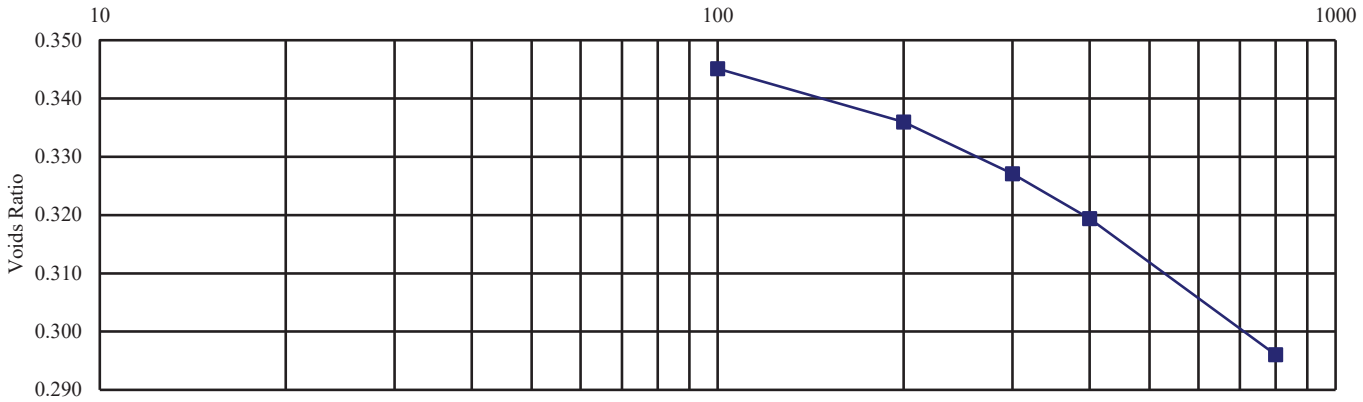
Hole Number: BH115 **Top Depth (m):** 6.50

Sample Number: 24 **Base Depth (m) :** 6.95

Sample Type: UT

Initial Conditions		Pressure Range kPa		Mv m2/MN	Cv m2/yr	Specimen location within tube:	Top
Moisture Content (%):	13						
Bulk Density (Mg/m3):	2.19	0	100	0.154	33.221	Method used to determine CV:	T90
Dry Density (Mg/m3):	1.94	100	200	0.068	4.359		
Voids Ratio:	0.366	200	300	0.066	1.891	Nominal temperature during test ' C:	20
Degree of saturation:	94.3	300	400	0.058	1.837		
Height (mm):	20.008	400	800	0.044	1.996	Remarks: See summary of soil descriptions	
Diameter (mm)	75.015						
Particle Density (Mg/m3): Assumed	2.65						





UKAS TESTING 4043 / PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY	A46 Walsgrave	Contract No: PSL23/4339 Client Ref: G230651

ONE DIMENSIONAL CONSOLIDATION TEST

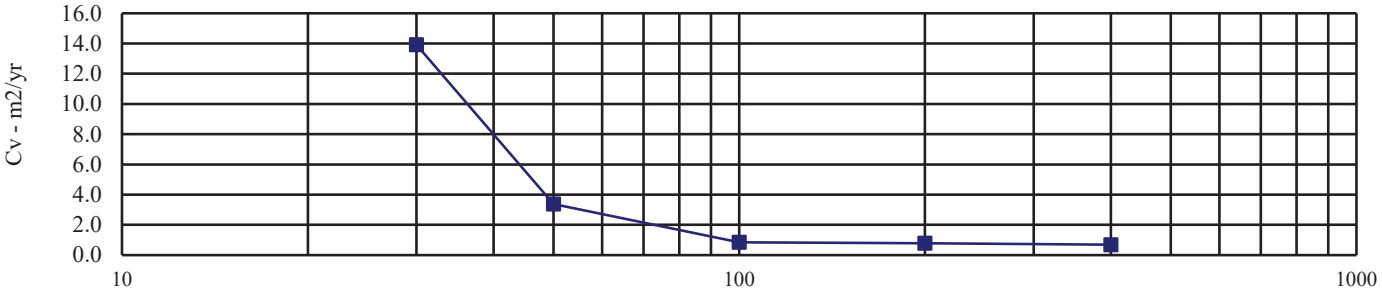
BS 1377: Part 5: 1990: Clause 3

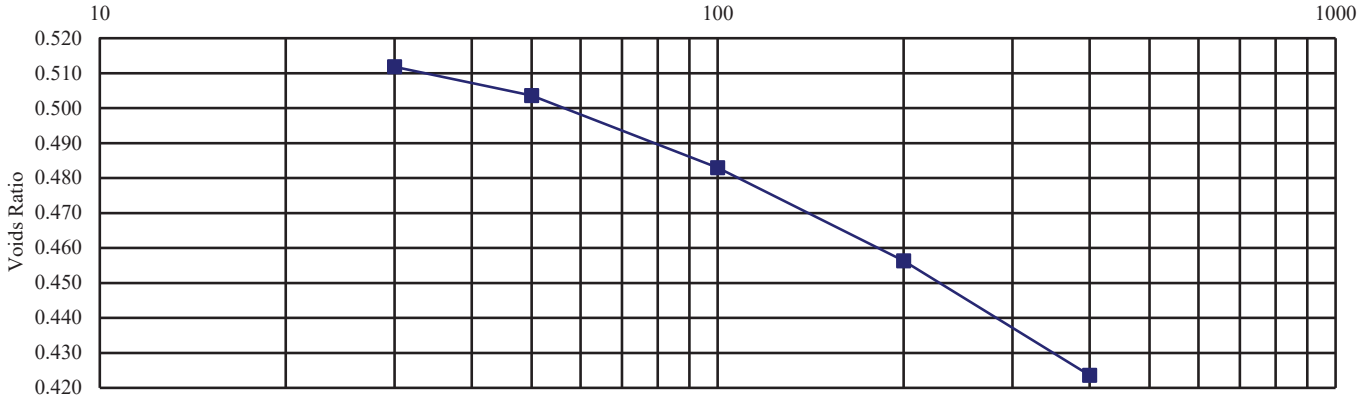
Hole Number: BH125A **Top Depth (m):** 1.50

Sample Number: 10 **Base Depth (m) :** 1.95

Sample Type: UT

Initial Conditions		Pressure Range kPa		Mv m2/MN	Cv m2/yr	Specimen location within tube:	Top
Moisture Content (%):	20						
Bulk Density (Mg/m3):	2.07	0	30	0.525	13.915	Method used to	
Dry Density (Mg/m3):	1.73	30	50	0.272	3.384	determine CV:	T90
Voids Ratio:	0.536	50	100	0.275	0.846	Nominal temperature	
Degree of saturation:	97.6	100	200	0.179	0.785	during test ' C:	20
Height (mm):	20.004	200	400	0.113	0.691	Remarks:	
Diameter (mm)	75.008					See summary of soil descriptions	
Particle Density (Mg/m3): Assumed	2.65						





UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

Contract No: PSL23/4339

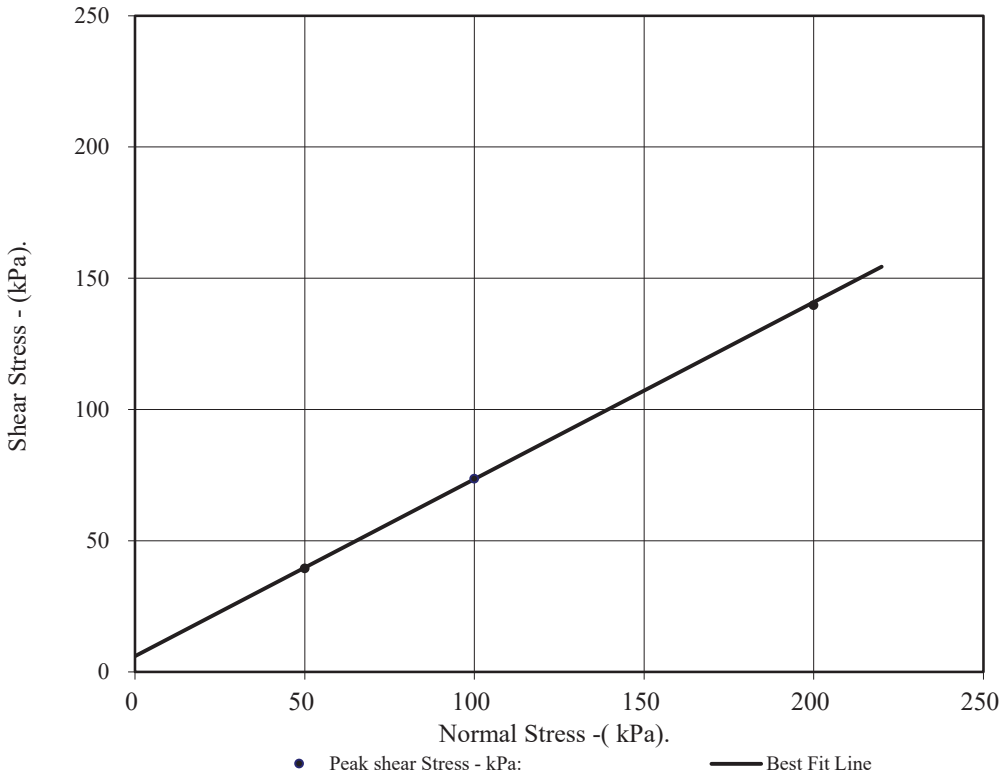
Client Ref: G230651

CONSOLIDATED DRAINED SHEARBOX TEST

BS1377:Part 7:1990 Clause 5 SHW Clause 636 Paragraph 2

Hole Number:	**BH125A**		Top Depth:	**3.50**
Sample Number:	**19**		Base Depth:	**4.00**
Sample Conditions:	Dry		Sample Type	**B**
Particle Density - Mg/m3:	2.65	Assumed	**Remarks:**	
Sample Preparation:	Material tested passing 20mm sieve Recompacted using hand tamped effort			
Sample Description:	**See summary of soil descriptions**			

STAGE	**1**	**2**	**3**
Initial Conditions			
Height - mm:	150	150	150
Length - mm:	300	300	300
Moisture Content - %:	22	22	22
Bulk Density - Mg/m3:	2.19	2.19	2.19
Dry Density - Mg/m3:	1.79	1.79	1.79
Voids Ratio:	0.480	0.480	0.480
Normal Pressure- kPa	50	100	200
Consolidation Stage			
Consolidated Height - mm:	149.53	148.82	148.73
Shearing Stage			
Rate of Strain (mm/min)	1.00	1.00	1.00
Displacement at peak shear stress (mm)	14.50	17.55	21.50
Peak shear Stress - kPa:	39	74	140
Final Consolidated Conditions			
Moisture Content - %:	21	20	20
Bulk Density - Mg/m3:	2.20	2.22	2.23
Dry Density - Mg/m3:	1.81	1.85	1.86
Peak			
Angle of Shearing Resistance:(~~θ~~)	**34**		
Effective Cohesion - kPa:	**6**		

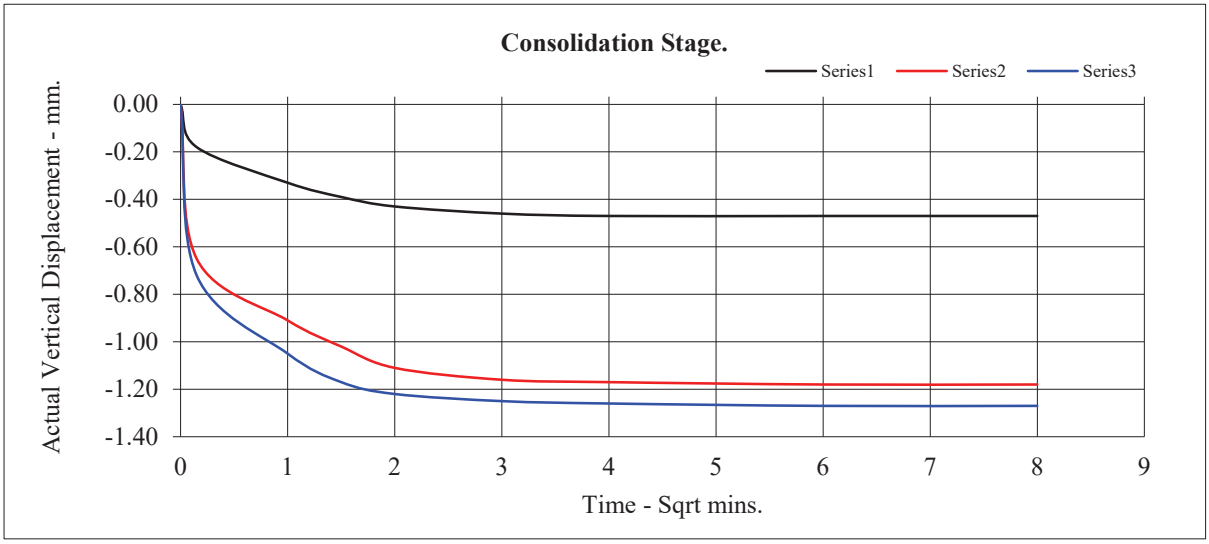


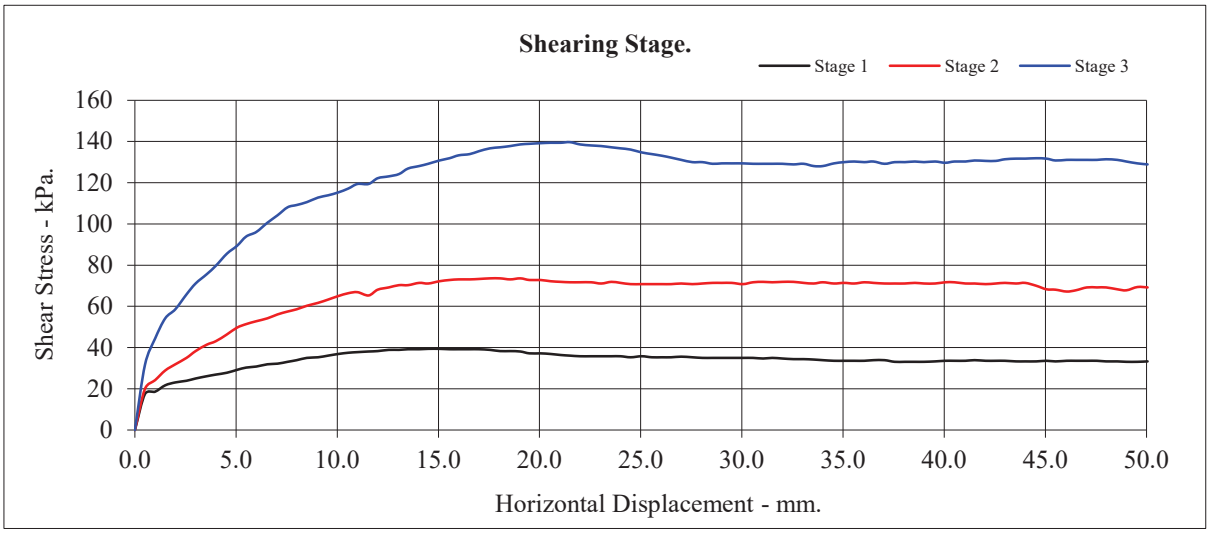
UKAS TESTING 4043 / PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY	**A46 Walsgrave**	**Contract No:** PSL23/4339 **Client Ref:** G230651

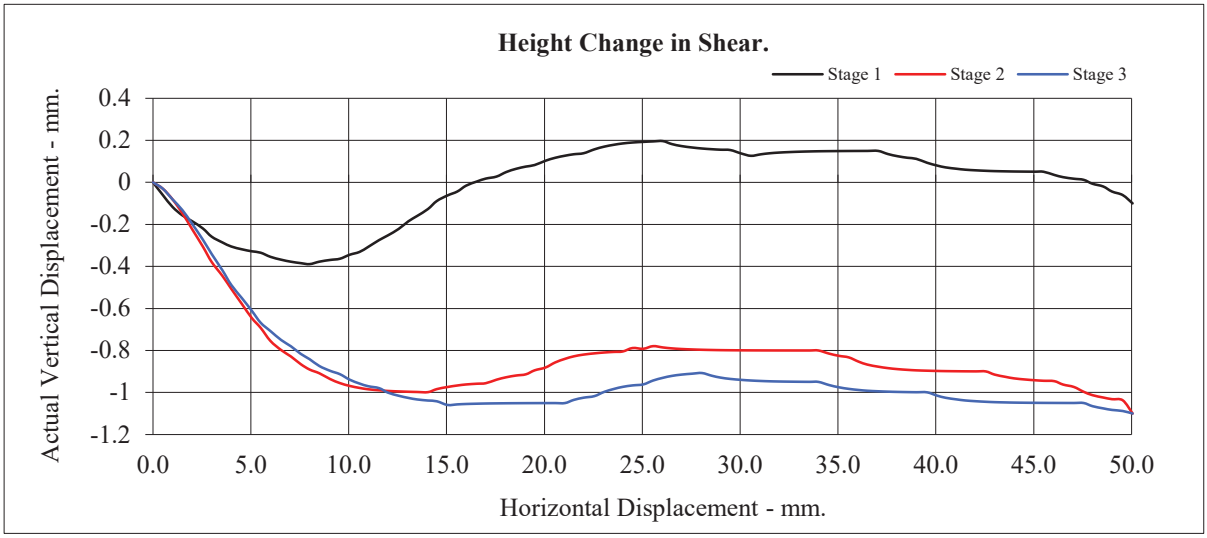
CONSOLIDATED DRAINED SHEARBOX TEST

BS1377:Part 7:1990 Clause 5 SHW Clause 636 Paragraph 2

Hole Number:	**BH125A**	Top Depth:	**3.50**
Sample Number:	**19**	Base Depth:	**4.00**







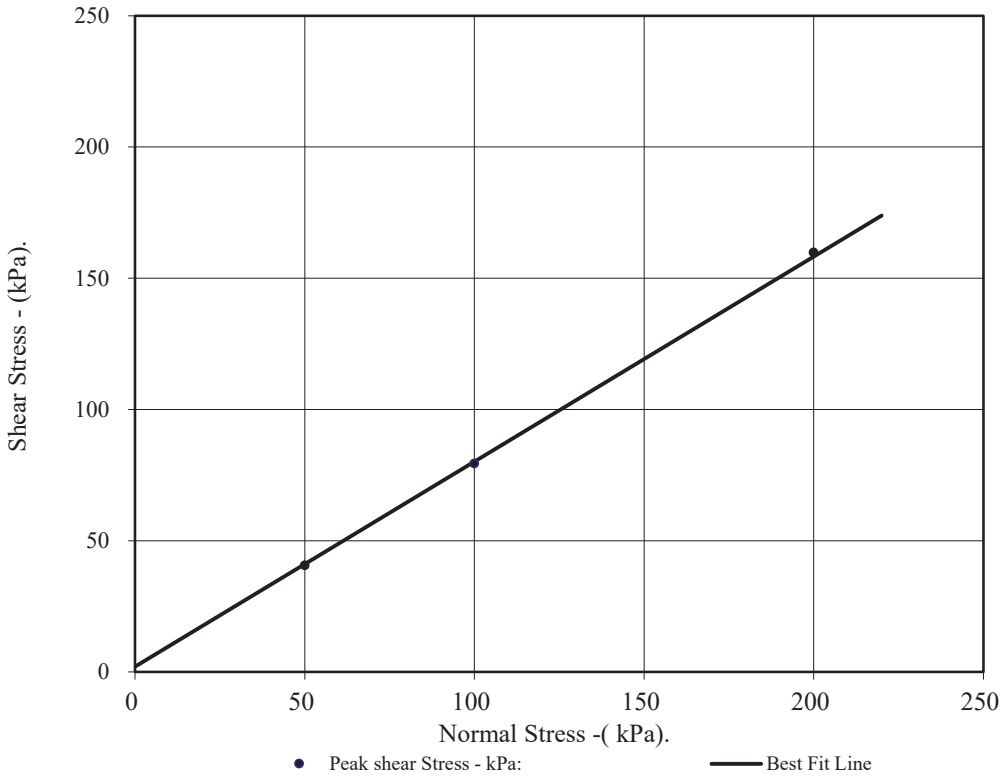
UKAS TESTING 4043 / PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY	**A46 Walsgrave**	**Contract No:** PSL23/4339 **Client Ref:** G230651

CONSOLIDATED DRAINED SHEARBOX TEST

BS1377:Part 7:1990 Clause 5 SHW Clause 636 Paragraph 2

Hole Number:	**BH125A**		Top Depth:	**4.50**
Sample Number:	**22**		Base Depth:	**5.00**
Sample Conditions:	Dry		Sample Type	**B**
Particle Density - Mg/m3:	2.65	Assumed	**Remarks:**	
Sample Preparation:	Material tested passing 20mm sieve Recompacted using hand tamped effort			
Sample Description:	**See summary of soil descriptions**			

STAGE	**1**	**2**	**3**
Initial Conditions			
Height - mm:	150	150	150
Length - mm:	300	300	300
Moisture Content - %:	12	12	12
Bulk Density - Mg/m3:	2.21	2.21	2.21
Dry Density - Mg/m3:	1.97	1.97	1.97
Voids Ratio:	0.345	0.345	0.345
Normal Pressure- kPa	50	100	200
Consolidation Stage			
Consolidated Height - mm:	149.52	148.85	148.58
Shearing Stage			
Rate of Strain (mm/min)	1.00	1.00	1.00
Displacement at peak shear stress (mm)	18.05	18.05	22.00
Peak shear Stress - kPa:	41	79	160
Final Consolidated Conditions			
Moisture Content - %:	10	9.5	9.0
Bulk Density - Mg/m3:	2.19	2.23	2.24
Dry Density - Mg/m3:	1.99	2.04	2.05
Peak			
Angle of Shearing Resistance:(~~θ~~)	**38**		
Effective Cohesion - kPa:	**2**		

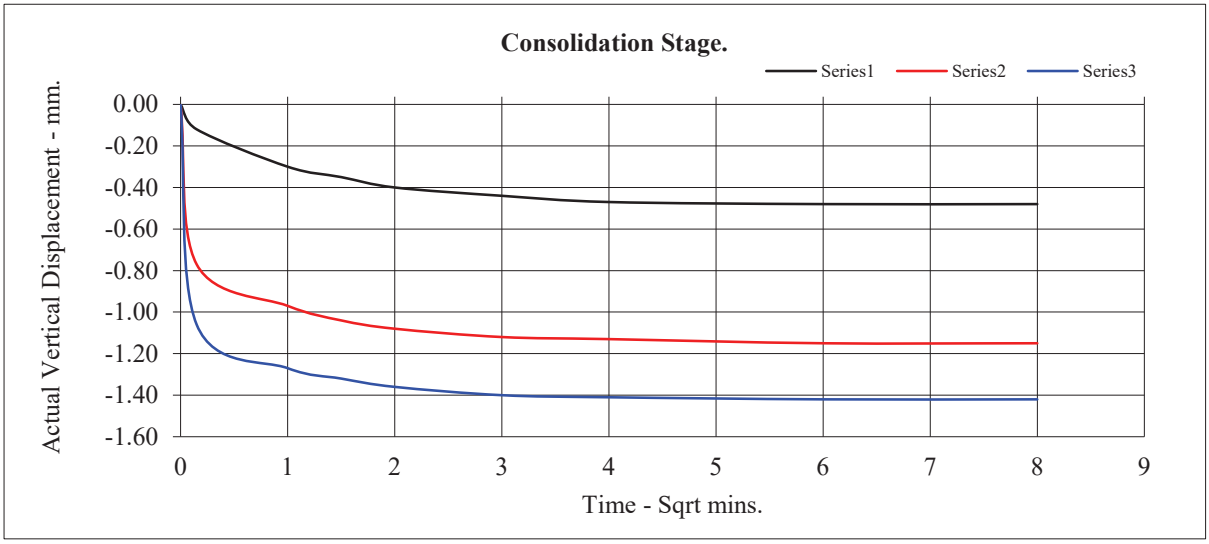


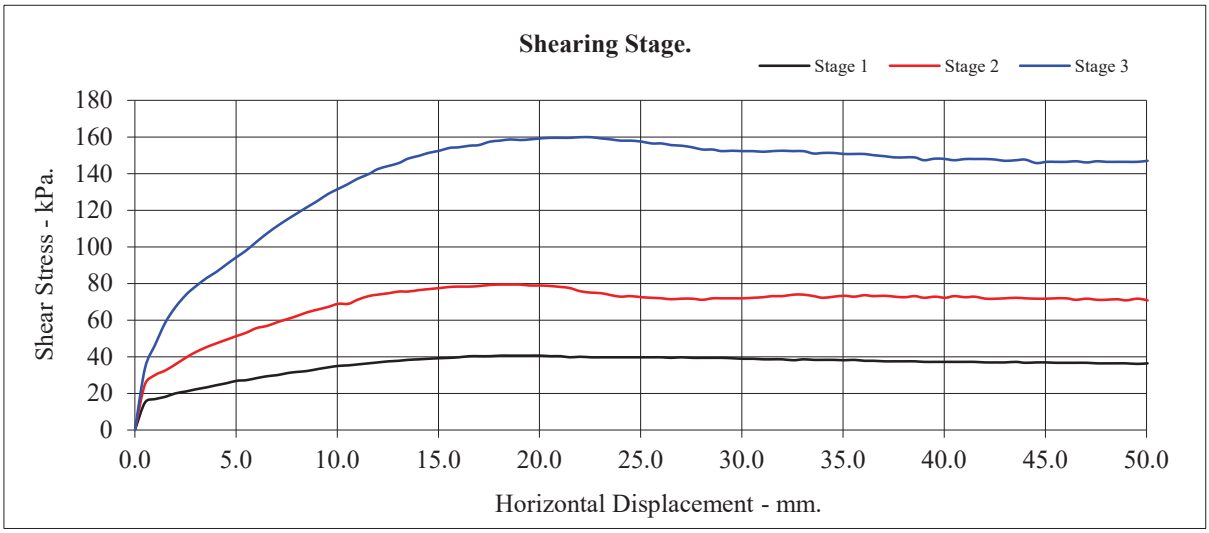
UKAS TESTING 4043 / PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY	**A46 Walsgrave**	**Contract No:** PSL23/4339 **Client Ref:** G230651

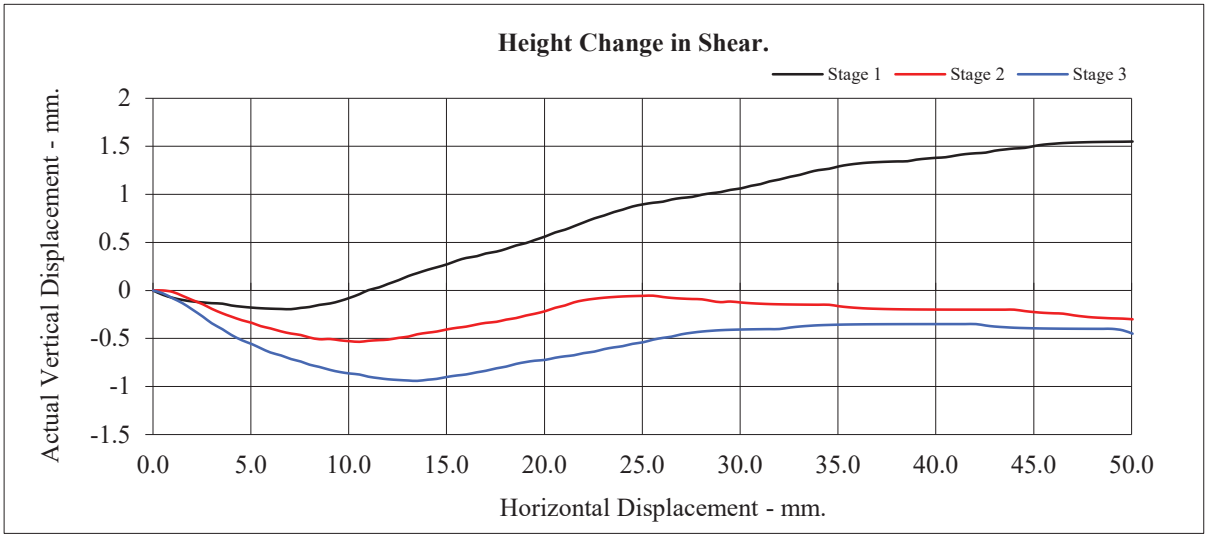
CONSOLIDATED DRAINED SHEARBOX TEST

BS1377:Part 7:1990 Clause 5 SHW Clause 636 Paragraph 2

Hole Number:	**BH125A**	Top Depth:	**4.50**
Sample Number:	**22**	Base Depth:	**5.00**







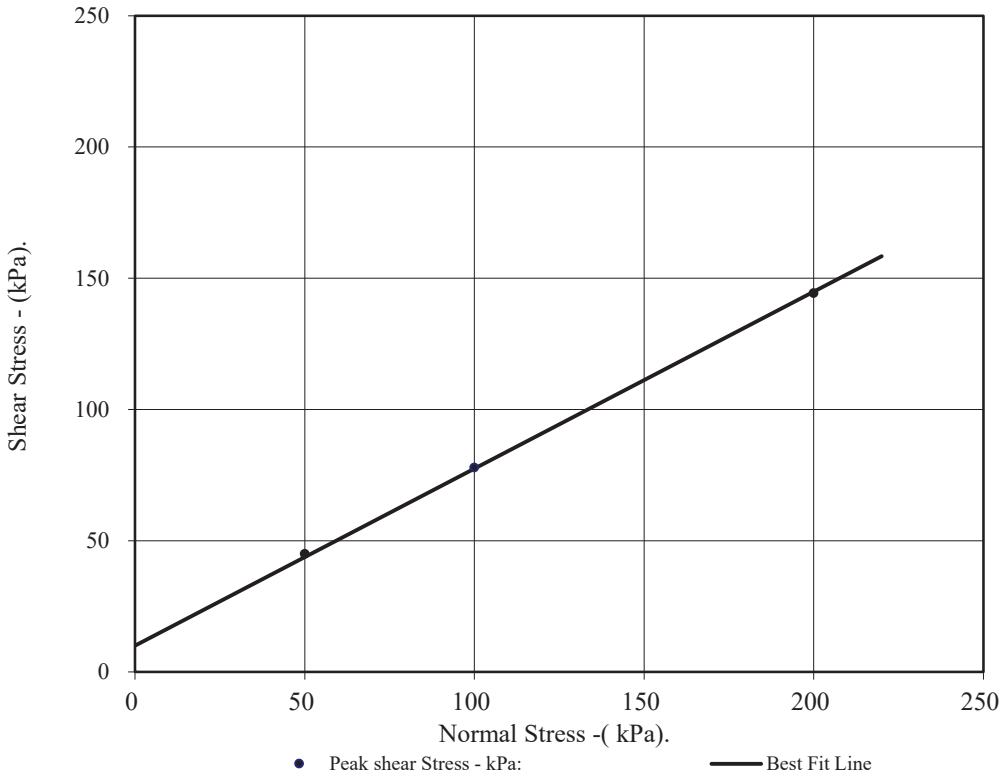
UKAS TESTING 4043 / PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY	**A46 Walsgrave**	**Contract No:** PSL23/4339 **Client Ref:** G230651

CONSOLIDATED DRAINED SHEARBOX TEST

BS1377:Part 7:1990 Clause 5 SHW Clause 636 Paragraph 2

Hole Number:	**BH125A**		Top Depth:	**7.00**
Sample Number:	**27**		Base Depth:	**7.80**
Sample Conditions:	Dry		Sample Type	**B**
Particle Density - Mg/m3:	2.65	Assumed	**Remarks:**	
Sample Preparation:	Material tested passing 20mm sieve Recompacted using hand tamped effort			
Sample Description:	**See summary of soil descriptions**			

STAGE	**1**	**2**	**3**
Initial Conditions			
Height - mm:	150	150	150
Length - mm:	300	300	300
Moisture Content - %:	10	10	10
Bulk Density - Mg/m3:	2.08	2.08	2.08
Dry Density - Mg/m3:	1.89	1.89	1.89
Voids Ratio:	0.400	0.400	0.400
Normal Pressure- kPa	50	100	200
Consolidation Stage			
Consolidated Height - mm:	149.78	149.59	149.53
Shearing Stage			
Rate of Strain (mm/min)	1.00	1.00	1.00
Displacement at peak shear stress (mm)	14.05	15.55	16.55
Peak shear Stress - kPa:	45	78	144
Final Consolidated Conditions			
Moisture Content - %:	10	9.5	9.0
Bulk Density - Mg/m3:	2.04	2.07	2.07
Dry Density - Mg/m3:	1.86	1.89	1.90
Peak			
Angle of Shearing Resistance:(~~θ~~)	**34**		
Effective Cohesion - kPa:	**10**		

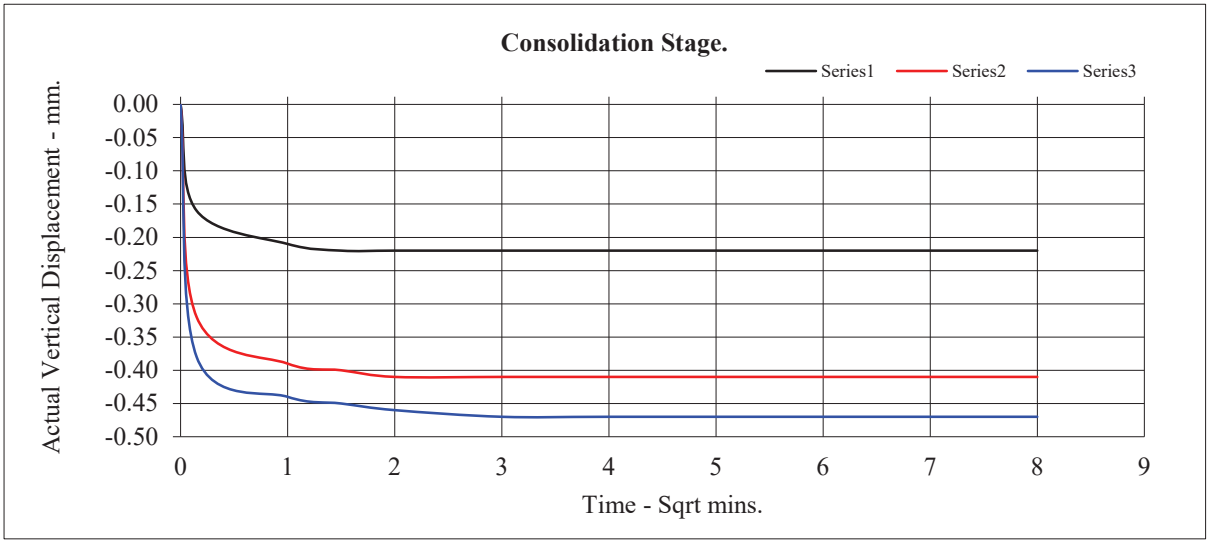


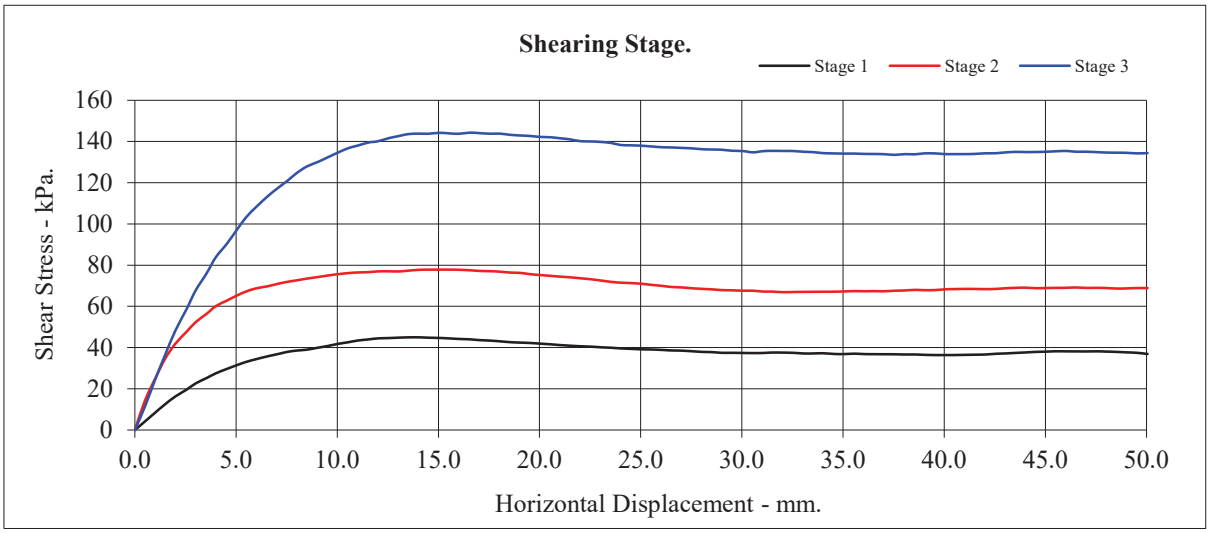
UKAS TESTING 4043 / PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY	**A46 Walsgrave**	**Contract No:** PSL23/4339 **Client Ref:** G230651

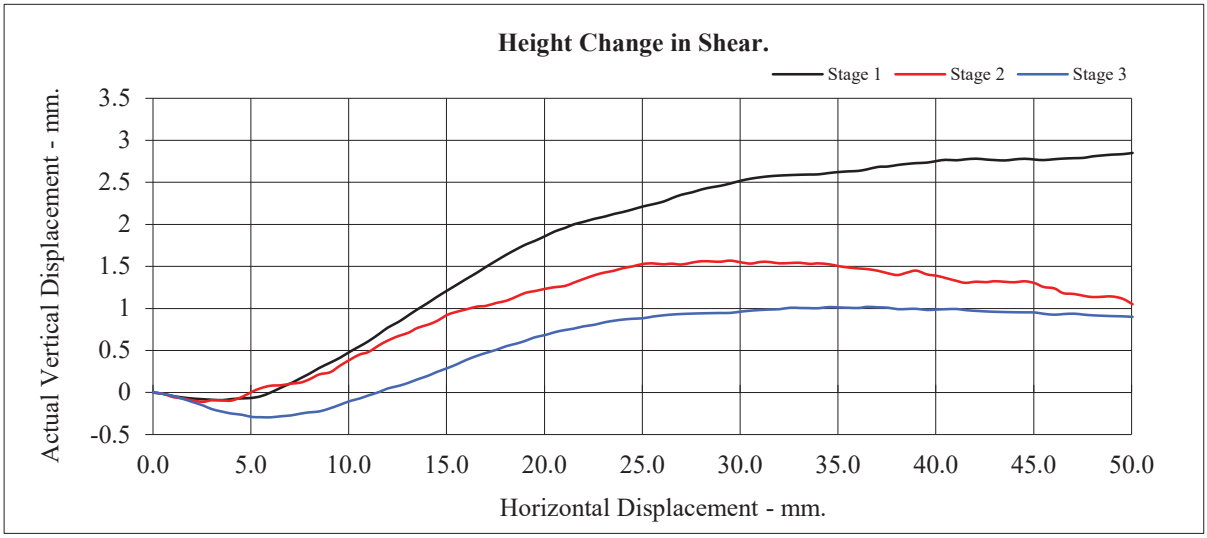
CONSOLIDATED DRAINED SHEARBOX TEST

BS1377:Part 7:1990 Clause 5 SHW Clause 636 Paragraph 2

Hole Number:	**BH125A**	Top Depth:	**7.00**
Sample Number:	**27**	Base Depth:	**7.80**







UKAS TESTING 4043 / PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY	**A46 Walsgrave**	**Contract No:** PSL23/4339 **Client Ref:** G230651

Effective Stress Triaxial Compression

Consolidated Undrained

Summary Report

Sample Details	*sketch showing specimen location in original sample*				
Depth	4.00-4.45m UT19				
Description	See summary of soil descriptions.				
Type	Undisturbed, vertical orientation.				
			Spm. 1	2	3
Initial Sample Length	L_0	(mm)	76.0	76.0	76.0
Initial Sample Diameter	D_0	(mm)	38.0	38.0	38.0
Initial Sample Weight	W_0	(gr)	190.1	187.1	190.0
Initial Bulk Density	ρ_0	(Mg/m3)	2.21	2.17	2.20
Particle Density	ρ_s	(Mg/m3)	2.66	2.66	2.66

Initial Conditions			Spm. 1	2	3
Initial Cell Pressure	σ_{3i}	(kPa)	745	790	980
Initial Back Pressure	U_{bi}	(kPa)	700	700	800
Membrane Thickness	m_b	(mm)	0.400	0.400	0.400
Displacement Input	L_{IP}	(mm)	CH 2	CH 2	CH 2
Load Input	N_{IP}	(N)	CH 4	CH 1	CH 1
Pore Water Pressure Input	u_{pwp}	(kPa)	CH 3	CH 3	CH 3
Sample Volume	V	(cc)	CH 6	CH 6	CH 6
Initial Moisture	ω_i	(%)	14	13	14
Initial Dry Density	ρ_{di}	(Mg/m3)	1.93	1.93	1.93
Initial Voids Ratio	e_i	.	0.379	0.380	0.377
Initial Degree of Saturation	S_i	(%)	100	88	100
B Value	B	.	0.95	0.95	0.97

Final Conditions			Spm. 1	2	3
Final Moisture	ω_f	(%)	18	17	16
Final Dry Density	ρ_{df}	(Mg/m3)	1.95	1.96	2.00
Final Voids Ratio	e_f	.	0.366	0.354	0.332
Final Degree of Saturation	S_f	(%)	100.0	100.0	100.0
Failure Criteria		.	Max. Dev. Stress	Max. Dev. Stress	Max. Dev. Stress
Strain At Failure	ε_f	(%)	19.69	20.00	13.21
Stress At Failure	$(\sigma_1-\sigma_3)_f$	(kPa)	340.7	361.6	492.1
Minor Stress At Failure	σ_3'	(kPa)	158.0	168.0	234.2
Major Stress At Failure	σ_1'	(kPa)	498.7	529.6	726.3
Principal Stress Ratio At Failure	σ_1'/σ_3'		3.157	3.152	3.101
PwP At Failure Criteria	u_f	(kPa)	587.0	622.0	745.8

Notes

Plastic

PSL PROFESSIONAL SOILS LABORATORY — A PHENNA GROUP COMPANY — UKAS TESTING 4043

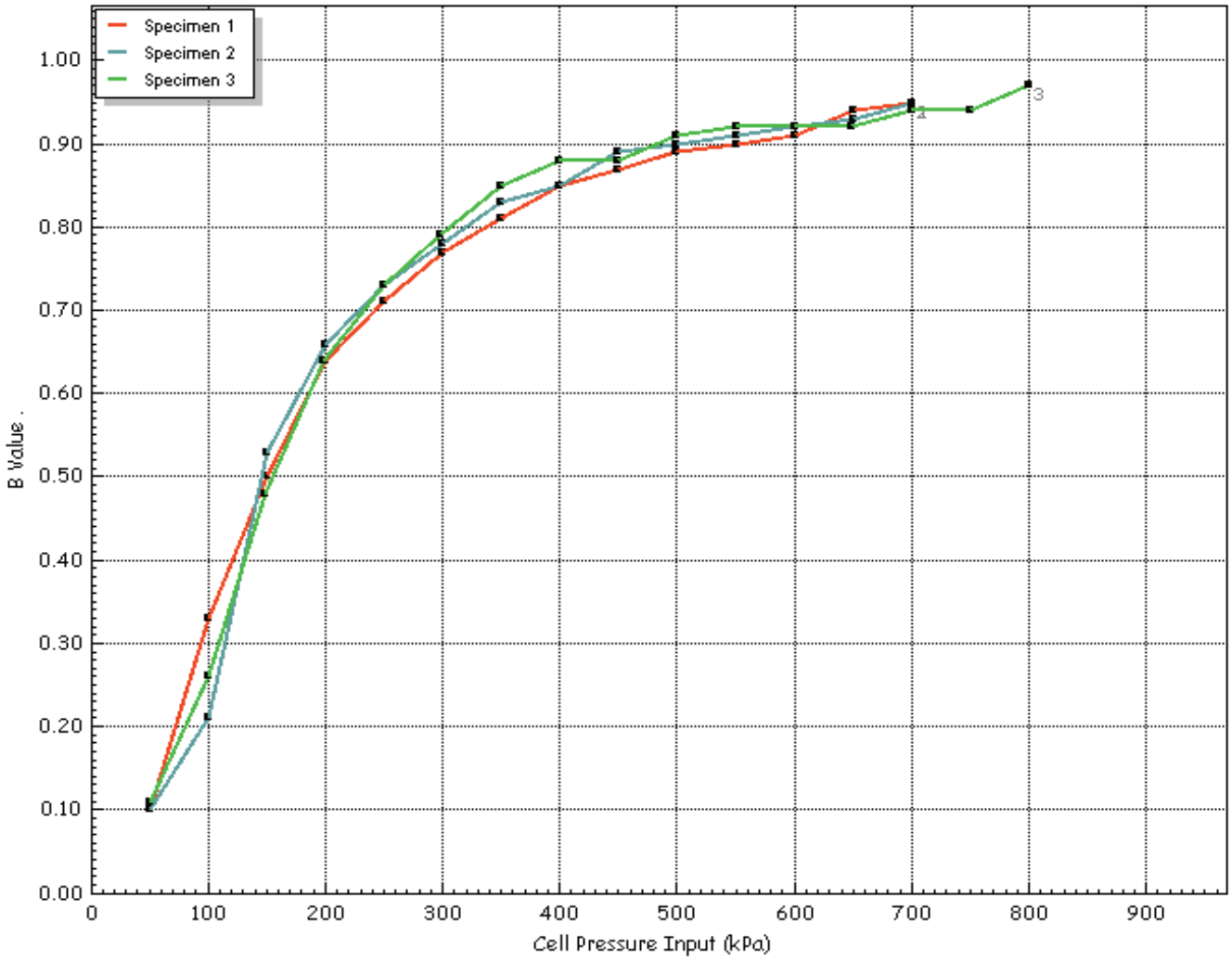
Test Method	BS1377-8 : 1990 : Clause 7			Test Name	BH115 4.00-4.45m UT
				Test Date	03/07/2023
				Borehole	BH115
Jobfile	A46 Walsgrave			Sample	4.00-4.45m UT-100
Client	Strata Geotechnics			Depth	4.00-4.45m UT19
Operator	D.Burton	Checked	S.Royle	Approved	S.Royle

Effective Stress Triaxial Compression

Consolidated Undrained

Saturation Plots

			Spm. 1	2	3
Saturation Method			Stepped	Stepped	Stepped
Cell Pressure Input	σ	(kPa)	700	700	800
Pore Water Pressure Input	u pwp	(kPa)	675	674	782
B Value	B	.	0.95	0.95	0.97



PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY UKAS TESTING 4043	Test Method	BS1377-8 : 1990 : Clause 7	Test Name	BH115 4.00-4.45m UT	
			Test Date	03/07/2023	
			Borehole	BH115	
	Jobfile	A46 Walsgrave	Sample	4.00-4.45m UT-100	
	Client	Strata Geotechnics	Depth	4.00-4.45m UT19	
	Operator	D.Burton	Checked	S.Royle	Approved S.Royle

Effective Stress Triaxial Compression

Consolidated Undrained

Consolidation Plots

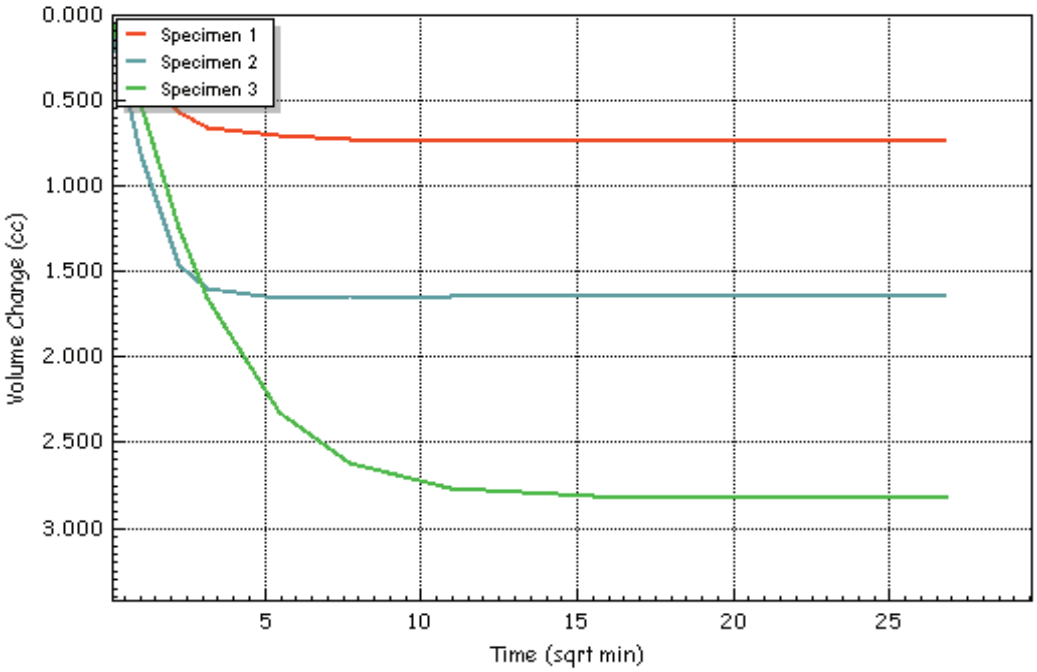
Initial Conditions

			Spm. 1	2	3
Initial Cell Pressure	σ_3	(kPa)	745	790	980
Initial Back Pressure	u_{bi}	(kPa)	700	700	801
Pore Water Pressure Input	u_{pwp}	(kPa)	714	761	957
Drainage Method			Radial+One End	Radial+One End	Radial+One End

Final Conditions

			Spm. 1	2	3
PWP Dissipation %	U%	(%)	100.00	100.00	100.00
Volumetric Strain	ε_v%	(%)	0.86	1.91	3.28
Corrected Length	L_c	(mm)	75.8	75.5	75.2
Corrected Area	A_c	(cm2)	11.28	11.20	11.09
Corrected Volume	V_c	(cc)	85.450	84.544	83.369
t100	t_{100}	(min)	5.83	4.52	29.72
Consolidation	c_v	(m2/year	0.051	0.065	0.010
Compressibility	m_v	(m2/MN)	0.601	0.314	0.209
Test Time	t_F	(h:m:s)	02:00:00	02:00:00	02:00:00
Estimated Strain to Failure	ε%	(%)	5.0	5.0	5.0
Shear Machine Speed	d_r	(mm/min	0.03158	0.03146	0.03132

Notes

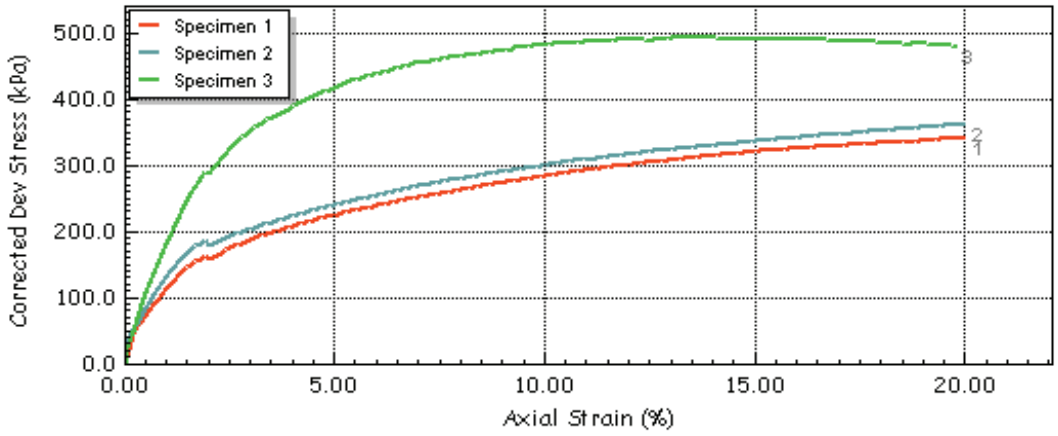


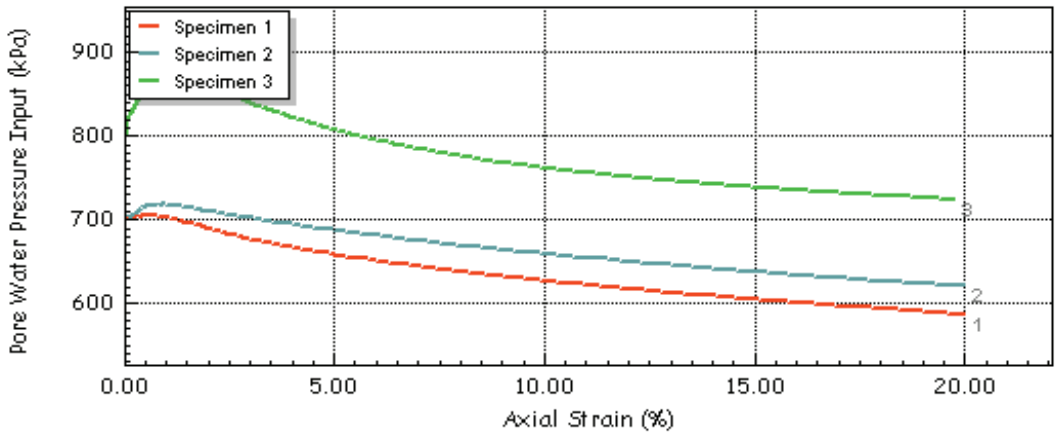
PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY UKAS TESTING 4043	Test Method	BS1377-8 : 1990 : Clause 7		Test Name	BH115 4.00-4.45m UT
				Test Date	03/07/2023
				Borehole	BH115
	Jobfile	A46 Walsgrave		Sample	4.00-4.45m UT-100
	Client	Strata Geotechnics		Depth	4.00-4.45m UT19
	Operator	D.Burton	Checked S.Royle	Approved	S.Royle

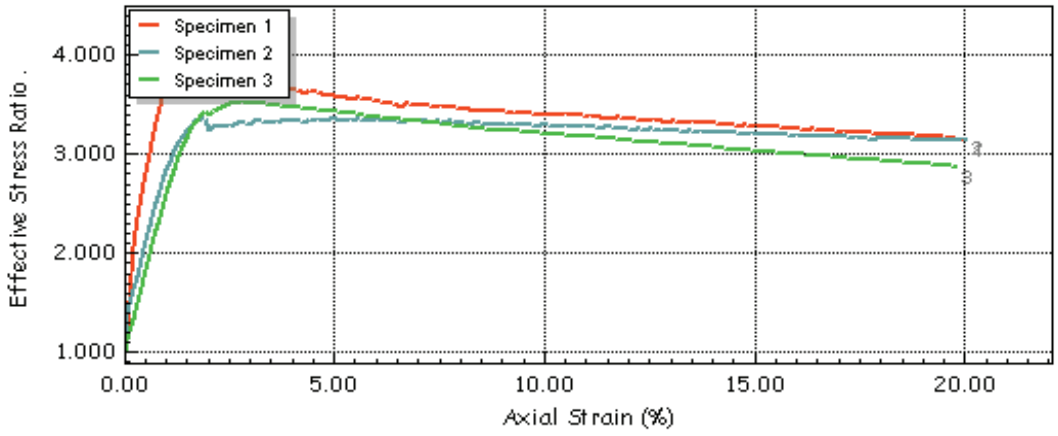
Effective Stress Triaxial Compression

Consolidated Undrained

Shear Stage Plots







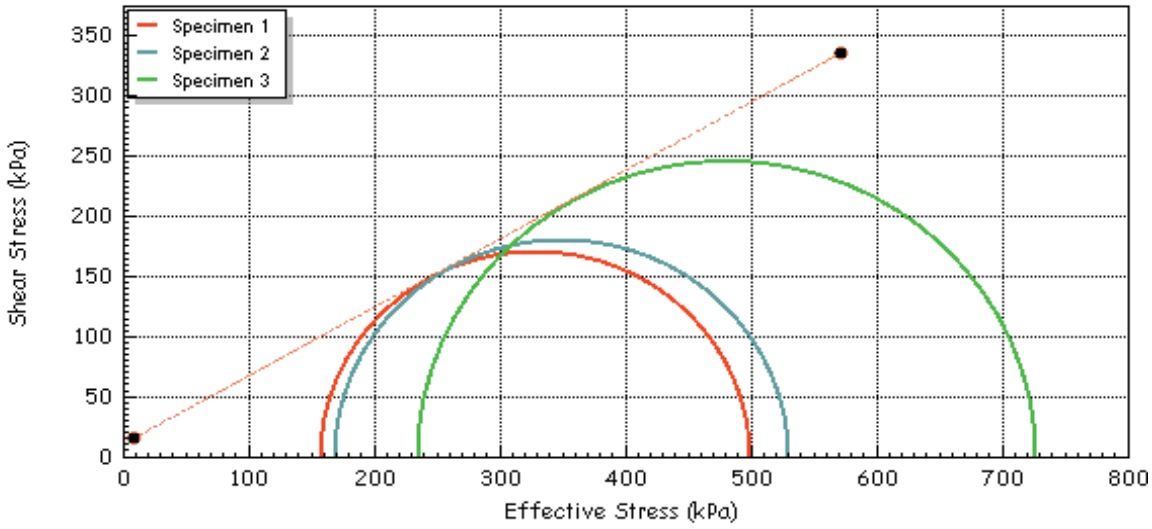
PSL PROFESSIONAL SOILS LABORATORY	Test Method	BS1377-8 : 1990 : Clause 7		Test Name	BH115 4.00-4.45m UT
				Test Date	03/07/2023
				Borehole	BH115
	Jobfile	A46 Walsgrave		Sample	4.00-4.45m UT-100
UKAS TESTING 4043	Client	Strata Geotechnics		Depth	4.00-4.45m UT19
	Operator	D.Burton	Checked	S.Royle	Approved S.Royle

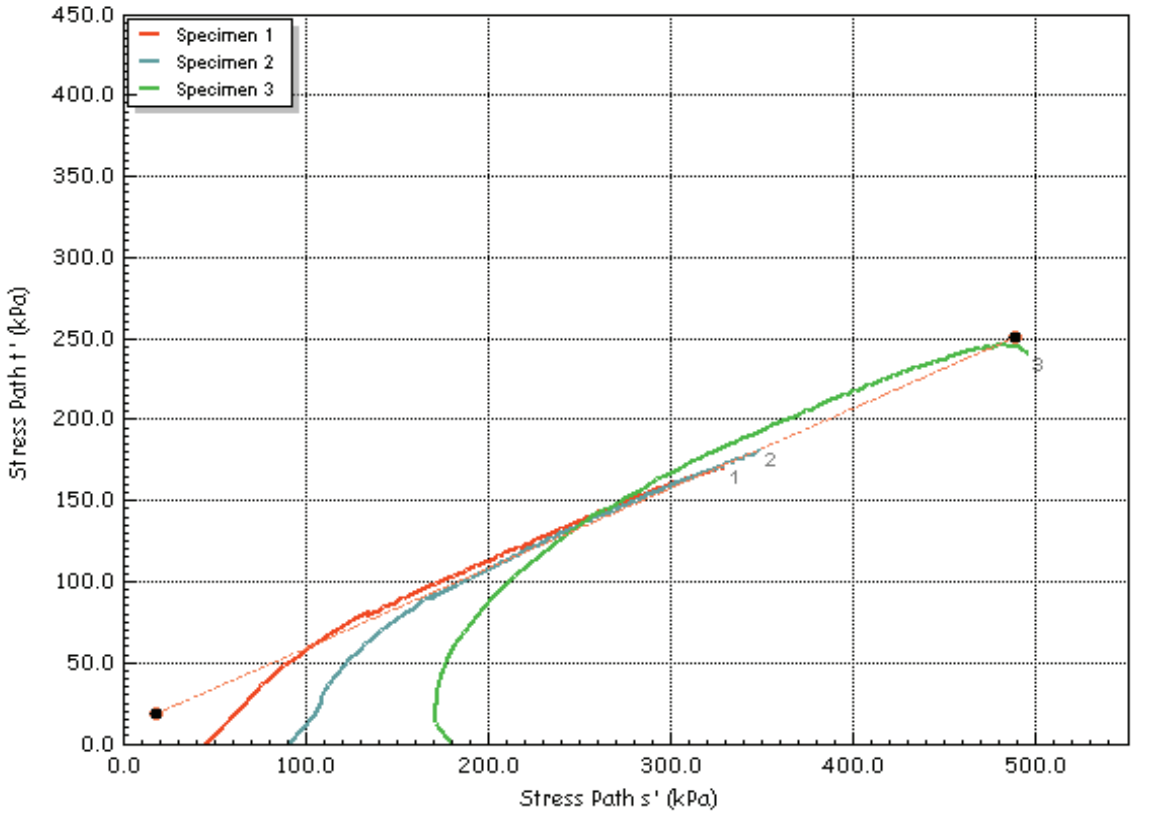
Effective Stress Triaxial Compression

Consolidated Undrained

Shear Stage Plots

Effective	c'	(kPa)	10.61	Effective Cohesion	c'	(kPa)	10.61
Effective Friction	ϕ'	(deg)	29.7	Effective Friction	ϕ'	(deg)	29.7





Test Method	BS1377-8 : 1990 : Clause 7			Test Name	BH115 4.00-4.45m UT
				Test Date	03/07/2023
				Borehole	BH115
Jobfile	A46 Walsgrave			Sample	4.00-4.45m UT-100
Client	Strata Geotechnics			Depth	4.00-4.45m UT19
Operator	D.Burton	Checked	S.Royle	Approved	S.Royle

2531

ANALYTICAL TEST REPORT

Contract no: 124306

Contract name: A46 Walsgrave

Client reference: PSL23/4339

Clients name: Professional Soils Laboratory

Clients address: 5/7 Hexthorpe Road
Doncaster
DN4 0AR

Samples received: 30 June 2023

Analysis started: 30 June 2023

Analysis completed: 10 July 2023

Report issued: 10 July 2023

Key

U	UKAS accredited test
M	MCERTS & UKAS accredited test
$	Test carried out by an approved subcontractor
I/S	Insufficient sample to carry out test
N/S	Sample not suitable for testing

Approved by: [redacted]

Abbie Neasham-Bourn
Senior Reporting Administrator

Chemtech Environmental Limited

SOILS

Lab number			124306-1	124306-2	124306-3	124306-4	124306-5
Sample id			BH115	BH115	BH125A	BH125A	BH125A
Depth (m)			2.45-2.50	6.20	4.50-5.00	7.00-7.80	9.50
Sample Type			D	D	B	B	D
Date sampled			-	-	-	-	-
Test	**Method**	**Units**					
pH	CE004 [U]	units	8.3	8.8	8.7	9.0	8.4
Magnesium (2:1 water soluble)	CE061	mg/l Mg	12	3.0	9.7	11	7.3
Chloride (2:1 water soluble)	CE049 [U]	mg/l Cl	5.3	3.8	6.5	7.6	6.8
Nitrate (2:1 water soluble)	CE049 [U]	mg/l NO_3	3.9	1.2	<1	<1	<1
Sulphate (2:1 water soluble)	CE061 [U]	mg/l SO_4	120	28	79	90	114
Sulphate (acid extractable)	CE062 [U]	mg/kg SO_4	469	275	815	888	558
Sulphate (acid extractable)	CE062 [U]	% w/w SO_4	0.05	0.03	0.08	0.09	0.06
Sulphur (total)	CE119	mg/kg S	221	130	915	1513	181
Sulphur (total)	CE119	% w/w S	0.02	0.01	0.09	0.15	0.02

Chemtech Environmental Limited

METHOD DETAILS

METHOD	SOILS	METHOD SUMMARY	SAMPLE	STATUS	LOD	UNITS
CE004	pH	Based on BS 1377, pH Meter	As received	U	-	units
CE061	Magnesium (2:1 water soluble)	Aqueous extraction, ICP-OES	Dry		1	mg/l Mg
CE049	Chloride (2:1 water soluble)	Aqueous extraction, IC-COND	Dry	U	1	mg/l Cl
CE049	Nitrate (2:1 water soluble)	Aqueous extraction, IC-COND	Dry	U	1	mg/l NO_3
CE061	Sulphate (2:1 water soluble)	Aqueous extraction, ICP-OES	Dry	U	10	mg/l SO_4
CE062	Sulphate (acid extractable)	HCl extract, analysed by ICP-OES	Dry	U	100	mg/kg SO4
CE062	Sulphate (acid extractable)	HCl extract, analysed by ICP-OES	Dry	U	0.01	% w/w SO4
CE119	Sulphur (total)	Aqua regia digest, analysed by ICP-OES	Dry		100	mg/kg S
CE119	Sulphur (total)	Aqua regia digest, analysed by ICP-OES	Dry		0.01	% w/w S

Chemtech Environmental Limited

DEVIATING SAMPLE INFORMATION

Comments
Sample deviation is determined in accordance with the UKAS note "Guidance on Deviating Samples" and based on reference standards and laboratory trials.
For samples identified as deviating, test result(s) may be compromised and may not be representative of the sample at the time of sampling.
Chemtech Environmental Ltd cannot be held responsible for the integrity of sample(s) received if Chemtech Environmental Ltd did not undertake the sampling. Such samples may be deviating.

Key

N	No (not deviating sample)
Y	Yes (deviating sample)
NSD	Sampling date not provided
NST	Sampling time not provided (waters only)
EHT	Sample exceeded holding time(s)
IC	Sample not received in appropriate containers
HP	Headspace present in sample container
NCF	Sample not chemically fixed (where appropriate)
OR	Other (specify)

Lab ref	Sample id	Depth (m)	Deviating	Tests (Reason for deviation)
124306-1	BH115	2.45-2.50	Y	All (NSD)
124306-2	BH115	6.20	Y	All (NSD)
124306-3	BH115A	4.50-5.00	Y	All (NSD)
124306-4	BH125A	7.00-7.80	Y	All (NSD)
124306-5	BH125A	9.50	Y	All (NSD)

Chemtech Environmental Limited

ADDITIONAL INFORMATION

Notes

Opinions and interpretations expressed herein are outside the UKAS accreditation scope.

Unless otherwise stated, Chemtech Environmental Ltd was not responsible for sampling.

All testing carried out at Unit 6 Parkhead, Stanley, DH9 7YB, except for subcontracted testing.

Methods, procedures and performance data are available on request.

Results reported herein relate only to the material supplied to the laboratory.

This report shall not be reproduced except in full, without prior written approval.

Samples will be disposed of 4 weeks from initial receipt unless otherwise instructed.

For soils and solids, all results are reported on a dry basis. Samples dried at no more than 30°C in a drying cabinet.

Analytical results are inclusive of stones, where applicable.

LABORATORY REPORT

Contract Number: PSL23/4338

Report Date: 26 June 2023

Client's Reference: G230651/Geo 13

Client Name: Strata Geotechnics
Kirkby Lane
Pinxton
Nottinghamshire
NG16 6JA

For the attention of: Izaac Lovatt

Contract Title: A46 Walsgrave

Date Received: 7/6/2023
Date Commenced: 7/6/2023
Date Completed: 26/6/2023

Notes: Opinions and Interpretations are outside the UKAS Accreditation

A copy of the Laboratory Schedule of accredited tests as issued by UKAS is attached to this report. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced other than in full, without the prior written approval of the laboratory.

Checked and Approved Signatories:

L Knight
(Assistant Laboratory Manager)

R Berriman
(Associate Director)

S Royle
(Laboratory Manager)

A Watkins
(Managing Director)

[redacted]
S Eyre
(Senior Technical Coordinator)

T Watkins
(Senior Technician)

5 – 7 Hexthorpe Road,
Hexthorpe,
Doncaster,
DN4 0AR
Tel: [redacted]
Email: [redacted]@prosoils.co.uk
[redacted]@prosoils.co.uk

WATER CONTENT OF ROCK

ISRM Suggested Methods - Rock Characterization Testing and Monitoring 1974 - 2006

Hole Number	Sample Number	Sample Type	Top Depth (m)	Base Depth (m)	Water Content (%)	Sample Description	Remarks
BH108	43	CSS	9.05	9.35	13.3	Brown MUDSTONE.	
BH108	45	CSS	10.75	10.85	12.4	Brown MUDSTONE.	
BH108	48	CSS	13.40	13.50	13.6	Brown MUDSTONE.	
BH108	52	CSS	16.00	16.30	13.9	Brown MUDSTONE.	
BH108	56	CSS	19.75	20.00	13.5	Brown MUDSTONE.	

UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

Contract No: PSL23/4338

Client Ref: G230651

SUMMARY OF POINT LOAD TEST RESULTS

ISRM Suggested Methods : 2007

Borehole Number	Depth (m)	Sample Ref	Test Type	Orientation	Dimensions (mm)		Area	D_e^2	D_e	Failure Load (P)		I_s	Corr Fac	I_{s50}	Failure Type	Remarks
				Par / Perp	W	D	(mm2)		(mm)	(Mpa)	(kN)	(MPa)	F	(MPa)		
BH108	9.05	43	A	Perp	100	37	3700	4710.99	68.64	-	0.41	0.09	1.153	0.10	Valid	
BH108	10.75	45	A	Perp	100	35	3500	4456.34	66.76	-	0.32	0.07	1.139	0.08	Valid	
BH108	13.40	48	A	Perp	100	38	3800	4838.31	69.56	-	0.38	0.08	1.160	0.09	Valid	
BH108	16.00	52	A	Perp	100	45	4500	5729.58	75.69	-	0.44	0.08	1.205	0.09	Valid	
BH108	19.75	56	A	Perp	100	32	3200	4074.37	63.83	-	0.37	0.09	1.116	0.10	Valid	

Note All testing carried out on samples at as received water content

Par = parallel, Perp = perpendicular, U = Random

A = Axial, D = Diametral, I = Irregular

UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave	Contract No:
	PSL23/4338
	Client Ref:
	G230651

UNIAXIAL COMPRESSIVE STRENGTH

ISRM Suggested Methods - Rock Characterization Testing and Monitoring 1974 - 2006

Borehole Number:	**BH108**	**Top Depth (m):**	**9.05**
Sample Number:	**43**	**Base Depth (m):**	**9.35**
Sample Type:	**CSS**	**Sample Date:**	**16/05/2023**
Storage Condition:	**Sealed in plastic.**	**Date of Reciept**	**07/06/2023**
Sample Description:	**Brown MUDSTONE.**		

Specimen Details/Conditions	
Diameter - mm:	100.10
Height - mm:	250.20
Water Content - %:	13.3
Sample Mass - g:	4543.5
Bulk Density - Mg/m^3:	2.31
Dry Density - Mg/m^3:	2.04
Height Ratio: * Sample does not comply with H:D ratio	2.5
Degree of Saturation - %:	91
Assumed Specific Gravity for Degree of Saturation:	2.90

Test Result	
Load Frame/Machine:	CM1/Controls
Date of test:	22/06/2023
Test Duration - mins:	00:20
Orientation:	Unknown
Stress Rate - MPa/s:	0.06
Strain at Failure - kN:	9.81
Unconfined Compressive Strength - Mpa:	1.25
Mode of Failure:	Vertical Shear

Remarks: -

UNIAXIAL COMPRESSIVE STRENGTH

ISRM Suggested Methods - Rock Characterization Testing and Monitoring 1974 - 2006

Borehole Number:	**BH108**	**Top Depth (m):**	**10.75**
Sample Number:	**45**	**Base Depth (m):**	**10.85**
Sample Type:	**CSS**	**Sample Date:**	**16/05/2023**
Storage Condition:	**Sealed in plastic.**	**Date of Reciept**	**07/06/2023**
Sample Description:	**Brown MUDSTONE.**		

Specimen Details/Conditions	
Diameter - mm:	100.10
Height - mm:	250.20
Water Content - %:	12.4
Sample Mass - g:	4548.7
Bulk Density - Mg/m^3:	2.31
Dry Density - Mg/m^3:	2.06
Height Ratio: * Sample does not comply with H:D ratio	2.5
Degree of Saturation - %:	87
Assumed Specific Gravity for Degree of Saturation:	2.90

Test Result	
Load Frame/Machine:	CM1/Controls
Date of test:	22/06/2023
Test Duration - mins:	00:18
Orientation:	Unknown
Stress Rate - MPa/s:	0.06
Strain at Failure - kN:	9.01
Unconfined Compressive Strength - Mpa:	1.14
Mode of Failure:	Vertical Shear

Remarks: -

UNIAXIAL COMPRESSIVE STRENGTH

ISRM Suggested Methods - Rock Characterization Testing and Monitoring 1974 - 2006

Borehole Number:	**BH108**	**Top Depth (m):**	**13.40**
Sample Number:	**48**	**Base Depth (m):**	**13.50**
Sample Type:	**CSS**	**Sample Date:**	**16/05/2023**
Storage Condition:	**Sealed in plastic.**	**Date of Reciept**	**07/06/2023**
Sample Description:	**Brown MUDSTONE.**		

Specimen Details/Conditions	
Diameter - mm:	100.10
Height - mm:	250.10
Water Content - %:	13.6
Sample Mass - g:	4560.1
Bulk Density - Mg/m^3:	2.32
Dry Density - Mg/m^3:	2.04
Height Ratio: * Sample does not comply with H:D ratio	2.5
Degree of Saturation - %:	93
Assumed Specific Gravity for Degree of Saturation:	2.90

Test Result	
Load Frame/Machine:	CM1/Controls
Date of test:	22/06/2023
Test Duration - mins:	00:15
Orientation:	Unknown
Stress Rate - MPa/s:	0.08
Strain at Failure - kN:	9.05
Unconfined Compressive Strength - Mpa:	1.15
Mode of Failure:	Vertical Shear

Remarks: -

UNIAXIAL COMPRESSIVE STRENGTH

ISRM Suggested Methods - Rock Characterization Testing and Monitoring 1974 - 2006

Borehole Number:	**BH108**	**Top Depth (m):**	**16.00**
Sample Number:	**52**	**Base Depth (m):**	**16.30**
Sample Type:	**CSS**	**Sample Date:**	**16/05/2023**
Storage Condition:	**Sealed in plastic.**	**Date of Reciept**	**07/06/2023**
Sample Description:	**Brown MUDSTONE.**		

Specimen Details/Conditions	
Diameter - mm:	100.10
Height - mm:	250.20
Water Content - %:	13.9
Sample Mass - g:	4589.7
Bulk Density - Mg/m^3:	2.33
Dry Density - Mg/m^3:	2.05
Height Ratio: * Sample does not comply with H:D ratio	2.5
Degree of Saturation - %:	97
Assumed Specific Gravity for Degree of Saturation:	2.90

Test Result	
Load Frame/Machine:	CM1/Controls
Date of test:	22/06/2023
Test Duration - mins:	00:15
Orientation:	Unknown
Stress Rate - MPa/s:	0.07
Strain at Failure - kN:	8.74
Unconfined Compressive Strength - Mpa:	1.11
Mode of Failure:	Vertical Shear

Remarks: -

UNIAXIAL COMPRESSIVE STRENGTH

ISRM Suggested Methods - Rock Characterization Testing and Monitoring 1974 - 2006

Borehole Number:	**BH108**	**Top Depth (m):**	**19.75**
Sample Number:	**56**	**Base Depth (m):**	**20.00**
Sample Type:	**CSS**	**Sample Date:**	**16/05/2023**
Storage Condition:	**Sealed in plastic.**	**Date of Reciept**	**07/06/2023**
Sample Description:	**Brown MUDSTONE.**		

Specimen Details/Conditions	
Diameter - mm:	100.10
Height - mm:	250.10
Water Content - %:	13.5
Sample Mass - g:	4546.7
Bulk Density - Mg/m^3:	2.31
Dry Density - Mg/m^3:	2.04
Height Ratio: * Sample does not comply with H:D ratio	2.5
Degree of Saturation - %:	92
Assumed Specific Gravity for Degree of Saturation:	2.90

Test Result	
Load Frame/Machine:	CM1/Controls
Date of test:	22/06/2023
Test Duration - mins:	00:16
Orientation:	Unknown
Stress Rate - MPa/s:	0.07
Strain at Failure - kN:	8.86
Unconfined Compressive Strength - Mpa:	1.13
Mode of Failure:	Vertical Shear

Remarks: -

2531

ANALYTICAL TEST REPORT

Contract no: 124262

Contract name: A46 Walsgrave

Client reference: PSL23/4338

Clients name: Professional Soils Laboratory

Clients address: 5/7 Hexthorpe Road
Doncaster
DN4 0AR

Samples received: 29 June 2023

Analysis started: 29 June 2023

Analysis completed: 10 July 2023

Report issued: 10 July 2023

Key

U	UKAS accredited test
M	MCERTS & UKAS accredited test
$	Test carried out by an approved subcontractor
I/S	Insufficient sample to carry out test
N/S	Sample not suitable for testing

Approved by: [redacted]

Abbie Neasham-Bourn
Senior Reporting Administrator

Chemtech Environmental Limited

SOILS

Lab number			124262-1	124262-2	124262-3
Sample id			BH108	BH108	BH108
Depth (m)			9.05-9.35	13.40-13.50	16.00-16.30
Sample Type			CSS	CSS	CSS
Date sampled			16/05/2023	16/05/2023	16/05/2023
Test	**Method**	**Units**			
pH	CE004 U	units	8.5	8.5	8.6
Magnesium (2:1 water soluble)	CE061	mg/l Mg	1.7	2.1	1.7
Chloride (2:1 water soluble)	CE049 U	mg/l Cl	4.1	4.3	5.1
Nitrate (2:1 water soluble)	CE049 U	mg/l NO_3	12	12	12
Sulphate (2:1 water soluble)	CE061 U	mg/l SO_4	14	20	13
Sulphate (acid extractable)	CE062 U	mg/kg SO_4	226	256	249
Sulphate (acid extractable)	CE062 U	% w/w SO_4	0.02	0.03	0.02
Sulphur (total)	CE119	mg/kg S	<100	<100	<100
Sulphur (total)	CE119	% w/w S	<0.01	<0.01	<0.01

Chemtech Environmental Limited

METHOD DETAILS

METHOD	SOILS	METHOD SUMMARY	SAMPLE	STATUS	LOD	UNITS
CE004	pH	Based on BS 1377, pH Meter	As received	U	-	units
CE061	Magnesium (2:1 water soluble)	Aqueous extraction, ICP-OES	Dry		1	mg/l Mg
CE049	Chloride (2:1 water soluble)	Aqueous extraction, IC-COND	Dry	U	1	mg/l Cl
CE049	Nitrate (2:1 water soluble)	Aqueous extraction, IC-COND	Dry	U	1	mg/l NO_3
CE061	Sulphate (2:1 water soluble)	Aqueous extraction, ICP-OES	Dry	U	10	mg/l SO_4
CE062	Sulphate (acid extractable)	HCl extract, analysed by ICP-OES	Dry	U	100	mg/kg SO4
CE062	Sulphate (acid extractable)	HCl extract, analysed by ICP-OES	Dry	U	0.01	% w/w SO4
CE119	Sulphur (total)	Aqua regia digest, analysed by ICP-OES	Dry		100	mg/kg S
CE119	Sulphur (total)	Aqua regia digest, analysed by ICP-OES	Dry		0.01	% w/w S

Chemtech Environmental Limited

DEVIATING SAMPLE INFORMATION

Comments
Sample deviation is determined in accordance with the UKAS note "Guidance on Deviating Samples" and based on reference standards and laboratory trials.
For samples identified as deviating, test result(s) may be compromised and may not be representative of the sample at the time of sampling.
Chemtech Environmental Ltd cannot be held responsible for the integrity of sample(s) received if Chemtech Environmental Ltd did not undertake the sampling. Such samples may be deviating.

Key

N	No (not deviating sample)
Y	Yes (deviating sample)
NSD	Sampling date not provided
NST	Sampling time not provided (waters only)
EHT	Sample exceeded holding time(s)
IC	Sample not received in appropriate containers
HP	Headspace present in sample container
NCF	Sample not chemically fixed (where appropriate)
OR	Other (specify)

Lab ref	Sample id	Depth (m)	Deviating	Tests (Reason for deviation)
124262-1	BH108	9.05-9.35	Y	pH (EHT), Sulphur (EHT), 2:1 Mg (EHT), 2:1 Cl (EHT), 2:1 N03 (EHT)
124262-2	BH108	13.40-13.50	Y	pH (EHT), Sulphur (EHT), 2:1 Mg (EHT), 2:1 Cl (EHT), 2:1 N03 (EHT)
124262-3	BH108	16.00-16.30	Y	pH (EHT), Sulphur (EHT), 2:1 Mg (EHT), 2:1 Cl (EHT), 2:1 N03 (EHT)

Chemtech Environmental Limited

ADDITIONAL INFORMATION

Notes

Opinions and interpretations expressed herein are outside the UKAS accreditation scope.

Unless otherwise stated, Chemtech Environmental Ltd was not responsible for sampling.

All testing carried out at Unit 6 Parkhead, Stanley, DH9 7YB, except for subcontracted testing.

Methods, procedures and performance data are available on request.

Results reported herein relate only to the material supplied to the laboratory.

This report shall not be reproduced except in full, without prior written approval.

Samples will be disposed of 4 weeks from initial receipt unless otherwise instructed.

For soils and solids, all results are reported on a dry basis. Samples dried at no more than 30°C in a drying cabinet.

Analytical results are inclusive of stones, where applicable.

LABORATORY REPORT

Contract Number: PSL23/4337

Report Date: 12 July 2023

Client's Reference: G230651/Geo 14

Client Name: Strata Geotechnics
Kirkby Lane
Pinxton
Nottinghamshire
NG16 6JA

For the attention of: Izaac Lovatt

Contract Title: A46 Walsgrave

Date Received: 7/6/2023
Date Commenced: 7/6/2023
Date Completed: 11/07/2023

A copy of the Laboratory Schedule of accredited tests as issued by UKAS is attached to this report. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced other than in full, without the prior written approval of the laboratory.

Checked and Approved Signatories:

A Watkins (Director)
R Berriman (Quality Manager)
S Royle (Laboratory Manager)
[redacted]
L Knight (Assistant Laboratory Manager)
S Eyre (Senior Technician)
M Fennell (Senior Technician)

5 – 7 Hexthorpe Road,
Hexthorpe,
Doncaster,
DN4 0AR
Tel: [redacted]
Email: [redacted]@prosoils.co.uk
[redacted]@prosoils.co.uk

SUMMARY OF LABORATORY SOIL DESCRIPTIONS

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Description of Sample
WS104	18	D	1.20	1.65	Brown slightly gravelly very sandy CLAY.
WS104	19	D	2.00	2.45	Brown gravelly very sandy CLAY.
WS104	14	D	2.75	3.00	Brown gravelly clayey SAND.
WS109	B2	B	0.90	1.00	Brown mottled grey slightly gravelly sandy CLAY.

UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

Contract No: PSL23/4337

Client Ref: G230651

SUMMARY OF SOIL CLASSIFICATION TESTS

(BS1377 : PART 2 : 1990)

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Moisture Content % Clause 3.2	Linear Shrinkage % Clause 6.5	Particle Density Mg/m^3 Clause 8.2	Liquid Limit % Clause 4.3/4	Plastic Limit % Clause 5.3	Plasticity Index % Clause 5.4	Passing .425mm %	Remarks
WS104	18	D	1.20	1.65	14			32	15	17	94	Low Plasticity CL
WS104	19	D	2.00	2.45	15			30	14	16	90	Low Plasticity CL
WS104	14	D	2.75	3.00	16							
WS109	B2	B	0.90	1.00	34			49	23	26	96	Intermediate Plasticity CI

SYMBOLS : **NP : Non Plastic** *** : Liquid Limit and Plastic Limit Wet Sieved.**

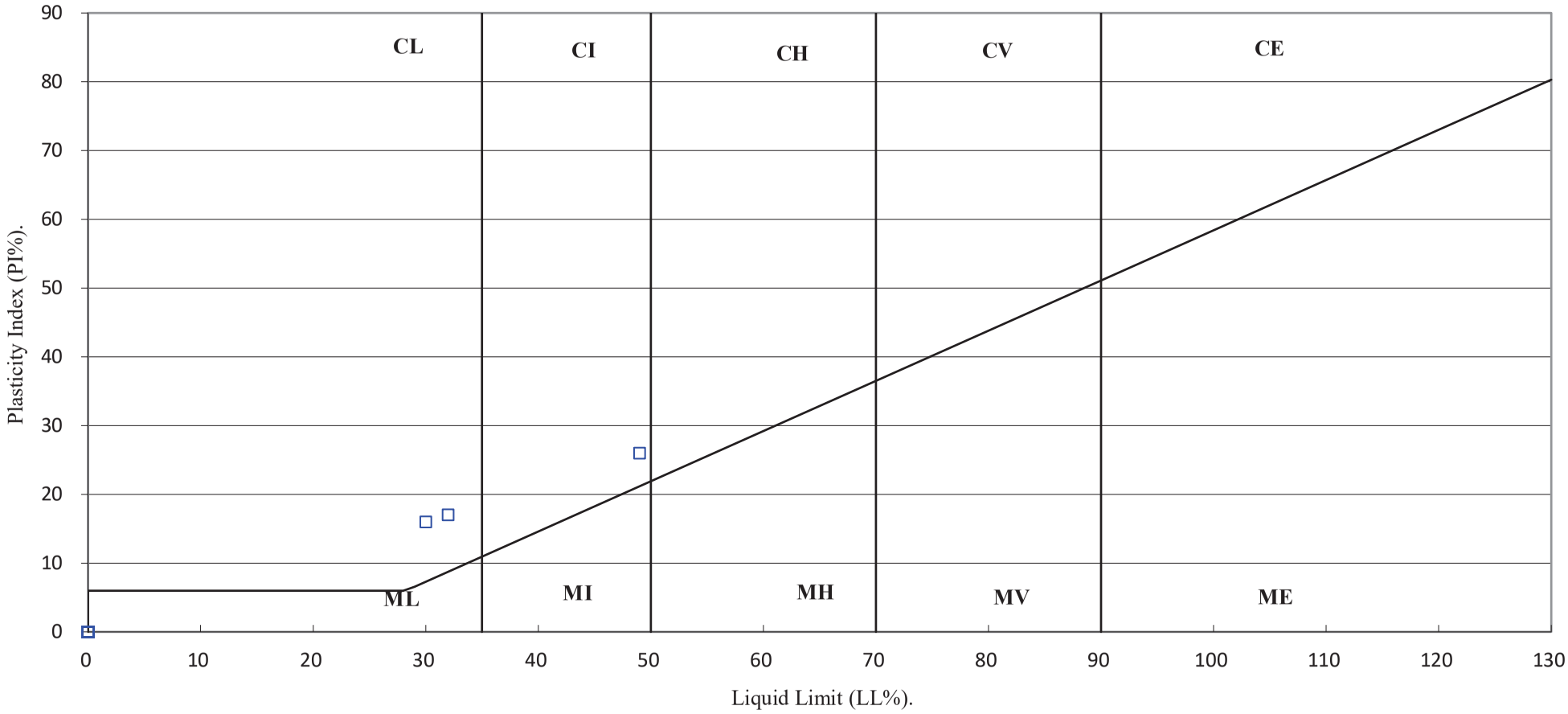
UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

Contract No:
PSL23/4337
Client Ref:
G230651

PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION.



UKAS TESTING 4043	A46 Walsgrave	Contract No: PSL23/4337
PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY		Client Ref: G230651

SUMMARY OF SOIL DENSITY RELATED TESTS

(BS1377 : PART 2 & 4 : 1990)

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Moisture Content %	Bulk Density Mg/m^3	Dry Density Mg/m^3	Retained 20mm %	Retained 37.5mm %	Method of compaction kg	Maximum Dry Density Mg/m^3	Minimum Dry Density Mg/m^3	Remarks
WS104	19	D	2.00	2.45	14	2.20	1.93						

UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

Contract No: PSL23/4337

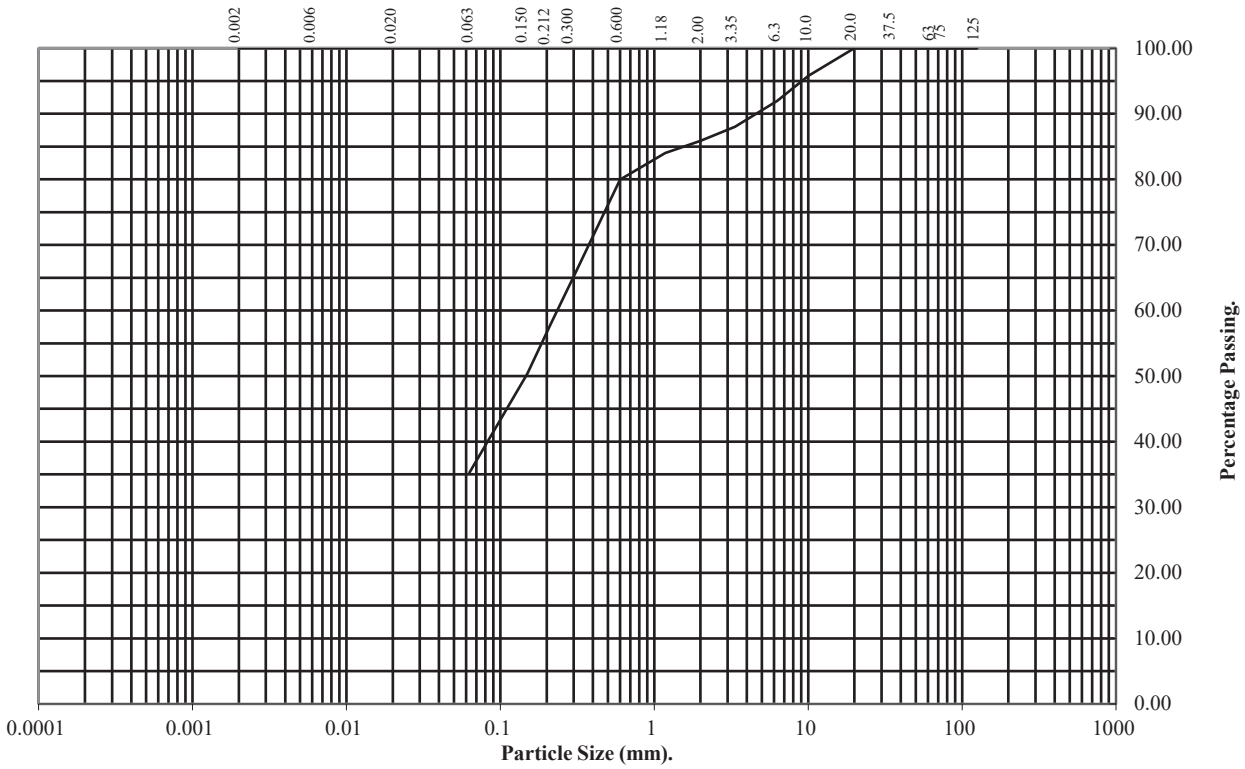
Client Ref: G230651

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number:	**WS104**	**Top Depth (m):**	**2.00**
Sample Number:	**19**	**Base Depth(m):**	**2.45**
Sample Type:	**D**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	96
6.3	92
3.35	88
2	86
1.18	84
0.6	80
0.3	65
0.212	58
0.15	50
0.063	35

Soil Fraction	Total Percentage
Cobbles	0
Gravel	14
Sand	51
Silt/Clay	35

Remarks:

See Summary of Soil Descriptions

UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

Contract No:
PSL23/4337
Client Ref:
G230651

ANALYTICAL TEST REPORT

Contract no: 124307

Contract name: A46 Walsgrave

Client reference: PSL23/4337

Clients name: Professional Soils Laboratory

Clients address: 5/7 Hexthorpe Road
Doncaster
DN4 0AR

Samples received: 30 June 2023

Analysis started: 30 June 2023

Analysis completed: 06 July 2023

Report issued: 06 July 2023

Key

U	UKAS accredited test
M	MCERTS & UKAS accredited test
$	Test carried out by an approved subcontractor
I/S	Insufficient sample to carry out test
N/S	Sample not suitable for testing

Approved by: [redacted]

Ellis McCulloch
Senior Reporting Administrator

Chemtech Environmental Limited

SOILS

Lab number			124307-1	124307-2
Sample id			WS104	WS104
Depth (m)			1.20-1.65	2.75-3.00
Sample Type			D	D
Date sampled			-	-
Test	**Method**	**Units**		
Total Organic Carbon (TOC)	CE197	% w/w C	0.5	0.2
Estimate of OMC (calculated from TOC)	CE197	% w/w	0.8	0.3

Chemtech Environmental Limited

METHOD DETAILS

METHOD	SOILS	METHOD SUMMARY	SAMPLE	STATUS	LOD	UNITS
CE197	Total Organic Carbon (TOC)	Carbon Analyser	Dry		0.1	% w/w C
CE197	Estimate of OMC (calculated from TOC)	Calculation from Total Organic Carbon	Dry		0.1	% w/w

Chemtech Environmental Limited

ADDITIONAL INFORMATION

Notes

Opinions and interpretations expressed herein are outside the UKAS accreditation scope.

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Methods, procedures and performance data are available on request.

Results reported herein relate only to the material supplied to the laboratory.

This report shall not be reproduced except in full, without prior written approval.

Samples will be disposed of 4 weeks from initial receipt unless otherwise instructed.

For soils and solids, all results are reported on a dry basis. Samples dried at no more than 30°C in a drying cabinet.

Analytical results are inclusive of stones, where applicable.

LABORATORY REPORT

Contract Number: PSL23/4336

Report Date: 13 July 2023

Client's Reference: G230651/Geo 15

Client Name: Strata Geotechnics
Kirkby Lane
Pinxton
Nottinghamshire
NG16 6JA

For the attention of: Izaac Lovatt

Contract Title: A46 Walsgrave

Date Received: 7/6/2023
Date Commenced: 7/6/2023
Date Completed: 13/7/2023

Notes: **Opinions and Interpretations are outside the UKAS Accreditation**

A copy of the Laboratory Schedule of accredited tests as issued by UKAS is attached to this report. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced other than in full, without the prior written approval of the laboratory.

Checked and Approved Signatories:

A Watkins (Director)
R Berriman (Quality Manager)
S Royle (Laboratory Manager)

[redacted]
L Knight (Assistant Laboratory Manager)
S Eyre (Senior Technician)
T Watkins (Senior Technician)

5 – 7 Hexthorpe Road,
Hexthorpe,
Doncaster,
DN4 0AR
Tel: [redacted]
Email: [redacted]@prosoils.co.uk
[redacted]@prosoils.co.uk

SUMMARY OF LABORATORY SOIL DESCRIPTIONS

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Description of Sample
BH118	6	D	0.70	0.70	Brown slightly gravelly very sandy CLAY.
BH118	9	B	0.80	1.00	Brown slightly gravelly very sandy CLAY.
BH118	10	B	1.20	1.65	Brown slightly gravelly very sandy CLAY.
BH118	11	D	1.80	1.80	Brown slightly gravelly very sandy CLAY.
BH118	13	UT	2.00	2.45	Brown slightly gravelly very sandy CLAY.
BH118	15	B	2.70	3.00	Brown slightly gravelly very sandy CLAY.
BH118	16	D	3.00	3.45	Brown slightly gravelly very sandy CLAY.
BH118	19	B	4.70	5.00	Brown very sandy very clayey GRAVEL with some cobbles.
BH118	21	B	5.60	5.90	Brown very sandy silty GRAVEL.

UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

Contract No:
PSL23/4336
Client Ref:
G230651

SUMMARY OF SOIL CLASSIFICATION TESTS

(BS1377 : PART 2 : 1990)

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Moisture Content % Clause 3.2	Linear Shrinkage % Clause 6.5	Particle Density Mg/m^3 Clause 8.2	Liquid Limit % Clause 4.3/4	Plastic Limit % Clause 5.3	Plasticity Index % Clause 5.4	Passing .425mm %	Remarks
BH118	6	D	0.70	0.70	15			33	16	17	96	Low Plasticity CL
BH118	11	D	1.80	1.80	12			30	14	16	93	Low Plasticity CL
BH118	16	D	3.00	3.45	10			26	12	14	96	Low Plasticity CL
BH118	19	B	4.70	5.00	12							
BH118	21	B	5.60	5.90	8.4							

SYMBOLS : **NP : Non Plastic** *** : Liquid Limit and Plastic Limit Wet Sieved.**

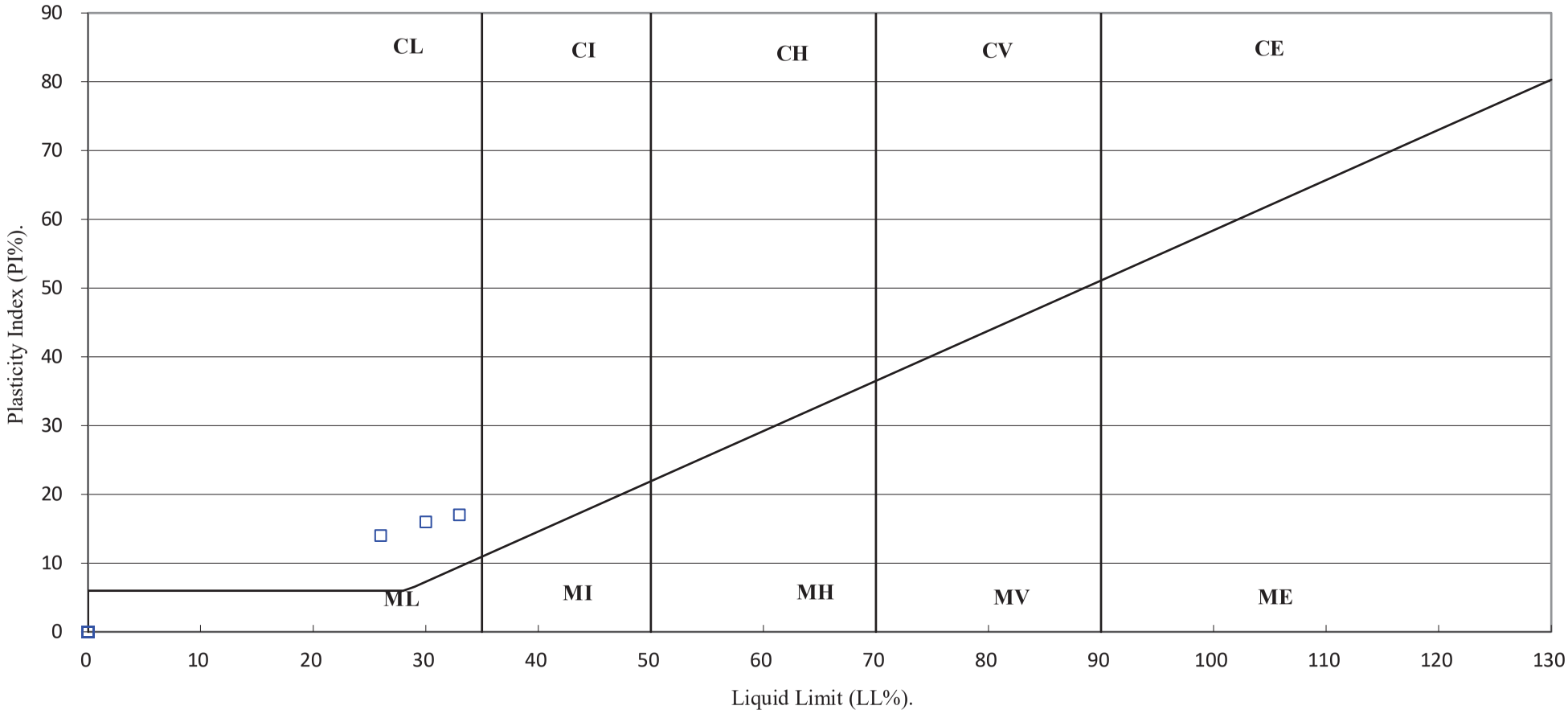
UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

Contract No:
PSL23/4336
Client Ref:
G230651

PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION.



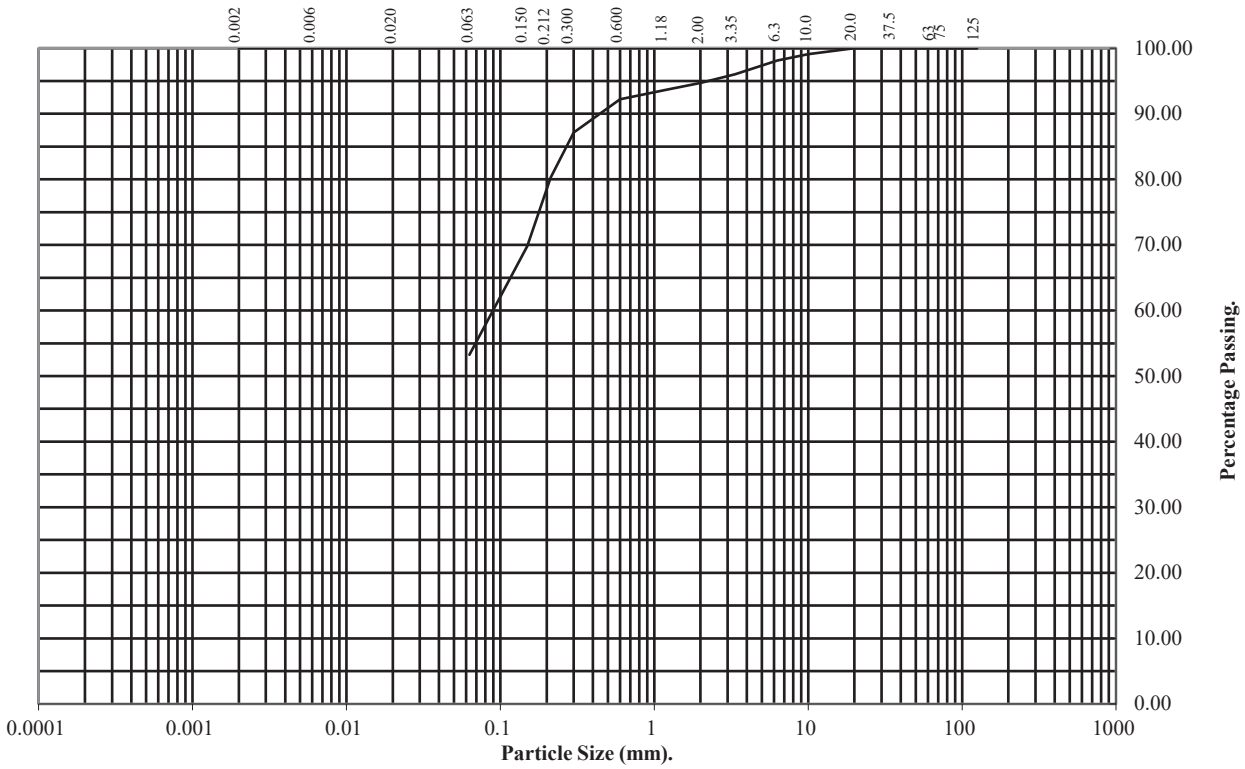
UKAS TESTING 4043	A46 Walsgrave	Contract No: PSL23/4336
PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY		Client Ref: G230651

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number:	**BH118**	**Top Depth (m):**	**3.00**
Sample Number:	**16**	**Base Depth(m):**	**3.45**
Sample Type:	**D**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	99
6.3	98
3.35	96
2	95
1.18	94
0.6	92
0.3	87
0.212	80
0.15	70
0.063	53

Soil Fraction	Total Percentage
Cobbles	0
Gravel	5
Sand	42
Silt/Clay	53

Remarks:
See Summary of Soil Descriptions

UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

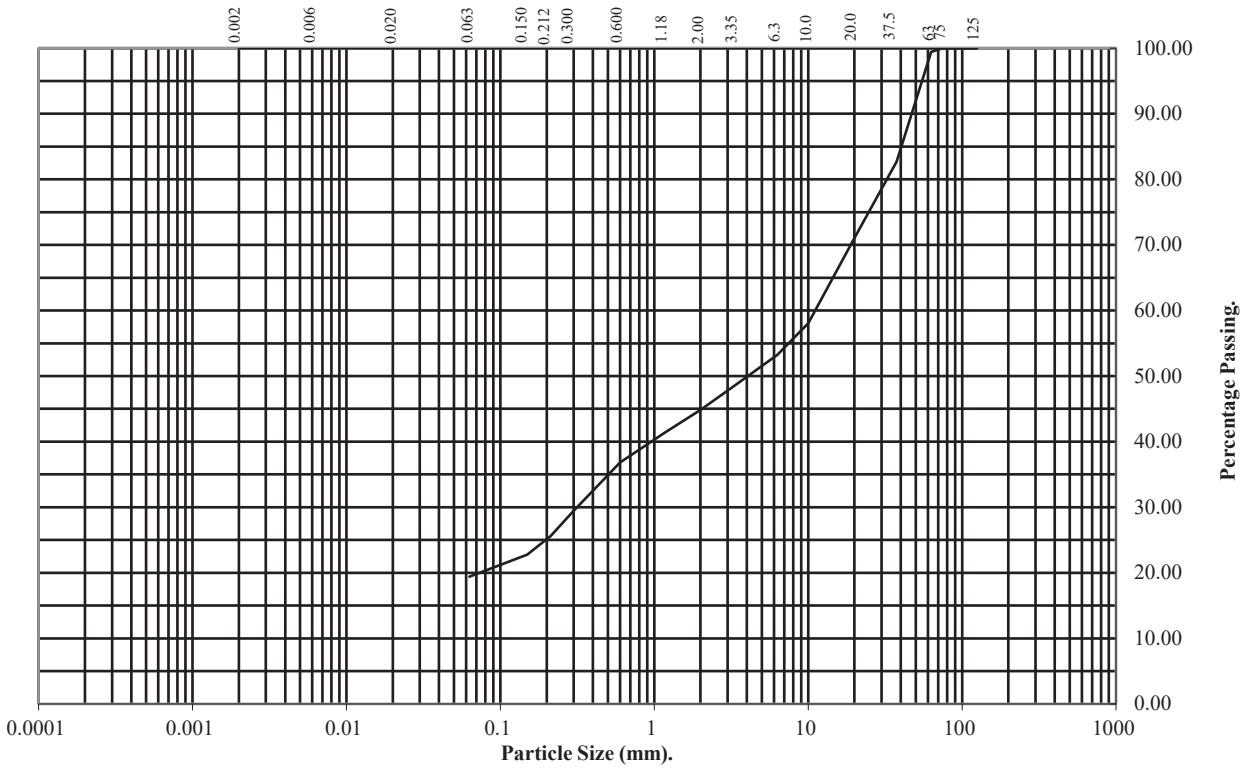
Contract No:
PSL23/4336
Client Ref:
G230651

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number:	**BH118**	**Top Depth (m):**	**4.70**
Sample Number:	**19**	**Base Depth(m):**	**5.00**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	99
37.5	83
20	71
10	58
6.3	53
3.35	49
2	45
1.18	41
0.6	37
0.3	29
0.212	26
0.15	23
0.063	19

Soil Fraction	Total Percentage
Cobbles	1
Gravel	54
Sand	26
Silt/Clay	19

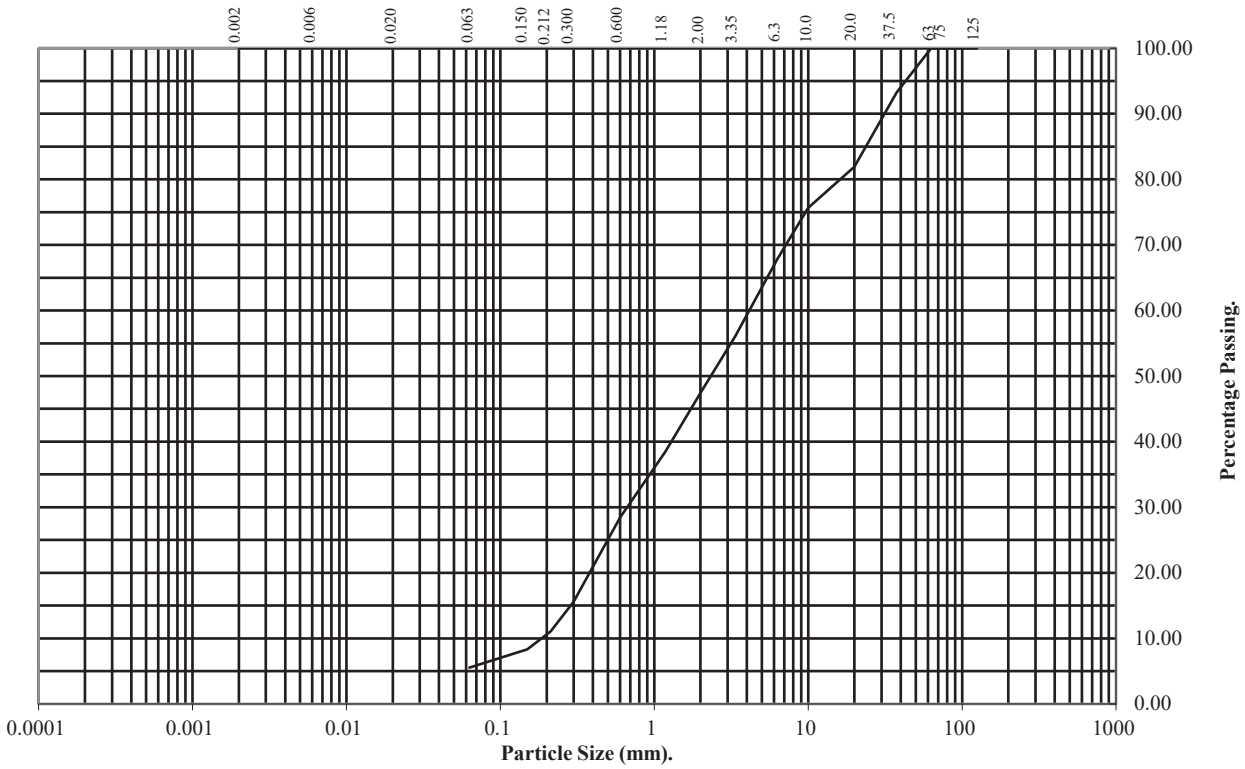
Remarks:
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number:	**BH118**	**Top Depth (m):**	**5.60**
Sample Number:	**21**	**Base Depth(m):**	**5.90**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	93
20	82
10	76
6.3	68
3.35	56
2	47
1.18	38
0.6	28
0.3	16
0.212	11
0.15	8
0.063	6

Soil Fraction	Total Percentage
Cobbles	0
Gravel	53
Sand	41
Silt/Clay	6

Remarks:

See Summary of Soil Descriptions

UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

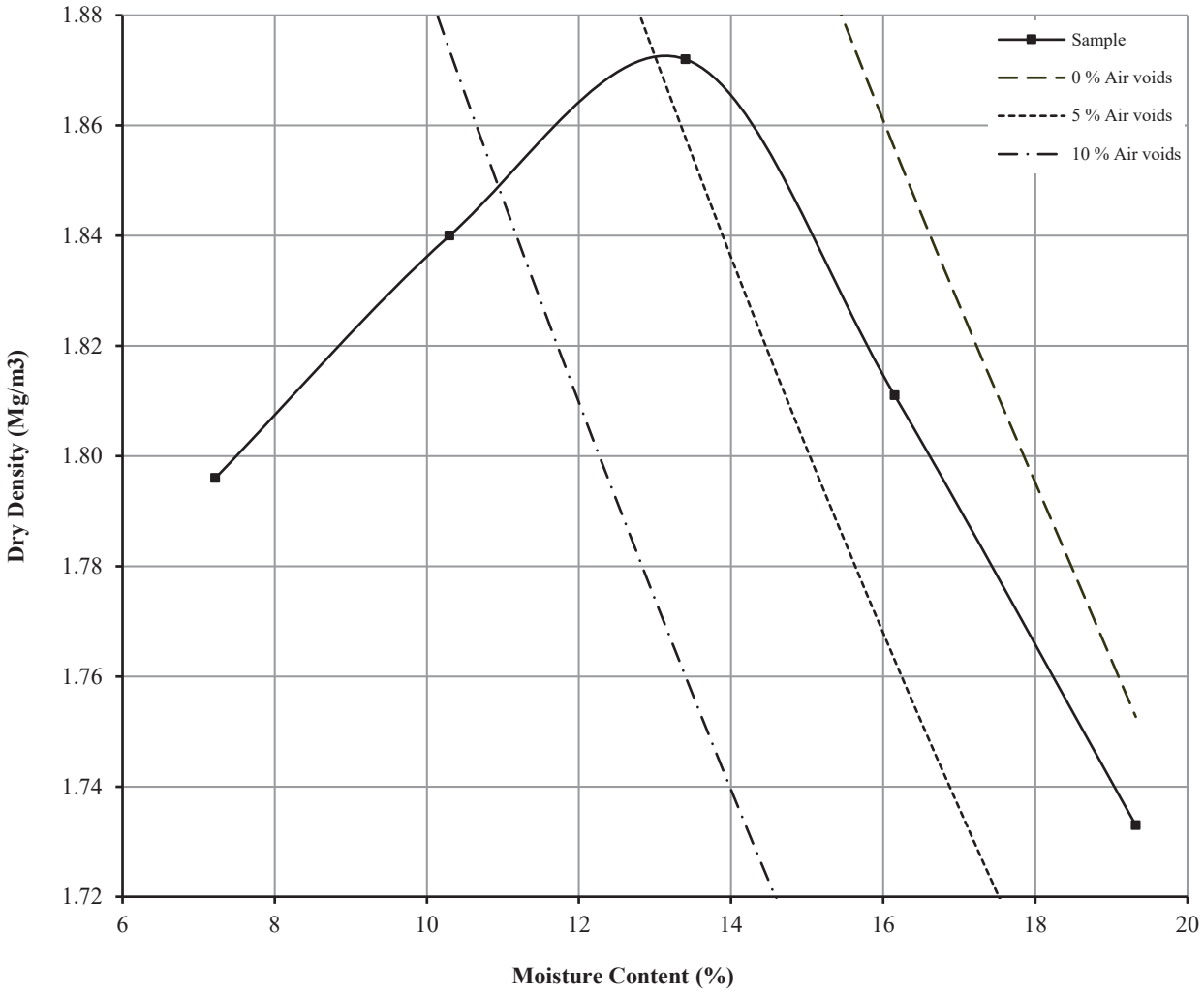
A46 Walsgrave

Contract No:
PSL23/4336
Client Ref:
G230651

DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

BS 1377 : Part 4 : Clause 3.3 : 1990

Hole Number:	**BH118**	**Top Depth (m) :**	**0.80**
Sample Number:	**9**	**Base Depth (m) :**	**1.00**
Sample Type:	**B**		



Initial Moisture Content:		16	Method of Compaction:	2.5kg	Separate Samples
Particle Density (Mg/m3):	2.65	Assumed	Material Retained on 37.5 mm Test Sieve (%):		0
Maximum Dry Density (Mg/m3):		1.87	Material Retained on 20.0 mm Test Sieve (%):		0
Optimum Moisture Content (%):		13			
Remarks See summary of soil descriptions					

UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

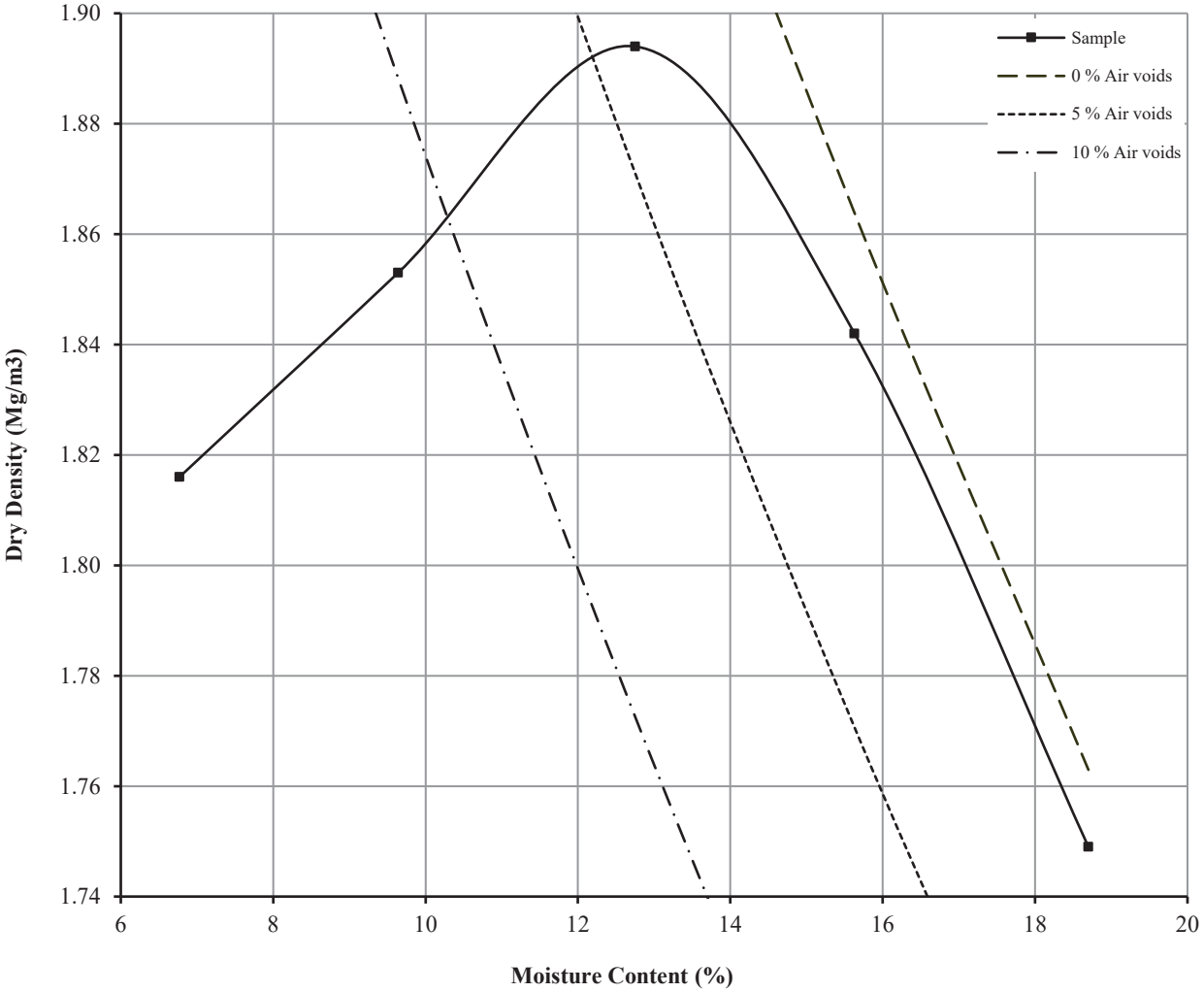
A46 Walsgrave

Contract
PSL23/4336
Client Ref
G230651

DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

BS 1377 : Part 4 : Clause 3.3 : 1990

Hole Number:	**BH118**	**Top Depth (m) :**	**2.70**
Sample Number:	**15**	**Base Depth (m) :**	**3.00**
Sample Type:	**B**		



Initial Moisture Content:		19	Method of Compaction:	2.5kg	Separate Samples
Particle Density (Mg/m3):	2.63	Assumed	Material Retained on 37.5 mm Test Sieve (%):		0
Maximum Dry Density (Mg/m3):		1.89	Material Retained on 20.0 mm Test Sieve (%):		0
Optimum Moisture Content (%):		13			
Remarks See summary of soil descriptions					

UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

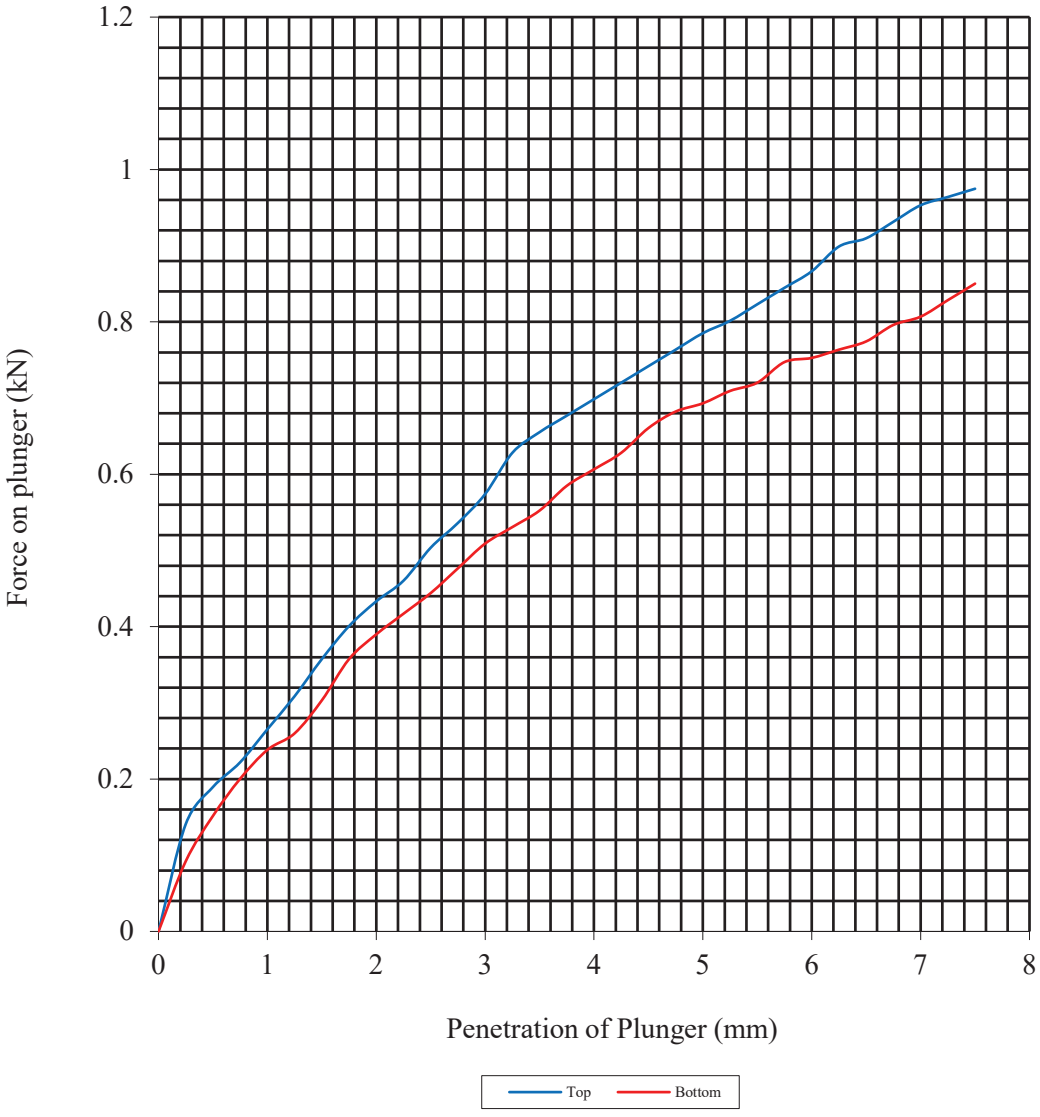
A46 Walsgrave

Contract
PSL23/4336
Client Ref
G230651

CALIFORNIA BEARING RATIO TEST

BS 1377 : Part 4 : 1990

Hole Number:	**BH118**	**Top Depth (m):**	**0.80**
Sample Number:	**9**	**Base Depth (m):**	**1.00**
Sample Type:	**B**		



Initial Sample Conditions		Sample Preparation		Final Moisture Content %		C.B.R. Value %	
Moisture Content:	16	Surcharge Kg:	4.00	Sample Top	16	Sample Top	3.9
Bulk Density Mg/m3:	2.10	Soaking Time hrs	0	Sample Bottom	16	Sample Bottom	3.5
Dry Density Mg/m3:	1.81	Swelling mm:	0	Remarks : See Summary of Soil Descriptions.			
Percentage retained on 20mm BS test sieve:			0				
Compaction Conditions		2.5kg					

UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

Contract No: PSL23/4336

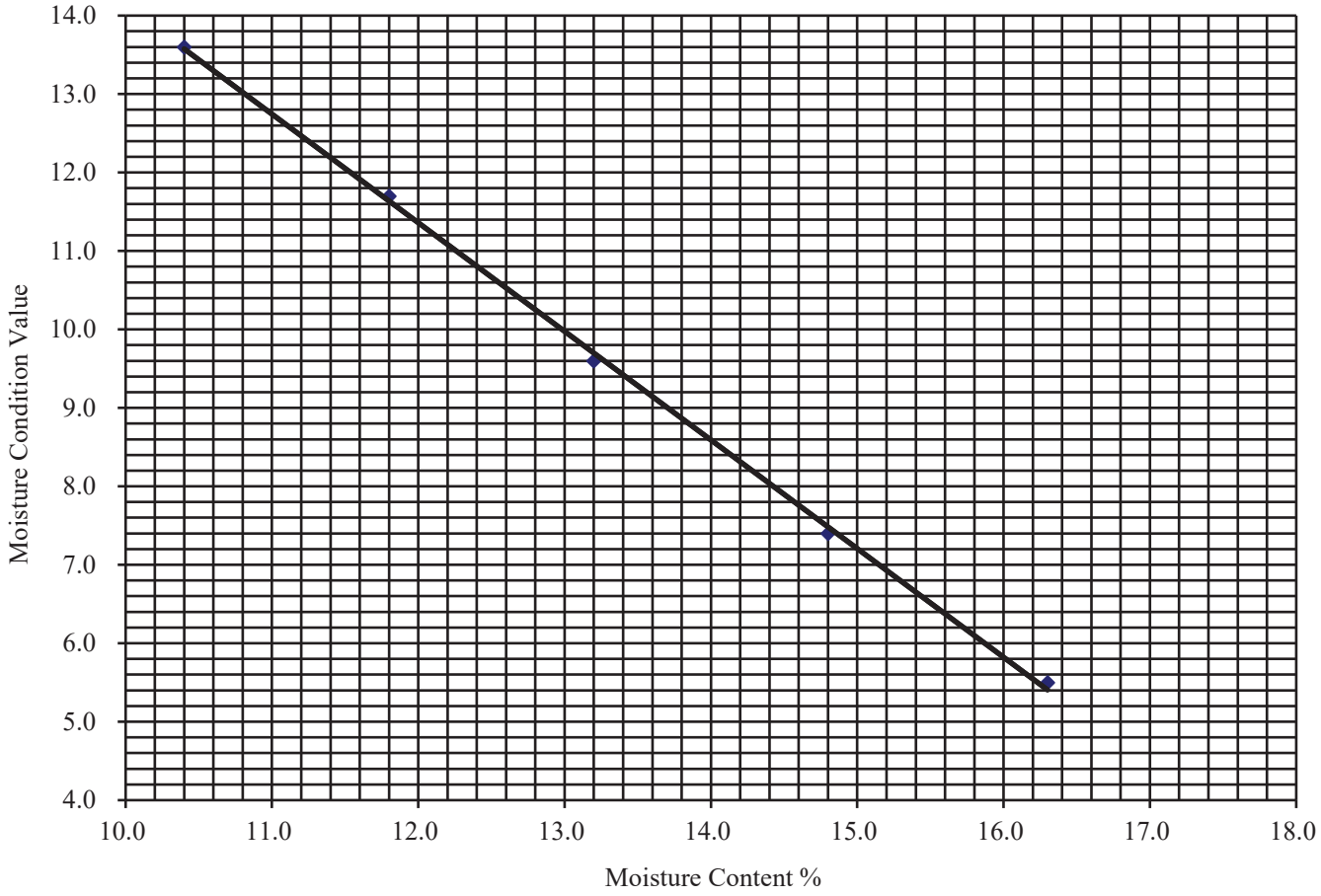
Client Ref: G230651

MOISTURE CONDITION VALUE CALIBRATION

BS1377 : Part 4 : 1990 Clause 5.5

Hole Number:	**BH118**	**Top Depth (m):**	**0.80**
Sample Number:	**9**	**Base Depth (m):**	**1.00**
Sample Type:	**B**		

Initial Moisture Content (%):	16
Single/Separate Samples Tested	Separate
Material Retained on the 20mm BS Test Sieve (%):	0



Test Results.

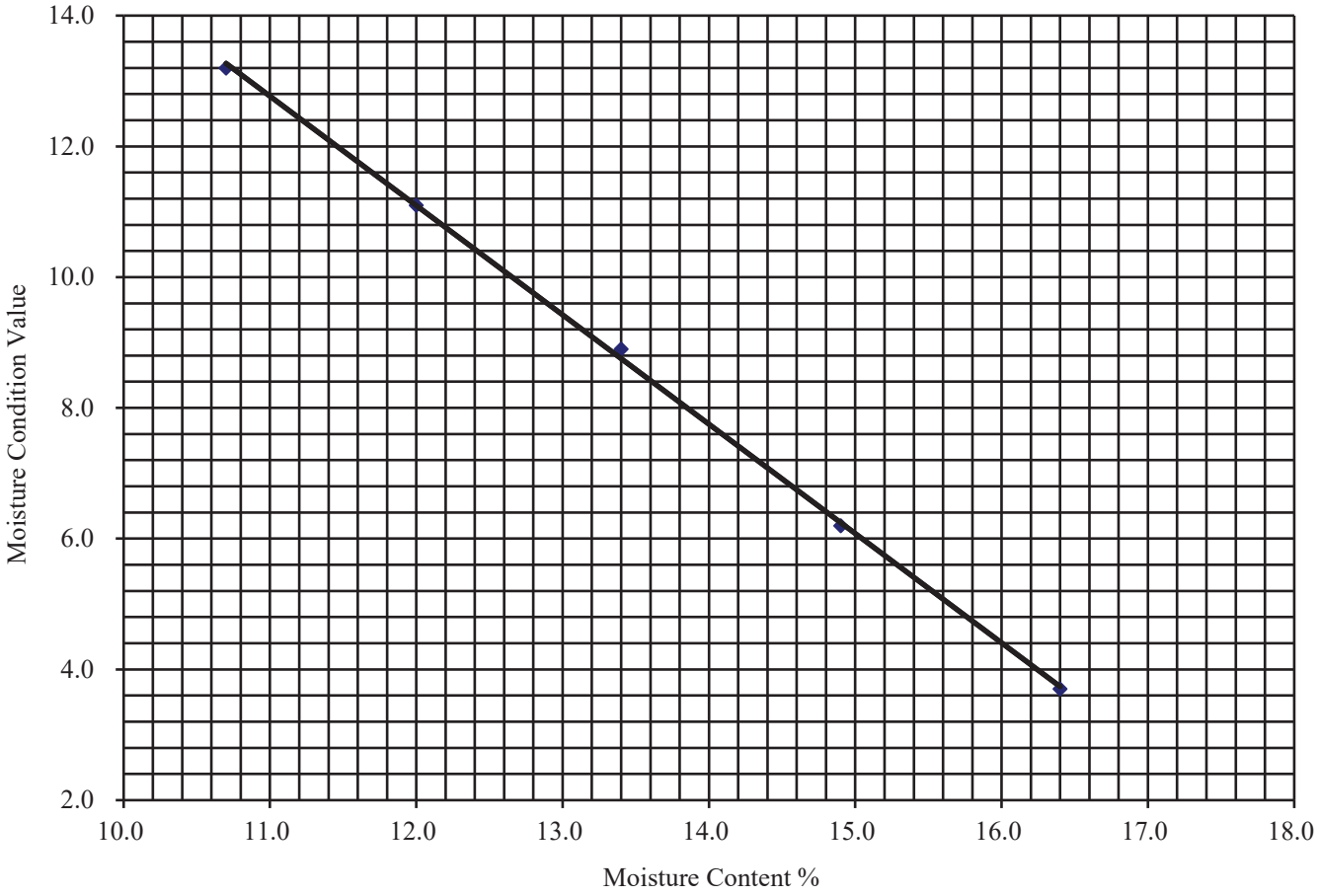
Test Number	1	2	3	4	5
Moisture Content (%)	10.4	11.8	13.2	14.8	16.3
MCV	13.6	11.7	9.6	7.4	5.5

MOISTURE CONDITION VALUE CALIBRATION

BS1377 : Part 4 : 1990 Clause 5.5

Hole Number:	**BH118**	**Top Depth (m):**	**2.70**
Sample Number:	**15**	**Base Depth (m):**	**3.00**
Sample Type:	**B**		

Initial Moisture Content (%):	19
Single/Separate Samples Tested	Separate
Material Retained on the 20mm BS Test Sieve (%):	0



Test Results.

Test Number	1	2	3	4	5
Moisture Content (%)	10.7	12.0	13.4	14.9	16.4
MCV	13.2	11.1	8.9	6.2	3.7

ONE DIMENSIONAL CONSOLIDATION TEST

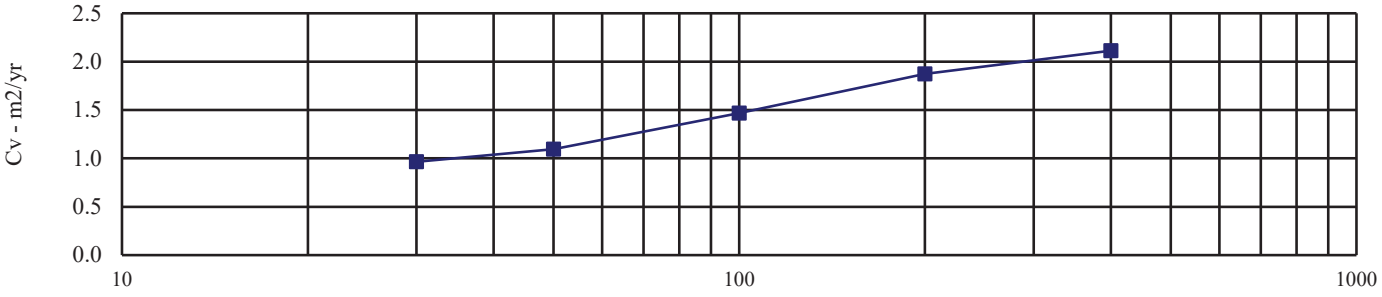
BS 1377: Part 5: 1990: Clause 3

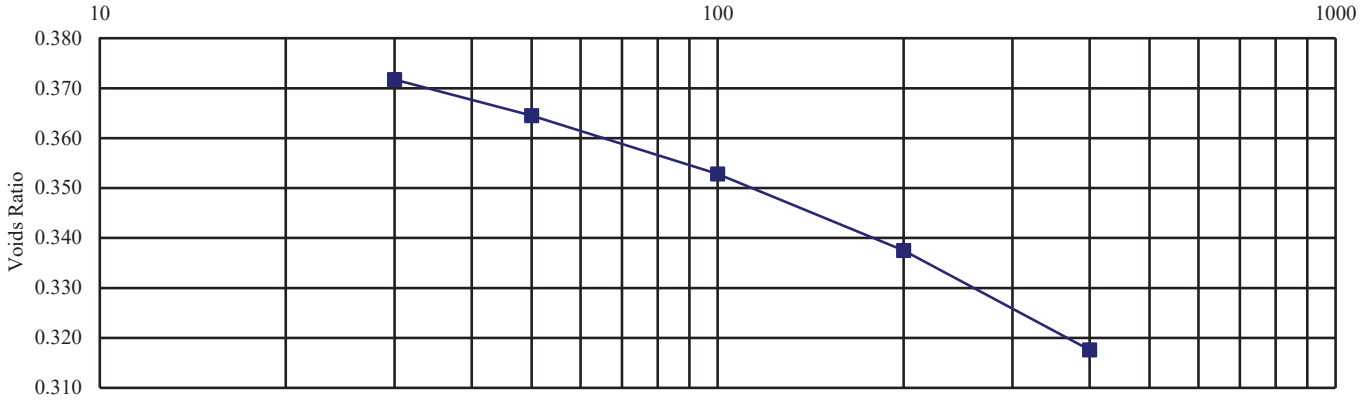
Hole Number: BH118 **Top Depth (m):** 2.00

Sample Number: 13 **Base Depth (m) :** 2.45

Sample Type: UT

Initial Conditions		Pressure Range kPa		Mv m2/MN	Cv m2/yr	Specimen location within tube:	Top
Moisture Content (%):	14						
Bulk Density (Mg/m3):	2.17	0	30	0.591	0.965	Method used to	
Dry Density (Mg/m3):	1.90	30	50	0.262	1.095	determine CV:	T90
Voids Ratio:	0.396	50	100	0.172	1.467	Nominal temperature	
Degree of saturation:	94.6	100	200	0.113	1.875	during test ' C:	20
Height (mm):	20.02	200	400	0.075	2.113	Remarks:	
Diameter (mm)	75.008					See summary of soil descriptions	
Particle Density (Mg/m3): Assumed	2.65						





UKAS TESTING 4043 / PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY	A46 Walsgrave	Contract No: PSL23/4336 Client Ref: G230651

SUMMARY OF LABORATORY HAND VANES

(BS1377 : PART 7 : 1990)

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Moisture Content %	Peak Shear Strength kPa	Residual Shear Strength kPa	Remarks
BH118	10	B	1.20	1.65	15	78		
BH118	15	B	2.70	3.00	19	23		

* This test is out of our UKAS scope

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY	A46 Walsgrave	Contract No: PSL23/4336 Client Ref: G230651

UKAS TESTING
2531

CHEMTECH environmental part of Cawood

ANALYTICAL TEST REPORT

Contract no: 124156

Contract name: A46 Walsgrave

Client reference: PSL23/4336

Clients name: Professional Soils Laboratory

Clients address: 5/7 Hexthorpe Road
Doncaster
DN4 0AR

Samples received: 28 June 2023

Analysis started: 28 June 2023

Analysis completed: 07 July 2023

Report issued: 07 July 2023

Key

U	UKAS accredited test
M	MCERTS & UKAS accredited test
$	Test carried out by an approved subcontractor
I/S	Insufficient sample to carry out test
N/S	Sample not suitable for testing

Approved by: [redacted]

Ellis McCulloch
Senior Reporting Administrator

Chemtech Environmental Limited

SOILS

Lab number			124156-1	124156-2
Sample id			BH118	BH118
Depth (m)			0.70	2.45-3.00
Sample Type			D	D
Date sampled			-	-
Test	**Method**	**Units**		
pH	CE004 U	units	7.9	8.7
Magnesium (2:1 water soluble)	CE061	mg/l Mg	5.1	8.2
Chloride (2:1 water soluble)	CE049 U	mg/l Cl	8.9	6.3
Nitrate (2:1 water soluble)	CE049 U	mg/l NO_3	1.4	1.2
Sulphate (2:1 water soluble)	CE061 U	mg/l SO_4	32	54
Sulphate (acid extractable)	CE062 U	mg/kg SO_4	154	776
Sulphate (acid extractable)	CE062 U	% w/w SO_4	0.02	0.08
Sulphur (total)	CE119	mg/kg S	129	984
Sulphur (total)	CE119	% w/w S	0.01	0.10

Chemtech Environmental Limited

METHOD DETAILS

METHOD	SOILS	METHOD SUMMARY	SAMPLE	STATUS	LOD	UNITS
CE004	pH	Based on BS 1377, pH Meter	As received	U	-	units
CE061	Magnesium (2:1 water soluble)	Aqueous extraction, ICP-OES	Dry		1	mg/l Mg
CE049	Chloride (2:1 water soluble)	Aqueous extraction, IC-COND	Dry	U	1	mg/l Cl
CE049	Nitrate (2:1 water soluble)	Aqueous extraction, IC-COND	Dry	U	1	mg/l NO_3
CE061	Sulphate (2:1 water soluble)	Aqueous extraction, ICP-OES	Dry	U	10	mg/l SO_4
CE062	Sulphate (acid extractable)	HCl extract, analysed by ICP-OES	Dry	U	100	mg/kg SO4
CE062	Sulphate (acid extractable)	HCl extract, analysed by ICP-OES	Dry	U	0.01	% w/w SO4
CE119	Sulphur (total)	Aqua regia digest, analysed by ICP-OES	Dry		100	mg/kg S
CE119	Sulphur (total)	Aqua regia digest, analysed by ICP-OES	Dry		0.01	% w/w S

Chemtech Environmental Limited

DEVIATING SAMPLE INFORMATION

Comments
Sample deviation is determined in accordance with the UKAS note "Guidance on Deviating Samples" and based on reference standards and laboratory trials.
For samples identified as deviating, test result(s) may be compromised and may not be representative of the sample at the time of sampling.
Chemtech Environmental Ltd cannot be held responsible for the integrity of sample(s) received if Chemtech Environmental Ltd did not undertake the sampling. Such samples may be deviating.

Key

N	No (not deviating sample)
Y	Yes (deviating sample)
NSD	Sampling date not provided
NST	Sampling time not provided (waters only)
EHT	Sample exceeded holding time(s)
IC	Sample not received in appropriate containers
HP	Headspace present in sample container
NCF	Sample not chemically fixed (where appropriate)
OR	Other (specify)

Lab ref	Sample id	Depth (m)	Deviating	Tests (Reason for deviation)
124156-1	BH118	0.70	Y	All (NSD)
124156-2	BH118	2.45-3.00	Y	All (NSD)

Chemtech Environmental Limited

ADDITIONAL INFORMATION

Notes

Opinions and interpretations expressed herein are outside the UKAS accreditation scope.

Unless otherwise stated, Chemtech Environmental Ltd was not responsible for sampling.

All testing carried out at Unit 6 Parkhead, Stanley, DH9 7YB, except for subcontracted testing.

Methods, procedures and performance data are available on request.

Results reported herein relate only to the material supplied to the laboratory.

This report shall not be reproduced except in full, without prior written approval.

Samples will be disposed of 4 weeks from initial receipt unless otherwise instructed.

For soils and solids, all results are reported on a dry basis. Samples dried at no more than 30°C in a drying cabinet.

Analytical results are inclusive of stones, where applicable.

LABORATORY REPORT

Contract Number: PSL23/4772

Report Date: 03 August 2023

Client's Reference: G230651/Geo 16

Client Name: Strata Geotechnics
Kirkby Lane
Pinxton
Nottinghamshire
NG16 6JA

For the attention of: Izaac Lovatt

Contract Title: A46 Walsgrave

Date Received: 20/6/2023
Date Commenced: 20/6/2023
Date Completed: 3/8/2023

Notes: Opinions and Interpretations are outside the UKAS Accreditation

A copy of the Laboratory Schedule of accredited tests as issued by UKAS is attached to this report. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced other than in full, without the prior written approval of the laboratory.

Checked and Approved Signatories:

A Watkins (Director)

R Berriman (Quality Manager)

[redacted] S Royle (Laboratory Manager)

L Knight (Assistant Laboratory Manager)

S Eyre (Senior Technician)

T Watkins (Senior Technician)

5 – 7 Hexthorpe Road,
Hexthorpe,
Doncaster,
DN4 0AR
Tel: [redacted]
Email: [redacted]@prosoils.co.uk
[redacted]@prosoils.co.uk

SUMMARY OF LABORATORY SOIL DESCRIPTIONS

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Description of Sample
BH127	5	B	0.50		Brown slightly gravelly sandy CLAY.
BH127	8	B	1.00		Brown slightly gravelly sandy CLAY.
BH127	9	D	1.20		Brown slightly gravelly sandy CLAY.
BH127	10	B	1.50	2.00	Brown slightly gravelly sandy CLAY.
BH127	14	D	2.50	2.95	Brown sandy CLAY.
BH127	15	B	2.50	3.00	Brown sandy CLAY.
BH127	17	UT	3.50	3.95	Brown slightly gravelly sandy CLAY.
BH127	21	B	4.50	5.00	Brown slightly gravelly very sandy CLAY.
BH127	24	D	7.00		Reddish brown slightly gravelly sandy CLAY.
BH127	27	D	8.50		Reddish brown slightly gravelly sandy CLAY.
BH127	29	D	8.90	9.28	Reddish brown slightly gravelly sandy CLAY.

UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

Contract No: PSL23/4772

Client Ref: G230651

SUMMARY OF SOIL CLASSIFICATION TESTS

(BS1377 : PART 2 : 1990)

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Moisture Content % Clause 3.2	Linear Shrinkage % Clause 6.5	Particle Density Mg/m^3 Clause 8.2	Liquid Limit % Clause 4.3/4	Plastic Limit % Clause 5.3	Plasticity Index % Clause 5.4	Passing .425mm %	Remarks
BH127	5	B	0.50		20			46	22	24	94	Intermediate Plasticity CI
BH127	9	D	1.20		20			43	21	22	95	Intermediate Plasticity CI
BH127	14	D	2.50	2.95	11			44	22	22	100	Intermediate Plasticity CI
BH127	24	D	7.00		12			38	20	18	95	Intermediate Plasticity CI
BH127	27	D	8.50		10			40	21	19	91	Intermediate Plasticity CI
BH127	29	D	8.90	9.28	11			35	18	17	92	Intermediate Plasticity CI

SYMBOLS : **NP : Non Plastic** *** : Liquid Limit and Plastic Limit Wet Sieved.**

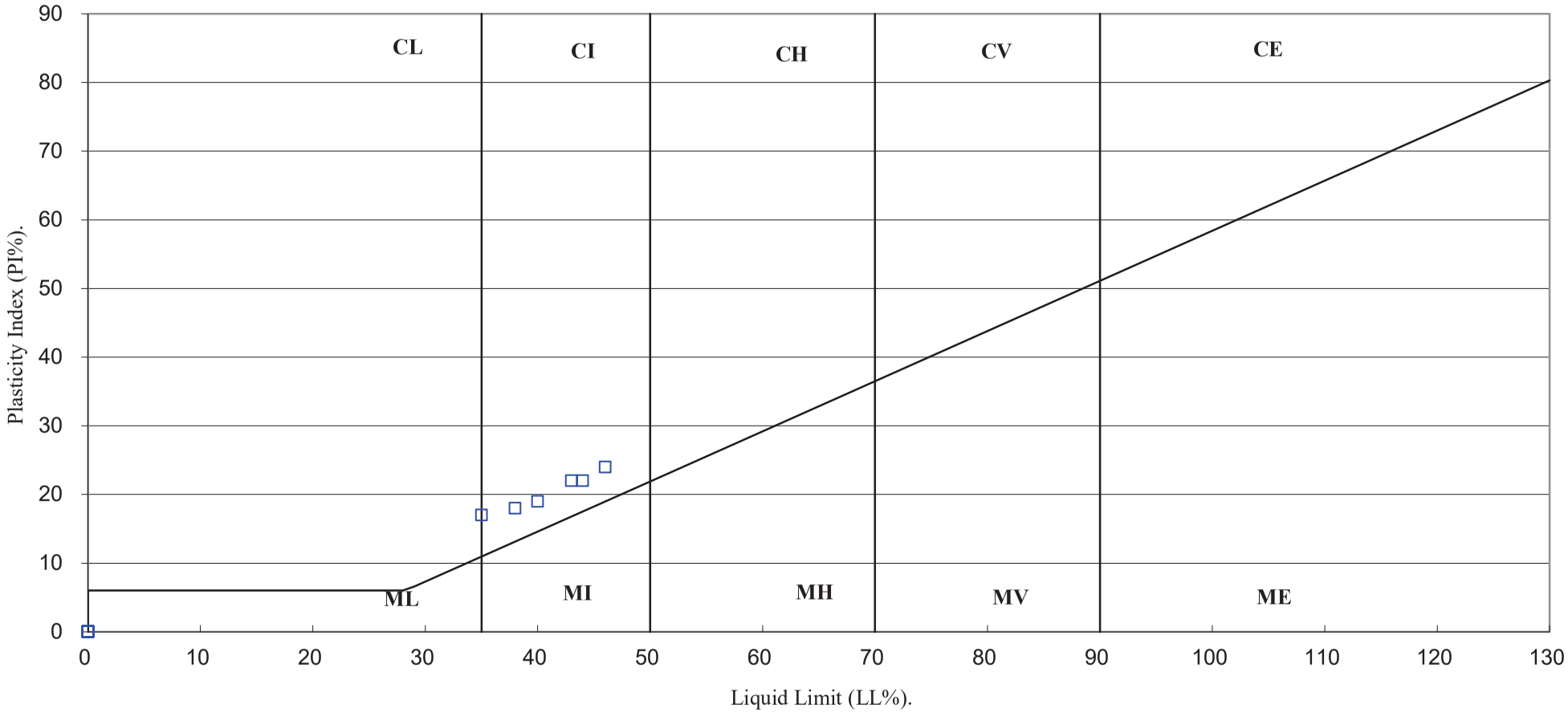
UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

Contract No:
PSL23/4772
Client Ref:
G230651

PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION.



