OXFORDSHIRE
STRATEGIC RAIL FREIGHT INTERCHANGE

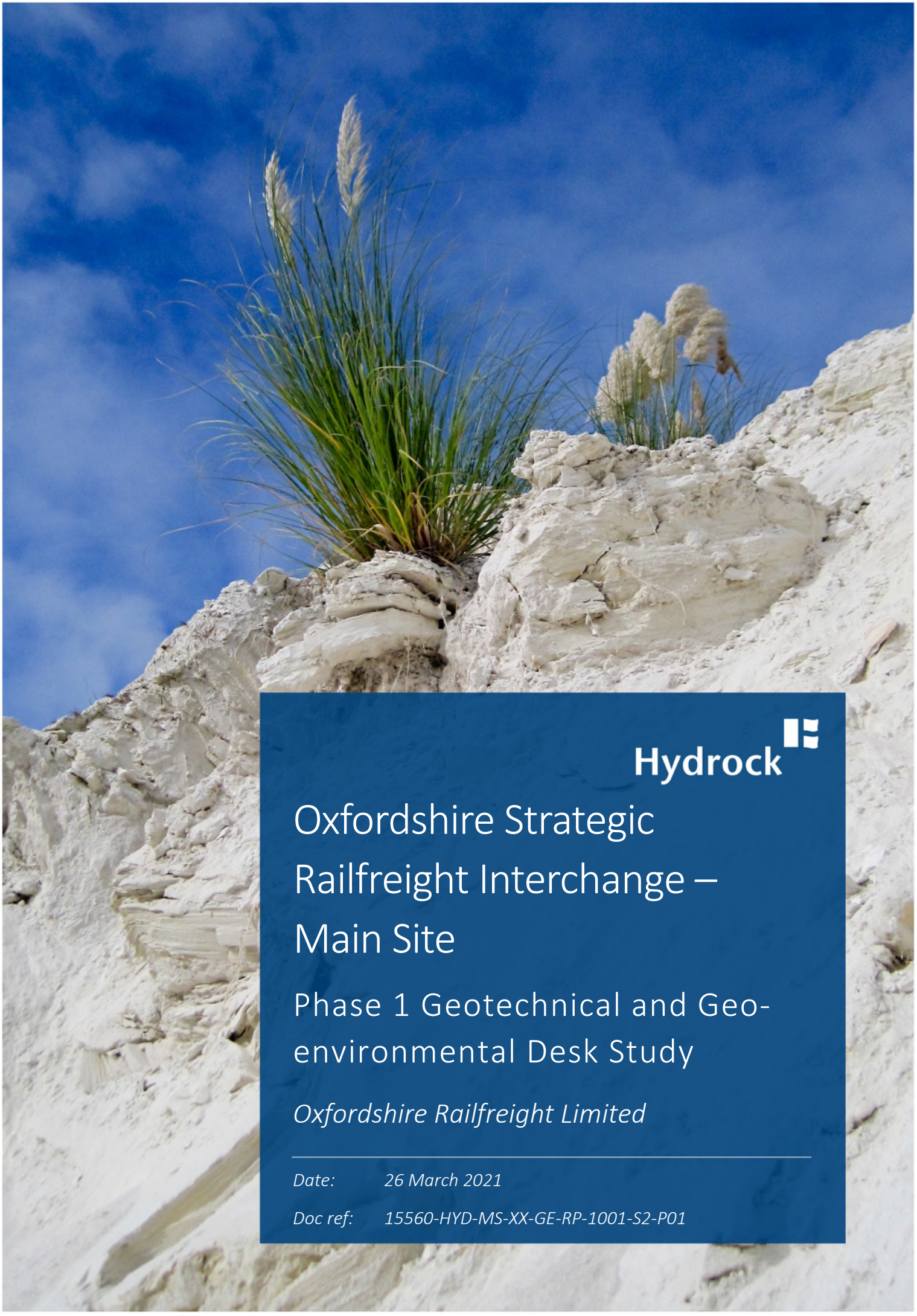
Environmental Statement

Chapter 11: Ground Conditions
Appendix 11.1: Main Site Phase 1 Geotechnical – Geoenvironmental Desk Study

Document 6.11A

On behalf of
Oxfordshire Railfreight Limited

Prepared by Hydrock Consultants Ltd
March 2021



Hydrock

Oxfordshire Strategic Railfreight Interchange – Main Site

Phase 1 Geotechnical and Geo-environmental Desk Study

Oxfordshire Railfreight Limited

Date: *26 March 2021*

Doc ref: *15560-HYD-MS-XX-GE-RP-1001-S2-P01*

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Checked by		[redacted] BSc MSc CGeol CSci FGS and [redacted] BSc MSc SQP SiLC EurGeol CGeol FGS
Approved by		[redacted] BSc MSc C.Eng C.Geol MIMMM FGS

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EXECUTIVE SUMMARY

SITE INFORMATION AND SETTING	
Objectives	The objective of the Phase 1 Desk Study is to formulate an initial Conceptual Site Model (iCSM) for the site and to identify key geo-environmental and geotechnical risks associated with the proposed development.
Client	Oxfordshire Railfreight Limited
Site name and location	Oxfordshire Strategic Railfreight, Ardley – Main Site The site is located approximately 5.5km north-west of Bicester, to the west of the M40, the south of Ardley and east of Upper Heyford and the former RAF Upper Heyford airfield. The National Grid Reference of the approximate centre of the site is 453276E, 226189N.
Proposed development	In summary, the site development proposals are understood to comprise the construction of a new Strategic Railfreight Interchange, with associated commercial/distribution warehouses, along with associated infrastructure and landscaping. Generally, the proposed development will involve significant cut in the north (to allow a proposed rail terminal to access the existing rail line), cut on the eastern and western edges of the site, and fill in the centre of the valley. Landscape bunding is proposed around the edges of the site and surface water attenuation features will be developed in the south and potentially throughout the development.
PHASE 1 (DESK STUDY AND SITE RECONNIASANCE)	
Site Setting	The site is irregular in shape, has an area of approximately 260 ha, is predominantly in agricultural use, and comprises two valleys, with streams in the valley bases. The valleys are separated by a ridge line at the north-eastern end of the runway of the former RAF Upper Heyford (at approximately 124m OD), located in the central-north of the site. The base of the smaller northernmost valley falls to the north-east, from between approximately 118m OD and 116m OD. The stream flows from the south-west to the north-east and then off site below the railway line. The southern side of the northern valley rises to approximately 124mOD at the north-eastern end of the runway. The base of the larger eastern valley slopes gently down towards the south-west, from a level of approximately 116m OD in the north to approximately 104m OD in the south. In addition to the two main streams, there are three tributaries to the stream in the eastern valley; all located on the western side of the valley, flowing either from drainage outfalls associated with the former RAF Heyford or springs. Also, on the western side of the eastern valley there are a number of current or historical springs and ponds. The site is predominantly covered by grass or crops, with mature, semi-mature trees and hedgerows on the majority of field boundaries and the site boundary. There were a number of relatively small, denser wooded areas across the site.
Current site uses	The site is predominantly used for agriculture (arable crops and grazing), with Ashgrove Farm in the central-west. A covered water reservoir is present in the south-east of the site and there is a commercial composting facility in the south-east. Camp Road passes through the site from south-west to the east, and the B430 passes the eastern edge of the site. A water pumping station is present in the far south of the site. The Chiltern Mainline railway is present, in cutting, along the northern boundary. The Ardley Energy Recovery Facility is located to the east of the site at the location of a former quarry and landfill. An operational quarry (Dewars Farm Quarry) is present to the south-east, and Upper Heyford (a mixed use residential and commercial development is located to the north and west, at the location of the former RAF Upper Heyford.

Site History	The site has historically been predominantly agricultural land. Ashgrove Farm has been present since before the earliest Ordinance Survey mapping, and a small number of farm buildings have historically been present in the west of the site. A water tower was historically present in the south of the site, at the location of the present-day water pumping station. The railway line along the northern boundary has been present since the early 20th Century Small scale quarrying has occurred in the area surrounding the site, with large scale quarrying occurring from the 1940s to the north, from the 1980s to the east, and from the late 1990s to the north-east. Landfilling operations to the east (Ardley landfill) began in the late 1980s (commencing in the north of the former quarry, as quarrying operations moved south). RAF Upper Heyford was operated as a grass aerodrome in WW1, and a hardstanding airfield was constructed by 1927. The site operated as a strategic bomber base until the 1930s and then mainly as an RAF training facility until 1950. From 1951 to 1994, the site was operated by the USAF Strategic Air Command until it was sold. Since 1994, the site has been used for a variety of residential and commercial purposes and is currently undergoing ongoing development as a mixed-use development.
Geology	Most of the site is expected to be underlain by the White Limestone Formation (Principal Aquifer), with superficial deposits (Alluvium and Head Deposits) only expected along stream courses. The White Limestone Formation is expected to be interbedded limestone, mudstone/siltstones and sandstone. Based on historical investigation data on the adjacent site (RAF Upper Heyford), the generalised geological section beneath the site is expected to be: • Topsoil and underlying superficial deposits; • Limestone (weathered in its upper reaches); • Siltstone, mudstone or clay bands; • Limestone or sandstone (some weathered to sand); • Significant mudstone deposits. Two groundwater bodies are expected at the base of each of the limestones, with the less permeable mudstone/siltstones/clays acting as an aquitard between the shallower and deeper groundwater bodies. The groundwater is also expected to be in hydraulic continuity with the surface water features on the site.
Hydrogeology	Historical site investigations at the Heyford Park site (immediately to the west of the current site) indicate that a tiered groundwater system is present, forming on clay, marl, siltstone, or mudrock interbeds within the White Limestone Formation and at the top of the Rutland Formation. Groundwater flow is likely to be generally towards the south-east, although there may be some localised flow towards the railway cutting in the north and the streams at the base of valleys. There are a number of springs on the western side of the site, which are likely to represent outcrops of low permeability clay, marl, siltstone, or mudrock interbeds in the White Limestone Formation. There are no active licensed groundwater abstractions on the site and one active licensed groundwater abstraction within 250m of the site. This is located 100m south-west, associated with Manor Farm for general farming and domestic use. There is no groundwater Source Protection Zone (SPZ) within the site boundary or within 1km of it.
Hydrogeology	Within the wider area, the River Cherwell is approximately 3km west of the site, flowing southwards and the River Ray is approximately 10km to the south-east of the site flowing to the south-west. The general area in which the site lies is largely devoid of major watercourses due to the presence of the limestone plateau and its relatively high permeability and porosity. The nearest named water features are: Gagle Brook, located off-site approximately 700m to the east of the site, flowing to the south; and Leys Farm Ditch, located off-site approximately 200m to the west of the site, flowing to the south.

Hydrogeology (Cont.)	There are two streams present in the base of the valleys at the site. The eastern stream starts to the west of Ashgrove farm in the central north of the site and flows initially to the south and exists the site to the south-east. The northern stream originates at Crowfoot Pond, off-site to the west, flows north-east across the site and is connected into pipework running beneath the railway to the north-east. In addition to the two main streams, there are three tributaries to the stream in the eastern valley; all located on the western side of the valley, flowing either from drainage outfalls associated with the former RAF Heyford or springs. Also, on the western side of the eastern valley there are a number of current or historical springs and ponds. There are no records of active licensed surface water abstractions on the site or within 1km of it.
Evidence of historical contamination	Review of historical site investigation reports undertaken at Ashgrove farm (on-site in the central east), Heyford Park to the west, and the former Ardley Landfill site to the east indicate that: • At Ashgrove Farm: ▪ There are a number of contaminant sources associated with historical or current use and storage of petroleum hydrocarbons, with these interpreted in historical reports to be of limited impact. ▪ There is a surface covering of Made Ground across the site, which does contain occasional elevated concentrations of metal. ▪ Asbestos Containing Materials are present on the ground surface and in / on buildings. • At Heyford Park: ▪ There is a low risk with regard to radiological materials. ▪ There are a number of contaminant sources associated with historical storage of petroleum hydrocarbons at the former RAF base. ▪ There are elevated concentrations of petroleum hydrocarbons and phenols in groundwater at the former RAF base. However, it was concluded that groundwater quality "was considered good when historic activity is taken into account. Specific contamination patterns, resembling plumes or contamination watersheds, were not obvious. The report indicated that these factors indicate the lack of a gross site wide contamination and that the presence of a reservoir of free product is remote." ▪ As part of the assessments at RAF Upper Heyford, surface water samples were collected from two springs / watercourses on the proposed Oxfordshire SRFI site. These indicated that the "*quality of the surface water in the spring was reasonably good*", with only occasional phenol recorded. ▪ Remedial work to clean and make safe the POL system was completed in March 2012. The remedial works comprised emptying, cleaning, and backfilling tanks with grout, while the buried pipelines were foam filled. A planning condition associated with the redevelopment of former RAF Upper Heyford was discharged to the satisfaction of the Environment Agency on completion of these works. • At the former Ardley Landfill, limited data is currently available to Hydrock. However, this indicates that: ▪ Significantly elevated concentrations of ground gas (methane and carbon dioxide) are not present on-site at Ardley Farm; ▪ There are significantly elevated concentrations of ground gas consistently recorded in the boreholes on the landfill. ▪ Groundwater monitoring data indicates that whilst there were occasional elevated concentrations of nickel in groundwater samples, "*as the concentrations were not significantly elevated, nor exceeding the threshold for more than one monitoring visit, it is not considered to present a valid risk*" (in the context of re-development of Ashgrove Farm).

Mining and Minerals Extraction	The site is not within an area of coal mining risk and is not within an area of recorded underground mining. As shown in the 'Oxfordshire County Council Minerals and Waste Core Strategy' and the 'Oxfordshire Minerals and Waste Local Plan Policies Map', the site is identified to be within: • A Mineral Resource Strategic Area (Policy M3) of OCC Minerals and Waste Core Strategy. • A Mineral Safeguarding Area (Policy M8). • A Mineral Consultation Area. Mineral extraction has been undertaken historically in the surrounding area, with several small-scale limestone pits and quarries noted on historical maps. In addition, significant limestone quarrying operations have occurred at: • the historical Ardley / Fields Farm Quarry), to the east of the site; • the historical Ardley Quarry Extension was located to the north-west of the site (on the northern side of the railway line); and • The operational Ardley/ Dewar's Farm Quarry to the south of Ardley Quarry; to the immediate east / south-east of the site. Historically, the quarry produced gabion stone, single size stone, crusher run and dust. At the current time the quarry is producing 6F5.
Waste Management	With regard to waste management in the vicinity of the site: • The Agrivert IVC (composting facility) is present on site for the composting of waste. • There are a number of historical landfills located in the vicinity of the site: ▪ Ardley Wood, located to the immediate north, was licenced for inert, industrial, commercial, household and liquid sludge; and ▪ Ardley Landfill/Ardley Fields Farm, located to the east of the site, was licenced for inert, non-hazardous, stable non-reactive hazardous waste (in the form of asbestos) and hazardous waste. The southern extension was operated as a co-disposal landfill from July 2000. • The Ardley Leachate Treatment Plant is an active biological treatment facility, located at the former Ardley Landfill/Ardley Fields Farm landfill. • There is a 'Household, Commercial & Industrial Waste Transfer Station', located at the former Ardley Landfill/Ardley Fields Farm landfill. Wastes accepted include household, commercial and industrial waste. • An Energy Recovery Facility is located to the east of the site at the former Ardley Landfill/Ardley Fields Farm landfill for the incineration of waste. Wastes accepted include household, commercial and industrial waste. There are a number of waste exemptions in the vicinity of the site. However, these are not considered to be relevant to the site and are not considered further.
Regulatory	The following regulatory controls are present in the immediate area of the site: • Control of Major Accident Hazards site (COMAH), located 458m west at the Southern Bomb Store/Site at Heyford Park. • Regulated explosive site, located adjacent to the north and north-west boundary of the site, as storage of fireworks and explosives within the hardened shelters of RAF Upper Heyford, which were previously used as bomb stores. • Pollution inventory substances: ▪ On-site in the south-east at the Agrivert IVC facility for ▪ To the east of the site at the Ardley EfW facility for the incineration of suitable waste. In the context of geo-environmental risk, the above are not considered to be a risk. However, specialist assessment (with regard to air quality) and management (with regard to COMAH and Regulated Explosives) may be required. No further assessment in this report.

SSSI	There are two SSSIs of interest with regard to development of the site. These are: • Ardley Cutting and Quarry, which is located along the railway cutting, and immediately north and south in parts. This SSSI is located on the site at the junction of the proposed railway sidings with the current rail line and is designated due to geological interest for its exposures of Jurassic rocks and has biological interest associated with limestone grassland, scrub, ancient woodland and wetland habitats. • Ardley Trackways, which is designated due to the presence of fossilised dinosaur (sauropod and theropod footprints, which form trackways. This SSSI is split into: ▪ the southern unit, located at Dewars Farm Quarry, an operational limestone quarry, to the east and south-east of the site; and ▪ the northern unit, located at an historical, now restored limestone quarry, to the north of the railway line; to the north-east of the site.
Radon	Based on the proposed development and locations of buildings, it is concluded that whilst small sections of the site are in Radon Affected Areas (radon levels in 1-3% of homes are above the action level), as there are no buildings proposed in these areas, no further action is required with regard to radon.
Unexploded ordnance (UXO)	A specialist UXO risk assessment indicates that at the current time, there is a medium risk that items of UXO could be located within the site boundary and a risk mitigation strategy has been recommended for excavation works within the site area. This risk mitigation strategy will be reviewed as additional information on the ground conditions of the site becomes available.
ASSESSMENT AND CONCLUSIONS	
Preliminary Geotechnical Hazards	The following plausible geotechnical risks are identified. • Uncontrolled Made Ground (variable strength and compressibility), which is likely to be limited in extent and depth across most of the main site and the historical landfill material in the north-west of the site, to the east of the B430. • Soft / loose compressible ground (low strength and high settlement potential), associated with Alluvium and Head Deposits along the existing watercourses. • Shrinkage / swelling of the clay fraction of soils under the influence of vegetation. Likely to be relatively low risk (low to moderate heave potential) and limited to the upper 1.0m (or so) of the weathered limestone, and the Alluvium and Head Deposits along the existing watercourses. • Lateral and vertical changes in ground conditions. • High sulphate concentrations in the soils. Likely to be a low risk as the soils are not expected to have high sulphate concentrations. However, testing is required to prove the risks. • Obstructions, including existing foundations at Ashgrove Farm, historical structures on the site and the drainage structure in the north. • Difficulty in excavating rock of differing strengths and fracturing. The limestone rock is anticipated to be difficult to excavate and will require heavy duty plant / rippers, and may require wide spaced blasting. • Existing below ground structures to remain, including the existing buildings to retained at Ashgrove Farm and the covered reservoir in the south-east of the site. • Shallow groundwater (existing spring lines and close to the level of the existing streams. • Changing groundwater conditions. Impact of groundwater in cuttings and excavations. Multiple groundwater horizons are expected, with the cut surface likely to intercept springs leading to wet or flooded conditions. • Running sands and / or loose Made Ground, leading to difficulty with excavation and collapse of side walls. Generally low risk across the majority of the site. However, likely to be a significant risk in the alluvial soils in the base of the valley and the landfill Made Ground in the north-east of the site (to the east of the B430). • Risk from flooding, including erosion due to surface water and groundwater flooding and changes in surface water run-off to neighbouring land.

<table>
<tr>
<td>Preliminary Geotechnical Hazards (Cont.)</td>
<td>

Earthworks - suitability of material excavated for use as Fill, with regard to selective excavation of soils and significant processing of excavated limestone.
Earthworks - differential bearing capacity and settlement.
Earthworks – poor bearing capacity of new fill. Unlikely to be a significant issue. However, Topsoil will only be suitable for use as Class 4 fill (non-structural) and Alluvium and Head Deposits may need improvement to increase bearing capacity.
Slope stability issues – general existing slopes. Generally, no significant issues apart from the railway cutting to the north, where the slopes are steep and appear poorly maintained.
Slope stability issues - instability of cut and fill slopes and excavations.
Slope stability issues – retaining walls.
Effect of earthworks and construction on assets outside the site boundaries such as the railway cutting slopes. The railway line is close to the northern site boundary. Consideration of earthworks and impacts on the railway will need to be considered.
Problematic soils (silts and rewetting etc.). Likely only to be a potential issue with soils won from the Alluvium, the Head Deposits and heavily weathered limestone (top 1.0m).
Faults are recorded in the north of the site and will need to be reviewed in detail as investigation progresses. These are not likely to be tectonically active.
Impacts on SSSIs.
Mineral Resource.

</td>
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<tr>
<td>Preliminary Geo-environmental Conclusions</td>
<td>
Based on current and historical land uses, the overall risk from land contamination at the site is considered to be low for the majority of the proposed development (as it has generally remained undeveloped), with some small areas of moderate to high risk (in historically developed areas, mainly Ashgrove Farm). This would need to be confirmed by appropriate intrusive investigation, testing and assessment of the results of the investigation.
It is considered that it is unlikely that the site would be classified as Contaminated Land under Part 2A of the EPA 1990.
The possible contaminant linkages on an unremediated site determined by the desk study and reconnaissance survey are summarised below for risk levels of moderate or greater.
<table>
<tr><th>Source(s)</th><th>◄ potential Impact on ►</th><th>Receptor(s)</th></tr>
<tr><td colspan="2">Made Ground associated with isolated areas of historical development and field spreading. (metals, metalloids and PAH).</td><td>Site users.
Water supply pipes.</td></tr>
<tr><td colspan="2">Made Ground associated with isolated areas of historical development and field spreading. (asbestos and Asbestos Containing Material).</td><td rowspan="2">Site users.</td></tr>
<tr><td colspan="2">Landfill Made Ground materials present in the in the historical landfill in the north-east of the site, to the east of the B430. (metals, metalloids, PAHs and petroleum hydrocarbons, phenols, VOCs, SVOCs).</td></tr>
<tr><td colspan="2">Landfill Made Ground in the historical landfill in the north-east of the site. (asbestos fibres and Asbestos Containing Materials (ACM).</td><td>Site users.
Neighbours</td></tr>
<tr><td colspan="2">Petroleum hydrocarbons and VOCs associated with spills and leaks from tanks at Ashgrove Farm.</td><td>Site users.
Water supply pipes.</td></tr>
<tr><td colspan="2">Ground gases (carbon dioxide and methane) from organic materials in the Made Ground below the site.</td><td rowspan="2">Site users.
Buildings on site.</td></tr>
<tr><td colspan="2">Ground gases from the Ardley landfill to the east he site.</td></tr>
<tr><td colspan="2">Petroleum hydrocarbons and phenols contaminated groundwater from the former RAF Upper Heyford.</td><td rowspan="2">Site users.
Aquatic ecosystems.</td></tr>
<tr><td colspan="2">PFOS / PFAS contaminated groundwater from the former RAF Upper Heyford from its use as an airbase and the potential use of firefighting foam.</td></tr>
<tr><td colspan="2">Asbestos fibres from insulation or asbestos-containing materials in the buildings.</td><td>Site users.</td></tr>
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FUTURE CONSIDERATIONS	
Further work	In order to confirm the actual risks to receptors and confirm the ground conditions with respect to potential geotechnical and geo-environmental risks, an appropriate intrusive investigation will need to be undertaken to: • determine the depth and distribution of Made Ground and natural strata (superficial and solid) across the site to create accurate ground models for preliminary geotechnical recommendations and conceptual site models in contamination assessment; • determine preliminary assessments of the strength/density profile of soils and rock strata beneath the site; • make preliminary assessments the rock material and rock mass characteristics beneath the site including weathering profiles; • determine the depth/level of groundwater beneath the site; • determine the ground gas concentrations beneath the site; • determine appropriate parameters to assist with pavement design for roads and rail tracks; • assess trench stability, over break potential and 'digability' with particular attention to rock excavation; • allow infiltration rate testing in soil and rock; • allow appropriate sampling for targeted and non-targeted chemical laboratory testing for contamination assessment and remediation design where appropriate; • allow appropriate sampling for geotechnical laboratory testing to assist in obtaining suitable geotechnical parameters and characteristic values for design; • allow soil classification to allow geotechnical characterisation and determine suitability for reuse of soils within earthworks; and • obtain information in terms of Aggressive Chemical Environment for Concrete Class (ACEC Class). Following investigation, assessment will be required to: • update the Ground Model; • update the Geotechnical Risk Register; • provide outline Geotechnical Design recommendations; • update the iCSM, including identification of plausible pollution linkages; • undertake generic quantitative risk assessment of potential chemical contaminants to establish 'suitability for use' under the current planning regime; • discuss potential environmental liabilities associated with land contamination (soil, water and gas); and • provide outline preliminary mitigation recommendations to ensure the site is 'suitable for use'.

This Executive Summary forms part of Hydrock Consultants Limited report number 15560-HYD-MS-XX-GE-RP-1001-S2-P01 and should not be used as a separate document.

1. INTRODUCTION

1.1 Terms of reference

In October 2020, Hydrock Consultants Limited (Hydrock) was commissioned by Oxfordshire Railfreight Limited (the Client) to undertake a geotechnical and geo-environmental desk study at the proposed Oxfordshire Strategic Rail Freight Interchange (SRFI) site, Ardley, Oxfordshire, herein referred to as 'the wider site'.

Hydrock understands that the proposed development for the wider site is to comprise:

- Up to 603,870 sq.m. (approx. 6.5 million square feet) of distribution and logistics (use class B8) floorspace, including ancillary office accommodation.
- A rail freight terminal served via connections to the Chiltern Railway Line (part of the Strategic Rail Freight Network).
- Improvements to Junction 10 of the M40, including a new Ardley By-pass to the east of the village, and a new Middleton Stoney relief road to the north-east of the village.
- Principal site access to the site via the new Ardley By-pass and off a new roundabout on the B430 close to the railway. A 2nd access into the site will be from the south of the site from the realigned Camp Road.
- Relocated Agrivert IVC (composting facility) on site.
- Measures to enable and encourage sustainable travel to the site, including considerations relating to existing Public Rights of Way, and provision of new foot and cycle links to and within the site; bus provision and suitable provisions for pedestrians and cyclists.
- Demolition of existing structures, and new earthworks to create development plateaux, drainage attenuation features, and extensive perimeter earthworks bunding, which will form part of the screening (landscape and visual mitigation) of the proposed development.
- Retained and new landscaping and planting, including on the earthwork bunds, as part of a comprehensive landscaping and green infrastructure scheme, including habitat creation.
- Retention of the Grade II listed 'Threshing Barn' at Ashgrove Farm.

An illustrative Masterplan of the proposed development layout (FPCR Drawing 8308-L-23), is presented in Appendix A.

The wider site includes two sub-areas:

- the Main Site (generally to the west of the B430, with a small extension in the north-east, on the eastern side of the B430), comprising the rail terminal, the warehousing, Ashgrove Farm, the Agrivert IVC (composting facility), and associated landscaping and infrastructure, including perimeter earthworks bunding; and
- off-site highways (generally to the south, south-east and north-east of the Main Site), including Improvements to Junction 10 of the M40, a new Ardley By-pass, a new Middleton Stoney relief road realignment of Camp Road (with a 2nd access into the site, and new roundabout(s) on the B430.

This report is for the Main Site only, which is hereafter referred to as 'the site'. A separate desk study will be completed for the off-site highways. A Site Reference Plan showing the various boundaries (Hydrock Drawing 15560-HYD-MS-ZZ-DR-GE-1004) is presented in Appendix A.

The works have been undertaken in accordance with Hydrock's fee proposal (dated May 2020, updated June 2020) and the Client's instructions to proceed (letter ref: Appointment 12809_TG_JC_MBT).

1.2 Objectives

The Desk Study been commissioned to support a Development Consent Order (DCO) submission.

The objective of the Phase 1 Desk Study is to formulate a preliminary Ground Model and an initial Conceptual Site Model (iCSM) for the site and to identify key geo-environmental and geotechnical risks associated with the proposed development.

This is a preliminary risk assessment, part of a tiered approach in accordance with the Environment Agency's Land Contamination: Risk Management guidance (LCRM, 2020).

1.3 Scope

The scope of the Phase 1 Desk Study comprises:

- a field reconnaissance (walkover) to determine the nature of the site and its surroundings including current and former land uses, topography and hydrology;
- acquisition and review of:
  - historical Ordnance Survey maps, to identify former potentially contaminative uses shown at the site and immediately surrounding it, and an assessment of the associated contamination risks;
  - a third-party environmental report to identify flooding warning areas, local landfills, pollution incidents, abstractions, environmental permits etc. which may have had the potential to have environmental impact on the site;
  - topographical, geological and hydrogeological maps;
  - British Geological Survey (BGS) archive records;
  - publicly available aerial imagery;
  - the natural England website (naturalengland.org.[redacted]
  - the MAGIC database website (magic.defra.gov.uk);
  - Oxfordshire County Council website (www.oxfordshire.gov.uk);and
  - a site-specific specialist UXO Desk Top Study;
- a review of public information sources;
- a review of previous investigations carried out at, and adjacent to, the site;
- development of a preliminary Ground Model representing ground conditions at the site;
- development of an iCSM, including identification of potential pollution linkages;
- a qualitative assessment of any geo-environmental risks identified; and
- identification of plausible geotechnical hazards.

The extent of the Site Investigation (Desk Study and Ground Investigation) study area is the land within the proposed development area and the immediate area. The immediate area is defined for the purposes of this report as land within close proximity to, or bordering, the relevant part of the site (i.e. less than 250m from the site) that has the potential to include contaminant sources, which may affect the site or be affected by it. The inclusion of a 250m buffer is based on the 'Guidance for the Safe

Development of Housing on Land Affected by Contamination' (Environment Agency, 2008). This buffer is a conservative approach due to the lower sensitivity of commercial development relative to housing, but reasonable in the context of the scheme, taking into account the distance over which contamination can migrate, and the relatively low density of development in the area of the scheme.

1.4 Available information

The following relevant information has been provided to Hydrock for review as part of this report and Hydrock understands this information has either been produced for the Client, or the Client has reliance on it:

- FPCR. 09th February 2021. 'Oxfordshire SRFI, Oxfordshire. Illustrative Landscape Masterplan (Alternative Highways)'. Ref 8308-L-23.
- Greenhatch Group. May 2020. 'Ardley, Bicester, OX27 7PJ. Topographical Survey'. Ref: 36646_T Rev 1.
- Complete Design Partnerships (CDP). March 2020, Updated October 2020. 'Ardley, Oxfordshire. Preliminary Earthworks'. Ref:19-7709-SK 0001.

1.5 Regulatory context and guidance

The geo-environmental section of this report is written in broad accordance with BS 10175:2011+ A2:2017, 'Land Contamination: Risk Management' (LCRM, 2020) and the AGS (2006) 'Good Practice Guidelines for Site Investigations'.

The methods used follow a risk-based approach; the first stage of which is a Phase 1 desk study and field reconnaissance (this report). The potential geo-environmental risks are assessed qualitatively using the 'source-pathway-receptor contaminant linkage' concept, as introduced in the Environmental Protection Act 1990 (EPA, 1990).

Potential geotechnical risks are also assessed and the geotechnical section of this report is prepared in general accordance with BS EN 1997 (EC7) and BS 8004:2015.

Phase 2 (future reports) will comprise intrusive ground investigation work and testing. The factual information from Phase 1 and Phase 2 will then be used to develop the Conceptual Model (CM). This CM will be based on a ground model of the physical site conditions and an exposure model of the possible contaminant linkages. The CM forms the basis for Generic Quantitative Risk Assessment (GQRA) in accordance with current guidelines. This GQRA might lead to more Detailed Quantitative Risk Assessment (DQRA).

The geo-environmental and geotechnical aspects are discussed in separate sections. Throughout the report the term 'geotechnical' is used to describe aspects relating to the physical nature of the site (such as foundation requirements) and the term 'geo-environmental' is used to describe aspects relating to ground-related environmental issues (such as potential contamination). However, it should be appreciated that this is an integrated investigation and these two main aspects are inter-related. Designers should take all aspects of the investigation into account.

Remaining uncertainties and recommendations for further work are listed in Section 7 and Section 8.

Professional judgement is then used to evaluate the findings of the risk assessments and to provide recommendations for the development.

2. PHASE 1 STUDY (DESK STUDY AND FIELD RECONNAISSANCE)

2.1 Data

In addition to the information detailed in Section 1.4, the desk study sources used to assemble the following information are presented in Appendix C and Appendix D and include:

- third-party environmental report (Groundsure report, reference GISP-2020-10641-3485);
- historical Ordnance Survey mapping (reference GISP-2020-10641-3484);
- aerial imagery (online Google Earth Pro, and in the Groundsure report);
- BGS Archive Records;
- Natural England website (naturalengland.org.uk);
- MAGIC database website (magic.defra.gov.uk);
- Oxfordshire County Council website (www.oxfordshire.gov.uk);
- Cherwell District Council Planning Portal (https://planningregister.cherwell.gov.uk/);
- Coal Authority's Interactive Viewer (http://mapapps2.bgs.ac.uk/coalauthority/home.html);
- EOD Contracts Limited. 15 February 2021. 'Explosive Ordnance Desktop Study For: Project 21056 (Land to the NE, E, SE of) RAF Heyford Oxfordshire'. Reference EOD/21/21056/DTS/HYDROCK/(Land to the NE, E, SE of) RAF Heyford Oxfordshire.
- Upper Heyford website ([redacted]); and
- Wikipedia website [redacted]

It should be noted that due to boundary changes through the initial project phases, the site boundaries shown on the Groundsure and UXO reports (referenced above) may not accurately reflect the current site boundary. However, the interpretation of the information does take in to account these changes and information presented is based on the current site boundary.

The following documents from publicly available sources have been reviewed by Hydrock in the preparation of this report:

- Arup. June 2007. 'Heyford Park Development. Locations of Possible Contamination Sources'. Ref: 120643-00 GG_G.2 – 01.
- SLR Consulting Limited. July 2009. 'Ardley Energy from Waste Facility, Ardley, Oxfordshire. Post Application Response: Hydrology and Hydrogeology'. Ref: 409-0036-00349.
- SLR. Undated. 'Ardley Quarry EfW. EIA Extract. Chapter 9. Geology Hydrology and Hydrogeology', Unreferenced.
- SLR. Undated. 'Ardley Quarry EfW. EIA Extract. Chapter 11. Palaeontology'. Unreferenced.
- Waterman Energy, Environment & Design Ltd (Waterman). March 2012. 'Heyford Park – Flying Field, Hydrogeological Characterisation and Groundwater Quality Assessment'. Ref: EED10658-109_R_9.3.1.FA.
- Hydrock. 26 August 2014. 'Land at Ashgrove Farm, Ardley, Oxon. Desk Study Report'. Ref. R/12421/001 Version 2 (Included in this report were copies of boreholes by SLR from 2006).
- BRD Environmental Ltd. 2015. 'Geo-Environmental Site Investigation, Ashgrove Farm, Ardley'. Ref. BRD2409-OR-1, dated October 2015.

- Waterman Infrastructure & Environment Limited. June 2016. 'Preliminary Environmental Risk Assessment Southern Bomb Store, Former RAF Upper Heyford, Oxfordshire'. Ref WIB14371-R-100-2-3-3.FA.

The Arup Plan (2007) and Waterman (2012 and 2016) reports have been prepared as part of investigation works undertaken for development of the former Royal Air Force (RAF) and United States Air Force (USAF) Upper Heyford airbase to the north and west of the site, now known as Heyford Park (Cherwell District Council Planning Applications 07/02291/OUT, 08/00716/OUT, 10/00221/DISC F and 16/02269/HYBRID).

The SLR (2009) report and EIA chapters were prepared as part of investigation works undertaken for development of the Ardley ERF, to the east of the site (Cherwell District Council Planning Application 08/02472/CM and 09/00423/CM).

The Hydrock (2014) and BRD (2015) reports refer to the farm buildings of Ashgrove Farm and their immediate environs, covering a limited area in the central part of the current site. The reports were undertaken to support a proposal to convert existing farm buildings for residential use, which has not been undertaken (Cherwell District Council Planning Applications 08/01520/F and 16/01617/F).

Full copies of the above information can be provided on request. Where suitable, extracts have been included within this report. Information from the reports noted above are incorporated into in the relevant sections of this report. However, these are not assigned to the Client and Hydrock has no reliance on them. Therefore, they have been used for background information only.

In addition to the above information, Hydrock has sourced copies of the following academic papers with regard to the Ardley Trackways:

- Day J. J, Norman D. B., Gale A. S., Upchurch P. and Powell H. P. 'A Middle Jurassic Dinosaur Trackway site from Oxfordshire, UK'. Published in Palaeontology, Vol. 47, Part 2, 2004, pp. 319–348 (Referenced as: Day et.al, 2004).
- Mossman, Bruning and Powell. 'Anatomy of a Jurassic Theropod Trackway from Ardley, Oxfordshire, U.K' 2003. Ichnos, Taylor and Francis Ltd, Volume 10, pp195-207.

2.2 Site referencing

The site is referenced in Table 2.1 and the location is indicated in Figure 2.1 and Figure 2.2 (note site boundaries are approximate).

Table 2.1: Site referencing information

Item	Brief Description
Site name	Oxfordshire Strategic Railfreight Interchange - Main Site
Site address	Land around Ashgrove Farm, Ardley Road, Ardley, Bicester OX27 7PJ.
Site location and grid reference	The site is located approximately 5.5km north-west of Bicester, to the west of the M40, the south of Ardley and east of Upper Heyford. The National Grid Reference of the approximate centre of the site is 453276E, 226189N. The Main Site is located to the west of the B430, approximately 1.5km north of Middleton Stoney and 1km south of Ardley. At its furthest extents, the Main Site measures approximately 2.7km from north to south and 1.6km from east to west, with an area of approximately 260ha. The Bicester to Banbury main line railway passes along the north-eastern site boundary.

A Site location Plan (Hydrock Drawing 15560-HYD-MS-ZZ-DR-GE-1000) is provided in Appendix A.



Figure 2.1: Site location

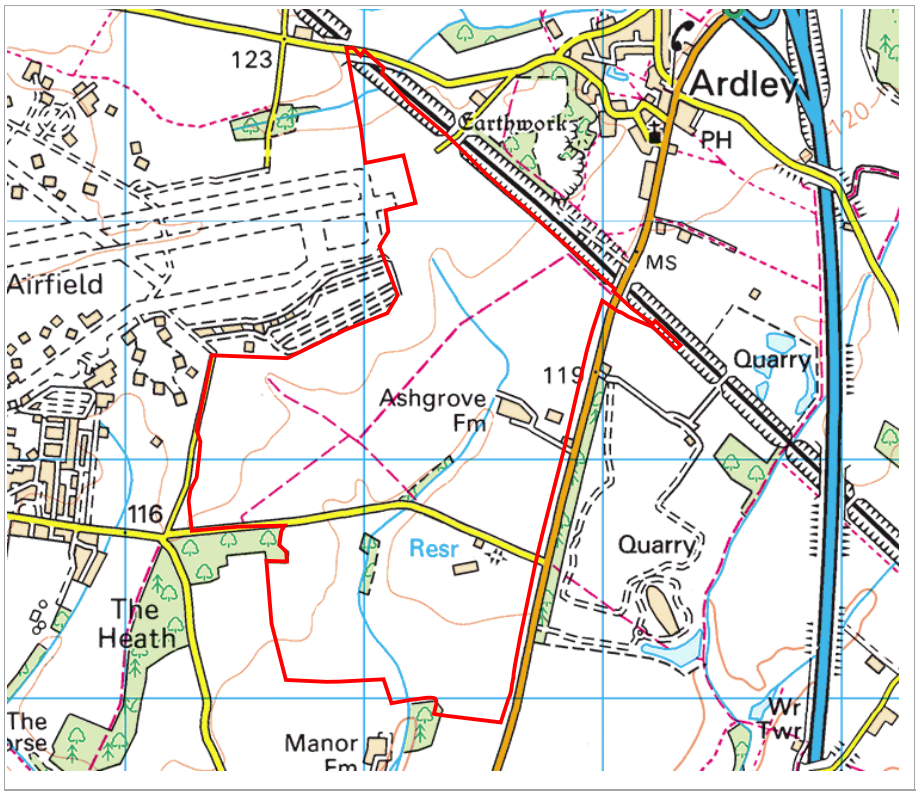


Figure 2.2: Extract from the Ordnance Survey Map (Licence number: 100023353

2.3 Site description and field reconnaissance survey

A field reconnaissance survey was undertaken on 30th November and 8th December 2020 to visually assess potential geotechnical hazards, contaminant sources and receptors. The weather during the field reconnaissance survey was overcast (30th November) and overcast and foggy (8th December).

A description of the site is presented in Table 2.2. Due to the size of the site and the number of fields it comprises, a Field Zonation Plan (Hydrock Drawing 15560-HYD-MS-ZZ-DR-GE-1001) has been used to reference individual fields for clarity with the site description. An extract from the Field Zonation Plan is shown in Figure 2.3 and the drawing is presented in Appendix A.

A site walkover plan (Hydrock Drawing 15560-HYD-MS-ZZ-DR-GE-1003) and a detailed plan of Ashgrove Farm (Hydrock Drawing 15560-HYD-MS-ZZ-DR-GE-1006) are presented in Appendix A.

Detailed site photos covering the entire site are presented in Appendix B.

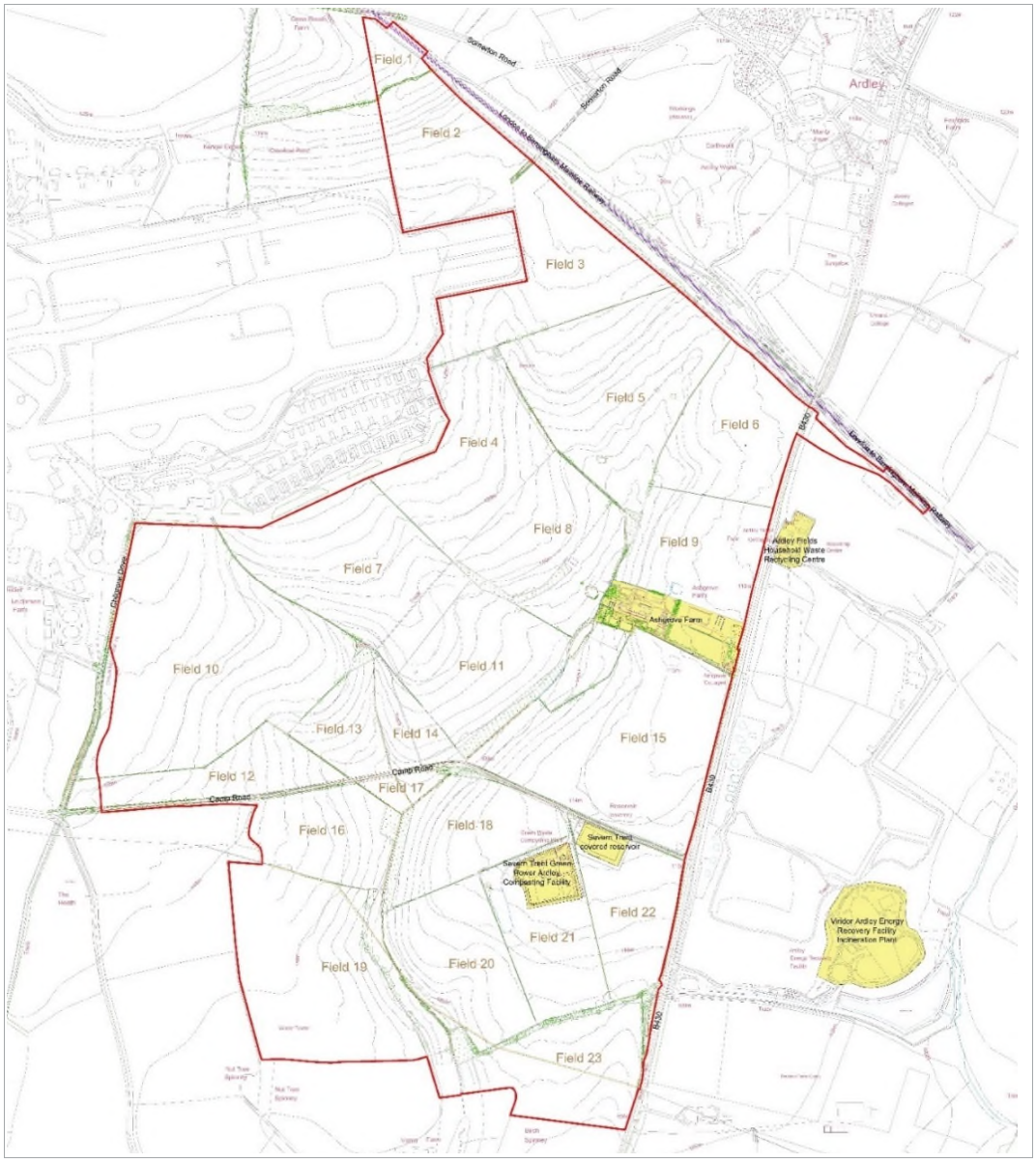


Figure 2.3: Extract from the Field Zonation Plan showing field references.