UKAS TESTING 4043	A46 Walsgrave	Contract No: PSL23/4772
PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY		Client Ref: G230651

SUMMARY OF SOIL DENSITY RELATED TESTS

(BS1377 : PART 2 & 4 : 1990)

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Moisture Content %	Bulk Density Mg/m^3	Dry Density Mg/m^3	Retained 20mm %	Retained 37.5mm %	Method of compaction kg	Maximum Dry Density Mg/m^3	Minimum Dry Density Mg/m^3	Remarks
BH127	5	B	0.50		20	2.05	1.71						
BH127	14	D	2.50	2.95	11	2.00	1.80						
BH127	21	B	4.50	5.00	14	2.15	1.89						
BH127	27	D	8.50		10	2.01	1.83						

UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

Contract No:
PSL23/4772
Client Ref:
G230651

SUMMARY OF LABORATORY HAND VANES

(BS1377 : PART 7 : 1990)

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Moisture Content %	Peak Shear Strength kPa	Residual Shear Strength kPa	Remarks
BH127	10	B	1.50	2.00	16	124		

* This test is out of our UKAS scope

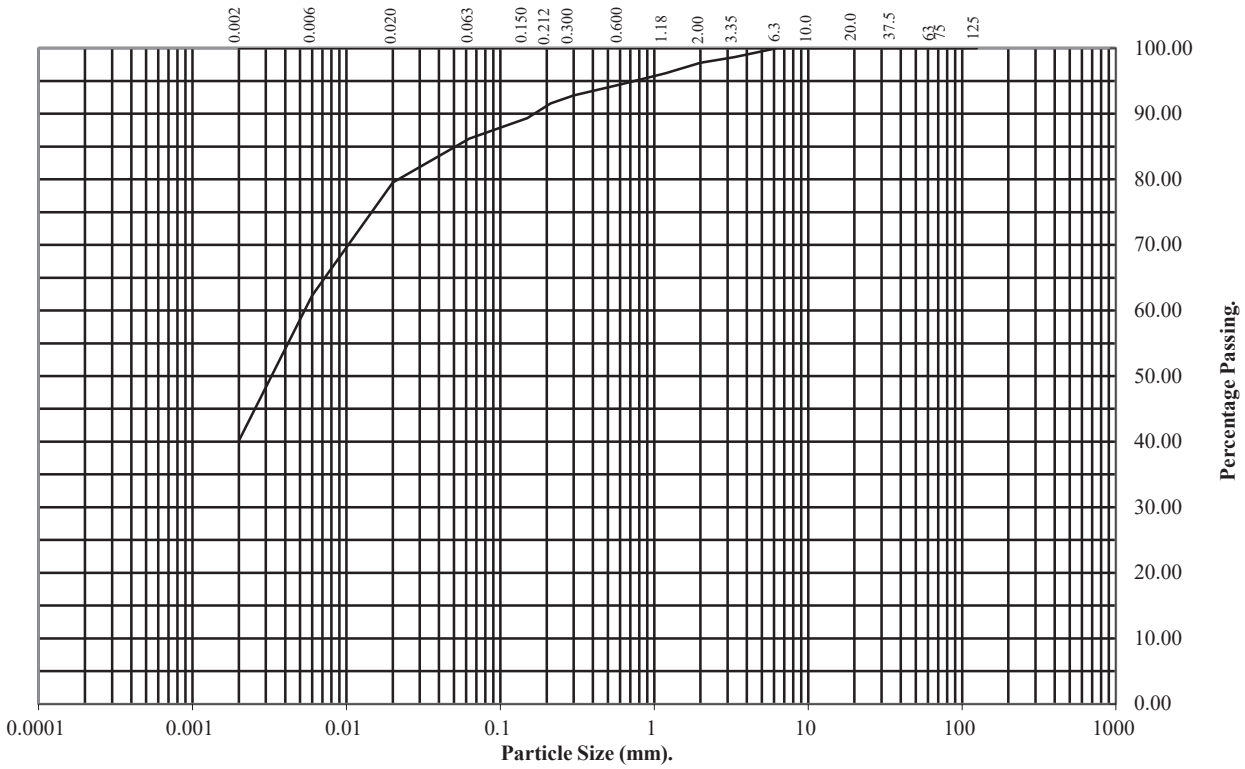
PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY	A46 Walsgrave	Contract No: PSL23/4772 Client Ref: G230651

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

Hole Number:	**BH127**	**Top Depth (m):**	**0.50**
Sample Number:	**5**	**Base Depth(m):**	
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	100
6.3	100
3.35	99
2	98
1.18	96
0.6	94
0.3	93
0.212	92
0.15	89
0.063	86

Particle Diameter	Percentage Passing
0.02	80
0.006	62
0.002	40

Soil Fraction	Total Percentage
Cobbles	0
Gravel	2
Sand	12
Silt	46
Clay	40

Remarks:
See Summary of Soil Descriptions

UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

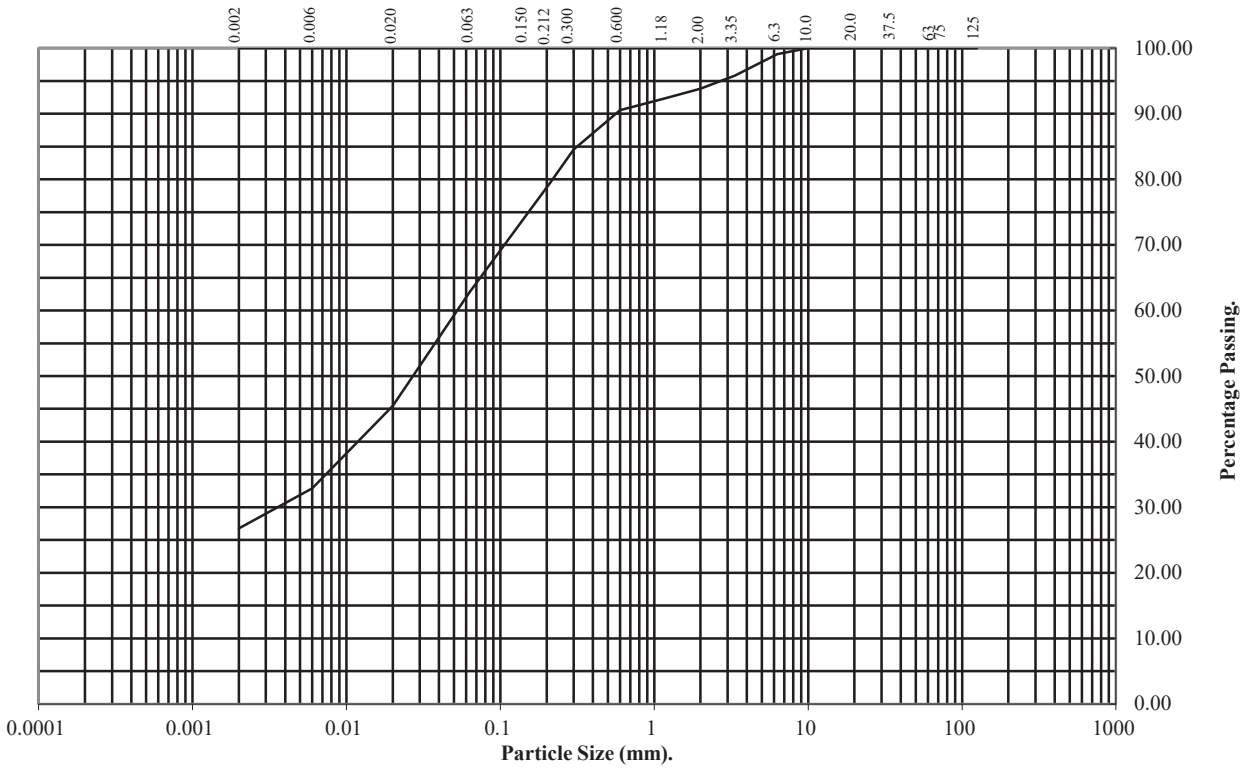
Contract No:
PSL23/4772
Client Ref:
G230651

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

Hole Number:	**BH127**	**Top Depth (m):**	**1.50**
Sample Number:	**10**	**Base Depth(m):**	**2.00**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	100
6.3	99
3.35	96
2	94
1.18	92
0.6	91
0.3	85
0.212	80
0.15	75
0.063	63

Particle Diameter	Percentage Passing
0.02	45
0.006	33
0.002	27

Soil Fraction	Total Percentage
Cobbles	0
Gravel	6
Sand	31
Silt	36
Clay	27

Remarks:
See Summary of Soil Descriptions

UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

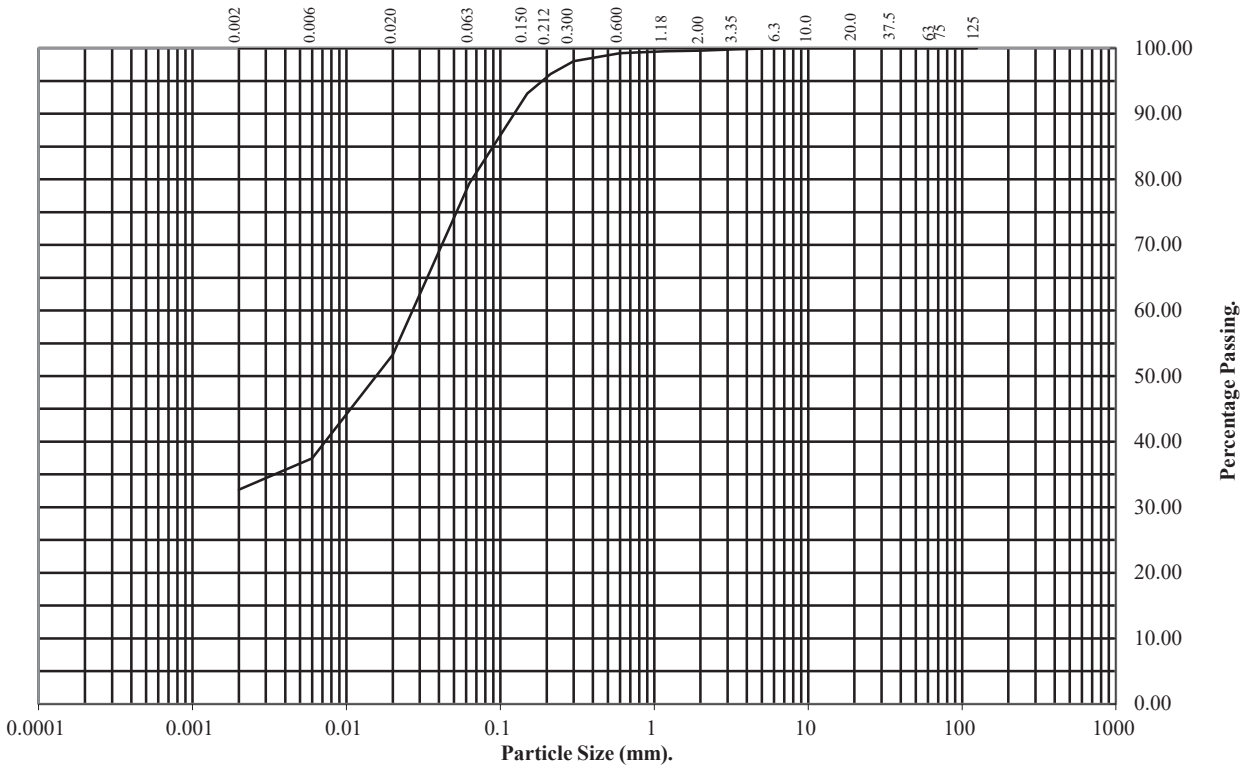
Contract No:
PSL23/4772
Client Ref:
G230651

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

Hole Number:	**BH127**	**Top Depth (m):**	**2.50**
Sample Number:	**15**	**Base Depth(m):**	**3.00**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	100
6.3	100
3.35	100
2	100
1.18	100
0.6	99
0.3	98
0.212	96
0.15	93
0.063	79

Particle Diameter	Percentage Passing
0.02	53
0.006	37
0.002	33

Soil Fraction	Total Percentage
Cobbles	0
Gravel	0
Sand	21
Silt	46
Clay	33

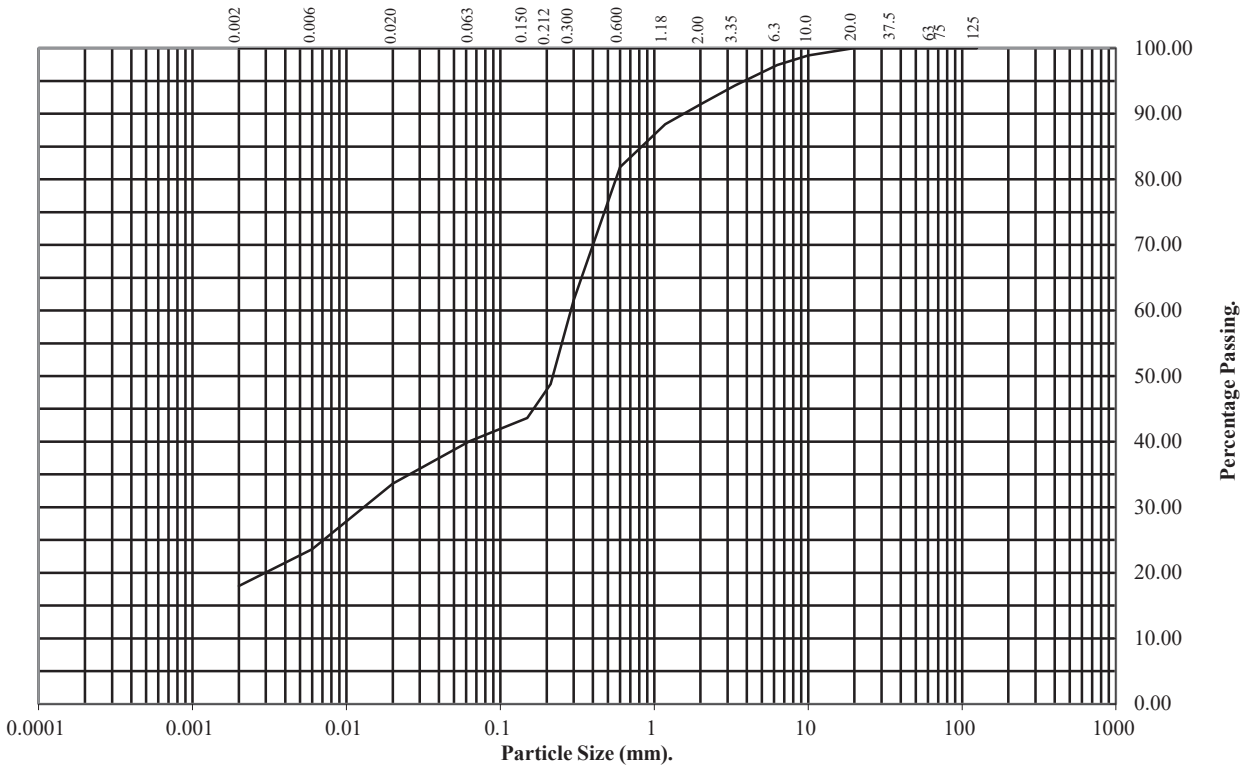
Remarks:
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

Hole Number:	**BH127**	**Top Depth (m):**	**4.50**
Sample Number:	**21**	**Base Depth(m):**	**5.00**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	99
6.3	97
3.35	94
2	91
1.18	88
0.6	82
0.3	62
0.212	49
0.15	44
0.063	40

Particle Diameter	Percentage Passing
0.02	34
0.006	24
0.002	18

Soil Fraction	Total Percentage
Cobbles	0
Gravel	9
Sand	51
Silt	22
Clay	18

Remarks:
See Summary of Soil Descriptions

UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

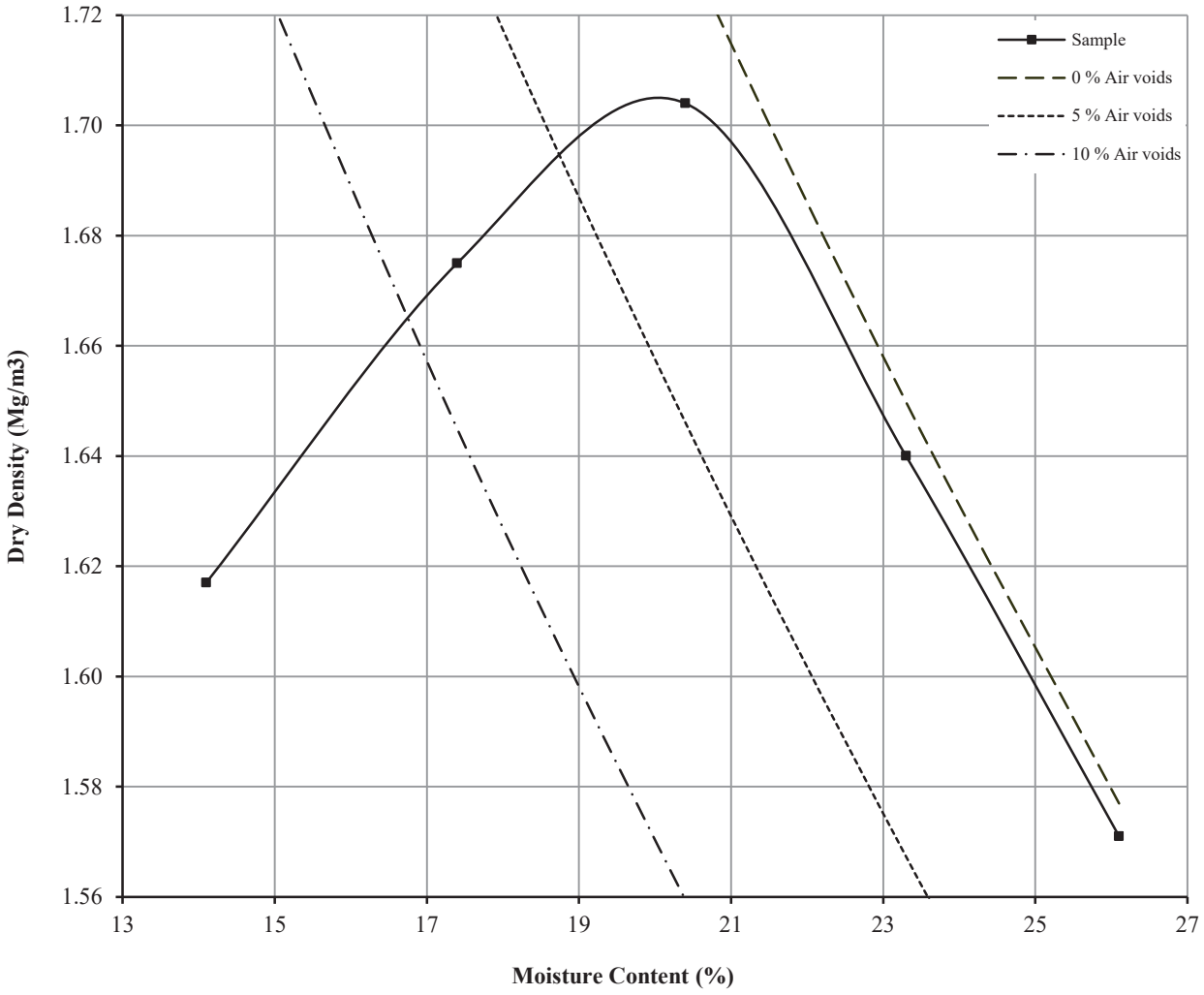
A46 Walsgrave

Contract No:
PSL23/4772
Client Ref:
G230651

DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

BS 1377 : Part 4 : Clause 3.3 : 1990

Hole Number:	**BH127**	**Top Depth (m) :**	**1.00**
Sample Number:	**8**	**Base Depth (m) :**	
Sample Type:	**B**		



Initial Moisture Content:		20	Method of Compaction:	2.5kg	Separate Samples
Particle Density (Mg/m3):	2.68	Assumed	Material Retained on 37.5 mm Test Sieve (%):		0
Maximum Dry Density (Mg/m3):		1.70	Material Retained on 20.0 mm Test Sieve (%):		0
Optimum Moisture Content (%):		20			
Remarks See summary of soil descriptions					

UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

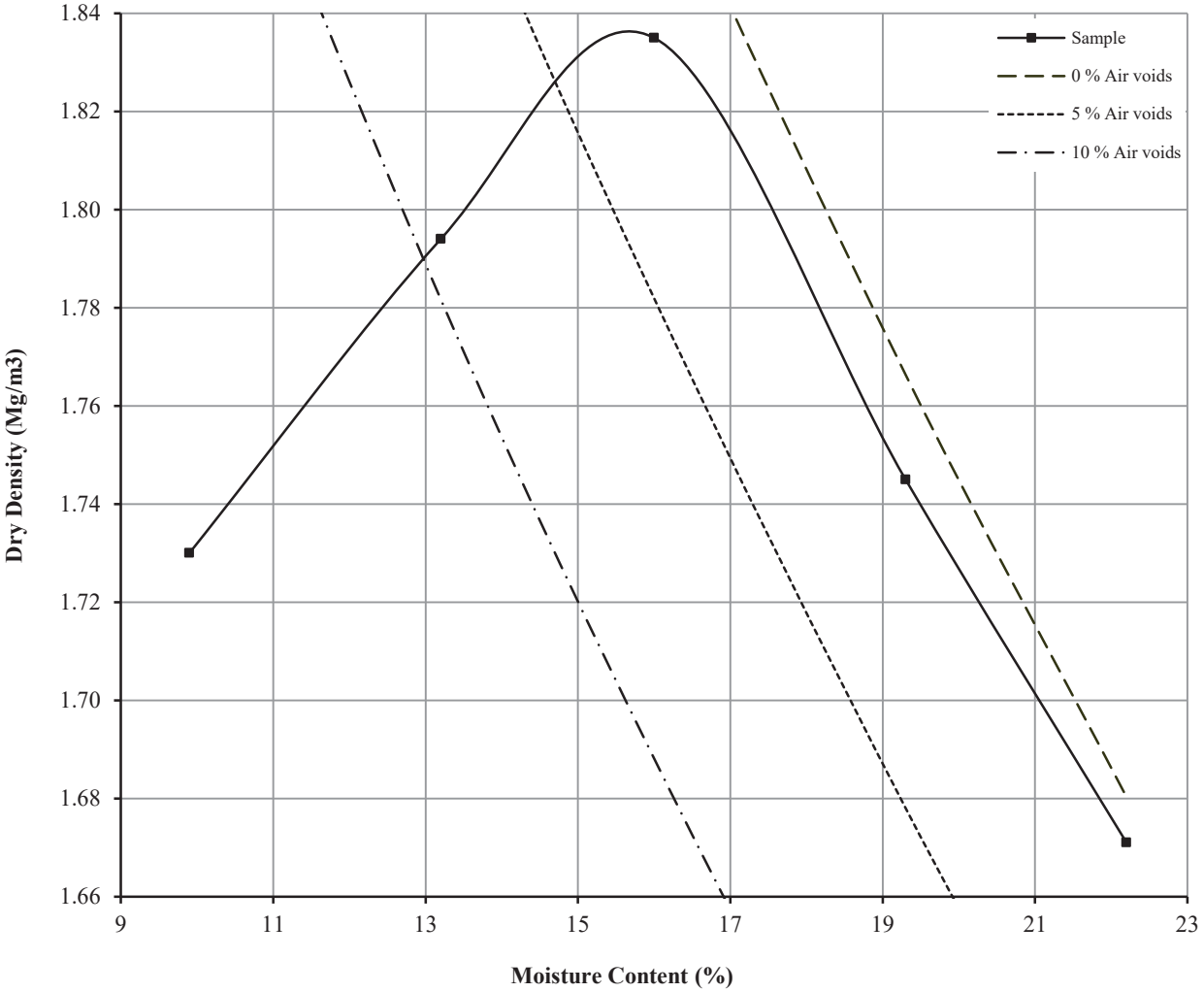
A46 Walsgrave

Contract
PSL23/4772
Client Ref
G230651

DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

BS 1377 : Part 4 : Clause 3.3 : 1990

Hole Number:	**BH127**	**Top Depth (m) :**	**1.50**
Sample Number:	**10**	**Base Depth (m) :**	**2.00**
Sample Type:	**B**		



Initial Moisture Content:		16	Method of Compaction:	2.5kg	Separate Samples
Particle Density (Mg/m3):	2.68	Assumed	Material Retained on 37.5 mm Test Sieve (%):		0
Maximum Dry Density (Mg/m3):		1.84	Material Retained on 20.0 mm Test Sieve (%):		0
Optimum Moisture Content (%):		16			
Remarks See summary of soil descriptions					

UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

Contract
PSL23/4772
Client Ref
G230651

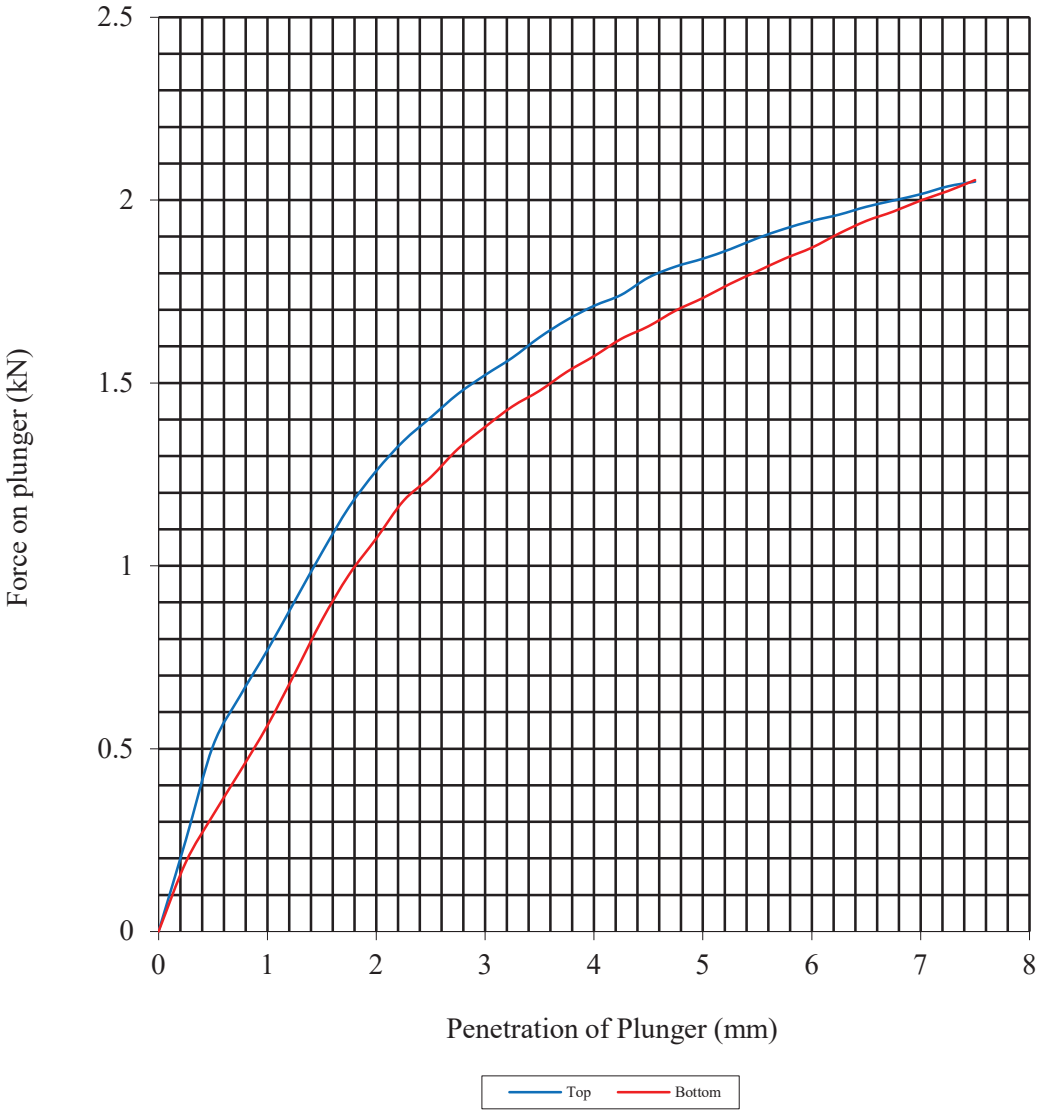
CALIFORNIA BEARING RATIO TEST

BS 1377 : Part 4 : 1990

Hole Number: BH127 **Top Depth (m):** 1.00

Sample Number: 8 **Base Depth (m):**

Sample Type: B



Initial Sample Conditions		Sample Preparation		Final Moisture Content %		C.B.R. Value %	
Moisture Content:	20	Surcharge Kg:	4.20	Sample Top	20	Sample Top	10.6
Bulk Density Mg/m3:	2.04	Soaking Time hrs	0	Sample Bottom	20	Sample Bottom	9.4
Dry Density Mg/m3:	1.70	Swelling mm:	0.00	Remarks : See Summary of Soil Descriptions.			
Percentage retained on 20mm BS test sieve:			0				
Compaction Conditions		2.5kg					

UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

Contract No: PSL23/4772

Client Ref: G230651

MOISTURE CONDITION VALUE

BS1377 : Part 4 : 1990 Clause 5.4

Hole Number: BH127 **Top Depth (m):** 1.00

Sample Number: 8 **Base Depth (m):**

Sample Type: B

Material Retained on the 20mm BS Test Sieve (%):	0
Interpretation based on steepest straight line intercept with 5mm change in penetration.	

MCV Determination

Blows (N)	Penetration (mm)	n to 4n (mm)
1	101.3	29.1
2	88.1	33.2
3	79.3	33.3
4	72.2	30.2
6	62.1	22.7
8	54.9	15.6
12	46.0	6.8
16	42.0	2.8
24	39.4	
32	39.3	
48	39.2	
64	39.2	
96		
128		
192		
256		

Test Results.

Moisture Content (%)	20
MCV	10.2

UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

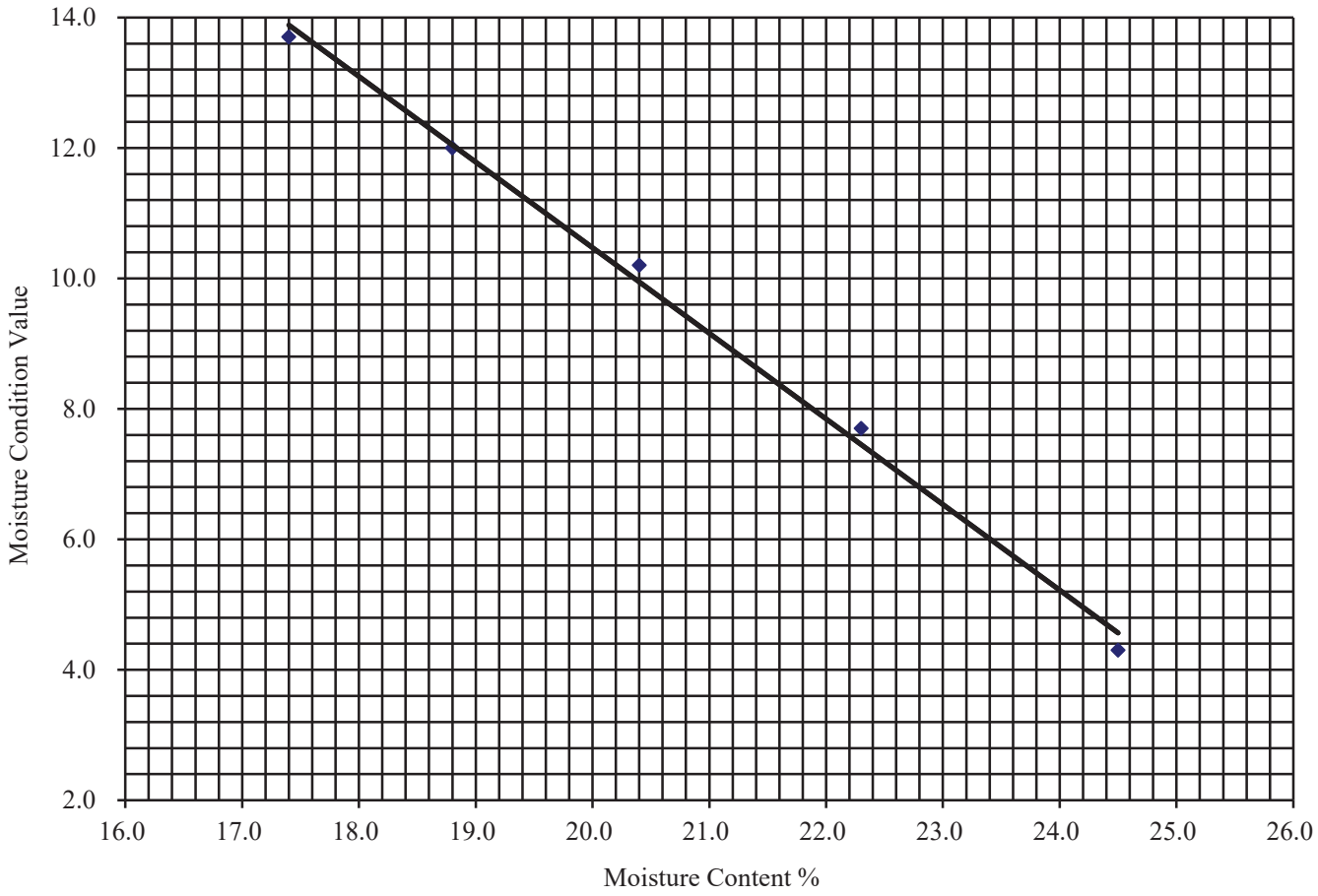
Contract No:
PSL23/4772
Client Ref:
G230651

MOISTURE CONDITION VALUE CALIBRATION

BS1377 : Part 4 : 1990 Clause 5.5

Hole Number:	**BH127**	**Top Depth (m):**	**1.00**
Sample Number:	**8**	**Base Depth (m):**	
Sample Type:	**B**		

Initial Moisture Content (%):	20
Single/Separate Samples Tested	Separate
Material Retained on the 20mm BS Test Sieve (%):	0



Test Results.

Test Number	1	2	3	4	5
Moisture Content (%)	17.4	18.8	20.4	22.3	24.5
MCV	13.7	12.0	10.2	7.7	4.3

MOISTURE CONDITION VALUE

BS1377 : Part 4 : 1990 Clause 5.4

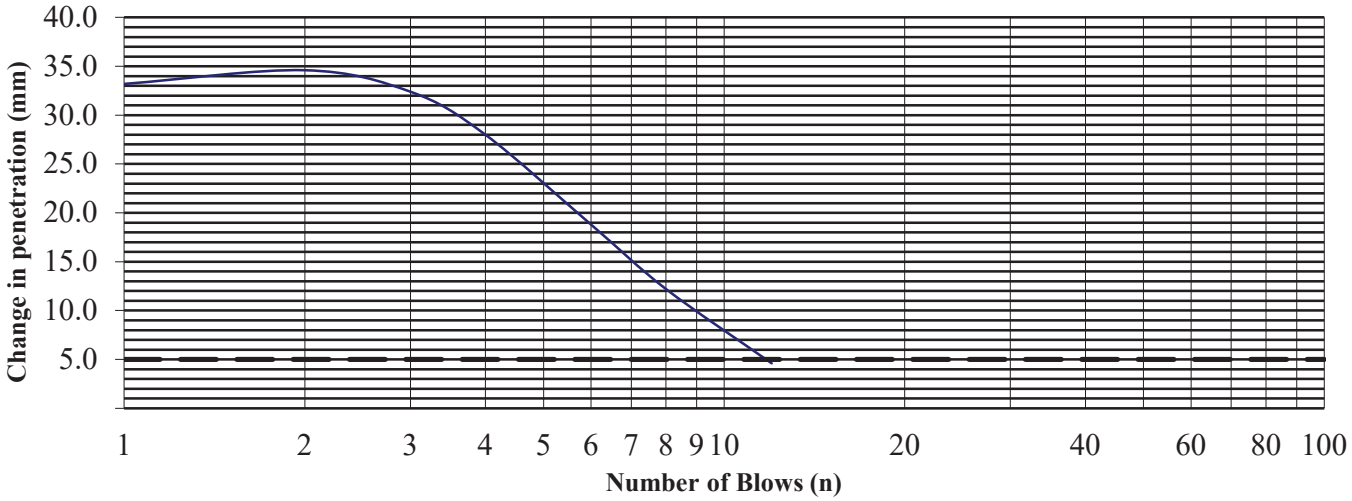
Hole Number: BH127 **Top Depth (m):** 1.50

Sample Number: 10 **Base Depth (m):**

Sample Type: B

Material Retained on the 20mm BS Test Sieve (%):	0
Interpretation based on steepest straight line intercept with 5mm change in penetration.	

MCV Determination



Blows (N)	Penetration (mm)	n to 4n (mm)
1	98.9	33.2
2	83.4	34.6
3	73.1	32.4
4	65.7	28.0
6	55.6	18.8
8	48.8	12.2
12	40.7	4.6
16	37.7	
24	36.8	
32	36.6	
48	36.1	
64		
96		
128		
192		
256		

Test Results.

Moisture Content (%)	16
MCV	10.3

UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

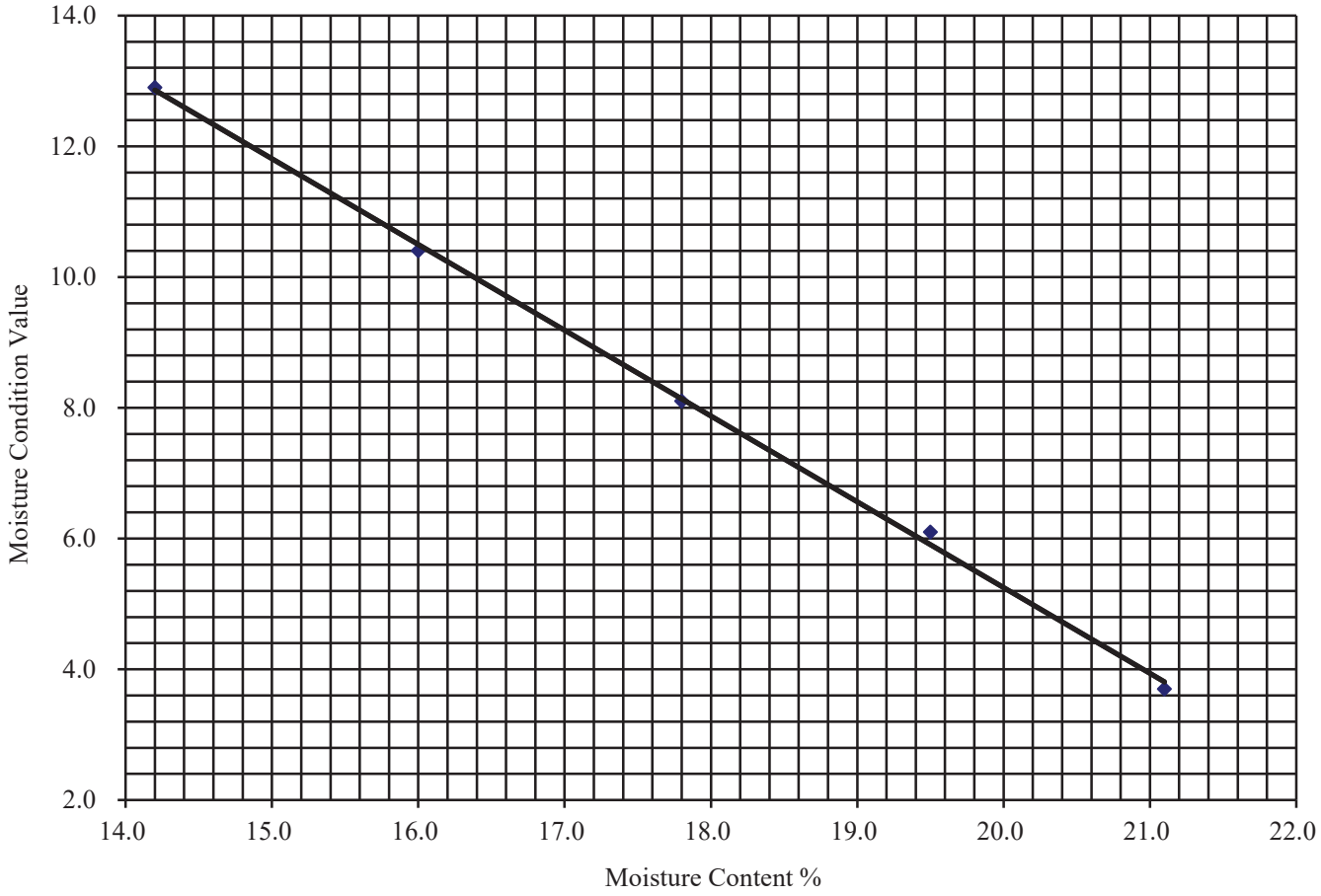
Contract No:
PSL23/4772
Client Ref:
G230651

MOISTURE CONDITION VALUE CALIBRATION

BS1377 : Part 4 : 1990 Clause 5.5

Hole Number:	**BH127**	**Top Depth (m):**	**1.50**
Sample Number:	**10**	**Base Depth (m):**	
Sample Type:	**B**		

Initial Moisture Content (%):	16
Single/Separate Samples Tested	Separate
Material Retained on the 20mm BS Test Sieve (%):	0



Test Results.

Test Number	1	2	3	4	5
Moisture Content (%)	14.2	16.0	17.8	19.5	21.1
MCV	12.9	10.4	8.1	6.1	3.7

ONE DIMENSIONAL CONSOLIDATION TEST

BS 1377: Part 5: 1990: Clause 3

Hole Number: BH127 **Top Depth (m):** 3.50

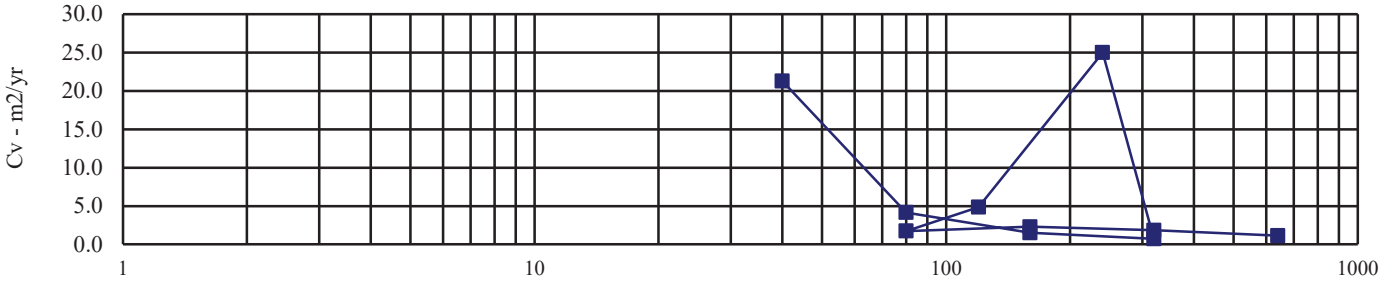
Sample Number: 17 **Base Depth (m) :** 3.95

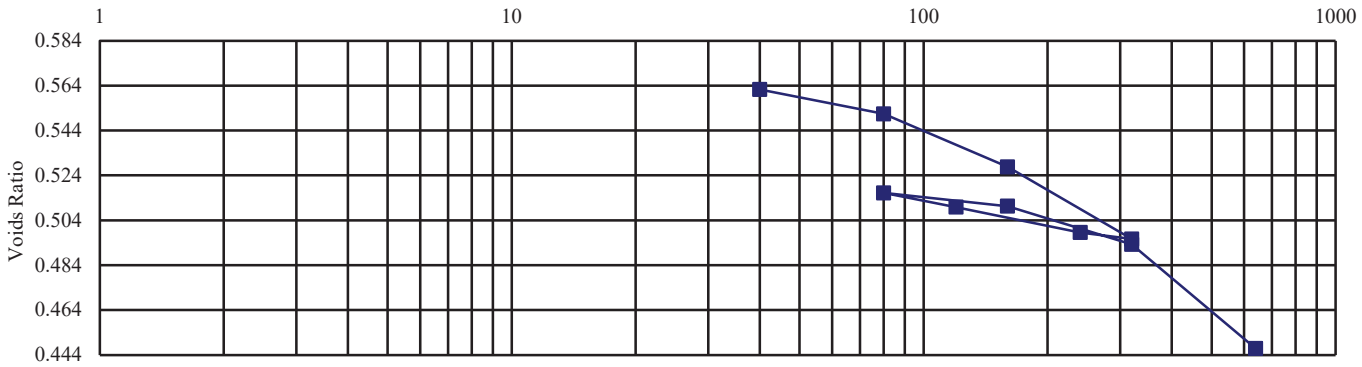
Sample Type: UT

Initial Conditions	
Moisture Content (%):	22
Bulk Density (Mg/m3):	2.05
Dry Density (Mg/m3):	1.68
Voids Ratio:	0.580
Degree of saturation:	100.3
Height (mm):	20.008
Diameter (mm)	75.02
Particle Density (Mg/m3): Assumed	2.65

Pressure Range kPa		Mv m2/MN	Cv m2/yr
0	40	0.284	21.265
40	80	0.174	4.164
80	160	0.190	1.506
160	320	0.132	0.746
320	240	0.024	24.990
240	120	0.063	4.854
120	80	0.105	1.749
80	160	0.049	2.293
160	320	0.070	1.837
320	640	0.097	1.144

Specimen location within tube:	Top
Method used to determine CV:	T90
Nominal temperature during test ' C:	20
Remarks: See summary of soil descriptions	





UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

Contract No: PSL23/4772

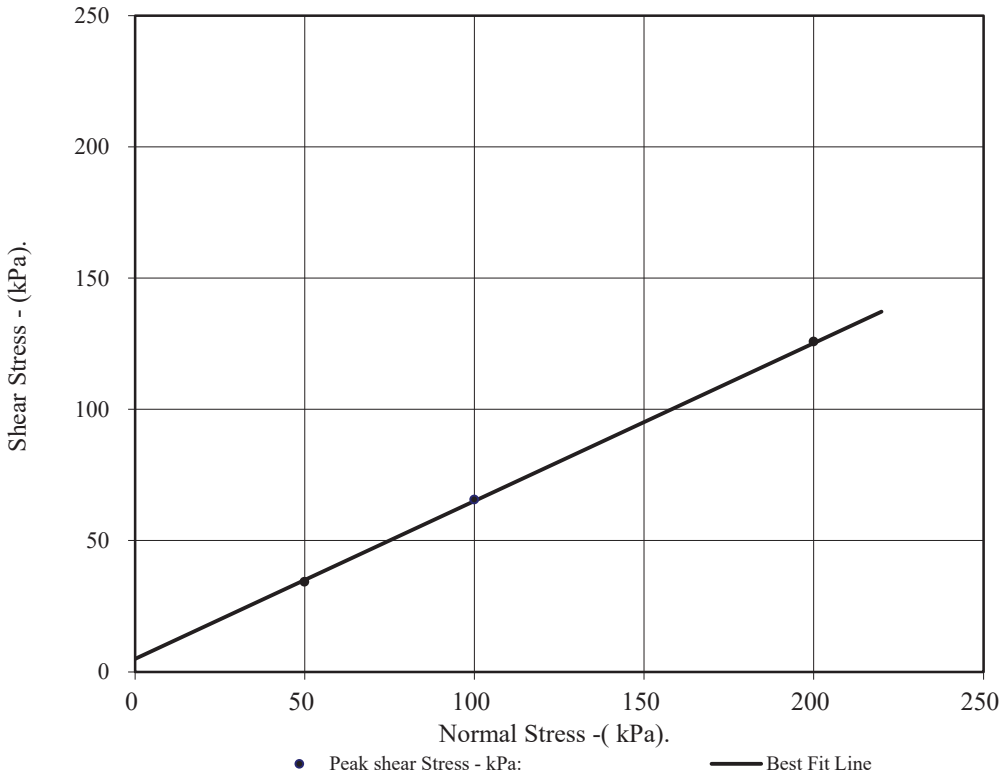
Client Ref: G230651

CONSOLIDATED DRAINED SHEARBOX TEST

BS1377:Part 7:1990 Clause 4

Hole Number:	**BH127**		Top Depth:	**4.50**	
Sample Number:	**21**		Base Depth:	**5.00**	
Sample Conditions:	Submerged		Sample Type	**B**	
Particle Density - Mg/m3:	2.65	Assumed	**Remarks:**		
Sample Preparation:	Material tested passing 2mm sieve Remoulded using 2.5kg effort.				
Sample Description:	**See summary of soil descriptions.**				

STAGE	**1**	**2**	**3**
Initial Conditions			
Height - mm:	20.05	20.05	20.05
Length - mm:	59.97	59.97	59.97
Moisture Content - %:	14	14	14
Bulk Density - Mg/m3:	2.15	2.15	2.15
Dry Density - Mg/m3:	1.89	1.89	1.89
Voids Ratio:	0.404	0.404	0.404
Normal Pressure- kPa	50	100	200
Consolidation Stage			
Consolidated Height - mm:	19.12	18.51	17.68
Shearing Stage			
Rate of Strain - mm/min	0.061	0.061	0.061
Displacement at peak shear stress - mm	9.00	8.20	6.10
Peak shear Stress - kPa:	34	66	126
Final Consolidated Conditions			
Moisture Content - %:	17	16	16
Bulk Density - Mg/m3:	2.26	2.33	2.44
Dry Density - Mg/m3:	1.93	2.01	2.11
Peak			
Angle of Shearing Resistance:(~~θ~~)	**31**		
Effective Cohesion - kPa:	**5**		

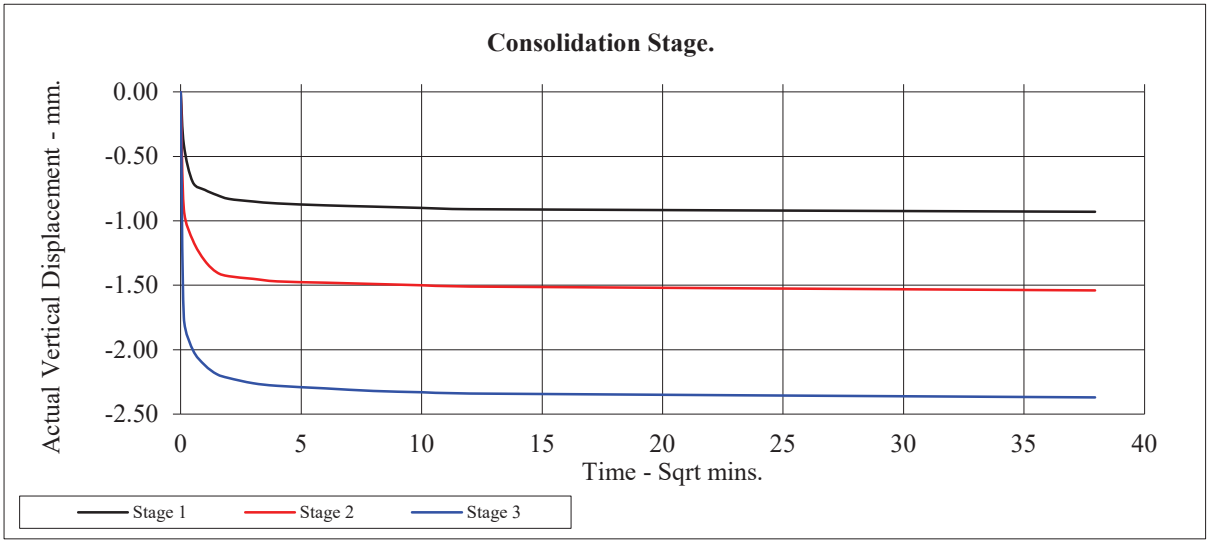


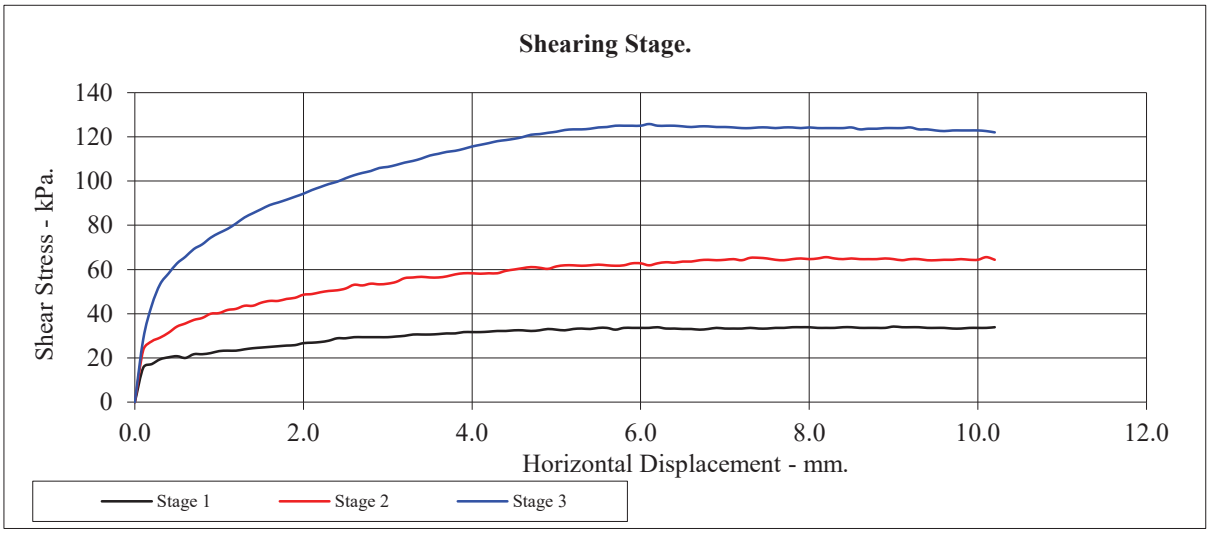
UKAS TESTING 4043 / PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY	**A46 Walsgrave**	**Contract No:** PSL23/4772 **Client Ref:** G230651

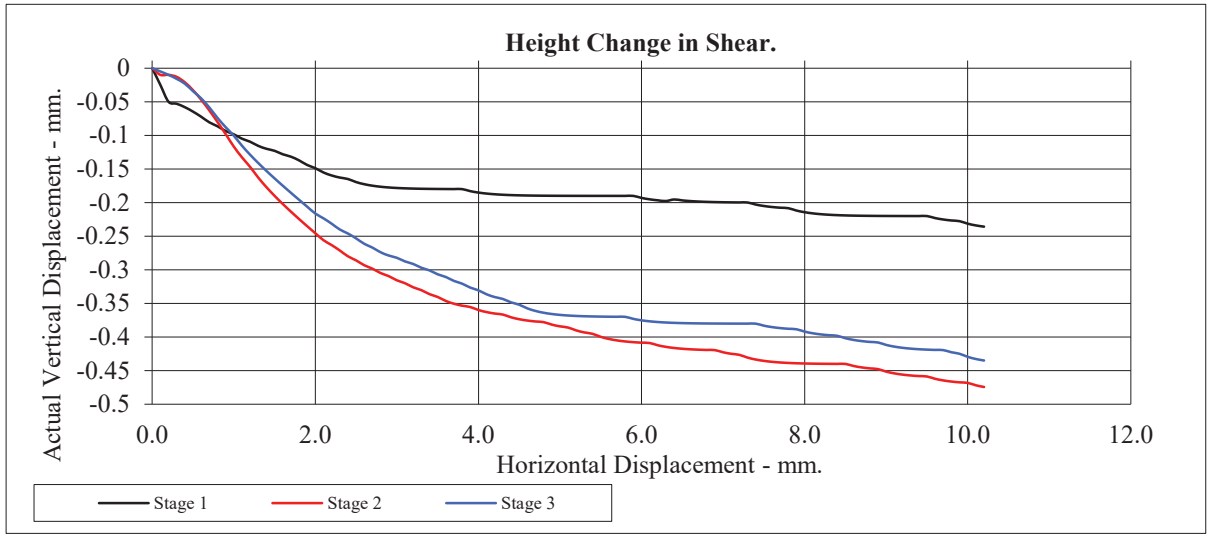
CONSOLIDATED DRAINED SHEARBOX TEST

BS1377:Part 7:1990 Clause 4

Hole Number:	**BH127**	Top Depth:	**4.50**
Sample Number:	**21**	Base Depth:	**5.00**







UKAS TESTING 4043 / PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY	**A46 Walsgrave**	**Contract No:** PSL23/4772 **Client Ref:** G230651

7 - 11 Harding Street
Leicester
LE1 4DH

Professional Soils Laboratory
5/7 Hexthorpe Road
Hexthorpe
Doncaster
DN4 0AR

Analytical Test Report: L23/03141/PSL - 23-35019

Your Project Reference:	**PSL23/4772 A46 Walsgrave**		
Your Order Number:	Anthony	Samples Received / Instructed:	04/07/2023 / 04/07/2023
Report Issue Number:	1	Sample Tested:	04/07 to 10/07/2023
Samples Analysed:	3 soil samples	Report issued:	10/07/2023

Si [redacted]

James Gane
Analytical Services Manager
CTS Group

Notes:

General

Please refer to Methodologies page for details pertaining to the analytical methods undertaken.

Samples will be retained for 14 days after issue of this report unless otherwise requested.

Moisture Content was determined in accordance with CTS method statement MS - CL - Sample Prep, oven dried at <30˚C.

Moisture Content is reported as a percentage of the dry mass of soil, this calculation is in accordance with BS1377, Part 2, 1990, Clause 3.2

Stone Content was determined in accordance with CTS method statement MS - CL - Sample Prep and refers to the percentage of stones retained on a 10mm BS test sieve.

Where specification limits are included these are for guidance only. Where a measured value has been highlighted this is not implying acceptance or failure and certainty of measurement values have not been taken into account.

Uncertainty of measurement values are available on request.

Samples were supplied by customer, results apply to the samples as received.

Deviating Samples

On receipt samples are compared against our sample holding and handling protocols, where any deviations have been noted these are reported on our deviating sample page (if present)

Accreditation Key

UKAS = UKAS Accreditation, MCERTS = MCERTS Accreditation, u = Unaccredited

MCERTS Accreditation only covers the SAND, CLAY and LOAM matrices

Date of Issue: 06.07.23

Issued by: J. Gane

Issue No: 4

Rev No: 1

CTS Group
7 - 11 Harding Street
Leicester
LE1 4DH

L23/03141/PSL - 23-35019

Project Reference - PSL23/4772 A46 Walsgrave

Analytical Test Results - Chemical Analysis

Lab Reference			302653	302654	302655
Client Sample ID			BH127	BH127	BH127
Client Sample Location			-	-	-
Client Sample Type			B	D	D
Client Sample Number			15	22	27
Depth - Top (m)			2.50	5.50	8.50
Depth - Bottom (m)			3.00	5.50	8.50
Date of Sampling			-	-	-
Time of Sampling			-	-	-
Sample Matrix			Clay	Clay	Clay
Determinant	**Units**	**Accreditation**			
Water soluble sulphate (as SO_4)	(mg/l)	u	1800	330	340
Acid Soluble Sulphate	(%)	u	4.08	0.12	0.09
Total Sulphur	(%)	UKAS	1.41	0.12	0.06
pH Value	pH Units	MCERTS	8.1	8.7	8.8
Water Soluble Chloride	(mg/l)	u	3.3	3.0	3.8
Water Soluble Nitrate (As NO_3)	(mg/l)	u	< 1.0	< 1.0	8.3
Water Soluble Magnesium	(mg/l)	u	93	14	8.8
Water Soluble Ammonium Ion	(mg/l)	u	< 1.0	< 1.0	< 1.0

7 - 11 Harding Street
Leicester
LE1 4DH

L23/03141/PSL - 23-35019

Project Reference - PSL23/4772 A46 Walsgrave

Sample Descriptions

Lab Reference	Client Sample ID	Client Sample Location	Client Sample Type	Client Sample Number	Description	Moisture Content (%)	Stone Content (%)	Passing 2mm test sieve (%)
302653	BH127	-	B	15	Mottled brown grey slightly gravelly silty clay	17	< 0.1	100
302654	BH127	-	D	22	Reddish brown slightly gravelly silty sandy clay	7.0	54	64
302655	BH127	-	D	27	Reddish brown slightly gravelly silty sandy clay	12	5.1	100

CTS Group
7 - 11 Harding Street
Leicester
LE1 4DH

L23/03141/PSL - 23-35019

Project Reference - PSL23/4772 A46 Walsgrave

Sample Comments

Lab Reference	Client Sample ID	Client Sample Location	Client Sample Type	Client Sample Number	Comments
302653	BH127	-	B	15	
302654	BH127	-	D	22	
302655	BH127	-	D	27	

7 - 11 Harding Street
Leicester
LE1 4DH

L23/03141/PSL - 23-35019

Project Reference - PSL23/4772 A46 Walsgrave

Analysis Methodologies

Test Code	Test Name / Reference	Sample condition for analysis	Sample Preperation	Test Details
ANIONSS	MS - CL - Anions by Aquakem (2:1Extract)	Oven dried	Passing 2mm test sieve	Determination of Anions (inc Sulphate, chloride etc.) in soils by Aquakem. Analysis is based on a 2:1 water to soil extraction ratio
PHS	MS - CL - pH in Soils	As received	Passing 10mm test sieve	Determination of pH in soils using a pH probe (using a 1:3 soil to water extraction)
ASSO4S	MS - CL - Acid Soluble Sulphate	Oven Dried	Passing 2mm test sieve	Determination of total sulphate in soils by acid extraction followed by ICP analysis
SAMPLEPREP	MS - CL - Sample Preparation	-	-	Preparation of samples (including determination of moisture content) to allow for subsequent analysis
1377TS-ELT	BS1377 Total Sulphur Content by HTC	Oven dried	BS1377 : Part 1 : 2016	Total Sulphur Content testing of Soil in accordance with BS 1377 : Part 3 : 2018 + A1 : 2021 Clause 7.10 (using Eltra CS-800 Analyser)

7 - 11 Harding Street
Leicester
LE1 4DH

L23/03141/PSL - 23-35019

Project Reference - PSL23/4772 A46 Walsgrave

Sample Deviations

Deviations are listed below against each sample and associated test method, where deviation(s) are noted it means data may not be representative of the sample at the time of sampling and it is possible that results provided may be compromised.

Observations on receipt

A - No date of sampling provided
C - Received in inappropriate container
H - Contains headspace
T - Temperature on receipt exceeds storage temperature
R - Date of sampling to receipt insufficient to allow analysis to be completed without deviation, Please note this is only a deviation if 'X' is also recorded against the sample

Observations whist in laboratory

X - Exceeds sampling to extraction or analysis timescales

Lab Reference	Client Sample ID	Client Sample Location	Client Sample Type	Client Sample Number	Test	Deviations
302653	BH127	-	B	15		A
302654	BH127	-	D	22		A
302655	BH127	-	D	27		A

LABORATORY REPORT

Contract Number: PSL23/4783

Report Date: 25 July 2023

Client's Reference: G230651/Geo 17

Client Name: Strata Geotechnics
Kirkby Lane
Pinxton
Nottinghamshire
NG16 6JA

For the attention of: Izaac Lovatt

Contract Title: A46 Walsgrave

Date Received: 20/6/2023
Date Commenced: 20/6/2023
Date Completed: 25/07/2023

A copy of the Laboratory Schedule of accredited tests as issued by UKAS is attached to this report. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced other than in full, without the prior written approval of the laboratory.

Checked and Approved Signatories:

A Watkins (Director)
R Berriman (Quality Manager)
S Royle (Laboratory Manager)
[redacted]
L Knight (Assistant Laboratory Manager)
S Eyre (Senior Technician)
M Fennell (Senior Technician)

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SUMMARY OF LABORATORY SOIL DESCRIPTIONS

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Description of Sample
BH106	36	CSS	8.30	8.60	Reddish brown slightly gravelly sandy CLAY.
BH106	37	CSS	9.10	9.30	Reddish brown slightly gravelly sandy CLAY.

UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

Contract No:
PSL23/4783
Client Ref:
G230651

SUMMARY OF SOIL CLASSIFICATION TESTS

(BS1377 : PART 2 : 1990)

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Moisture Content % Clause 3.2	Linear Shrinkage % Clause 6.5	Particle Density Mg/m^3 Clause 8.2	Liquid Limit % Clause 4.3/4	Plastic Limit % Clause 5.3	Plasticity Index % Clause 5.4	Passing .425mm %	Remarks
BH106	36	CSS	8.30	8.60	12			38	18	20	91	Intermediate Plasticity CI
BH106	37	CSS	9.10	9.30	12			36	17	19	93	Intermediate Plasticity CI

SYMBOLS : **NP : Non Plastic** *** : Liquid Limit and Plastic Limit Wet Sieved.**

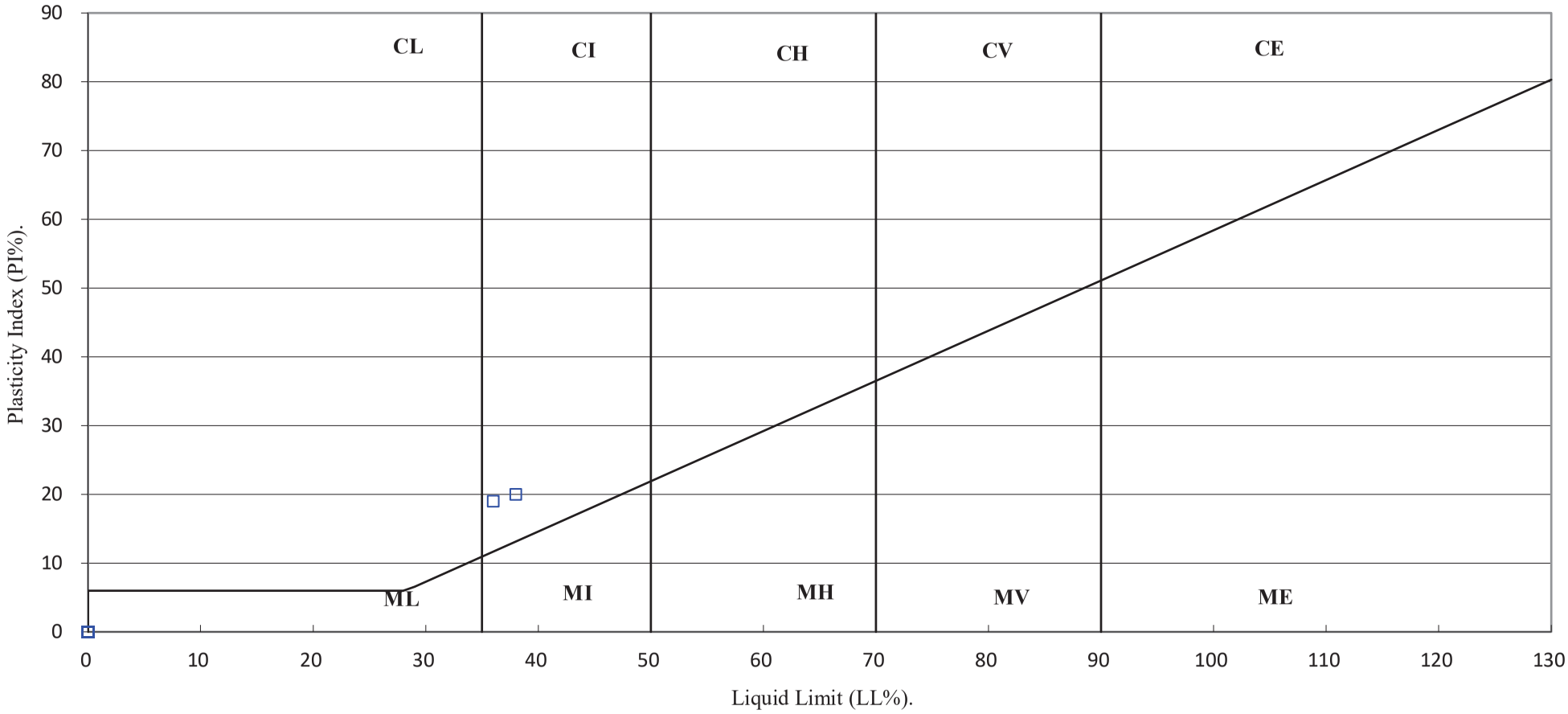
UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

Contract No:
PSL23/4783
Client Ref:
G230651

PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION.



UKAS TESTING 4043	A46 Walsgrave	Contract No: PSL23/4783
PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY		Client Ref: G230651

SUMMARY OF POINT LOAD TEST RESULTS

ISRM Suggested Methods : 2007

Borehole Number	Depth (m)	Sample Ref	Test Type	Orientation	Dimensions (mm)		Area	D_e^2	D_e	Failure Load (P)		I_s	Corr Fac	I_{s50}	Failure Type	Remarks
				Par / Perp	W	D	(mm2)		(mm)	(Mpa)	(kN)	(MPa)	F	(MPa)		
BH106	9.10	37	A	Perp	100	37	3700	4710.99	68.64	-	1.01	0.21	1.153	0.25	Valid	

Note All testing carried out on samples at as received water content

Par = parallel, Perp = perpendicular, U = Random

A = Axial, D = Diametral, I = Irregular

UKAS TESTING 4043

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Contract No: PSL23/4783

Client Ref: G230651

SUMMARY OF POINT LOAD TEST RESULTS

ISRM Suggested Methods : 2007

Borehole Number	Depth (m)	Sample Ref	Test Type	Orientation	Dimensions (mm)		D_e^2	D_e	Failure Load		I_s	Corr Fac	I_{s50}	Failure Type	Remarks
				Par / Perp	L	D		(mm)	(Mpa)	(kN)	(MPa)	F	(MPa)		
BH106	9.10	37	D	Par	-	100	10000	100.00	-	1.01	0.101	1.366	0.14	Valid	

Note All testing carried out on samples at as received water content

Par = parallel, Perp = perpendicular, U = Random

UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

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UNIAXIAL COMPRESSIVE STRENGTH

ISRM Suggested Methods - Rock Characterization Testing and Monitoring 1974 - 2006

Borehole Number:	**BH106**	**Top Depth (m):**	**9.10**
Sample Number:	**37**	**Base Depth (m):**	**9.30**
Sample Type:	**CSS**	**Sample Date:**	**N/A**
Storage Condition:	**Sealed in Core Box**	**Date of Reciept**	**N/A**
Sample Description:	**Brown slightly gravelly sandy CLAY.**		

Specimen Details/Conditions	
Diameter - mm:	100.07
Height - mm:	200.14
Water Content - %:	12.0
Sample Mass - g:	3661.4
Bulk Density - Mg/m^3:	2.33
Dry Density - Mg/m^3:	2.08
Height Ratio: * Sample does not comply with H:D ratio	2.0
Degree of Saturation - %:	100
Assumed Specific Gravity for Degree of Saturation:	2.77

Test Result	
Load Frame/Machine:	CM1/Controls
Date of test:	21/07/2023
Test Duration - mins:	00:24
Orientation:	Unknown
Stress Rate - MPa/s:	0.12
Strain at Failure - kN:	21.86
Unconfined Compressive Strength - Mpa:	2.78
Mode of Failure:	Vertical Shear

Remarks: -

LABORATORY REPORT

Contract Number: PSL23/4771

Report Date: 02 August 2023

Client's Reference: G230651/Geo 18

Client Name: Strata Geotechnics
Kirkby Lane
Pinxton
Nottinghamshire
NG16 6JA

For the attention of: Izaac Lovatt

Contract Title: A46 Walsgrave

Date Received: 20/6/2023
Date Commenced: 20/6/2023
Date Completed: 2/8/2023

Notes: Opinions and Interpretations are outside the UKAS Accreditation

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[redacted] S Royle (Laboratory Manager)

L Knight (Assistant Laboratory Manager)

S Eyre (Senior Technician)

T Watkins (Senior Technician)

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SUMMARY OF LABORATORY SOIL DESCRIPTIONS

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Description of Sample
BH120	9	B	0.70	1.00	Brown slightly gravelly sandy CLAY.
BH120	6	D	0.80	0.80	Brown slightly gravelly sandy CLAY.
BH120	12	B	1.70	2.00	Brown slightly gravelly sandy CLAY.
BH120	13	D	2.00	2.45	Brown slightly gravelly sandy CLAY.
BH120	17	UT	3.00	3.45	Firm brown slightly gravelly very sandy CLAY.
BH120	20	D	4.00	4.45	Reddish brown slightly clayey SAND.
BH120	23	D	5.90	5.90	Reddish brown gravelly very sandy CLAY.
BH120	24	B	6.30	6.50	Brown sandy GRAVEL.
BH120	25	D	6.50	6.95	Brown sandy slightly clayey GRAVEL.
BH120	27	D	8.00	8.45	Brown gravelly slightly clayey SAND.
BH120	29	D	9.00	9.29	Brown slightly gravelly sandy CLAY.

UKAS TESTING 4043

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PSL23/4771
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SUMMARY OF SOIL CLASSIFICATION TESTS

(BS1377 : PART 2 : 1990)

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Moisture Content % Clause 3.2	Linear Shrinkage % Clause 6.5	Particle Density Mg/m^3 Clause 8.2	Liquid Limit % Clause 4.3/4	Plastic Limit % Clause 5.3	Plasticity Index % Clause 5.4	Passing .425mm %	Remarks
BH120	6	D	0.80	0.80	12			38	19	19	95	Intermediate Plasticity CI
BH120	13	D	2.00	2.45	10			35	17	18	91	Intermediate Plasticity CI
BH120	20	D	4.00	4.45	16				NP			
BH120	23	D	5.90	5.90	13			28	14	14	80	Low Plasticity CL
BH120	29	D	9.00	9.29	15			36	18	18	94	Intermediate Plasticity CI

SYMBOLS : **NP : Non Plastic** *** : Liquid Limit and Plastic Limit Wet Sieved.**

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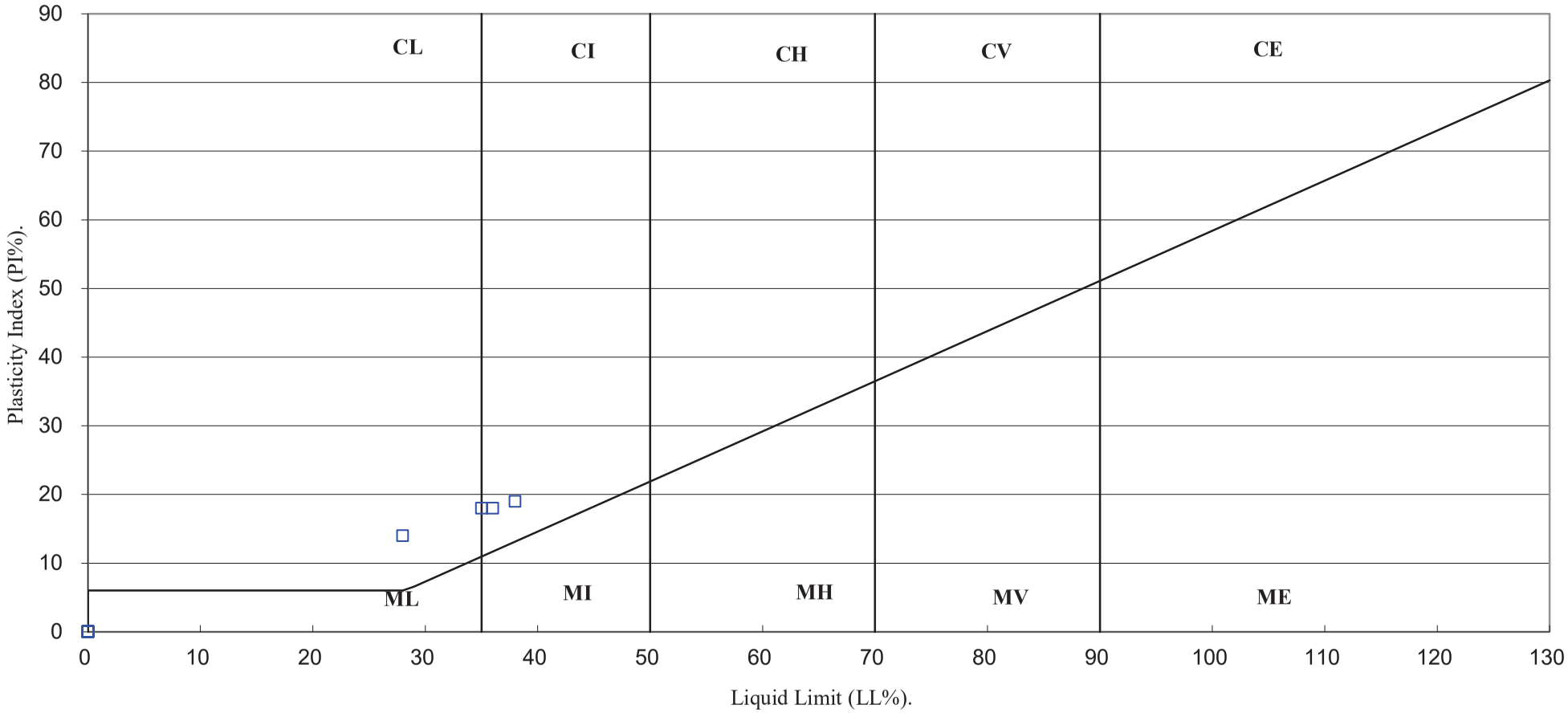
PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION.



UKAS TESTING 4043	PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY	**A46 Walsgrave**

Contract No:
PSL23/4771
Client Ref:
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SUMMARY OF SOIL DENSITY RELATED TESTS

(BS1377 : PART 2 & 4 : 1990)

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Moisture Content %	Bulk Density Mg/m^3	Dry Density Mg/m^3	Retained 20mm %	Retained 37.5mm %	Method of compaction kg	Maximum Dry Density Mg/m^3	Minimum Dry Density Mg/m^3	Remarks
BH120	25	D	6.50	6.95	9.4	2.28	2.08						
BH120	27	D	8.00	8.45	14	2.18	1.91						

UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

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Contract No:
PSL23/4771
Client Ref:
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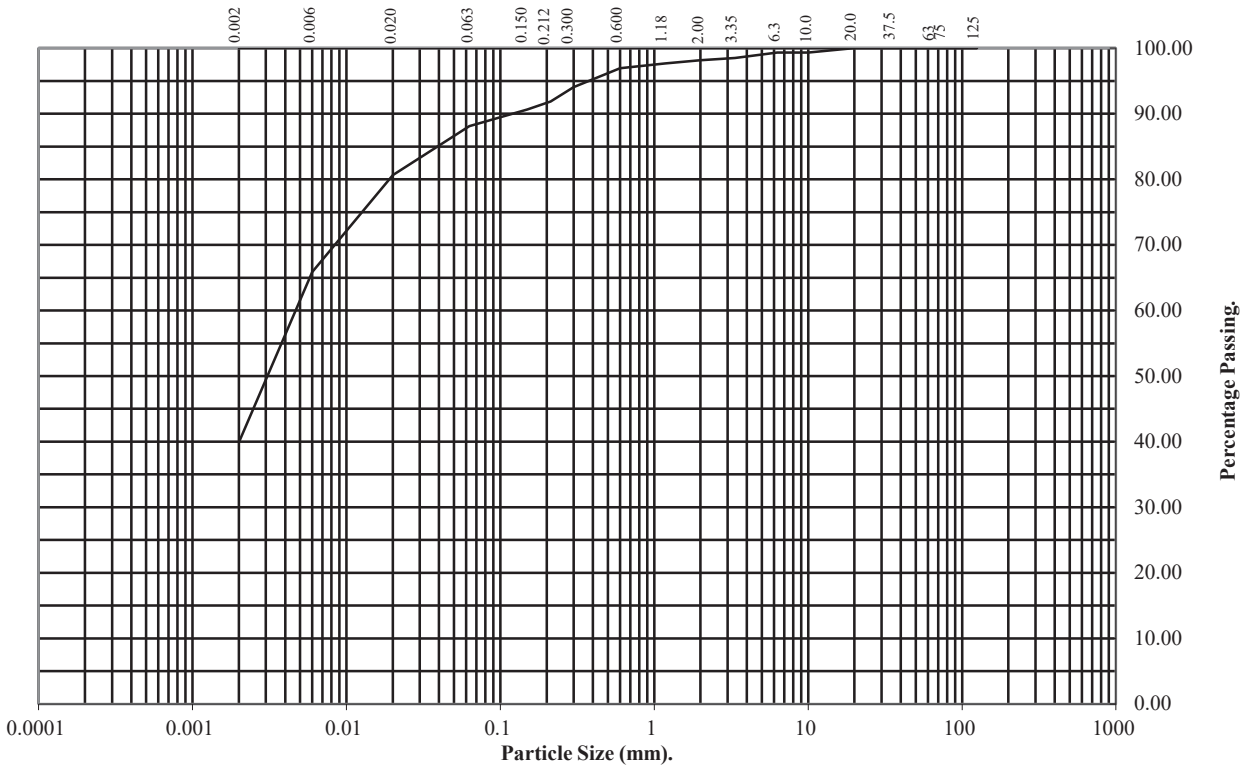
PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

Hole Number:	**BH120**	**Top Depth (m):**	**0.70**
Sample Number:	**9**	**Base Depth(m):**	**1.00**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	99
6.3	99
3.35	99
2	98
1.18	98
0.6	97
0.3	94
0.212	92
0.15	91
0.063	88

Particle Diameter	Percentage Passing
0.02	81
0.006	66
0.002	40

Soil Fraction	Total Percentage
Cobbles	0
Gravel	2
Sand	10
Silt	48
Clay	40

Remarks:
See Summary of Soil Descriptions

UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

Contract No:
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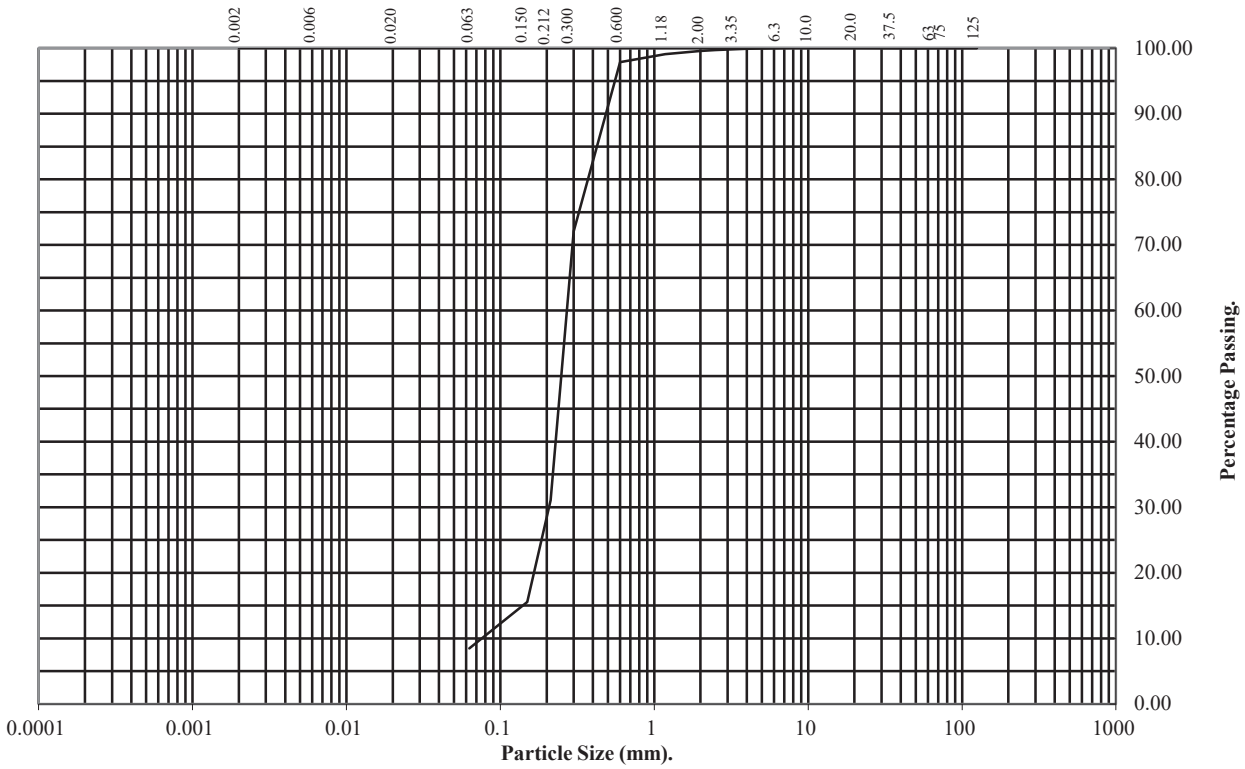
PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number:	**BH120**	**Top Depth (m):**	**4.00**
Sample Number:	**20**	**Base Depth(m):**	**4.45**
Sample Type:	**D**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	100
6.3	100
3.35	100
2	100
1.18	99
0.6	98
0.3	72
0.212	31
0.15	16
0.063	8

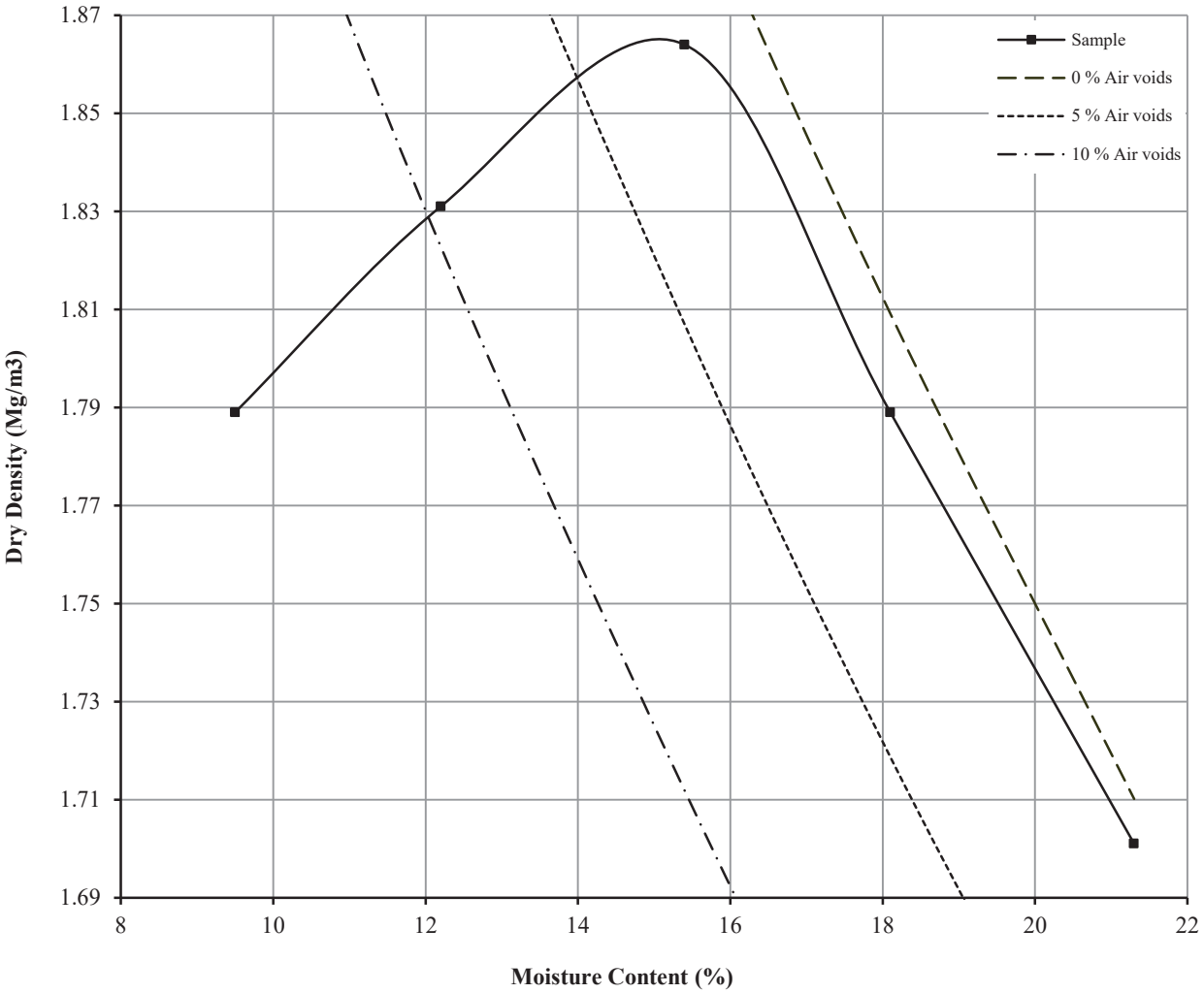
Soil Fraction	Total Percentage
Cobbles	0
Gravel	0
Sand	92
Silt/Clay	8

Remarks:
See Summary of Soil Descriptions

DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

BS 1377 : Part 4 : Clause 3.3 : 1990

Hole Number:	**BH120**	**Top Depth (m) :**	**1.70**
Sample Number:	**12**	**Base Depth (m) :**	**2.00**
Sample Type:	**B**		



Initial Moisture Content:		15	Method of Compaction:	2.5kg	Separate Samples
Particle Density (Mg/m3):	2.69	Measured	Material Retained on 37.5 mm Test Sieve (%):		0
Maximum Dry Density (Mg/m3):		1.86	Material Retained on 20.0 mm Test Sieve (%):		0
Optimum Moisture Content (%):		15			
Remarks See summary of soil descriptions					

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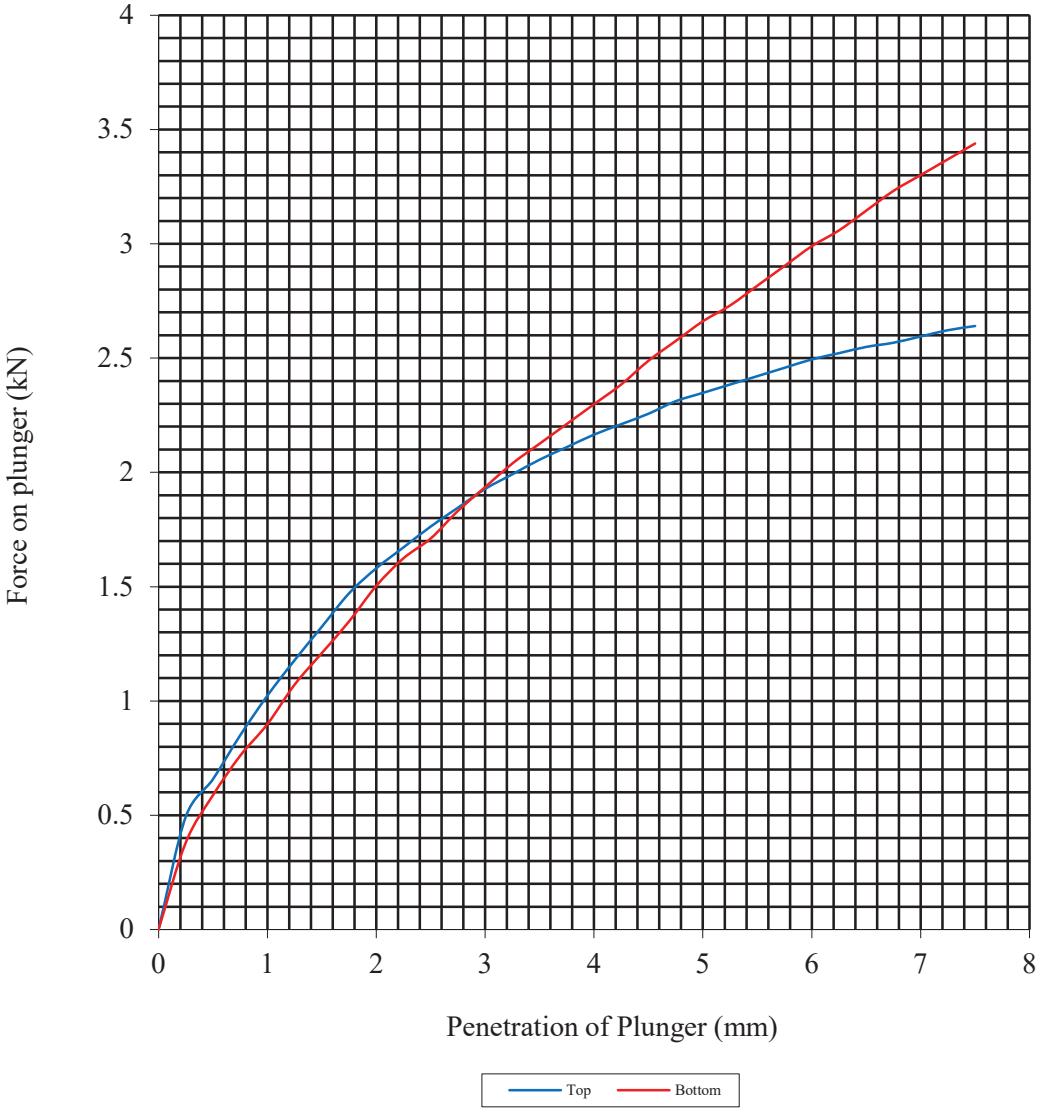
Contract
PSL23/4771
Client Ref
G230651

CALIFORNIA BEARING RATIO TEST

BS 1377 : Part 4 : 1990

Hole Number:	**BH120**	**Top Depth (m):**	**0.70**
Sample Number:	**9**	**Base Depth (m):**	**1.00**
Sample Type:	**B**		



Initial Sample Conditions		Sample Preparation		Final Moisture Content %		C.B.R. Value %	
Moisture Content:	16	Surcharge Kg:	4.20	Sample Top	16	Sample Top	13.4
Bulk Density Mg/m3:	2.06	Soaking Time hrs	0	Sample Bottom	16	Sample Bottom	13.3
Dry Density Mg/m3:	1.77	Swelling mm:	0.00	Remarks : See Summary of Soil Descriptions.			
Percentage retained on 20mm BS test sieve:			0				
Compaction Conditions		2.5kg					

UKAS TESTING 4043

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Contract No:
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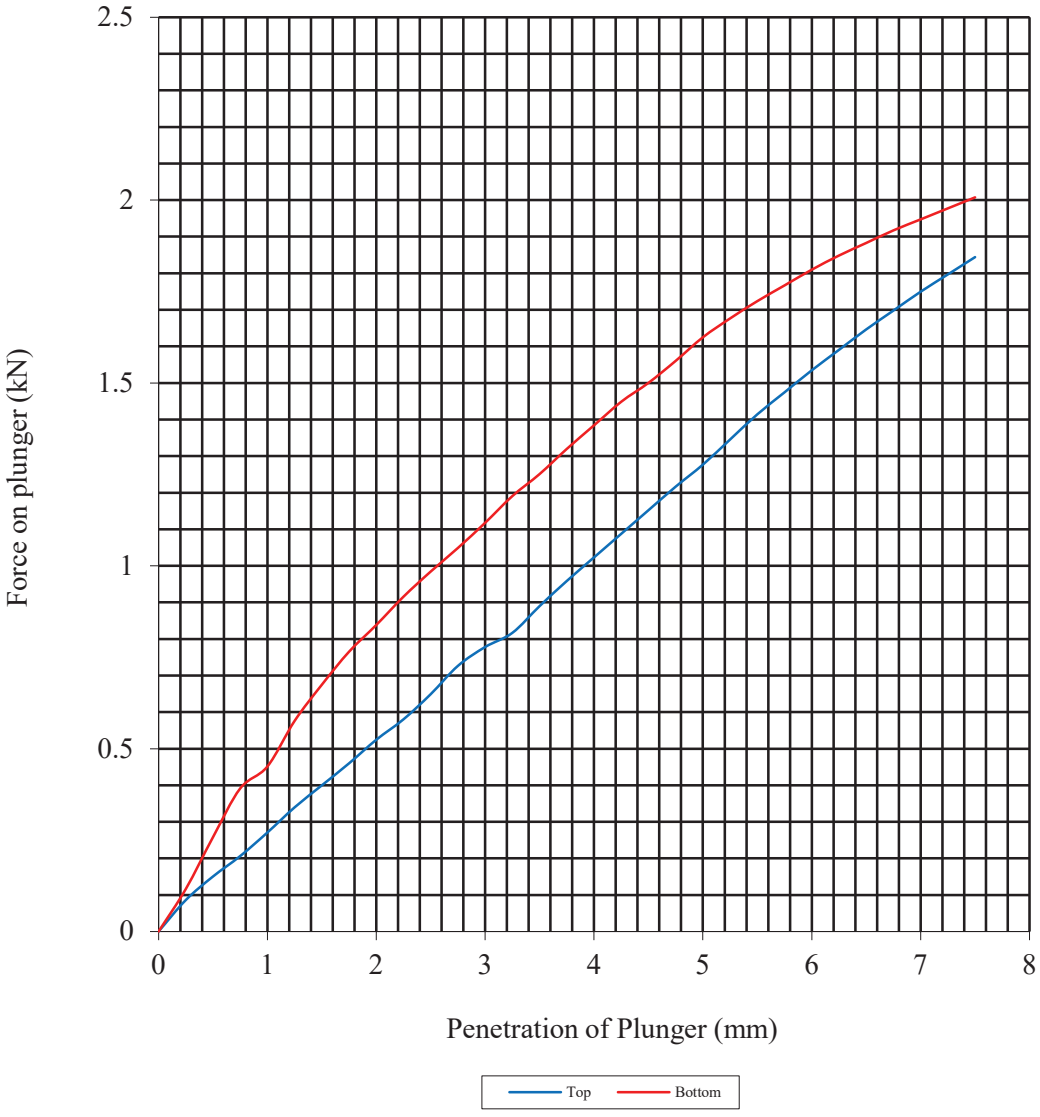
CALIFORNIA BEARING RATIO TEST

BS 1377 : Part 4 : 1990

Hole Number:	**BH120**	**Top Depth (m):**	**1.70**
Sample Number:	**12**	**Base Depth (m):**	**2.00**
Sample Type:	**B**		



Initial Sample Conditions		Sample Preparation		Final Moisture Content %		C.B.R. Value %	
Moisture Content:	15	Surcharge Kg:	4.20	Sample Top	15	Sample Top	6.4
Bulk Density Mg/m3:	2.19	Soaking Time hrs	0	Sample Bottom	15	Sample Bottom	8.1
Dry Density Mg/m3:	1.89	Swelling mm:	0.00	Remarks : See Summary of Soil Descriptions.			
Percentage retained on 20mm BS test sieve:			0				
Compaction Conditions		2.5kg					

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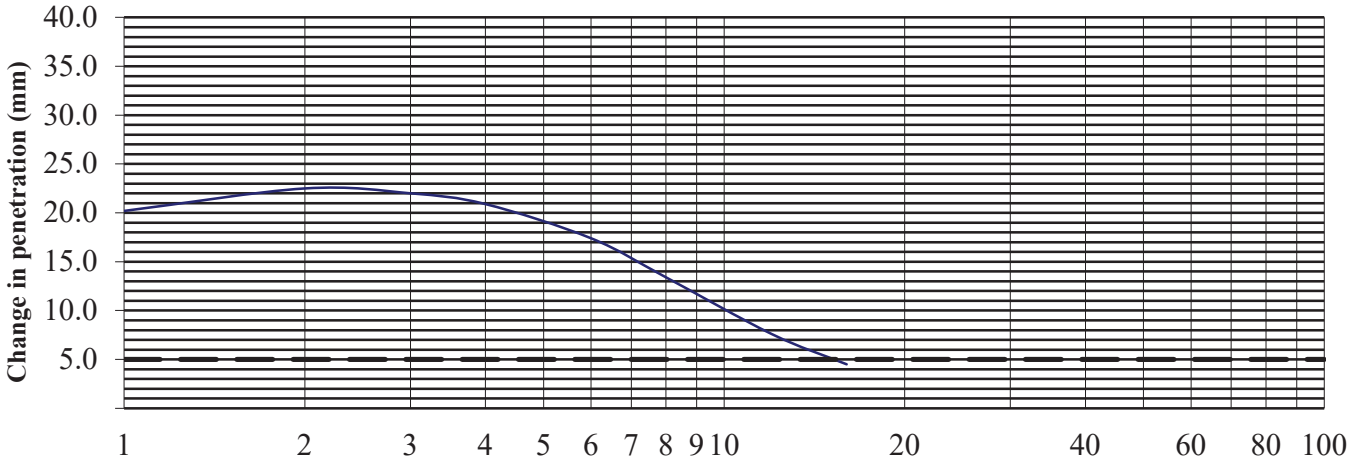
MOISTURE CONDITION VALUE

BS1377 : Part 4 : 1990 Clause 5.4

Hole Number:	**BH120**	**Top Depth (m):**	**0.70**
Sample Number:	**9**	**Base Depth (m):**	**1.00**
Sample Type:	**B**		

Material Retained on the 20mm BS Test Sieve (%):	0
Interpretation based on steepest straight line intercept with 5mm change in penetration.	

MCV Determination



Blows (N)	Penetration (mm)	n to 4n (mm)
1	82.0	20.2
2	73.0	22.5
3	66.5	22.0
4	61.8	20.9
6	55.1	17.4
8	50.5	13.4
12	44.5	7.6
16	40.9	4.5
24	37.7	
32	37.1	
48	36.9	
64	36.4	
96		
128		
192		
256		

Test Results.

Moisture Content (%)	16
MCV	11.8

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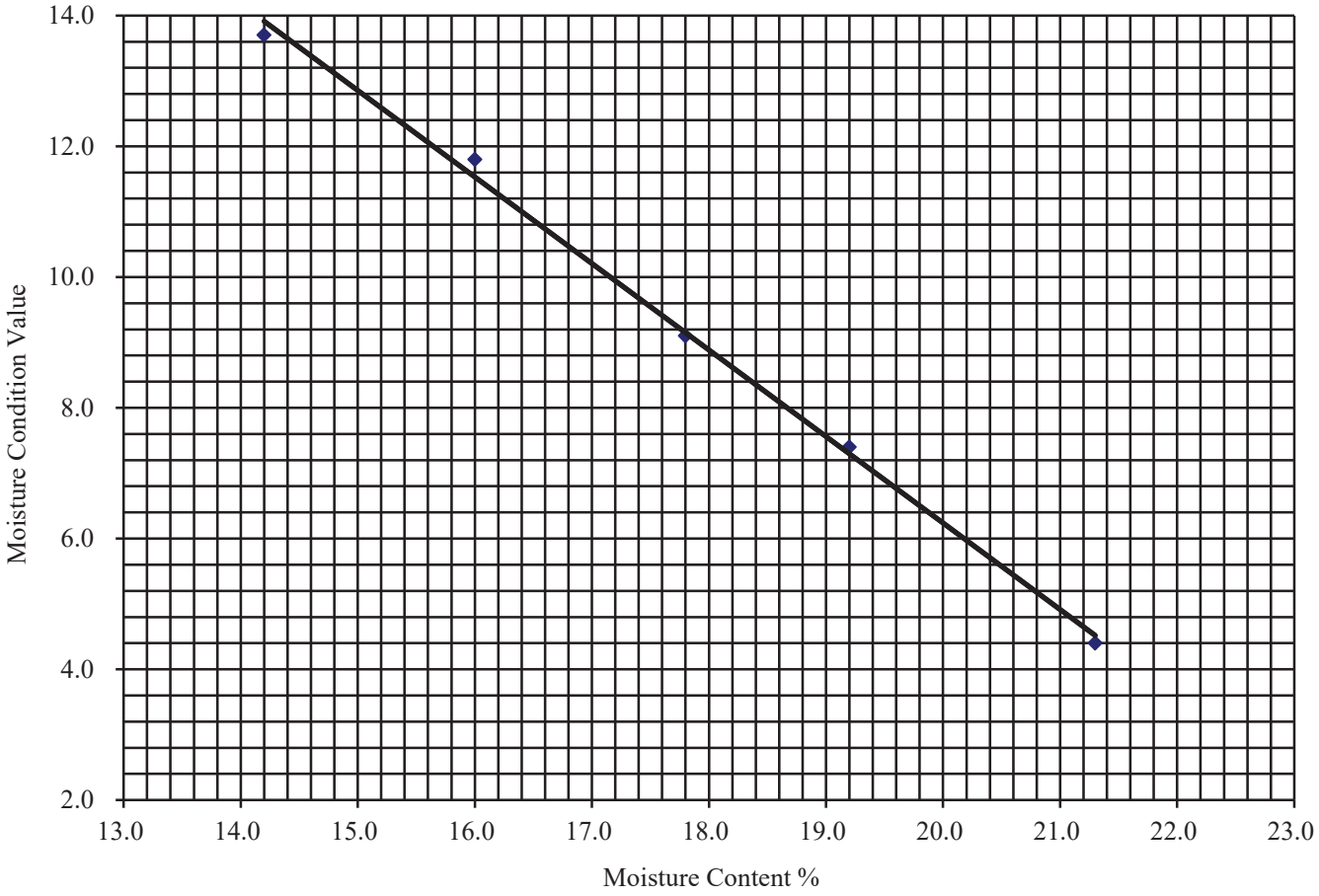
MOISTURE CONDITION VALUE CALIBRATION

BS1377 : Part 4 : 1990 Clause 5.5

Hole Number:	**BH120**	**Top Depth (m):**	**0.70**
Sample Number:	**9**	**Base Depth (m):**	**1.00**
Sample Type:	**B**		

Initial Moisture Content (%):	16
Single/Separate Samples Tested	Separate
Material Retained on the 20mm BS Test Sieve (%):	0



Test Results.

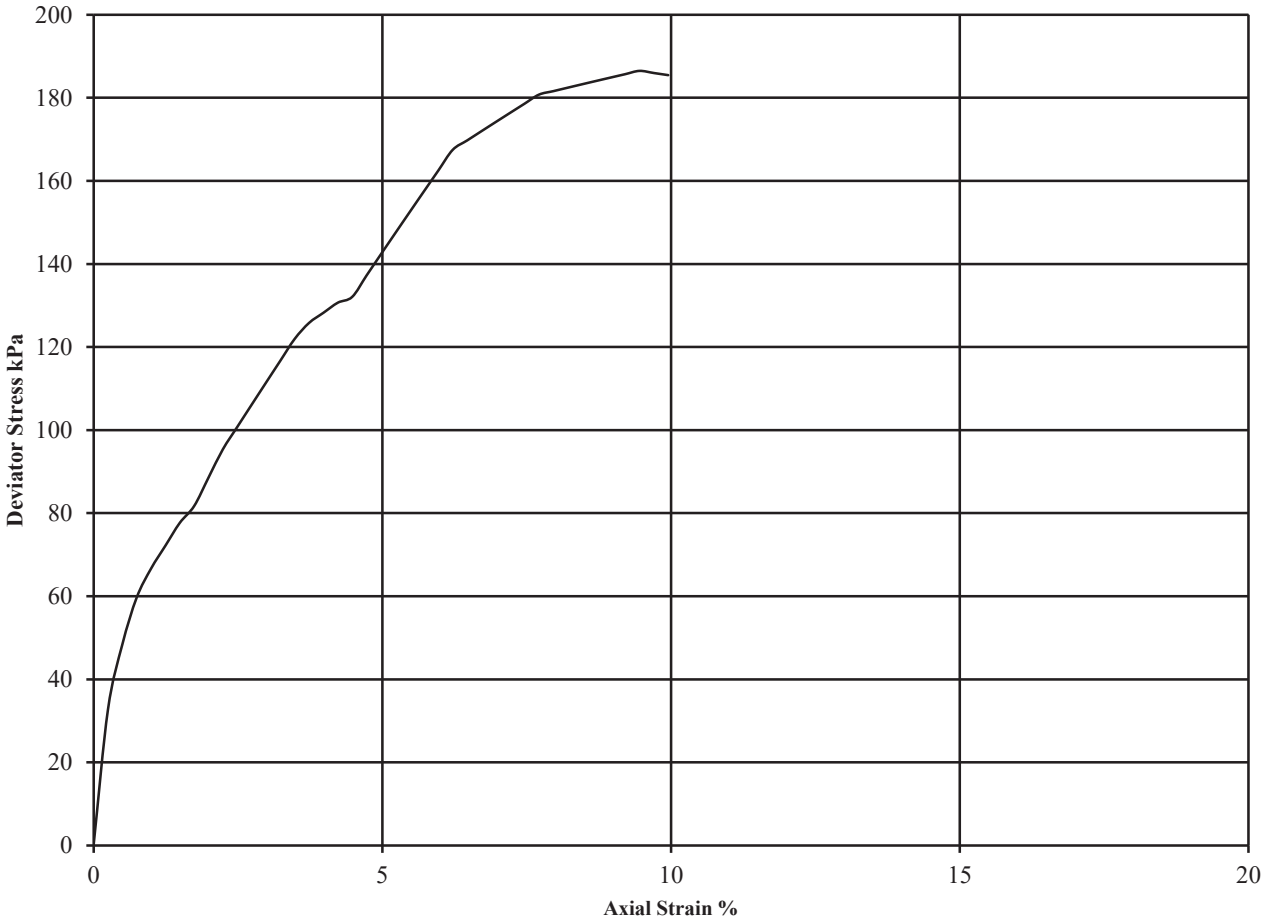
Test Number	1	2	3	4	5
Moisture Content (%)	14.2	16.0	17.8	19.2	21.3
MCV	13.7	11.8	9.1	7.4	4.4

UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION

WITHOUT MEASUREMENT OF PORE PRESSURE

BS1377 : Part7 : 1990: Clause 9

Hole Number:	**BH120**	**Top Depth (m):**	**3.00**
Sample Number:	**17**	**Base Depth (m):**	**3.45**
Sample Type	**UT**		



Diameter (mm):		103	Height (mm):		207	Test:	UU Multistage		Remarks
Specimen	Moisture Content (%)	Bulk Density (Mg/m3)	Dry Density (Mg/m3)	Cell Pressure (kPa) θ_3	Corr. Max. Deviator Stress (kPa) $(\theta_1-\theta_3)_f$	Shear Strength Cu (kPa) $^1/_2(\theta_1-\theta_3)_f$	Failure Strain (%)	Mode of Failure	Undisturbed Sample Sample taken from top of tube Rate of strain = 2 %/min Latex Membrane used 0.2 mm thick Membrane Correction applied (kPa)
1	13	2.18	1.93	30	82	41	1.7		0.37 0.36 0.35
				60	131	65	4.2		See summary of soil descriptions
				120	186	93	9.5	Plastic	

UKAS TESTING 4043

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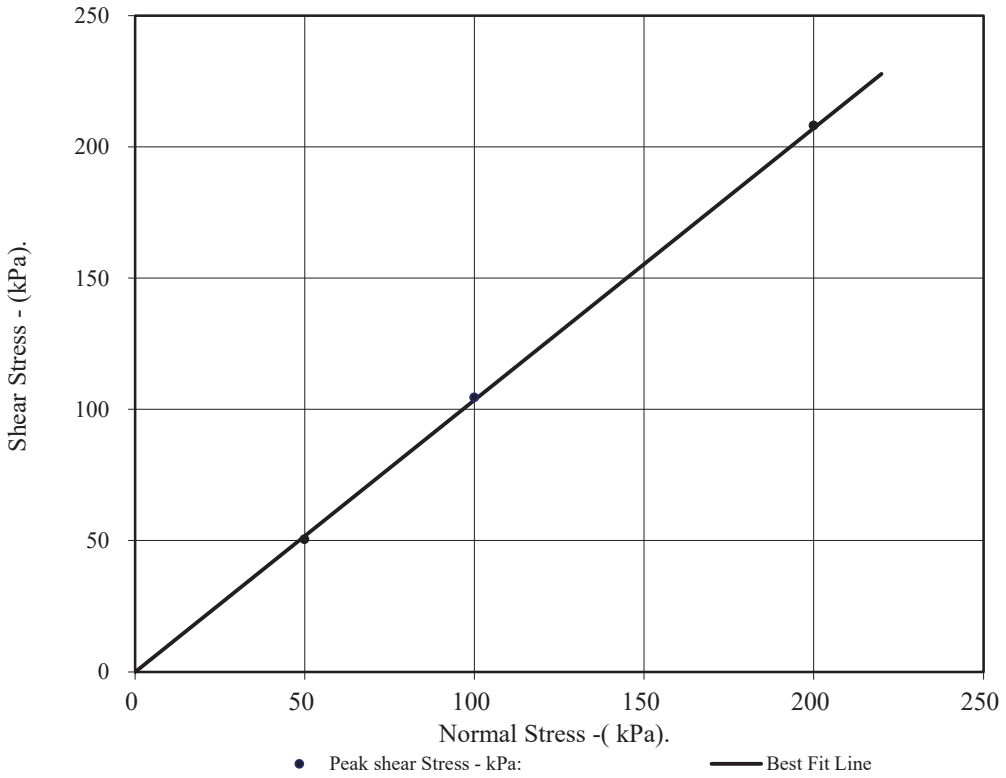
CONSOLIDATED DRAINED SHEARBOX TEST

BS1377:Part 7:1990 Clause 5

Hole Number:	**BH120**		Top Depth:	**6.30**
Sample Number:	**24**		Base Depth:	**6.50**
Sample Conditions:	Dry		Sample Type	**B**
Particle Density - Mg/m3:	2.65	Assumed	**Remarks:**	
Sample Preparation:	Material tested passing 20mm sieve Recompacted using 2.5kg effort			
Sample Description:	**See summary of soil descriptions**			

STAGE	**1**	**2**	**3**
Initial Conditions			
Height - mm:	150	150	150
Length - mm:	300	300	300
Moisture Content - %:	8.8	8.8	8.8
Bulk Density - Mg/m3:	2.22	2.22	2.22
Dry Density - Mg/m3:	2.04	2.04	2.04
Voids Ratio:	0.299	0.299	0.299
Normal Pressure- kPa	50	100	200
Consolidation Stage			
Consolidated Height - mm:	148.33	147.63	146.60
Shearing Stage			
Rate of Strain (mm/min)	1.00	1.00	1.00
Displacement at peak shear stress (mm)	19.50	20.50	21.50
Peak shear Stress - kPa:	50	104	208
Final Consolidated Conditions			
Moisture Content - %:	8.4	8.5	8.2
Bulk Density - Mg/m3:	2.24	2.26	2.27
Dry Density - Mg/m3:	2.07	2.08	2.10
Peak			
Angle of Shearing Resistance:(~~θ~~)	**46**		
Effective Cohesion - kPa:	**0**		



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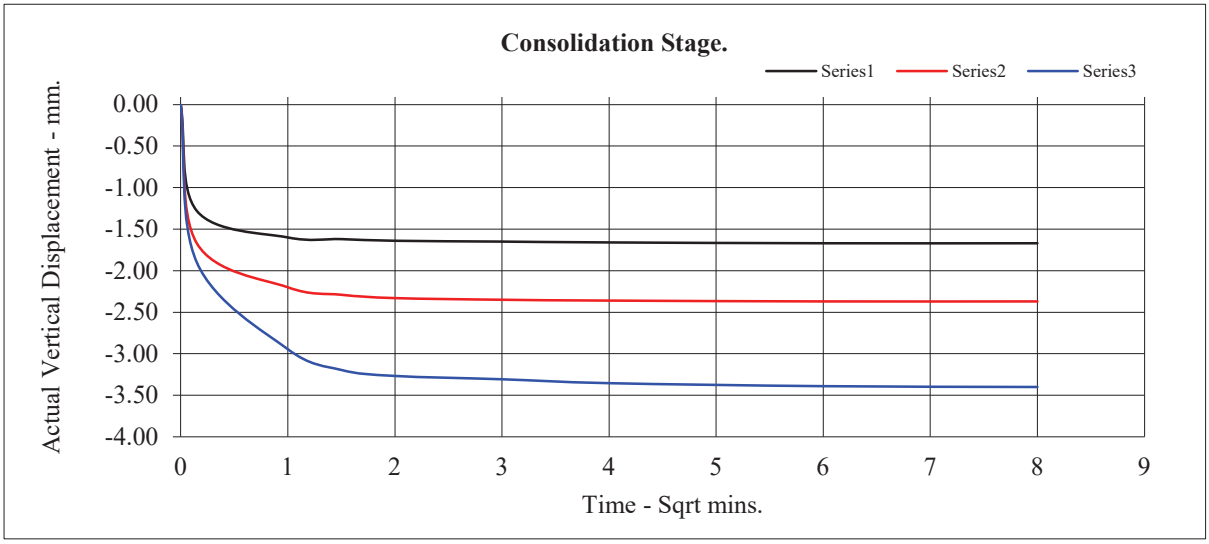
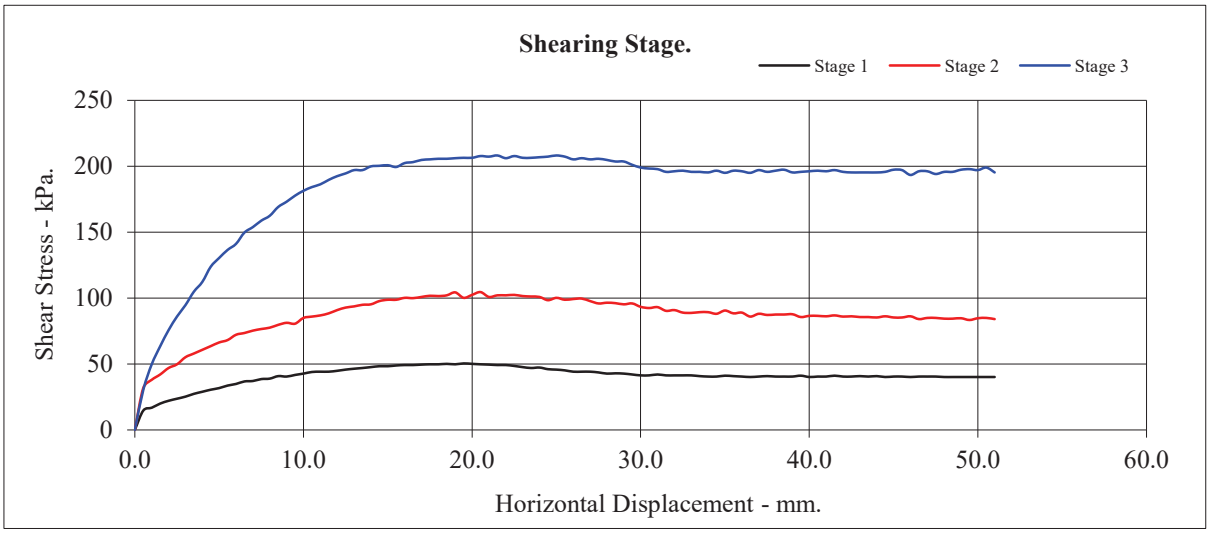
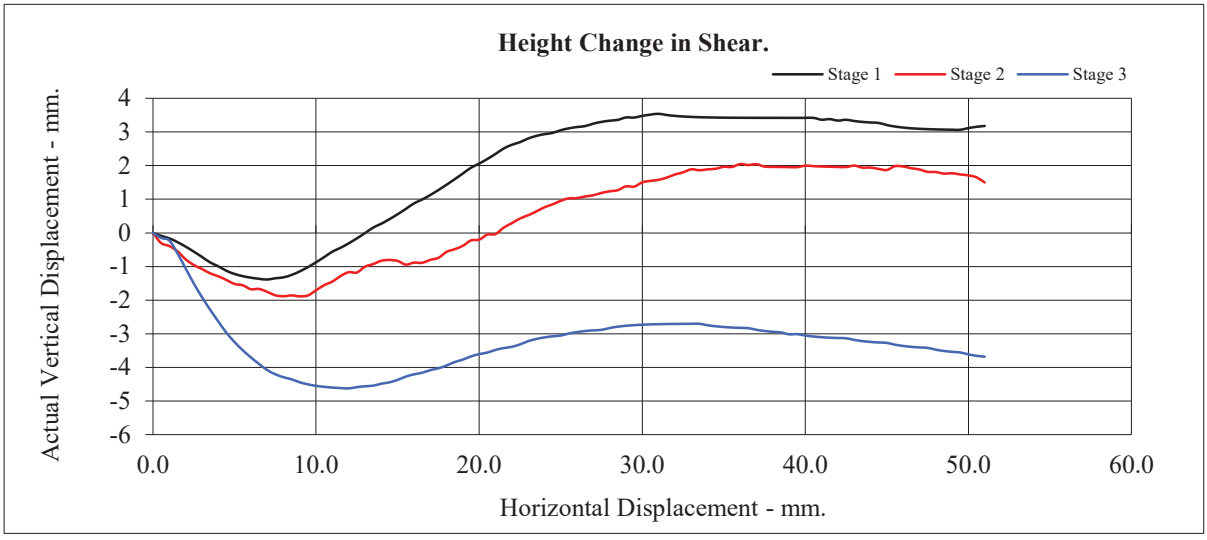
CONSOLIDATED DRAINED SHEARBOX TEST

BS1377:Part 7:1990 Clause 5

Hole Number:	**BH120**	Top Depth:	**6.30**
Sample Number:	**24**	Base Depth:	**6.50**







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Doncaster
DN4 0AR

Analytical Test Report: L23/03123/PSL - 23-35001

Your Project Reference:	**PSL23/4771 A46 Walsgrave**		
Your Order Number:	Anthony	Samples Received / Instructed:	04/07/2023 / 04/07/2023
Report Issue Number:	1	Sample Tested:	04/07 to 10/07/2023
Samples Analysed:	2 soil samples	Report issued:	10/07/2023

Signed
[redacted]
James Gane
Analytical Services Manager
CTS Group

Notes:

General

Please refer to Methodologies page for details pertaining to the analytical methods undertaken.

Samples will be retained for 14 days after issue of this report unless otherwise requested.

Moisture Content was determined in accordance with CTS method statement MS - CL - Sample Prep, oven dried at <30˚C.

Moisture Content is reported as a percentage of the dry mass of soil, this calculation is in accordance with BS1377, Part 2, 1990, Clause 3.2

Stone Content was determined in accordance with CTS method statement MS - CL - Sample Prep and refers to the percentage of stones retained on a 10mm BS test sieve.

Where specification limits are included these are for guidance only. Where a measured value has been highlighted this is not implying acceptance or failure and certainty of measurement values have not been taken into account.

Uncertainty of measurement values are available on request.

Samples were supplied by customer, results apply to the samples as received.

Deviating Samples

On receipt samples are compared against our sample holding and handling protocols, where any deviations have been noted these are reported on our deviating sample page (if present)

Accreditation Key

UKAS = UKAS Accreditation, MCERTS = MCERTS Accreditation, u = Unaccredited

MCERTS Accreditation only covers the SAND, CLAY and LOAM matrices

Date of Issue: 06.07.23

Issued by: J. Gane

Issue No: 4

Rev No: 1

CTS Group
7 - 11 Harding Street
Leicester
LE1 4DH

L23/03123/PSL - 23-35001

Project Reference - PSL23/4771 A46 Walsgrave

Analytical Test Results - Chemical Analysis

Lab Reference			302606	302607
Client Sample ID			BH120	BH120
Client Sample Location			-	-
Client Sample Type			D	B
Client Sample Number			13	26
Depth - Top (m)			2.00	7.50
Depth - Bottom (m)			2.45	7.70
Date of Sampling			31/05/2023	31/05/2023
Time of Sampling			-	-
Sample Matrix			Clay	Clay
Determinant	**Units**	**Accreditation**		
Water soluble sulphate (as SO_4)	(mg/l)	u	19	170
Acid Soluble Sulphate	(%)	u	0.04	0.08
Total Sulphur	(%)	UKAS	0.14	0.02
pH Value	pH Units	MCERTS	9.0	8.9
Water Soluble Chloride	(mg/l)	u	3.0	4.1
Water Soluble Nitrate (As NO_3)	(mg/l)	u	3.0	< 1.0
Water Soluble Magnesium	(mg/l)	u	6.2	8.9
Water Soluble Ammonium Ion	(mg/l)	u	< 1.0	< 1.0

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L23/03123/PSL - 23-35001

Project Reference - PSL23/4771 A46 Walsgrave

Sample Descriptions

Lab Reference	Client Sample ID	Client Sample Location	Client Sample Type	Client Sample Number	Description	Moisture Content (%)	Stone Content (%)	Passing 2mm test sieve (%)
302606	BH120	-	D	13	Reddish brown slightly gravelly silty clay	6.5	35	95
302607	BH120	-	B	26	Reddish brown gravelly silty sandy clay	8.7	53	37

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L23/03123/PSL - 23-35001

Project Reference - PSL23/4771 A46 Walsgrave

Sample Comments

Lab Reference	Client Sample ID	Client Sample Location	Client Sample Type	Client Sample Number	Comments
302606	BH120	-	D	13	
302607	BH120	-	B	26	

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L23/03123/PSL - 23-35001

Project Reference - PSL23/4771 A46 Walsgrave

Analysis Methodologies

Test Code	Test Name / Reference	Sample condition for analysis	Sample Preperation	Test Details
ANIONSS	MS - CL - Anions by Aquakem (2:1Extract)	Oven dried	Passing 2mm test sieve	Determination of Anions (inc Sulphate, chloride etc.) in soils by Aquakem. Analysis is based on a 2:1 water to soil extraction ratio
PHS	MS - CL - pH in Soils	As received	Passing 10mm test sieve	Determination of pH in soils using a pH probe (using a 1:3 soil to water extraction)
ASSO4S	MS - CL - Acid Soluble Sulphate	Oven Dried	Passing 2mm test sieve	Determination of total sulphate in soils by acid extraction followed by ICP analysis
SAMPLEPREP	MS - CL - Sample Preparation	-	-	Preparation of samples (including determination of moisture content) to allow for subsequent analysis
1377TS-ELT	BS1377 Total Sulphur Content by HTC	Oven dried	BS1377 : Part 1 : 2016	Total Sulphur Content testing of Soil in accordance with BS 1377 : Part 3 : 2018 + A1 : 2021 Clause 7.10 (using Eltra CS-800 Analyser)

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Sample Deviations

Deviations are listed below against each sample and associated test method, where deviation(s) are noted it means data may not be representative of the sample at the time of sampling and it is possible that results provided may be compromised.

Observations on receipt

A - No date of sampling provided
C - Received in inappropriate container
H - Contains headspace
T - Temperature on receipt exceeds storage temperature
R - Date of sampling to receipt insufficient to allow analysis to be completed without deviation, Please note this is only a deviation if 'X' is also recorded against the sample

Observations whist in laboratory

X - Exceeds sampling to extraction or analysis timescales

Lab Reference	Client Sample ID	Client Sample Location	Client Sample Type	Client Sample Number	Test	Deviations
302606	BH120	-	D	13	BS1377 Total Sulphur Content by HTC	RX
302606	BH120	-	D	13	MS - CL - Anions by Aquakem (2:1Extract)	RX
302606	BH120	-	D	13	MS - CL - pH in Soils	RX
302607	BH120	-	B	26	BS1377 Total Sulphur Content by HTC	RX
302607	BH120	-	B	26	MS - CL - Anions by Aquakem (2:1Extract)	RX
302607	BH120	-	B	26	MS - CL - pH in Soils	RX

LABORATORY REPORT

Contract Number: PSL23/4784

Report Date: 25 July 2023

Client's Reference: G230651/Geo 19

Client Name: Strata Geotechnics
Kirkby Lane
Pinxton
Nottinghamshire
NG16 6JA

For the attention of: Izaac Lovatt

Contract Title: A46 Walsgrave

Date Received: 20/6/2023
Date Commenced: 20/6/2023
Date Completed: 25/07/2023

A copy of the Laboratory Schedule of accredited tests as issued by UKAS is attached to this report. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced other than in full, without the prior written approval of the laboratory.

Checked and Approved Signatories:

A Watkins (Director)
R Berriman (Quality Manager)
S Royle (Laboratory Manager)

[redacted]

L Knight (Assistant Laboratory Manager)
S Eyre (Senior Technician)
M Fennell (Senior Technician)

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Hexthorpe,
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Tel: [redacted]
Email: [redacted]@prosoils.co.uk
[redacted]@prosoils.co.uk

SUMMARY OF LABORATORY SOIL DESCRIPTIONS

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Description of Sample
BH109	29	CSS	8.00	8.18	Reddish brown MUDSTONE.
BH109	29	D	10.00	10.34	Reddish brown MUDSTONE.

UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

Contract No:
PSL23/4784
Client Ref:
G230651

SUMMARY OF SOIL CLASSIFICATION TESTS

(BS1377 : PART 2 : 1990)

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Moisture Content % Clause 3.2	Linear Shrinkage % Clause 6.5	Particle Density Mg/m^3 Clause 8.2	Liquid Limit % Clause 4.3/4	Plastic Limit % Clause 5.3	Plasticity Index % Clause 5.4	Passing .425mm %	Remarks
BH109	29	CSS	8.00	8.18	8.2			31	13	18	90	Low Plasticity CL
BH109	29	D	10.00	10.34	15			32	20	12	70	Low Plasticity CL

SYMBOLS : **NP : Non Plastic** *** : Liquid Limit and Plastic Limit Wet Sieved.**

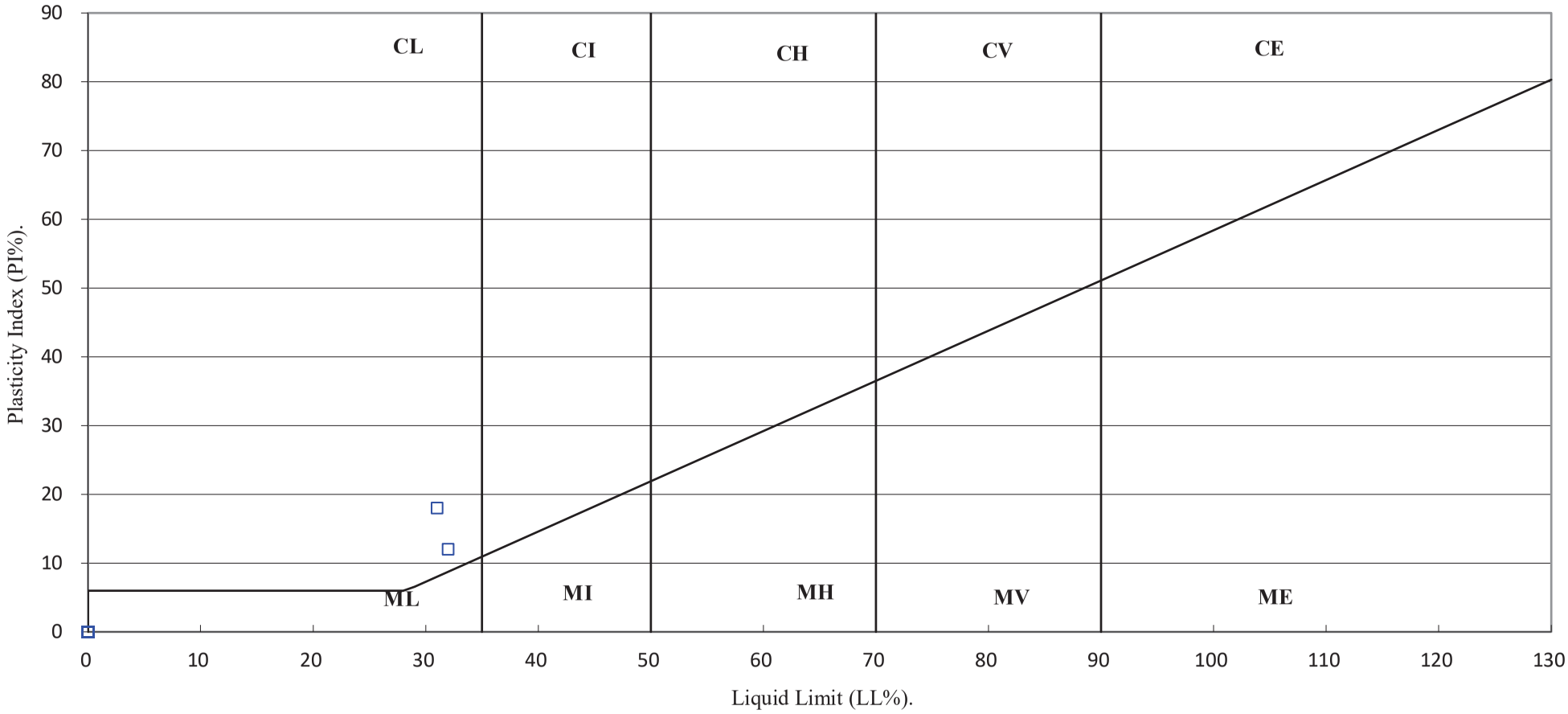
UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

Contract No:
PSL23/4784
Client Ref:
G230651

PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION.



UKAS TESTING 4043	A46 Walsgrave	Contract No: PSL23/4784
PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY		Client Ref: G230651

SUMMARY OF SOIL DENSITY RELATED TESTS

(BS1377 : PART 2 & 4 : 1990)

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Moisture Content %	Bulk Density Mg/m^3	Dry Density Mg/m^3	Retained 20mm %	Retained 37.5mm %	Method of compaction kg	Maximum Dry Density Mg/m^3	Minimum Dry Density Mg/m^3	Remarks
BH109	29	D	10.00	10.34	15	2.14	1.86						

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PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

Contract No:
PSL23/4784
Client Ref:
G230651

WATER CONTENT OF ROCK

ISRM Suggested Methods - Rock Characterization Testing and Monitoring 1974 - 2006

Hole Number	Sample Number	Sample Type	Top Depth (m)	Base Depth (m)	Water Content (%)	Sample Description	Remarks
BH109	40	CSS	11.60	11.90	14	Brown MUDSTONE	
BH109	48	CSS	14.40	14.50	14	Brown MUDSTONE	
BH109	53	CSS	18.10	18.20	14	Brown MUDSTONE	

UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

Contract No:

PSL23/4784

Client Ref:

G230651

SUMMARY OF POINT LOAD TEST RESULTS

ISRM Suggested Methods : 2007

Borehole Number	Depth (m)	Sample Ref	Test Type	Orientation	Dimensions (mm)		Area	D_e^2	D_e	Failure Load (P)		I_s	Corr Fac	I_{s50}	Failure Type	Remarks
				Par / Perp	W	D	(mm2)		(mm)	(Mpa)	(kN)	(MPa)	F	(MPa)		
BH109	8.00	29	A	Perp	100	36	3600	4583.66	67.70	-	0.89	0.19	1.146	0.22	Valid	
BH109	14.40	48	A	Perp	100	38	3800	4838.31	69.56	-	0.71	0.15	1.160	0.17	Valid	
BH109	18.10	53	A	Perp	100	36	3600	4583.66	67.70	-	1.22	0.27	1.146	0.31	Valid	
BH109	19.30	55	A	Perp	100	42	4200	5347.61	73.13	-	0.92	0.17	1.187	0.20	Valid	

Note All testing carried out on samples at as received water content

Par = parallel, Perp = perpendicular, U = Random

A = Axial, D = Diametral, I = Irregular

UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

Contract No: PSL23/4784

Client Ref: G230651

SUMMARY OF POINT LOAD TEST RESULTS

ISRM Suggested Methods : 2007

Borehole Number	Depth (m)	Sample Ref	Test Type	Orientation	Dimensions (mm)		D_e^2	D_e	Failure Load		I_s	Corr Fac	I_{s50}	Failure Type	Remarks
				Par / Perp	L	D		(mm)	(Mpa)	(kN)	(MPa)	F	(MPa)		
BH109	8.00	29	D	Par	-	100	10000	100.00	-	0.44	0.044	1.366	0.06	Valid	
BH109	14.40	48	D	Par	-	100	10000	100.00	-	0.51	0.051	1.366	0.07	Valid	
BH109	18.10	53	D	Par	-	100	10000	100.00	-	0.81	0.081	1.366	0.11	Valid	
BH109	19.30	55	D	Par	-	100	10000	100.00	-	0.92	0.092	1.366	0.13	Valid	

Note All testing carried out on samples at as received water content

Par = parallel, Perp = perpendicular, U = Random

UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

Contract No:

PSL23/4784

Client Ref:

G230651

UNIAXIAL COMPRESSIVE STRENGTH

ISRM Suggested Methods - Rock Characterization Testing and Monitoring 1974 - 2006

Borehole Number:	**BH109**	**Top Depth (m):**	**11.60**
Sample Number:	**40**	**Base Depth (m):**	**11.90**
Sample Type:	**CSS**	**Sample Date:**	**N/A**
Storage Condition:	**Sealed in Core Box**	**Date of Reciept**	**N/A**
Sample Description:	**Brown MUDSTONE.**		

Specimen Details/Conditions	
Diameter - mm:	100.05
Height - mm:	250.21
Water Content - %:	14.2
Sample Mass - g:	4379.9
Bulk Density - Mg/m^3:	2.23
Dry Density - Mg/m^3:	1.95
Height Ratio: * Sample complies with H:D ratio	2.5
Degree of Saturation - %:	100
Assumed Specific Gravity for Degree of Saturation:	2.70

Test Result	
Load Frame/Machine:	CM1/Controls
Date of test:	21/07/2023
Test Duration - mins:	00:18
Orientation:	Unknown
Stress Rate - MPa/s:	0.20
Strain at Failure - kN:	28.10
Unconfined Compressive Strength - Mpa:	3.57
Mode of Failure:	Vertical Shear

Remarks: -

LABORATORY REPORT

Contract Number: PSL23/4785

Report Date: 27 July 2023

Client's Reference: G230651/Geo 20

Client Name: Strata Geotechnics
Kirkby Lane
Pinxton
Nottinghamshire
NG16 6JA

For the attention of: Izaac Lovatt

Contract Title: A46 Walsgrave

Date Received: 20/6/2023
Date Commenced: 20/6/2023
Date Completed: 27/7/2023

Notes: Opinions and Interpretations are outside the UKAS Accreditation

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Checked and Approved Signatories:

A Watkins (Director)	R Berriman (Quality Manager)	S Royle (Laboratory Manager)
[redacted] L Knight (Assistant Laboratory Manager)	S Eyre (Senior Technician)	T Watkins (Senior Technician)

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SUMMARY OF LABORATORY SOIL DESCRIPTIONS

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Description of Sample
BH117	5	D	0.40	0.40	Brown gravelly very sandy CLAY.
BH117	10	D	1.20	1.65	Brown gravelly very sandy CLAY.
BH117	16	D	2.70	2.70	Reddish brown slightly clayey very silty SAND.
BH117	18	B	3.70	3.90	Brown very sandy CLAY.
BH117	19	D	4.00	4.45	Brown very clayey SAND.
BH117	22	B	5.70	5.90	Brown very clayey SAND.
BH117	23	D	6.50	6.95	Brown gravelly very sandy CLAY.
BH124	6	D	0.80	0.80	Brown sandy CLAY.
BH124	7	B	1.00	1.00	Brown slightly gravelly sandy CLAY.
BH124	10	UT	1.50	1.95	Stiff reddish brown slightly gravelly sandy CLAY.
BH124	15	D	2.50	2.95	Brown slightly gravelly very sandy CLAY.
BH124	20	B	4.00	4.50	Brown gravelly very clayey SAND.
BH124	24	B	4.50	5.00	Brown gravelly very clayey SAND.
BH124	26	D	6.50	6.50	Brown very sandy very clayey GRAVEL.
BH124	30	B	8.50	9.00	Brown gravelly very sandy CLAY.
BH124	34	UT	12.00	12.45	Very stiff brown slightly gravelly very sandy CLAY.
BH124	35	D	12.50	12.50	Brown slightly gravelly very sandy CLAY.

SUMMARY OF SOIL CLASSIFICATION TESTS

(BS1377 : PART 2 : 1990)

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Moisture Content % Clause 3.2	Linear Shrinkage % Clause 6.5	Particle Density Mg/m^3 Clause 8.2	Liquid Limit % Clause 4.3/4	Plastic Limit % Clause 5.3	Plasticity Index % Clause 5.4	Passing .425mm %	Remarks
BH117	5	D	0.40	0.40	5.1			33	16	17	87	Low Plasticity CL
BH117	10	D	1.20	1.65	14			29	15	14	81	Low Plasticity CL
BH117	16	D	2.70	2.70	10				NP			
BH117	19	D	4.00	4.45	11			27	13	14	100	Low Plasticity CL
BH117	23	D	6.50	6.95	17			31	15	16	82	Low Plasticity CL
BH124	6	D	0.80	0.80	21			53	24	29	100	High Plasticity CH
BH124	15	D	2.50	2.95	16			29	14	15	95	Low Plasticity CL
BH124	26	D	6.50	6.50	11			26	12	14	43	Low Plasticity CL
BH124	35	D	12.50	12.50	13			31	16	15	97	Low Plasticity CL

SYMBOLS : NP : Non Plastic * : Liquid Limit and Plastic Limit Wet Sieved.

UKAS TESTING 4043

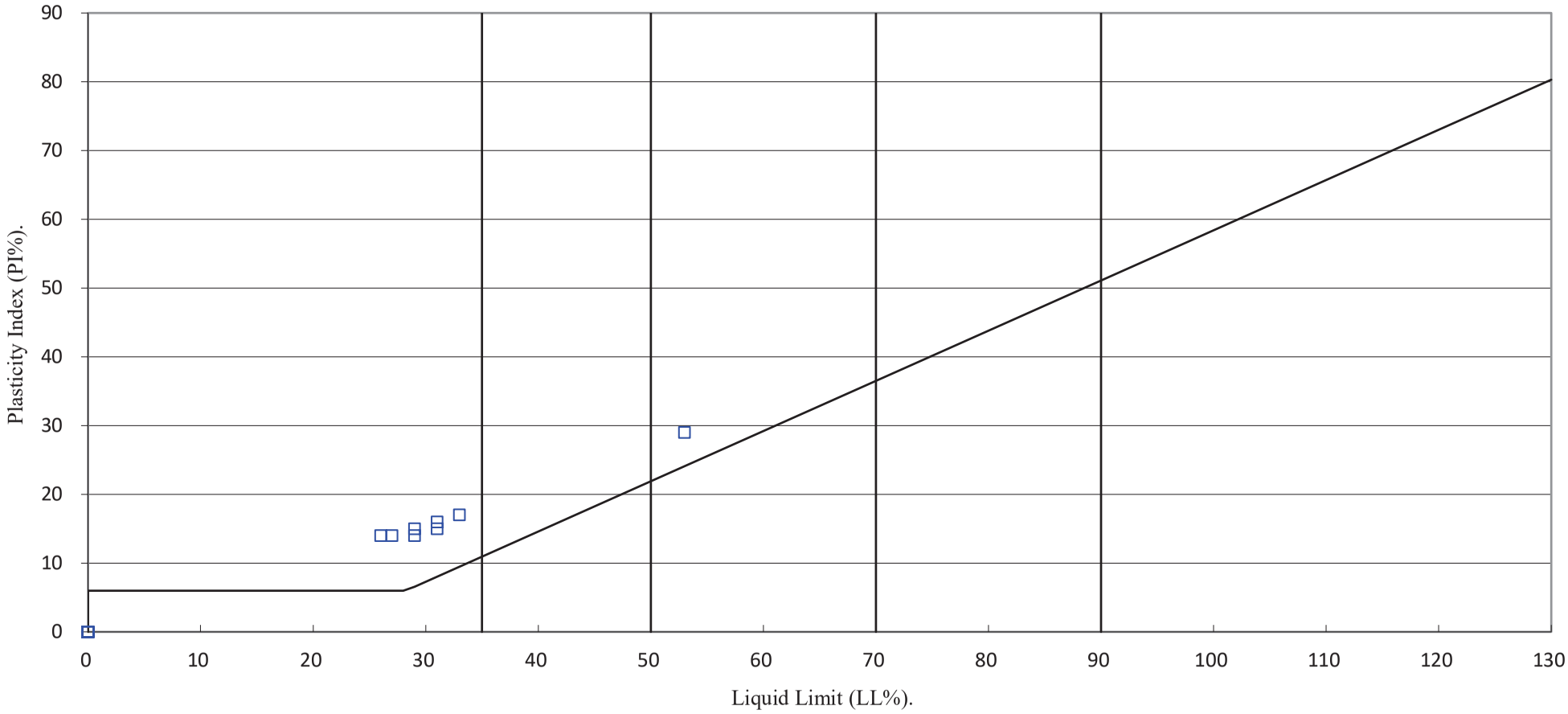
PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

Contract No: PSL23/4785

Client Ref: G230651

PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION.



UKAS TESTING 4043	PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY	**A46 Walsgrave**

Contract No:
PSL23/4785
Client Ref:
G230651

SUMMARY OF SOIL DENSITY RELATED TESTS

(BS1377 : PART 2 & 4 : 1990)

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Moisture Content %	Bulk Density Mg/m^3	Dry Density Mg/m^3	Retained 20mm %	Retained 37.5mm %	Method of compaction kg	Maximum Dry Density Mg/m^3	Minimum Dry Density Mg/m^3	Remarks
BH117	5	D	0.40	0.40	5.1	1.98	1.88						
BH117	10	D	1.20	1.65	14	2.17	1.90						
BH117	19	D	4.00	4.45	11	1.89	1.70						
BH124	15	D	2.50	2.95	16	2.14	1.84						
BH124	20	B	4.00	4.50	17	2.13	1.82						
BH124	26	D	6.50	6.50	11	2.23	2.01						

UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

Contract No:
PSL23/4785
Client Ref:
G230651

SUMMARY OF LABORATORY HAND VANES

(BS1377 : PART 7 : 1990)

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Moisture Content %	Peak Shear Strength kPa	Residual Shear Strength kPa	Remarks
BH117	18	B	3.70	3.90	19	13		
BH117	22	B	5.70	5.90	28	6		

* This test is out of our UKAS scope

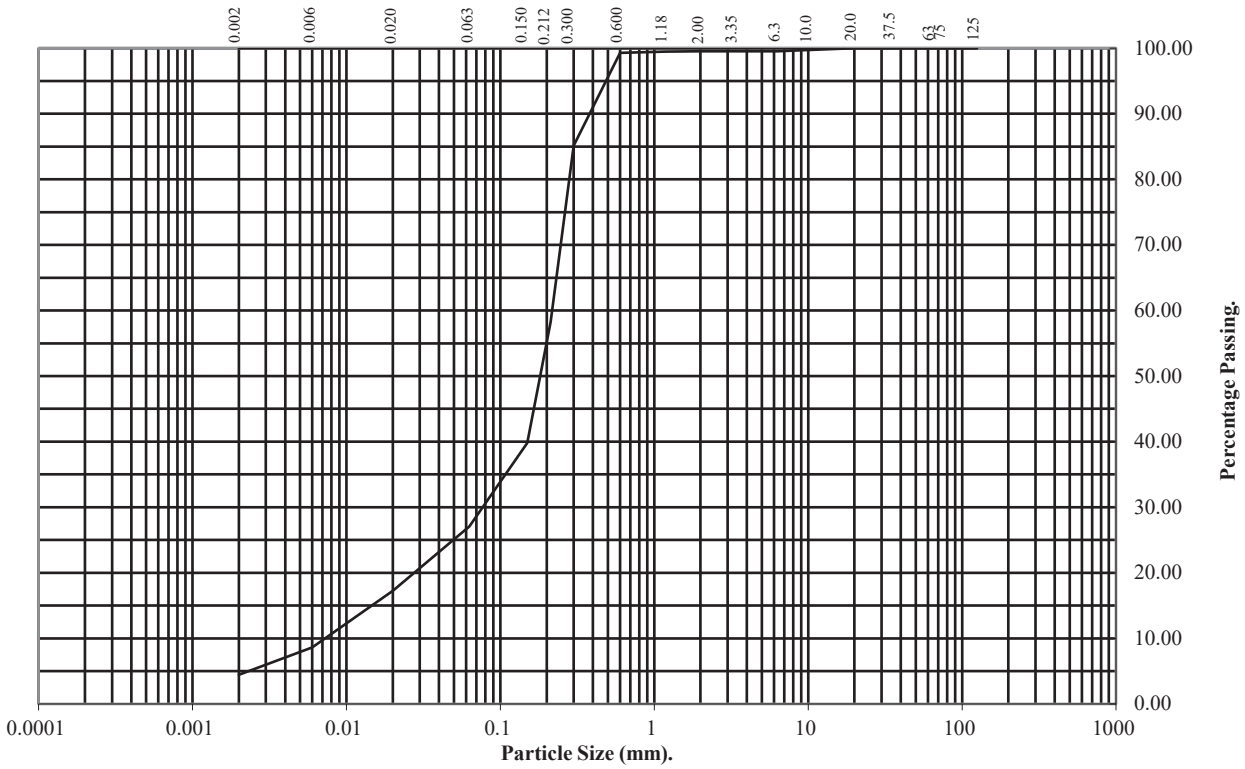
PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY	A46 Walsgrave	Contract No: PSL23/4785 Client Ref: G230651

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

Hole Number:	**BH117**	**Top Depth (m):**	**2.70**
Sample Number:	**16**	**Base Depth(m):**	**2.70**
Sample Type:	**D**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	100
6.3	100
3.35	100
2	100
1.18	99
0.6	99
0.3	85
0.212	58
0.15	40
0.063	27

Particle Diameter	Percentage Passing
0.02	17
0.006	9
0.002	4

Soil Fraction	Total Percentage
Cobbles	0
Gravel	0
Sand	73
Silt	23
Clay	4

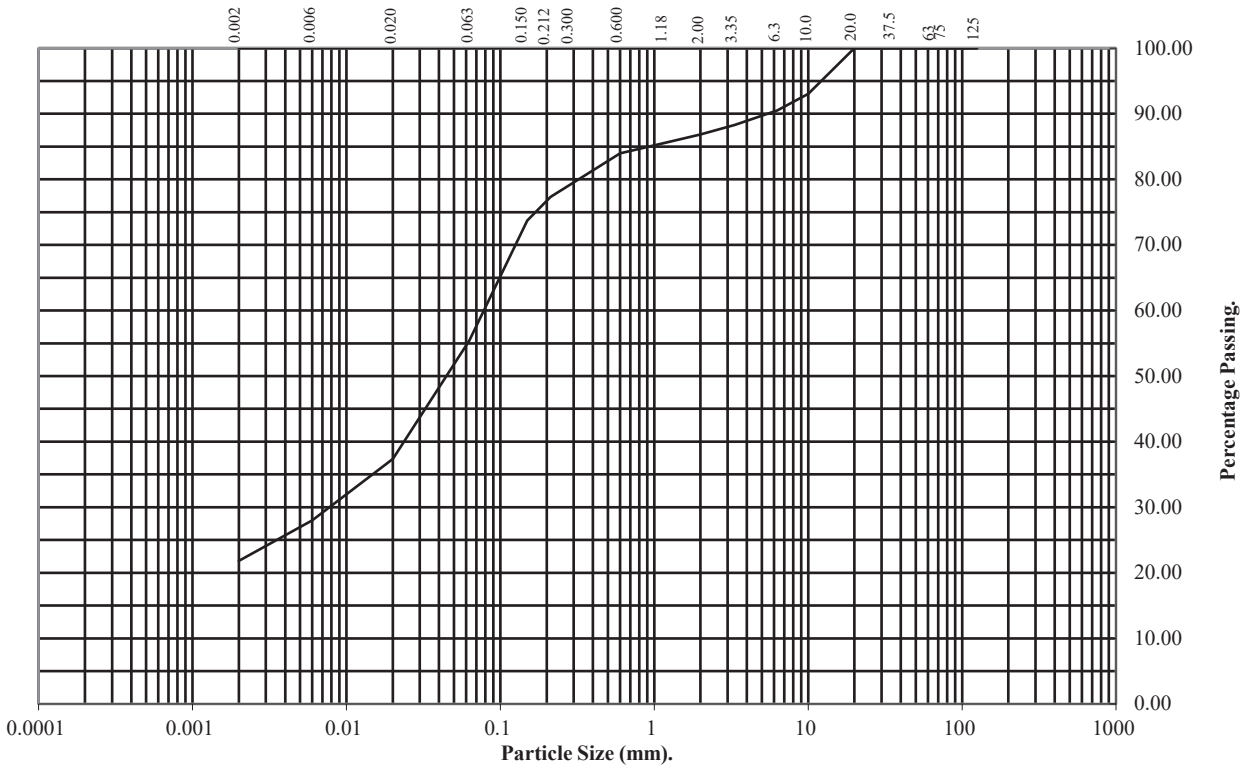
Remarks:
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

Hole Number:	**BH117**	**Top Depth (m):**	**6.50**
Sample Number:	**23**	**Base Depth(m):**	**6.95**
Sample Type:	**D**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	93
6.3	90
3.35	88
2	87
1.18	86
0.6	84
0.3	80
0.212	77
0.15	74
0.063	55

Particle Diameter	Percentage Passing
0.02	37
0.006	28
0.002	22

Soil Fraction	Total Percentage
Cobbles	0
Gravel	13
Sand	32
Silt	33
Clay	22

Remarks:
See Summary of Soil Descriptions

UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

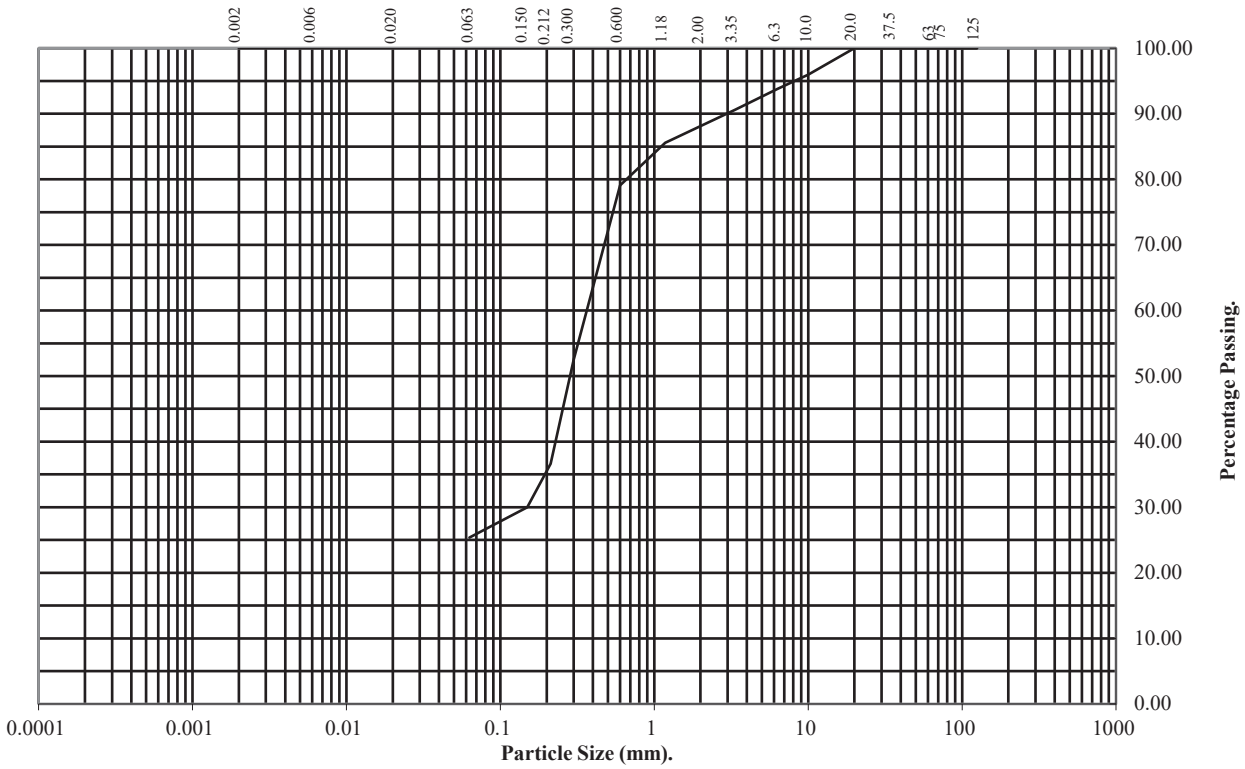
Contract No:
PSL23/4785
Client Ref:
G230651

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number:	**BH124**	**Top Depth (m):**	**4.00**
Sample Number:	**20**	**Base Depth(m):**	**4.50**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	96
6.3	94
3.35	91
2	88
1.18	86
0.6	79
0.3	52
0.212	37
0.15	30
0.063	25

Soil Fraction	Total Percentage
Cobbles	0
Gravel	12
Sand	63
Silt/Clay	25

Remarks:

See Summary of Soil Descriptions

UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

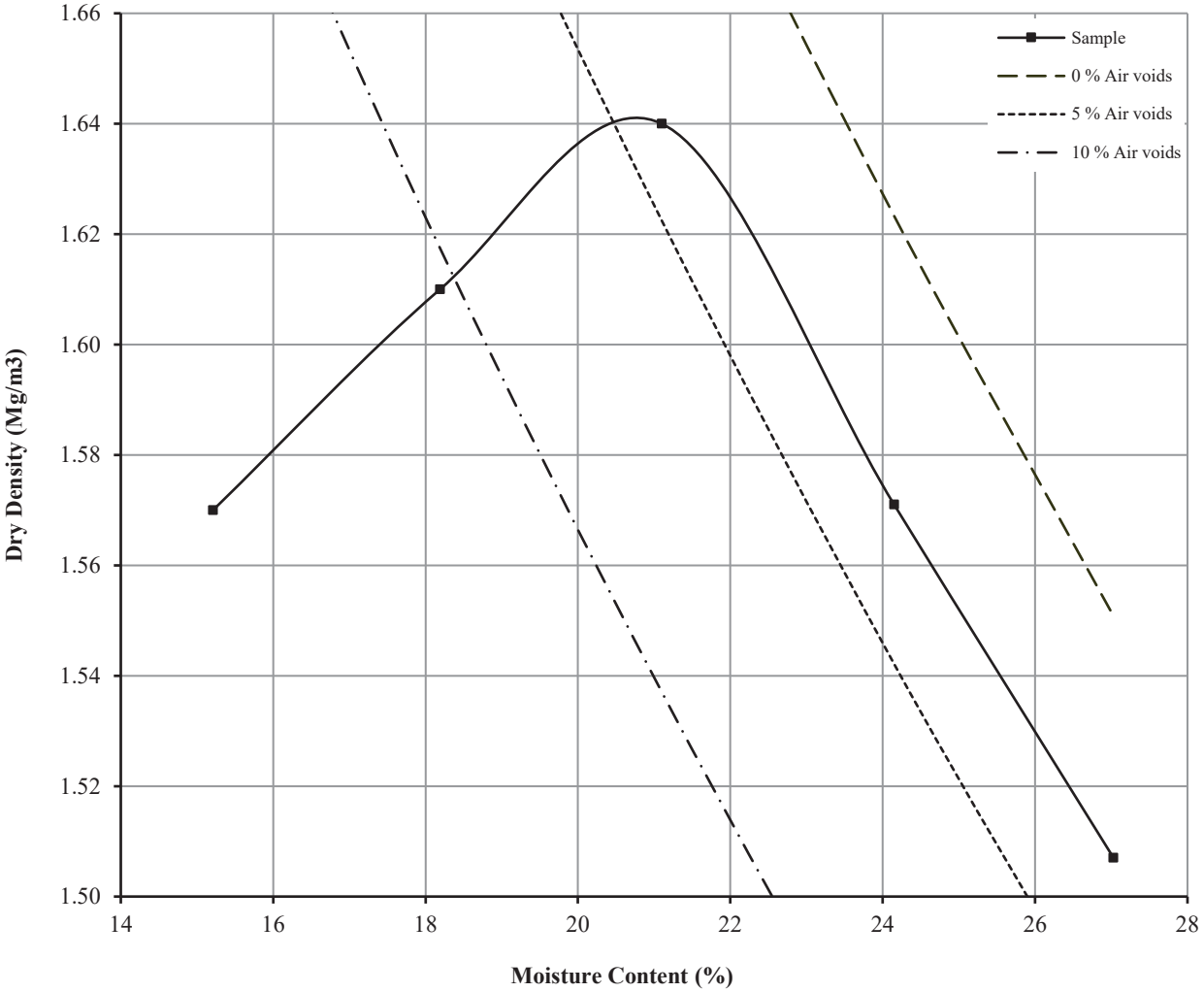
A46 Walsgrave

Contract No:
PSL23/4785
Client Ref:
G230651

DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

BS 1377 : Part 4 : Clause 3.3 : 1990

Hole Number:	**BH124**	**Top Depth (m) :**	**1.00**
Sample Number:	**7**	**Base Depth (m) :**	**1.00**
Sample Type:	**B**		



Initial Moisture Content:		21	Method of Compaction:	2.5kg	Separate Samples
Particle Density (Mg/m3):	2.67	Assumed	Material Retained on 37.5 mm Test Sieve (%):		0
Maximum Dry Density (Mg/m3):		1.64	Material Retained on 20.0 mm Test Sieve (%):		0
Optimum Moisture Content (%):		21			
Remarks See summary of soil descriptions					

UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

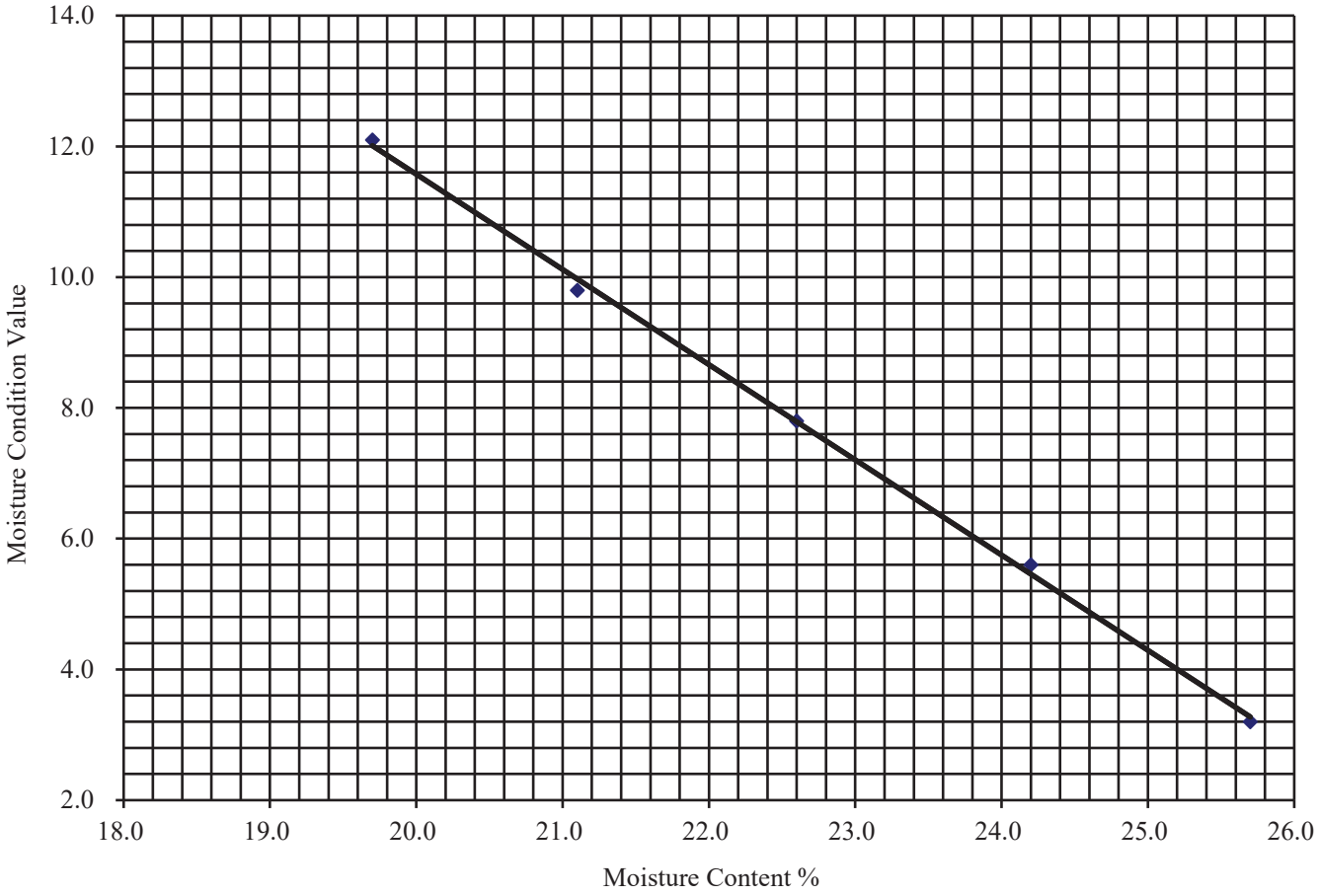
Contract
PSL23/4785
Client Ref
G230651

MOISTURE CONDITION VALUE CALIBRATION

BS1377 : Part 4 : 1990 Clause 5.5

Hole Number:	**BH124**	**Top Depth (m):**	**1.00**
Sample Number:	**7**	**Base Depth (m):**	**1.00**
Sample Type:	**B**		

Initial Moisture Content (%):	21
Single/Separate Samples Tested	Separate
Material Retained on the 20mm BS Test Sieve (%):	0



Test Results.