Table 2.2: Site description

Item	Brief Description
Site access	The majority of the site is accessed from Ashgrove Farm, with individual fields connected by a series of access routes and farm gates. Access for Fields 1 and 2 in the north is from Somerton Road which enters the site from the north, between Fields 2 and 3, via a bridge over the railway line. The access for the southern section of the site (Fields 16 to 23) is off Camp Road, which crosses the central south area of the site.
Site area	The site is irregular in shape and has an area of approximately 260 ha.
Site boundaries and surrounding land	The site is bounded to the north by the London-Birmingham (Chiltern) mainline railway, in a cutting, trending north-west to south-east. The majority of the eastern boundary (apart from the north-eastern part of the site) comprises the B430 (Ardley Road), with Ardley Fields Household Waste & Recycling Centre to the east of Field 9, Viridor Ardley ERF Incineration Plant east of Field 22 and Ardley/Dewars Farm Quarry, east of Field 23. In the north-east of the site, there is an eastern extension of the site, where the rail connection to the main line is proposed. In this location, the eastern and southern boundary are formed by the former, now restored, Ardley Landfill. The south and south-western site boundaries pass through agricultural fields, generally following existing field boundaries, but occasionally cutting through them. Camp Road and Chilgrove Drive form the south-western boundary, with the central western boundary formed by the edge of the former RAF and USAF Upper Heyford Airfield, which is situated to the west/north-west of the site. The north-western boundary is undefined and crosses two fields up to the railway line.
General site sensitivity	The site is within a generally rural area with a Household Waste and Recycling Centre and Ardley ERF Incineration Plant to the east of the B430, adjacent to the eastern site boundary, and a limestone quarry and aggregate processing facility (Ardley/Dewars Farm Quarry) to the south-east. Residential dwellings are located approximately 350m south-west of the south-western corner of the site, with commercial buildings (building of the former RAF Upper Heyford) approximately 400m west of the western site boundary. The former flying field, bomb storage and Petrol Oil and Lubricant stores of the former RAF Upper Heyford are present to the immediate north-west of the north-western site boundary. There are two Sites of Special Scientific Interest (SSSI) in close proximity to the site: Ardley Cutting and Quarry (associated with the railway cutting and quarries to the north of the cutting) is located immediately to the north of the site; and Ardley Trackways is located immediately to the south-east (see Section 2.10 for details).
Elevation, topography and any geomorphic features	The site comprises two valleys, separated by a ridge-line at the north-eastern end of the runway of the former RAF Upper Heyford, in the central north of the site. The northernmost valley falls to the north-east, with the northern slope down to the south from the northern boundary; from approximately 119m OD to a stream, which is at between 118m OD and 116m OD. The stream flows from the south-west to the north-east and flows off site below the rail line. The southern side of the northern valley, rises to approximately 124mOD at the north-eastern end of the runway.

Item	Brief Description
	The larger valley is in the central east of the site and slopes gently down towards the south-west; from a level of approximately 116m OD in the north (Field 1) to approximately 104m OD in the south (Field 23). The north-western slope falls down to the south-east; from between approximately 120m OD and 124m OD to the stream. The northern part of the south-eastern slope falls down to the north-west; from between approximately 115m OD and 120m OD to the stream. The southern part of the south-eastern slope falls down to the west and south-west; from between approximately 1055m OD and 115m OD. In the south-east of the site, the stream is located off site to the south. The crest of the railway cutting to the north-east of the site is between approximately 5m and 10m from the site boundary, with a steep reduction in level down (to the north) to the railway track level in the base of the cutting at approximately 113m OD. Due to topographical changes at the crest of the railway cutting, there are level differences of between approximately 2.5m in the north of Field 2 and 12m to the north-east of the end of the runway of the former RAF Upper Heyford (northern edge of Field 3). There are a further number of local reductions in level associated with streams, drainage ditches and ponds that cross the site, generally in the order of 0.5m to 1.5m lower than the surrounding topography. Surface water features are discussed in more detail below.
Present land use	The site comprises a series of pastural and arable agricultural fields, with farm buildings associated with Ashgrove Farm (on the central eastern boundary), a drainage basin in the north, a composting facility and covered reservoirs in the south-west, and a water pumping station in the south. These are discussed in more detail below.
Ashgrove Farm Farmyard	There were a series of farm structures forming part of Ashgrove Farm in the central east of the site between Fields 9 and 15. These include cottages adjacent to the B430 an access road into the farm and the farmyard. Ashgrove Cottages are present at the entrance to Ashgrove [redacted] with an electricity sub-station opposite. In the eastern end of the Ashgrove Farm farmyard there were stockpiles of topsoil (approximately 4m in height by 30m length and 25m width) and demolition rubble (approximately 3m in height by 30m in length and 15m width). Immediately west of these stockpiles there was a stack of vehicle tyres, covered oil drums and empty 25 litre plastic chemical containers. There was also a concrete-floored storage area containing general construction materials (scaffolding, concrete blocks, racking etc), several empty approximately 1000 litre plastic IBCs and a stockpile of demolition rubble. The demolition rubble was noted to contain several fragments of suspected asbestos cement. There were several other small stockpiles of general building rubble, macadam and further oil drums (see selected photos below and detailed photos in Appendix B). See Hydrock Drawing 15560-HYD-MS-ZZ-DR-GE-1006 for reference. The easternmost barn contained hay bales, farm vehicles (including tractors, JCBs and vans), general farm materials and agricultural chemical containers. There was a rusted metal storage tank, approximately 10m in length by 1m in width, to the east of this barn which was marked and labelled as containing anhydrous ammonia. There was no obvious odours or signs of spills adjacent to the tank. A separate barn was used by a scaffolding company. There was no access available into the inside of this barn during the walkover. There was also a caravan that appeared occupied and several refrigerators and household appliances in this section of the farmyard (some of which appeared to be connected to services). In the western end of the farmyard there were a number of barns that appeared derelict, with a barn in the north-west used as a car workshop. The remaining barns were used for agricultural animal uses. Many of the barns in this area had asbestos cement roofs. The

<table>
<tr><th>Item</th><th>Brief Description</th></tr>
<tr><td></td><td>westernmost structures comprised a residential property with a fuel storage tank (AST) to the north-east. There was a historical borehole adjacent to the tank.
The floor slabs of former barns in the north-west of the farmyard remained but the superstructure has been demolished. There was an agricultural or service pit in the west adjacent to the floor slabs.
There were several above ground fuel storage tanks in the centre of the farm yard.
A number of manholes and service runs crossed the western, central and eastern ends of the farmyard. There were overhead cables running east to west along the farmyard adjacent to the farm access road.
There was a wooded area adjacent to the stream; to the west of Ashgrove Farm.</td></tr>
<tr><td>Drainage basin</td><td>In the north of the site, adjacent to the north-eastern edge of the former RAF Upper Heyford, is a drainage attenuation basin. This appears to be part of the former RAF airfield drainage system and comprises an approximately 20m x 30m concrete structure behind a chain link fence. The area inside the chain link fence is heavily overgrown.
The drainage basin had standing water in it at the time of the walkover, with two outlet pipes being observed, discharging at a headwall to the south of the compound, into a surface water drainage ditch. The surface water drainage ditch leads to the stream in the bottom of the valley.</td></tr>
<tr><td>Agrivert IVC (composting facility)</td><td>The northern end of Fields 21 and 22 were in a segregated area operated as an organic and compostable materials composting facility (Agrivert IVC). There was no access available to the composting site itself during the walkover, only the immediately surrounding fields. However, based on walking the perimeter, the composting site contained three warehouse structures. Two were approximately 30m length by 30m width, and the central structure was approximately 40m length by 30m width.
The composting site also contained processing plant and machinery, and stockpiles of green and organic waste, covering an area of approximately 100m length by 60m width, for use in the biofuel plant.
Stockpiles of organic feed were present on the external areas of the composting compound. There was also a stockpile of topsoil and organic materials, approximately 20m length by 5m in width, associated with the plant, in the north-west of Field 21.
There were a number of manhole covers and service marker posts in the north-west corner of Field 21, to the west of the composting site.</td></tr>
<tr><td>Covered Reservoir</td><td>The northern end of Field 22 contains a covered reservoir operated by Severn Trent Water.
The reservoir is approximately 100m in length, by 70m in width and is constructed with grassed earth walls with associated pipework and services connected to the reservoir.
Access to the covered reservoir was not possible.</td></tr>
<tr><td>Agricultural Fields</td><td>The agricultural fields are described below. Fields are referenced on Figure 2.3 and the Field Zonation Plan (Hydrock Drawing: 15560-HYD-MS-ZZ-DR-GE-1001 in Appendix A.
<table>
<tr><th>Field</th><th>Current Use</th><th>Additional uses and features</th></tr>
<tr><td>Field 1</td><td>Ploughed</td><td rowspan="2">Public footpath runs on the northern field boundary trending south-east to north-west and adjacent to the railway cutting.</td></tr>
<tr><td>Field 2</td><td>Ploughed</td></tr>
<tr><td>Field 3</td><td>Ploughed</td><td>The western end of Field 3 comprises a surface covering of general man-made materials mixed into the topsoil including plastic, metal, paper, cardboard, animal bones and used shotgun cartridges.
There is a public footpath on the northern field boundary, trending south-east to north-west; adjacent to the railway cutting.</td></tr>
</table>
</td></tr>
</table>

Item	Brief Description		
	Field 4	Ploughed	A public footpath is present on the northern field boundary trending south-east to north-west; adjacent to the railway cutting. A concrete drainage structure (drainage basin for former RAF Upper Heyford), is present in north-east of Field 4. There is an old boiler (scrap) in north-east corner. There is a running surface water drain on the north-eastern boundary of Field 4. This drain connects via two pipes and headwalls to the drainage basin in the north of Field 5.
	Field 5	Ploughed	Surface covering of general man-made materials mixed into the topsoil including plastic, metal, paper, cardboard, animal bones and used shotgun cartridges. There is a public footpath on the northern field boundary, trending south-east to north-west; adjacent to the railway cutting. There is a pond (historical spring), with a number of field drains (marked by headwalls) in the south. A running surface water drain is present on the south-western boundary.
	Field 6	Ploughed	There is a public footpath on the northern field boundary, trending south-east to north-west; adjacent to the railway cutting, with A pedestrian gate is present in the north-east of Field 6. There are historical boreholes in the centre and north-east corner of the field. Surface covering of Made Ground materials mixed into the topsoil locally on the northern and eastern field boundaries. The B430 is present on the eastern boundary.
	Field 7	Cropped	There is a farm track on the south-eastern edge of the field, trending south-west to north-east.
	Field 8	Grazing cows	There is a concrete slab of a former structure in the centre of the field. An 'L' shaped woodland approximately 300m long is present in the central west, extending to the north-west corner. A triangular shaped woodland approximately 90m long by 30m wide is present in the east. The farm track to Ashfield Farm crosses the stream in the south-east of the field. A pond is present in the southern corner (boundary with Field 11 and 15) and a separate pond, with pipes (field drains) is present in the central east.
	Field 9	Grazing sheep	There were areas of discoloration / evidence of regrowth of grass in the north-west of the field, possibly indicative of the excavation and burial of materials. The B430 is on the eastern boundary.
	Field 10	Cropped	There was fly-tipping of general household and commercial refuse on the western boundary (adjacent to Chilgrove Drive). There was an area of broken up hardstanding in the south-west corner adjacent to the field entrance from Chilgrove Drive (at the location of an historical caravan park).

Item	Brief Description		
			A small triangular woodland is present in the eastern corner, at the location of a spring, and is approximately 60m long by 40m wide. A surface water drain (flowing at the time of the walkover), leads from an off-site drainage feature associated with the former RAF Upper Heyford along the north-western boundary.
	Field 11	Grazing cows and sheep	There were remnants of two former structures in the north-west of the field with a concrete floor slab and a separate brick-walled structure. A pond is present in the north-eastern corner (boundary with Field 8 and 15) and the main valley bottom stream is present on the south-eastern boundary of the field. A linear woodland is present, adjacent to the stream, and is approximately 350m long by 30m wide.
	Field 12	Cropped	There was fly-tipping of general household and commercial refuse on the southern boundary (adjacent to Camp Road). Local areas of general windblown rubbish were also noted on the northern boundary and western boundary. A flowing surface water drainage ditch is present on the north-eastern boundary. Camp Road is present on the southern boundary.
	Field 13	Grazing cows	There were areas of discoloration / evidence of regrowth of grass in the north-west of the field, possibly indicative of the excavation and burial of materials. Flowing surface water drainage ditches present on the south-western boundary and the eastern boundary. These pass below Camp Road via culverts. Camp Road is on the southern boundary.
	Field 14	Grazing cows	A farm track crosses the centre of the field trending north to south. A flowing surface water drainage ditch is present on the western boundary. This passes below Camp Road via culverts. Camp Road is on the southern boundary.
	Field 15	Grazing cows and sheep, and cropped.	The northern end of the field is demarcated by a partial hedge and a temporary electric fence to contain sheep and cows. The remainder of the field is cropped. There is a pond in the north-western corner (boundary with Field 8 and 11) and the main valley bottom stream is present on the western boundary of the field. Ashgrove Farm is to the north of the field. Camp Road is on the southern boundary. The B430 is on the eastern boundary.
	Field 16	Cropped	High voltage overhead cables were present on the southern field boundary running east to west. A small rectangular woodland, approximately 70m long by 40m wide, is present in the north-east corner. A flowing surface water drainage ditch is present on the north-eastern boundary and the main valley bottom stream is present

Item	Brief Description		
			on the eastern boundary. All streams / ditches are in culverts crossing Camp Road, which is on the northern boundary.
	Field 17	Grassed	Localised domestic rubbish was noted adjacent to the site entrance and road layby. A small triangular woodland is present in the north-east corner. A flowing surface water drainage ditch is present on the south-western boundary. A separate ditch is present in the centre of the field and the main valley bottom stream is on the eastern boundary. All streams / ditches are in culverts crossing Camp Road, which is on the northern boundary.
	Field 18	Cropped	Local windblown rubbish was noted on the northern boundary. A small triangular woodland is present in the northern corner and a linear wooded area is present on the western boundary. Camp Road is on the northern boundary. The composting facility and the Severn Trent covered reservoir are located to the west.
	Field 19	Cropped	High voltage overhead cables were present running east to west on the northern field boundary then crossing the north-east field corner and continuing in a north-west to south-east direction. The main valley bottom stream is on the eastern boundary of the field.
	Field 20	Cropped	High voltage overhead cables cross the south-west field corner trending north-west to south-east. The main valley bottom stream is on the western boundary of the field. There is a rectangular wooded area, approximately 80m long by 50m wide, on the south-eastern boundary.
	Field 21	Cropped	The composting facility site (previously described) is at the northern end of the field
	Field 22	Cropped	The covered reservoir (previously described) is at the northern end of the field. A linear, wooded area is present on the south-eastern boundary. The B430 is on the eastern boundary.
	Field 23	Ploughed	High voltage overhead cables trend north-west to south-east across the central north of the field. There were sleeping bags and general rubbish in the north-east of the field, possibly left by campers or rough sleepers. A linear wooded area is present on the north-western boundary. There is a triangular woodland, approximately 80m long by 50m wide, in the north-western corner. The B430 is on the eastern boundary.
Surface Water Features	There were a number of surface water features on the site which are shown on the Site Walkover Plan (Hydrock Drawing: 15560-HYD-MS-ZZ-DR-GE-1003). Five streams / flowing drainage ditches were noted during the site walkover: • The main stream is located in the central-west of the site and flows north to south along the base of the eastern valley. This stream was approximately 2m to 3m wide running south/south-west across the centre of the site on the boundaries between		

Item	Brief Description
	Fields 8 and 9, 11 and 15, 17 and 18, and 19 and 20. The water flowed from north to south. • There are three tributaries to this main stream, all located on the western side of the eastern valley, flowing either from drainage outfalls associated with the former RAF Heyford, or springs. Also, on the western side of the eastern valley there are a number of current or historical springs and ponds. • There is a stream located in the north of the site (at the base of the western valley), which flows from off site (originating from Crowfoot Pond to the west) to the south-west, across the site between Field 1 and 2, and off-site to the north-east, flowing into a headwall and into a culvert running beneath the railway to the north-east. The level change between the site and the railway cutting at this location is approximately 2m. Concrete drainage outfalls / attenuation structures (associated with drainage for the former RAF Upper Heyford) are located: • On the north-western boundary, with an outfall from a pipe into a drainage ditch between Fields 7 and 10, which flowed south, between Field 13 and 14 and into the stream in Field 17. • In the north, on the boundary between Field 3 and Field 4, flowing into a concrete attenuation structure on the northern boundary of Fields 4 and 5 and then discharging (via concrete pipes and a headwall) into the drainage ditch between Fields 4 and 5, and into the stream in the south of Field 8. There were several ponds on the site: • The largest was located on the boundary of Fields 8, 11 and 15 and is approximately 100m in length by 20m in width, and connected to the stream flowing down the valley. • In the south-east of Field 8, approximately 30m in length by 20m in width, which was fed by two land drains running from north to south and north-west to south-east respectively. This pond is noted to historically have been a spring. • In the south of Field 5, approximately 20m in length by 15m in width. This pond is fed by land drains. Springs are present or were historically present at: • Scotland Barns (at the junction of Fields 7, 10, 11, 13 and 14); • to the south of Scotland Barns; and • (historically) in the south-west of Field 5.
Vegetation	The site is predominantly covered by grass or crops, with mature, semi-mature trees and hedgerows on the majority of field boundaries and the site boundary. These are not listed in detail in this report and reference should be made to the detailed arboricultural survey for details of vegetation. There were denser wooded areas across the site and these are noted in the individual area and field descriptions above.

2.1 Off-site uses

Located off-site to the north-east is the former Flying Field of the RAF and USAF Upper Heyford Airbase. Historical uses of areas within the Flying Field, close to the site boundary, include: former petrol, oil and lubricant stores (significant underground or partially underground tanks and associated pipework), a bomb store (comprising partially buried hardened structures) and the runway.

To the south-east of the site is the former administrative and residential hub of the former RAF and USAF Upper Heyford Airbase. This area has been developed and now serves as a home to

approximately 2000 residents and numerous businesses in a mix of historical (RAF and USAF buildings) and new construction.

Off-site to the east is the former Ardley Quarry, which was historically operated by Viridor as the Ardley Landfill (now closed), with an active waste transfer facility (Ardley Fields household waste recycling centre, operated by Oxfordshire County Council) and an Energy Recovery Facility (Ardley ERF, operated by Viridor).

Off-site to the south-east is an active limestone quarry, operated by Smiths & Sons (Bletchington) Limited.

2.2 Site history

A study of historical Ordnance Survey maps (Appendix C) has been undertaken to identify former land uses at the site and surrounding areas which may have geotechnical or geo-environmental implications for the proposed development.

The key findings are summarised in Table 2.3. All distances quoted are approximate and field numbers are included for clarity.

A Site Features Plan (Hydrock Drawing 15560-HYD-MS-ZZ-DR-GE-1005) is presented in Appendix A.

Table 2.3: Site history review

Reference	Key Features on Site	Key Features off Site
OS Maps[1] 1:10,560: 1875-1880; 1885;1898 and 1898 - 1890	The site mainly comprises open fields with field boundaries and footpaths across it. Somerton Road in the north crosses the site twice (north of Field 1 and between Fields 2 and 3). 'Ashgrove Farm' is present in the east of the site (between Fields 9 and 15), with a sheepwash labelled, together with 'Ashgrove Cottages' and a well near the entrance off Brackley Road (B430), which runs along the eastern site boundary. A spring is present 500m to the north of Ashgrove Farm, in the south of Field 5. 'Scotland Barn' is present in the west of the site, where Fields 7, 11 and 14 intersect. A spring is present to the south of 'Scotland Barn' on the boundary between Fields 13 and 14.	Several farms and barns are present in the surrounding area, including 'Middleton Grounds Farm' 100m to the south. The site goes around 'The Heath' in the central west, with 'Birch Spinney' and 'Nut Tree Spinney' along the southern boundary. Several small quarries are present within 500m of the site; these are: • 50m to the west of 'The Heath'; • 100m from the north-west corner of Field 10; • 250m to the north-west (north of Somerton Road); • 250m to the north of Field 6 (along the B430); and • On the opposite side of the B430 (Ardley Fields Farm) to the east of the site. There are several wells within 500m, and where labelled these are: • 170m to the west, opposite the north-west corner of Field 10; • 390m and 500m to the north of Field 6; and • on the opposite side of the B430, to the north-east of Field 9.

[1] Ordnance Survey Historical Map Information provided by Groundsure.

Reference	Key Features on Site	Key Features off Site
OS Maps 1:10,560: 1919; 1919 - 1920; 1920 - 1923; and 1923. Google Earth© Imagery 1945[2]	The Great Western Railway line has been constructed along the northern boundary of the site, aligned south-east-to north-west. Camp Road is now present in the central part of the site (between Field 12 and Field 16 in the west and Fields 15 and 22 in the east).	The above listed quarries are generally labelled as 'old' or 'disused'. Although not shown on the historical maps, RAF Upper Heyford was operational by 1918. This is likely to have been omitted from the maps for national security reasons.
OS Maps 1:10,560: 1950 - 1954; and 1950 - 1955	No significant changes.	Middleton Grounds Farm (100m south) is now called 'Manor Farm'. 'Heyford Airfield' is shown to the west of the site (west of Chilgrove Drive) (RAF Upper Heyford).
OS Maps 1:10,560: 1965; and 1965-1966.	No significant changes.	A small unidentified 'works' is shown 600m to the south-west of the site. The quarries and wells are no longer marked.
OS Maps 1:10,000: 1980; 1980-1981; and 1980-1985. Google Earth© Imagery 1985[3]	'Tanks', shown as a singular rectangular structure, are shown in the north of the site (where Fields 3, 4 and 5 intersect). These are known to be part of the surface water system associated with the airfield. The southern arm of Somerfield Road (between Fields 2 and 3) is no longer present due to the expansion of the off-site airfield. An electricity sub-station is present opposite Ashgrove Cottages. Scotland Barn and the spring to the south of it are no longer shown. The spring to the north of Ashgrove Farm is now shown as a pond. A caravan park is present in the west of the site (south-west corner of Field 10), north of Camp Road and east of Chilgrove Drive. A covered reservoir is present in the east of the site. There is a water tower in the south of the site (south-west corner of Field 19).	RAF Upper Heyford has expanded and the airfield has also expanded to adjacent to the north-west site boundary. The small works to the south-west has also expanded and is labelled as a 'sewage works'. The quarries 50m to the west of 'The Heath', 100m from the north-west corner of Field 10 and 250m to the north of Field 6 (along the B430) are no longer shown. Ardley Wood (quarry) is shown to the north of the site, on the opposite side of the railway line.
OS Maps 1:10,000: 1992; and 1992 - 1995	No significant changes.	Ardley Quarry is shown adjacent to the north-east of the site, partially along the railway line, north of Ardley Fields Farm. The quarry 250m to the north-west (north of Somerton Road) is no longer shown.

[2] ©The Geoinformation Group, image date: 12/1945.
[3] ©Landsat/Copernicus, image date: 31/12/1985.

Reference	Key Features on Site	Key Features off Site
Aerial Photograph[4] 05/10/1999	The site is shown as mostly fields and associated field boundaries. Ashgrove Farm can be seen in the east and the covered reservoir in the south.	RAF Upper Heyford Airfield to the north-west, is shown as disused. Ardley Quarry can be seen to the south of Ardley Fields Farm, with exposed limestone clearly visible.
OS Maps 1:10,000: 2001 OS Maps 1:1,250: 2003 Google Earth© Imagery 2004[5]	No significant changes.	Ardley Quarry, south of Ardley Fields Farm has been extended further south. The sewage works 600m to the south-west of the site is no longer shown. Large areas of the RAF Upper Heyford site appear to be used as vehicle storage, including the central runway and the runway closest to the site. A 'refuse tip' is shown 50m to the east of the site, opposite Ardley Fields Farm Cottages. Ardley Quarry (stone) is shown to the south of the tip.
Google Earth© Imagery 2006[6] and 2009 Aerial Photograph 19/08/2009 OS Maps 1:10,000: 2010	The Agrivert IVC composting facility is being constructed in the south of the site.	The north end of Ardley Quarry appears to have been infilled, with vegetation at the surface. The southern part of the quarry still appears exposed.
Google Earth© Imagery 2013[7]	The composting facility appears operational.	The central area of Ardley Quarry appears to have been infilled, and the Viridor Ardley ERF is under construction. Ardley/Dewars Farm Quarry, located to the south-east of the site and south of the former Ardley Quarry and the Viridor Ardley ERF, is shown.
Aerial Photographs 29/10/2018 05/07/2019 Google Earth© Imagery 09/04/2017, 29/05/2020	No significant changes.	The majority of Ardley Quarry appears to have been infilled, with vegetation at the surface. The Viridor Ardley ERF has been constructed to the south-east of Ardley Quarry, east of the site. Ardley/Dewars Farm Quarry has been extended west to the B405.

[4] Aerial photograph, provided by Groundsure.
[5] ©Infoterra Ltd & Bluesky, images dated: 1/1/2004 and 30/05/2009.
[6] ©Getmapping plc, images date: 1/1/2006, 1/1/2009.
[7] ©Maxar Technologies, image date: 8/7/2013.

Reference	Key Features on Site	Key Features off Site
Aerial Photograph 05/07/2019 OS Maps 1:10,000: 2020 Google Earth© Imagery 29/05/2020	No significant changes.	Ardley/Dewars Farm Quarry has been extended south, and the north-western part of the quarry appears to be in the process of restoration.

With regard to the former RAF Upper Heyford Airfield, with is located to the north-eat and east of the site, review of publicly available information sources [8, 9] indicates:

- A grass aerodrome was constructed in June 1918, opened in July 2018 and was operated in World War One (WW1) by the RAF and the Canadian Air Force (which was formed at Upper Heyford).
- By 1920, the aerodrome had closed and the land returned to agricultural use.
- A new airfield was constructed between 1924 and 1927 and aircraft of the RAF strategic bombing force flew from it until the 1930s, when the aircraft were relocated to bases in the east and north-east of England and replaced by training squadrons. The airfield operated mainly as an RAF training facility until 1950.
- As a result of the Cold War, in 1950, the United States Air Force (USAF) took over Upper Heyford and upgraded it, with the runway extended from 6,000 ft (1,829 m) to 8,300 ft (2,530 m), with new hardstands and a secure weapons storage facility also added.
- From 1951 to 1994, the site was operated by the USAF Strategic Air Command and during that period a wide variety of aircraft, including: strategic bombers, aerial refuelling, reconnaissance, electronic warfare and tactical fighter squadrons, were deployed, supported by a vast number of support and maintenance staff.
- The USAF returned the airfield to the British Ministry of Defence in September 1994 and the site was sold to The North Oxfordshire Consortium and became known as Heyford Park.
- In 2009, the Dorchester Group acquired Heyford Park, and it is in the process of being redeveloped as a mixed used development (residential and employment).

[8] Upper Heyford Website (http://www.upperheyfordheritage.co.uk/).
[9] Wikipedia Website (https://en.wikipedia.org/wiki/RAF_Upper_Heyford).

2.3 Geology

2.3.1 British Geological Survey data

The general geology of the site area is shown on the British Geological Survey (BGS) 1:50,000 geological maps of Chipping Norton and Buckingham (Sheet 218 and 219 respectively) and the 1:50,000 and 1:10,000 BGS map extracts are reproduced as part of the Groundsure Report in Appendix D. The geology of the site is summarised in Table 2.4 (Superficial) and Table 2.5 (Solid). Extracts from the 1:10,000 maps are shown in Figure 2.4 (Superficial) and Figure 2.5 (Solid).

Table 2.4: Superficial Geology

Ref. in Figure 2.4	Location	Stratigraphic Name	Description
No superficial deposits are present across the majority of the site. Limited to the base of valleys and drainage.			
1, 3, 7	Limited outcrop along the main stream running centrally north / south in the central east of the site.	Alluvium	Sandy gravelly clay.
2, 4, 5, 6, 8	Very limited outcrop, associated with drainage features to the east of the main stream and with the northern stream.	Head	Clay and silts.

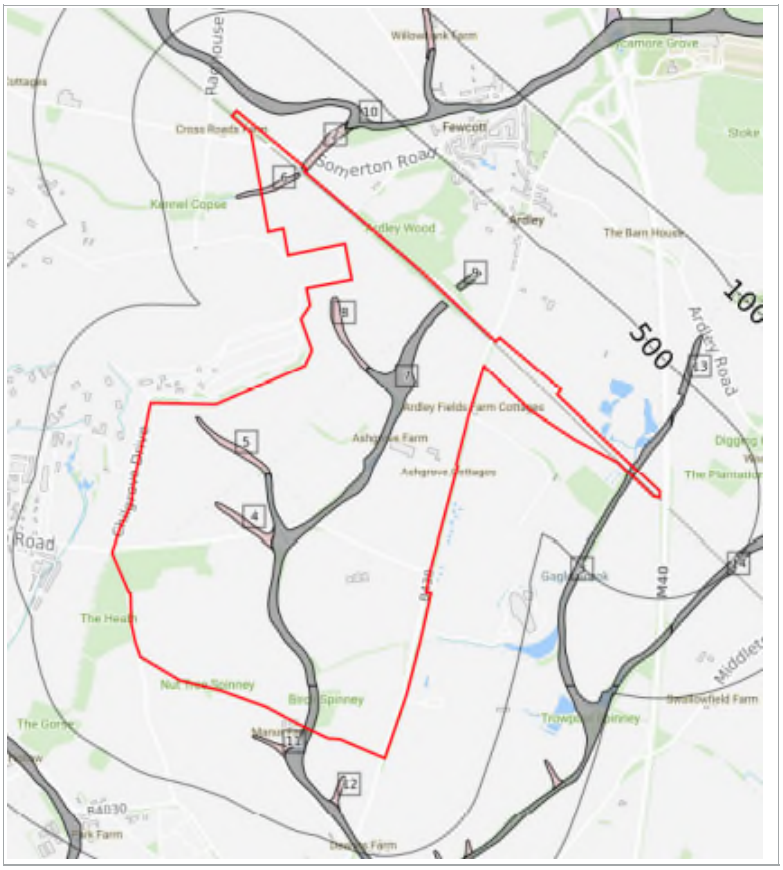


Figure 2.4: Superficial deposits (Reproduced from Groundsure)

Table 2.5: Solid Geology

Ref. in Figure 2.5	Location	Stratigraphic Name	Description
Solid Geology			
4	On site - limited to a localised outcrop in the railway cutting and proposed rail spur along the northern site boundary. Present due to a localised inlier created by downthrow along an east-west trending fault line.	Forest Marble Formation (Great Oolite Group)	Greenish grey, variously calcareous sandy silicate-mudstone with lenticular, typically cross-bedded limestone units that form banks and channel-fills. Between 2m to 7m thick
1, 3	On site - outcropping across almost the entire site.	White Limestone Formation (Great Oolite Group)	Pale grey, off-white or yellowish ooidal limestone with recrystallised limestone and/or hardgrounds, rare sandy or muddy limestone, calcareous mudstone and coral units. Typically, 7m to 18m total thickness.
6	On site - limited to a localised outcrop in the north-east of site along the railway cutting. Underlies the entire site at depth.	Rutland Formation (Great Oolite Group)	Deltaic deposits, comprising grey marine mudstone passing up into non-marine mudstone and siltstone, with a greenish-grey rootlet bed at the top and sandstones at the base. Typically, 2m to 12m thick.
-	Off-site - present at depth to the east of the site (logged in BGS boreholes). Passes laterally into the Rutland Formation.	Hampen Formation (Great Oolite Group)	Limestone with subordinate interbedded calcareous mudstone ('marl'); limestone characteristically grey to brown, thinly bedded, fine- to very fine-grained, well-sorted, ooidal grainstone to packstone, commonly slightly sandy or silty, with small-scale cross-bedding.

The White Limestone Formation, which is present below the majority of the site is sub-divided into: the Bladon Member, the Ardley Member and the Shipton Member, as indicated in Figure 2.6.

- The Bladon Member comprises a green and grey clay/mudstone, which is commonly lignitic.
- The Ardley Member, comprising a pale grey to off-white or yellowish limestone, peloidal wackestones and packstones with common ooidal and shell fragmental grainstones, and recrystallised limestone with beds of argillaceous limestone, sandy limestone, marl and mudstone or clay at some levels.
- The Shipton Member, comprising pale grey to off-white or yellowish limestone, peloidal wackestone and packstone with subordinate ooidal and shell fragmental grainstone, and re-crystallised limestone with beds of argillaceous limestone, marl and mudstone or clay.

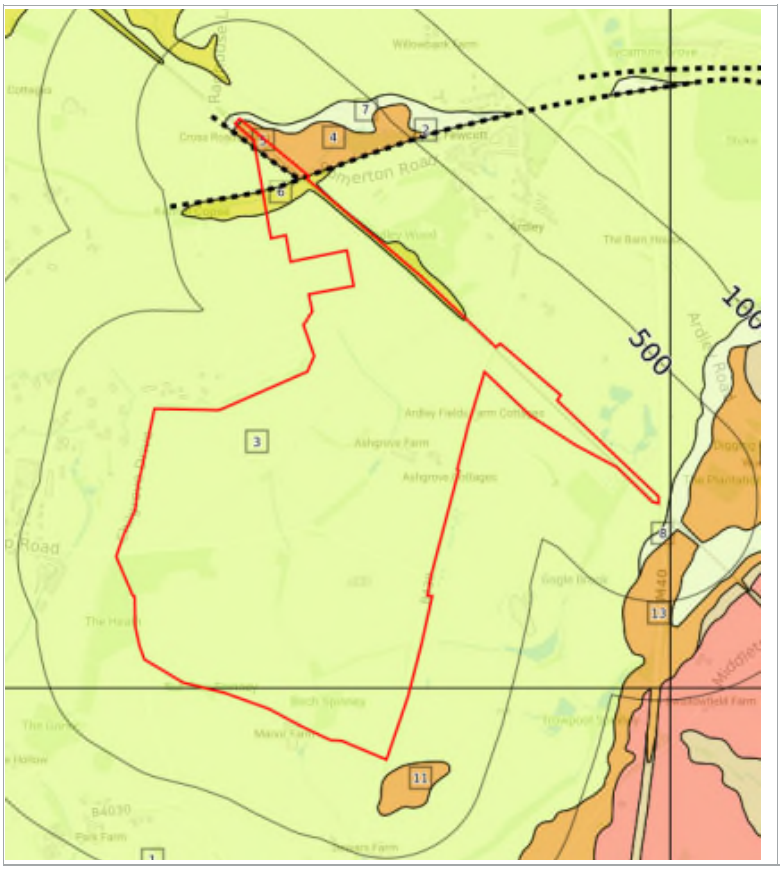


Figure 2.5: Solid geology (Reproduced from Groundsure)

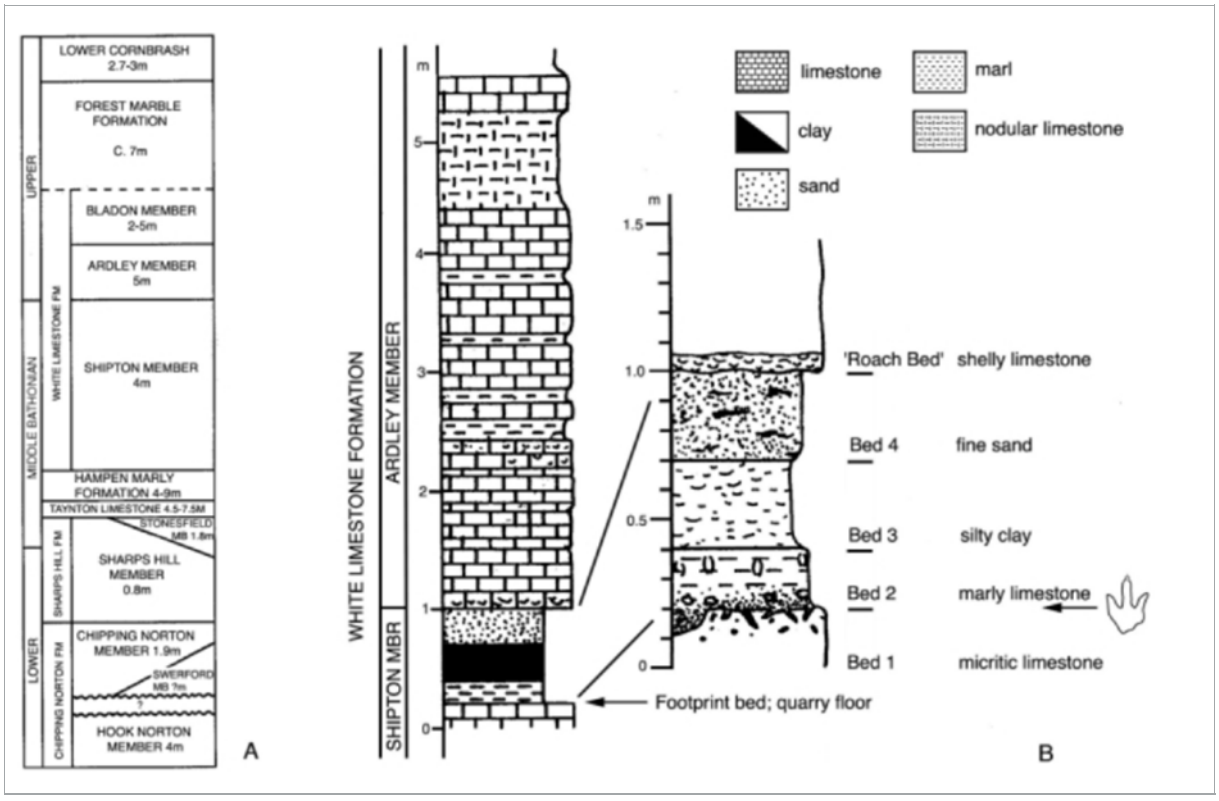


Figure 2.6: Detailed stratigraphic section of the expected geology
(after Cope et al. 1980, from Day et. al 2004)

The regional dip of the strata is generally towards the south-east.

At depth, the Rutland Formation / Hampen Formation is underlain by variable, generally thin strata of Taynton Limestone Formation, Sharp's Hill Formation (mudstone and limestone) and the Horsehay Sand Formation (sand and sandstone). These lie over an unconformable erosional boundary at the top of the Northampton Sand Formation, which in turn unconformably overlies the Whitby Mudstone Formation at a depth of approximately 30m to 40m below ground level.

Two faults are present in the far north of the site:

- Northwest to south-east trending, not shown on BGS hard copy maps but is presented within the Groundsure report and on the BGS online viewer; and
- West to east trending fault intersects the site, with a downthrow to the north.

BGS mapping and the Groundsure report also indicates 'worked ground' to the north and east of the site, some of which has been infilled. The former RAF Upper Heyford site and Upper Heyford are indicated on the BGS maps as 'landscaped ground'.

2.3.2 Historical borehole data

Geological data on the site and its surrounding area is available from a number of borehole logs from the BGS archive have been reviewed, along with the publicly available reports by SLR, Waterman, Hydrock and BRD.

Copies of all borehole data used as part of interpretation are provided in Appendix D, and the boreholes are shown on the Exploratory Hole Location Plan (Hydrock drawing 15560-HYD-MS-ZZ-DR-GE-1007), also provided in Appendix D.

BGS archive records

The BGS archive borehole records have been reviewed and whilst there are a small number of freely available records associated with Heyford Park, and the M40, the remainder of the boreholes are 'confidential'.

Heyford Park - BGS

The records associated with Heyford Park (SP52NW270, SP52NW271, SP52NW272 and SP52NW273) indicate holes were drilled/excavated to depths between 0.9m and 1.5m below ground level (bgl) and generally recorded:

- Topsoil or Made Ground (comprising brick, concrete and limestone), from ground level to depths between 0.08m and 0.3m bgl;
- Weathered limestone (recovered as silts, clays and sand) to depths between 0.6m and >1.5m bgl; and
- Limestone to the base of the holes.

The Heyford Park BGS holes have not been used in ongoing interpretation due to their limited depth.

M40 – BGS

The records associated with the M40 (listed north to south - SP52NW51, P52NW111, SP52NW49, SP52NW36, SP52NW34, SP52NW31, SP52SW64, SP52SW47 and SP52SW29) are of very high quality and very detailed. These holes generally recorded the full sequence of the anticipated geology at the site and provide very good reference points for ongoing interpretation.

The sequence in these boreholes was: Forest Marble Formation, White Limestone Formation (including the Bladon Member, the Ardley Member and the Shipton Member) and the top of the Rutland Formation / Hampen Formation.

Some of the boreholes also intersected the Taynton Limestone Formation and the Sharp's Hill Formation. However, for the purposes of this report, interpretation stops at the top of the Rutland Formation / Hampen Formation.

SLR records (2009)

The SLR (2009) report includes a number of boreholes (BH101 to BH124) advanced at the proposed location of the Ardley ERF facility, in the south-east of the former Ardley Landfill (to the east of the site), to provide information with regard the planning application for the Ardley ERF.

In summary, the geological sequence indicated by these boreholes was: limestone, with occasional thin marl units, overlying marl at a depth of between 4.20m bgl and 4.90m bgl. Levels are not provided for these holes, which were drilled from a reduced level in the former quarry / landfill. Whilst reviewed, these boreholes have not been used in ongoing interpretation due to the lack of level data.

Waterman records (2012)

Boreholes BH04, BH214, BH215, BH216, BH217, BH218 and BH219 in the Waterman 2012 report, are located around the eastern boundary of Heyford Park, and are considered relevant to the site. In summary, the boreholes identified the following ground conditions:

- Topsoil or Made Ground to between 0.1m bgl to 0.5m bgl; over
- clay with highly weathered limestone, becoming gravelly and transitioning to rock with depth; to between 0.4m to 2.0m bgl; over
- limestone (Ardley Member of the White Limestone Formation); over,
- a mudstone or siltstone layer (top of the Shipton Member of the White Limestone Formation); over
- interbedded siltstone, mudrock and limestone (Shipton Member of the White Limestone Formation), with the Ardley Trackways SSSI horizon potentially at the top of this sequence; over
- mudrock / siltstone and interbedded sandstone and limestone of the Rutland Formation / Hampen Formation.

The depth to the top of the various lithological units changes considerably across the site due to topography and geological dip. A conceptual ground model is presented as part of the Conceptual Site Model in Hydrock drawing 15560-HYD-MS-ZZ-DR-GE-1007 in Appendix A.

Hydrock records (2014)

A number of boreholes (BH101 to BH124) presented in the Hydrock (2014) report, were advanced by SLR on the western and southern edge of the former Ardley Quarry /Landfill (to the south-east of the site), to provide information with regards the planning application for the Ardley ERF.

These boreholes are geo-located, but a full copy of the SLR report, from which they come, is not provided. Hydrock understands these boreholes are an extract from SLR Consulting Limited Report 403/0036/0174 'Ardley Landfill Site. Monitoring Borehole Construction Works', dated October 2006.

In summary, the geological sequence indicated by the SLR boreholes (presented in the Hydrock 2014) report was:

- Topsoil generally, between 0.2m and 0.3m (although locally not recorded, and locally up to 0.5m thick);
- soft or firm clay, generally between 0.3m and 0.7m thick, although locally not recorded, and locally up to 1.0m thick; over
- limestone, generally between 5.5m and 6.5m thick (averaging 6.1m thick), although ranges from 3.8m to 7.2m thick (Ardley Member of the White Limestone Formation); over
- soft clay, siltstone and mudrock, generally between 0.25m and 0.5m thick (averaging 0.55m thick), although ranges from not recorded to 2.0m thick (top of the Shipton Member of the White Limestone Formation); over
- interbedded siltstone, mudrock and limestone (Shipton Member of the White Limestone Formation), with the Ardley Trackways SSSI horizon at the top of this sequence; over
- mudrock and interbedded limestone of the Rutland Formation / Hampen Formation.

BRD records (2015)

The ground conditions proven by historical investigation at Ashgrove Farm (BRD, 2015), generally comprised:

- Surface cover of scrub, concrete or tarmac/roadstone to 0.1m bgl; over
- Made Ground of sandy gravelly clay, with gravel of flint, limestone, brick and concrete, to between 0.1m and 1.4m bgl; or
- reworked or weathered White Limestone of medium dense/dense sandy clayey gravel or sandy gravelly clay, between 0.1m and 1.6m bgl (probable reworked or weathered limestone); over
- White Limestone: weak, becoming strong limestone, recovered as sandy gravel of limestone, to between 3.9m bgl and 4.0m bgl; over
- a mudstone or siltstone layer (top of the Shipton Member of the White Limestone Formation); over
- interbedded siltstone, mudrock and limestone (Shipton Member of the White Limestone Formation), with the Ardley Trackways SSSI horizon potentially at the top of this sequence.

2.4 Hydrogeology

2.4.1 Aquifer designations

Based on the inferred geological sequence presented in Section 0 and the Environment Agency's interactive aquifer designation map, the aquifer system presented in Table 2.6 applies.