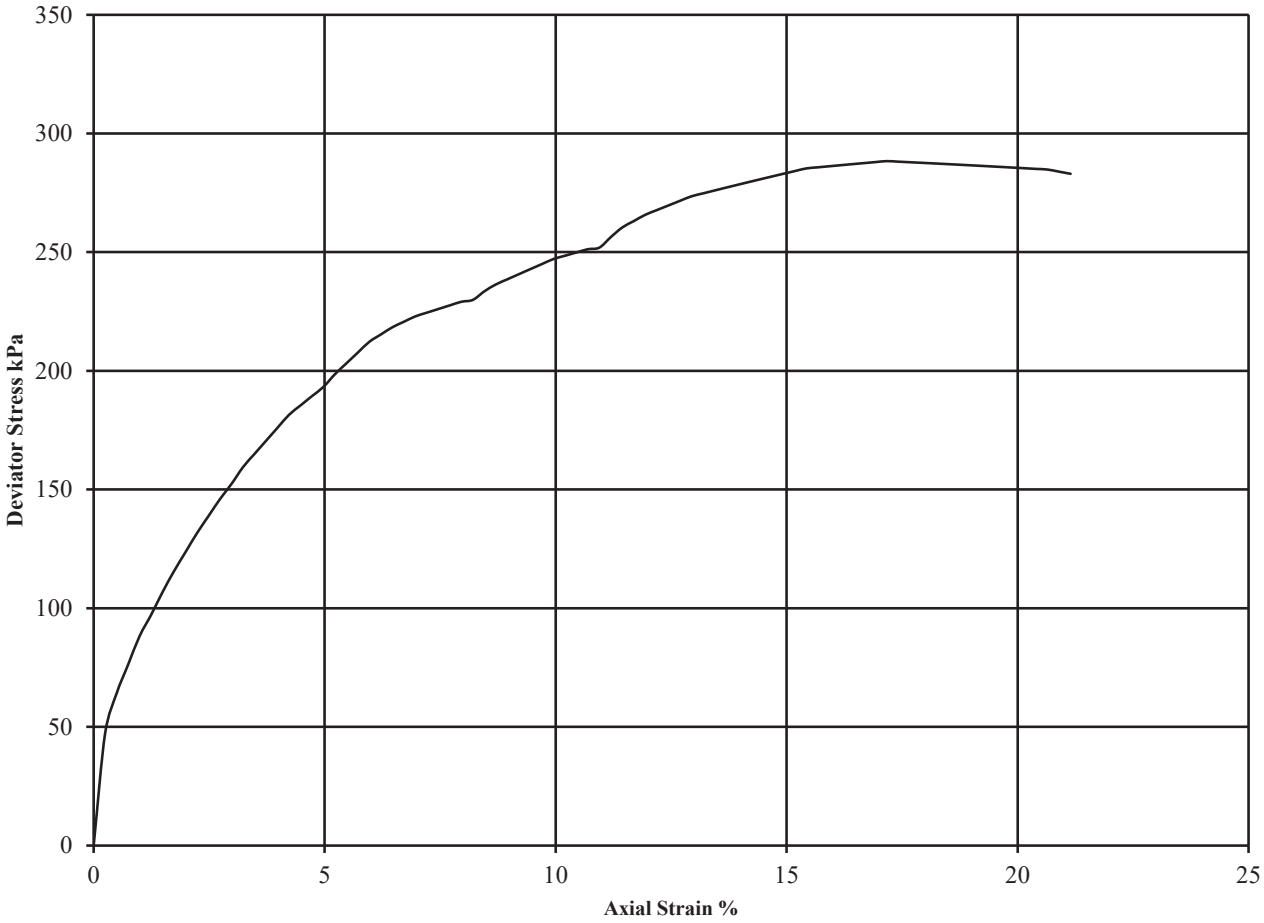
Test Number	1	2	3	4	5
Moisture Content (%)	19.7	21.1	22.6	24.2	25.7
MCV	12.1	9.8	7.8	5.6	3.2

UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION

WITHOUT MEASUREMENT OF PORE PRESSURE

BS1377 : Part7 : 1990: Clause 9

Hole Number:	**BH124**	**Top Depth (m):**	**1.50**
Sample Number:	**10**	**Base Depth (m):**	**1.95**
Sample Type	**UT**		



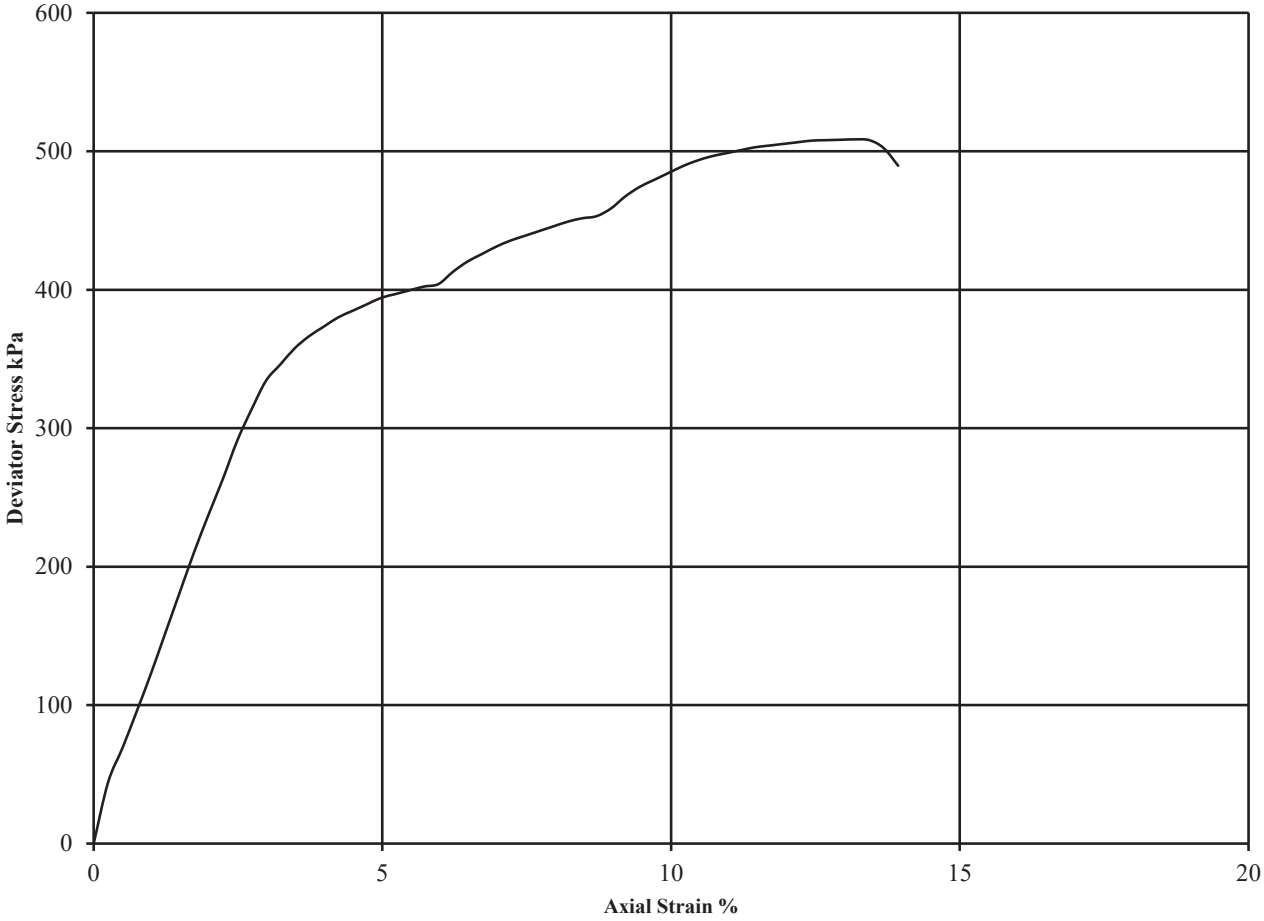
Diameter (mm):		103	Height (mm):		207	Test:	UU Multistage		Remarks
Specimen	Moisture Content (%)	Bulk Density (Mg/m3)	Dry Density (Mg/m3)	Cell Pressure (kPa) θ_3	Corr. Max. Deviator Stress (kPa) $(\theta_1-\theta_3)_f$	Shear Strength Cu (kPa) $^1/_2(\theta_1-\theta_3)_f$	Failure Strain (%)	Mode of Failure	Undisturbed Sample Sample taken from top of tube Rate of strain = 2 %/min Latex Membrane used 0.2 mm thick Membrane Correction applied (kPa)
1	17	2.15	1.83	15	230	115	8.2		0.35 0.35 0.34
				30	252	126	10.9		See summary of soil descriptions
				60	288	144	17.2	Plastic	

UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION

WITHOUT MEASUREMENT OF PORE PRESSURE

BS1377 : Part7 : 1990: Clause 9

Hole Number:	**BH124**	**Top Depth (m):**	**12.00**
Sample Number:	**34**	**Base Depth (m):**	**12.45**
Sample Type	**UT**		



Diameter (mm):		103	Height (mm):		207	Test:	UU Multistage		Remarks
Specimen	Moisture Content (%)	Bulk Density (Mg/m3)	Dry Density (Mg/m3)	Cell Pressure (kPa) θ_3	Corr. Max. Deviator Stress (kPa) $(\theta_1-\theta_3)_f$	Shear Strength Cu (kPa) $^1/_2(\theta_1-\theta_3)_f$	Failure Strain (%)	Mode of Failure	Undisturbed Sample Sample taken from top of tube Rate of strain = 2 %/min Latex Membrane used 0.2 mm thick Membrane Correction applied (kPa)
1	13	2.24	1.98	120	404	202	6.0		0.36 0.35 0.34
				240	453	227	8.7		See summary of soil descriptions
				480	509	254	13.2	Brittle	

UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

Contract No: PSL23/4785

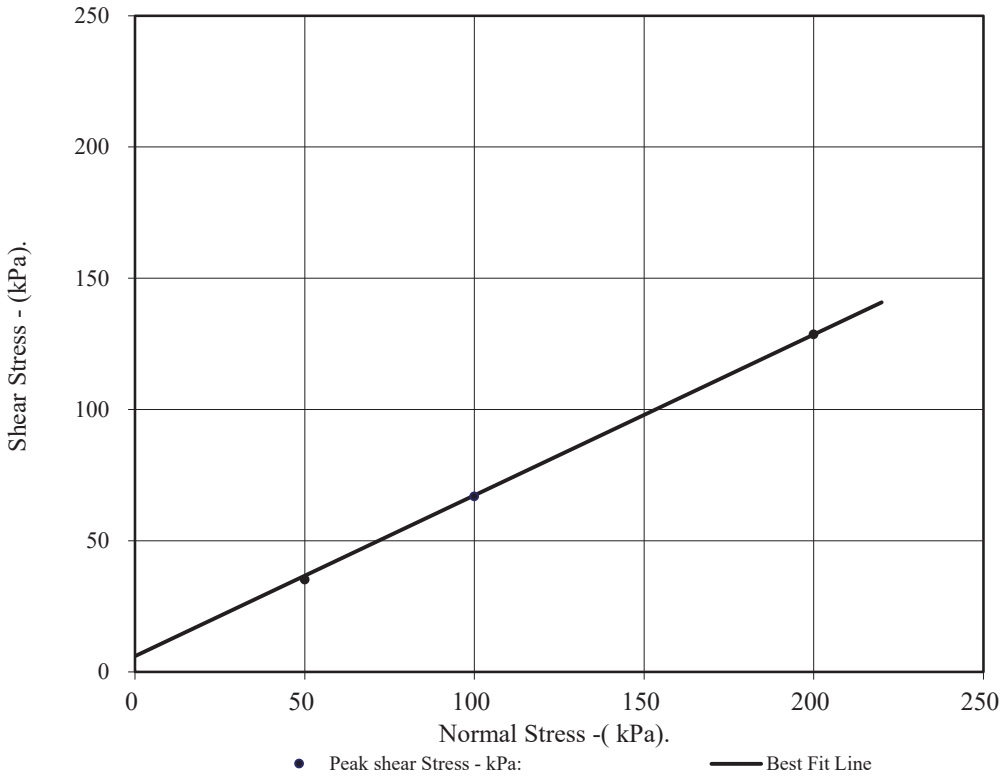
Client Ref: G230651

CONSOLIDATED DRAINED SHEARBOX TEST

BS1377:Part 7:1990 Clause 5

Hole Number:	**BH124**		Top Depth:	**4.50**	
Sample Number:	**24**		Base Depth:	**5.00**	
Sample Conditions:	Submerged		Sample Type	**B**	
Particle Density - Mg/m3:	2.65	Assumed	**Remarks:**		
Sample Preparation:	Material tested passing 20mm sieve Recompacted using 2.5kg effort				
Sample Description:	**See summary of soil descriptions**				

STAGE	**1**	**2**	**3**
Initial Conditions			
Height - mm:	150	150	150
Length - mm:	300	300	300
Moisture Content - %:	19	19	19
Bulk Density - Mg/m3:	2.26	2.26	2.26
Dry Density - Mg/m3:	1.90	1.90	1.90
Voids Ratio:	0.394	0.394	0.394
Normal Pressure- kPa	50	100	200
Consolidation Stage			
Consolidated Height - mm:	148.50	148.08	147.65
Shearing Stage			
Rate of Strain (mm/min)	0.06	0.06	0.06
Displacement at peak shear stress (mm)	26.05	49.00	45.05
Peak shear Stress - kPa:	35	67	129
Final Consolidated Conditions			
Moisture Content - %:	17	16	14
Bulk Density - Mg/m3:	2.29	2.29	2.30
Dry Density - Mg/m3:	1.95	1.98	2.01
Peak			
Angle of Shearing Resistance:(~~θ~~)	**32**		
Effective Cohesion - kPa:	**6**		

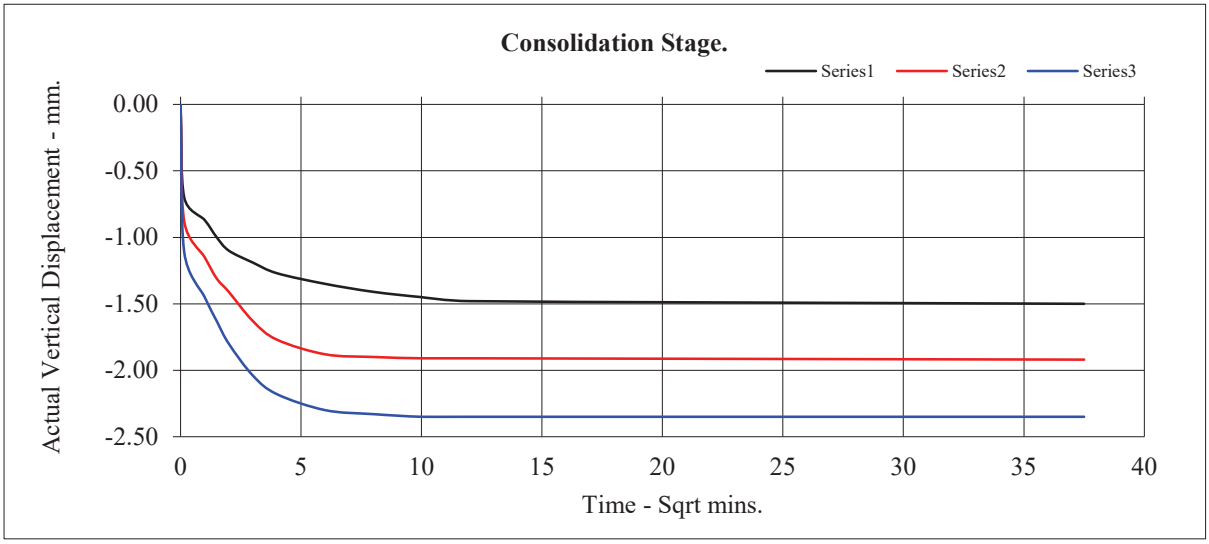


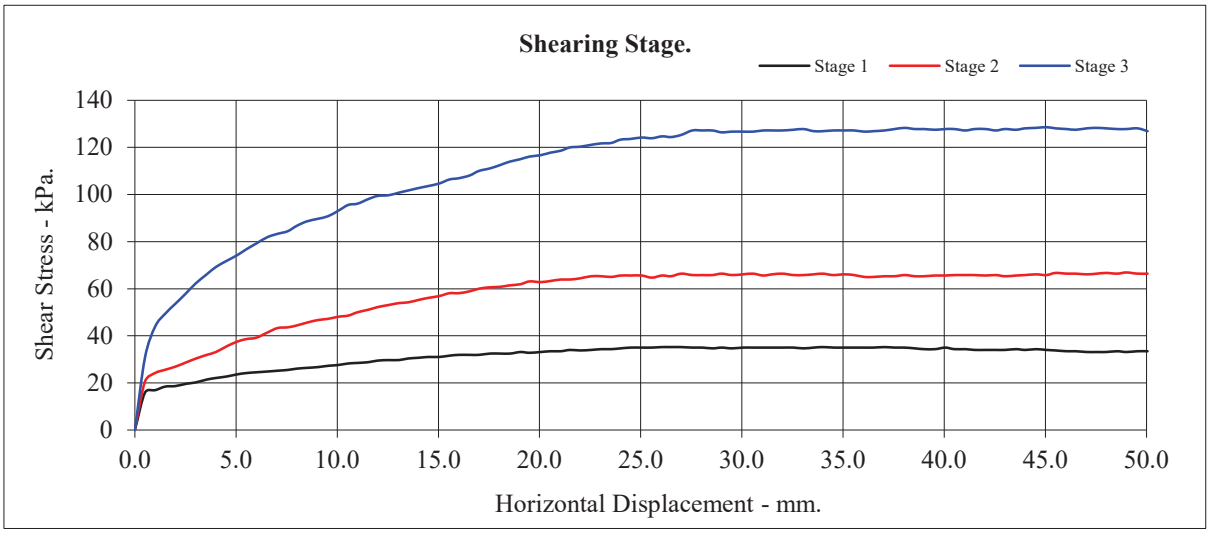
UKAS TESTING 4043 / PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY	**A46 Walsgrave**	**Contract No:** PSL23/4785 **Client Ref:** G230651

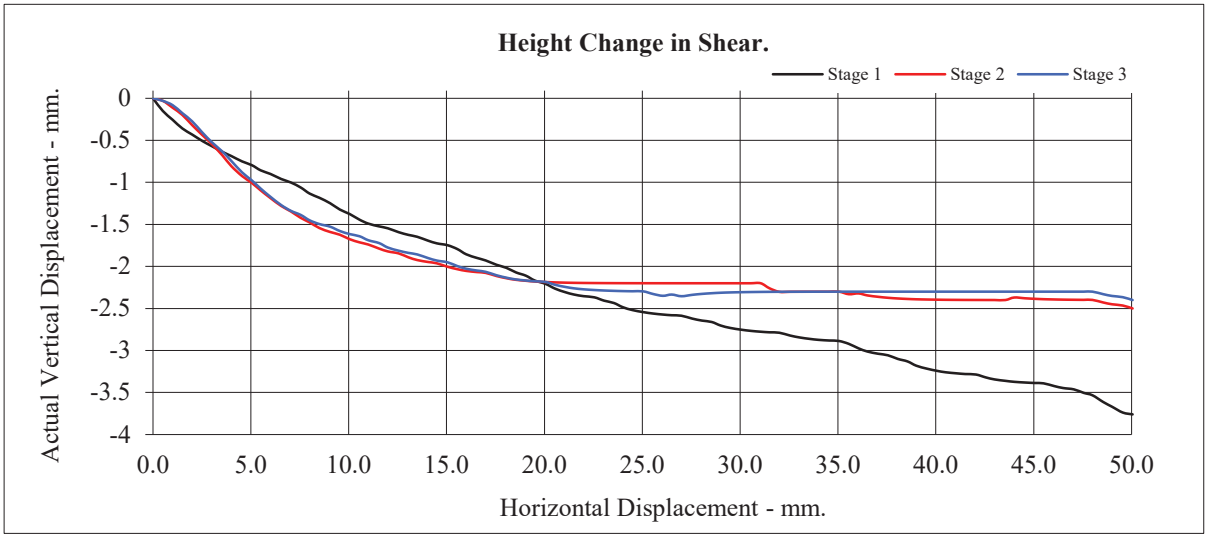
CONSOLIDATED DRAINED SHEARBOX TEST

BS1377:Part 7:1990 Clause 5

Hole Number:	**BH124**	Top Depth:	**4.50**
Sample Number:	**24**	Base Depth:	**5.00**







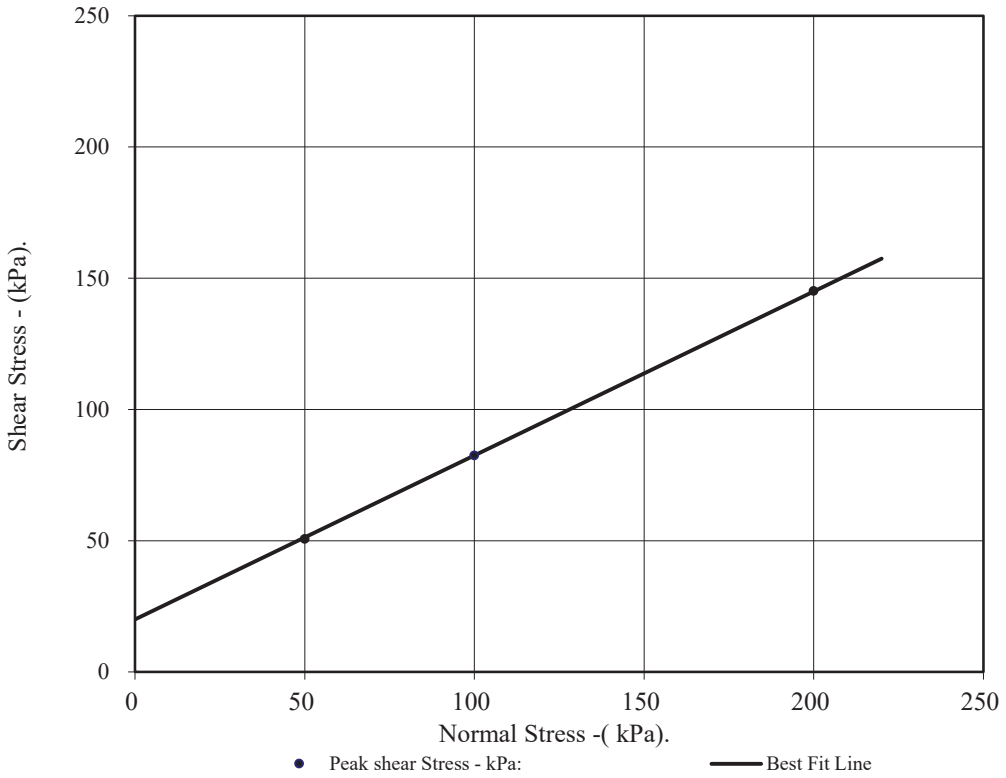
UKAS TESTING 4043 / PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY	**A46 Walsgrave**	**Contract No:** PSL23/4785 **Client Ref:** G230651

CONSOLIDATED DRAINED SHEARBOX TEST

BS1377:Part 7:1990 Clause 5

Hole Number:	**BH124**		Top Depth:	**8.50**
Sample Number:	**30**		Base Depth:	**9.00**
Sample Conditions:	Submerged		Sample Type	**B**
Particle Density - Mg/m3:	2.65	Assumed	**Remarks:**	
Sample Preparation:	Material tested passing 20mm sieve Recompacted using 2.5kg effort			
Sample Description:	**See summary of soil descriptions**			

STAGE	**1**	**2**	**3**
Initial Conditions			
Height - mm:	150	150	150
Length - mm:	300	300	300
Moisture Content - %:	15	15	15
Bulk Density - Mg/m3:	2.23	2.23	2.23
Dry Density - Mg/m3:	1.94	1.94	1.94
Voids Ratio:	0.365	0.365	0.365
Normal Pressure- kPa	50	100	200
Consolidation Stage			
Consolidated Height - mm:	149.11	148.76	147.63
Shearing Stage			
Rate of Strain (mm/min)	0.06	0.06	0.06
Displacement at peak shear stress (mm)	48.50	49.51	49.51
Peak shear Stress - kPa:	51	83	145
Final Consolidated Conditions			
Moisture Content - %:	15	15	15
Bulk Density - Mg/m3:	2.24	2.24	2.26
Dry Density - Mg/m3:	1.95	1.96	1.97
Peak			
Angle of Shearing Resistance:(~~θ~~)	**32**		
Effective Cohesion - kPa:	**20**		



UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

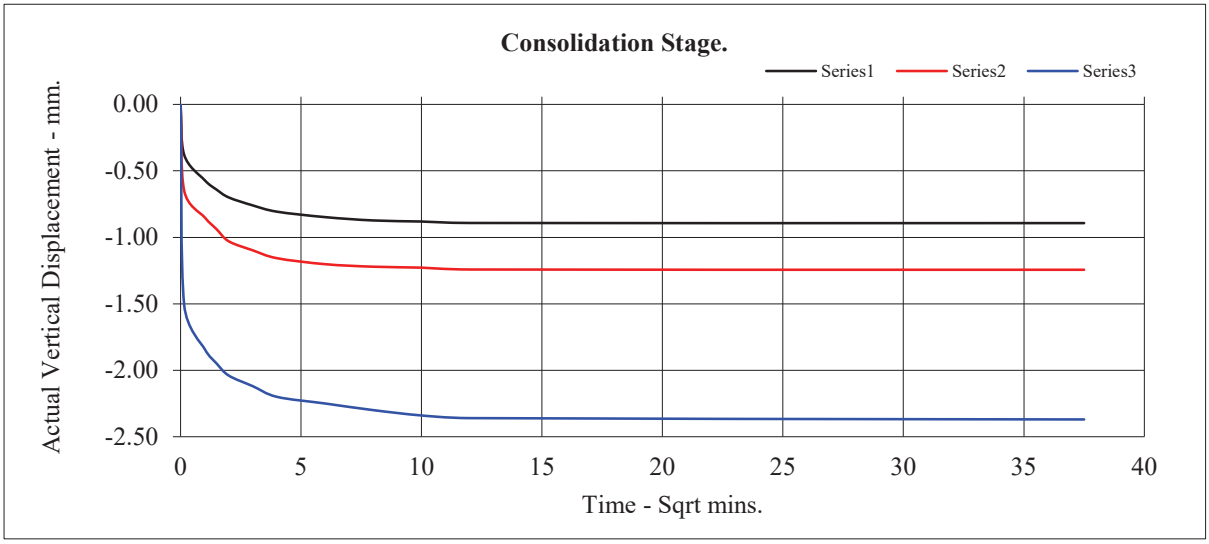
A46 Walsgrave

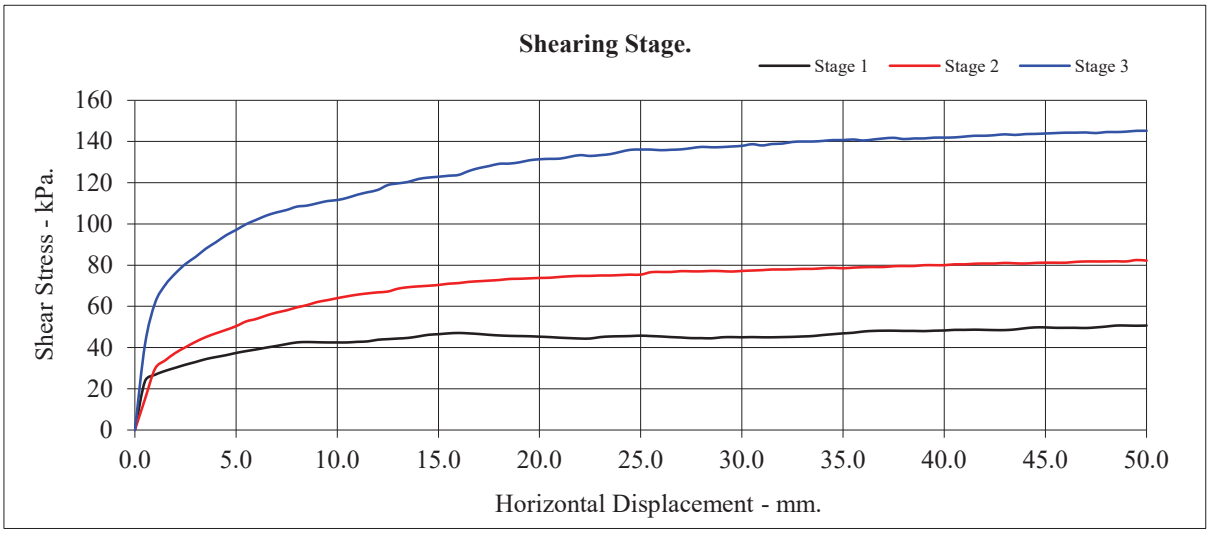
Contract No:
PSL23/4785
Client Ref:
G230651

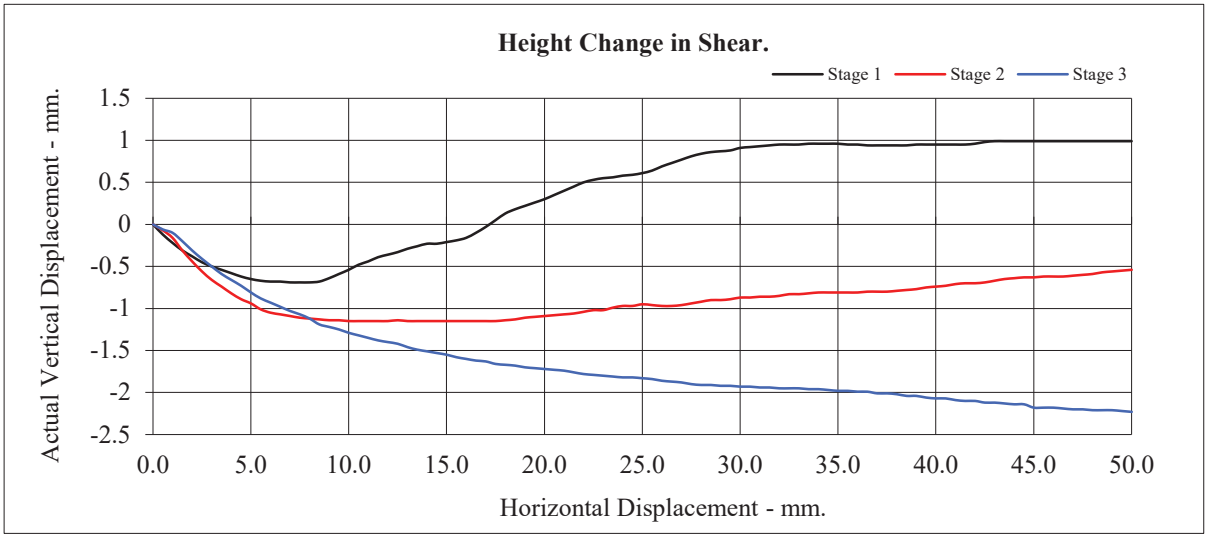
CONSOLIDATED DRAINED SHEARBOX TEST

BS1377:Part 7:1990 Clause 5

Hole Number:	**BH124**	Top Depth:	**8.50**
Sample Number:	**30**	Base Depth:	**9.00**







UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

Contract No:
PSL23/4785
Client Ref:
G230651

SUMMARY OF POINT LOAD TEST RESULTS

ISRM Suggested Methods : 2007

Borehole Number	Depth (m)	Sample Ref	Test Type	Orientation	Dimensions (mm)		Area	D_e^2	D_e	Failure Load (P)		I_s	Corr Fac	I_{s50}	Failure Type	Remarks
				Par / Perp	W	D	(mm2)		(mm)	(Mpa)	(kN)	(MPa)	F	(MPa)		
BH117	9.50	2	A	Perp	100	38	3800	4838.31	69.56	-	0.86	0.18	1.160	0.21	Valid	
BH117	12.50	4	A	Perp	100	41	4100	5220.28	72.25	-	0.92	0.18	1.180	0.21	Valid	

Note All testing carried out on samples at as received water content

Par = parallel, Perp = perpendicular, U = Random

A = Axial, D = Diametral, I = Irregular

UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

Contract No:

PSL23/4785

Client Ref:

G230651

WATER CONTENT OF ROCK

ISRM Suggested Methods - Rock Characterization Testing and Monitoring 1974 - 2006

Hole Number	Sample Number	Sample Type	Top Depth (m)	Base Depth (m)	Water Content (%)	Sample Description	Remarks
BH117	2	C	9.50	11.00	12		
BH117	4	C	12.50	14.00	13		

UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

Contract No:

PSL23/4785

Client Ref:

G230651

LABORATORY REPORT

Contract Number: PSL23/4786

Report Date: 04 August 2023

Client's Reference: G230651/Geo 22

Client Name: Strata Geotechnics
Kirkby Lane
Pinxton
Nottinghamshire
NG16 6JA

For the attention of: Izaac Lovatt

Contract Title: A46 Walsgrave

Date Received: 20/6/2023
Date Commenced: 20/6/2023
Date Completed: 4/8/2023

Notes: Opinions and Interpretations are outside the UKAS Accreditation

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Checked and Approved Signatories:

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(Assistant Laboratory Manager)

R Berriman
(Associate Director)

S Royle
(Laboratory Manager)

[redacted]

A Watkins
(Managing Director)

S Eyre
(Senior Technical Coordinator)

A Fry
(Section Manager)

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Email: [redacted]@prosoils.co.uk
[redacted]@prosoils.co.uk

WATER CONTENT OF ROCK

ISRM Suggested Methods - Rock Characterization Testing and Monitoring 1974 - 2006

Hole Number	Sample Number	Sample Type	Top Depth (m)	Base Depth (m)	Water Content (%)	Sample Description	Remarks
BH110	41	C	14.50	16.00	16		
BH110	43	C	17.50	19.00	15		
BH110	44	C	19.00	20.00	16		

UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

Contract No:

PSL23/4786

Client Ref:

G230651

SUMMARY OF POINT LOAD TEST RESULTS

ISRM Suggested Methods : 2007

Borehole Number	Depth (m)	Sample Ref	Test Type	Orientation	Dimensions (mm)		Area	D_e^2	D_e	Failure Load (P)		I_s	Corr Fac	I_{s50}	Failure Type	Remarks
				Par / Perp	W	D	(mm2)		(mm)	(Mpa)	(kN)	(MPa)	F	(MPa)		
BH110	15.30	59	A	Perp	100	48	4800	6111.55	78.18	-	0.43	0.07	1.223	0.09	Valid	
BH110	17.41	61	A	Perp	100	37	3700	4710.99	68.64	-	0.61	0.13	1.153	0.15	Valid	
BH110	18.90	63	A	Perp	100	39	3900	4965.63	70.47	-	0.57	0.11	1.167	0.13	Valid	

Note All testing carried out on samples at as received water content

Par = parallel, Perp = perpendicular, U = Random

A = Axial, D = Diametral, I = Irregular

UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

Contract No:

PSL23/4786

Client Ref:

G230651

UNIAXIAL COMPRESSIVE STRENGTH

ISRM Suggested Methods - Rock Characterization Testing and Monitoring 1974 - 2006

Borehole Number:	**BH110**	**Top Depth (m):**	**14.50**
Sample Number:	**41**	**Base Depth (m):**	**16.00**
Sample Type:	**C**	**Sample Date:**	**30/05/2023**
Storage Condition:	**Sealed in Core Box**	**Date of Reciept**	**20/06/2023**
Sample Description:	**Brown slightly gravelly sandy CLAY.**		

Specimen Details/Conditions	
Diameter - mm:	100.07
Height - mm:	200.08
Water Content - %:	15.7
Sample Mass - g:	3681.0
Bulk Density - Mg/m^3:	2.34
Dry Density - Mg/m^3:	2.02
Height Ratio: * Sample does not comply with H:D ratio	2.0
Degree of Saturation - %:	105
Assumed Specific Gravity for Degree of Saturation:	2.90

Test Result	
Load Frame/Machine:	CM1/Controls
Date of test:	24/07/2023
Test Duration - mins:	00:19
Orientation:	Unknown
Stress Rate - MPa/s:	0.11
Strain at Failure - kN:	15.80
Unconfined Compressive Strength - Mpa:	2.01
Mode of Failure:	Vertical Shear

Remarks: -

UNIAXIAL COMPRESSIVE STRENGTH

ISRM Suggested Methods - Rock Characterization Testing and Monitoring 1974 - 2006

Borehole Number:	**BH110**	**Top Depth (m):**	**17.50**
Sample Number:	**43**	**Base Depth (m):**	**19.00**
Sample Type:	**C**	**Sample Date:**	**30/05/2023**
Storage Condition:	**Sealed in Core Box**	**Date of Reciept**	**20/06/2023**
Sample Description:	**Brown slightly gravelly sandy CLAY.**		

Specimen Details/Conditions	
Diameter - mm:	100.07
Height - mm:	200.04
Water Content - %:	15.0
Sample Mass - g:	3690.6
Bulk Density - Mg/m^3:	2.35
Dry Density - Mg/m^3:	2.04
Height Ratio: * Sample does not comply with H:D ratio	2.0
Degree of Saturation - %:	103
Assumed Specific Gravity for Degree of Saturation:	2.90

Test Result	
Load Frame/Machine:	CM1/Controls
Date of test:	24/07/2023
Test Duration - mins:	00:20
Orientation:	Unknown
Stress Rate - MPa/s:	0.10
Strain at Failure - kN:	16.40
Unconfined Compressive Strength - Mpa:	2.09
Mode of Failure:	Vertical Shear

Remarks: -

UNIAXIAL COMPRESSIVE STRENGTH

ISRM Suggested Methods - Rock Characterization Testing and Monitoring 1974 - 2006

Borehole Number:	**BH110**	**Top Depth (m):**	**19.00**
Sample Number:	**44**	**Base Depth (m):**	**20.00**
Sample Type:	**C**	**Sample Date:**	**30/05/2023**
Storage Condition:	**Sealed in Core Box**	**Date of Reciept**	**20/06/2023**
Sample Description:	**Brown slightly gravelly sandy CLAY.**		

Specimen Details/Conditions	
Diameter - mm:	100.13
Height - mm:	200.11
Water Content - %:	15.7
Sample Mass - g:	3684.2
Bulk Density - Mg/m^3:	2.34
Dry Density - Mg/m^3:	2.02
Height Ratio: * Sample does not comply with H:D ratio	2.0
Degree of Saturation - %:	105
Assumed Specific Gravity for Degree of Saturation:	2.90

Test Result	
Load Frame/Machine:	CM1/Controls
Date of test:	24/07/2023
Test Duration - mins:	00:12
Orientation:	Unknown
Stress Rate - MPa/s:	0.12
Strain at Failure - kN:	11.20
Unconfined Compressive Strength - Mpa:	1.42
Mode of Failure:	Vertical Shear

Remarks: -

LABORATORY REPORT

Contract Number: PSL23/4787

Report Date: 04 August 2023

Client's Reference: G230651/Geo 23

Client Name: Strata Geotechnics
Kirkby Lane
Pinxton
Nottinghamshire
NG16 6JA

For the attention of: Izaac Lovatt

Contract Title: A46 Walsgrave

Date Received: 20/6/2023
Date Commenced: 20/6/2023
Date Completed: 4/8/2023

Notes: Opinions and Interpretations are outside the UKAS Accreditation

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Checked and Approved Signatories:

L Knight
(Assistant Laboratory Manager)

R Berriman
(Associate Director)

S Royle
(Laboratory Manager)

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A Watkins
(Managing Director)

S Eyre
(Senior Technical Coordinator)

A Fry
(Section Manager)

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Email: [redacted]@prosoils.co.uk
[redacted]@prosoils.co.uk

WATER CONTENT OF ROCK

ISRM Suggested Methods - Rock Characterization Testing and Monitoring 1974 - 2006

Hole Number	Sample Number	Sample Type	Top Depth (m)	Base Depth (m)	Water Content (%)	Sample Description	Remarks
BH113	30	CSS	9.60	9.70	13		
BH113	32	CSS	11.10	11.20	13		

UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

Contract No: PSL23/4787

Client Ref: G230651

SUMMARY OF POINT LOAD TEST RESULTS

ISRM Suggested Methods : 2007

Borehole Number	Depth (m)	Sample Ref	Test Type	Orientation	Dimensions (mm)		Area	D_e^2	D_e	Failure Load (P)		I_s	Corr Fac	I_{s50}	Failure Type	Remarks
				Par / Perp	W	D	(mm2)		(mm)	(Mpa)	(kN)	(MPa)	F	(MPa)		
BH113	9.60	30	A	Perp	100	47	4700	5984.23	77.36	-	1.01	0.17	1.217	0.21	Valid	
BH113	10.20	31	A	Perp	100	50	5000	6366.20	79.79	-	0.86	0.14	1.234	0.17	Valid	
BH113	11.10	32	A	Perp	100	48	4800	6111.55	78.18	-	0.94	0.15	1.223	0.19	Valid	

Note All testing carried out on samples at as received water content

Par = parallel, Perp = perpendicular, U = Random

A = Axial, D = Diametral, I = Irregular

UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

Contract No:

PSL23/4787

Client Ref:

G230651

UNIAXIAL COMPRESSIVE STRENGTH

ISRM Suggested Methods - Rock Characterization Testing and Monitoring 1974 - 2006

Borehole Number:	**BH113**	**Top Depth (m):**	**9.60**
Sample Number:	**30**	**Base Depth (m):**	**9.70**
Sample Type:	**CSS**	**Sample Date:**	**01/06/2023**
Storage Condition:	**Sealed in Core Box**	**Date of Reciept**	**20/06/2023**
Sample Description:	**Brown slightly gravelly sandy CLAY.**		

Specimen Details/Conditions	
Diameter - mm:	100.13
Height - mm:	200.20
Water Content - %:	13.0
Sample Mass - g:	3802.6
Bulk Density - Mg/m^3:	2.41
Dry Density - Mg/m^3:	2.13
Height Ratio: * Sample does not comply with H:D ratio	2.0
Degree of Saturation - %:	105
Assumed Specific Gravity for Degree of Saturation:	2.90

Test Result	
Load Frame/Machine:	CM1/Controls
Date of test:	24/07/2023
Test Duration - mins:	00:18
Orientation:	Unknown
Stress Rate - MPa/s:	0.10
Strain at Failure - kN:	14.20
Unconfined Compressive Strength - Mpa:	1.8
Mode of Failure:	Vertical Shear

Remarks: -

LABORATORY REPORT

Contract Number: PSL23/5523

Report Date: 08 August 2023

Client's Reference: G230651/Geo 24

Client Name: Strata Geotechnics
Kirkby Lane
Pinxton
Nottinghamshire
NG16 6JA

For the attention of: Izaac Lovatt

Contract Title: A46 Walsgrave

Date Received: 12/7/2023
Date Commenced: 12/7/2023
Date Completed: 8/8/2023

Notes: Opinions and Interpretations are outside the UKAS Accreditation

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Checked and Approved Signatories:

A Watkins (Director)	R Berriman (Quality Manager)	S Royle (Laboratory Manager)
[redacted] L Knight (Assistant Laboratory Manager)	S Eyre (Senior Technician)	T Watkins (Senior Technician)

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Tel: [redacted]
Email: [redacted]@prosoils.co.uk
[redacted]@prosoils.co.uk

SUMMARY OF LABORATORY SOIL DESCRIPTIONS

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Description of Sample
BH121	9	B	0.70	1.00	Brown slightly gravelly very sandy CLAY.
BH121	9	D	1.00	1.00	Brown slightly gravelly very sandy CLAY.
BH121	10	B	1.20	1.65	Brown slightly gravelly very sandy CLAY.
BH121	14	UT	2.00	2.45	Brown slightly gravelly very sandy CLAY.
BH121	17	D	3.00	3.45	Brown mottled grey very gravelly very sandy CLAY.
BH121	22	B	4.60	4.90	Brown very gravelly very clayey SAND.
BH121	23	D	4.90	5.35	Brown very gravelly very clayey SAND.
BH122	6	D	0.80	0.80	Brown slightly gravelly sandy CLAY.
BH122	7	B	1.00	1.00	Brown slightly gravelly sandy CLAY.
BH122	10	UT	1.50	1.95	Brown slightly gravelly sandy CLAY.
BH122	14	D	2.20	2.20	Brown slightly gravelly very sandy CLAY.
BH122	16	B	2.50	3.00	Brown slightly gravelly very sandy CLAY.
BH122	17	D	3.20	3.20	Brown gravelly very sandy CLAY.
BH122	24	B	5.50	6.00	Brown very gravelly very clayey SAND.
BH122	26	B	7.00	7.50	Brown slightly gravelly very sandy CLAY.
BH122	35	B	12.00	12.50	Brown slightly gravelly very sandy CLAY.

SUMMARY OF SOIL CLASSIFICATION TESTS

(BS1377 : PART 2 : 1990)

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Moisture Content % Clause 3.2	Linear Shrinkage % Clause 6.5	Particle Density Mg/m^3 Clause 8.2	Liquid Limit % Clause 4.3/4	Plastic Limit % Clause 5.3	Plasticity Index % Clause 5.4	Passing .425mm %	Remarks
BH121	9	D	1.00	1.00	20			30	16	14	95	Low Plasticity CL
BH121	17	D	3.00	3.45	8.9			27	13	14	63	Low Plasticity CL
BH121	23	D	4.90	5.35	16			25	12	13	47	Low Plasticity CL
BH122	6	D	0.80	0.80	23			48	22	26	98	Intermediate Plasticity CI
BH122	14	D	2.20	2.20	17			29	14	15	86	Low Plasticity CL

SYMBOLS : **NP : Non Plastic** *** : Liquid Limit and Plastic Limit Wet Sieved.**

UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

Contract No:
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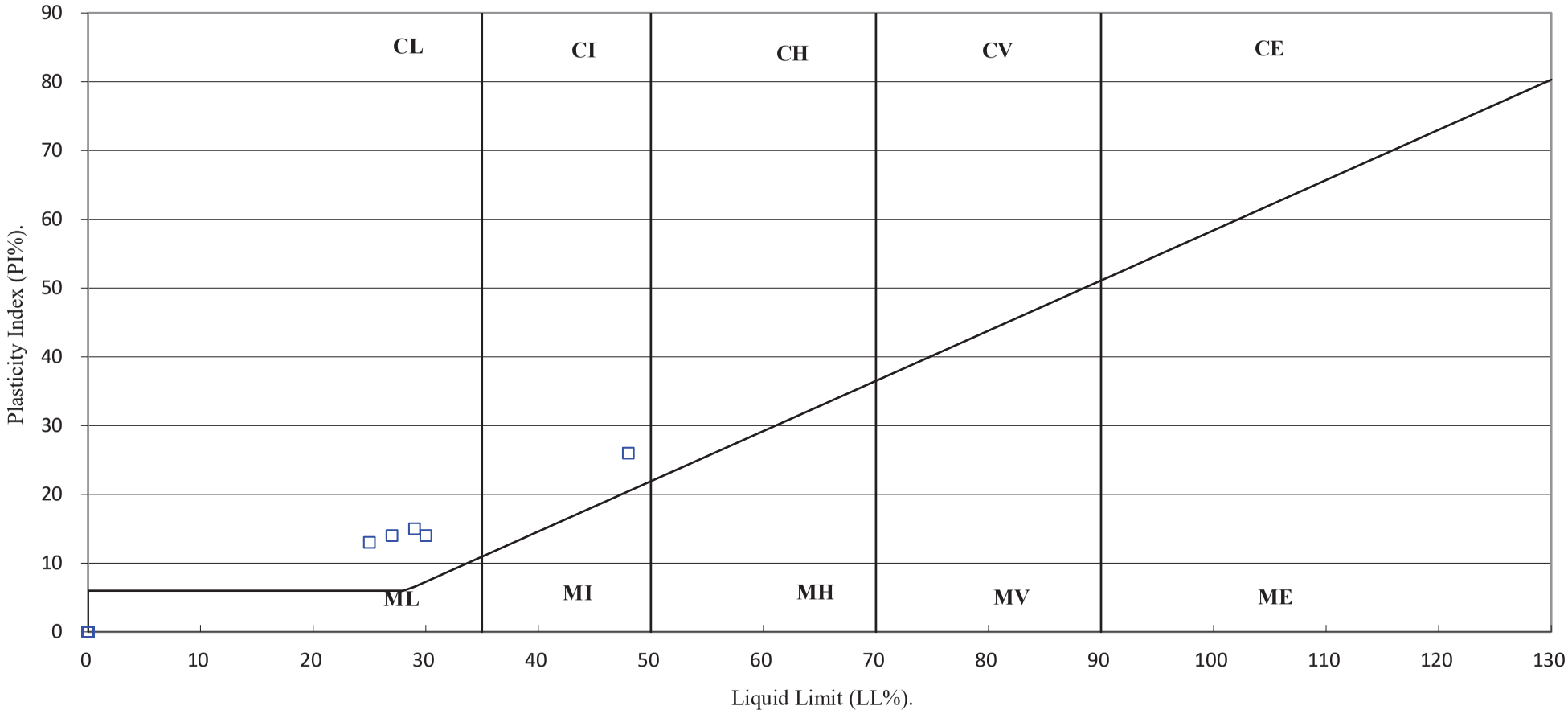
PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION.



UKAS TESTING 4043	PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY	**A46 Walsgrave**

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SUMMARY OF SOIL DENSITY RELATED TESTS

(BS1377 : PART 2 & 4 : 1990)

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Moisture Content %	Bulk Density Mg/m^3	Dry Density Mg/m^3	Retained 20mm %	Retained 37.5mm %	Method of compaction kg	Maximum Dry Density Mg/m^3	Minimum Dry Density Mg/m^3	Remarks
BH121	10	B	1.20	1.65	20	2.08	1.73						
BH122	14	D	2.20	2.20	17	2.12	1.81						
BH122	17	D	3.20	3.20	12	2.28	2.04						
BH122	24	B	5.50	6.00	15	2.33	2.03						

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PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

Contract No: PSL23/5523

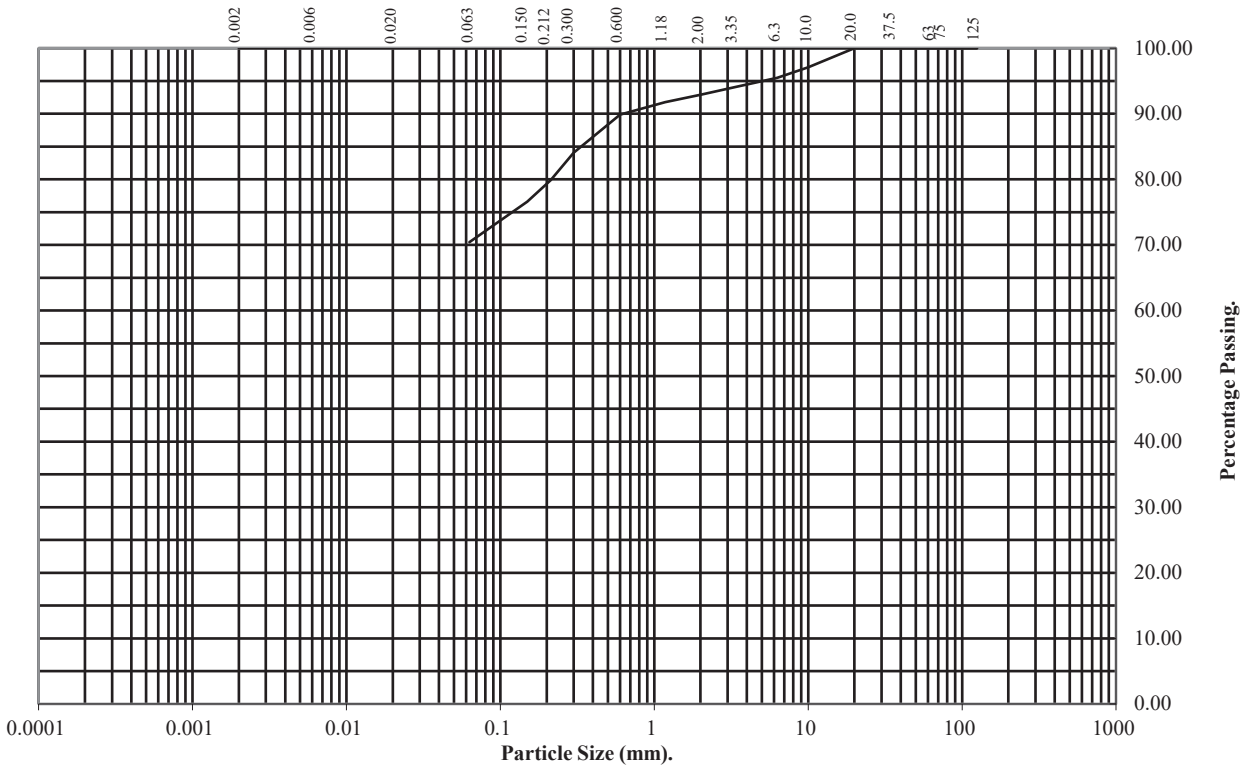
Client Ref: G230651

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number:	**BH121**	**Top Depth (m):**	**0.70**
Sample Number:	**9**	**Base Depth(m):**	**1.00**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	97
6.3	96
3.35	94
2	93
1.18	92
0.6	90
0.3	84
0.212	80
0.15	77
0.063	70

Soil Fraction	Total Percentage
Cobbles	0
Gravel	7
Sand	23
Silt/Clay	70

Remarks:
See Summary of Soil Descriptions

UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

Contract No:
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Client Ref:
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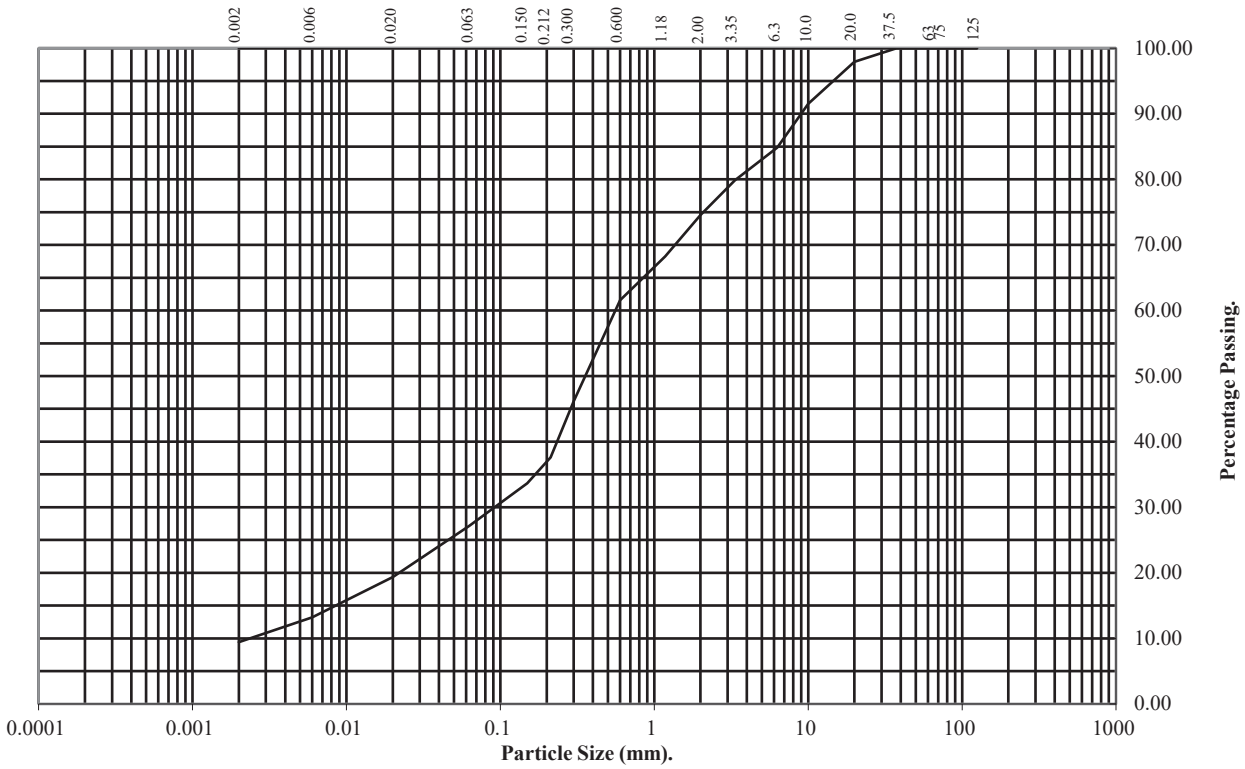
PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

Hole Number:	**BH121**	**Top Depth (m):**	**4.60**
Sample Number:	**22**	**Base Depth(m):**	**4.90**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	98
10	92
6.3	85
3.35	80
2	75
1.18	68
0.6	62
0.3	46
0.212	38
0.15	34
0.063	27

Particle Diameter	Percentage Passing
0.02	19
0.006	13
0.002	9

Soil Fraction	Total Percentage
Cobbles	0
Gravel	25
Sand	48
Silt	18
Clay	9

Remarks:
See Summary of Soil Descriptions

UKAS TESTING 4043

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Contract No:
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Client Ref:
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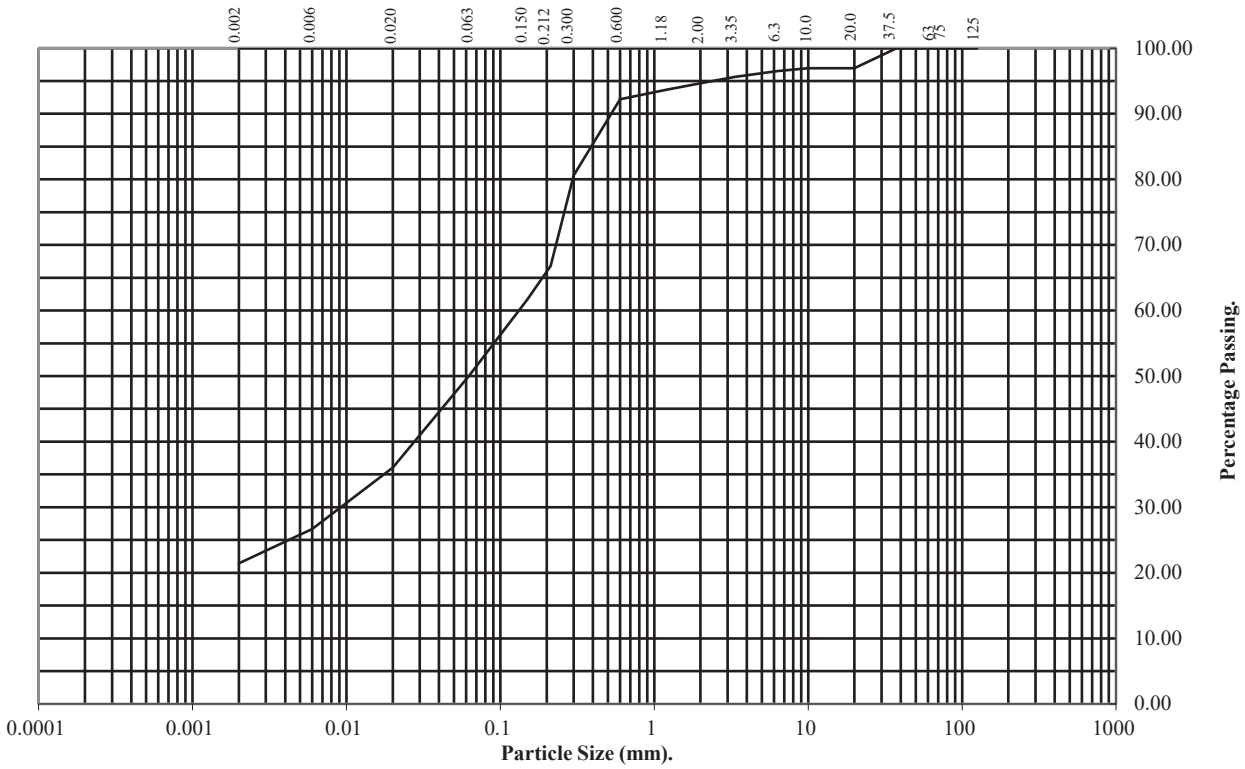
PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

Hole Number:	**BH122**	**Top Depth (m):**	**2.20**
Sample Number:	**14**	**Base Depth(m):**	**2.20**
Sample Type:	**D**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	97
10	97
6.3	96
3.35	96
2	95
1.18	94
0.6	92
0.3	81
0.212	67
0.15	62
0.063	50

Particle Diameter	Percentage Passing
0.02	36
0.006	27
0.002	21

Soil Fraction	Total Percentage
Cobbles	0
Gravel	5
Sand	45
Silt	29
Clay	21

Remarks:
See Summary of Soil Descriptions

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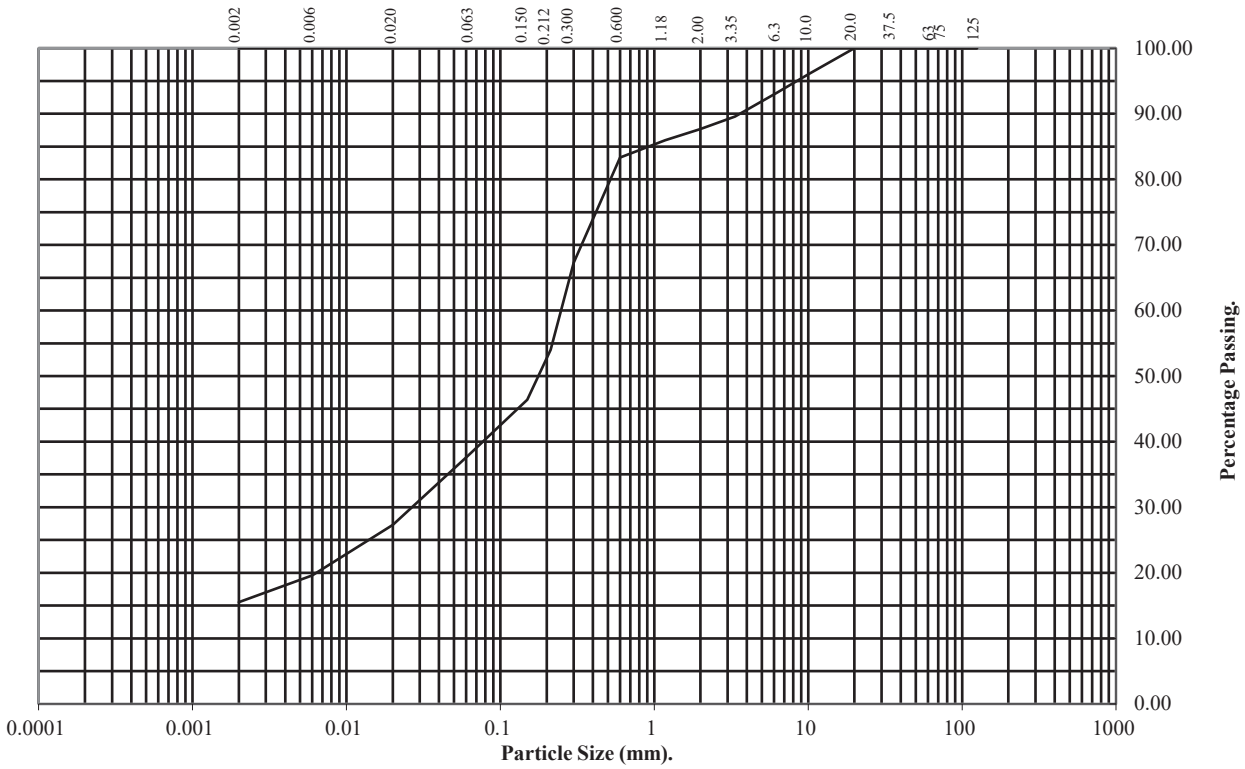
PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

Hole Number:	**BH122**	**Top Depth (m):**	**3.20**
Sample Number:	**17**	**Base Depth(m):**	**3.20**
Sample Type:	**D**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	96
6.3	93
3.35	90
2	88
1.18	86
0.6	83
0.3	67
0.212	54
0.15	46
0.063	38

Particle Diameter	Percentage Passing
0.02	27
0.006	20
0.002	16

Soil Fraction	Total Percentage
Cobbles	0
Gravel	12
Sand	50
Silt	22
Clay	16

Remarks:
See Summary of Soil Descriptions

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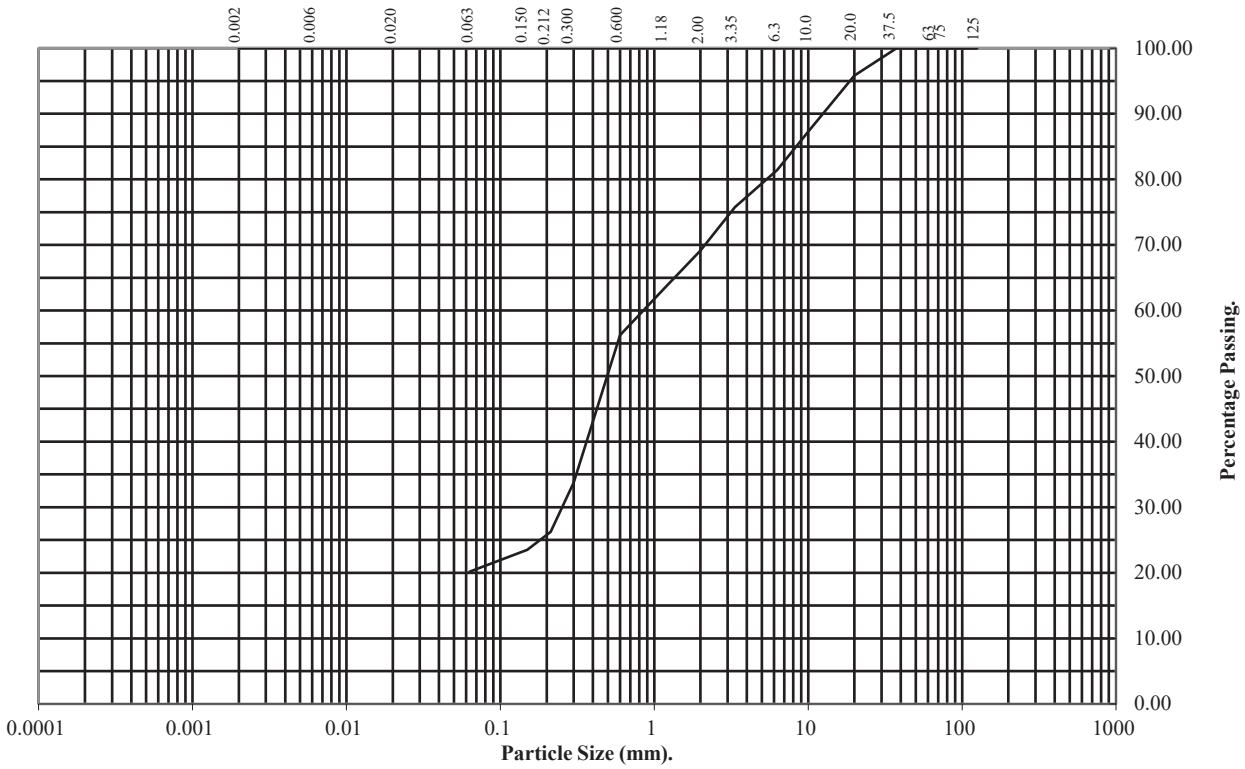
PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number:	**BH122**	**Top Depth (m):**	**5.50**
Sample Number:	**24**	**Base Depth(m):**	**6.00**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	96
10	87
6.3	81
3.35	76
2	69
1.18	64
0.6	56
0.3	34
0.212	26
0.15	23
0.063	20

Soil Fraction	Total Percentage
Cobbles	0
Gravel	31
Sand	49
Silt/Clay	20

Remarks:

See Summary of Soil Descriptions

UKAS TESTING 4043

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Contract No:
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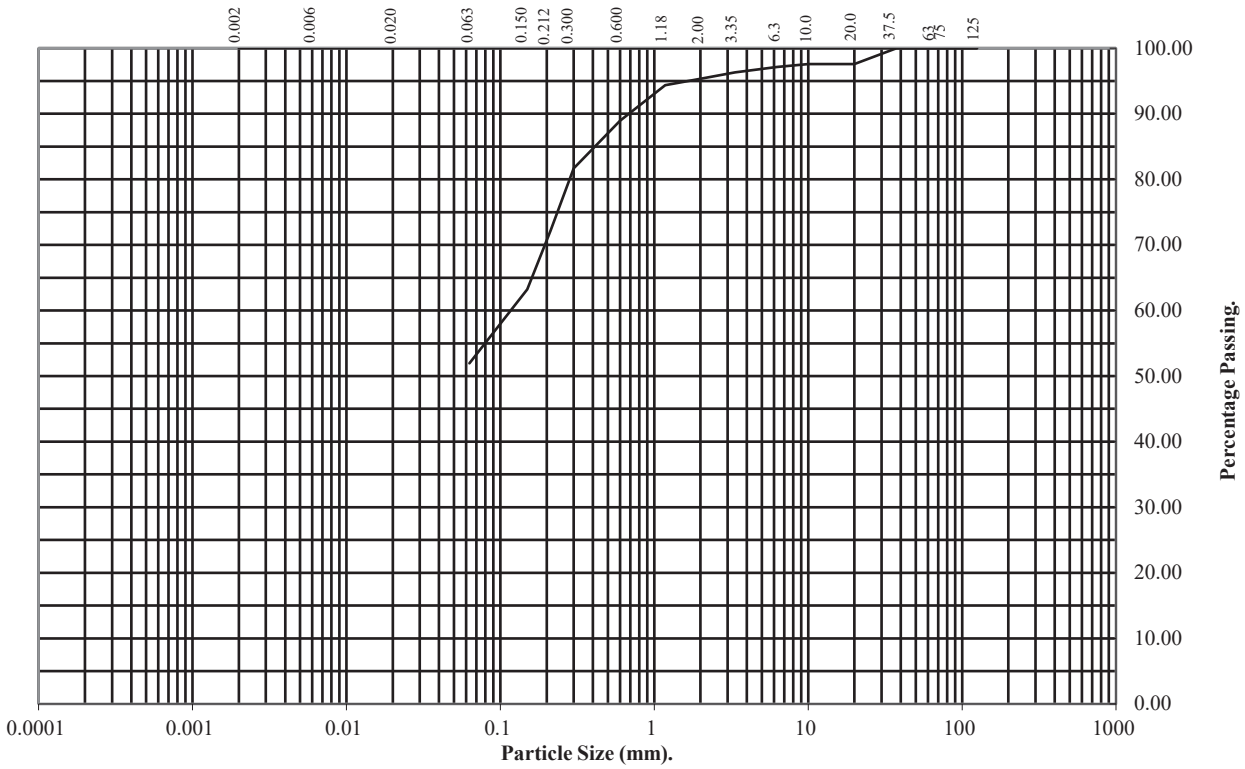
PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number:	**BH122**	**Top Depth (m):**	**12.00**
Sample Number:	**35**	**Base Depth(m):**	**12.50**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	98
10	98
6.3	97
3.35	96
2	95
1.18	94
0.6	89
0.3	82
0.212	72
0.15	63
0.063	52

Soil Fraction	Total Percentage
Cobbles	0
Gravel	5
Sand	43
Silt/Clay	52

Remarks:
See Summary of Soil Descriptions

UKAS TESTING 4043

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A46 Walsgrave

Contract No:
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Client Ref:
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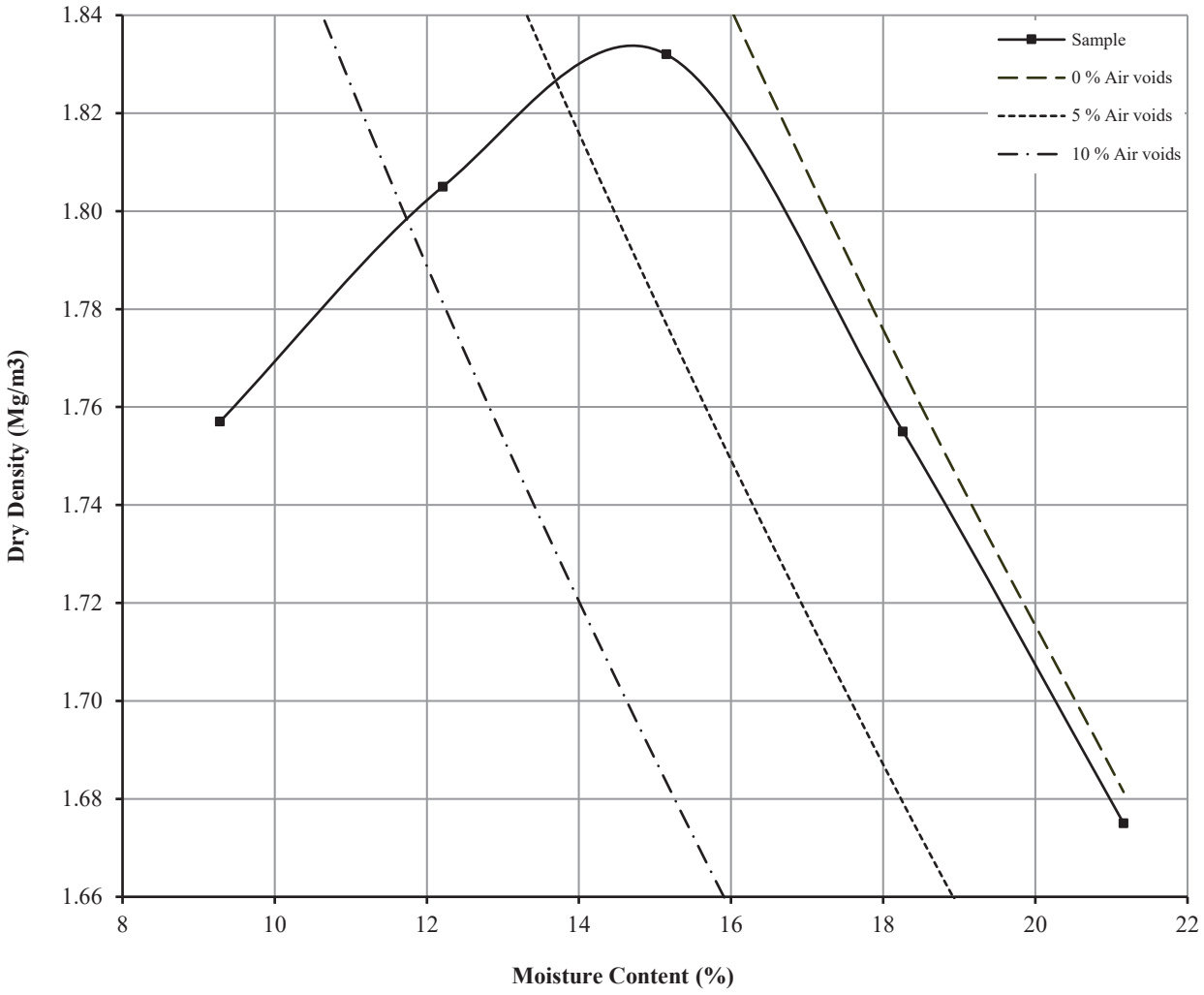
DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

BS 1377 : Part 4 : Clause 3.3 : 1990

Hole Number:	**BH121**	**Top Depth (m) :**	**0.70**
Sample Number:	**9**	**Base Depth (m) :**	**1.00**
Sample Type:	**B**		



Initial Moisture Content:		18	Method of Compaction:	2.5kg	Separate Samples
Particle Density (Mg/m3):	2.61	Assumed	Material Retained on 37.5 mm Test Sieve (%):		0
Maximum Dry Density (Mg/m3):		1.83	Material Retained on 20.0 mm Test Sieve (%):		0
Optimum Moisture Content (%):		15			
Remarks See summary of soil descriptions					

UKAS TESTING 4043

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Contract
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Client Ref
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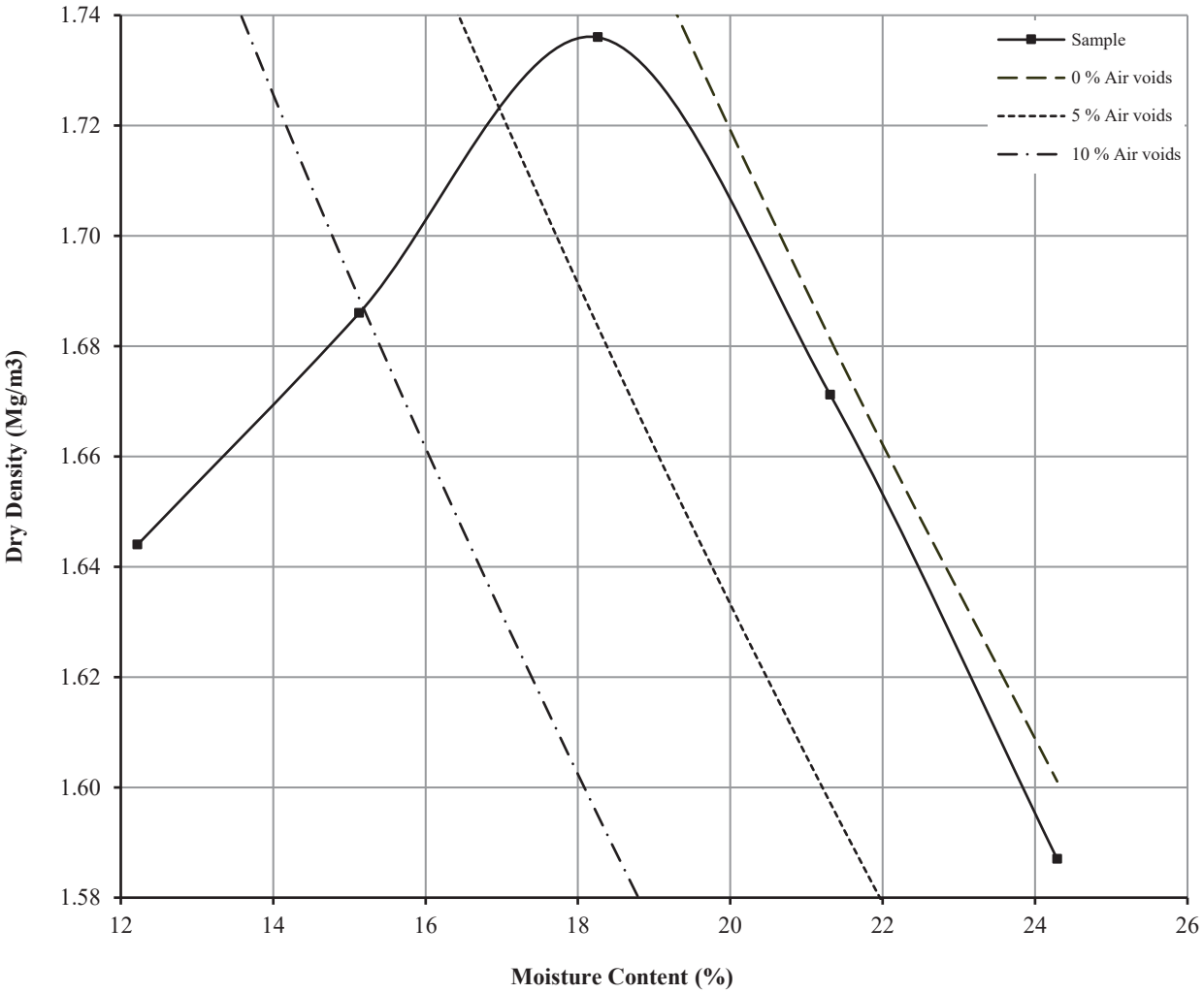
DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

BS 1377 : Part 4 : Clause 3.3 : 1990

Hole Number:	**BH122**	**Top Depth (m) :**	**1.00**
Sample Number:	**7**	**Base Depth (m) :**	**1.00**
Sample Type:	**B**		



Initial Moisture Content:		15	Method of Compaction:	2.5kg	Separate Samples
Particle Density (Mg/m3):	2.62	Assumed	Material Retained on 37.5 mm Test Sieve (%):		0
Maximum Dry Density (Mg/m3):		1.74	Material Retained on 20.0 mm Test Sieve (%):		0
Optimum Moisture Content (%):		18			
Remarks See summary of soil descriptions					

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Contract
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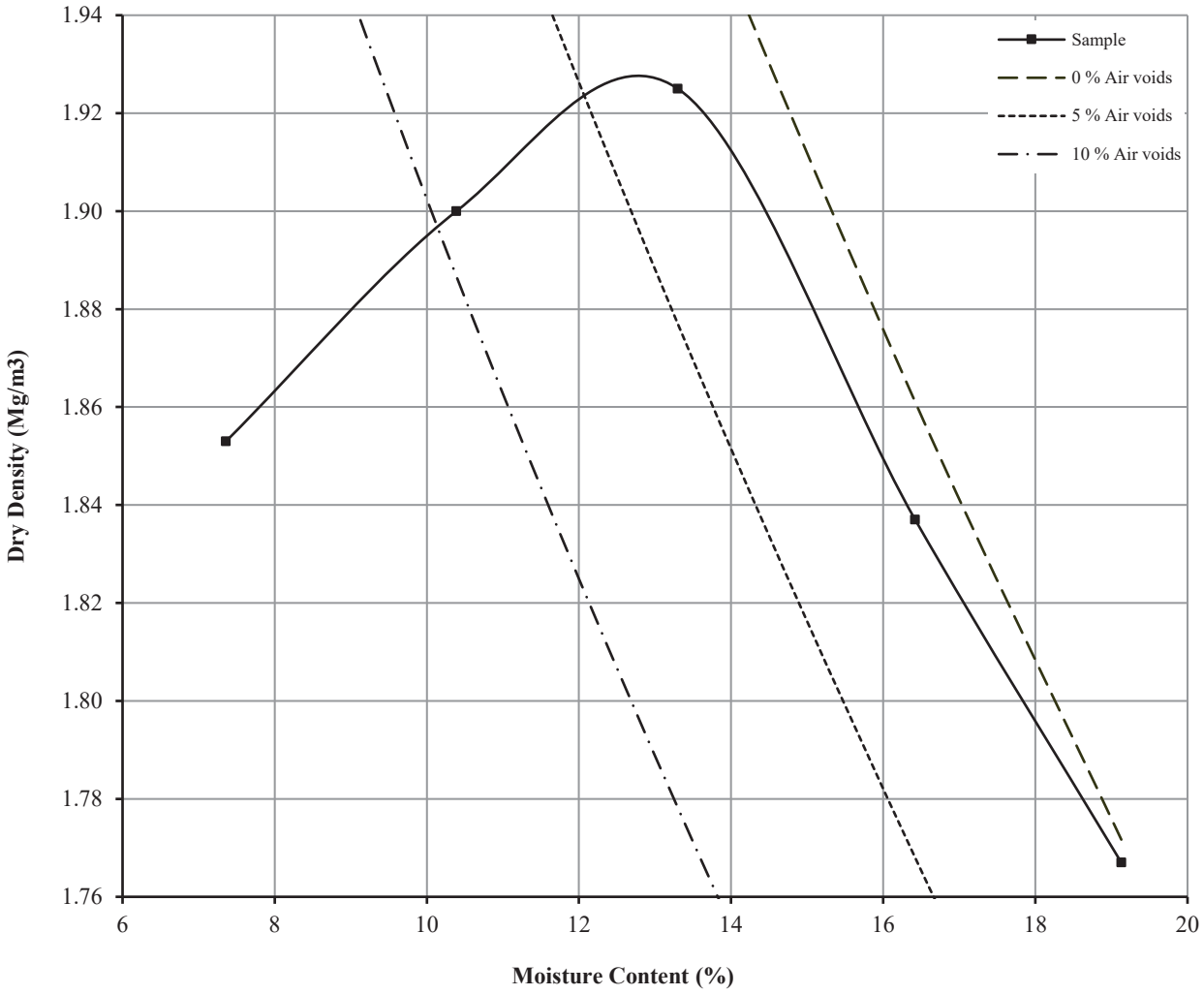
DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

BS 1377 : Part 4 : Clause 3.3 : 1990

Hole Number:	**BH122**	**Top Depth (m) :**	**2.50**
Sample Number:	**16**	**Base Depth (m) :**	**3.00**
Sample Type:	**B**		



Initial Moisture Content:		16	Method of Compaction:	2.5kg	Separate Samples
Particle Density (Mg/m3):	2.68	Assumed	Material Retained on 37.5 mm Test Sieve (%):		1
Maximum Dry Density (Mg/m3):		1.93	Material Retained on 20.0 mm Test Sieve (%):		4
Optimum Moisture Content (%):		13			
Remarks See summary of soil descriptions					

UKAS TESTING 4043

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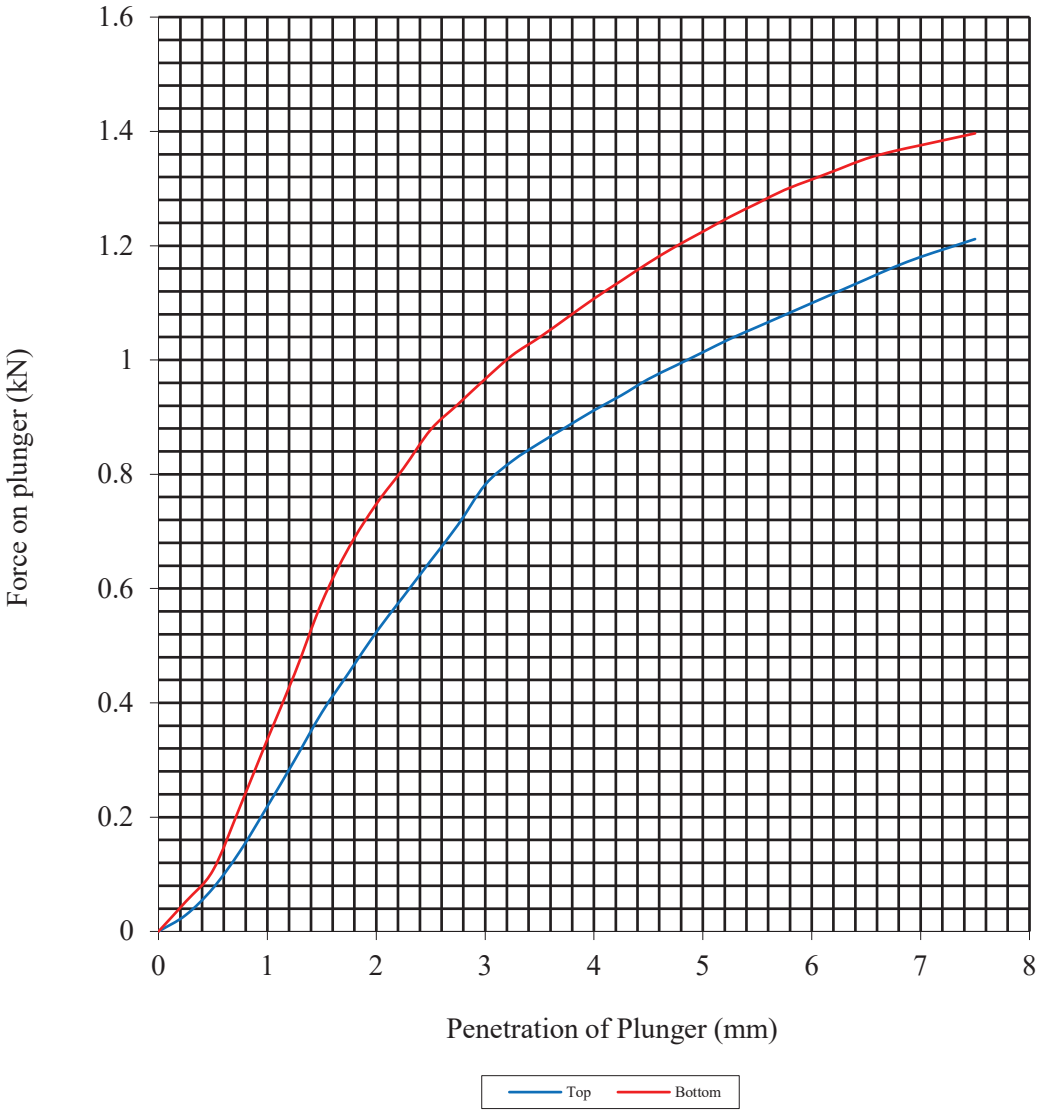
CALIFORNIA BEARING RATIO TEST

BS 1377 : Part 4 : 1990

Hole Number:	**BH121**	**Top Depth (m):**	**0.70**
Sample Number:	**9**	**Base Depth (m):**	**1.00**
Sample Type:	**B**		



Initial Sample Conditions		Sample Preparation		Final Moisture Content %		C.B.R. Value %	
Moisture Content:	18	Surcharge Kg:	4.00	Sample Top	18	Sample Top	5.1
Bulk Density Mg/m3:	2.08	Soaking Time hrs	0	Sample Bottom	18	Sample Bottom	6.7
Dry Density Mg/m3:	1.76	Swelling mm:	0	Remarks : See Summary of Soil Descriptions.			
Percentage retained on 20mm BS test sieve:			0				
Compaction Conditions		2.5kg					

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PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

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Contract No:
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Client Ref:
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ONE DIMENSIONAL CONSOLIDATION TEST

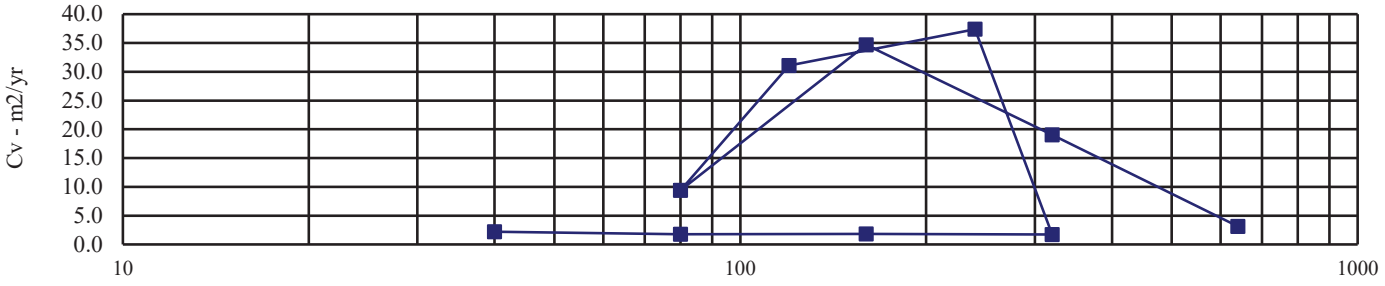
BS 1377: Part 5: 1990: Clause 3

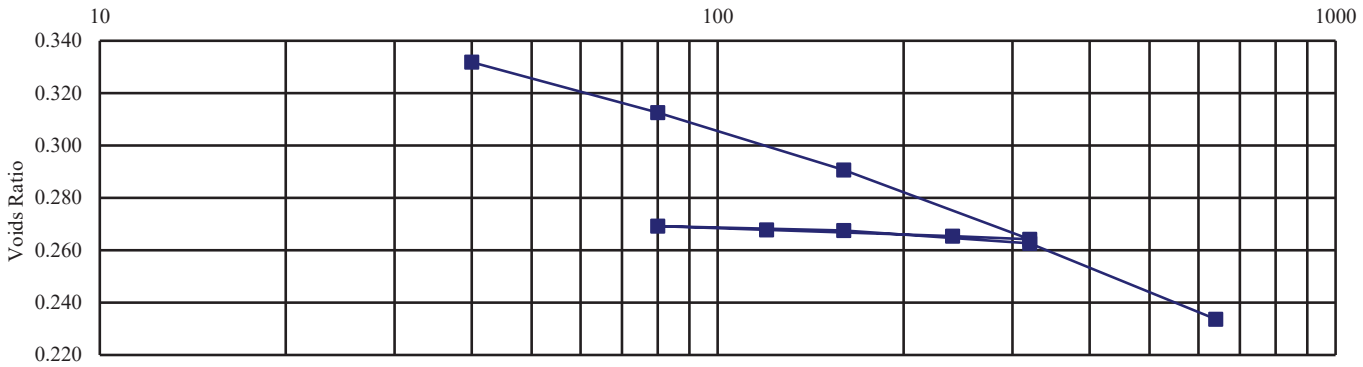
Hole Number: BH121 **Top Depth (m):** 2.00

Sample Number: 14 **Base Depth (m) :** 2.45

Sample Type: UT

Initial Conditions		Pressure Range kPa		Mv m2/MN	Cv m2/yr	Specimen location within tube:	Top
Moisture Content (%):	13						
Bulk Density (Mg/m3):	2.20	0	40	0.626	2.213	Method used to determine CV:	T90
Dry Density (Mg/m3):	1.94	40	80	0.360	1.755		
Voids Ratio:	0.366	80	160	0.209	1.817	Nominal temperature during test ' C:	20
Degree of saturation:	96.3	160	320	0.128	1.729		
Height (mm):	20.016	320	240	0.011	37.378	Remarks: See summary of soil descriptions	
Diameter (mm)	75.023	240	120	0.016	31.058		
Particle Density (Mg/m3): Assumed	2.65	120	80	0.028	9.423		
		80	160	0.016	34.700		
		160	320	0.024	19.016		
		320	640	0.072	3.159		





UKAS TESTING 4043 / PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY	A46 Walsgrave	Contract No: PSL23/5523 Client Ref: G230651

ONE DIMENSIONAL CONSOLIDATION TEST

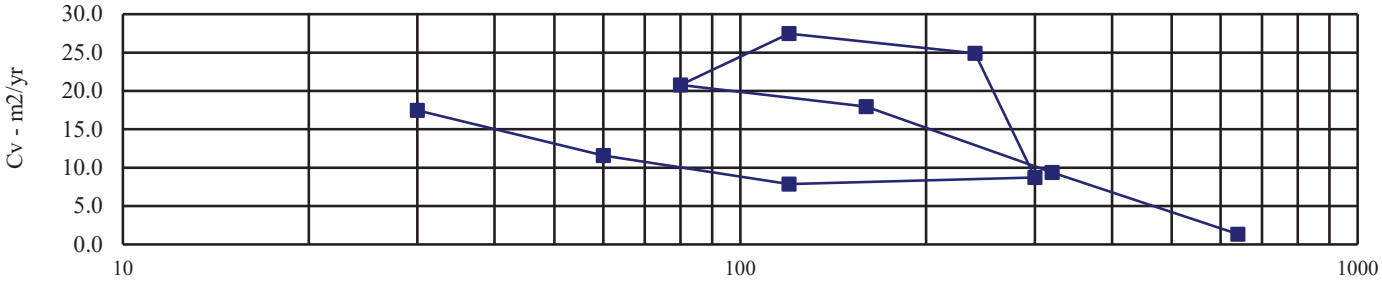
BS 1377: Part 5: 1990: Clause 3

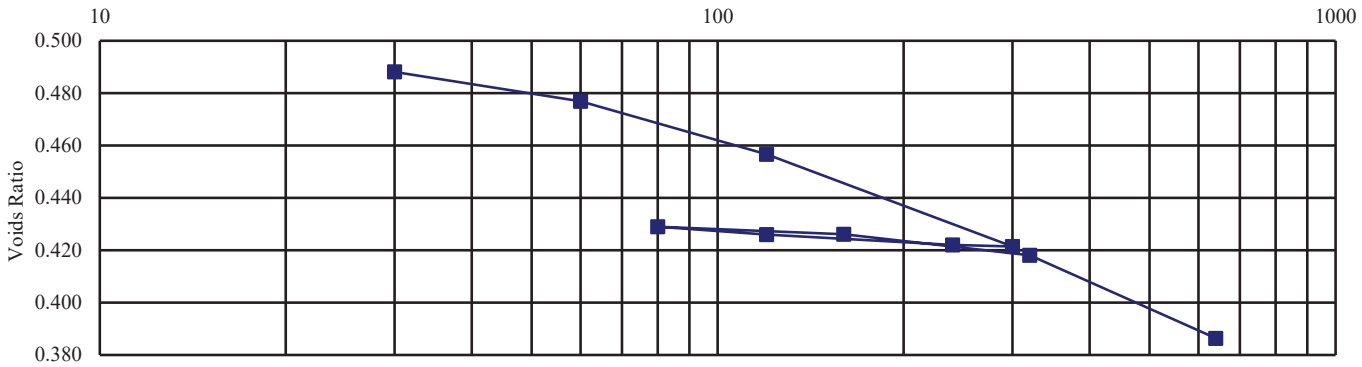
Hole Number: BH122 **Top Depth (m):** 1.50

Sample Number: 10 **Base Depth (m) :** 1.95

Sample Type: UT

Initial Conditions		Pressure Range kPa		Mv m2/MN	Cv m2/yr	Specimen location within tube:	Top
Moisture Content (%):	18						
Bulk Density (Mg/m3):	2.08	0	30	0.351	17.472	Method used to	
Dry Density (Mg/m3):	1.76	30	60	0.251	11.575	determine CV:	T90
Voids Ratio:	0.504	60	120	0.228	7.858	Nominal temperature	
Degree of saturation:	95.5	120	300	0.134	8.708	during test ' C:	20
Height (mm):	20.01	300	240	0.007	24.917	Remarks:	
Diameter (mm)	75.033	240	120	0.023	27.461	See summary of soil descriptions	
Particle Density (Mg/m3): Assumed	2.65	120	80	0.053	20.758		
		80	160	0.026	17.965		
		160	320	0.035	9.386		
		320	640	0.070	1.343		





UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

Contract No: PSL23/5523

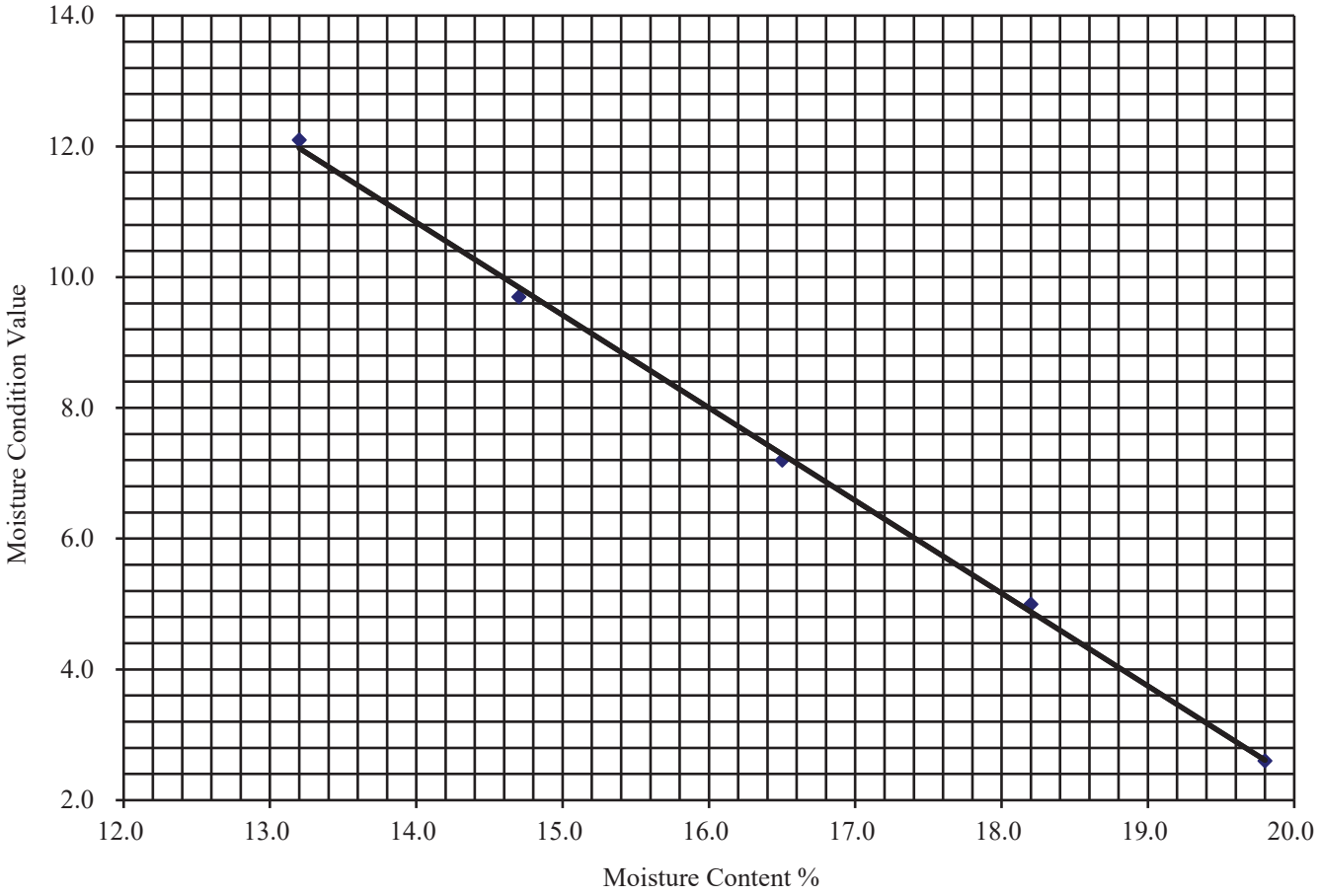
Client Ref: G230651

MOISTURE CONDITION VALUE CALIBRATION

BS1377 : Part 4 : 1990 Clause 5.5

Hole Number:	**BH121**	**Top Depth (m):**	**0.70**
Sample Number:	**9**	**Base Depth (m):**	**1.00**
Sample Type:	**B**		

Initial Moisture Content (%):	18
Single/Separate Samples Tested	Separate
Material Retained on the 20mm BS Test Sieve (%):	0



Test Results.

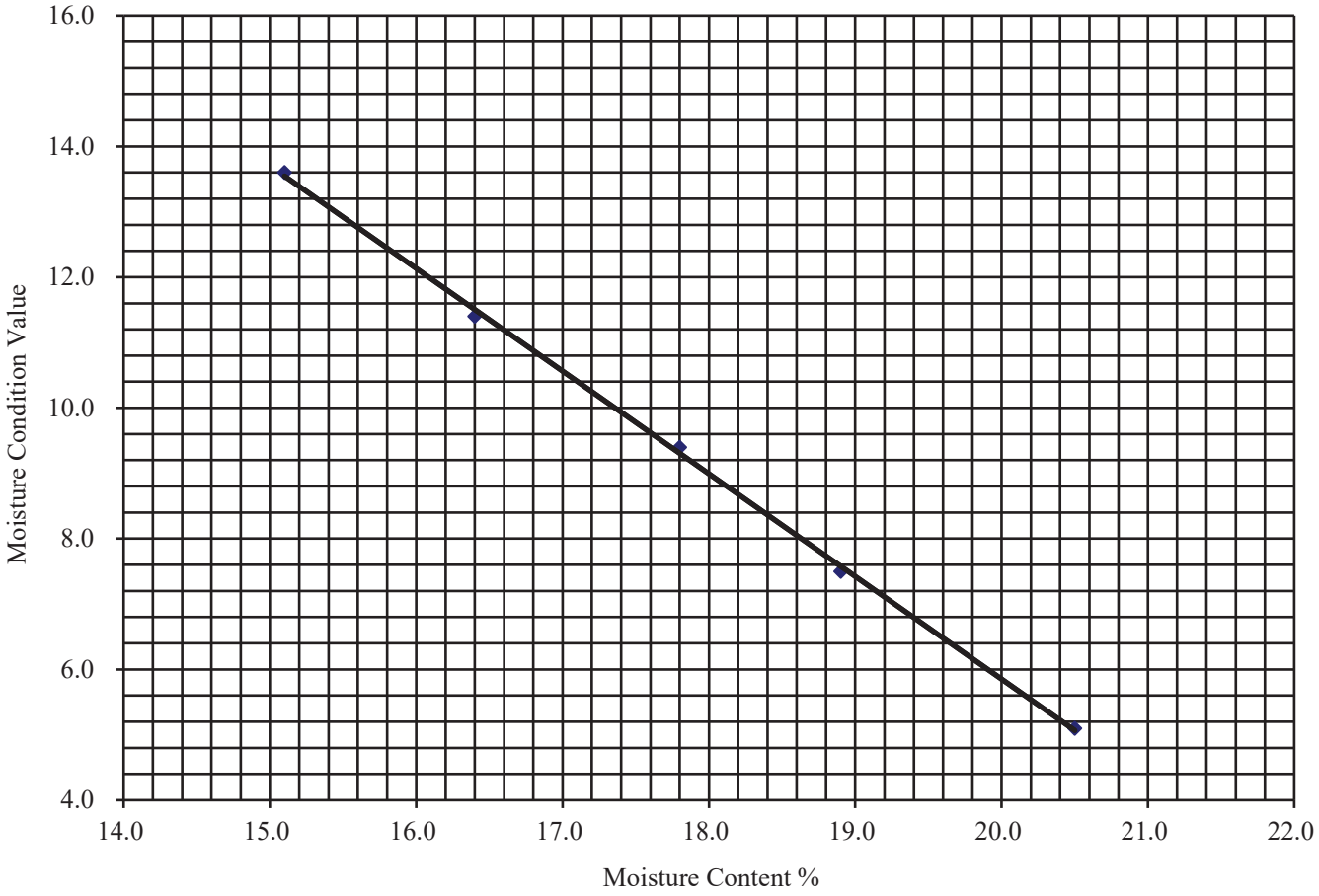
Test Number	1	2	3	4	5
Moisture Content (%)	13.2	14.7	16.5	18.2	19.8
MCV	12.1	9.7	7.2	5.0	2.6

MOISTURE CONDITION VALUE CALIBRATION

BS1377 : Part 4 : 1990 Clause 5.5

Hole Number:	**BH122**	**Top Depth (m):**	**1.00**
Sample Number:	**7**	**Base Depth (m):**	**1.00**
Sample Type:	**B**		

Initial Moisture Content (%):	15
Single/Separate Samples Tested	Separate
Material Retained on the 20mm BS Test Sieve (%):	0



Test Results.

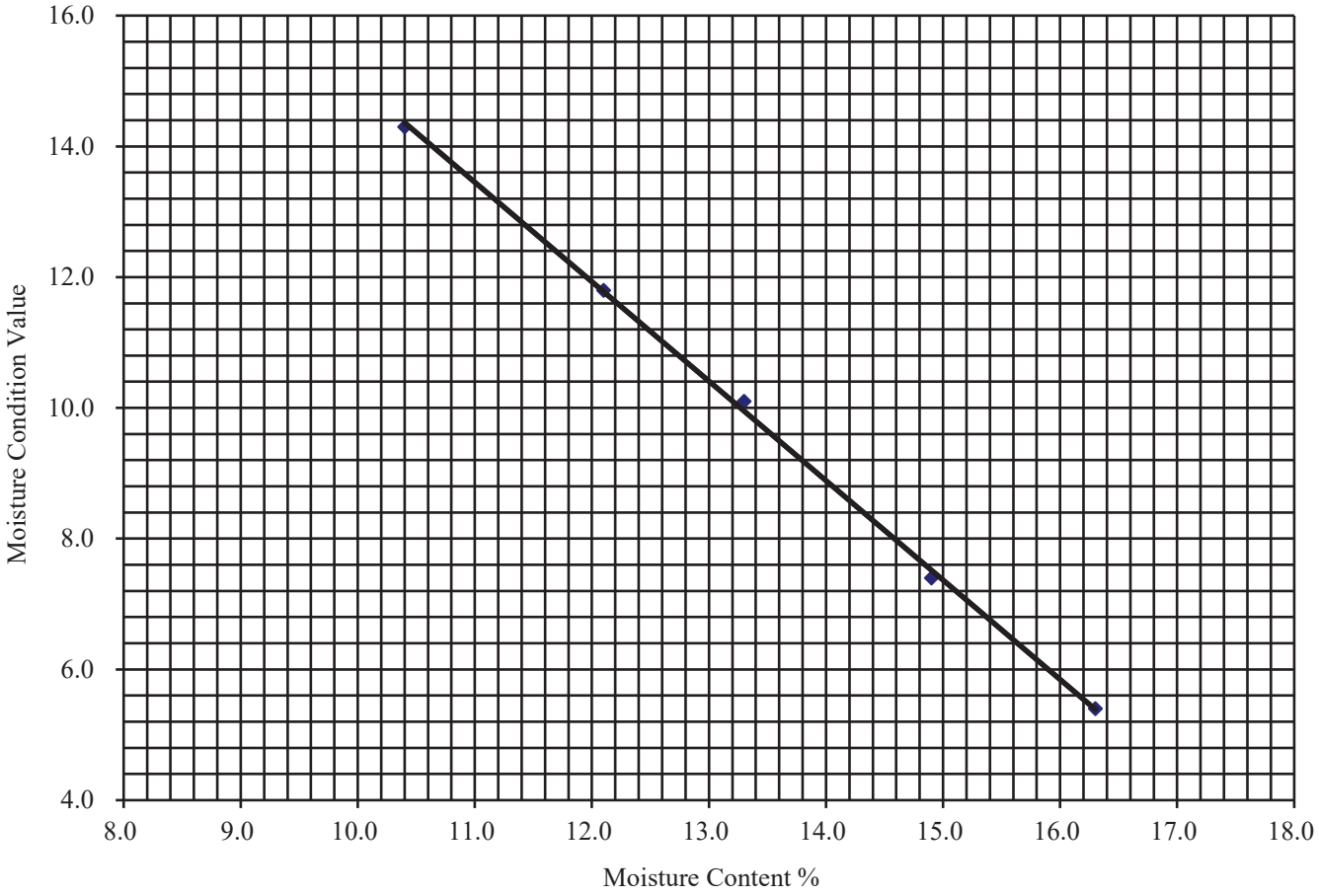
Test Number	1	2	3	4	5
Moisture Content (%)	15.1	16.4	17.8	18.9	20.5
MCV	13.6	11.4	9.4	7.5	5.1

MOISTURE CONDITION VALUE CALIBRATION

BS1377 : Part 4 : 1990 Clause 5.5

Hole Number:	**BH122**	**Top Depth (m):**	**2.50**
Sample Number:	**16**	**Base Depth (m):**	**3.00**
Sample Type:	**B**		

Initial Moisture Content (%):	16
Single/Separate Samples Tested	Separate
Material Retained on the 20mm BS Test Sieve (%):	5



Test Results.

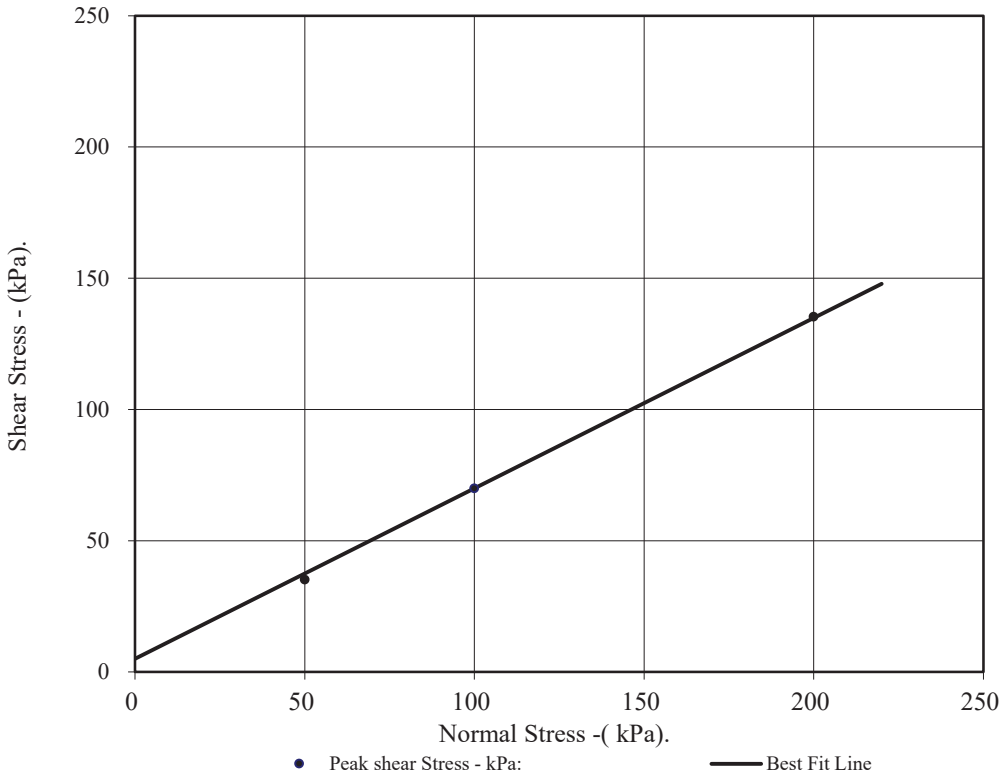
Test Number	1	2	3	4	5
Moisture Content (%)	10.4	12.1	13.3	14.9	16.3
MCV	14.3	11.8	10.1	7.4	5.4

CONSOLIDATED DRAINED SHEARBOX TEST

BS1377:Part 7:1990 Clause 4

Hole Number:	**BH122**		Top Depth:	**1.00**	
Sample Number:	**7**		Base Depth:		
Sample Conditions:	Submerged		Sample Type	**B**	
Particle Density - Mg/m3:	2.62	Assumed	**Remarks:**		
Sample Preparation:	Material tested passing 2mm sieve Remoulded using 2.5kg effort.				
Sample Description:	**See summary of soil descriptions.**				

STAGE	**1**	**2**	**3**
Initial Conditions			
Height - mm:	20.05	20.05	20.05
Length - mm:	59.97	59.97	59.97
Moisture Content - %:	15	15	15
Bulk Density - Mg/m3:	1.86	1.86	1.86
Dry Density - Mg/m3:	1.61	1.61	1.61
Voids Ratio:	0.623	0.623	0.623
Normal Pressure- kPa	50	100	200
Consolidation Stage			
Consolidated Height - mm:	18.75	18.02	16.64
Shearing Stage			
Rate of Strain - mm/min	0.042	0.042	0.042
Displacement at peak shear stress - mm	6.91	6.31	6.61
Peak shear Stress - kPa:	35	70	135
Final Consolidated Conditions			
Moisture Content - %:	20	19	18
Bulk Density - Mg/m3:	1.99	2.07	2.24
Dry Density - Mg/m3:	1.65	1.73	1.90
Peak			
Angle of Shearing Resistance:(~~θ~~)	**33**		
Effective Cohesion - kPa:	**5**		

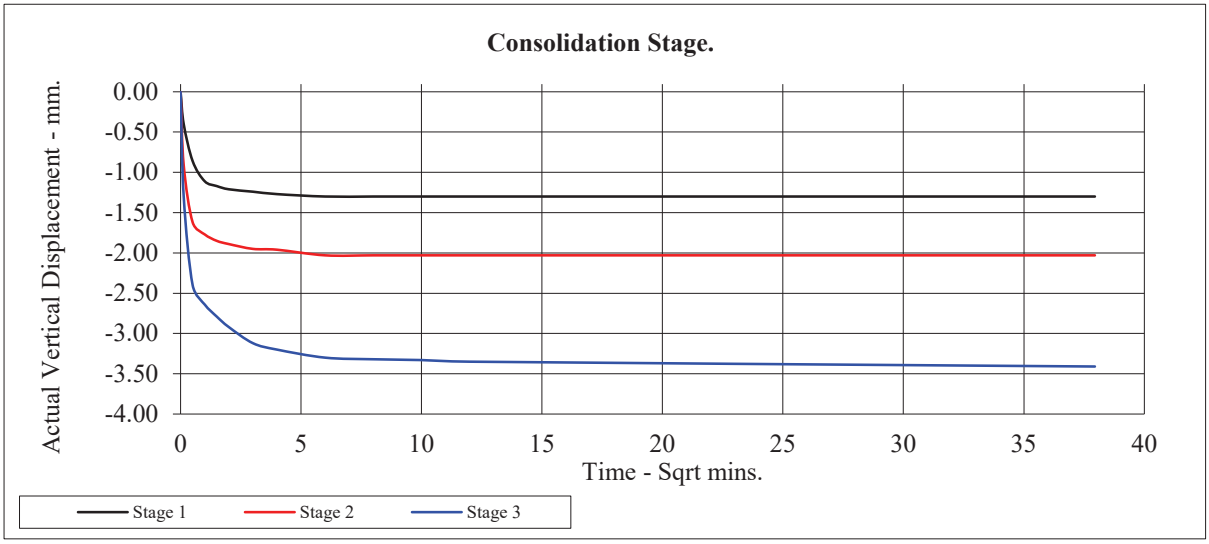


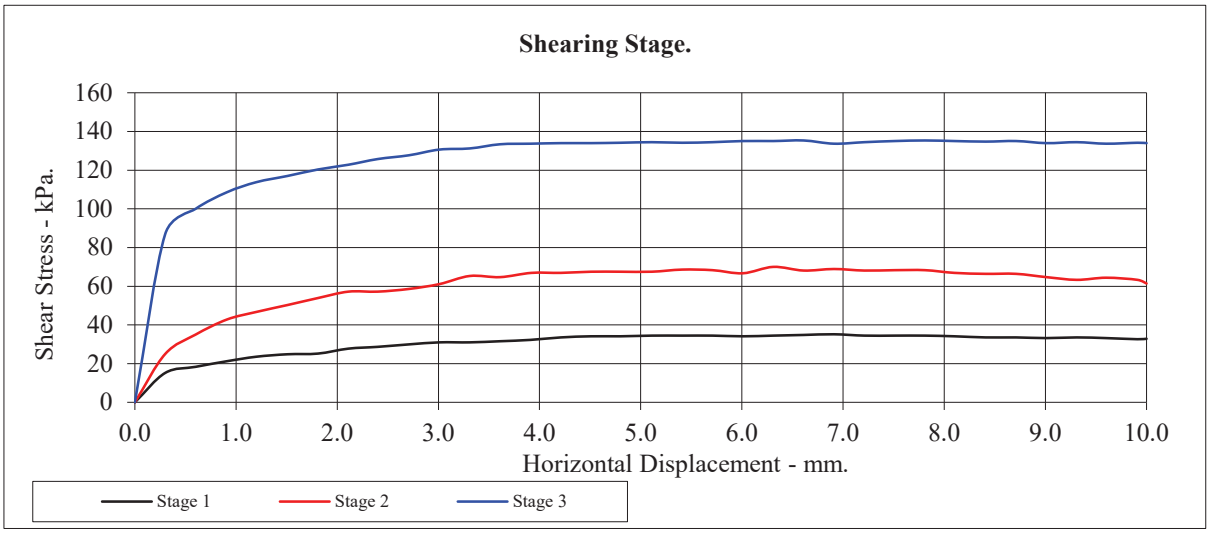
UKAS TESTING 4043 / PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY	**A46 Walsgrave**	**Contract No:** PSL23/5523 **Client Ref:** G230651

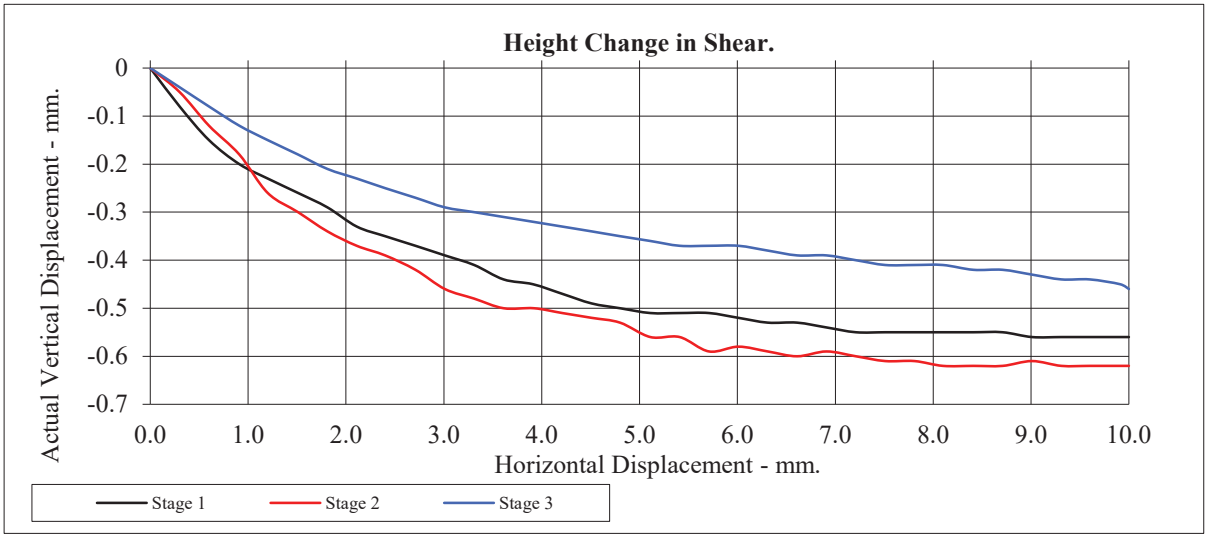
CONSOLIDATED DRAINED SHEARBOX TEST

BS1377:Part 7:1990 Clause 4

Hole Number:	**BH122**	Top Depth:	**1.00**
Sample Number:	**7**	Base Depth:	







UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

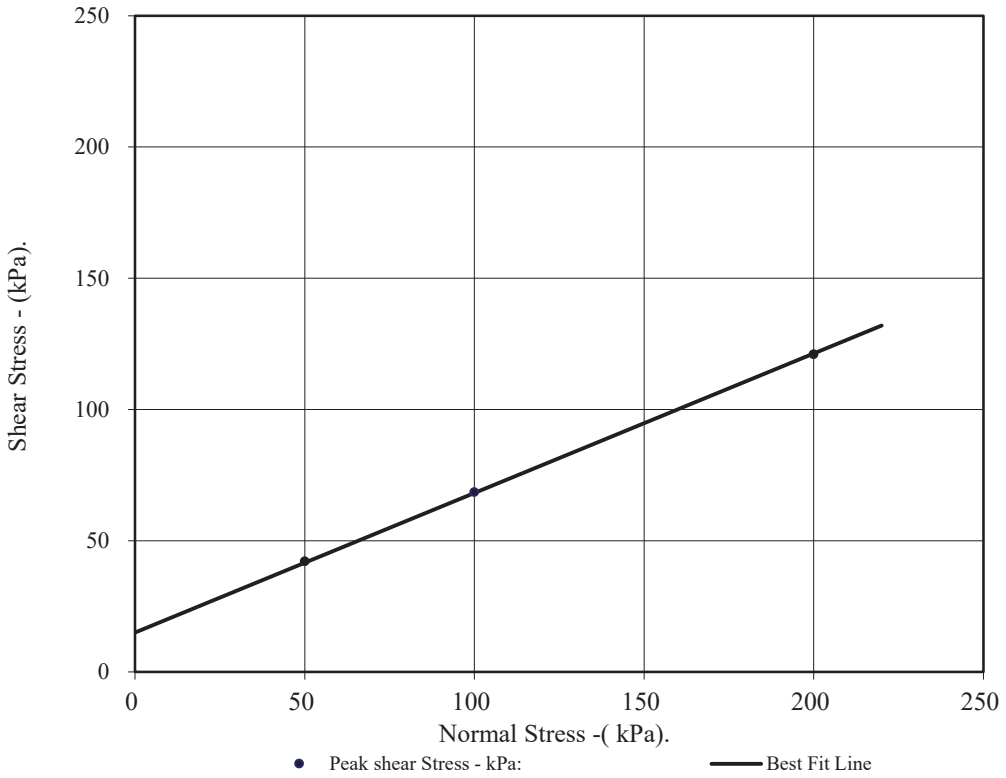
Contract No:
PSL23/5523
Client Ref:
G230651

CONSOLIDATED DRAINED SHEARBOX TEST

BS1377:Part 7:1990 Clause 4

Hole Number:	**BH122**		Top Depth:	**2.50**	
Sample Number:	**16**		Base Depth:	**3.00**	
Sample Conditions:	Submerged		Sample Type	**B**	
Particle Density - Mg/m3:	2.68	Assumed	**Remarks:**		
Sample Preparation:	Material tested passing 2mm sieve Remoulded using 2.5kg effort.				
Sample Description:	**See summary of soil descriptions.**				

STAGE	**1**	**2**	**3**
Initial Conditions			
Height - mm:	20.05	20.05	20.05
Length - mm:	59.97	59.97	59.97
Moisture Content - %:	16	16	16
Bulk Density - Mg/m3:	2.07	2.04	2.06
Dry Density - Mg/m3:	1.79	1.77	1.78
Voids Ratio:	0.495	0.515	0.505
Normal Pressure- kPa	50	100	200
Consolidation Stage			
Consolidated Height - mm:	19.67	19.22	18.46
Shearing Stage			
Rate of Strain - mm/min	0.042	0.042	0.042
Displacement at peak shear stress - mm	3.91	5.71	10.00
Peak shear Stress - kPa:	42	69	121
Final Consolidated Conditions			
Moisture Content - %:	17	16	15
Bulk Density - Mg/m3:	2.11	2.13	2.23
Dry Density - Mg/m3:	1.80	1.83	1.94
Peak			
Angle of Shearing Resistance:(~~θ~~)	**28**		
Effective Cohesion - kPa:	**15**		

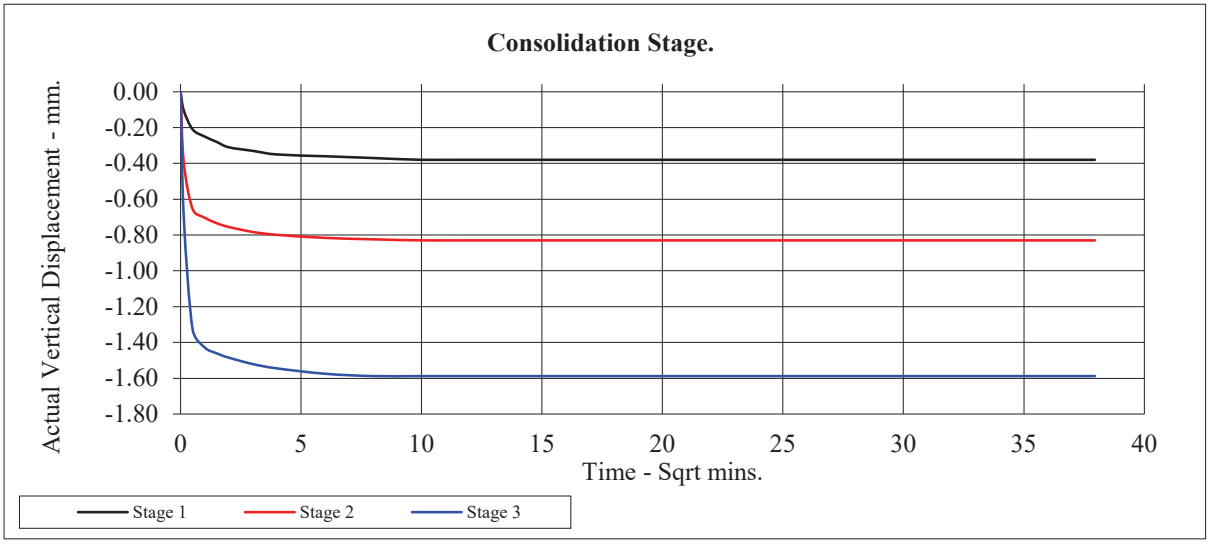


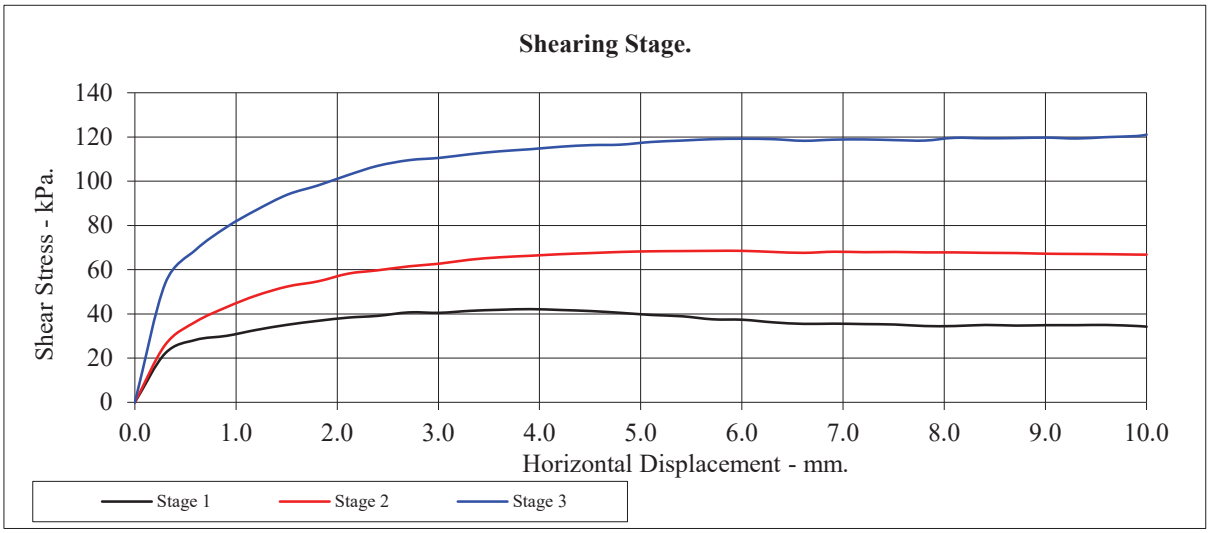
UKAS TESTING 4043 / PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY	**A46 Walsgrave**	**Contract No:** PSL23/5523 **Client Ref:** G230651

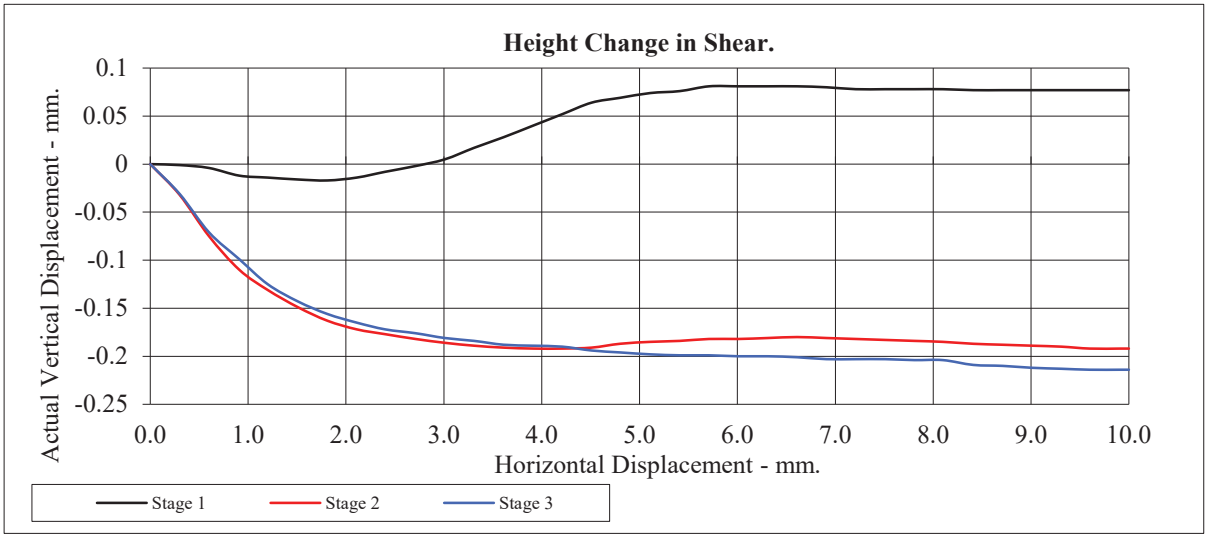
CONSOLIDATED DRAINED SHEARBOX TEST

BS1377:Part 7:1990 Clause 4

Hole Number:	**BH122**	Top Depth:	**2.50**
Sample Number:	**16**	Base Depth:	**3.00**







UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

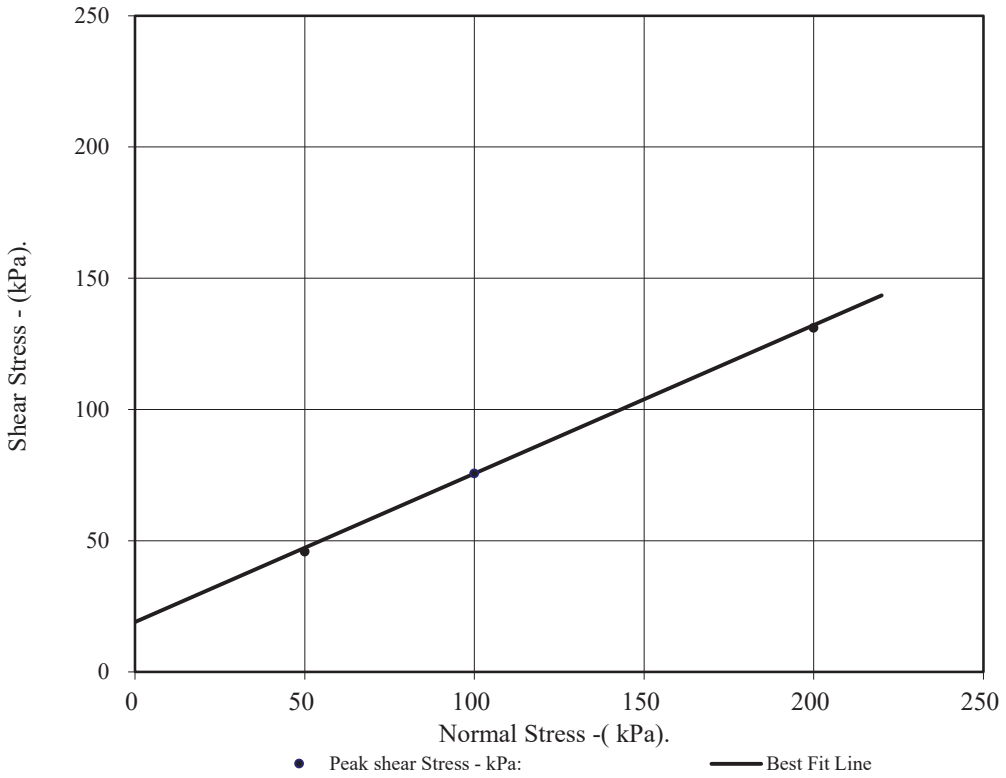
Contract No:
PSL23/5523
Client Ref:
G230651

CONSOLIDATED DRAINED SHEARBOX TEST

BS1377:Part 7:1990 Clause 4

Hole Number:	**BH122**		Top Depth:	**7.00**	
Sample Number:	**26**		Base Depth:	**7.50**	
Sample Conditions:	Submerged		Sample Type	**B**	
Particle Density - Mg/m3:	2.68	Assumed	**Remarks:**		
Sample Preparation:	Material tested passing 2mm sieve Remoulded using 2.5kg effort.				
Sample Description:	**See summary of soil descriptions.**				

STAGE	**1**	**2**	**3**
Initial Conditions			
Height - mm:	20.05	20.05	20.05
Length - mm:	59.97	59.97	59.97
Moisture Content - %:	17	17	17
Bulk Density - Mg/m3:	2.08	2.10	2.09
Dry Density - Mg/m3:	1.79	1.80	1.79
Voids Ratio:	0.498	0.489	0.496
Normal Pressure- kPa	50	100	200
Consolidation Stage			
Consolidated Height - mm:	18.82	18.49	18.27
Shearing Stage			
Rate of Strain - mm/min	0.042	0.042	0.042
Displacement at peak shear stress - mm	2.11	3.61	2.71
Peak shear Stress - kPa:	46	76	131
Final Consolidated Conditions			
Moisture Content - %:	27	27	27
Bulk Density - Mg/m3:	2.22	2.27	2.29
Dry Density - Mg/m3:	1.74	1.79	1.81
Peak			
Angle of Shearing Resistance:(~~θ~~)	**30**		
Effective Cohesion - kPa:	**19**		

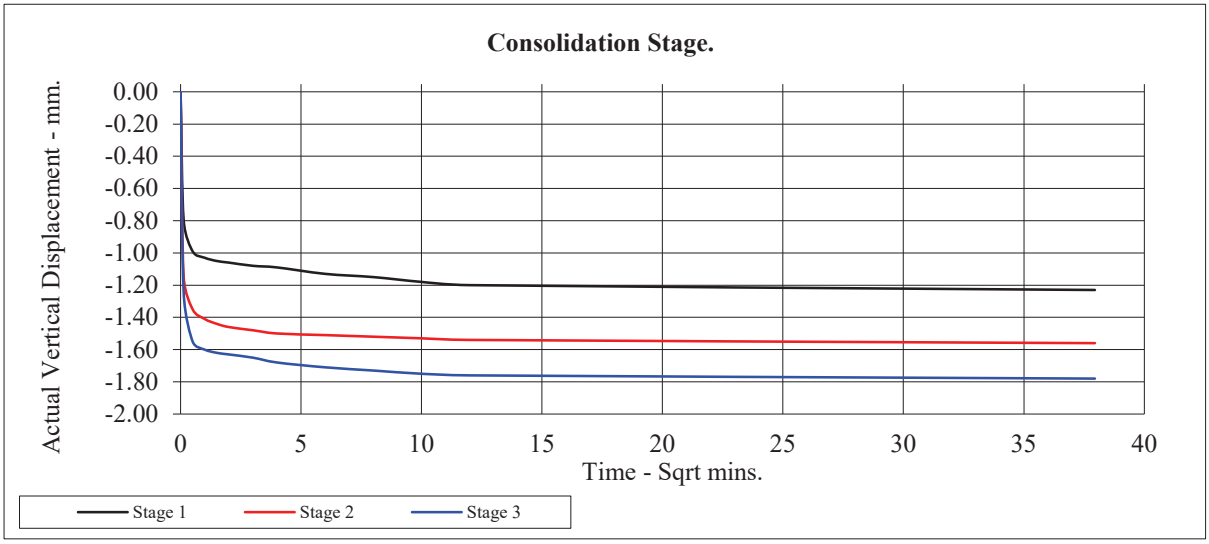


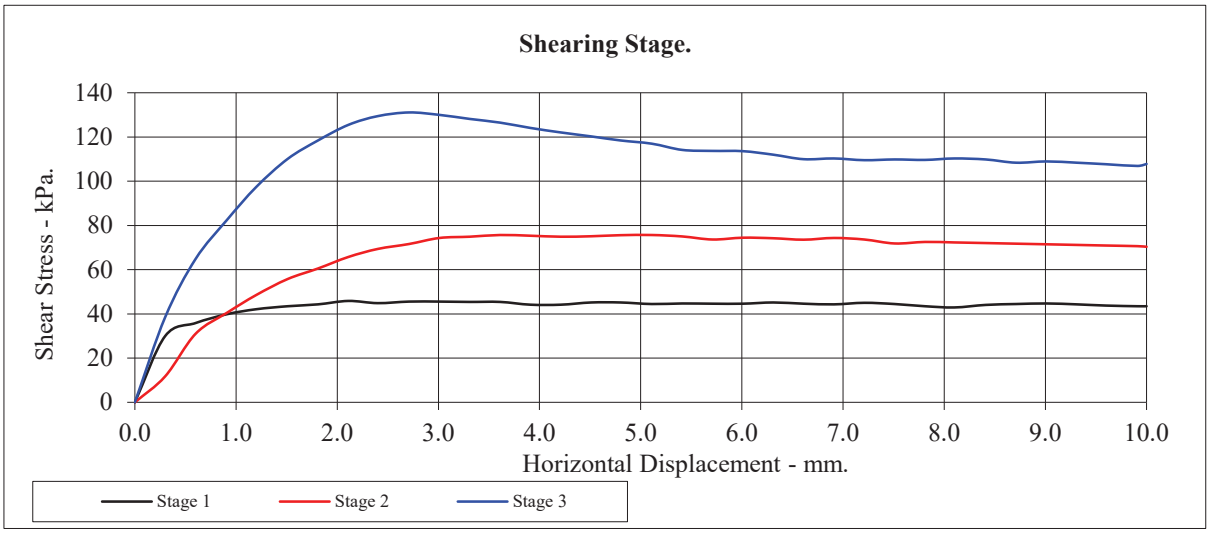
UKAS TESTING 4043 / PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY	**A46 Walsgrave**	**Contract No:** PSL23/5523 **Client Ref:** G230651

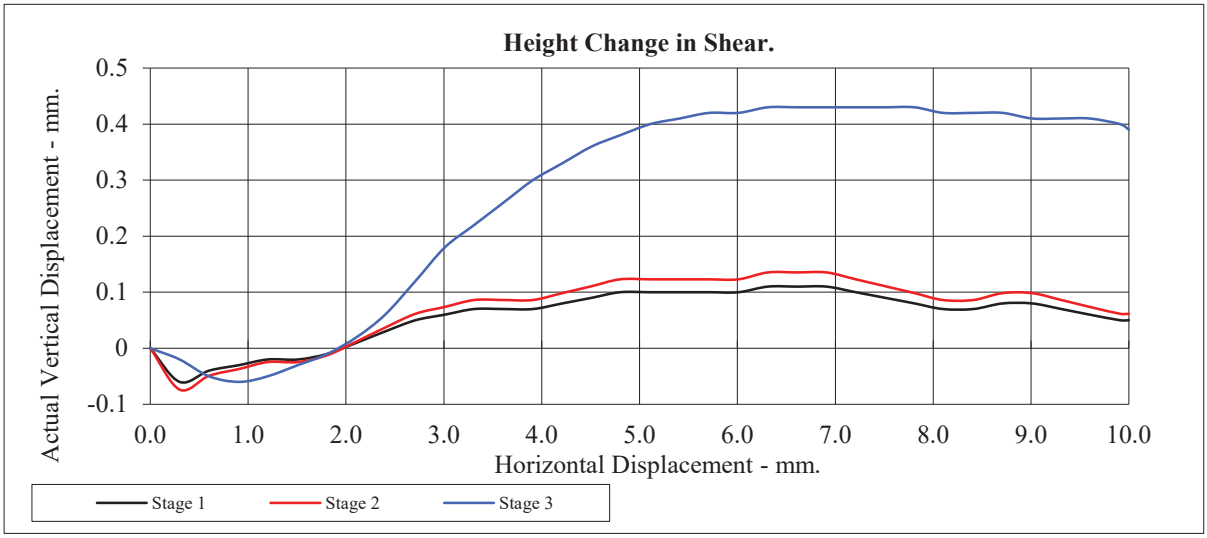
CONSOLIDATED DRAINED SHEARBOX TEST

BS1377:Part 7:1990 Clause 4

Hole Number:	**BH122**	Top Depth:	**7.00**
Sample Number:	**26**	Base Depth:	**7.50**







UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

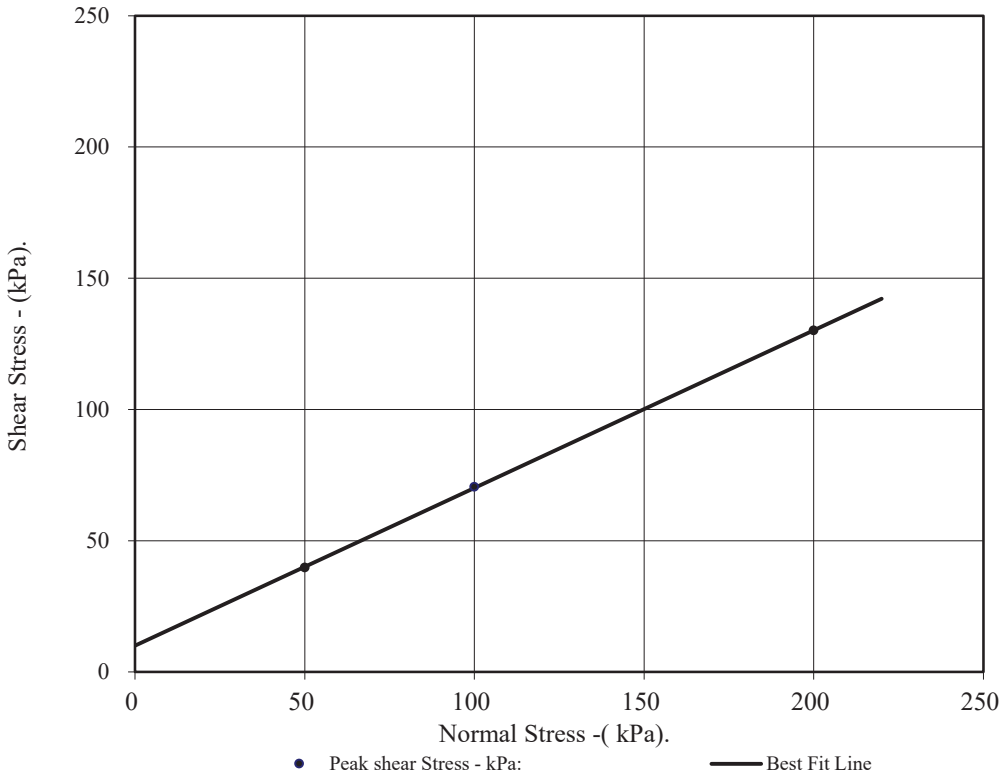
Contract No:
PSL23/5523
Client Ref:
G230651

CONSOLIDATED DRAINED SHEARBOX TEST

BS1377:Part 7:1990 Clause 4

Hole Number:	**BH122**		Top Depth:	**12.00**
Sample Number:	**35**		Base Depth:	**12.50**
Sample Conditions:	Submerged		Sample Type	**B**
Particle Density - Mg/m3:	2.68	Assumed	**Remarks:**	
Sample Preparation:	Material tested passing 2mm sieve Remoulded using 2.5kg effort.			
Sample Description:	**See summary of soil descriptions.**			

STAGE	**1**	**2**	**3**
Initial Conditions			
Height - mm:	20.05	20.05	20.05
Length - mm:	59.97	59.97	59.97
Moisture Content - %:	20	20	20
Bulk Density - Mg/m3:	2.10	2.10	2.09
Dry Density - Mg/m3:	1.75	1.75	1.74
Voids Ratio:	0.530	0.529	0.537
Normal Pressure- kPa	50	100	200
Consolidation Stage			
Consolidated Height - mm:	19.06	18.75	17.93
Shearing Stage			
Rate of Strain - mm/min	0.042	0.042	0.042
Displacement at peak shear stress - mm	3.60	3.60	6.30
Peak shear Stress - kPa:	40	71	130
Final Consolidated Conditions			
Moisture Content - %:	26	26	25
Bulk Density - Mg/m3:	2.21	2.24	2.33
Dry Density - Mg/m3:	1.75	1.78	1.86
Peak			
Angle of Shearing Resistance:(~~θ~~)	**31**		
Effective Cohesion - kPa:	**10**		

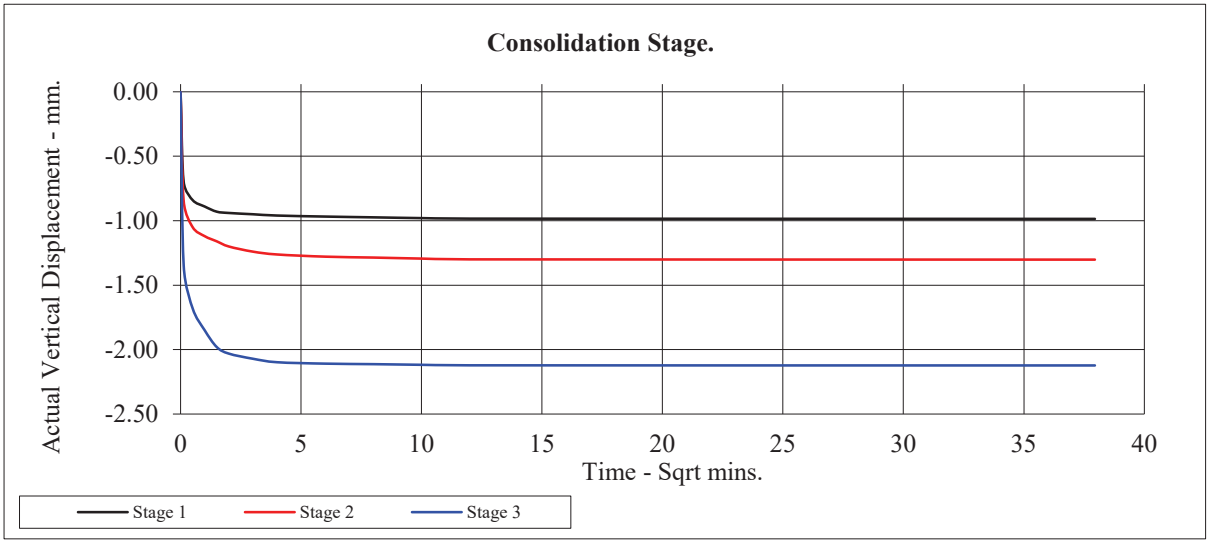


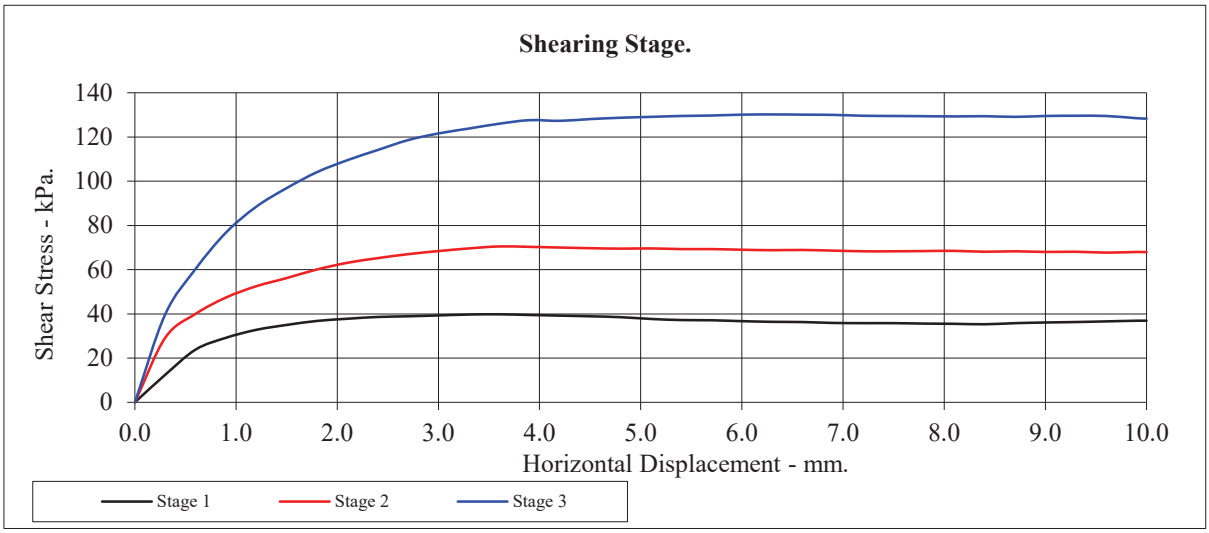
UKAS TESTING 4043 / PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY	**A46 Walsgrave**	**Contract No:** PSL23/5523 **Client Ref:** G230651

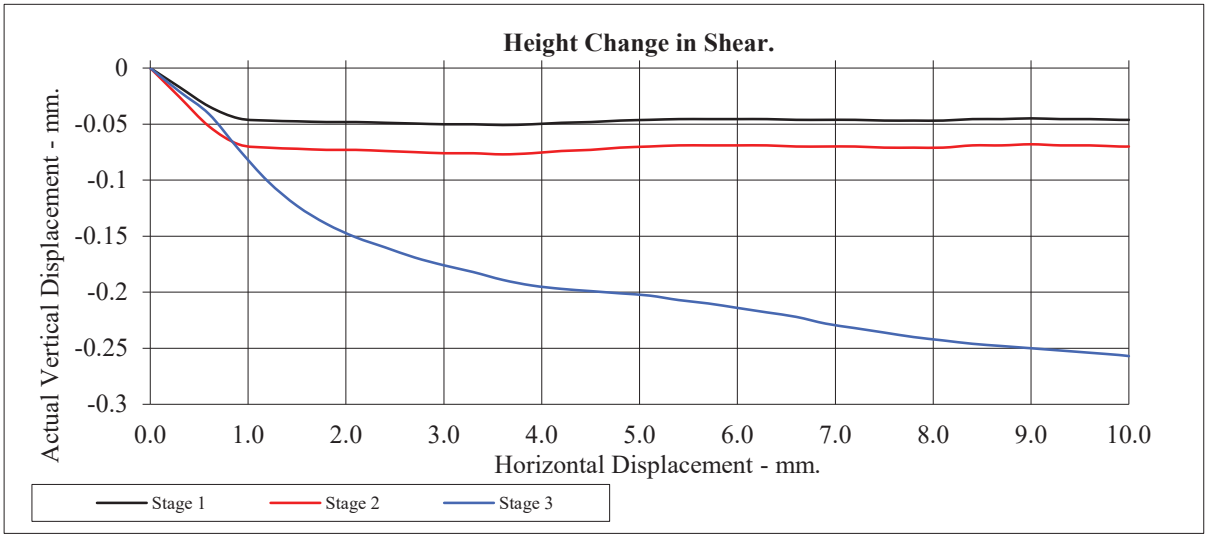
CONSOLIDATED DRAINED SHEARBOX TEST

BS1377:Part 7:1990 Clause 4

Hole Number:	**BH122**	Top Depth:	**12.00**
Sample Number:	**35**	Base Depth:	**12.50**







UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

Contract No:
PSL23/5523
Client Ref:
G230651

4161

CTS Group
7 - 11 Harding Street
Leicester
LE1 4DH

Professional Soils Laboratory
5/7 Hexthorpe Road
Hexthorpe
Doncaster
DN4 0AR

Analytical Test Report: L23/03775/PSL - 23-35711

Your Project Reference:	**PSL23/5523 G230651/GEO 24**		
Your Order Number:	PSL23/5523	Samples Received / Instructed:	24/07/2023 / 24/07/2023
Report Issue Number:	1	Sample Tested:	24/07 to 01/08/2023
Samples Analysed:	3 soil samples	Report issued:	01/08/2023

Si [redacted]

James Gane
Analytical Services Manager
CTS Group

Notes:

General

Please refer to Methodologies page for details pertaining to the analytical methods undertaken.

Samples will be retained for 14 days after issue of this report unless otherwise requested.

Moisture Content was determined in accordance with CTS method statement MS - CL - Sample Prep, oven dried at <30˚C.

Moisture Content is reported as a percentage of the dry mass of soil, this calculation is in accordance with BS1377, Part 2, 1990, Clause 3.2

Stone Content was determined in accordance with CTS method statement MS - CL - Sample Prep and refers to the percentage of stones retained on a 10mm BS test sieve.

Where specification limits are included these are for guidance only. Where a measured value has been highlighted this is not implying acceptance or failure and certainty of measurement values have not been taken into account.

Uncertainty of measurement values are available on request.

Samples were supplied by customer, results apply to the samples as received.

Deviating Samples

On receipt samples are compared against our sample holding and handling protocols, where any deviations have been noted these are reported on our deviating sample page (if present)

Accreditation Key

UKAS = UKAS Accreditation, MCERTS = MCERTS Accreditation, u = Unaccredited

MCERTS Accreditation only covers the SAND, CLAY and LOAM matrices

Date of Issue: 26.07.23

Issued by: J. Gane

Issue No: 4

Rev No: 2

4161

7 - 11 Harding Street
Leicester
LE1 4DH

L23/03775/PSL - 23-35711

Project Reference - PSL23/5523 G230651/GEO 24

Analytical Test Results - Soil

Lab Reference			306192	306193
Client Sample ID			-	-
Client Sample Location			BH122	BH122
Client Sample Type			D	D
Client Sample Number			11	20
Depth - Top (m)			2.00	4.20
Depth - Bottom (m)			2.00	4.20
Date of Sampling			02/06/2023	02/06/2023
Time of Sampling			-	-
Sample Matrix			Clay	Clay
Determinant	**Units**	**Accreditation**		
SOM (via TOC)	(%)	UKAS	< 1.7	< 1.7

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Leicester
LE1 4DH

L23/03775/PSL - 23-35711

Project Reference - PSL23/5523 G230651/GEO 24

Analytical Test Results - Chemical Analysis

Lab Reference			306192	306193	306194
Client Sample ID			-	-	-
Client Sample Location			BH122	BH122	BH122
Client Sample Type			D	D	D
Client Sample Number			11	20	27
Depth - Top (m)			2.00	4.20	8.00
Depth - Bottom (m)			2.00	4.20	8.00
Date of Sampling			02/06/2023	02/06/2023	02/06/2023
Time of Sampling			-	-	-
Sample Matrix			Clay	Clay	Clay
Determinant	**Units**	**Accreditation**			
Water soluble sulphate (as SO_4)	(mg/l)	u	96	130	88
Acid Soluble Sulphate	(%)	u	0.05	0.07	0.07
Total Sulphur	(%)	UKAS	0.03	0.12	0.05
pH Value	pH Units	MCERTS	8.4	8.7	8.9
Water Soluble Chloride	(mg/l)	u	5.6	5.2	6.0
Water Soluble Nitrate (As NO_3)	(mg/l)	u	< 1.0	< 1.0	< 1.0
Water Soluble Magnesium	(mg/l)	u	15	19	14
Water Soluble Ammonium Ion	(mg/l)	u	< 1.0	< 1.0	< 1.0

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CTS Group
7 - 11 Harding Street
Leicester
LE1 4DH

L23/03775/PSL - 23-35711

Project Reference - PSL23/5523 G230651/GEO 24

Sample Descriptions

Lab Reference	Client Sample ID	Client Sample Location	Client Sample Type	Client Sample Number	Description	Moisture Content (%)	Stone Content (%)	Passing 2mm test sieve (%)
306192	-	BH122	D	11	Brown slightly silty sandy clay	19	< 0.1	100
306193	-	BH122	D	20	Orangish brown slightly silty gravelly sandy clay	15	0.7	100
306194	-	BH122	D	27	Orangish brown slightly silty gravelly sandy clay	10	29	97

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CTS Group
7 - 11 Harding Street
Leicester
LE1 4DH

L23/03775/PSL - 23-35711

Project Reference - PSL23/5523 G230651/GEO 24

Sample Comments

Lab Reference	Client Sample ID	Client Sample Location	Client Sample Type	Client Sample Number	Comments
306192	-	BH122	D	11	
306193	-	BH122	D	20	
306194	-	BH122	D	27	

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7 - 11 Harding Street
Leicester
LE1 4DH

L23/03775/PSL - 23-35711

Project Reference - PSL23/5523 G230651/GEO 24

Analysis Methodologies

Test Code	Test Name / Reference	Sample condition for analysis	Sample Preperation	Test Details
ANIONSS	MS - CL - Anions by Aquakem (2:1Extract)	Oven dried	Passing 2mm test sieve	Determination of Anions (inc Sulphate, chloride etc.) in soils by Aquakem. Analysis is based on a 2:1 water to soil extraction ratio
TOCS	MS - CL - TOC Eltra	Air Dried	Passing 10mm test sieve	Determination of Total Organic Carbon in soils
PHS	MS - CL - pH in Soils	As received	Passing 10mm test sieve	Determination of pH in soils using a pH probe (using a 1:3 soil to water extraction)
ASSO4S	MS - CL - Acid Soluble Sulphate	Oven Dried	Passing 2mm test sieve	Determination of total sulphate in soils by acid extraction followed by ICP analysis
SAMPLEPREP	MS - CL - Sample Preparation	-	-	Preparation of samples (including determination of moisture content) to allow for subsequent analysis
1377TS-ELT	BS1377 Total Sulphur Content by HTC	Oven dried	BS1377 : Part 1 : 2016	Total Sulphur Content testing of Soil in accordance with BS 1377 : Part 3 : 2018 + A1 : 2021 Clause 7.10 (using Eltra CS-800 Analyser)

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7 - 11 Harding Street
Leicester
LE1 4DH

L23/03775/PSL - 23-35711

Project Reference - PSL23/5523 G230651/GEO 24

Sample Deviations

Deviations are listed below against each sample and associated test method, where deviation(s) are noted it means data may not be representative of the sample at the time of sampling and it is possible that results provided may be compromised.

Observations on receipt

A - No date of sampling provided
C - Received in inappropriate container
H - Contains headspace
T - Temperature on receipt exceeds storage temperature
R - Date of sampling to receipt insufficient to allow analysis to be completed without deviation, Please note this is only a deviation if 'X' is also recorded against the sample

Observations whist in laboratory

X - Exceeds sampling to extraction or analysis timescales

Lab Reference	Client Sample ID	Client Sample Location	Client Sample Type	Client Sample Number	Test	Deviations
306192	-	BH122	D	11	BS1377 Total Sulphur Content by HTC	RX
306192	-	BH122	D	11	MS - CL - Anions by Aquakem (2:1Extract)	RX
306192	-	BH122	D	11	MS - CL - TOC Eltra	RX
306192	-	BH122	D	11	MS - CL - pH in Soils	RX
306193	-	BH122	D	20	BS1377 Total Sulphur Content by HTC	RX
306193	-	BH122	D	20	MS - CL - Anions by Aquakem (2:1Extract)	RX
306193	-	BH122	D	20	MS - CL - TOC Eltra	RX
306193	-	BH122	D	20	MS - CL - pH in Soils	RX
306194	-	BH122	D	27	BS1377 Total Sulphur Content by HTC	RX
306194	-	BH122	D	27	MS - CL - Anions by Aquakem (2:1Extract)	RX
306194	-	BH122	D	27	MS - CL - pH in Soils	RX

LABORATORY REPORT

Contract Number: PSL23/6735

Report Date: 16 August 2023

Client's Reference: G230651

Client Name: Strata Geotechnics
Kirkby Lane
Pinxton
Nottinghamshire
NG16 6JA

For the attention of: Izaac Lovatt

Contract Title: A46 Walsgrave

Date Received: 11/8/2023
Date Commenced: 11/8/2023
Date Completed: 16/8/2023

Notes: Opinions and Interpretations are outside the UKAS Accreditation

A copy of the Laboratory Schedule of accredited tests as issued by UKAS is attached to this report. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced other than in full, without the prior written approval of the laboratory.

Checked and Approved Signatories:

A Watkins (Director)	R Berriman (Quality Manager)	S Royle (Laboratory Manager)
[redacted] L Knight (Assistant Laboratory Manager)	S Eyre (Senior Technician)	T Watkins (Senior Technician)

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Hexthorpe,
Doncaster,
DN4 0AR
Tel: [redacted]
Email: [redacted]@prosoils.co.uk
[redacted]@prosoils.co.uk

SUMMARY OF LABORATORY SOIL DESCRIPTIONS

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Description of Sample
BH122	5	B	0.50	0.50	Brown sandy CLAY.
BH122	9	D	1.20	1.20	Brown slightly gravelly sandy CLAY.
BH122	18	D	3.50	3.95	Reddish brown slightly gravelly very sandy CLAY.
BH122	19	B	3.50	4.00	Reddish brown slightly gravelly very sandy CLAY.
BH122	21	D	4.50	4.95	Reddish brown gravelly very sandy CLAY.
BH122	25	D	6.50	6.50	Reddish brown gravelly very sandy CLAY.

UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

Contract No:
PSL23/6735
Client Ref:
G230651

SUMMARY OF SOIL CLASSIFICATION TESTS

(BS1377 : PART 2 : 1990)

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Moisture Content % Clause 3.2	Linear Shrinkage % Clause 6.5	Particle Density Mg/m^3 Clause 8.2	Liquid Limit % Clause 4.3/4	Plastic Limit % Clause 5.3	Plasticity Index % Clause 5.4	Passing .425mm %	Remarks
BH122	9	D	1.20	1.20	21			45	21	24	97	Intermediate Plasticity CI
BH122	18	D	3.50	3.95	13			25	12	13	94	Low Plasticity CL
BH122	21	D	4.50	4.95	10			27	13	14	85	Low Plasticity CL

SYMBOLS : **NP : Non Plastic** *** : Liquid Limit and Plastic Limit Wet Sieved.**

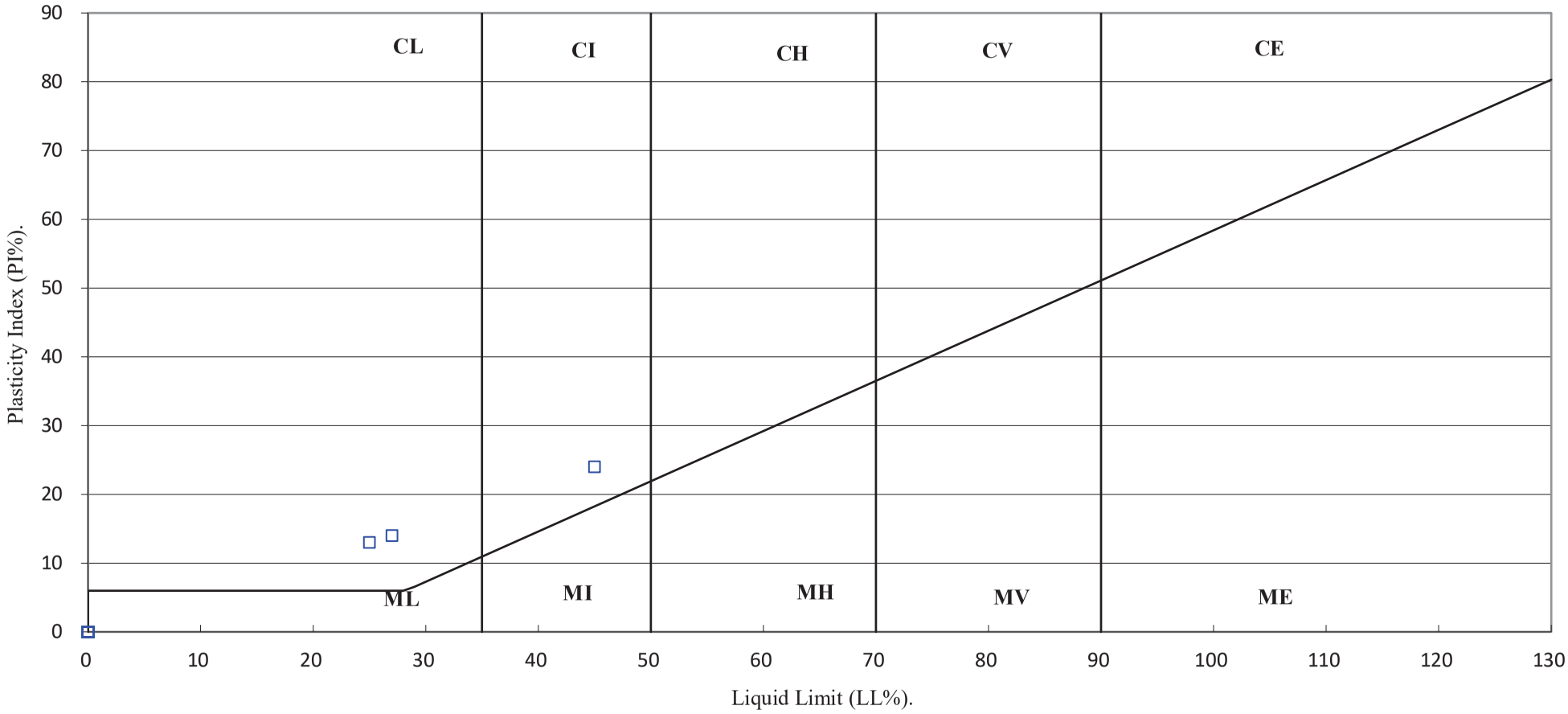
UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

Contract No:
PSL23/6735
Client Ref:
G230651

PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION.



UKAS TESTING 4043	PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY	**A46 Walsgrave**

Contract No:
PSL23/6735
Client Ref:
G230651

SUMMARY OF LABORATORY HAND VANES

(BS1377 : PART 7 : 1990)

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Moisture Content %	Peak Shear Strength kPa	Residual Shear Strength kPa	Remarks
BH122	5	B	0.50	0.50	20	127		

* This test is out of our UKAS scope

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY	A46 Walsgrave	Contract No: PSL23/6735 Client Ref: G230651

SUMMARY OF SOIL DENSITY RELATED TESTS

(BS1377 : PART 2 & 4 : 1990)

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Moisture Content %	Bulk Density Mg/m^3	Dry Density Mg/m^3	Retained 20mm %	Retained 37.5mm %	Method of compaction kg	Maximum Dry Density Mg/m^3	Minimum Dry Density Mg/m^3	Remarks
BH122	19	B	3.50	4.00	17	2.14	1.83						
BH122	25	D	6.50	6.50	11	2.24	2.02						

UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

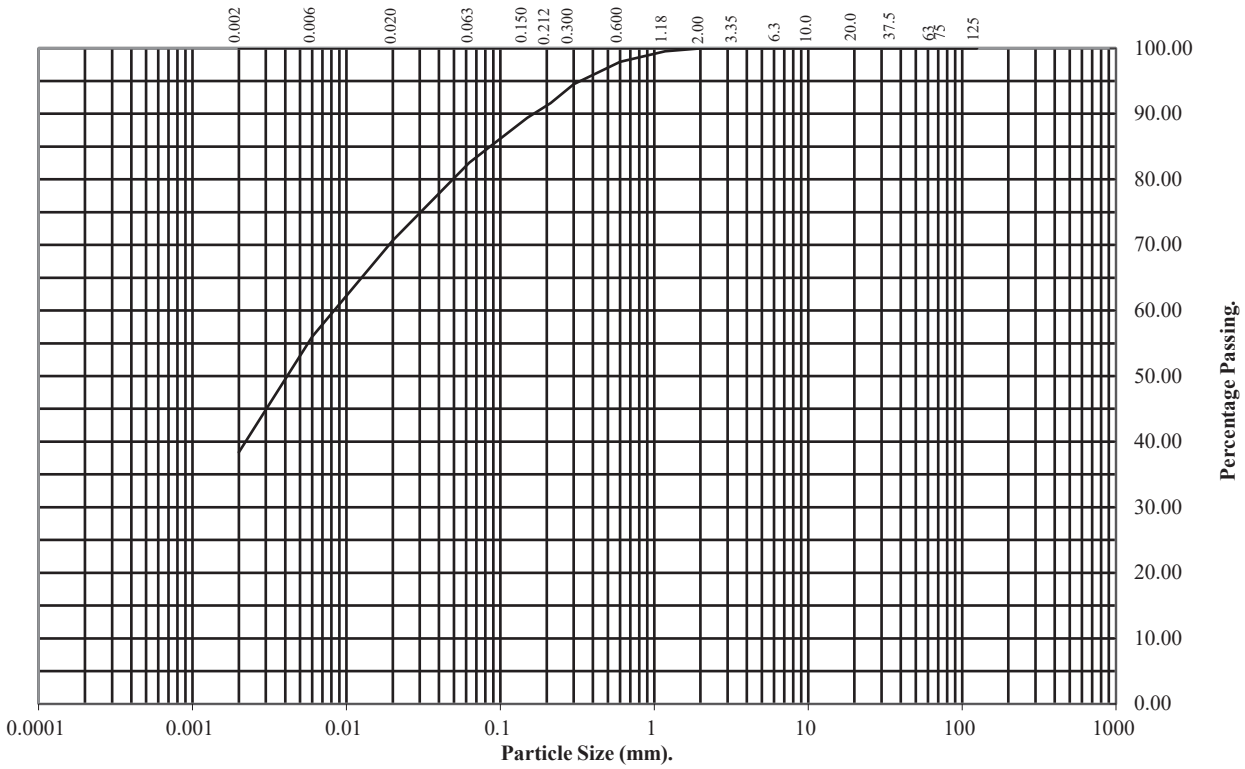
Contract No:
PSL23/6735
Client Ref:
G230651

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

Hole Number:	**BH122**	**Top Depth (m):**	**0.50**
Sample Number:	**5**	**Base Depth(m):**	**0.50**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	100
6.3	100
3.35	100
2	100
1.18	100
0.6	98
0.3	95
0.212	92
0.15	89
0.063	83

Particle Diameter	Percentage Passing
0.02	71
0.006	56
0.002	38

Soil Fraction	Total Percentage
Cobbles	0
Gravel	0
Sand	17
Silt	45
Clay	38

Remarks:
See Summary of Soil Descriptions

UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

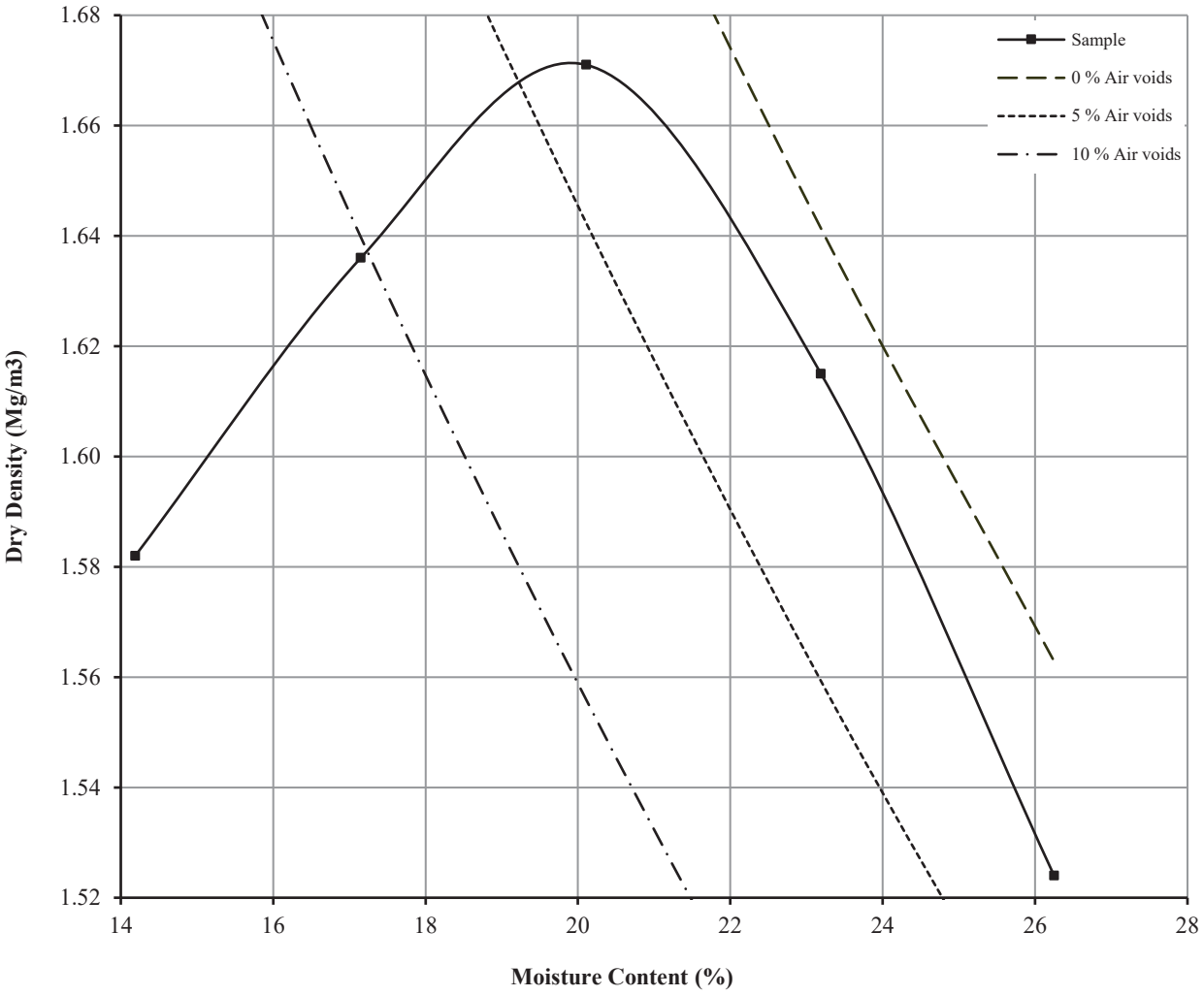
A46 Walsgrave

Contract No:
PSL23/6735
Client Ref:
G230651

DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

BS 1377 : Part 4 : Clause 3.3 : 1990

Hole Number:	**BH122**	**Top Depth (m) :**	**0.50**
Sample Number:	**5**	**Base Depth (m) :**	**0.50**
Sample Type:	**B**		



Initial Moisture Content:		20	Method of Compaction:	2.5kg	Separate Samples
Particle Density (Mg/m3):	2.65	Assumed	Material Retained on 37.5 mm Test Sieve (%):		0
Maximum Dry Density (Mg/m3):		1.67	Material Retained on 20.0 mm Test Sieve (%):		0
Optimum Moisture Content (%):		20			
Remarks See summary of soil descriptions					

UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

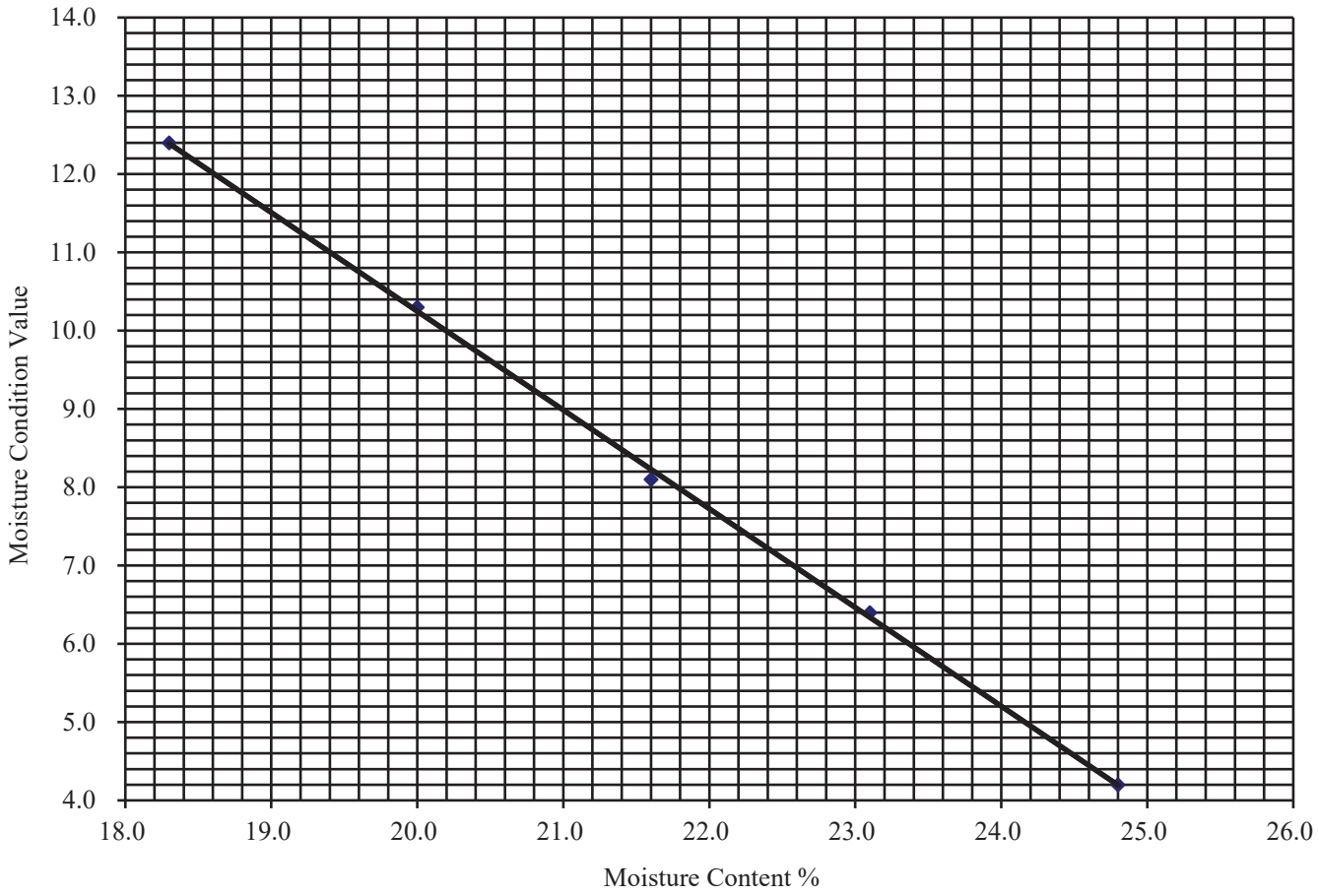
Contract
PSL23/6735
Client Ref
G230651

MOISTURE CONDITION VALUE CALIBRATION

BS1377 : Part 4 : 1990 Clause 5.5

Hole Number:	**BH122**	**Top Depth (m):**	**0.50**
Sample Number:	**5**	**Base Depth (m):**	**0.50**
Sample Type:	**B**		

Initial Moisture Content (%):	20
Single/Separate Samples Tested	Separate
Material Retained on the 20mm BS Test Sieve (%):	0



Test Results.

Test Number	1	2	3	4	5
Moisture Content (%)	18.3	20.0	21.6	23.1	24.8
MCV	12.4	10.3	8.1	6.4	4.2

WATER CONTENT OF ROCK

ISRM Suggested Methods - Rock Characterization Testing and Monitoring 1974 - 2006

Hole Number	Sample Number	Sample Type	Top Depth (m)	Base Depth (m)	Water Content (%)	Sample Description	Remarks
BH122	41	CSS	15.00	15.08	5.1		
BH122	43	CSS	16.59	16.77	4.4		
BH122	47	CSS	19.00	19.10	4.8		
BH122	49	CSS	19.70	20.00	5.4		
BH122	50	CSS	21.80	22.00	4.4		
BH122	52	CSS	23.40	23.50	5.2		

UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

Contract No: PSL23/6735

Client Ref: G230651

UNIAXIAL COMPRESSIVE STRENGTH

ISRM Suggested Methods - Rock Characterization Testing and Monitoring 1974 - 2006

Borehole Number:	**BH122**	**Top Depth (m):**	**16.59**
Sample Number:	**43**	**Base Depth (m):**	**16.77**
Sample Type:	**CSS**	**Sample Date:**	**13/06/2023**
Storage Condition:	**Sealed in Wax**	**Date of Receipt**	**11/08/2023**
Sample Description:	**-**		

Specimen Details/Conditions	
Diameter - mm:	100.01
Height - mm:	180.10
Water Content - %:	4.4
Sample Mass - g:	3517.9
Bulk Density - Mg/m^3:	2.49
Dry Density - Mg/m^3:	2.38
Height Ratio: * Sample does not comply with H:D ratio	1.8
Degree of Saturation - %:	91
Assumed Specific Gravity for Degree of Saturation:	2.69

Test Result	
Load Frame/Machine:	CM1/Controls
Date of test:	15/08/2023
Test Duration - mins:	00:26
Orientation:	Unknown
Stress Rate - MPa/s:	0.20
Strain at Failure - kN:	40.10
Unconfined Compressive Strength - Mpa:	5.1
Mode of Failure:	Vertical Shear

Remarks: -

UNIAXIAL COMPRESSIVE STRENGTH

ISRM Suggested Methods - Rock Characterization Testing and Monitoring 1974 - 2006

Borehole Number:	**BH122**	**Top Depth (m):**	**19.70**
Sample Number:	**49**	**Base Depth (m):**	**20.00**
Sample Type:	**CSS**	**Sample Date:**	**13/06/2023**
Storage Condition:	**Sealed in Wax**	**Date of Receipt**	**11/08/2023**
Sample Description:	**-**		

Specimen Details/Conditions	
Diameter - mm:	100.02
Height - mm:	200.14
Water Content - %:	5.4
Sample Mass - g:	3920.8
Bulk Density - Mg/m^3:	2.49
Dry Density - Mg/m^3:	2.37
Height Ratio: * Sample does not comply with H:D ratio	2.0
Degree of Saturation - %:	93
Assumed Specific Gravity for Degree of Saturation:	2.74

Test Result	
Load Frame/Machine:	CM1/Controls
Date of test:	15/08/2023
Test Duration - mins:	00:37
Orientation:	Unknown
Stress Rate - MPa/s:	0.18
Strain at Failure - kN:	51.20
Unconfined Compressive Strength - Mpa:	6.52
Mode of Failure:	Vertical Shear

Remarks: -

UNIAXIAL COMPRESSIVE STRENGTH

ISRM Suggested Methods - Rock Characterization Testing and Monitoring 1974 - 2006

Borehole Number:	**BH122**	**Top Depth (m):**	**21.80**
Sample Number:	**50**	**Base Depth (m):**	**22.00**
Sample Type:	**CSS**	**Sample Date:**	**13/06/2023**
Storage Condition:	**Sealed in Wax**	**Date of Receipt**	**11/08/2023**
Sample Description:	**-**		

Specimen Details/Conditions	
Diameter - mm:	100.03
Height - mm:	200.70
Water Content - %:	4.4
Sample Mass - g:	3913.3
Bulk Density - Mg/m^3:	2.48
Dry Density - Mg/m^3:	2.38
Height Ratio: * Sample does not comply with H:D ratio	2.0
Degree of Saturation - %:	90
Assumed Specific Gravity for Degree of Saturation:	2.69

Test Result	
Load Frame/Machine:	CM1/Controls
Date of test:	15/08/2023
Test Duration - mins:	00:29
Orientation:	Unknown
Stress Rate - MPa/s:	0.19
Strain at Failure - kN:	43.10
Unconfined Compressive Strength - Mpa:	5.48
Mode of Failure:	Vertical Shear

Remarks: -

SUMMARY OF POINT LOAD TEST RESULTS

ISRM Suggested Methods : 2007

Borehole Number	Depth (m)	Sample Ref	Test Type	Orientation	Dimensions (mm)		Area	D_e^2	D_e	Failure Load (P)		I_s	Corr Fac	I_{s50}	Failure Type	Remarks
				Par / Perp	W	D	(mm2)		(mm)	(Mpa)	(kN)	(MPa)	F	(MPa)		
BH122	15.00	41	A	Perp	100	32	3200	4074.37	63.83	-	1.54	0.38	1.116	0.42	Valid	
BH122	19.00	47	A	Perp	100	40	4000	5092.96	71.36	-	1.59	0.31	1.174	0.37	Valid	
BH122	23.40	52	A	Perp	100	36	3600	4583.66	67.70	-	1.80	0.39	1.146	0.45	Valid	

Note All testing carried out on samples at as received water content

Par = parallel, Perp = perpendicular, U = Random

A = Axial, D = Diametral, I = Irregular

UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

Contract No:

PSL23/6735

Client Ref:

G230651

SUMMARY OF POINT LOAD TEST RESULTS

ISRM Suggested Methods : 2007

Borehole Number	Depth (m)	Sample Ref	Test Type	Orientation	Dimensions (mm)		D_e^2	D_e	Failure Load		I_s	Corr Fac	I_{s50}	Failure Type	Remarks
				Par / Perp	L	D		(mm)	(Mpa)	(kN)	(MPa)	F	(MPa)		
BH122	15.00	41	D	Par	-	100	10000	100.00	-	1.01	0.101	1.366	0.14	Valid	
BH122	19.00	47	D	Par	-	100	10000	100.00	-	2.06	0.206	1.366	0.28	Valid	
BH122	23.40	52	D	Par	-	100	10000	100.00	-	1.37	0.137	1.366	0.19	Valid	

Note All testing carried out on samples at as received water content

Par = parallel, Perp = perpendicular, U = Random

UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

Contract No:

PSL23/6735

Client Ref:

G230651

4161

CTS Group
7 - 11 Harding Street
Leicester
LE1 4DH

Professional Soils Laboratory
5/7 Hexthorpe Road
Hexthorpe
Doncaster
DN4 0AR

Analytical Test Report:	**L23/04490/PSL - 23-36500**

Your Project Reference:	**Psl23/6735 11/8 G230651**		
Your Order Number:	PSL	Samples Received / Instructed:	16/08/2023 / 16/08/2023
Report Issue Number:	1	Sample Tested:	16/08 to 23/08/2023
Samples Analysed:	3 soil samples	Report issued:	23/08/2023

S[redacted]

James Gane
Analytical Services Manager
CTS Group

Notes:

General

Please refer to Methodologies page for details pertaining to the analytical methods undertaken.

Samples will be retained for 14 days after issue of this report unless otherwise requested.

Moisture Content was determined in accordance with CTS method statement MS - CL - Sample Prep, oven dried at <30˚C.

Moisture Content is reported as a percentage of the dry mass of soil, this calculation is in accordance with BS1377, Part 2, 1990, Clause 3.2

Stone Content was determined in accordance with CTS method statement MS - CL - Sample Prep and refers to the percentage of stones retained on a 10mm BS test sieve.

Where specification limits are included these are for guidance only. Where a measured value has been highlighted this is not implying acceptance or failure and certainty of measurement values have not been taken into account.

Uncertainty of measurement values are available on request.

Samples were supplied by customer, results apply to the samples as received.

Deviating Samples

On receipt samples are compared against our sample holding and handling protocols, where any deviations have been noted these are reported on our deviating sample page (if present)

Accreditation Key

UKAS = UKAS Accreditation, MCERTS = MCERTS Accreditation, u = Unaccredited

MCERTS Accreditation only covers the SAND, CLAY and LOAM matrices

Date of Issue: 26.07.23

Issued by: J. Gane

Issue No: 4

Rev No: 2

4161

CTS Group
7 - 11 Harding Street
Leicester
LE1 4DH

L23/04490/PSL - 23-36500

Project Reference - Psl23/6735 11/8 G230651

Analytical Test Results - Chemical Analysis

Lab Reference			310375	310376	310377
Client Sample ID			VE10230602023	VE10230606006	-
Client Sample Location			BH122	BH122	BH122
Client Sample Type			-	-	-
Client Sample Number			23	33	45
Depth - Top (m)			5.20	11.50	17.80
Depth - Bottom (m)			5.20	11.50	17.90
Date of Sampling			02/06/2023	02/06/2023	02/06/2023
Time of Sampling			-	-	-
Sample Matrix			Clay	Clay	Sand
Determinant	**Units**	**Accreditation**			
Water soluble sulphate (as SO_4)	(mg/l)	u	320	56	1600
Acid Soluble Sulphate	(%)	u	0.11	0.03	2.14
Total Sulphur	(%)	UKAS	0.23	0.03	0.82
pH Value	pH Units	MCERTS	8.7	8.8	7.9
Water Soluble Chloride	(mg/l)	u	5.7	4.6	3.4
Water Soluble Nitrate (As NO_3)	(mg/l)	u	< 1.0	< 1.0	< 1.0
Water Soluble Magnesium	(mg/l)	u	30	7.9	20
Water Soluble Ammonium Ion	(mg/l)	u	1.3	1.3	1.3

4161

7 - 11 Harding Street
Leicester
LE1 4DH

L23/04490/PSL - 23-36500

Project Reference - Psl23/6735 11/8 G230651

Sample Descriptions

Lab Reference	Client Sample ID	Client Sample Location	Client Sample Type	Client Sample Number	Description	Moisture Content (%)	Stone Content (%)	Passing 2mm test sieve (%)
310375	VE10230602023	BH122	-	23	Reddish brown gravelly silty clay	15	< 0.1	99
310376	VE10230606006	BH122	-	33	Reddish brown slightly gravelly clayey silt	17	< 0.1	100
310377	-	BH122	-	45	Reddish greyish brown sandy silt	13	< 0.1	100

4161

7 - 11 Harding Street
Leicester
LE1 4DH

L23/04490/PSL - 23-36500

Project Reference - Psl23/6735 11/8 G230651

Sample Comments

Lab Reference	Client Sample ID	Client Sample Location	Client Sample Type	Client Sample Number	Comments
310375	VE10230602023	BH122	-	23	
310376	VE10230606006	BH122	-	33	
310377	-	BH122	-	45	

4161

CTS Group
7 - 11 Harding Street
Leicester
LE1 4DH

L23/04490/PSL - 23-36500

Project Reference - Psl23/6735 11/8 G230651

Analysis Methodologies

Test Code	Test Name / Reference	Sample condition for analysis	Sample Preperation	Test Details
ANIONSS	MS - CL - Anions by Aquakem (2:1Extract)	Oven dried	Passing 2mm test sieve	Determination of Anions (inc Sulphate, chloride etc.) in soils by Aquakem. Analysis is based on a 2:1 water to soil extraction ratio
PHS	MS - CL - pH in Soils	As received	Passing 10mm test sieve	Determination of pH in soils using a pH probe (using a 1:3 soil to water extraction)
ASSO4S	MS - CL - Acid Soluble Sulphate	Oven Dried	Passing 2mm test sieve	Determination of total sulphate in soils by acid extraction followed by ICP analysis
SAMPLEPREP	MS - CL - Sample Preparation	-	-	Preparation of samples (including determination of moisture content) to allow for subsequent analysis
1377TS-ELT	BS1377 Total Sulphur Content by HTC	Oven dried	BS1377 : Part 1 : 2016	Total Sulphur Content testing of Soil in accordance with BS 1377 : Part 3 : 2018 + A1 : 2021 Clause 7.10 (using Eltra CS-800 Analyser)

L23/04490/PSL - 23-36500

Project Reference - Psl23/6735 11/8 G230651

Sample Deviations

Deviations are listed below against each sample and associated test method, where deviation(s) are noted it means data may not be representative of the sample at the time of sampling and it is possible that results provided may be compromised.

Observations on receipt

A - No date of sampling provided
C - Received in inappropriate container
H - Contains headspace
T - Temperature on receipt exceeds storage temperature
R - Date of sampling to receipt insufficient to allow analysis to be completed without deviation, Please note this is only a deviation if 'X' is also recorded against the sample

Observations whist in laboratory

X - Exceeds sampling to extraction or analysis timescales

Lab Reference	Client Sample ID	Client Sample Location	Client Sample Type	Client Sample Number	Test	Deviations
310375	VE10230602023	BH122	-	23	BS1377 Total Sulphur Content by HTC	RX
310375	VE10230602023	BH122	-	23	MS - CL - Anions by Aquakem (2:1Extract)	RX
310375	VE10230602023	BH122	-	23	MS - CL - pH in Soils	RX
310376	VE10230606006	BH122	-	33	BS1377 Total Sulphur Content by HTC	RX
310376	VE10230606006	BH122	-	33	MS - CL - Anions by Aquakem (2:1Extract)	RX
310376	VE10230606006	BH122	-	33	MS - CL - pH in Soils	RX
310377	-	BH122	-	45	BS1377 Total Sulphur Content by HTC	RX
310377	-	BH122	-	45	MS - CL - Anions by Aquakem (2:1Extract)	RX
310377	-	BH122	-	45	MS - CL - pH in Soils	RX

LABORATORY REPORT

Contract Number: PSL23/6734

Report Date: 17 August 2023

Client's Reference: G230651

Client Name: Strata Geotechnics
Kirkby Lane
Pinxton
Nottinghamshire
NG16 6JA

For the attention of: Izaac Lovatt

Contract Title: A46 Walsgrave

Date Received: 11/8/2023
Date Commenced: 11/8/2023
Date Completed: 17/8/2023

Notes: Opinions and Interpretations are outside the UKAS Accreditation

A copy of the Laboratory Schedule of accredited tests as issued by UKAS is attached to this report. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced other than in full, without the prior written approval of the laboratory.

Checked and Approved Signatories:

A Watkins (Director)	R Berriman (Quality Manager)	S Royle (Laboratory Manager)
[redacted] L Knight (Assistant Laboratory Manager)	S Eyre (Senior Technician)	T Watkins (Senior Technician)

5 – 7 Hexthorpe Road,
Hexthorpe,
Doncaster,
DN4 0AR
Tel: [redacted]
Email: [redacted]@prosoils.co.uk
[redacted]@prosoils.co.uk

SUMMARY OF LABORATORY SOIL DESCRIPTIONS

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Description of Sample
BH123	6	D	0.80	0.80	Brown slightly gravelly slightly sandy CLAY.
BH123	7	B	1.00	1.00	Brown slightly gravelly sandy CLAY.
BH123	9	D	1.20	1.20	Brown slightly gravelly sandy CLAY.
BH123	10	B	1.50	2.00	Brown mottled grey slightly gravelly sandy CLAY.
BH123	11	D	2.00	2.00	Brown slightly gravelly sandy CLAY.
BH123	15	D	2.40	2.40	Brown slightly gravelly very sandy CLAY.
BH123	20	B	3.50	4.00	Brown slightly gravelly very sandy CLAY.
BH123	27	U	7.50	7.95	Brown slightly gravelly very sandy CLAY.
BH123	34	U	10.50	10.95	OED

SUMMARY OF SOIL CLASSIFICATION TESTS

(BS1377 : PART 2 : 1990)

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Moisture Content % Clause 3.2	Linear Shrinkage % Clause 6.5	Particle Density Mg/m^3 Clause 8.2	Liquid Limit % Clause 4.3/4	Plastic Limit % Clause 5.3	Plasticity Index % Clause 5.4	Passing .425mm %	Remarks
BH123	6	D	0.80	0.80	19			67	28	39	95	High Plasticity CH
BH123	11	D	2.00	2.00	21			49	23	26	97	Intermediate Plasticity CI
BH123	15	D	2.40	2.40	12			31	14	17	93	Low Plasticity CL

SYMBOLS : **NP : Non Plastic** *** : Liquid Limit and Plastic Limit Wet Sieved.**

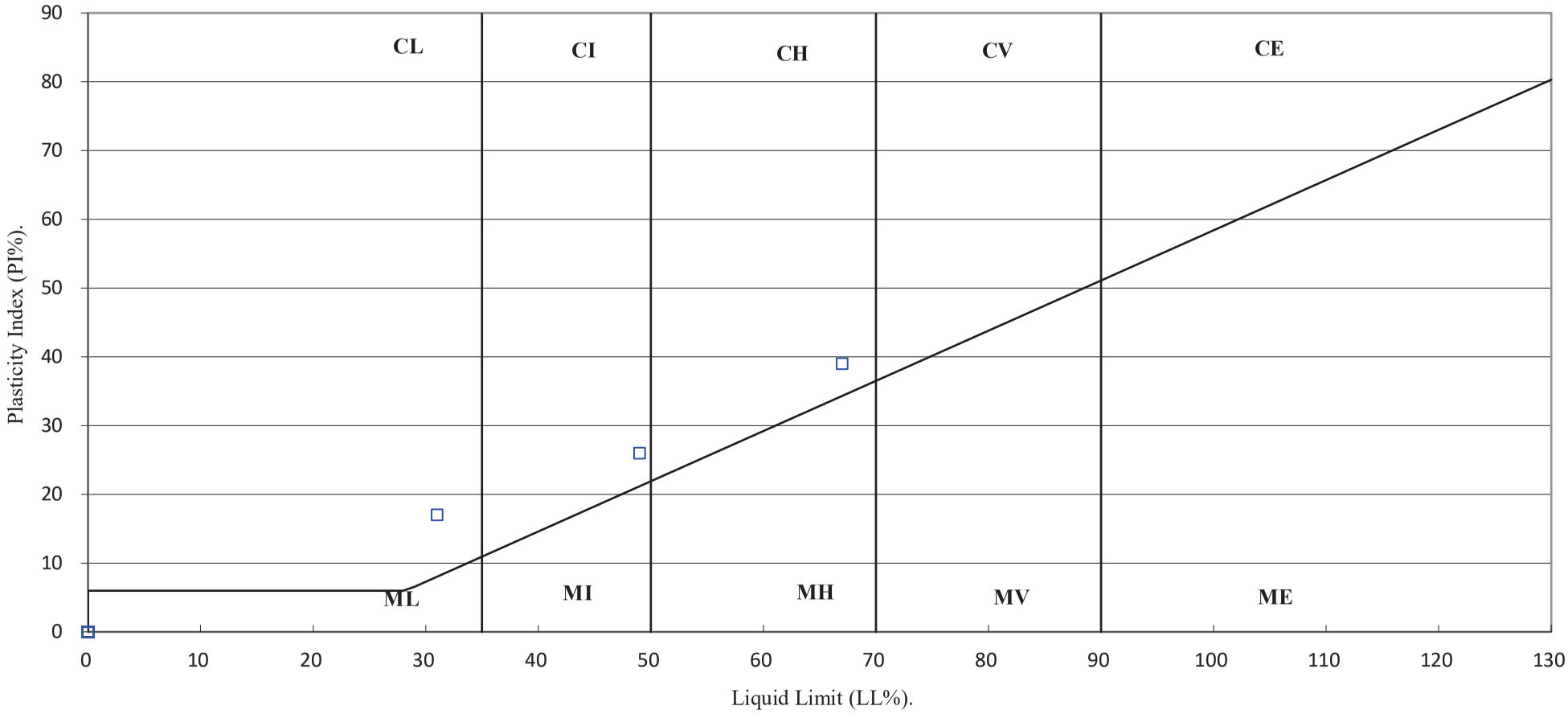
UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

Contract No:
PSL23/6734
Client Ref:
G230651

PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION.



UKAS TESTING 4043	PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY	**A46 Walsgrave**

Contract No:
PSL23/6734
Client Ref:
G230651

SUMMARY OF SOIL DENSITY RELATED TESTS

(BS1377 : PART 2 & 4 : 1990)

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Moisture Content %	Bulk Density Mg/m^3	Dry Density Mg/m^3	Retained 20mm %	Retained 37.5mm %	Method of compaction kg	Maximum Dry Density Mg/m^3	Minimum Dry Density Mg/m^3	Remarks
BH123	9	D	1.20	1.20	23	2.01	1.63						

UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

Contract No: PSL23/6734

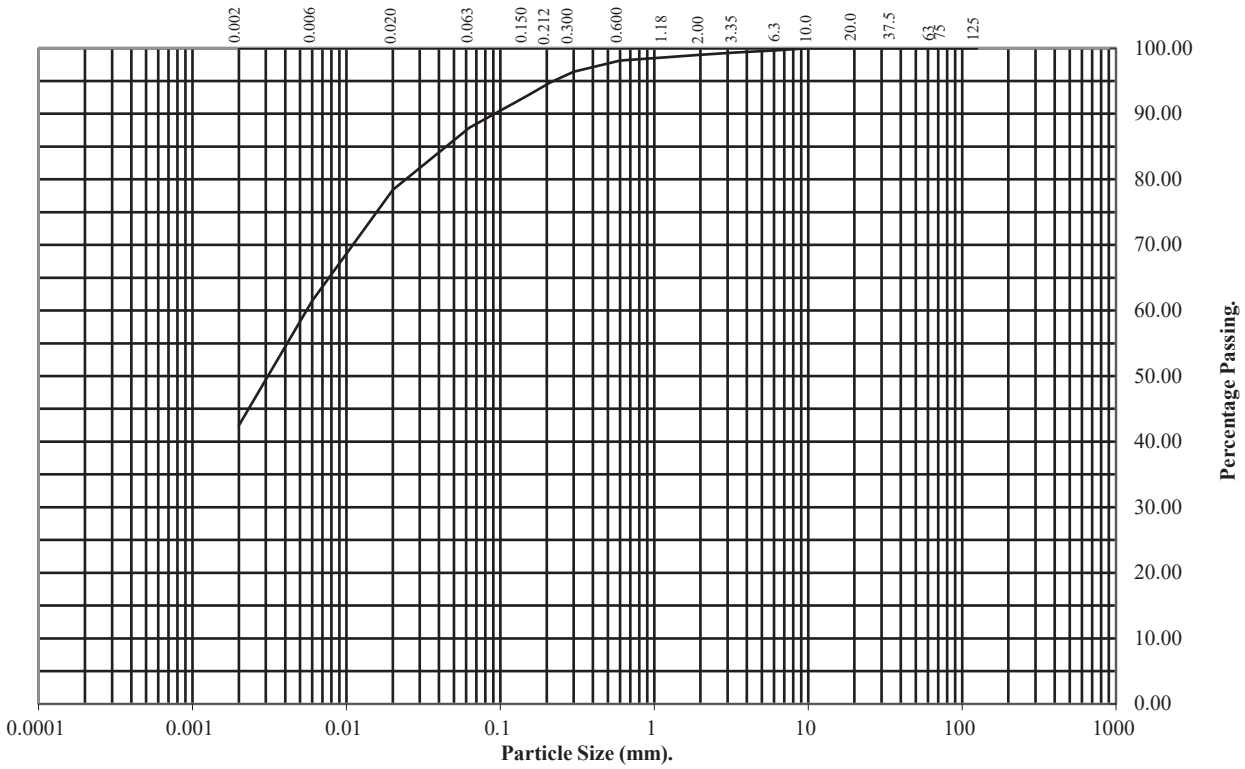
Client Ref: G230651

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

Hole Number:	**BH123**	**Top Depth (m):**	**1.00**
Sample Number:	**7**	**Base Depth(m):**	**1.00**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	100
6.3	100
3.35	99
2	99
1.18	99
0.6	98
0.3	96
0.212	95
0.15	93
0.063	88

Particle Diameter	Percentage Passing
0.02	78
0.006	61
0.002	42

Soil Fraction	Total Percentage
Cobbles	0
Gravel	1
Sand	11
Silt	46
Clay	42

Remarks:
See Summary of Soil Descriptions

UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

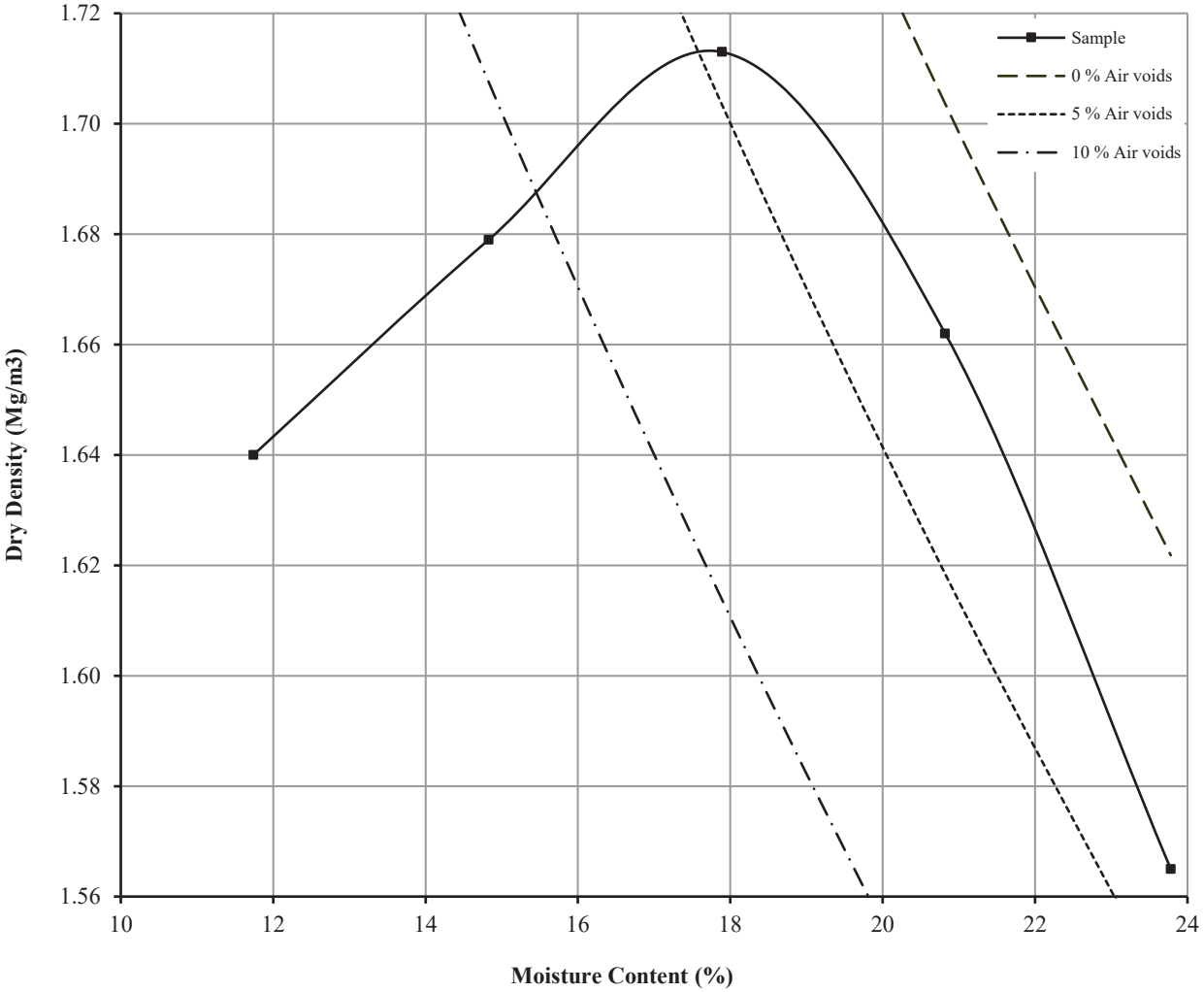
A46 Walsgrave

Contract No:
PSL23/6734
Client Ref:
G230651

DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

BS 1377 : Part 4 : Clause 3.3 : 1990

Hole Number:	**BH123**	**Top Depth (m) :**	**1.00**
Sample Number:	**7**	**Base Depth (m) :**	**1.00**
Sample Type:	**B**		

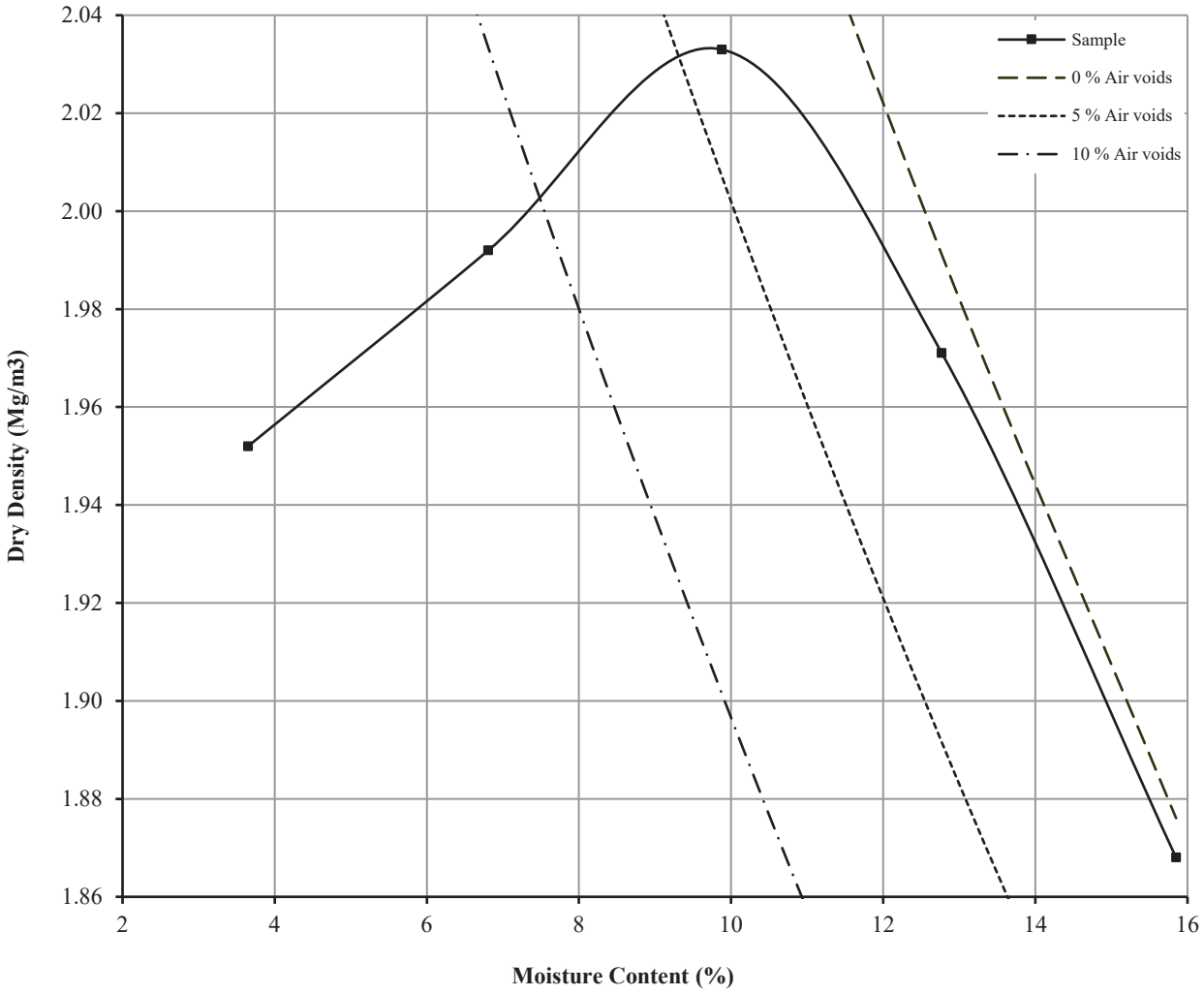


Initial Moisture Content:		18	Method of Compaction:	2.5kg	Separate Samples
Particle Density (Mg/m3):	2.64	Assumed	Material Retained on 37.5 mm Test Sieve (%):		0
Maximum Dry Density (Mg/m3):		1.71	Material Retained on 20.0 mm Test Sieve (%):		0
Optimum Moisture Content (%):		18			
Remarks See summary of soil descriptions					

DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

BS 1377 : Part 4 : Clause 3.6 : 1990

Hole Number:	**BH123**	**Top Depth (m) :**	**3.50**
Sample Number:	**20**	**Base Depth (m) :**	**4.00**
Sample Type:	**B**		



Initial Moisture Content:		16	Method of Compaction:	4.5kg	Separate Samples
Particle Density (Mg/m3):	2.67	Assumed	Material Retained on 37.5 mm Test Sieve (%):		3
Maximum Dry Density (Mg/m3):		2.03	Material Retained on 20.0 mm Test Sieve (%):		3
Optimum Moisture Content (%):		10			
Remarks See summary of soil descriptions					

UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

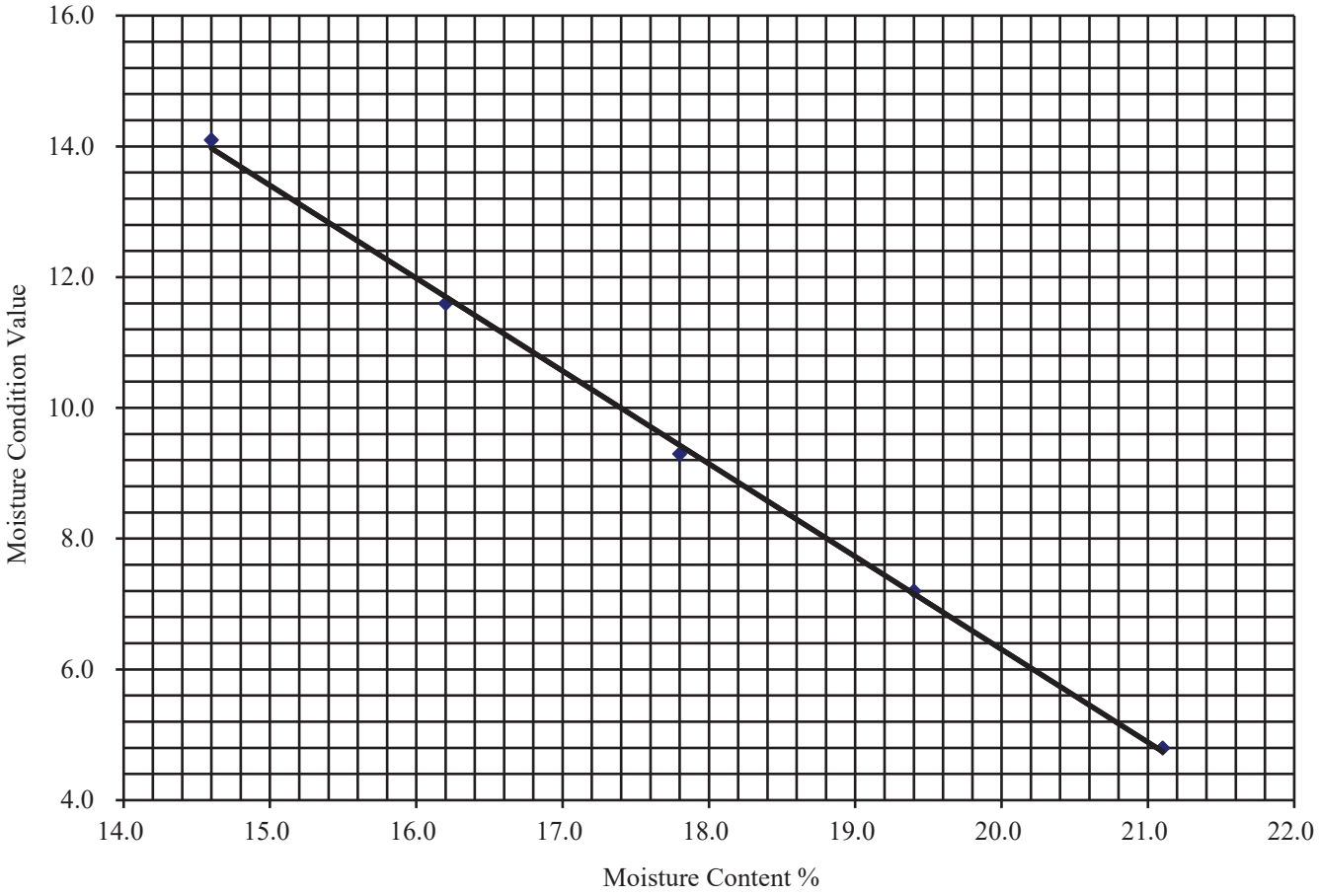
Contract
PSL23/6734
Client Ref
G230651

MOISTURE CONDITION VALUE CALIBRATION

BS1377 : Part 4 : 1990 Clause 5.5

Hole Number:	**BH123**	**Top Depth (m):**	**1.00**
Sample Number:	**7**	**Base Depth (m):**	**1.00**
Sample Type:	**B**		

Initial Moisture Content (%):	18
Single/Separate Samples Tested	Separate
Material Retained on the 20mm BS Test Sieve (%):	0



Test Results.

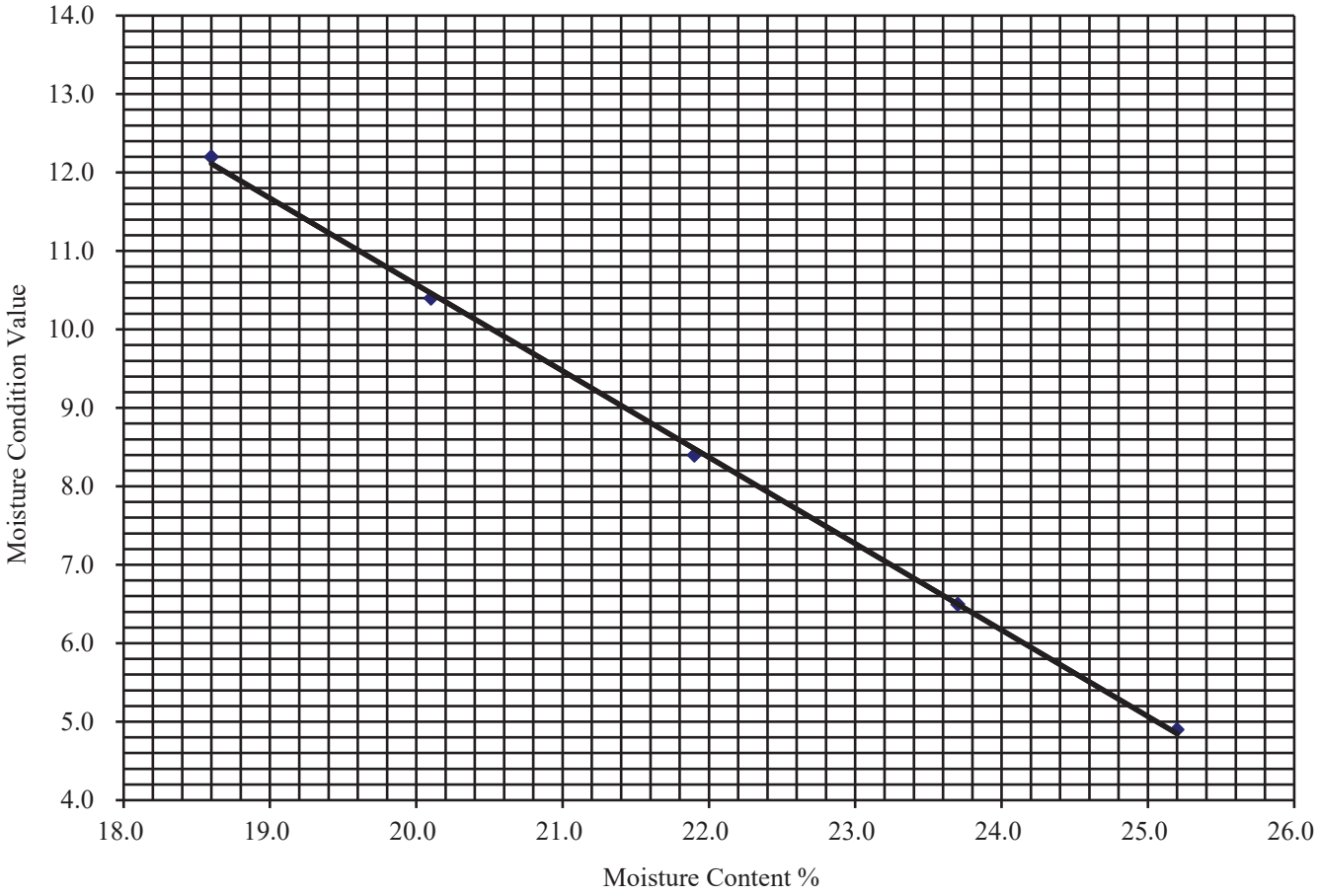
Test Number	1	2	3	4	5
Moisture Content (%)	14.6	16.2	17.8	19.4	21.1
MCV	14.1	11.6	9.3	7.2	4.8

MOISTURE CONDITION VALUE CALIBRATION

BS1377 : Part 4 : 1990 Clause 5.5

Hole Number:	**BH123**	**Top Depth (m):**	**1.50**
Sample Number:	**10**	**Base Depth (m):**	**2.00**
Sample Type:	**B**		

Initial Moisture Content (%):	19
Single/Separate Samples Tested	Separate
Material Retained on the 20mm BS Test Sieve (%):	0



Test Results.

Test Number	1	2	3	4	5
Moisture Content (%)	18.6	20.1	21.9	23.7	25.2
MCV	12.2	10.4	8.4	6.5	4.9

ONE DIMENSIONAL CONSOLIDATION TEST

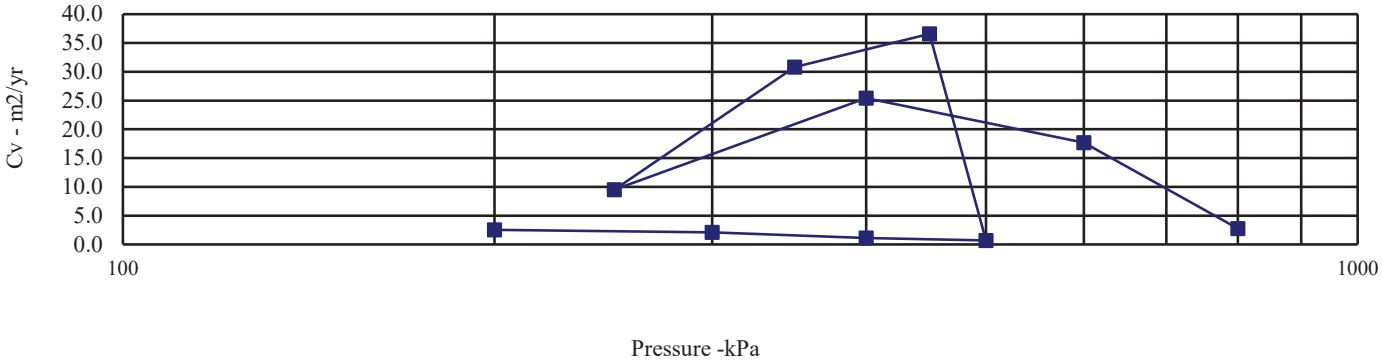
BS 1377: Part 5: 1990: Clause 3

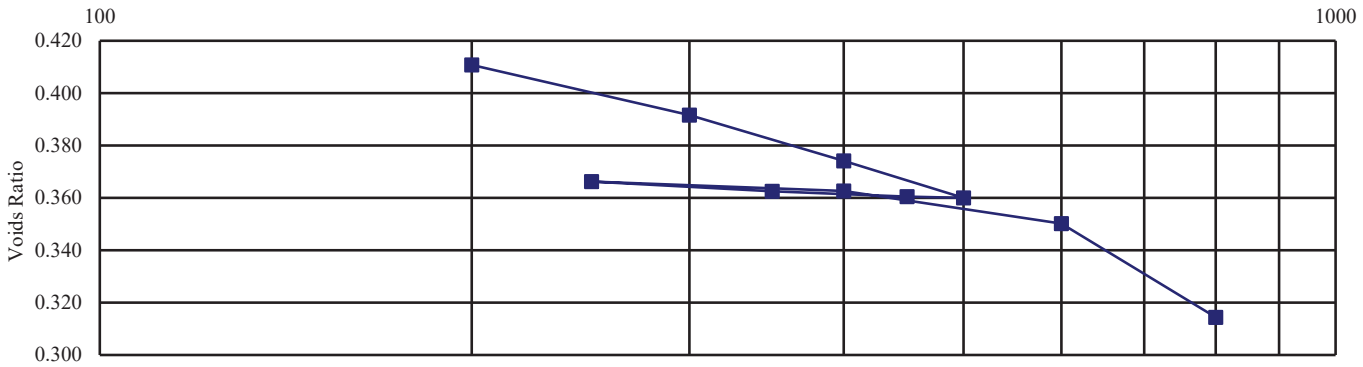
Hole Number: BH123 **Top Depth (m):** 10.50

Sample Number: 34 **Base Depth (m) :** 10.95

Sample Type: U

Initial Conditions		Pressure Range kPa		Mv m2/MN	Cv m2/yr	Specimen location within tube:	Top
Moisture Content (%):	17						
Bulk Density (Mg/m3):	2.09	0	200	0.257	2.535	Method used to	
Dry Density (Mg/m3):	1.78	200	300	0.136	2.087	determine CV:	T90
Voids Ratio:	0.487	300	400	0.125	1.121	Nominal temperature	
Degree of saturation:	93.0	400	500	0.103	0.696	during test ' C:	20
Height (mm):	20.016	500	450	0.008	36.577	Remarks:	
Diameter (mm)	75.018	450	350	0.015	30.826	See summary of soil descriptions	
Particle Density (Mg/m3): Assumed	2.65	350	250	0.027	9.484		
		250	400	0.017	25.425		
		400	600	0.046	17.697		
		600	800	0.132	2.775		





UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

Contract No: PSL23/6734

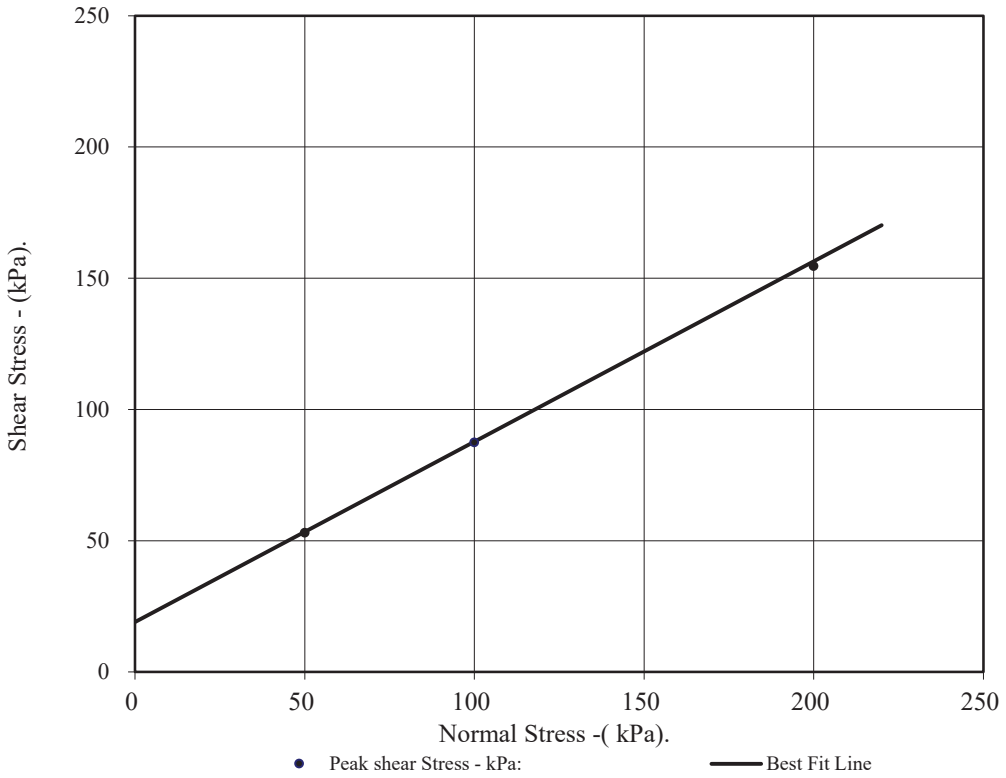
Client Ref: G230651

CONSOLIDATED DRAINED SHEARBOX TEST

BS1377:Part 7:1990 Clause 4

Hole Number:	**BH123**		Top Depth:	**7.50**	
Sample Number:	**27**		Base Depth:	**7.95**	
Sample Conditions:	Submerged		Sample Type	**U**	
Particle Density - Mg/m3:	2.65	Assumed	**Remarks:**		
Sample Preparation:	Cut and Trimmed Undisturbed				
Sample Description:	**See summary of soil descriptions.**				

STAGE	**1**	**2**	**3**
Initial Conditions			
Height - mm:	20.05	20.05	20.05
Length - mm:	59.97	59.97	59.97
Moisture Content - %:	16	16	16
Bulk Density - Mg/m3:	1.79	1.79	1.79
Dry Density - Mg/m3:	1.54	1.54	1.54
Voids Ratio:	0.725	0.725	0.725
Normal Pressure- kPa	50	100	200
Consolidation Stage			
Consolidated Height - mm:	19.53	18.98	18.17
Shearing Stage			
Rate of Strain - mm/min	0.047	0.047	0.047
Displacement at peak shear stress - mm	4.91	2.71	6.91
Peak shear Stress - kPa:	53	88	155
Final Consolidated Conditions			
Moisture Content - %:	18	17	16
Bulk Density - Mg/m3:	1.83	1.89	1.97
Dry Density - Mg/m3:	1.56	1.62	1.70
Peak			
Angle of Shearing Resistance:(~~θ~~)	**35**		
Effective Cohesion - kPa:	**19**		

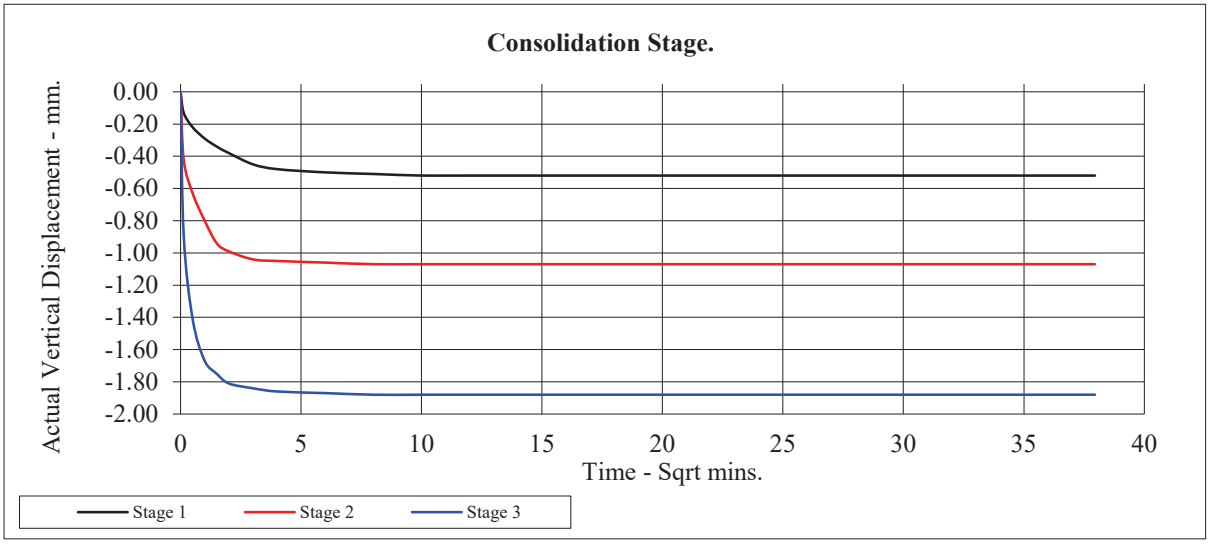


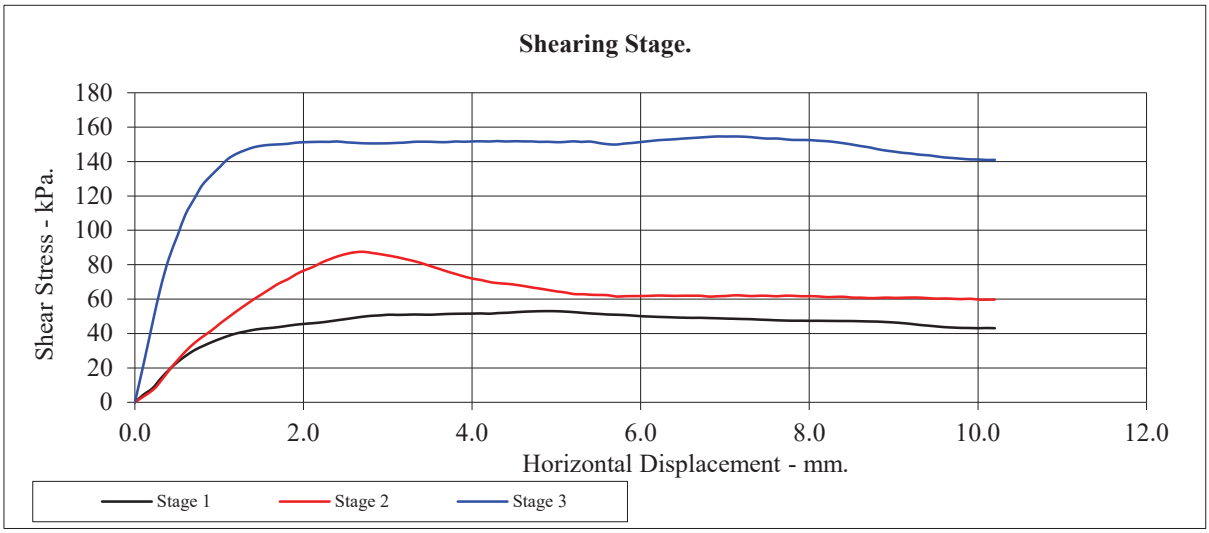
UKAS TESTING 4043 / PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY	**A46 Walsgrave**	**Contract No:** PSL23/6734 **Client Ref:** G230651

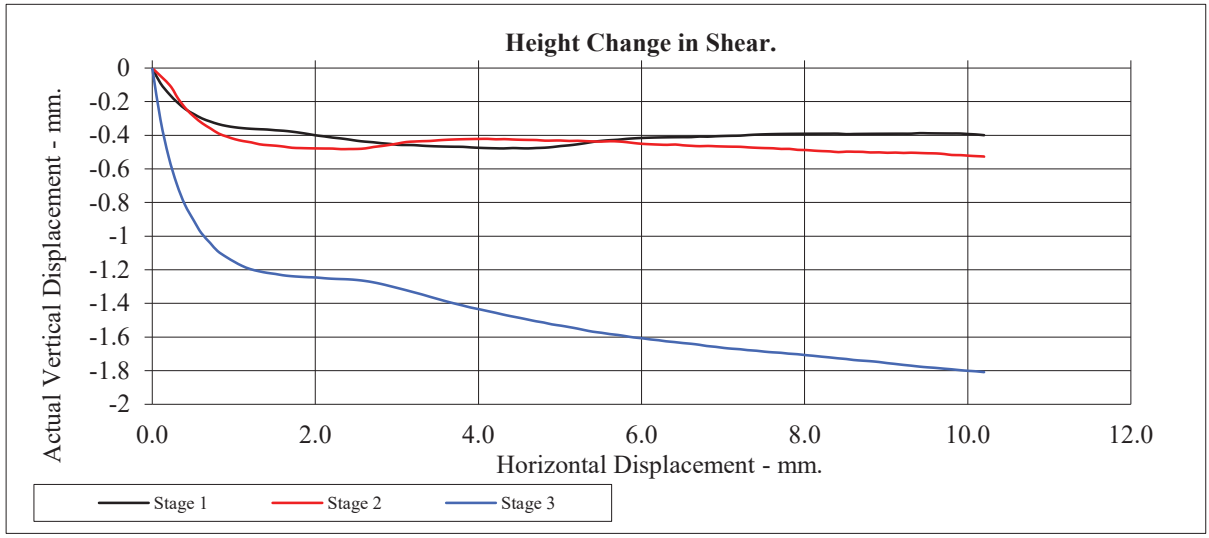
CONSOLIDATED DRAINED SHEARBOX TEST

BS1377:Part 7:1990 Clause 4

Hole Number:	**BH123**	Top Depth:	**7.50**
Sample Number:	**27**	Base Depth:	**7.95**







UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

Contract No:
PSL23/6734
Client Ref:
G230651

4161

7 - 11 Harding Street
Leicester
LE1 4DH

Professional Soils Laboratory
5/7 Hexthorpe Road
Hexthorpe
Doncaster
DN4 0AR

Analytical Test Report: L23/04474/PSL - 23-36484

Your Project Reference:	**PSL23/6734 11/8 G230651**		
Your Order Number:	PSL	Samples Received / Instructed:	16/08/2023 / 16/08/2023
Report Issue Number:	1	Sample Tested:	16/08 to 23/08/2023
Samples Analysed:	3 soil samples	Report issued:	23/08/2023

Signed

James Gane
Analytical Services Manager
CTS Group

Notes:

General

Please refer to Methodologies page for details pertaining to the analytical methods undertaken.

Samples will be retained for 14 days after issue of this report unless otherwise requested.

Moisture Content was determined in accordance with CTS method statement MS - CL - Sample Prep, oven dried at <30˚C.

Moisture Content is reported as a percentage of the dry mass of soil, this calculation is in accordance with BS1377, Part 2, 1990, Clause 3.2

Stone Content was determined in accordance with CTS method statement MS - CL - Sample Prep and refers to the percentage of stones retained on a 10mm BS test sieve.

Where specification limits are included these are for guidance only. Where a measured value has been highlighted this is not implying acceptance or failure and certainty of measurement values have not been taken into account.

Uncertainty of measurement values are available on request.

Samples were supplied by customer, results apply to the samples as received.

Deviating Samples

On receipt samples are compared against our sample holding and handling protocols, where any deviations have been noted these are reported on our deviating sample page (if present)

Accreditation Key

UKAS = UKAS Accreditation, MCERTS = MCERTS Accreditation, u = Unaccredited

MCERTS Accreditation only covers the SAND, CLAY and LOAM matrices

Date of Issue: 26.07.23

Issued by: J. Gane

Issue No: 4

Rev No: 2

4161

CTS Group
7 - 11 Harding Street
Leicester
LE1 4DH

L23/04474/PSL - 23-36484

Project Reference - PSL23/6734 11/8 G230651

Analytical Test Results - Chemical Analysis

Lab Reference			310276	310277	310278
Client Sample ID			VE10230607009	VE10230607017	VE10230607026
Client Sample Location			BH123	BH123	BH123
Client Sample Type			-	-	-
Client Sample Number			-	-	-
Depth - Top (m)			1.20	2.50	6.50
Depth - Bottom (m)			1.20	3.00	6.50
Date of Sampling			07/06/2023	07/06/2023	07/06/2023
Time of Sampling			-	-	-
Sample Matrix			Clay	Clay	Clay
Determinant	**Units**	**Accreditation**			
Water soluble sulphate (as SO_4)	(mg/l)	u	28	34	370
Acid Soluble Sulphate	(%)	u	0.03	0.03	0.12
Total Sulphur	(%)	UKAS	0.02	0.01	0.32
pH Value	pH Units	MCERTS	8.5	8.8	8.5
Water Soluble Chloride	(mg/l)	u	6.8	7.5	9.3
Water Soluble Nitrate (As NO_3)	(mg/l)	u	8.5	1.3	< 1.0
Water Soluble Magnesium	(mg/l)	u	13	8.0	38
Water Soluble Ammonium Ion	(mg/l)	u	1.3	1.3	1.3

4161

CTS Group
7 - 11 Harding Street
Leicester
LE1 4DH

L23/04474/PSL - 23-36484

Project Reference - PSL23/6734 11/8 G230651

Sample Descriptions

Lab Reference	Client Sample ID	Client Sample Location	Client Sample Type	Client Sample Number	Description	Moisture Content (%)	Stone Content (%)	Passing 2mm test sieve (%)
310276	VE10230607009	BH123	-	-	Brown slightly gravelly silty clay with rare rootlets	17	16	46
310277	VE10230607017	BH123	-	-	Reddish dark brown gravelly slightly silty sandy clay	17	10	38
310278	VE10230607026	BH123	-	-	Greyish orangish brown gravelly sandy silty clay	14	15	39

4161

CTS Group
7 - 11 Harding Street
Leicester
LE1 4DH

L23/04474/PSL - 23-36484

Project Reference - PSL23/6734 11/8 G230651

Sample Comments

Lab Reference	Client Sample ID	Client Sample Location	Client Sample Type	Client Sample Number	Comments
310276	VE10230607009	BH123	-	-	
310277	VE10230607017	BH123	-	-	
310278	VE10230607026	BH123	-	-	

4161

CTS Group
7 - 11 Harding Street
Leicester
LE1 4DH

L23/04474/PSL - 23-36484

Project Reference - PSL23/6734 11/8 G230651

Analysis Methodologies

Test Code	Test Name / Reference	Sample condition for analysis	Sample Preperation	Test Details
ANIONSS	MS - CL - Anions by Aquakem (2:1Extract)	Oven dried	Passing 2mm test sieve	Determination of Anions (inc Sulphate, chloride etc.) in soils by Aquakem. Analysis is based on a 2:1 water to soil extraction ratio
PHS	MS - CL - pH in Soils	As received	Passing 10mm test sieve	Determination of pH in soils using a pH probe (using a 1:3 soil to water extraction)
ASSO4S	MS - CL - Acid Soluble Sulphate	Oven Dried	Passing 2mm test sieve	Determination of total sulphate in soils by acid extraction followed by ICP analysis
SAMPLEPREP	MS - CL - Sample Preparation	-	-	Preparation of samples (including determination of moisture content) to allow for subsequent analysis
1377TS-ELT	BS1377 Total Sulphur Content by HTC	Oven dried	BS1377 : Part 1 : 2016	Total Sulphur Content testing of Soil in accordance with BS 1377 : Part 3 : 2018 + A1 : 2021 Clause 7.10 (using Eltra CS-800 Analyser)

4161

CTS Group
7 - 11 Harding Street
Leicester
LE1 4DH

L23/04474/PSL - 23-36484

Project Reference - PSL23/6734 11/8 G230651

Sample Deviations

Deviations are listed below against each sample and associated test method, where deviation(s) are noted it means data may not be representative of the sample at the time of sampling and it is possible that results provided may be compromised.

Observations on receipt

A - No date of sampling provided
C - Received in inappropriate container
H - Contains headspace
T - Temperature on receipt exceeds storage temperature
R - Date of sampling to receipt insufficient to allow analysis to be completed without deviation, Please note this is only a deviation if 'X' is also recorded against the sample

Observations whist in laboratory

X - Exceeds sampling to extraction or analysis timescales

Lab Reference	Client Sample ID	Client Sample Location	Client Sample Type	Client Sample Number	Test	Deviations
310276	VE10230607009	BH123	-	-	BS1377 Total Sulphur Content by HTC	RX
310276	VE10230607009	BH123	-	-	MS - CL - Anions by Aquakem (2:1Extract)	RX
310276	VE10230607009	BH123	-	-	MS - CL - pH in Soils	RX
310277	VE10230607017	BH123	-	-	BS1377 Total Sulphur Content by HTC	RX
310277	VE10230607017	BH123	-	-	MS - CL - Anions by Aquakem (2:1Extract)	RX
310277	VE10230607017	BH123	-	-	MS - CL - pH in Soils	RX
310278	VE10230607026	BH123	-	-	BS1377 Total Sulphur Content by HTC	RX
310278	VE10230607026	BH123	-	-	MS - CL - Anions by Aquakem (2:1Extract)	RX
310278	VE10230607026	BH123	-	-	MS - CL - pH in Soils	RX

LABORATORY REPORT

Contract Number: PSL23/4788

Report Date: 08 August 2023

Client's Reference: G230651/Geo 26

Client Name: Strata Geotechnics
Kirkby Lane
Pinxton
Nottinghamshire
NG16 6JA

For the attention of: Izaac Lovatt

Contract Title: A46 Walsgrave

Date Received: 20/6/2023
Date Commenced: 20/6/2023
Date Completed: 8/8/2023

Notes: Opinions and Interpretations are outside the UKAS Accreditation

A copy of the Laboratory Schedule of accredited tests as issued by UKAS is attached to this report. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced other than in full, without the prior written approval of the laboratory.

Checked and Approved Signatories:

L Knight
(Assistant Laboratory Manager)

R Berriman
(Associate Director)

S Royle
(Laboratory Manager)

[redacted]

A Watkins
(Managing Director)

S Eyre
(Senior Technical Coordinator)

A Fry
(Section Manager)

5 – 7 Hexthorpe Road,
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Tel: [redacted]
Email: [redacted]@prosoils.co.uk
[redacted]@prosoils.co.uk

WATER CONTENT OF ROCK

ISRM Suggested Methods - Rock Characterization Testing and Monitoring 1974 - 2006

Hole Number	Sample Number	Sample Type	Top Depth (m)	Base Depth (m)	Water Content (%)	Sample Description	Remarks
BH118	25	CSS	9.10	9.35	12	Brown CLAY	
BH118	26	CSS	9.90	10.00	12	Brown CLAY	

UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

Contract No:

PSL23/4788

Client Ref:

G230651

SUMMARY OF POINT LOAD TEST RESULTS

ISRM Suggested Methods : 2007

Borehole Number	Depth (m)	Sample Ref	Test Type	Orientation	Dimensions (mm)		Area	D_e^2	D_e	Failure Load (P)		I_s	Corr Fac	I_{s50}	Failure Type	Remarks
				Par / Perp	W	D	(mm2)		(mm)	(Mpa)	(kN)	(MPa)	F	(MPa)		
BH118	9.10	25	A	Perp	100	42	4200	5347.61	73.13	-	0.68	0.13	1.187	0.15	Valid	

Note All testing carried out on samples at as received water content

Par = parallel, Perp = perpendicular, U = Random

A = Axial, D = Diametral, I = Irregular

UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

Contract No:

PSL23/4788

Client Ref:

G230651

UNIAXIAL COMPRESSIVE STRENGTH

ISRM Suggested Methods - Rock Characterization Testing and Monitoring 1974 - 2006

Borehole Number:	**BH118**	**Top Depth (m):**	**9.90**
Sample Number:	**26**	**Base Depth (m):**	**10.00**
Sample Type:	**CSS**	**Sample Date:**	**26/05/2023**
Storage Condition:	**Sealed in Core Box**	**Date of Reciept**	**20/06/2023**
Sample Description:	**Brown slightly gravelly sandy CLAY.**		

Specimen Details/Conditions	
Diameter - mm:	100.12
Height - mm:	200.07
Water Content - %:	11.6
Sample Mass - g:	3794.6
Bulk Density - Mg/m^3:	2.41
Dry Density - Mg/m^3:	2.16
Height Ratio: * Sample does not comply with H:D ratio	2.0
Degree of Saturation - %:	98
Assumed Specific Gravity for Degree of Saturation:	2.90

Test Result	
Load Frame/Machine:	CM1/Controls
Date of test:	24/07/2023
Test Duration - mins:	00:14
Orientation:	Unknown
Stress Rate - MPa/s:	0.12
Strain at Failure - kN:	13.10
Unconfined Compressive Strength - Mpa:	1.66
Mode of Failure:	Vertical Shear

Remarks: -

LABORATORY REPORT

Contract Number: PSL23/4773

Report Date: 04 August 2023

Client's Reference: G230651/Geo 27

Client Name: Strata Geotechnics
Kirkby Lane
Pinxton
Nottinghamshire
NG16 6JA

For the attention of: Izaac Lovatt

Contract Title: A46 Walsgrave

Date Received: 20/6/2023
Date Commenced: 20/6/2023
Date Completed: 4/8/2023

Notes: Opinions and Interpretations are outside the UKAS Accreditation

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Checked and Approved Signatories:

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(Assistant Laboratory Manager)

R Berriman
(Associate Director)

S Royle
(Laboratory Manager)

[redacted]

A Watkins
(Managing Director)

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(Senior Technical Coordinator)

A Fry
(Section Manager)

5 – 7 Hexthorpe Road,
Hexthorpe,
Doncaster,
DN4 0AR
Tel: [redacted]
Email: [redacted]@prosoils.co.uk
[redacted]@prosoils.co.uk

WATER CONTENT OF ROCK

ISRM Suggested Methods - Rock Characterization Testing and Monitoring 1974 - 2006

Hole Number	Sample Number	Sample Type	Top Depth (m)	Base Depth (m)	Water Content (%)	Sample Description	Remarks
BH125A	34	CSS	12.40	12.70	8.5		
BH125A	36	CSS	14.03	14.18	8.9		
BH125A	39	CSS	15.60	15.95	9.1		
BH125A	42	CSS	18.40	18.70	11		
BH125A	45	CSS	20.60	20.90	8.0		
BH125A	48	CSS	22.80	23.05	8.3		
BH125A	51	CSS	24.85	25.00	8.5		

UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

Contract No: PSL23/4773

Client Ref: G230651

SUMMARY OF POINT LOAD TEST RESULTS

ISRM Suggested Methods : 2007

Borehole Number	Depth (m)	Sample Ref	Test Type	Orientation	Dimensions (mm)		Area	D_e^2	D_e	Failure Load (P)		I_s	Corr Fac	I_{s50}	Failure Type	Remarks
				Par / Perp	W	D	(mm2)		(mm)	(Mpa)	(kN)	(MPa)	F	(MPa)		
BH125A	14.03	36	A	Perp	100	43	4300	5474.93	73.99	-	1.06	0.19	1.193	0.23	Valid	
BH125A	18.40	42	A	Perp	100	35	3500	4456.34	66.76	-	0.86	0.19	1.139	0.22	Valid	
BH125A	22.80	48	A	Perp	100	51	5100	6493.52	80.58	-	2.61	0.40	1.240	0.50	Valid	

Note All testing carried out on samples at as received water content

Par = parallel, Perp = perpendicular, U = Random

A = Axial, D = Diametral, I = Irregular

UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

Contract No:

PSL23/4773

Client Ref:

G230651

SUMMARY OF POINT LOAD TEST RESULTS

ISRM Suggested Methods : 2007

Borehole Number	Depth (m)	Sample Ref	Test Type	Orientation	Dimensions (mm)		D_e^2	D_e	Failure Load		I_s	Corr Fac	I_{s50}	Failure Type	Remarks
				Par / Perp	L	D		(mm)	(Mpa)	(kN)	(MPa)	F	(MPa)		

Note All testing carried out on samples at as received water content

Par = parallel, Perp = perpendicular, U = Random

UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

Contract No:

PSL23/4773

Client Ref:

G230651

UNIAXIAL COMPRESSIVE STRENGTH

ISRM Suggested Methods - Rock Characterization Testing and Monitoring 1974 - 2006

Borehole Number:	**BH125A**	**Top Depth (m):**	**12.40**
Sample Number:	**34**	**Base Depth (m):**	**12.70**
Sample Type:	**CSS**	**Sample Date:**	**24/05/2023**
Storage Condition:	**Sealed in Core Box**	**Date of Reciept**	**20/06/2023**
Sample Description:	**MUDSTONE**		

Specimen Details/Conditions	
Diameter - mm:	100.17
Height - mm:	252.10
Water Content - %:	8.5
Sample Mass - g:	4997.4
Bulk Density - Mg/m^3:	2.52
Dry Density - Mg/m^3:	2.32
Height Ratio: * Sample complies with H:D ratio	2.5
Degree of Saturation - %:	105
Assumed Specific Gravity for Degree of Saturation:	2.85

Test Result	
Load Frame/Machine:	CM1/Controls
Date of test:	07/07/2023
Test Duration - mins:	00:18
Orientation:	Unknown
Stress Rate - MPa/s:	0.18
Strain at Failure - kN:	24.80
Unconfined Compressive Strength - Mpa:	3.15
Mode of Failure:	Vertical Shear

Remarks: -

UNIAXIAL COMPRESSIVE STRENGTH

ISRM Suggested Methods - Rock Characterization Testing and Monitoring 1974 - 2006

Borehole Number:	**BH125A**	**Top Depth (m):**	**14.03**
Sample Number:	**36**	**Base Depth (m):**	**14.18**
Sample Type:	**CSS**	**Sample Date:**	**24/05/2023**
Storage Condition:	**Sealed in Core Box**	**Date of Reciept**	**20/06/2023**
Sample Description:	**MUDSTONE**		

Specimen Details/Conditions	
Diameter - mm:	100.07
Height - mm:	251.10
Water Content - %:	8.9
Sample Mass - g:	4914.6
Bulk Density - Mg/m^3:	2.49
Dry Density - Mg/m^3:	2.29
Height Ratio: * Sample complies with H:D ratio	2.5
Degree of Saturation - %:	102
Assumed Specific Gravity for Degree of Saturation:	2.85

Test Result	
Load Frame/Machine:	CM1/Controls
Date of test:	07/07/2023
Test Duration - mins:	00:12
Orientation:	Unknown
Stress Rate - MPa/s:	0.22
Strain at Failure - kN:	20.40
Unconfined Compressive Strength - Mpa:	2.59
Mode of Failure:	Vertical Shear

Remarks: -

UNIAXIAL COMPRESSIVE STRENGTH

ISRM Suggested Methods - Rock Characterization Testing and Monitoring 1974 - 2006

Borehole Number:	**BH125A**	**Top Depth (m):**	**15.60**
Sample Number:	**39**	**Base Depth (m):**	**15.95**
Sample Type:	**CSS**	**Sample Date:**	**24/05/2023**
Storage Condition:	**Sealed in Core Box**	**Date of Reciept**	**20/06/2023**
Sample Description:	**MUDSTONE**		

Specimen Details/Conditions	
Diameter - mm:	100.04
Height - mm:	252.47
Water Content - %:	9.1
Sample Mass - g:	4920.4
Bulk Density - Mg/m^3:	2.48
Dry Density - Mg/m^3:	2.27
Height Ratio: * Sample complies with H:D ratio	2.5
Degree of Saturation - %:	102
Assumed Specific Gravity for Degree of Saturation:	2.85

Test Result	
Load Frame/Machine:	CM1/Controls
Date of test:	07/07/2023
Test Duration - mins:	00:10
Orientation:	Unknown
Stress Rate - MPa/s:	0.23
Strain at Failure - kN:	18.10
Unconfined Compressive Strength - Mpa:	2.3
Mode of Failure:	Vertical Shear

Remarks: -

UNIAXIAL COMPRESSIVE STRENGTH

ISRM Suggested Methods - Rock Characterization Testing and Monitoring 1974 - 2006

Borehole Number:	**BH125A**	**Top Depth (m):**	**20.60**
Sample Number:	**45**	**Base Depth (m):**	**20.90**
Sample Type:	**CSS**	**Sample Date:**	**24/05/2023**
Storage Condition:	**Sealed in Core Box**	**Date of Reciept**	**20/06/2023**
Sample Description:	**MUDSTONE**		

Specimen Details/Conditions	
Diameter - mm:	100.13
Height - mm:	250.15
Water Content - %:	8.0
Sample Mass - g:	4922.4
Bulk Density - Mg/m^3:	2.50
Dry Density - Mg/m^3:	2.31
Height Ratio: * Sample does not comply with H:D ratio	2.5
Degree of Saturation - %:	99
Assumed Specific Gravity for Degree of Saturation:	2.85

Test Result	
Load Frame/Machine:	CM1/Controls
Date of test:	07/07/2023
Test Duration - mins:	00:12
Orientation:	Unknown
Stress Rate - MPa/s:	0.21
Strain at Failure - kN:	20.20
Unconfined Compressive Strength - Mpa:	2.57
Mode of Failure:	Vertical Shear

Remarks: -

UNIAXIAL COMPRESSIVE STRENGTH

ISRM Suggested Methods - Rock Characterization Testing and Monitoring 1974 - 2006

Borehole Number:	**BH125A**	**Top Depth (m):**	**22.80**
Sample Number:	**48**	**Base Depth (m):**	**23.05**
Sample Type:	**CSS**	**Sample Date:**	**24/05/2023**
Storage Condition:	**Sealed in Core Box**	**Date of Reciept**	**20/06/2023**
Sample Description:	**MUDSTONE**		

Specimen Details/Conditions	
Diameter - mm:	100.15
Height - mm:	250.12
Water Content - %:	8.3
Sample Mass - g:	4899.4
Bulk Density - Mg/m^3:	2.49
Dry Density - Mg/m^3:	2.30
Height Ratio: * Sample does not comply with H:D ratio	2.5
Degree of Saturation - %:	98
Assumed Specific Gravity for Degree of Saturation:	2.85

Test Result	
Load Frame/Machine:	CM1/Controls
Date of test:	07/07/2023
Test Duration - mins:	00:27
Orientation:	Unknown
Stress Rate - MPa/s:	0.18
Strain at Failure - kN:	37.40
Unconfined Compressive Strength - Mpa:	4.75
Mode of Failure:	Vertical Shear

Remarks: -

UNIAXIAL COMPRESSIVE STRENGTH

ISRM Suggested Methods - Rock Characterization Testing and Monitoring 1974 - 2006

Borehole Number:	**BH125A**	**Top Depth (m):**	**24.85**
Sample Number:	**51**	**Base Depth (m):**	**25.00**
Sample Type:	**CSS**	**Sample Date:**	**24/05/2023**
Storage Condition:	**Sealed in Core Box**	**Date of Reciept**	**20/06/2023**
Sample Description:	**MUDSTONE**		

Specimen Details/Conditions	
Diameter - mm:	100.09
Height - mm:	250.12
Water Content - %:	8.5
Sample Mass - g:	4937.2
Bulk Density - Mg/m^3:	2.51
Dry Density - Mg/m^3:	2.31
Height Ratio: * Sample does not comply with H:D ratio	2.5
Degree of Saturation - %:	104
Assumed Specific Gravity for Degree of Saturation:	2.85

Test Result	
Load Frame/Machine:	CM1/Controls
Date of test:	07/07/2023
Test Duration - mins:	00:10
Orientation:	Unknown
Stress Rate - MPa/s:	0.23
Strain at Failure - kN:	17.90
Unconfined Compressive Strength - Mpa:	2.28
Mode of Failure:	Vertical Shear

Remarks: -

7 - 11 Harding Street
Leicester
LE1 4DH

Professional Soils Laboratory
5/7 Hexthorpe Road
Hexthorpe
Doncaster
DN4 0AR

Analytical Test Report: L23/03185/PSL - 23-35068 - Amendment A

Your Project Reference:	**PSL23/4773 A46 Walsgrave**		
Your Order Number:	PSL23/4773	Samples Received / Instructed:	06/07/2023 / 06/07/2023
Report Issue Number:	2	Sample Tested:	06/07 to 11/07/2023
Samples Analysed:	2 soil samples	Report issued:	03/08/2023

James Gane
Analytical Services Manager
CTS Group

Notes:

Amendment A 03/08/2023 - To include additional sample reference information as requested by client

General

Please refer to Methodologies page for details pertaining to the analytical methods undertaken.

Samples will be retained for 14 days after issue of this report unless otherwise requested.

Moisture Content was determined in accordance with CTS method statement MS - CL - Sample Prep, oven dried at <30˚C.

Moisture Content is reported as a percentage of the dry mass of soil, this calculation is in accordance with BS1377, Part 2, 1990, Clause 3.2

Where specification limits are included these are for guidance only. Where a measured value has been highlighted this is not implying acceptance or failure and certainty of measurement values have not been taken into account.

Uncertainty of measurement values are available on request.

Samples were supplied by customer, results apply to the samples as received.

Deviating Samples

On receipt samples are compared against our sample holding and handling protocols, where any deviations have been noted these are reported on our deviating sample page (if present)

Accreditation Key

UKAS = UKAS Accreditation, MCERTS = MCERTS Accreditation, u = Unaccredited

MCERTS Accreditation only covers the SAND, CLAY and LOAM matrices

Date of Issue: 26.07.23

Issued by: J. Gane

Issue No: 4

Rev No: 2

CTS Group
7 - 11 Harding Street
Leicester
LE1 4DH

L23/03185/PSL - 23-35068 - Amendment A

Project Reference - PSL23/4773 A46 Walsgrave

Analytical Test Results - Chemical Analysis

Lab Reference			303068	303069
Client Sample ID			-	-
Client Sample Location			BH125A	BH125A
Client Sample Type			CSS	CSS
Client Sample Number			34	42
Depth - Top (m)			12.40	18.40
Depth - Bottom (m)			12.70	18.70
Date of Sampling			24/05/2023	24/05/2023
Time of Sampling			-	-
Sample Matrix			Clay	Clay
Determinant	**Units**	**Accreditation**		
Water soluble sulphate (as SO_4)	(mg/l)	u	1600	1600
pH Value	pH Units	MCERTS	7.5	7.5

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Leicester
LE1 4DH

L23/03185/PSL - 23-35068 - Amendment A

Project Reference - PSL23/4773 A46 Walsgrave

Sample Descriptions

Lab Reference	Client Sample ID	Client Sample Location	Client Sample Type	Client Sample Number	Description	Moisture Content (%)	Stone Content (%)	Passing 2mm test sieve (%)
303068	-	BH125A	CSS	34	Reddish brown silt	-	-	100
303069	-	BH125A	CSS	42	Reddish brown silt	-	-	100

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Leicester
LE1 4DH

L23/03185/PSL - 23-35068 - Amendment A

Project Reference - PSL23/4773 A46 Walsgrave

Sample Comments

Lab Reference	Client Sample ID	Client Sample Location	Client Sample Type	Client Sample Number	Comments
303068	-	BH125A	CSS	34	
303069	-	BH125A	CSS	42	

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Leicester
LE1 4DH

L23/03185/PSL - 23-35068 - Amendment A

Project Reference - PSL23/4773 A46 Walsgrave

Analysis Methodologies

Test Code	Test Name / Reference	Sample condition for analysis	Sample Preperation	Test Details
ANIONSS	MS - CL - Anions by Aquakem (2:1Extract)	Oven dried	Passing 2mm test sieve	Determination of Anions (inc Sulphate, chloride etc.) in soils by Aquakem. Analysis is based on a 2:1 water to soil extraction ratio
PHS	MS - CL - pH in Soils	As received	Passing 10mm test sieve	Determination of pH in soils using a pH probe (using a 1:3 soil to water extraction)
SAMPLEPREP	MS - CL - Sample Preparation	-	-	Preparation of samples (including determination of moisture content) to allow for subsequent analysis

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Leicester
LE1 4DH

L23/03185/PSL - 23-35068 - Amendment A

Project Reference - PSL23/4773 A46 Walsgrave

Sample Deviations

Deviations are listed below against each sample and associated test method, where deviation(s) are noted it means data may not be representative of the sample at the time of sampling and it is possible that results provided may be compromised.

Observations on receipt

A - No date of sampling provided
C - Received in inappropriate container
H - Contains headspace
T - Temperature on receipt exceeds storage temperature
R - Date of sampling to receipt insufficient to allow analysis to be completed without deviation, Please note this is only a deviation if 'X' is also recorded against the sample

Observations whist in laboratory

X - Exceeds sampling to extraction or analysis timescales

Lab Reference	Client Sample ID	Client Sample Location	Client Sample Type	Client Sample Number	Test	Deviations
303068	-	BH125A	CSS	34	MS - CL - Anions by Aquakem (2:1Extract)	RX
303068	-	BH125A	CSS	34	MS - CL - pH in Soils	RX
303069	-	BH125A	CSS	42	MS - CL - Anions by Aquakem (2:1Extract)	RX
303069	-	BH125A	CSS	42	MS - CL - pH in Soils	RX

LABORATORY REPORT

Contract Number: PSL23/5771

Report Date: 08 August 2023

Client's Reference: G230651/Geo 28

Client Name: Strata Geotechnics
Kirkby Lane
Pinxton
Nottinghamshire
NG16 6JA

For the attention of: Izaac Lovatt

Project Name: A46 Walsgrave

Date Received: 19/7/2023
Date Commenced: 19/7/2023
Date Completed: 08/08/2023

Notes: **Opinions and Interpretations are outside the UKAS Accreditation**

A copy of the Laboratory Schedule of accredited tests as issued by UKAS is attached to this report. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced other than in full, without the prior written approval of the laboratory.

Checked and Approved Signatories:

A Watkins (Director)	R Berriman (Quality Manager)	S Royle (Laboratory Manager)
L Knight (Assistant Laboratory Manager)	S Eyre (Senior Technician)	[redacted] M l (Senior Technician)

5 – 7 Hexthorpe Road,
Hexthorpe,
Doncaster,
DN4 0AR
Tel: [redacted]
Email: [redacted]@prosoils.co.uk
[redacted]@prosoils.co.uk

SUMMARY OF LABORATORY SOIL DESCRIPTIONS

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Description of Sample
BH117	32	D	8.30	8.40	Brown clayey silty SAND.

UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

Contract No: PSL23/5771

Client Ref: G230651

SUMMARY OF SOIL DENSITY RELATED TESTS

(BS1377 : PART 2 & 4 : 1990)

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Moisture Content %	Bulk Density Mg/m^3	Dry Density Mg/m^3	Retained 20mm %	Retained 37.5mm %	Method of compaction kg	Maximum Dry Density Mg/m^3	Minimum Dry Density Mg/m^3	Remarks
BH117	32	D	8.30	8.40	24	1.84	1.48						

UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

Contract No: PSL23/5771

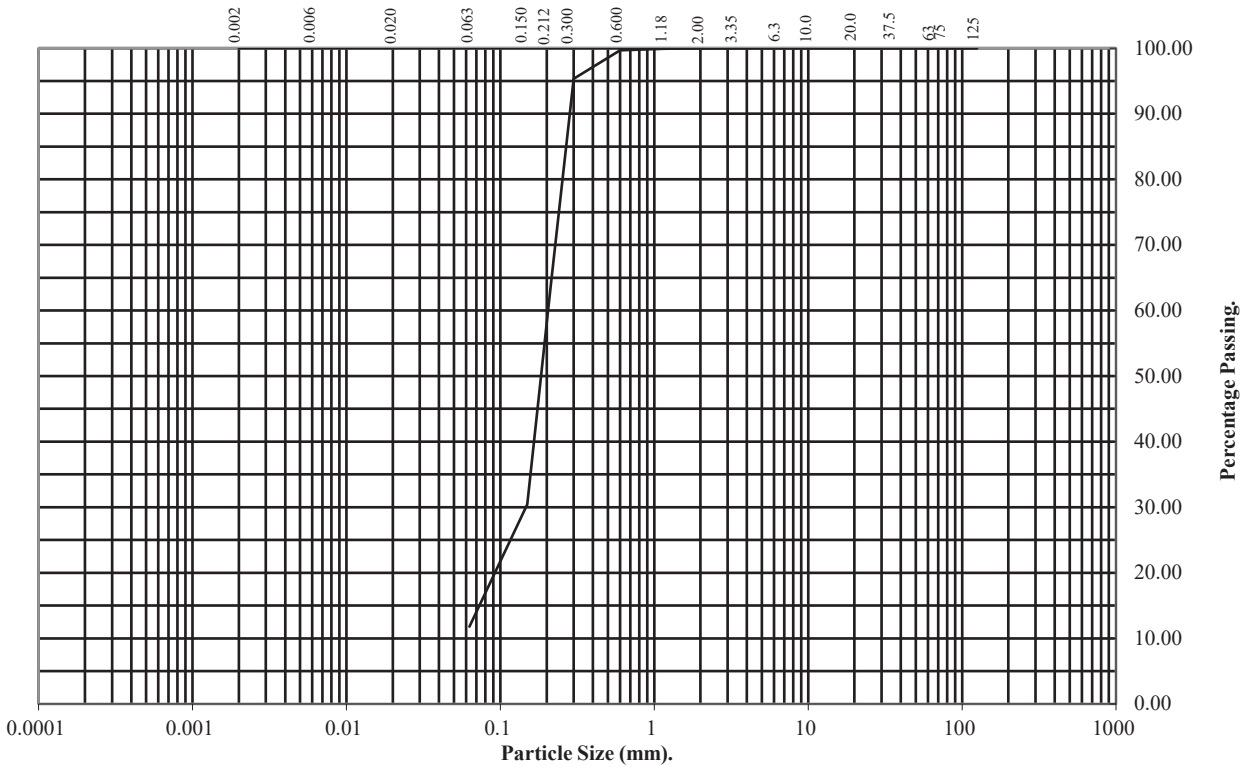
Client Ref: G230651

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number:	**BH117**	**Top Depth (m):**	**8.30**
Sample Number:	**32**	**Base Depth(m):**	**8.40**
Sample Type:	**D**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	100
6.3	100
3.35	100
2	100
1.18	100
0.6	100
0.3	95
0.212	64
0.15	30
0.063	12

Soil Fraction	Total Percentage
Cobbles	0
Gravel	0
Sand	88
Silt/Clay	12

Remarks:

See Summary of Soil Descriptions

WATER CONTENT OF ROCK

ISRM Suggested Methods - Rock Characterization Testing and Monitoring 1974 - 2006

Hole Number	Sample Number	Sample Type	Top Depth (m)	Base Depth (m)	Water Content (%)	Sample Description	Remarks
BH117	35	CSS	9.15	9.30	13	Mudstone	
BH117	39	CSS	12.30	12.40	13	Mudstone	
BH117	42	CSS	14.50	14.70	13	Mudstone	

UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

Contract No:

PSL23/5771

Client Ref:

G230651

SUMMARY OF POINT LOAD TEST RESULTS

ISRM Suggested Methods : 2007

Borehole Number	Depth (m)	Sample Ref	Test Type	Orientation	Dimensions (mm)		Area	D_e^2	D_e	Failure Load (P)		I_s	Corr Fac	I_{s50}	Failure Type	Remarks
				Par / Perp	W	D	(mm2)		(mm)	(Mpa)	(kN)	(MPa)	F	(MPa)		
BH117	9.15	35	A	Perp	100	38	3800	4838.31	69.56	-	0.57	0.12	1.160	0.14	Valid	
BH117	12.30	39	A	Perp	100	42	4200	5347.61	73.13	-	0.91	0.17	1.187	0.20	Valid	
BH117	14.50	42	A	Perp	100	39	3900	4965.63	70.47	-	1.01	0.20	1.167	0.24	Valid	

Note All testing carried out on samples at as received water content

Par = parallel, Perp = perpendicular, U = Random

A = Axial, D = Diametral, I = Irregular

UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

Contract No:

PSL23/5771

Client Ref:

G230651

SUMMARY OF POINT LOAD TEST RESULTS

ISRM Suggested Methods : 2007

Borehole Number	Depth (m)	Sample Ref	Test Type	Orientation	Dimensions (mm)		D_e^2	D_e	Failure Load		I_s	Corr Fac	I_{s50}	Failure Type	Remarks
				Par / Perp	L	D		(mm)	(Mpa)	(kN)	(MPa)	F	(MPa)		
BH117	9.15	35	D	Par	-	100	10000	100.00	-	0.31	0.031	1.366	0.04	Valid	
BH117	12.30	39	D	Par	-	100	10000	100.00	-	0.46	0.046	1.366	0.06	Valid	
BH117	14.50	42	D	Par	-	100	10000	100.00	-	0.55	0.055	1.366	0.08	Valid	

Note All testing carried out on samples at as received water content

Par = parallel, Perp = perpendicular, U = Random

UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

Contract No:

PSL23/5771

Client Ref:

G230651

PSL
PROFESSIONAL SOILS LABORATORY
A PHENNA GROUP COMPANY

TEST AMENDMENT NOTICE

(Please tick boxes as appropriate)

From: Matthew Fennell

To: Shamon Wade

Date: 10 / 8 /2023

Laboratory Ref: G230651

Contract Number: PSL23/5771

Location: A46 Walsgrave

☒ BH 117 o TP Sample Number

Depth (m): 9.15 + 12.3 + 14.5

Sample Type: o U o B o D o W o P ☒ C

Test/s:

The above sample cannot be tested for the following reasons:

- ☐ The Sample has not been received
- ☐ There is insufficient material for BS1377: 1990 testing

  Maximum Grain Size (Minimum 10%): o Fine o Medium o Coarse
  Sample Mass (kg): .....
  Required Mass (kg): .....

- ☐ The Sample has been previously tested.
- ☐ The Sample has been misplaced in the Laboratory.
- ☒ The Sample is unsuitable for testing because: • Insufficient dimensions

Please advise action required:

- ☐ Perform original test on the following alternative Sample:
- ☐

  o BH o TP Sample Number: Depth (m):

  Sample Type: o U o B o D o W o P o C

- ☐ Combine original Sample with the following sample:

  o BH o TP Sample Number: Depth (m):

  Sample Type: o U o B o D o W o P o C

- ☐ Perform the following alternative test/s on the original Sample
- ☐ Perform non-standard test on material available
- ☐ Take no further action.

Signed ..... Date .....
(Project Engineer)

LABORATORY REPORT

Contract Number: PSL23/5788

Report Date: 09 August 2023

Client's Reference: G230651/Geo

Client Name: Strata Geotechnics
Kirkby Lane
Pinxton
Nottinghamshire
NG16 6JA

For the attention of: Izaac Lovatt

Contract Title: A46 Walsgrave

Date Received: 19/7/2023
Date Commenced: 19/7/2023
Date Completed: 9/8/2023

Notes: Opinions and Interpretations are outside the UKAS Accreditation

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Checked and Approved Signatories:

A Watkins (Director)

R Berriman (Quality Manager)

S Royle (Laboratory Manager)

[redacted]

L Knight (Assistant Laboratory Manager)

S Eyre (Senior Technician)

T Watkins (Senior Technician)

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DN4 0AR
Tel: [redacted]
Email: [redacted]@prosoils.co.uk
[redacted]@prosoils.co.uk

SUMMARY OF LABORATORY SOIL DESCRIPTIONS

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Description of Sample
WS106	2	UT	2.00	2.50	Stiff brown slightly gravelly sandy CLAY.
WS106	8	D	2.70	2.80	Brown sandy CLAY.
WS106	9	D	3.50	3.70	Brown sandy CLAY.
WS106	4	UT	4.00	4.50	Brown slightly gravelly very sandy CLAY.

SUMMARY OF SOIL CLASSIFICATION TESTS

(BS1377 : PART 2 : 1990)

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Moisture Content % Clause 3.2	Linear Shrinkage % Clause 6.5	Particle Density Mg/m^3 Clause 8.2	Liquid Limit % Clause 4.3/4	Plastic Limit % Clause 5.3	Plasticity Index % Clause 5.4	Passing .425mm %	Remarks
WS106	8	D	2.70	2.80	21			44	21	23	100	Intermediate Plasticity CI
WS106	9	D	3.50	3.70	18			47	22	25	100	Intermediate Plasticity CI

SYMBOLS : **NP : Non Plastic** *** : Liquid Limit and Plastic Limit Wet Sieved.**

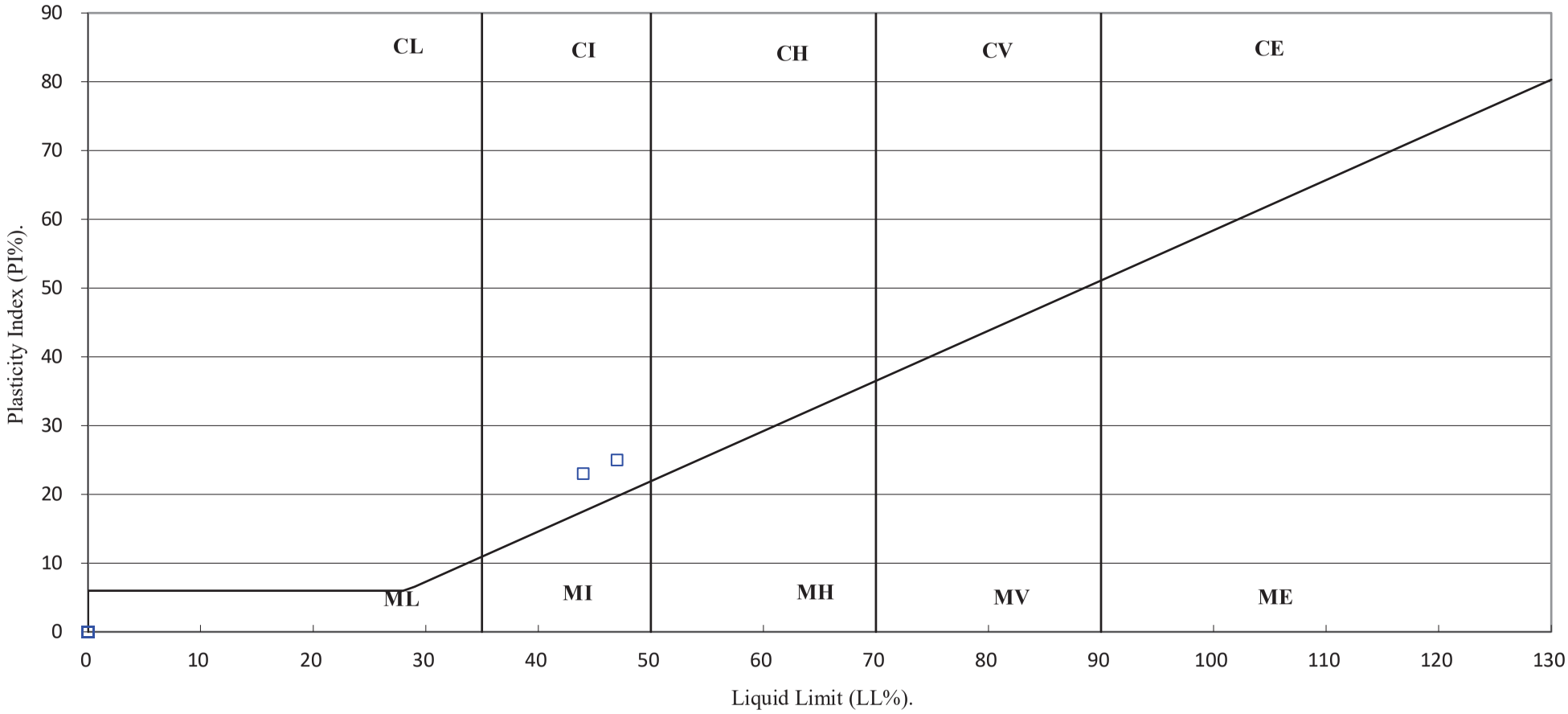
UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walgrave

Contract No:
PSL23/5788
Client Ref:
G230651

PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION.



UKAS TESTING 4043	PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY	**A46 Walgrave**

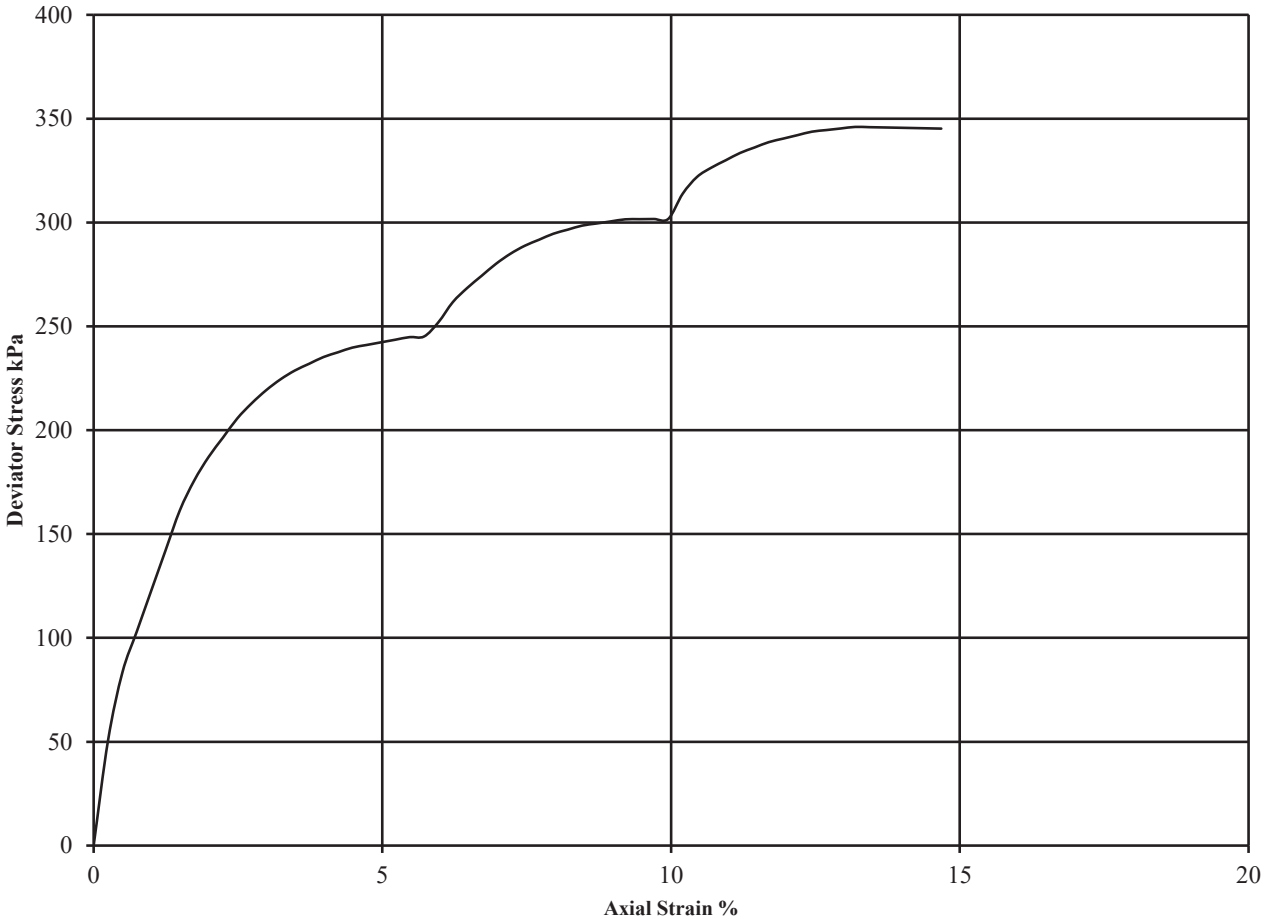
Contract No:
PSL23/5788
Client Ref:
G230651

UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION

WITHOUT MEASUREMENT OF PORE PRESSURE

BS1377 : Part7 : 1990: Clause 9

Hole Number:	**WS106**	**Top Depth (m):**	**2.00**
Sample Number:	**2**	**Base Depth (m):**	**2.50**
Sample Type	**UT**		



Diameter (mm):		103	Height (mm):		207	Test:	UU Multistage		Remarks
Specimen	Moisture Content (%)	Bulk Density (Mg/m3)	Dry Density (Mg/m3)	Cell Pressure (kPa) θ_3	Corr. Max. Deviator Stress (kPa) $(\theta_1-\theta_3)_f$	Shear Strength Cu (kPa) $^1/_2(\theta_1-\theta_3)_f$	Failure Strain (%)	Mode of Failure	Undisturbed Sample Sample taken from top of tube Rate of strain = 2 %/min Latex Membrane used 0.2 mm thick Membrane Correction applied (kPa)
1	21	2.10	1.74	20	245	123	5.7		0.36 0.35 0.34
				40	302	151	10.0		See summary of soil descriptions
				80	346	173	13.2	Plastic	

UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walgrave

Contract No:
PSL23/5788
Client Ref:
G230651

ONE DIMENSIONAL CONSOLIDATION TEST

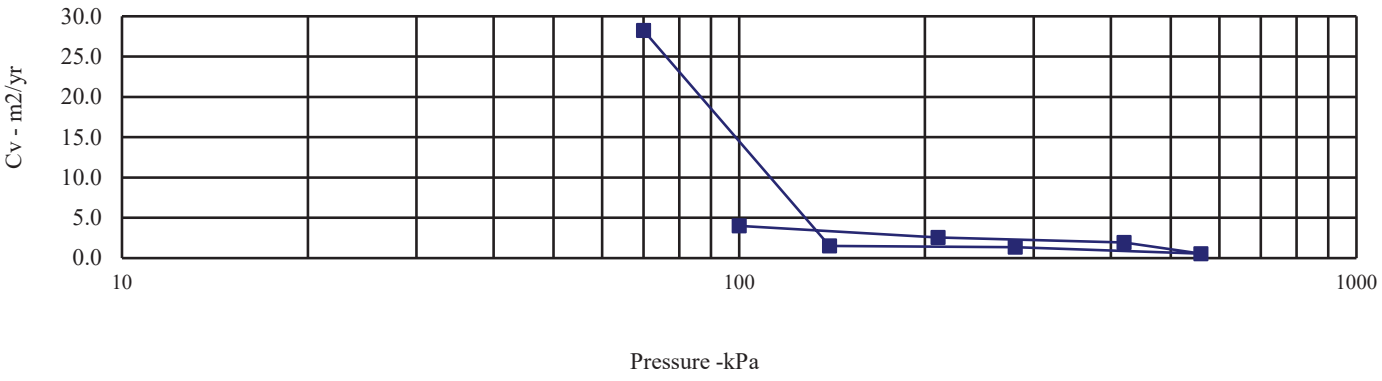
BS 1377: Part 5: 1990: Clause 3

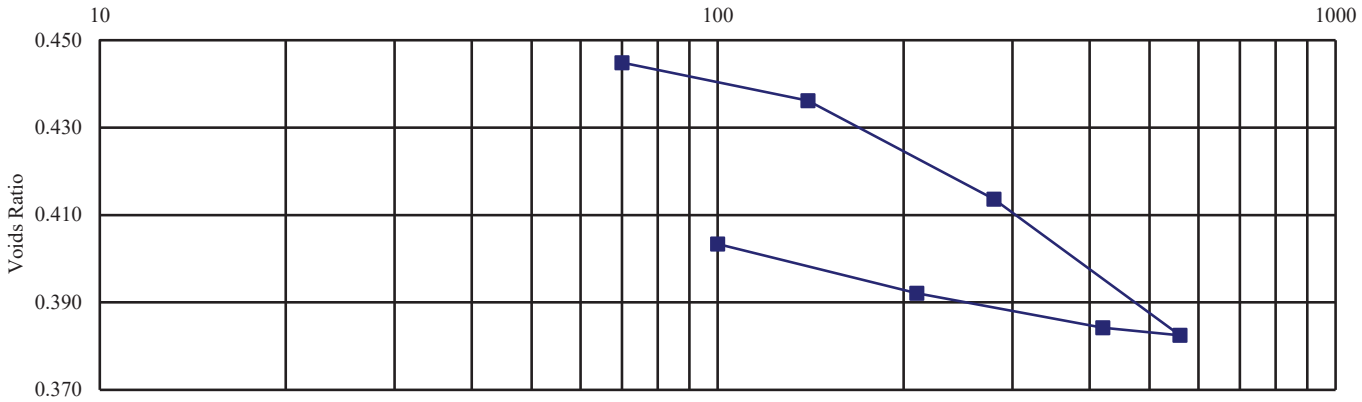
Hole Number: WS106 **Top Depth (m):** 4.00

Sample Number: 4 **Base Depth (m) :** 4.50

Sample Type: UT

Initial Conditions		Pressure Range kPa		Mv m2/MN	Cv m2/yr	Specimen location within tube:	Top
Moisture Content (%):	17						
Bulk Density (Mg/m3):	2.12	0	70	0.121	28.228	Method used to	
Dry Density (Mg/m3):	1.82	70	140	0.086	1.526	determine CV:	T90
Voids Ratio:	0.457	140	280	0.112	1.360	Nominal temperature	
Degree of saturation:	97.4	280	560	0.079	0.554	during test ' C:	20
Height (mm):	19.99	560	420	0.009	1.931	Remarks:	
Diameter (mm)	75.02	420	210	0.027	2.577	See summary of soil descriptions	
Particle Density (Mg/m3): Assumed	2.65	210	100	0.074	3.981		





UKAS TESTING 4043	A46 Walgrave	Contract No: PSL23/5788
PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY		Client Ref: G230651

LABORATORY REPORT

Contract Number: PSL23/5787

Report Date: 08 August 2023

Client's Reference: G230651/Geo 30

Client Name: Strata Geotechnics
Kirkby Lane
Pinxton
Nottinghamshire
NG16 6JA

For the attention of: Izaac Lovatt

Contract Title: A46 Walsgrave

Date Received: 19/7/2023
Date Commenced: 19/7/2023
Date Completed: 8/8/2023

Notes: Opinions and Interpretations are outside the UKAS Accreditation

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Checked and Approved Signatories:

L Knight
(Assistant Laboratory Manager)

R Berriman
(Associate Director)

S Royle
(Laboratory Manager)

[redacted]

A Watkins
(Managing Director)

S Eyre
(Senior Technical Coordinator)

A Fry
(Section Manager)

5 – 7 Hexthorpe Road,
Hexthorpe,
Doncaster,
DN4 0AR
Tel: [redacted]
Email: [redacted]@prosoils.co.uk
[redacted]@prosoils.co.uk

SUMMARY OF SOIL DENSITY RELATED TESTS

(BS1377 : PART 2 & 4 : 1990)

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Moisture Content %	Bulk Density Mg/m^3	Dry Density Mg/m^3	Retained 20mm %	Retained 37.5mm %	Method of compaction kg	Maximum Dry Density Mg/m^3	Minimum Dry Density Mg/m^3	Remarks
BH124	49	CSS	21.85	22.00	4.6	2.41	2.30						

UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

Contract No:
PSL23/5787
Client Ref:
G230651

WATER CONTENT OF ROCK

ISRM Suggested Methods - Rock Characterization Testing and Monitoring 1974 - 2006

Hole Number	Sample Number	Sample Type	Top Depth (m)	Base Depth (m)	Water Content (%)	Sample Description	Remarks
BH124	45	CSS	18.70	19.00	4.5	Reddish brown CLAY/MUDSTONE	
BH124	48	CSS	21.05	21.32	4.8	Reddish brown CLAY/MUDSTONE	
BH124	51	CSS	22.15	22.24	4.8	Reddish brown CLAY/MUDSTONE	

UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

Contract No:
PSL23/5787
Client Ref:
G230651

SUMMARY OF POINT LOAD TEST RESULTS

ISRM Suggested Methods : 2007

Borehole Number	Depth (m)	Sample Ref	Test Type	Orientation	Dimensions (mm)		Area	D_e^2	D_e	Failure Load (P)		I_s	Corr Fac	I_{s50}	Failure Type	Remarks
				Par / Perp	W	D	(mm2)		(mm)	(Mpa)	(kN)	(MPa)	F	(MPa)		
BH124	20.37	47	A	Perp	100	44	4400	5602.25	74.85	-	1.48	0.26	1.199	0.32	Valid	
BH124	21.85	49	A	Perp	100	56	5600	7130.14	84.44	-	1.38	0.19	1.266	0.25	Valid	

Note All testing carried out on samples at as received water content

Par = parallel, Perp = perpendicular, U = Random

A = Axial, D = Diametral, I = Irregular

UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

Contract No:

PSL23/5787

Client Ref:

G230651

UNIAXIAL COMPRESSIVE STRENGTH

ISRM Suggested Methods - Rock Characterization Testing and Monitoring 1974 - 2006

Borehole Number:	**BH124**	**Top Depth (m):**	**18.70**
Sample Number:	**45**	**Base Depth (m):**	**19.00**
Sample Type:	**CSS**	**Sample Date:**	**31/05/2023**
Storage Condition:	**Sealed in Core Box**	**Date of Reciept**	**19/07/2023**
Sample Description:	**Reddish brown CLAY/MUDSTONE**		

Specimen Details/Conditions	
Diameter - mm:	100.05
Height - mm:	200.12
Water Content - %:	4.5
Sample Mass - g:	3980.7
Bulk Density - Mg/m^3:	2.53
Dry Density - Mg/m^3:	2.42
Height Ratio: * Sample does not comply with H:D ratio	2.0
Degree of Saturation - %:	66
Assumed Specific Gravity for Degree of Saturation:	2.90

Test Result	
Load Frame/Machine:	CM1/Controls
Date of test:	02/08/2023
Test Duration - mins:	00:57
Orientation:	Unknown
Stress Rate - MPa/s:	0.11
Strain at Failure - kN:	50.80
Unconfined Compressive Strength - Mpa:	6.46
Mode of Failure:	Vertical Shear

Remarks: -

UNIAXIAL COMPRESSIVE STRENGTH

ISRM Suggested Methods - Rock Characterization Testing and Monitoring 1974 - 2006

Borehole Number:	**BH124**	**Top Depth (m):**	**21.05**
Sample Number:	**48**	**Base Depth (m):**	**21.32**
Sample Type:	**CSS**	**Sample Date:**	**31/05/2023**
Storage Condition:	**Sealed in Core Box**	**Date of Reciept**	**19/07/2023**
Sample Description:	**Reddish brown CLAY/MUDSTONE**		

Specimen Details/Conditions	
Diameter - mm:	100.10
Height - mm:	200.21
Water Content - %:	4.8
Sample Mass - g:	3984.2
Bulk Density - Mg/m^3:	2.53
Dry Density - Mg/m^3:	2.41
Height Ratio: * Sample does not comply with H:D ratio	2.0
Degree of Saturation - %:	69
Assumed Specific Gravity for Degree of Saturation:	2.90

Test Result	
Load Frame/Machine:	CM1/Controls
Date of test:	02/08/2023
Test Duration - mins:	01:04
Orientation:	Unknown
Stress Rate - MPa/s:	0.12
Strain at Failure - kN:	60.40
Unconfined Compressive Strength - Mpa:	7.68
Mode of Failure:	Vertical Shear

Remarks: -

UNIAXIAL COMPRESSIVE STRENGTH

ISRM Suggested Methods - Rock Characterization Testing and Monitoring 1974 - 2006

Borehole Number:	**BH124**	**Top Depth (m):**	**22.15**
Sample Number:	**51**	**Base Depth (m):**	**22.24**
Sample Type:	**CSS**	**Sample Date:**	**31/05/2023**
Storage Condition:	**Sealed in Core Box**	**Date of Reciept**	**19/07/2023**
Sample Description:	**Reddish brown CLAY/MUDSTONE**		

Specimen Details/Conditions	
Diameter - mm:	100.10
Height - mm:	200.18
Water Content - %:	4.8
Sample Mass - g:	3977.9
Bulk Density - Mg/m^3:	2.53
Dry Density - Mg/m^3:	2.41
Height Ratio: * Sample does not comply with H:D ratio	2.0
Degree of Saturation - %:	68
Assumed Specific Gravity for Degree of Saturation:	2.90

Test Result	
Load Frame/Machine:	CM1/Controls
Date of test:	02/08/2023
Test Duration - mins:	01:01
Orientation:	Unknown
Stress Rate - MPa/s:	0.12
Strain at Failure - kN:	58.70
Unconfined Compressive Strength - Mpa:	7.46
Mode of Failure:	Vertical Shear

Remarks: -

4161

CTS Group
7 - 11 Harding Street
Leicester
LE1 4DH

Professional Soils Laboratory
5/7 Hexthorpe Road
Hexthorpe
Doncaster
DN4 0AR

Analytical Test Report: L23/04087/PSL - 23-36073

Your Project Reference:	**PSL23/5787 A46 Walsgrave**		
Your Order Number:	PSL23/5787	Samples Received / Instructed:	03/08/2023 / 03/08/2023
Report Issue Number:	1	Sample Tested:	03/08 to 10/08/2023
Samples Analysed:	1 soil sample	Report issued:	10/08/2023

[redacted]
James Gane
Analytical Services Manager
CTS Group

Notes:

General

Please refer to Methodologies page for details pertaining to the analytical methods undertaken.

Samples will be retained for 14 days after issue of this report unless otherwise requested.

Moisture Content was determined in accordance with CTS method statement MS - CL - Sample Prep, oven dried at <30˚C.

Moisture Content is reported as a percentage of the dry mass of soil, this calculation is in accordance with BS1377, Part 2, 1990, Clause 3.2

Stone Content was determined in accordance with CTS method statement MS - CL - Sample Prep and refers to the percentage of stones retained on a 10mm BS test sieve.

Where specification limits are included these are for guidance only. Where a measured value has been highlighted this is not implying acceptance or failure and certainty of measurement values have not been taken into account.

Uncertainty of measurement values are available on request.

Samples were supplied by customer, results apply to the samples as received.

Deviating Samples

On receipt samples are compared against our sample holding and handling protocols, where any deviations have been noted these are reported on our deviating sample page (if present)

Accreditation Key

UKAS = UKAS Accreditation, MCERTS = MCERTS Accreditation, u = Unaccredited

MCERTS Accreditation only covers the SAND, CLAY and LOAM matrices

Date of Issue: 26.07.23

Issued by: J. Gane

Issue No: 4

Rev No: 2

4161

CTS Group
7 - 11 Harding Street
Leicester
LE1 4DH

L23/04087/PSL - 23-36073

Project Reference - PSL23/5787 A46 Walsgrave

Analytical Test Results - Chemical Analysis

Lab Reference			**307947**
Client Sample ID			-
Client Sample Location			BH124
Client Sample Type			CSS
Client Sample Number			46
Depth - Top (m)			19.70
Depth - Bottom (m)			20.00
Date of Sampling			31/05/2023
Time of Sampling			-
Sample Matrix			Clay
Determinant	**Units**	**Accreditation**	
Water soluble sulphate (as SO_4)	(mg/l)	u	1600
Acid Soluble Sulphate	(%)	u	0.49
Total Sulphur	(%)	UKAS	0.18
pH Value	pH Units	MCERTS	7.8
Water Soluble Chloride	(mg/l)	u	3.9
Water Soluble Nitrate (As NO_3)	(mg/l)	u	< 1.0
Water Soluble Magnesium	(mg/l)	u	14
Water Soluble Ammonium Ion	(mg/l)	u	< 1.0

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CTS Group
7 - 11 Harding Street
Leicester
LE1 4DH

L23/04087/PSL - 23-36073

Project Reference - PSL23/5787 A46 Walsgrave

Sample Descriptions

Lab Reference	Client Sample ID	Client Sample Location	Client Sample Type	Client Sample Number	Description	Moisture Content (%)	Stone Content (%)	Passing 2mm test sieve (%)
307947	-	BH124	CSS	46	Reddish brown sandy clay	12	< 0.1	44

4161

CTS Group
7 - 11 Harding Street
Leicester
LE1 4DH

L23/04087/PSL - 23-36073

Project Reference - PSL23/5787 A46 Walsgrave

Sample Comments

Lab Reference	Client Sample ID	Client Sample Location	Client Sample Type	Client Sample Number	Comments
307947	-	BH124	CSS	46	

4161

7 - 11 Harding Street
Leicester
LE1 4DH

L23/04087/PSL - 23-36073

Project Reference - PSL23/5787 A46 Walsgrave

Analysis Methodologies

Test Code	Test Name / Reference	Sample condition for analysis	Sample Preperation	Test Details
ANIONSS	MS - CL - Anions by Aquakem (2:1Extract)	Oven dried	Passing 2mm test sieve	Determination of Anions (inc Sulphate, chloride etc.) in soils by Aquakem. Analysis is based on a 2:1 water to soil extraction ratio
PHS	MS - CL - pH in Soils	As received	Passing 10mm test sieve	Determination of pH in soils using a pH probe (using a 1:3 soil to water extraction)
ASSO4S	MS - CL - Acid Soluble Sulphate	Oven Dried	Passing 2mm test sieve	Determination of total sulphate in soils by acid extraction followed by ICP analysis
SAMPLEPREP	MS - CL - Sample Preparation	-	-	Preparation of samples (including determination of moisture content) to allow for subsequent analysis
1377TS-ELT	BS1377 Total Sulphur Content by HTC	Oven dried	BS1377 : Part 1 : 2016	Total Sulphur Content testing of Soil in accordance with BS 1377 : Part 3 : 2018 + A1 : 2021 Clause 7.10 (using Eltra CS-800 Analyser)

4161

CTS Group
7 - 11 Harding Street
Leicester
LE1 4DH

L23/04087/PSL - 23-36073

Project Reference - PSL23/5787 A46 Walsgrave

Sample Deviations

Deviations are listed below against each sample and associated test method, where deviation(s) are noted it means data may not be representative of the sample at the time of sampling and it is possible that results provided may be compromised.

Observations on receipt

A - No date of sampling provided
C - Received in inappropriate container
H - Contains headspace
T - Temperature on receipt exceeds storage temperature
R - Date of sampling to receipt insufficient to allow analysis to be completed without deviation, Please note this is only a deviation if 'X' is also recorded against the sample

Observations whist in laboratory

X - Exceeds sampling to extraction or analysis timescales

Lab Reference	Client Sample ID	Client Sample Location	Client Sample Type	Client Sample Number	Test	Deviations
307947	-	BH124	CSS	46	BS1377 Total Sulphur Content by HTC	RX
307947	-	BH124	CSS	46	MS - CL - Anions by Aquakem (2:1Extract)	RX
307947	-	BH124	CSS	46	MS - CL - pH in Soils	RX

LABORATORY REPORT

Contract Number: PSL23/5786

Report Date: 09 August 2023

Client's Reference: G230651/Geo 31

Client Name: Strata Geotechnics
Kirkby Lane
Pinxton
Nottinghamshire
NG16 6JA

For the attention of: Izaac Lovatt

Contract Title: A46 Walsgrave

Date Received: 19/7/2023
Date Commenced: 19/7/2023
Date Completed: 9/8/2023

Notes: Opinions and Interpretations are outside the UKAS Accreditation

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Checked and Approved Signatories:

L Knight (Assistant Laboratory Manager)
R Berriman (Associate Director)
S Royle (Laboratory Manager)
[redacted]
A Watkins (Managing Director)
S Eyre (Senior Technical Coordinator)
T Watkins (Senior Technician)

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Hexthorpe,
Doncaster,
DN4 0AR
Tel: [redacted]
Email: [redacted]@prosoils.co.uk
[redacted]@prosoils.co.uk

SUMMARY OF SOIL DENSITY RELATED TESTS

(BS1377 : PART 2 & 4 : 1990)

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Moisture Content %	Bulk Density Mg/m^3	Dry Density Mg/m^3	Retained 20mm %	Retained 37.5mm %	Method of compaction kg	Maximum Dry Density Mg/m^3	Minimum Dry Density Mg/m^3	Remarks
BH121	29	CSS	8.37	8.47	6.9	2.16	2.02						
BH121	33	CSS	11.25	11.40	13	2.32	2.05						
BH121	36	CSS	13.10	13.35	12	2.08	1.87						

UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

Contract No:

PSL23/5786

Client Ref:

G230651

WATER CONTENT OF ROCK

ISRM Suggested Methods - Rock Characterisation Testing and Monitoring 1974 - 2006

Hole Number	Sample Number	Sample Type	Top Depth (m)	Base Depth (m)	Water Content (%)	Sample Description	Remarks
BH121	28	CSS	7.00	7.30	16.8	Brown MUDSTONE	
BH121	31	CSS	9.70	9.80	10.0	Brown MUDSTONE	
BH121	34	CSS	11.65	11.75	8.3	Brown MUDSTONE	
BH121	37	CSS	14.07	14.22	10.3	Brown MUDSTONE	

UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

Contract No: PSL23/5786

Client Ref: G230651

SUMMARY OF POINT LOAD TEST RESULTS

ISRM Suggested Methods : 2007

Borehole Number	Depth (m)	Sample Ref	Test Type	Orientation	Dimensions (mm)		Area	D_e^2	D_e	Failure Load (P)		I_s	Corr Fac	I_{s50}	Failure Type	Remarks
				Par / Perp	W	D	(mm2)		(mm)	(Mpa)	(kN)	(MPa)	F	(MPa)		
BH121	11.65	34	A	Perp	100	46	4600	5856.90	76.53	-	0.68	0.12	1.211	0.14	Valid	

Note All testing carried out on samples at as received water content

Par = parallel, Perp = perpendicular, U = Random

A = Axial, D = Diametral, I = Irregular

UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

Contract No:

PSL23/5786

Client Ref:

G230651

SUMMARY OF POINT LOAD TEST RESULTS

ISRM Suggested Methods : 2007

Borehole Number	Depth (m)	Sample Ref	Test Type	Orientation	Dimensions (mm)		D_e^2	D_e	Failure Load		I_s	Corr Fac	I_{s50}	Failure Type	Remarks
				Par / Perp	L	D		(mm)	(Mpa)	(kN)	(MPa)	F	(MPa)		
BH121	11.65	34	D	Par	-	100	10000	100.00	-	0.34	0.034	1.366	0.05	Valid	

Note All testing carried out on samples at as received water content

Par = parallel, Perp = perpendicular, U = Random

UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

Contract No:

PSL23/5786

Client Ref:

G230651

UNIAXIAL COMPRESSIVE STRENGTH

ISRM Suggested Methods - Rock Characterization Testing and Monitoring 1974 - 2006

Borehole Number:	**BH121**	**Top Depth (m):**	**7.00**
Sample Number:	**28**	**Base Depth (m):**	**7.30**
Sample Type:	**CSS**	**Sample Date:**	**-**
Storage Condition:	**Sealed in plastic**	**Date of Receipt**	**19/07/2023**
Sample Description:	**Brown MUDSTONE**		

Specimen Details/Conditions	
Diameter - mm:	100.10
Height - mm:	200.10
Water Content - %:	16.8
Sample Mass - g:	3331.0
Bulk Density - Mg/m^3:	2.12
Dry Density - Mg/m^3:	1.81
Height Ratio: * Sample does not comply with H:D ratio	2.0
Degree of Saturation - %:	86
Assumed Specific Gravity for Degree of Saturation:	2.80

Test Result	
Load Frame/Machine:	CM1/Controls
Date of test:	08/08/2023
Test Duration - mins:	00:21
Orientation:	Unknown
Stress Rate - MPa/s:	0.08
Strain at Failure - kN:	13.20
Unconfined Compressive Strength - Mpa:	1.68
Mode of Failure:	Vertical Shear

Remarks: -

TEST AMENDMENT NOTICE

PSL
Professional Soils Laboratory

(Please tick boxes as appropriate)

From: Bradley Harmer

To:

Date: 8 / 8 /2023

Laboratory Ref: 5786

Contract Number:

Location:

☑ BH ○ TP Sample Number 121 Depth (m): 11.65 - 11.75

Sample Type: ○ U ○ B ○ D ○ W ○ P ☑ C

Test/s: UCS

The above sample cannot be tested for the following reasons:

- ☐ The Sample has not been received
- ☐ There is insufficient material for BS1377: 1990 testing
  - Maximum Grain Size (Minimum 10%): ○ Fine ○ Medium ○ Coarse
  - Sample Mass (kg): .....
  - Required Mass (kg): .....
- ☐ The Sample has been previously tested.
- ☐ The Sample has been misplaced in the Laboratory.
- ☑ The Sample is unsuitable for testing because: There is insufficient dimensions Suitable for testing.