Table 2.6: Aquifer system

Stratum	Aquifer Designation	Comments
Superficial Deposits		
Alluvium	Secondary A Aquifer	Intergranular permeability. Permeability likely to be moderate to high in layers of sand and gravel, with low permeability in clays and silts.
Head	Secondary undifferentiated Aquifer	
Solid Geology		
Forest Marble Formation	Principal Aquifer	High vulnerability. Moderately productive aquifer where flow is virtually all through fractures and other discontinuities.
White Limestone Formation	Principal Aquifer	
Rutland Formation	Secondary B Aquifer	Likely to be low permeability as largely mudstone sequence with limestones forming local aquifers yielding small supplies.

The Cotswolds Great Oolite has a high range of transmissivity values. Review of BGS literature[10] indicates properly constructed wells and springs from the oolites can yield 5,000m^3/day if they intersect a good fracture system.

2.4.2 Groundwater abstraction

There are no active licensed groundwater abstractions on the site. The active licensed groundwater abstractions within 250m of the site are detailed in Table 2.7.

Table 2.7: Groundwater abstractions

Location Relative to Site	Purpose of Abstraction
Off site, approximately 100m south-west, associated with Manor Farm *	Active - General farming and domestic
Off-site, approximately 110m north-west.	Historical - General farming and domestic
* This abstraction is noted to be on site in the Environmental database. However, whilst it is located within the possible DCO order limits, it is not located within the main site.	

2.4.3 Groundwater source protection zones and groundwater vulnerability

There is no groundwater Source Protection Zone (SPZ) within the site boundary or within 1km of it.

[10] The British Geological Survey, Physical Properties of Major Aquifers in England and Wales, 1997.

2.4.4 Groundwater levels, recharge, and flow

Based on discussions with a representative of Smith & Sons (Bletchington) Limited, the operators of the Ardley / Dewars Farm Quarry, to the south-east of the site, the quarry is dry to the base (at approximately 7.0m bgl, where sand, clay and mudrock (at the top of the Shipton member) are encountered. This sand, clay and mudrock form an aquitard and groundwater is often encountered in the sand and in the overlying limestone (i.e. at the base of the interpreted Ardley Formation).

The BRD ground investigation reported groundwater in the White Limestone Formation (at the base of the interpreted Ardley Formation), at depths of between 3.4m and 3.7m bgl.

Based on the information in the Waterman (2012) report, the groundwater system at the western part of the site is a tiered system, with at least two groundwater bodies expected. The tiered groundwater system is interpreted to be linked to stratigraphy, with the upper groundwater body formed by an aquitard of siltstone and mudrock (present at the top of the Shipton member), with groundwater expected to be encountered in the sand and in the overlying limestone (i.e. at the base of the interpreted Ardley Formation). A second deeper groundwater body is interpreted in the Shipton Formation, associated with mudrock interbeds, which will also act as aquitards.

The SLR EIA Chapter for the Ardley ERF and the SLR (2009) report, indicates the groundwater flow is generally to the south-east (with a possible westerly flow direction in the northeast of the Oxfordshire SRFI site), and groundwater levels have a typical seasonal variation of 1 - 2m.

The ponds and springs on the western slope of the eastern valley are anticipated to be associated with outcrop of the base of the interpreted Ardley Formation. The deeper groundwater body is interpreted to form a spring, coincident with the stream through the central west of the valley bottom. Groundwater is therefore considered likely to be in hydraulic continuity with the surface water features at the site. It should be noted that there are no springs present in the eastern side of the western valley, as the groundwater is interpreted to flow to the south-east with the regional geological dip.

Superficial deposits were not encountered during the historical investigation but given they are likely to be present in some areas, in the form of Alluvium alongside watercourses, it is possible that perched groundwater could also be present at shallow depth in these strata.

Groundwater flow is likely to be generally towards the south-east, although there may be some localised flow towards the railway cutting in the north, and the streams at the base of valleys.

2.4.5 Groundwater quality

The groundwater body beneath the majority of the site is the 'Tackley Jurassic', which is currently (2019 Cycle 2) classified under the Water Framework Directive as 'Good'.

The 'Upper Bedford Ouse Oolite Principal 1' groundwater body is present beneath the far northern part of the site and is currently (2019 Cycle 2) classified under the Water Framework Directive as 'Poor' (although noted in the Groundsure report (2015), as 'Good').

2.4.6 Groundwater flooding

The environmental data report indicates the risk of groundwater flooding across most of the site is 'Low', although the strips of Alluvium and Head running north to south across through the site are shown as 'Medium' risk.

2.5 Hydrology

2.5.1 Surface water system and drainage

The River Cherwell is approximately 3km west of the site, flowing southwards and the River Ray is approximately 10km to the south-east of the site flowing to the south-west. However, the area in which the site lies is largely devoid of major watercourses due to the presence of the limestone plateau and its relatively high permeability and porosity. The general topography slopes slightly towards the south-east, and the minor watercourses, streams, and ditches tend to flow in the direction of the topography. These are generally unnamed but ultimately, after joining other watercourses, they tend to flow towards the Rivers Ray, Isis and eventually, Cherwell.

The surface water features in the vicinity of the site are listed in Table 2.8 and, where appropriate, are marked on the Site Features Plan (Hydrock Drawing 15560-HYD-MS-ZZ-DR-GE-1005) in Appendix A.

Table 2.8: Surface water features

Feature	Location Relative to Site
Unnamed stream	Flowing south / south-west down the centre of the eastern valley and present down the majority of the site on the boundaries between Fields 8 and 9, 11 and 15, 17 and 18, and 19 and 20 flowing from the north.
Unnamed stream	Flowing east to west on the boundary between Field 1 and Field 2 in the base of the northern valley. This stream originates at Crowfoot Pond to the west, flows north-east across the site and is connected into pipework running beneath the railway to the north-east.
Drainage features that outfall from the former RAF Upper Heyford / Heyford Park	Outfall (1), is located off site to the north, on the northern-western boundary and flows into a drainage ditch between Fields 7 and 10, which in turn flows south between Field 13 and 14 and into the stream in Field 17. Outfall (2) is in the north of the site, on the boundary between Field 3 and Field 4, which flows into a concrete water storage structure (approximately 10m x 15m in size) on the northern boundary of Fields 4 and 5. This then discharges, via 200mm to 250mm diameter concrete pipes and a headwall, into a drainage ditch between Fields 4 and 5 and into the stream in the south of Field 8.
Springs	There were a number of springs present, or historically present, at the site, including: • Scotland Barns (at the junction of Fields 7, 10, 11, 13 and 14); • historically to the south of Scotland Barns; and • historically in the south-west of Field 5 (now a pond).
Land drains	There are land drains flowing into ponds in Field 5 and Field 8. It is possible there may be other land drains across the site, especially in the west.
Ponds	There were several ponds on the site: • The largest was located on the boundary of Field 8, 11 and 15 and is approximately 100m in length by 20m in width, and connected to the stream flowing down the valley. • A pond in the south-east of Field 8, approximately 30m in length by 20m in width, which was fed by two land drains running from north to south and north-west to south-east respectively. This pond is noted to historically have been a spring. • Another pond in the south of Field 5 approximately 20m in length by 15m in width, fed by land drains.
Reservoir	A covered reservoir is present in the north of Field 22, which appears to have been constructed in the 1980s. No further information is available. The reservoir is to be retained as part of the proposed redevelopment.

Feature	Location Relative to Site
Gagle Brook	Off-site approximately 700m to the east of the site, flowing to the south.
Leys Farm Ditch	Off-site approximately 200m to the west of the site, flowing to the south.

2.5.2 *Surface water abstractions and discharges*

There are no records of active licensed surface water abstractions on the site or within 1km of it.

Table 2.9 gives details of the records of four active licensed surface water discharges outside the site boundary but within 1km of it.

Table 2.9: Surface water discharges

Location Relative to Site	Purpose of Discharge
289m, 323m and 399m west (Heyford Park)	Trade discharges – Site drainage (Permit no. CATM.2850, CATM.2848 and CATM.2849)
382m south-west (Heyford Leys Mobile Home Park)	Sewage discharges – Final/treated effluent (Permit no. CATM.2849)

The receiving water for all four discharges is Leys Farm Ditch, which flows south, and is cross-gradient to the site.

2.5.3 *Surface water quality*

Reference to the Environment Agency website shows:

- The majority of the site is located within the catchment of the Oxon Ray, with the specific river water body being the Langford Brook (Bicester to Ray including Gagle Brook). The current (2019 cycle 2) overall status under the Water Framework Directive is 'poor' ('Poor' for ecological classification and 'Fail' with regard to chemical classification (due to invertebrates, macrophytes and phytobenthos combined, dissolved oxygen and phosphate)).
- The Padbury Brook catchment is located in the north of the site (Field 1 and Field 2). The current (2019 cycle 2) overall status under the Water Framework Directive is 'Moderate' ('Moderate' for ecological classification and 'Fail' with regard to chemical classification (due to phosphate)).
- Gallos Brook catchment is located to the south of the site. Whilst not noted on site in the Environmental database, it is within the possible DCO order limits, but not within the main site). The current (2019 cycle 2) overall status under the Water Framework Directive is 'Moderate' ('Moderate' for ecological classification and 'Fail' with regard to chemical classification (due to dissolved oxygen, phosphate and ammonia)).

2.5.4 *Surface water flooding*

Surface water flood risk has not been considered as part of this assessment. For information on surface water flood risk, the reader should refer to the specialist reports being provided by others.

2.6 Mining and mineral extraction

The site is not within an area of coal mining risk and is not within an area of recorded underground mining.

As shown in the 'Oxfordshire County Council Minerals and Waste Core Strategy'[11] and the 'Oxfordshire Minerals and Waste Local Plan Policies Map'[12], the site is identified to be within:

- A Mineral Resource Strategic Area (Policy M3) of OCC Minerals and Waste Core Strategy.
- A Mineral Safeguarding Area (Policy M8).
- A Mineral Consultation Area.

A copy of the 'Oxfordshire Minerals and Waste Local Plan Policies Map' is provided in Appendix A. Minerals are discussed further in the separate Minerals Resource Assessment.

Mineral extraction has been undertaken historically in the surrounding area, with several small-scale limestone pits and quarries noted on historical maps and in the Groundsure report. In addition, significant limestone quarrying operations have occurred at:

- The historical Ardley Quarry (also known as Ardley Fields Farm Quarry), to the east of the site, on the eastern side of the B430 road. Small scale mining occurred historically (late 19th Century), with a planning status for limestone extraction dated 17 January 1951.

  Large scale quarrying appears to have commenced in the 1980s and worked north to south. Mineral extraction appears to have been completed by the late 1990s and the site was progressively backfilled as a landfill (Ardley landfill). Restoration commenced in the early 21st Century and the Ardley ERF facility was constructed in the south of the site during the early 2010s.
- The historical Ardley Woods Quarry was located to the north of the site (on the northern side of the railway line). This was quarried (small scale) in the late 19th Century and appears to have been mined more extensively in the late 1970s and early 1980s. It is noted as disused by 1992. The site forms part of the Ardley Woods and Cutting SSSI.
- The historical Ardley Quarry Extension was located to the north-west of the site; north of the Ardley Quarry (on the northern side of the railway line). This was quarried in the early 2000s and is now partially restored (vegetated, with ponds in the east of the former quarry). This quarry now forms part of the Ardley Trackways SSSI.
- Ardley/ Dewar's Farm Quarry to the south of Ardley Quarry; to the immediate east / south-east of the site. This quarry is noted to be 'active'. For further information with regard to the Ardley/ Dewar's Farm Quarry, please refer to the information below.

There are four areas of surface ground workings noted within the Groundsure report, within the site boundary. Two are within Ashgrove Farm, one is the covered reservoir in the south-west of the site and the other is to the north of Ashgrove Farm. These are likely to be small scale excavations for construction, rather than mineral extraction, based on the review of historical maps and aerial imagery.

[11] https://www2.oxfordshire.gov.uk/cms/sites/default/files/folders/documents/environmentandplanning/planning/mineralsandwaste/September2017/AdoptedMineralsWasteCoreStrategySept2017.pdf

[12] https://www2.oxfordshire.gov.uk/cms/sites/default/files/folders/documents/environmentandplanning/planning/mineralsandwaste/September2017/MineralsWasteLocalPlanPoliciesMapNorth.pdf

Hydrock has undertaken discussions with the Planning & Estates Manager of Smith & Sons (Bletchington) Limited (the operators of Ardley/ Dewar's Farm Quarry), which is located to the east / south-east of the site. Based on this discussion, it is understood

- The geological sequence is generally:
  - a metre or so of 'brash' (limestone and clay – weathered limestone); over
  - limestone (which is approximately 7.0m thick); over
  - soft blue grey clay and mudrock; over
  - limestone.
- Dinosaur footprints (Ardley Trackways SSSI), are located at the top of the mudrock unit underlying the soft blue grey clay (see Figure 2.6).
- There is groundwater at the base of the limestone unit, perched on the top of the soft blue grey clay and mudrock.
- There are no inter-burden units in the quarry.
- The mining operation undertakes wides spaced drill and blast of the limestone to loosen the rock for excavation. In the north, historically at Ardley Quarry (against the railway line), large excavators ripped the limestone against the railway (due to network rail restrictions). This was slow and difficult, but was achievable.
- The processing operation is generally blast - excavate - crush.
- The resource calculation is generally depth (of limestone (as proven by boreholes)) multiplied by the area multiplied by wastage. For single size product, wastage is generally 20%. For 6F2 production, wastage is generally negligible.
- The limestone has a density of 2.3 Mg/m^3 (for conversion to tonnage).
- Historically, the quarry produced gabion stone, single size stone, crusher run and dust. At the current time the quarry is producing 6F5.
- The product from the quarry is frost susceptible, so is not suitable for Type 1.

2.7 Natural ground instability

Based on the information available, Hydrock expect ground instability risks to be low across most of the site. The areas which may present elevated risks are detailed below.

Where superficial deposits are present, mainly being Alluvium and Head Deposits in the vicinity of surface water features, these may pose a risk of instability from low strength and compressible deposits, and shrinkage/swelling due to changes in water content.

Made Ground is expected in isolated areas of historical development such as Ashgrove Farm, Ashgrove Cottages, Scotland Barn, the water tower, the caravan park, locally associated with isolated historical construction (drainage features and made-up tracks) and associated with Field 3 and Field 5, where man-made items are prolific and have been spread. In these areas, it will be necessary to assume that the Made Ground may be of low strength, and compressible.

The risks from cambering and gulls in the limestone are considered to be low.

The risks from ground dissolution and natural cavities in the limestone are considered to be low.

2.8 Waste management

Details of waste management sites recorded on site and within 250m of the site are listed in Table 2.10.

Table 2.10: Waste management sites

Site Name and Location	Details
Agrivert IVC (composting facility) on site in the north of Field 22	Type of site: Composting facility. Annual Tonnage: 75,000 tonnes (as of 2015), previously 25,000 tonnes). Status: Active. Operational dates: 2007 – ongoing.
Ardley Wood, 10m north of the site	Status: Historical landfill. Operational dates: 1940 – 1980. Wastes accepted: inert, industrial, commercial, household and liquid sludge.
Ardley Landfill/Ardley Fields Farm, 10m to the east of the site. Noted as extending on to site in the area east of the B430. However, this is related to boundary location being slightly incorrect, rather than being located on the site.	Landfill Status: Closed. Operational dates: 1979 - 2014 Annual tonnage: 60,000 tonnes, 305,000 tonnes from 2000 to include southern extension. Wastes accepted: inert, non-hazardous, stable non-reactive hazardous waste (in the form of asbestos) and hazardous waste. The southern extension was operated as a co-disposal landfill from July 2000. Status: Active. Operational dates: 2002 – ongoing. Size: >= 25,000 tonnes to 75,000 tonnes Status: Active. Operational dates: 1980 - ongoing Size: >75,000 tonnes reducing to 25,000 tonnes from 2005. Energy Recovery Facility (EfW) Located on the eastern edge of the former Ardley Landfill. Status: Active. Operational dates: 2014 - ongoing Size: 326,300 tonnes of non-recyclable material per year[13]. Wastes accepted: household and residual waste from businesses.
Dewars Farm/Dewars Quarry 15m - 240m east of the site	Disposing of waste exemption for burning waste in the open. Storing a waste, exemption for non-agricultural waste, for storage of sludge.
Manor Farm 50m south of the site	Storing a waste exemption for storage of waste in secure containers. Disposing of waste, exemption for burning waste in the open. Using waste, exemption for incorporation of ash into soils, spreading waste on agricultural land to confer benefit and use of waste in construction.
Quarry Cottages 190m north-east	Use of a waste exemption on a farm or for both agricultural and non-agricultural waste for use of waste in construction, burning of waste as a fuel in a small appliance and use of waste for a specified purpose.

[13] h[redacted]

2.9 Regulatory controls

Information in the Groundsure Report (Appendix D), relating to various regulatory controls has been reviewed, with a summary presented below in Table 2.11.

Table 2.11: Regulatory information within 500m of the site

Regulatory Data	Distance from Site	Details	Potential Risk	Comment
Pollution Incidents	On-site, adjacent to Camp Road in the south of the site.	August 2011, atmospheric pollutants and effects (other odour). No impact to water or land, Category 2 -significant incident for air impact	No	Due to the time since the incident and only air being impacted.
Control of major accident hazards sites (COMAH)	458m west	Heyford Park Management Company Limited, Southern Bomb Store/Site.	No *	Control measures should be in place but still a potential risk as part of the site management. Not assessed further in this report
Regulated explosive sites	Adjacent to the north and north-west boundary of the site.	Registered to Cosmic Fireworks Limited, located at the former RAF Upper Heyford. Fireworks and explosives are stored within the hardened shelters of RAF Upper Heyford, which were previously used as bomb stores.	No *	Control measures should be in place but still a potential risk as part of the site management. Not assessed further in this report
Pollution inventory substances	On-site in the south-east at the Agrivert IVC facility	Permit: SP3934QD Agrivert (Ardley) Limited Recovery or a mix of recovery and disposal of > 50 t/d non-hazardous waste (>100 t/d if only AD) involving biological treatment	No *	Control measures are required as part of the licence. Not assessed further in this report
	64m East Ardley EfW	Permit: FP3134GU Viridor Waste Management Limited Incineration, other than in course of burning landfill gas, solid or liquid waste, of any gaseous compound containing halogens in a plant which is not anIncineration or a co-incineration plant.	No *	Control measures are required as part of the licence. Not assessed further in this report
Registered radioactive substances	N/A	No entries on registered radioactive substances were recorded within 500m of the site.	No	-
Notification of installations handling hazardous substances	N/A	No entries on notification of installations handling hazardous substances were recorded within 500m of the site.	No	-

Regulatory Data	Distance from Site	Details	Potential Risk	Comment
* In the context of geo-environmental risk, the above are not considered to be a risk. However, specialist assessment (with regard to air quality) and management (with regard to COMAH and Regulated Explosives) may be required. No further assessment in this report.				

2.10 Sites of Special Scientific Interest

The areas shown in Table 2.12 are those either on site or within 250m of its boundaries which have been identified as having been designated by Natural England as Sites of Special Scientific Interest (SSSI).

The location of the SSSIs are shown on the Site Features Plan (Hydrock Drawing 15560-HYD-MS-ZZ-DR-GE-1005) in Appendix A.

Table 2.12: Regulatory information within 500m of the site

SSSI Name	Distance from Site	Details
Ardley Cutting and Quarry	Along the railway cutting, and immediately north and south in parts. Located on the site at the junction of the proposed railway sidings with the current rail line.	Designated due to geological interest for its exposures of Jurassic rocks and has biological interest associated with limestone grassland, scrub, ancient woodland and wetland habitats[14]. The site is 40.13 ha in area and has been a SSSI since 1988. The Natural England citation is provided in Appendix D and with regard to Earth Heritage states "*the railway cutting and southernmost quarry together constitute one of southern England's key sites for Mid Jurassic strata. It has exposures range from the Chipping Norton Formation to the White Limestone Formation and therefore the entire local Bathonian is represented with the exception of the Forest Marble".*
Ardley Trackways (Dewars Farm)*	10m east and south-east of the site, on the eastern side of the B430. Located at Dewars Farm Quarry, an operational limestone quarry, to the east and south-east of the site; and	Designated due to geological interest for its exposures of fossilised dinosaur trackways[15]. The site is 63.59 ha in area and has been a SSSI since January 2010. The Natural England citation is provided in Appendix D and with regard to Earth Heritage states "*Ardley Trackways SSSI is a nationally important site containing a rock horizon close to the top of the Shipton Member of the White Limestone Formation which, in the immediate vicinity of the SSSI, has revealed the presence of an array of fossilised trackways. These trackways were formed by the passage of a herd of sauropod dinosaurs, and several theropod dinosaurs, along a shoreline in what is now north-eastern Oxfordshire, during the Middle Jurassic (approximately 165 million years ago). Such extensive and relatively complete assemblages of trackways are otherwise unknown in England and are rare in the Middle Jurassic worldwide. The rarity of these trackways and their geological and environmental context for future research, mean that Ardley Trackways SSSI can be regarded as being of international importance. Based on the orientation of the trackways studied to date, the SSSI has been identified as containing a finite buried reserve of the trackway bed, which is accessible for scientific study".*
Ardley Trackways (Ardley North)^	10m north-east of the eastern junction of the proposed railways siding with the current rail line. Located at an historical, now restored limestone quarry.	
* Noted as extending on to site in the area east of the B430. However, this is related to boundary location being slightly incorrect, rather than being located on the site. ^ Noted as extending on to site in the area north of the railway cutting. However, this is related to boundary location being slightly incorrect, rather than being located on the site.		

[14] https://designatedsites.naturalengland.org.uk/PDFsForWeb/Citation/1000903.pdf
[15] https://designatedsites.naturalengland.org.uk/PDFsForWeb/Citation/2000672.pdf

Although not within the site or its immediate surrounds, several sites in the surrounding area have also been designated as ancient and semi-natural woodland, with the closest being an unnamed location, 137m west of the site; Ardley Wood, 251m to the north-east; Kennel Copse, 333m to the west and Digging Copse, 484m to the north-east.

2.11 Natural soil chemistry

Information in the Groundsure report (Appendix D) gives indicative (estimated) concentration values for the natural soils at the site for a selection of Contaminants of Potential Concern (CoPC) based on BGS rural topsoil data collected at a sample density of approximately 1 per 2km^2. These are reproduced in Table 2.13.

Table 2.13: Natural soil chemistry

Element	Arsenic	Cadmium	Chromium	Lead	Nickel
Concentration (mg/kg)	15 - 25	1.8	60 - 90	100	15 - 30

The above results are not significant in the context of the site.

2.12 Evidence of historical contamination

As detailed in Section 2.1, there are a number of historical reports available for review. The known contamination based on these reports is discussed below.

Arup (2007)

A plan presented by ARUP as part of planning application 07/02291/OUT for the former RAF Upper Heyford (extract provided in Figure *2.7*) details the locations of possible contamination sources at the former RAF and USAF base. Within close proximity to the north-western boundary of the site are:

- POL20: comprising twelve underground tanks, with a capacity of capacity of 14,500 gallons (approximately 65,900 litres) each, comprising six gasoline tanks and six diesel tanks and two fill stands.
- POL25B: a cut and cover storage tank and fill stand, with a capacity of 1,189,750 gallons (approximately 5.4million litres) of JP8 (jet fuel);
- POL25A: a cut and cover storage tank and fill stand, with a capacity of 1,191,000 gallons (approximately 5.4million litres) of JP8 (jet fuel); and
- above and below ground infrastructure of pipes, pumps and valves.

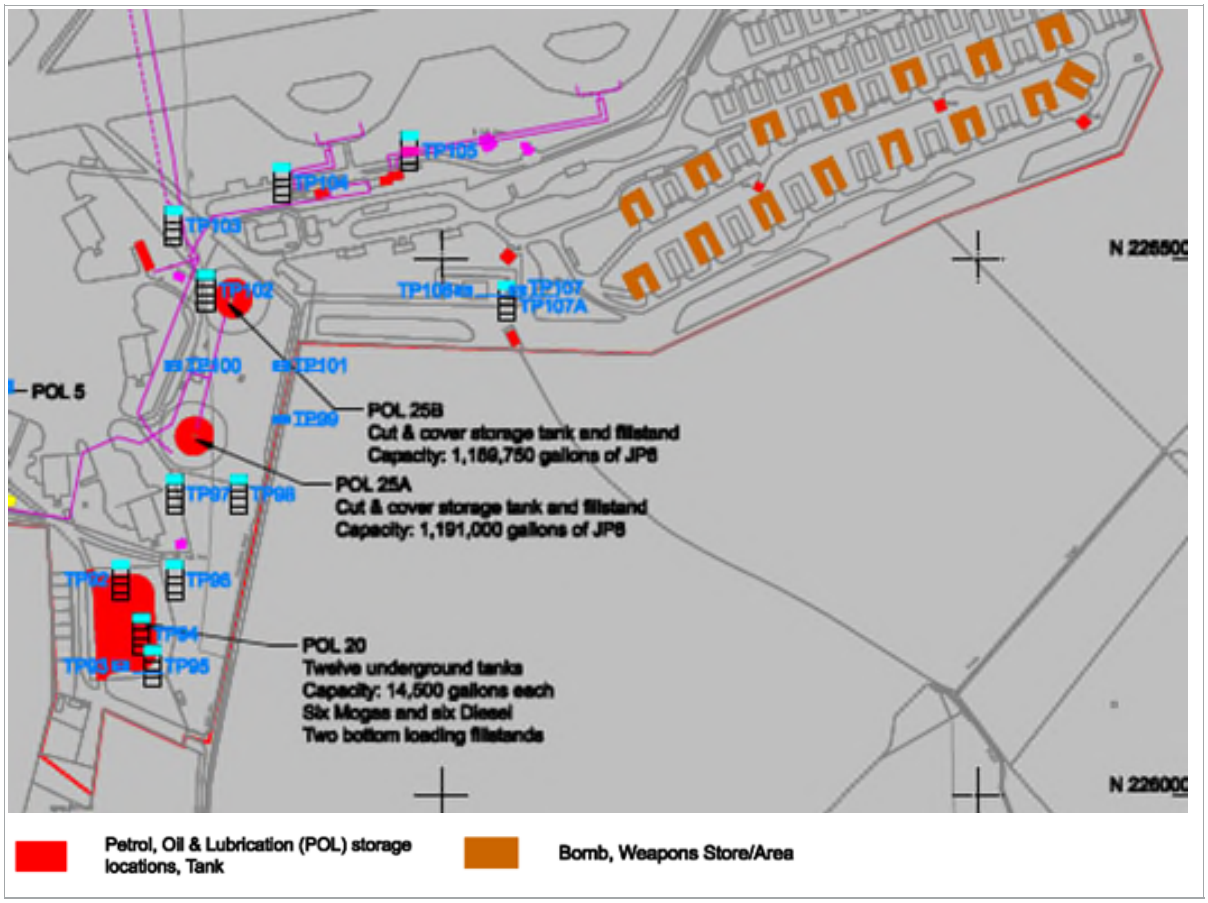


Figure 2.7: Extract from Arup drawing 120643-00 GG_G.2 – 01

Waterman (2012 and 2016)

The Waterman (2012 and 2016) reports indicate that the area adjacent to the north-western boundary of the Oxfordshire SRFI site is part of former RAF Upper Heyford, including part of the POL system.

Investigation and assessment of geo-environmental risks by Waterman concluded that whilst there are concentrations of TPH and phenol in the groundwater adjacent to the north-west site boundary (i.e below the former RAF Upper Heyford, groundwater quality "*was considered good when historic activity is taken into account. Specific contamination patterns, resembling plumes or contamination watersheds, were not obvious. The report indicated that these factors indicate the lack of a gross site wide contamination and that the presence of a reservoir of free product is remote*."

As part of the assessments at RAF Upper Heyford, surface water samples were collected from two springs / watercourses on the proposed Oxfordshire SRFI site. These indicated that the "*quality of the surface water in the spring was reasonably good*", with only occasional phenol recorded.

Remedial work to clean and make safe the POL system was completed in March 2012. The remedial works comprised emptying, cleaning, and backfilling tanks with grout, while the buried pipelines were foam filled. A planning condition associated with the redevelopment of former RAF Upper Heyford was discharged to the satisfaction of the Environment Agency on completion of these works.

The Waterman (2016) report indicates that radiological testing was carried out on the wider former RAF Upper Heyford site prior to the Ministry of Defence (MOD) decommissioning the site as an RAF airbase.

The MOD did not deem the former RAF Upper Heyford site as high risk and "*testing carried out in targeted areas indicated radiation levels were consistent with normal background concentrations*". As such, radiological risk is not considered further in this report.

Hydrock (2014)

The Hydrock 2014 desk study identified four fuel tanks in the Ashgrove Farm site: three above ground (diesel and paraffin) and one underground (diesel). In addition, an 'oil store' was located in the central-north of the farm used for storage of a number of petroleum-based products.

A pile of broken possible asbestos containing cementitious roof sheets was present in the north-west of the farm.

As part of the 2014 Desk Study Hydrock prepared for Ashgrove Farm, Hydrock made enquiries to the Environment Agency (EA) with regard to the Ardley Fields Farm landfill site, off site to the east of the B430. The EA advised direct contact with Viridor, the operator. The following information was provided by Viridor at the time:

- SLR Consulting borehole logs from 2006, although no plan showing the locations of the boreholes was provided; and
- an excel spreadsheet containing groundwater sampling chemical data from 1994 to 2012, and gas monitoring results from 1991 to 2012.

The Viridor data was assessed by BRD with regard to the Ashgrove Farm conversion (see below).

BRD (2015)

BRD undertook an investigation across the central section of Ashgrove Farm. By the time of the BRD investigation a number of the tanks (including the underground storage tank (UST)) had been removed and the resulting excavation infilled with imported stone.

The analysis of soils samples indicated the majority of the test data were below the adopted generic assessment criteria (GAC) for residential end use (for which the report was written). The exception was a single elevated concentration of lead (313mg/kg in TP01 at a depth of 0.1m bgl, in Made Ground; compared with the GAC of 200 mg/kg). Further delineation was undertaken, with four surface samples taken around the area (SS01-SS04), which recorded concentrations between 25mg/kg and 162mg/kg. BRD deemed this to prove no hotspot of lead was present and no remedial action was required.

TP03 of the BRD investigation was located adjacent to the location of the UST, and included 'grey/black staining and hydrocarbon odours' at a depth of 1.35m bgl. BH01 of the BRD investigation was progressed through the former UST area following removal of the Made Ground, with hydrocarbon odours and staining noted in the limestone to a depth of 4.0m bgl.

Elevated concentrations of TPH, PAHs and BTEX were noted in groundwater samples taken from BH01, in the vicinity of the former tank. However, BRD noted that as the "*source has been removed, there is no on-going contamination and the concentrations of hydrocarbons in the groundwater will reduce naturally*". Hydrock consider that this remains a potential source of unacceptable contamination and will require targeted investigation to enable remediation requirements to be considered.

Ground gas risk assessment was undertaken by BRD on data provided by Viridor and assessment of the three closest landfill boreholes to the site (AR094GM, AR095GM and AR097GM). The BRD report indicates that the data from the boreholes reviewed did not record significantly elevated

concentrations of methane (maximum of 0.3%), or carbon dioxide concentrations (typically did not exceed 2%, but with three readings of 2.7%, 4.7% and 6.7%). Significantly elevated concentrations of carbon dioxide (maximum 38.5%) and methane (maximum 69.1%) were consistently recorded in the boreholes on the landfill. However, BRD concluded that "*in consideration of the distance of the landfill from the site, it is considered that the landfill does not present a plausible gas risk to the site".*

BRD also reviewed groundwater monitoring data provided by Viridor and concluded that whilst there were occasional elevated concentrations of nickel in groundwater samples, "*as the concentrations were not significantly elevated, nor exceeding the threshold for more than one monitoring visit, it is not considered to present a valid risk*".

Whilst the BRD assessment (for a small-scale residential conversion) indicated low risks, Hydrock considers ground gas and groundwater contamination from the landfill to be potential risks which need further consideration. In addition, the Made Ground at the farm, along with potential petroleum hydrocarbon sources, requires further consideration.

2.13 Radon

The radon risk is reported in the environmental report, which indicates that with the exception of the area described in the following paragraph, most of site is not in a Radon Affected Area and radon protection measures are not required for new buildings.

The environmental report indicates that the areas in the far north and south of the site are in Radon Affected Areas where recorded radon levels in 1-3% of homes are above the action level. However, radon protection measures are not required for new buildings at these locations, in line with current guidance.

Whilst, consideration should be given to fitting basic radon protection measures in new buildings on the 'as low as reasonably practicable' principle in view of advice given to the legal responsibilities of employers with commercial properties, as there are no buildings proposed for the far north of the site (this area is part of the railways sidings), no further action is required with regard to radon.

2.14 Unexploded ordnance (UXO)

A specialist UXO risk assessment has been commissioned (see Appendix D). The key findings are summarised as follows:

- There are no recorded incidents of the site being the subject of bombardment during WW1, although RAF Upper Heyford was operational for training purposes since 1918.
- RAF Upper Heyford was targeted on at least four separate occasions during WW2, although records of the exact locations of where the bombs landed are not available.
- In April 2019 two pieces of ordnance were located in a construction site on Camp Road (within RAF Upper Heyford), with the devices being subsequently destroyed by specialists.
- The site itself would not have been considered a viable target to the Luftwaffe. However, its close proximity to RAF Upper Heyford could leave it vulnerable, due to the low accuracy / precision of bombing at the time.
- There is no evidence to suggest that there were any gun emplacements within the site area. However, due to the close proximity to RAF Upper Heyford this cannot be ruled out, especially considering the placement of trenching/defensive positioning and military troop training.

- There is a medium risk that items of UXO could be located within the site boundary and the following risk mitigation strategy has been recommended by the UXO specialists relating to an excavation works within the site area:
  - communicating the risks to all stakeholders;
  - UXO safety awareness training of site personnel and project staff;
  - awareness training by a competent person as part of the project safety induction;
  - specific safety briefings and toolbox talks to individuals involved in conducting intrusive earthworks;
  - UXO recognition and safety procedures to be written and followed on discovery of a suspicious object or the alarm being sounded;
  - emergency procedures to be to be followed in the event of an explosion. This should include evacuation routes, muster stations and accounting for personnel; and
  - work permits, works methodology and specific UXO risk mitigation methods are to be written and followed.

A copy of the UXO desk study is included in Appendix D.

3. GROUND MODEL

3.1 Introduction

Based on the Desk Study presented in Section 2, the preliminary ground model is summarised below and is the basis for preparing the preliminary geotechnical hazard assessment (Section 0) and the preliminary geo-environmental exposure model (Section 5.2).

3.2 Proposed development

In summary, the site development proposals are understood to comprise the construction of a new Strategic Railfreight Interchange, with associated commercial/distribution warehouses, along with associated infrastructure and landscaping.

Generally, the proposed development will involve significant cut in the north (to allow a proposed rail terminal to access the existing rail line), cut on the eastern and western edges of the site, and fill in the centre of the valley. Landscape bunding is proposed around the edges of the site and surface water attenuation features will be developed in the south and potentially throughout the development.

3.3 Site Setting

The site is located approximately 5.5km north-west of Bicester, to the west of the M40, south of Ardley and east of Upper Heyford. The National Grid Reference of the approximate centre of the site is 453276E, 226189N.

The site is irregular in shape, has an area of approximately 260 ha, is predominantly in agricultural use, and comprises two valleys, with streams in the valley bases. The valleys are separated by a ridge line at the north-eastern end of the runway of the former RAF Upper Heyford (at approximately 124m OD), located in the central-north of the site.

The base of the smaller northernmost valley falls to the north-east, from between approximately 118m OD and 116m OD. The stream flows from the south-west to the north-east and then off site below the railway line. The southern side of the northern valley rises to approximately 124mOD at the north-eastern end of the runway.

The base of the larger eastern valley slopes gently down towards the south-west, from a level of approximately 116m OD in the north to approximately 104m OD in the south.

The site is predominantly covered by grass or crops, with mature, semi-mature trees and hedgerows on the majority of field boundaries and the site boundary. There were a number of relatively small, denser wooded areas across the site.

3.4 Current site uses

The site is predominantly used for agriculture (arable crops and grazing), with Ashgrove Farm in the central-west. A covered water reservoir is present in the south-east of the site and there is a commercial composting facility in the south-east. Camp Road passes through the site from south-west to the east, and the B430 passes the eastern edge of the site. A water pumping station is present in the far south of the site.

The Chiltern Mainline railway is present, in cutting, along the northern boundary. The Ardley Energy Recovery Facility is located to the east of the site at the location of a former quarry and landfill. An

operational quarry (Dewars Farm Quarry) is present to the south-east, and Upper Heyford (a mixed use residential and commercial development is located to the north and west, at the location of the former RAF Upper Heyford.

3.5 History

The site has historically been predominantly agricultural land. Ashgrove Farm has been present since before the earliest Ordinance Survey mapping, and a small number of farm buildings have historically been present in the west of the site. A water tower was historically present in the south of the site, at the location of the present-day water pumping station.

The railway line along the northern boundary has been present since the early 20th Century

Small scale quarrying has occurred in the area surrounding the site, with large scale quarrying occurring from the 1940s to the north, from the 1980s to the east, and from the late 1990s to the north-east. Landfilling operations to the east (Ardley landfill) began in the late 1980s (commencing in the north of the former quarry, as quarrying operations moved south).

RAF Upper Heyford was operated as a grass aerodrome in WW1, and a hardstanding airfield was constructed by 1927. The site operated as a strategic bomber base until the 1930s and then mainly as an RAF training facility until 1950. From 1951 to 1994, the site was operated by the USAF Strategic Air Command until it was sold. Since 1994, the site has been used for a variety of residential and commercial purposes and is currently undergoing ongoing development as a mixed-use development.

3.6 Geology

Made Ground is expected to be present in isolated areas of historical development such as Ashgrove Farm, Ashgrove Cottages, Scotland Barn, the water tower, the caravan park, locally associated with isolated historical construction (drainage features and made-up tracks) and also associated with Field 3 and Field 5, where man-made items are prolific and have been spread).

In areas where Made Ground is not present, there is likely to be a varied thickness of topsoil, generally to 0.3m bgl and soil cover (generally to 1.0m bgl) formed by weathering of the limestone.

Alluvium and Head Deposits are noted on the British Geological Survey mapping along the edges of streams and watercourses.

The solid geology dips to the south-east, and the majority of the site is underlain by the White Limestone Formation, with the Ardley member and the Shipton Member expected to be present at outcrop / sub-crop at the site. The White Limestone Formation generally comprises thinly bedded oolitic and crystalline limestone, with interbeds of clay, marl, siltstone, or mudrock.

There is limited outcrop of the Rutland Formation in the north and along the railway cutting. However, the Rutland Formation underlies the majority of the site at depth.

There are two faults in the far north of the site, with the geological sequence downthrown to the north.

The Forest Marble Formation is present in the railway cutting and immediately north of the site. Whilst this unit is stratigraphically younger, it is present due to a localised inlier created by downthrow along an east-west trending fault line.

3.7 Hydrogeology

Historical site investigations at the Heyford Park site (immediately to the west of the current site) indicate that a tiered groundwater system is present, forming on clay, marl, siltstone, or mudrock interbeds within the White Limestone Formation and at the top of the Rutland Formation. Groundwater flow is likely to be generally towards the south-east, although there may be some localised flow towards the railway cutting in the north and the streams at the base of valleys.

There are a number of springs on the western side of the site, which are likely to represent outcrops of low permeability clay, marl, siltstone, or mudrock interbeds in the White Limestone Formation.

There are no active licensed groundwater abstractions on the site and one active licensed groundwater abstraction within 250m of the site (100m south-west, associated with Manor Farm for general farming and domestic use).

There is no groundwater Source Protection Zone (SPZ) within the site boundary or within 1km of it.

3.8 Hydrology

Within the wider area, the River Cherwell is approximately 3km west of the site, flowing southwards and the River Ray is approximately 10km to the south-east of the site flowing to the south-west. The general area in which the site lies is largely devoid of major watercourses due to the presence of the limestone plateau and its relatively high permeability and porosity. The nearest named water features are: Gagle Brook, located off-site approximately 700m to the east of the site, flowing to the south; and Leys Farm Ditch, located off-site approximately 200m to the west of the site, flowing to the south.

There are two streams present in the base of the valleys at the site. The eastern stream starts to the west of Ashgrove farm in the central north of the site and flows initially to the south and exists the site to the south-east. The northern stream originates at Crowfoot Pond, off-site to the west, flows north-east across the site and is connected into pipework running beneath the railway to the north-east.

In addition to the two main streams, there are three tributaries to the stream in the eastern valley; all located on the western side of the valley, flowing either from drainage outfalls associated with the former RAF Heyford or springs. Also, on the western side of the eastern valley there are a number of current or historical springs and ponds.

There are no records of active licensed surface water abstractions on the site or within 1km of it.

3.9 Evidence of historical contamination

Review of historical site investigation reports undertaken at Ashgrove farm (on-site in the central east), Heyford Park to the west, and the former Ardley Landfill site to the east indicate that:

- At Ashgrove Farm:
  - There are a number of contaminant sources associated with historical or current use and storage of petroleum hydrocarbons, with these interpreted in historical reports to be of limited impact.
  - There is a surface covering of Made Ground across the site, which does contain occasional elevated concentrations of metal.
  - Asbestos Containing Materials are present on the ground surface and in / on buildings.

- At Heyford Park:
  - There is a low risk with regard to radiological materials.
  - There are a number of contaminant sources associated with historical storage of petroleum hydrocarbons at the former RAF base.
  - There are elevated concentrations of petroleum hydrocarbons and phenols in groundwater at the former RAF base. However, it was concluded that groundwater quality "*was considered good when historic activity is taken into account. Specific contamination patterns, resembling plumes or contamination watersheds, were not obvious. The report indicated that these factors indicate the lack of a gross site wide contamination and that the presence of a reservoir of free product is remote*."
  - As part of the assessments at RAF Upper Heyford, surface water samples were collected from two springs / watercourses on the proposed Oxfordshire SRFI site. These indicated that the "*quality of the surface water in the spring was reasonably good*", with only occasional phenol recorded.
  - Remedial work to clean and make safe the POL system was completed in March 2012. The remedial works comprised emptying, cleaning, and backfilling tanks with grout, while the buried pipelines were foam filled. A planning condition associated with the redevelopment of former RAF Upper Heyford was discharged to the satisfaction of the Environment Agency on completion of these works.
- At the former Ardley Landfill, limited data is currently available to Hydrock. However, this indicates that:
  - Significantly elevated concentrations of ground gas (methane and carbon dioxide) are not present on-site at Ardley Farm;
  - There are significantly elevated concentrations of ground gas consistently recorded in the boreholes on the landfill.
  - Groundwater monitoring data indicates that whilst there were occasional elevated concentrations of nickel in groundwater samples, "*as the concentrations were not significantly elevated, nor exceeding the threshold for more than one monitoring visit, it is not considered to present a valid risk*" (in the context of re-development of Ashgrove Farm).

3.10 Mining and minerals extraction

The site is not within an area of coal mining risk and is not within an area of recorded underground mining.

As shown in the 'Oxfordshire County Council Minerals and Waste Core Strategy' and the 'Oxfordshire Minerals and Waste Local Plan Policies Map', the site is identified to be within:

- A Mineral Resource Strategic Area (Policy M3) of OCC Minerals and Waste Core Strategy.
- A Mineral Safeguarding Area (Policy M8).
- A Mineral Consultation Area.

Mineral extraction has been undertaken historically in the surrounding area, with several small-scale limestone pits and quarries noted on historical maps.

In addition, significant limestone quarrying operations have occurred at:

- the historical Ardley / Fields Farm Quarry), to the east of the site;
- the historical Ardley Quarry Extension was located to the north-west of the site (on the northern side of the railway line); and
- The operational Ardley/ Dewar's Farm Quarry to the south of Ardley Quarry; to the immediate east / south-east of the site. Historically, the quarry produced gabion stone, single size stone, crusher run and dust. At the current time the quarry is producing 6F5.

3.11 Waste Management

With regard to waste management in the vicinity of the site:

- The Agrivert IVC (composting facility) is present on site for the composting of waste.
- There are a number of historical landfills located in the vicinity of the site:
  - Ardley Wood, located to the immediate north, was licenced for inert, industrial, commercial, household and liquid sludge; and
  - Ardley Landfill/Ardley Fields Farm, located to the east of the site, was licenced for inert, non-hazardous, stable non-reactive hazardous waste (in the form of asbestos) and hazardous waste. The southern extension was operated as a co-disposal landfill from July 2000.
- The Ardley Leachate Treatment Plant is an active biological treatment facility, located at the former Ardley Landfill/Ardley Fields Farm landfill.
- There is a 'Household, Commercial & Industrial Waste Transfer Station', located at the former Ardley Landfill/Ardley Fields Farm landfill. Wastes accepted include household, commercial and industrial waste.
- An Energy Recovery Facility is located to the east of the site at the former Ardley Landfill/Ardley Fields Farm landfill for the incineration of waste. Wastes accepted include household, commercial and industrial waste.

There are a number of waste exemptions in the vicinity of the site. However, these are not considered to be relevant to the site and are not considered further.