Please advise action required:

- ☐ Perform alternative test on the following alternative Sample
  - ○ BH ○ TP Sample Number Depth (m)
  - Sample Type: ○ U ○ B ○ D ○ W ○ P ○ C
- ☐ Combine original Sample with the following sample:
  - ○ BH ○ TP Sample Number Depth (m)
  - Sample Type: ○ U ○ B ○ D ○ W ○ P ○ C
- ☐ Perform reduced testing (Please specify the tests to be)
- ☐ Perform non-standard test on material available

Signature: Date:

LABORATORY REPORT

Contract Number: PSL23/5785

Report Date: 09 August 2023

Client's Reference: G230651/Geo 32

Client Name: Strata Geotechnics
Kirkby Lane
Pinxton
Nottinghamshire
NG16 6JA

For the attention of: Izaac Lovatt

Contract Title: A46 Walsgrave

Date Received: 19/7/2023
Date Commenced: 19/7/2023
Date Completed: 9/8/2023

Notes: Opinions and Interpretations are outside the UKAS Accreditation

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Checked and Approved Signatories:

A Watkins (Director)	R Berriman (Quality Manager)	S Royle (Laboratory Manager)
[redacted] L Knight (Assistant Laboratory Manager)	S Eyre (Senior Technician)	T Watkins (Senior Technician)

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Doncaster,
DN4 0AR
Tel: [redacted]
Email: [redacted]@prosoils.co.uk
[redacted]@prosoils.co.uk

SUMMARY OF LABORATORY SOIL DESCRIPTIONS

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Description of Sample
BH126	6	D	0.80	0.80	Brown slightly gravelly slightly sandy CLAY.
BH126	7	B	1.00	1.00	Brown slightly gravelly sandy CLAY.
BH126	10	UT	1.50	1.95	Very stiff brown mottled grey slightly gravelly sandy CLAY.
BH126	11	D	2.00	2.00	Brown slightly gravelly sandy CLAY.
BH126	16	B	2.50	3.00	Brown slightly gravelly sandy CLAY.
BH126	18	UT	3.50	3.95	Brown gravelly very sandy CLAY.
BH126	21	B	4.00	4.50	Brown slightly gravelly very sandy CLAY.
BH126	23	B	4.50	5.00	Brown slightly gravelly very sandy CLAY.
BH126	26	B	5.50	6.00	Reddish brown very gravelly very sandy CLAY.
BH126	30	D	8.50	8.50	Reddish brown slightly gravelly very sandy CLAY.
BH126	34	D	10.50	10.69	Reddish brown slightly gravelly very sandy CLAY.

UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

Contract No: PSL23/5785

Client Ref: G230651

SUMMARY OF SOIL CLASSIFICATION TESTS

(BS1377 : PART 2 : 1990)

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Moisture Content % Clause 3.2	Linear Shrinkage % Clause 6.5	Particle Density Mg/m^3 Clause 8.2	Liquid Limit % Clause 4.3/4	Plastic Limit % Clause 5.3	Plasticity Index % Clause 5.4	Passing .425mm %	Remarks
BH126	6	D	0.80	0.80	21			61	27	34	95	High Plasticity CH
BH126	11	D	2.00	2.00	18			42	20	22	93	Intermediate Plasticity CI
BH126	21	B	4.00	4.50	14			29	14	15	96	Low Plasticity CL
BH126	23	B	4.50	5.00	14			32	15	17	94	Low Plasticity CL
BH126	30	D	8.50	8.50	14			30	15	15	91	Low Plasticity CL
BH126	34	D	10.50	10.69	13			34	17	17	95	Low Plasticity CL

SYMBOLS : NP : Non Plastic * : Liquid Limit and Plastic Limit Wet Sieved.

UKAS TESTING 4043

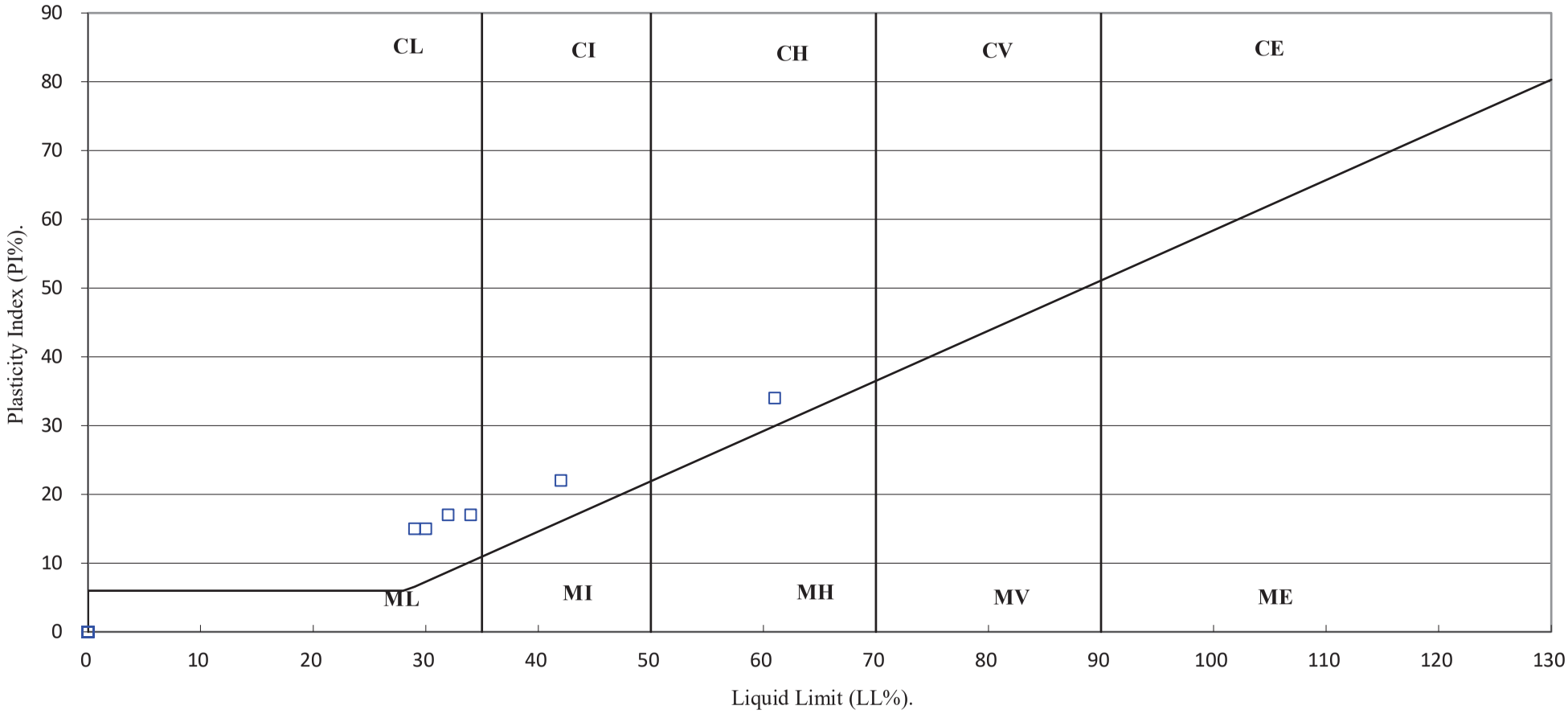
PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

Contract No: PSL23/5785

Client Ref: G230651

PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION.



UKAS TESTING 4043	PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY	A46 Walsgrave

Contract No:
PSL23/5785
Client Ref:
G230651

SUMMARY OF SOIL DENSITY RELATED TESTS

(BS1377 : PART 2 & 4 : 1990)

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Moisture Content %	Bulk Density Mg/m^3	Dry Density Mg/m^3	Retained 20mm %	Retained 37.5mm %	Method of compaction kg	Maximum Dry Density Mg/m^3	Minimum Dry Density Mg/m^3	Remarks
BH126	11	D	2.00	2.00	18	2.08	1.76						
BH126	21	B	4.00	4.50	14	2.16	1.89						
BH126	26	B	5.50	6.00	13	2.15	1.90						

UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

Contract No:

PSL23/5785

Client Ref:

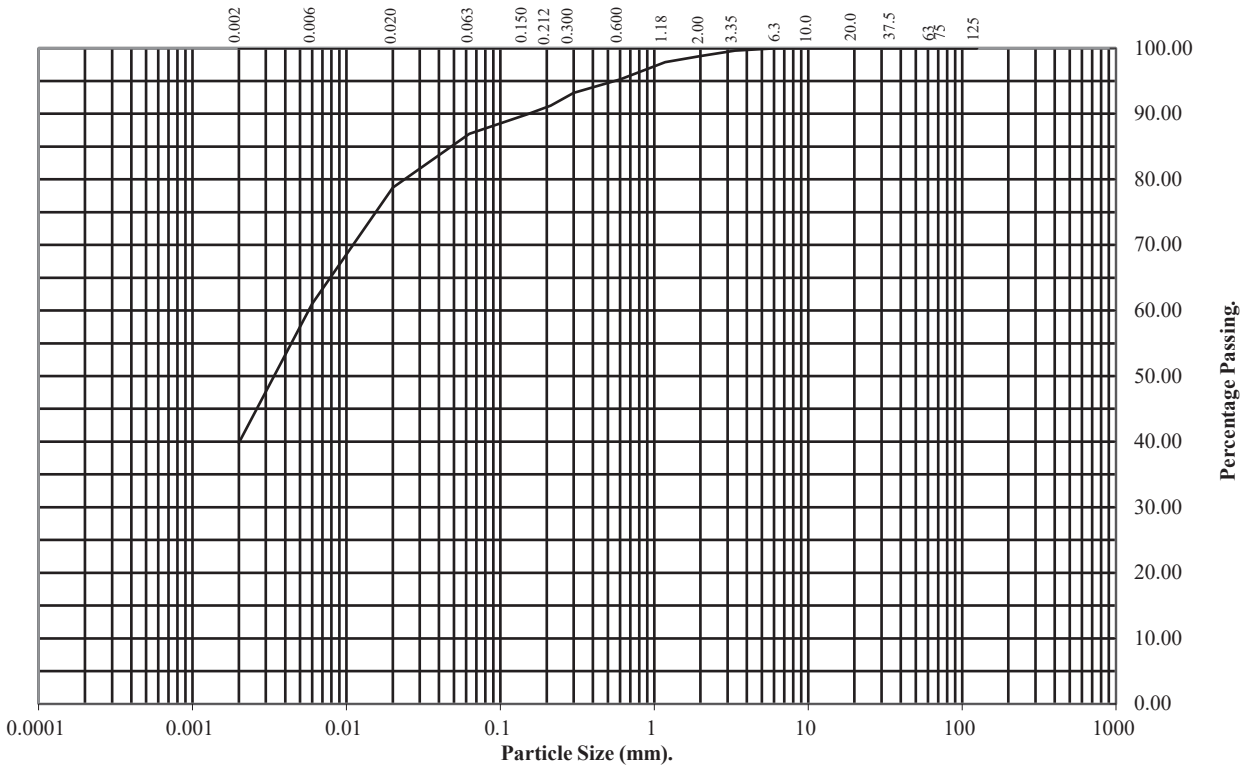
G230651

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

Hole Number:	**BH126**	**Top Depth (m):**	**1.00**
Sample Number:	**7**	**Base Depth(m):**	**1.00**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	100
6.3	100
3.35	100
2	99
1.18	98
0.6	95
0.3	93
0.212	91
0.15	90
0.063	87

Particle Diameter	Percentage Passing
0.02	79
0.006	61
0.002	40

Soil Fraction	Total Percentage
Cobbles	0
Gravel	1
Sand	12
Silt	47
Clay	40

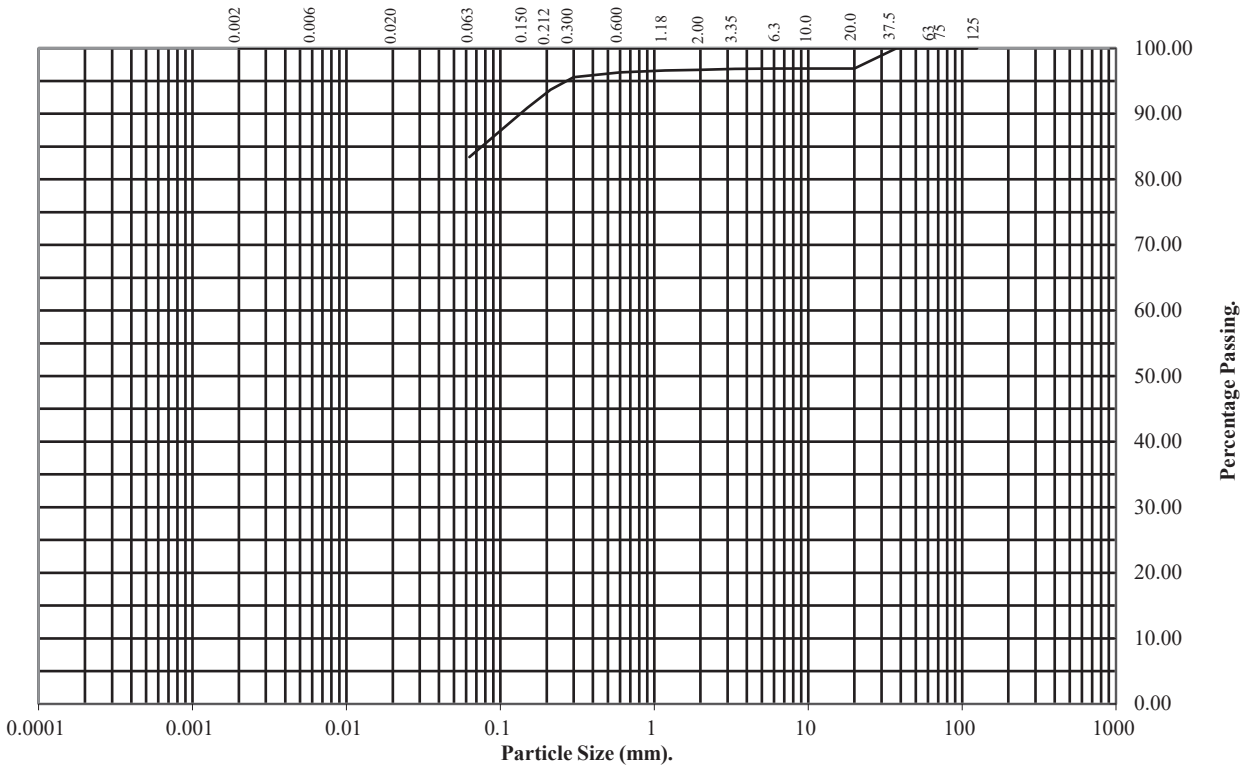
Remarks:
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number:	**BH126**	**Top Depth (m):**	**2.50**
Sample Number:	**16**	**Base Depth(m):**	**3.00**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	97
10	97
6.3	97
3.35	97
2	97
1.18	97
0.6	96
0.3	96
0.212	94
0.15	91
0.063	83

Soil Fraction	Total Percentage
Cobbles	0
Gravel	3
Sand	14
Silt/Clay	83

Remarks:

See Summary of Soil Descriptions

UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

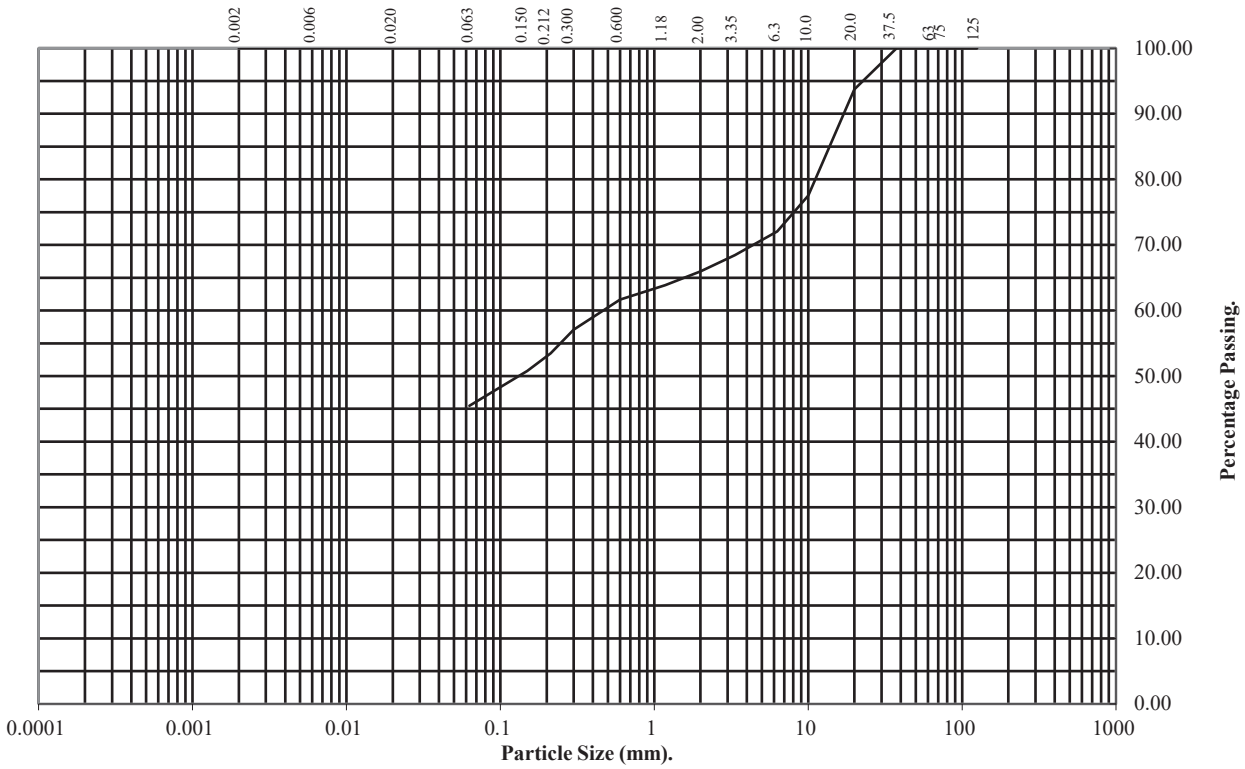
Contract No:
PSL23/5785
Client Ref:
G230651

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number:	**BH126**	**Top Depth (m):**	**5.50**
Sample Number:	**26**	**Base Depth(m):**	**6.00**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	94
10	78
6.3	72
3.35	68
2	66
1.18	64
0.6	62
0.3	57
0.212	53
0.15	51
0.063	45

Soil Fraction	Total Percentage
Cobbles	0
Gravel	34
Sand	21
Silt/Clay	45

Remarks:

See Summary of Soil Descriptions

UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

Contract No: PSL23/5785

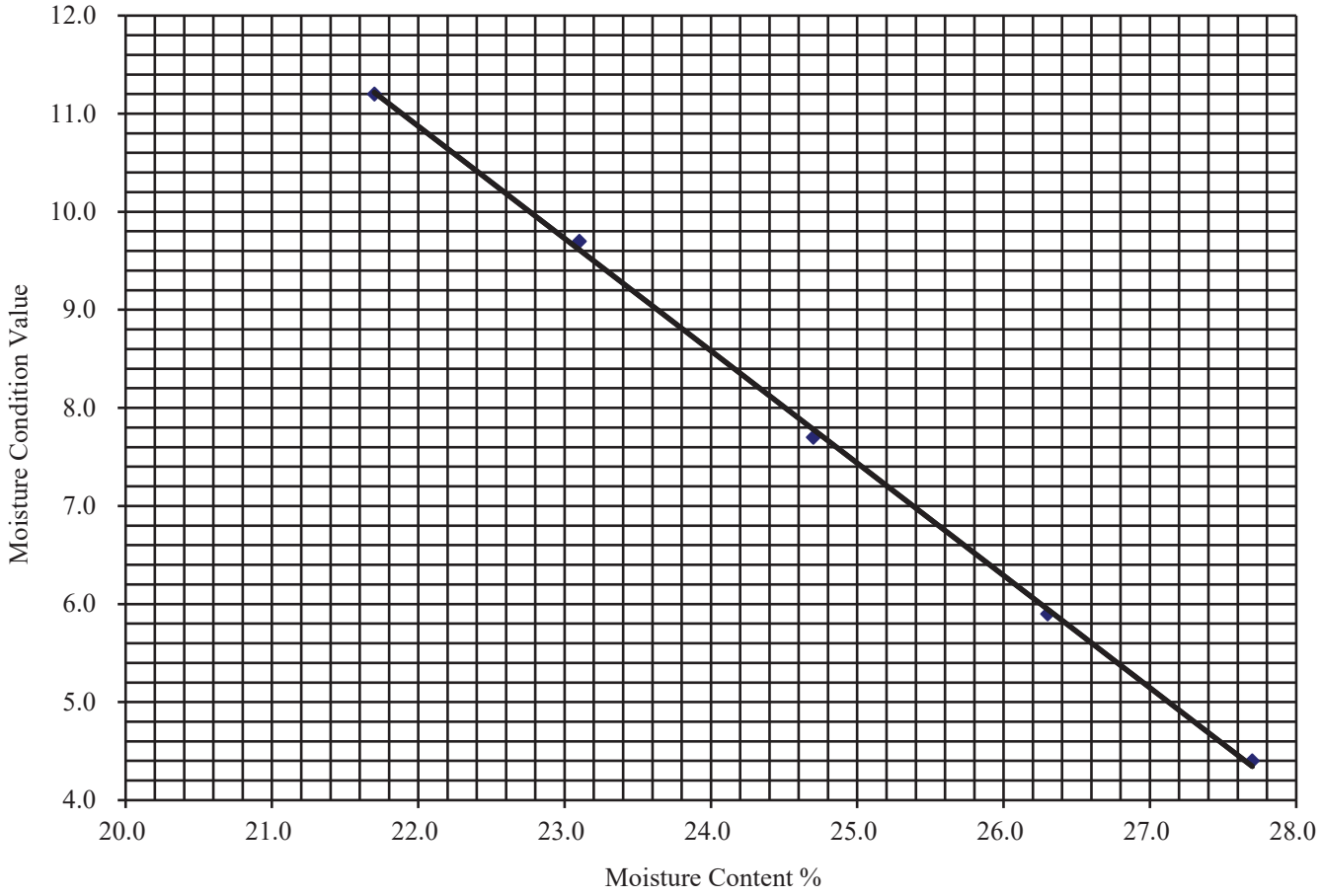
Client Ref: G230651

MOISTURE CONDITION VALUE CALIBRATION

BS1377 : Part 4 : 1990 Clause 5.5

Hole Number:	**BH126**	**Top Depth (m):**	**1.00**
Sample Number:	**7**	**Base Depth (m):**	**1.00**
Sample Type:	**B**		

Initial Moisture Content (%):	22
Single/Separate Samples Tested	Separate
Material Retained on the 20mm BS Test Sieve (%):	0



Test Results.

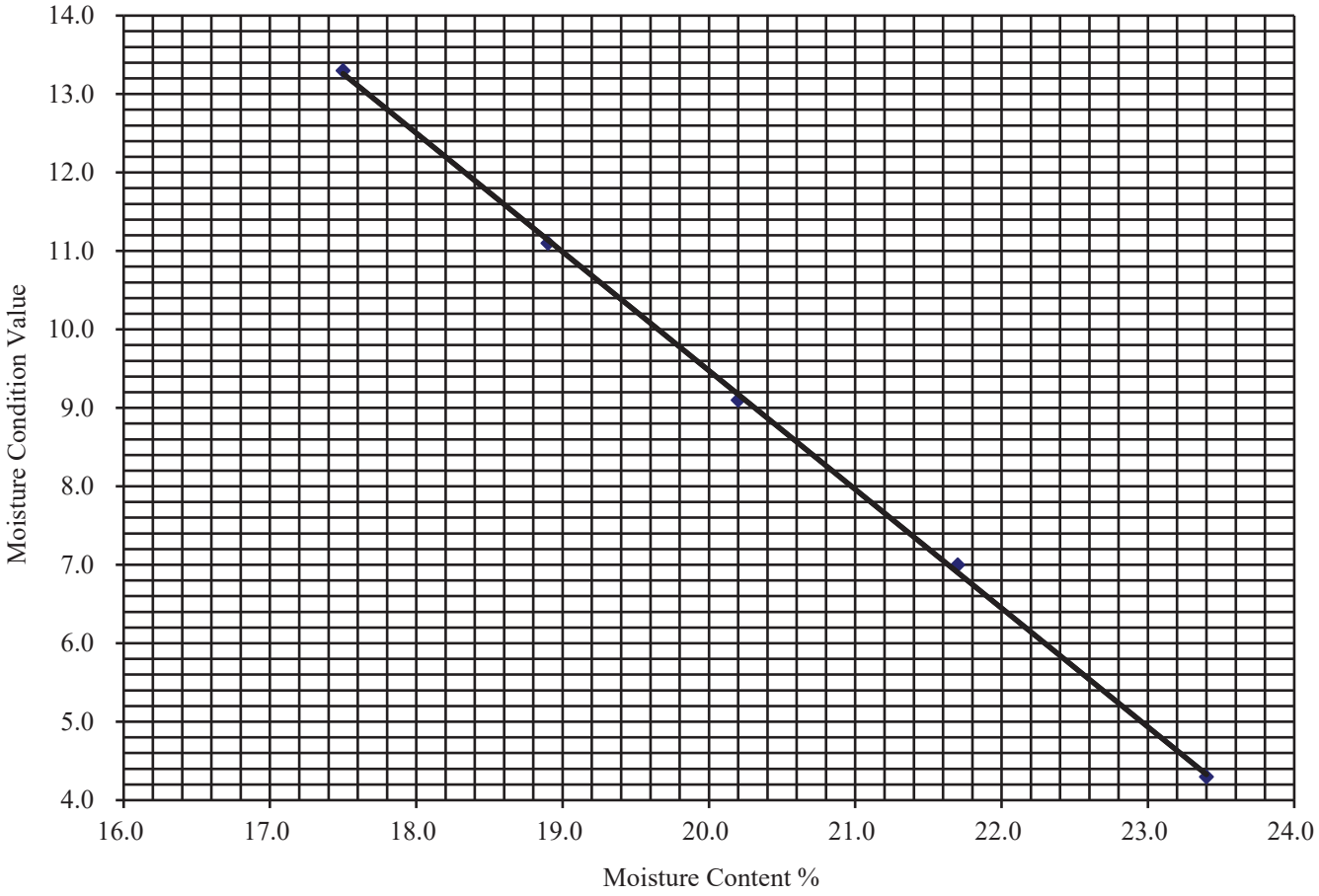
Test Number	1	2	3	4	5
Moisture Content (%)	21.7	23.1	24.7	26.3	27.7
MCV	11.2	9.7	7.7	5.9	4.4

MOISTURE CONDITION VALUE CALIBRATION

BS1377 : Part 4 : 1990 Clause 5.5

Hole Number:	**BH126**	**Top Depth (m):**	**2.50**
Sample Number:	**16**	**Base Depth (m):**	**3.00**
Sample Type:	**B**		

Initial Moisture Content (%):	19
Single/Separate Samples Tested	Separate
Material Retained on the 20mm BS Test Sieve (%):	3



Test Results.

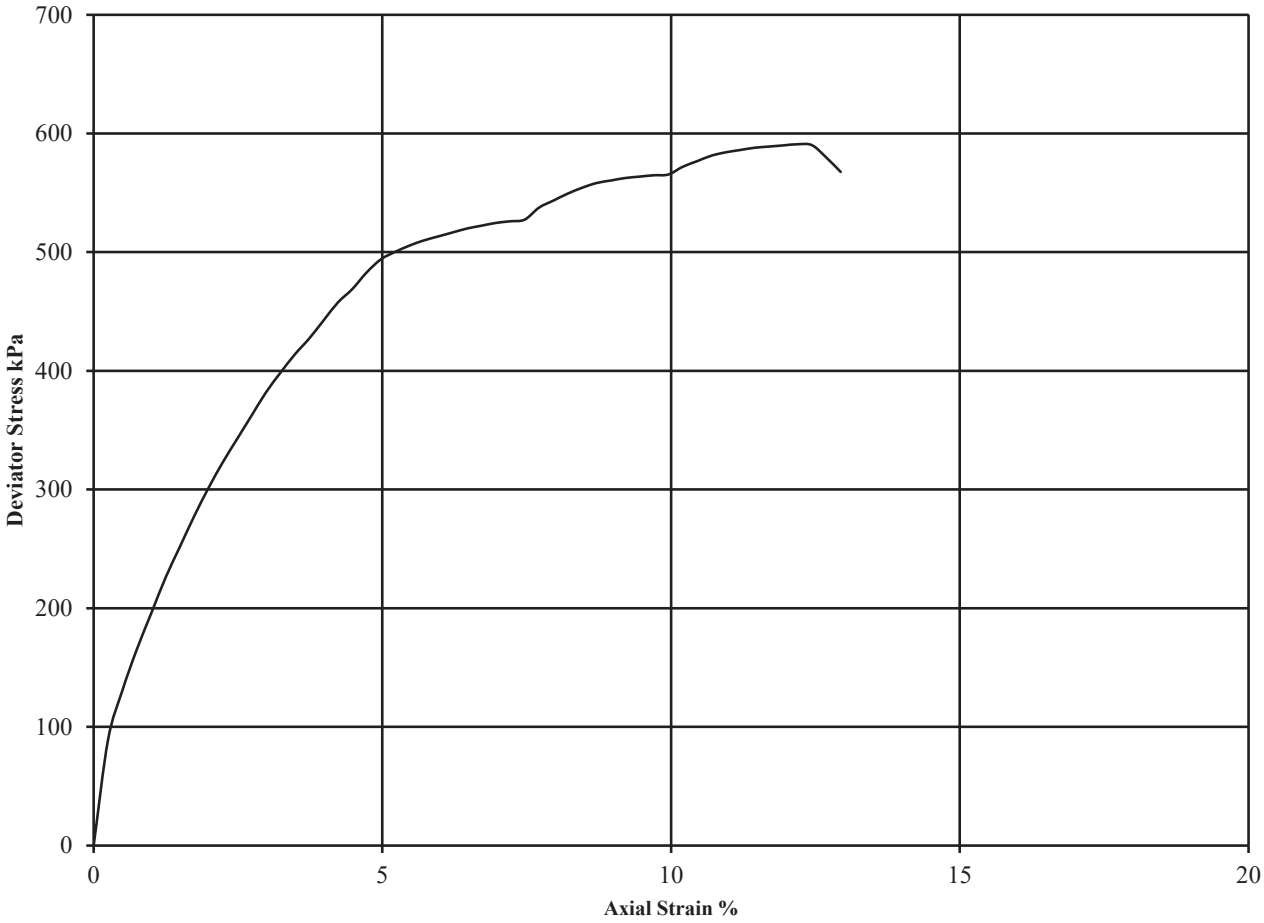
Test Number	1	2	3	4	5
Moisture Content (%)	17.5	18.9	20.2	21.7	23.4
MCV	13.3	11.1	9.1	7.0	4.3

UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION

WITHOUT MEASUREMENT OF PORE PRESSURE

BS1377 : Part7 : 1990: Clause 9

Hole Number:	**BH126**	**Top Depth (m):**	**1.50**
Sample Number:	**10**	**Base Depth (m):**	**1.95**
Sample Type	**UT**		



Diameter (mm):		103	Height (mm):		207	Test:	UU Multistage		Remarks
Specimen	Moisture Content (%)	Bulk Density (Mg/m3)	Dry Density (Mg/m3)	Cell Pressure (kPa) θ_3	Corr. Max. Deviator Stress (kPa) $(\theta_1-\theta_3)_f$	Shear Strength Cu (kPa) $^1/_2(\theta_1-\theta_3)_f$	Failure Strain (%)	Mode of Failure	Undisturbed Sample Sample taken from top of tube Rate of strain = 2 %/min Latex Membrane used 0.2 mm thick Membrane Correction applied (kPa)
1	15	2.18	1.89	15	527	264	7.5		0.35 0.35 0.35
				30	565	282	9.7		See summary of soil descriptions
				60	591	295	12.2	Brittle	

UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

Contract No:
PSL23/5785
Client Ref:
G230651

ONE DIMENSIONAL CONSOLIDATION TEST

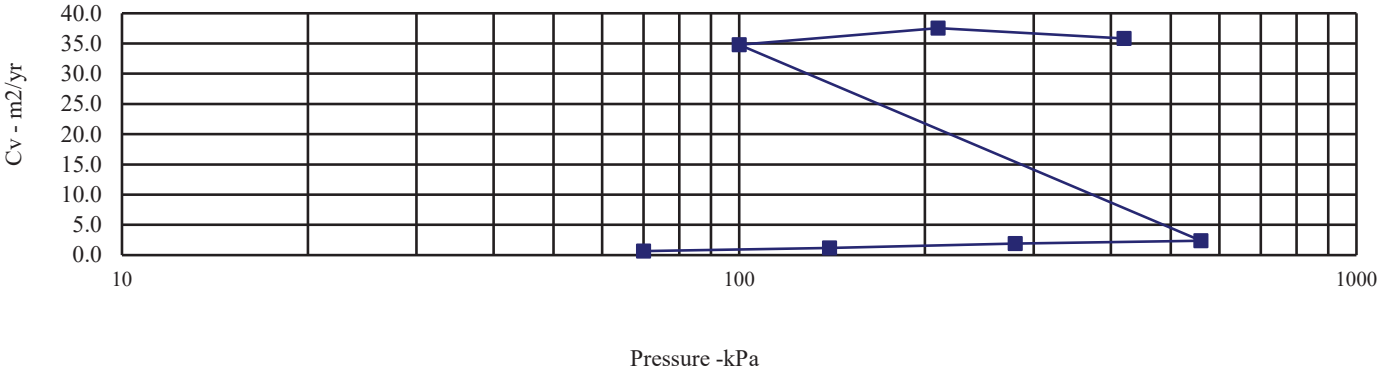
BS 1377: Part 5: 1990: Clause 3

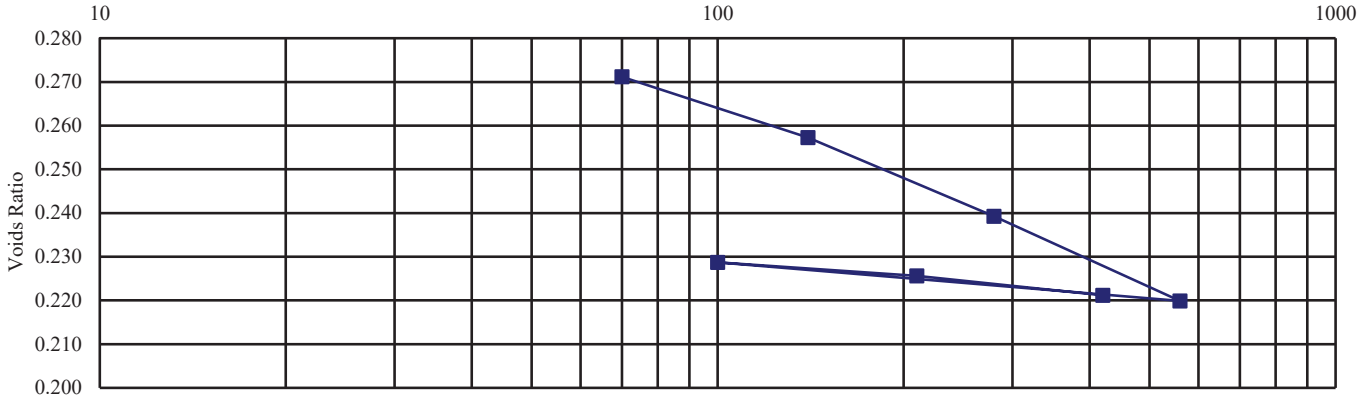
Hole Number: BH126 **Top Depth (m):** 3.50

Sample Number: 18 **Base Depth (m) :** 3.95

Sample Type: UT

Initial Conditions		Pressure Range kPa		Mv m2/MN	Cv m2/yr	Specimen location within tube:	Top
Moisture Content (%):	12						
Bulk Density (Mg/m3):	2.26	0	70	0.445	0.666	Method used to	
Dry Density (Mg/m3):	2.02	70	140	0.156	1.161	determine CV:	T90
Voids Ratio:	0.312	140	280	0.102	1.928	Nominal temperature	
Degree of saturation:	101.6	280	560	0.056	2.392	during test ' C:	20
Height (mm):	20.014	560	100	0.016	34.787	Remarks:	
Diameter (mm)	75.025	100	210	0.023	37.547	See summary of soil descriptions	
Particle Density (Mg/m3): Assumed	2.65	210	420	0.017	35.830		





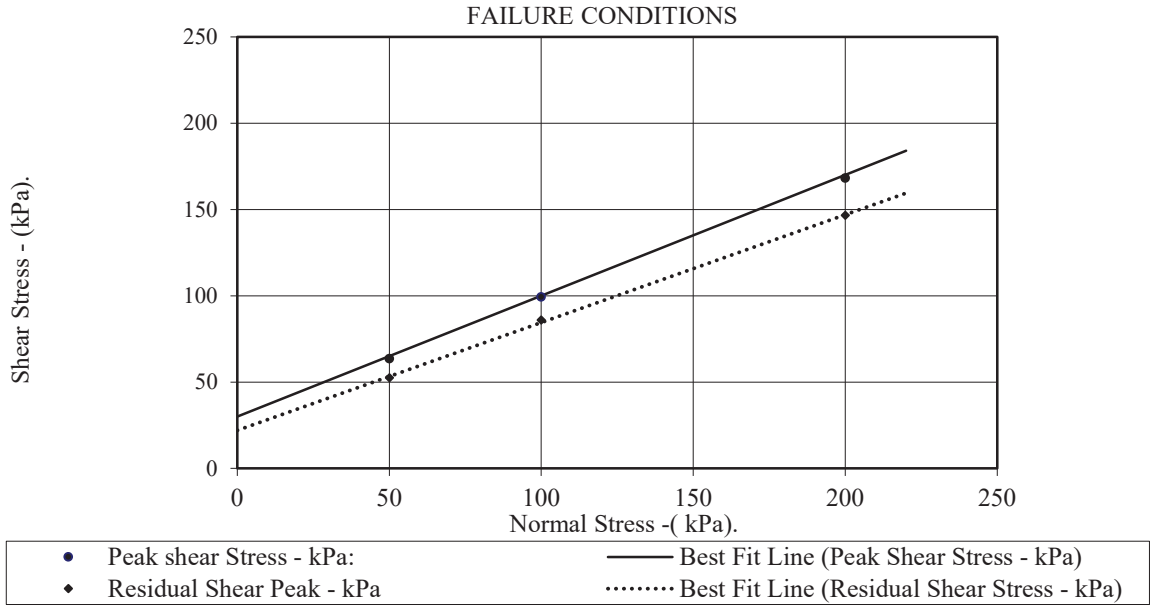
UKAS TESTING 4043 / PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY	A46 Walsgrave	Contract No: PSL23/5785 Client Ref: G230651

CONSOLIDATED DRAINED SHEARBOX TEST

BS1377:Part 7:1990 Clause 5

Hole Number:	**BH126**		Top Depth	**5.50**
Sample Number:	**26**		Base Depth	**6.00**
Sample Conditions:	Submerged		Sample Type	**B**
Particle Density - Mg/m3:	2.65	Assumed	**Remarks:**	
Specimen Preparation	Material tested passing 20mm sieve Remoulded using light tamping			
Sample Description:	**See summary of soil descriptions**			

STAGE	**1**	**2**	**3**
Initial Conditions			
Height - mm:	150.00	150.00	150.00
Length - mm:	300.00	300.00	300.00
Moisture Content - %:	13	13	13
Bulk Density - Mg/m3:	2.16	2.16	2.16
Dry Density - Mg/m3:	1.91	1.91	1.91
Voids Ratio:	0.386	0.386	0.386
Normal Pressure- kPa	50	100	200
Consolidation Stage			
Consolidated Height - mm:	147.65	143.08	138.67
Peak Shear			
Rate of Strain - mm/min	1.000	1.000	1.000
Displacement at peak shear stress - mm	48.50	50.50	50.50
Peak shear Stress - kPa:	63	99	168
Residual Shear			
Rate of Strain - mm/min	1.000	1.000	1.000
Displacement at residual shear stress - mm	152.97	151.98	152.97
Residual shear Stress - kPa:	52	86	147
Final Consolidation Conditions			
Moisture Content - %:	13	12	12
Bulk Density - Mg/m3:	2.26	2.41	2.58
Dry Density - Mg/m3:	2.01	2.15	2.31
Peak Shear			
Angle of Shearing Resistance:(θ)	35		
Effective Cohesion - kPa:	30		
Residual Shear			
Angle of Shearing Resistance:(θ)	32		
Effective Cohesion - kPa:	22		



UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

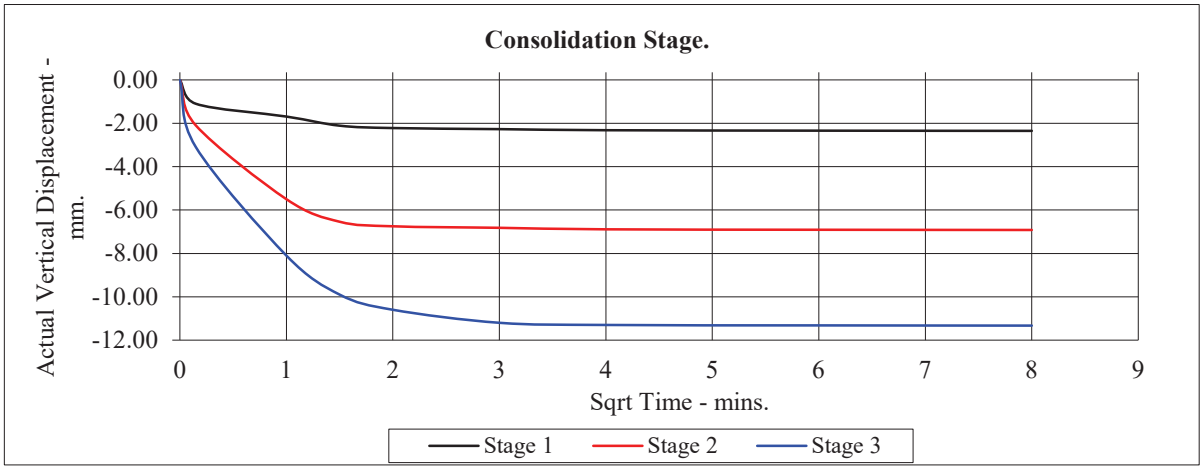
A46 Walsgrave

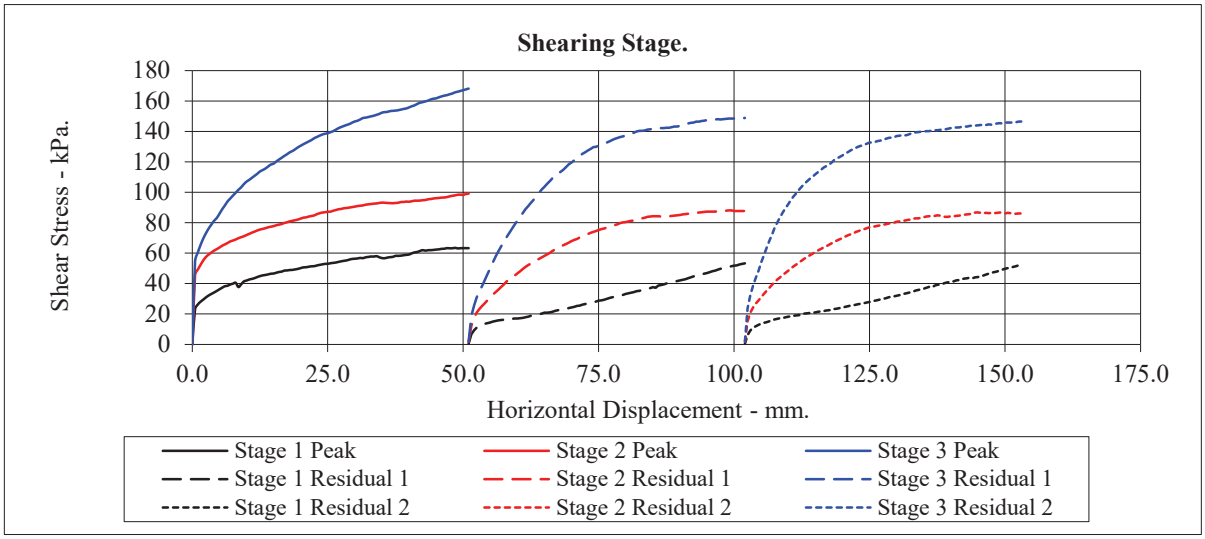
Contract No:
PSL23/5785
Client Ref:
G230651

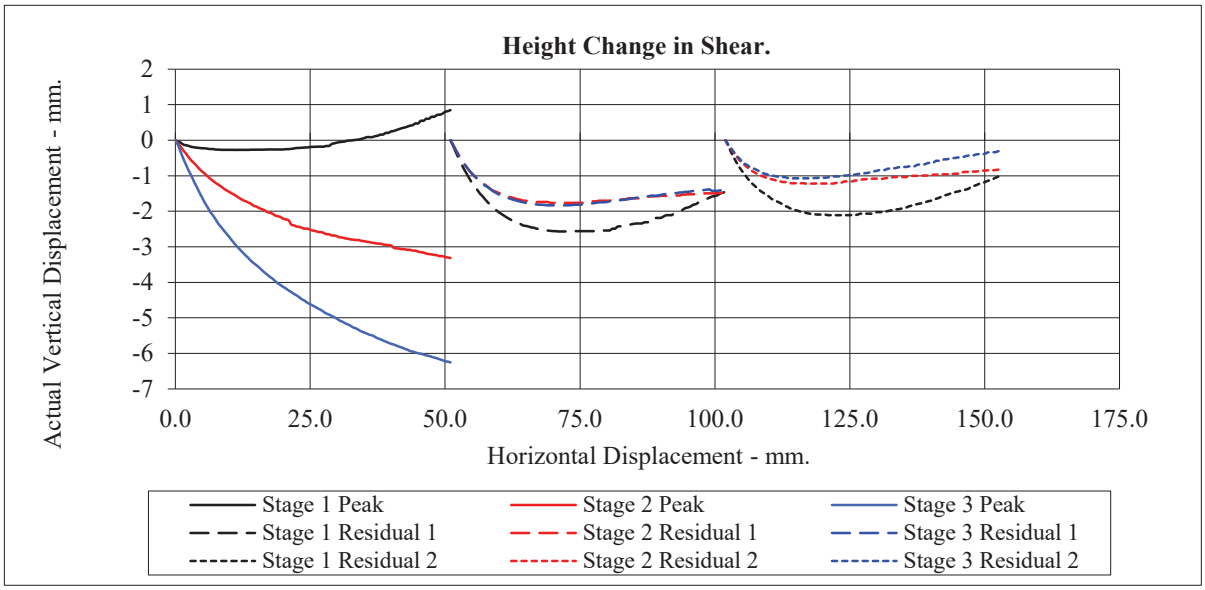
CONSOLIDATED DRAINED SHEARBOX TEST

BS1377:Part 7:1990 Clause 5

Hole Number:	**BH126**	Top Depth:	**5.50**
Sample Number:	**26**	Base Depth:	**6.00**







UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

Contract No:
PSL23/5785
Client Ref:
G230651

4161

CTS Group
7 - 11 Harding Street
Leicester
LE1 4DH

Professional Soils Laboratory
5/7 Hexthorpe Road
Hexthorpe
Doncaster
DN4 0AR

Analytical Test Report: L23/04055/PSL - 23-36039

Your Project Reference:	**PSL23/5785 A46 Walsgrave**		
Your Order Number:	PSL23/5785	Samples Received / Instructed:	02/08/2023 / 02/08/2023
Report Issue Number:	1	Sample Tested:	02/08 to 09/08/2023
Samples Analysed:	1 soil sample	Report issued:	09/08/2023

Sign

James Gane
Analytical Services Manager
CTS Group

Notes:

General

Please refer to Methodologies page for details pertaining to the analytical methods undertaken.

Samples will be retained for 14 days after issue of this report unless otherwise requested.

Moisture Content was determined in accordance with CTS method statement MS - CL - Sample Prep, oven dried at <30˚C.

Moisture Content is reported as a percentage of the dry mass of soil, this calculation is in accordance with BS1377, Part 2, 1990, Clause 3.2

Stone Content was determined in accordance with CTS method statement MS - CL - Sample Prep and refers to the percentage of stones retained on a 10mm BS test sieve.

Where specification limits are included these are for guidance only. Where a measured value has been highlighted this is not implying acceptance or failure and certainty of measurement values have not been taken into account.

Uncertainty of measurement values are available on request.

Samples were supplied by customer, results apply to the samples as received.

Deviating Samples

On receipt samples are compared against our sample holding and handling protocols, where any deviations have been noted these are reported on our deviating sample page (if present)

Accreditation Key

UKAS = UKAS Accreditation, MCERTS = MCERTS Accreditation, u = Unaccredited

MCERTS Accreditation only covers the SAND, CLAY and LOAM matrices

Date of Issue: 26.07.23

Issued by: J. Gane

Issue No: 4

Rev No: 2

4161

CTS Group
7 - 11 Harding Street
Leicester
LE1 4DH

L23/04055/PSL - 23-36039

Project Reference - PSL23/5785 A46 Walsgrave

Analytical Test Results - Chemical Analysis

Lab Reference			307798
Client Sample ID			-
Client Sample Location			BH126
Client Sample Type			B
Client Sample Number			16
Depth - Top (m)			2.50
Depth - Bottom (m)			3.00
Date of Sampling			09/06/2023
Time of Sampling			-
Sample Matrix			Other
Determinant	**Units**	**Accreditation**	
Water soluble sulphate (as SO_4)	(mg/l)	u	67
Acid Soluble Sulphate	(%)	u	0.05
Total Sulphur	(%)	UKAS	0.02
pH Value	pH Units	MCERTS	8.5
Water Soluble Chloride	(mg/l)	u	26
Water Soluble Nitrate (As NO_3)	(mg/l)	u	< 1.0
Water Soluble Magnesium	(mg/l)	u	19
Water Soluble Ammonium Ion	(mg/l)	u	< 1.0

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CTS Group
7 - 11 Harding Street
Leicester
LE1 4DH

L23/04055/PSL - 23-36039

Project Reference - PSL23/5785 A46 Walsgrave

Sample Descriptions

Lab Reference	Client Sample ID	Client Sample Location	Client Sample Type	Client Sample Number	Description	Moisture Content (%)	Stone Content (%)	Passing 2mm test sieve (%)
307798	-	BH126	B	16	Mottled grey brown silty clay	20	< 0.1	100

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CTS Group
7 - 11 Harding Street
Leicester
LE1 4DH

L23/04055/PSL - 23-36039

Project Reference - PSL23/5785 A46 Walsgrave

Sample Comments

Lab Reference	Client Sample ID	Client Sample Location	Client Sample Type	Client Sample Number	Comments
307798	-	BH126	B	16	

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CTS Group
7 - 11 Harding Street
Leicester
LE1 4DH

L23/04055/PSL - 23-36039

Project Reference - PSL23/5785 A46 Walsgrave

Analysis Methodologies

Test Code	Test Name / Reference	Sample condition for analysis	Sample Preperation	Test Details
ANIONSS	MS - CL - Anions by Aquakem (2:1Extract)	Oven dried	Passing 2mm test sieve	Determination of Anions (inc Sulphate, chloride etc.) in soils by Aquakem. Analysis is based on a 2:1 water to soil extraction ratio
PHS	MS - CL - pH in Soils	As received	Passing 10mm test sieve	Determination of pH in soils using a pH probe (using a 1:3 soil to water extraction)
ASSO4S	MS - CL - Acid Soluble Sulphate	Oven Dried	Passing 2mm test sieve	Determination of total sulphate in soils by acid extraction followed by ICP analysis
SAMPLEPREP	MS - CL - Sample Preparation	-	-	Preparation of samples (including determination of moisture content) to allow for subsequent analysis
1377TS-ELT	BS1377 Total Sulphur Content by HTC	Oven dried	BS1377 : Part 1 : 2016	Total Sulphur Content testing of Soil in accordance with BS 1377 : Part 3 : 2018 + A1 : 2021 Clause 7.10 (using Eltra CS-800 Analyser)

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7 - 11 Harding Street
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LE1 4DH

L23/04055/PSL - 23-36039

Project Reference - PSL23/5785 A46 Walsgrave

Sample Deviations

Deviations are listed below against each sample and associated test method, where deviation(s) are noted it means data may not be representative of the sample at the time of sampling and it is possible that results provided may be compromised.

Observations on receipt

A - No date of sampling provided
C - Received in inappropriate container
H - Contains headspace
T - Temperature on receipt exceeds storage temperature
R - Date of sampling to receipt insufficient to allow analysis to be completed without deviation, Please note this is only a deviation if 'X' is also recorded against the sample

Observations whist in laboratory

X - Exceeds sampling to extraction or analysis timescales

Lab Reference	Client Sample ID	Client Sample Location	Client Sample Type	Client Sample Number	Test	Deviations
307798	-	BH126	B	16	BS1377 Total Sulphur Content by HTC	RX
307798	-	BH126	B	16	MS - CL - Anions by Aquakem (2:1Extract)	RX
307798	-	BH126	B	16	MS - CL - pH in Soils	RX

LABORATORY REPORT

Contract Number: PSL23/5770

Report Date: 08 August 2023

Client's Reference: G230651/Geo 33

Client Name: Strata Geotechnics
Kirkby Lane
Pinxton
Nottinghamshire
NG16 6JA

For the attention of: Izaac Lovatt

Contract Title: A46 Walsgrave

Date Received: 19/7/2023
Date Commenced: 19/7/2023
Date Completed: 8/8/2023

Notes: Opinions and Interpretations are outside the UKAS Accreditation

A copy of the Laboratory Schedule of accredited tests as issued by UKAS is attached to this report. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced other than in full, without the prior written approval of the laboratory.

Checked and Approved Signatories:

L Knight
(Assistant Laboratory Manager)

R Berriman
(Associate Director)

S Royle
(Laboratory Manager)

[redacted]

A Watkins
(Managing Director)

S Eyre
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5 – 7 Hexthorpe Road,
Hexthorpe,
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DN4 0AR
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Email: [redacted]@prosoils.co.uk
[redacted]@prosoils.co.uk

SUMMARY OF SOIL DENSITY RELATED TESTS

(BS1377 : PART 2 & 4 : 1990)

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Moisture Content %	Bulk Density Mg/m^3	Dry Density Mg/m^3	Retained 20mm %	Retained 37.5mm %	Method of compaction kg	Maximum Dry Density Mg/m^3	Minimum Dry Density Mg/m^3	Remarks
BH120	36	CSS	14.10	14.25	12	1.98	1.78						
BH120	41	CSS	17.50	17.65	9.3	1.87	1.71						
BH120	44	CSS	19.90	20.15	7.7	2.20	2.04						
BH120	49	CSS	24.68	24.82	8.0	2.22	2.06						

UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

Contract No:
PSL23/5770
Client Ref:
G230651

WATER CONTENT OF ROCK

ISRM Suggested Methods - Rock Characterization Testing and Monitoring 1974 - 2006

Hole Number	Sample Number	Sample Type	Top Depth (m)	Base Depth (m)	Water Content (%)	Sample Description	Remarks
BH120	31	CSS	9.95	10.10	16	Brown CLAY	
BH120	34	CSS	12.45	12.55	9.0	Brown CLAY	
BH120	37	CSS	14.70	14.85	9.3	Brown CLAY	
BH120	40	CSS	16.70	17.00	7.3	Brown CLAY	
BH120	43	CSS	19.30	19.40	9.3	Brown CLAY	
BH120	45	CSS	21.42	21.58	13	Brown CLAY	
BH120	48	CSS	23.84	23.85	9.9	Brown CLAY	
BH120	49	CSS	24.68	24.82	8.0	Brown CLAY	

UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

Contract No: PSL23/5770

Client Ref: G230651

SUMMARY OF POINT LOAD TEST RESULTS

ISRM Suggested Methods : 2007

Borehole Number	Depth (m)	Sample Ref	Test Type	Orientation	Dimensions (mm)		Area	D_e^2	D_e	Failure Load (P)		I_s	Corr Fac	I_{s50}	Failure Type	Remarks
				Par / Perp	W	D	(mm2)		(mm)	(Mpa)	(kN)	(MPa)	F	(MPa)		
BH120	15.70	38	A	Perp	100	37	3700	4710.99	68.64	-	1.80	0.38	1.153	0.44	Valid	
BH120	16.70	40	A	Perp	100	45	4500	5729.58	75.69	-	0.98	0.17	1.205	0.21	Valid	
BH120	18.60	42	A	Perp	100	38	3800	4838.31	69.56	-	0.67	0.14	1.160	0.16	Valid	
BH120	12.45	34	A	Perp	100	60	6000	7639.44	87.40	-	0.48	0.06	1.286	0.08	Valid	
BH120	14.70	37	A	Perp	100	41	4100	5220.28	72.25	-	0.81	0.16	1.180	0.18	Valid	
BH120	19.30	43	A	Perp	100	32	3200	4074.37	63.83	-	1.12	0.27	1.116	0.31	Valid	
BH120	22.40	46	A	Perp	100	44	4400	5602.25	74.85	-	0.99	0.18	1.199	0.21	Valid	
BH120	24.68	49	A	Perp	100	37	3700	4710.99	68.64	-	1.46	0.31	1.153	0.36	Valid	

Note All testing carried out on samples at as received water content

Par = parallel, Perp = perpendicular, U = Random

A = Axial, D = Diametral, I = Irregular

UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

Contract No:

PSL23/5770

Client Ref:

G230651

LABORATORY REPORT

Contract Number: PSL23/5523

Report Date: 08 August 2023

Client's Reference: G230651/Geo 24

Client Name: Strata Geotechnics
Kirkby Lane
Pinxton
Nottinghamshire
NG16 6JA

For the attention of: Izaac Lovatt

Contract Title: A46 Walsgrave

Date Received: 12/7/2023
Date Commenced: 12/7/2023
Date Completed: 8/8/2023

Notes: Opinions and Interpretations are outside the UKAS Accreditation

A copy of the Laboratory Schedule of accredited tests as issued by UKAS is attached to this report. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced other than in full, without the prior written approval of the laboratory.

Checked and Approved Signatories:

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SUMMARY OF LABORATORY SOIL DESCRIPTIONS

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Description of Sample
BH121	9	B	0.70	1.00	Brown slightly gravelly very sandy CLAY.
BH121	9	D	1.00	1.00	Brown slightly gravelly very sandy CLAY.
BH121	10	B	1.20	1.65	Brown slightly gravelly very sandy CLAY.
BH121	14	UT	2.00	2.45	Brown slightly gravelly very sandy CLAY.
BH121	17	D	3.00	3.45	Brown mottled grey very gravelly very sandy CLAY.
BH121	22	B	4.60	4.90	Brown very gravelly very clayey SAND.
BH121	23	D	4.90	5.35	Brown very gravelly very clayey SAND.
BH122	6	D	0.80	0.80	Brown slightly gravelly sandy CLAY.
BH122	7	B	1.00	1.00	Brown slightly gravelly sandy CLAY.
BH122	10	UT	1.50	1.95	Brown slightly gravelly sandy CLAY.
BH122	14	D	2.20	2.20	Brown slightly gravelly very sandy CLAY.
BH122	16	B	2.50	3.00	Brown slightly gravelly very sandy CLAY.
BH122	17	D	3.20	3.20	Brown gravelly very sandy CLAY.
BH122	24	B	5.50	6.00	Brown very gravelly very clayey SAND.
BH122	26	B	7.00	7.50	Brown slightly gravelly very sandy CLAY.
BH122	35	B	12.00	12.50	Brown slightly gravelly very sandy CLAY.

SUMMARY OF SOIL CLASSIFICATION TESTS

(BS1377 : PART 2 : 1990)

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Moisture Content % Clause 3.2	Linear Shrinkage % Clause 6.5	Particle Density Mg/m^3 Clause 8.2	Liquid Limit % Clause 4.3/4	Plastic Limit % Clause 5.3	Plasticity Index % Clause 5.4	Passing .425mm %	Remarks
BH121	9	D	1.00	1.00	20			30	16	14	95	Low Plasticity CL
BH121	17	D	3.00	3.45	8.9			27	13	14	63	Low Plasticity CL
BH121	23	D	4.90	5.35	16			25	12	13	47	Low Plasticity CL
BH122	6	D	0.80	0.80	23			48	22	26	98	Intermediate Plasticity CI
BH122	14	D	2.20	2.20	17			29	14	15	86	Low Plasticity CL

SYMBOLS : **NP : Non Plastic** *** : Liquid Limit and Plastic Limit Wet Sieved.**

UKAS TESTING 4043

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Contract No:
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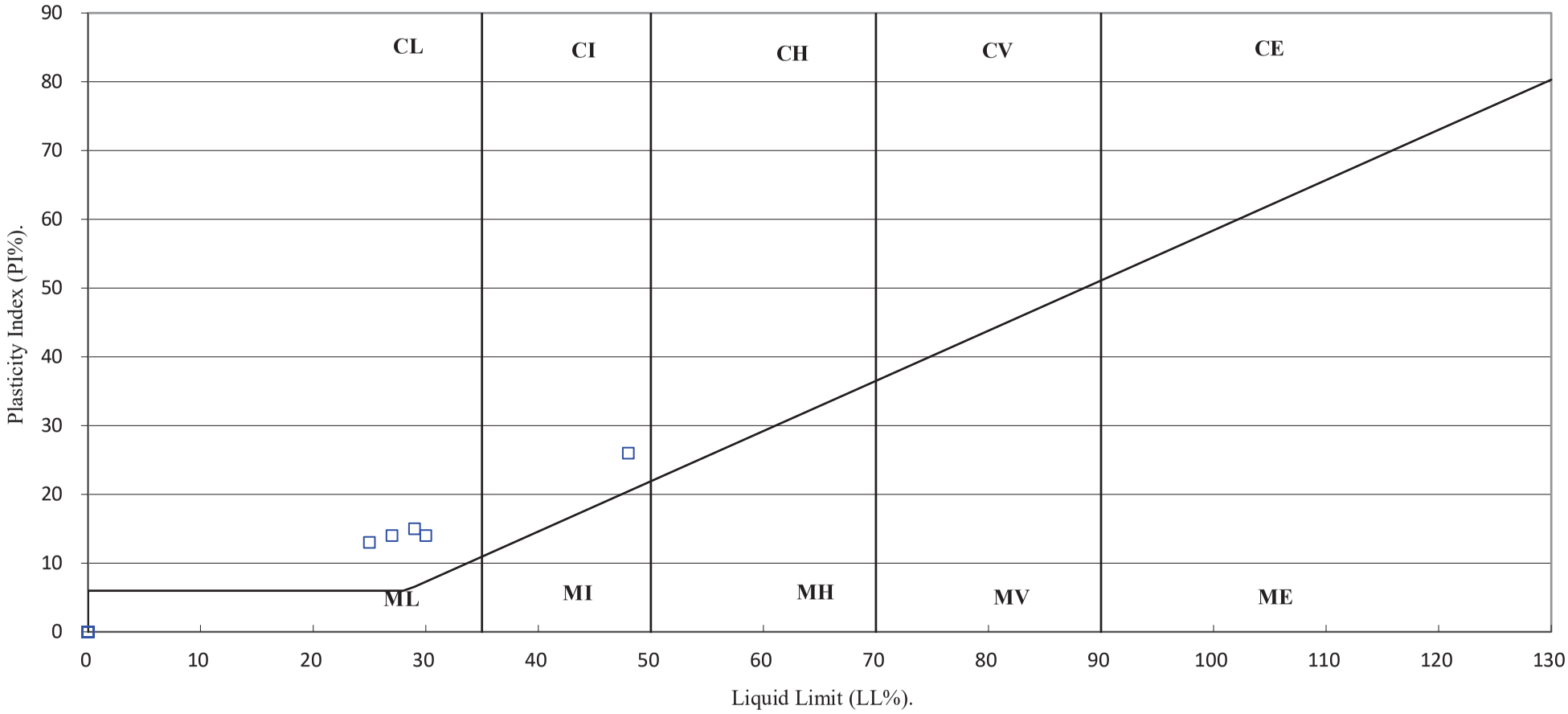
PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION.



UKAS TESTING 4043	PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY	**A46 Walsgrave**

Contract No:
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SUMMARY OF SOIL DENSITY RELATED TESTS

(BS1377 : PART 2 & 4 : 1990)

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Moisture Content %	Bulk Density Mg/m^3	Dry Density Mg/m^3	Retained 20mm %	Retained 37.5mm %	Method of compaction kg	Maximum Dry Density Mg/m^3	Minimum Dry Density Mg/m^3	Remarks
BH121	10	B	1.20	1.65	20	2.08	1.73						
BH122	14	D	2.20	2.20	17	2.12	1.81						
BH122	17	D	3.20	3.20	12	2.28	2.04						
BH122	24	B	5.50	6.00	15	2.33	2.03						

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PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

Contract No: PSL23/5523

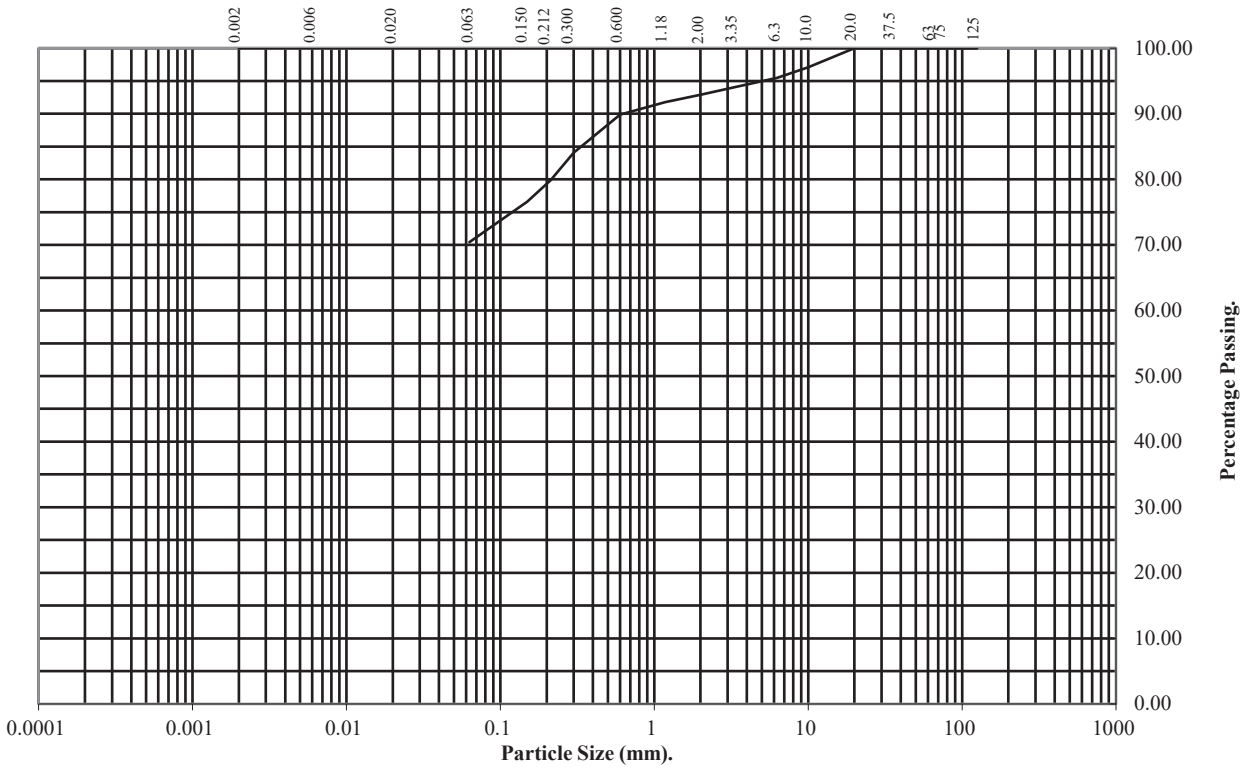
Client Ref: G230651

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number:	**BH121**	**Top Depth (m):**	**0.70**
Sample Number:	**9**	**Base Depth(m):**	**1.00**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	97
6.3	96
3.35	94
2	93
1.18	92
0.6	90
0.3	84
0.212	80
0.15	77
0.063	70

Soil Fraction	Total Percentage
Cobbles	0
Gravel	7
Sand	23
Silt/Clay	70

Remarks:

See Summary of Soil Descriptions

UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

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Contract No:
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Client Ref:
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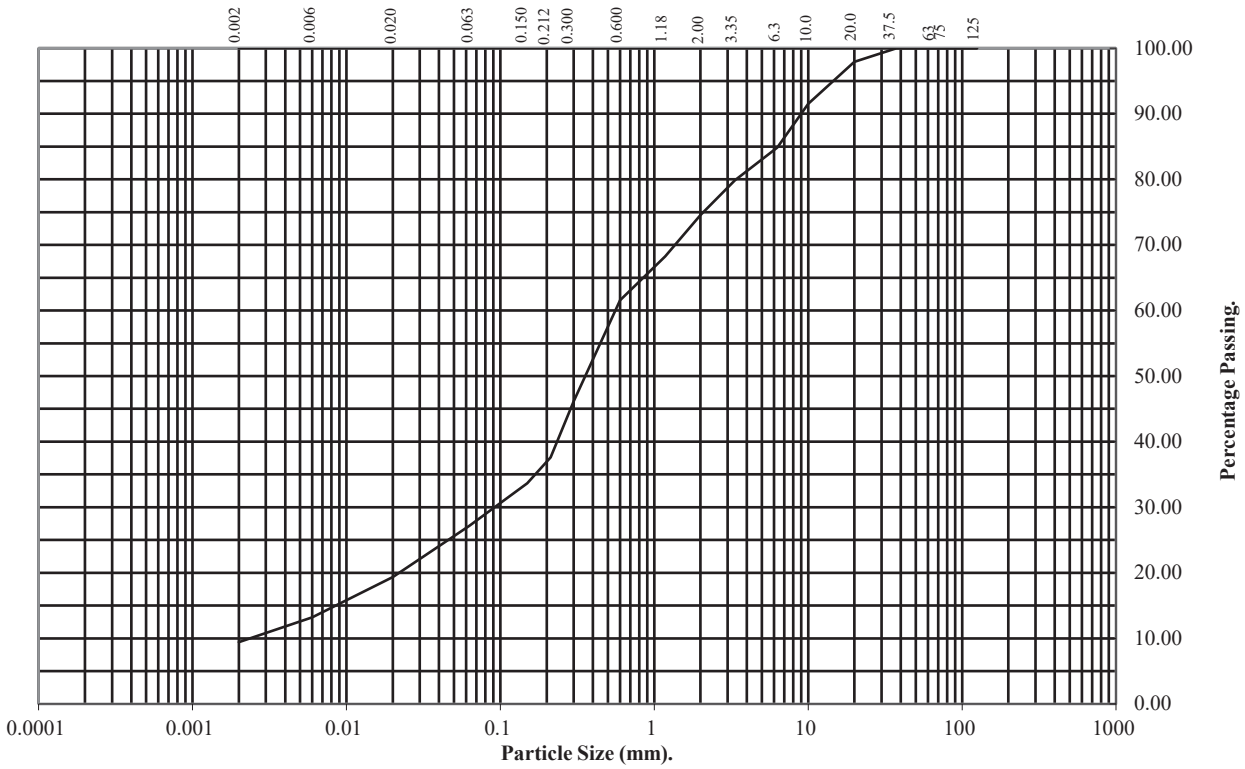
PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

Hole Number:	**BH121**	**Top Depth (m):**	**4.60**
Sample Number:	**22**	**Base Depth(m):**	**4.90**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	98
10	92
6.3	85
3.35	80
2	75
1.18	68
0.6	62
0.3	46
0.212	38
0.15	34
0.063	27

Particle Diameter	Percentage Passing
0.02	19
0.006	13
0.002	9

Soil Fraction	Total Percentage
Cobbles	0
Gravel	25
Sand	48
Silt	18
Clay	9

Remarks:
See Summary of Soil Descriptions

UKAS TESTING 4043

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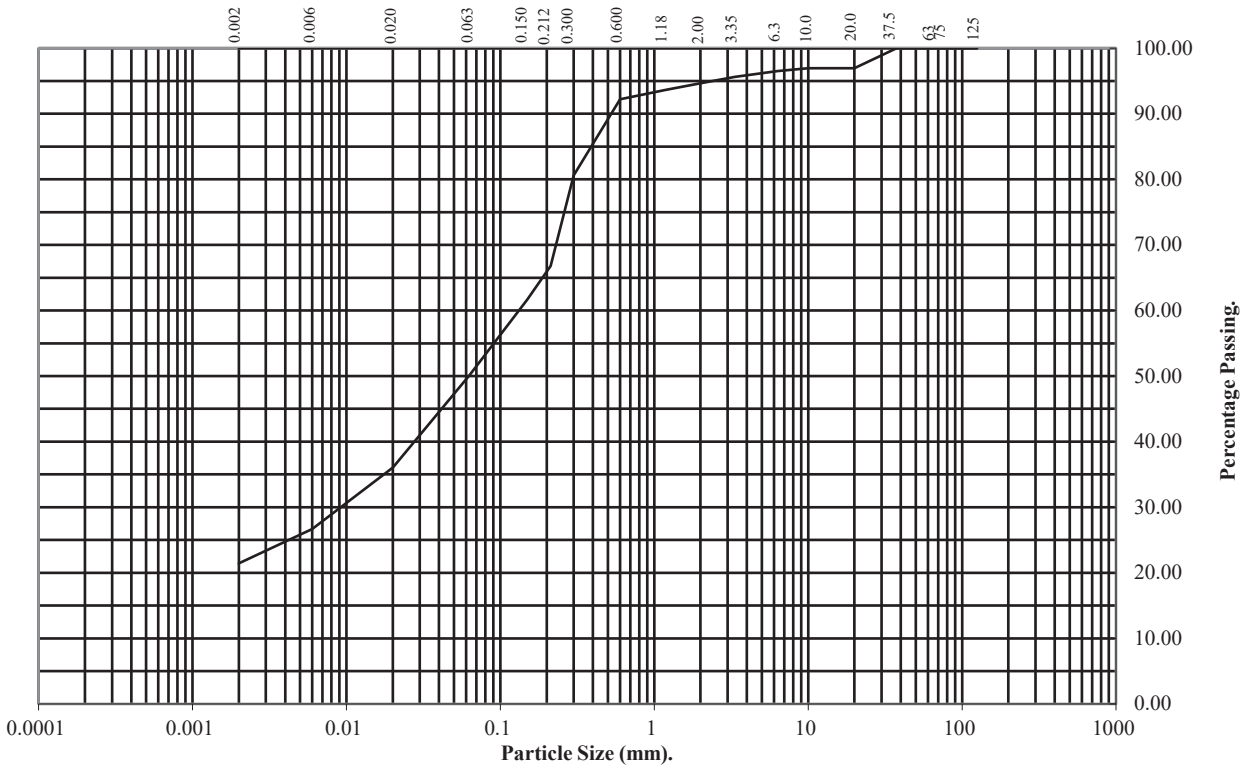
PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

Hole Number:	**BH122**	**Top Depth (m):**	**2.20**
Sample Number:	**14**	**Base Depth(m):**	**2.20**
Sample Type:	**D**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	97
10	97
6.3	96
3.35	96
2	95
1.18	94
0.6	92
0.3	81
0.212	67
0.15	62
0.063	50

Particle Diameter	Percentage Passing
0.02	36
0.006	27
0.002	21

Soil Fraction	Total Percentage
Cobbles	0
Gravel	5
Sand	45
Silt	29
Clay	21

Remarks:
See Summary of Soil Descriptions

UKAS TESTING 4043

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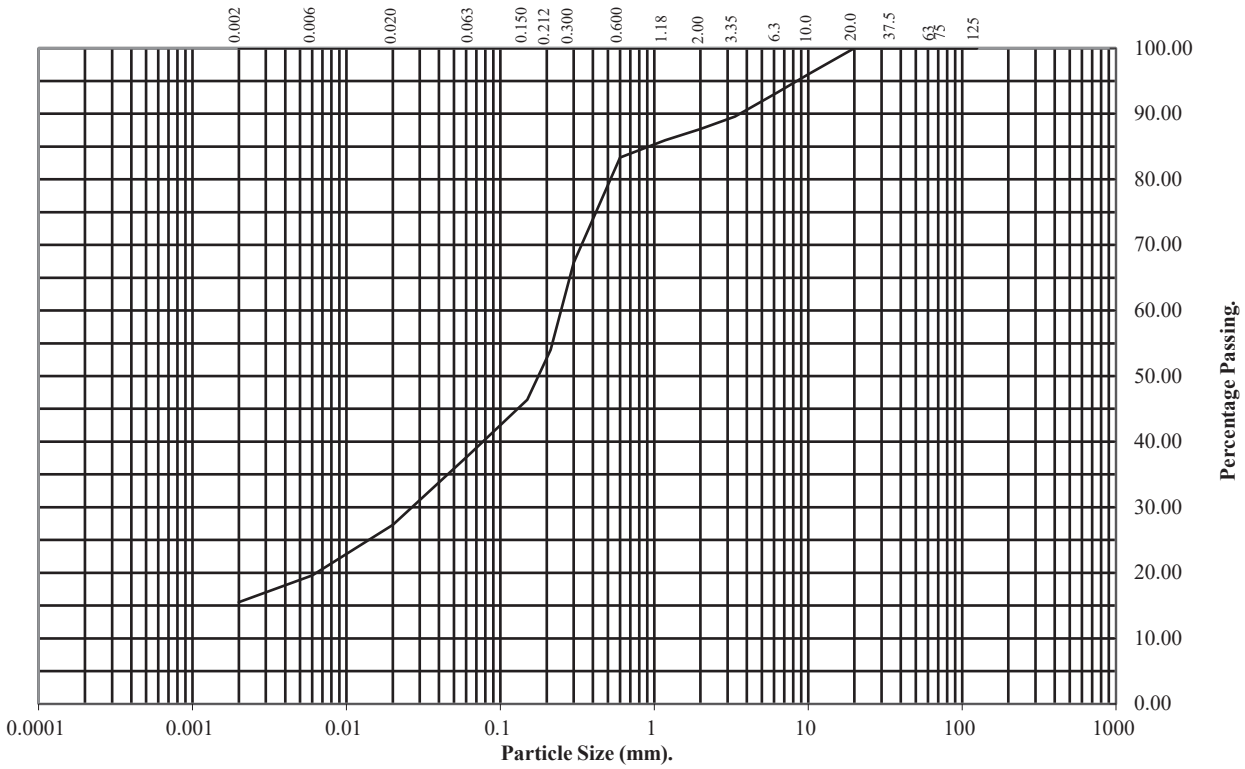
PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

Hole Number:	**BH122**	**Top Depth (m):**	**3.20**
Sample Number:	**17**	**Base Depth(m):**	**3.20**
Sample Type:	**D**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	96
6.3	93
3.35	90
2	88
1.18	86
0.6	83
0.3	67
0.212	54
0.15	46
0.063	38

Particle Diameter	Percentage Passing
0.02	27
0.006	20
0.002	16

Soil Fraction	Total Percentage
Cobbles	0
Gravel	12
Sand	50
Silt	22
Clay	16

Remarks:
See Summary of Soil Descriptions

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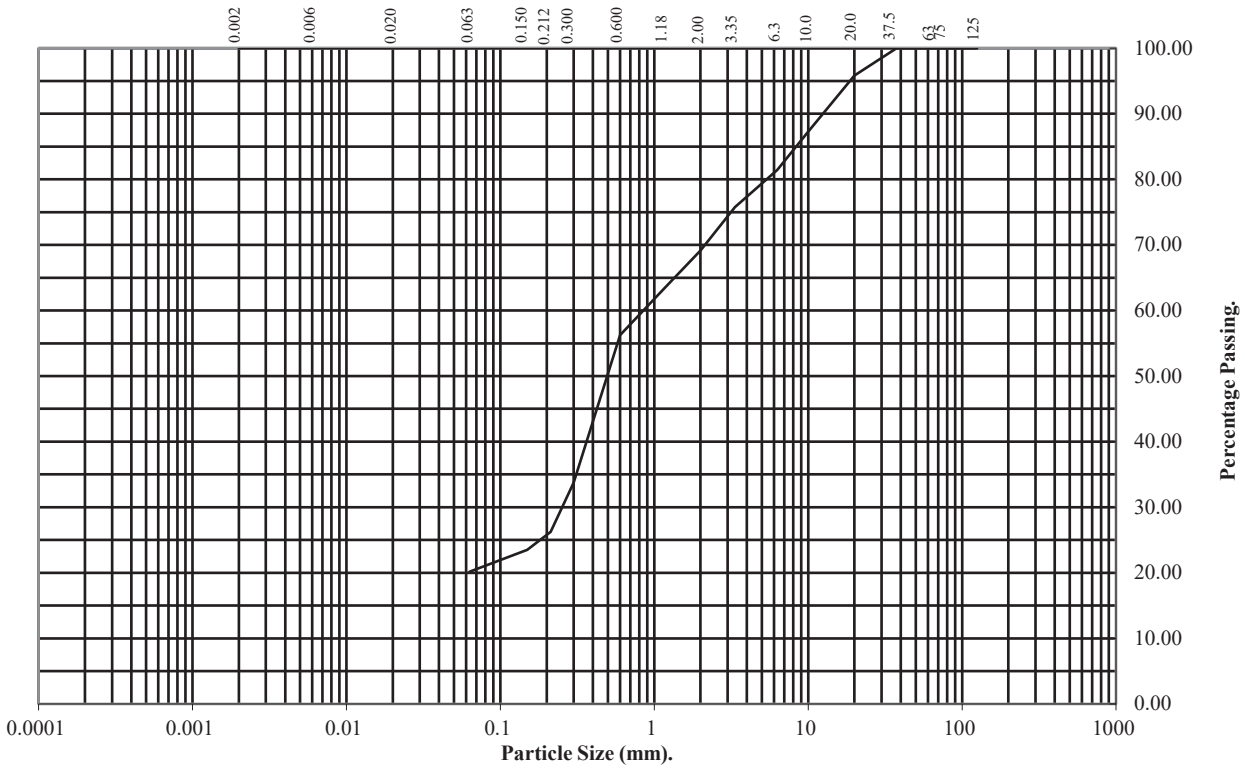
PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number:	**BH122**	**Top Depth (m):**	**5.50**
Sample Number:	**24**	**Base Depth(m):**	**6.00**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	96
10	87
6.3	81
3.35	76
2	69
1.18	64
0.6	56
0.3	34
0.212	26
0.15	23
0.063	20

Soil Fraction	Total Percentage
Cobbles	0
Gravel	31
Sand	49
Silt/Clay	20

Remarks:
See Summary of Soil Descriptions

UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

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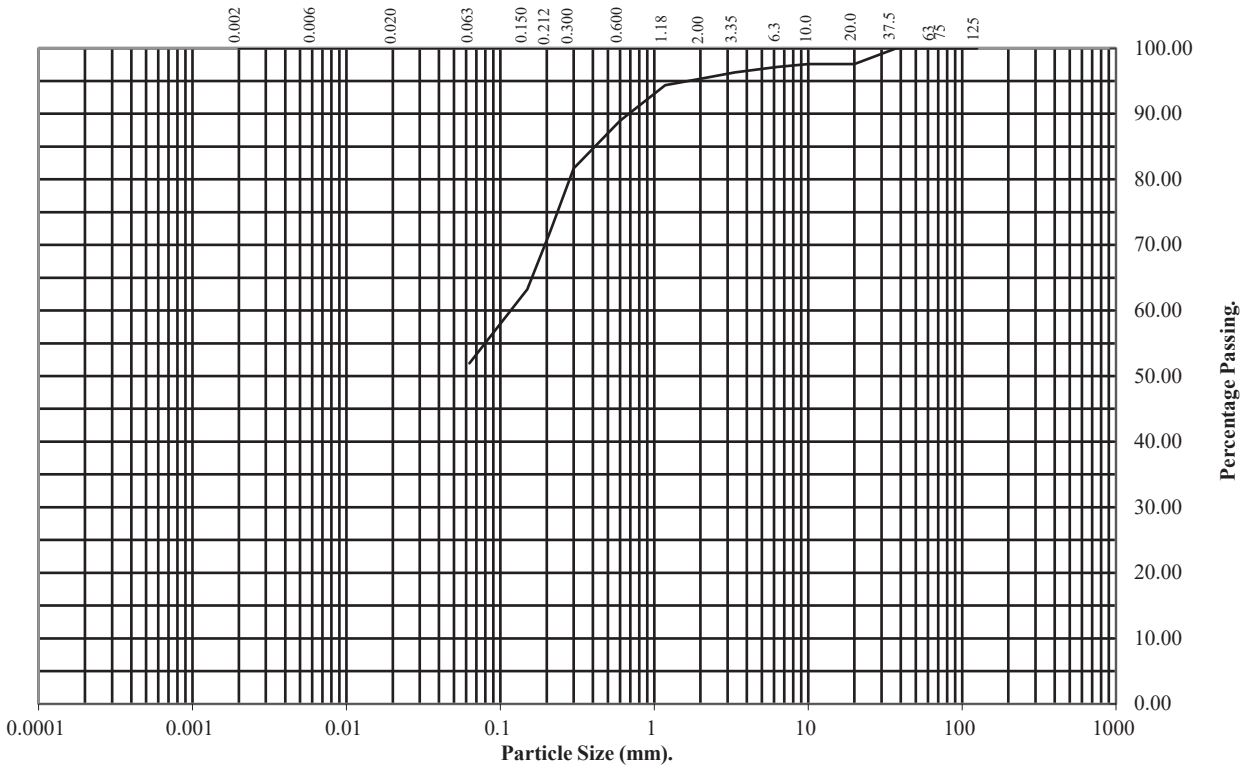
PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number:	**BH122**	**Top Depth (m):**	**12.00**
Sample Number:	**35**	**Base Depth(m):**	**12.50**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	98
10	98
6.3	97
3.35	96
2	95
1.18	94
0.6	89
0.3	82
0.212	72
0.15	63
0.063	52

Soil Fraction	Total Percentage
Cobbles	0
Gravel	5
Sand	43
Silt/Clay	52

Remarks:
See Summary of Soil Descriptions

UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

Contract No:
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Client Ref:
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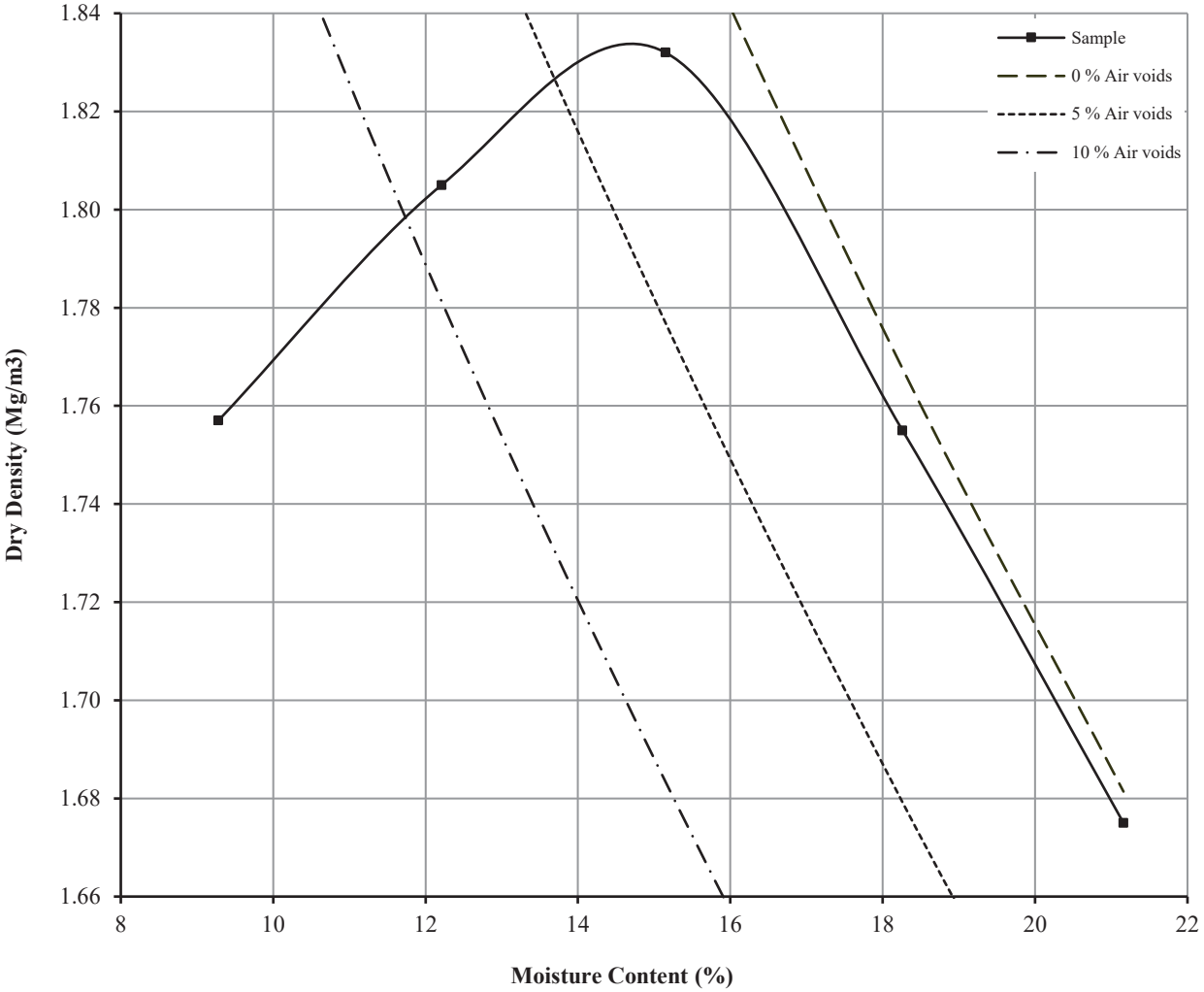
DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

BS 1377 : Part 4 : Clause 3.3 : 1990

Hole Number:	**BH121**	**Top Depth (m) :**	**0.70**
Sample Number:	**9**	**Base Depth (m) :**	**1.00**
Sample Type:	**B**		



Initial Moisture Content:		18	Method of Compaction:	2.5kg	Separate Samples
Particle Density (Mg/m3):	2.61	Assumed	Material Retained on 37.5 mm Test Sieve (%):		0
Maximum Dry Density (Mg/m3):		1.83	Material Retained on 20.0 mm Test Sieve (%):		0
Optimum Moisture Content (%):		15			
Remarks See summary of soil descriptions					

UKAS TESTING 4043

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A46 Walsgrave

Contract
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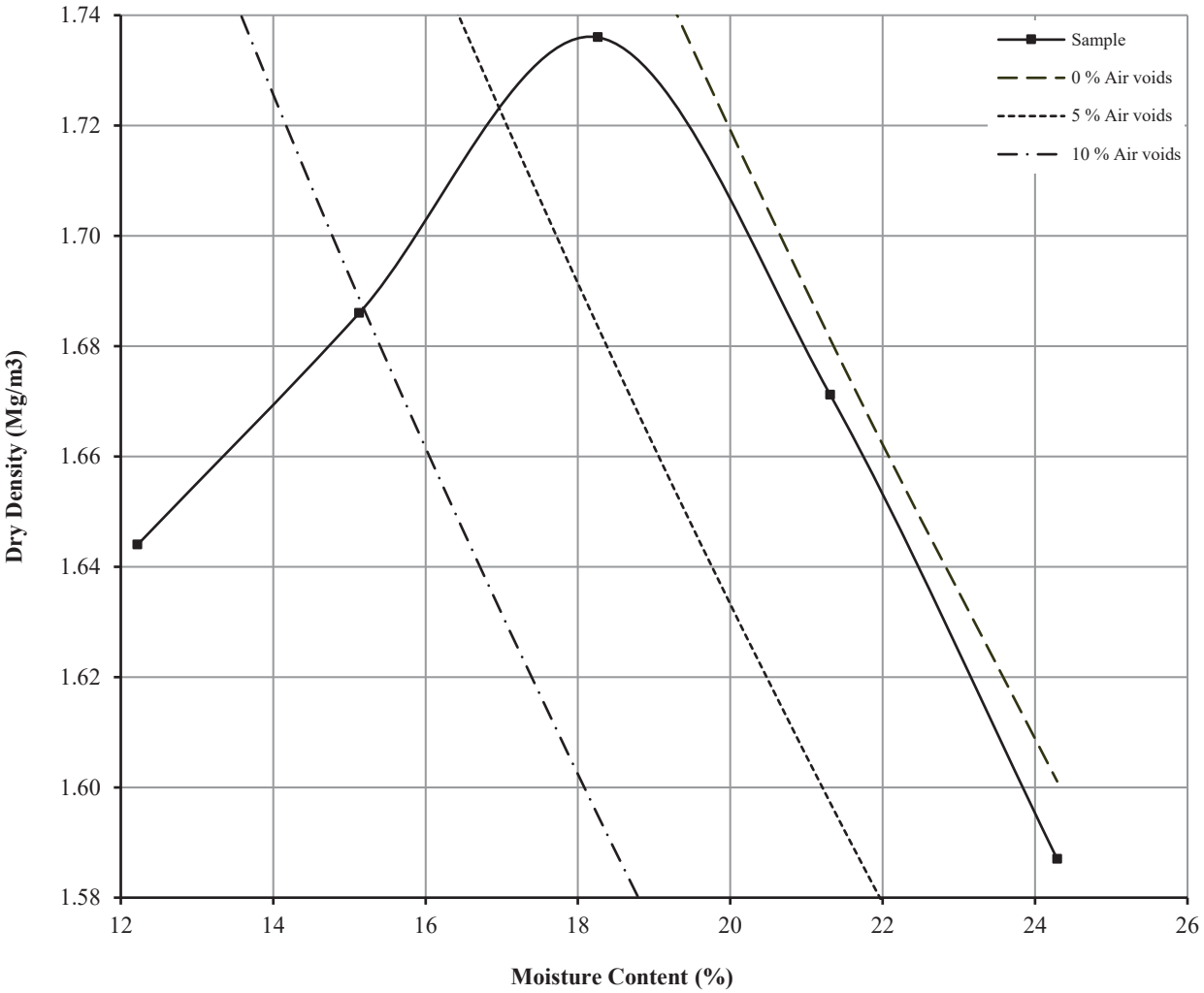
DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

BS 1377 : Part 4 : Clause 3.3 : 1990

Hole Number:	**BH122**	**Top Depth (m) :**	**1.00**
Sample Number:	**7**	**Base Depth (m) :**	**1.00**
Sample Type:	**B**		



Initial Moisture Content:		15	Method of Compaction:	2.5kg	Separate Samples
Particle Density (Mg/m3):	2.62	Assumed	Material Retained on 37.5 mm Test Sieve (%):		0
Maximum Dry Density (Mg/m3):		1.74	Material Retained on 20.0 mm Test Sieve (%):		0
Optimum Moisture Content (%):		18			
Remarks See summary of soil descriptions					

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Contract
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Client Ref
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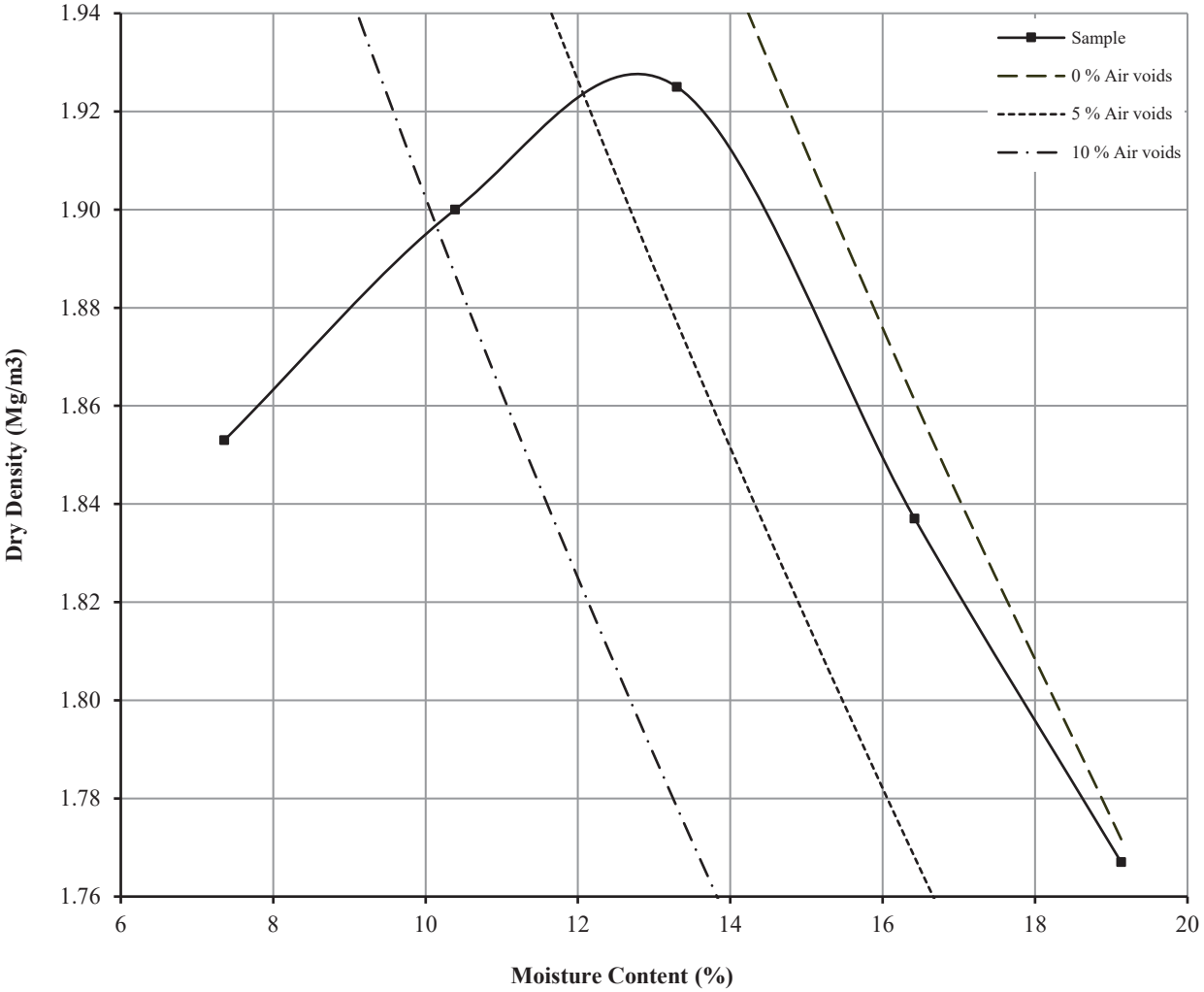
DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

BS 1377 : Part 4 : Clause 3.3 : 1990

Hole Number:	**BH122**	**Top Depth (m) :**	**2.50**
Sample Number:	**16**	**Base Depth (m) :**	**3.00**
Sample Type:	**B**		



Initial Moisture Content:		16	Method of Compaction:	2.5kg	Separate Samples
Particle Density (Mg/m3):	2.68	Assumed	Material Retained on 37.5 mm Test Sieve (%):		1
Maximum Dry Density (Mg/m3):		1.93	Material Retained on 20.0 mm Test Sieve (%):		4
Optimum Moisture Content (%):		13			
Remarks See summary of soil descriptions					

UKAS TESTING 4043

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Contract
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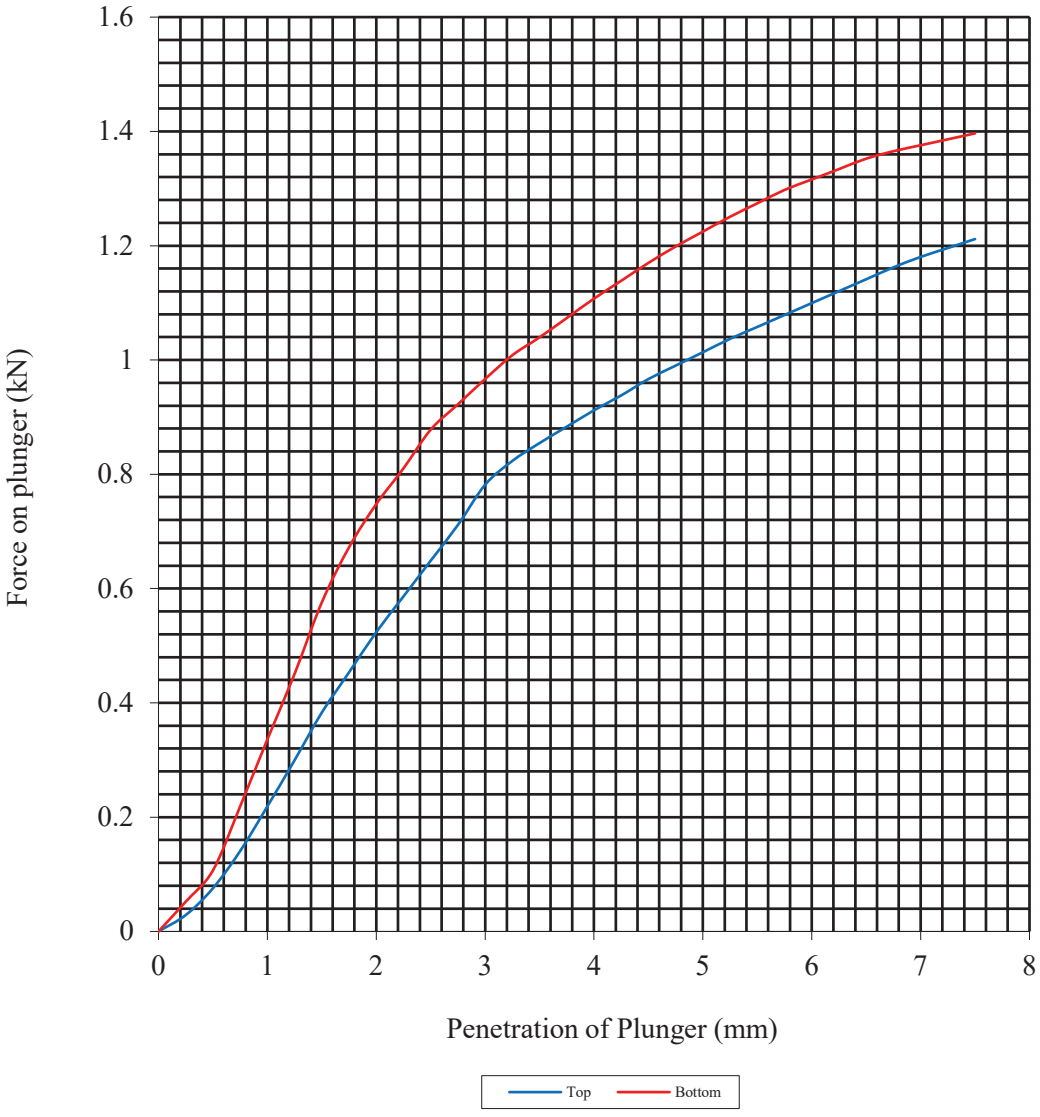
CALIFORNIA BEARING RATIO TEST

BS 1377 : Part 4 : 1990

Hole Number:	**BH121**	**Top Depth (m):**	**0.70**
Sample Number:	**9**	**Base Depth (m):**	**1.00**
Sample Type:	**B**		



Initial Sample Conditions		Sample Preparation		Final Moisture Content %		C.B.R. Value %	
Moisture Content:	18	Surcharge Kg:	4.00	Sample Top	18	Sample Top	5.1
Bulk Density Mg/m3:	2.08	Soaking Time hrs	0	Sample Bottom	18	Sample Bottom	6.7
Dry Density Mg/m3:	1.76	Swelling mm:	0	Remarks : See Summary of Soil Descriptions.			
Percentage retained on 20mm BS test sieve:			0				
Compaction Conditions		2.5kg					

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Contract No:
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ONE DIMENSIONAL CONSOLIDATION TEST

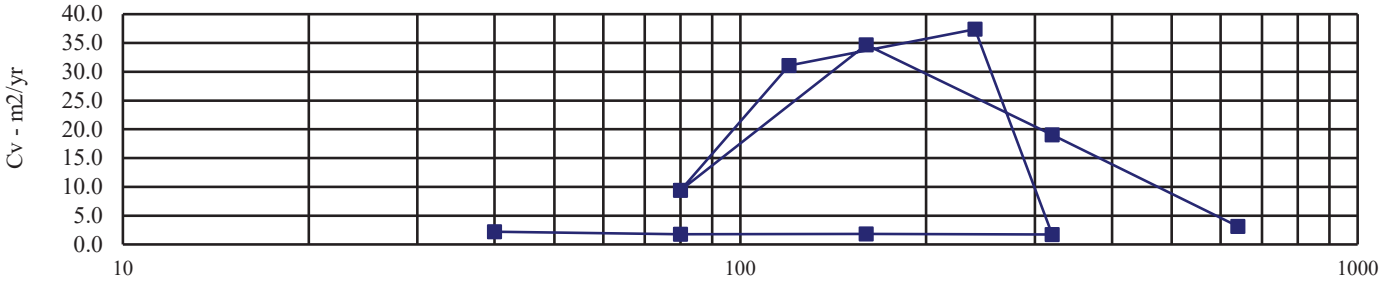
BS 1377: Part 5: 1990: Clause 3

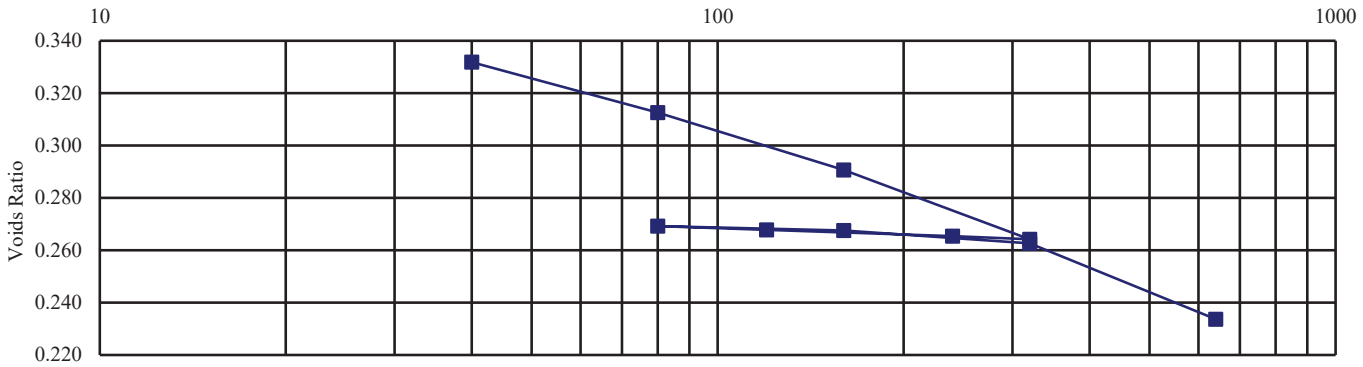
Hole Number: BH121 **Top Depth (m):** 2.00

Sample Number: 14 **Base Depth (m) :** 2.45

Sample Type: UT

Initial Conditions		Pressure Range kPa		Mv m2/MN	Cv m2/yr	Specimen location within tube:	Top
Moisture Content (%):	13						
Bulk Density (Mg/m3):	2.20	0	40	0.626	2.213	Method used to determine CV:	T90
Dry Density (Mg/m3):	1.94	40	80	0.360	1.755		
Voids Ratio:	0.366	80	160	0.209	1.817	Nominal temperature during test ' C:	20
Degree of saturation:	96.3	160	320	0.128	1.729		
Height (mm):	20.016	320	240	0.011	37.378	Remarks: See summary of soil descriptions	
Diameter (mm)	75.023	240	120	0.016	31.058		
Particle Density (Mg/m3): Assumed	2.65	120	80	0.028	9.423		
		80	160	0.016	34.700		
		160	320	0.024	19.016		
		320	640	0.072	3.159		





UKAS TESTING 4043 / PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY	A46 Walsgrave	Contract No: PSL23/5523 Client Ref: G230651

ONE DIMENSIONAL CONSOLIDATION TEST

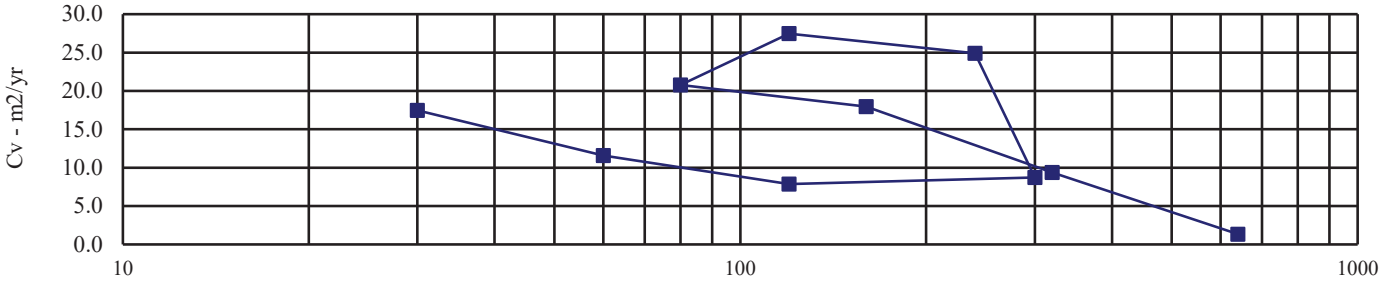
BS 1377: Part 5: 1990: Clause 3

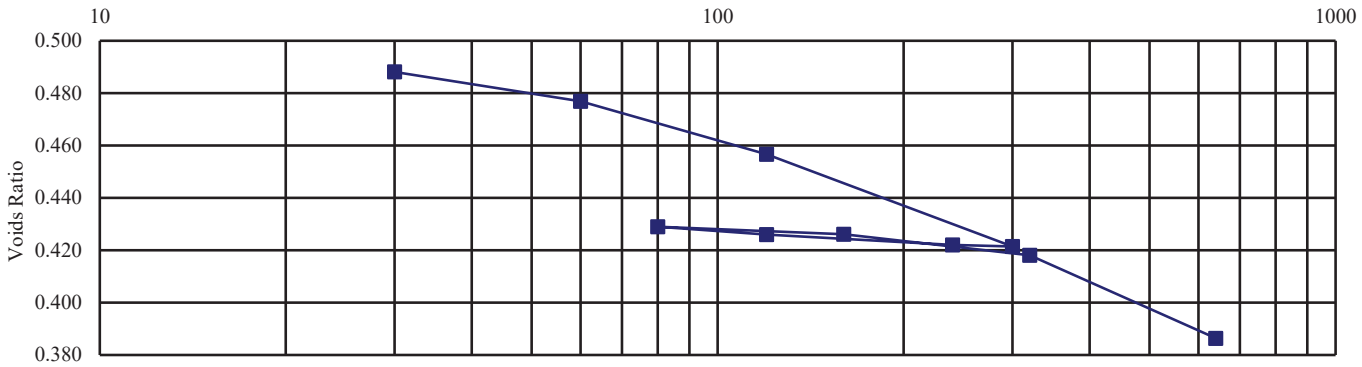
Hole Number: BH122 **Top Depth (m):** 1.50

Sample Number: 10 **Base Depth (m) :** 1.95

Sample Type: UT

Initial Conditions		Pressure Range kPa		Mv m2/MN	Cv m2/yr	Specimen location within tube:	Top
Moisture Content (%):	18						
Bulk Density (Mg/m3):	2.08	0	30	0.351	17.472	Method used to	
Dry Density (Mg/m3):	1.76	30	60	0.251	11.575	determine CV:	T90
Voids Ratio:	0.504	60	120	0.228	7.858	Nominal temperature	
Degree of saturation:	95.5	120	300	0.134	8.708	during test ' C:	20
Height (mm):	20.01	300	240	0.007	24.917	Remarks:	
Diameter (mm)	75.033	240	120	0.023	27.461	See summary of soil descriptions	
Particle Density (Mg/m3): Assumed	2.65	120	80	0.053	20.758		
		80	160	0.026	17.965		
		160	320	0.035	9.386		
		320	640	0.070	1.343		





UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

Contract No: PSL23/5523

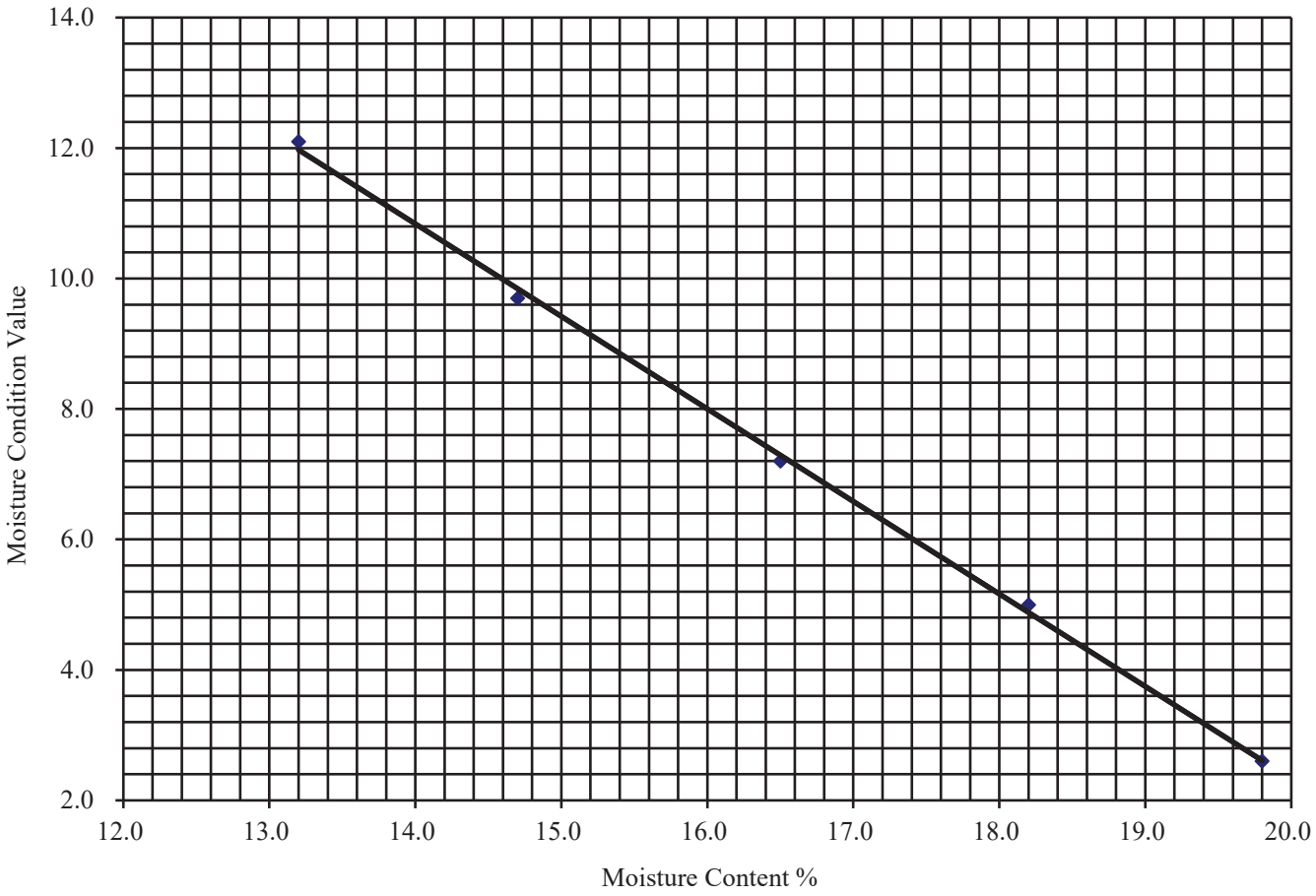
Client Ref: G230651

MOISTURE CONDITION VALUE CALIBRATION

BS1377 : Part 4 : 1990 Clause 5.5

Hole Number:	**BH121**	**Top Depth (m):**	**0.70**
Sample Number:	**9**	**Base Depth (m):**	**1.00**
Sample Type:	**B**		

Initial Moisture Content (%):	18
Single/Separate Samples Tested	Separate
Material Retained on the 20mm BS Test Sieve (%):	0



Test Results.

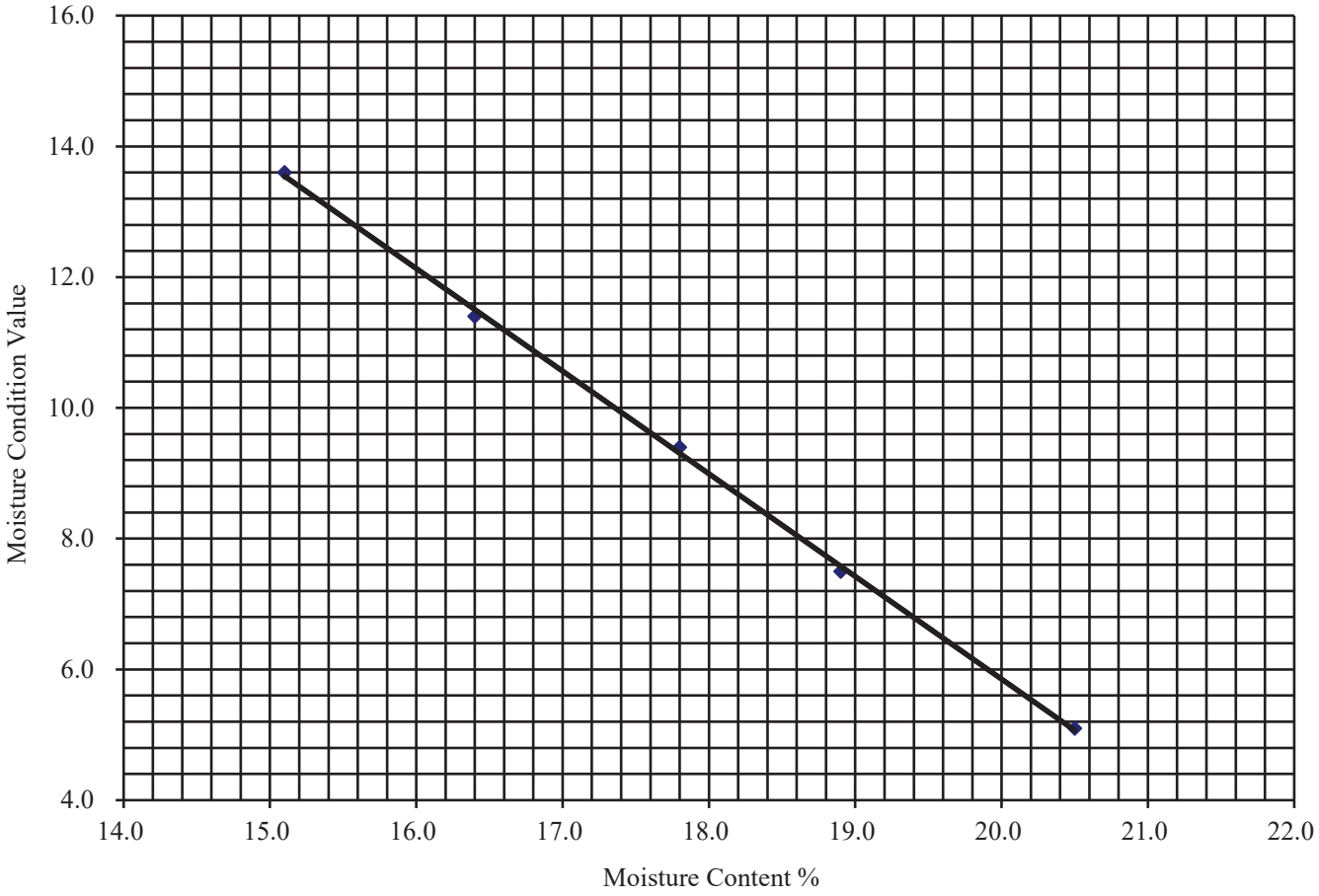
Test Number	1	2	3	4	5
Moisture Content (%)	13.2	14.7	16.5	18.2	19.8
MCV	12.1	9.7	7.2	5.0	2.6

MOISTURE CONDITION VALUE CALIBRATION

BS1377 : Part 4 : 1990 Clause 5.5

Hole Number:	**BH122**	**Top Depth (m):**	**1.00**
Sample Number:	**7**	**Base Depth (m):**	**1.00**
Sample Type:	**B**		

Initial Moisture Content (%):	15
Single/Separate Samples Tested	Separate
Material Retained on the 20mm BS Test Sieve (%):	0



Test Results.

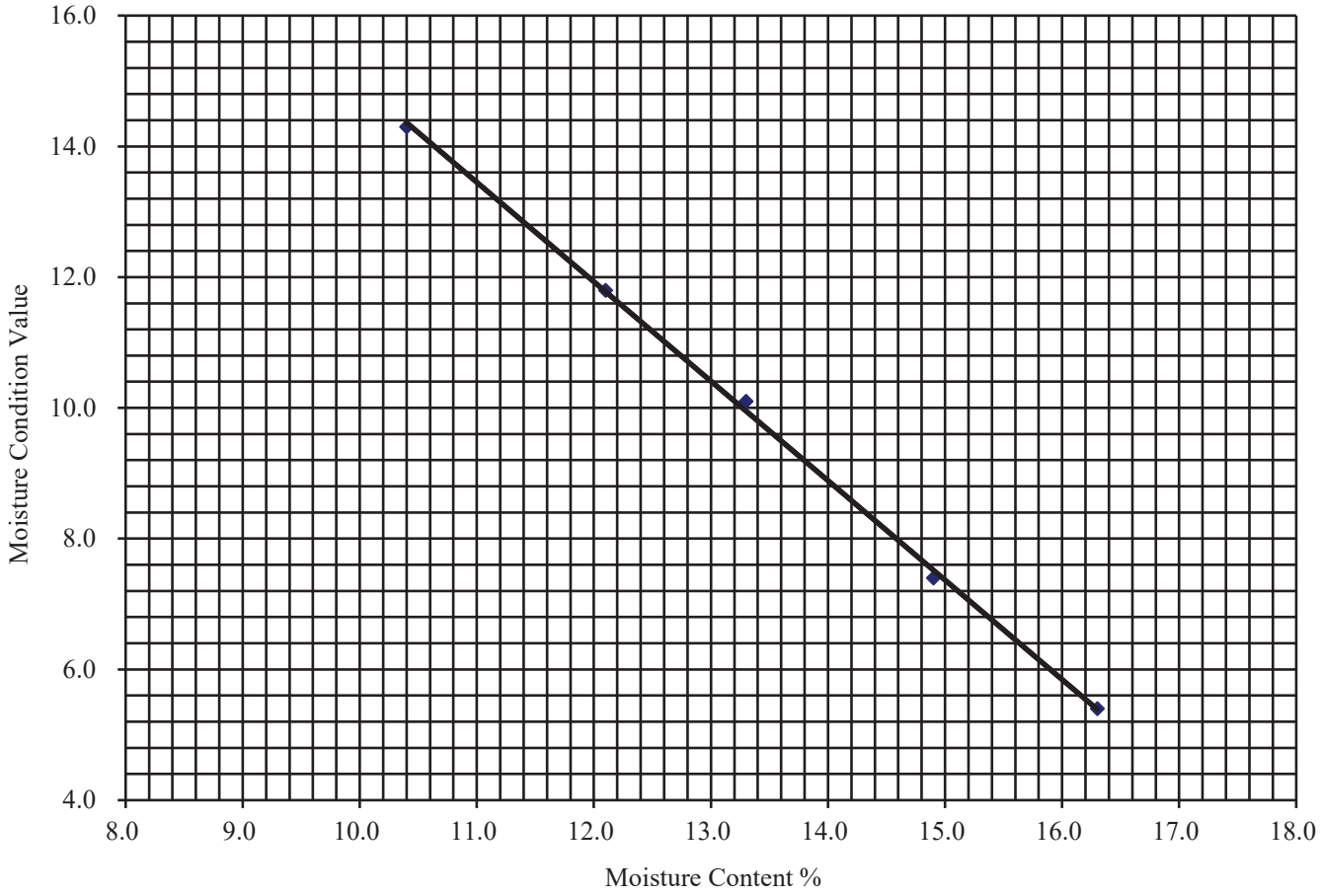
Test Number	1	2	3	4	5
Moisture Content (%)	15.1	16.4	17.8	18.9	20.5
MCV	13.6	11.4	9.4	7.5	5.1

MOISTURE CONDITION VALUE CALIBRATION

BS1377 : Part 4 : 1990 Clause 5.5

Hole Number:	**BH122**	**Top Depth (m):**	**2.50**
Sample Number:	**16**	**Base Depth (m):**	**3.00**
Sample Type:	**B**		

Initial Moisture Content (%):	16
Single/Separate Samples Tested	Separate
Material Retained on the 20mm BS Test Sieve (%):	5



Test Results.

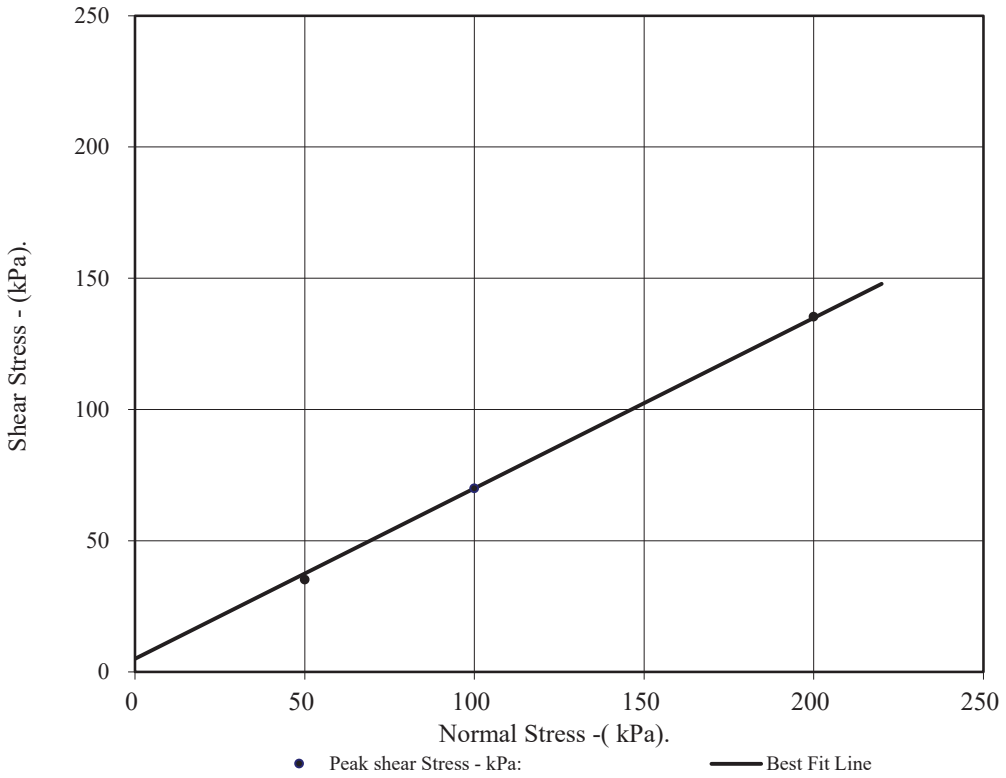
Test Number	1	2	3	4	5
Moisture Content (%)	10.4	12.1	13.3	14.9	16.3
MCV	14.3	11.8	10.1	7.4	5.4

CONSOLIDATED DRAINED SHEARBOX TEST

BS1377:Part 7:1990 Clause 4

Hole Number:	**BH122**		Top Depth:	**1.00**	
Sample Number:	**7**		Base Depth:		
Sample Conditions:	Submerged		Sample Type	**B**	
Particle Density - Mg/m3:	2.62	Assumed	**Remarks:**		
Sample Preparation:	Material tested passing 2mm sieve Remoulded using 2.5kg effort.				
Sample Description:	**See summary of soil descriptions.**				

STAGE	**1**	**2**	**3**
Initial Conditions			
Height - mm:	20.05	20.05	20.05
Length - mm:	59.97	59.97	59.97
Moisture Content - %:	15	15	15
Bulk Density - Mg/m3:	1.86	1.86	1.86
Dry Density - Mg/m3:	1.61	1.61	1.61
Voids Ratio:	0.623	0.623	0.623
Normal Pressure- kPa	50	100	200
Consolidation Stage			
Consolidated Height - mm:	18.75	18.02	16.64
Shearing Stage			
Rate of Strain - mm/min	0.042	0.042	0.042
Displacement at peak shear stress - mm	6.91	6.31	6.61
Peak shear Stress - kPa:	35	70	135
Final Consolidated Conditions			
Moisture Content - %:	20	19	18
Bulk Density - Mg/m3:	1.99	2.07	2.24
Dry Density - Mg/m3:	1.65	1.73	1.90
Peak			
Angle of Shearing Resistance:(~~θ~~)	**33**		
Effective Cohesion - kPa:	**5**		

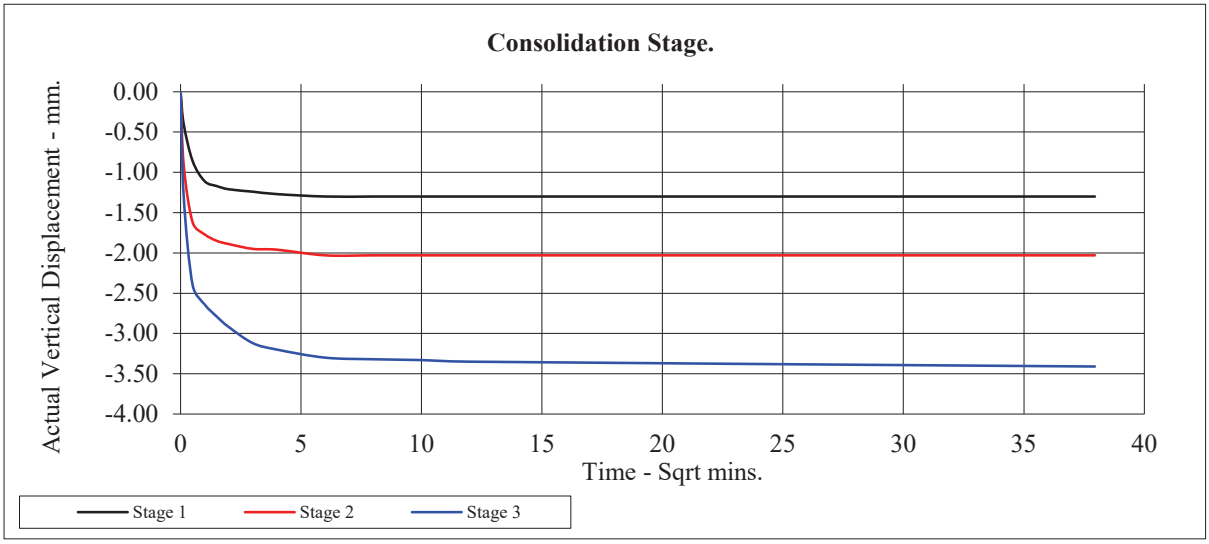


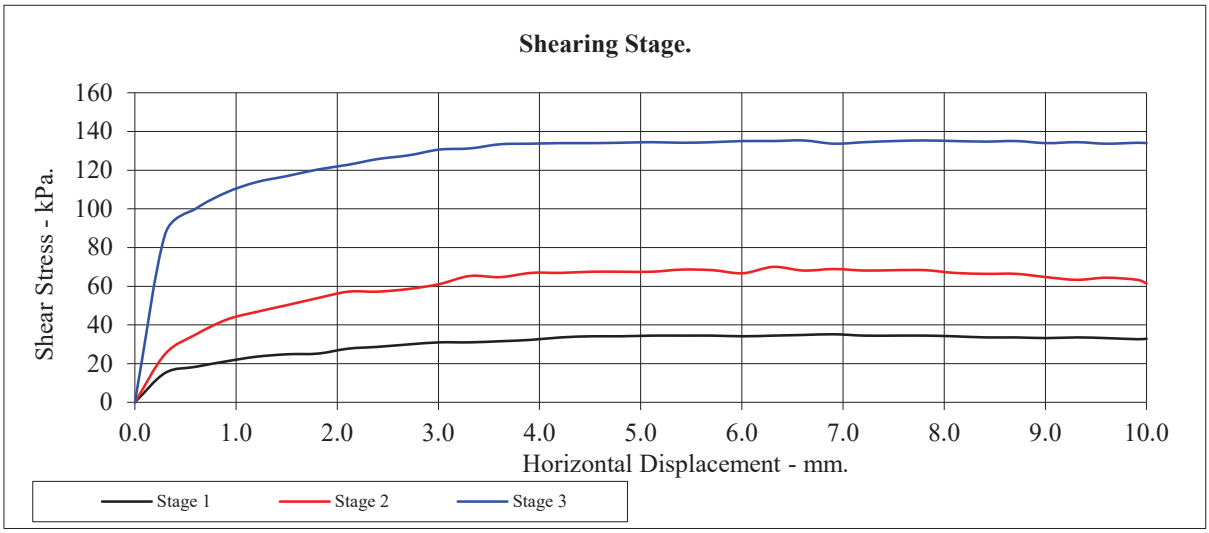
UKAS TESTING 4043 / PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY	**A46 Walsgrave**	**Contract No:** PSL23/5523 **Client Ref:** G230651

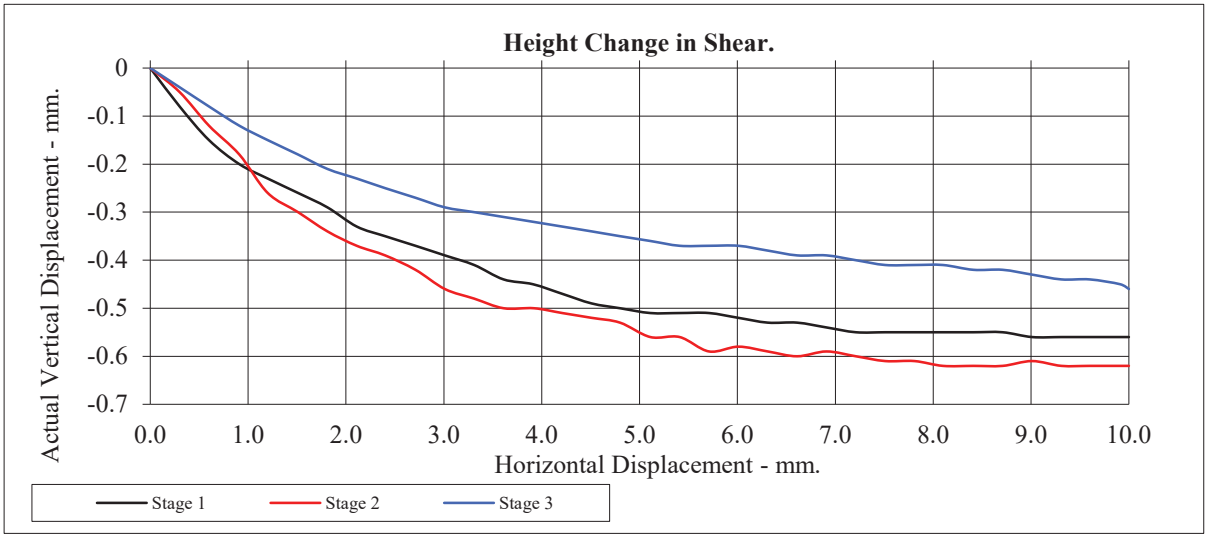
CONSOLIDATED DRAINED SHEARBOX TEST

BS1377:Part 7:1990 Clause 4

Hole Number:	**BH122**	Top Depth:	**1.00**
Sample Number:	**7**	Base Depth:	







UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

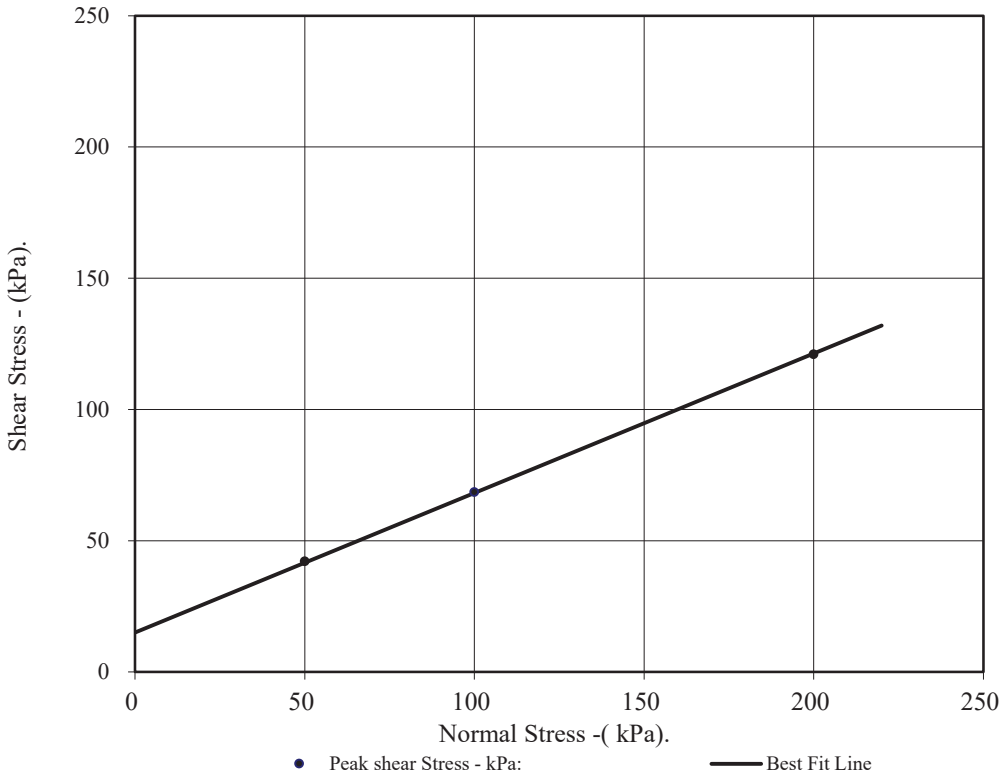
Contract No:
PSL23/5523
Client Ref:
G230651

CONSOLIDATED DRAINED SHEARBOX TEST

BS1377:Part 7:1990 Clause 4

Hole Number:	**BH122**		Top Depth:	**2.50**	
Sample Number:	**16**		Base Depth:	**3.00**	
Sample Conditions:	Submerged		Sample Type	**B**	
Particle Density - Mg/m3:	2.68	Assumed	**Remarks:**		
Sample Preparation:	Material tested passing 2mm sieve Remoulded using 2.5kg effort.				
Sample Description:	**See summary of soil descriptions.**				

STAGE	**1**	**2**	**3**
Initial Conditions			
Height - mm:	20.05	20.05	20.05
Length - mm:	59.97	59.97	59.97
Moisture Content - %:	16	16	16
Bulk Density - Mg/m3:	2.07	2.04	2.06
Dry Density - Mg/m3:	1.79	1.77	1.78
Voids Ratio:	0.495	0.515	0.505
Normal Pressure- kPa	50	100	200
Consolidation Stage			
Consolidated Height - mm:	19.67	19.22	18.46
Shearing Stage			
Rate of Strain - mm/min	0.042	0.042	0.042
Displacement at peak shear stress - mm	3.91	5.71	10.00
Peak shear Stress - kPa:	42	69	121
Final Consolidated Conditions			
Moisture Content - %:	17	16	15
Bulk Density - Mg/m3:	2.11	2.13	2.23
Dry Density - Mg/m3:	1.80	1.83	1.94
Peak			
Angle of Shearing Resistance:(~~θ~~)	**28**		
Effective Cohesion - kPa:	**15**		

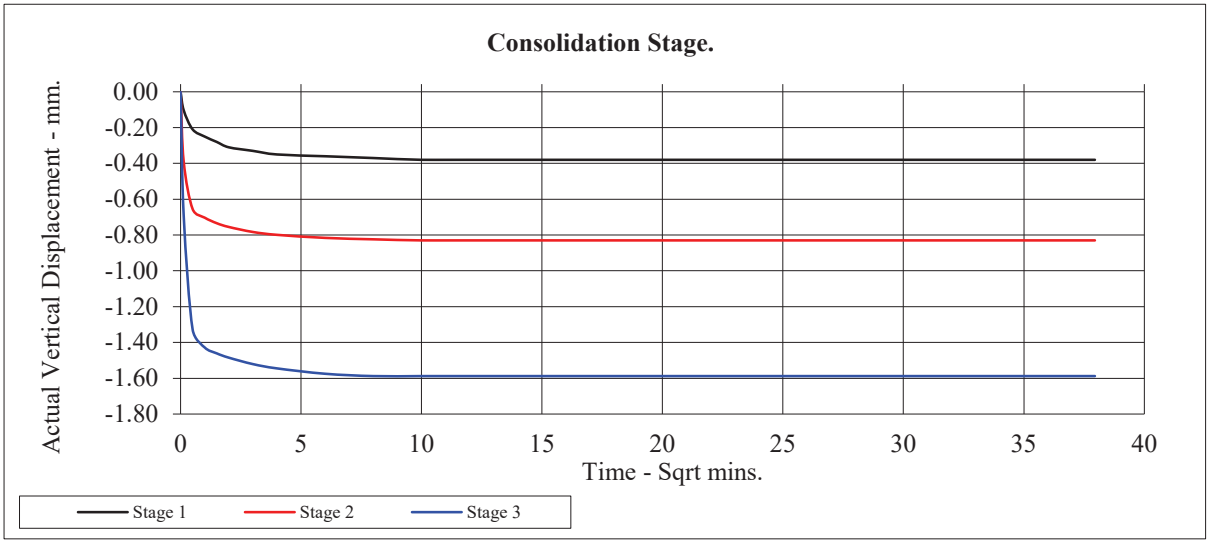


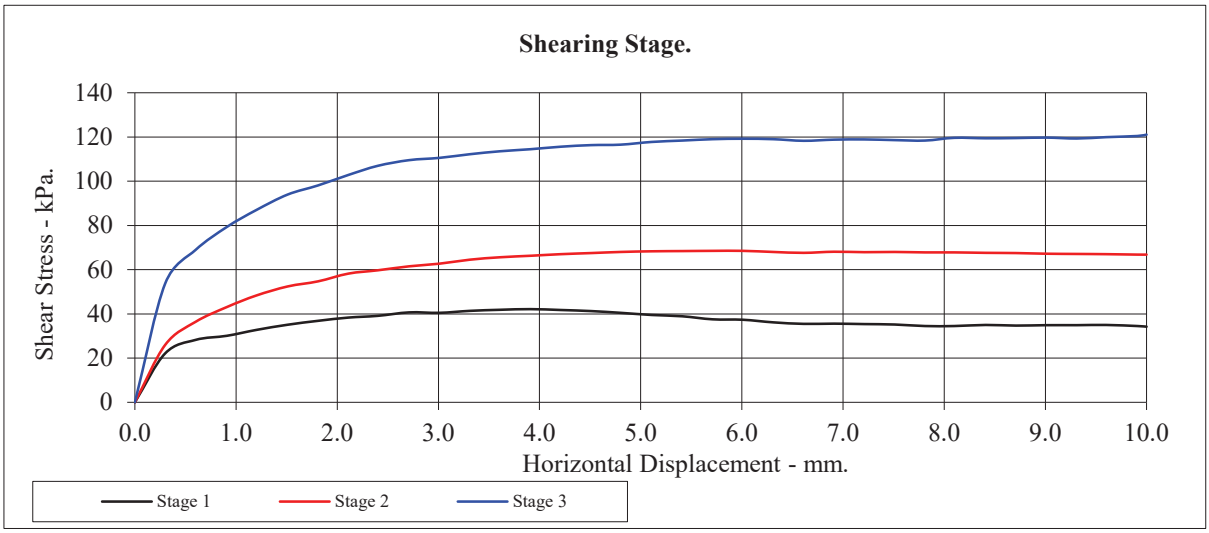
UKAS TESTING 4043 / PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY	**A46 Walsgrave**	**Contract No:** PSL23/5523 **Client Ref:** G230651

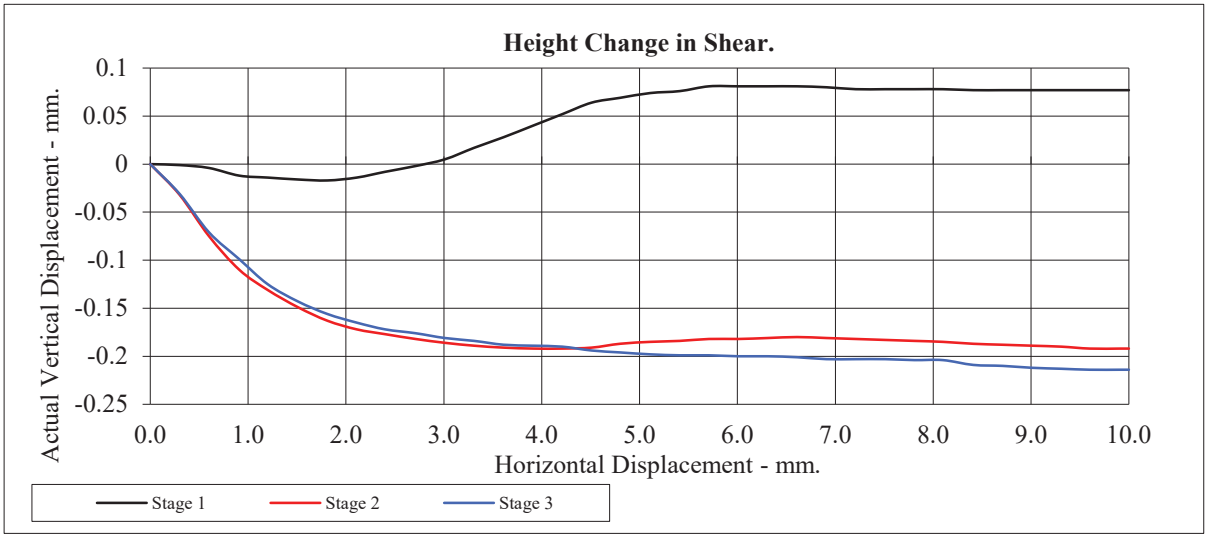
CONSOLIDATED DRAINED SHEARBOX TEST

BS1377:Part 7:1990 Clause 4

Hole Number:	**BH122**	Top Depth:	**2.50**
Sample Number:	**16**	Base Depth:	**3.00**







UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

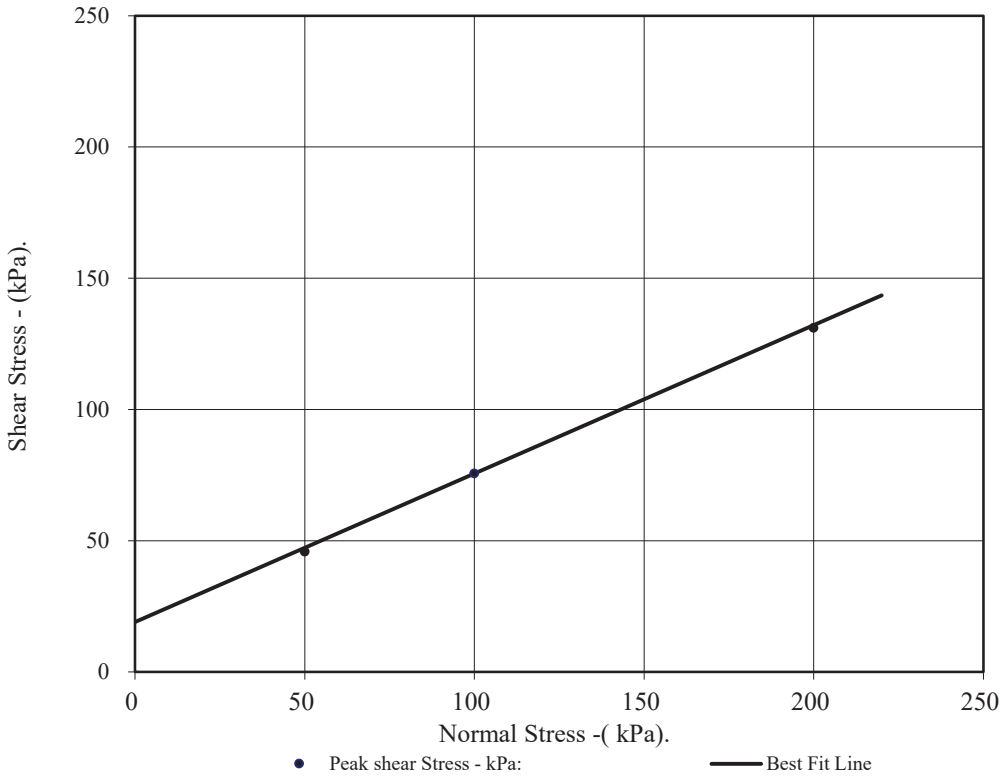
Contract No:
PSL23/5523
Client Ref:
G230651

CONSOLIDATED DRAINED SHEARBOX TEST

BS1377:Part 7:1990 Clause 4

Hole Number:	**BH122**		Top Depth:	**7.00**	
Sample Number:	**26**		Base Depth:	**7.50**	
Sample Conditions:	Submerged		Sample Type	**B**	
Particle Density - Mg/m3:	2.68	Assumed	**Remarks:**		
Sample Preparation:	Material tested passing 2mm sieve Remoulded using 2.5kg effort.				
Sample Description:	**See summary of soil descriptions.**				

STAGE	**1**	**2**	**3**
Initial Conditions			
Height - mm:	20.05	20.05	20.05
Length - mm:	59.97	59.97	59.97
Moisture Content - %:	17	17	17
Bulk Density - Mg/m3:	2.08	2.10	2.09
Dry Density - Mg/m3:	1.79	1.80	1.79
Voids Ratio:	0.498	0.489	0.496
Normal Pressure- kPa	50	100	200
Consolidation Stage			
Consolidated Height - mm:	18.82	18.49	18.27
Shearing Stage			
Rate of Strain - mm/min	0.042	0.042	0.042
Displacement at peak shear stress - mm	2.11	3.61	2.71
Peak shear Stress - kPa:	46	76	131
Final Consolidated Conditions			
Moisture Content - %:	27	27	27
Bulk Density - Mg/m3:	2.22	2.27	2.29
Dry Density - Mg/m3:	1.74	1.79	1.81
Peak			
Angle of Shearing Resistance:(~~θ~~)	**30**		
Effective Cohesion - kPa:	**19**		

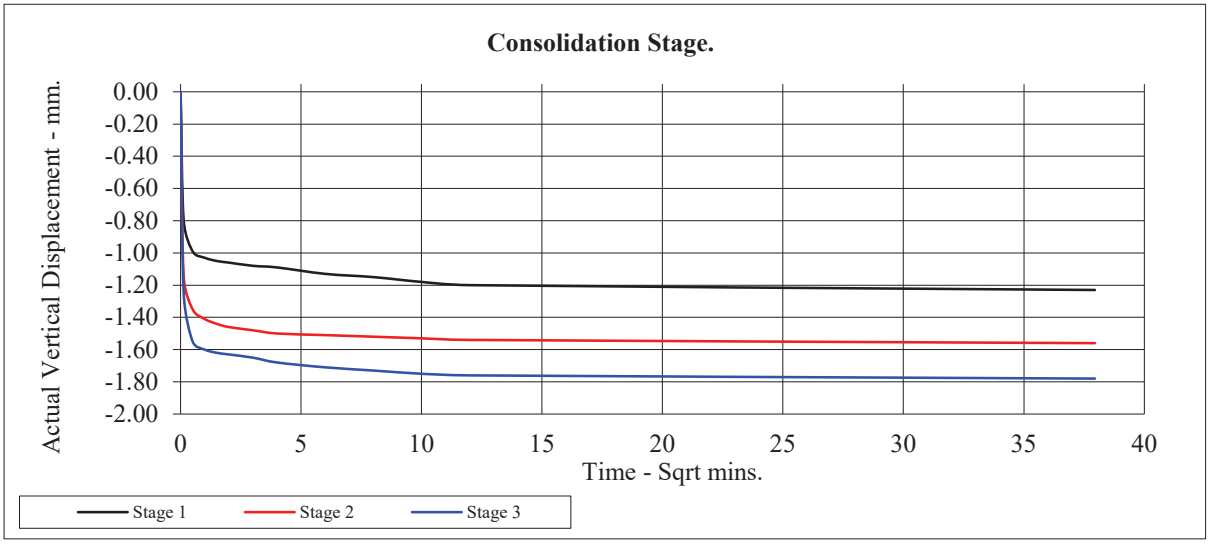


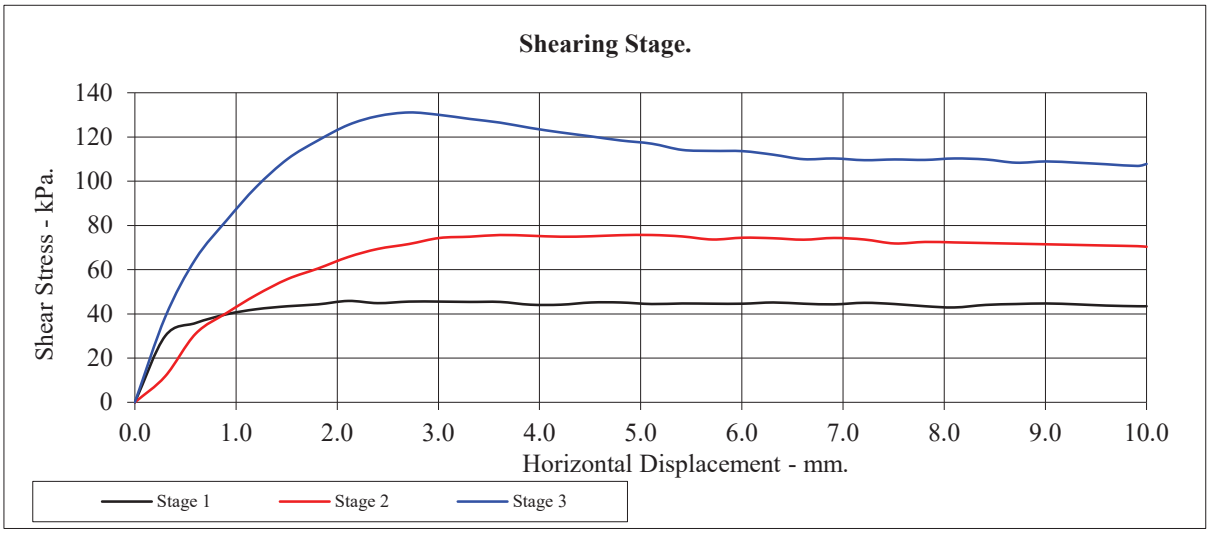
UKAS TESTING 4043 / PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY	**A46 Walsgrave**	**Contract No:** PSL23/5523 **Client Ref:** G230651

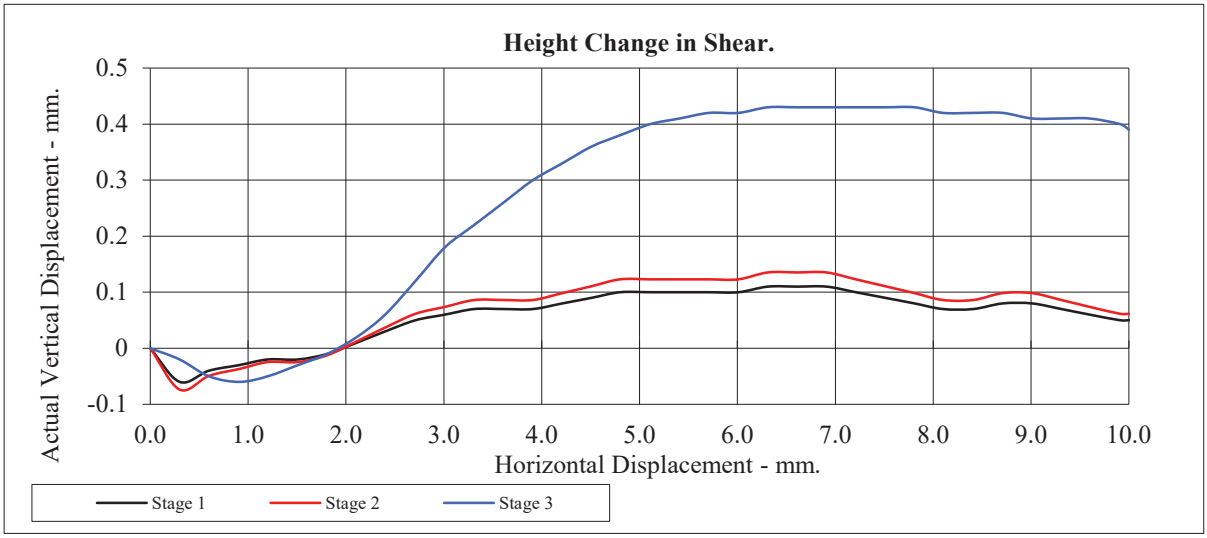
CONSOLIDATED DRAINED SHEARBOX TEST

BS1377:Part 7:1990 Clause 4

Hole Number:	**BH122**	Top Depth:	**7.00**
Sample Number:	**26**	Base Depth:	**7.50**







UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

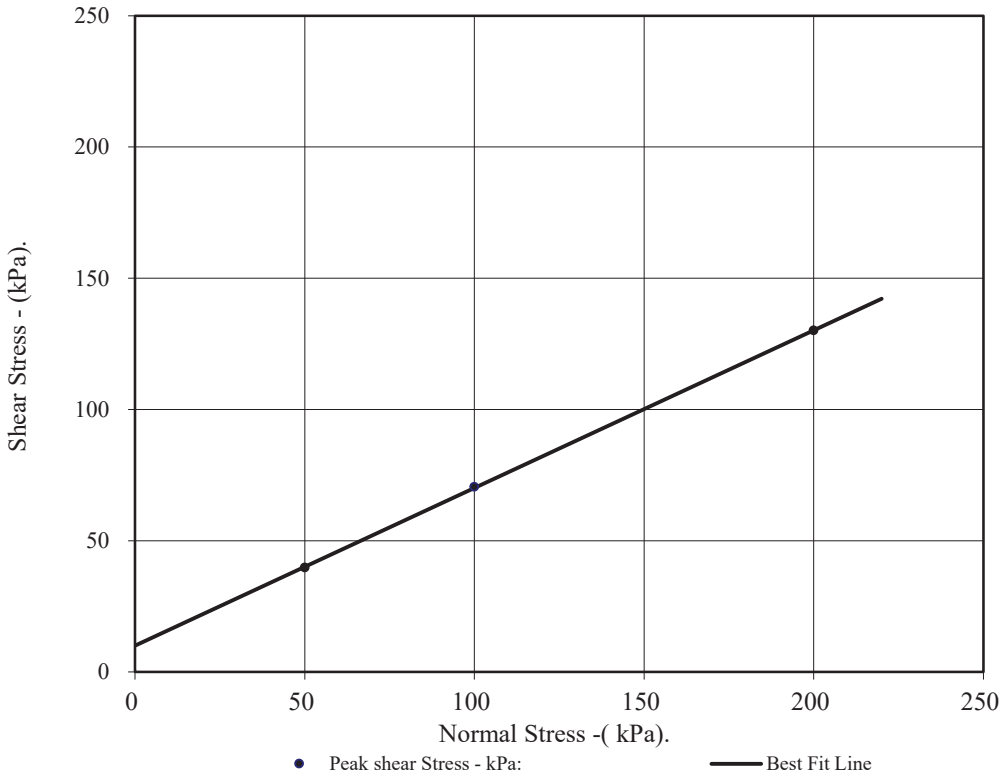
Contract No:
PSL23/5523
Client Ref:
G230651

CONSOLIDATED DRAINED SHEARBOX TEST

BS1377:Part 7:1990 Clause 4

Hole Number:	**BH122**		Top Depth:	**12.00**
Sample Number:	**35**		Base Depth:	**12.50**
Sample Conditions:	Submerged		Sample Type	**B**
Particle Density - Mg/m3:	2.68	Assumed	**Remarks:**	
Sample Preparation:	Material tested passing 2mm sieve Remoulded using 2.5kg effort.			
Sample Description:	**See summary of soil descriptions.**			

STAGE	**1**	**2**	**3**
Initial Conditions			
Height - mm:	20.05	20.05	20.05
Length - mm:	59.97	59.97	59.97
Moisture Content - %:	20	20	20
Bulk Density - Mg/m3:	2.10	2.10	2.09
Dry Density - Mg/m3:	1.75	1.75	1.74
Voids Ratio:	0.530	0.529	0.537
Normal Pressure- kPa	50	100	200
Consolidation Stage			
Consolidated Height - mm:	19.06	18.75	17.93
Shearing Stage			
Rate of Strain - mm/min	0.042	0.042	0.042
Displacement at peak shear stress - mm	3.60	3.60	6.30
Peak shear Stress - kPa:	40	71	130
Final Consolidated Conditions			
Moisture Content - %:	26	26	25
Bulk Density - Mg/m3:	2.21	2.24	2.33
Dry Density - Mg/m3:	1.75	1.78	1.86
Peak			
Angle of Shearing Resistance:(~~θ~~)	**31**		
Effective Cohesion - kPa:	**10**		

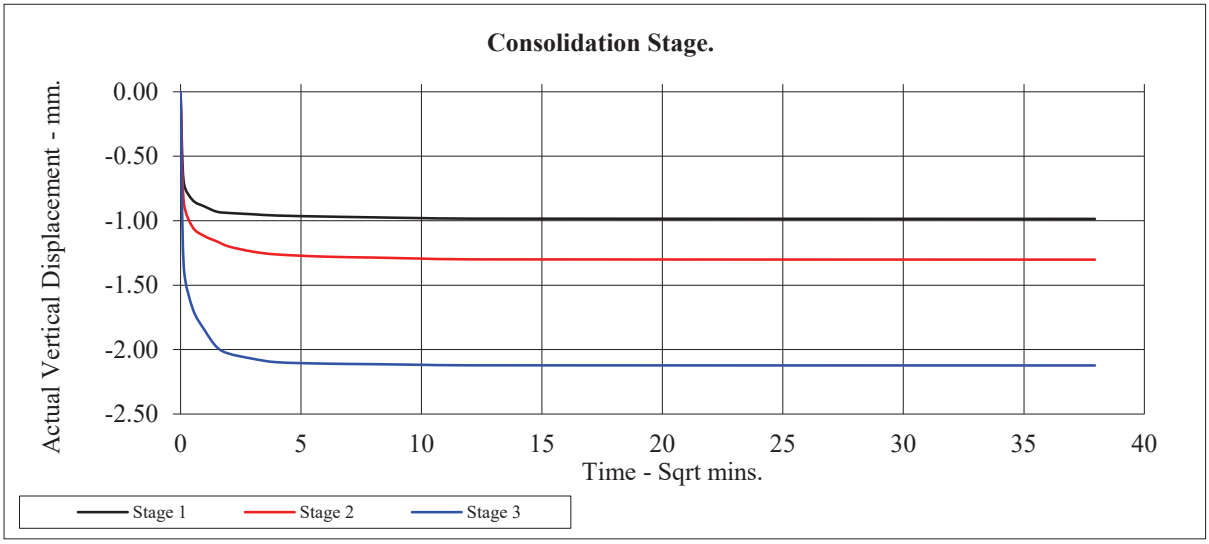


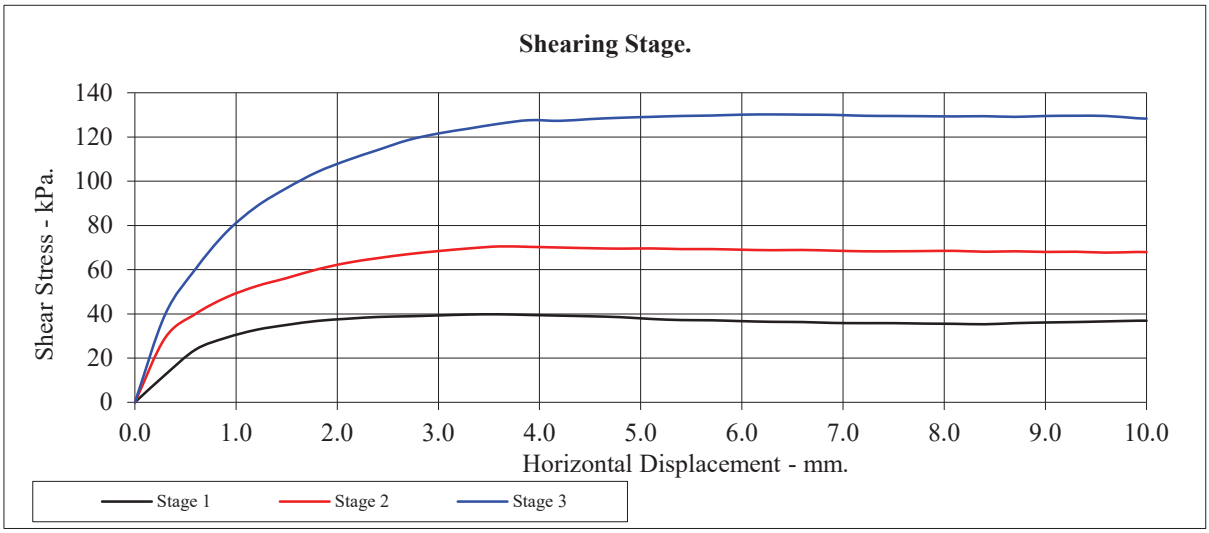
UKAS TESTING 4043 / PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY	**A46 Walsgrave**	**Contract No:** PSL23/5523 **Client Ref:** G230651

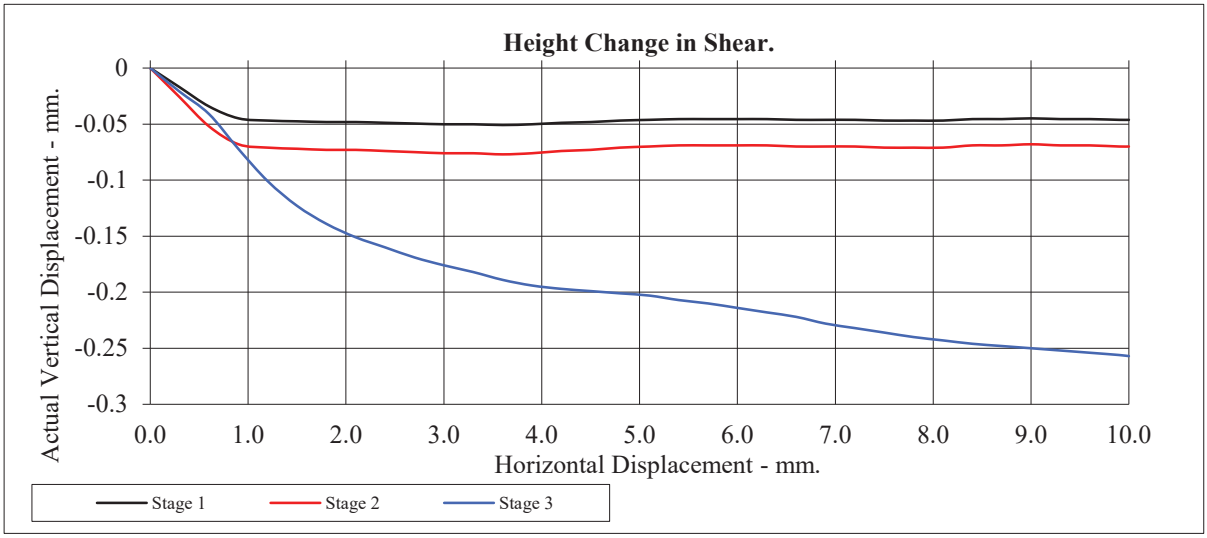
CONSOLIDATED DRAINED SHEARBOX TEST

BS1377:Part 7:1990 Clause 4

Hole Number:	**BH122**	Top Depth:	**12.00**
Sample Number:	**35**	Base Depth:	**12.50**







UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

Contract No:
PSL23/5523
Client Ref:
G230651

4161

7 - 11 Harding Street
Leicester
LE1 4DH

Professional Soils Laboratory
5/7 Hexthorpe Road
Hexthorpe
Doncaster
DN4 0AR

Analytical Test Report: L23/03775/PSL - 23-35711

Your Project Reference:	**PSL23/5523 G230651/GEO 24**		
Your Order Number:	PSL23/5523	Samples Received / Instructed:	24/07/2023 / 24/07/2023
Report Issue Number:	1	Sample Tested:	24/07 to 01/08/2023
Samples Analysed:	3 soil samples	Report issued:	01/08/2023

Si [redacted]

James Gane
Analytical Services Manager
CTS Group

Notes:

General

Please refer to Methodologies page for details pertaining to the analytical methods undertaken.

Samples will be retained for 14 days after issue of this report unless otherwise requested.

Moisture Content was determined in accordance with CTS method statement MS - CL - Sample Prep, oven dried at <30˚C.

Moisture Content is reported as a percentage of the dry mass of soil, this calculation is in accordance with BS1377, Part 2, 1990, Clause 3.2

Stone Content was determined in accordance with CTS method statement MS - CL - Sample Prep and refers to the percentage of stones retained on a 10mm BS test sieve.

Where specification limits are included these are for guidance only. Where a measured value has been highlighted this is not implying acceptance or failure and certainty of measurement values have not been taken into account.

Uncertainty of measurement values are available on request.

Samples were supplied by customer, results apply to the samples as received.

Deviating Samples

On receipt samples are compared against our sample holding and handling protocols, where any deviations have been noted these are reported on our deviating sample page (if present)

Accreditation Key

UKAS = UKAS Accreditation, MCERTS = MCERTS Accreditation, u = Unaccredited

MCERTS Accreditation only covers the SAND, CLAY and LOAM matrices

Date of Issue: 26.07.23

Issued by: J. Gane

Issue No: 4

Rev No: 2

4161

7 - 11 Harding Street
Leicester
LE1 4DH

L23/03775/PSL - 23-35711

Project Reference - PSL23/5523 G230651/GEO 24

Analytical Test Results - Soil

Lab Reference			306192	306193
Client Sample ID			-	-
Client Sample Location			BH122	BH122
Client Sample Type			D	D
Client Sample Number			11	20
Depth - Top (m)			2.00	4.20
Depth - Bottom (m)			2.00	4.20
Date of Sampling			02/06/2023	02/06/2023
Time of Sampling			-	-
Sample Matrix			Clay	Clay
Determinant	**Units**	**Accreditation**		
SOM (via TOC)	(%)	UKAS	< 1.7	< 1.7

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CTS Group
7 - 11 Harding Street
Leicester
LE1 4DH

L23/03775/PSL - 23-35711

Project Reference - PSL23/5523 G230651/GEO 24

Analytical Test Results - Chemical Analysis

Lab Reference			306192	306193	306194
Client Sample ID			-	-	-
Client Sample Location			BH122	BH122	BH122
Client Sample Type			D	D	D
Client Sample Number			11	20	27
Depth - Top (m)			2.00	4.20	8.00
Depth - Bottom (m)			2.00	4.20	8.00
Date of Sampling			02/06/2023	02/06/2023	02/06/2023
Time of Sampling			-	-	-
Sample Matrix			Clay	Clay	Clay
Determinant	**Units**	**Accreditation**			
Water soluble sulphate (as SO_4)	(mg/l)	u	96	130	88
Acid Soluble Sulphate	(%)	u	0.05	0.07	0.07
Total Sulphur	(%)	UKAS	0.03	0.12	0.05
pH Value	pH Units	MCERTS	8.4	8.7	8.9
Water Soluble Chloride	(mg/l)	u	5.6	5.2	6.0
Water Soluble Nitrate (As NO_3)	(mg/l)	u	< 1.0	< 1.0	< 1.0
Water Soluble Magnesium	(mg/l)	u	15	19	14
Water Soluble Ammonium Ion	(mg/l)	u	< 1.0	< 1.0	< 1.0

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CTS Group
7 - 11 Harding Street
Leicester
LE1 4DH

L23/03775/PSL - 23-35711

Project Reference - PSL23/5523 G230651/GEO 24

Sample Descriptions

Lab Reference	Client Sample ID	Client Sample Location	Client Sample Type	Client Sample Number	Description	Moisture Content (%)	Stone Content (%)	Passing 2mm test sieve (%)
306192	-	BH122	D	11	Brown slightly silty sandy clay	19	< 0.1	100
306193	-	BH122	D	20	Orangish brown slightly silty gravelly sandy clay	15	0.7	100
306194	-	BH122	D	27	Orangish brown slightly silty gravelly sandy clay	10	29	97

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CTS Group
7 - 11 Harding Street
Leicester
LE1 4DH

L23/03775/PSL - 23-35711

Project Reference - PSL23/5523 G230651/GEO 24

Sample Comments

Lab Reference	Client Sample ID	Client Sample Location	Client Sample Type	Client Sample Number	Comments
306192	-	BH122	D	11	
306193	-	BH122	D	20	
306194	-	BH122	D	27	

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CTS Group
7 - 11 Harding Street
Leicester
LE1 4DH

L23/03775/PSL - 23-35711

Project Reference - PSL23/5523 G230651/GEO 24

Analysis Methodologies

Test Code	Test Name / Reference	Sample condition for analysis	Sample Preperation	Test Details
ANIONSS	MS - CL - Anions by Aquakem (2:1Extract)	Oven dried	Passing 2mm test sieve	Determination of Anions (inc Sulphate, chloride etc.) in soils by Aquakem. Analysis is based on a 2:1 water to soil extraction ratio
TOCS	MS - CL - TOC Eltra	Air Dried	Passing 10mm test sieve	Determination of Total Organic Carbon in soils
PHS	MS - CL - pH in Soils	As received	Passing 10mm test sieve	Determination of pH in soils using a pH probe (using a 1:3 soil to water extraction)
ASSO4S	MS - CL - Acid Soluble Sulphate	Oven Dried	Passing 2mm test sieve	Determination of total sulphate in soils by acid extraction followed by ICP analysis
SAMPLEPREP	MS - CL - Sample Preparation	-	-	Preparation of samples (including determination of moisture content) to allow for subsequent analysis
1377TS-ELT	BS1377 Total Sulphur Content by HTC	Oven dried	BS1377 : Part 1 : 2016	Total Sulphur Content testing of Soil in accordance with BS 1377 : Part 3 : 2018 + A1 : 2021 Clause 7.10 (using Eltra CS-800 Analyser)

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CTS Group
7 - 11 Harding Street
Leicester
LE1 4DH

L23/03775/PSL - 23-35711

Project Reference - PSL23/5523 G230651/GEO 24

Sample Deviations

Deviations are listed below against each sample and associated test method, where deviation(s) are noted it means data may not be representative of the sample at the time of sampling and it is possible that results provided may be compromised.

Observations on receipt

A - No date of sampling provided
C - Received in inappropriate container
H - Contains headspace
T - Temperature on receipt exceeds storage temperature
R - Date of sampling to receipt insufficient to allow analysis to be completed without deviation, Please note this is only a deviation if 'X' is also recorded against the sample

Observations whist in laboratory

X - Exceeds sampling to extraction or analysis timescales

Lab Reference	Client Sample ID	Client Sample Location	Client Sample Type	Client Sample Number	Test	Deviations
306192	-	BH122	D	11	BS1377 Total Sulphur Content by HTC	RX
306192	-	BH122	D	11	MS - CL - Anions by Aquakem (2:1Extract)	RX
306192	-	BH122	D	11	MS - CL - TOC Eltra	RX
306192	-	BH122	D	11	MS - CL - pH in Soils	RX
306193	-	BH122	D	20	BS1377 Total Sulphur Content by HTC	RX
306193	-	BH122	D	20	MS - CL - Anions by Aquakem (2:1Extract)	RX
306193	-	BH122	D	20	MS - CL - TOC Eltra	RX
306193	-	BH122	D	20	MS - CL - pH in Soils	RX
306194	-	BH122	D	27	BS1377 Total Sulphur Content by HTC	RX
306194	-	BH122	D	27	MS - CL - Anions by Aquakem (2:1Extract)	RX
306194	-	BH122	D	27	MS - CL - pH in Soils	RX

LABORATORY REPORT

Contract Number: PSL23/5769

Report Date: 09 August 2023

Client's Reference: G230651/Geo 35

Client Name: Strata Geotechnics
Kirkby Lane
Pinxton
Nottinghamshire
NG16 6JA

For the attention of: Izaac Lovatt

Contract Title: A46 Walsgrave

Date Received: 19/7/2023
Date Commenced: 19/7/2023
Date Completed: 9/8/2023

Notes: Opinions and Interpretations are outside the UKAS Accreditation

A copy of the Laboratory Schedule of accredited tests as issued by UKAS is attached to this report. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced other than in full, without the prior written approval of the laboratory.

Checked and Approved Signatories:

A Watkins (Director)

R Berriman (Quality Manager)

[redacted] S Royle (Laboratory Manager)

L Knight (Assistant Laboratory Manager)

S Eyre (Senior Technician)

T Watkins (Senior Technician)

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Hexthorpe,
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DN4 0AR
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Email: [redacted]@prosoils.co.uk
[redacted]@prosoils.co.uk

SUMMARY OF LABORATORY SOIL DESCRIPTIONS

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Description of Sample
BH119	4	B	0.50		Brown slightly gravelly sandy CLAY.
BH119	7	B	1.00		Brown slightly gravelly sandy CLAY.
BH119	11	B	1.50	2.00	Reddish brown slightly gravelly sandy CLAY.
BH119	16	B	2.50	3.00	Reddish brown slightly gravelly sandy CLAY.
BH119	19	B	3.50	4.00	Reddish brown slightly gravelly sandy CLAY.
BH119	22	B	5.00	5.50	Brown sandy CLAY.
BH119	26	B	7.50	8.00	Brown sandy CLAY.
BH119	29	B	9.00	9.50	Reddish brown sandy CLAY.
BH119	31	D	10.00	10.24	Reddish brown sandy CLAY.

SUMMARY OF SOIL CLASSIFICATION TESTS

(BS1377 : PART 2 : 1990)

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Moisture Content % Clause 3.2	Linear Shrinkage % Clause 6.5	Particle Density Mg/m^3 Clause 8.2	Liquid Limit % Clause 4.3/4	Plastic Limit % Clause 5.3	Plasticity Index % Clause 5.4	Passing .425mm %	Remarks
BH119	4	B	0.50		16			36	18	18	91	Intermediate Plasticity CI
BH119	22	B	5.00	5.50	13			38	18	20	100	Intermediate Plasticity CI
BH119	26	B	7.50	8.00	11			35	17	18	100	Intermediate Plasticity CI
BH119	29	B	9.00	9.50	12			33	17	16	100	Low Plasticity CL
BH119	31	D	10.00	10.24	10			37	18	19	100	Intermediate Plasticity CI

SYMBOLS : **NP : Non Plastic** *** : Liquid Limit and Plastic Limit Wet Sieved.**

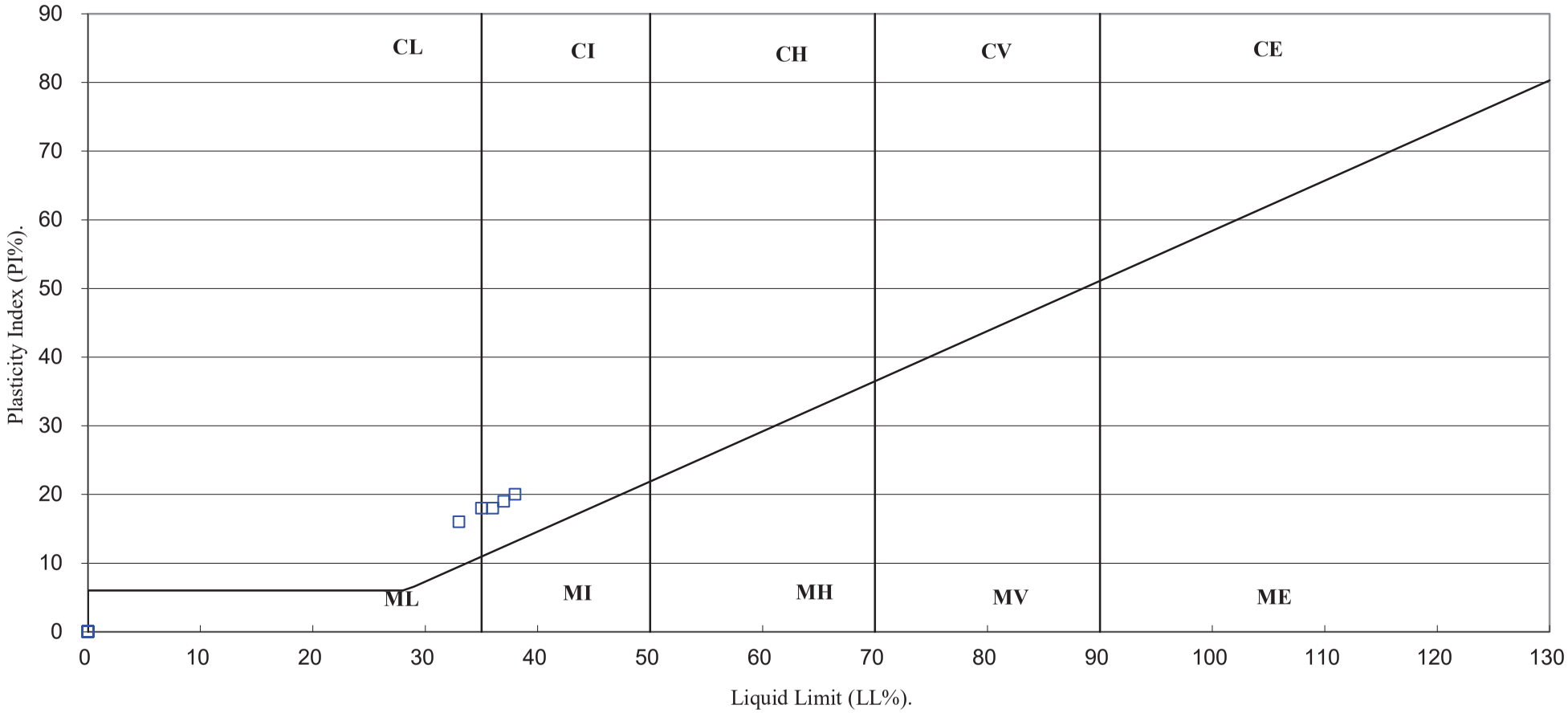
UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

Contract No:
PSL23/5769
Client Ref:
G230651

PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION.



UKAS TESTING 4043 / PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY	A46 Walsgrave	Contract No: PSL23/5769 Client Ref: G230651

SUMMARY OF SOIL DENSITY RELATED TESTS

(BS1377 : PART 2 & 4 : 1990)

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Moisture Content %	Bulk Density Mg/m^3	Dry Density Mg/m^3	Retained 20mm %	Retained 37.5mm %	Method of compaction kg	Maximum Dry Density Mg/m^3	Minimum Dry Density Mg/m^3	Remarks
BH119	11	B	1.50	2.00	19	2.12	1.78						
BH119	16	B	2.50	3.00	21	2.08	1.72						

UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

Contract No:
PSL23/5769
Client Ref:
G230651

SUMMARY OF LABORATORY HAND VANES

(BS1377 : PART 7 : 1990)

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Moisture Content %	Peak Shear Strength kPa	Residual Shear Strength kPa	Remarks
BH119	26	B	7.50	8.00	11	>150		
BH119	29	B	9.00	9.50	12	>150		

* This test is out of our UKAS scope

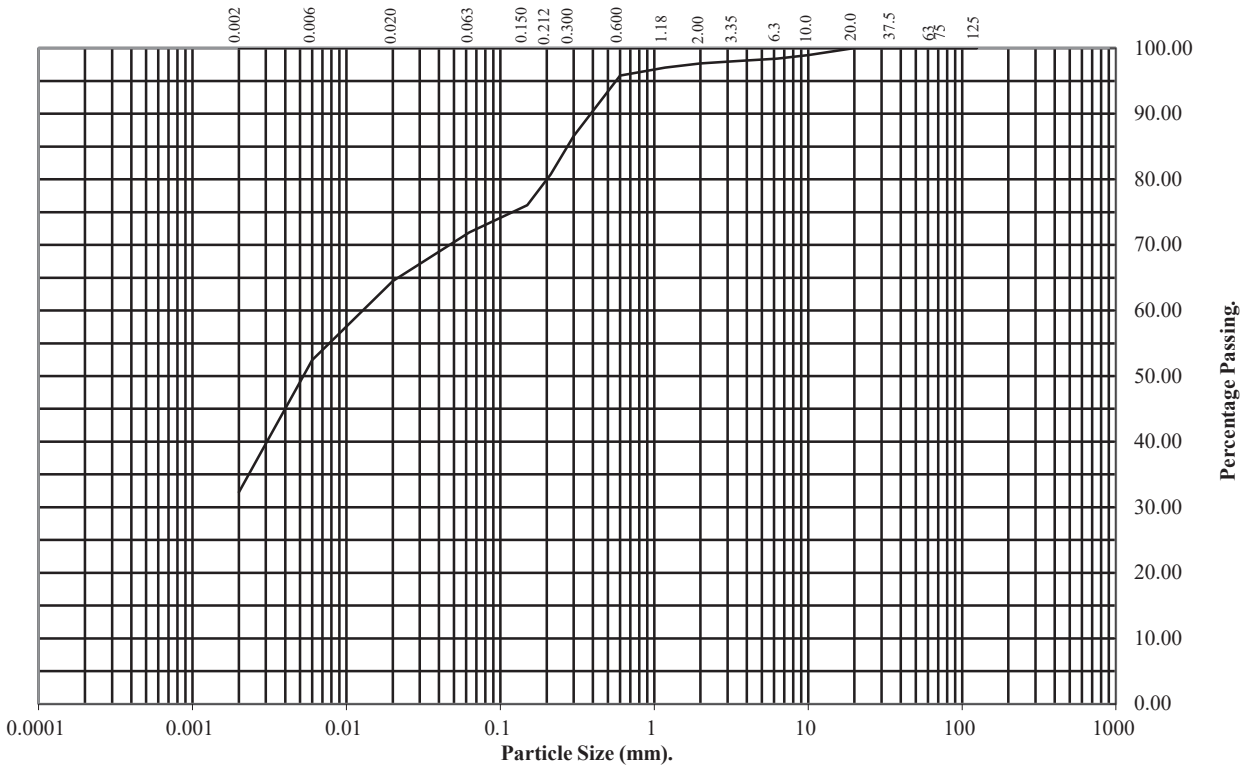
PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY	A46 Walsgrave	Contract No: PSL23/5769 Client Ref: G230651

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

Hole Number:	**BH119**	**Top Depth (m):**	**0.50**
Sample Number:	**4**	**Base Depth(m):**	
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	99
6.3	98
3.35	98
2	98
1.18	97
0.6	96
0.3	87
0.212	81
0.15	76
0.063	72

Particle Diameter	Percentage Passing
0.02	65
0.006	52
0.002	32

Soil Fraction	Total Percentage
Cobbles	0
Gravel	2
Sand	26
Silt	40
Clay	32

Remarks:
See Summary of Soil Descriptions

UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

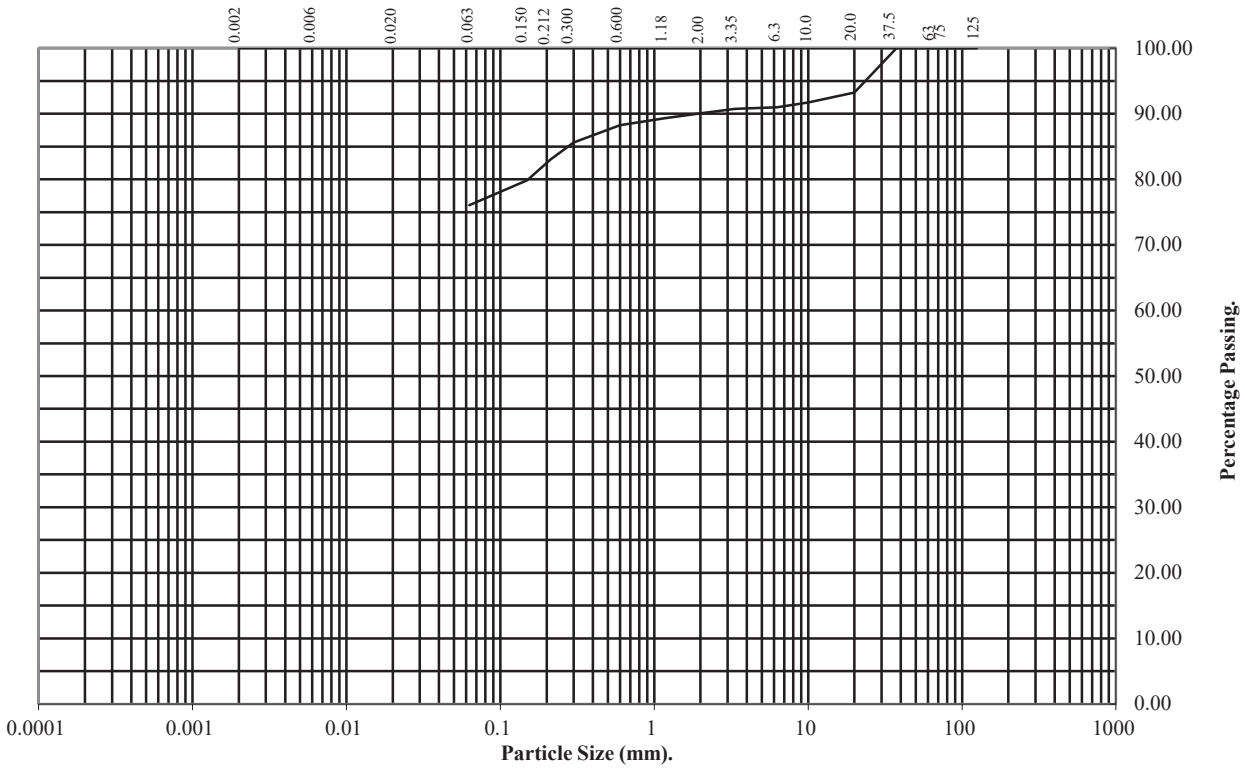
Contract No:
PSL23/5769
Client Ref:
G230651

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number:	**BH119**	**Top Depth (m):**	**1.50**
Sample Number:	**11**	**Base Depth(m):**	**2.00**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	93
10	92
6.3	91
3.35	91
2	90
1.18	89
0.6	88
0.3	86
0.212	83
0.15	80
0.063	76

Soil Fraction	Total Percentage
Cobbles	0
Gravel	10
Sand	14
Silt/Clay	76

Remarks:

See Summary of Soil Descriptions

UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

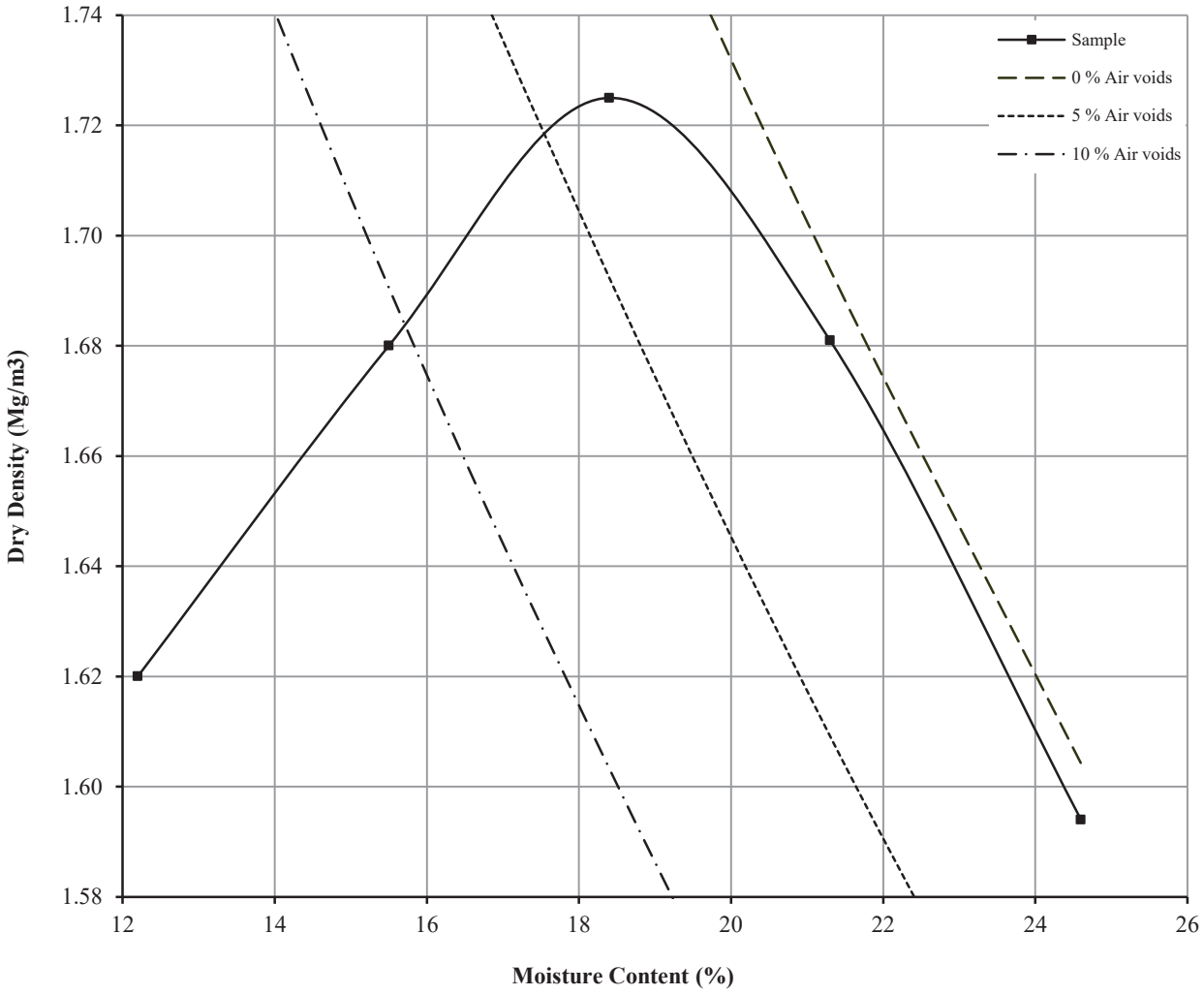
A46 Walsgrave

Contract No:
PSL23/5769
Client Ref:
G230651

DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

BS 1377 : Part 4 : Clause 3.3 : 1990

Hole Number:	**BH119**	**Top Depth (m) :**	**1.00**
Sample Number:	**7**	**Base Depth (m) :**	
Sample Type:	**B**		



Initial Moisture Content:		18	Method of Compaction:	2.5kg	Separate Samples
Particle Density (Mg/m3):	2.65	Assumed	Material Retained on 37.5 mm Test Sieve (%):		0
Maximum Dry Density (Mg/m3):		1.73	Material Retained on 20.0 mm Test Sieve (%):		2
Optimum Moisture Content (%):		18			
Remarks See summary of soil descriptions					

UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

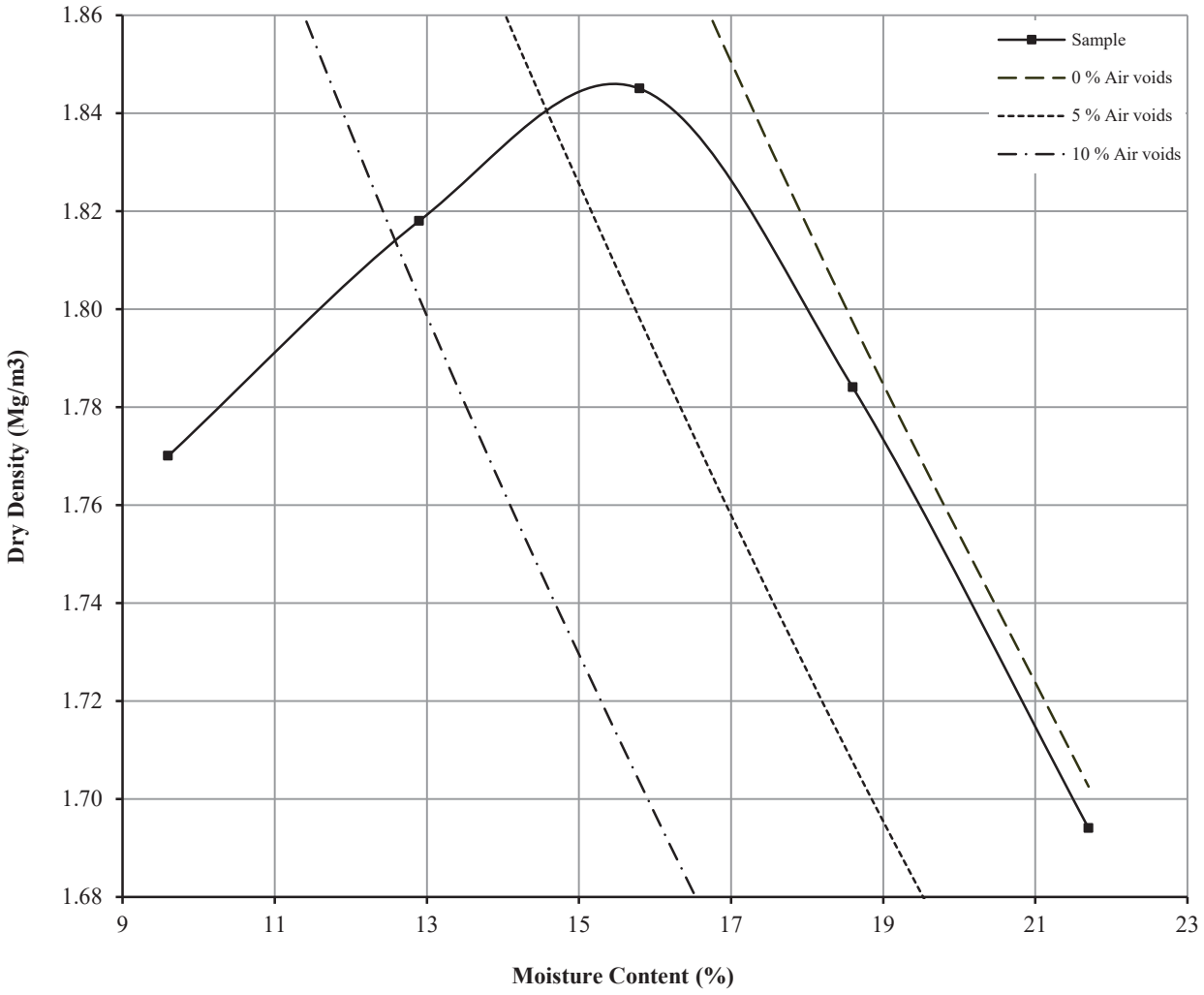
A46 Walsgrave

Contract
PSL23/5769
Client Ref
G230651

DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

BS 1377 : Part 4 : Clause 3.6 : 1990

Hole Number:	**BH119**	**Top Depth (m) :**	**1.50**
Sample Number:	**11**	**Base Depth (m) :**	**2.00**
Sample Type:	**B**		



Initial Moisture Content:		19	Method of Compaction:	4.5kg	Separate Samples
Particle Density (Mg/m3):	2.7	Assumed	Material Retained on 37.5 mm Test Sieve (%):		0
Maximum Dry Density (Mg/m3):		1.85	Material Retained on 20.0 mm Test Sieve (%):		7
Optimum Moisture Content (%):		16			
Remarks See summary of soil descriptions					

UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

Contract
PSL23/5769
Client Ref
G230651

MOISTURE CONDITION VALUE

BS1377 : Part 4 : 1990 Clause 5.4

Hole Number: BH119 **Top Depth (m):** 0.50

Sample Number: 4 **Base Depth (m):**

Sample Type: B

Material Retained on the 20mm BS Test Sieve (%):	0
Interpretation based on steepest straight line intercept with 5mm change in penetration.	

MCV Determination

Blows (N)	Penetration (mm)	n to 4n (mm)
1	92.1	27.2
2	79.2	28.1
3	70.8	26.2
4	64.9	24.2
6	56.9	19.4
8	51.1	14.4
12	44.6	8.0
16	40.7	4.1
24	37.5	
32	36.7	
48	36.6	
64	36.6	
96		
128		
192		
256		

Test Results.

Moisture Content (%)	16
MCV	11.7

UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

Contract No: PSL23/5769

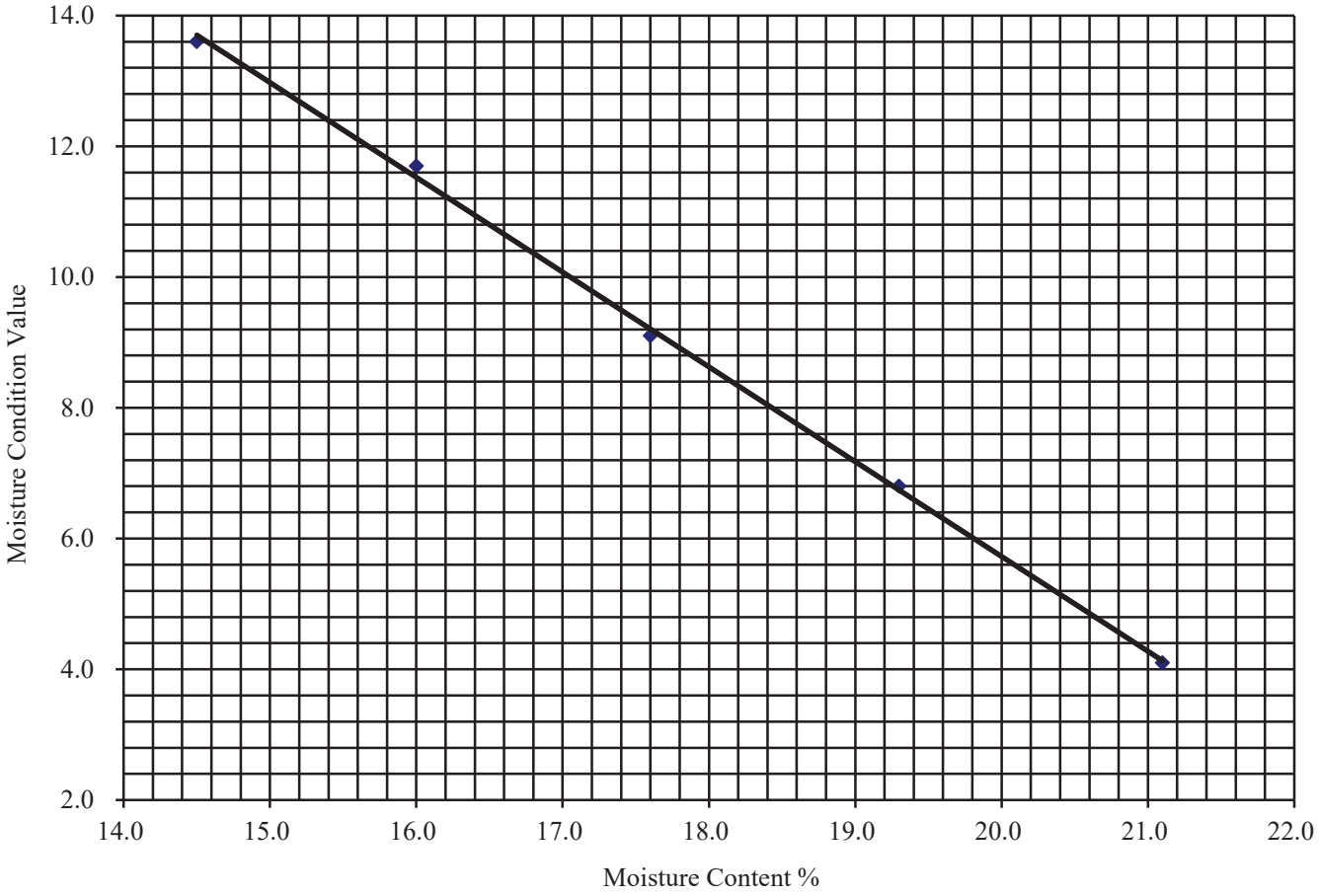
Client Ref: G230651

MOISTURE CONDITION VALUE CALIBRATION

BS1377 : Part 4 : 1990 Clause 5.5

Hole Number:	**BH119**	**Top Depth (m):**	**0.50**
Sample Number:	**4**	**Base Depth (m):**	
Sample Type:	**B**		

Initial Moisture Content (%):	16
Single/Separate Samples Tested	Separate
Material Retained on the 20mm BS Test Sieve (%):	0



Test Results.

Test Number	1	2	3	4	5
Moisture Content (%)	14.5	16.0	17.6	19.3	21.1
MCV	13.6	11.7	9.1	6.8	4.1

MOISTURE CONDITION VALUE

BS1377 : Part 4 : 1990 Clause 5.4

Hole Number: BH119 **Top Depth (m):** 1.00

Sample Number: 7 **Base Depth (m):**

Sample Type: B

Material Retained on the 20mm BS Test Sieve (%):	2
Interpretation based on steepest straight line intercept with 5mm change in penetration.	

MCV Determination

Blows (N)	Penetration (mm)	n to 4n (mm)
1	95.6	27.8
2	82.7	30.4
3	74.1	28.9
4	67.8	26.4
6	58.2	19.2
8	52.3	13.8
12	45.2	6.8
16	41.4	3.1
24	39.0	
32	38.5	
48	38.4	
64	38.3	
96		
128		
192		
256		

Test Results.

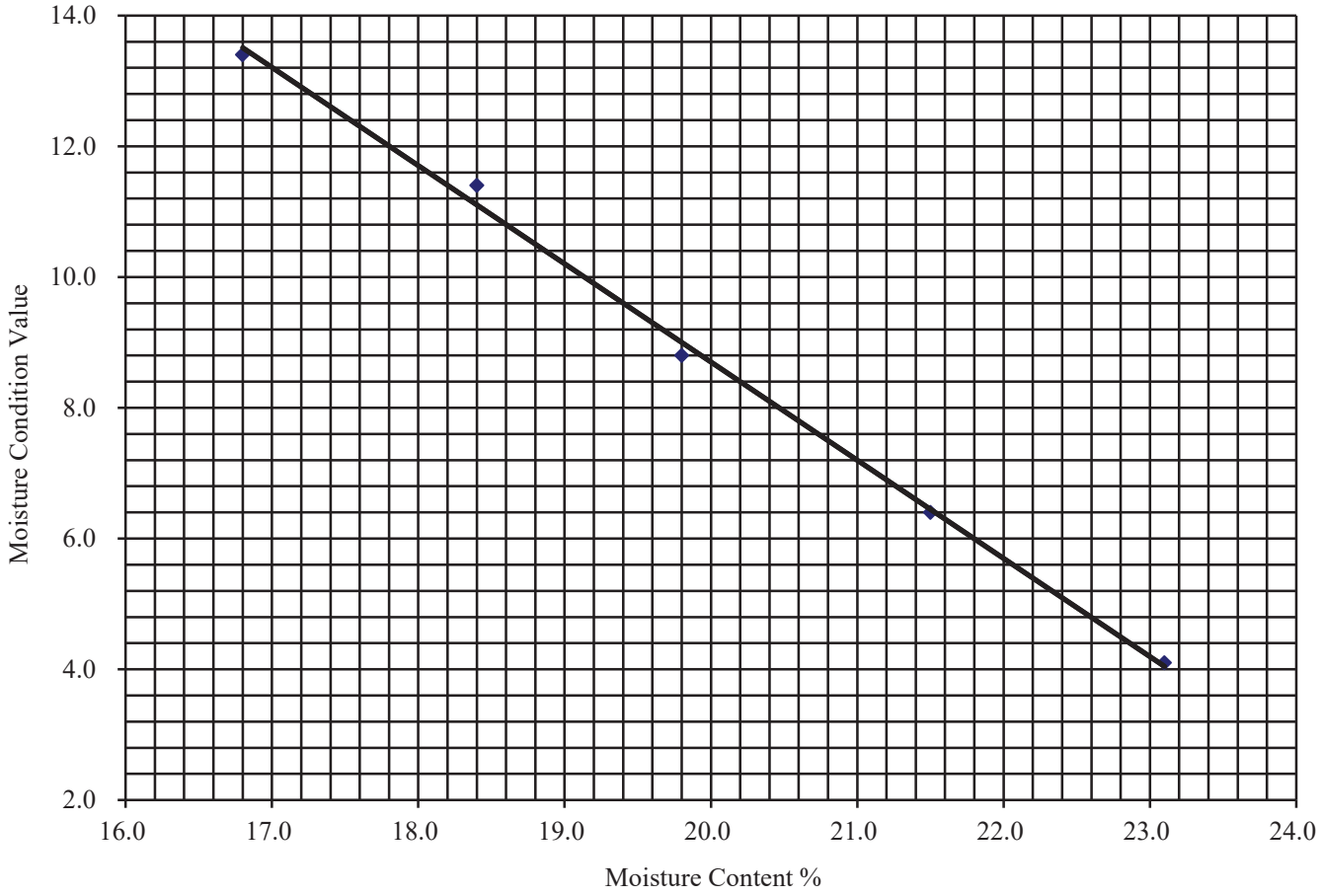
Moisture Content (%)	18
MCV	11.4

MOISTURE CONDITION VALUE CALIBRATION

BS1377 : Part 4 : 1990 Clause 5.5

Hole Number:	**BH119**	**Top Depth (m):**	**1.00**
Sample Number:	**7**	**Base Depth (m):**	
Sample Type:	**B**		

Initial Moisture Content (%):	18
Single/Separate Samples Tested	Separate
Material Retained on the 20mm BS Test Sieve (%):	2



Test Results.

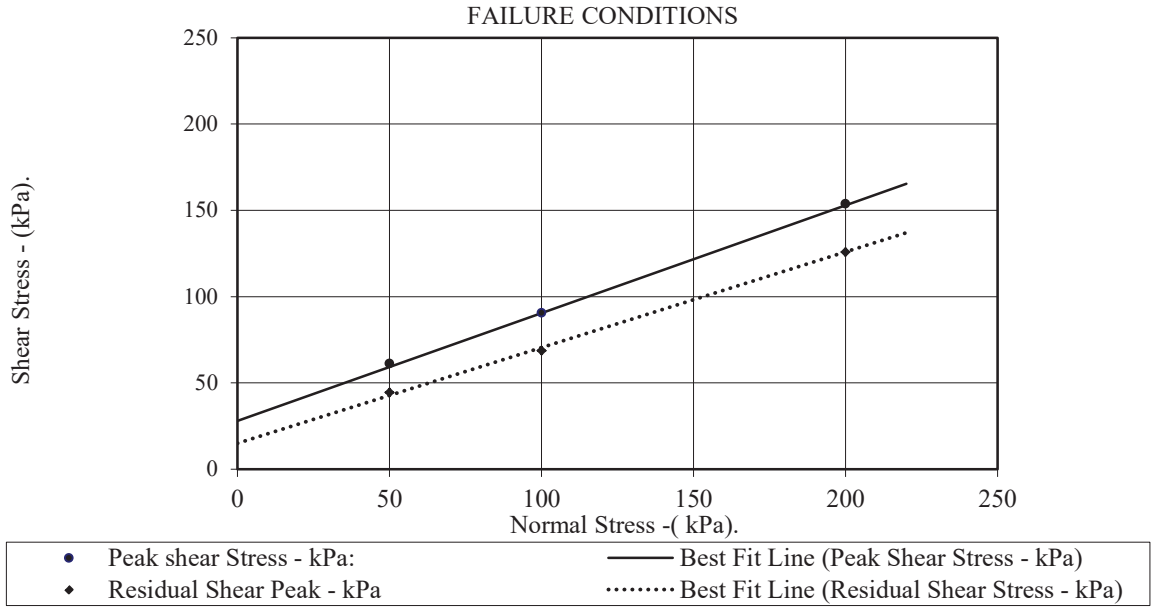
Test Number	1	2	3	4	5
Moisture Content (%)	16.8	18.4	19.8	21.5	23.1
MCV	13.4	11.4	8.8	6.4	4.1

CONSOLIDATED DRAINED SHEARBOX TEST

BS1377:Part 7:1990 Clause 5

Hole Number:	**BH119**		Top Depth	**1.50**	
Sample Number:	**11**		Base Depth	**2.00**	
Sample Conditions:	Submerged		Sample Type	**B**	
Particle Density - Mg/m3:	2.65	Assumed	**Remarks:**		
Specimen Preparation	Material tested passing 20mm sieve Remoulded using 2.5kg effort				
Sample Description:	**See summary of soil descriptions**				

STAGE	**1**	**2**	**3**
Initial Conditions			
Height - mm:	120.00	120.00	120.00
Length - mm:	300.00	300.00	300.00
Moisture Content - %:	19	19	19
Bulk Density - Mg/m3:	2.10	2.10	2.10
Dry Density - Mg/m3:	1.77	1.77	1.77
Voids Ratio:	0.500	0.500	0.500
Normal Pressure- kPa	50	100	200
Consolidation Stage			
Consolidated Height - mm:	117.20	115.33	112.09
Peak Shear			
Rate of Strain - mm/min	0.085	0.085	0.085
Displacement at peak shear stress - mm	50.50	50.50	50.50
Peak shear Stress - kPa:	61	91	154
Residual Shear			
Rate of Strain - mm/min	0.170	0.170	0.170
Final displacement at residual shear stress - mm	153.50	153.50	153.50
Residual shear Stress - kPa:	44	69	126
Final Consolidation Conditions			
Moisture Content - %:	24	24	23
Bulk Density - Mg/m3:	2.22	2.42	2.08
Dry Density - Mg/m3:	1.79	1.96	1.69
Peak Shear			
Angle of Shearing Resistance:(θ)	32		
Effective Cohesion - kPa:	28		
Residual Shear			
Angle of Shearing Resistance:(θ)	29		
Effective Cohesion - kPa:	15		



UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

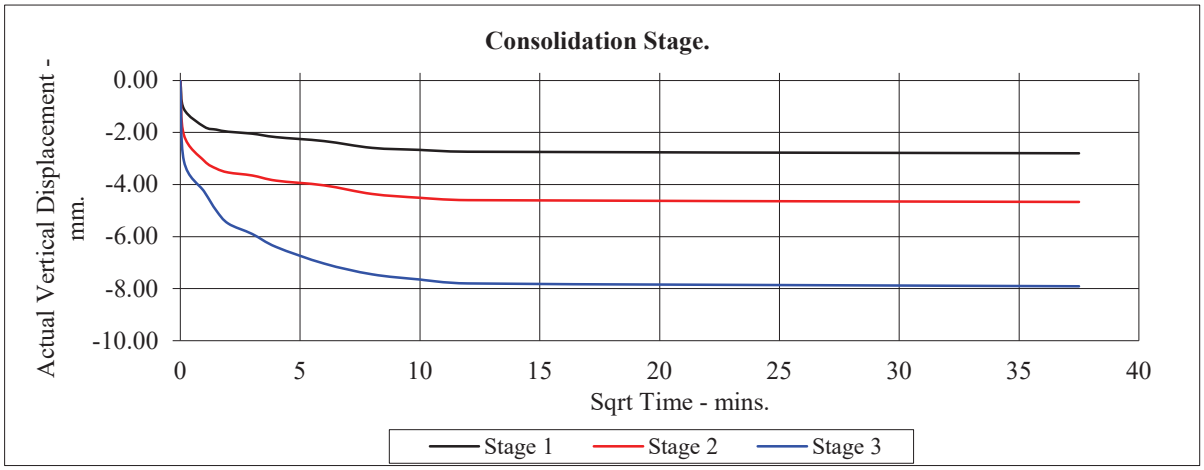
A46 Walsgrave

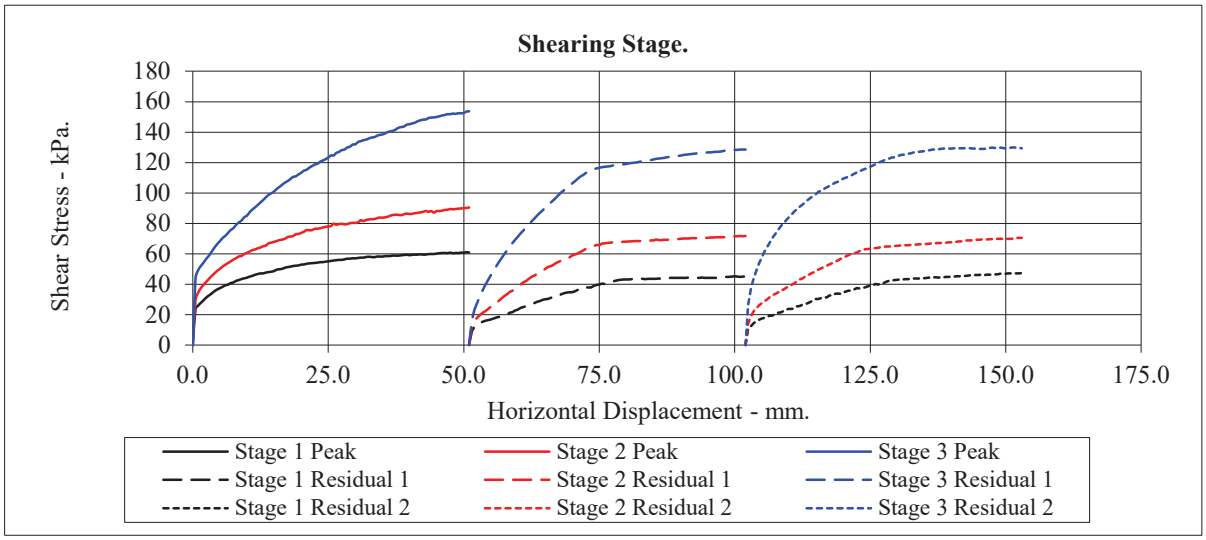
Contract No:
PSL23/5769
Client Ref:
G230651

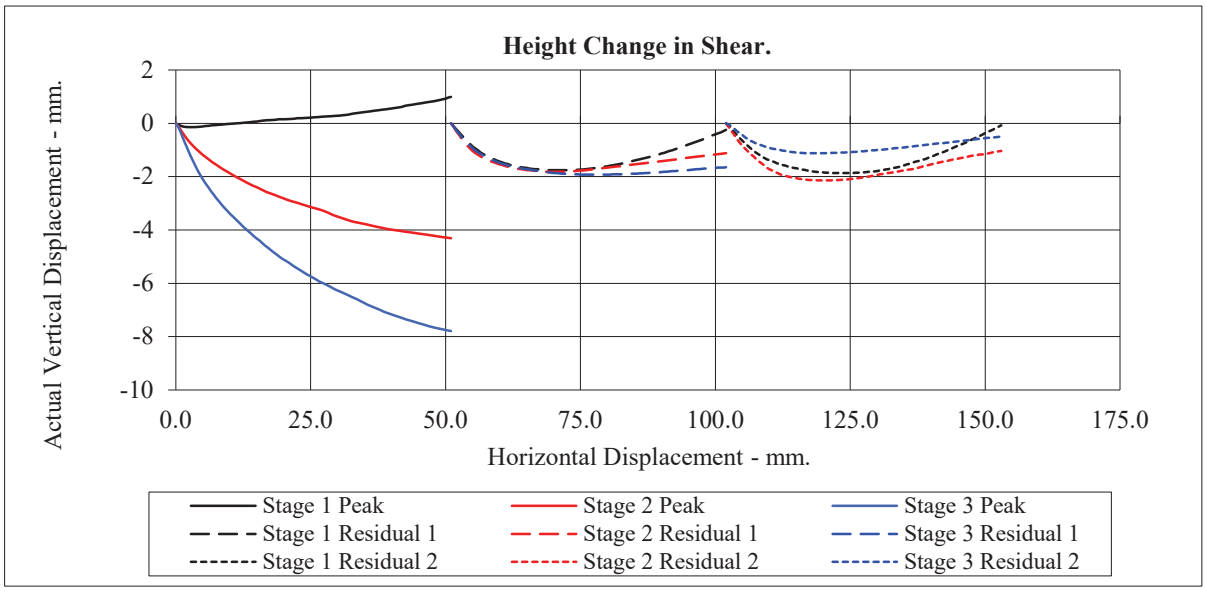
CONSOLIDATED DRAINED SHEARBOX TEST

BS1377:Part 7:1990 Clause 5

Hole Number:	**BH119**	Top Depth:	**1.50**
Sample Number:	**11**	Base Depth:	**2.00**







UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

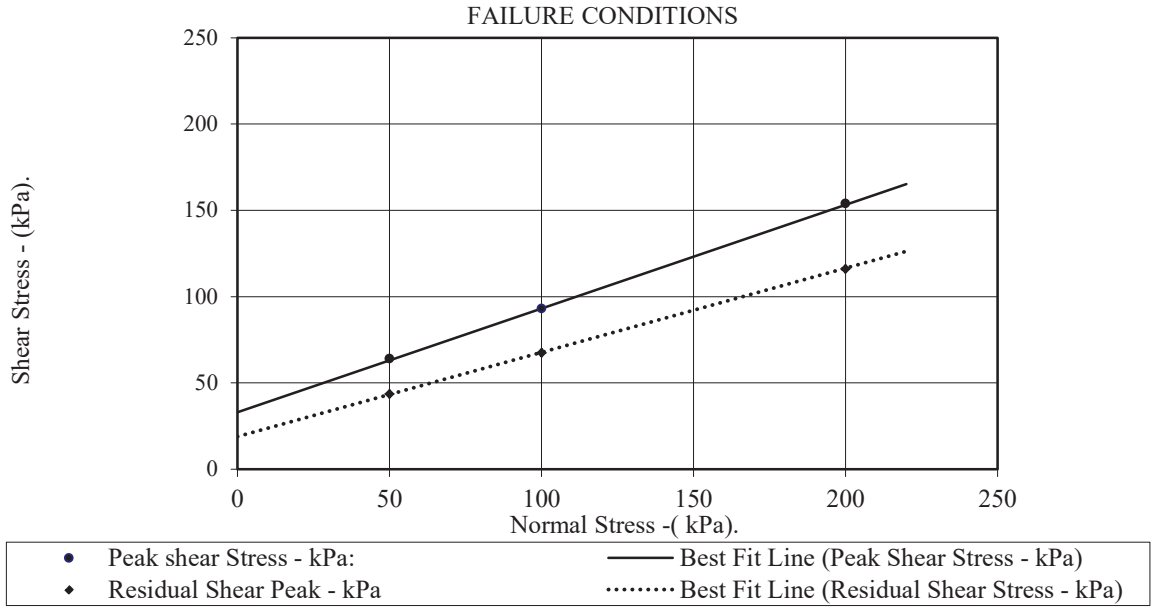
Contract No:
PSL23/5769
Client Ref:
G230651

CONSOLIDATED DRAINED SHEARBOX TEST

BS1377:Part 7:1990 Clause 5

Hole Number:	**BH119**		Top Depth	**3.50**
Sample Number:	**19**		Base Depth	**4.00**
Sample Conditions:	Submerged		Sample Type	**B**
Particle Density - Mg/m3:	2.65	Assumed	**Remarks:**	
Specimen Preparation	Material tested passing 20mm sieve Remoulded using 2.5kg effort			
Sample Description:	**See summary of soil descriptions**			

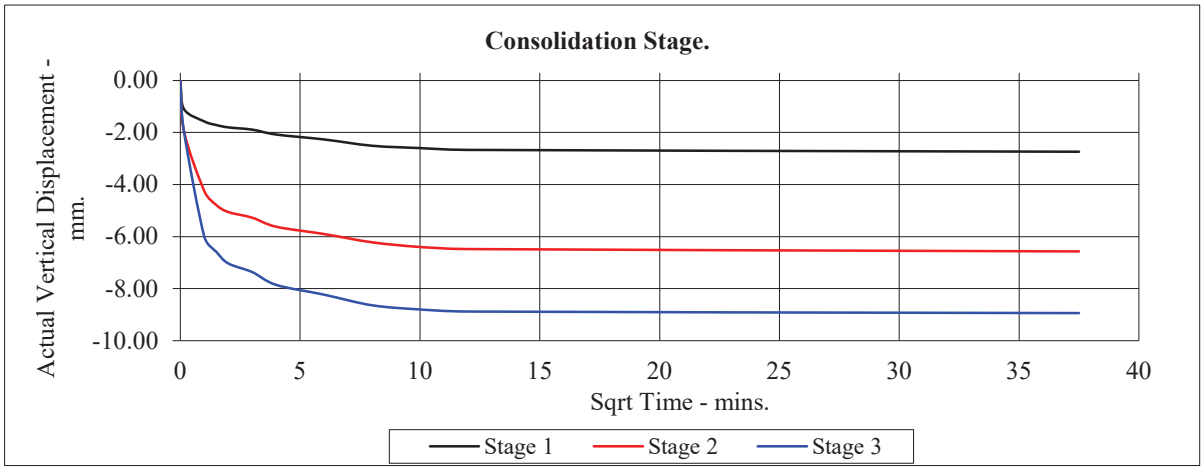
STAGE	**1**	**2**	**3**
Initial Conditions			
Height - mm:	115.00	115.00	115.00
Length - mm:	300.00	300.00	300.00
Moisture Content - %:	15	15	15
Bulk Density - Mg/m3:	2.12	2.12	2.12
Dry Density - Mg/m3:	1.85	1.85	1.85
Voids Ratio:	0.429	0.429	0.429
Normal Pressure- kPa	50	100	200
Consolidation Stage			
Consolidated Height - mm:	112.26	108.43	106.06
Peak Shear			
Rate of Strain - mm/min	0.091	0.091	0.091
Displacement at peak shear stress - mm	50.99	47.50	42.00
Peak shear Stress - kPa:	64	93	154
Residual Shear			
Rate of Strain - mm/min	0.180	0.180	0.180
Final displacement at residual shear stress - mm	153.50	153.50	153.50
Residual shear Stress - kPa:	44	67	116
Final Consolidation Conditions			
Moisture Content - %:	19	19	18
Bulk Density - Mg/m3:	2.30	2.48	2.53
Dry Density - Mg/m3:	1.93	2.09	2.15
Peak Shear			
Angle of Shearing Resistance:(θ)	31		
Effective Cohesion - kPa:	33		
Residual Shear			
Angle of Shearing Resistance:(θ)	26		
Effective Cohesion - kPa:	19		

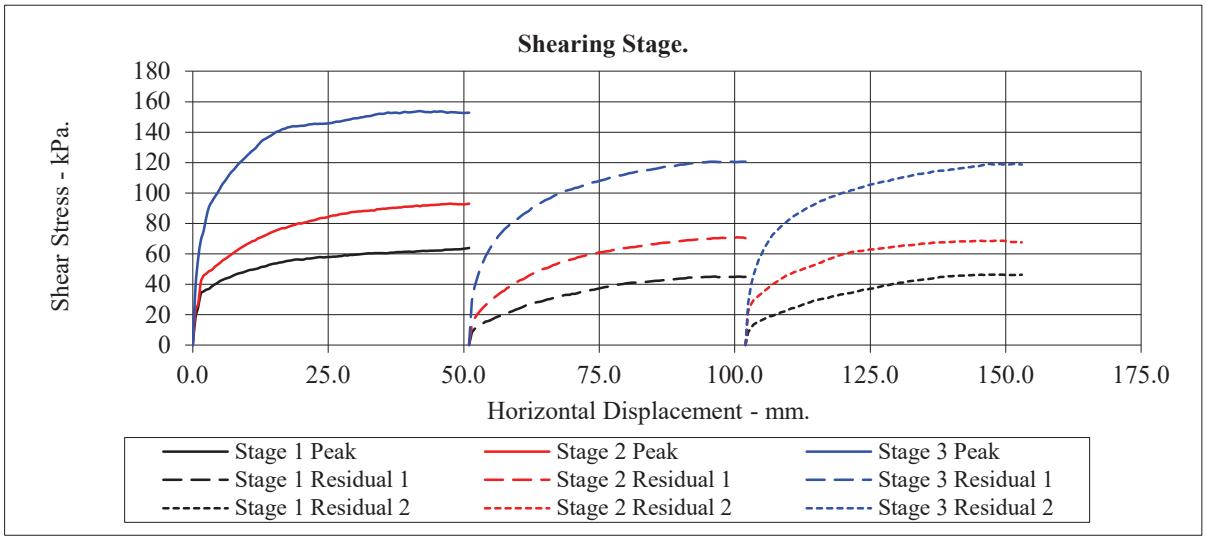


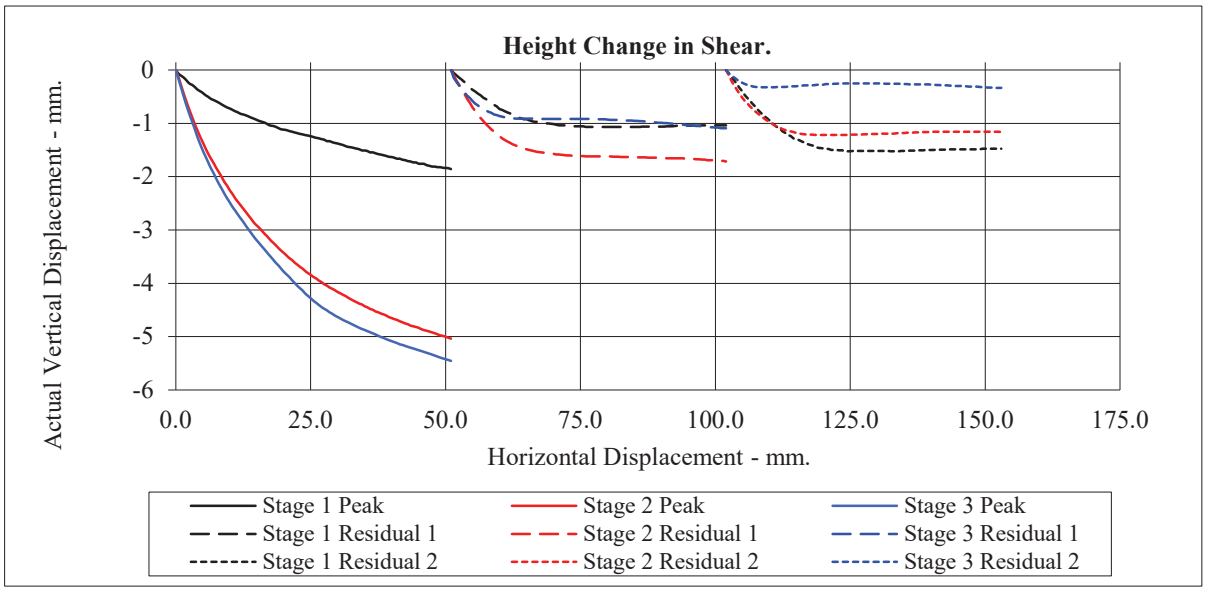
CONSOLIDATED DRAINED SHEARBOX TEST

BS1377:Part 7:1990 Clause 5

Hole Number:	**BH119**	Top Depth:	**3.50**
Sample Number:	**19**	Base Depth:	**4.00**







UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

Contract No:
PSL23/5769
Client Ref:
G230651

PSL
Professional Soils Laboratory

TEST AMENDMENT NOTICE

(Please tick boxes as appropriate)

From: Taylor Hinds

To: Izaac Lovatt.

Date: 1 / 8 /2023

Laboratory Ref:

Contract Number: 5783

Location: A46 WALSGRAVE.

✓BH 128 o TP Sample Number

Depth (m): 9.00

Sample Type: ✓U o B o D o W o P o C

Test/s:

Quick undrained tx1.

The above sample cannot be tested for the following reasons:

- ❑ The Sample has not been received
- ❑ There is insufficient material for BS1377: 1990 testing
  - Maximum Grain Size (Minimum 10%): o Fine o Medium o Coarse
  - Sample Mass (kg): .....
  - Required Mass (kg): .....
- ❑ The Sample has been previously tested.
- ❑ The Sample has been misplaced in the Laboratory.
- ☑ The Sample is unsuitable for testing because:

sample too brittle, collapsed on extrusion.

Please advise action required:

- ❑ Perform original test on the following alternative Sample:
  - o BH o TP Sample Number: Depth (m):
  - Sample Type: o U o B o D o W o P o C
- ❑ Combine original Sample with the following sample:
  - o BH o TP Sample Number: Depth (m):
  - Sample Type: o U o B o D o W o P o C
- ❑ Perform the following alternative test/s on the original Sample
- ❑ Perform non-standard test on material available
- ❑ Take no further action

Signed: ..... Date .....

(Project Engineer)

LABORATORY REPORT

Contract Number: PSL23/5783

Report Date: 09 August 2023

Client's Reference: G230651/Geo 36

Client Name: Strata Geotechnics
Kirkby Lane
Pinxton
Nottinghamshire
NG16 6JA

For the attention of: Izaac Lovatt

Contract Title: A46 Walsgrave

Date Received: 19/7/2023
Date Commenced: 19/7/2023
Date Completed: 9/8/2023

Notes: Opinions and Interpretations are outside the UKAS Accreditation

A copy of the Laboratory Schedule of accredited tests as issued by UKAS is attached to this report. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced other than in full, without the prior written approval of the laboratory.

Checked and Approved Signatories:

L Knight
(Assistant Laboratory Manager)

R Berriman
(Associate Director)

S Royle
(Laboratory Manager)

[redacted]

A Watkins
(Managing Director)

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(Senior Technical Coordinator)

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DN4 0AR
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[redacted]@prosoils.co.uk

SUMMARY OF LABORATORY SOIL DESCRIPTIONS

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Description of Sample
BH128	5	B	0.50	0.50	Brown slightly gravelly slightly sandy CLAY.
BH128	7	D	1.20	1.20	Brown slightly gravelly slightly sandy CLAY.
BH128	10	UT	1.50	1.95	Firm brown sandy CLAY.
BH128	16	B	2.50	3.00	Brown sandy CLAY.
BH128	17	D	3.20	3.20	Brown mottled grey sandy CLAY.
BH128	18	UT	3.50	3.95	Firm to stiff brown slightly gravelly sandy CLAY.
BH128	22	B	4.50	5.00	Brown sandy CLAY.
BH128	24	UT	5.50	5.95	Brown slightly gravelly sandy CLAY.
BH128	28	D	7.50	7.95	Brown very sandy CLAY.
BH128	34	D	10.20	10.20	Brown slightly gravelly sandy CLAY.

UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

Contract No:
PSL23/5783
Client Ref:
G230651

SUMMARY OF SOIL CLASSIFICATION TESTS

(BS1377 : PART 2 : 1990)

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Moisture Content % Clause 3.2	Linear Shrinkage % Clause 6.5	Particle Density Mg/m^3 Clause 8.2	Liquid Limit % Clause 4.3/4	Plastic Limit % Clause 5.3	Plasticity Index % Clause 5.4	Passing .425mm %	Remarks
BH128	7	D	1.20	1.20	20			59	24	35	97	High Plasticity CH
BH128	17	D	3.20	3.20	20			50	23	27	100	High Plasticity CH
BH128	22	B	4.50	5.00	16			35	18	17	100	Intermediate Plasticity CI
BH128	28	D	7.50	7.95	21			28	16	12	100	Low Plasticity CL
BH128	34	D	10.20	10.20	22			34	18	16	98	Low Plasticity CL

SYMBOLS : **NP : Non Plastic** *** : Liquid Limit and Plastic Limit Wet Sieved.**

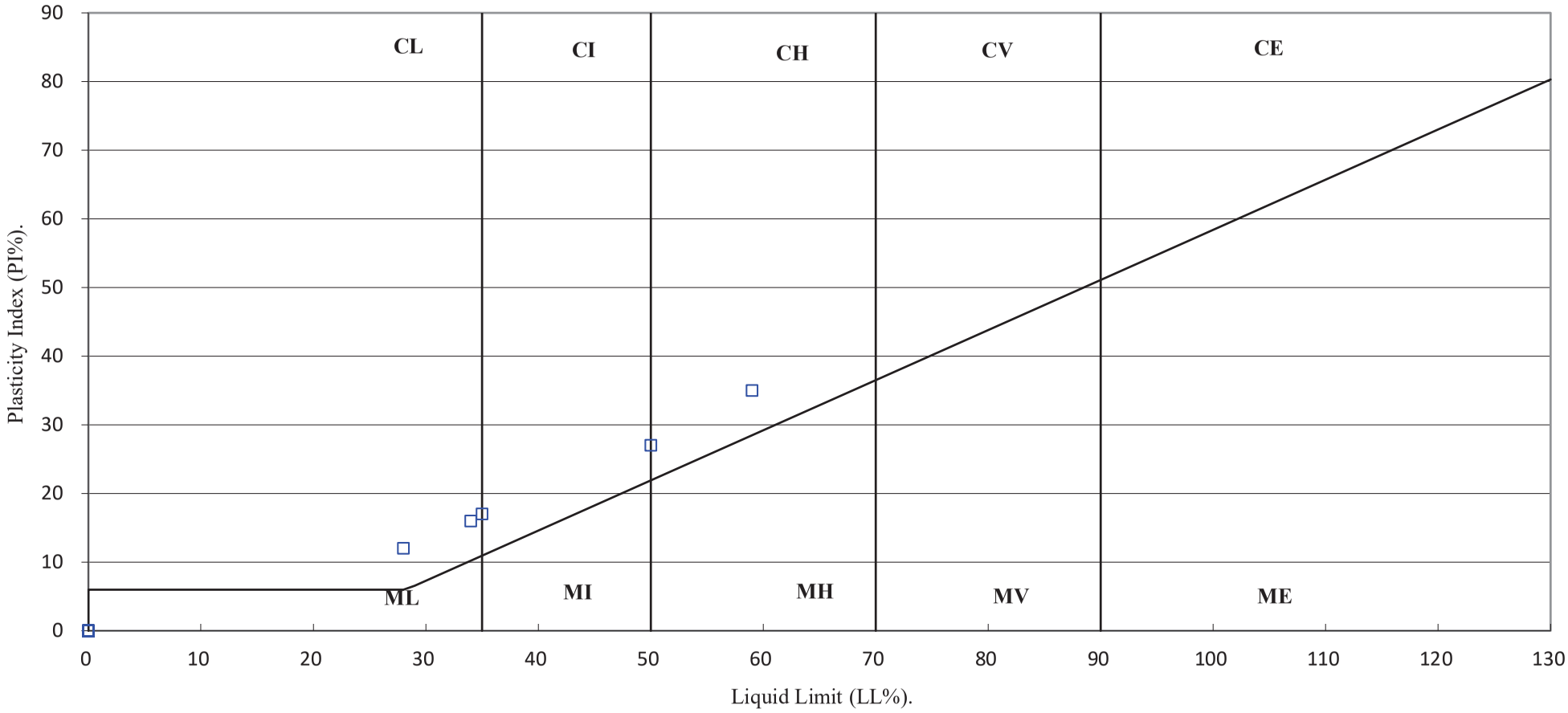
UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

Contract No:
PSL23/5783
Client Ref:
G230651

PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION.



UKAS TESTING 4043	PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY	A46 Walsgrave

Contract No:
PSL23/5783
Client Ref:
G230651

SUMMARY OF SOIL DENSITY RELATED TESTS

(BS1377 : PART 2 & 4 : 1990)

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Moisture Content %	Bulk Density Mg/m^3	Dry Density Mg/m^3	Retained 20mm %	Retained 37.5mm %	Method of compaction kg	Maximum Dry Density Mg/m^3	Minimum Dry Density Mg/m^3	Remarks
BH128	7	D	1.20	1.20	20	2.11	1.76						
BH128	22	B	4.50	5.00	16	2.17	1.87						

UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

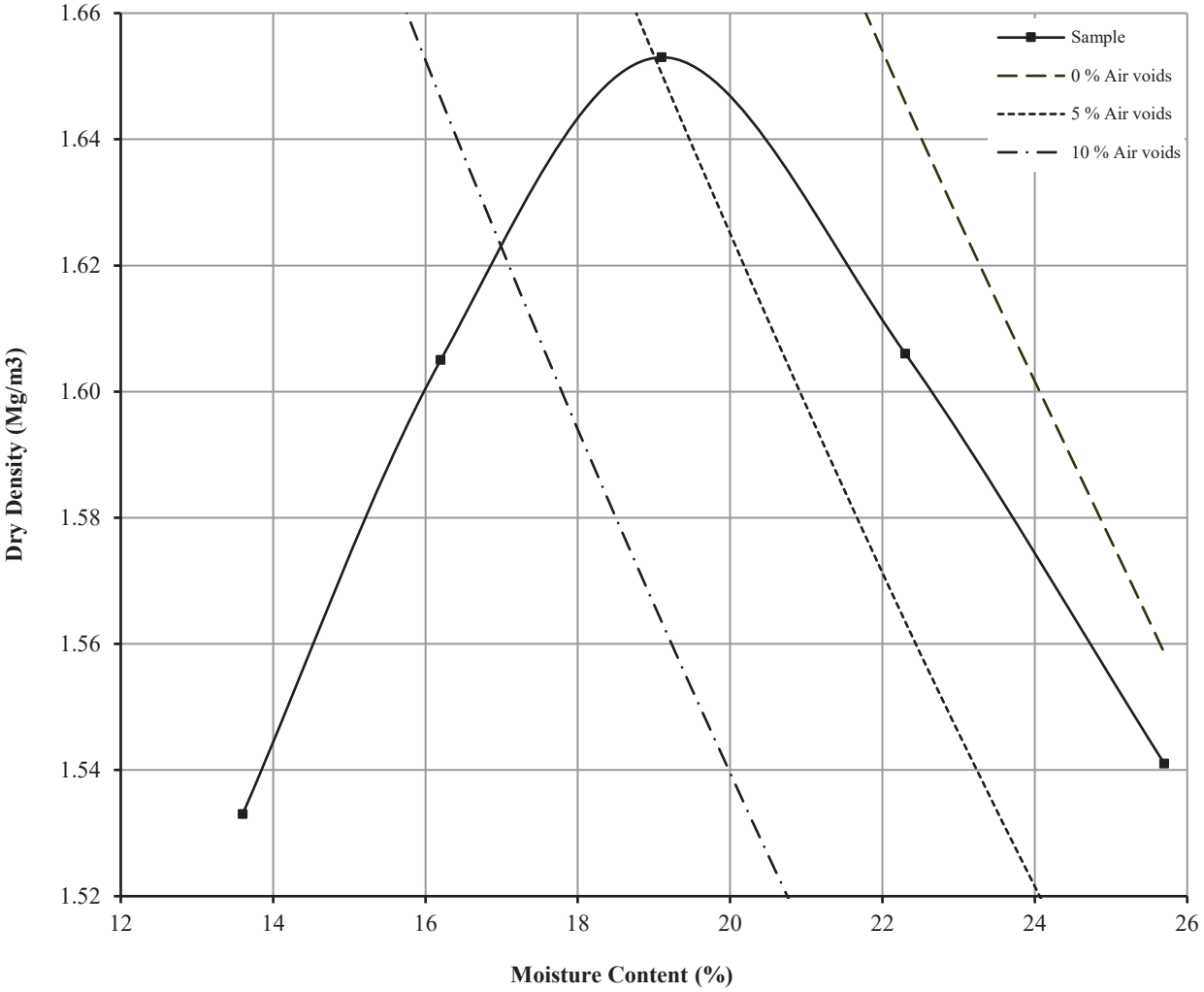
A46 Walsgrave

Contract No:
PSL23/5783
Client Ref:
G230651

DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

BS 1377 : Part 4 : Clause 3.3 : 1990

Hole Number:	**BH128**	**Top Depth (m) :**	**0.50**
Sample Number:	**5**	**Base Depth (m) :**	**0.50**
Sample Type:	**B**		

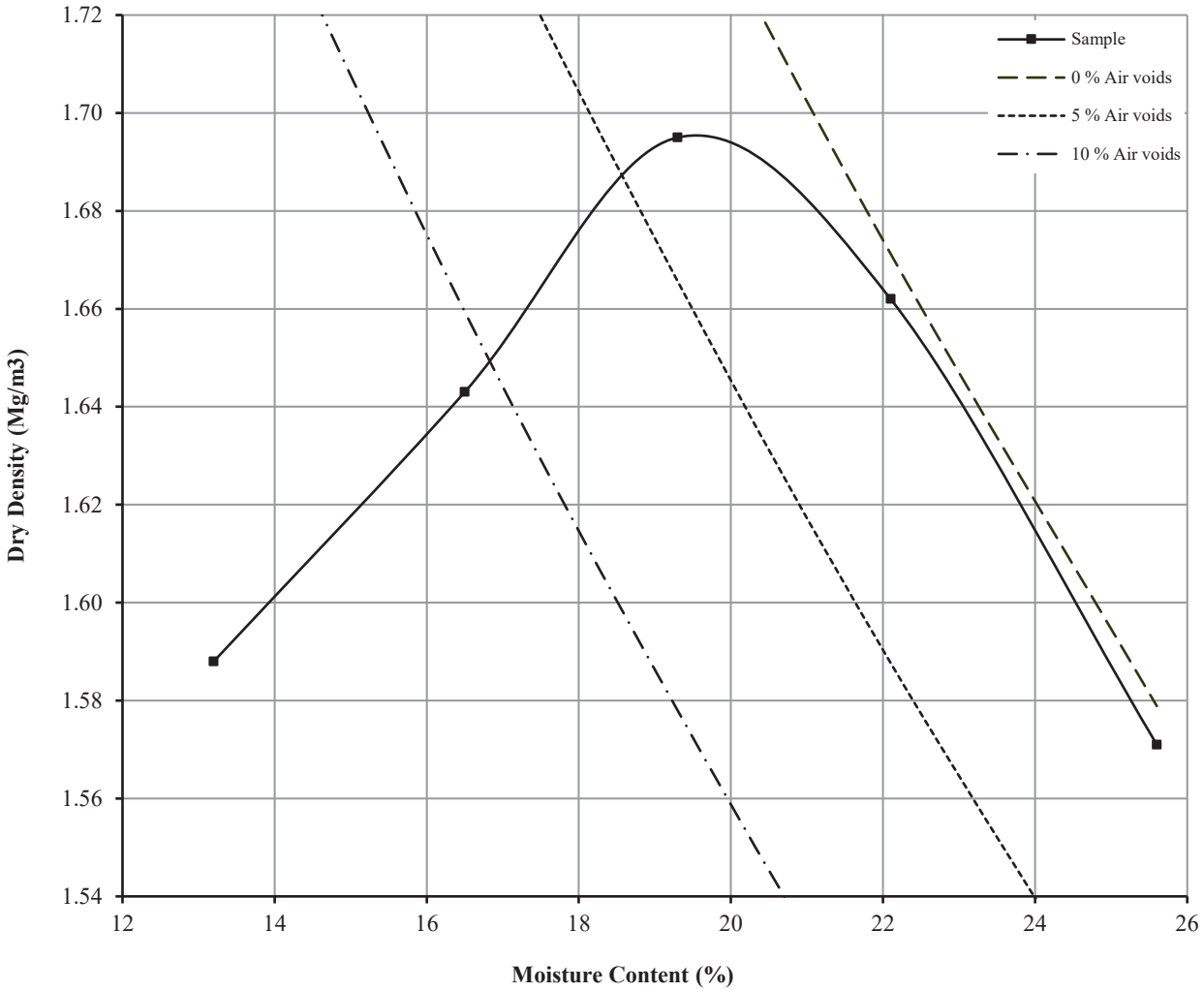


Initial Moisture Content:		22	Method of Compaction:	2.5kg	Separate Samples
Particle Density (Mg/m3):	2.6	Assumed	Material Retained on 37.5 mm Test Sieve (%):		0
Maximum Dry Density (Mg/m3):		1.65	Material Retained on 20.0 mm Test Sieve (%):		0
Optimum Moisture Content (%):		19			
Remarks See summary of soil descriptions					

DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

BS 1377 : Part 4 : Clause 3.3 : 1990

Hole Number:	**BH128**	**Top Depth (m) :**	**2.50**
Sample Number:	**16**	**Base Depth (m) :**	**3.00**
Sample Type:	**B**		



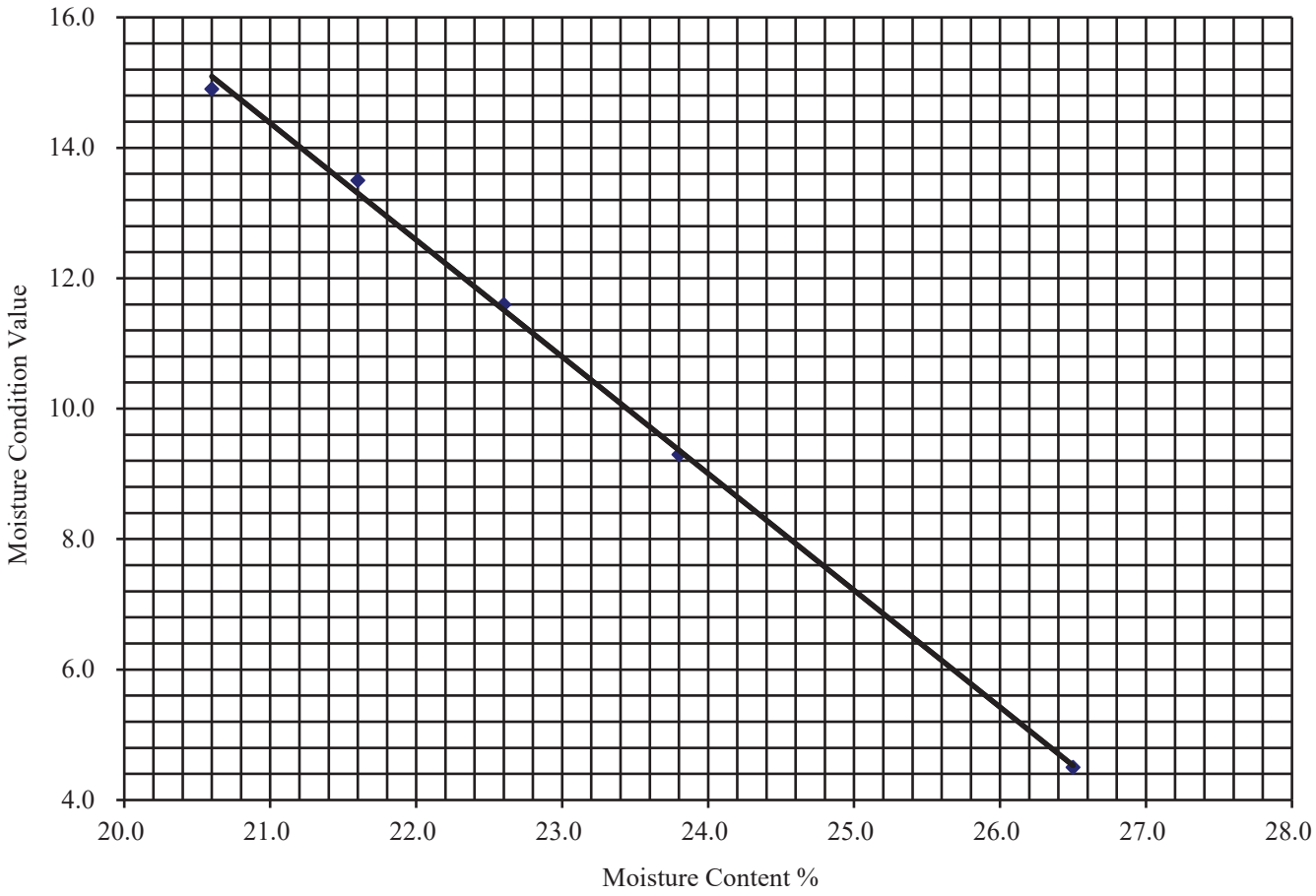
Initial Moisture Content:		22	Method of Compaction:	2.5kg	Separate Samples
Particle Density (Mg/m3):	2.65	Assumed	Material Retained on 37.5 mm Test Sieve (%):		0
Maximum Dry Density (Mg/m3):		1.70	Material Retained on 20.0 mm Test Sieve (%):		0
Optimum Moisture Content (%):		19			
Remarks See summary of soil descriptions					

MOISTURE CONDITION VALUE CALIBRATION

BS1377 : Part 4 : 1990 Clause 5.5

Hole Number:	**BH128**	**Top Depth (m):**	**0.50**
Sample Number:	**5**	**Base Depth (m):**	**0.50**
Sample Type:	**B**		

Initial Moisture Content (%):	22
Single/Separate Samples Tested	Separate
Material Retained on the 20mm BS Test Sieve (%):	0



Test Results.

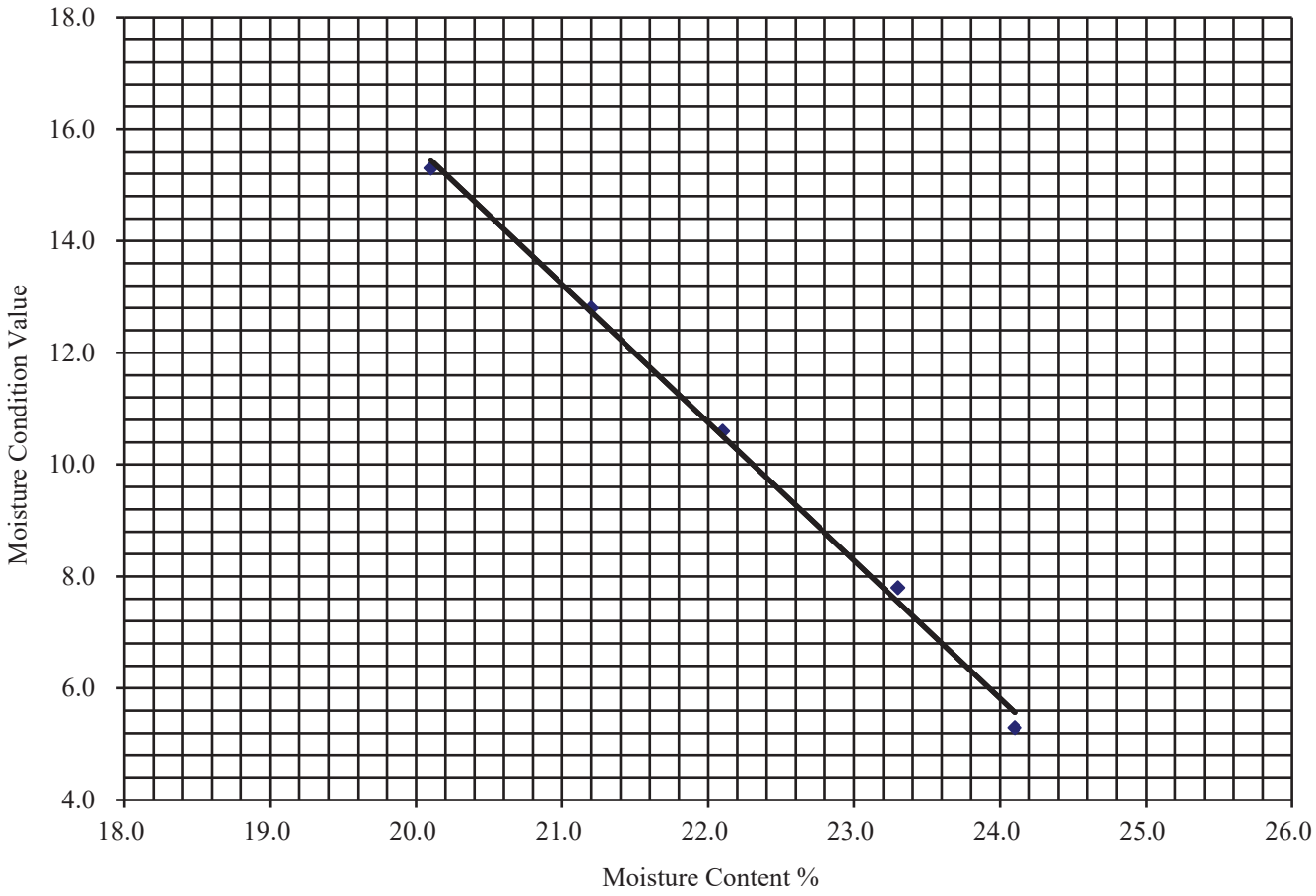
Test Number	1	2	3	4	5
Moisture Content (%)	20.6	21.6	22.6	23.8	26.5
MCV	14.9	13.5	11.6	9.3	4.5

MOISTURE CONDITION VALUE CALIBRATION

BS1377 : Part 4 : 1990 Clause 5.5

Hole Number:	**BH128**	**Top Depth (m):**	**2.50**
Sample Number:	**16**	**Base Depth (m):**	**3.00**
Sample Type:	**B**		

Initial Moisture Content (%):	22
Single/Separate Samples Tested	Separate
Material Retained on the 20mm BS Test Sieve (%):	0



Test Results.

Test Number	1	2	3	4	5
Moisture Content (%)	20.1	21.2	22.1	23.3	24.1
MCV	15.3	12.8	10.6	7.8	5.3

ONE DIMENSIONAL CONSOLIDATION TEST

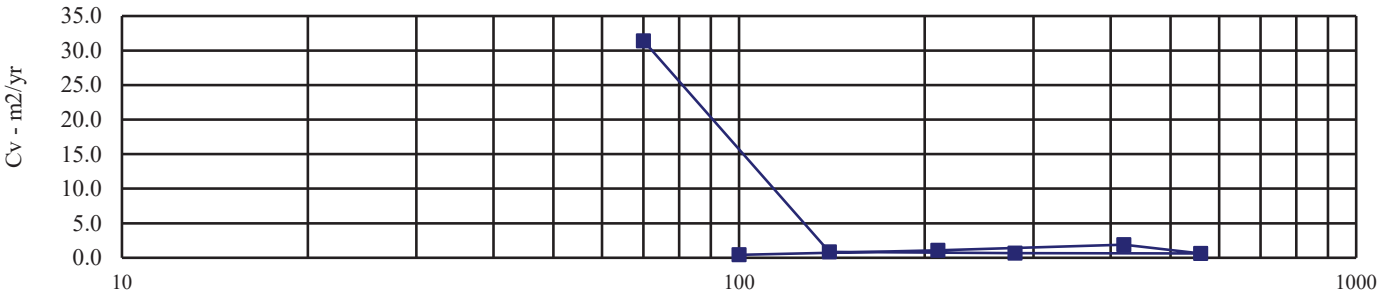
BS 1377: Part 5: 1990: Clause 3

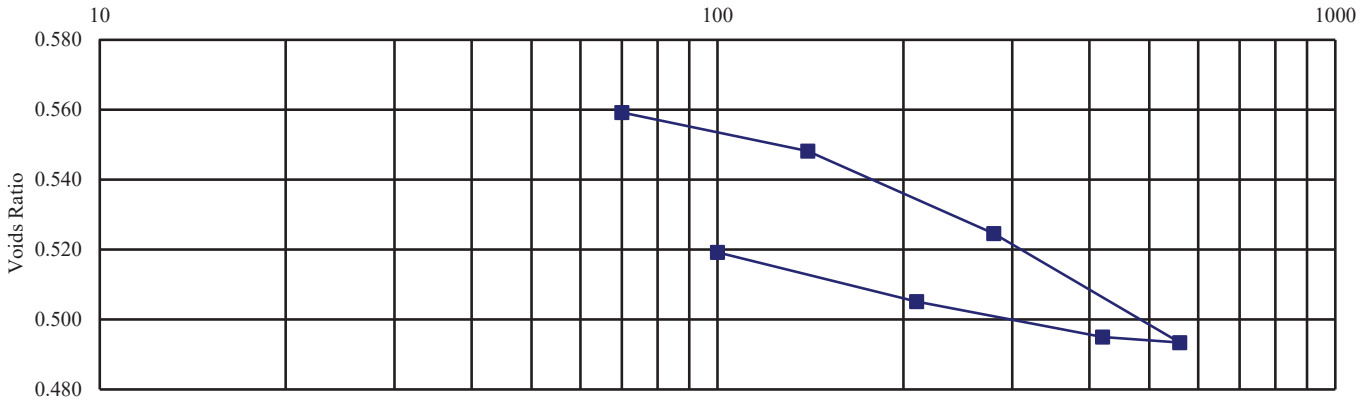
Hole Number: BH128 **Top Depth (m):** 3.50

Sample Number: 18 **Base Depth (m) :** 3.95

Sample Type: UT

Initial Conditions		Pressure Range kPa		Mv m2/MN	Cv m2/yr	Specimen location within tube:	Top
Moisture Content (%):	21						
Bulk Density (Mg/m3):	2.04	0	70	0.111	31.419	Method used to	
Dry Density (Mg/m3):	1.69	70	140	0.101	0.860	determine CV:	T90
Voids Ratio:	0.571	140	280	0.109	0.680	Nominal temperature	
Degree of saturation:	96.5	280	560	0.073	0.644	during test ' C:	20
Height (mm):	20.034	560	420	0.008	1.920	Remarks:	
Diameter (mm)	75.015	420	210	0.032	1.061	See summary of soil descriptions	
Particle Density (Mg/m3): Assumed	2.65	210	100	0.085	0.426		





UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

Contract No: PSL23/5783

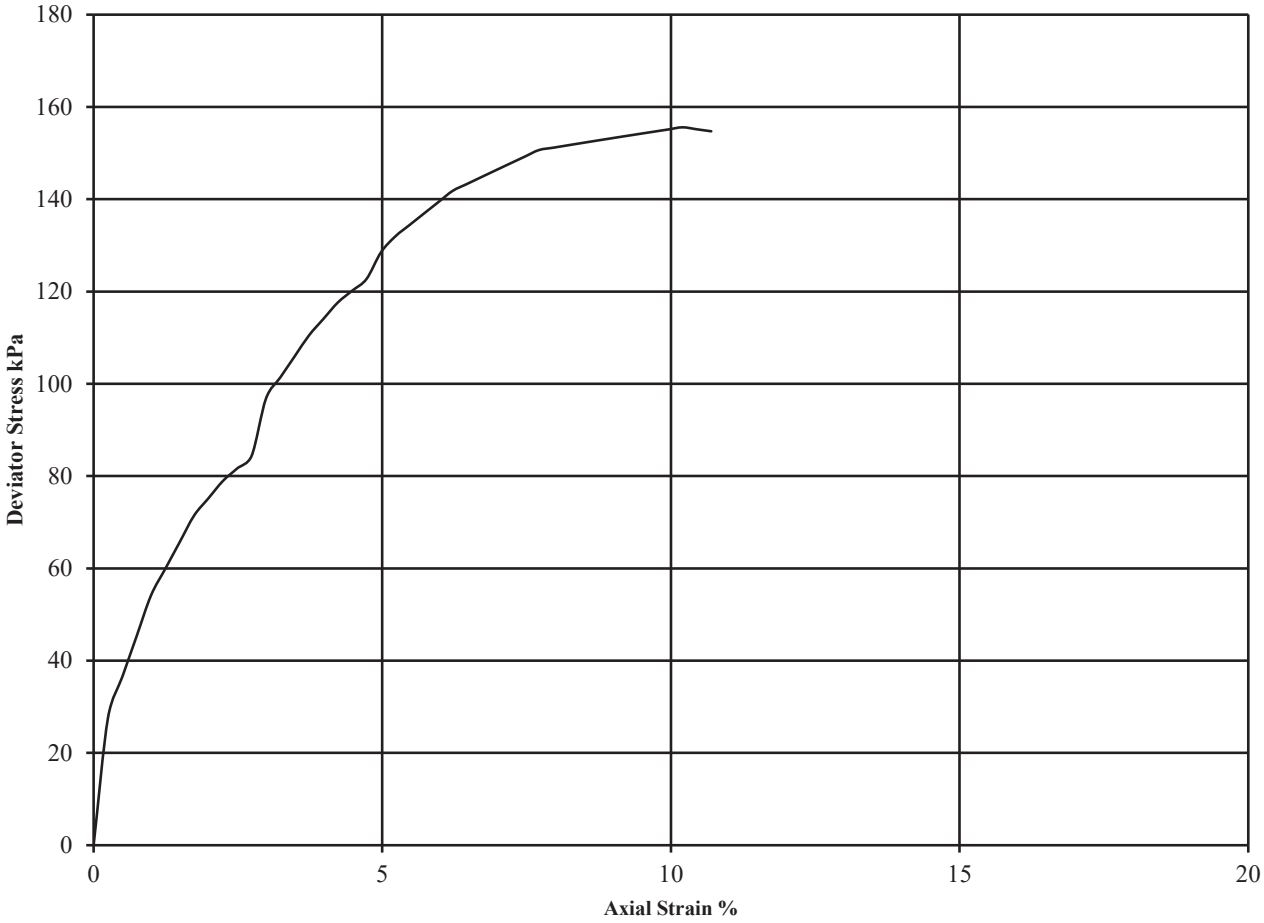
Client Ref: G230651

UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION

WITHOUT MEASUREMENT OF PORE PRESSURE

BS1377 : Part7 : 1990: Clause 9

Hole Number:	**BH128**	**Top Depth (m):**	**1.50**
Sample Number:	**10**	**Base Depth (m):**	**1.95**
Sample Type	**UT**		



Diameter (mm):		103	Height (mm):		207	Test:	UU Multistage		Remarks
Specimen	Moisture Content (%)	Bulk Density (Mg/m3)	Dry Density (Mg/m3)	Cell Pressure (kPa) θ_3	Corr. Max. Deviator Stress (kPa) $(\theta_1-\theta_3)_f$	Shear Strength Cu (kPa) $^1/_2(\theta_1-\theta_3)_f$	Failure Strain (%)	Mode of Failure	Undisturbed Sample Sample taken from top of tube Rate of strain = 2 %/min Latex Membrane used 0.2 mm thick Membrane Correction applied (kPa)
1	18	2.13	1.80	20	84	42	2.7		0.36 0.36 0.35
				40	123	61	4.7		See summary of soil descriptions
				80	156	78	10.2	Plastic	

UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

Contract No:
PSL23/5783
Client Ref:
G230651

4161

7 - 11 Harding Street
Leicester
LE1 4DH

Professional Soils Laboratory
5/7 Hexthorpe Road
Hexthorpe
Doncaster
DN4 0AR

Analytical Test Report: L23/04061/PSL - 23-36045

Your Project Reference:	**PSL23/5783 A46 Walsgrave**		
Your Order Number:	PSL23/5783	Samples Received / Instructed:	02/08/2023 / 02/08/2023
Report Issue Number:	1	Sample Tested:	02/08 to 14/08/2023
Samples Analysed:	1 soil sample	Report issued:	14/08/2023

S[redacted]

James Gane
Analytical Services Manager
CTS Group

Notes:

General

Please refer to Methodologies page for details pertaining to the analytical methods undertaken.

Samples will be retained for 14 days after issue of this report unless otherwise requested.

Moisture Content was determined in accordance with CTS method statement MS - CL - Sample Prep, oven dried at <30˚C.

Moisture Content is reported as a percentage of the dry mass of soil, this calculation is in accordance with BS1377, Part 2, 1990, Clause 3.2

Stone Content was determined in accordance with CTS method statement MS - CL - Sample Prep and refers to the percentage of stones retained on a 10mm BS test sieve.

Where specification limits are included these are for guidance only. Where a measured value has been highlighted this is not implying acceptance or failure and certainty of measurement values have not been taken into account.

Uncertainty of measurement values are available on request.

Samples were supplied by customer, results apply to the samples as received.

Deviating Samples

On receipt samples are compared against our sample holding and handling protocols, where any deviations have been noted these are reported on our deviating sample page (if present)

Accreditation Key

UKAS = UKAS Accreditation, MCERTS = MCERTS Accreditation, u = Unaccredited

MCERTS Accreditation only covers the SAND, CLAY and LOAM matrices

Date of Issue: 26.07.23

Issued by: J. Gane

Issue No: 4

Rev No: 2

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CTS Group
7 - 11 Harding Street
Leicester
LE1 4DH

L23/04061/PSL - 23-36045

Project Reference - PSL23/5783 A46 Walsgrave

Analytical Test Results - Chemical Analysis

Lab Reference			307816
Client Sample ID			-
Client Sample Location			BH128
Client Sample Type			D
Client Sample Number			7
Depth - Top (m)			1.20
Depth - Bottom (m)			1.20
Date of Sampling			14/06/2023
Time of Sampling			-
Sample Matrix			Other
Determinant	**Units**	**Accreditation**	
Water soluble sulphate (as SO_4)	(mg/l)	u	95
Acid Soluble Sulphate	(%)	u	0.06
Total Sulphur	(%)	UKAS	0.03
pH Value	pH Units	MCERTS	8.8
Water Soluble Chloride	(mg/l)	u	9.7
Water Soluble Nitrate (As NO_3)	(mg/l)	u	< 1.0
Water Soluble Magnesium	(mg/l)	u	24
Water Soluble Ammonium Ion	(mg/l)	u	< 1.0

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Leicester
LE1 4DH

L23/04061/PSL - 23-36045

Project Reference - PSL23/5783 A46 Walsgrave

Sample Descriptions

Lab Reference	Client Sample ID	Client Sample Location	Client Sample Type	Client Sample Number	Description	Moisture Content (%)	Stone Content (%)	Passing 2mm test sieve (%)
307816	-	BH128	D	7	Reddish brown slightly gravelly clayey silt	23	< 0.1	100

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Leicester
LE1 4DH

L23/04061/PSL - 23-36045

Project Reference - PSL23/5783 A46 Walsgrave

Sample Comments

Lab Reference	Client Sample ID	Client Sample Location	Client Sample Type	Client Sample Number	Comments
307816	-	BH128	D	7	

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Leicester
LE1 4DH

L23/04061/PSL - 23-36045

Project Reference - PSL23/5783 A46 Walsgrave

Analysis Methodologies

Test Code	Test Name / Reference	Sample condition for analysis	Sample Preperation	Test Details
ANIONSS	MS - CL - Anions by Aquakem (2:1Extract)	Oven dried	Passing 2mm test sieve	Determination of Anions (inc Sulphate, chloride etc.) in soils by Aquakem. Analysis is based on a 2:1 water to soil extraction ratio
PHS	MS - CL - pH in Soils	As received	Passing 10mm test sieve	Determination of pH in soils using a pH probe (using a 1:3 soil to water extraction)
ASSO4S	MS - CL - Acid Soluble Sulphate	Oven Dried	Passing 2mm test sieve	Determination of total sulphate in soils by acid extraction followed by ICP analysis
SAMPLEPREP	MS - CL - Sample Preparation	-	-	Preparation of samples (including determination of moisture content) to allow for subsequent analysis
1377TS-ELT	BS1377 Total Sulphur Content by HTC	Oven dried	BS1377 : Part 1 : 2016	Total Sulphur Content testing of Soil in accordance with BS 1377 : Part 3 : 2018 + A1 : 2021 Clause 7.10 (using Eltra CS-800 Analyser)

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LE1 4DH

L23/04061/PSL - 23-36045

Project Reference - PSL23/5783 A46 Walsgrave

Sample Deviations

Deviations are listed below against each sample and associated test method, where deviation(s) are noted it means data may not be representative of the sample at the time of sampling and it is possible that results provided may be compromised.

Observations on receipt

A - No date of sampling provided
C - Received in inappropriate container
H - Contains headspace
T - Temperature on receipt exceeds storage temperature
R - Date of sampling to receipt insufficient to allow analysis to be completed without deviation, Please note this is only a deviation if 'X' is also recorded against the sample

Observations whist in laboratory

X - Exceeds sampling to extraction or analysis timescales

Lab Reference	Client Sample ID	Client Sample Location	Client Sample Type	Client Sample Number	Test	Deviations
307816	-	BH128	D	7	BS1377 Total Sulphur Content by HTC	RX
307816	-	BH128	D	7	MS - CL - Anions by Aquakem (2:1Extract)	RX
307816	-	BH128	D	7	MS - CL - pH in Soils	RX

LABORATORY REPORT

Contract Number: PSL23/5789

Report Date: 09 August 2023

Client's Reference: G230651/Geo 37

Client Name: Strata Geotechnics
Kirkby Lane
Pinxton
Nottinghamshire
NG16 6JA

For the attention of: Izaac Lovatt

Contract Title: A46 Walsgrave

Date Received: 19/7/2023
Date Commenced: 19/7/2023
Date Completed: 9/8/2023

Notes: Opinions and Interpretations are outside the UKAS Accreditation

A copy of the Laboratory Schedule of accredited tests as issued by UKAS is attached to this report. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced other than in full, without the prior written approval of the laboratory.

Checked and Approved Signatories:

A Watkins (Director)	R Berriman (Quality Manager)	S Royle (Laboratory Manager)
L Knight (Assistant Laboratory Manager)	S Eyre (Senior Technician)	[redacted] T Watkins (Senior Technician)

5 – 7 Hexthorpe Road,
Hexthorpe,
Doncaster,
DN4 0AR
Tel: [redacted]
Email: [redacted]@prosoils.co.uk
[redacted]@prosoils.co.uk

SUMMARY OF LABORATORY SOIL DESCRIPTIONS

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Description of Sample
WS102	14	D	0.70	0.70	MADE GROUND brown very gravelly very sandy clay.
WS102	1	D	1.20	1.65	MADE GROUND brown slightly sandy clay.
WS102	16	D	2.45	2.50	Brown slightly sandy clay.
WS102	18	D	3.50	3.60	Brown very sandy GRAVEL.
WS102	4	D	4.00	4.45	Brown sandy CLAY.
WS102	5	D	5.00	5.45	Brown sandy CLAY.
WS103	17	D	1.00	1.00	Brown gravelly clayey SAND.
WS103	3	UT	3.00	3.50	Brown very sandy CLAY.
WS103	23	B	3.50	4.00	Brown sandy CLAY.

SUMMARY OF SOIL CLASSIFICATION TESTS

(BS1377 : PART 2 : 1990)

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Moisture Content % Clause 3.2	Linear Shrinkage % Clause 6.5	Particle Density Mg/m^3 Clause 8.2	Liquid Limit % Clause 4.3/4	Plastic Limit % Clause 5.3	Plasticity Index % Clause 5.4	Passing .425mm %	Remarks
WS102	14	D	0.70	0.70	17			54	25	29	100	High Plasticity CH
WS102	16	D	2.45	2.50	33			65	27	38	100	High Plasticity CH
WS102	4	D	4.00	4.45	11			35	18	17	100	Intermediate Plasticity CI
WS102	5	D	5.00	5.45	19			36	19	17	100	Intermediate Plasticity CI
WS103	17	D	1.00	1.00	8.9				NP			
WS103	23	B	3.50	4.00	14			40	20	20	100	Intermediate Plasticity CI

SYMBOLS : **NP : Non Plastic** *** : Liquid Limit and Plastic Limit Wet Sieved.**

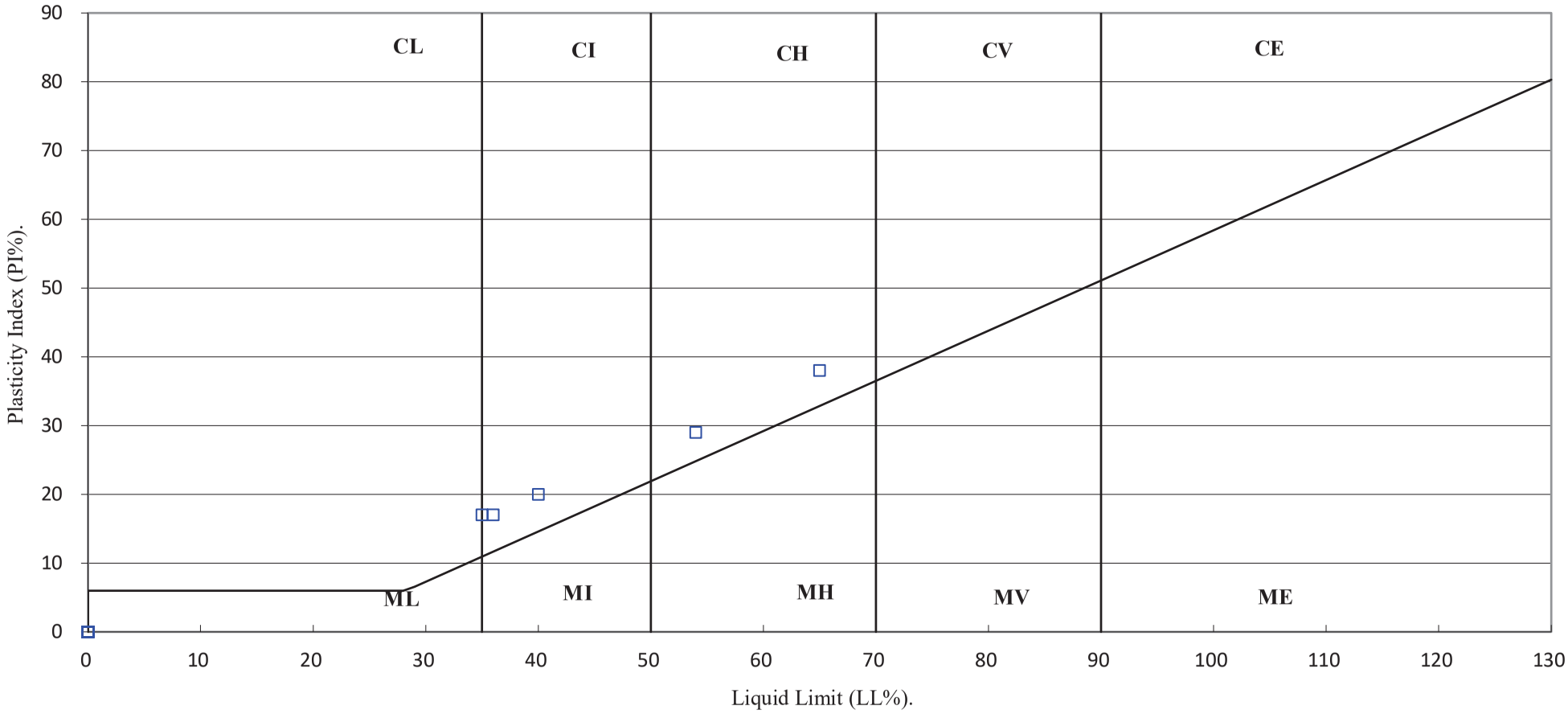
UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

Contract No:
PSL23/5789
Client Ref:
G230651GEO37

PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION.



UKAS TESTING 4043	PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY	**A46 Walsgrave**

Contract No:
PSL23/5789
Client Ref:
G230651GEO37

SUMMARY OF SOIL DENSITY RELATED TESTS

(BS1377 : PART 2 & 4 : 1990)

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Moisture Content %	Bulk Density Mg/m^3	Dry Density Mg/m^3	Retained 20mm %	Retained 37.5mm %	Method of compaction kg	Maximum Dry Density Mg/m^3	Minimum Dry Density Mg/m^3	Remarks
WS102	1	D	1.20	1.65	43	1.76	1.23						
WS102	18	D	3.50	3.60	6.8	2.20	2.06						
WS103	3	UT	3.00	3.50	14	2.05	1.80						

UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

Contract No:
PSL23/5789
Client Ref:
G230651GEO37

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CTS Group
7 - 11 Harding Street
Leicester
LE1 4DH

Professional Soils Laboratory
5/7 Hexthorpe Road
Hexthorpe
Doncaster
DN4 0AR

Analytical Test Report: L23/04059/PSL - 23-36042

Your Project Reference:	**PSL23/5789 A46 Walsgrave**		
Your Order Number:	PSL23/5789	Samples Received / Instructed:	02/08/2023 / 02/08/2023
Report Issue Number:	1	Sample Tested:	02/08 to 09/08/2023
Samples Analysed:	1 soil sample	Report issued:	09/08/2023

Sign [redacted]

James Gane
Analytical Services Manager
CTS Group

Notes:

General

Please refer to Methodologies page for details pertaining to the analytical methods undertaken.

Samples will be retained for 14 days after issue of this report unless otherwise requested.

Moisture Content was determined in accordance with CTS method statement MS - CL - Sample Prep, oven dried at <30˚C.

Moisture Content is reported as a percentage of the dry mass of soil, this calculation is in accordance with BS1377, Part 2, 1990, Clause 3.2

Stone Content was determined in accordance with CTS method statement MS - CL - Sample Prep and refers to the percentage of stones retained on a 10mm BS test sieve.

Where specification limits are included these are for guidance only. Where a measured value has been highlighted this is not implying acceptance or failure and certainty of measurement values have not been taken into account.

Uncertainty of measurement values are available on request.

Samples were supplied by customer, results apply to the samples as received.

Deviating Samples

On receipt samples are compared against our sample holding and handling protocols, where any deviations have been noted these are reported on our deviating sample page (if present)

Accreditation Key

UKAS = UKAS Accreditation, MCERTS = MCERTS Accreditation, u = Unaccredited

MCERTS Accreditation only covers the SAND, CLAY and LOAM matrices

Date of Issue: 26.07.23

Issued by: J. Gane

Issue No: 4

Rev No: 2

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CTS Group
7 - 11 Harding Street
Leicester
LE1 4DH

L23/04059/PSL - 23-36042

Project Reference - PSL23/5789 A46 Walsgrave

Analytical Test Results - Soil

Lab Reference			307806
Client Sample ID			-
Client Sample Location			WS102
Client Sample Type			D
Client Sample Number			1
Depth - Top (m)			1.20
Depth - Bottom (m)			1.65
Date of Sampling			15/06/2023
Time of Sampling			-
Sample Matrix			Clay
Determinant	**Units**	**Accreditation**	
SOM (via TOC)	(%)	UKAS	2.0

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L23/04059/PSL - 23-36042

Project Reference - PSL23/5789 A46 Walsgrave

Analytical Test Results - Chemical Analysis

Lab Reference			307806
Client Sample ID			-
Client Sample Location			WS102
Client Sample Type			D
Client Sample Number			1
Depth - Top (m)			1.20
Depth - Bottom (m)			1.65
Date of Sampling			15/06/2023
Time of Sampling			-
Sample Matrix			Clay
Determinant	**Units**	**Accreditation**	
Water soluble sulphate (as SO_4)	(mg/l)	u	620
Acid Soluble Sulphate	(%)	u	0.19
Total Sulphur	(%)	UKAS	0.06
pH Value	pH Units	MCERTS	7.9
Water Soluble Chloride	(mg/l)	u	9.9
Water Soluble Nitrate (As NO_3)	(mg/l)	u	< 1.0
Water Soluble Magnesium	(mg/l)	u	21
Water Soluble Ammonium Ion	(mg/l)	u	< 1.0

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CTS Group
7 - 11 Harding Street
Leicester
LE1 4DH

L23/04059/PSL - 23-36042

Project Reference - PSL23/5789 A46 Walsgrave

Sample Descriptions

Lab Reference	Client Sample ID	Client Sample Location	Client Sample Type	Client Sample Number	Description	Moisture Content (%)	Stone Content (%)	Passing 2mm test sieve (%)
307806	-	WS102	D	1	Greyish orangish brown silty clay with rare rootlets	35	< 0.1	100

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CTS Group
7 - 11 Harding Street
Leicester
LE1 4DH

L23/04059/PSL - 23-36042

Project Reference - PSL23/5789 A46 Walsgrave

Sample Comments

Lab Reference	Client Sample ID	Client Sample Location	Client Sample Type	Client Sample Number	Comments
307806	-	WS102	D	1	

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CTS Group
7 - 11 Harding Street
Leicester
LE1 4DH

L23/04059/PSL - 23-36042

Project Reference - PSL23/5789 A46 Walsgrave

Analysis Methodologies

Test Code	Test Name / Reference	Sample condition for analysis	Sample Preperation	Test Details
ANIONSS	MS - CL - Anions by Aquakem (2:1Extract)	Oven dried	Passing 2mm test sieve	Determination of Anions (inc Sulphate, chloride etc.) in soils by Aquakem. Analysis is based on a 2:1 water to soil extraction ratio
TOCS	MS - CL - TOC Eltra	Air Dried	Passing 10mm test sieve	Determination of Total Organic Carbon in soils
PHS	MS - CL - pH in Soils	As received	Passing 10mm test sieve	Determination of pH in soils using a pH probe (using a 1:3 soil to water extraction)
ASSO4S	MS - CL - Acid Soluble Sulphate	Oven Dried	Passing 2mm test sieve	Determination of total sulphate in soils by acid extraction followed by ICP analysis
SAMPLEPREP	MS - CL - Sample Preparation	-	-	Preparation of samples (including determination of moisture content) to allow for subsequent analysis
1377TS-ELT	BS1377 Total Sulphur Content by HTC	Oven dried	BS1377 : Part 1 : 2016	Total Sulphur Content testing of Soil in accordance with BS 1377 : Part 3 : 2018 + A1 : 2021 Clause 7.10 (using Eltra CS-800 Analyser)

4161

CTS Group
7 - 11 Harding Street
Leicester
LE1 4DH

L23/04059/PSL - 23-36042

Project Reference - PSL23/5789 A46 Walsgrave

Sample Deviations

Deviations are listed below against each sample and associated test method, where deviation(s) are noted it means data may not be representative of the sample at the time of sampling and it is possible that results provided may be compromised.

Observations on receipt

A - No date of sampling provided
C - Received in inappropriate container
H - Contains headspace
T - Temperature on receipt exceeds storage temperature
R - Date of sampling to receipt insufficient to allow analysis to be completed without deviation, Please note this is only a deviation if 'X' is also recorded against the sample

Observations whist in laboratory

X - Exceeds sampling to extraction or analysis timescales

Lab Reference	Client Sample ID	Client Sample Location	Client Sample Type	Client Sample Number	Test	Deviations
307806	-	WS102	D	1	BS1377 Total Sulphur Content by HTC	RX
307806	-	WS102	D	1	MS - CL - Anions by Aquakem (2:1Extract)	RX
307806	-	WS102	D	1	MS - CL - TOC Eltra	RX
307806	-	WS102	D	1	MS - CL - pH in Soils	RX

LABORATORY REPORT

Contract Number: PSL23/5623

Report Date: 10 August 2023

Client's Reference: G230651/Geo 38

Client Name: Strata Geotechnics
Kirkby Lane
Pinxton
Nottinghamshire
NG16 6JA

For the attention of: Shannon Wade

Contract Title: A46 Walsgrave

Date Received: 13/7/2023
Date Commenced: 13/7/2023
Date Completed: 10/8/2023

Notes: Opinions and Interpretations are outside the UKAS Accreditation

A copy of the Laboratory Schedule of accredited tests as issued by UKAS is attached to this report. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced other than in full, without the prior written approval of the laboratory.

Checked and Approved Signatories:

L Knight
(Assistant Laboratory Manager)

R Berriman
(Associate Director)

S Royle
(Laboratory Manager)

[redacted]

A Watkins
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[redacted]@prosoils.co.uk

SUMMARY OF LABORATORY SOIL DESCRIPTIONS

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Description of Sample
BH104	9	B	0.70	0.80	Brown very gravelly very sandy CLAY.
BH104	7	D	1.00		Reddish brown slightly gravelly very sandy CLAY.
BH104	10	B	1.00	1.20	Reddish brown slightly gravelly very sandy CLAY.
BH104	13	B	1.80	2.00	Reddish brown slightly gravelly very sandy CLAY.
BH104	15	UT	2.00	2.45	Reddish brown gravelly very sandy CLAY.
BH104	17	B	2.80	3.00	Reddish brown slightly gravelly very sandy CLAY.
BH104	18	D	3.00	3.55	Reddish brown slightly gravelly sandy CLAY.
BH104	20	UT	4.00	4.45	Firm reddish brown sandy CLAY.
BH104	21	D	4.45	4.50	Reddish brown sandy CLAY.
BH104	23	D	5.00	5.45	Reddish brown sandy CLAY.
BH104	26	B	7.30	7.50	Reddish brown slightly gravelly sandy CLAY.
BH104	29	D	9.50	9.79	Reddish brown slightly gravelly sandy CLAY.
BH112	7	B	1.00		Brown gravelly silty SAND.
BH112	9	D	1.20		Brown silty SAND.
BH112	14	D	2.20		Brown slightly gravelly SAND.
BH112	15	D	2.50	2.95	Brown gravelly silty SAND.
BH112	16	B	2.50	3.00	Brown gravelly silty SAND.
BH112	18	B	3.50	3.80	Brown slightly sandy slightly silty GRAVEL.
BH112	19	B	3.80	4.20	Brown slightly sandy slightly silty GRAVEL.

SUMMARY OF LABORATORY SOIL DESCRIPTIONS

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Description of Sample
BH112	20	B	4.50	5.00	Brown slightly sandy GRAVEL.
BH112	22	U	5.50	5.95	Very stiff brown slightly gravelly very sandy CLAY.
BH112	23	D	6.00		Brown very gravelly very sandy CLAY.
BH112	24	D	7.00		Reddish brown mottled grey very sandy CLAY.
BH112	27	D	8.50		Reddish brown mottled grey sandy CLAY.
BH116	5	B	0.50		Reddish brown gravelly very sandy CLAY.
BH116	6	D	0.80		Brown gravelly very sandy CLAY.
BH116	7	B	1.00		Brown gravelly sandy CLAY.
BH116	10	UT	1.50	1.95	Brown sandy CLAY.
BH116	14	D	2.20		Reddish brown very sandy CLAY.
BH116	16	B	2.50	3.00	Brown gravelly very sandy CLAY.
BH116	18	UT	3.50	3.95	Brown very sandy CLAY.
BH116	19	D	4.00		Brown mottled grey very sandy CLAY.
BH116	23	D	5.20		Reddish brown very sandy CLAY.
BH116	27	D	7.50	7.84	Reddish brown mottled grey very sandy CLAY.
BH116	30	D	9.00	9.45	Reddish brown very sandy CLAY.

SUMMARY OF SOIL CLASSIFICATION TESTS

(BS1377 : PART 2 : 1990)

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Moisture Content % Clause 3.2	Linear Shrinkage % Clause 6.5	Particle Density Mg/m^3 Clause 8.2	Liquid Limit % Clause 4.3/4	Plastic Limit % Clause 5.3	Plasticity Index % Clause 5.4	Passing .425mm %	Remarks
BH104	7	D	1.00		21			30	17	13	79	Low Plasticity CL
BH104	18	D	3.00	3.55	19			35	19	16	86	Intermediate Plasticity CI
BH104	23	D	5.00	5.45	18			38	20	18	99	Intermediate Plasticity CI
BH104	29	D	9.50	9.79	25			36	19	17	98	Intermediate Plasticity CI
BH112	9	D	1.20		5.7							
BH112	15	D	2.50	2.95	18							
BH112	23	D	6.00		11			29	17	12	73	Low Plasticity CL
BH112	24	D	7.00		12			34	18	16	100	Low Plasticity CL
BH112	27	D	8.50		12			41	20	21	100	Intermediate Plasticity CI
BH116	6	D	0.80		16			34	18	16	77	Low Plasticity CL
BH116	19	D	4.00		15			31	17	14	100	Low Plasticity CL
BH116	23	D	5.20		18			33	18	15	100	Low Plasticity CL
BH116	27	D	7.50	7.84	9.4			35	18	17	100	Intermediate Plasticity CI
BH116	30	D	9.00	9.45	12			33	17	16	100	Low Plasticity CL

SYMBOLS : NP : Non Plastic * : Liquid Limit and Plastic Limit Wet Sieved.

UKAS TESTING 4043

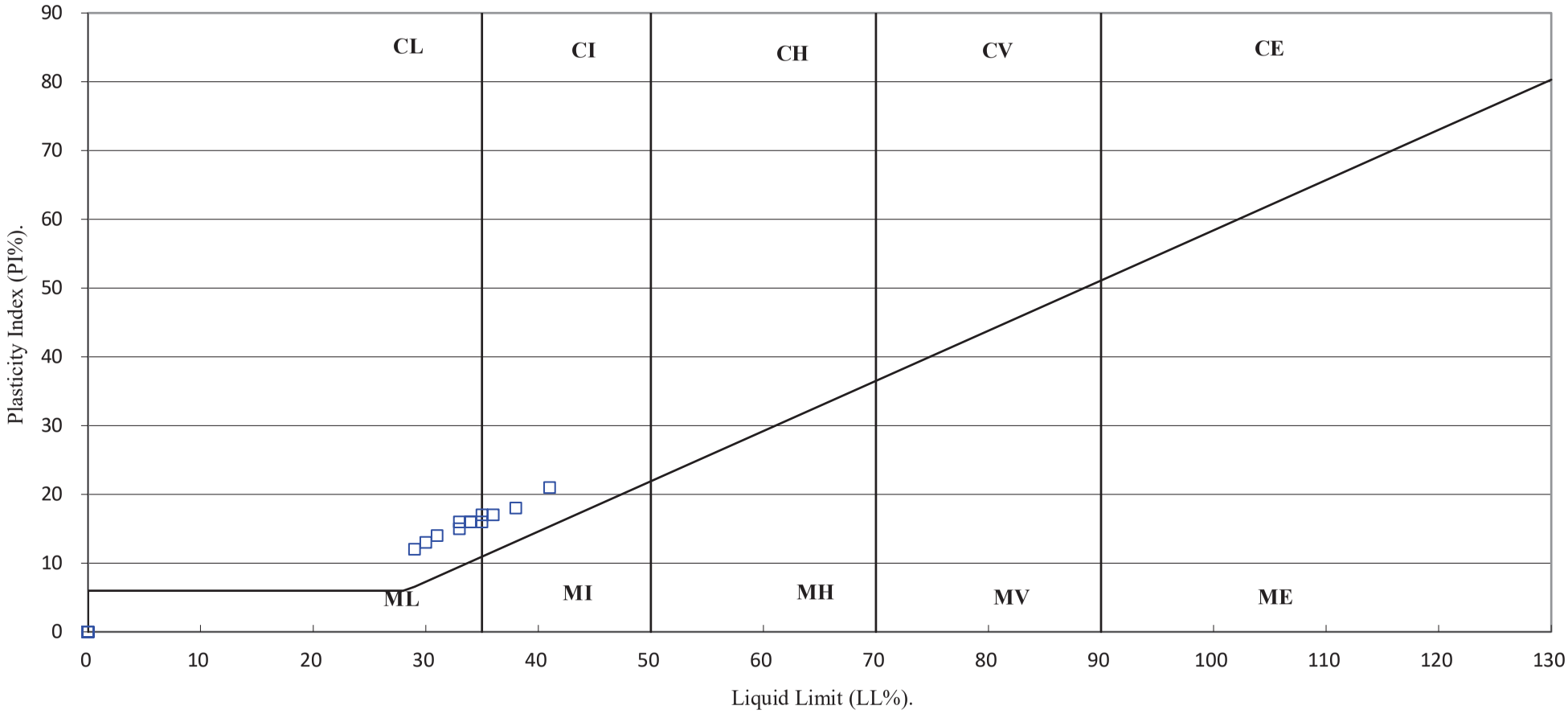
PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

Contract No: PSL23/5623

Client Ref: G230651-GEO38

PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION.