3.12 Regulatory

The following regulatory controls are present in the immediate area of the site:

- Control of Major Accident Hazards site (COMAH), located 458m west at the Southern Bomb Store/Site at Heyford Park.
- Regulated explosive site, located adjacent to the north and north-west boundary of the site, as storage of fireworks and explosives within the hardened shelters of RAF Upper Heyford, which were previously used as bomb stores.
- Pollution inventory substances:
  - On-site in the south-east at the Agrivert IVC facility for
  - To the east of the site at the Ardley EfW facility for the incineration of suitable waste.

In the context of geo-environmental risk, the above are not considered to be a risk. However, specialist assessment (with regard to air quality) and management (with regard to COMAH and Regulated Explosives) may be required. No further assessment in this report.

3.13 SSSI

There are two SSSIs of interest with regard to development of the site. These are:

- Ardley Cutting and Quarry, which is located along the railway cutting, and immediately north and south in parts. This SSSI is located on the site at the junction of the proposed railway sidings with the current rail line and is designated due to geological interest for its exposures of Jurassic rocks and has biological interest associated with limestone grassland, scrub, ancient woodland and wetland habitats.
- Ardley Trackways, which is designated due to the presence of fossilised dinosaur (sauropod and theropod footprints, which form trackways. This SSSI is split into:
  - the southern unit, located at Dewars Farm Quarry, an operational limestone quarry, to the east and south-east of the site; and
  - the northern unit, located at an historical, now restored limestone quarry, to the north of the railway line; to the north-east of the site.

3.14 Radon

Based on the proposed development and locations of buildings, it is concluded that whilst small sections of the site are in Radon Affected Areas (radon levels in 1-3% of homes are above the action level), as there are no buildings proposed in these areas, no further action is required with regard to radon.

3.15 Unexploded ordnance (UXO)

A specialist UXO risk assessment indicates that at the current time, there is a medium risk that items of UXO could be located within the site boundary and a risk mitigation strategy has been recommended for excavation works within the site area. This risk mitigation strategy will be reviewed as additional information on the ground conditions of the site becomes available.

4. GEOTECHNICAL HAZARD IDENTIFICATION

4.1 Context

The preliminary geotechnical hazard identification has been undertaken in accordance with the general requirements of ICE/DETR Document 'Managing Geotechnical Risk' and the HE documents HD 41/15 and CD 622.

The following section sets out the identified geotechnical hazards and the development elements potentially affected (see Table E.1 in Appendix E for further information).

4.2 Plausible geotechnical hazards

Plausible geotechnical hazards identified at the site are:

- Uncontrolled Made Ground and landfill (variable strength and compressibility).
- Soft / loose compressible ground (low strength and high settlement potential), associated with Alluvium and Head Deposits along the existing watercourses.
- Shrinkage / swelling of the clay fraction of soils under the influence of vegetation.
- Lateral and vertical changes in ground conditions.
- High sulphates in the soils. Likely to be a low risk; however, testing is required to prove this.
- Buried obstructions.
- Difficulty in excavation.
- Existing below ground structures to remain.
- Shallow groundwater.
- Changing groundwater conditions.
- Running sands and / or loose Made Ground, leading to difficulty with excavation and collapse of side walls.
- Risk from flooding, including erosion and changes in surface water runoff to neighbouring land.
- Earthworks - Suitability of material excavated for use as Fill.
- Earthworks - Differential bearing capacity and settlement.
- Earthworks – poor bearing capacity of new fill.
- Slope stability issues – general existing slopes.
- Slope stability issues - instability of cut and fill slopes and excavations.
- Slope stability issues – retaining walls.
- Effect of earthworks and construction on assets outside the site boundaries, such as the railway cutting slopes.
- Problematic soils (silts and rewetting etc.).
- Faults.
- Impacts to SSSIs.

The risk from mining (surface and underground) is considered low at the site. The risk with regard to minerals is not assessed in this report and reference should be made to the separate Mineral Resource Assessment Report.

4.3 Potential development elements affected

Development elements potentially affected by geotechnical hazards are:

- buildings – foundations;
- buildings – floor slabs;
- roads and pavements;
- Rail track construction;
- craneage / logistics infrastructure;
- services (underground and overground);
- drainage runs, watercourses, both on and off site;
- slopes (both cut and fill) / retaining walls;
- construction staff, vehicles and plant operators; and
- users of the SRFI including operators, workers, visitors etc.

Health and safety risks to site contractors and maintenance workers will need to be considered separately during design.

The above plausible geotechnical hazards and development elements affected have been carried forward for investigation and assessment.

5. INITIAL CONCEPTUAL SITE MODEL

5.1 Introduction

The initial Conceptual Site Model (iCSM) incorporates evidence from the site walkover, the Desk Study and data from previous investigations carried out at the site. The formulation of an iCSM is a key component of the LCRM methodology. The iCSM incorporates a ground model of the physical / geological site conditions and an exposure model of the possible contaminant linkages. It forms the basis for Generic Quantitative Risk Assessment (GQRA) in accordance with current guidelines.

5.2 Geo-environmental exposure model

5.2.1 Context

The preliminary exposure model is used to identify geo-environmental hazards and to establish potential pollution linkages, based on the source-pathway-receptor (SPR) approach.

A viable pollution linkage requires all the components of an SPR to be present. If only one or two are present, there is no linkage and no further assessment is required.

5.2.2 Potential contaminants

For the purpose of this assessment the potential contaminants have been separated according to whether they are likely to have originated from an on-site or off-site source.

Potential on-site sources of contamination

- Made Ground associated with isolated areas of historical development (Ashgrove Farm, Ashgrove Cottages, Scotland Barn, the water tower, the caravan park and isolated historical construction (drainage features and made-up tracks)), and associated with Field 3 and Field 5, where man-made items are prolific and have been spread. Made Ground may include elevated concentrations of metals, metalloids, asbestos fibres, Asbestos Containing Materials (ACM) and PAHs.
- Asbestos Containing Materials within existing buildings.
- Petroleum Hydrocarbons, potentially leaking from storage tanks (either current or historical), and temporary stores at Ashgrove Farm.
- PCBs and oils from transformers in the electricity sub-station on site (opposite Ashgrove Cottages).
- Herbicides / pesticides / agrochemicals used historically on the farm and stored in storage facilities.
- Ground gases (carbon dioxide and methane) from organic materials in the Made Ground / Alluvium.

Potential off-site sources of contamination

- Landfill Made Ground materials in the historical landfill in the north-east of the site, to the east of the B430, may include elevated concentrations of metals, metalloids, PAHs and petroleum hydrocarbons, phenols, VOCs, SVOCs, asbestos fibres and Asbestos Containing Materials (ACM).
- Leachate from landfilled waste and infilled soils from the historical landfills and infilled quarries from north and east of the site.
- Ground gases (carbon dioxide and methane) from the historical landfills and infilled quarries north and east of the site.
- Petroleum hydrocarbon and phenol contaminated groundwater from the former RAF Upper Heyford, from its use as an airbase and leaks from POL storage.

- PFOS / PFAS contaminated groundwater from the former RAF Upper Heyford from its use as an airbase and the potential use of firefighting foam.

5.2.3 Potential receptors

The following potential receptors in relation to the proposed land use have been identified:

- People (site users, neighbours).
- Groundwater: Principal aquifer bedrock and Secondary A aquifer superficial deposits.
- Surface water: on-site streams, ditches and ponds (aquatic ecosystems and possible surface water abstractors)
- Development end use (buildings, utilities and landscaping).

Ecological risk has been discounted as the SSSI along the railway cutting is for calcareous grassland and geology.

5.2.4 Potential pathways

The following potential pathways have been identified.

- Ingestion, dermal (skin) contact, inhalation of dust by people.
- Inhalation of vapour by people, with ingress via permeable soils and/or construction gaps.
- Inhalation of asbestos fibres by people.
- Migration of contaminant via leachate migration through the unsaturated zone into the groundwater.
- Migration of contaminated groundwater on to the site.
- Overland flow to surface waters.
- Ground gas ingress via permeable soils and/or construction gaps leading to accumulation in buildings.

Health and safety risks to site development contractors and maintenance workers have not been assessed as part of this study and will need to be considered separately.

The above sources, pathways and receptors have been considered as part of the Preliminary Risk Assessment in accordance with LCRM (2020), are considered to be plausible in the context of this site and have been carried forward for investigation and assessment. An assessment of the Source – Pathway – Receptor linkages is presented in Appendix F (Table F.1).

6. DESK STUDY CONCLUSIONS

6.1 Geotechnical conclusions

The following plausible geotechnical risks are identified.

- Uncontrolled Made Ground (variable strength and compressibility).
  - Likely to be limited in extent and depth across most of the main site. However, will be present in Field 3, Field 5, Ashgrove Farm and isolated areas around the site.
  - Historical landfill material in the north-west of the site, to the east of the B430. The proposed rail line connection from the rail terminal to the mainline passes across / through the former Ardley Quarry / Ardley Landfill.
- Soft / loose compressible ground (low strength and high settlement potential), associated with Alluvium and Head Deposits along the existing watercourses.
- Shrinkage / swelling of the clay fraction of soils under the influence of vegetation. Likely to be relatively low risk (low to moderate heave potential) and limited to the upper 1.0m (or so) of the weathered limestone, and the Alluvium and Head Deposits along the existing watercourses.
- Lateral and vertical changes in ground conditions, associated with:
  - Variation between rock and superficial soils (Alluvium and Head Deposits).
  - Variation in rock type vertically and laterally with varying lithological units (limestone, marl, mudrock and siltstone) within the geological units.
  - Variation in rock mass characteristics (fracture spacing, aperture, infilling etc).
  - Variation in the weathering profile of limestone or other bedrock.
- High sulphate concentrations in the soils. Likely to be a low risk as the soils are not expected to have high sulphate concentrations. However, testing is required to prove the risks.
- Obstructions, including existing foundations at Ashgrove Farm, historical structures on the site and the drainage structure in the north.
- Difficulty in excavating rock of differing strengths and fracturing. The limestone rock is anticipated to be difficult to excavate and will require heavy duty plant / rippers, and may require wide spaced blasting.
- Existing below ground structures to remain:
  - Existing buildings to retained at Ashgrove Farm and potential vibration damage associated with excavation in close proximity. Some of the farm buildings are Grade 2 listed.
  - The covered reservoir in the south-east of the site is to be retained. Review of the preliminary cut to fill indicates limited cut in this section of the site. Impact of construction will need to be accounted for in the design and in temporary works.
- Shallow groundwater:
  - Potential for shallow groundwater at existing spring lines and close to the level of the existing streams.
  - Presence of groundwater and spring lines and the potential impact on proposed surface water attenuation features.

- Changing groundwater conditions. Impact of groundwater in cuttings and excavations. Multiple groundwater horizons are expected, with the cut surface likely to intercept springs leading to wet or flooded conditions.
- Running sands and / or loose Made Ground, leading to difficulty with excavation and collapse of side walls. Generally low risk across the majority of the site. However, likely to be a significant risk in the alluvial soils in the base of the valley and the landfill Made Ground in the north-east of the site (to the east of the B430).
- Risk from flooding, including:
  - Risk from erosion due to surface water and groundwater flooding.
  - Changes in surface water run-off to neighbouring land.
- Earthworks - suitability of material excavated for use as Fill:
  - Selective excavation of soils will be required. Differing engineering classifications likely to be derived from the: Made Ground, Topsoil, Alluvium, Head, significantly (near surface) weathered limestone, partially weathered limestone, unweathered limestone and mudrock/ siltstone.
  - Significant processing of excavated limestone is likely to be required to allow reuse as an engineered fill. The limestone is currently processed to a 6F5 / 6F2 class from Dewars Farm Quarry adjacent to the site.
- Earthworks - differential bearing capacity and settlement depending on:
  - The underlying ground conditions (rock or clay soils (Alluvium and Head Deposits)).
  - Varying rock units (limestone, marl, mudrock and siltstone).
  - The thickness and type of fill.
  - Transition from cut rock to fill.
- Earthworks – poor bearing capacity of new fill. Unlikely to be a significant issue. However, Topsoil will only be suitable for use as Class 4 fill (non-structural) and Alluvium and Head Deposits may need improvement to increase bearing capacity.
- Slope stability issues – general existing slopes. Generally, no significant issues apart from the railway cutting to the north, where the slopes are steep and appear poorly maintained.
- Slope stability issues - instability of cut and fill slopes and excavations. Significant, steep cut slopes are proposed, especially in the north. Slope stability will depend on: geology (rock or clay), rock mass quality, dip of the strata, fracturing, presence of unsupported boulders and blocks of rock, and groundwater conditions. Fill slopes are also prosed for development plateaux and landscape bunds.
- Slope stability issues – retaining walls. Significant sub-vertical cut is required in the north-west, associated with the intermodal terminal. Significant retaining walls will be required to support the interbedded limestone and mudrock of the White Limestone Group and the Rutland Formation.
- Effect of earthworks and construction on assets outside the site boundaries such as the railway cutting slopes. The railway line is close to the northern site boundary. Consideration of earthworks and impacts on the railway will need to be considered.
- Problematic soils (silts and rewetting etc.). Likely only to be a potential issue with soils won from the Alluvium, the Head Deposits and heavily weathered limestone (top 1.0m).
- Faults are recorded in the north of the site and will need to be reviewed in detail as investigation progresses. These are not likely to be tectonically active.
- Impacts on SSSIs:

- The Ardley Cutting and Quarry SSSI is present along the northern site boundary, and the proposed connections from the rail terminal to the mainline will pass through it.
- The Ardley Trackways SSSI is located off-site to the north-west, south, and south-east. Whilst specific impacts to the SSSI are likely to be low, the top of the Shipton Member will be exposed in the cut surfaces in the west of the site.

- Mineral Resource.

These plausible risks require further investigation and assessment (see Section 8).

6.2 Geo-environmental conclusions

Based on historical and current land uses and in accordance with the processes set out in the EPA (1990) and LC:RM (2020):

- It is considered unlikely that the site, or significant parts of it, could be classified as Contaminated Land under Part 2A of the EPA 1990.
- The overall risk from land contamination at the site is considered to be low for the majority of the proposed development (as it has generally remained undeveloped), with some small areas of moderate to high risk (in historically developed areas, mainly Ashgrove Farm). This would need to be confirmed by appropriate intrusive investigation, testing and assessment of the results of the investigation.

The possible pollutant linkages (for risk levels of moderate or greater) on an unremediated redeveloped site, as determined by the desk study and walkover, are summarised in Table 6.1:

Table 6.1: Possible Pollutant Linkages (for Risk Levels of Moderate or Greater)

Source(s)	◄ potential Impact on ►	Receptor(s)
Made Ground associated with isolated areas of historical development and field spreading. (metals, metalloids and PAH).		Site users. Water supply pipes.
Made Ground associated with isolated areas of historical development and field spreading.(asbestos and Asbestos Containing Material).		Site users.
Landfill Made Ground materials present in the historical landfill in the north-east of the site, to the east of the B430. (metals, metalloids, PAHs and petroleum hydrocarbons, phenols, VOCs, SVOCs).		Site users.
Landfill Made Ground materials present in the in the historical landfill in the north-east of the site, to the east of the B430. (asbestos fibres and Asbestos Containing Materials (ACM).		Site users. Neighbours
Petroleum hydrocarbons and VOCs associated with spills and leaks from tanks at Ashgrove Farm.		Site users. Water supply pipes.
Ground gases (carbon dioxide and methane) from organic materials in the Made Ground below the site.		Site users. Buildings on site.
Ground gases (carbon dioxide and methane) from the Ardley landfill located to the east of the site.		
Petroleum hydrocarbons and phenols contaminated groundwater from the former RAF Upper Heyford from its use as an airbase and leaks from POL storage.		Site users. Aquatic ecosystems.
PFOS / PFAS contaminated groundwater from the former RAF Upper Heyford from its use as an airbase and the potential use of firefighting foam.		Site users. Aquatic ecosystems.
Asbestos fibres from insulation or asbestos-containing materials in the buildings.		Site users.

These possible pollutant linkages require further investigation and assessment (see Section 8).

7. UNCERTAINTIES AND LIMITATIONS

7.1 Site-specific comments

Access to the buildings in Ashgrove Farm was not possible during the site walkover reconnaissance.

Access to the railway cutting was not possible. However, at this stage is not deemed necessary.

Hydrock has requested data from Smiths & Sons (Bletchington), with regard to operations, boreholes and a site visit at Dewars Farm Quarry. This data is outstanding.

Hydrock has requested data from Viridor, with regard to historical operations, boreholes and monitoring. This data is outstanding.

7.2 General comments

Hydrock Consultants Limited (Hydrock) has prepared this report in accordance with the instructions of Oxfordshire Railfreight Limited (the Client), under the terms of appointment for Hydrock, for the sole and specific use of the Client and parties commissioned by them to undertake work where reliance is placed on this report. Any third parties who use the information contained herein do so at their own risk. Hydrock shall not be responsible for any use of the report or its contents for any purpose other than that for which it was prepared or for use of the report by any parties not defined in Hydrock's appointment.

This report details the findings of work carried out in February and March 2021. The report has been prepared by Hydrock on the basis of available information obtained during the study period. Although every reasonable effort has been made to gather all relevant information, not all potential environmental constraints or liabilities associated with the site may have been revealed.

Groundwater data are only representative of the dates on which they were obtained and both levels and quality may vary.

Information provided by third parties has been used in good faith and is taken at face value; however, Hydrock cannot guarantee its accuracy or completeness.

Hydrock is not responsible for any factual errors or omissions in the supplied data, or for the opinions and recommendations of others. It is possible that the conditions described may have since changed through natural processes or later activities.

The work has been carried out in general accordance with recognised best practice.

Unless otherwise stated, no assessment has been made for the presence of radioactive substances or unexploded ordnance.

Where the phrase 'suitable for use' is used in this report, it is in keeping with the terminology used in planning control and does not imply any specific warranty or guarantee offered by Hydrock.

Please note that notwithstanding any site observations concerning the presence or otherwise of archaeological sites, asbestos-containing materials or invasive weeds, this report does not constitute a formal survey of these potential constraints and specialist advice should be sought.

Any site boundary line depicted on plans does not imply legal ownership of land.

8. RECOMMENDATIONS FOR FURTHER WORK

In order to confirm the actual risks to receptors and confirm the ground conditions with respect to potential geotechnical and geo-environmental risks, an appropriate intrusive investigation will need to be undertaken. This investigation will need to:

- determine the depth and distribution of Made Ground and natural strata (superficial and solid) across the site to create accurate ground models for preliminary geotechnical recommendations and conceptual site models in contamination assessment;
- determine preliminary assessments of the strength/density profile of soils and rock strata beneath the site;
- make preliminary assessments the rock material and rock mass characteristics beneath the site including weathering profiles;
- determine the depth/level of groundwater beneath the site;
- determine the ground gas concentrations beneath the site;
- determine appropriate parameters to assist with pavement design for roads and rail tracks;
- assess trench stability, over break potential and 'digability' with particular attention to rock excavation;
- allow infiltration rate testing in soil and rock;
- allow appropriate sampling for targeted and non-targeted chemical laboratory testing for contamination assessment and remediation design where appropriate;
- allow appropriate sampling for geotechnical laboratory testing to assist in obtaining suitable geotechnical parameters and characteristic values for design;
- allow soil classification to allow geotechnical characterisation and determine suitability for reuse of soils within earthworks; and
- obtain information in terms of Aggressive Chemical Environment for Concrete Class (ACEC Class).

Following investigation, assessment will be required to:

- update the Ground Model;
- update the Geotechnical Risk Register;
- provide outline Geotechnical Design recommendations;
- update the iCSM, including identification of plausible pollution linkages;
- undertake generic quantitative risk assessment of potential chemical contaminants to establish 'suitability for use' under the current planning regime;
- discuss potential environmental liabilities associated with land contamination (soil, water and gas); and
- provide outline preliminary mitigation recommendations to ensure the site is 'suitable for use'.

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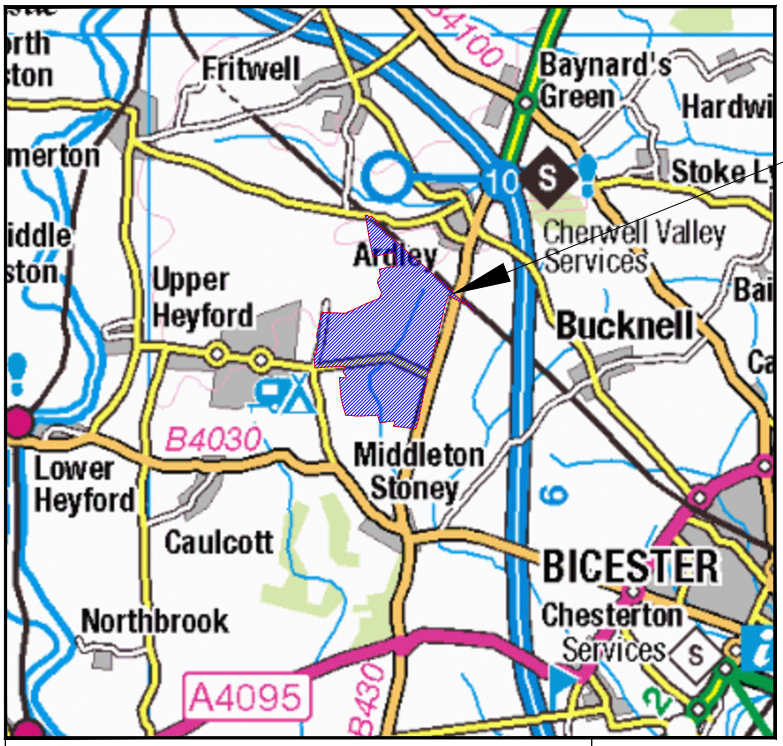
STONE, K., MURRAY, A., COOKE, S., FORAN, J. and GOODERHAM, L. 2009. Unexploded ordnance (UXO), a guide to the construction industry. CIRIA Report C681. Contaminated Land: Applications in Real Environments, London.

WATER UK HBF. January 2014. Contaminated Land Assessment Guidance. Water UK and the Home Builders Federation.

Appendix A

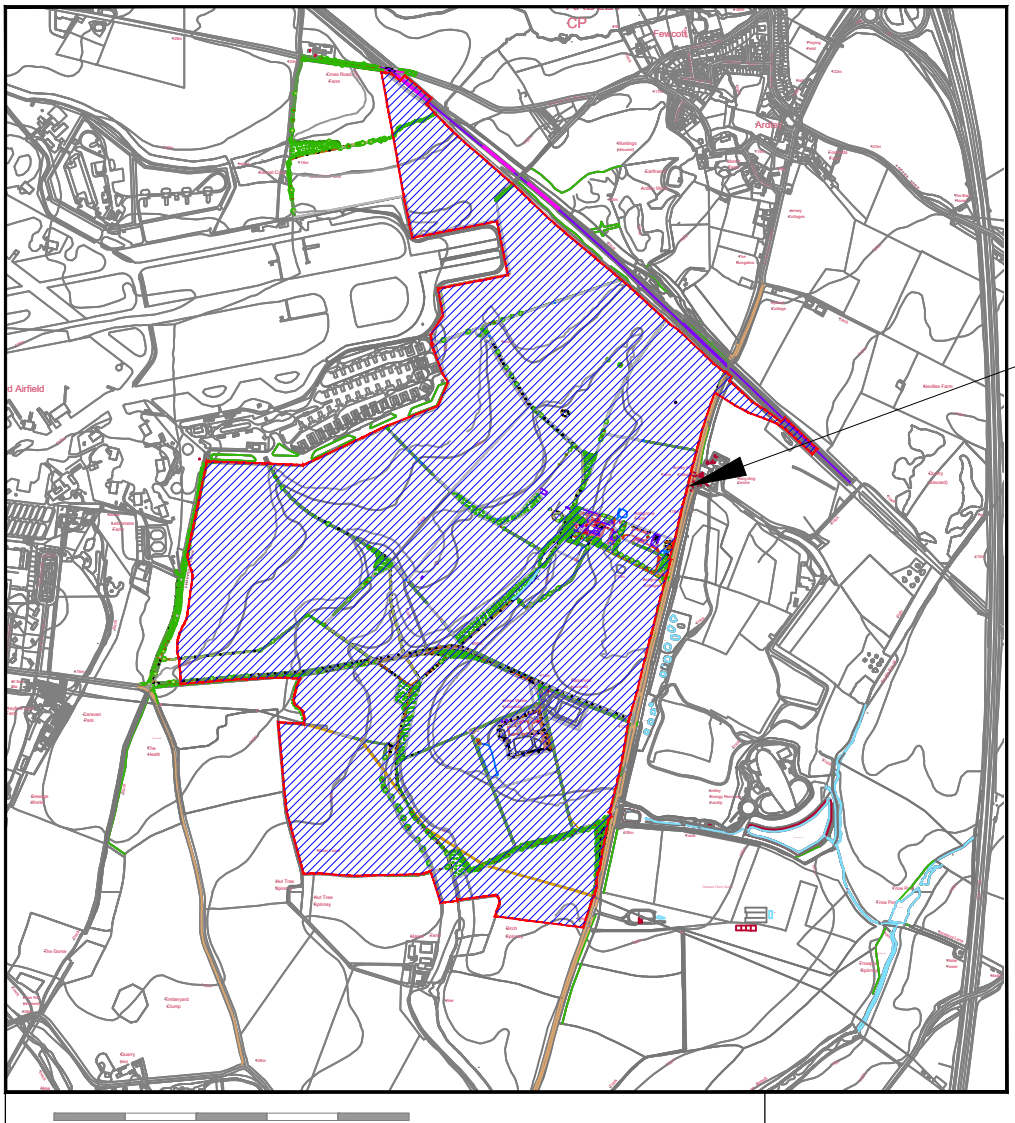
Drawings

OS NORTH



THE SITE





THE SITE

REV						
P02	SITE BOUNDARY UPDATED					
	SD	23/02/21	CD	23/02/21	AB	23/02/21
P01	FIRST ISSUE					
	SD	16/12/20	CA	16/12/20	AB	16/12/20
REV	REVISION NOTES/COMMENTS					
	DRAWN BY	DATE	CHECKED BY	DATE	APPROVED BY	DATE

Hydrock
Hawthorn Park
Holdenby Road
Spratton
Northampton NN6 8LD
TEL: 01604 842 888
E-Mail: northampton@hydrock.com
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CLIENT
Oxfordshire Railfreight Limited

PROJECT
Oxfordshire Strategic Railfreight, Ardley

TITLE
SITE LOCATION PLAN
(MAIN SITE)

HYDROCK PROJECT NO.	SCALE @ A4
C-15560-C	See Drawing

PURPOSE OF ISSUE	STATUS
SUITABLE FOR INFORMATION	S2

DRAWING NO. (PROJECT - ORIGINATOR-VOLUME-LEVEL-TYPE-ROLE-NUMBER)	REVISION
15560-HYD-XX-ZZ-DR-GE-1000	P02



N

Station Information:

Station	Easting (m)	Northing (m)	Level (m)
F1	453600.549	226253.804	112.009
F2	453817.113	226156.760	116.623
F3	453780.771	226086.120	116.402
GH1	453702.739	226125.952	115.784
GH2	453852.711	226051.687	116.501
GH3	453851.944	225877.853	115.911
GH4	453824.564	225725.330	114.739
GH5	453766.968	225562.831	113.396
GH7	453580.999	225635.090	114.154
GH8	453456.665	225696.578	114.124
GH9	453220.040	225803.893	108.935
GH10	453085.871	225790.902	108.407
GH11	452909.907	225765.733	109.558
GH12	452722.745	225726.455	113.894
GH13	452532.700	225715.600	117.469
GH14	452323.006	225692.407	119.453
GH15	452178.113	225687.244	120.476
GH16	452213.849	225777.565	121.961
GH17	452269.352	225913.271	121.691
GH18	452333.139	226060.555	118.473
GH19	452433.039	226315.277	114.454
GH20	452779.218	226451.899	122.513
GH21	452978.396	226515.217	121.842
GH22	453130.931	226601.384	121.842
GH23	453365.090	226715.964	117.140
GH24	453288.711	226834.069	119.547
GH25	453433.664	226603.981	115.504
GH26	453557.710	226492.761	113.358
GH27	453464.591	226323.072	113.841
GH28	453634.251	226235.216	113.481
GH29	453705.344	226211.771	115.750
GH30	453724.124	226182.456	116.272
GH2A	453889.174	226031.150	116.443
GH8A	453352.232	225744.817	113.337
SL1	453753.629	225404.051	111.595
SL2	453713.645	225269.858	109.849
SL3	453572.612	225211.894	109.162
SL4	453383.357	225156.452	108.829
SL5	453334.165	225444.389	106.442
SL6	453034.165	225444.389	106.442
SL7	453046.940	225571.094	105.958
SL8	453076.734	225697.219	106.311
SL2A	453671.194	225072.114	107.705

OS Note:

Some services may have been omitted due to parked vehicles.

Surveyed Buildings

This survey has been orientated to the Ordnance Survey (O.S) National Grid OSGB36(15) via Global Navigation Satellite Systems (GNSS) and the O.S. Active Network (OS Net).

A true OSGB36 coordinate has been established near to the site centre via a transformation using the OSTN15GB & OSGM15GB transformation models.

The survey has been correlated to this point and a further one or more OSGB36 (15) points established to create a true O.S. bearing for angle orientation.

No scale factor has been applied to the survey therefore the coordinates shown are arbitrary & not true O.S. Coordinates which have a scale factor applied.

Please refer to Survey Station Table to enable establishment of the on-site grid and datum.

Legend:

Buildings; Wall; Kerb line; Low marking; Edge of Road; Drop kerb; Centre line; Top of bank; Bottom of bank; Hedge; Fence types: Inner/woven; Iron Railings; Wire Mesh; Post & Rail; Post & Wire; Chain Link; Wooden Panels; Close Boarded; Steel Palisade; Overhead Cable; Concrete Path; Concrete edge; Tarmac edge; Grass verge; Canopy/Overhang; Slope; Station Level; Tree / Bush / Sapling; Area of Undergrowth; Woodland; Ridge Level; Eaves Level; Flat Roof Level; Gate

IC	Inspection chamber	Bo	Bollard		
PInv	Pipe invert	IR	Illuminated bollard		
Gy	Gully	Bin	Rubbish bin		
Rg	Back gully	Vp	Vent pipe		
Dp	Down pipe	Gri	Ground light		
Pipe	Pipe above ground	Lbox	Letter box		
MH	Manhole	Stmp	Tree Stump		
WL	Water level	Sy	Sink		
Fl	Flood light	IFL	Internal floor level		
Lp	Lamp post	Thrl.	Threshold level		
Tp	Telegraph post	Sp	Sign post		
Ep	Electricity post	TH	Trashale		
Tl	Traffic light	BH	Borehole		
Bst	Bus stop	ELC	Electric		
Sv	Stop valve	BT	British Telecom		
St	Stop tap	CTelc	Control box		
Er	Earth rod	TT	Tactile		
Wm	Water meter	BP	Brick paved		
Gav	Gas valve	CPS	Concrete paving slabs		
Av	Air valve	CVR	Cover		
ICU	Unidentified inspection	Rwall	Retaining wall		
Ws	Wash out	TWL	Top of Wall Level		
Re	Rodding eye	TCL	Tree canopy level		
BB	Belisha beacon	G	Girth		
CTV	Cable tv	MG	Multi girth		
Mkr	Marker post	IC	Inspection chamber		
Gmkr	Gas marker post	CL	Cover level		
So	Soffit	IL	Invert level		
Fh	Fire hydrant	UTL	Unable to lift		

Rev	Date	Description	Drawn	Ch. Ref.
2	14.09.20	See note	TC	GH8471
1	03.06.20	OS mapping added	LM	GH7506

greenhatch group

Topographical Surveys; Site Engineering; Utility / CCTV Surveys; Measured Building Surveys; 3D Laser Scanning; Revit & BIM Models

Rowan House
Duffield Road
Little Eaton
Derby
DE21 5DR
Tel (01332) 830044 Fax (01332) 830055
admin@greenhatch-group.co.uk
www.greenhatch-group.co.uk

St Albans: Unit 8, The Courtyard, Alben Park, St Albans, Hertfordshire, AL4 0LA, t. (01727) 854481
Newcastle: 24 Riverside Studios, Amethyst Road, Newcastle Bus. Park, Newcastle-U-Tyne, NE4 7YL, t. (01912) 736391
London: 27, Cornwall Terrace Mews, Regents Park, London, NW1 5LL, t. (02072) 241806

CLIENT
FPCR
Environment and Design LLP

PROJECT
Ardley
Bicester
OX27 7PJ

TITLE
Topographical Survey

SCALE	DATE
A1@ 1: 5000	May 2020
DRAWN	QUALITY REF
TS	GH7506

Level datum	See note
Grid orientation	See note
Job number	36646
Drawing No.	Rev.
36646_T	2

Comments
This plan should only be used for its original purpose. Greenhatch Group accepts no responsibility for this plan if supplied to any party other than the original client.

All dimensions should be checked on site prior to design and construction.

Drainage information (where applicable) has been visually inspected from the surface and therefore should be treated as approximate only.

Notes:

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Ardley Road
Somerton Road
Ardley
J10
Ardley Wood
Railway Line
Station Road
Upper Heyford Airfield (disused)
Intermodal Rail Terminal
M40
Retained planting and buildings at Ashgrove Farm
Heyford Park
Chilgrove Drive
Camp Road
Duvall Park Homes
Lorry Park
Ardley Quarry
Existing Reservoir (underground)
Relocated Waste Recycling Facility
Viridor Ardley Energy Recovery Facility
Birch Spinney
Manor Farm
B430
Middleton Stoney
B4030

Scale: 1:5000 @ A1

0 100 200 300 400 500m

- Existing Trees / Woodland
- Existing Hedgrows / Other Planting
- Grassland / Open Space (Existing and Proposed)
- Existing Ponds / Water Features (including off-site)
- Existing Public Right of Way
- Proposed Footways / Redirected PROW and / or Cycleways (Off Road)
- Proposed Woodland / Structural Planting / Scrub
- Proposed / Translocated Hedgerows
- Proposed Ponds / Wetlands / Drainage Features
- Proposed Individual / Hedgerow Trees / Small Tree Groups

N

K:\8300\8308\LANDS\PLANS\8308-L-23 ILLUSTRATIVE LANDSCAPE MASTERPLAN ALTERNATIVE HIGHWAYS.indd

Cuvette Property Consulting
Oxfordshire SRFI
Oxfordshire

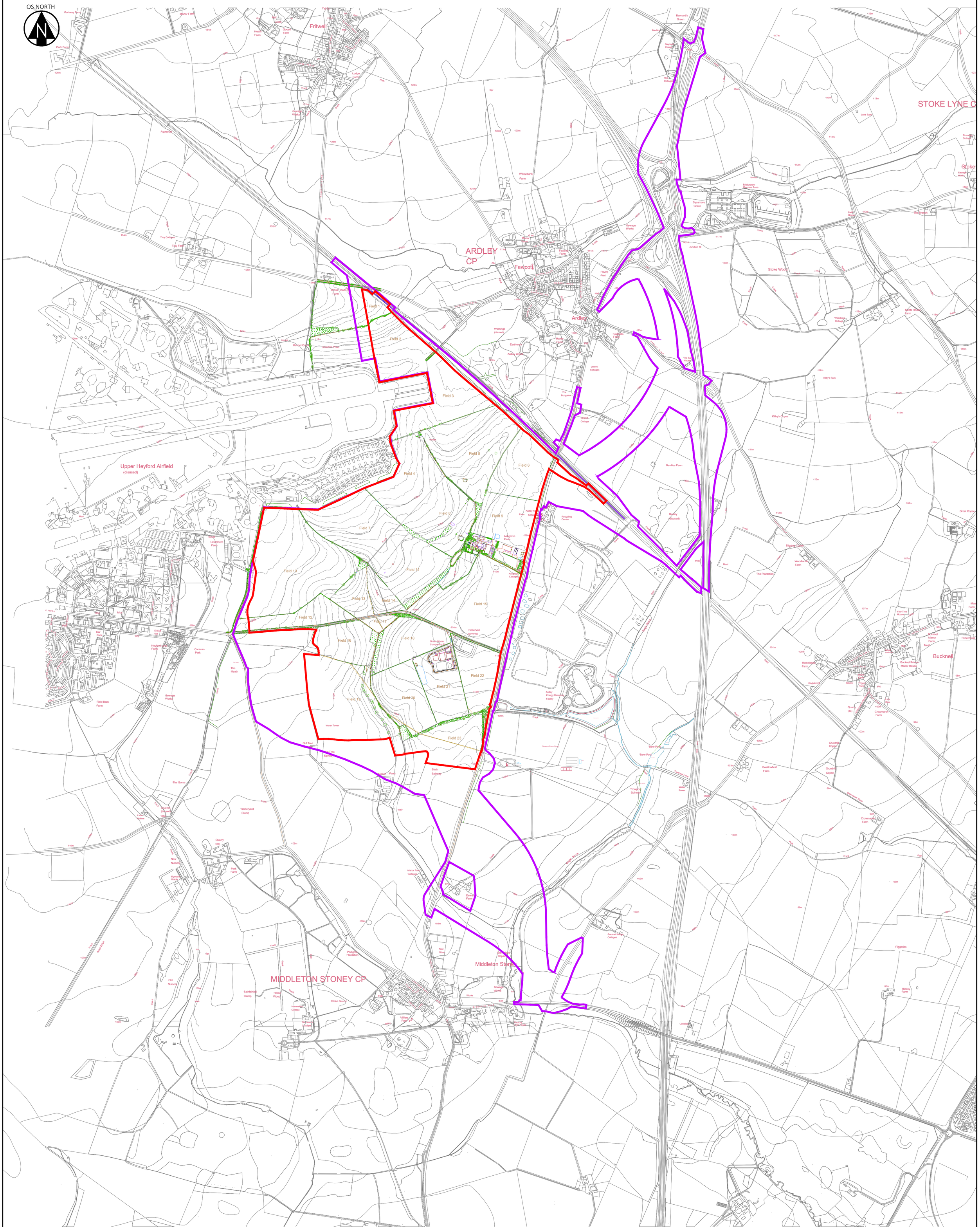
ILLUSTRATIVE LANDSCAPE MASTERPLAN (ALTERNATIVE HIGHWAYS)

1:5000 @ A1
09.02.2021 CMW/TMJ
8308-L-23 rev -

masterplanning
environmental assessment
landscape design
urban design
ecology
architecture
arboriculture

FPCR Environment and Design Ltd
Lockington Hall
Lockington
Derby DE74 2RH

t: 01509 672772
f: 01509 674565
e: mail@fpcr.co.uk
w: www.fpcr.co.uk


OS NORTH
Fritwell
ARDLEY CP
Fewcott
Ardley
STOKE LYNE C
Stoke Wood
Bucknell
Upper Heyford Airfield
(disused)
MIDDLETON STONEY CP
Middleton Stoney
Field 1
Field 2
Field 3
Field 4
Field 5
Field 6
Field 7
Field 8
Field 9
Field 10
Field 11
Field 12
Field 13
Field 14
Field 15
Field 16
Field 17
Field 18
Field 19
Field 20
Field 21
Field 22
Field 23
Motorway Service Area
Junction 10
Ardley Energy Recovery Facility
Recycling Centre
Quarry (disused)
Trow Pool
Trow Pool
Trowpool Spinney
Dewars Farm Quarry
Reservoir (covered)
Water Tower
Sewage Works
Caravan Park
Park Farm
Manor Farm
Lodge Farm
Willowbank Farm
Fewcott Farm
Ashgrove Farm
Neville's Farm
Woodlands Farm
Bucknell Manor Farm
Swallowfield Farm
Grunthill Copse
Crowmarsh Farm
Hinkley Farm
Dewar Farm
Birch Spinney
Timberyard Clump
Rainsborough Clump
Home Wood
Pedigree Plantation
Aqueduct
Sewage Works
Cricket Ground
Piggeries
Diggins Copse
Kilby's Copse
Kilby's Barn
The Plantation
Great Copse
Linkslade
Gagleknowe
Homelands Farm
Bucknell Manor House
Yew Tree House
Pump House
Lone Barn
The Branch
Baynard's Green
Baynard's House
Gycamore Grove
Stoke Hollow Farm
Woodside Cottages
Jersey Cottages
Ashgrove Cottages
Bucknell Lodge Cottages
Manor Farm Cottages
Villiers Park
Cottesmore Cottages
Heyford Park Free School
Heyford Park Primary School
Heyford Park Nursery
Heyford Park Sports Hall
Heyford Park Sports Pitches
Heyford Park Sports Pavilion
Heyford Park Sports Pitches
Heyford Park Sports Pitches
Heyford Park Sports Pitches

OS NORTH

ARDLEY CP

Field 1
Field 2
Field 3
Field 4
Field 5
Field 6
Field 7
Field 8
Field 9
Field 10
Field 11
Field 12
Field 13
Field 14
Field 15
Field 16
Field 17
Field 18
Field 19
Field 20
Field 21
Field 22
Field 23

Somerton Road
Somerton Road
Camp Road
Camp Road
Chilgrove Drive
B430
B430
B430

London to Birmingham Mainline Railway
London to Birmingham Mainline Railway

Ashgrove Farm
Ardley Fields Household Waste Rectycling Centre
Severn Trent covered reservoir
Severn Trent Green Power Ardley Composting Facility
Viridor Ardley Energy Recovery Facility Incineration Plant

Fewcott
Fewcott Farm
Ardley
Cross Roads Farm
Kennel Corner
Crowfoot Pond
Issues
Workings (disused)
Earthwork
Ardley Wood
Manor Farm
Foxfields Farm
Jersey Cottages
The Bungalow
Playing Field
Hall
Upland Cottage
Nevilles Farm
Quarry (disused)
Ashgrove Farm
Ashgrove Cottages
Ardley Fields Farm Cottages
Recycling Centre
Letchmere Farm
The Heath
Water Tower
Nut Tree Spinney
Nut Tree Spinney
Manor Farm
Birch Spinney
Weir
Timberyard Clump
Quarry (dis)
Reservoir (covered)
Green Waste Composting Plant
Ardley Energy Recovery Facility
Dewars Farm Quarry
Trow Pool
Trow Pool
Trowpool Spinney
Water Tower
Trowpool Lane
Gagle Brook
Gagle Brook

FAIR WELL ROAD
WATER LANE
PADDOCK END
ORCHARD RD
RUSSET ROAD
ARDLEY ROAD
CASTLE RD
SOMERTON ROAD
PINHAY ROAD
STATION ROAD
ARDLEY ROAD
CHILGROVE DRIVE

Track
Drain
Path
Issues
Pond

KEY

Main site boundary

NOTES

1. All dimensions are to be checked on site before the commencement of works. Any discrepancies are to be reported to the Architect & Engineer for verification. Figured dimensions only are to be taken from this drawing.

2. This drawing is to be read in conjunction with all relevant Engineers' and Service Engineers' drawings and specifications.