UKAS TESTING 4043 / PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY	A46 Walsgrave	Contract No: PSL23/5623 Client Ref: G230651-GEO38

SUMMARY OF SOIL DENSITY RELATED TESTS

(BS1377 : PART 2 & 4 : 1990)

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Moisture Content %	Bulk Density Mg/m^3	Dry Density Mg/m^3	Retained 20mm %	Retained 37.5mm %	Method of compaction kg	Maximum Dry Density Mg/m^3	Minimum Dry Density Mg/m^3	Remarks
BH104	13	B	1.80	2.00	15	2.13	1.85						
BH104	21	D	4.45	4.50	19	2.09	1.76						
BH112	14	D	2.20		15	1.99	1.73						
BH112	18	B	3.50	3.80	3.3	1.84	1.78						
BH112	24	D	7.00		12	1.99	1.78						
BH112	27	D	8.50		12	1.94	1.73						
BH116	14	D	2.20		14	2.10	1.84						
BH116	23	D	5.20		18	2.15	1.82						
BH116	30	D	9.00	9.45	12	2.03	1.81						

UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

Contract No:
PSL23/5623
Client Ref:
G230651-GEO38

SUMMARY OF LABORATORY HAND VANES

(BS1377 : PART 7 : 1990)

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Moisture Content %	Peak Shear Strength kPa	Residual Shear Strength kPa	Remarks
BH104	10	B	1.00	1.20	18	58		
BH104	17	B	2.80	3.00	18	48		
BH104	26	B	7.30	7.50	24	34		
BH116	5	B	0.50		16	97		

* This test is out of our UKAS scope

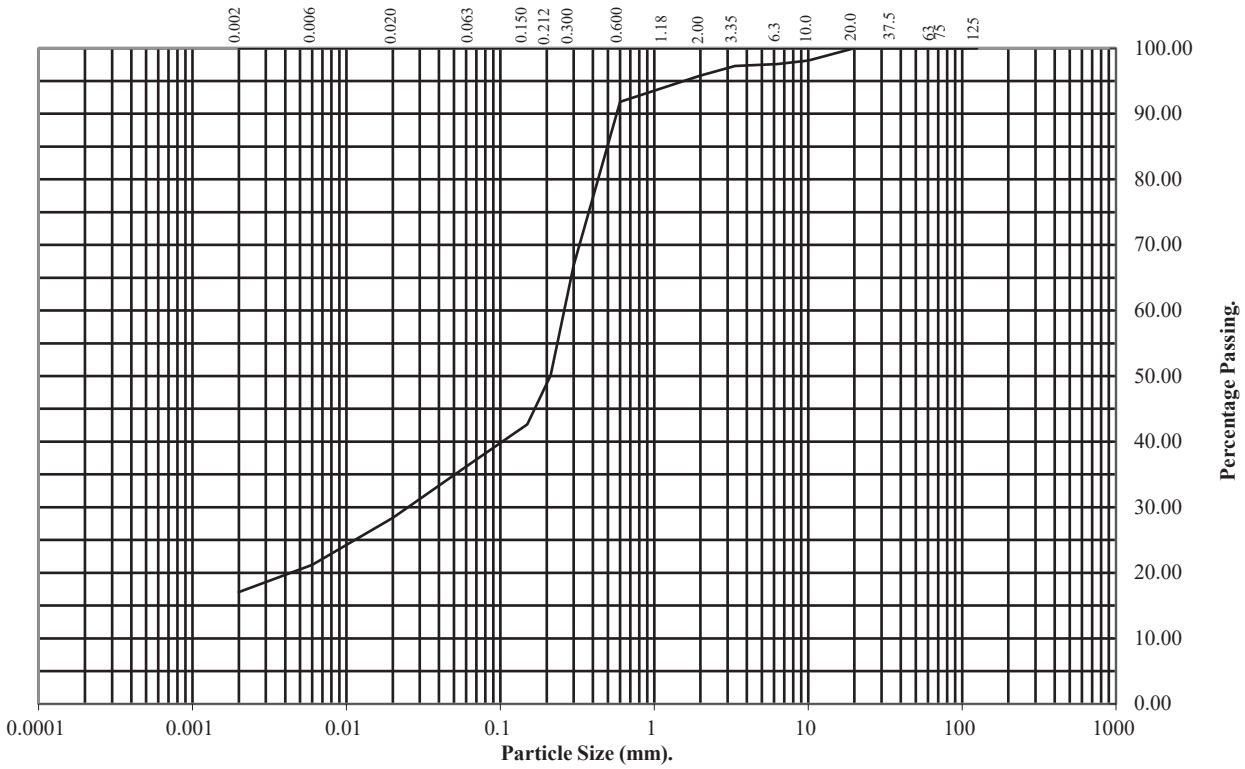
PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY	A46 Walsgrave	Contract No: PSL23/5623 Client Ref: G230651-GEO38

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

Hole Number:	**BH104**	**Top Depth (m):**	**1.00**
Sample Number:	**7**	**Base Depth(m):**	**1.00**
Sample Type:	**D**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	98
6.3	98
3.35	97
2	96
1.18	94
0.6	92
0.3	67
0.212	50
0.15	43
0.063	37

Particle Diameter	Percentage Passing
0.02	28
0.006	21
0.002	17

Soil Fraction	Total Percentage
Cobbles	0
Gravel	4
Sand	59
Silt	20
Clay	17

Remarks:
See Summary of Soil Descriptions

UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

Contract No: PSL23/5623

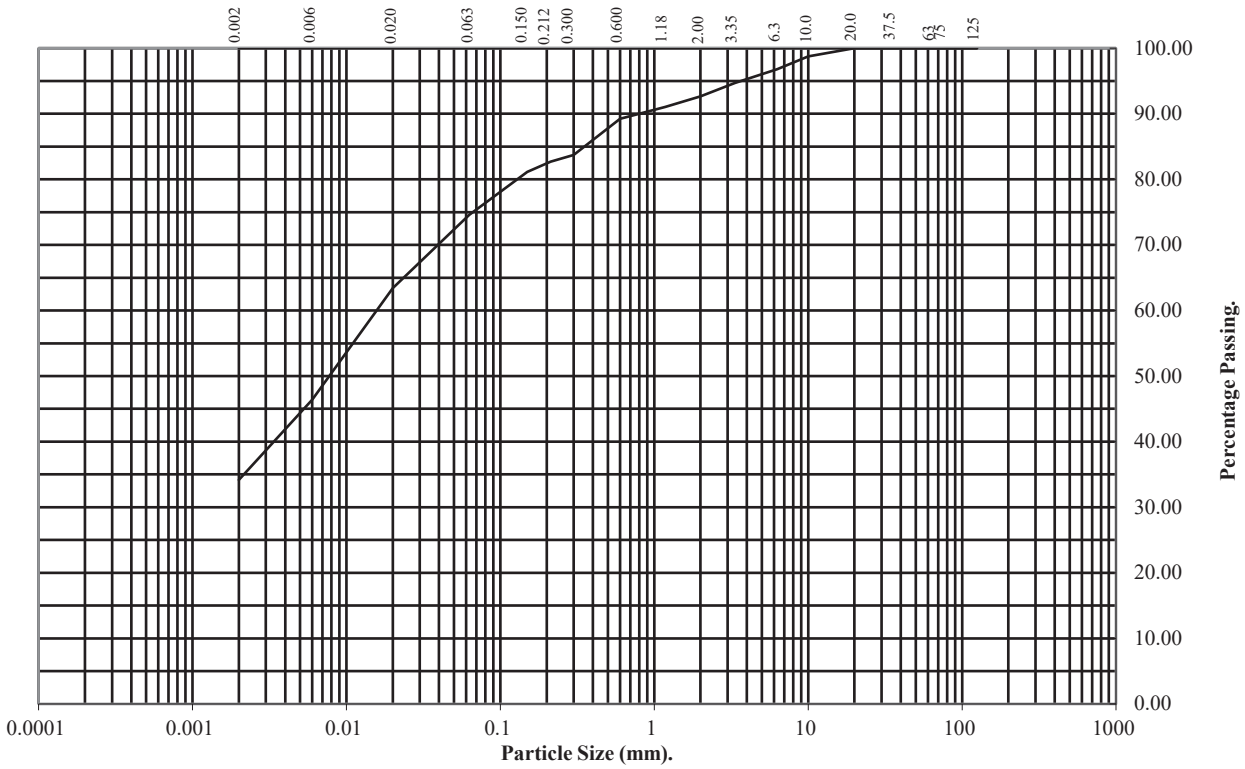
Client Ref: G230651-GEO3

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

Hole Number:	**BH104**	**Top Depth (m):**	**3.00**
Sample Number:	**18**	**Base Depth(m):**	**3.55**
Sample Type:	**D**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	99
6.3	97
3.35	95
2	93
1.18	91
0.6	89
0.3	84
0.212	83
0.15	81
0.063	75

Particle Diameter	Percentage Passing
0.02	63
0.006	46
0.002	34

Soil Fraction	Total Percentage
Cobbles	0
Gravel	7
Sand	18
Silt	41
Clay	34

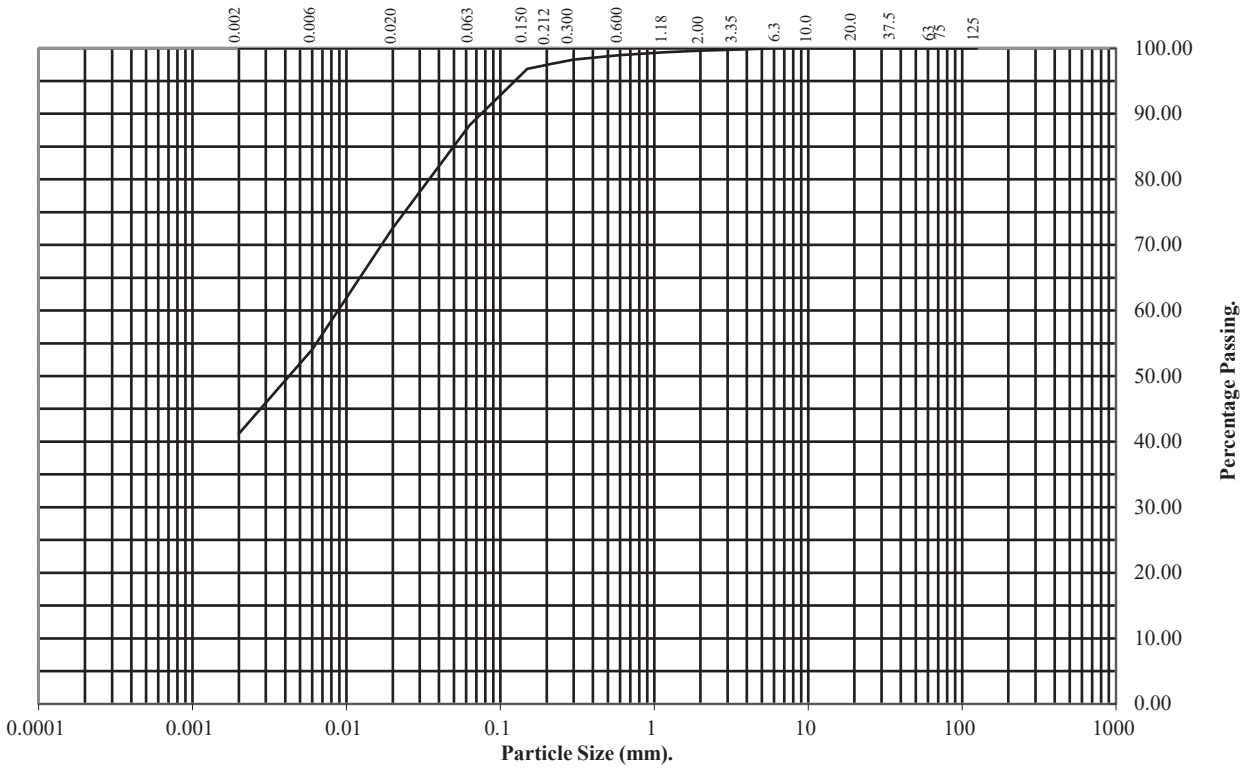
Remarks:
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

Hole Number:	**BH104**	**Top Depth (m):**	**5.00**
Sample Number:	**23**	**Base Depth(m):**	**5.45**
Sample Type:	**D**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	100
6.3	100
3.35	100
2	100
1.18	99
0.6	99
0.3	98
0.212	98
0.15	97
0.063	88

Particle Diameter	Percentage Passing
0.02	73
0.006	54
0.002	41

Soil Fraction	Total Percentage
Cobbles	0
Gravel	0
Sand	12
Silt	47
Clay	41

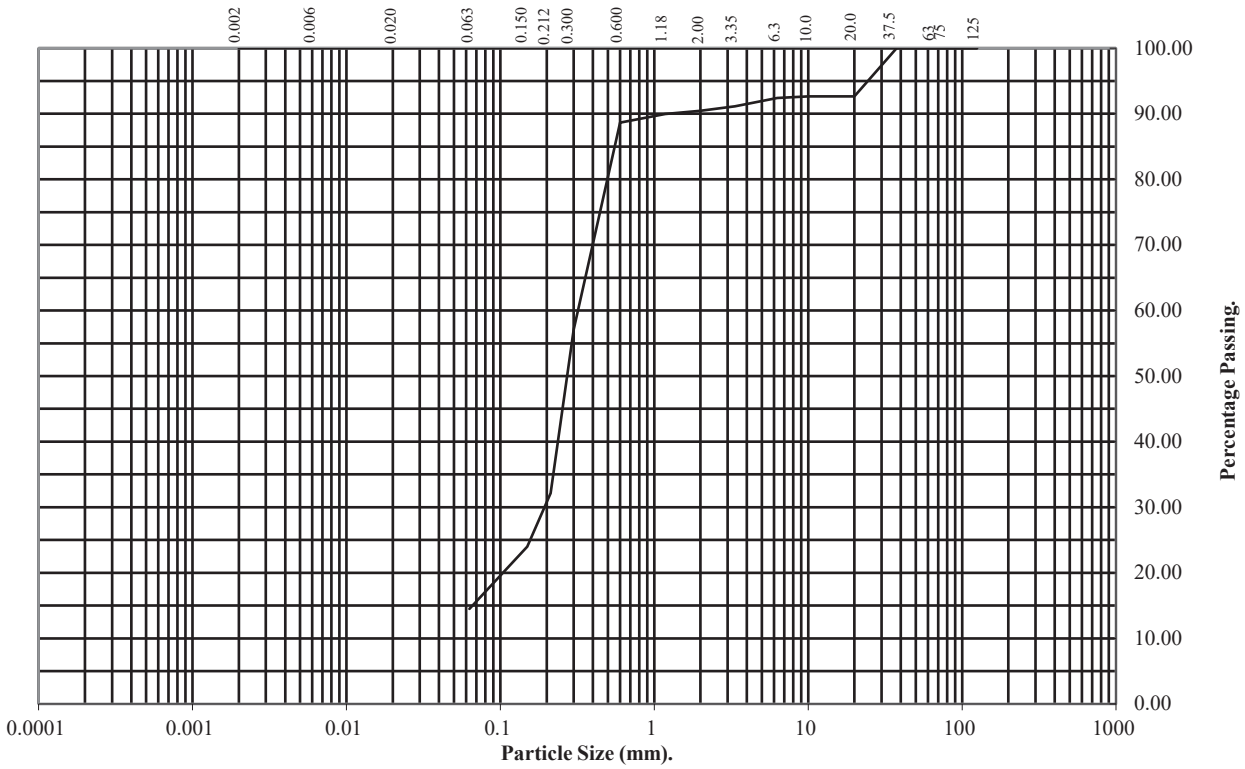
Remarks:
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number:	**BH112**	**Top Depth (m):**	**1.00**
Sample Number:	**7**	**Base Depth(m):**	
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	93
10	93
6.3	92
3.35	91
2	90
1.18	90
0.6	89
0.3	57
0.212	32
0.15	24
0.063	14

Soil Fraction	Total Percentage
Cobbles	0
Gravel	10
Sand	76
Silt/Clay	14

Remarks:
See Summary of Soil Descriptions

UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

Contract No: PSL23/5623

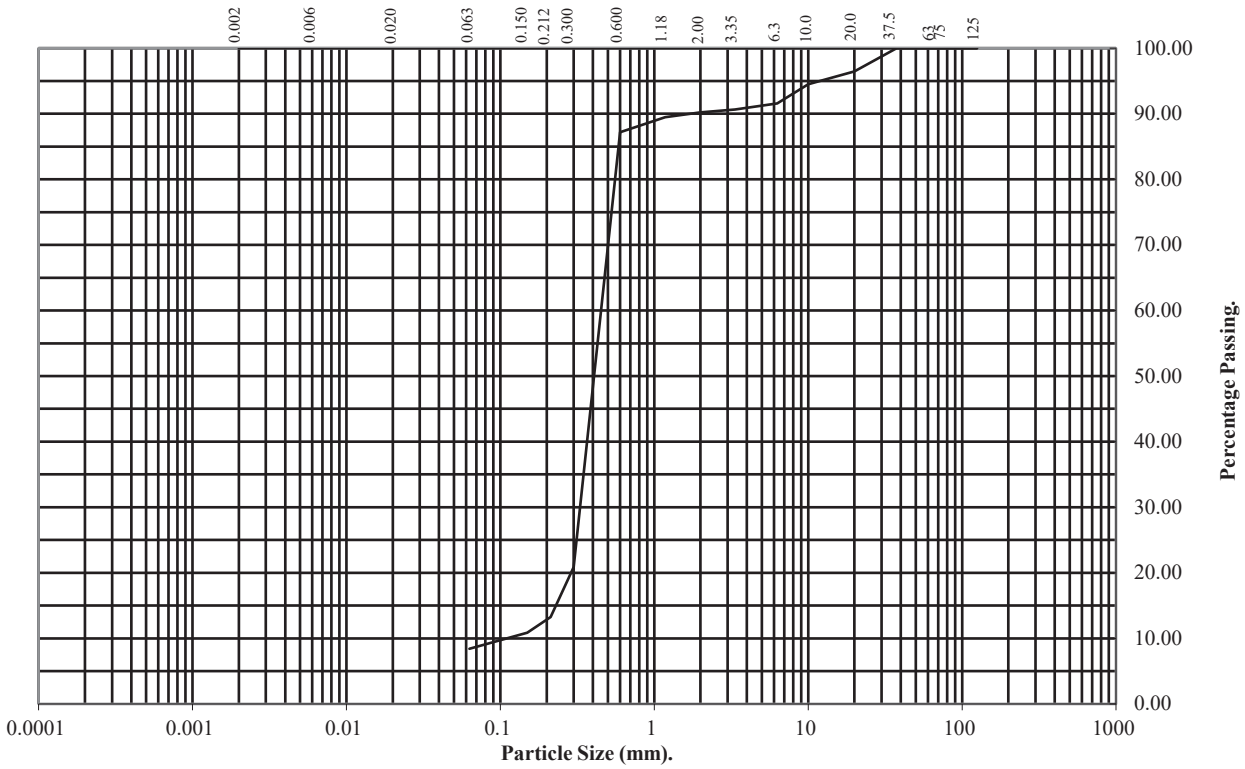
Client Ref: G230651-GEO3

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number:	**BH112**	**Top Depth (m):**	**2.50**
Sample Number:	**16**	**Base Depth(m):**	**3.00**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	96
10	94
6.3	92
3.35	91
2	90
1.18	89
0.6	87
0.3	21
0.212	13
0.15	11
0.063	8

Soil Fraction	Total Percentage
Cobbles	0
Gravel	10
Sand	82
Silt/Clay	8

Remarks:
See Summary of Soil Descriptions

UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

Contract No: PSL23/5623

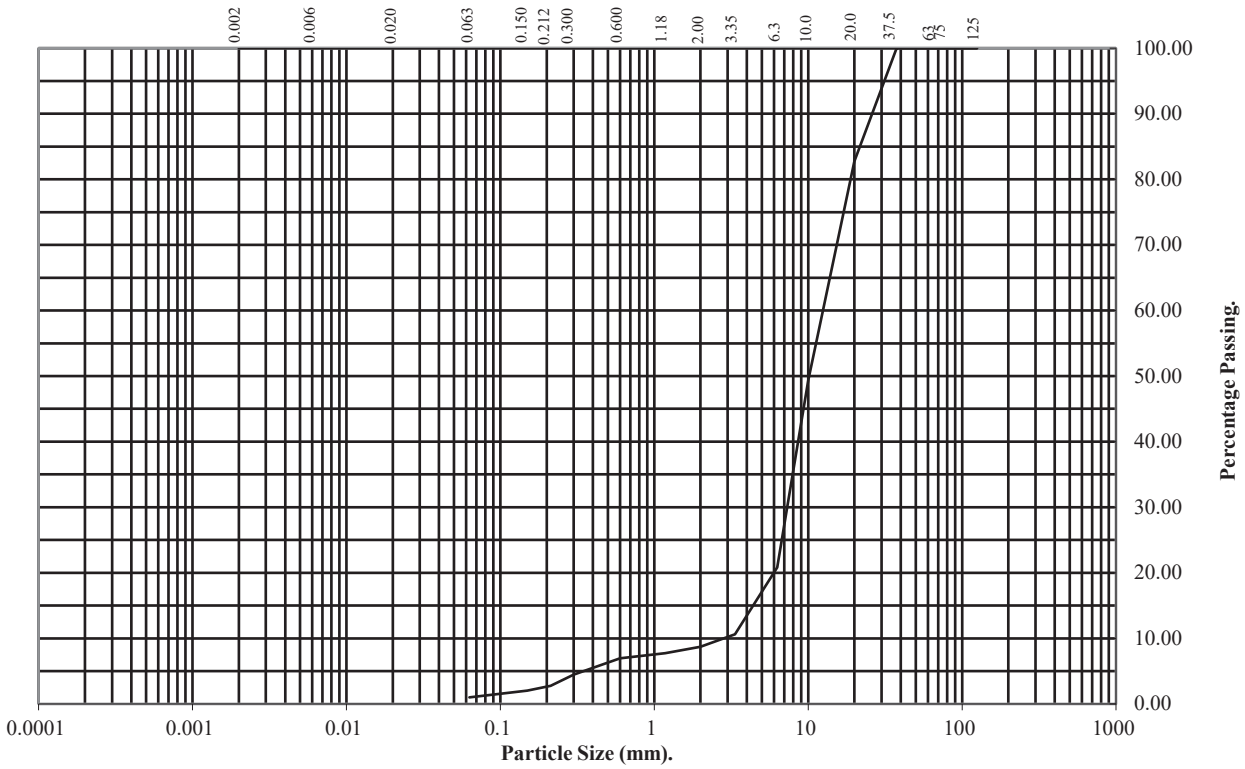
Client Ref: G230651-GEO3

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number:	**BH112**	**Top Depth (m):**	**3.80**
Sample Number:	**19**	**Base Depth(m):**	**4.20**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	83
10	49
6.3	21
3.35	11
2	9
1.18	8
0.6	7
0.3	4
0.212	3
0.15	2
0.063	1

Soil Fraction	Total Percentage
Cobbles	0
Gravel	91
Sand	8
Silt/Clay	1

Remarks:
See Summary of Soil Descriptions

UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

Contract No: PSL23/5623

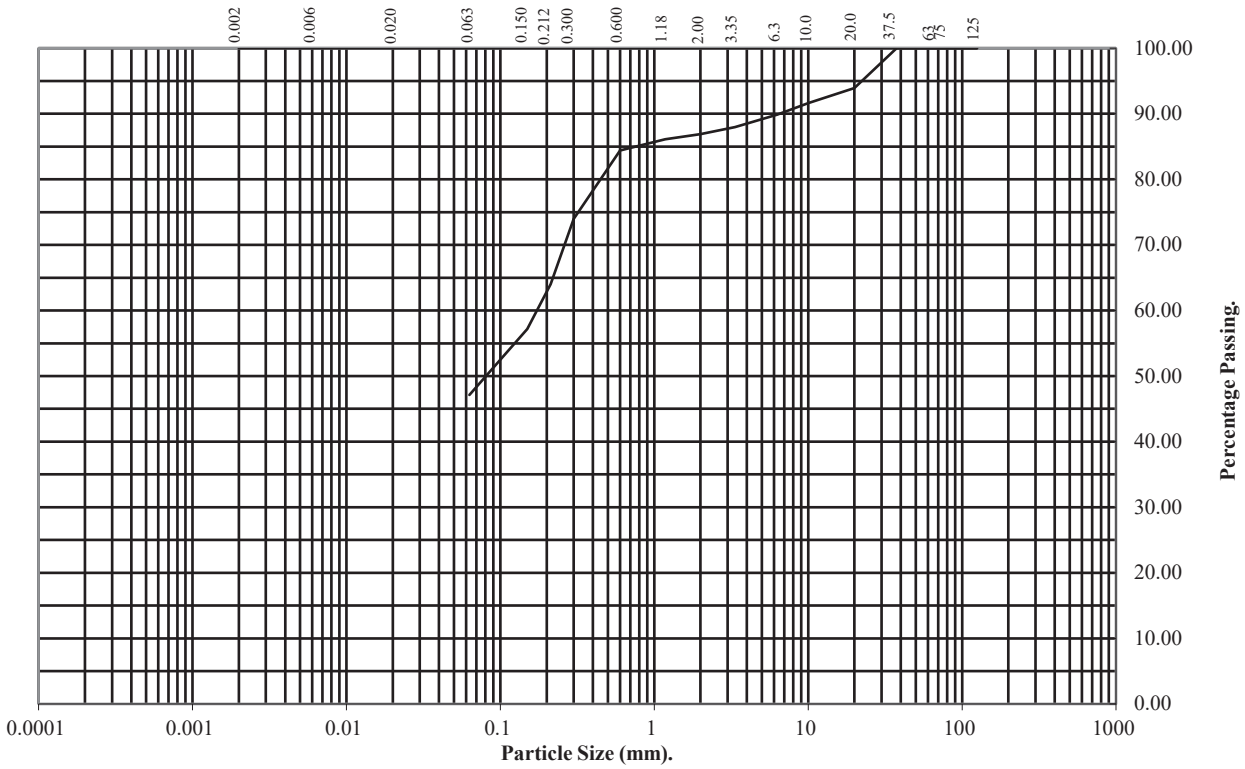
Client Ref: G230651-GEO3

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number:	**BH116**	**Top Depth (m):**	**2.50**
Sample Number:	**16**	**Base Depth(m):**	**3.00**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	94
10	92
6.3	90
3.35	88
2	87
1.18	86
0.6	84
0.3	74
0.212	64
0.15	57
0.063	47

Soil Fraction	Total Percentage
Cobbles	0
Gravel	13
Sand	40
Silt/Clay	47

Remarks:
See Summary of Soil Descriptions

UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

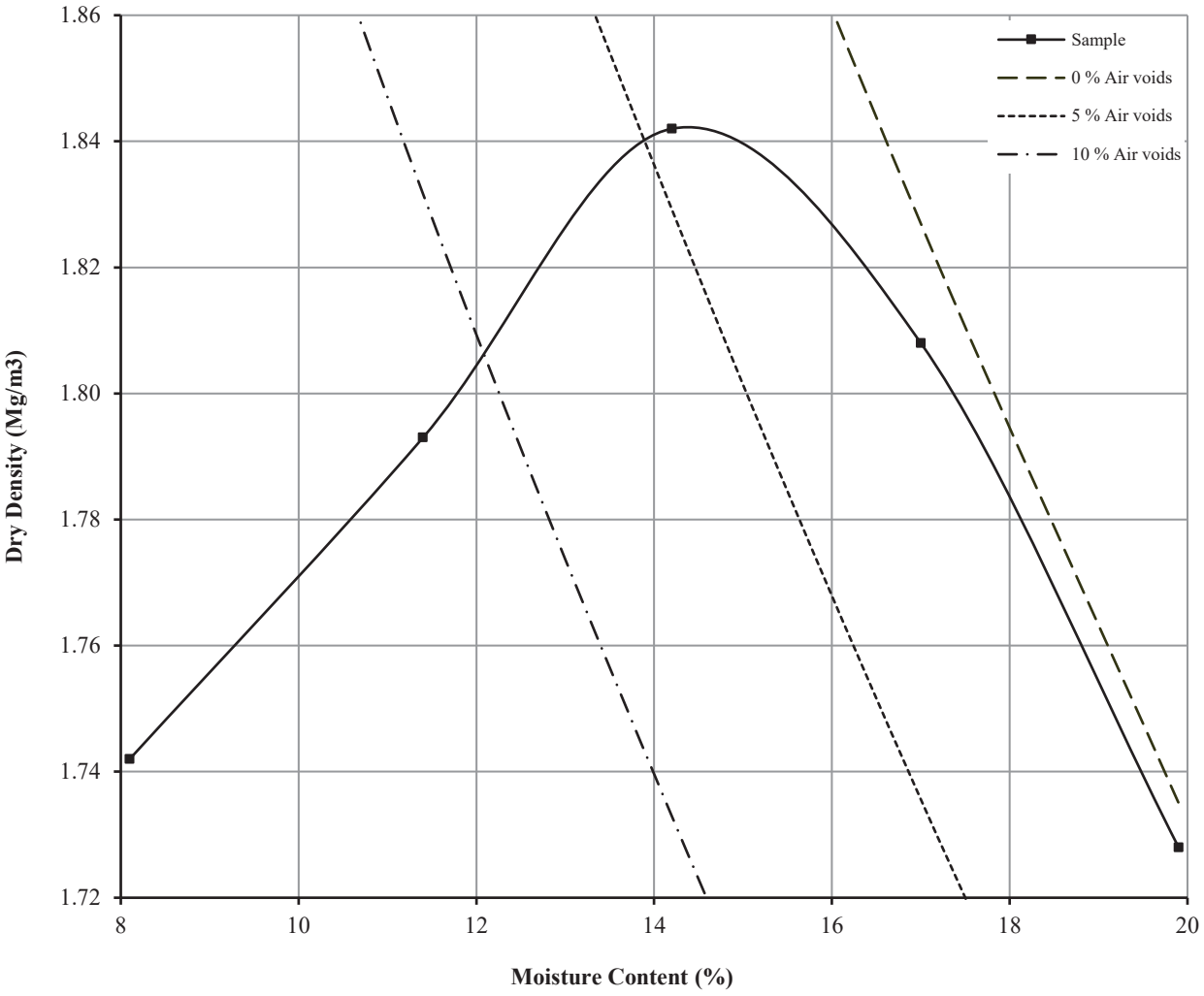
Contract No: PSL23/5623

Client Ref: G230651-GEO3

DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

BS 1377 : Part 4 : Clause 3.4 : 1990

Hole Number:	**BH104**	**Top Depth (m) :**	**0.70**
Sample Number:	**9**	**Base Depth (m) :**	**0.80**
Sample Type:	**B**		



Initial Moisture Content:		20	Method of Compaction:	2.5kg	Separate Samples
Particle Density (Mg/m3):	2.65	Assumed	Material Retained on 37.5 mm Test Sieve (%):		8
Maximum Dry Density (Mg/m3):		1.84	Material Retained on 20.0 mm Test Sieve (%):		7
Optimum Moisture Content (%):		14			
Remarks See summary of soil descriptions					

UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

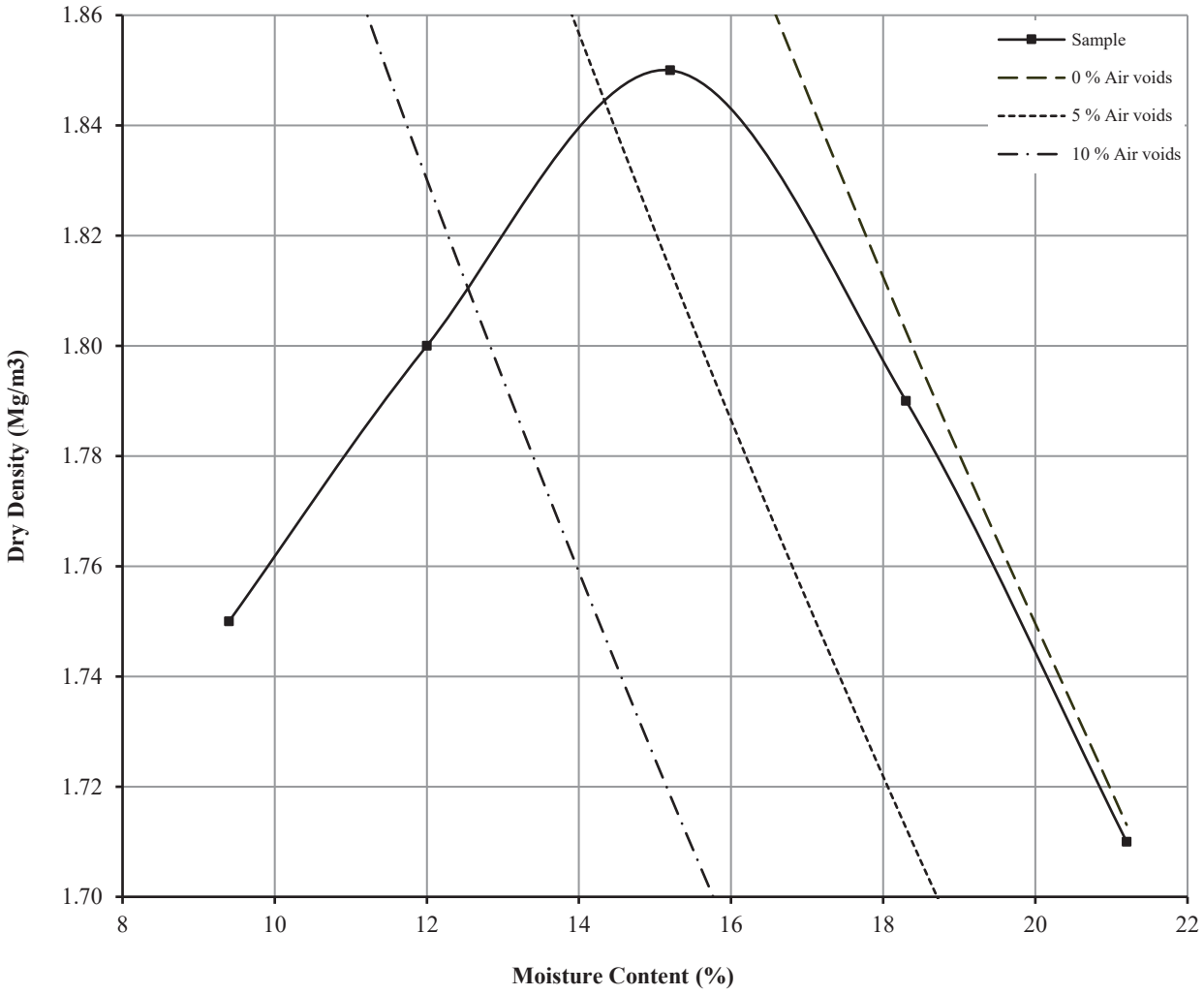
A46 Walsgrave

Contract
PSL23/5623
Client Ref
230651-GEO

DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

BS 1377 : Part 4 : Clause 3.3 : 1990

Hole Number:	**BH104**	**Top Depth (m) :**	**1.80**
Sample Number:	**13**	**Base Depth (m) :**	**2.00**
Sample Type:	**B**		

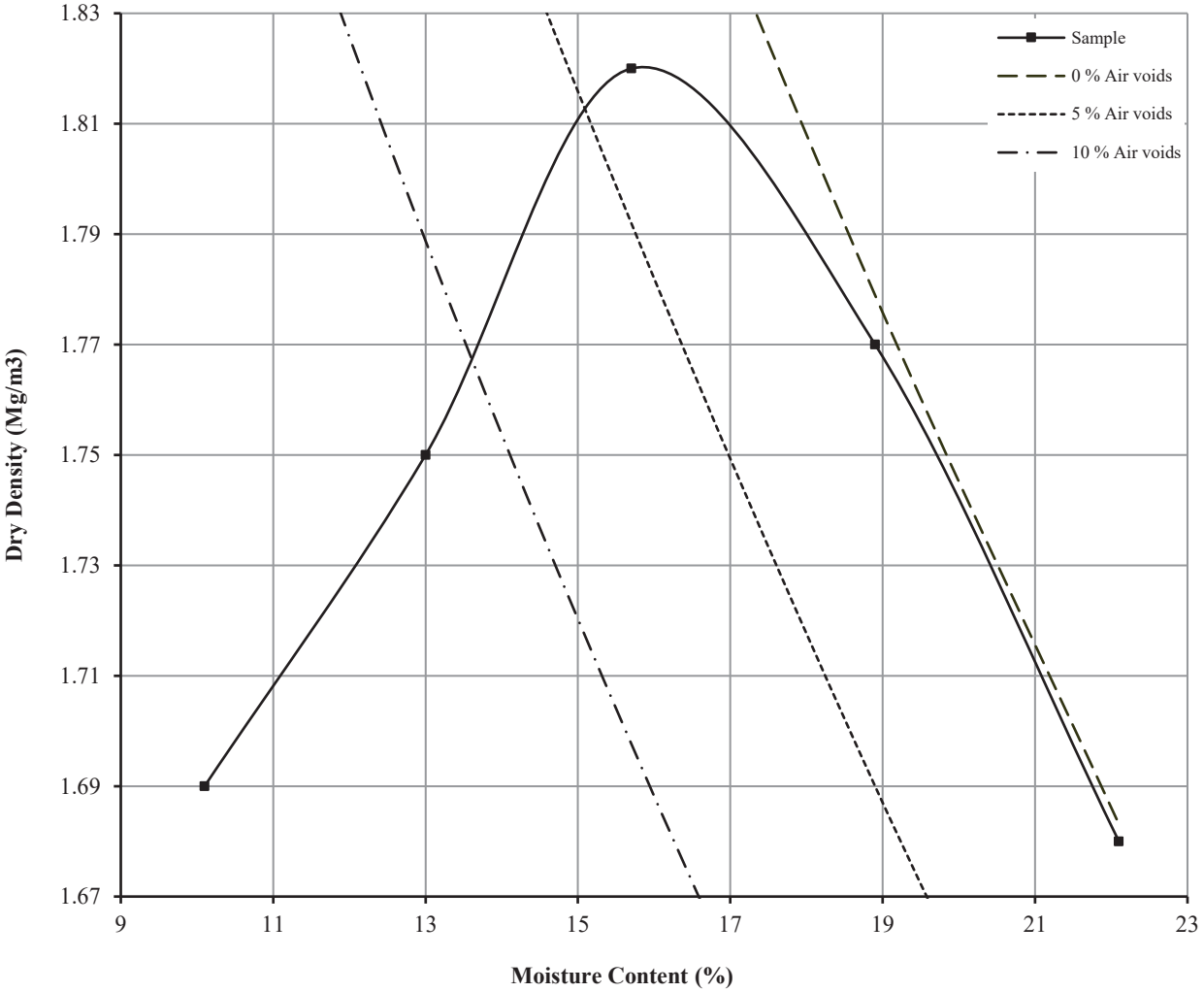


Initial Moisture Content:		15	Method of Compaction:	2.5kg	Separate Samples
Particle Density (Mg/m3):	2.69	Assumed	Material Retained on 37.5 mm Test Sieve (%):		0
Maximum Dry Density (Mg/m3):		1.85	Material Retained on 20.0 mm Test Sieve (%):		4
Optimum Moisture Content (%):		15			
Remarks See summary of soil descriptions					

DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

BS 1377 : Part 4 : Clause 3.3 : 1990

Hole Number:	**BH116**	**Top Depth (m) :**	**0.50**
Sample Number:	**5**	**Base Depth (m) :**	**0.50**
Sample Type:	**B**		



Initial Moisture Content:		16	Method of Compaction:	2.5kg	Separate Samples
Particle Density (Mg/m3):	2.68	Assumed	Material Retained on 37.5 mm Test Sieve (%):		0
Maximum Dry Density (Mg/m3):		1.82	Material Retained on 20.0 mm Test Sieve (%):		3
Optimum Moisture Content (%):		16			
Remarks See summary of soil descriptions					

UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

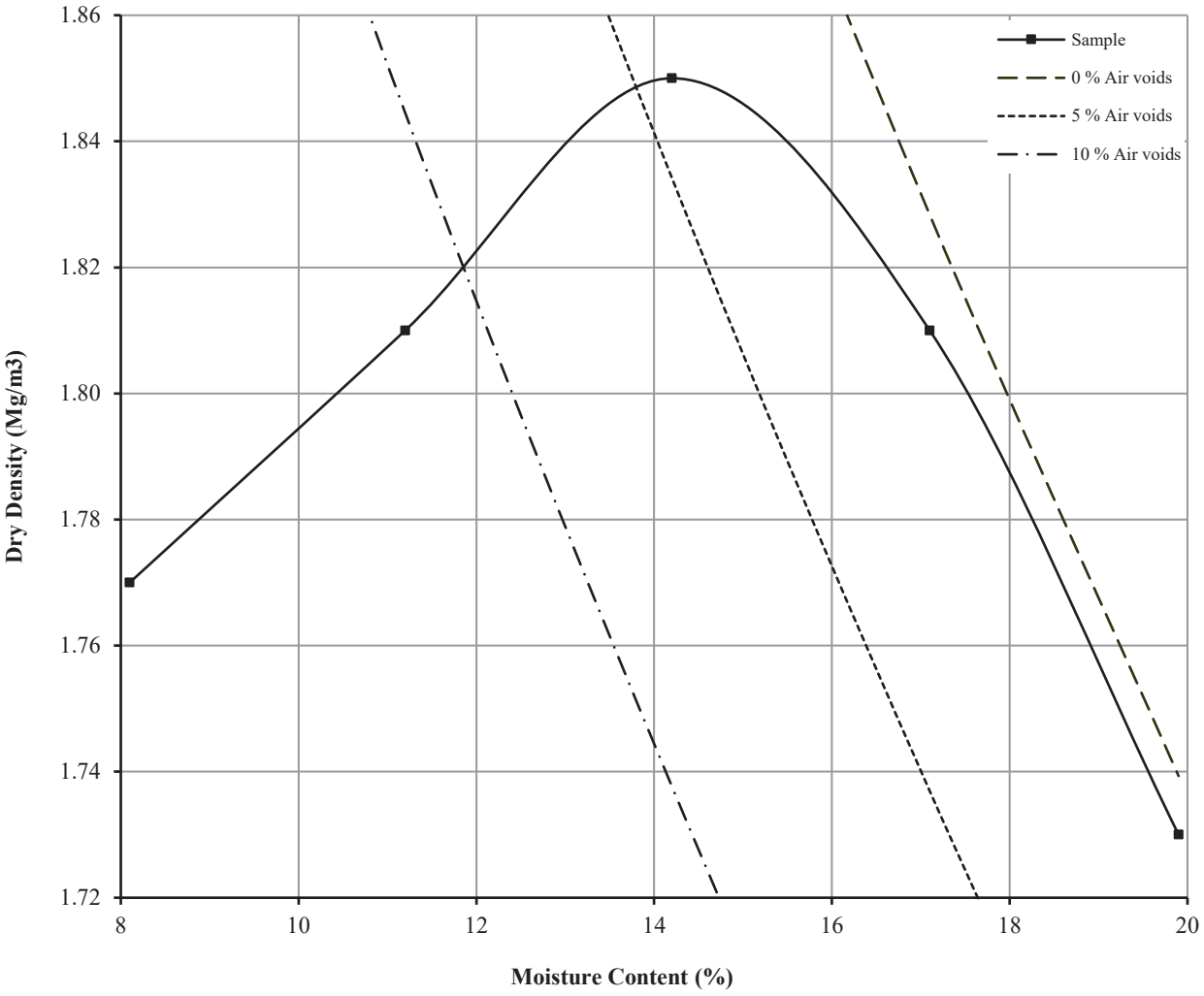
A46 Walsgrave

Contract
PSL23/5623
Client Ref
230651-GEO

DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

BS 1377 : Part 4 : Clause 3.6 : 1990

Hole Number:	**BH116**	**Top Depth (m) :**	**2.50**
Sample Number:	**16**	**Base Depth (m) :**	**3.00**
Sample Type:	**B**		



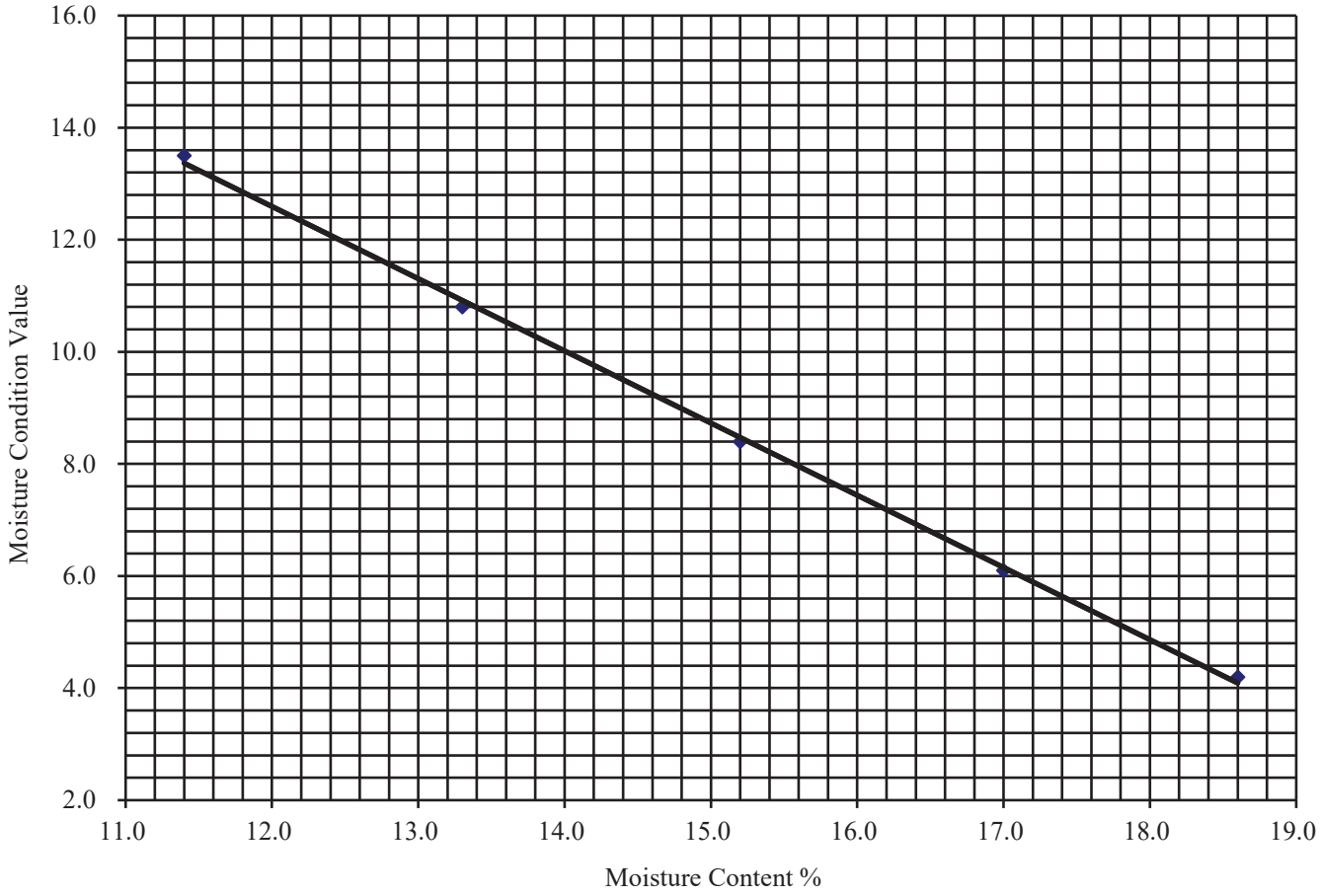
Initial Moisture Content:		17	Method of Compaction:	4.5kg	Separate Samples
Particle Density (Mg/m3):	2.66	Assumed	Material Retained on 37.5 mm Test Sieve (%):		0
Maximum Dry Density (Mg/m3):		1.85	Material Retained on 20.0 mm Test Sieve (%):		6
Optimum Moisture Content (%):		14			
Remarks See summary of soil descriptions					

MOISTURE CONDITION VALUE CALIBRATION

BS1377 : Part 4 : 1990 Clause 5.5

Hole Number:	**BH104**	**Top Depth (m):**	**0.70**
Sample Number:	**9**	**Base Depth (m):**	**0.80**
Sample Type:	**B**		

Initial Moisture Content (%):	20
Single/Separate Samples Tested	Separate
Material Retained on the 20mm BS Test Sieve (%):	15



Test Results.

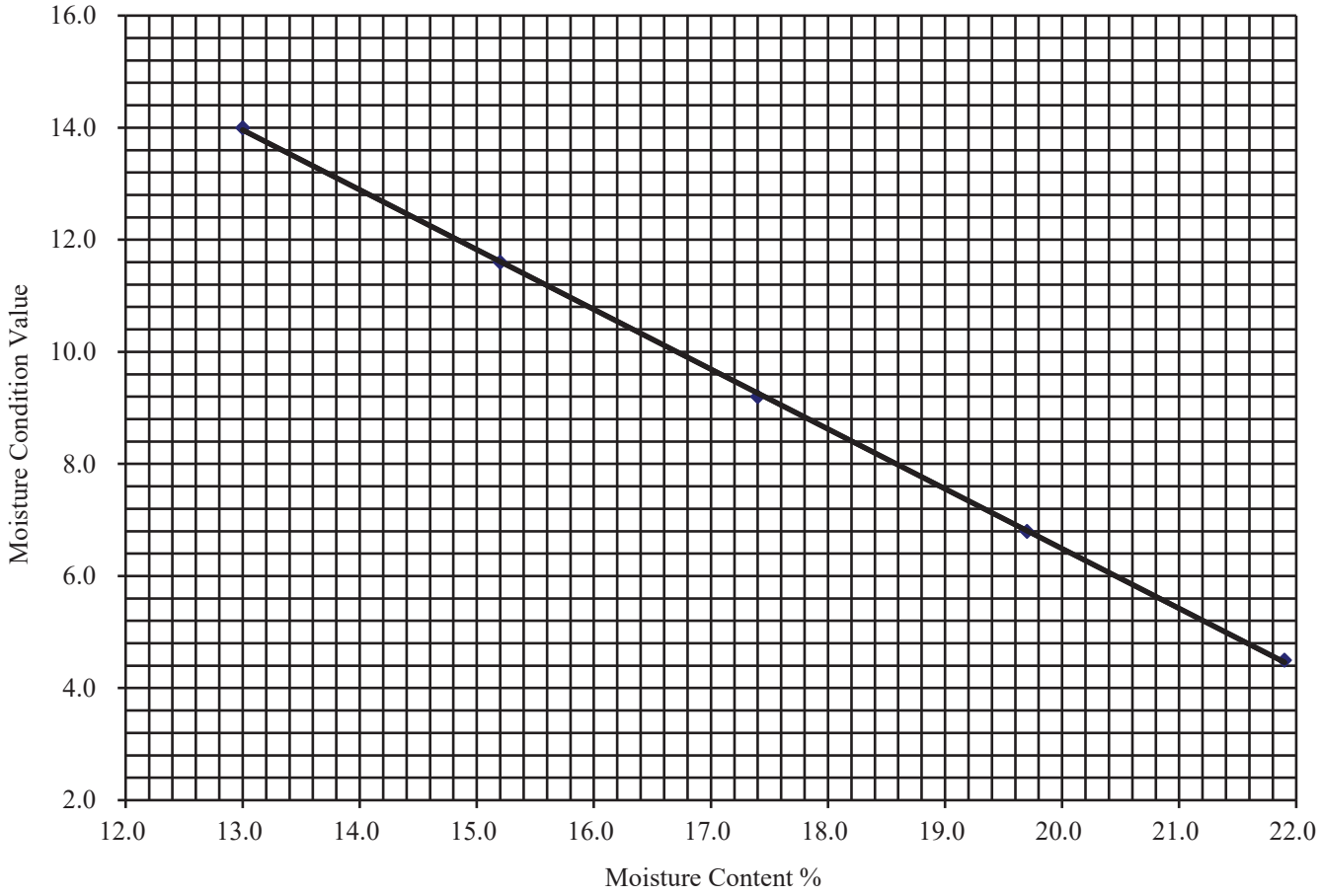
Test Number	1	2	3	4	5
Moisture Content (%)	11.4	13.3	15.2	17.0	18.6
MCV	13.5	10.8	8.4	6.1	4.2

MOISTURE CONDITION VALUE CALIBRATION

BS1377 : Part 4 : 1990 Clause 5.5

Hole Number:	**BH104**	**Top Depth (m):**	**1.80**
Sample Number:	**13**	**Base Depth (m):**	**2.00**
Sample Type:	**B**		

Initial Moisture Content (%):	15
Single/Separate Samples Tested	Separate
Material Retained on the 20mm BS Test Sieve (%):	4



Test Results.

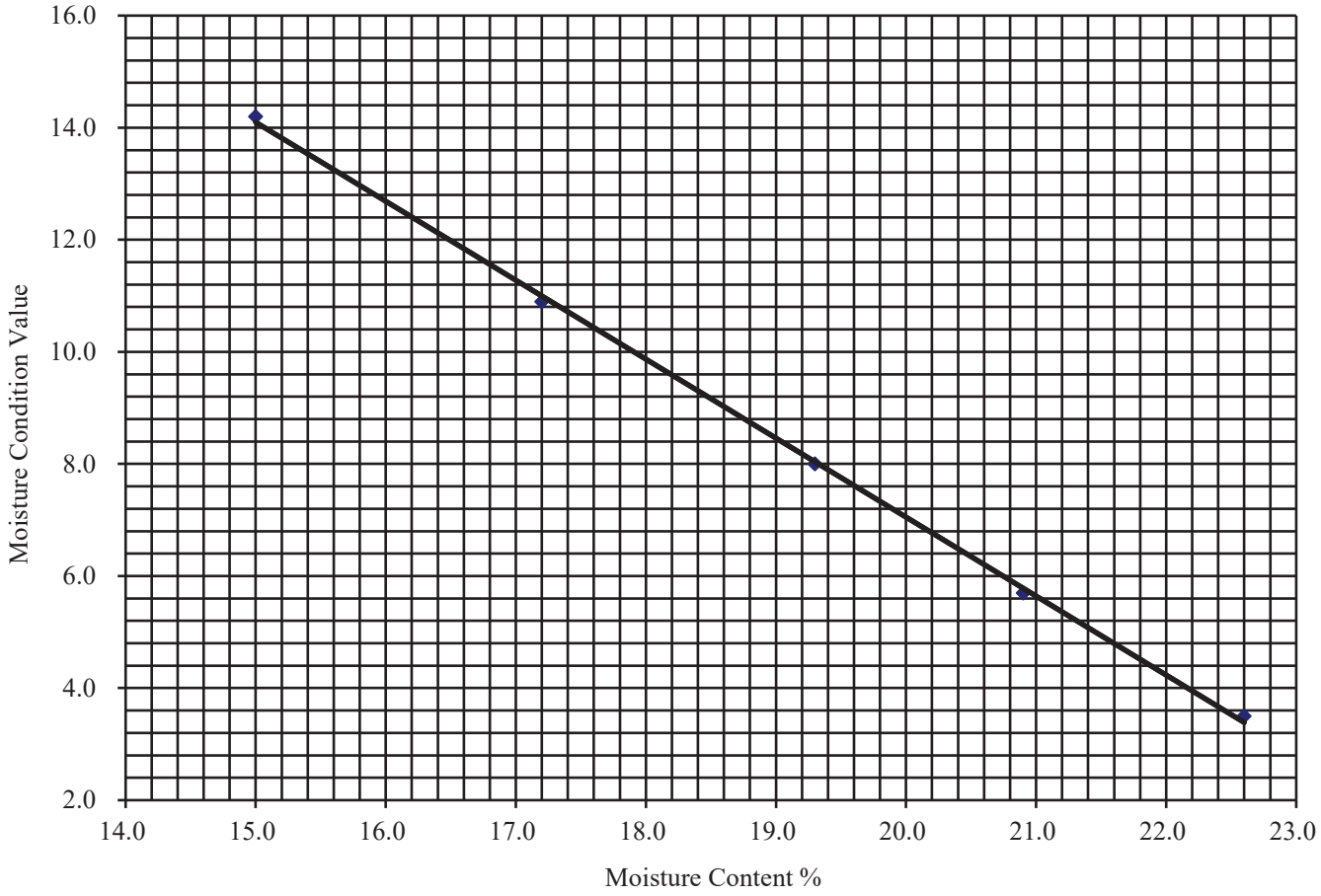
Test Number	1	2	3	4	5
Moisture Content (%)	13.0	15.2	17.4	19.7	21.9
MCV	14.0	11.6	9.2	6.8	4.5

MOISTURE CONDITION VALUE CALIBRATION

BS1377 : Part 4 : 1990 Clause 5.5

Hole Number:	**BH116**	**Top Depth (m):**	**2.50**
Sample Number:	**16**	**Base Depth (m):**	**3.00**
Sample Type:	**B**		

Initial Moisture Content (%):	17
Single/Separate Samples Tested	Separate
Material Retained on the 20mm BS Test Sieve (%):	6



Test Results.

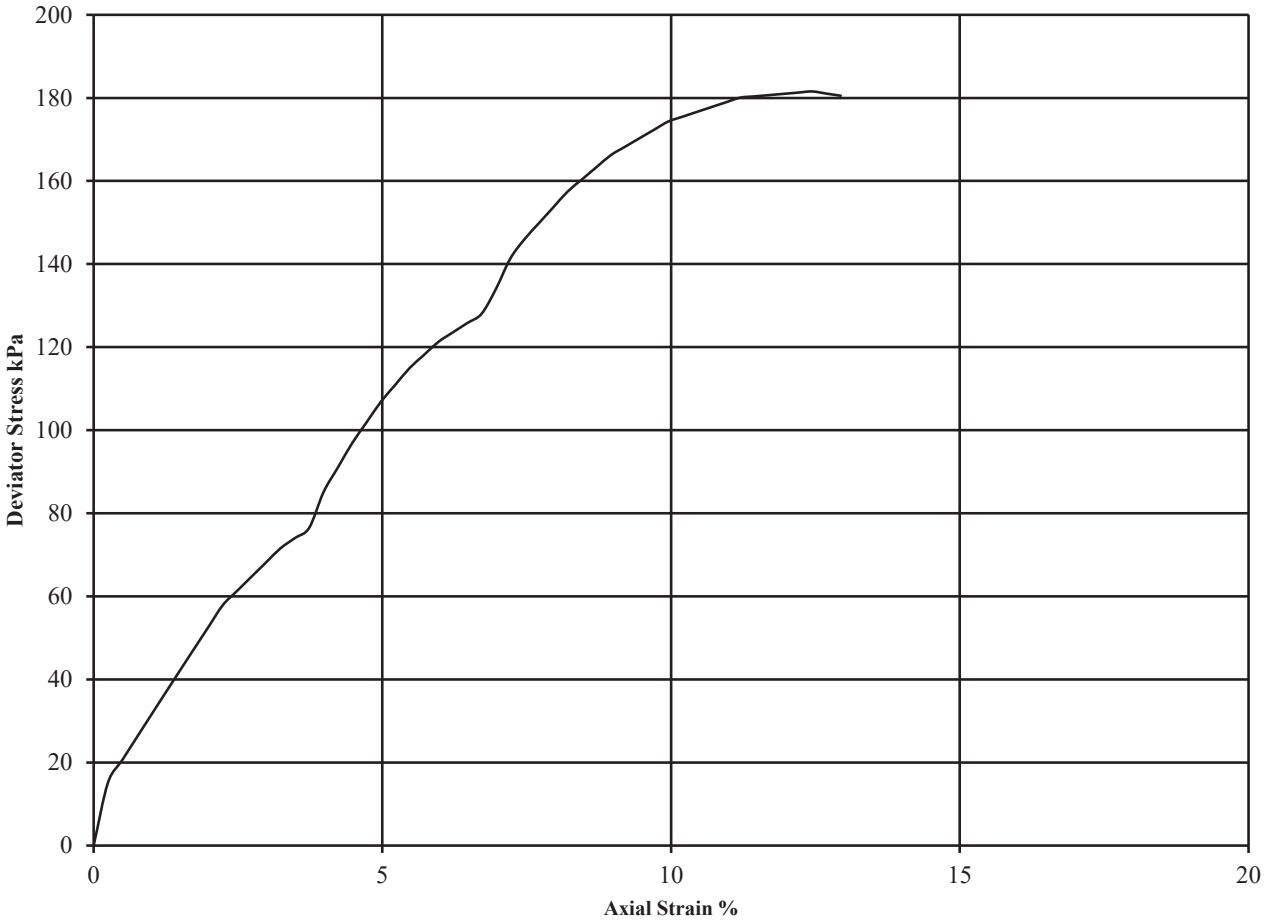
Test Number	1	2	3	4	5
Moisture Content (%)	15.0	17.2	19.3	20.9	22.6
MCV	14.2	10.9	8.0	5.7	3.5

UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION

WITHOUT MEASUREMENT OF PORE PRESSURE

BS1377 : Part7 : 1990: Clause 9

Hole Number:	**BH104**	**Top Depth (m):**	**4.00**
Sample Number:	**20**	**Base Depth (m):**	**4.45**
Sample Type	**UT**		



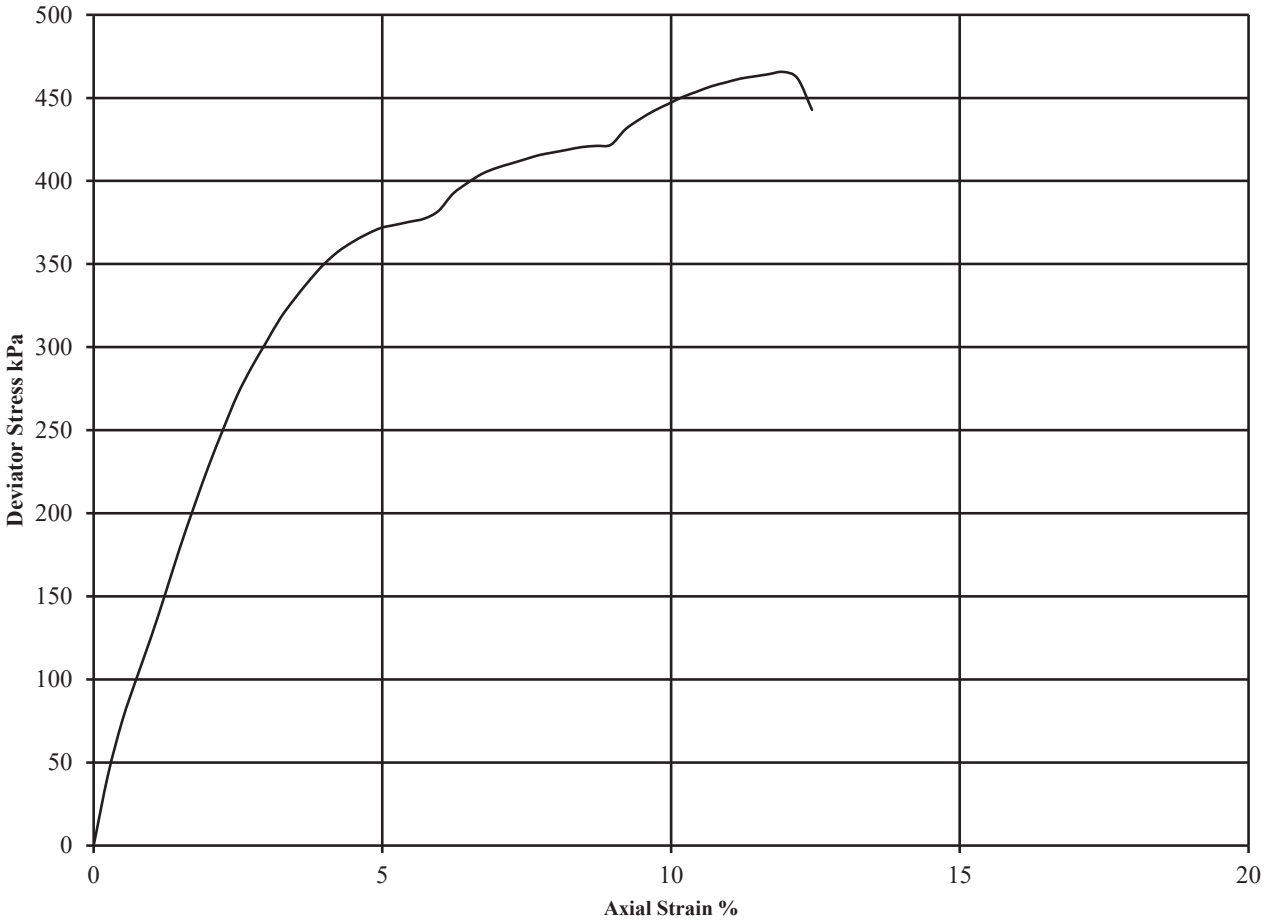
Diameter (mm):		103	Height (mm):		207	Test:	UU Multistage		Remarks
Specimen	Moisture Content (%)	Bulk Density (Mg/m3)	Dry Density (Mg/m3)	Cell Pressure (kPa) θ_3	Corr. Max. Deviator Stress (kPa) $(\theta_1-\theta_3)_f$	Shear Strength Cu (kPa) $^1/_2(\theta_1-\theta_3)_f$	Failure Strain (%)	Mode of Failure	Undisturbed Sample Sample taken from top of tube Rate of strain = 2 %/min Latex Membrane used 0.2 mm thick Membrane Correction applied (kPa)
1	20	2.12	1.76	40	76	38	3.7		0.36 0.36 0.35
				80	128	64	6.7		See summary of soil descriptions
				160	182	91	12.4	Plastic	

UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION

WITHOUT MEASUREMENT OF PORE PRESSURE

BS1377 : Part7 : 1990: Clause 9

Hole Number:	**BH112**	**Top Depth (m):**	**5.50**
Sample Number:	**22**	**Base Depth (m):**	**5.95**
Sample Type	**U**		



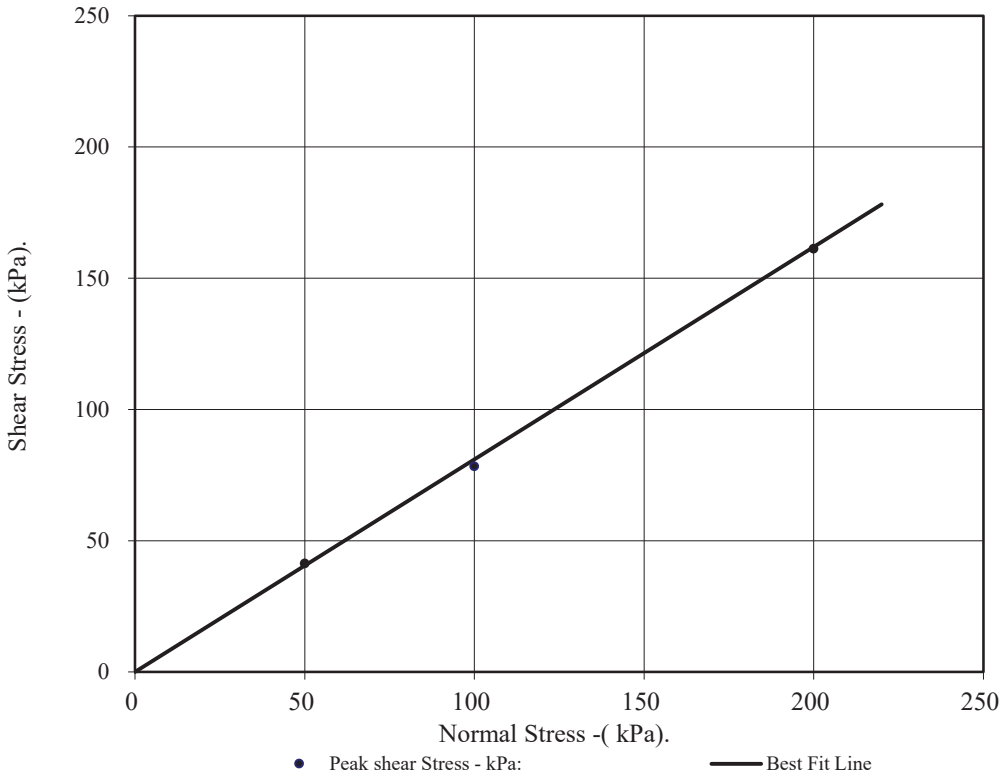
Diameter (mm):		103	Height (mm):		207	Test:	UU Multistage		Remarks
Specimen	Moisture Content (%)	Bulk Density (Mg/m3)	Dry Density (Mg/m3)	Cell Pressure (kPa) θ_3	Corr. Max. Deviator Stress (kPa) $(\theta_1-\theta_3)_f$	Shear Strength Cu (kPa) $^1/_2(\theta_1-\theta_3)_f$	Failure Strain (%)	Mode of Failure	Undisturbed Sample Sample taken from top of tube Rate of strain = 2 %/min Latex Membrane used 0.2 mm thick Membrane Correction applied (kPa)
1	13	2.24	1.98	55	377	189	5.7		0.36 0.35 0.35
				110	422	211	9.0		See summary of soil descriptions
				220	466	233	11.9	Brittle	

CONSOLIDATED DRAINED SHEARBOX TEST

BS1377:Part 7:1990 Clause 5

Hole Number:	**BH112**		Top Depth:	**1.00**
Sample Number:	**7**		Base Depth:	
Sample Conditions:	Dry		Sample Type	**B**
Particle Density - Mg/m3:	2.65	Assumed	**Remarks:**	
Sample Preparation:	Material tested passing 20mm sieve Recompacted using hand tamped effort			
Sample Description:	**See summary of soil descriptions**			

STAGE	**1**	**2**	**3**
Initial Conditions			
Height - mm:	150	150	150
Length - mm:	300	300	300
Moisture Content - %:	9.3	9.3	9.3
Bulk Density - Mg/m3:	1.75	1.75	1.75
Dry Density - Mg/m3:	1.60	1.60	1.60
Voids Ratio:	0.658	0.658	0.658
Normal Pressure- kPa	50	100	200
Consolidation Stage			
Consolidated Height - mm:	149.15	144.34	137.93
Shearing Stage			
Rate of Strain (mm/min)	1.00	1.00	1.00
Displacement at peak shear stress (mm)	29.50	28.50	38.50
Peak shear Stress - kPa:	41	78	161
Final Consolidated Conditions			
Moisture Content - %:	9.2	9.0	8.6
Bulk Density - Mg/m3:	1.76	1.82	1.90
Dry Density - Mg/m3:	1.61	1.67	1.75
Peak			
Angle of Shearing Resistance:(~~θ~~)	**39**		
Effective Cohesion - kPa:	**0**		



UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

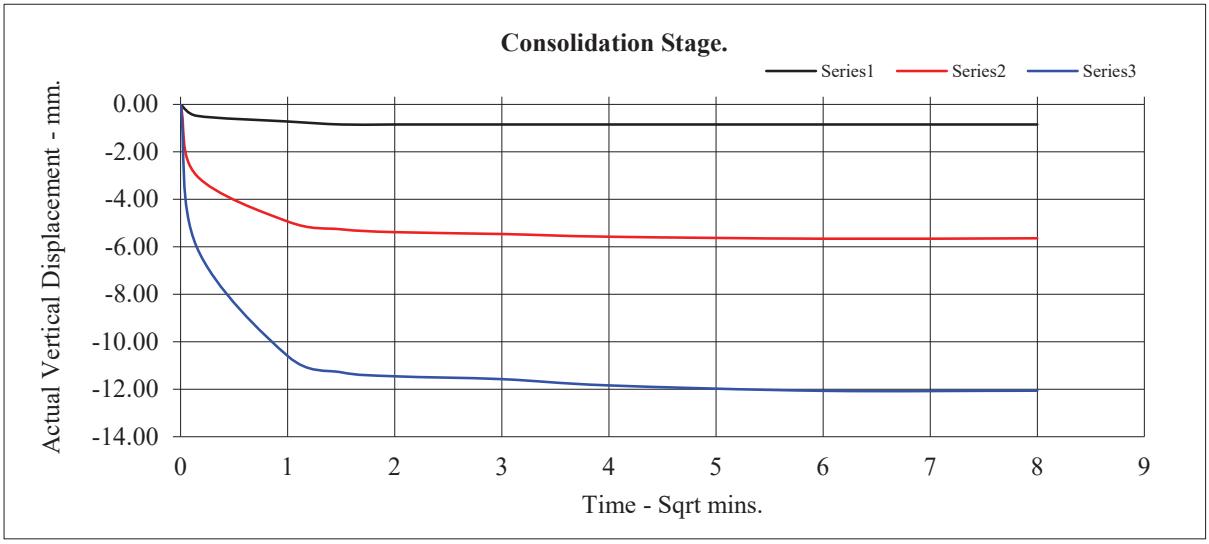
A46 Walsgrave

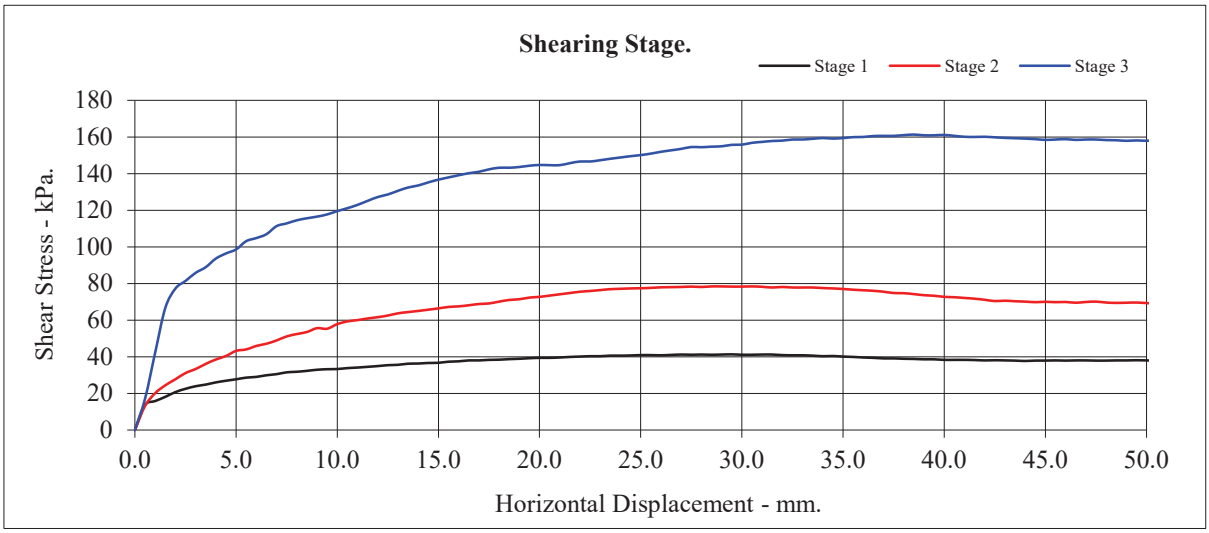
Contract No:
PSL23/5623
Client Ref:
G230651-GEO38

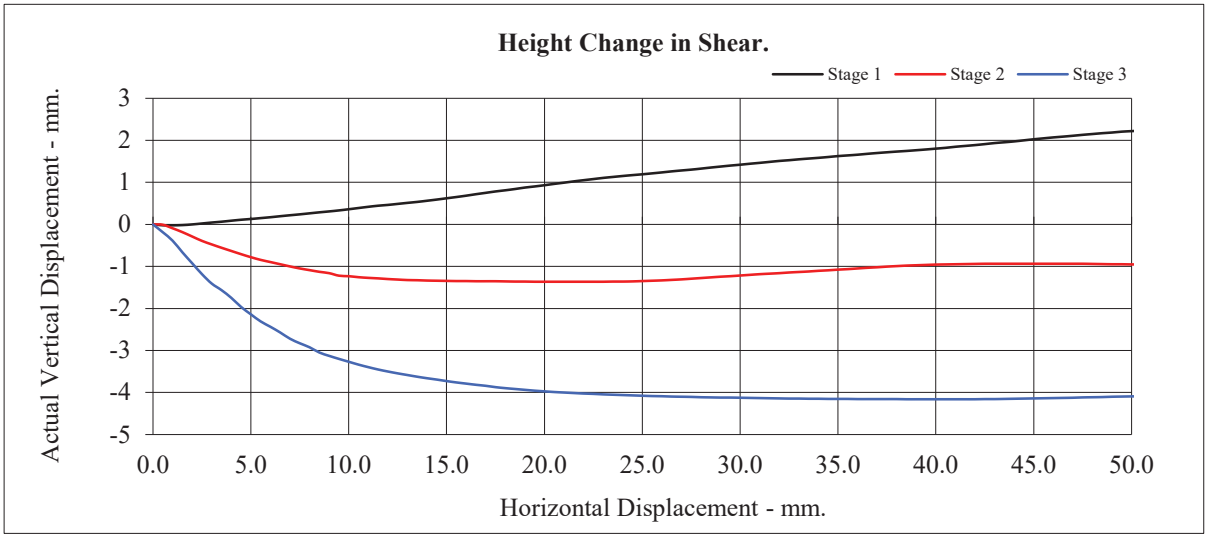
CONSOLIDATED DRAINED SHEARBOX TEST

BS1377:Part 7:1990 Clause 5

Hole Number:	**BH112**	Top Depth:	**1.00**
Sample Number:	**7**	Base Depth:	







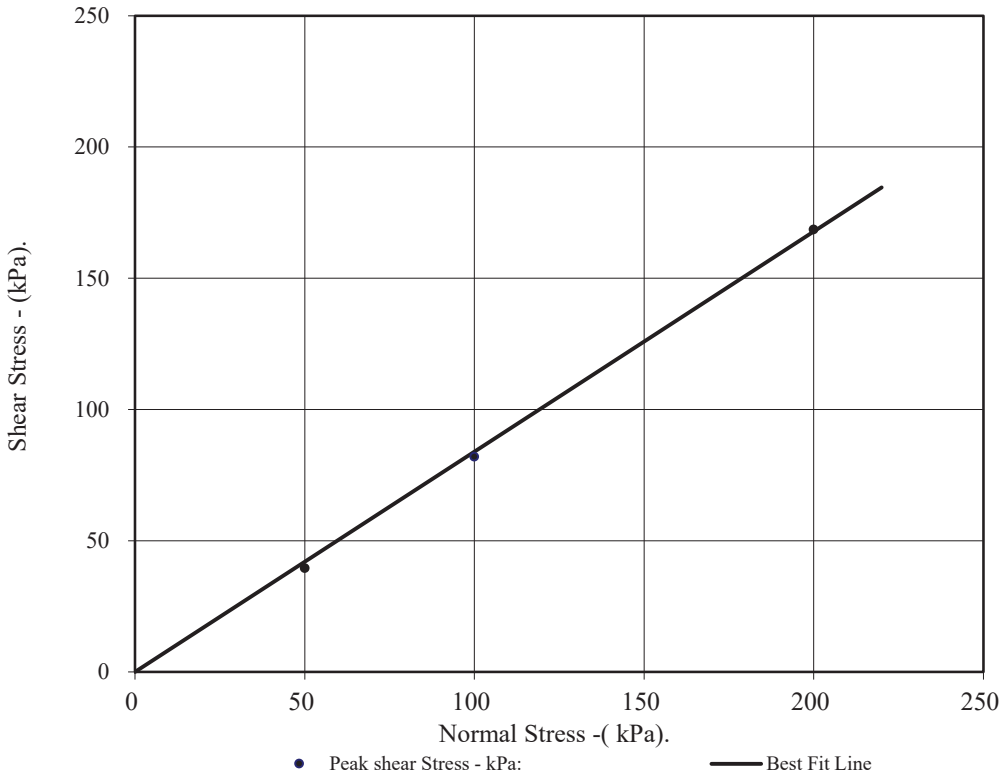
UKAS TESTING 4043 / PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY	**A46 Walsgrave**	**Contract No: PSL23/5623** **Client Ref: G230651-GEO38**

CONSOLIDATED DRAINED SHEARBOX TEST

BS1377:Part 7:1990 Clause 5

Hole Number:	**BH112**		Top Depth:	**2.50**
Sample Number:	**16**		Base Depth:	**3.00**
Sample Conditions:	Dry		Sample Type	**B**
Particle Density - Mg/m3:	2.65	Assumed	**Remarks:**	
Sample Preparation:	Material tested passing 20mm sieve Recompacted using hand tamped effort			
Sample Description:	**See summary of soil descriptions**			

STAGE	**1**	**2**	**3**
Initial Conditions			
Height - mm:	150	150	150
Length - mm:	300	300	300
Moisture Content - %:	11	11	11
Bulk Density - Mg/m3:	1.98	1.98	1.98
Dry Density - Mg/m3:	1.79	1.79	1.79
Voids Ratio:	0.482	0.482	0.482
Normal Pressure- kPa	50	100	200
Consolidation Stage			
Consolidated Height - mm:	147.81	144.55	142.28
Shearing Stage			
Rate of Strain (mm/min)	1.00	1.00	1.00
Displacement at peak shear stress (mm)	11.00	10.00	14.50
Peak shear Stress - kPa:	40	82	169
Final Consolidated Conditions			
Moisture Content - %:	11	10	10
Bulk Density - Mg/m3:	2.01	2.06	2.09
Dry Density - Mg/m3:	1.81	1.86	1.90
Peak			
Angle of Shearing Resistance:(~~θ~~)	**40**		
Effective Cohesion - kPa:	**0**		



UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

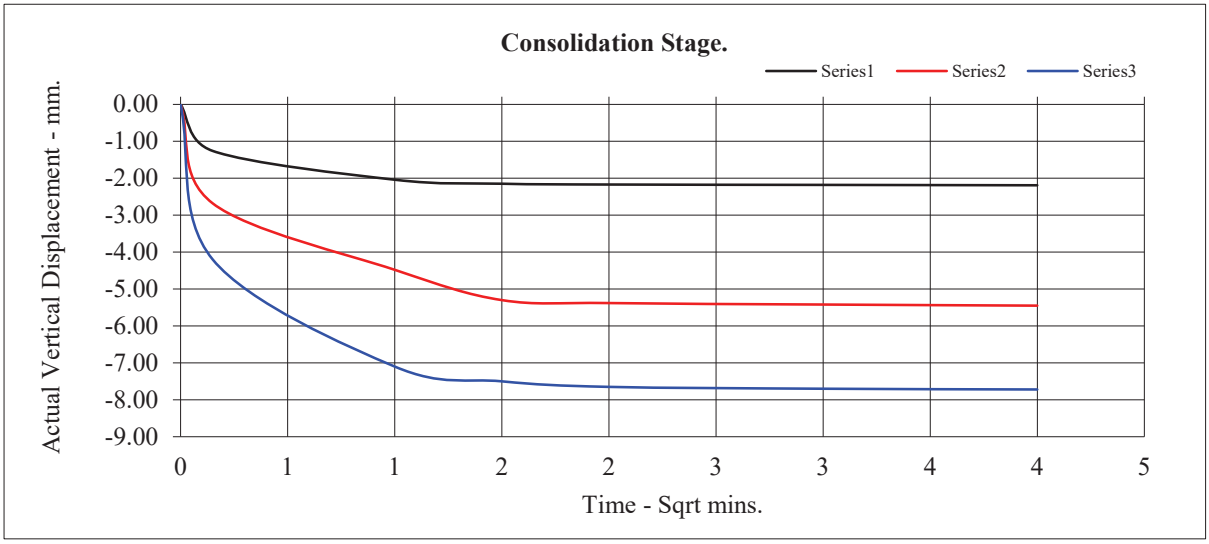
A46 Walsgrave

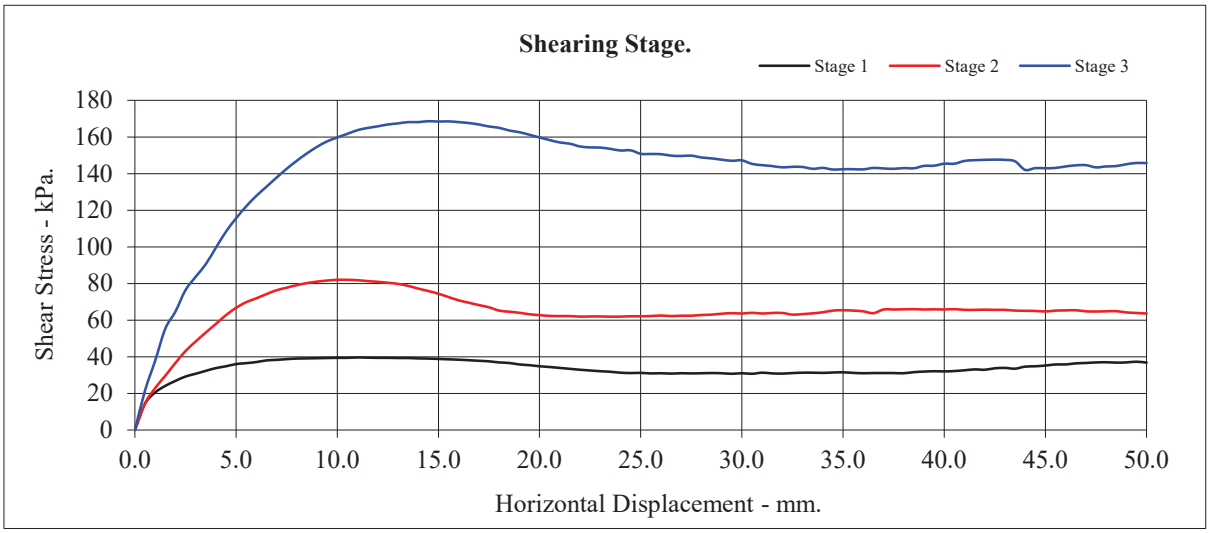
Contract No:
PSL23/5623
Client Ref:
G230651-GEO38

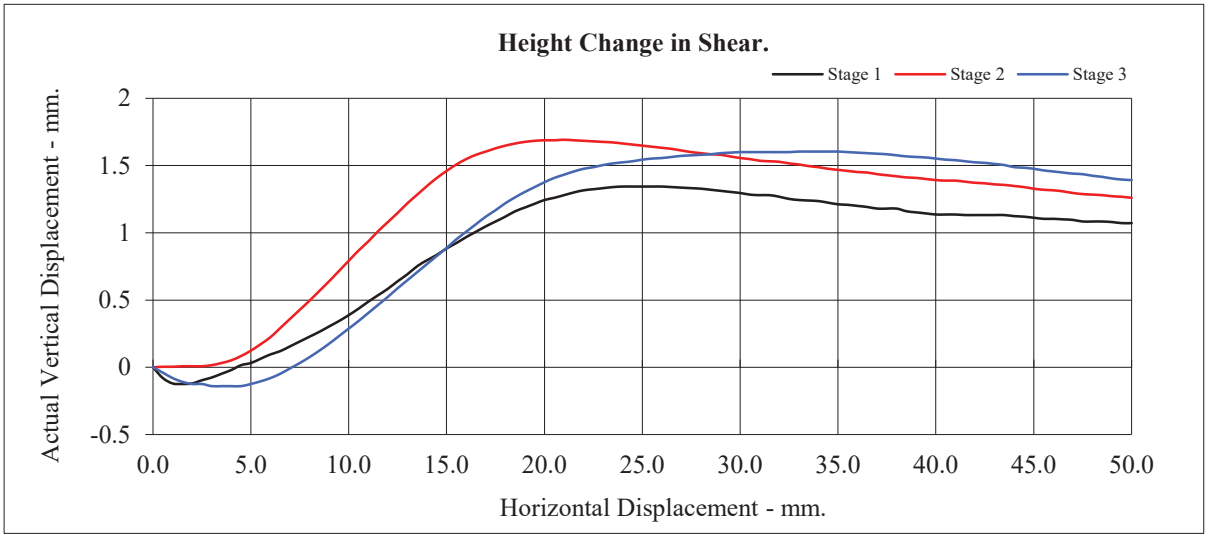
CONSOLIDATED DRAINED SHEARBOX TEST

BS1377:Part 7:1990 Clause 5

Hole Number:	**BH112**	Top Depth:	**2.50**
Sample Number:	**16**	Base Depth:	**3.00**







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PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

Contract No:
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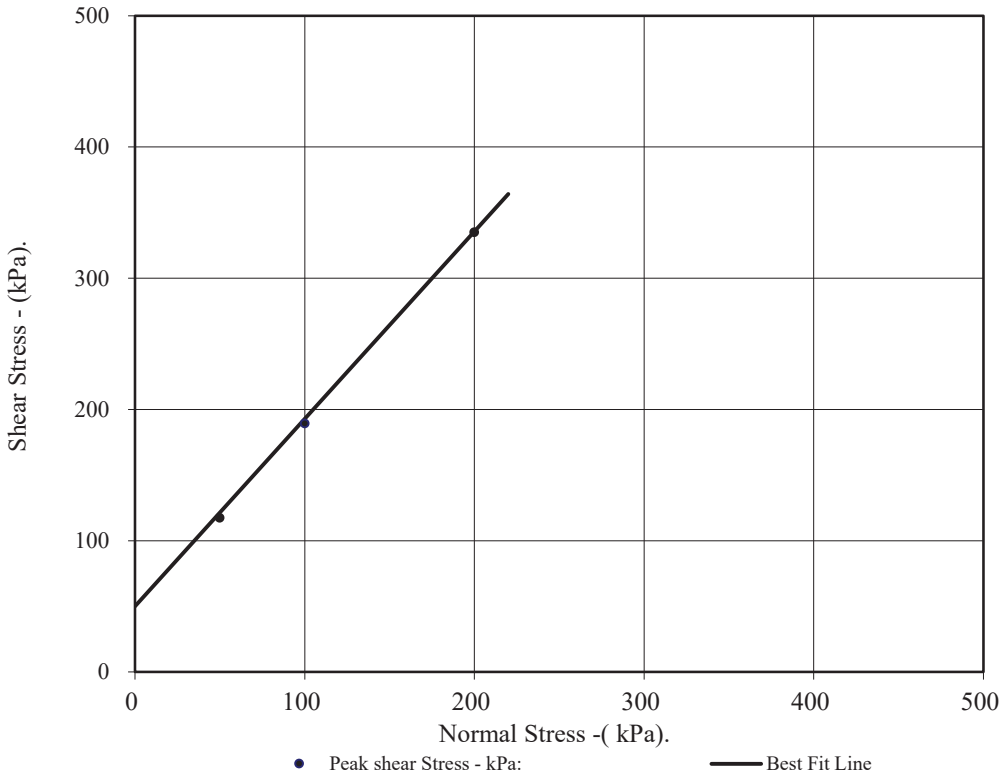
Client Ref:
G230651-GEO38

CONSOLIDATED DRAINED SHEARBOX TEST

BS1377:Part 7:1990 Clause 5

Hole Number:	**BH112**		Top Depth:	**4.50**
Sample Number:	**20**		Base Depth:	**5.00**
Sample Conditions:	Dry		Sample Type	**B**
Particle Density - Mg/m3:	2.65	Assumed	**Remarks:**	
Sample Preparation:	Material tested passing 20mm sieve Recompacted using hand tamped effort			
Sample Description:	**See summary of soil descriptions**			

STAGE	**1**	**2**	**3**
Initial Conditions			
Height - mm:	150	150	150
Length - mm:	300	300	300
Moisture Content - %:	2.1	2.1	2.1
Bulk Density - Mg/m3:	1.89	1.89	1.89
Dry Density - Mg/m3:	1.85	1.85	1.85
Voids Ratio:	0.432	0.432	0.432
Normal Pressure- kPa	50	100	200
Consolidation Stage			
Consolidated Height - mm:	149.29	146.84	146.14
Shearing Stage			
Rate of Strain (mm/min)	1.00	1.00	1.00
Displacement at peak shear stress (mm)	48.00	44.50	39.50
Peak shear Stress - kPa:	117	189	335
Final Consolidated Conditions			
Moisture Content - %:	2.0	1.8	1.7
Bulk Density - Mg/m3:	1.83	1.94	1.95
Dry Density - Mg/m3:	1.79	1.90	1.91
Peak			
Angle of Shearing Resistance:(~~θ~~)	**55**		
Effective Cohesion - kPa:	**50**		



UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

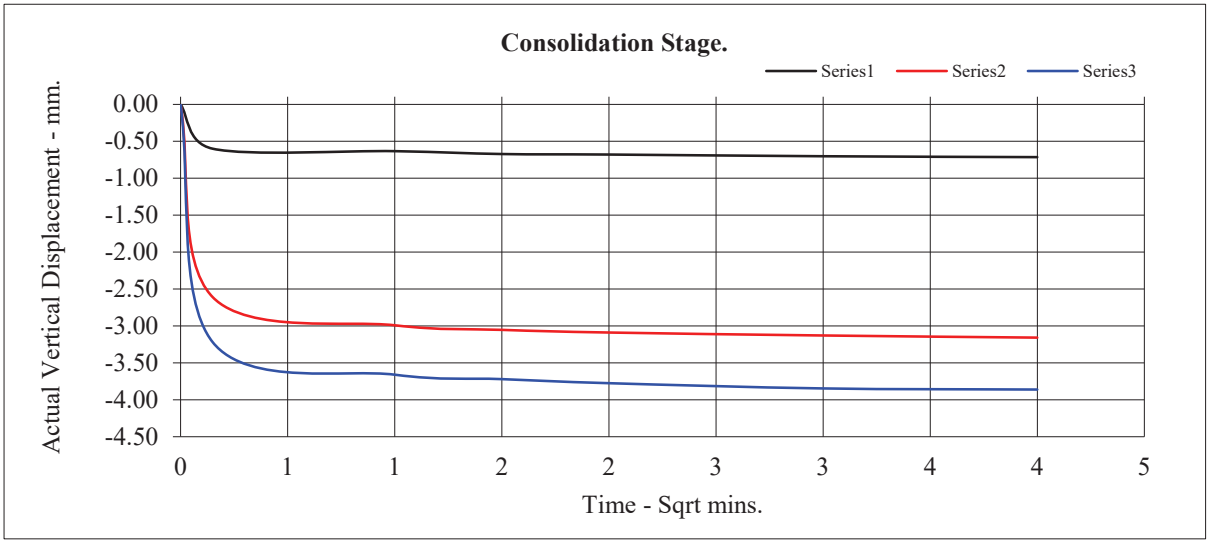
A46 Walsgrave

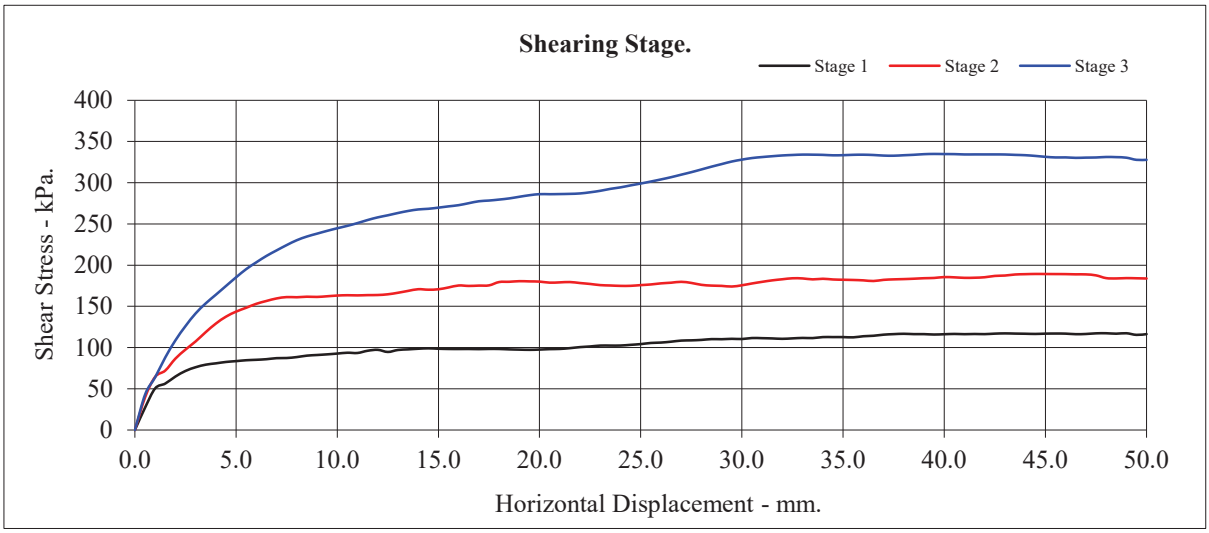
Contract No:
PSL23/5623
Client Ref:
G230651-GEO38

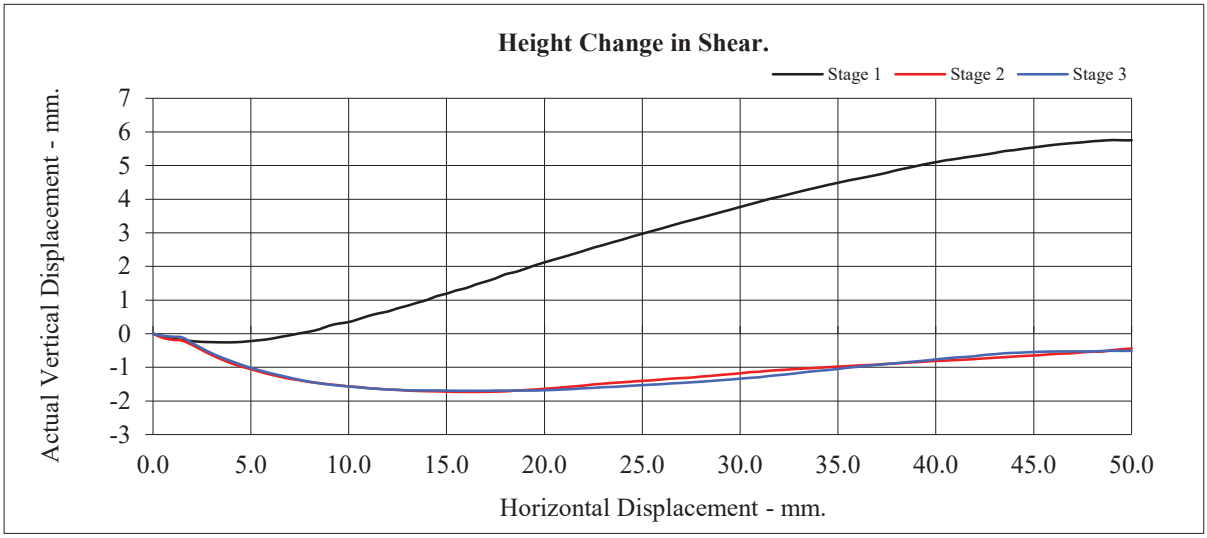
CONSOLIDATED DRAINED SHEARBOX TEST

BS1377:Part 7:1990 Clause 5

Hole Number:	**BH112**	Top Depth:	**4.50**
Sample Number:	**20**	Base Depth:	**5.00**







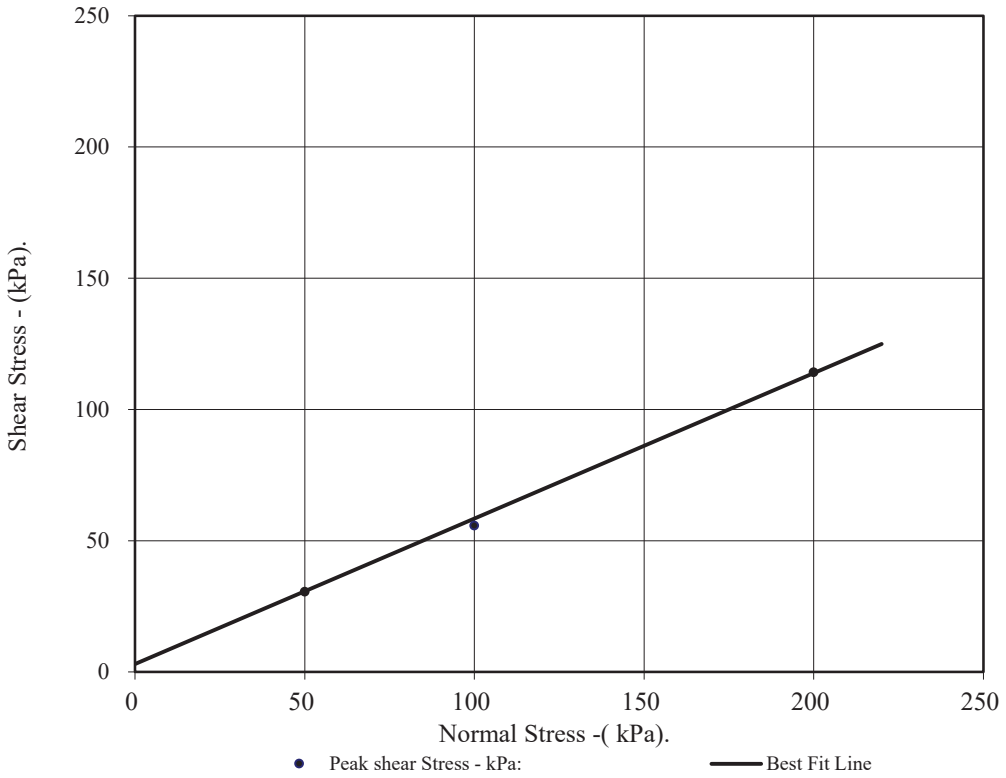
UKAS TESTING 4043 / PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY	**A46 Walsgrave**	**Contract No:** PSL23/5623 **Client Ref:** G230651-GEO38

CONSOLIDATED DRAINED SHEARBOX TEST

BS1377:Part 7:1990 Clause 4

Hole Number:	**BH116**		Top Depth:	**1.00**	
Sample Number:	**7**		Base Depth:	**1.00**	
Sample Conditions:	Submerged		Sample Type	**B**	
Particle Density - Mg/m3:	2.65	Assumed	**Remarks:**		
Sample Preparation:	Material tested passing 2mm sieve Remoulded using 2.5kg effort.				
Sample Description:	**See summary of soil descriptions.**				

STAGE	**1**	**2**	**3**
Initial Conditions			
Height - mm:	20.05	20.05	20.05
Length - mm:	59.97	59.97	59.97
Moisture Content - %:	17	17	17
Bulk Density - Mg/m3:	2.08	2.09	2.08
Dry Density - Mg/m3:	1.77	1.78	1.77
Voids Ratio:	0.496	0.492	0.498
Normal Pressure- kPa	50	100	200
Consolidation Stage			
Consolidated Height - mm:	19.07	18.27	17.73
Shearing Stage			
Rate of Strain - mm/min	0.046	0.046	0.046
Displacement at peak shear stress - mm	2.61	7.71	5.21
Peak shear Stress - kPa:	31	56	114
Final Consolidated Conditions			
Moisture Content - %:	21	19	18
Bulk Density - Mg/m3:	2.20	2.35	2.35
Dry Density - Mg/m3:	1.82	1.98	1.99
Peak			
Angle of Shearing Resistance:(~~θ~~)	**29**		
Effective Cohesion - kPa:	**3**		



UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

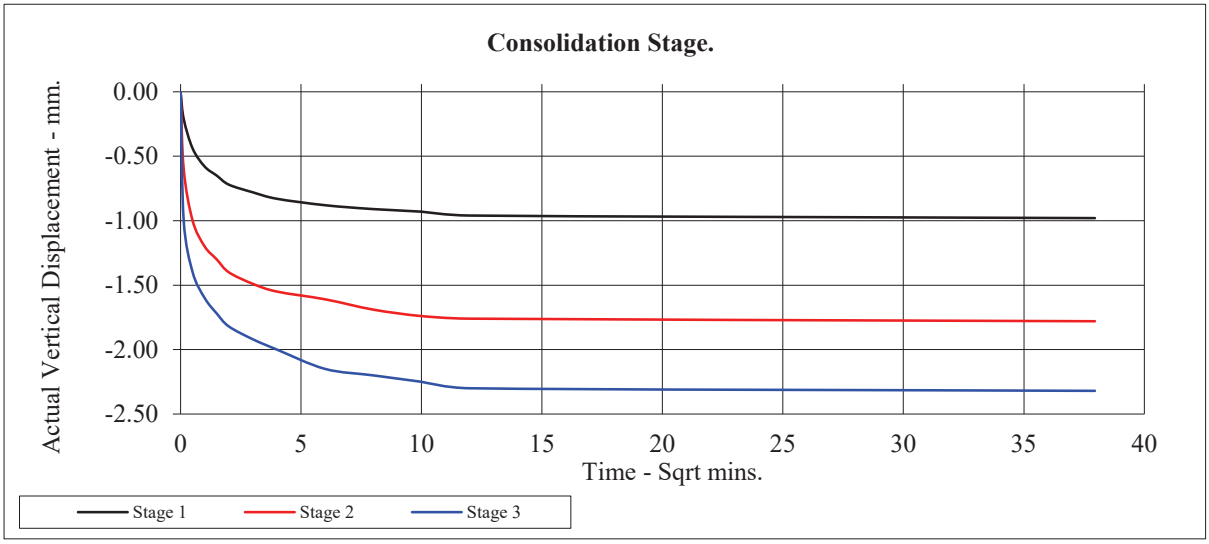
A46 Walsgrave

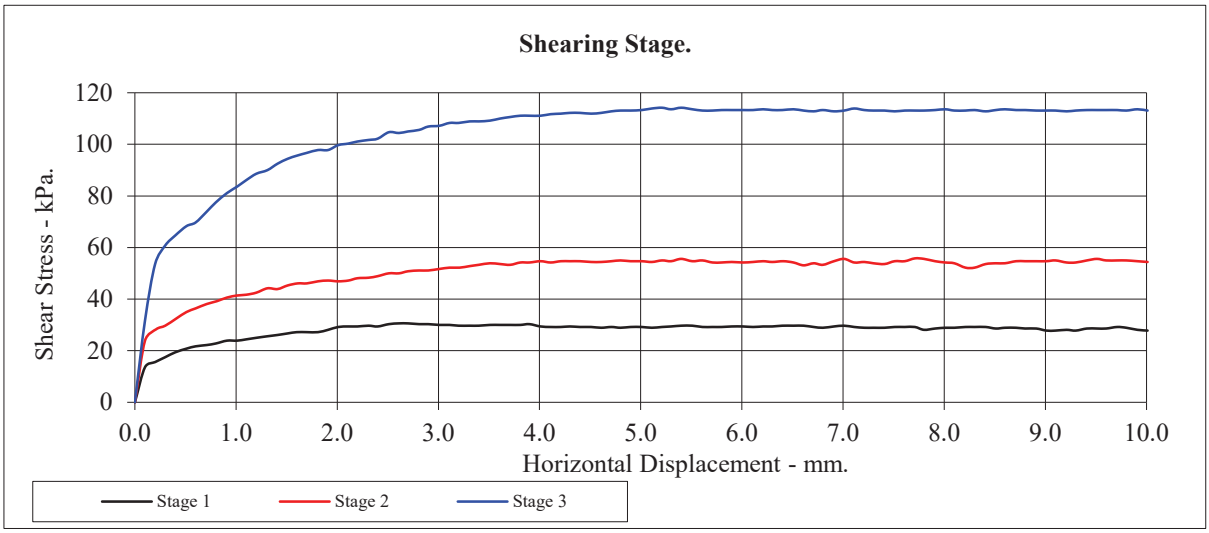
Contract No:
PSL23/5623
Client Ref:
G230651-GEO38

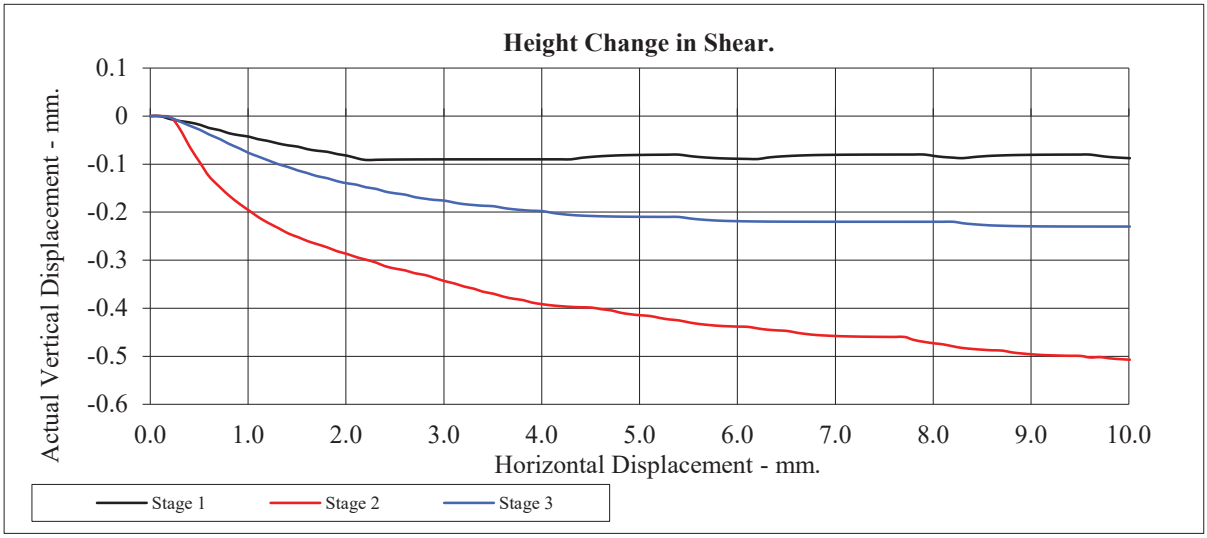
CONSOLIDATED DRAINED SHEARBOX TEST

BS1377:Part 7:1990 Clause 4

Hole Number:	**BH116**	Top Depth:	**1.00**
Sample Number:	**7**	Base Depth:	**1.00**







UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

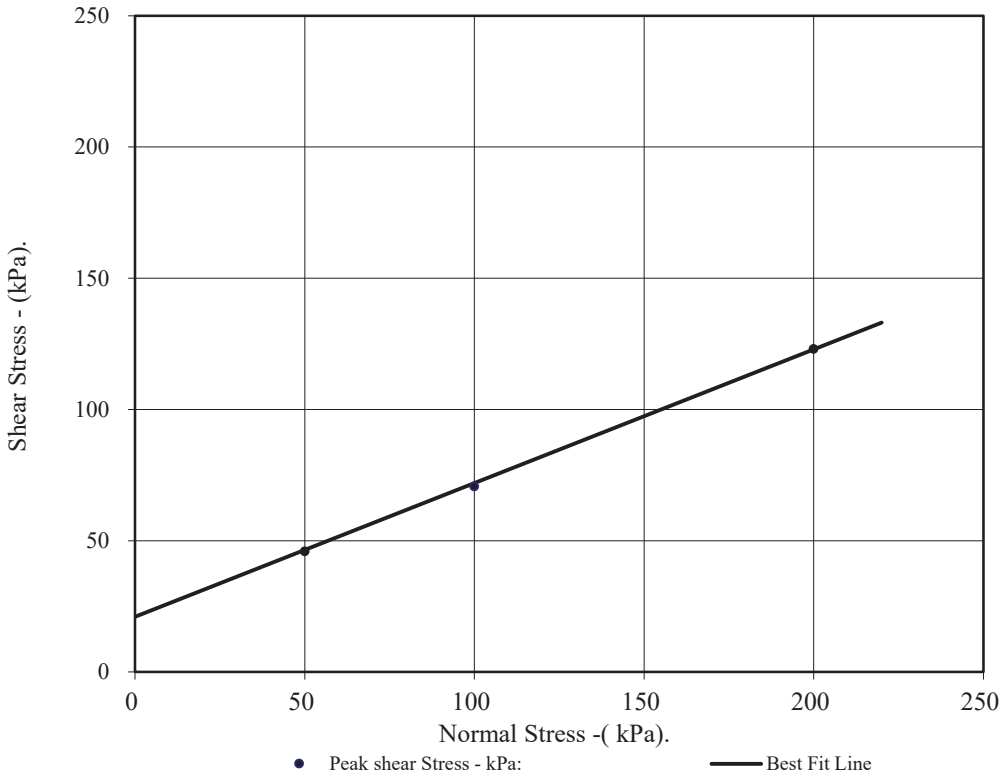
Contract No:
PSL23/5623
Client Ref:
G230651-GEO38

CONSOLIDATED DRAINED SHEARBOX TEST

BS1377:Part 7:1990 Clause 4

Hole Number:	**BH116**		Top Depth:	**2.50**	
Sample Number:	**16**		Base Depth:	**3.00**	
Sample Conditions:	Submerged		Sample Type	**B**	
Particle Density - Mg/m3:	2.65	Assumed	**Remarks:**		
Sample Preparation:	Material tested passing 2mm sieve Remoulded using 2.5kg effort.				
Sample Description:	**See summary of soil descriptions.**				

STAGE	**1**	**2**	**3**
Initial Conditions			
Height - mm:	20.05	20.05	20.05
Length - mm:	59.97	59.97	59.97
Moisture Content - %:	17	17	17
Bulk Density - Mg/m3:	2.08	2.09	2.08
Dry Density - Mg/m3:	1.77	1.78	1.77
Voids Ratio:	0.496	0.492	0.498
Normal Pressure- kPa	50	100	200
Consolidation Stage			
Consolidated Height - mm:	19.87	19.08	18.79
Shearing Stage			
Rate of Strain - mm/min	0.045	0.045	0.045
Displacement at peak shear stress - mm	3.61	4.21	9.01
Peak shear Stress - kPa:	46	71	123
Final Consolidated Conditions			
Moisture Content - %:	21	19	18
Bulk Density - Mg/m3:	2.10	2.19	2.22
Dry Density - Mg/m3:	1.74	1.84	1.88
Peak			
Angle of Shearing Resistance:(~~θ~~)	**27**		
Effective Cohesion - kPa:	**21**		

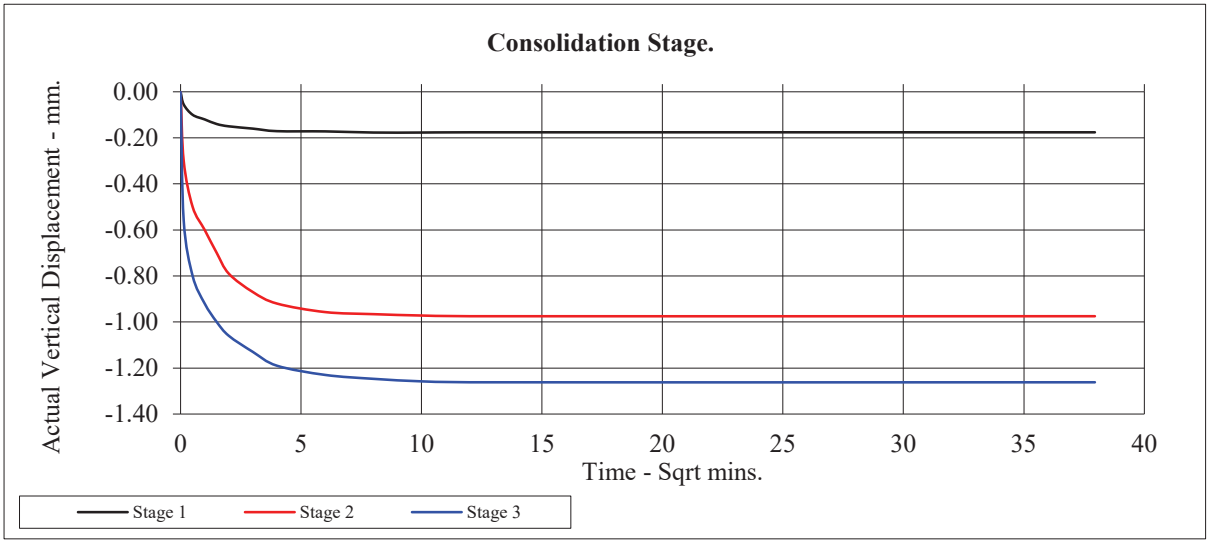


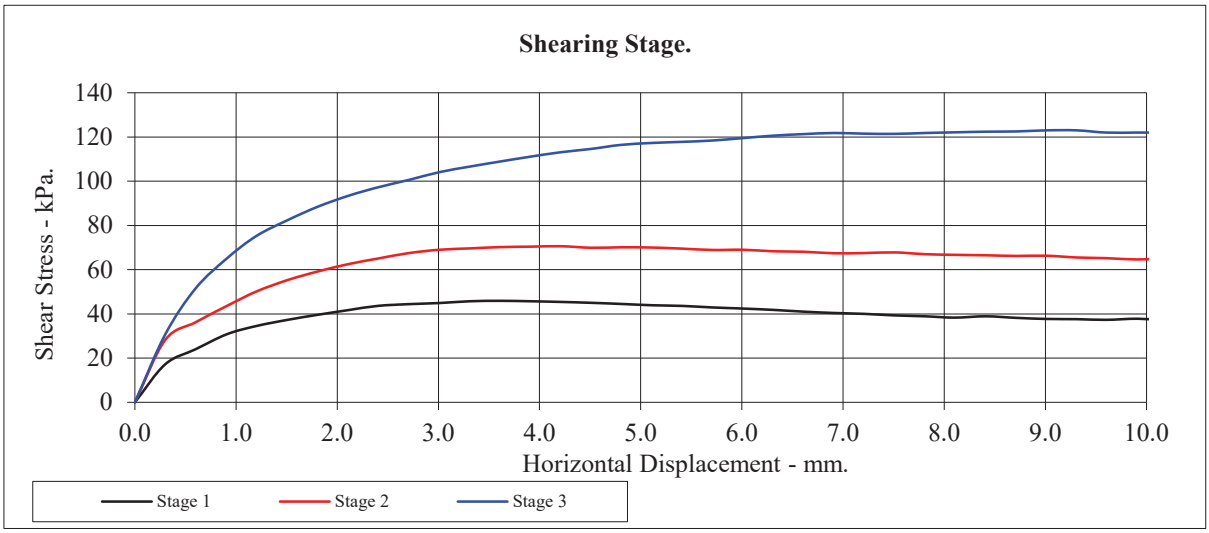
UKAS TESTING 4043 / PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY	**A46 Walsgrave**	**Contract No:** PSL23/5623 **Client Ref:** G230651-GEO38

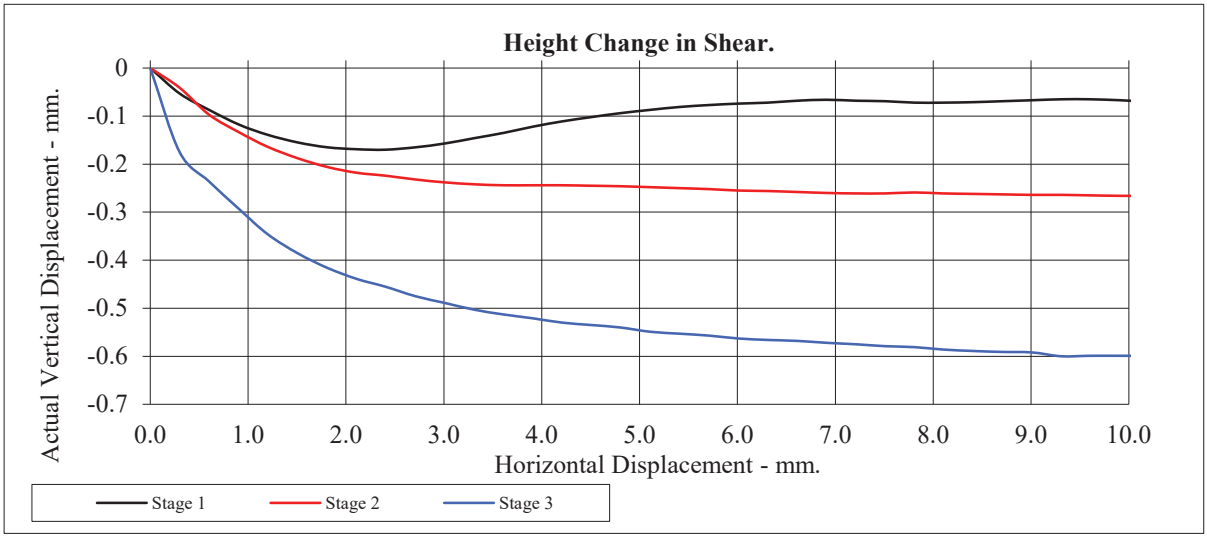
CONSOLIDATED DRAINED SHEARBOX TEST

BS1377:Part 7:1990 Clause 4

Hole Number:	**BH116**	Top Depth:	**2.50**
Sample Number:	**16**	Base Depth:	**3.00**







UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

Contract No:
PSL23/5623
Client Ref:
G230651-GEO38

ONE DIMENSIONAL CONSOLIDATION TEST

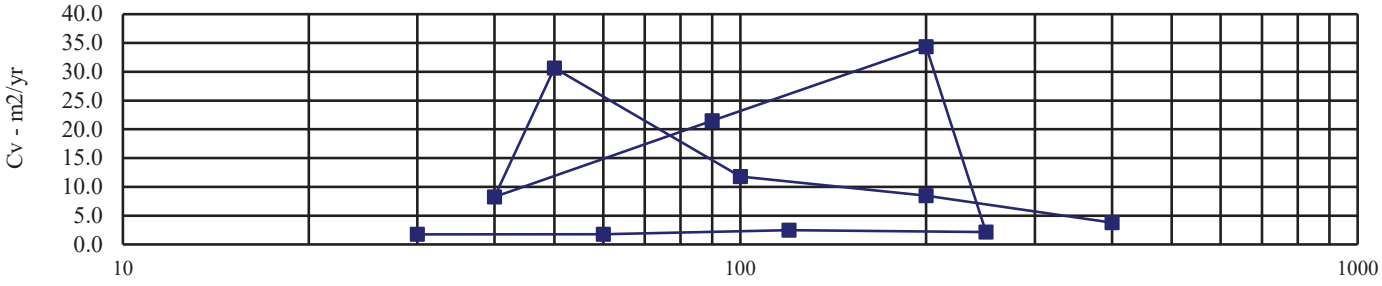
BS 1377: Part 5: 1990: Clause 3

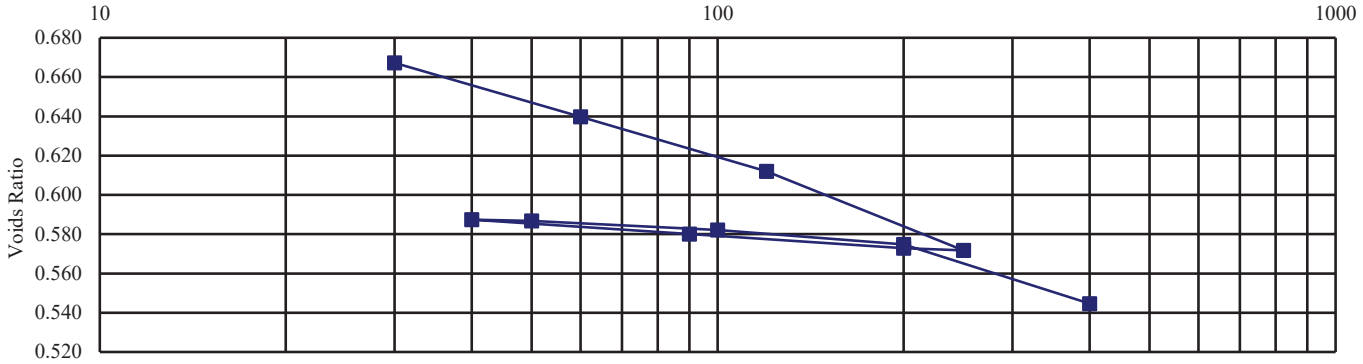
Hole Number: BH116 **Top Depth (m):** 1.50

Sample Number: 10 **Base Depth (m) :** 1.95

Sample Type: UT

Initial Conditions		Pressure Range kPa		Mv m2/MN	Cv m2/yr	Specimen location within tube:	Top
Moisture Content (%):	29						
Bulk Density (Mg/m3):	1.96	0	30	1.424	1.746	Method used to	
Dry Density (Mg/m3):	1.52	30	60	0.548	1.790	determine CV:	T90
Voids Ratio:	0.742	60	120	0.282	2.469	Nominal temperature	
Degree of saturation:	103.2	120	250	0.193	2.175	during test ' C:	20
Height (mm):	20.018	250	200	0.015	34.362	Remarks:	
Diameter (mm)	75.01	200	90	0.041	21.489	See summary of soil descriptions	
Particle Density (Mg/m3): Assumed	2.65	90	40	0.093	8.258		
		40	50	0.033	30.654		
		50	100	0.059	11.804		
		100	200	0.047	8.469		
		200	400	0.096	3.781		





UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

Contract No: PSL23/5623

Client Ref: G230651-GEO38

ONE DIMENSIONAL CONSOLIDATION TEST

BS 1377: Part 5: 1990: Clause 3

Hole Number: BH116 **Top Depth (m):** 3.50

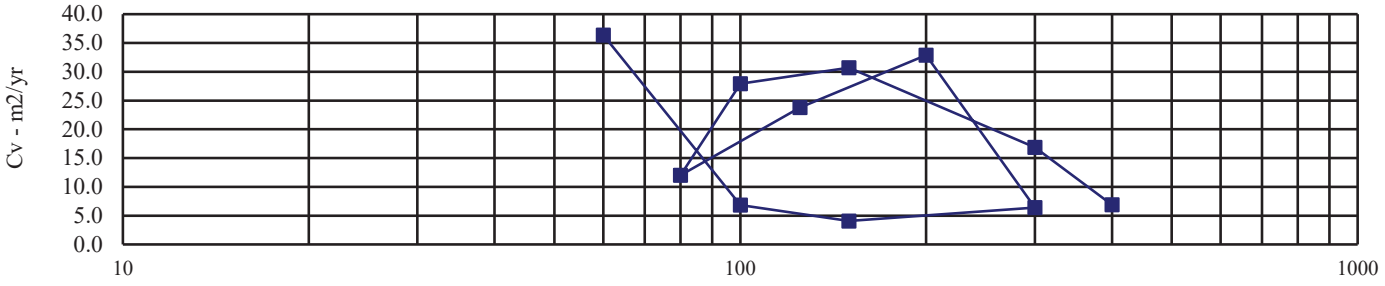
Sample Number: 18 **Base Depth (m) :** 3.95

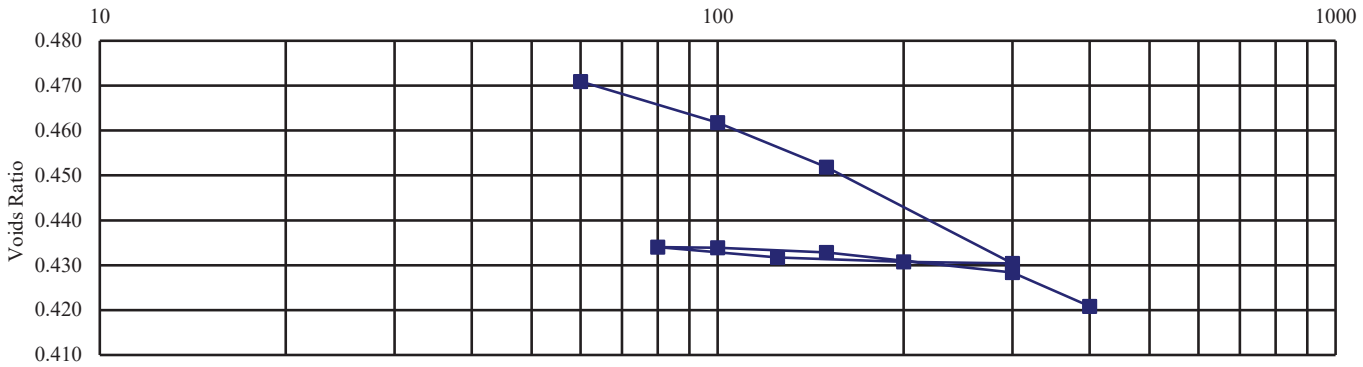
Sample Type: UT

Initial Conditions	
Moisture Content (%):	17
Bulk Density (Mg/m3):	2.08
Dry Density (Mg/m3):	1.78
Voids Ratio:	0.492
Degree of saturation:	91.3
Height (mm):	19.988
Diameter (mm)	76.03
Particle Density (Mg/m3): Assumed	2.65

Pressure Range kPa		Mv m2/MN	Cv m2/yr
0	60	0.235	36.375
60	100	0.156	6.821
100	150	0.136	4.079
150	300	0.098	6.409
300	200	0.003	32.854
200	125	0.009	23.796
125	80	0.036	12.020
80	100	0.005	27.906
100	150	0.015	30.707
150	300	0.021	16.863
300	400	0.053	6.895

Specimen location within tube:	Top
Method used to determine CV:	T90
Nominal temperature during test ' C:	20
Remarks: See summary of soil descriptions	





UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgrave

Contract No: PSL23/5623

Client Ref: G230651-GEO38

Effective Stress Triaxial Compression

Consolidated Undrained

Summary Report

Sample Details	*sketch showing specimen location in original sample*				
Depth	2.00-2.45m UT15				
Description	See summary of soil descriptions.				
Type	Undisturbed, vertical orientation.				
			Spm. 1	2	3
Initial Sample Length	L_0	(mm)	76.0	76.0	76.0
Initial Sample Diameter	D_0	(mm)	38.0	38.0	38.0
Initial Sample Weight	W_0	(gr)	191.2	191.0	192.1
Initial Bulk Density	ρ_0	(Mg/m3)	2.22	2.22	2.23
Particle Density	ρ_s	(Mg/m3)	2.66	2.66	2.66

Initial Conditions			Spm. 1	2	3
Initial Cell Pressure	σ_{3i}	(kPa)	820	840	480
Initial Back Pressure	U_{bi}	(kPa)	800	800	400
Membrane Thickness	m_b	(mm)	0.600	0.600	0.600
Displacement Input	L_{IP}	(mm)	CH 2	CH 2	CH 2
Load Input	N_{IP}	(N)	CH 4	CH 4	CH 4
Pore Water Pressure Input	u_{pwp}	(kPa)	CH 3	CH 3	CH 3
Sample Volume	V	(cc)	CH 6	CH 6	CH 6
Initial Moisture	ω_i	(%)	16	16	16
Initial Dry Density	ρ_{di}	(Mg/m3)	1.92	1.92	1.93
Initial Voids Ratio	e_i	.	0.389	0.388	0.381
Initial Degree of Saturation	S_i	(%)	100	100	100
B Value	B	.	0.95	0.98	0.98

Final Conditions			Spm. 1	2	3
Final Moisture	ω_f	(%)	16	16	15
Final Dry Density	ρ_{df}	(Mg/m3)	1.92	1.93	1.96
Final Voids Ratio	e_f	.	0.386	0.379	0.358
Final Degree of Saturation	S_f	(%)	100.0	100.0	100.0
Failure Criteria		.	Max. Dev. Stress	Max. Dev. Stress	Max. Dev. Stress
Strain At Failure	ε_f	(%)	11.72	20.00	13.83
Stress At Failure	$(\sigma_1-\sigma_3)_f$	(kPa)	118.6	159.7	182.5
Minor Stress At Failure	σ_3'	(kPa)	69.0	98.0	115.0
Major Stress At Failure	σ_1'	(kPa)	187.6	257.7	297.5
Principal Stress Ratio At Failure	σ_1'/σ_3'		2.719	2.629	2.587
PwP At Failure Criteria	u_f	(kPa)	751.0	742.0	365.0

Notes

Plastic

PSL PROFESSIONAL SOILS LABORATORY — A PHENNA GROUP COMPANY — UKAS TESTING 4043

Test Method	BS1377-8 : 1990 : Clause 7	Test Name	BH104 2.00-2.45m
		Test Date	28/07/2023
		Borehole	BH104
Jobfile	A46 Walsgrave	Sample	2.00-2.45m
Client	Strata Geotechnics	Depth	2.00-2.45m UT15

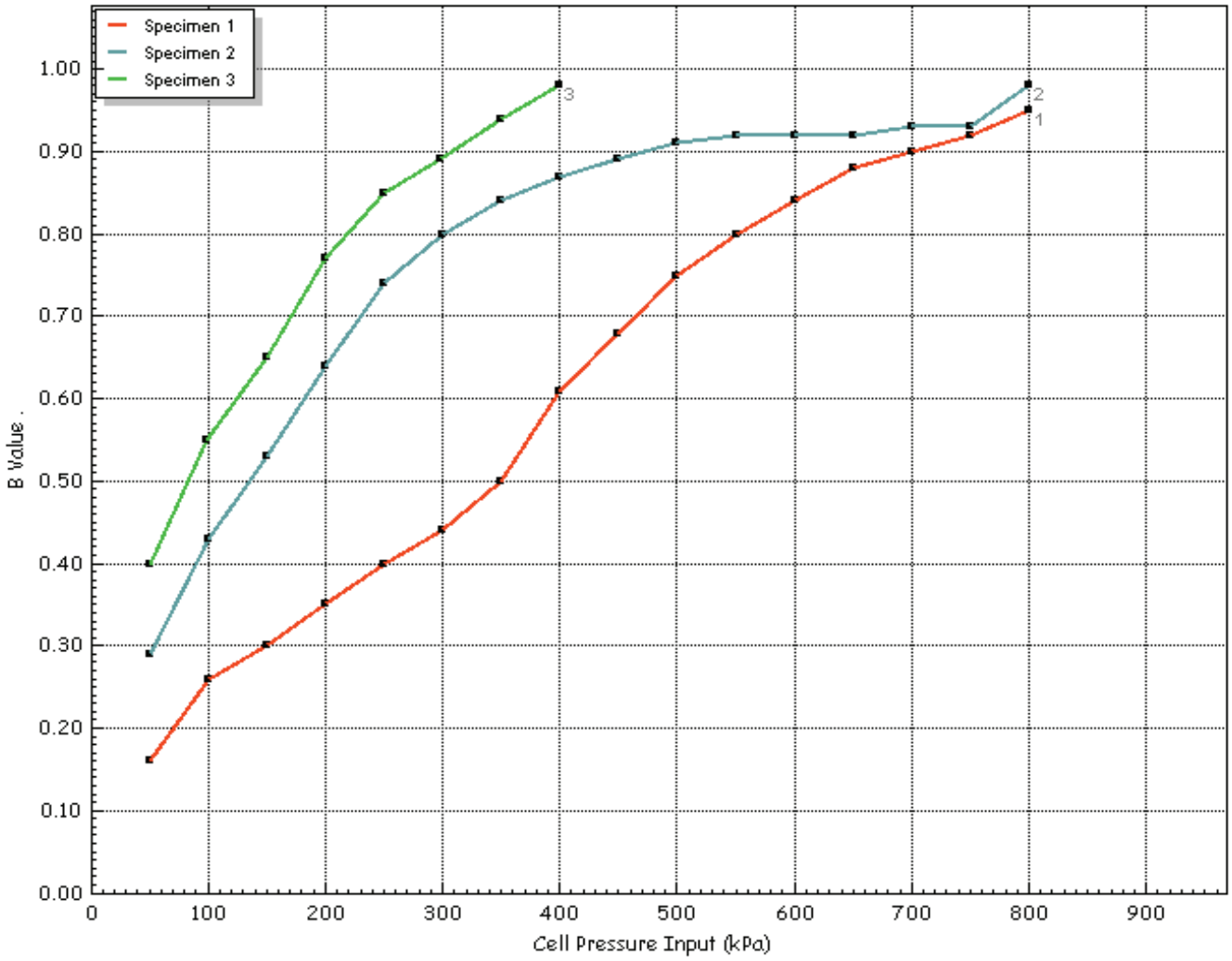
Operator	D.Burton	Checked	S.Royle	Approved	S.Royle

Effective Stress Triaxial Compression

Consolidated Undrained

Saturation Plots

			Spm. 1	2	3
Saturation Method			Stepped	Stepped	Stepped
Cell Pressure Input	σ	(kPa)	800	800	400
Pore Water Pressure Input	u pwp	(kPa)	723	794	382
B Value	B	.	0.95	0.98	0.98



PSL PROFESSIONAL SOILS LABORATORY	Test Method	BS1377-8 : 1990 : Clause 7		Test Name	BH104 2.00-2.45m
				Test Date	28/07/2023
				Borehole	BH104
	Jobfile	A46 Walsgrave		Sample	2.00-2.45m
	Client	Strata Geotechnics		Depth	2.00-2.45m UT15
UKAS TESTING 4043	Operator	D.Burton	Checked S.Royle	Approved	S.Royle

Effective Stress Triaxial Compression

Consolidated Undrained

Consolidation Plots

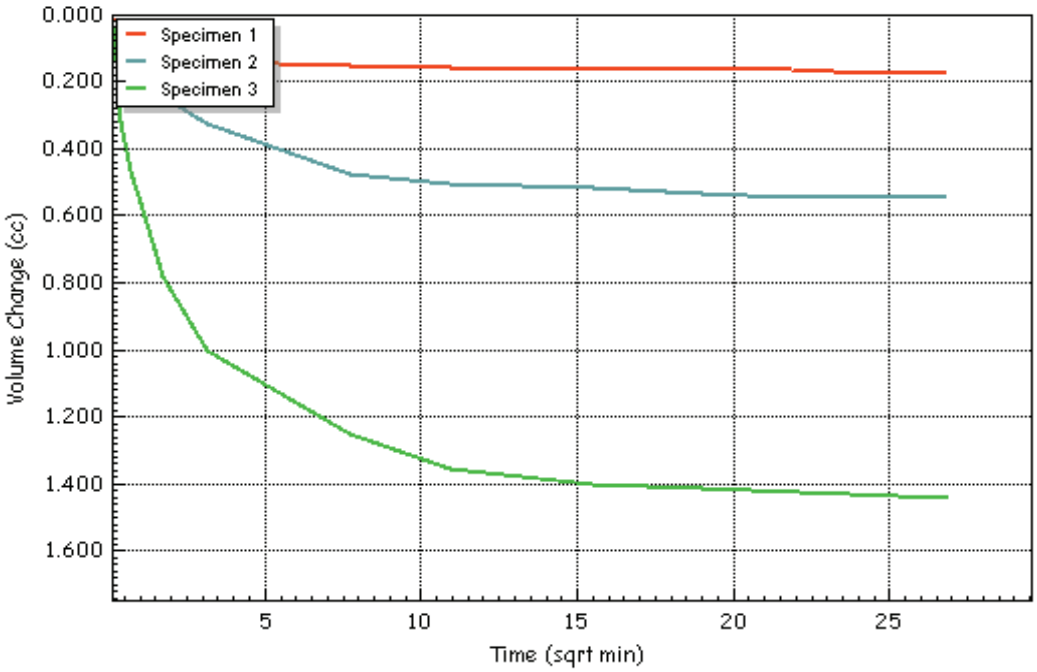
Initial Conditions

			Spm. 1	2	3
Initial Cell Pressure	σ_3	(kPa)	820	840	480
Initial Back Pressure	u_{bi}	(kPa)	800	800	400
Pore Water Pressure Input	u_{pwp}	(kPa)	804	833	470
Drainage Method			Radial+One End	Radial+One End	Radial+One End

Final Conditions

			Spm. 1	2	3
PWP Dissipation %	U%	(%)	100.00	100.00	100.00
Volumetric Strain	ε_v%	(%)	0.21	0.64	1.67
Corrected Length	L_C	(mm)	75.9	75.8	75.6
Corrected Area	A_C	(cm2)	11.33	11.29	11.21
Corrected Volume	V_C	(cc)	86.014	85.645	84.751
t100	t_{100}	(min)	5.95	41.06	12.24
Consolidation	c_v	(m2/year	0.050	0.007	0.024
Compressibility	m_v	(m2/MN)	0.518	0.191	0.238
Test Time	t_F	(h:m:s)	02:00:00	02:00:00	02:00:00
Estimated Strain to Failure	ε%	(%)	5.0	5.0	5.0
Shear Machine Speed	d_r	(mm/min	0.03164	0.03160	0.03149

Notes

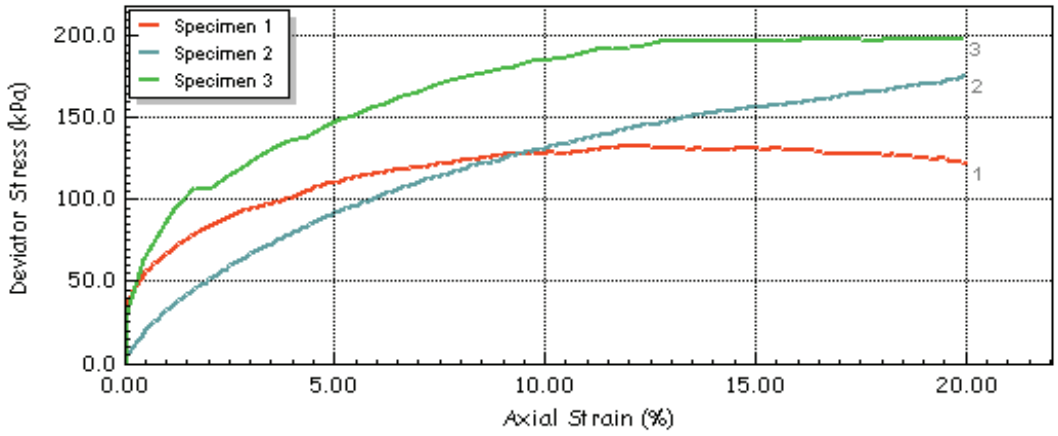


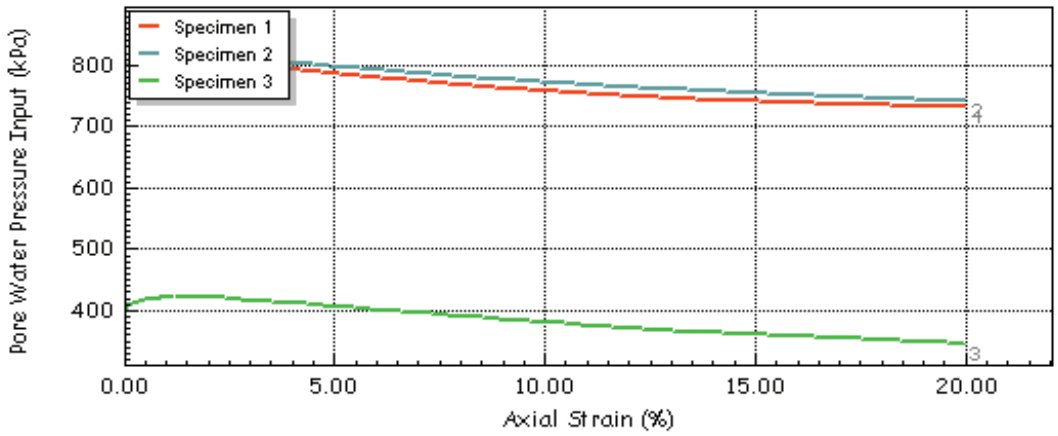
PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY UKAS TESTING 4043	Test Method	BS1377-8 : 1990 : Clause 7	Test Name	BH104 2.00-2.45m	
			Test Date	28/07/2023	
	Jobfile	A46 Walsgrave	Borehole	BH104	
	Client	Strata Geotechnics	Sample	2.00-2.45m	
			Depth	2.00-2.45m UT15	
	Operator	D.Burton	Checked	S.Royle	Approved S.Royle

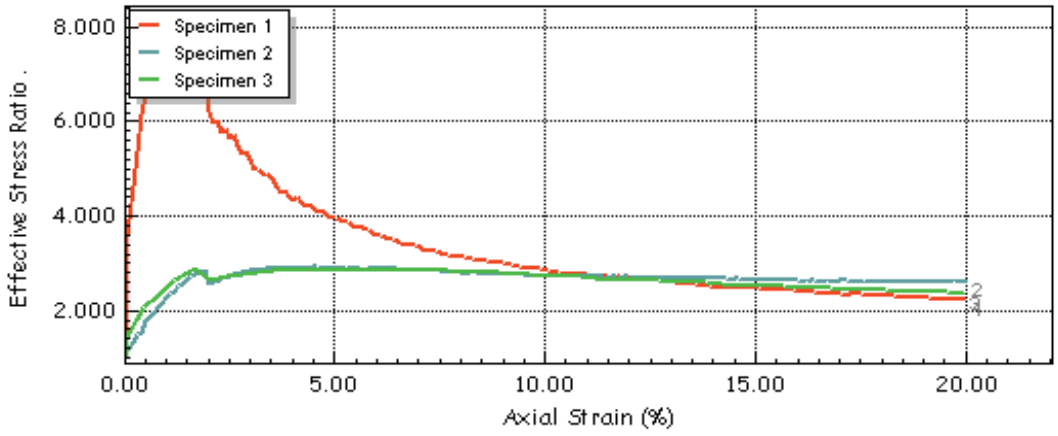
Effective Stress Triaxial Compression

Consolidated Undrained

Shear Stage Plots







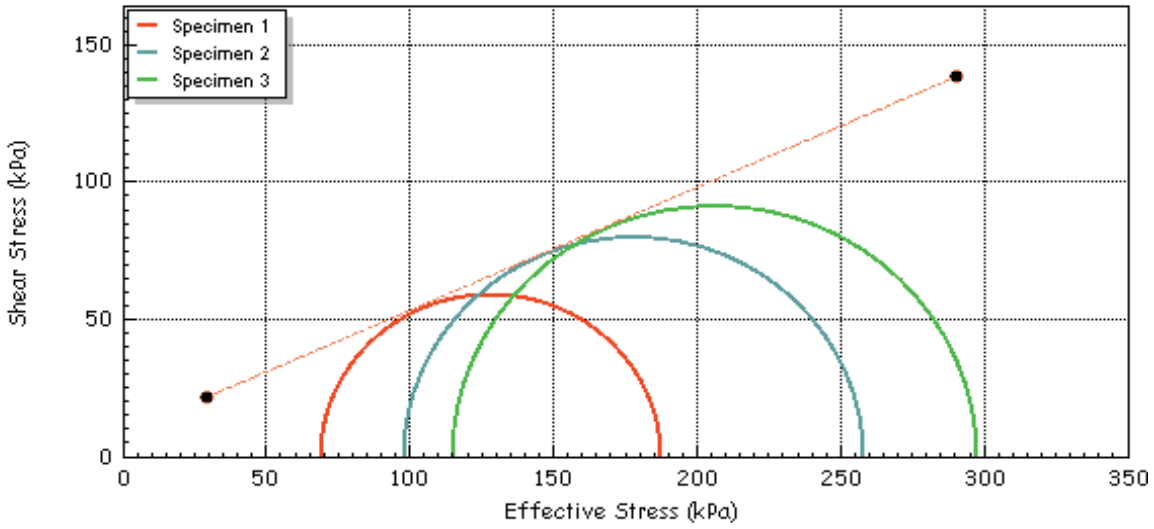
PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY UKAS TESTING 4043	Test Method	BS1377-8 : 1990 : Clause 7		Test Name	BH104 2.00-2.45m
				Test Date	28/07/2023
				Borehole	BH104
	Jobfile	A46 Walsgrave		Sample	2.00-2.45m
	Client	Strata Geotechnics		Depth	2.00-2.45m UT15
	Operator	D.Burton	Checked	S.Royle	Approved S.Royle

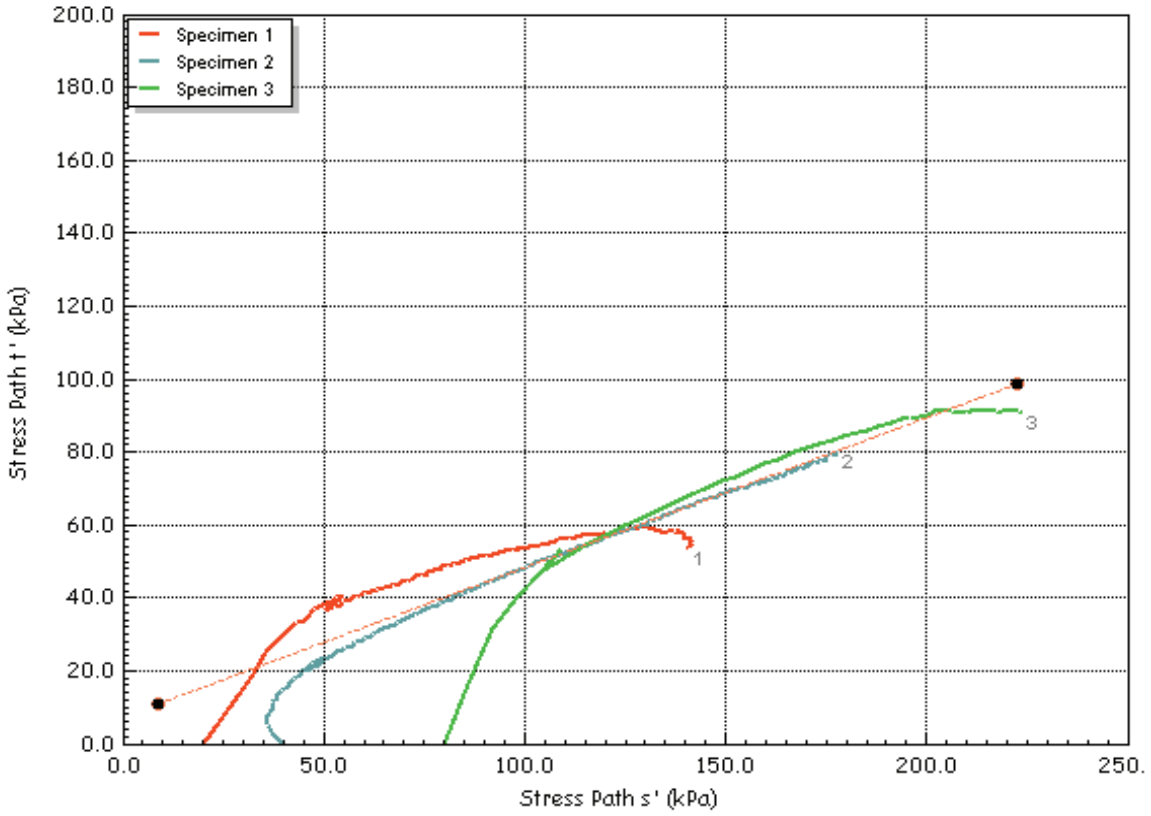
Effective Stress Triaxial Compression

Consolidated Undrained

Shear Stage Plots

Effective	c'	(kPa)	8.24	Effective Cohesion	c'	(kPa)	8.24
Effective Friction	ϕ'	(deg)	24.2	Effective Friction	ϕ'	(deg)	24.2





Test Method	BS1377-8 : 1990 : Clause 7			Test Name	BH104 2.00-2.45m
				Test Date	28/07/2023
				Borehole	BH104
Jobfile	A46 Walsgrave			Sample	2.00-2.45m
Client	Strata Geotechnics			Depth	2.00-2.45m UT15
Operator	D.Burton	Checked	S.Royle	Approved	S.Royle

LABORATORY REPORT

Contract Number: PSL23/5637

Report Date: 07 August 2023

Client's Reference: G230651/Geo 39

Client Name: Strata Geotechnics
Kirkby Lane
Pinxton
Nottinghamshire
NG16 6JA

For the attention of: Shannon Wade

Contract Title: A46 Walsgrave

Date Received: 13/7/2023
Date Commenced: 13/7/2023
Date Completed: 7/8/2023

Notes: Opinions and Interpretations are outside the UKAS Accreditation

A copy of the Laboratory Schedule of accredited tests as issued by UKAS is attached to this report. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced other than in full, without the prior written approval of the laboratory.

Checked and Approved Signatories:

A Watkins (Director)	R Berriman (Quality Manager)	S Royle (Laboratory Manager)
		[redacted]
L Knight (Assistant Laboratory Manager)	S Eyre (Senior Technician)	T Watkins (Senior Technician)

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SUMMARY OF LABORATORY SOIL DESCRIPTIONS

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Description of Sample
BH107	5	B	0.50	-	Brown gravelly very sandy CLAY.
BH107	14	B	1.10	1.50	Brown very gravelly very sandy CLAY.
BH107	9	D	1.20	-	Brown very gravelly very sandy CLAY.
BH107	10	B	1.50	2.00	Brown slightly gravelly very sandy CLAY.
BH107	15	B	2.20	2.50	Reddish brown slightly gravelly very sandy CLAY.
BH107	16	U	2.50	2.95	Reddish brown slightly gravelly sandy CLAY.
BH107	17	D	3.00	-	Reddish brown very sandy CLAY.
BH107	20	B	3.50	4.00	Reddish brown slightly gravelly very sandy CLAY.
BH107	21	D	4.20	-	Reddish brown very sandy CLAY.
BH107	23	B	4.50	5.00	Reddish brown very gravelly sandy CLAY.
BH107	25	D	5.50	5.95	Brown very sandy CLAY.
BH107	26	B	5.50	6.00	Reddish brown slightly gravelly very sandy CLAY.
BH107	28	D	7.00	-	Reddish brown very sandy CLAY.
BH107	29	D	7.50	7.87	Reddish brown very sandy CLAY.
BH107	30	B	7.50	8.00	Reddish brown slightly gravelly very sandy CLAY.

SUMMARY OF SOIL CLASSIFICATION TESTS

(BS1377 : PART 2 : 1990)

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Moisture Content % Clause 3.2	Linear Shrinkage % Clause 6.5	Particle Density Mg/m^3 Clause 8.2	Liquid Limit % Clause 4.3/4	Plastic Limit % Clause 5.3	Plasticity Index % Clause 5.4	Passing .425mm %	Remarks
BH107	9	D	1.20	-	9.4			30	16	14	75	Low Plasticity CL
BH107	17	D	3.00	-	17			33	17	16	100	Low Plasticity CL
BH107	21	D	4.20	-	13			29	15	14	100	Low Plasticity CL
BH107	25	D	5.50	5.95	17			34	17	17	100	Low Plasticity CL
BH107	29	D	7.50	7.87	12			32	16	16	100	Low Plasticity CL

SYMBOLS : **NP : Non Plastic** *** : Liquid Limit and Plastic Limit Wet Sieved.**

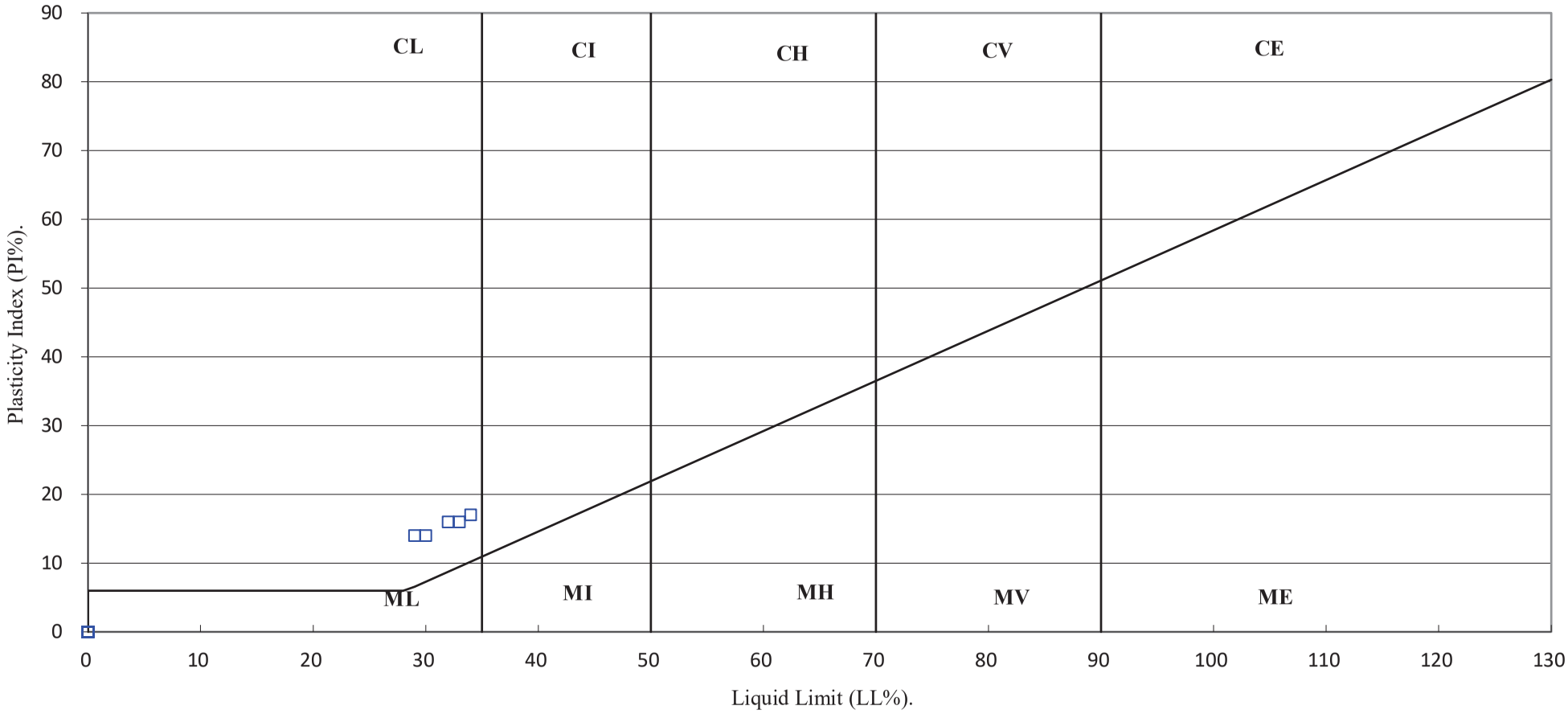
UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgreave

Contract No:
PSL23/5637
Client Ref:
G230651GEO39

PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION.



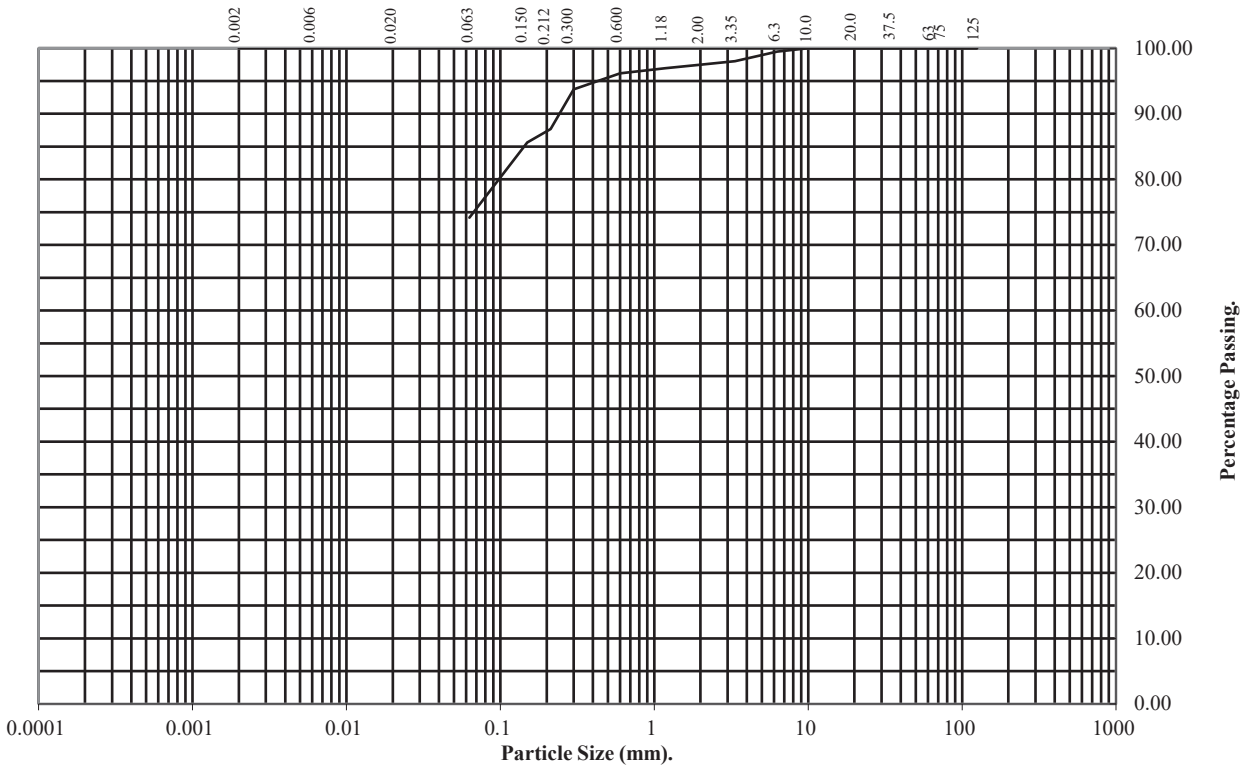
UKAS TESTING 4043 / PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY	A46 Walsgreave	Contract No: PSL23/5637 Client Ref: G230651GEO39

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number:	**BH107**	**Top Depth (m):**	**2.20**
Sample Number:	**15**	**Base Depth(m):**	**2.50**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	100
6.3	99
3.35	98
2	97
1.18	97
0.6	96
0.3	94
0.212	88
0.15	86
0.063	74

Soil Fraction	Total Percentage
Cobbles	0
Gravel	3
Sand	23
Silt/Clay	74

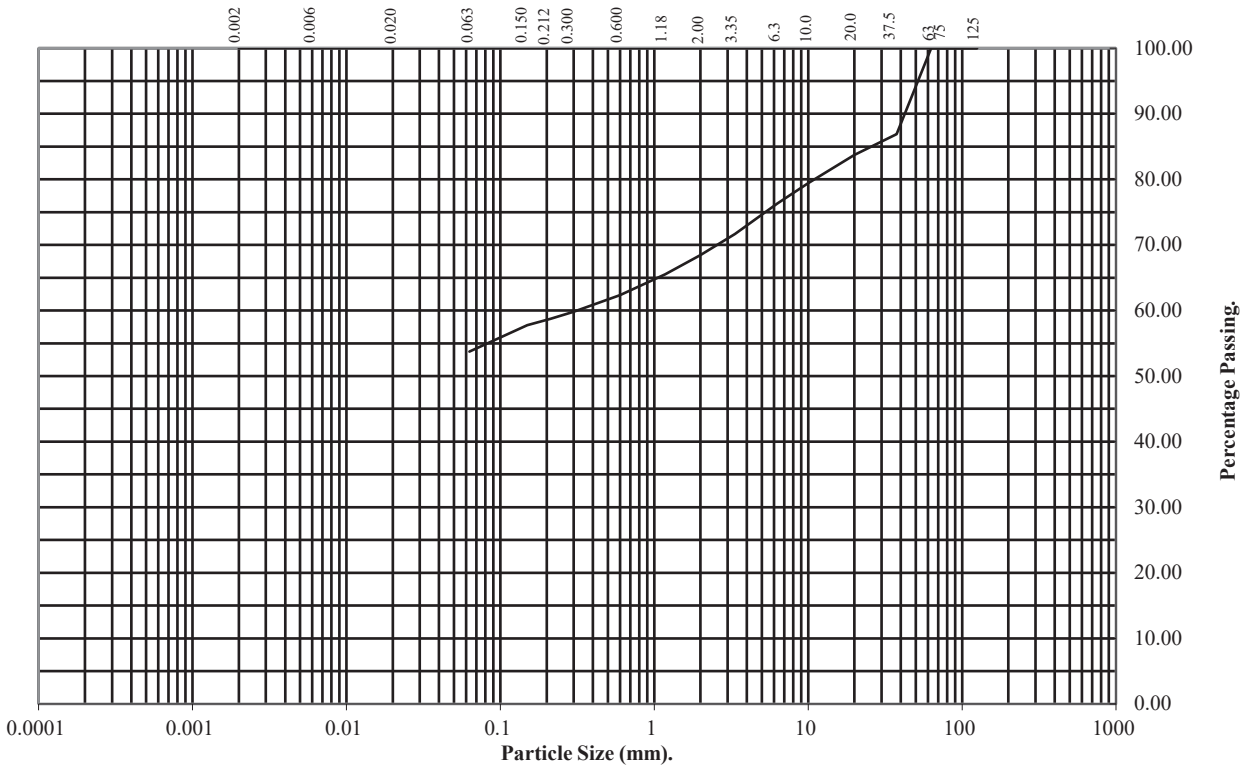
Remarks:
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number:	**BH107**	**Top Depth (m):**	**4.50**
Sample Number:	**23**	**Base Depth(m):**	**5.00**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	87
20	84
10	79
6.3	76
3.35	72
2	68
1.18	66
0.6	62
0.3	60
0.212	59
0.15	58
0.063	54

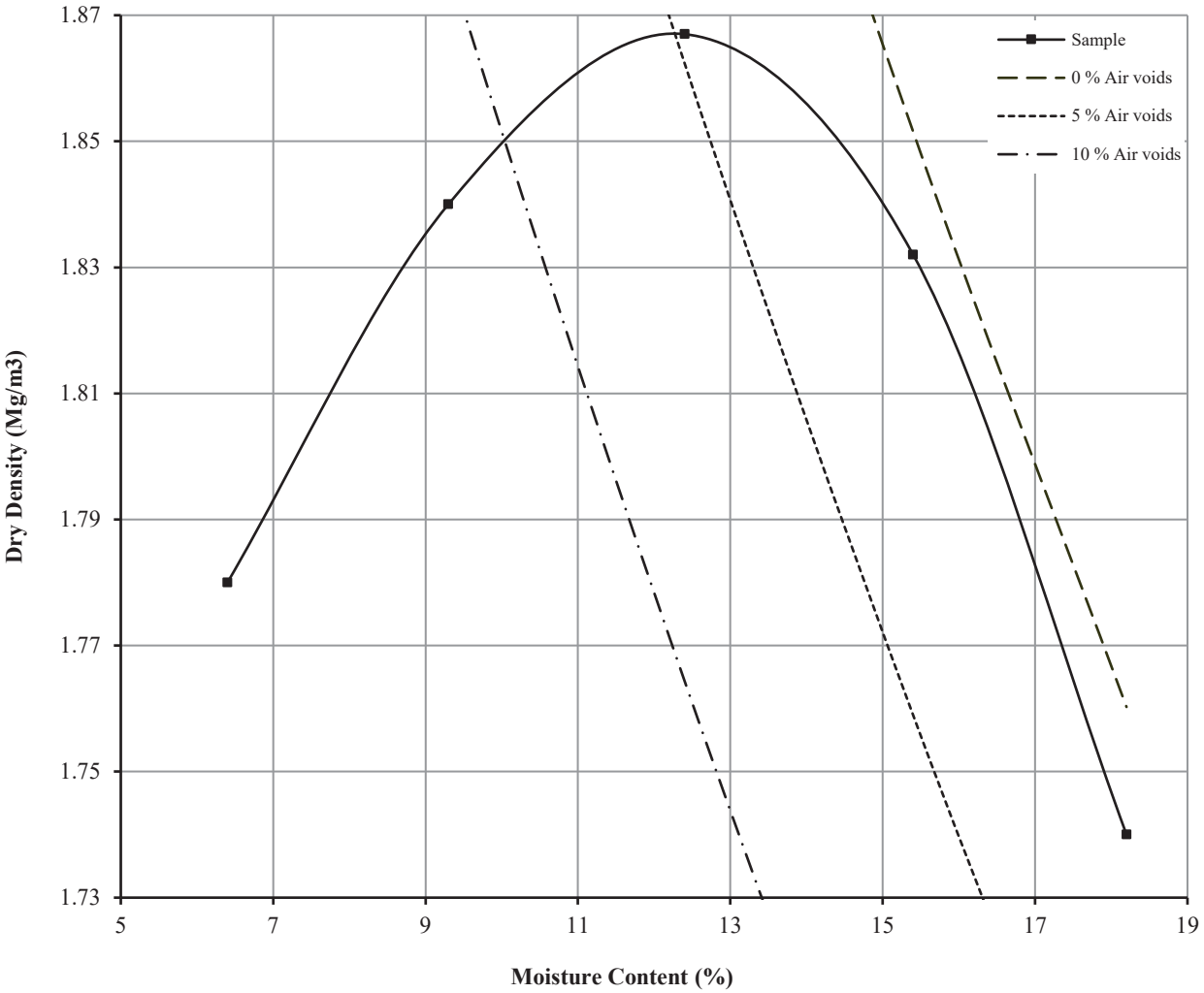
Soil Fraction	Total Percentage
Cobbles	0
Gravel	32
Sand	14
Silt/Clay	54

Remarks:
See Summary of Soil Descriptions

DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

BS 1377 : Part 4 : Clause 3.4 : 1990

Hole Number:	**BH107**	**Top Depth (m) :**	**0.50**
Sample Number:	**5**	**Base Depth (m) :**	
Sample Type:	**B**		

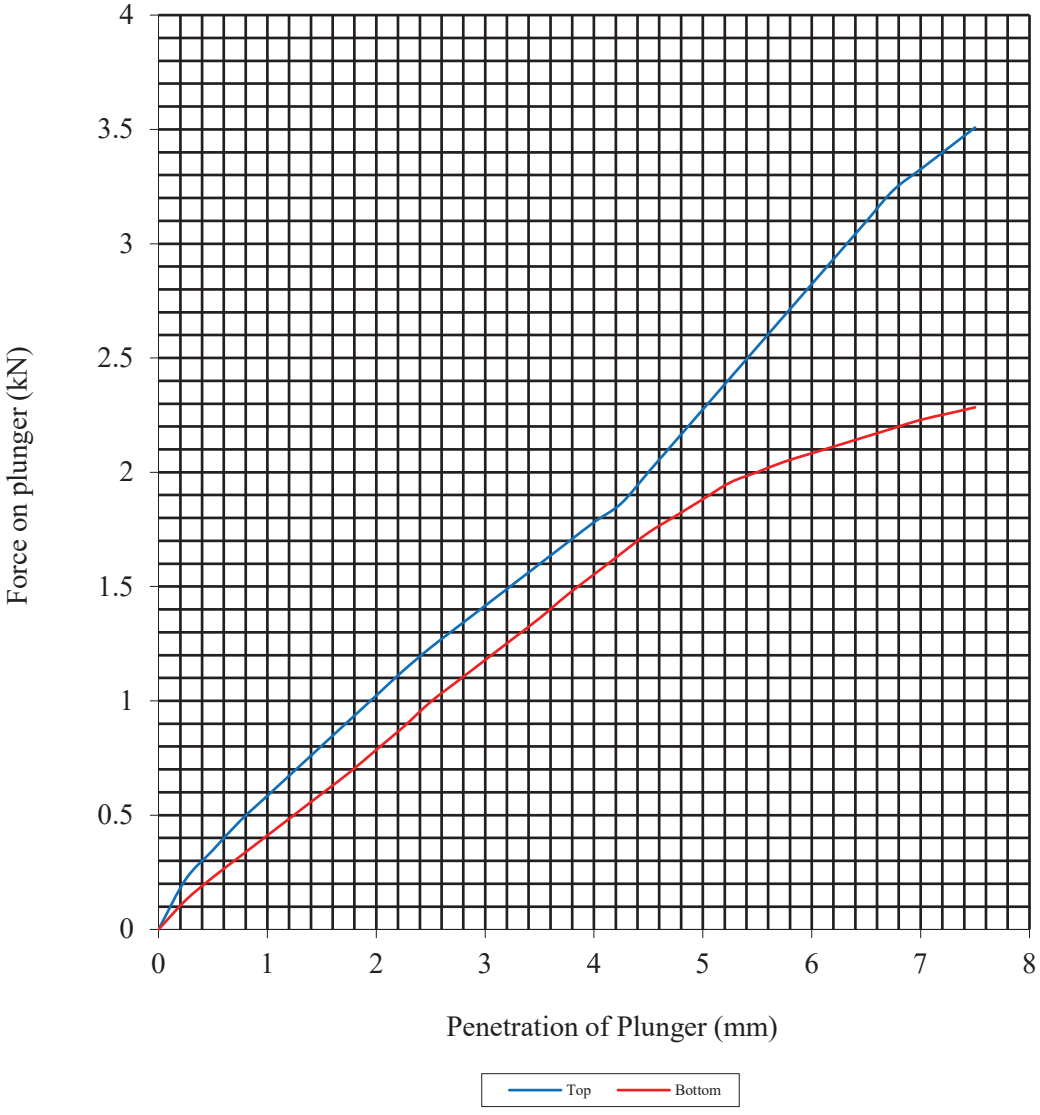


Initial Moisture Content:		12	Method of Compaction:	2.5kg	Separate Samples
Particle Density (Mg/m3):	2.59	Assumed	Material Retained on 37.5 mm Test Sieve (%):		2
Maximum Dry Density (Mg/m3):		1.87	Material Retained on 20.0 mm Test Sieve (%):		17
Optimum Moisture Content (%):		12			
Remarks See summary of soil descriptions					

CALIFORNIA BEARING RATIO TEST

BS 1377 : Part 4 : 1990

Hole Number:	**BH107**	**Top Depth (m):**	**1.10**
Sample Number:	**14**	**Base Depth (m):**	**1.50**
Sample Type:	**B**		



Initial Sample Conditions		Sample Preparation		Final Moisture Content %		C.B.R. Value %	
Moisture Content:	7.9	Surcharge Kg:	4.20	Sample Top	7.9	Sample Top	11.4
Bulk Density Mg/m3:	2.03	Soaking Time hrs	0	Sample Bottom	7.9	Sample Bottom	9.4
Dry Density Mg/m3:	1.88	Swelling mm:	0.00	Remarks : See Summary of Soil Descriptions.			
Percentage retained on 20mm BS test sieve:			17				
Compaction Conditions		2.5kg					

UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgreave

Contract No:
PSL23/5637
Client Ref:
230651GEO39

SUMMARY OF SOIL DENSITY RELATED TESTS

(BS1377 : PART 2 & 4 : 1990)

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Moisture Content %	Bulk Density Mg/m^3	Dry Density Mg/m^3	Retained 20mm %	Retained 37.5mm %	Method of compaction kg	Maximum Dry Density Mg/m^3	Minimum Dry Density Mg/m^3	Remarks
BH107	9	D	1.20	-	9.4	2.08	1.90						
BH107	15	B	2.20	2.50	18	2.03	1.72						
BH107	28	D	7.00	-	14	2.09	1.83						

UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgreave

Contract No:
PSL23/5637
Client Ref:
G230651GEO39

SUMMARY OF LABORATORY HAND VANES

(BS1377 : PART 7 : 1990)

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Moisture Content %	Peak Shear Strength kPa	Residual Shear Strength kPa	Remarks
BH107	14	B	1.10	1.50	7.9	120		
BH107	20	B	3.50	4.00	15	135		
BH107	30	B	7.50	8.00	18	87		

* This test is out of our UKAS scope

PROFESSIONAL SOILS LABORATORY
A PHENNA GROUP COMPANY

A46 Walsgreave

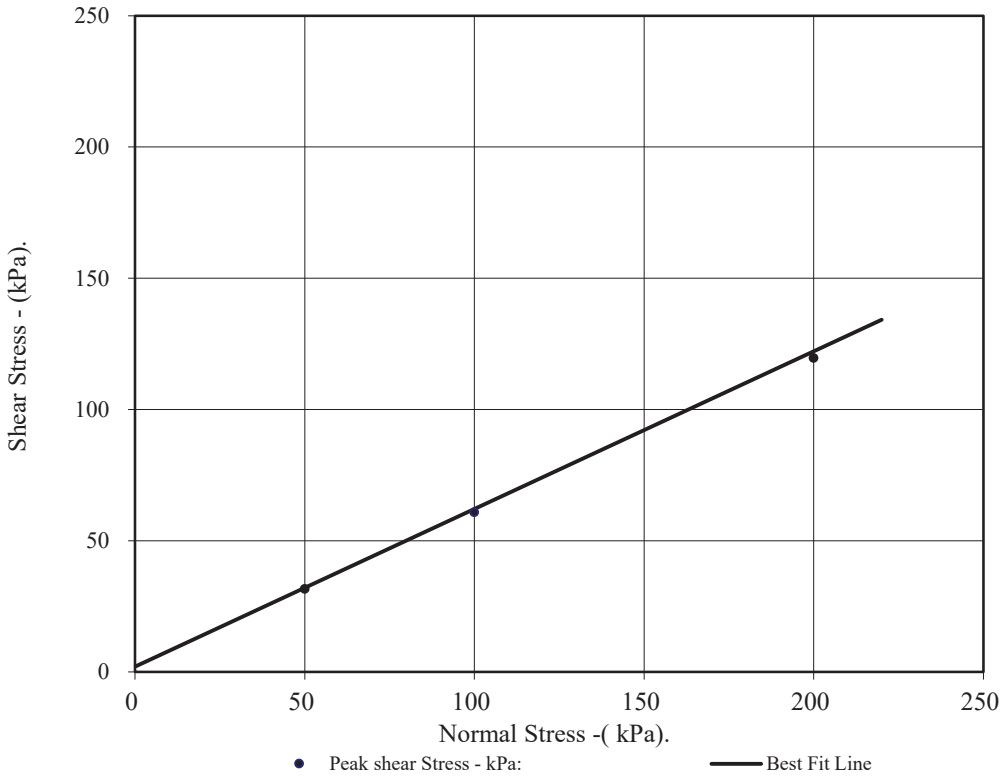
Contract No:
PSL23/5637
Client Ref:
G230651GEO39

CONSOLIDATED DRAINED SHEARBOX TEST

BS1377:Part 7:1990 Clause 4

Hole Number:	**BH107**		Top Depth:	**1.50**	
Sample Number:	**10**		Base Depth:	**2.00**	
Sample Conditions:	Submerged		Sample Type	**B**	
Particle Density - Mg/m3:	2.65	Assumed	**Remarks:**		
Sample Preparation:	Material tested passing 2mm sieve Remoulded using 2.5kg effort.				
Sample Description:	**See summary of soil descriptions.**				

STAGE	**1**	**2**	**3**
Initial Conditions			
Height - mm:	20.05	20.05	20.05
Length - mm:	59.97	59.97	59.97
Moisture Content - %:	17	17	17
Bulk Density - Mg/m3:	1.99	1.99	1.99
Dry Density - Mg/m3:	1.69	1.69	1.69
Voids Ratio:	0.566	0.566	0.566
Normal Pressure- kPa	50	100	200
Consolidation Stage			
Consolidated Height - mm:	18.79	17.82	17.38
Shearing Stage			
Rate of Strain - mm/min	0.250	0.250	0.250
Displacement at peak shear stress - mm	7.50	3.90	7.80
Peak shear Stress - kPa:	32	61	120
Final Consolidated Conditions			
Moisture Content - %:	19	19	19
Bulk Density - Mg/m3:	2.12	2.24	2.29
Dry Density - Mg/m3:	1.78	1.88	1.92
Peak			
Angle of Shearing Resistance:(~~θ~~)	**31**		
Effective Cohesion - kPa:	**2**		



UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

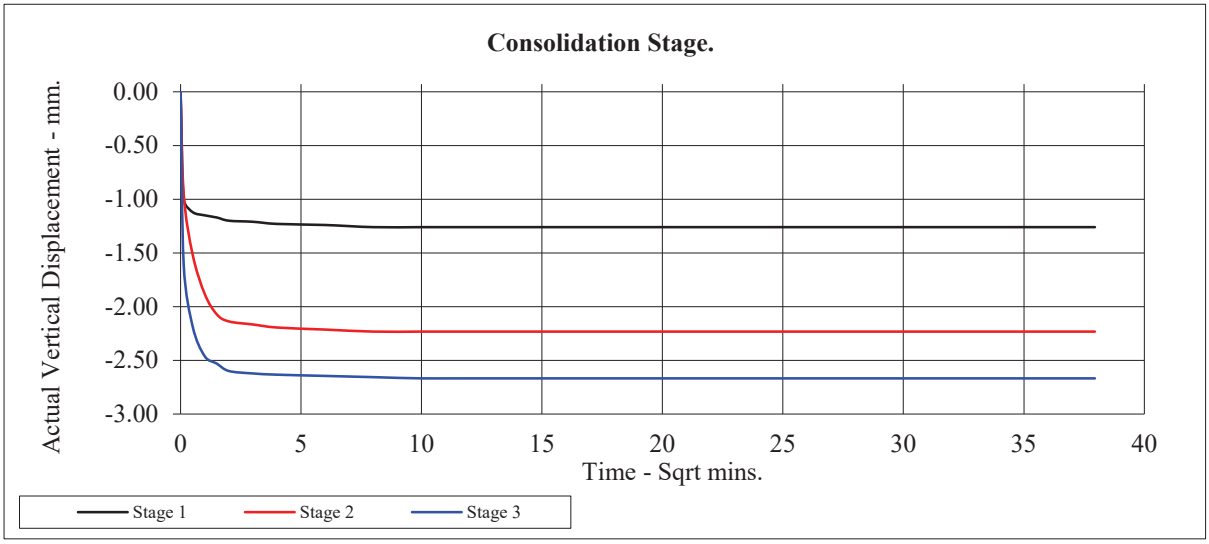
A46 Walsgreave

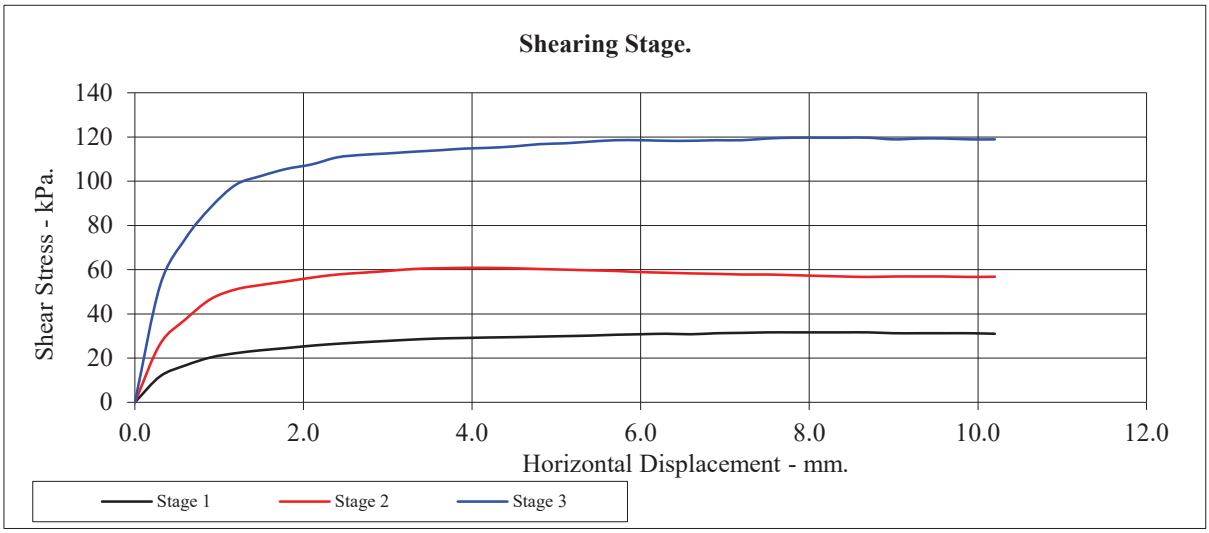
Contract No:
PSL23/5637
Client Ref:
G230651GEO39

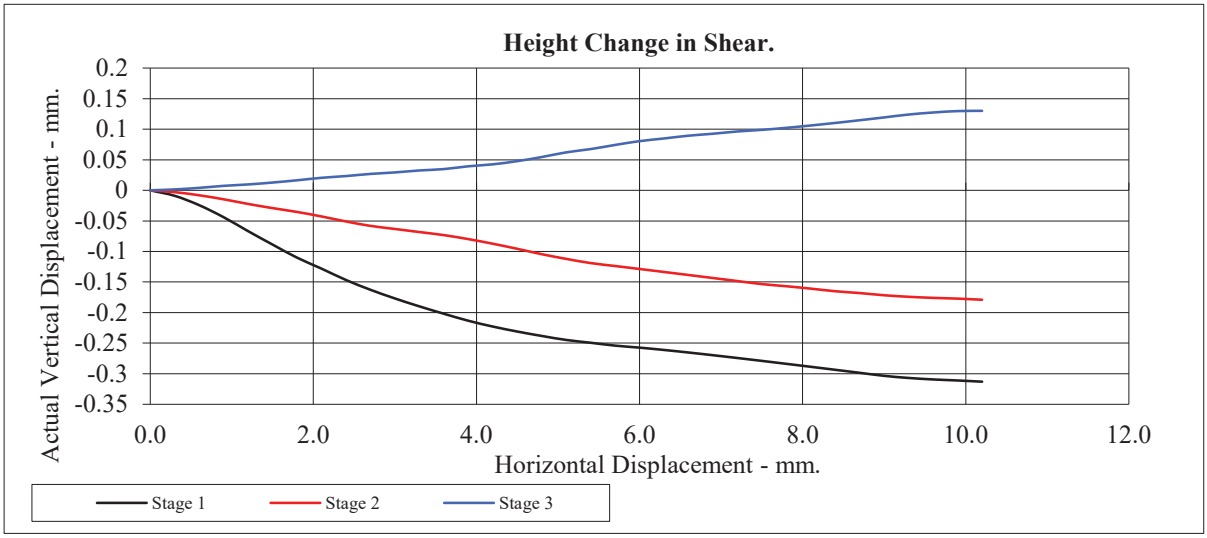
CONSOLIDATED DRAINED SHEARBOX TEST

BS1377:Part 7:1990 Clause 4

Hole Number:	**BH107**	Top Depth:	**1.50**
Sample Number:	**10**	Base Depth:	**2.00**







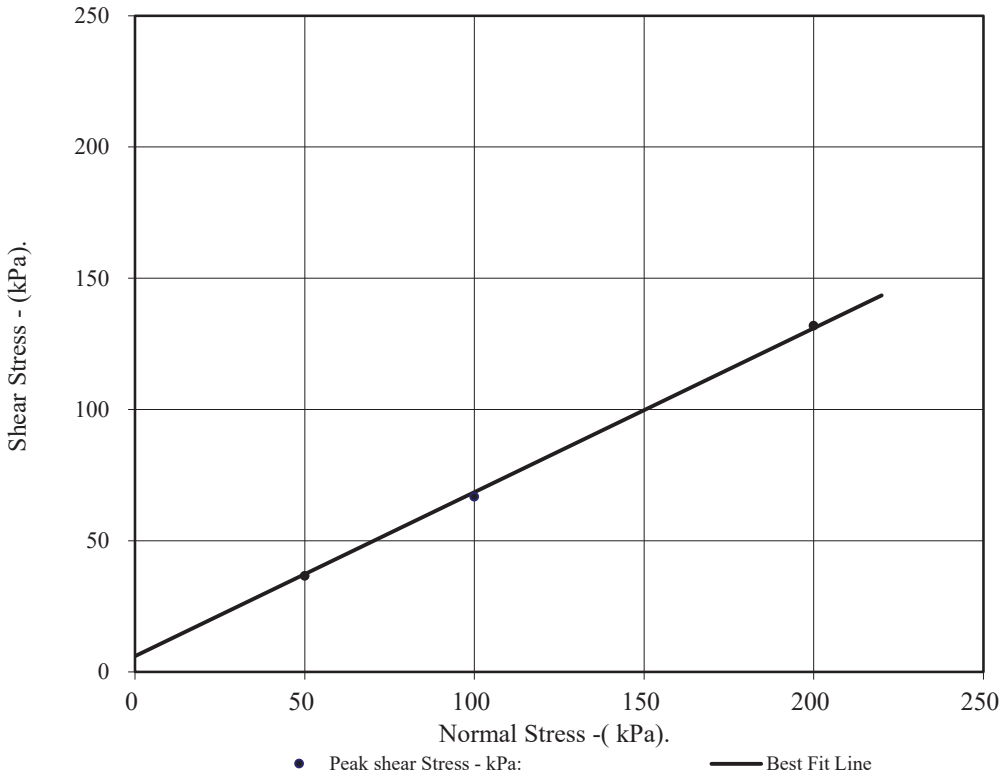
UKAS TESTING 4043 / PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY	**A46 Walsgreave**	**Contract No:** PSL23/5637 **Client Ref:** G230651GEO39

CONSOLIDATED DRAINED SHEARBOX TEST

BS1377:Part 7:1990 Clause 4

Hole Number:	**BH107**		Top Depth:	**3.50**	
Sample Number:	**20**		Base Depth:	**4.00**	
Sample Conditions:	Submerged		Sample Type	**B**	
Particle Density - Mg/m3:	2.65	Assumed	**Remarks:**		
Sample Preparation:	Material tested passing 2mm sieve Remoulded using 2.5kg effort.				
Sample Description:	**See summary of soil descriptions.**				

STAGE	**1**	**2**	**3**
Initial Conditions			
Height - mm:	20.05	20.05	20.05
Length - mm:	59.97	59.97	59.97
Moisture Content - %:	15	15	15
Bulk Density - Mg/m3:	2.01	2.01	2.01
Dry Density - Mg/m3:	1.74	1.74	1.74
Voids Ratio:	0.519	0.519	0.519
Normal Pressure- kPa	50	100	200
Consolidation Stage			
Consolidated Height - mm:	18.74	18.40	17.29
Shearing Stage			
Rate of Strain - mm/min	0.250	0.250	0.250
Displacement at peak shear stress - mm	2.40	4.21	9.01
Peak shear Stress - kPa:	37	67	132
Final Consolidated Conditions			
Moisture Content - %:	15	15	15
Bulk Density - Mg/m3:	2.15	2.19	2.34
Dry Density - Mg/m3:	1.87	1.90	2.02
Peak			
Angle of Shearing Resistance:(~~θ~~)	**32**		
Effective Cohesion - kPa:	**6**		

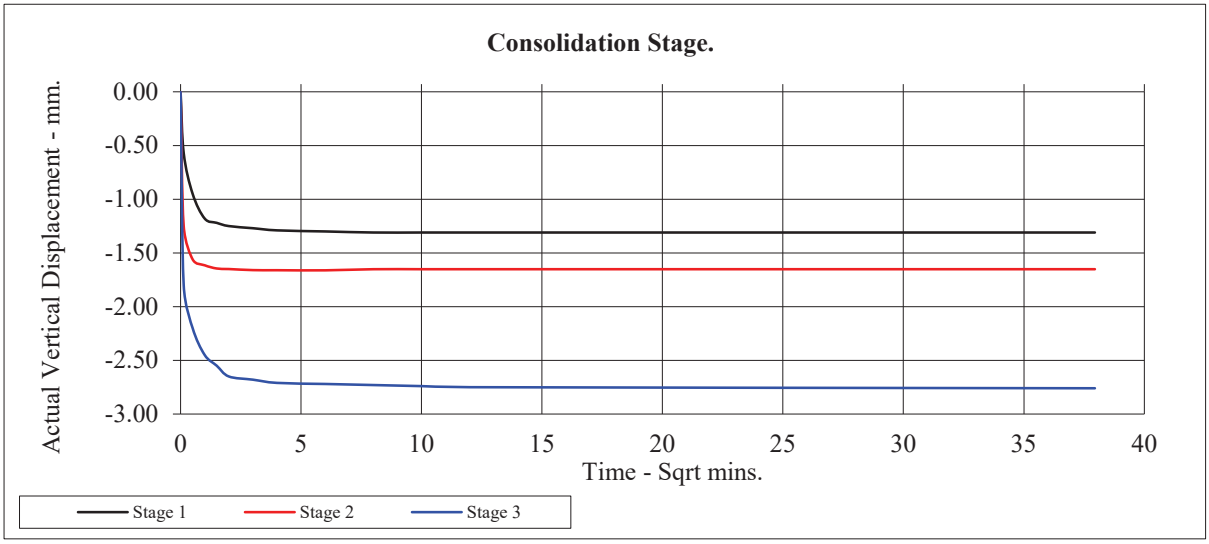


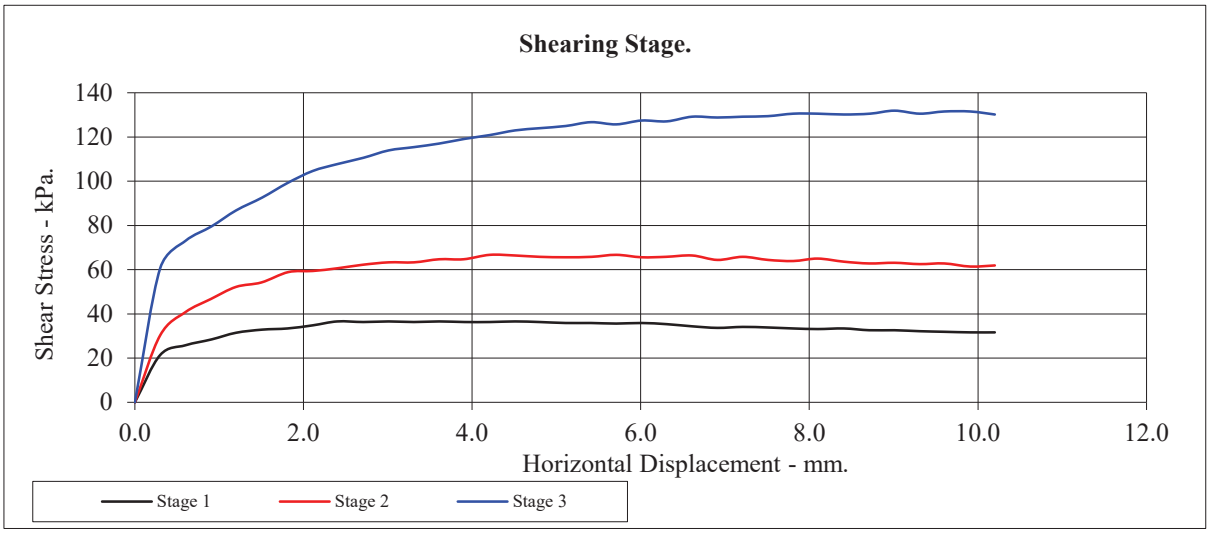
UKAS TESTING 4043 / PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY	**A46 Walsgreave**	**Contract No:** PSL23/5637 **Client Ref:** G230651GEO39

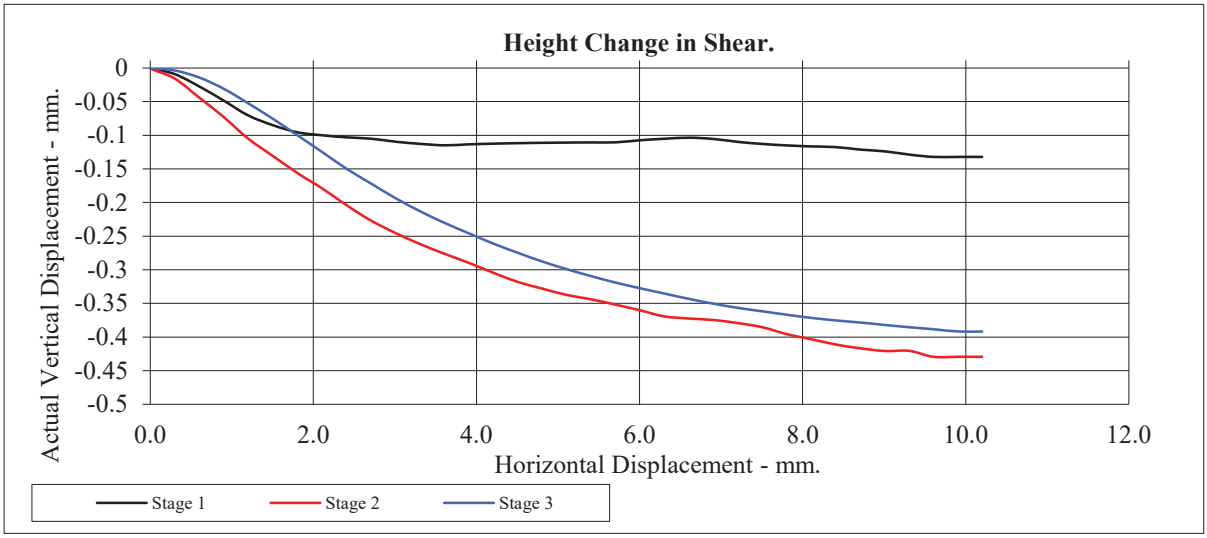
CONSOLIDATED DRAINED SHEARBOX TEST

BS1377:Part 7:1990 Clause 4

Hole Number:	**BH107**	Top Depth:	**3.50**
Sample Number:	**20**	Base Depth:	**4.00**







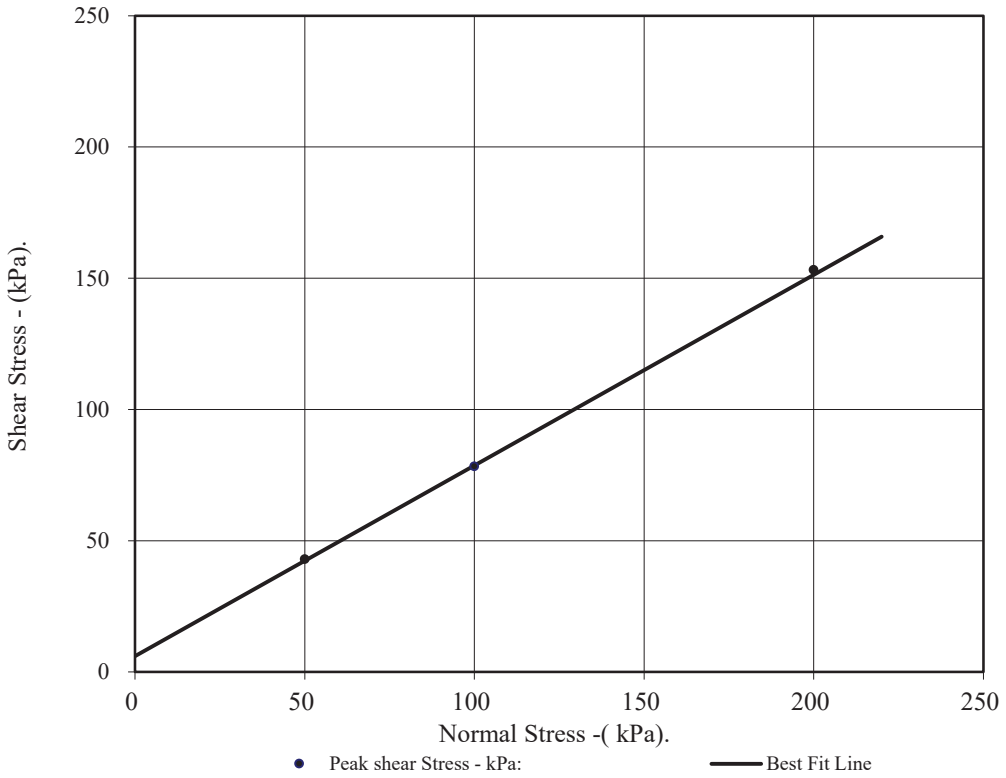
UKAS TESTING 4043 / PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY	**A46 Walsgreave**	**Contract No:** PSL23/5637 **Client Ref:** G230651GEO39

CONSOLIDATED DRAINED SHEARBOX TEST

BS1377:Part 7:1990 Clause 4

Hole Number:	**BH107**		Top Depth:	**5.50**	
Sample Number:	**26**		Base Depth:	**6.00**	
Sample Conditions:	Submerged		Sample Type	**B**	
Particle Density - Mg/m3:	2.65	Assumed	**Remarks:**		
Sample Preparation:	Material tested passing 2mm sieve Remoulded using 2.5kg effort.				
Sample Description:	**See summary of soil descriptions.**				

STAGE	**1**	**2**	**3**
Initial Conditions			
Height - mm:	20.05	20.05	20.05
Length - mm:	59.97	59.97	59.97
Moisture Content - %:	17	17	17
Bulk Density - Mg/m3:	2.10	2.10	2.10
Dry Density - Mg/m3:	1.79	1.79	1.79
Voids Ratio:	0.483	0.483	0.483
Normal Pressure- kPa	50	100	200
Consolidation Stage			
Consolidated Height - mm:	19.20	18.87	18.65
Shearing Stage			
Rate of Strain - mm/min	0.250	0.250	0.250
Displacement at peak shear stress - mm	3.30	3.60	4.20
Peak shear Stress - kPa:	43	78	153
Final Consolidated Conditions			
Moisture Content - %:	20	20	20
Bulk Density - Mg/m3:	2.19	2.23	2.26
Dry Density - Mg/m3:	1.82	1.86	1.88
Peak			
Angle of Shearing Resistance:(~~θ~~)	**36**		
Effective Cohesion - kPa:	**6**		

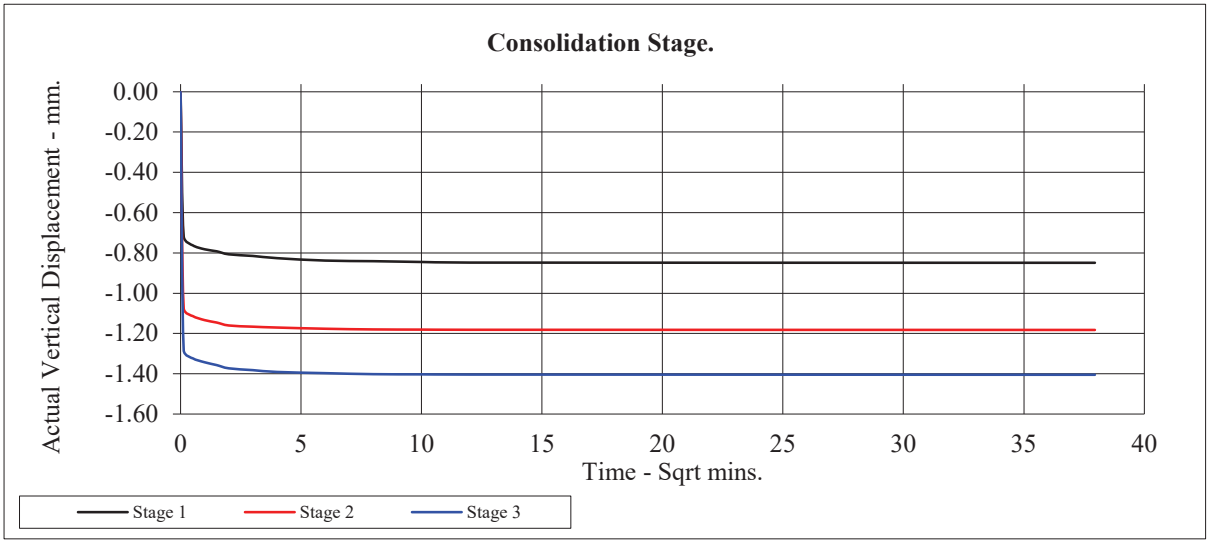


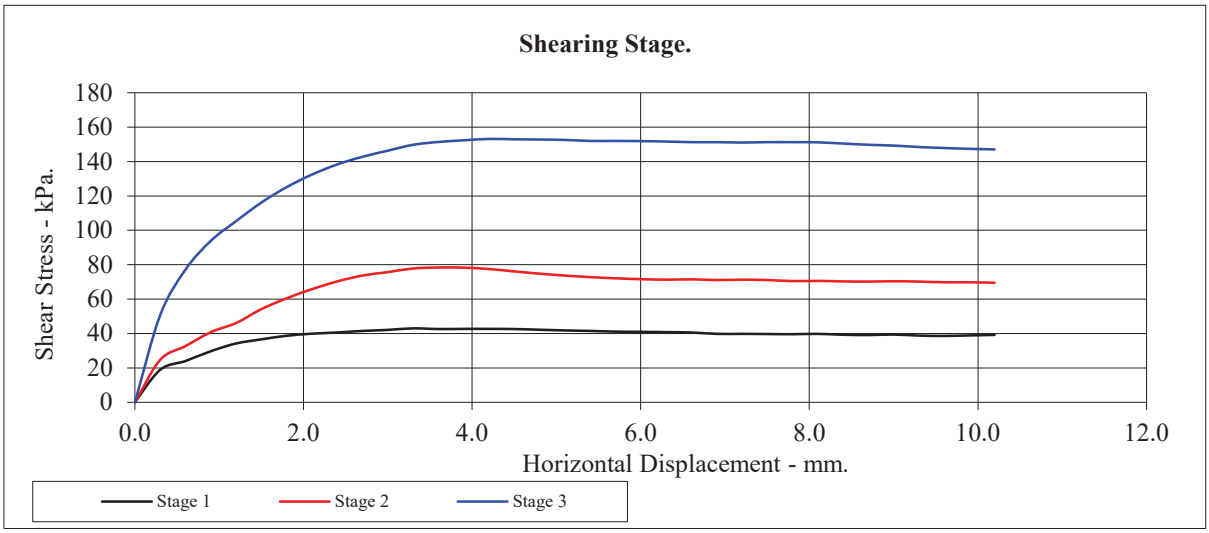
UKAS TESTING 4043 / PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY	**A46 Walsgreave**	**Contract No:** PSL23/5637 **Client Ref:** G230651GEO39

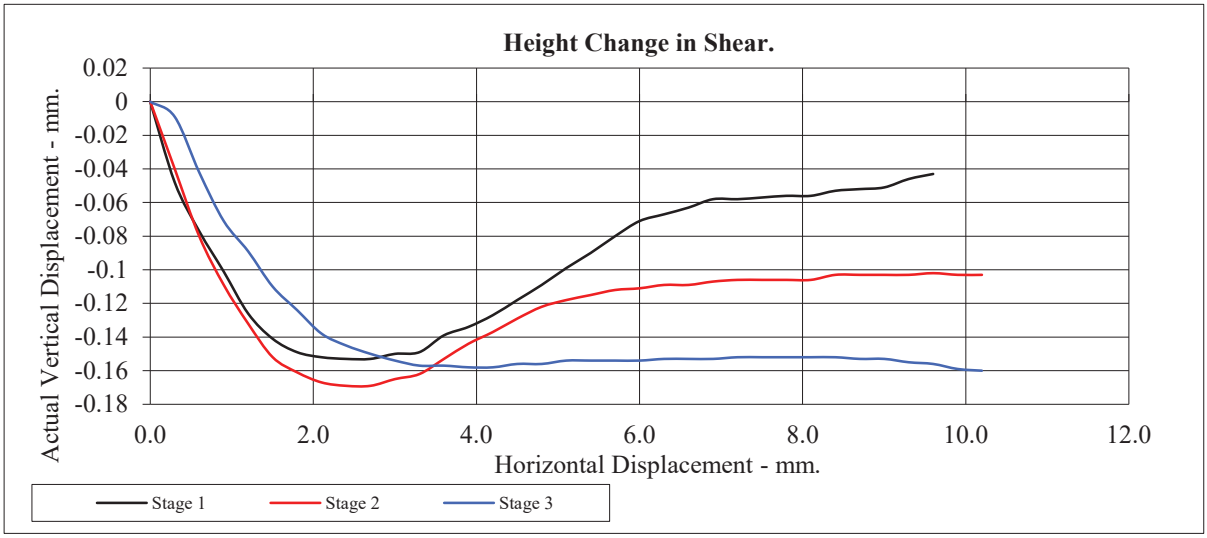
CONSOLIDATED DRAINED SHEARBOX TEST

BS1377:Part 7:1990 Clause 4

Hole Number:	**BH107**	Top Depth:	**5.50**
Sample Number:	**26**	Base Depth:	**6.00**







UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgreave

Contract No:
PSL23/5637
Client Ref:
G230651GEO39

ONE DIMENSIONAL CONSOLIDATION TEST

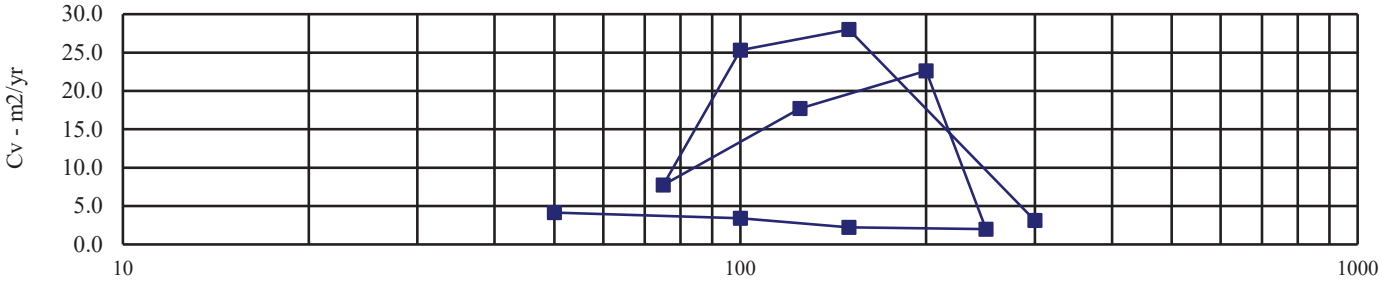
BS 1377: Part 5: 1990: Clause 3

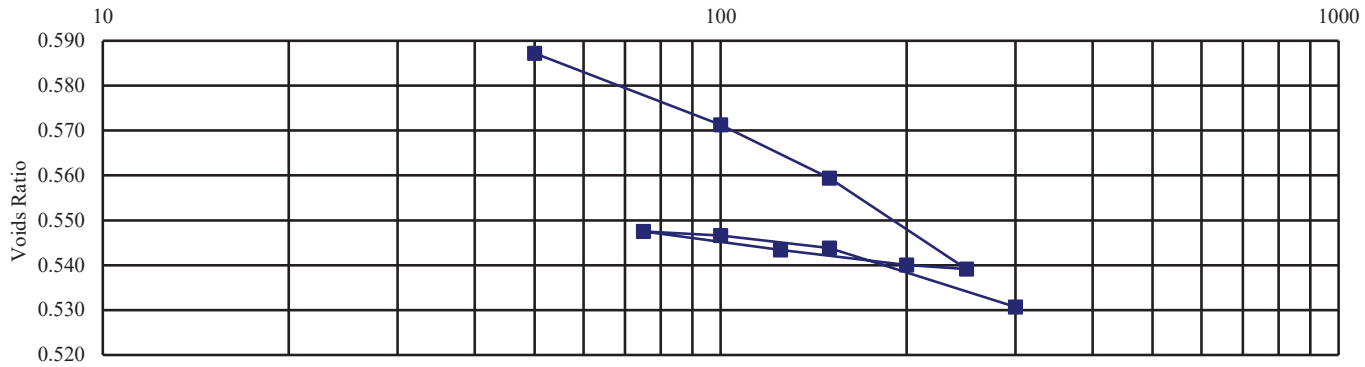
Hole Number: BH107 **Top Depth (m):** 2.50

Sample Number: 16 **Base Depth (m) :** 2.95

Sample Type: U

Initial Conditions		Pressure Range kPa		Mv m2/MN	Cv m2/yr	Specimen location within tube:	Top
Moisture Content (%):	21						
Bulk Density (Mg/m3):	1.98	0	50	0.395	4.142	Method used to determine CV:	T90
Dry Density (Mg/m3):	1.64	50	100	0.201	3.392		
Voids Ratio:	0.619	100	150	0.151	2.243	Nominal temperature during test ' C:	20
Degree of saturation:	90.2	150	250	0.130	1.997		
Height (mm):	20.03	250	200	0.013	22.606	Remarks: See summary of soil descriptions	
Diameter (mm)	75.01	200	125	0.029	17.692		
Particle Density (Mg/m3): Assumed	2.65	125	75	0.053	7.758		
		75	100	0.023	25.329		
		100	150	0.037	27.989		
		150	300	0.057	3.116		





UKAS TESTING 4043

PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

A46 Walsgreave

Contract No: PSL23/5637

Client Ref: G230651GEO39

Appendix E: Core & Dynamic Sample Photographs

Appendix F: Monitoring Records

Job Name:		**A46 Walsgrave**		**Date:**	**23/05/2023**							
Job Number:		**230651**		**Visit:**	**Visit 1**							
Weather, Temp.:		**Sunny**		**Eng:**	**WG**							
Pressure Trend:		**Steady**		**Client:**	**Octavius**		**Key:** DTW - Depth to Water DTB - Depth to Base					
Time Start (hh:mm)		**09:05**	**11:00**									
Monitoring Location		**BH111**	**WS104**									
GROUND GAS												
Atmos. Pressure (mb)		1019										
Pressure - DP (pa)		0										
Flow (l/hr)	**Peak**	0.9										
	Steady	0.9										
CH_4 %	**Peak**	0										
	Steady	0										
LEL %	**Peak**	0										
	Steady	0										
O_2 %	**Minimum**	16.9										
	Steady	16.9										
CO2 %	**Peak**	1.7										
	Steady	1.6										
Hex %	**Peak**	0										
	Steady	0										
CO (ppm)	**Peak**	10										
	Steady	10										
H_2S (ppm)	**Peak**	0										
	Steady	0										
Notes:	Time for Steady? Cover Height? Obstruction?		Gas tap open. Unable to monitor									
Measured DTW (m bgl)		2.90	1.12									
Measured DTB (m bgl)		3.75	2.86									
GROUNDWATER SAMPLING		If Sample Taken, Please Turn Over For Groundwater Sampling Record										
Sample taken (Y/N) Note method in notes		N	N									

Accuracy of Instrument	0-5% vol ± 0.5 (vol)	5-15% vol ± 1.0% (vol)	15%-FS ± 3.0% (vol)	(Flow) 0.3 l/hr	±	Instrument Used	Gas Data GFM 436-1	Serial Number:	12166
						Date Last Calibrated	14/08/2023		
						Date Next Calibration Due	14/08/2024		

Notes/Comments:

Only these two locations requested for gas monitoring.

Job Name:	A46 Walsgrave	Date:	02/06/2023
Job Number:	G230651	Visit:	Visit 2
Weather, Temp.:	Sunny	Eng:	WG
Pressure Trend:	Steady	Client:	Octavius

Key: DTW - Depth to Water DTB - Depth to Base

Time Start (hh:mm)		BH105	BH106	BH109	BH110	WS109	BH127	WS105	WS104	BH111
Monitoring Location		10:10	10:45	11:15	11:35	12:12	12:31	12:44	13:05	13:20
GROUND GAS										
Atmos. Pressure (mb)		1020	1017	1018	1018	1018	1018	1018	1020	1019
Pressure - DP (pa)		0	0	0	-1.3	0	0	0	0	0
Flow (l/hr)	Peak	-0.2	0	0	-7	0	0	0	0	0
	Steady	-1.0	0	0	0	0	0	0	0	0
CH_4 %	Peak	0	0	0	0	0	0	0	0	0
	Steady	0	0	0	0	0	0	0	0	0
LEL %	Peak	0	0	0	0	0	0	0	0	0
	Steady	0	0	0	0	0	0	0	0	0
O_2 %	Minimum	20.2	20.2	17.3	20.5	19.7	20.1	20.1	11.7	20.1
	Steady	20.2	20.2	17.3	20.5	20.6	20.6	20	11.7	20.1
CO2 %	Peak	0	0	2.4	2.2	0.6	0	0.5	4.3	0
	Steady	0	0	2.4	0	0.6	0	0.5	4.3	0
Hex %	Peak	0	0	0	0	0	0	0	0	0
	Steady	0	0	0	0	0	0	0	0	0
CO (ppm)	Peak	0	0	0	0	0	0	0	0	0
	Steady	0	0	0	0	0	0	0	0	0
H_2S (ppm)	Peak	0	0	0	0	0	0	0	0	0
	Steady	0	0	0	0	0	0	0	0	0
Notes:	Time for Steady? Cover Height? Obstruction?									
Measured DTW (m bgl)		3.90	2.52	2.22	4.79	1.38	1.00	3.95	1.27	2.85
Measured DTB (m bgl)		9.70	10.62	4.22	20.49	3.01	9.23	3.96	2.83	3.74
GROUNDWATER SAMPLING		If Sample Taken, Please Turn Over For Groundwater Sampling Record								
Sample taken (Y/N) Note method in notes										

Accuracy of Instrument	0-5% vol ± 0.5 (vol)	5-15% vol ± 1.0% (vol)	15%-FS ± 3.0% (vol)	(Flow) ± 0.3 l/hr	Instrument Used	Gas Data GFM 436-1	Serial Number:	12166
					Date Last Calibrated	14/08/2023		
					Date Next Calibration Due	14/08/2024		

Notes/Comments:

All locations present requested for gas monitoring.

Job Name:		**A46 Walsgrave**		**Date:**	**22/06/2023**							
Job Number:		**230651**		**Visit:**	**Visit 4**							
Weather, Temp.:		**Fine**		**Eng:**	**MN**							
Pressure Trend:		**Steady**		**Client:**	**Octavius**		**Key:**	DTW - Depth to Water		DTB - Depth to Base		
Time Start (hh:mm)		**13:25**	**10:30**									
Monitoring Location		**WS109**	**BH111**									
GROUND GAS												
Atmos. Pressure (mb)		1011	1009									
Pressure - DP (pa)		2.0	1.6									
Flow (l/hr)	**Peak**	0.4	0.6									
	Steady	0.3	0.5									
CH_4 %	**Peak**	0	0									
	Steady	0	0									
LEL %	**Peak**	0	0									
	Steady	0	0									
O_2 %	**Minimum**	20.5	17.8									
	Steady	20.2	17.6									
CO2 %	**Peak**	0.6	1.2									
	Steady	0	0									
Hex %	**Peak**	0	0									
	Steady	0	0									
CO (ppm)	**Peak**	0	0									
	Steady	0	0									
H_2S (ppm)	**Peak**	0	0									
	Steady	0	0									
Notes:	Time for Steady? Cover Height? Obstruction?											
Measured DTW (m bgl)		1.45	2.36									
Measured DTB (m bgl)		2.92	3.65									
GROUNDWATER SAMPLING		If Sample Taken, Please Turn Over For Groundwater Sampling Record										
Sample taken (Y/N) Note method in notes												
Accuracy of Instrument		**0-5% vol** ± 0.5 (vol)	**5-15% vol** ± 1.0% (vol)	**15%-FS** ± 3.0% (vol)	(Flow) 0.3 l/hr	±	Instrument Used	Gas Data GFM 436-1		Serial Number:	12166	
							Date Last Calibrated	14/08/2023				
							Date Next Calibration Due	14/08/2024				

Notes/Comments:

Prior to visit 3, gas monitoring cancelled (see master water monitoring sheet for manual water measurement vales), during the subsequent visit 4, request for gas monitoring reinstated by client - remaining unvisited locations monitored as requested.

Job Name:		A46 Walsgrave		Date:	24/07/2023					
Job Number:		230651		Visit:	Visit 5					
Weather, Temp.:		Fine		Eng:	MN					
Pressure Trend:		Steady		Client:	Octavius		Key: DTW - Depth to Water DTB - Depth to Base			
Time Start (hh:mm)		12:49	13.25	13.49	14.44	14.14				
Monitoring Location		BH105	BH109	BH111	WS105	WS109				
GROUND GAS										
Atmos. Pressure (mb)		1023	1019	1019	1022	1018				
Pressure - DP (pa)		0.1	0	-1.1	0.6	0.1				
Flow (l/hr)	Peak	0.1	-0.4	0	1.1	0				
	Steady	0	-0.2	-0.4	0.9	-0.3				
CH_4 %	Peak	0	0	0	0	0				
	Steady	0	0	0	0	0				
LEL %	Peak	0	0	0	0	0				
	Steady	0	0	0	0	0				
O_2 %	Minimum	20.5	18.9	20.2	20.3	19.5				
	Steady	20.6	20	20.1	20.1	11.7				
CO2 %	Peak	2.1	1.7	0.3	0.8	0.1				
	Steady	2	1.7	0	0.8	0				
Hex %	Peak	0	0	0	0	0				
	Steady	0	0	0	0	0				
CO (ppm)	Peak	0	0	0	0	0				
	Steady	0	0	0	0	0				
H_2S (ppm)	Peak	0	0	0	0	0				
	Steady	0	0	0	0	0				
Notes:	Time for Steady? Cover Height? Obstruction?	GAS VALUES AND DIVER DOWNLOAD FOR ALL POSITIONS. SEE MANUAL DIPS BELOW.								
Measured DTW (m bgl)		0.67	2.84	2.51	0.73	1.46				
Measured DTB (m bgl)		9.23	4.24	3.65	3.93	4.24				
GROUNDWATER SAMPLING		If Sample Taken, Please Turn Over For Groundwater Sampling Record								
Sample taken (Y/N) Note method in notes										

Accuracy of Instrument	0-5% vol ± 0.5 (vol)	5-15% vol ± 1.0% (vol)	15%-FS ± 3.0% (vol)	(Flow) 0.3 l/hr	±	Instrument Used	Gas Data GFM 436-1	Serial Number:	12166
						Date Last Calibrated	14/08/2023		
						Date Next Calibration Due	14/08/2024		

Notes/Comments:

Job Name:		**A46 Walsgrave**		**Date:**	**21/08/2023**							
Job Number:		**230651**		**Visit:**	**Visit 6**							
Weather, Temp.:		**Sunny**		**Eng:**	**MN**							
Pressure Trend:		**Steady**		**Client:**	**Octavius**		**Key:**	DTW - Depth to Water		DTB - Depth to Base		
Time Start (hh:mm)		**09:52**	**10:24**	**10:55**	**12:45**							
Monitoring Location		**BH105**	**BH109**	**BH111**	**WS105**	**WS109**						
GROUND GAS												
Atmos. Pressure (mb)		1021	1021	1023	1022							
Pressure - DP (pa)		0	0	0.2	0							
Flow (l/hr)	**Peak**	0.1	0.1	-0.4	-0.1							
	Steady	0	0.1	0.2	0							
CH_4 %	**Peak**	0	0	0	0							
	Steady	0	0	0	0							
LEL %	**Peak**	0	0	0	0							
	Steady	0	0	0	0							
O_2 %	**Minimum**	20.3	19.9	20.1	19.8							
	Steady	20.5	20.1	20.2	20							
CO2 %	**Peak**	1.9	2.1	0.7	1.7							
	Steady	1.8	2.1	0.3	1.4							
Hex %	**Peak**	0	0	0	0							
	Steady	0	0	0	0							
CO (ppm)	**Peak**	0	0	0	0							
	Steady	0	0	0	0							
H_2S (ppm)	**Peak**	0	0	0	0							
	Steady	0	0	0	0							
Notes:	Time for Steady? Cover Height? Obstruction?					No Access						
Measured DTW (m bgl)		2.32	2.88	2.70	0.95							
Measured DTB (m bgl)		9.56	4.11	3.64	3.94							
GROUNDWATER SAMPLING		If Sample Taken, Please Turn Over For Groundwater Sampling Record										
Sample taken (Y/N) **Note method in notes**												

Accuracy of Instrument	0-5% vol ± 0.5 (vol)	5-15% vol ± 1.0% (vol)	15%-FS ± 3.0% (vol)	(Flow) 0.3 l/hr	±	Instrument Used	Gas Data GFM 436-1	Serial Number:	12166
						Date Last Calibrated	14/08/2023		
						Date Next Calibration Due	14/08/2024		

Notes/Comments:

Job Name:		A46 Walsgrave		Date:	09/10/2023						
Job Number:		230651		Visit:	Visit 7						
Weather, Temp.:		rain		Eng:	MN						
Pressure Trend:		steady		Client:	Octavius		Key: DTW - Depth to Water DTB - Depth to Base				
Time Start (hh:mm)		12:45									
Monitoring Location		BH105	BH109	BH111	WS105	WS109					
GROUND GAS											
Atmos. Pressure (mb)		1019	1019	1021	1023	1020					
Pressure - DP (pa)		0.1	0.3	-1	0	0.1					
Flow (l/hr)	Peak	0.2	-0.5	0	1.2	0.6					
	Steady	0.1	-0.1	-0.2	0.9	0.4					
CH_4 %	Peak	0	0	0	0	0					
	Steady	0	0	0	0	0					
LEL %	Peak	0	0	0	0	0					
	Steady	0	0	0	0	0					
O_2 %	Minimum	20.2	18.2	19.5	21.2	19.8					
	Steady	20.9	21.1	20.1	20.7	17.2					
CO2 %	Peak	2.4	2	0.8	0.5	0.3					
	Steady	2	2	0.1	0.5	0					
Hex %	Peak	0	0	0	0	0					
	Steady	0	0	0	0	0					
CO (ppm)	Peak	0	0	0	0	0					
	Steady	0	0	0	0	0					
H_2S (ppm)	Peak	0	0	0	0	0					
	Steady	0	0	0	0	0					
Notes:	Time for Steady? Cover Height? Obstruction?										
Measured DTW (m bgl)											
Measured DTB (m bgl)											
GROUNDWATER SAMPLING		If Sample Taken, Please Turn Over For Groundwater Sampling Record									
Sample taken (Y/N) Note method in notes											

Accuracy of Instrument	0-5% vol ± 0.5 (vol)	5-15% vol ± 1.0% (vol)	15%-FS ± 3.0% (vol)	(Flow) 0.3 l/hr	±	Instrument Used	Gas Data GFM 436-1	Serial Number:	12166
						Date Last Calibrated	14/08/2023		
						Date Next Calibration Due	14/08/2024		

Notes/Comments:

	Overview											Monitoring at Install		Monitoring 01.: 23/05/23		Monitoring 02.: 02/06/23		Monitoring 03.: 09/06/23		Monitoring 04.: 22-26/06/23		Monitoring 5.: 24-25/07/23		Monitoring 6.: 21-29/08/23		Monitoring 7.: 09-12/10/23		Monitoring 8.: 13-15/11/23	
Position	**Highest**	**Lowest**	**Average**	**Successful Readings**	**Hole depth**	**Diver**	**Response Top**	**Response Base**	**Pipework height above GL**	**Relative Level of Pipework**	**HCB of pipework measured**	**Installed date**	**Water Level at Installation**	**Depth to Water**	**Depth to Base**	**Depth to Water**	**Depth to Base**	**Depth to Water**	**Depth to Base**	**Depth to Water**	**Depth to Base**	**Depth to Water**	**Depth to Base**	**Depth to Water**	**Depth to Base**	**Depth to water**	**Depth to base**	**Depth to water**	**Depth to base**
BH111	2.30	2.90	2.60	6	10.00	Y	1.50	3.80	0.21	78.66	75	22/05/2023	3.40	2.90	3.75	2.85	3.74	2.30	3.74	2.36	3.65	2.51	3.65	2.70	3.64	3.20	3.65	2.46	3.85
WS104	1.12	2.09	1.55	6	3.90	Y	1.90	3.90	0.15	75.66	82	17/05/2023	Dry	1.12	2.86	1.27	2.83	1.48	2.84	1.44	2.72	1.88	2.75	2.09	2.78	2.17	2.79	1.00	2.81
BH105	1.45	3.90	2.30	5	10.41	Y	3.20	10.00	0.04	72.87	38	23/05/2023	Dry			3.90	9.70	1.78	9.70	1.45	9.61	2.07	9.65	2.32	9.56	2.65	9.98	1.14	9.55
BH106	2.52	3.45	2.99	5	10.79	Y	3.50	10.40	0.10	76.10	20	24/05/2023	Dry			2.52	10.62	2.88	10.62	2.97	10.51	3.14	10.56	3.45	10.41	3.51	10.49	2.51	10.45
BH109	2.22	2.88	2.67	5	20.50	Y	1.50	4.20	-0.11	79.32	350	30/05/2023	Dry			2.22	4.22	2.67	4.22	2.72	4.19	2.84	4.24	2.88	4.11	3.34*	4.46	2.66	4.00
BH110	4.79	5.47	5.18	5	20.15	Y	5.50	20.00	0.14	79.46	295	31/05/2023	Dry			4.79	20.49	5.06	20.49	5.17	19.99	5.39	19.97	5.47	19.93	5.57*	20.34	4.90	20.11
WS109	1.38	1.53	1.46	4	3.00	Y	1.00	3.00	0.19	71.26	160	22/05/2023	Dry			1.38	3.01	1.53	3.01	1.45	2.92	1.46	4.24		No access	1.44	1.95	0.93	3.02
BH127	0.67	2.40	1.10	5	9.86	Y	6.90	9.50	0.07	74.83	96	30/05/2023	1.80			1.00	9.23	2.40	9.50	0.68	9.21	0.67	9.23	0.74	9.08	0.68	9.04	0.35	9.01
WS105	0.75	3.95	2.25	5	3.90	Y	1.20	3.90	0.10	74.78	44	25/05/2023	Dry			3.95	3.96	3.35	3.88	2.23	3.91	0.75	3.93	0.95	3.94	0.69	3.86	0.31	3.95
BH117	1.05	1.24	1.14	4	15.50	Y	6.70	15.50	0.05	74.15	345	01/06/2023	Dry							1.05	6.63	1.14	6.61	1.24	6.56	0.90	6.65	0.79	8.09
BH121	0.41	0.71	0.52	4	4.90	Y	6.50	16.00	0.20	73.82	320	05/06/2023	Dry							0.45	15.06	0.71	15.05	0.41	15.14	0.18	15.24	0.09	15.40
BH125A	1.29	1.51	1.42	4	5.90	Y	3.80	8.00	-0.03	74.66	145	25/05/2023	Dry							1.51	8.10	1.29	8.16	1.47	8.13	1.16	8.14	0.71	8.09
WS102	0.71	1.01	0.86	4	6.90	Y	2.90	3.70	0.16	71.46	85	16/06/2023	1.40							Dry	2.65	0.71	2.66	1.01	2.71	0.86	2.64	0.51	2.86
WS103	Dry	Dry	Dry	4	7.90	Y	1.60	2.30	0.20	77.69	45	15/06/2023	Dry							Dry	2.09	Dry	2.11	Dry	2.08	2.02	2.15	0.96	2.30
WS106	3.26	3.68	3.45	4	8.90	Y	2.30	5.00	0.27	77.21	335	08/06/2023	Dry							3.42	4.30	3.68	4.31	3.26	4.30	0.37	4.33	0.37	4.57
BH123	3.50	3.73	3.61	4	9.90	Y	2.80	8.90	0.18	78.42	50	08/06/2023	10.60							3.50	8.81	3.61	8.83	3.73	8.72	3.62	8.71	3.20	8.83
BH126	2.91	3.24	3.02	4	10.90	Y	5.40	7.80	0.18	77.02	230	14/06/2023	5.80							2.91	7.85	2.92	7.81	3.24	7.72	2.80	7.82	2.63	8.01
BH107	Dry	Dry	Dry	4	13.90	Y	0.40	2.20		76.04		23/06/2023	Dry							Dry	2.29	Dry	2.32	Dry	2.30	Dry	2.28	Dry	2.33
BH104	0.98	0.98	0.98	2	11.90	Y	5.20	9.79	0.60	70.91	250	22/06/2023	1.50							0.98	8.70				No Access	No Access	No Access	0.80	9.24
BH112	3.65	4.42	3.94	4	12.90	Y	1.30	5.10	0.20	79.11	94	21/06/2023	Dry							4.42	4.46	3.65	5.16	3.75	5.12	4.14	5.47	3.72	5.29
	All Visits			**97**									**20**	**2**		**9**		**9**		**20**		**19**		**18**		**20**		**20**	

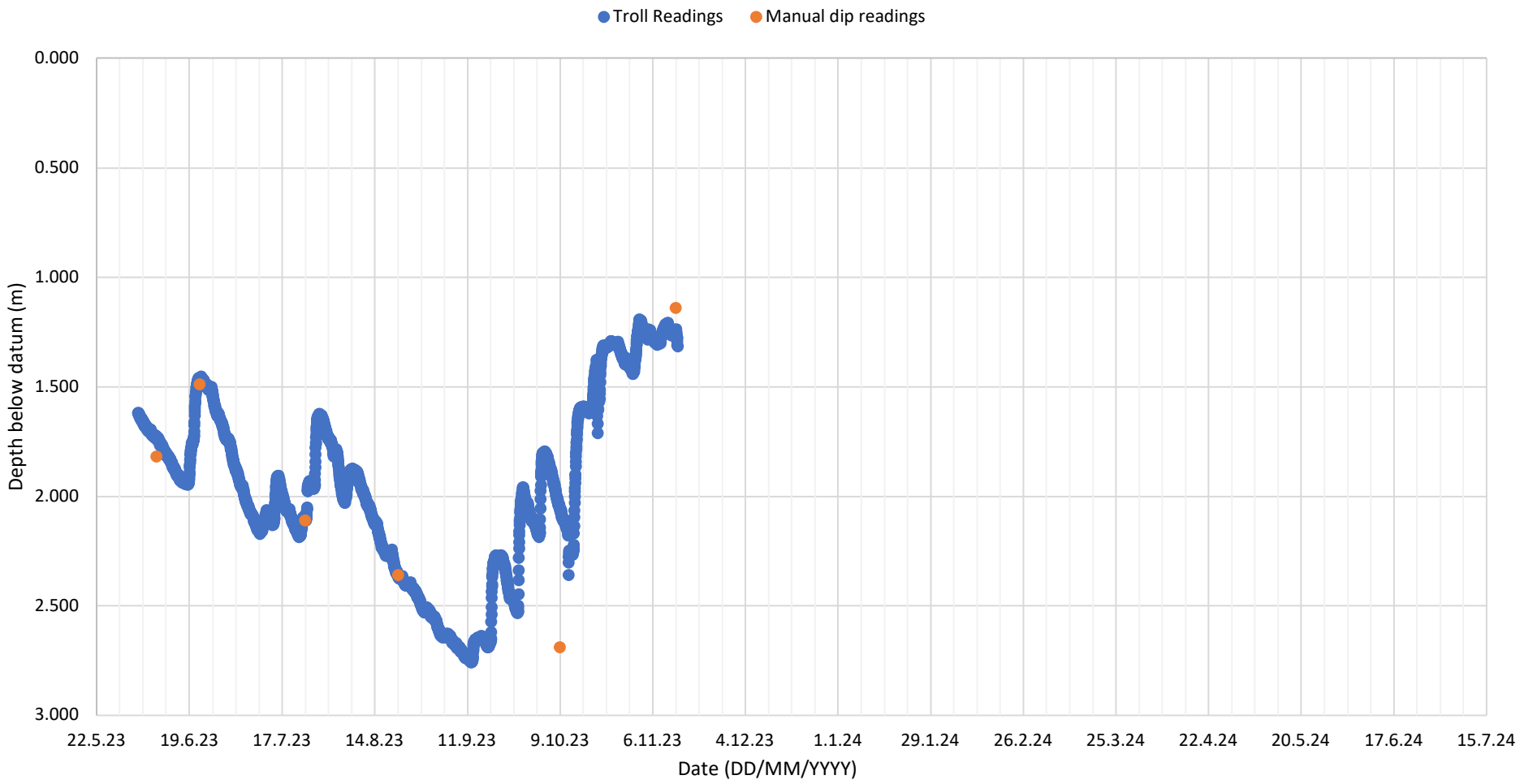
Dry values have not been included in the average water depth as the water depth is unknown.

Anomalous results not included in average

From this point on measurements are taken relative to pipework height not, GL

Continuous Water Monitoirng

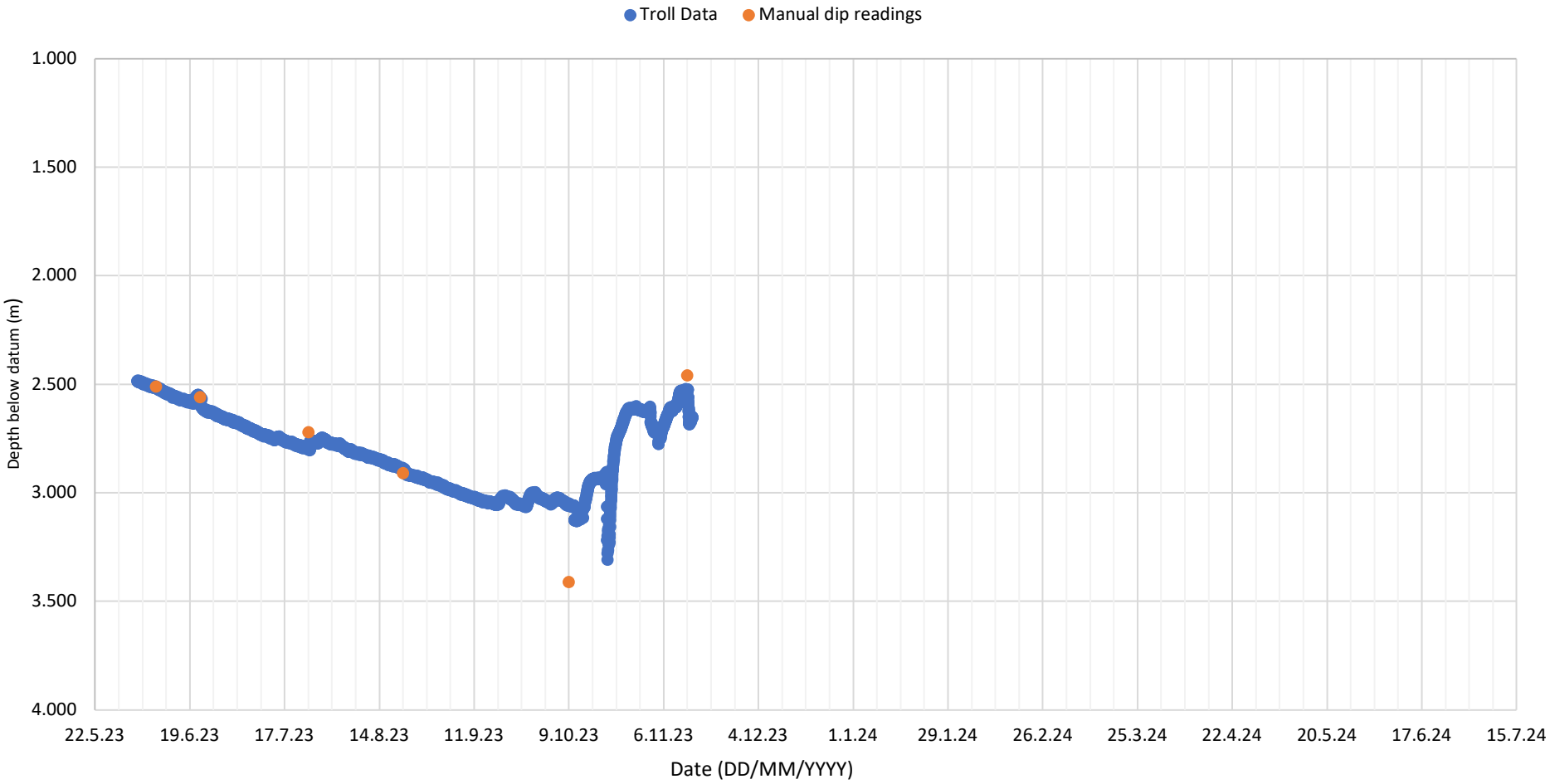
Client:	Octavius	Location:	BH105	Engineer:	SW
Job Location:	A46 Walsgrave	Start Date:	02/06/2023	Level Datum:	72.87
Job No:	230651	End Date:	Ongoing	Installed Equipment:	Rugged Troll 100



Notes:	Continuous water monitoring diver installed on 02/06/23

Continuous Water Monitoirng

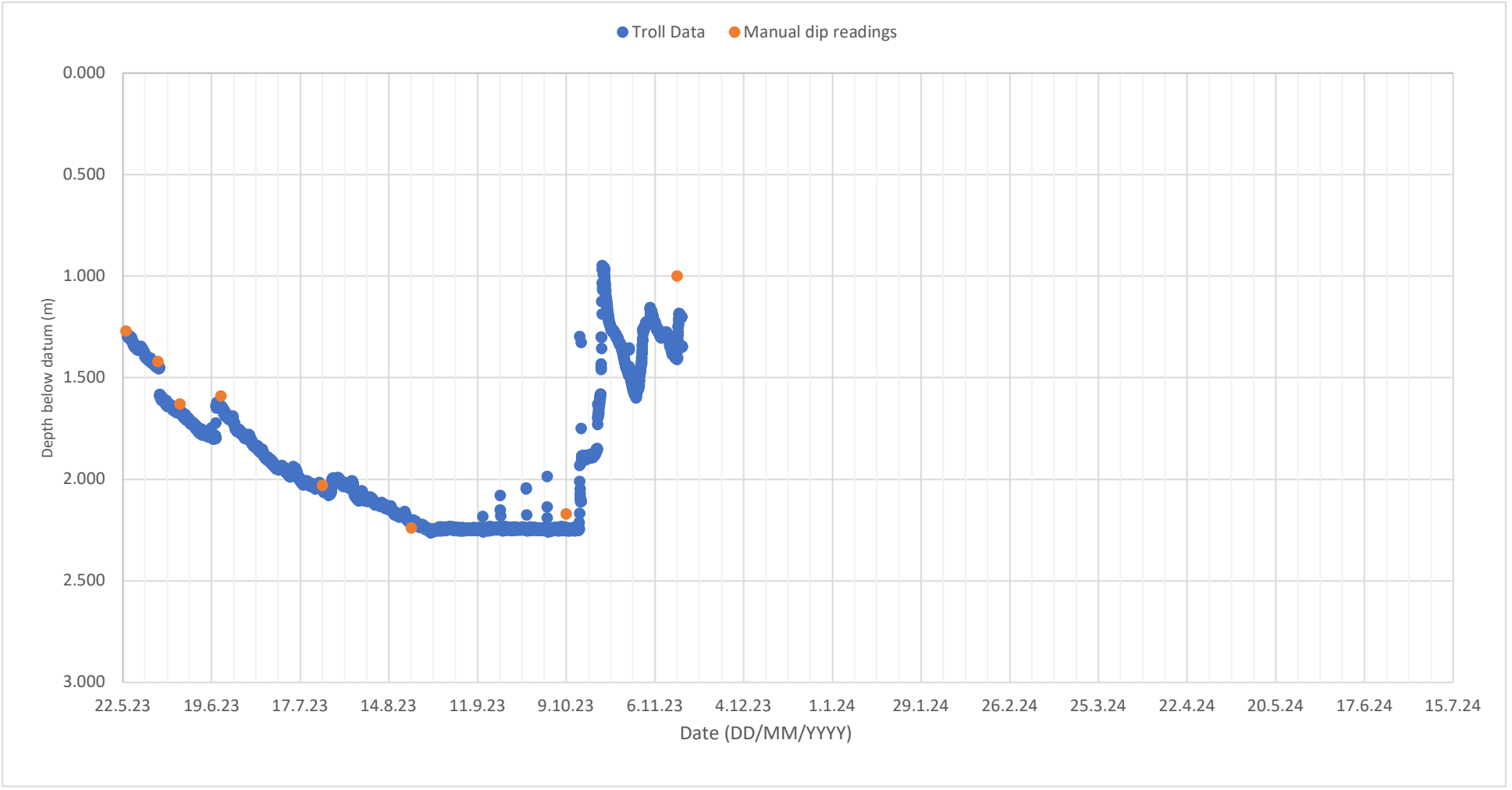
Client:	Octavius	Location:	BH111	Engineer:	SW
Job Location:	A46 Walsgrave	Start Date:	23/05/2023	Level Datum:	78.66
Job No:	230651	End Date:	Ongoing	Installed Equipment:	Rugged Troll 100



Notes:	Continuous water monitoring diver installed on 23/05/23

Continuous Water Monitoirng

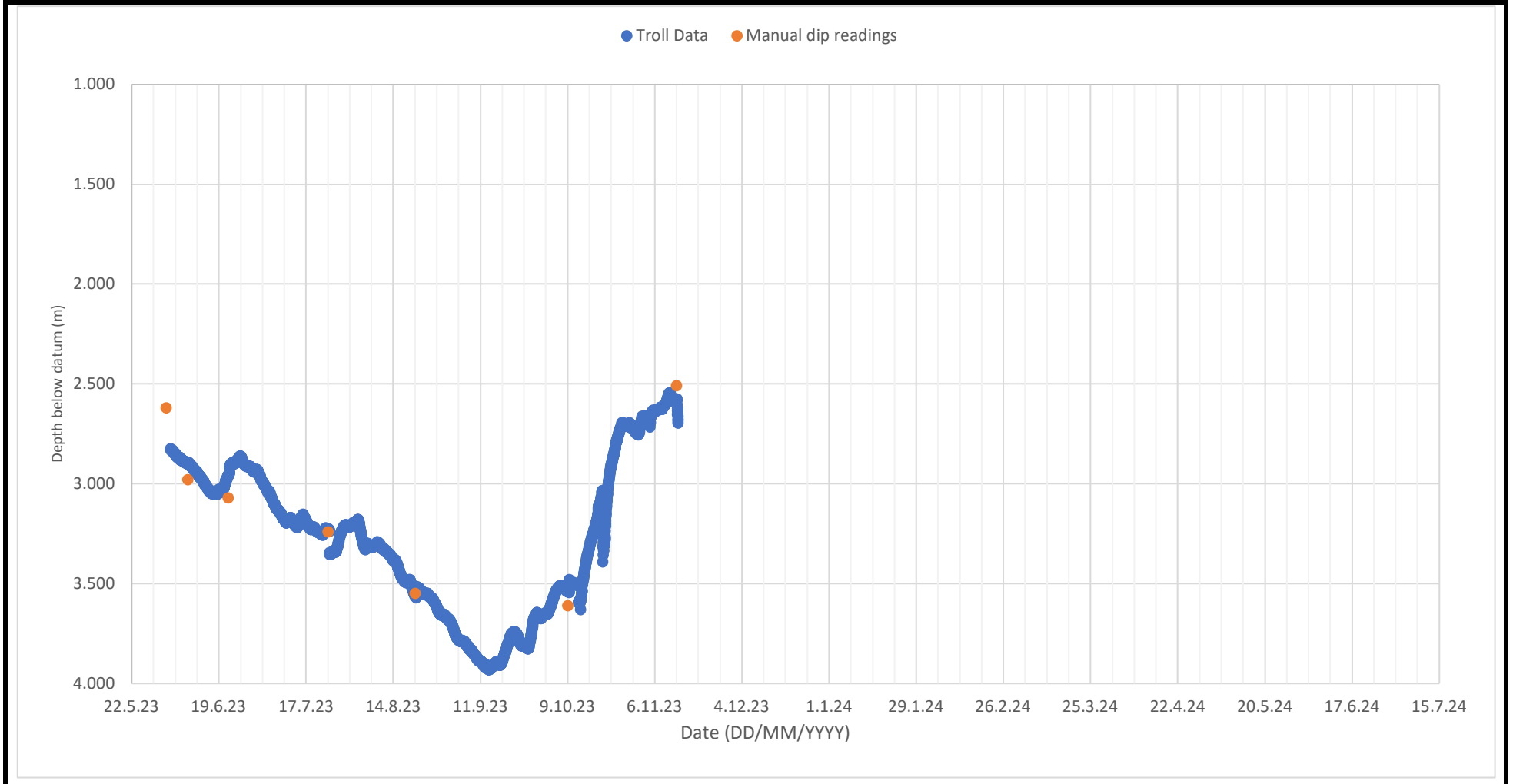
Client:	Octavius	Location:	WS104	Engineer:	SW
Job Location:	A46 Walsgrave	Start Date:	23/05/2023	Level Datum:	75.66
Job No:	230651	End Date:	Ongoing	Installed Equipment:	Rugged Troll 100



Notes:	Continuous water monitoring diver installed on 23/05/23

Continuous Water Monitoirng

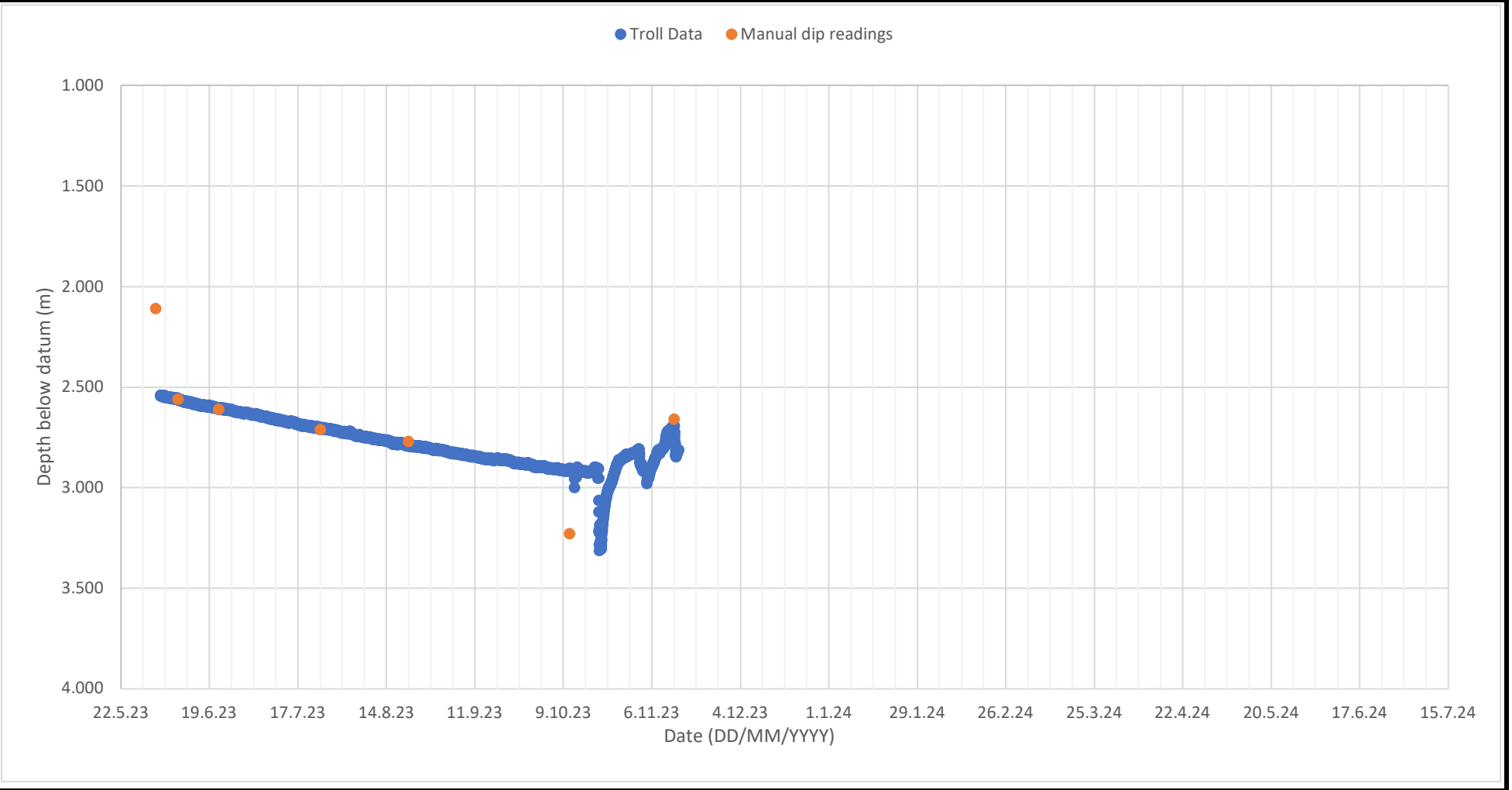
Client:	Octavius	Location:	BH106	Engineer:	SW
Job Location:	A46 Walsgrave	Start Date:	02/06/2023	Level Datum:	76.10
Job No:	230651	End Date:	Ongoing	Installed Equipment:	Rugged Troll 100



Notes:	Continuous water monitoring diver installed on 02/06/23

Continuous Water Monitoirng

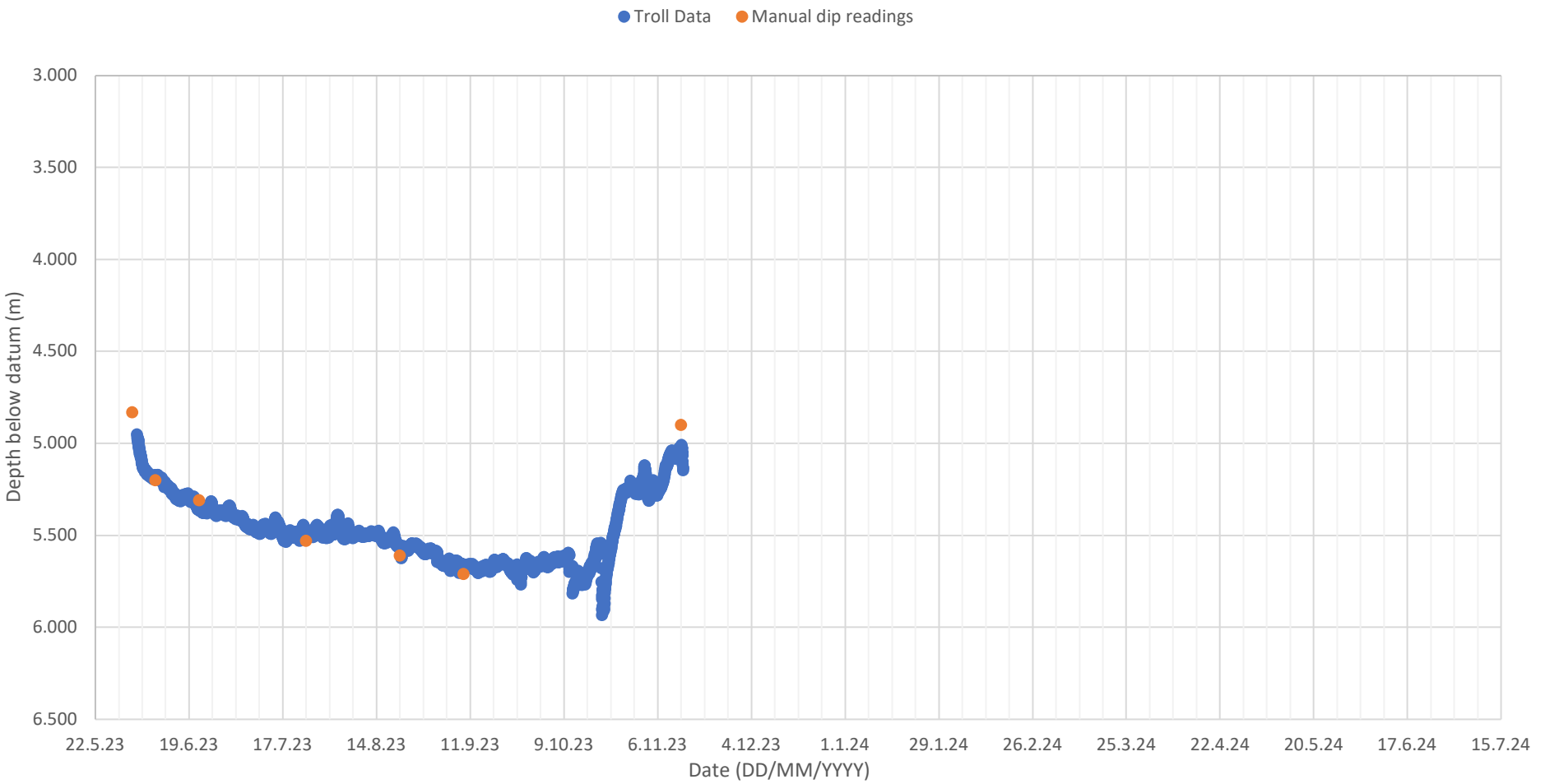
Client:	Octavius	Location:	BH109	Engineer:	SW
Job Location:	A46 Walsgrave	Start Date:	02/06/2023	Level Datum:	79.32
Job No:	230651	End Date:	Ongoing	Installed Equipment:	Rugged Troll 100



Notes:	Continuous water monitoring diver installed on 02/06/23

Continuous Water Monitoirng

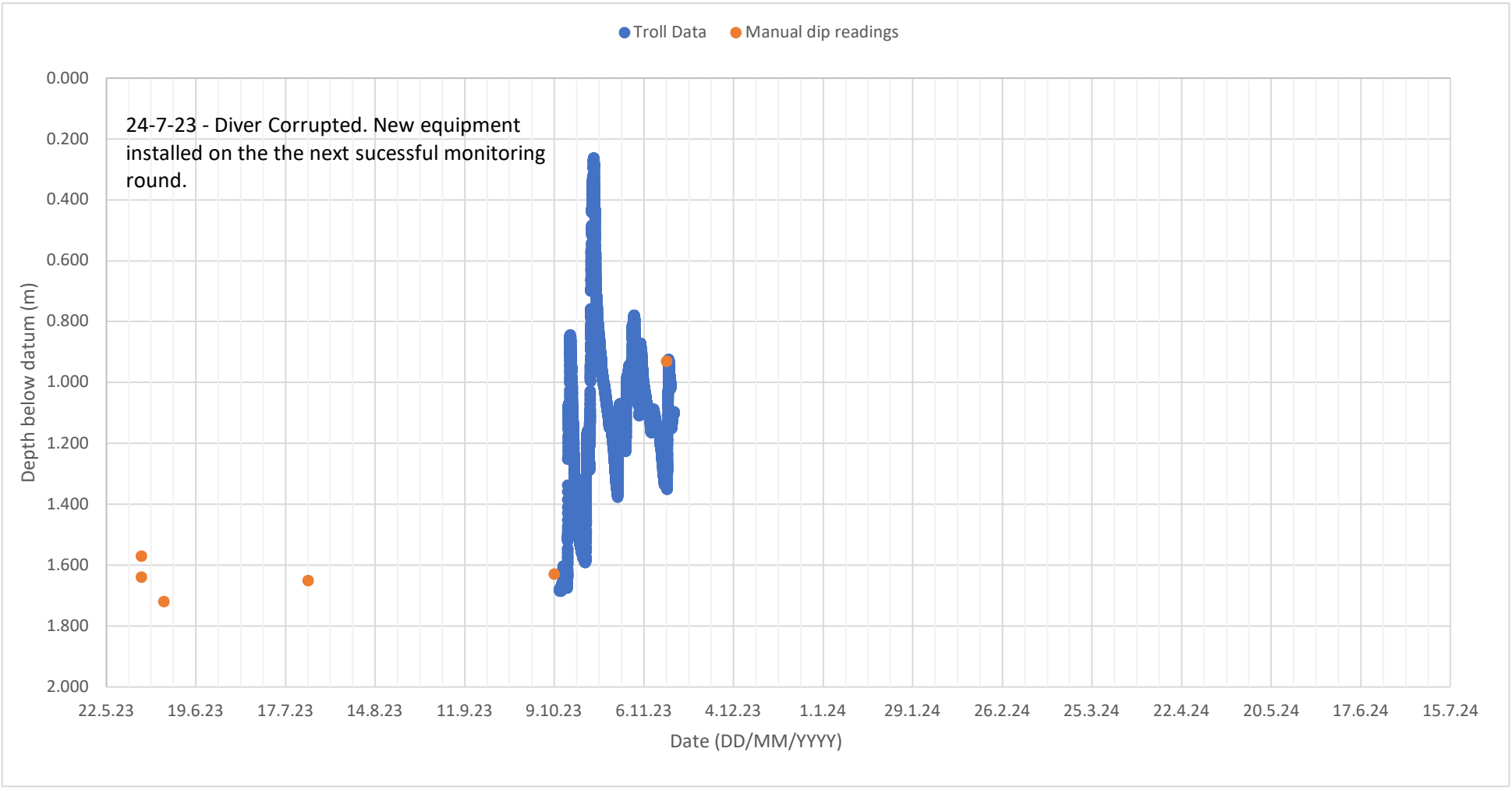
Client:	Octavius	Location:	BH110	Engineer:	SW
Job Location:	A46 Walsgrave	Start Date:	02/06/2023	Level Datum:	79.46
Job No:	230651	End Date:	Ongoing	Installed Equipment:	Rugged Troll 100



Notes:	Continuous water monitoring diver installed on 02/06/23

Continuous Water Monitoirng

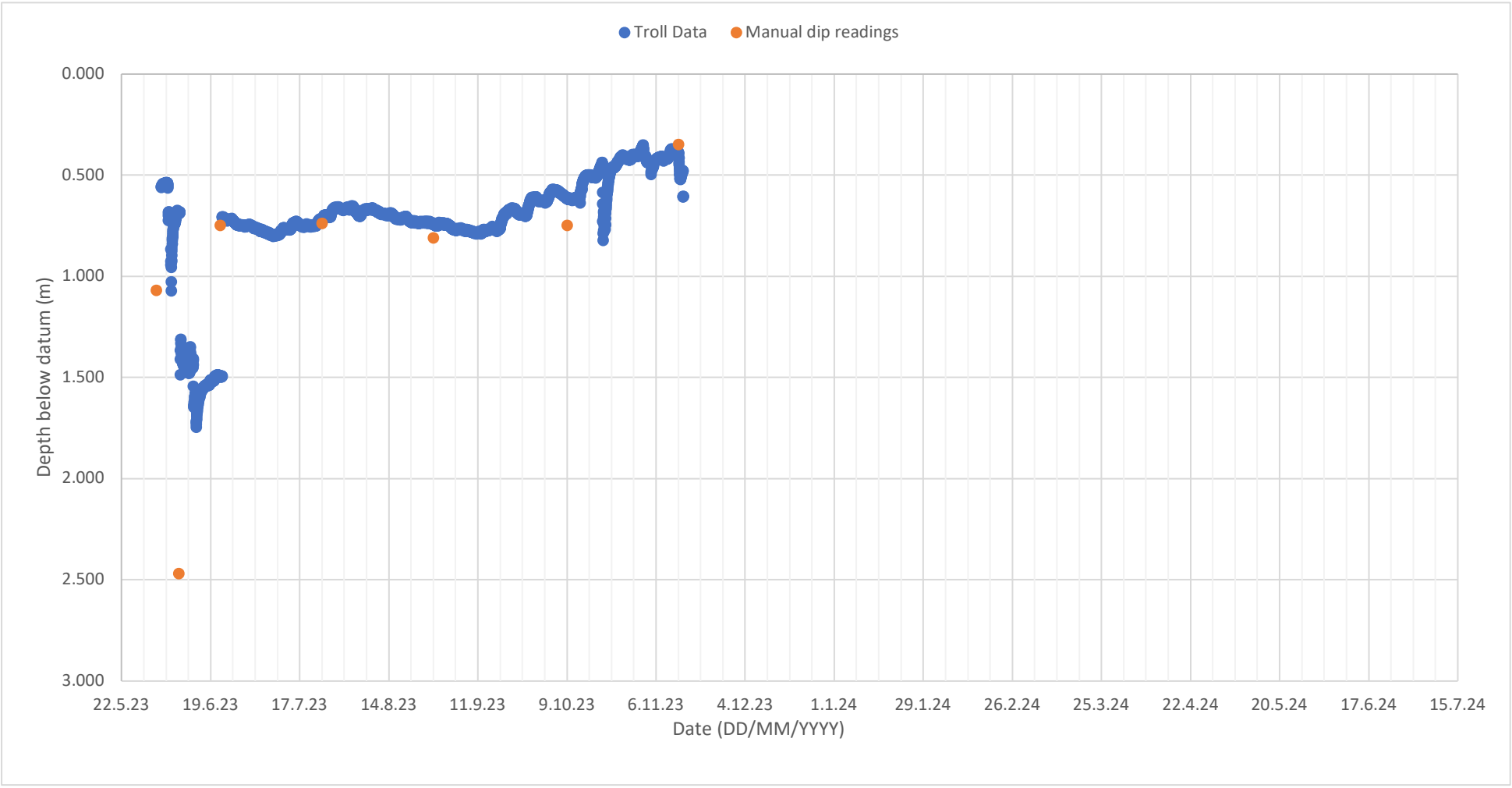
Client:	Octavius	Location:	WS109	Engineer:	SW
Job Location:	A46 Walsgrave	Start Date:	02/06/2023	Level Datum:	71.26
Job No:	230651	End Date:	Ongoing	Installed Equipment:	Rugged Troll 100



Notes:	Data File corrupted on 09/06/23

Continuous Water Monitoirng

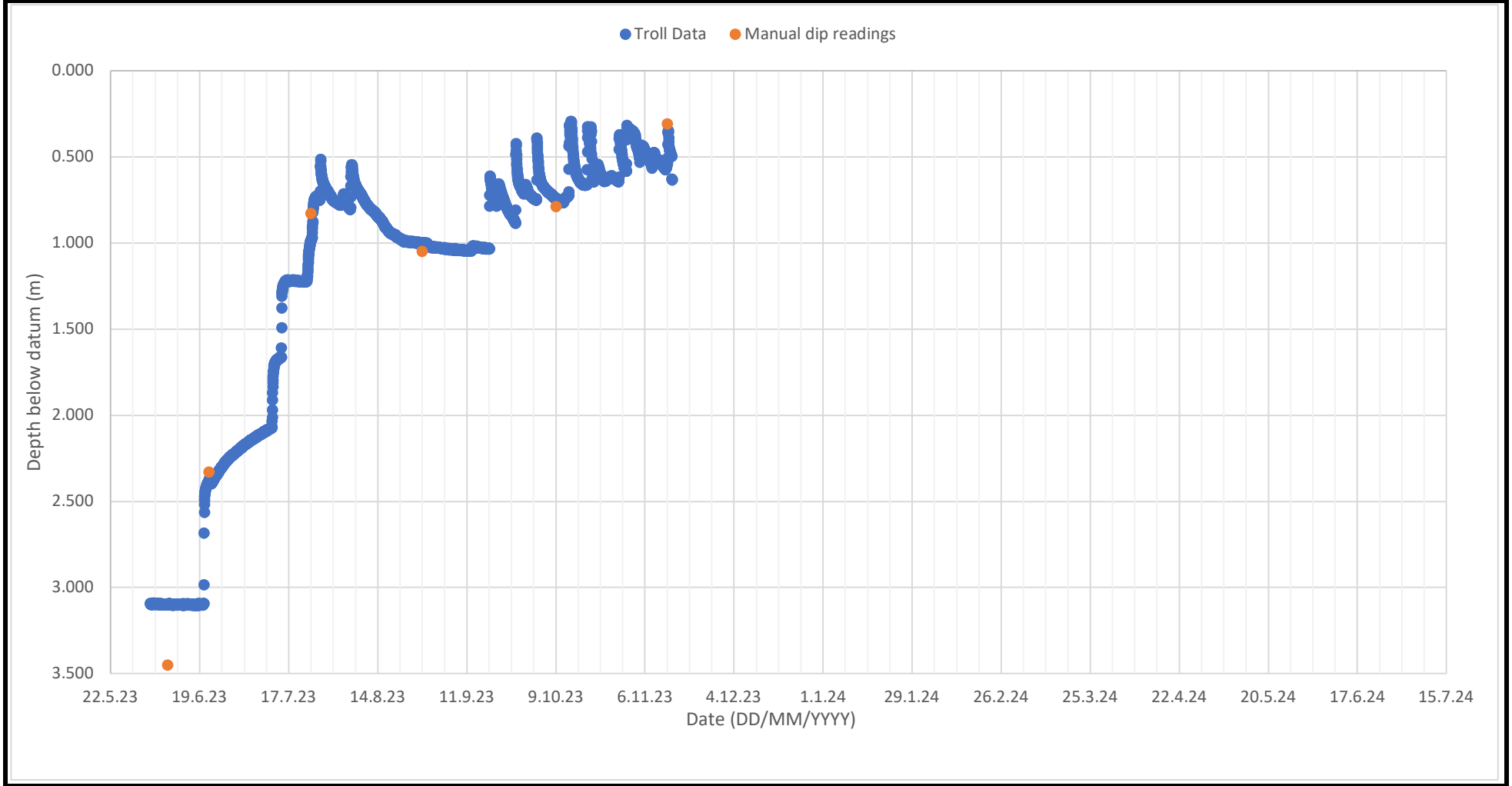
Client:	Octavius	Location:	BH127	Engineer:	SW
Job Location:	A46 Walsgrave	Start Date:	02/06/2023	Level Datum:	74.83
Job No:	230651	End Date:	Ongoing	Installed Equipment:	Rugged Troll 100



Notes:	Continuous water monitoring diver installed on 02/06/23

Continuous Water Monitoirng

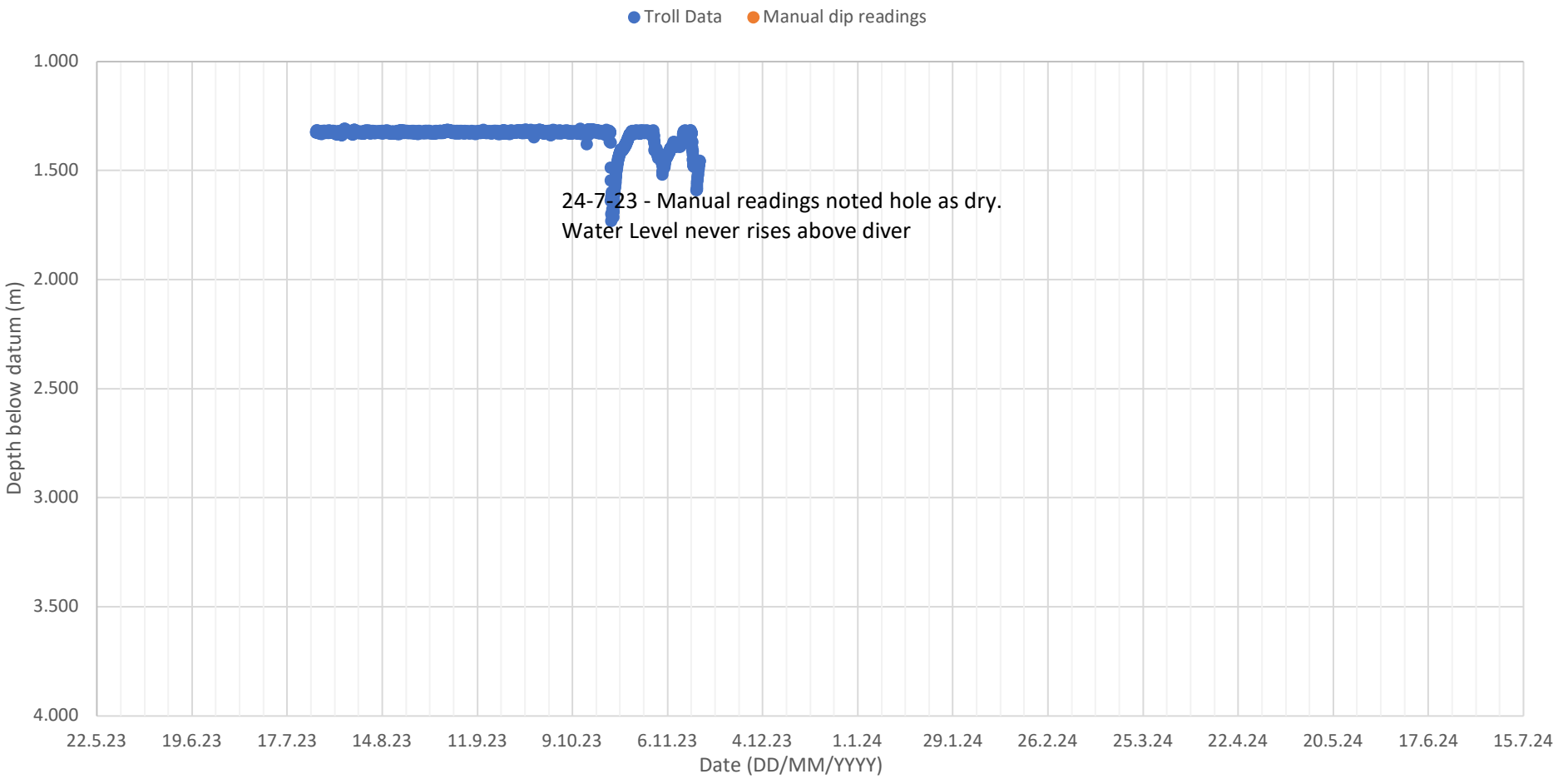
Client:	Octavius	Location:	WS105	Engineer:	SW
Job Location:	A46 Walsgrave	Start Date:	02/06/2023	Level Datum:	74.78
Job No:	230651	End Date:	Ongoing	Installed Equipment:	Rugged Troll 100



Notes:	Continuous water monitoring diver installed on 02/06/23

Continuous Water Monitoirng

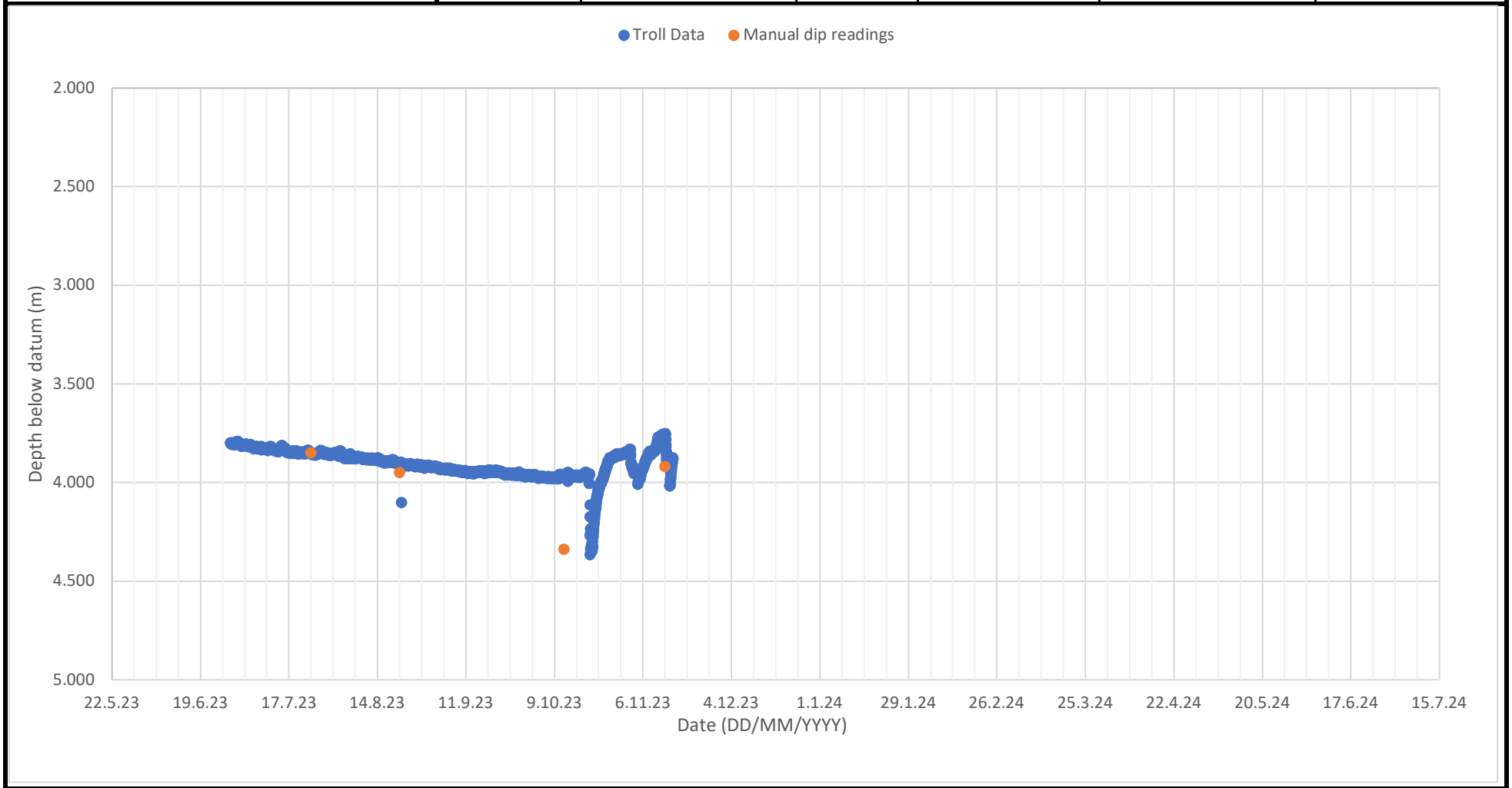
Client:	Octavius	Location:	BH107	Engineer:	SW
Job Location:	A46 Walsgrave	Start Date:	26/06/2023	Level Datum:	
Job No:	230651	End Date:	Ongoing	Installed Equipment:	Rugged Troll 100



Notes:	Continuous water monitoring diver installed on 26/06/23

Continuous Water Monitoirng

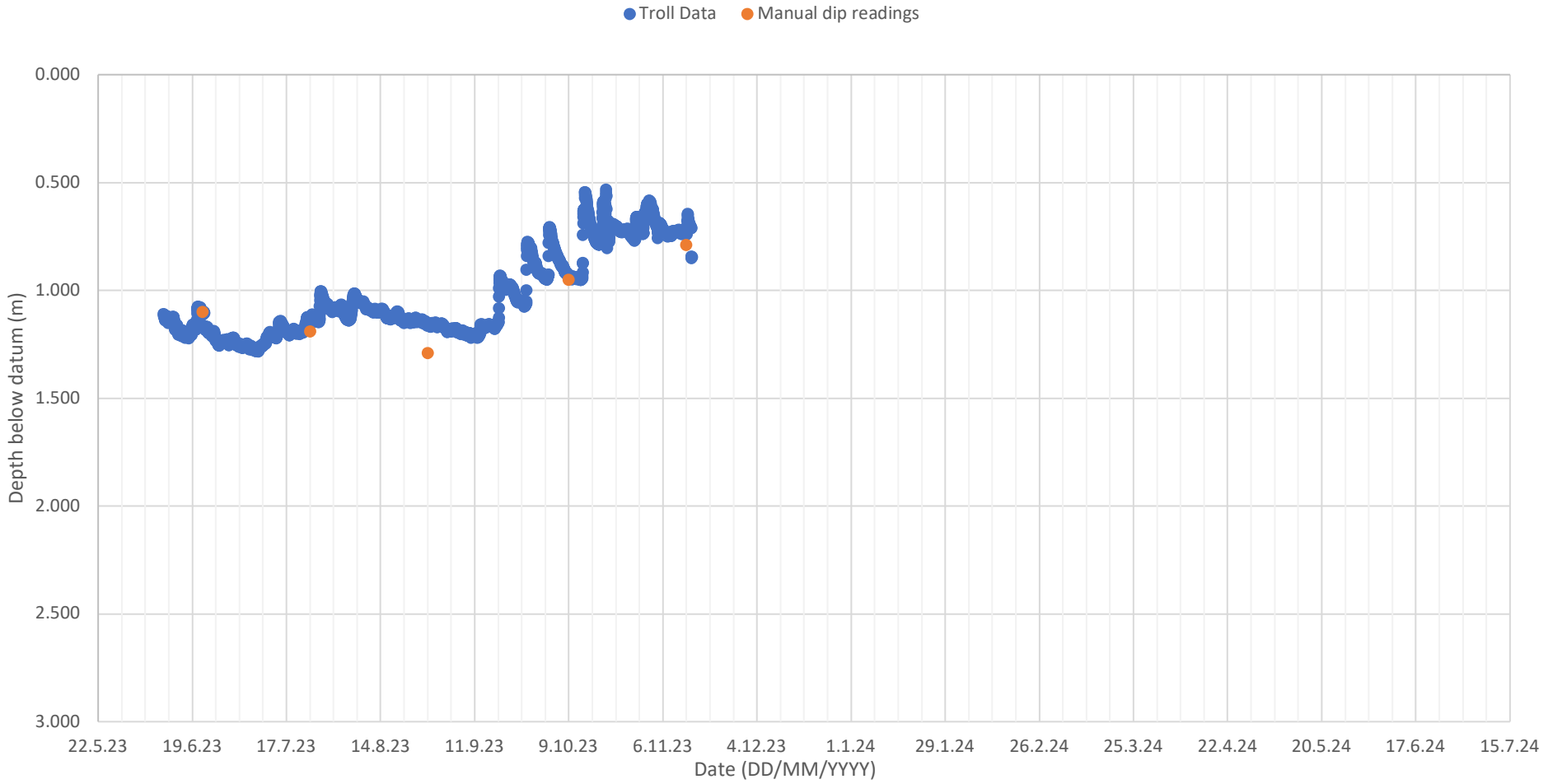
Client:	Octavius	Location:	BH112	Engineer:	SW
Job Location:	A46 Walsgrave	Start Date:	28/06/2023	Level Datum:	79.11
Job No:	230651	End Date:	Ongoing	Installed Equipment:	Rugged Troll 100



Notes:	Continuous water monitoring diver installed on 28/06/23

Continuous Water Monitoirng

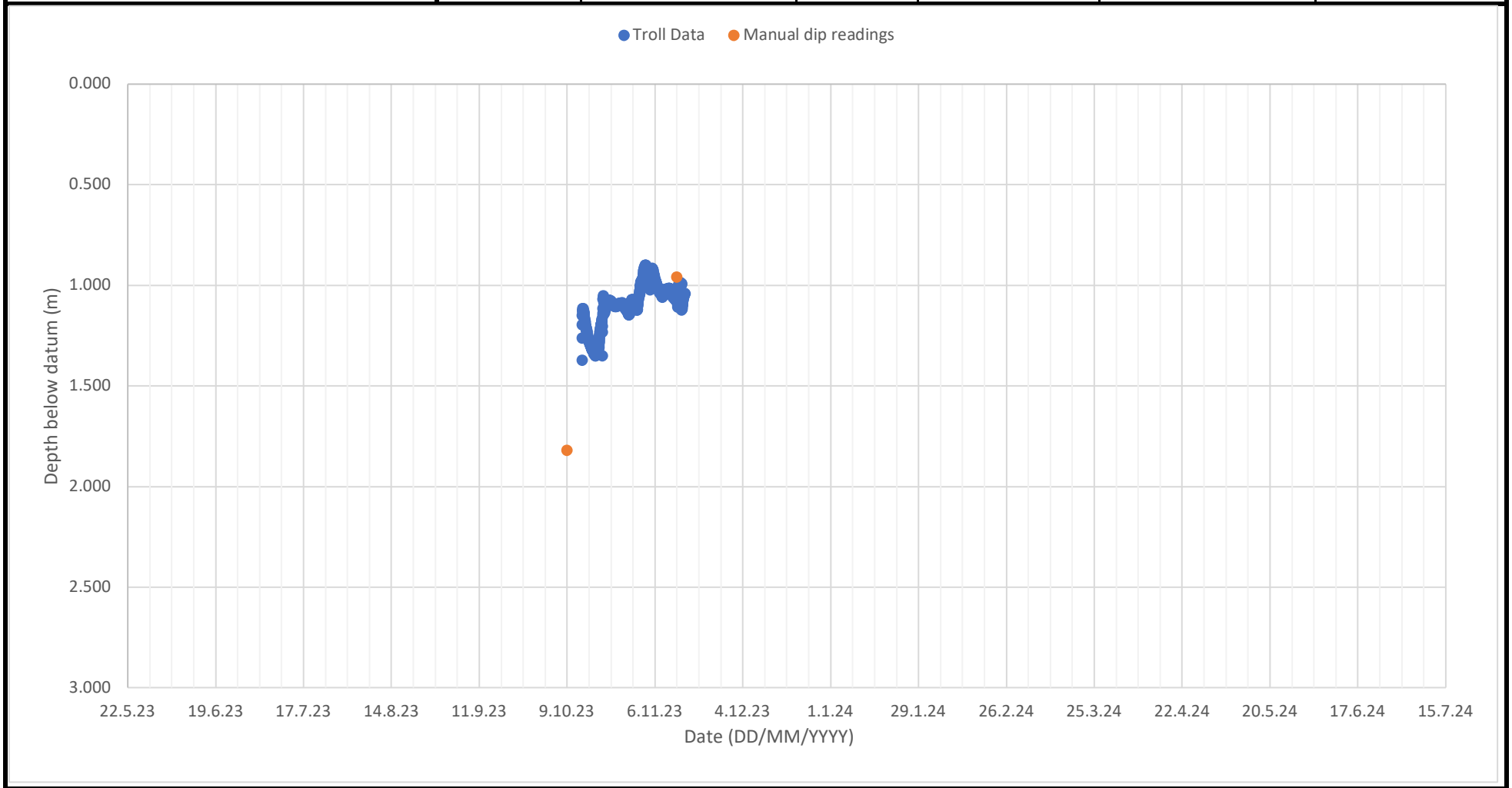
Client:	Octavius	Location:	BH117	Engineer:	SW
Job Location:	A46 Walsgrave	Start Date:	10/06/2023	Level Datum:	74.15
Job No:	230651	End Date:	Ongoing	Installed Equipment:	Rugged Troll 100



Notes:	Continuous water monitoring diver installed on 10/06/23

Manual Water Monitoirng

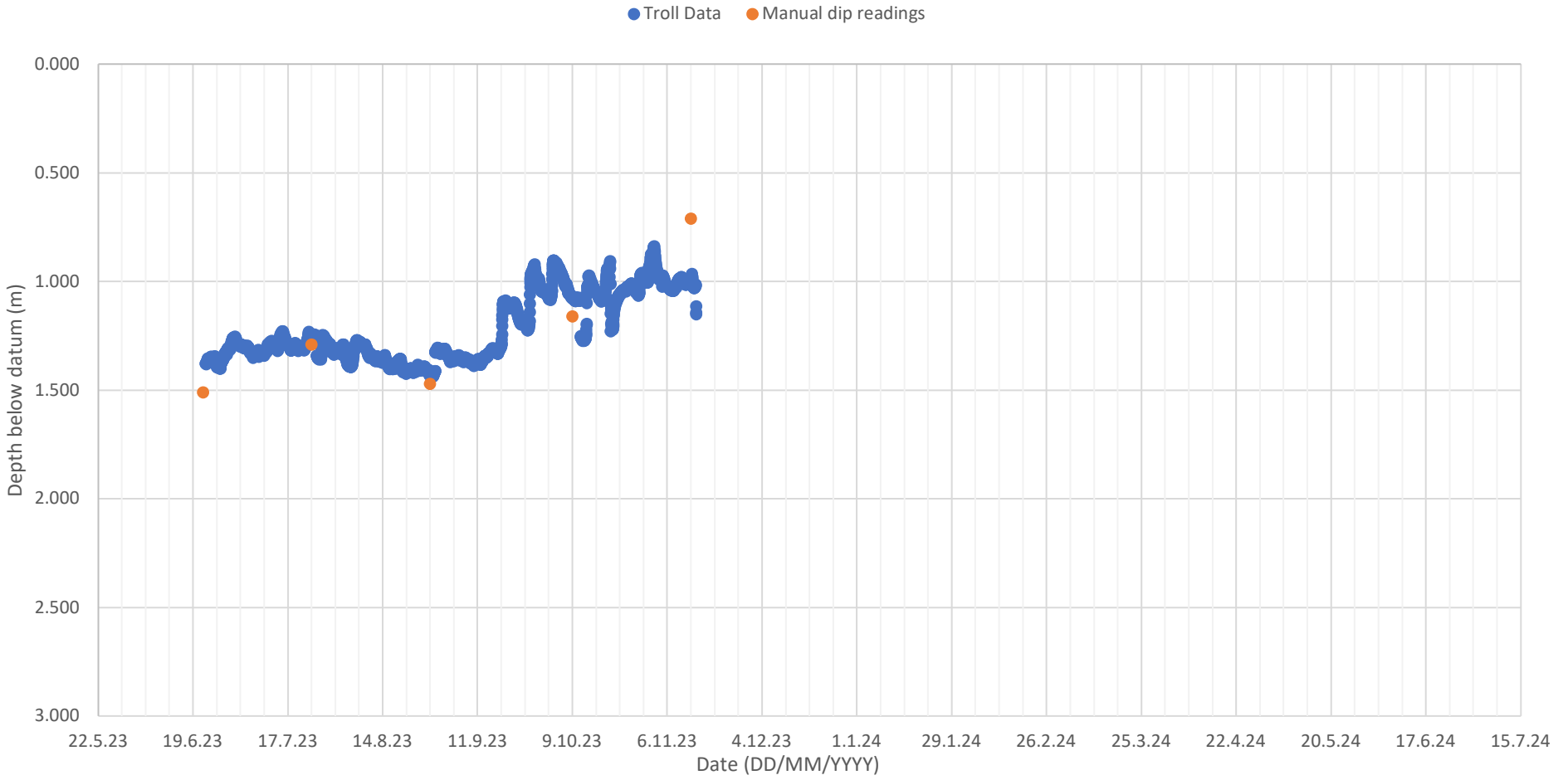
Client:	Octavius	Location:	WS103	Engineer:	SW
Job Location:	A46 Walsgrave	Start Date:	26/06/2023	Level Datum:	77.69
Job No:	230651	End Date:	Ongoing	Installed Equipment:	Rugged Troll 100



Notes:	Continuous water monitoring diver installed on 26/06/23. Prior to

Continuous Water Monitoirng

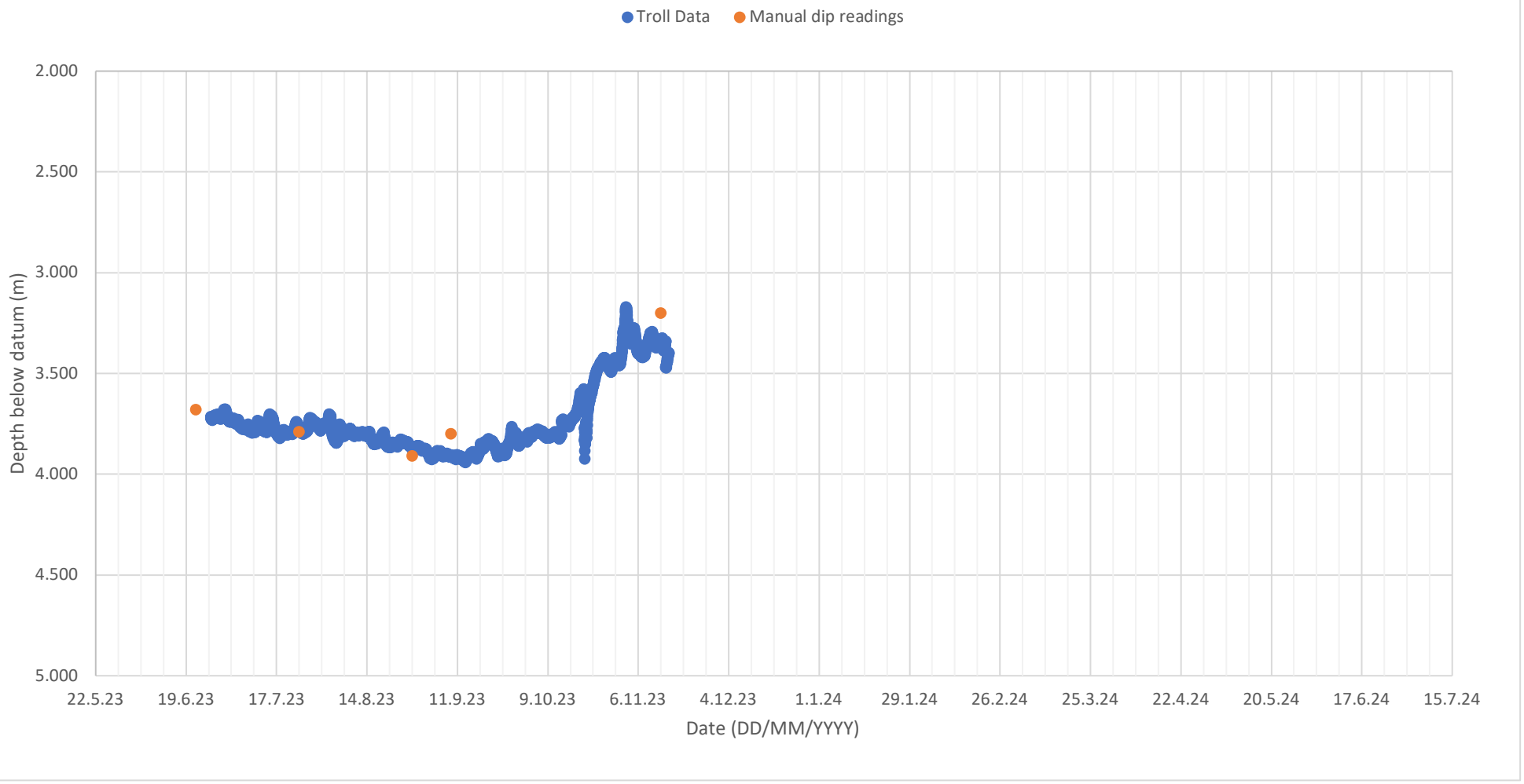
Client:	Octavius	Location:	BH125A	Engineer:	SW
Job Location:	A46 Walsgrave	Start Date:	22/06/2023	Level Datum:	74.66
Job No:	230651	End Date:	Ongoing	Installed Equipment:	Rgged Troll 100



Notes:	Continuous water monitoring diver installed on 22/06/23

Continuous Water Monitoirng

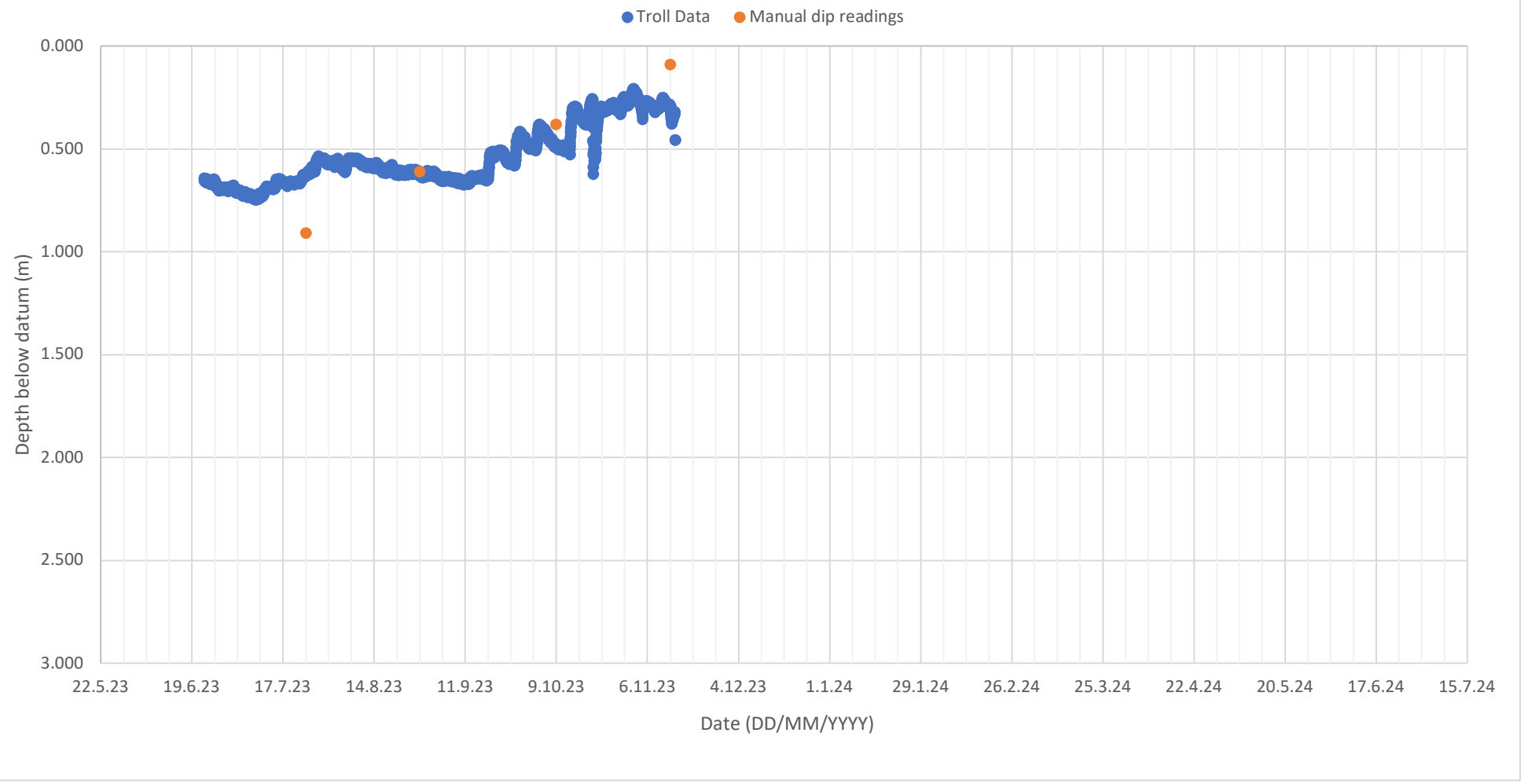
Client:	Octavius	Location:	BH123	Engineer:	SW
Job Location:	A46 Walsgrave	Start Date:	26/06/2023	Level Datum:	78.42
Job No:	230651	End Date:	Ongoing	Installed Equipment:	Rugged Troll 100



Notes:	Continuous water monitoring diver installed on 26/06/23

Continuous Water Monitoirng

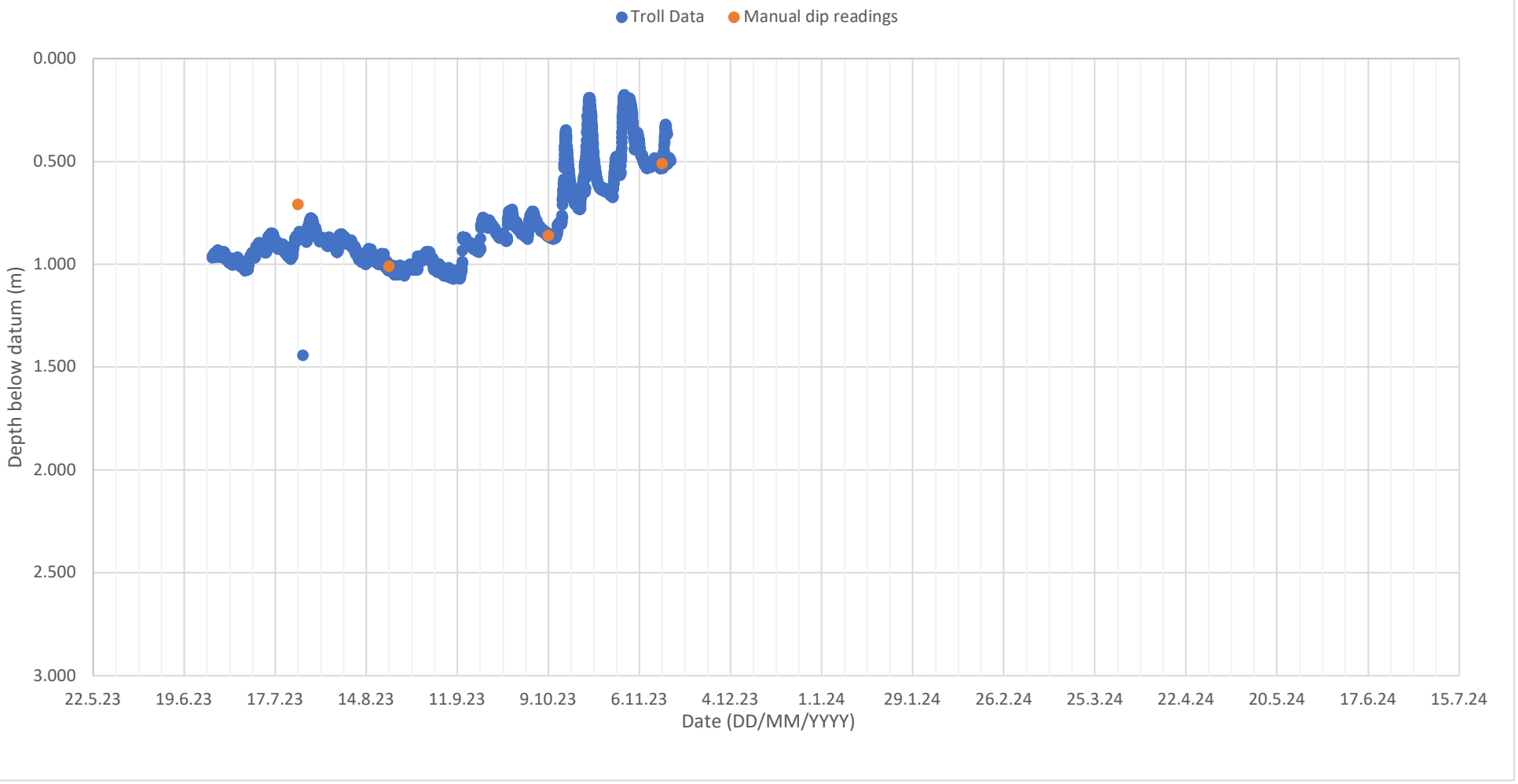
Client:	Octavius	Location:	BH121	Engineer:	SW
Job Location:	A46 Walsgrave	Start Date:	22/06/2023	Level Datum:	73.82
Job No:	230651	End Date:	Ongoing	Installed Equipment:	Rugged Troll 100



Notes:	Continuous water monitoring diver installed on 22/06/23

Continuous Water Monitoirng

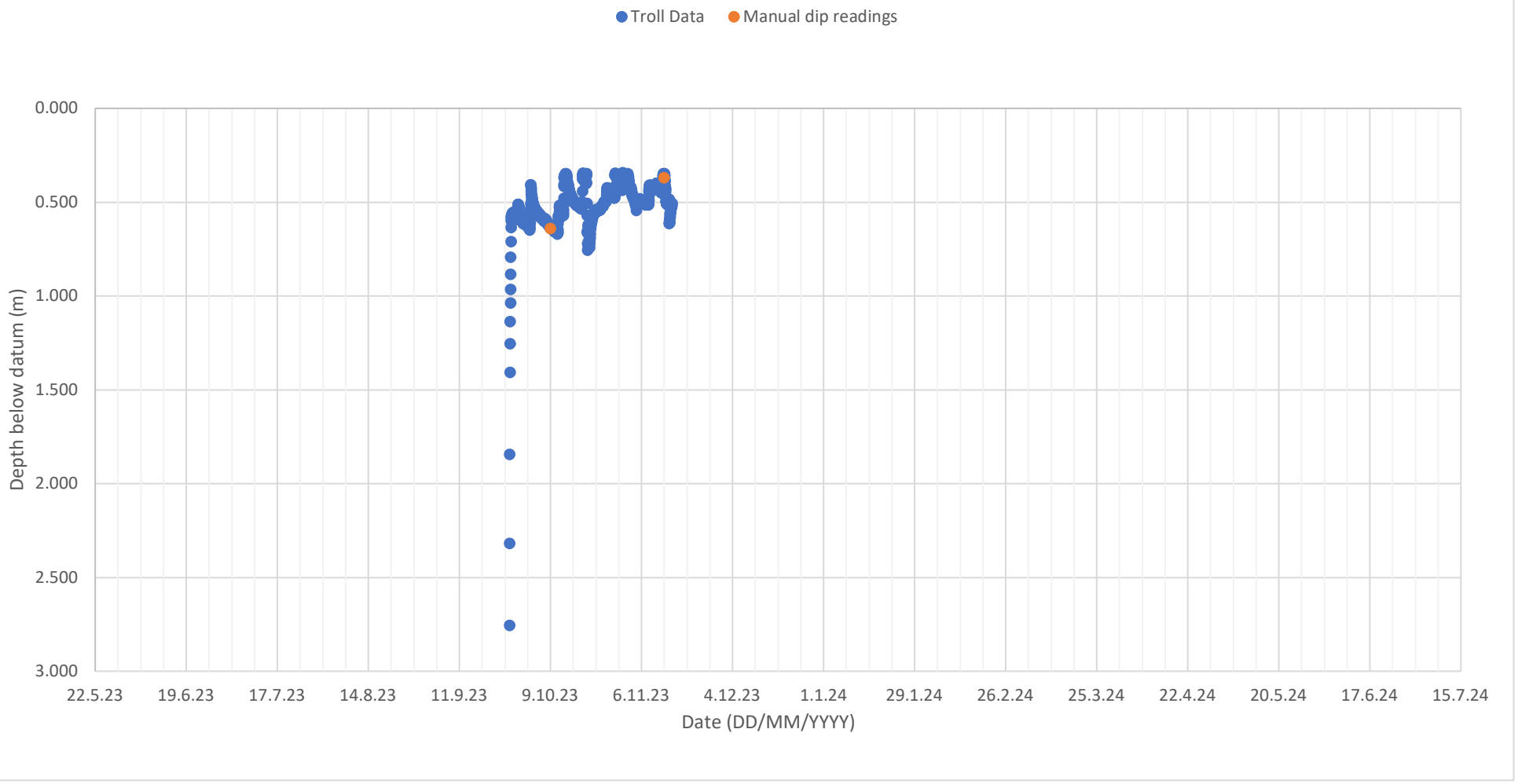
Client:	Octavius	Location:	WS102	Engineer:	SW
Job Location:	A46 Walsgrave	Start Date:	26/06/2023	Level Datum:	71.46
Job No:	230651	End Date:	Ongoing	Installed Equipment:	Ruged Troll 100



Notes:	Continuous water monitoring diver installed on 26/06/23

Manual Water Monitoirng

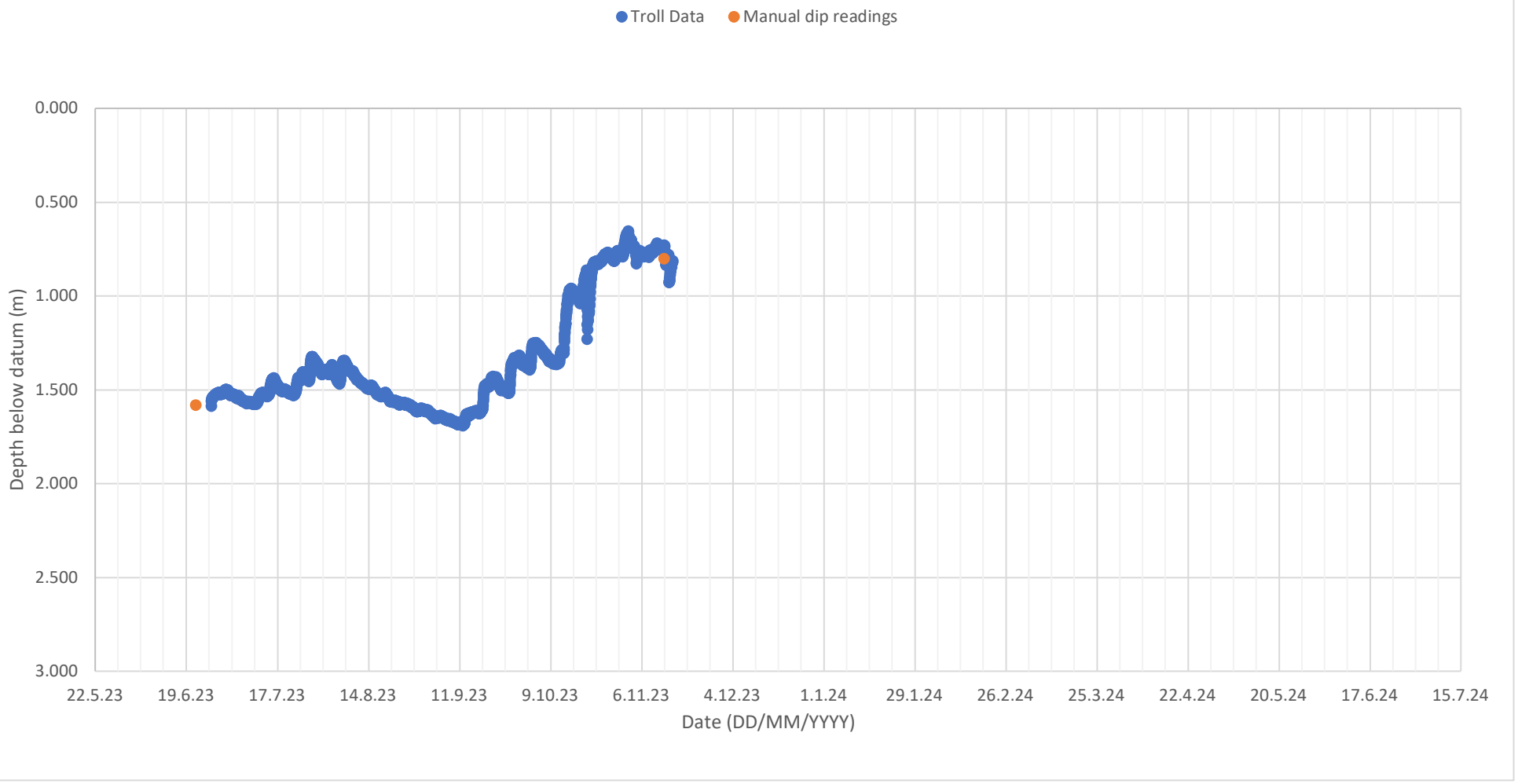
Client:	Octavius	Location:	WS106	Engineer:	SW
Job Location:	A46 Walsgrave	Start Date:	26/06/2023	Level Datum:	77.21
Job No:	230651	End Date:	Ongoing	Installed Equipment:	Ruged Troll 100



Notes:	Continuous water monitoring diver installed on 26/06/23

Manual Water Monitoirng

Client:	Octavius	Location:	BH104	Engineer:	SW
Job Location:	A46 Walsgrave	Start Date:	26/06/2023	Level Datum:	70.91
Job No:	230651	End Date:	Ongoing	Installed Equipment:	Ruged Troll 100



Notes:	Continuous water monitoring diver installed on 26/06/23

Appendix G: Calibration Certification

TEST DATE AND CONDITIONS		
Date	14/08/2023	
Atmospheric Pressure	987	mB
Ambient Temperature	21	°C
Environics Serial No.	9370	

GFM436 Final Inspection & Calibration Check Certificate

GAS DATA LTD
Unit 4, Fairfield Court
Seven Stars Estate
Wheler Rd
Coventry
CV3 4LJ
Tel 02476303311 Fax 02476307711

Customer	Strata Geotechnics
Certificate Number	124441
Order Number	335678

Serial Number	12166
Software Version	G436-00.0027/0009

Recalibration DUE Date
14/08/24

Instrument Checks					
Keyboard	✓		Display Contrast	✓	
Pump Flow In	500	*Accept > 200 cc/min*	Pump Flow @ -200mB	350	*Accept > 200 cc/min*
Clock Set / Running	✓		Labels Fitted	✓	

Gas Checks						
	CH_4		CO_2		O_2	
	Instrument Gas Readings %	True Gas Value %	Instrument Gas Readings %	True Gas Value %	Instrument Gas Readings %	True Gas Value %
Sensor	59.4	60	41.2	40	20.9	20.9
	Accept ±3.0		*Accept ±3.0*		*Accept ±0.5*	
	5.0	5	4.8	5	6.0	6
	Accept ±0.3		*Accept ±0.3*		*Accept ±0.3*	
Zero Reading 100% N2	0.0	0	0.0	0	0.0	0
	Accept ±0.0		*Accept ±0.0*		*Accept ±0.1*	

Optional Gas Checks						
Applied Gas & Range		Concentration Tested @ (ppm)	Instrument Readings *(ppm)*			
			Zero Reading		Instrument Gas Reading	
Gas Type	Range *(ppm)*					
H2S	5000	*1500*	0	*Accept ±0.0*	1500	*Accept ±5.0%*
CO	2000	*1000*	0	*Accept ±0.0*	1000	*Accept ±5.0%*
Hexane	2.0%	*2.0%*	0	*Accept ±0.0*	1.99	*Accept ±10.0%*

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Cross Gas Effects

Applied Gas *(ppm)*		Instrument Readings *(ppm)*							
Gas Type	**Concentration**	**Toxic 1:**	**H2S**	**Toxic 2:**	**CO**	**Toxic 3:**	**Hex**		
H2S	*1500*	**1500**		**0**		**0**			
CO	*1000*	**80**		**1000**		**0**			
Hexane	*2.0%*	**0**		**0**		**1.99**			

Pressure Checks

Atmospheric Pressure [AP] *(mB)*			
Current Atmospheric Pressure (mB)		**Instrument Atmospheric Pressure Reading (mB)**	
AP Open Ports		**987**	*Accept ±2.0*
AP Port (Internal)	*+800 mB*	**800**	*Accept ±5.0*
	+1200mb	**1201**	*Accept ±5.0*

Flow Checks

Borehole Flow			Differential Pressure		
Applied Reading *(l/h)*	**Instrument Reading *(l/h)***		**Applied Pressure *(Pa)***	**Instrument Reading *(Pa)***	
-30	**-30.2**	*Accept ±3.0*	*-375*	**-377**	*Accept ±50*
-3	**-3.0**	*Accept ±1.0*	*-18*	**-17**	*Accept ±6.0*
0	**0.0**	*Accept ±0.0*	*0.0*	**0.0**	*Accept ±0.5*
3	**3.0**	*Accept ±0.5*	*15*	**15**	*Accept ±3.0*
30	**30.1**	*Accept ±3.0*	*315*	**319**	*Accept ±50*
60	**60.0**	*Accept ±6.0*	*958*	**957**	*Accept ±130*
90	**90.1**	*Accept ±9.0*	*1840*	**1879**	*Accept ±250*

Temperature Checks

Calibration Temperature Applied Temperature °C	Instrument Temperature Reading °C	
-10	**-10.0**	*Accept ±2.0*
0	**0.0**	*Accept ±1.0*
30	**30.0**	*Accept ±1.0*
60	**60.0**	*Accept ±1.0*
100	**100.0**	*Accept ±1.0*

Technician:	Date Tested:
[redacted]	***14/08/2023***

The instrument identified by the serial number stated above has been tested by Gas Data personnel for calibration accuracy on the date and under the ambient conditions stated. Gas Data Ltd internal BS EN ISO9001:2015, BS EN ISO14001:2015, BS EN ISO45001:2018 compliant workshop procedures were followed to apply known calibration test gases, gas flow rates, pressures and temperatures of the values stated. The results displayed on the instrument at each stage are recorded above.

Gas Data Ltd is certified to BS EN ISO9001:2015, BS EN ISO14001:2015, BS EN ISO45001:2018.

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TEST DATE AND CONDITIONS		
Date	01/09/2022	
Atmospheric Pressure	1004	mB
Ambient Temperature	20.9	°C
Environics Serial No.	5089	

GAS DATA LTD

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GAS DATA

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GFM436 Final Inspection & Calibration Check Certificate

Customer	Strata Geotechnics
Certificate Number	123440
Order Number	331890

Serial Number	12166
Software Version	G436-00.0027/0009

Recalibration DUE Date
01/09/23

Instrument Checks					
Keyboard	✓		Display Contrast	✓	
Pump Flow In	450	*Accept > 200 cc/min*	Pump Flow @ -200mB	400	*Accept > 200 cc/min*
Clock Set / Running	✓		Labels Fitted	✓	

Gas Checks						
Sensor	CH_4		CO_2		O_2	
	Instrument Gas Readings %	True Gas Value %	Instrument Gas Readings %	True Gas Value %	Instrument Gas Readings %	True Gas Value %
	60.0	*60*	39.6	*40*	20.9	*20.9*
	Accept ±3.0		*Accept ±3.0*		*Accept ±0.5*	
	5.0	*5*	4.9	*5*	6.0	*6*
	Accept ±0.3		*Accept ±0.3*		*Accept ±0.3*	
Zero Reading 100% N2	0.0	*0*	0.0	*0*	0.0	*0*
	Accept ±0.0		*Accept ±0.0*		*Accept ±0.1*	

Optional Gas Checks						
Applied Gas & Range		Concentration Tested @ (ppm)	Instrument Readings *(ppm)*			
Gas Type	Range *(ppm)*		Zero Reading		Instrument Gas Reading	
H2S	5000	*1500*	0	*Accept ±0.0*	1500	*Accept ±5.0*
CO	2000	*1000*	0	*Accept ±0.0*	1000	*Accept ±5.0*
Hexane	*2.0%*	2.0%	0	*Accept ±0.0*	1.99	*Accept ±10.0*

Cross Gas Effects									
Applied Gas *(ppm)*		Instrument Readings *(ppm)*							
Gas Type	Concentration	Toxic 1:	H2S	Toxic 2:	CO	Toxic 3:	Hex		
H2S	*1500*	1500		0		0			
CO	*1000*	60		1000		0			
Hexane	*2.0%*	0		0		1.99			

Pressure Checks				
Atmospheric Pressure [AP] *(mB)*				
Current Atmospheric Pressure (mB)		Instrument Atmospheric Pressure Reading (mB)		
AP Open Ports		1004	*Accept ±2.0*	
AP Port (Internal)	*+800 mB*	800	*Accept ±5.0*	
	+1200mb	1200	*Accept ±5.0*	

Flow Checks					
Borehole Flow			Differential Pressure		
Applied Reading *(l/h)*	Instrument Reading *(l/h)*		Applied Pressure *(Pa)*	Instrument Reading *(Pa)*	
-30	-30.4	*Accept ±3.0*	*-400*	-404	*Accept ±50*
-3	-3.0	*Accept ±1.0*	*-18*	-18	*Accept ±6.0*
0	0.0	*Accept ±0.0*	*0.0*	0.0	*Accept ±0.5*
3	3.0	*Accept ±0.5*	*14*	16	*Accept ±3.0*
30	30.0	*Accept ±3.0*	*316*	317	*Accept ±50*
60	59.8	*Accept ±6.0*	*953*	949	*Accept ±130*
90	90.6	*Accept ±9.0*	*1849*	1892	*Accept ±250*

Temperature Checks		
Calibration Temperature Applied Temperature ^{0}C	Instrument Temperature Reading ^{0}C	
-10	-10	*Accept ±2.0*
0	0	*Accept ±1.0*
30	30	*Accept ±1.0*
60	60	*Accept ±1.0*
100	100	*Accept ±1.0*

Technician:	Date Tested:
[redacted]	*01/09/2022*

The instrument identified by the serial number stated above has been tested by Gas Data personnel for calibration accuracy on the date and under the ambient conditions stated. Gas Data Ltd internal BS EN ISO9001:2015, BS EN ISO14001:2015, BS EN ISO45001:2018 compliant workshop procedures were followed to apply known calibration test gases, gas flow rates, pressures and temperatures of the values stated. The results displayed on the instrument at each stage are recorded above.

Gas Data Ltd is certified to BS EN ISO9001:2015, BS EN ISO14001:2015, BS EN ISO45001:2018.

TEST DATE AND CONDITIONS		
Date	27/07/2021	
Atmospheric Pressure	989	mB
Ambient Temperature	21.8	°C
Environics Serial No.	5089	

GAS DATA LTD

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GFM436 Final Inspection & Calibration Check Certificate

Customer	Strata Geotechnics
Certificate Number	122616
Order Number	328960

Serial Number	12166
Software Version	G436-00.0027/0009

Recalibration DUE Date
27/07/22

Instrument Checks					
Keyboard	✓		Display Contrast	✓	
Pump Flow In	400	*Accept > 200 cc/min*	Pump Flow @ -200mB	300	*Accept > 200 cc/min*
Clock Set / Running	✓		Labels Fitted	✓	

Gas Checks						
Sensor	CH_4		CO_2		O_2	
	Instrument Gas Readings %	True Gas Value %	Instrument Gas Readings %	True Gas Value %	Instrument Gas Readings %	True Gas Value %
	59.7	*60*	40.4	*40*	20.9	*20.9*
	Accept ±3.0		*Accept ±3.0*		*Accept ±0.5*	
	5	*5*	5	*5*	6	*6*
	Accept ±0.3		*Accept ±0.3*		*Accept ±0.3*	
Zero Reading 100% N2	0	*0*	0	*0*	0	*0*
	Accept ±0.0		*Accept ±0.0*		*Accept ±0.1*	

Optional Gas Checks						
Applied Gas & Range		Concentration Tested @ (ppm)	Instrument Readings *(ppm)*			
Gas Type	Range *(ppm)*		Zero Reading		Instrument Gas Reading	
H2S	5000	*1500*	0	*Accept ±0.0*	1500	*Accept ±5.0*
CO	2000	*1000*	0	*Accept ±0.0*	997	*Accept ±5.0*
Hexane	*2.0%*	2.0%	0	*Accept ±0.0*	1.99	*Accept ±10.0*

Cross Gas Effects									
Applied Gas *(ppm)*		**Instrument Readings *(ppm)***							
Gas Type	**Concentration**	**Toxic 1:**	**H2S**	**Toxic 2:**	**CO**	**Toxic 3:**	**HEX**		
H2S	*1500*	**1500**		**0**		**0**			
CO	*1000*	**50**		**997**		**0**			
Hexane	*2.0%*	**0**		**0**		**1.99**			

Pressure Checks			
Atmospheric Pressure [AP] *(mB)*			
Current Atmospheric Pressure (mB)		**Instrument Atmospheric Pressure Reading (mB)**	
AP Open Ports		**989**	*Accept ±2.0*
AP Port (Internal)	*+800 mB*	**800**	*Accept ±5.0*
	+1200mb	**1200**	*Accept ±5.0*

Flow Checks					
Borehole Flow			**Differential Pressure**		
Applied Reading *(l/h)*	**Instrument Reading *(l/h)***		**Applied Pressure *(Pa)***	**Instrument Reading *(Pa)***	
-30	**-30.2**	*Accept ±3.0*	-397	**-400**	*Accept ±50*
-3	**-3**	*Accept ±1.0*	-19	**-19**	*Accept ±6.0*
0	**0**	*Accept ±0.0*	0	**0**	*Accept ±0.5*
3	**3**	*Accept ±0.5*	16	**16**	*Accept ±3.0*
30	**29.5**	*Accept ±3.0*	313	**323**	*Accept ±50*
60	**59.8**	*Accept ±6.0*	984	**974**	*Accept ±130*
90	**90.2**	*Accept ±9.0*	1903	**1925**	*Accept ±250*

Temperature Checks		
Calibration Temperature	**Instrument Temperature Reading ^{0}C**	
Applied Temperature ^{0}C		
-10	**-10**	*Accept ±2.0*
0	**0**	*Accept ±1.0*
30	**30**	*Accept ±1.0*
60	**60**	*Accept ±1.0*
100	**100**	*Accept ±1.0*

Technician:	Date Tested:
[redacted]	***28/07/2021***

The instrument identified by the serial number stated above has been tested by Gas Data personnel for calibration accuracy on the date and under the ambient conditions stated. Gas Data Ltd internal BS EN ISO9001:2015 compliant workshop procedures were followed to apply known calibration test gases, gas flow rates, pressures and temperatures of the values stated. The results displayed on the instrument at each stage are recorded above.

Gas Data Ltd is certified to BS EN ISO9001:2015. Certificate NQA 8374. Valid until 21/03/2022