3. This drawing has been based on the following drawings and information: Greenhatch Group drawing number: 36646_T Rev 2 dated: May 2020

REV.						
P02	SITE BOUNDARY UPDATED					
	SD	23/02/21	CD	23/02/21	AB	23/02/21
P01	FIRST ISSUE					
	SD	16/12/20	CA	16/12/20	AB	16/12/20
	REVISION NOTES/COMMENTS					
	DRAWN BY	DATE	CHECKED BY	DATE	APPROVED BY	DATE

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Hawthorn Park
Holdenby Road
Spratton
Northampton NN6 8LD
TEL: 01604 842 888
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CLIENT

Oxfordshire Railfreight Limited

PROJECT

Oxfordshire Strategic Railfreight, Ardley

TITLE

Field Zonation Plan

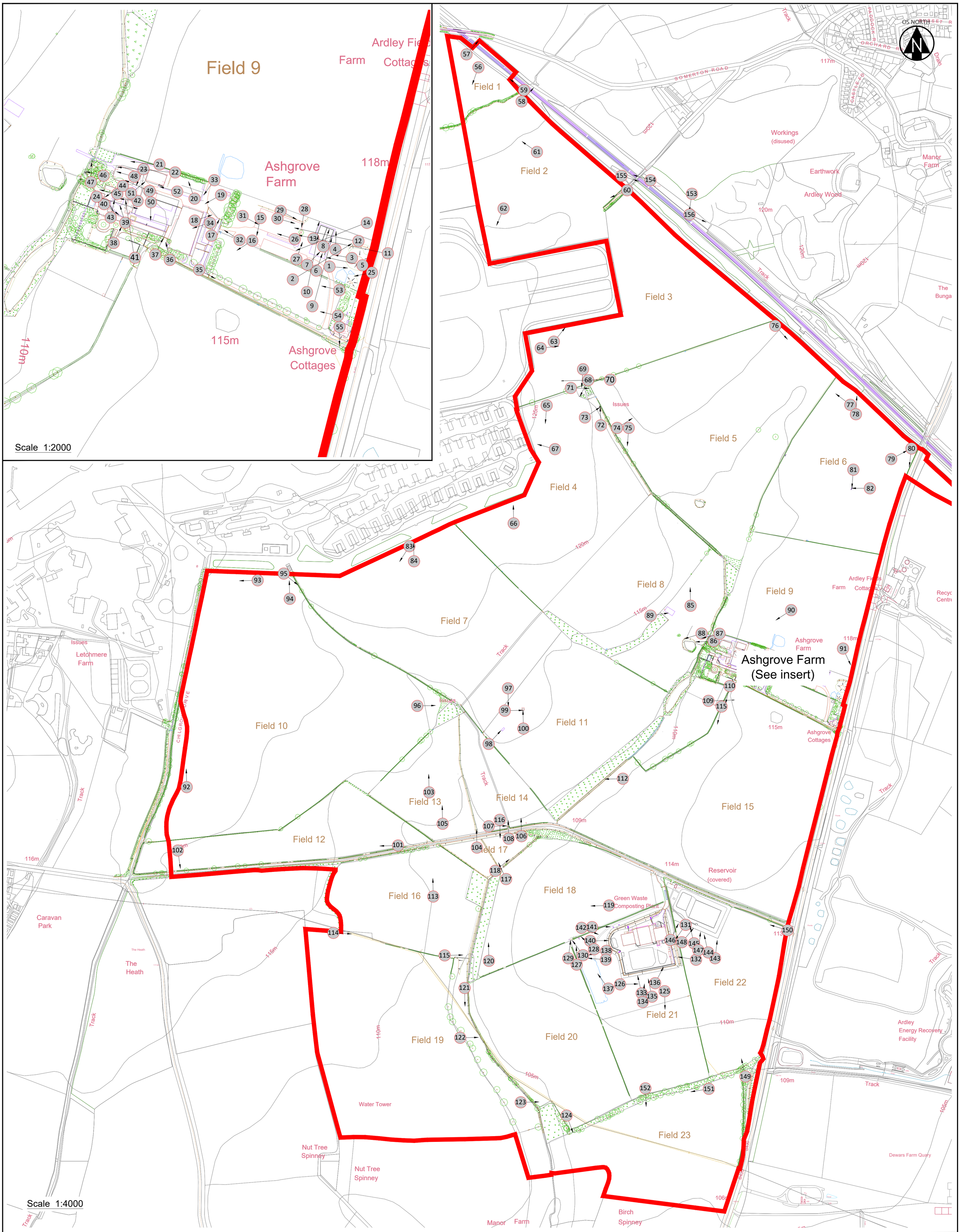
HYDROCK PROJECT NO.	SCALE @ A1
C-15560-C	1:5000

PURPOSE OF ISSUE	STATUS
SUITABLE FOR INFORMATION	S2

DRAWING NO. (PROJECT CODE-ORGINATOR-ZONE-LEVEL-TYPE-ROLE-NUMBER)

15560-HYD-MS-ZZ-DR-GE-1001

REVISION P02



KEY

- Main site boundary
- ## Photograph location number and orientation

NOTES

1. All dimensions are to be checked on site before the commencement of works. Any discrepancies are to be reported to the Architect & Engineer for verification. Figured dimensions only are to be taken from this drawing.
2. This drawing is to be read in conjunction with all relevant Engineers' and Service Engineers' drawings and specifications.
3. This drawing has been based on the following drawings and information: Greenhatch Group drawing number: 36646_T Rev 2 dated: May 2020

REV.	REVISION NOTES/COMMENTS	DRAWN BY	DATE	CHECKED BY	DATE	APPROVED BY	DATE
P01	FIRST ISSUE	SD	22/03/21	CD	22/03/21	AB	22/03/21

Hydrock
Hawthorn Park
Holdenby Road
Spratton
Northampton NN6 8LD
TEL: 01604 842 888
E-Mail: northampton@hydrock.com
or visit www.hydrock.com

CLIENT: Oxfordshire Railfreight Limited

PROJECT: Oxfordshire Strategic Railfreight, Ardley

TITLE: Walkover Photograph Locations Plan

HYDROCK PROJECT NO.	SCALE @ A1
C-15560-C	1:4000

PURPOSE OF ISSUE	STATUS
SUITABLE FOR INFORMATION	S2

DRAWING NO. (PROJECT CODE-ORGINATOR-ZONE-LEVEL-TYPE-ROLE-NUMBER)	REVISION
15560-HYD-MS-ZZ-DR-GE-1008	P01

OS NORTH

Historical area of rubble containing asbestos fragments
Deep grain hoppers
Garage/ workshop
Evidence of burning
Former fuel tank
Former fuel tank
Fuel tanks
Demolished grain silos
Slab only remains
Stack of IBC's
Contains tractors, JCB & vans
Piles of general building materials & macadam
Manhole covers
Ashgrove Farm
118m
IBC's & general building materials
Ammonia tank
Former underground fuel tank
Concrete rubble containing fragments of asbestos cement
Tank
Listed barn
Private house & garden
Shed used as hay store
Stack of tyres
Pig-stys
Stockpile of topsoil
Chemical containers & oil store
Shed (containing tractors) with asbestos cement roof
Sheep in field
Empty IBC
Historical borehole
Stockpile of rubble with macadam, metal & plastic
Historical borehole
Temporary caravan & stack of washing machines
Shed used as scaffolding store
Drums and chemical containers
110m
115m
Ashgrove Cottages
Area of broken up hardstanding/crushed materials
Contains barrels of chemicals
Oil/fuel drum
Houses adjacent to site entrance
Oil drum & in-situ manhole covers
Substation & tanks
Scale 1:2000

Road
Area of clay pigeon shooting traps
Field 1
Railway line
Barrel - for burning
Culvert for drainage ditch under railway
Field 2
Area of trees/woodland
Access track
Kennel Corse
Crowfoot Pond
Area of fly tipping
Ardley Cutting & Quarry (SSSI)
No access into northern fields
Top of railway cutting approximately 5m from site boundary
Airfield tracks/infrastructure
Field 3
Former RAF Airfield
Pedestrian gate
Railway line
Sporadic Made Ground materials mixed into topsoil
Concrete drainage structure
Area of general surface rubbish
Bridge
Made Ground materials mixed into topsoil accross field; plastic, metal, paper, cardboard etc.
Pedestrian gate
Old boiler
Culvert with 2 pipes
Field 5
Historical borehole & manhole
Outfall from airfield into drainage ditch
Disused Airfield structures
Field 4
Field 6
Group of Historical boreholes concreted in place
Pond
Surface rubbish
Fenceline for airfield
Pond (sheen on surface)
Cows in field
Field 9
Sheep in field
Concrete slab
Field 8
Cropped field
Field 7
Land drains
Recycling Centre
Ashgrove Farm
Historical borehole
Ashgrove Farm (See insert)
Brick walls of former structure
Pond
Cows & sheep
Field 11
Concrete base of former structure
Cows & sheep
Houses adjacent to site entrance
Shed
Cropped field
Field 10
Area of grass/vegetation
Main entrance to Ashcroft Farm
Overhead lines near road
Area of broken up hardstanding
Field 13
Field 14
Cows in field
Field 15
Cropped field
Substation & tanks
Gate closed with barbed wire fence
Fly tipping
Culvert/pipe
Cropped field
Field 12
Field 17
Culvert/drain crossings
Multiple Thames Water covers
Reservoir (covered)
Barbed wire fence across access
Wooded area
Fly tipping
Field 16
Field 18
Green Waste Composting Plant
Housing advert sign
Wooded area
Severn Trent covered reservoir
Overhead lines
Grassed over mound
Field 22
Service marker post : water
Stockpiles of pig waste
Severn Trent land, structures & bio fuel storage (pig waste)
Field 21
Evidence of rough sleepers
Field 19
Field 20
Area stripped of topsoil (recorded as compost piles on survey)
Water Tower
Field 23
Nut Tree Spinney
Stripped area of topsoil mounded with organic matter (likely pig waste) Made Ground constituents: plastic, metal, fabric etc
Wooded area
Overhead lines
Ardley Trackways (Dewars Farm (SSSI)
Scale 1:5000

KEY

- Main site boundary
- SSSI Areas
- Access/gates
- Streams/drainage/ditch/pond
- Direction of flow (where noted)
- Historic Borehole

NOTES

1. All dimensions are to be checked on site before the commencement of works. Any discrepancies are to be reported to the Architect & Engineer for verification. Figured dimensions only are to be taken from this drawing.
2. This drawing is to be read in conjunction with all relevant Engineers' and Service Engineers' drawings and specifications.
3. This drawing has been based on the following drawings and information: Greenhatch Group drawing number: 36646_T Rev 2 dated: May 2020

REV.						
P02	TEXT AND BOUNDARIES AMENDED & INSERT ADDED					
	SD	23/02/21	CD	23/02/21	AB	23/02/21
P01	FIRST ISSUE					
	SD	17/12/20	CA	17/12/20	AB	17/12/20
	REVISION NOTES/COMMENTS					
	DRAWN BY	DATE	CHECKED BY	DATE	APPROVED BY	DATE

Hydrock
Hawthorn Park
Holdenby Road
Spratton
Northampton NN6 8LD
TEL: 01604 842 888
E-Mail: northampton@hydrock.com
or visit www.hydrock.com

CLIENT: Oxfordshire Railfreight Limited

PROJECT: Oxfordshire Strategic Railfreight, Ardley

TITLE: Site Walkover Plan

HYDROCK PROJECT NO.: C-15560-C

SCALE @ A1: As shown

PURPOSE OF ISSUE: SUITABLE FOR INFORMATION

STATUS: S2

DRAWING NO. (PROJECT CODE-ORGINATOR-ZONE-LEVEL-TYPE-ROLE-NUMBER): 15560-HYD-MS-ZZ-DR-GE-1003

REVISION: P02

OS NORTH

Historical area of rubble containing asbestos fragments
Evidence of burning
Deep grain hoppers
Garage/ workshop
Former fuel tank
Demolished grain silos
Slab only remains
Former fuel tank
Stack of IBC's
Fuel tanks
Contains tractors, JCB & vans
Manhole covers
Former underground fuel tank
Tank
Private house & garden
Historical borehole
Chemical containers & oil store
Listed barn
Pigstys
Shed (containing tractors) with asbestos cement roof
Historical borehole
Shed
Temporary caravan & stack of washing machines
Shed used as scaffolding store
Contains barrels of chemicals
Oil/fuel drum
Oil drum & in-situ manhole covers
Sheep in field
Ammonia tank
Piles of general building materials & macadam
IBC's & general building materials
Historical borehole
Concrete rubble containing fragments of asbestos cement
Shed used as hay store
Stack of tyres
Stockpile of topsoil
Empty IBC
Stockpile of rubble with macadam, metal & plastic
Drums and chemical containers
Area of broken up hardstanding/crushed materials
Houses adjacent to site entrance
Main entrance to Ashcroft Farm
Substation & tanks

Farm
Cottages
Ashgrove Farm
Ashgrove Cottages
Ardley Fields
Farm Cottages
118m
117.9m
115m
110m
Track

KEY

NOTES

1. All dimensions are to be checked on site before the commencement of works. Any discrepancies are to be reported to the Architect & Engineer for verification. Figured dimensions only are to be taken from this drawing.

2. This drawing is to be read in conjunction with all relevant Engineers' and Service Engineers' drawings and specifications.

3. This drawing has been based on the following drawings and information: Greenhatch Group drawing number: 36646_T Rev 2 dated: ay 2020.

REV.						
P01	FIRST ISSUE					
	SD	15/03/21	CA	15/03/21	AB	15/03/21
	REVISION NOTES/COMMENTS					
	DRAWN BY	DATE	CHECKED BY	DATE	APPROVED BY	DATE

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Hawthorn Park
Holdenby Road
Spratton
Northampton NN6 8LD
TEL: 01604 842 888
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CLIENT
Oxfordshire Railfreight Limited

PROJECT
Oxfordshire Strategic Railfreight, Ardley

TITLE
Ashgrove Farm Detail

HYDROCK PROJECT NO.	SCALE @ A2
C-15560-C	1:1250

PURPOSE OF ISSUE	STATUS
SUITABLE FOR INFORMATION	S2

DRAWING NO. (PROJECT CODE-ORGINATOR-ZONE-LEVEL-TYPE-ROLE-NUMBER)	REVISION
15560-HYD-XX-ZZ-DR-GE-1006	P01

OS NORTH

Old quarry pre 1880-1992

Cross Roads Farm

Area of clay pigeon shooting/traps

Drainage ditch / stream

Field 1

Railway line

Somerton Road

Road

Barrel - for burning

Access track

Kennel Copse

Crowfoot Pond

Area of fly tipping

Area of trees/woodland

Culvert for drainage ditch / stream under railway

Field 2

Hitorical Road (pre 1880-1980)

No access into northern fields

Top of railway cutting approximately 5m from site boundary

London to Birmingham Mainline Railway

Ardley Cutting & Quarry (SSSI)

Old quarry pre 1930-2001

Airfield tracks/infrastructure

Field 3

Former RAF Upper Heyford Airfield

Sporadic Made Ground materials mixed into topsoil

Tanks 1980-present

Concrete drainage structure

Made Ground materials mixed into topsoil accross field; plastic, metal, paper, cardboard etc.

Field 5

Outfall 2

Old boiler

Culvert with 2 pipes

Outfall (1) from airfield into drainage ditch

Disused Airfield structures

Tank

Field 4

Pond. Historical Spring

Fenceline for airfield

Old quarry pre 1898-1980

Well pre 1880-1954

Tank POL

Tank POL

Tanks / POL

Chilgrove Drive

Pond (sheen on surface)

Cows in field

Concrete slab

Field 8

Cropped field

Field 7

Land drains

Spring

Brick walls of former structure

Scotland Barn pre 1875-1980

Spring 1919-1980

Pond

Cows & sheep

Field 11

Concrete base of former structure

Cows & sheep

Shed

Cropped field

Field 10

Area of grass/vegetation

Area of broken up hardstanding

Overhead lines near road

Caravan Park 1980-2001

Gate closed with barbed wire fence

Field 13

Field 14

Cows in field

Unnamed stream

Field 15

Cropped field

Culvert/pipe

Fly tipping

Fly tipping

Cropped field

Field 12

Field 17

Camp Road

Old quarry pre 1875-1980

The Heath

Wooded area

Culvert/drain crossings

Multiple Thames Water covers

Field 16

Field 18

Green Waste Composting Plant

Wooded area

Severn Trent Green Power Ardley Composting Facility

Housing advert sign

The Heath

Overhead lines

Grassed over mound

Stockpiles of pig waste

Field 22

Service marker post : water

Field 19

Field 20

Field 21

Evidence of rough sleepers

Area stripped of topsoil (recorded as compost piles on survey)

Water Tower 1980-present

Water Tower

Stripped area of topsoil mounded with organic matter (likely pig waste) Made Ground constituents: plastic, metal, fabric etc

Nut Tree Spinney

Well pre 1875-1980

Wooded area

Field 23

Overhead lines

Birch Spinney

Maper Farm

Scale 1:5000

Historical area of rubble containing asbestos fragments

Deep grain hoppers

Garage/ workshop

Evidence of burning

Demolished grain silos

Slab only remains

Former fuel tank

Former fuel tank

Stack of IBC's

Fuel tanks

Contains tractors, JCB & vans

Piles of general building materials & macadam

Manhole covers

Former underground fuel tank

Ashgrove Farm

118m

Ammonia tank

IBC's & general building materials

Tank

Concrete rubble containing fragments of asbestos cement

Private house & garden

Shed used as hay store

Stack of tyres

Listed barn

Stockpile of topsoil

Chemical containers & oil store

Shed (containing tractors) with asbestos cement roof

Sheep in field

Empty IBC

Historical borehole

Stockpile of rubble with macadam, metal & plastic

Pig-sties

Historical borehole

Drums and chemical containers

Temporary caravan & stack of washing machines

Shed used as scaffolding store

110m

115m

Area of broken up hardstanding/crushed materials

Oil/fuel drum

Ashgrove Cottages

Contains barrels of chemicals

Houses adjacent to site entrance

Oil drum & in-situ manhole covers

Substation & tanks

Scale 1:2000

Manor Farm

Well pre 1880-1898

Foxfields Farm

Jersey Cottages

The Barn House

Well pre 1880-1898

The Bungalow

Pedestrian gate

Railway line

Upland Cottage

Area of general surface rubbish

Bridge

Pedestrian gate

Historical borehole & manhole

Group of Historical boreholes concreted in place

Nevilles Farm

Surface rubbish

Well pre 1898-1965

Sheep in field

Field 9

Quarry 1980-2001

Ardley Trackways (Ardley North) SSSI

Quarry (disused)

Ardley Fields Farm

Ardley Fields Household Waste Recycling Centre

Recycling Centre

Ashgrove Farm

Ashgrove Farm (See insert)

Historical borehole

Well pre 1875-1980

Old quarry pre 1898-2001

Houses adjacent to site entrance

Main entrance to Ashcroft Farm

Substation & tanks

B430

Reservoir (covered)

Barbed wire fence across access

Severn Trent covered reservoir

Severn Trent land, structures & bio fuel storage (pig waste)

Viridor Ardley Energy Recovery Facility Incineration Plant

Ardley Trackways (Dewars Farm) SSSI

Trow Pool

Trowpool Lane

Gagle Brook

KEY

- Main site boundary
- SSSI Areas
- Access/gates
- Streams/drainage/ditch/pond
- Direction of flow (where noted)
- Historic Borehole
- Landfill Areas

NOTES

1. All dimensions are to be checked on site before the commencement of works. Any discrepancies are to be reported to the Architect & Engineer for verification. Figured dimensions only are to be taken from this drawing.
2. This drawing is to be read in conjunction with all relevant Engineers' and Service Engineers' drawings and specifications.
3. This drawing has been based on the following drawings and information: Greenhatch Group drawing number: 36646_T Rev 2 dated: May 2020

REV.	REVISION NOTES/COMMENTS	DRAWN BY	DATE	CHECKED BY	DATE	APPROVED BY	DATE
P01	FIRST ISSUE	SD	10/03/21	CA	10/03/21	AB	10/03/21

Hydrock
Hawthorn Park
Holdenby Road
Spratton
Northampton NN6 8LD
TEL: 01604 842 888
E-Mail: northampton@hydrock.com
or visit www.hydrock.com

CLIENT: Oxfordshire Railfreight Limited

PROJECT: Oxfordshire Strategic Railfreight, Ardley

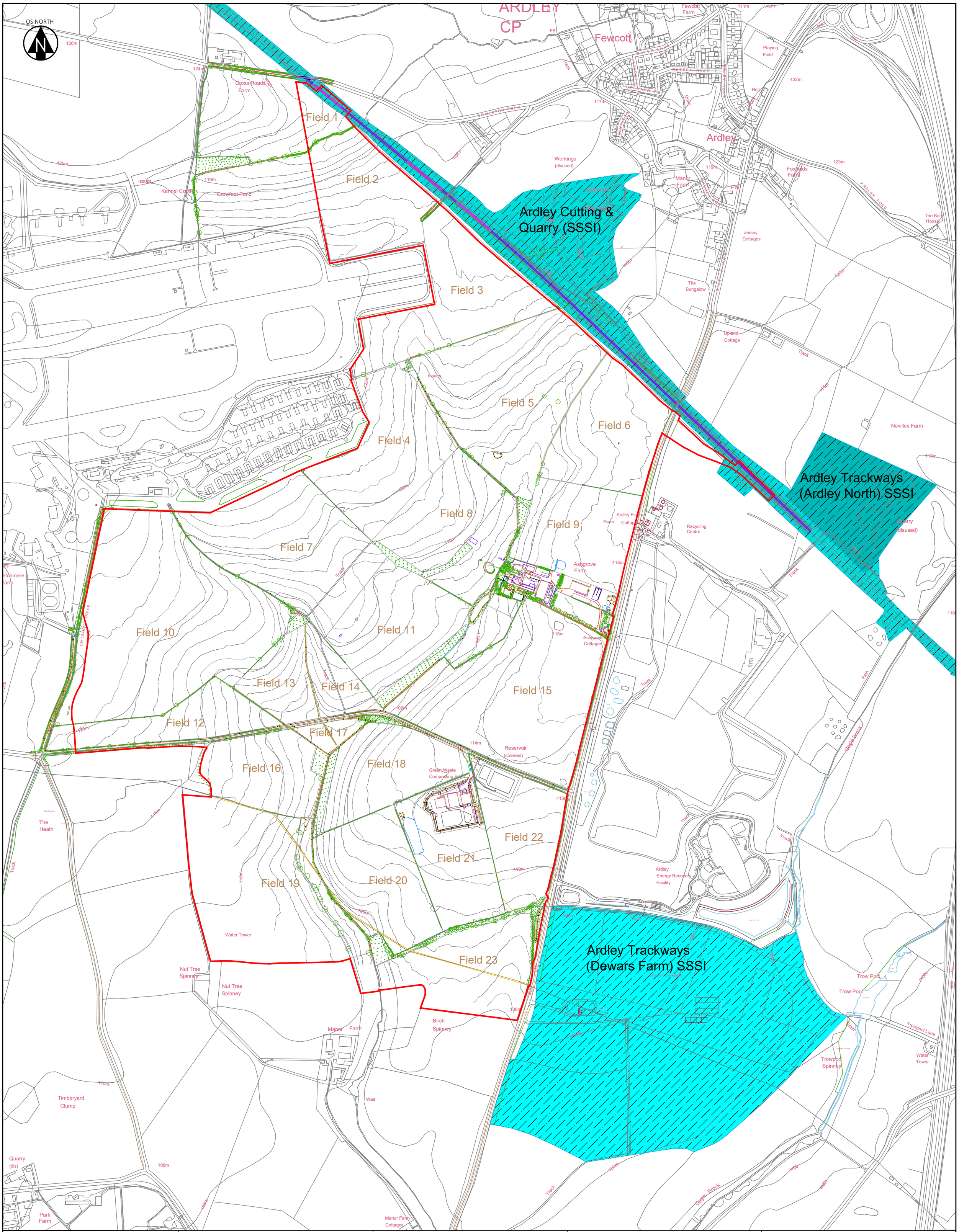
TITLE: Site Features Plan

HYDROCK PROJECT NO.	SCALE @ A1
C-15560-C	As shown

PURPOSE OF ISSUE	STATUS
SUITABLE FOR INFORMATION	S2

DRAWING NO. (PROJECT CODE-ORGINATOR-ZONE-LEVEL-TYPE-ROLE-NUMBER): 15560-HYD-MS-ZZ-DR-GE-1005

REVISION: P01



KEY

Main site boundary

SSSI Areas

NOTES

1. All dimensions are to be checked on site before the commencement of works. Any discrepancies are to be reported to the Architect & Engineer for verification. Figured dimensions only are to be taken from this drawing.

2. This drawing is to be read in conjunction with all relevant Engineers' and Service Engineers' drawings and specifications.

3. This drawing has been based on the following drawings and information: Greenhatch Group drawing number: 36646_T Rev 2 dated: May 2020

P02	SITE BOUNDARIES UPDATED					
	SD	23/03/21	CD	23/03/21	AB	23/03/21
P01	FIRST ISSUE					
	SD	17/12/20	CA	17/12/20	AB	17/12/20
REV.	REVISION NOTES/COMMENTS					
	DRAWN BY	DATE	CHECKED BY	DATE	APPROVED BY	DATE

Hydrock
Hawthorn Park
Holdenby Road
Spratton
Northampton NN6 8LD
TEL: 01604 842 888
E-Mail: northampton@hydrock.com
or visit www.hydrock.com

CLIENT

Oxfordshire Railfreight Limited

PROJECT

Oxfordshire Strategic Railfreight, Ardley

TITLE

Sites of Special Scientific Interest Plan

HYDROCK PROJECT NO.	SCALE @ A1
C-15560-C	1:5000

PURPOSE OF ISSUE	STATUS
SUITABLE FOR INFORMATION	S2

DRAWING NO. (PROJECT CODE-ORGINATOR-ZONE-LEVEL-TYPE-ROLE-NUMBER)
15560-HYD-MS-ZZ-DR-GE-1002

REVISION
P02

Appendix B

Field Reconnaissance Photographs

Desk Study Photograph 1	
Date: 30/11/20	
Direction Photograph Taken: Looking east from the east of Ashgrove Farm	
Description: Plastic IBC and topsoil stockpiles in the east of Ashgrove Farm	

Desk Study Photograph 2	
Date: 30/11/20	
Direction Photograph Taken: n/a	
Description: Topsoil stockpiles in the east of Ashgrove Farm	

Desk Study Photograph 3	
Date: 30/11/20	
Direction Photograph Taken: Looking west from the eastern end of Ashgrove Farm	
Description: Storage area, tyres and farm barns	

Desk Study Photograph 4	
Date: 30/11/20	
Direction Photograph Taken: Looking north west from the east of Ashgrove Farm	
Description: Mound of tyres and a trailer	

Desk Study Photograph 5	
Date: 30/11/20	
Direction Photograph Taken: Facing west from the east of the farmyard	
Description: Oil drum in the east of the farmyard	

Desk Study Photograph 6	
Date: 30/11/20	
Direction Photograph Taken: Facing north in the eastern end of the farmyard	
Description: Storage area in the farmyard	

Desk Study Photograph 7	
Date: 30/11/20	
Direction Photograph Taken: Facing north in the storage area of the farmyard	
Description: Farmyard storage area containing general construction materials	

Desk Study Photograph 8	
Date: 30/11/20	
Direction Photograph Taken: Facing north in the farmyard storage area	
Description: Demolition rubble	

Desk Study Photograph 9	
Date: 30/11/20	
Direction Photograph Taken: n/a	
Description: Potential asbestos cement fragments in the demolition material stockpile	

Desk Study Photograph 10	
Date: 30/11/20	
Direction Photograph Taken: Looking north in the storage area in the farmyard	
Description: Materials and IBCs	

Desk Study Photograph 11	
Date: 30/11/20	
Direction Photograph Taken: Facing west in the east of the farmyard	
Description: Tank storing Anhydrous Ammonia	

Desk Study Photograph 12	
Date: 30/11/20	
Direction Photograph Taken: Facing west in the east of the farmyard	
Description: Tank storing Anhydrous Ammonia	

Desk Study Photograph 13	
Date: 30/11/20	
Direction Photograph Taken: Facing north in the east of the farmyard	
Description: Stockpile of macadam	

Desk Study Photograph 14	
Date: 30/11/20	
Direction Photograph Taken: Facing south in the east of the farmyard	
Description: Metal chemical container	

Desk Study Photograph 15	
Date: 30/11/20	
Direction Photograph Taken: Facing south in the central east of the farmyard	
Description: Tyres, metal and plastic containers and a generator	

Desk Study Photograph 16	
Date: 30/11/20	
Direction Photograph Taken: Facing south west in the central east of the farmyard	
Description: Static caravan and washing machines	

Desk Study Photograph 17	
Date: 30/11/20	
Direction Photograph Taken: Facing north in the central west of the site	
Description: Fuel storage tanks in the background of the photo with a metal storage container, used for general farm materials, in the foreground. Tanks are empty.	

Desk Study Photograph 18	
Date: 30/11/20	
Direction Photograph Taken: Facing north east from the centre of the farmyard	
Description: Fuel storage tank on the left and general purpose farm storage container on the right. Tanks are empty.	

Desk Study Photograph 19	
Date: 30/11/20	
Direction Photograph Taken: Facing west in the centre of the farm	
Description: Barn with potential asbestos cement sheet roofing and sections of walls	

Desk Study Photograph 20	
Date: 30/11/20	
Direction Photograph Taken: Facing north in the central west of the farmyard	
Description: IBCs and general farm equipment	

Desk Study Photograph 21	
Date: 30/11/20	
Direction Photograph Taken: Facing west in the western end of the farmyard	
Description: Concrete hardstanding track in the west of the farmyard. Entrance to fields.	

Desk Study Photograph 22	
Date: 30/11/20	
Direction Photograph Taken: Facing west in the western end of the farmyard	
Description: Piles of general demolition materials	

Desk Study Photograph 23	
Date: 30/11/20	
Direction Photograph Taken: n/a	
Description: Chamber / below ground storage container in the western end of the farmyard	

Desk Study Photograph 24	
Date: 30/11/20	
Direction Photograph Taken: Facing east in the western end of the farmyard	
Description: Farm structures and concrete blocks in the western end of the farmyard	

Desk Study Photograph 25	
Date: 30/11/20	
Direction Photograph Taken: Facing south west in the eastern end of the farmyard	
Description: Stockpile of demolition materials	

Desk Study Photograph 26	
Date: 30/11/20	
Direction Photograph Taken: Facing west in the easternmost barn in the farmyard	
Description: Hay bales in the easternmost barn	

Desk Study Photograph 27	
Date: 30/11/20	
Direction Photograph Taken: Facing north in the east of the farmyard	
Description: Vehicle parking in the east of the farmyard	

Desk Study Photograph 28	
Date: 30/11/20	
Direction Photograph Taken: n/a	
Description: Gas canisters in the eastern barn	

Desk Study Photograph 29	
Date: 30/11/20	
Direction Photograph Taken: Facing east in the eastern barn	
Description: Plant in the easternmost barn	

Desk Study Photograph 30	
Date: 30/11/20	
Direction Photograph Taken: Facing east in the eastern barn	
Description: Plant in the easternmost barn and remains of a sand stockpile.	

Desk Study Photograph 31	
Date: 30/11/20	
Direction Photograph Taken: n/a	
Description: Containers in the eastern barn	

Desk Study Photograph 32	
Date: 30/11/20	
Direction Photograph Taken: Facing west from the central east of the farmyard	
Description: Farm shed with asbestos cement roofing in the central east of the farmyard	

Desk Study Photograph 33	
Date: 30/11/20	
Direction Photograph Taken: Facing south in the centre of the farmyard	
Description: Farm shed	

Desk Study Photograph 34	
Date: 30/11/20	
Direction Photograph Taken: n/a	
Description: Hay bales inside the central farm shed	

Desk Study Photograph 35 **Date:** 30/11/20 **Direction Photograph Taken:** Facing east from the western end of the farmyard **Description:** Farmyard access road	

Desk Study Photograph 36 **Date:** 30/11/20 **Direction Photograph Taken:** Facing north west in the central south of the farmyard **Description:** Farm former cottage	

Desk Study Photograph 37	
Date: 30/11/20	
Direction Photograph Taken: Facing north in the central south of farmyard	
Description: Farm structures and barns	

Desk Study Photograph 38	
Date: 30/11/20	
Direction Photograph Taken: Facing north from the south west corner of the farmyard	
Description: Former cottages	

Desk Study Photograph 39	
Date: 30/11/20	
Direction Photograph Taken: Facing north in the western end of the farmyard	
Description: Derelict farm buildings	

Desk Study Photograph 40	
Date: 30/11/20	
Direction Photograph Taken: Facing south east from the western end of the farmyard	
Description: Former cottages and the edge of the existing farmhouse	

Desk Study Photograph 41	
Date: 30/11/20	
Direction Photograph Taken: Facing north from the west of the farmyard	
Description: Derelict barn	

Desk Study Photograph 42	
Date: 30/11/20	
Direction Photograph Taken: Facing west from the western end of the farmyard	
Description: Farmhouse and wooden outbuilding	

Desk Study Photograph 43	
Date: 30/11/20	
Direction Photograph Taken: n/a	
Description: Historical BRD BH1 in proximity to the farmhouse	

Desk Study Photograph 44	
Date: 30/11/20	
Direction Photograph Taken: Facing south west in adjacent to the farmhouse	
Description: Metal above ground fuel storage tank	

Desk Study Photograph 45	
Date: 30/11/20	
Direction Photograph Taken: Facing west to the north west of the farmhouse	
Description: Wooded area to the north-west of the farmhouse	

Desk Study Photograph 46	
Date: 30/11/20	
Direction Photograph Taken: n/a	
Description: Stream to the west of the farmyard	

Desk Study Photograph 47 **Date:** 30/11/20 **Direction Photograph Taken:** Facing north west from west of the farmyard **Description:** Stream immediately west of the farmyard	

Desk Study Photograph 48 **Date:** 30/11/20 **Direction Photograph Taken:** n/a **Description:** Floor slab and possible farmyard drainage channel	

Desk Study Photograph 49	
Date: 30/11/20	
Direction Photograph Taken: n/a	
Description: Floor slab and possible farmyard drainage channel	

Desk Study Photograph 50	
Date: 30/11/20	
Direction Photograph Taken: Facing south in the west of the farmyard	
Description: Farm structures in the west of the farmyard	

Desk Study Photograph 51	
Date: 30/11/20	
Direction Photograph Taken: Facing north east from the western end of the farmyard	
Description: Farm structures in the west of the farmyard	

Desk Study Photograph 52	
Date: 30/11/20	
Direction Photograph Taken: Facing north west in the western end of the farmyard	
Description: Farm structures used as a workshop	

Desk Study Photograph 53	
Date: 30/11/20	
Direction Photograph Taken: Facing west in the eastern end of the farmyard	
Description: Small Field in the eastern end of the farmyard used for grazing sheep	

Desk Study Photograph 54	
Date: 30/11/20	
Direction Photograph Taken: Facing west in the eastern end of the farmyard	
Description: Small Field in the eastern end of the farmyard used for grazing sheep	

Desk Study Photograph 55	
Date: 30/11/20	
Direction Photograph Taken: Facing south from the entrance to Ashgrove Farm	
Description: Electricity sub-station in the entrance to Ashgrove Farm	

Desk Study Photograph 56	
Date: 30/11/20	
Direction Photograph Taken: Facing south west from the centre of Field 1	
Description: Field 1	

Desk Study Photograph 57	
Date: 30/11/20	
Direction Photograph Taken: Facing north east on the north east boundary of Field 1	
Description: Railway cutting to the north east of Field 1	

Desk Study Photograph 58	
Date: 30/11/20	
Direction Photograph Taken: Facing north east on the north east boundary of Field 1	
Description: Culvert following on from the drainage ditch crossing Field 1 and crossing under the railway	

Desk Study Photograph 59	
Date: 30/11/20	
Direction Photograph Taken: n/a	
Description: Drainage ditch connecting to culvert in Field 1	

Desk Study Photograph 60	
Date: 30/11/20	
Direction Photograph Taken: Facing west from Somerton Road to access Field 2	
Description: Somerton Road access to Field 2	

Desk Study Photograph 61	
Date: 30/11/20	
Direction Photograph Taken: Facing north west from the centre of Field 2	
Description: Field 2	

Desk Study Photograph 62	
Date: 30/11/20	
Direction Photograph Taken: Facing south west in the south west of Field 2	
Description: Former RAF Upper Heyford Airfield land immediately south west of Field 2	

Desk Study Photograph 63	
Date: 30/11/20	
Direction Photograph Taken: Facing north east from the western end of Field 3	
Description: Field 3 and the bordering former RAF Upper Heyford land	

Desk Study Photograph 64	
Date: 30/11/20	
Direction Photograph Taken: n/a	
Description: Made Ground materials mixed into the topsoil in the western end of Field 3	

Desk Study Photograph 65	
Date: 30/11/20	
Direction Photograph Taken: Facing south from the northern end of Field 4	
Description: Field 4	

Desk Study Photograph 66	
Date: 30/11/20	
Direction Photograph Taken: Facing north from the northern boundary of Field 4	
Description: Former RAF Upper Heyford land and former bomb storage structures to the north of Field 4	

Desk Study Photograph 67	
Date: 30/11/20	
Direction Photograph Taken: Facing north west of the north west boundary of Field 4	
Description: Former RAF Upper Heyford land and former bomb structures to the north of Field 4	

Desk Study Photograph 68	
Date: 30/11/20	
Direction Photograph Taken: Facing south west from the north east corner of Field 4	
Description: Plastic ducting and metal in north east corner of Field 4	

Desk Study Photograph 69	
Date: 30/11/20	
Direction Photograph Taken: Facing south from the north east corner of Field 4	
Description: Farm plant in the north east corner of Field 4	

Desk Study Photograph 70	
Date: 30/11/20	
Direction Photograph Taken: Facing west in the north east corner of Field 4	
Description: Old boiler	

Desk Study Photograph 71	
Date: 30/11/20	
Direction Photograph Taken: Facing east from the north east corner of Field 4	
Description: Overgrown concrete drainage structure	

Desk Study Photograph 72	
Date: 30/11/20	
Direction Photograph Taken: n/a	
Description: Concrete drainage channel running north to south on the eastern boundary of Field 4	

Desk Study Photograph 73	
Date: 30/11/20	
Direction Photograph Taken: n/a	
Description: Concrete drainage channel running into a drainage ditch trending north-south on the eastern boundary of Field 4	

Desk Study Photograph 74	
Date: 30/11/20	
Direction Photograph Taken: Facing north east from the west of Field 5	
Description: Field 5	

Desk Study Photograph 75	
Date: 30/11/20	
Direction Photograph Taken: n/a	
Description: Made Ground materials mixed into topsoil in Field 5	

Desk Study Photograph 76	
Date: 30/11/20	
Direction Photograph Taken: n/a	
Description: Made Ground materials mixed into topsoil in Field 5	

Desk Study Photograph 77	
Date: 30/11/20	
Direction Photograph Taken: Facing north west from the northern boundary of Field 6	
Description: Field 6	

Desk Study Photograph 78	
Date: 30/11/20	
Direction Photograph Taken: Facing north from the northern boundary of Field 6	
Description: Railway cutting to the north of Field 6	

Desk Study Photograph 79	
Date: 30/11/20	
Direction Photograph Taken: Facing north east in the north east corner of Field 6	
Description: Facing the Station Road bridge over the railway	

Desk Study Photograph 80	
Date: 30/11/20	
Direction Photograph Taken: n/a	
Description: Historical borehole on the eastern boundary of Field 6	

Desk Study Photograph 81	
Date: 30/11/20	
Direction Photograph Taken: Facing south in the centre of Field 6	
Description: Historical boreholes in the centre of Field 6	

Desk Study Photograph 82	
Date: 30/11/20	
Direction Photograph Taken: n/a	
Description: Historical borehole in the centre of Field 6	

Desk Study Photograph 83	
Date: 08/12/20	
Direction Photograph Taken: Facing south from the north of Field 7	
Description: Field 7	

Desk Study Photograph 84	
Date: 08/12/20	
Direction Photograph Taken: Facing north from the northern boundary of Field 7	
Description: Former RAF Upper Heyford land and former bomb storage structures to the north of Field 7	

Desk Study Photograph 85	
Date: 30/11/20	
Direction Photograph Taken: Facing north from the central south of Field 8	
Description: Field 8	

Desk Study Photograph 86	
Date: 30/11/20	
Direction Photograph Taken: Facing west from the south of Field 8	
Description: Pond in the south of Field 8	

Desk Study Photograph 87	
Date: 30/11/20	
Direction Photograph Taken: n/a	
Description: Land drain feeding into the pond in Field 8	

Desk Study Photograph 88	
Date: 30/11/20	
Direction Photograph Taken: n/a	
Description: Land drain into the pond in Field 8	

Desk Study Photograph 89	
Date: 30/11/20	
Direction Photograph Taken: Facing east in the centre of Field 8	
Description: Concrete slabs in the centre of Field 8	

Desk Study Photograph 90	
Date: 30/11/20	
Direction Photograph Taken: Facing south west from the central south of Field 9	
Description: Field 9	

Desk Study Photograph 91	
Date: 30/11/20	
Direction Photograph Taken: n/a	
Description: Historical borehole in the south east of Field 9	

Desk Study Photograph 92	
Date: 08/12/20	
Direction Photograph Taken: Facing north from the west of Field 10	
Description: Field 10	

Desk Study Photograph 93	
Date: 08/12/20	
Direction Photograph Taken: Facing west from the north of Field 10	
Description: Field 10 and fence of the former RAF Upper Heyford base	

Desk Study Photograph 94	
Date: 08/12/20	
Direction Photograph Taken: Facing north on the northern boundary of Field 10	
Description: Concrete drainage chambers leading to the outfall into the drainage ditch in the north east of Field 10	

Desk Study Photograph 95	
Date: 08/12/20	
Direction Photograph Taken: n/a	
Description: Edge of the drainage ditch in Field 10	

Desk Study Photograph 96	
Date: 08/12/20	
Direction Photograph Taken: Facing east from the south east corner of Field 10	
Description: Wooded area	

Desk Study Photograph 97	
Date: 08/12/20	
Direction Photograph Taken: Facing south from the north west of Field 11	
Description: Field 11	

Desk Study Photograph 98	
Date: 08/12/20	
Direction Photograph Taken: Facing north	
Description: Concrete base of a former structure	

Desk Study Photograph 99	
Date: 08/12/20	
Direction Photograph Taken: Facing east from the west of Field 11	
Description: Derelict brick structure	

Desk Study Photograph 100	
Date: 08/12/20	
Direction Photograph Taken: n/a	
Description: Derelict brick structure	

Desk Study Photograph 101	
Date: 08/12/20	
Direction Photograph Taken: Facing west from the east of Field 12	
Description: Field 12	

Desk Study Photograph 102	
Date: 08/12/20	
Direction Photograph Taken: Facing south from the west of Field 12	
Description: Fly tipping on the edge of Field 12	

Desk Study Photograph 103	
Date: 08/12/20	
Direction Photograph Taken: Facing north from the centre of Field 13	
Description: Field 13	

Desk Study Photograph 104	
Date: 08/12/20	
Direction Photograph Taken: Facing north from the south of Field 13	
Description: Drainage ditch on the eastern boundary of Field 13	

Desk Study Photograph 105	
Date: 08/12/20	
Direction Photograph Taken: n/a	
Description: Area of different vegetation / stripped grassed in the centre of Field 13	

Desk Study Photograph 106	
Date: 08/12/20	
Direction Photograph Taken: Facing north from the south of Field 14	
Description: Field 14	

Desk Study Photograph 107	
Date: 08/12/20	
Direction Photograph Taken: Facing east from the south of Field 14	
Description: Entrance to Field 14	

Desk Study Photograph 108	
Date: 08/12/20	
Direction Photograph Taken: Facing north from the south of Field 14	
Description: Farm track across Field 14	

Desk Study Photograph 109	
Date: 08/12/20	
Direction Photograph Taken: Facing east from the north of Field 15	
Description: Field 15	

Desk Study Photograph 110	
Date: 08/12/20	
Direction Photograph Taken: Facing south west from the north west of Field 15	
Description: Gate and edge of electric fence	

Desk Study Photograph 111 **Date:** 08/12/20 **Direction Photograph Taken:** n/a **Description:** Crop of swede in Field 15	

Desk Study Photograph 112 **Date:** 08/12/20 **Direction Photograph Taken:** n/a **Description:** Drainage ditch on the western boundary of Field 15	

Desk Study Photograph 113	
Date: 08/12/20	
Direction Photograph Taken: Facing north from the centre of Field 16	
Description: Field 16	

Desk Study Photograph 114	
Date: 08/12/20	
Direction Photograph Taken: Facing east from the southern boundary of Field 16	
Description: High voltage overhead cables on the southern boundary of Field 16	

Desk Study Photograph 115	
Date: 08/12/20	
Direction Photograph Taken: Facing east from the south east corner of Field 16	
Description: Wooded area on the southern boundary of Field 16	

Desk Study Photograph 116	
Date: 08/12/20	
Direction Photograph Taken: Facing south from the north of Field 17	
Description: Field 17	

Desk Study Photograph 117	
Date: 30/11/20	
Direction Photograph Taken: Facing north from the south of Field 17	
Description: Drainage ditch running north to south in Field 17	

Desk Study Photograph 118	
Date: 30/11/20	
Direction Photograph Taken: Facing north east from the south of Field 17	
Description: Drainage ditch on the eastern boundary of Field 17	

Desk Study Photograph 119	
Date: 08/12/20	
Direction Photograph Taken: Facing west from the east of Field 18	
Description: Field 18	

Desk Study Photograph 120	
Date: 30/11/20	
Direction Photograph Taken: Facing north in the western end of Field 18	
Description: Wooded area on the western boundary of Field 18	

Desk Study Photograph 121	
Date: 08/12/20	
Direction Photograph Taken: Facing south from the eastern end of Field 19	
Description: Field 19	

Desk Study Photograph 122	
Date: 08/12/20	
Direction Photograph Taken: Facing east on the eastern boundary of Field 19	
Description: High voltage overhead powerlines on the eastern boundary of Field 19	

Desk Study Photograph 123	
Date: 08/12/20	
Direction Photograph Taken: Facing east from the south western section of Field 20	
Description: Cropped area of Field 20	

Desk Study Photograph 124	
Date: 08/12/20	
Description: Adjacent to the wooded area in the south west of Field 20	

Desk Study Photograph 125	
Date: 08/12/20	
Direction Photograph Taken: Facing south from the centre of Field 21	
Description: Cropped section of Field 21	

Desk Study Photograph 126	
Date: 08/12/20	
Direction Photograph Taken: Facing east from the northern end of Field 21	
Description: Grassed area of Field 21 south of the composting facility	

Desk Study Photograph 127	
Date: 08/12/20	
Direction Photograph Taken: n/a	
Description: Manhole covers in the north west corner of Field 21	

Desk Study Photograph 128	
Date: 08/12/20	
Direction Photograph Taken: n/a	
Description: Manhole covers in the north west corner of Field 21	

Desk Study Photograph 129	
Date: 08/12/20	
Direction Photograph Taken: n/a	
Description: Service marker in the north west corner of Field 21	

Desk Study Photograph 130	
Date: 08/12/20	
Direction Photograph Taken: n/a	
Description: Service markers in the north west corner of Field 21	

Desk Study Photograph 131	
Date: 08/12/20	
Direction Photograph Taken: Facing south west immediately east of the composting facility	
Description: Plant and structures from the composting facility	

Desk Study Photograph 132	
Date: 08/12/20	
Direction Photograph Taken: Facing west from immediately east of the composting facility	
Description: Plant and structures from the composting facility	

Desk Study Photograph 133	
Date: 08/12/20	
Direction Photograph Taken: Facing north from the centre of Field 21	
Description: Grassed area of Field 21 and the composting facility to the north	

Desk Study Photograph 134	
Date: 08/12/20	
Direction Photograph Taken: Facing north from the centre of Field 21	
Description: Grassed area of Field 21 and the composting facility to the north	

Desk Study Photograph 135	
Date: 08/12/20	
Direction Photograph Taken: Facing the north in the northern end of Field 21	
Description: Stockpile of organic matter in the composting facility	

Desk Study Photograph 136	
Date: 08/12/20	
Direction Photograph Taken: Facing the north in the northern end of Field 21	
Description: Processing plant in the composting facility	

Desk Study Photograph 137	
Date: 08/12/20	
Direction Photograph Taken: Facing north west in the north west end of Field 21	
Description: Stripped area of topsoil and stockpile of organic matter associated with the composting facility	

Desk Study Photograph 138	
Date: 08/12/20	
Direction Photograph Taken: Facing west in the north west corner of Field 21	
Description: Stockpile of organic matter associated with the composting facility	

Desk Study Photograph 139	
Date: 08/12/20	
Direction Photograph Taken: Facing west in the north west corner of Field 21	
Description: Stockpile of organic matter associated with the composting facility	

Desk Study Photograph 140	
Date: 08/12/20	
Direction Photograph Taken: Facing east from immediately west of composting facility	
Description: Organic material stockpiles on the composting facility and structures	

Desk Study Photograph 141	
Date: 08/12/20	
Direction Photograph Taken: Facing east in the northern end of Field 21	
Description: Northern end of Field 21 and the adjacent composting facility	

Desk Study Photograph 142	
Date: 08/12/20	
Direction Photograph Taken: Facing south east from the north west corner of Field 21	
Description: The composting facility comprising stockpiles of organic material, sheds and metal structures	

Desk Study Photograph 143	
Date: 08/12/20	
Direction Photograph Taken: Facing north on the northern boundary of Field 22	
Description: Severn Trent covered reservoir in the north west corner of Field 22	

Desk Study Photograph 144	
Date: 08/12/20	
Direction Photograph Taken: Facing north on the northern boundary of Field 22	
Description: Severn Trent covered reservoir in the north west corner of Field 22	

Desk Study Photograph 145	
Date: 08/12/20	
Direction Photograph Taken: Facing north on the northern boundary of Field 22	
Description: Severn Trent covered reservoir in the north west corner of Field 22	

Desk Study Photograph 146	
Date: 08/12/20	
Direction Photograph Taken: Facing north on the northern boundary of Field 22	
Description: Severn Trent covered reservoir in the north west corner of Field 22	

Desk Study Photograph 147 **Date:** 08/12/20 **Direction Photograph Taken:** Facing north on the northern boundary of Field 22 **Description:** Severn Trent covered reservoir in the north west corner of Field 22	

Desk Study Photograph 148 **Date:** 08/12/20 **Direction Photograph Taken:** Facing north east on the northern boundary of Field 22 **Description:** Severn Trent covered reservoir in the north west corner of Field 22	

Desk Study Photograph 149	
Date: 08/12/20	
Direction Photograph Taken: Facing north from the southern end of Field 22	
Description: Field 22	

Desk Study Photograph 150	
Date: 08/12/20	
Direction Photograph Taken: Facing west from the north east corner of Field 22	
Description: Cropped area of Field 22 and covered reservoir	

Desk Study Photograph 151	
Date: 08/12/20	
Direction Photograph Taken: Facing west on the northern boundary of Field 23	
Description: Field 23 and trees / hedgerow	

Desk Study Photograph 152	
Date: 08/12/20	
Direction Photograph Taken: Facing south from the north of Field 23	
Description: High voltage overhead cables running across Field 23	

Desk Study Photograph 153	
Date: 30/11/20	
Direction Photograph Taken: Facing south from the northern side of the railway cutting	
Description: Railway cutting to the north of the site	

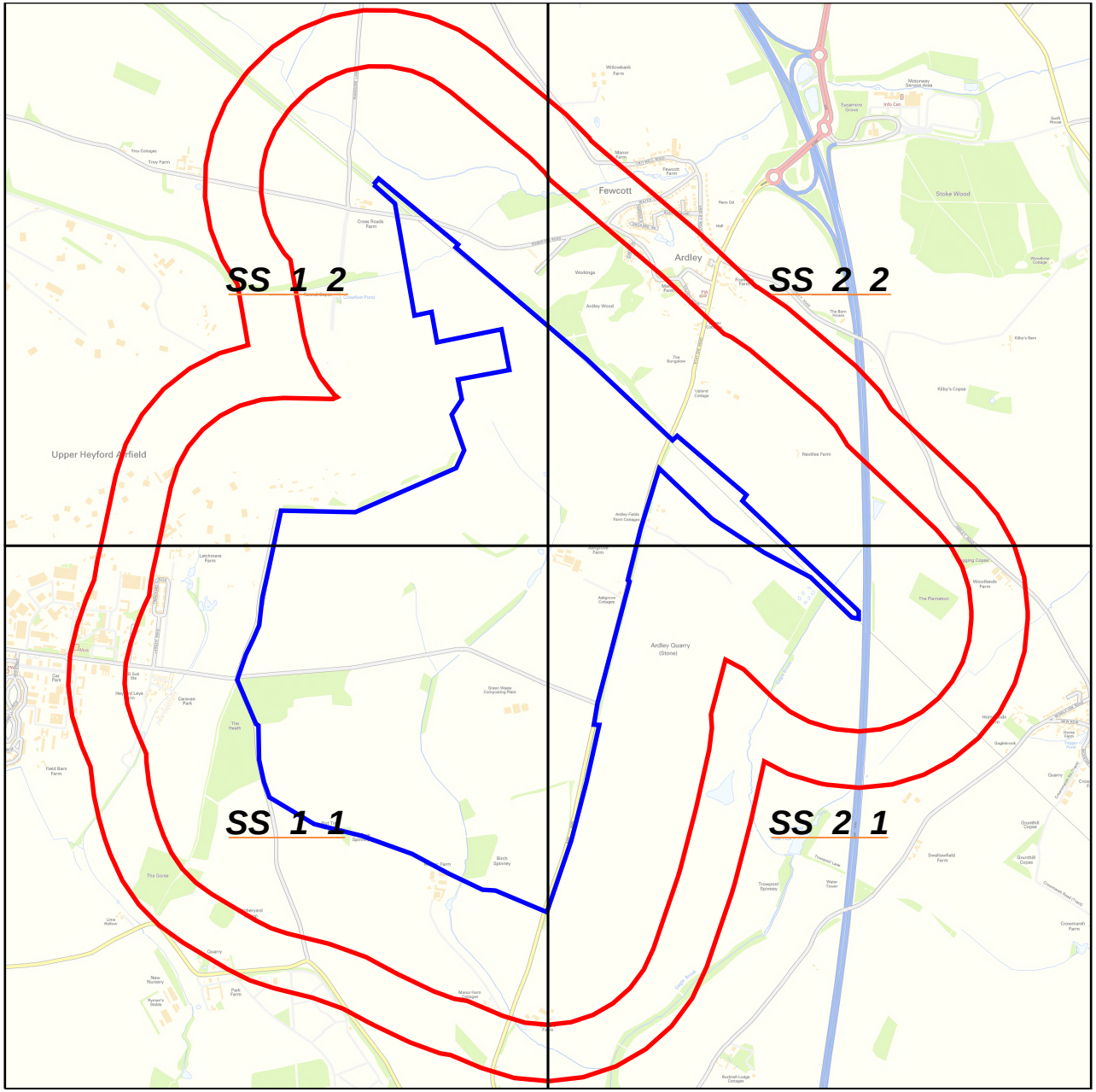
Desk Study Photograph 154	
Date: 30/11/20	
Direction Photograph Taken: Facing west from bridge over the railway cutting	
Description: Railway cutting to the north of the site	

Desk Study Photograph 155	
Date: 30/11/20	
Direction Photograph Taken: Facing east from bridge over the railway cutting	
Description: Railway cutting to the north of the site	

Desk Study Photograph 156	
Date: 30/11/20	
Direction Photograph Taken: Facing south east from the north side of the railway cutting	
Description: Railway cutting to the north of the site	

Appendix C

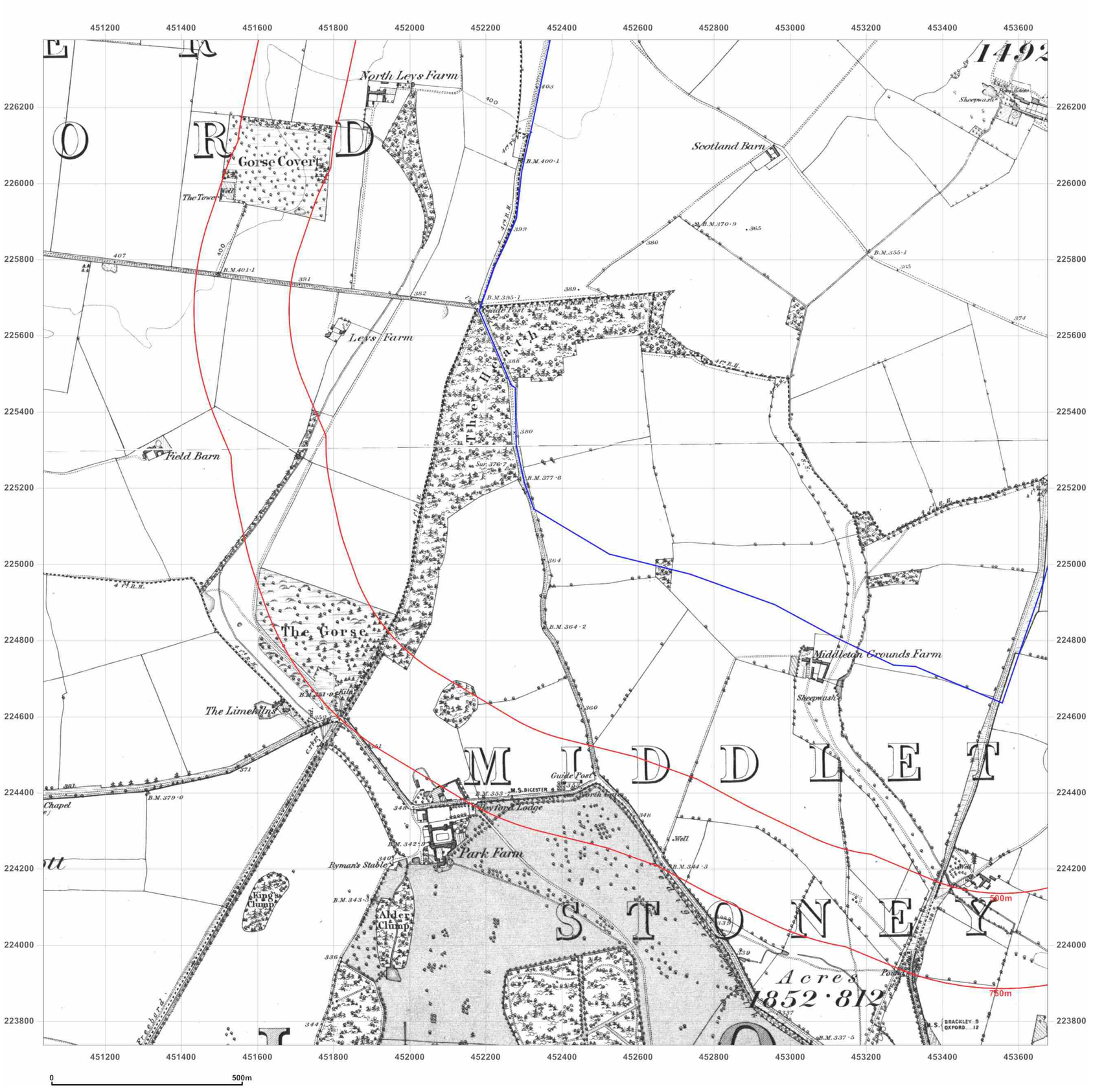
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Site Details:

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Client Ref: Oxfordshire, Railfreight, Interchange
Report Ref: GSIP-2020-10641-3484_SS_1_1
Grid Ref: 452356, 225056

Map Name: County Series

Map date: **1875-1880**

Scale: 1:10,560

Printed at: 1:10,560

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Revised 1880
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1875
Revised 1875
Edition N/A
Copyright N/A
Levelled N/A

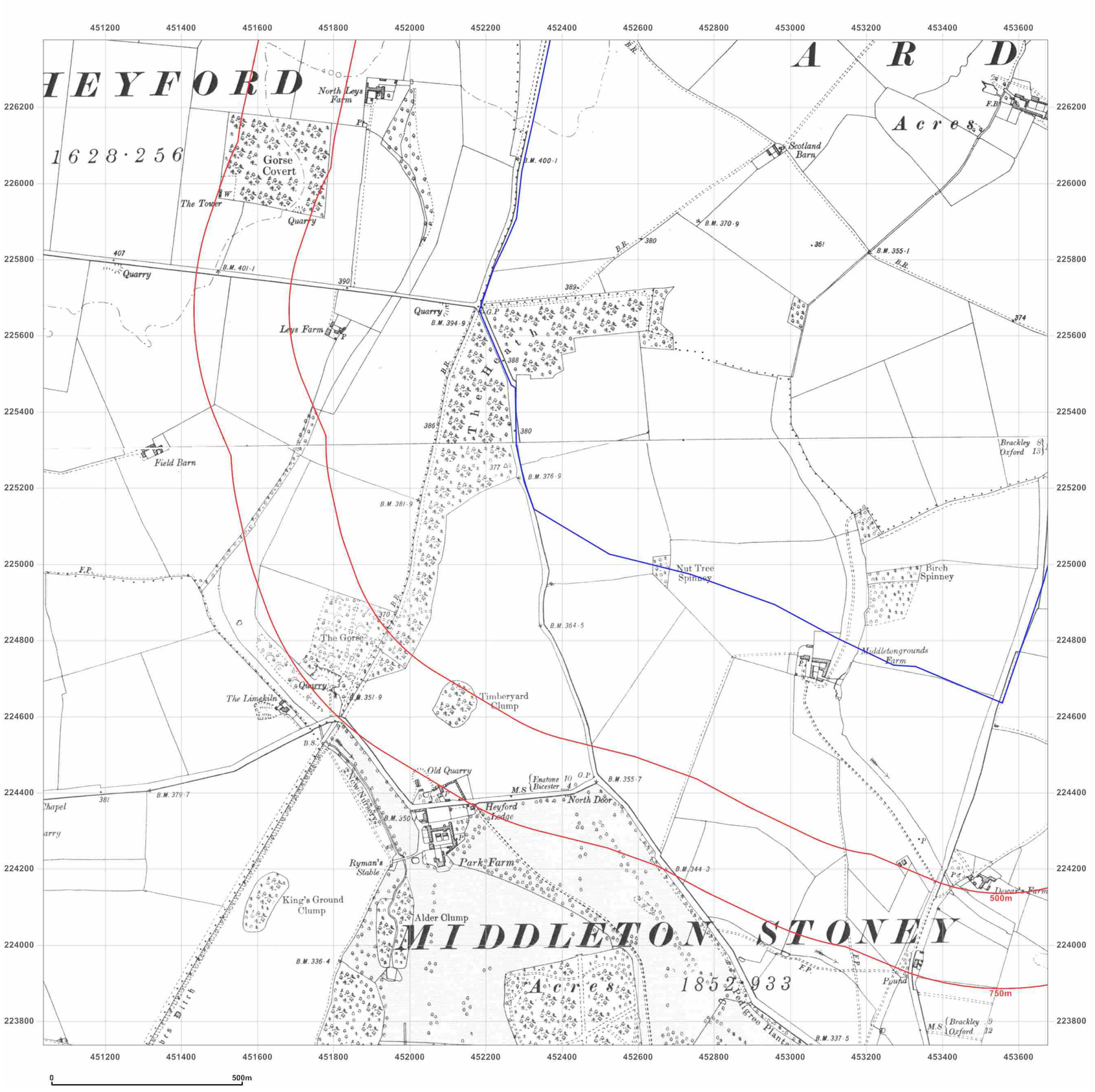
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Grid Ref: 452356, 225056

Map Name: County Series

Map date: **1898**

Scale: 1:10,560

Printed at: 1:10,560

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Surveyed 1880
Revised 1898
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1879
Revised 1898
Edition N/A
Copyright N/A
Levelled N/A

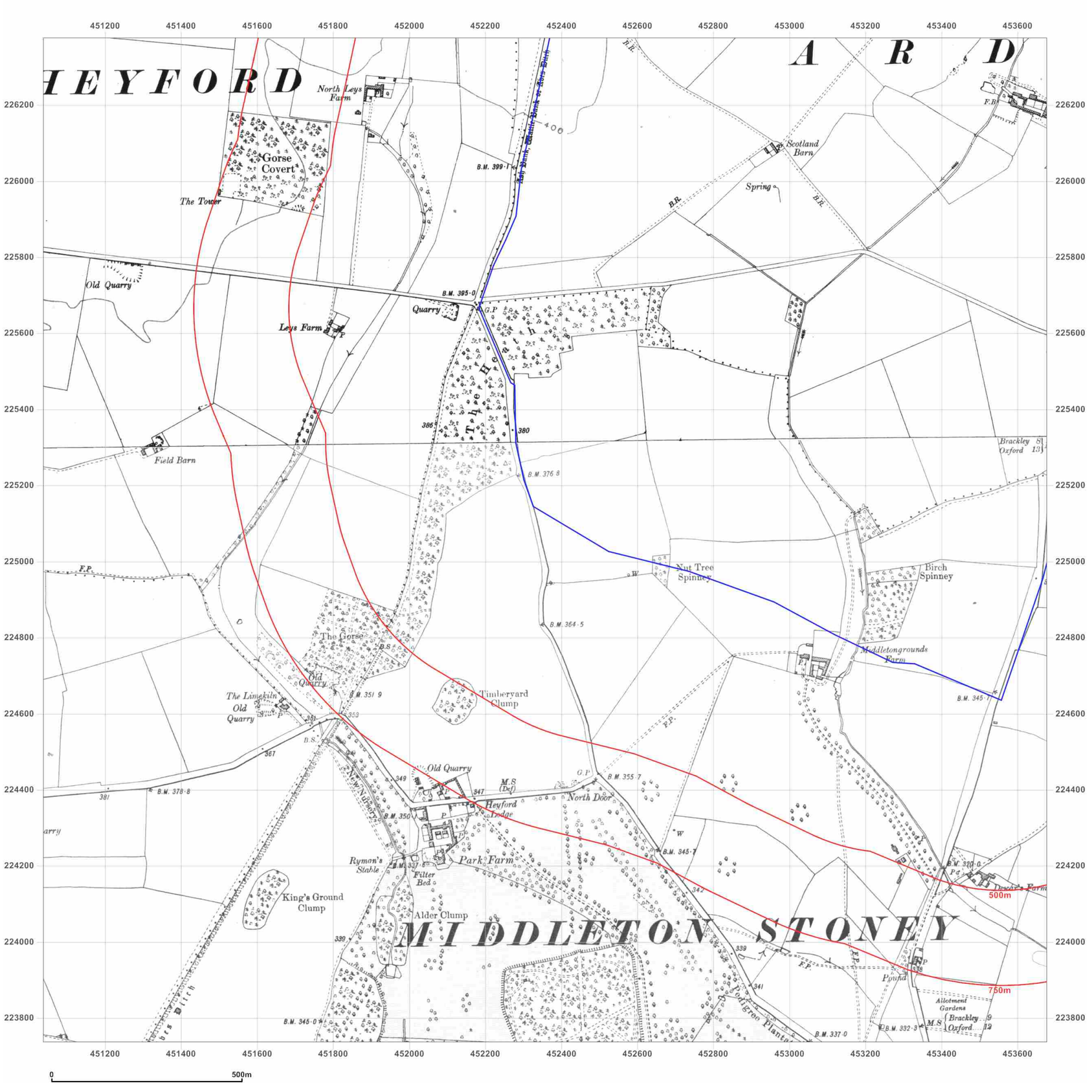
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Grid Ref: 452356, 225056

Map Name: County Series

Map date: **1919**

Scale: 1:10,560

Printed at: 1:10,560

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Surveyed N/A
Revised N/A
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1879
Revised 1919
Edition N/A
Copyright N/A
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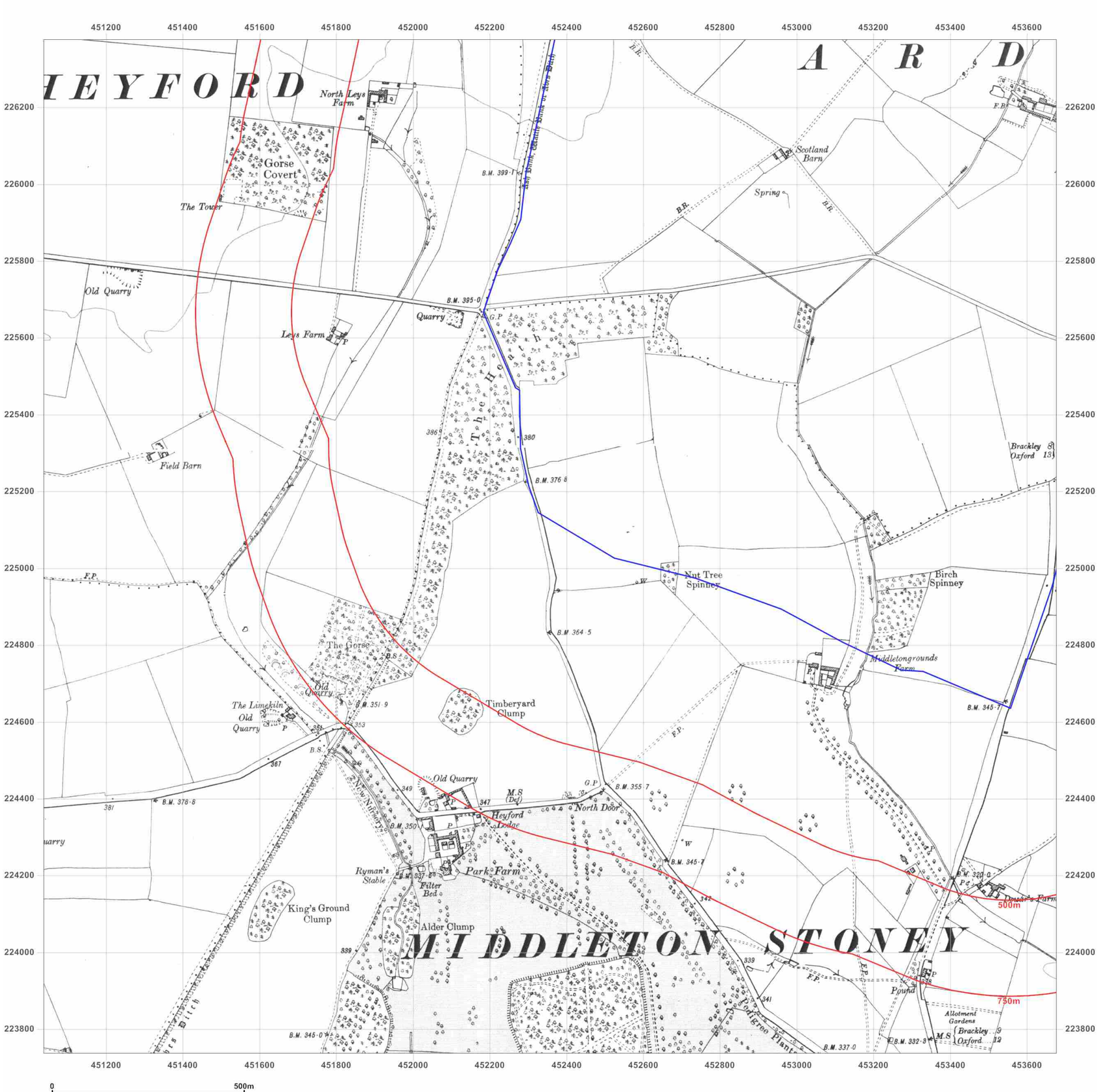
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Grid Ref: 452356, 225056

Map Name: County Series

Map date: **1923**

Scale: 1:10,560

Printed at: 1:10,560

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Surveyed 1882
Revised 1923
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1880
Revised 1923
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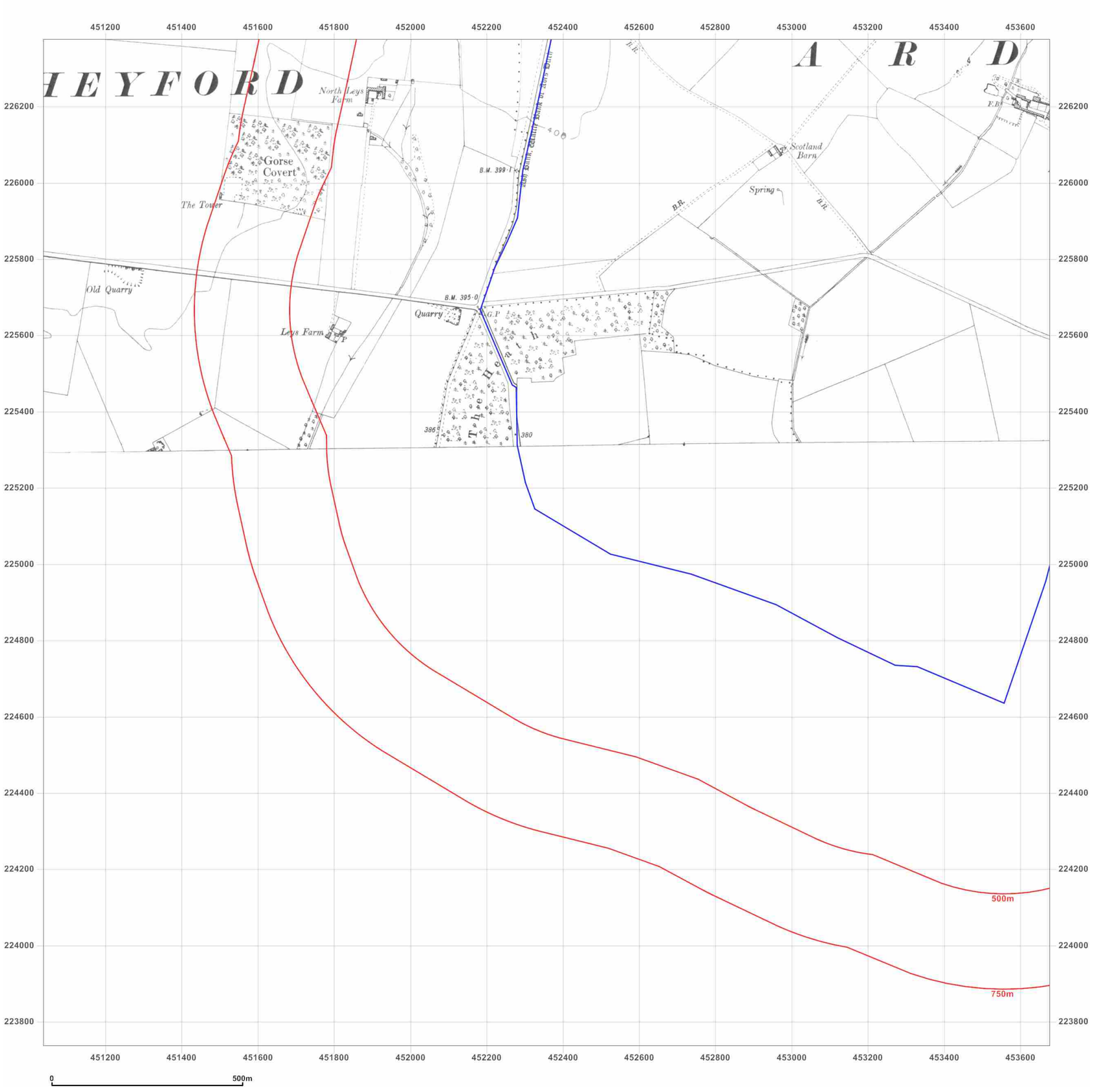
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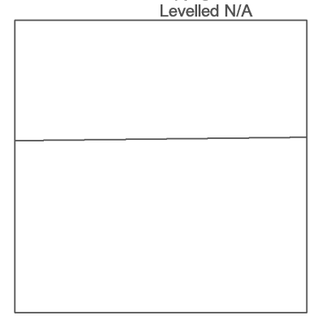
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Surveyed 1880
Revised 1923
Edition N/A
Copyright N/A
Levelled N/A



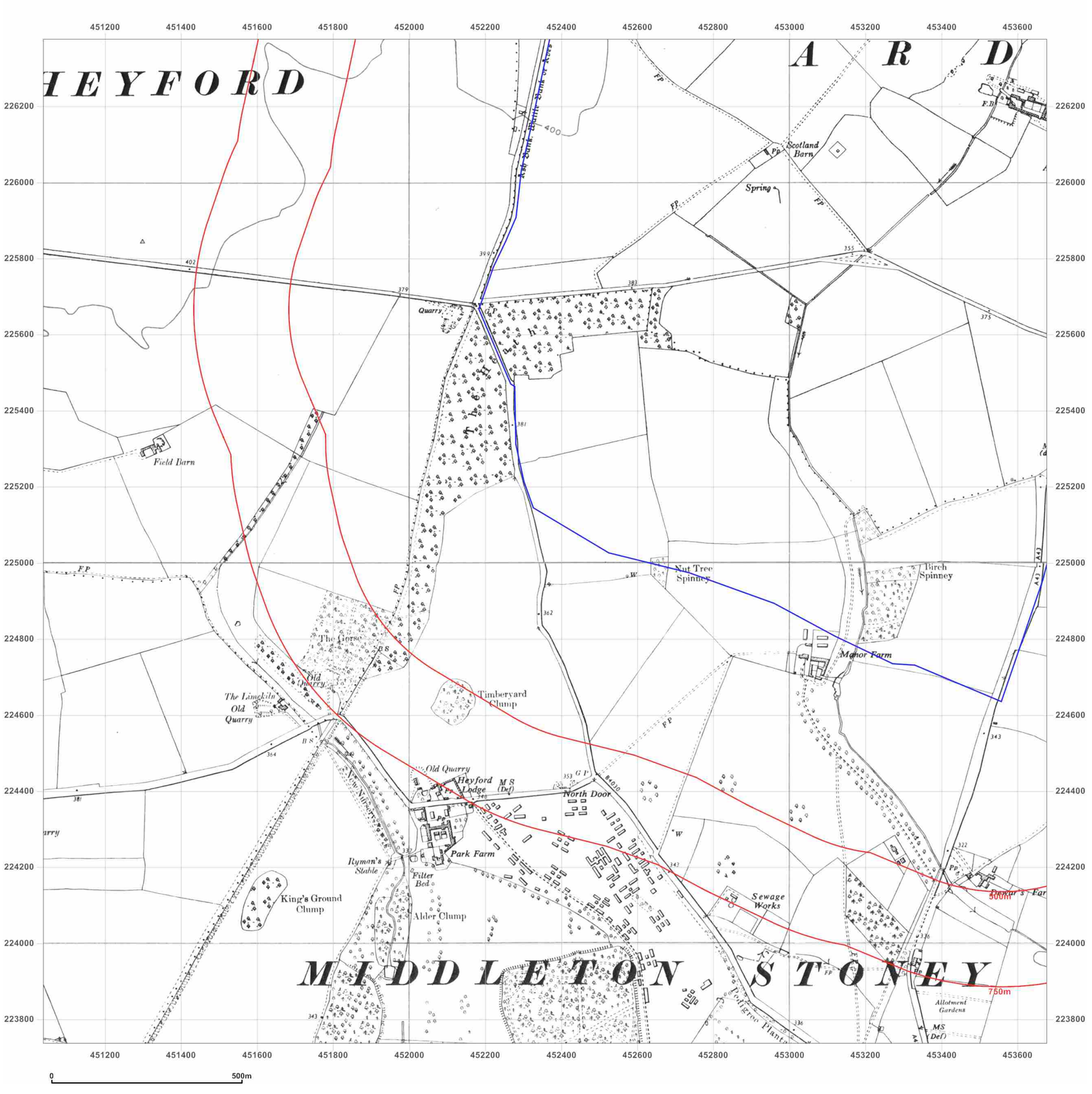
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Grid Ref: 452356, 225056

Map Name: Provisional
Map date: **1954**
Scale: 1:10,560
Printed at: 1:10,560

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Surveyed N/A
Revised 1954
Edition N/A
Copyright N/A
Levelled N/A

Surveyed N/A
Revised 1954
Edition N/A
Copyright N/A
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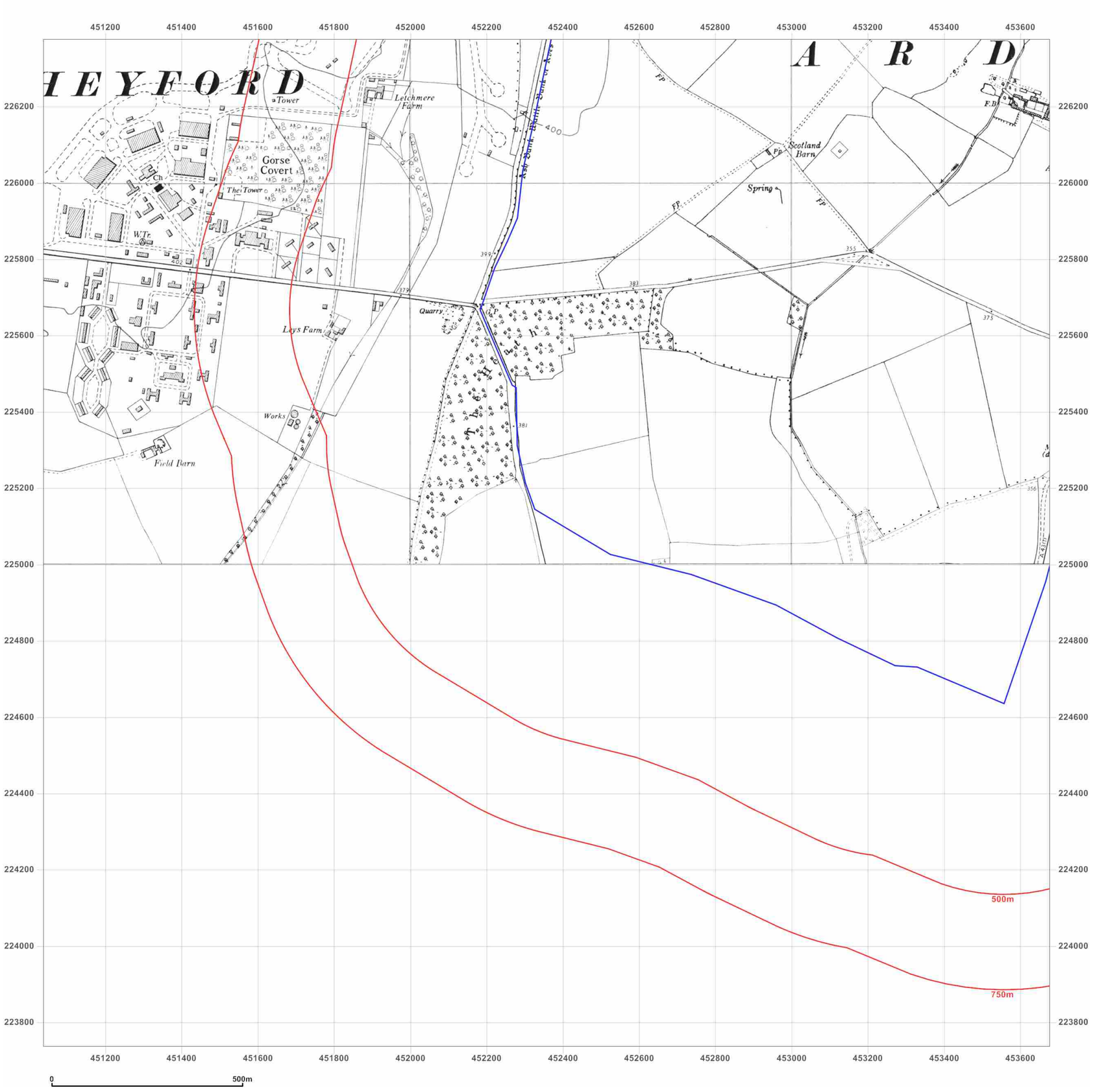
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Report Ref: GSIP-2020-10641-3484_SS_1_1
Grid Ref: 452356, 225056

Map Name: Provisional
Map date: **1965**
Scale: 1:10,560
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Revised 1965
Edition N/A
Copyright N/A
Levelled N/A

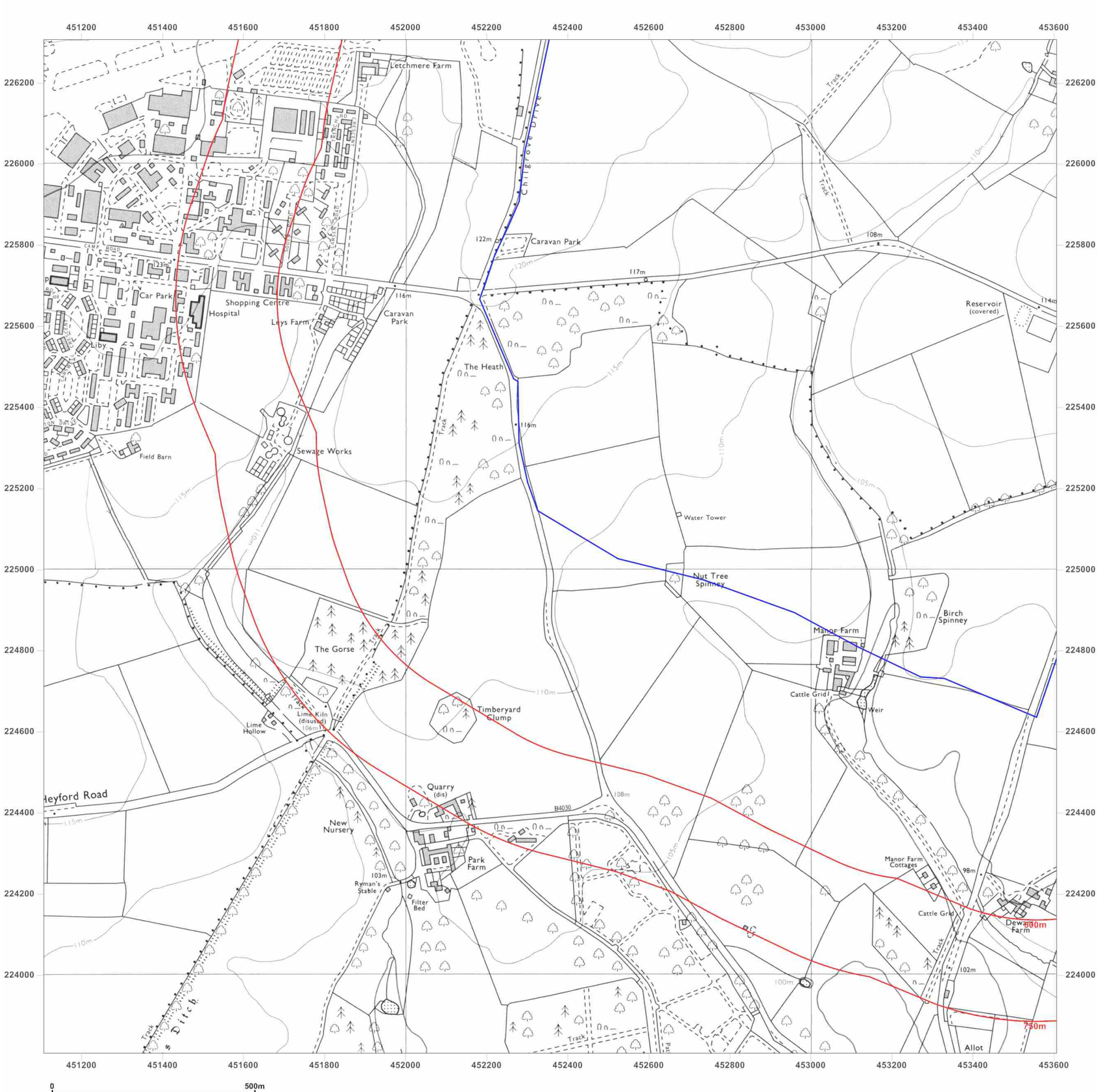
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Grid Ref: 452356, 225056

Map Name: National Grid

Map date: **1980-1981**

Scale: 1:10,000

Printed at: 1:10,000

N
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Revised 1980
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1977
Revised 1981
Edition N/A
Copyright N/A
Levelled N/A

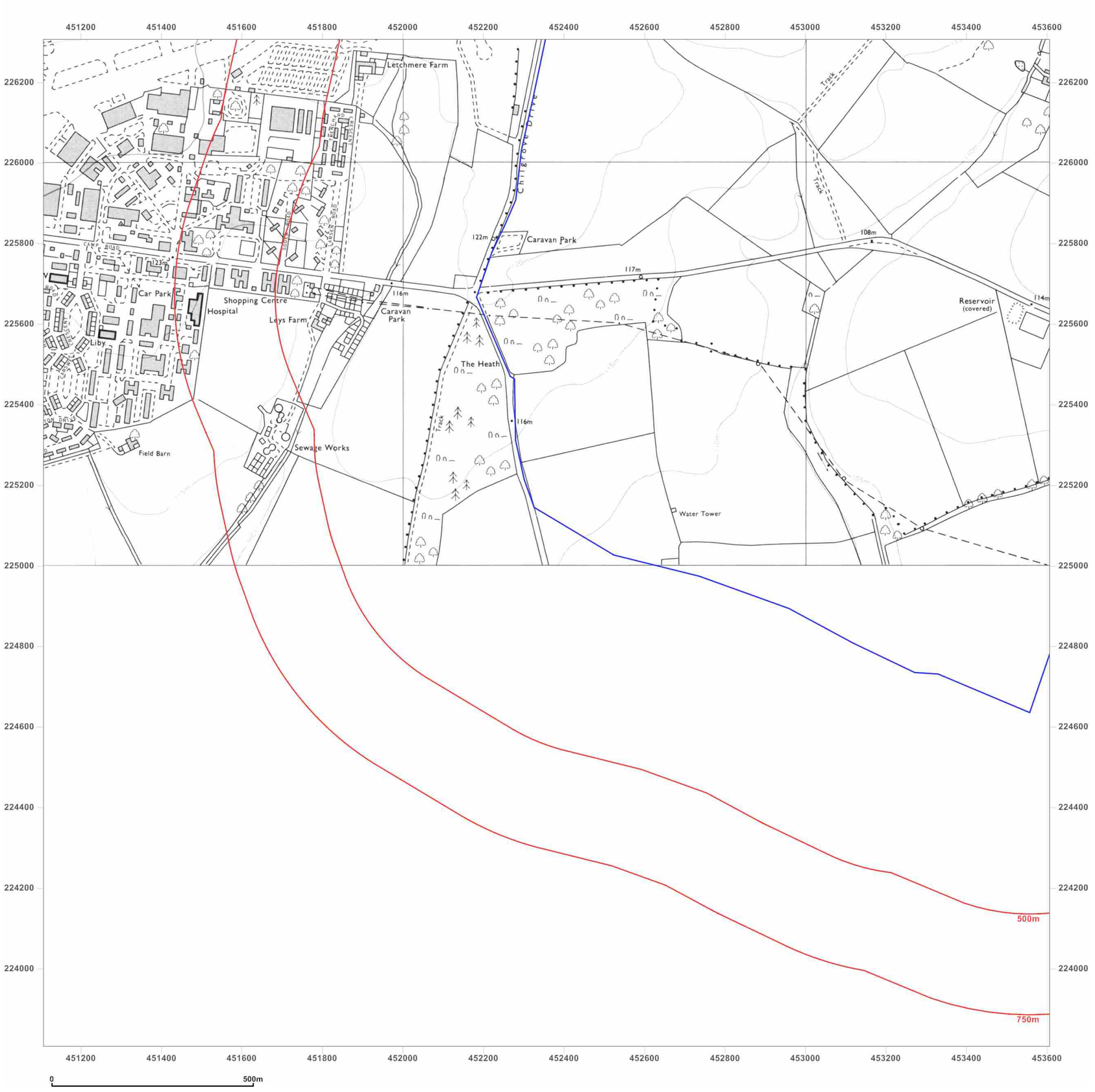
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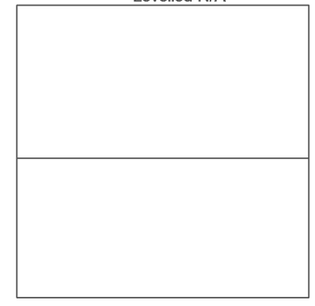
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Surveyed 1975
Revised 1992
Edition N/A
Copyright N/A
Levelled N/A



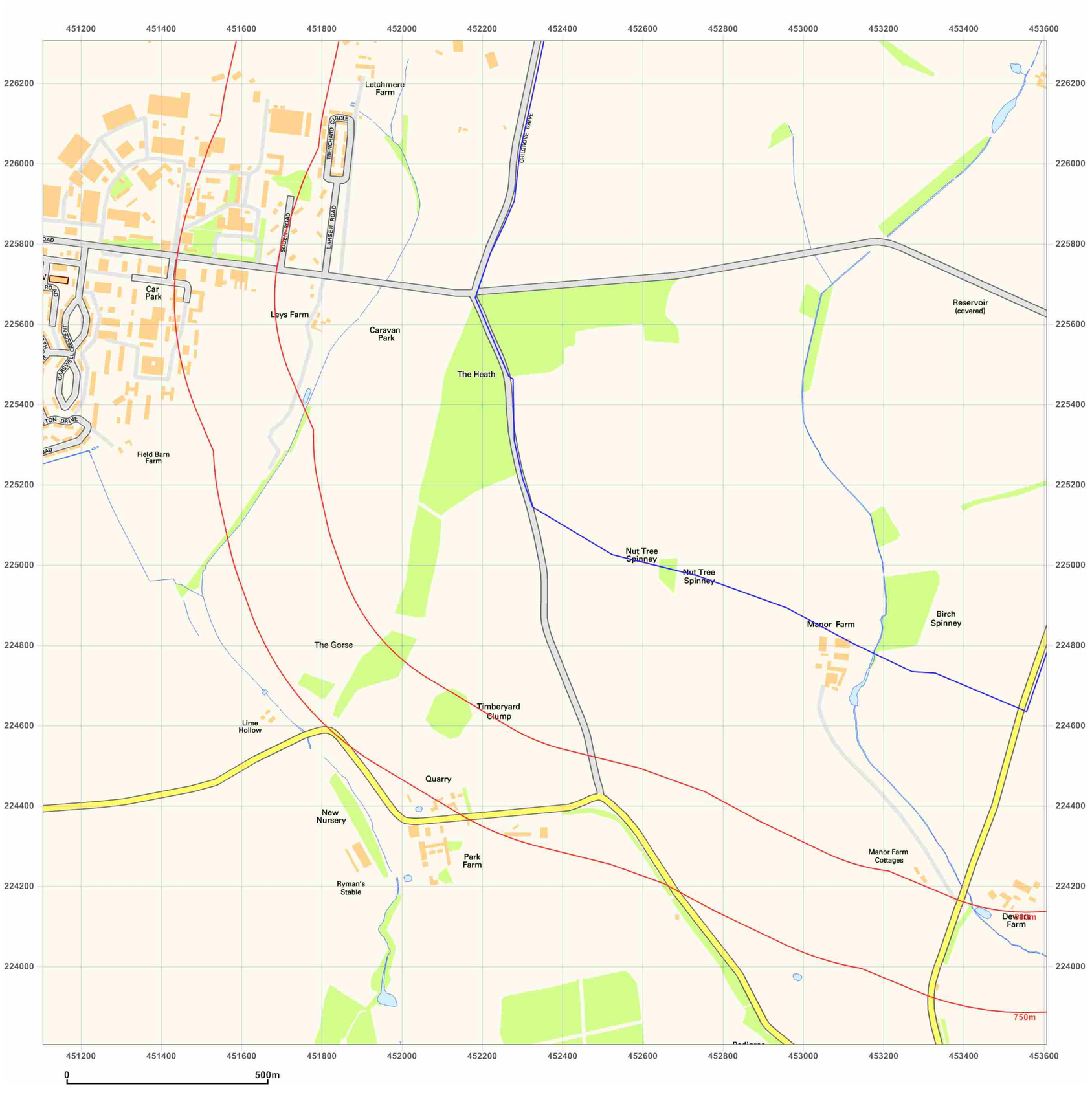
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Report Ref: GSIP-2020-10641-3484_SS_1_1
Grid Ref: 452356, 225056

Map Name: National Grid

Map date: **2001**

Scale: 1:10,000

Printed at: 1:10,000

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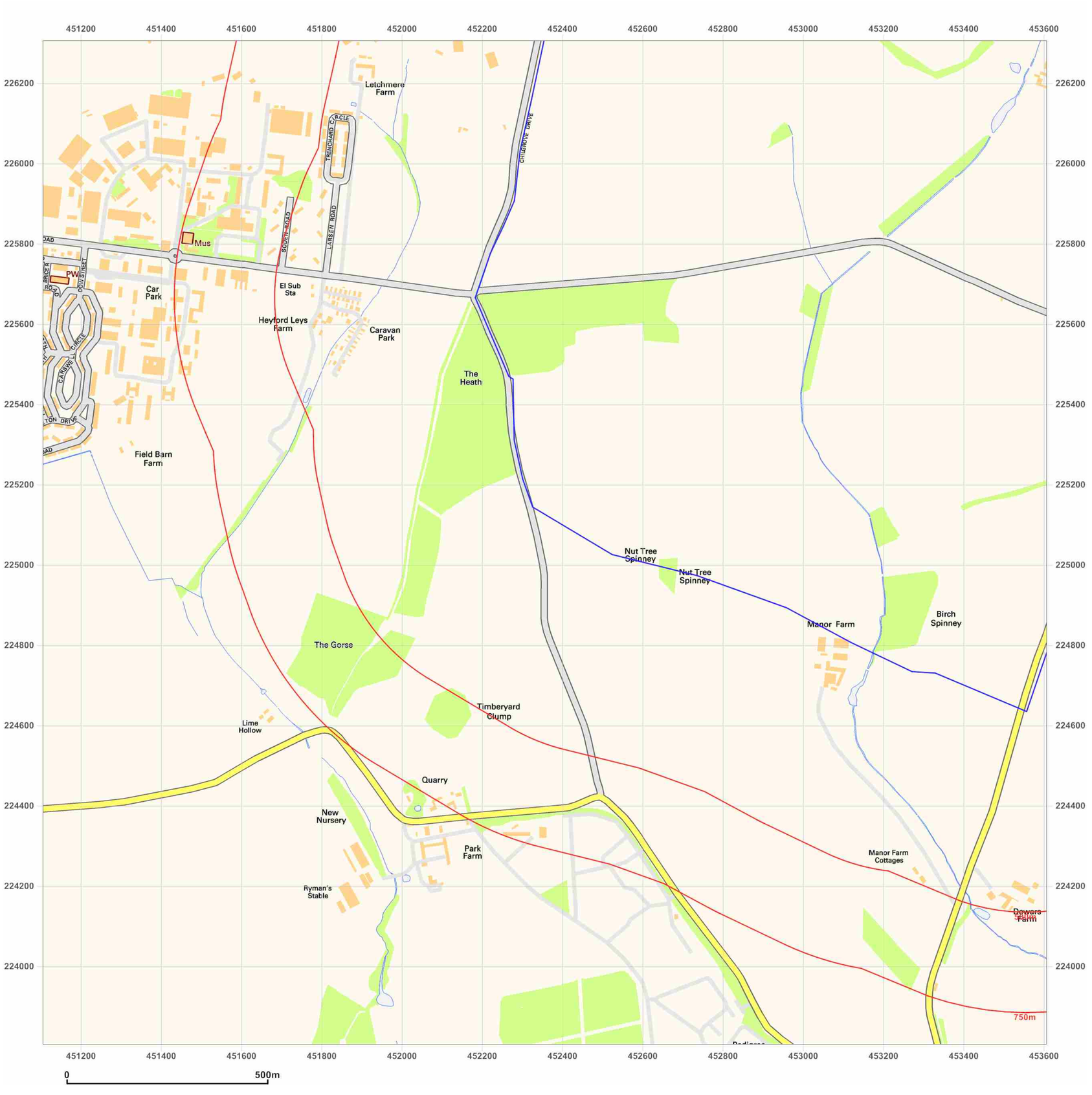
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Report Ref: GSIP-2020-10641-3484_SS_1_1
Grid Ref: 452356, 225056

Map Name: National Grid

Map date: **2010**

Scale: 1:10,000

Printed at: 1:10,000

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2010

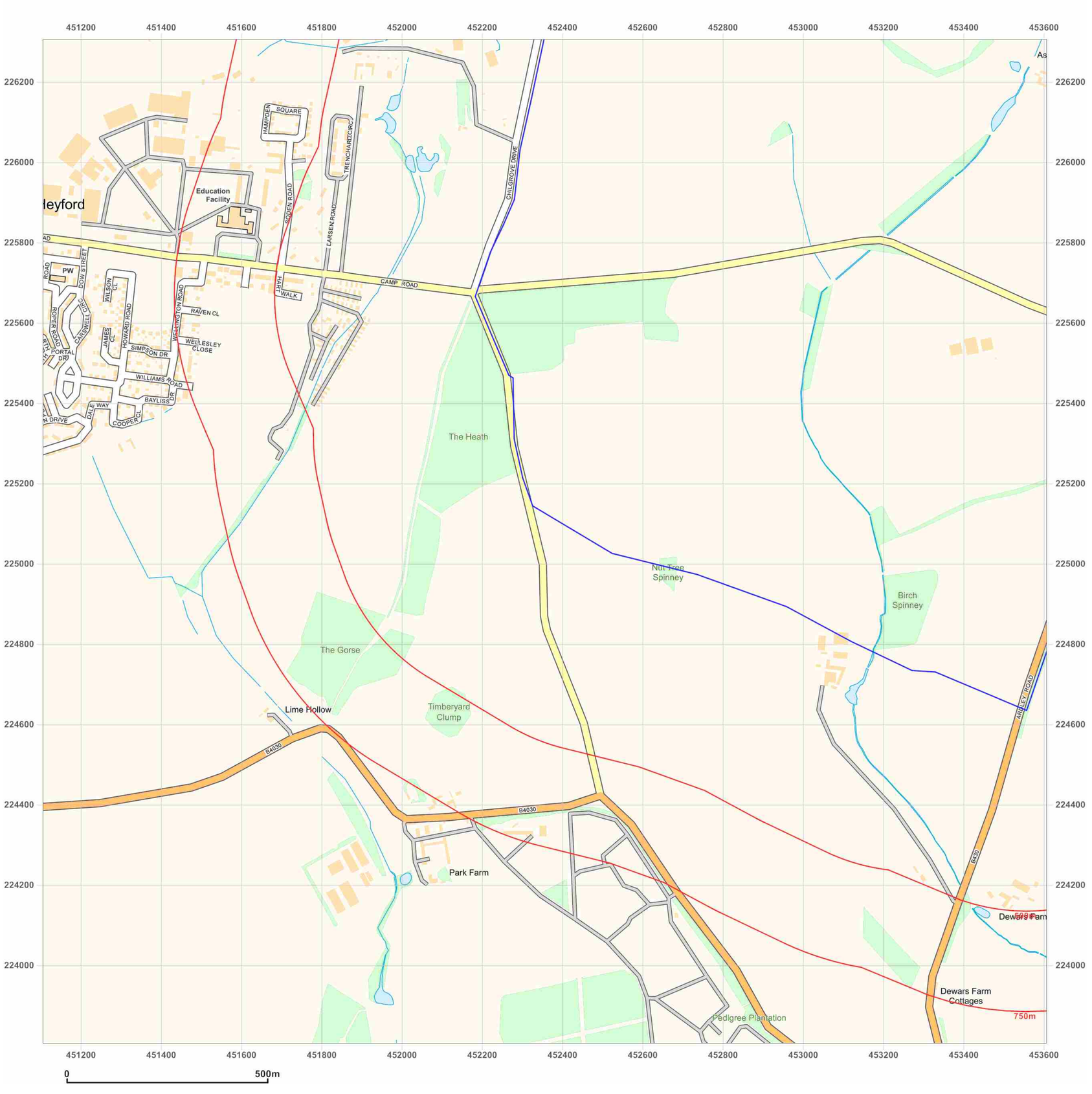
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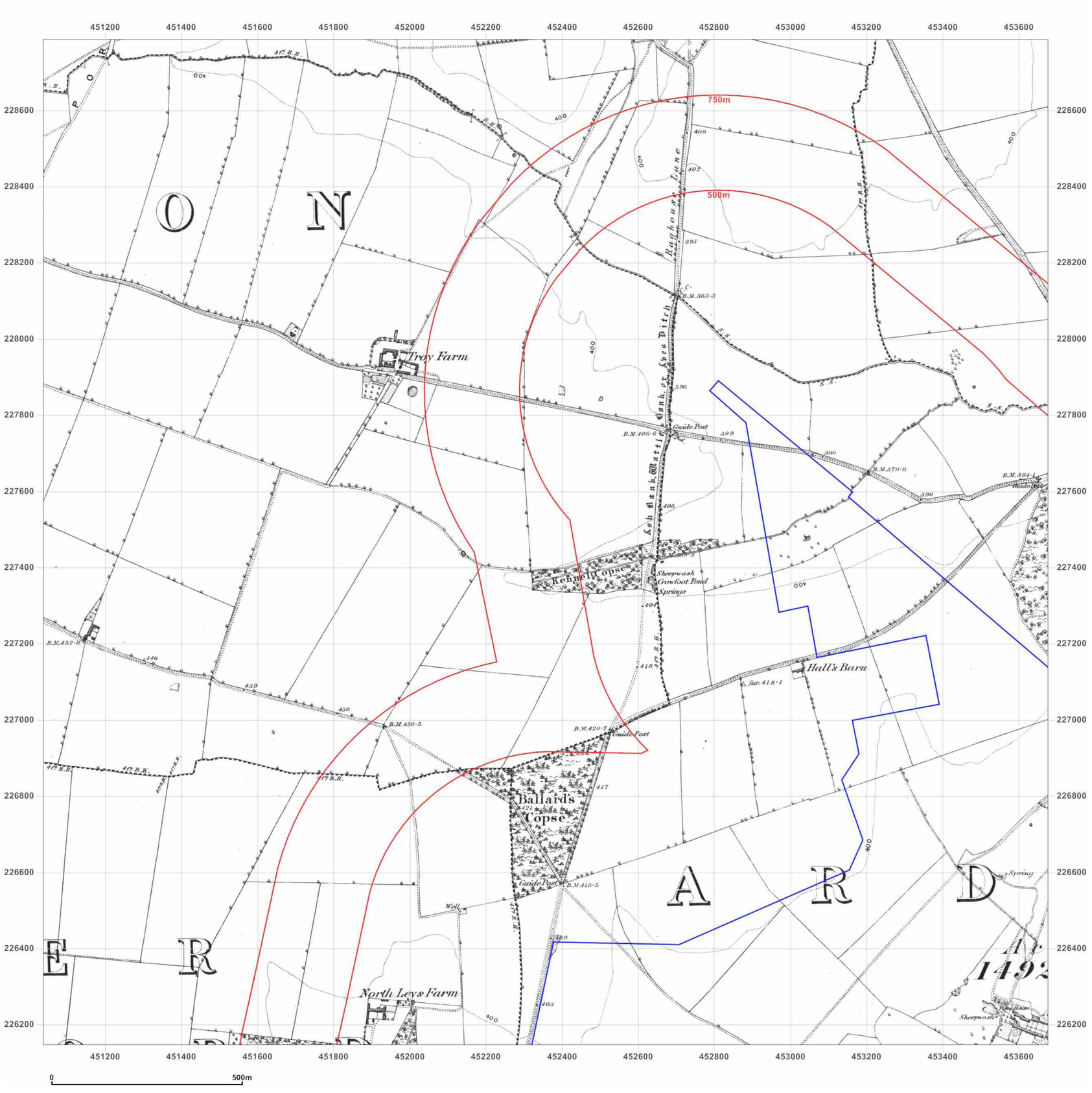
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Client Ref: Oxfordshire, Railfreight, Interchange
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Grid Ref: 452356, 227466

Map Name: County Series

Map date: **1880**

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Printed at: 1:10,560

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Surveyed 1880
Revised 1880
Edition N/A
Copyright N/A
Levelled N/A

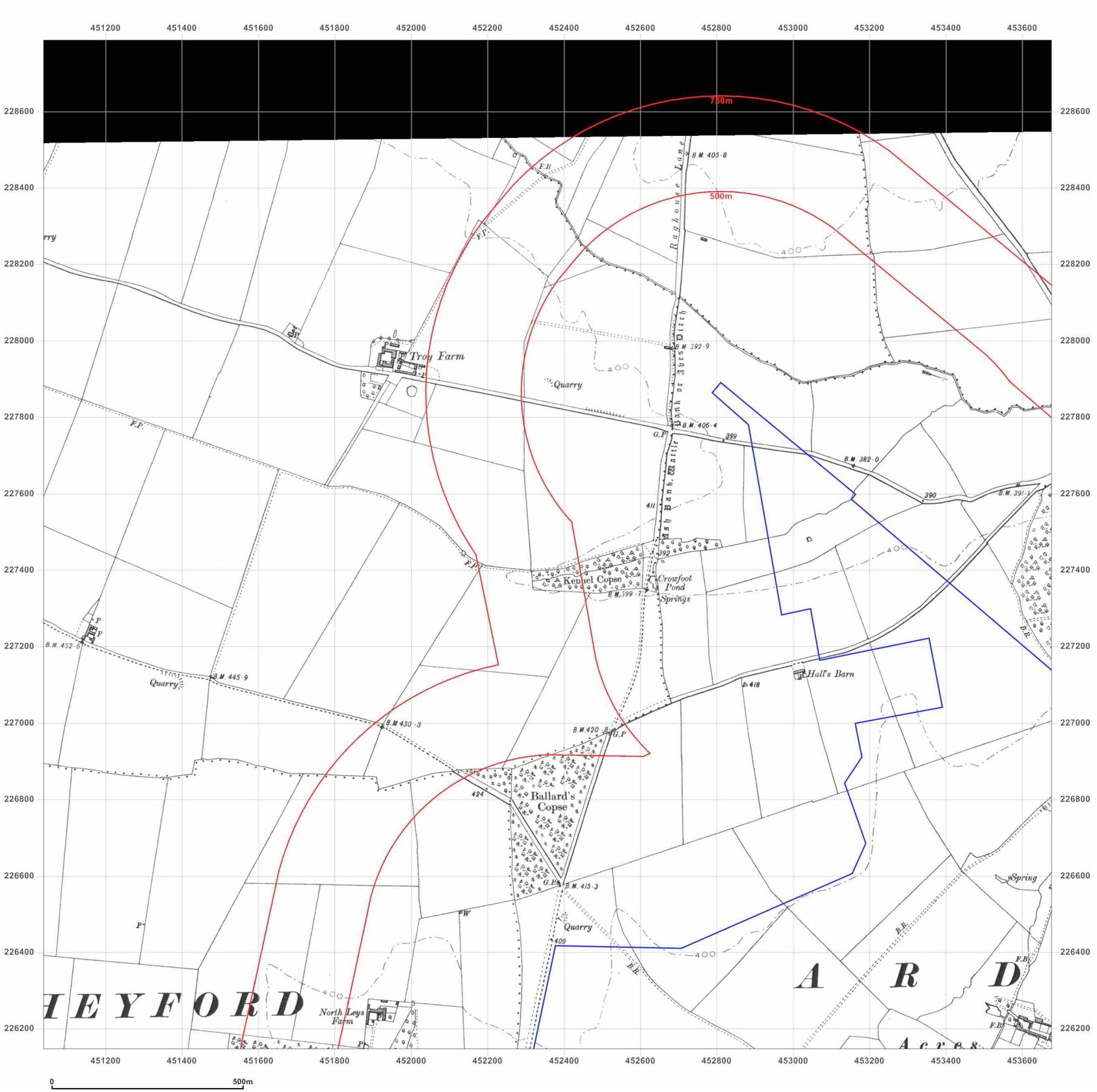
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Map Name: County Series

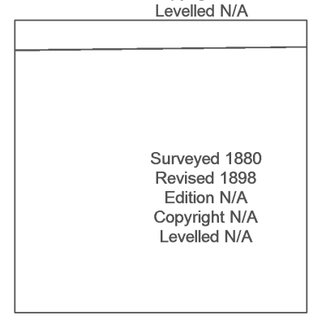
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N
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Revised N/A
Edition N/A
Copyright N/A
Levelled N/A



Surveyed 1880
Revised 1898
Edition N/A
Copyright N/A
Levelled N/A

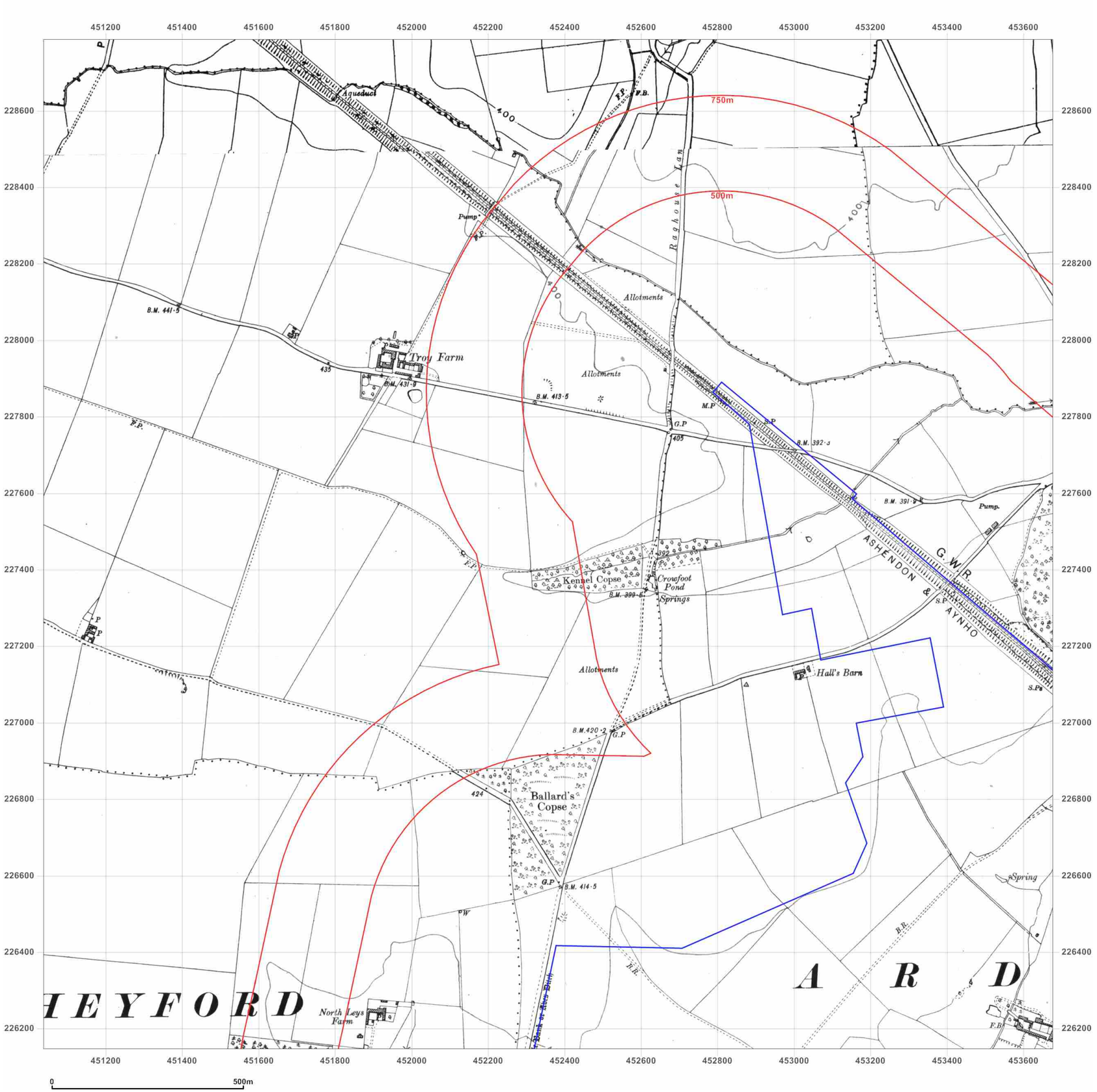
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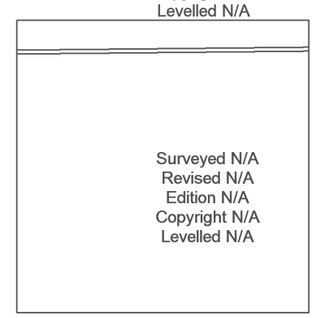
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Revised N/A
Edition N/A
Copyright N/A
Levelled N/A



Surveyed N/A
Revised N/A
Edition N/A
Copyright N/A
Levelled N/A

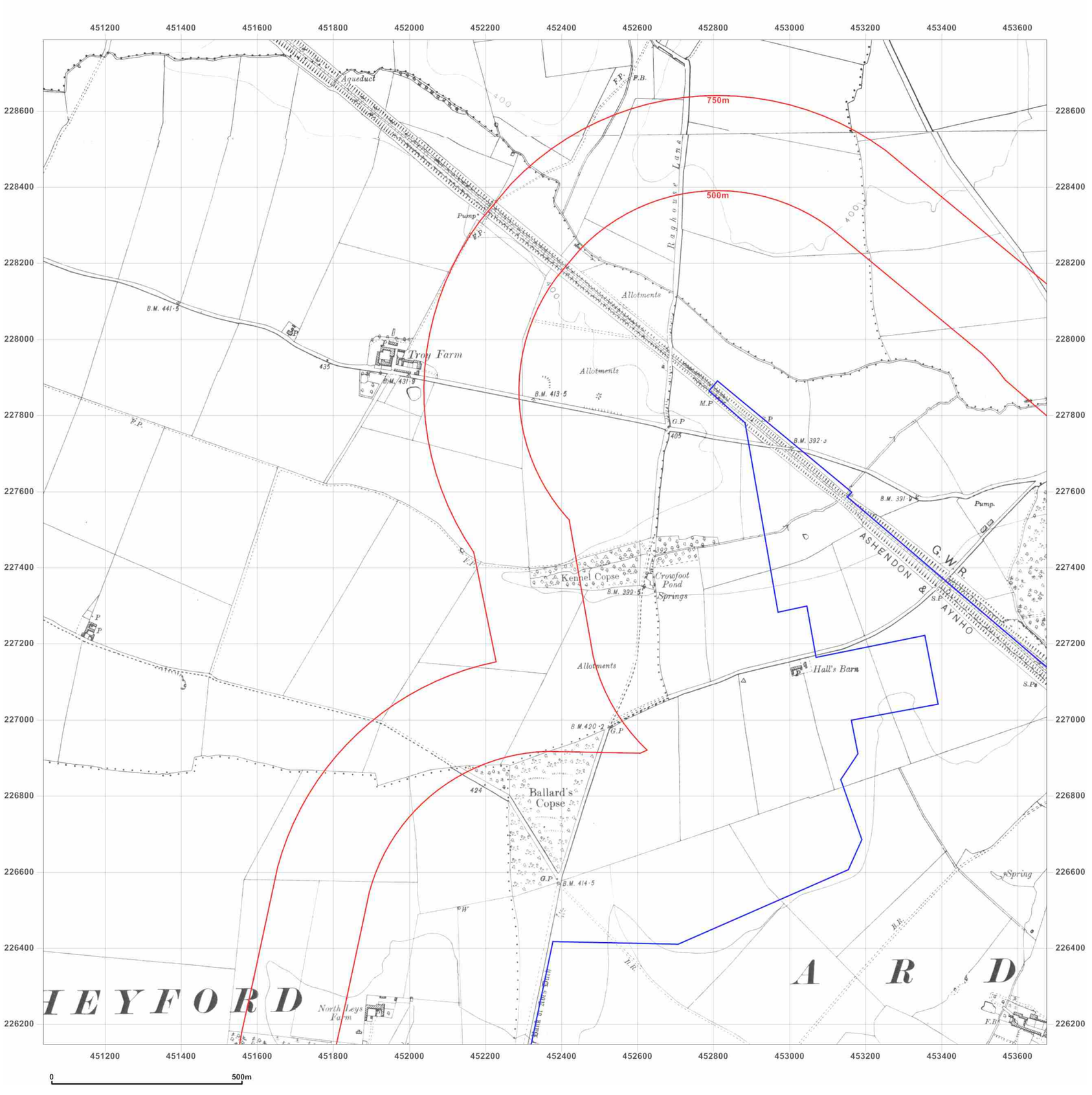
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Groundsure INSIGHTS

Site Details:

Oxfordshire, Railfreight, Interchange

Client Ref: Oxfordshire, Railfreight, Interchange
Report Ref: GSIP-2020-10641-3484_SS_1_2
Grid Ref: 452356, 227466

Map Name: County Series

Map date: **1923**

Scale: 1:10,560

Printed at: 1:10,560

N
W E
S

Surveyed 1882
Revised 1923
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1880
Revised 1923
Edition N/A
Copyright N/A
Levelled N/A

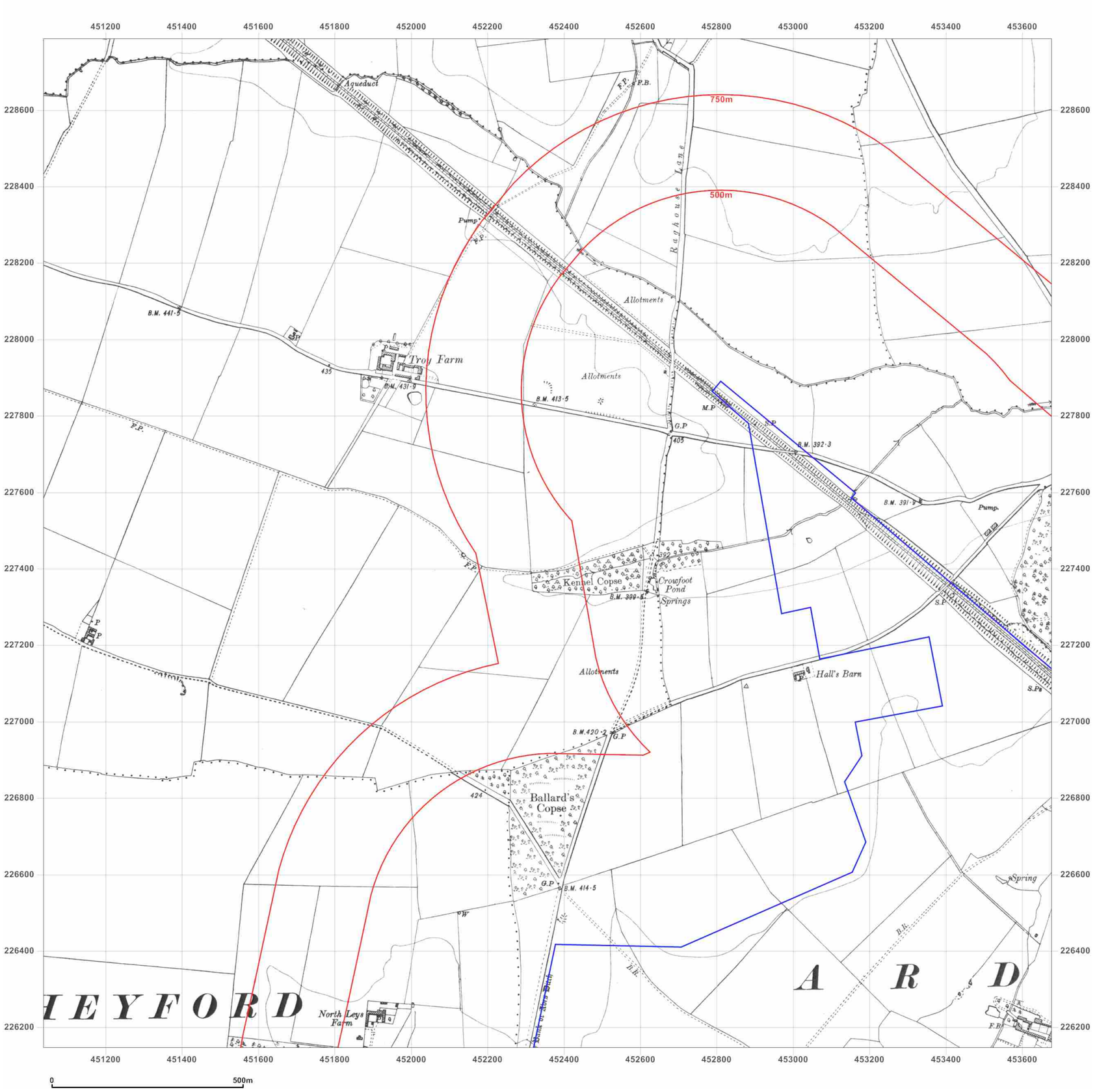
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Groundsure INSIGHTS

Site Details:

Oxfordshire, Railfreight, Interchange

Client Ref: Oxfordshire, Railfreight, Interchange
Report Ref: GSIP-2020-10641-3484_SS_1_2
Grid Ref: 452356, 227466

Map Name: County Series

Map date: **1923**

Scale: 1:10,560

Printed at: 1:10,560

N
W E
S

Surveyed 1882
Revised 1923
Edition N/A
Copyright N/A
Levelled N/A

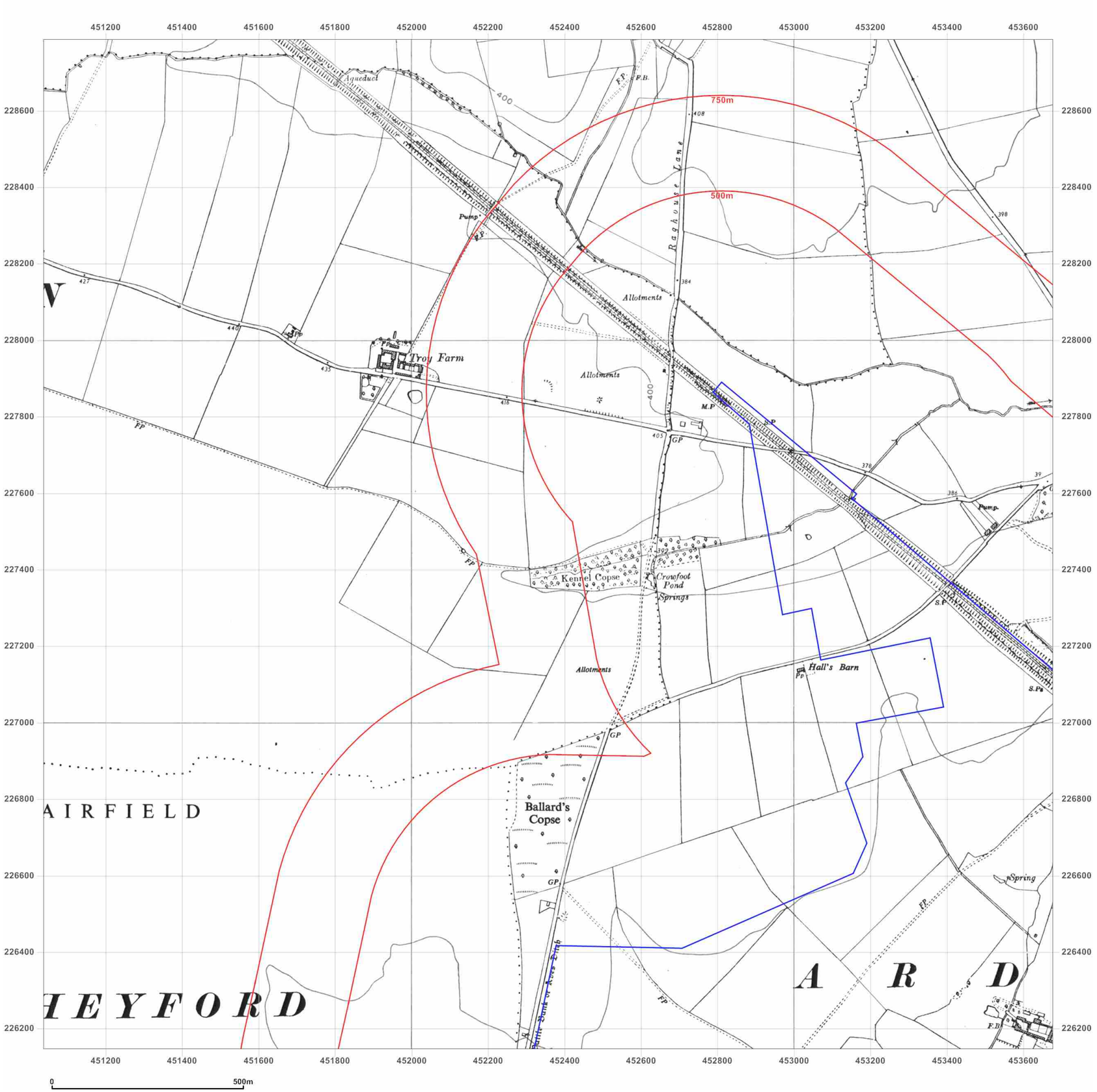
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Groundsure INSIGHTS

Site Details:

Oxfordshire, Railfreight, Interchange

Client Ref: Oxfordshire, Railfreight, Interchange
Report Ref: GSIP-2020-10641-3484_SS_1_2
Grid Ref: 452356, 227466

Map Name: Provisional

Map date: **1954**

Scale: 1:10,560

Printed at: 1:10,560

N
W E
S

Surveyed N/A
Revised 1954
Edition N/A
Copyright N/A
Levelled N/A

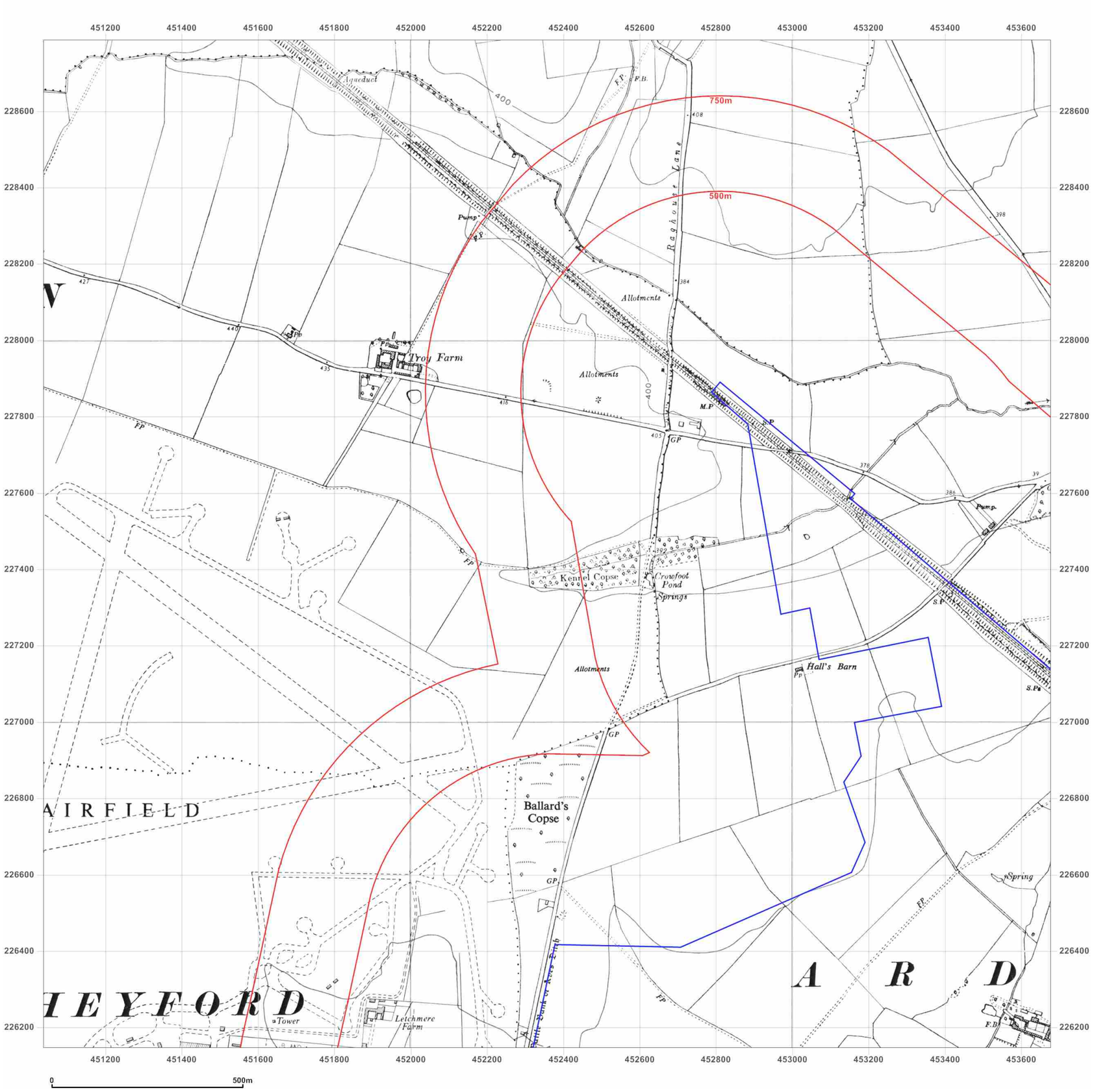
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Production date: 15 December 2020

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Site Details:

Oxfordshire, Railfreight, Interchange

Client Ref: Oxfordshire, Railfreight, Interchange
Report Ref: GSIP-2020-10641-3484_SS_1_2
Grid Ref: 452356, 227466

Map Name: Provisional

Map date: **1965**

Scale: 1:10,560

Printed at: 1:10,560

N
W E
S

Surveyed N/A
Revised 1965
Edition N/A
Copyright N/A
Levelled N/A

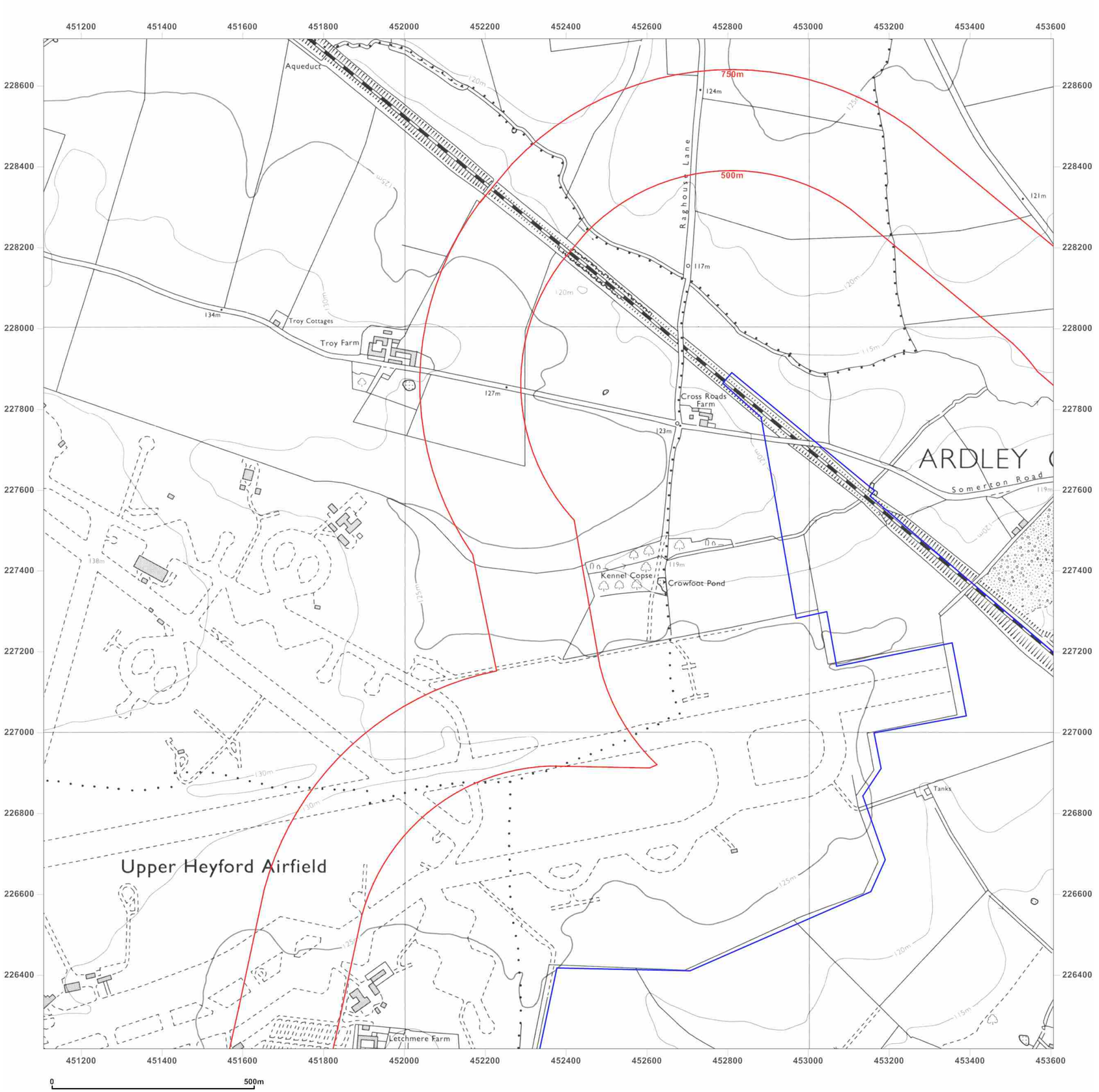
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Site Details:

Oxfordshire, Railfreight, Interchange

Client Ref: Oxfordshire, Railfreight, Interchange
Report Ref: GSIP-2020-10641-3484_SS_1_2
Grid Ref: 452356, 227466

Map Name: National Grid

Map date: **1980**

Scale: 1:10,000

Printed at: 1:10,000

N
W E
S

Surveyed 1975
Revised 1980
Edition N/A
Copyright N/A
Levelled N/A

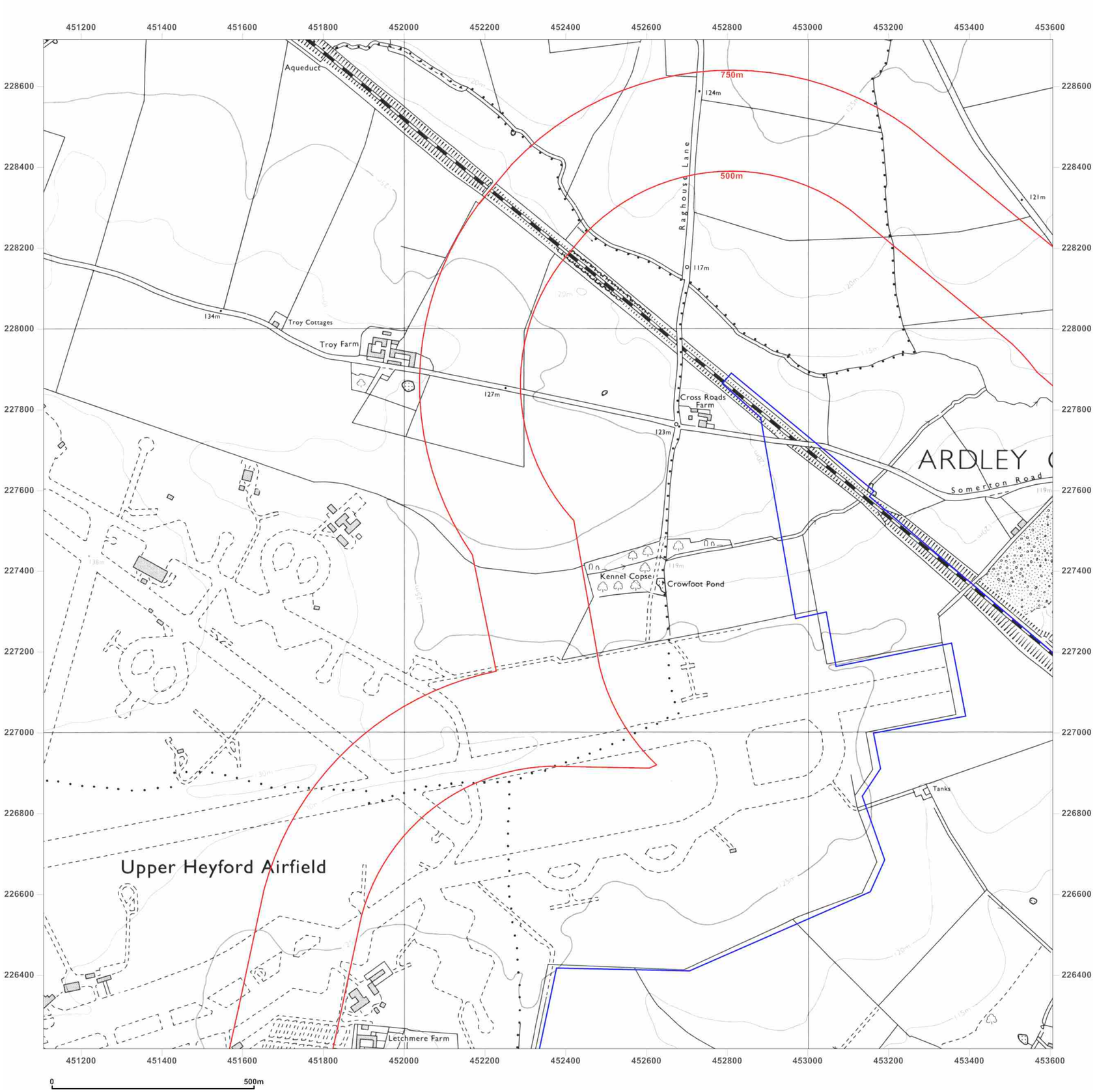
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Site Details:

Oxfordshire, Railfreight, Interchange

Client Ref: Oxfordshire, Railfreight, Interchange
Report Ref: GSIP-2020-10641-3484_SS_1_2
Grid Ref: 452356, 227466

Map Name: National Grid

Map date: **1992**

Scale: 1:10,000

Printed at: 1:10,000

N
W E
S

Surveyed 1975
Revised 1992
Edition N/A
Copyright N/A
Levelled N/A

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Groundsure INSIGHTS

Site Details:

Oxfordshire, Railfreight, Interchange

Client Ref: Oxfordshire, Railfreight, Interchange
Report Ref: GSIP-2020-10641-3484_SS_1_2
Grid Ref: 452356, 227466

Map Name: National Grid

Map date: **2001**

Scale: 1:10,000

Printed at: 1:10,000

N
W E
S

2001

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Site Details:

Oxfordshire, Railfreight, Interchange

Client Ref: Oxfordshire, Railfreight, Interchange
Report Ref: GSIP-2020-10641-3484_SS_1_2
Grid Ref: 452356, 227466

Map Name: National Grid

Map date: **2010**

Scale: 1:10,000

Printed at: 1:10,000

N
W E
S

2010

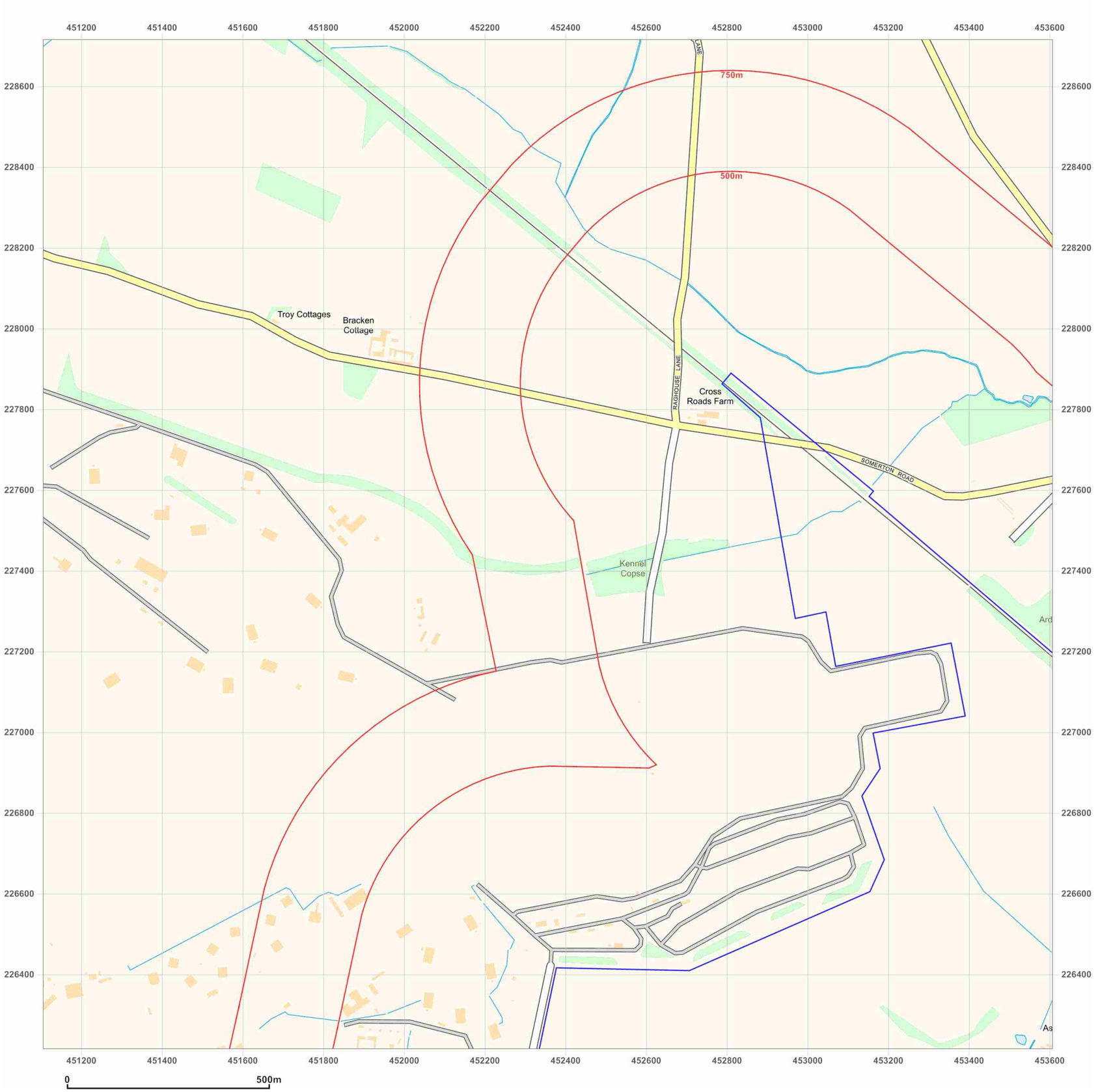
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Site Details:

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Client Ref: Oxfordshire, Railfreight, Interchange
Report Ref: GSIP-2020-10641-3484_SS_1_2
Grid Ref: 452356, 227466

Map Name: National Grid

Map date: **2020**

Scale: 1:10,000

Printed at: 1:10,000

N
W E
S

2020

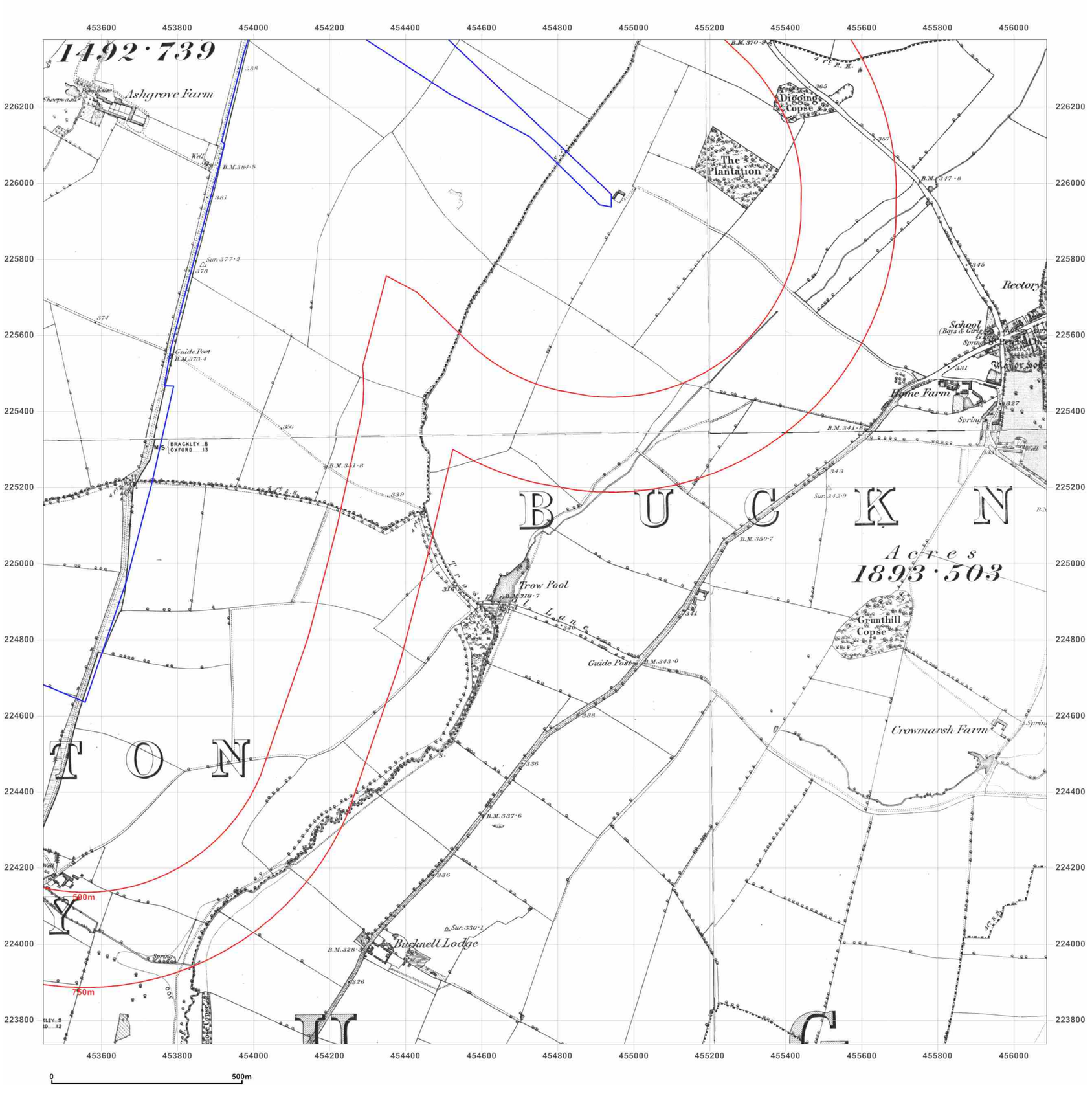
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Site Details:

Oxfordshire, Railfreight, Interchange

Client Ref: Oxfordshire, Railfreight, Interchange
Report Ref: GSIP-2020-10641-3484_SS_2_1
Grid Ref: 454766, 225056

Map Name: County Series

Map date: **1875-1880**

Scale: 1:10,560

Printed at: 1:10,560

N
W E
S

Surveyed 1880
Revised 1880
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1880
Revised 1880
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1875
Revised 1875
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1880
Revised 1880
Edition N/A
Copyright N/A
Levelled N/A

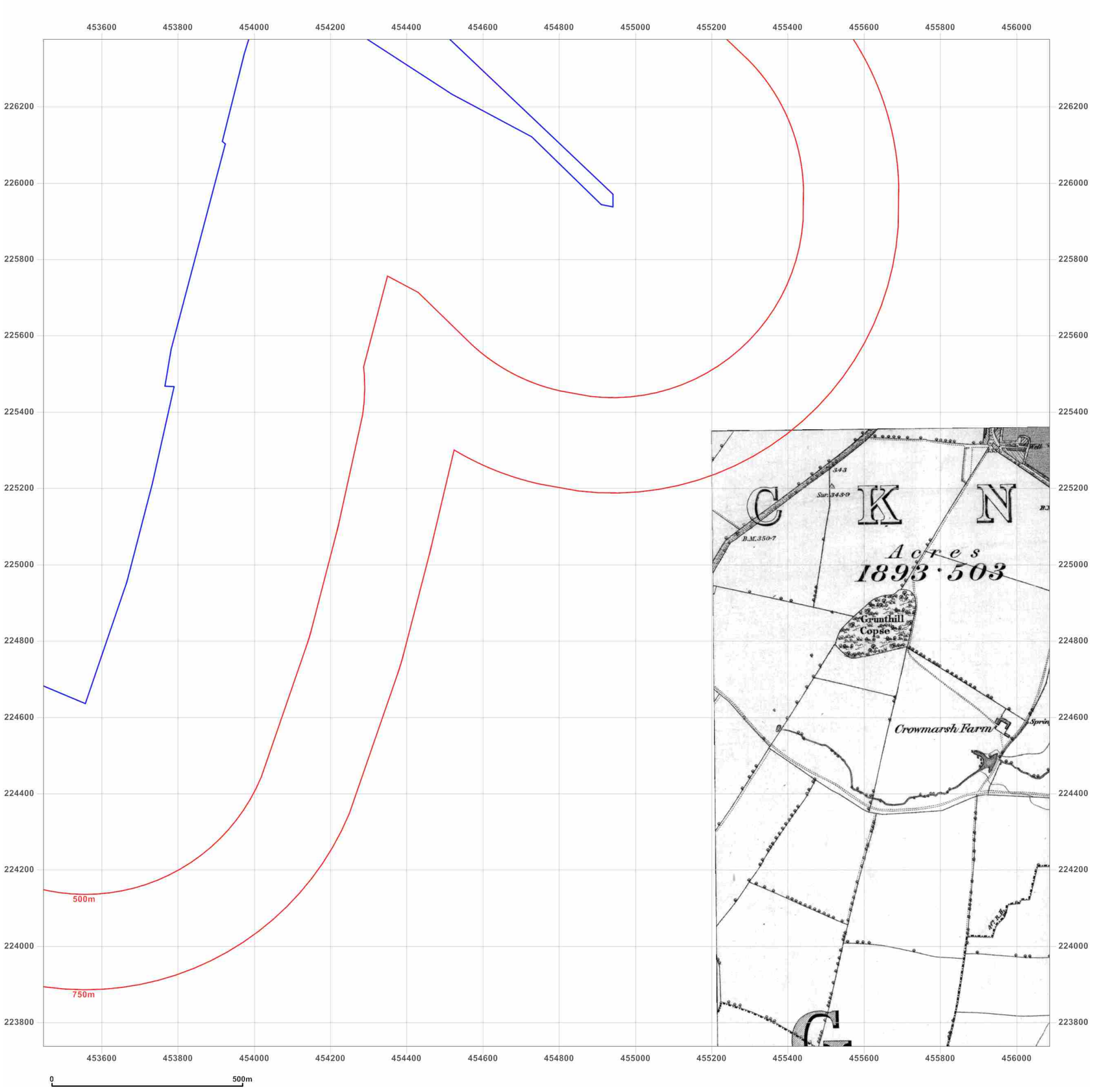
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Groundsure INSIGHTS

Site Details:

Oxfordshire, Railfreight, Interchange

Client Ref: Oxfordshire, Railfreight, Interchange
Report Ref: GSIP-2020-10641-3484_SS_2_1
Grid Ref: 454766, 225056

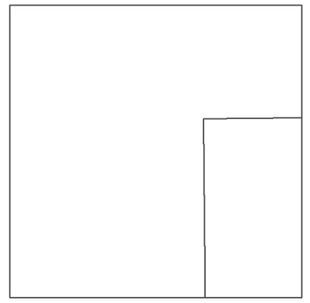
Map Name: County Series

Map date: **1885**

Scale: 1:10,560

Printed at: 1:10,560

N
W E
S



Surveyed 1880
Revised N/A
Edition 1885
Copyright N/A
Levelled N/A

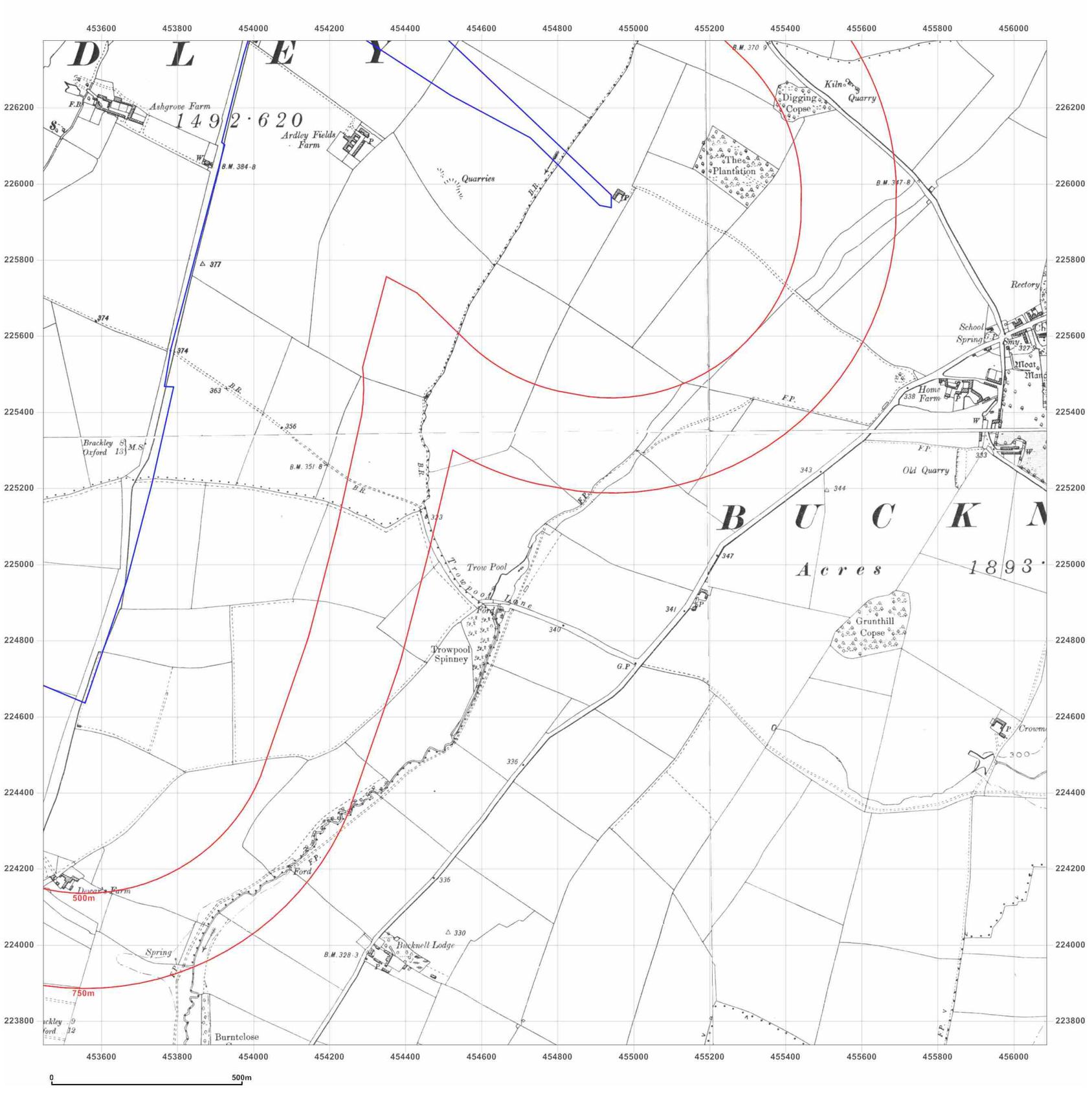
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Site Details:

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Client Ref: Oxfordshire, Railfreight, Interchange
Report Ref: GSIP-2020-10641-3484_SS_2_1
Grid Ref: 454766, 225056

Map Name: County Series

Map date: **1898**

Scale: 1:10,560

Printed at: 1:10,560

N
W E
S

Surveyed 1880
Revised 1898
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1879
Revised 1898
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1879
Revised 1898
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1879
Revised 1898
Edition N/A
Copyright N/A
Levelled N/A

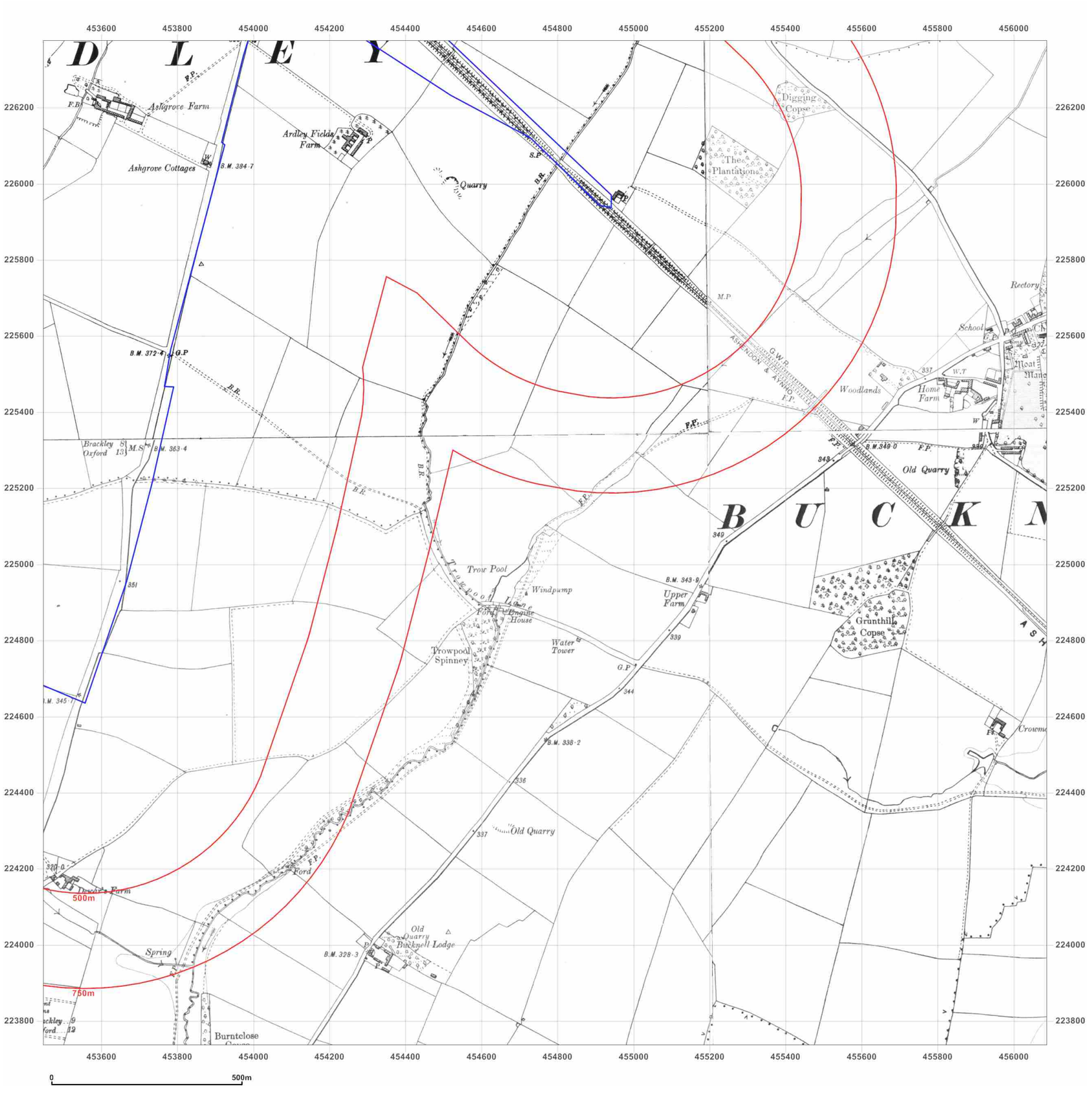
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Site Details:

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Client Ref:	Oxfordshire, Railfreight, Interchange
Report Ref:	GSIP-2020-10641-3484_SS_2_1
Grid Ref:	454766, 225056

Map Name:	County Series
Map date:	**1919-1920**
Scale:	1:10,560
Printed at:	1:10,560

N W E S

Surveyed N/A
Revised N/A
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1879
Revised 1920
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1879
Revised 1919
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1879
Revised 1920
Edition N/A
Copyright N/A
Levelled N/A

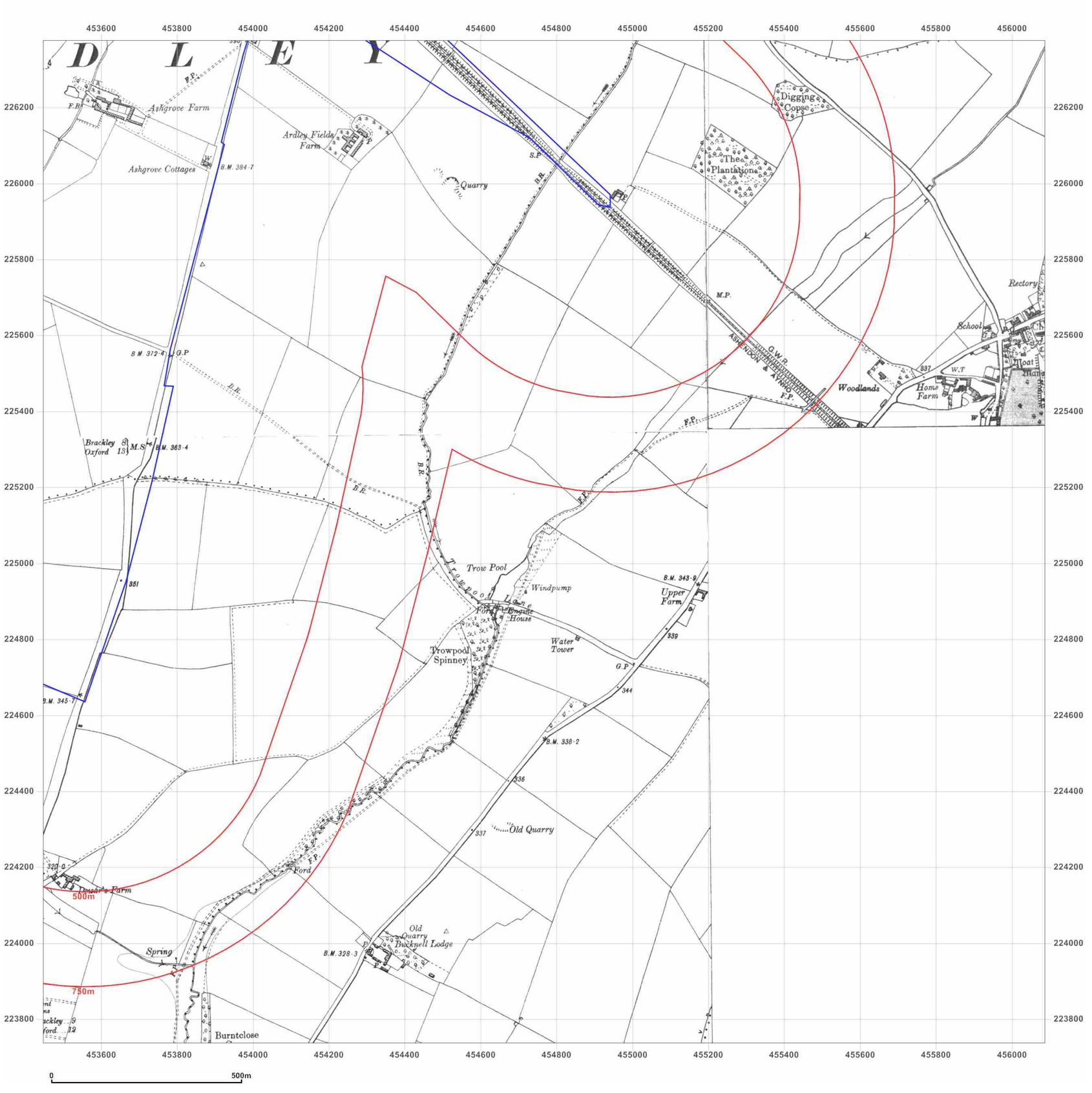
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Site Details:

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Client Ref: Oxfordshire, Railfreight, Interchange
Report Ref: GSIP-2020-10641-3484_SS_2_1
Grid Ref: 454766, 225056

Map Name: County Series

Map date: **1920-1923**

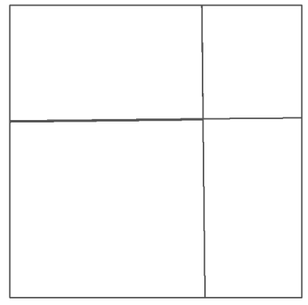
Scale: 1:10,560

Printed at: 1:10,560

N
W E
S

Surveyed 1882
Revised 1923
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1879
Revised 1920
Edition N/A
Copyright N/A
Levelled N/A



Surveyed 1880
Revised 1923
Edition N/A
Copyright N/A
Levelled N/A

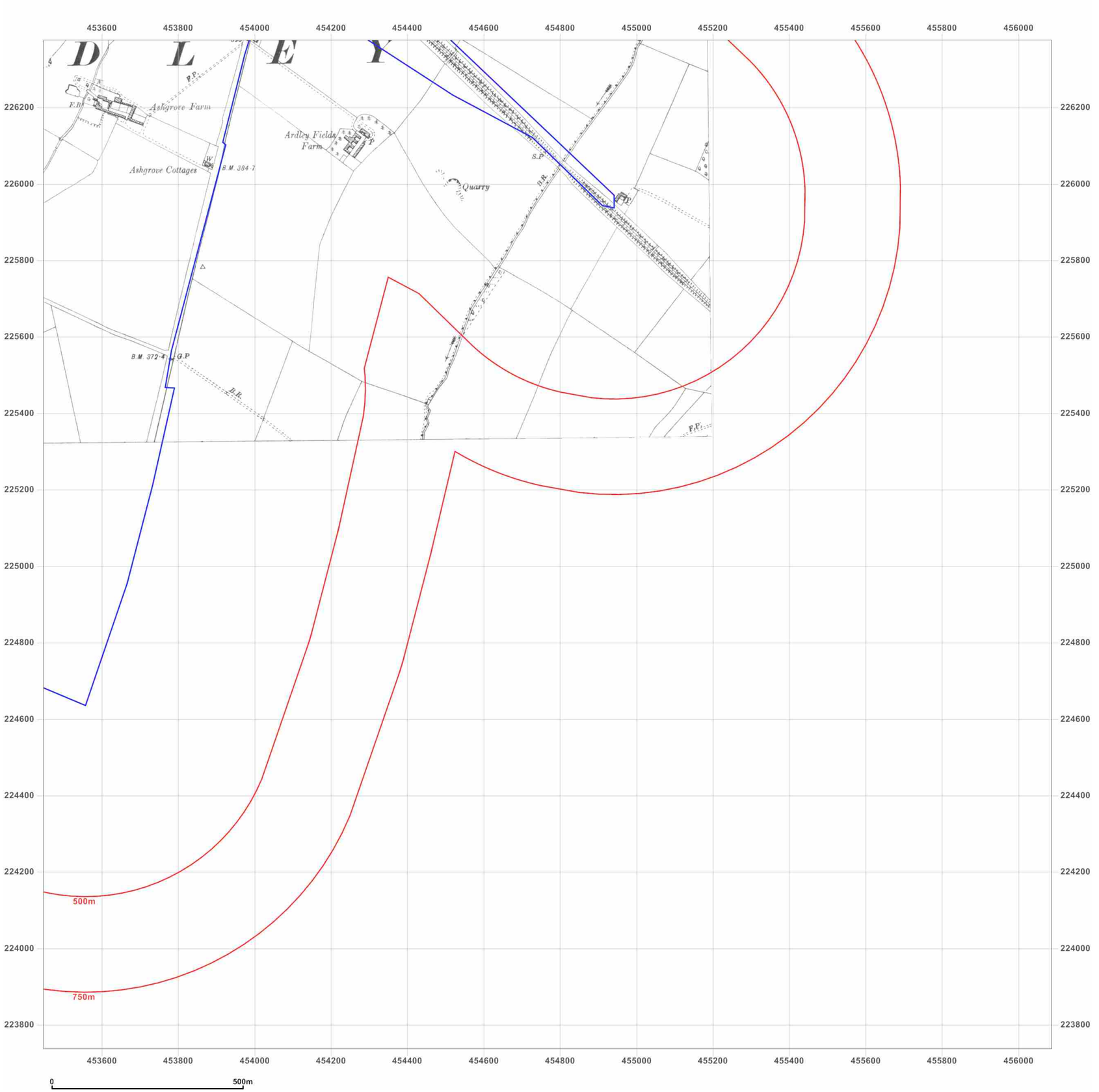
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Groundsure INSIGHTS

Site Details:

Oxfordshire, Railfreight, Interchange

Client Ref: Oxfordshire, Railfreight, Interchange
Report Ref: GSIP-2020-10641-3484_SS_2_1
Grid Ref: 454766, 225056

Map Name: County Series

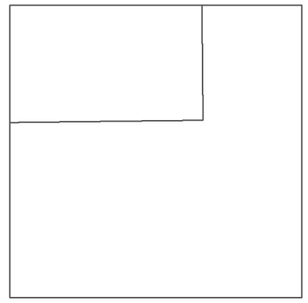
Map date: **1923**

Scale: 1:10,560

Printed at: 1:10,560

N
W E
S

Surveyed 1880
Revised 1923
Edition N/A
Copyright N/A
Levelled N/A



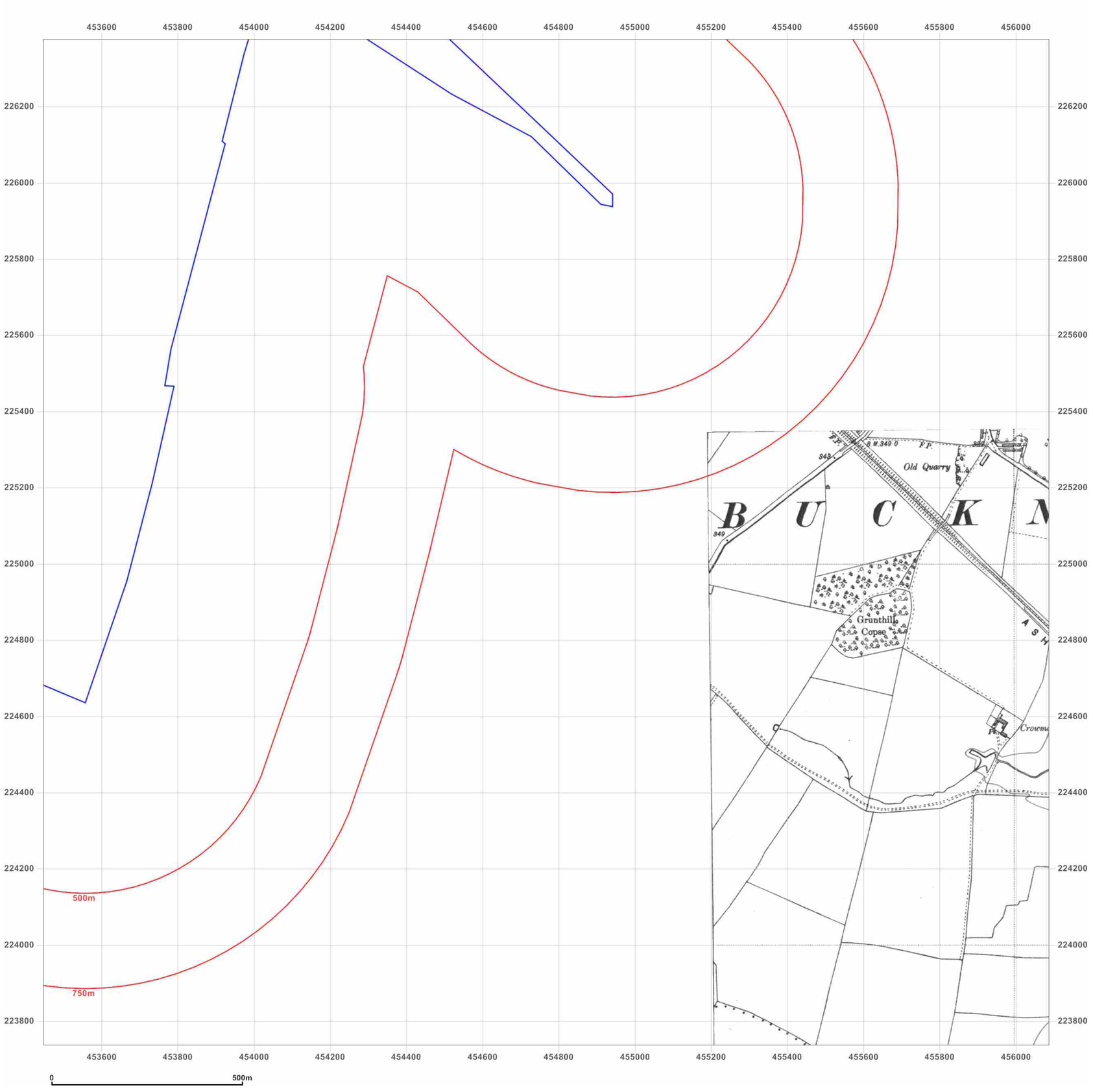
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Groundsure INSIGHTS

Site Details:

Oxfordshire, Railfreight, Interchange

Client Ref: Oxfordshire, Railfreight, Interchange
Report Ref: GSIP-2020-10641-3484_SS_2_1
Grid Ref: 454766, 225056

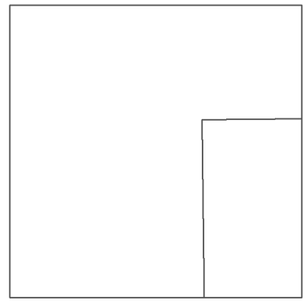
Map Name: County Series

Map date: **1938**

Scale: 1:10,560

Printed at: 1:10,560

N
W E
S



Surveyed 1879
Revised 1938
Edition 1938
Copyright N/A
Levelled N/A

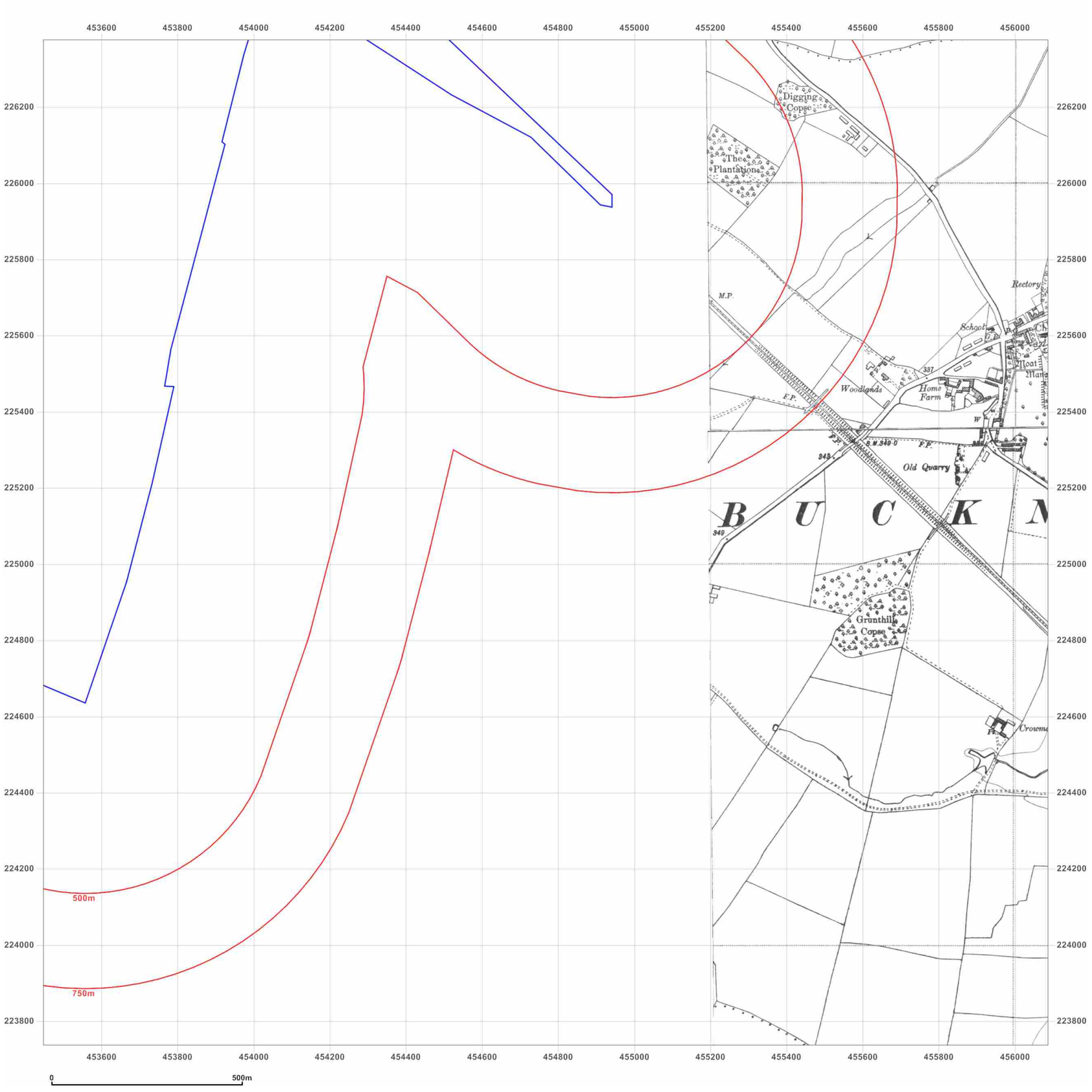
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Site Details:

Oxfordshire, Railfreight, Interchange

Client Ref: Oxfordshire, Railfreight, Interchange
Report Ref: GSIP-2020-10641-3484_SS_2_1
Grid Ref: 454766, 225056

Map Name: County Series

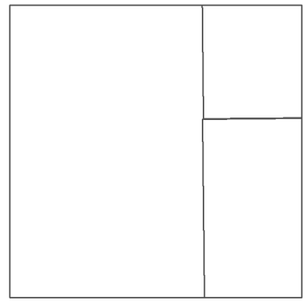
Map date: **1950**

Scale: 1:10,560

Printed at: 1:10,560

N
W E
S

Surveyed 1879
Revised 1950
Edition N/A
Copyright N/A
Levelled N/A



Surveyed 1879
Revised 1950
Edition N/A
Copyright N/A
Levelled N/A

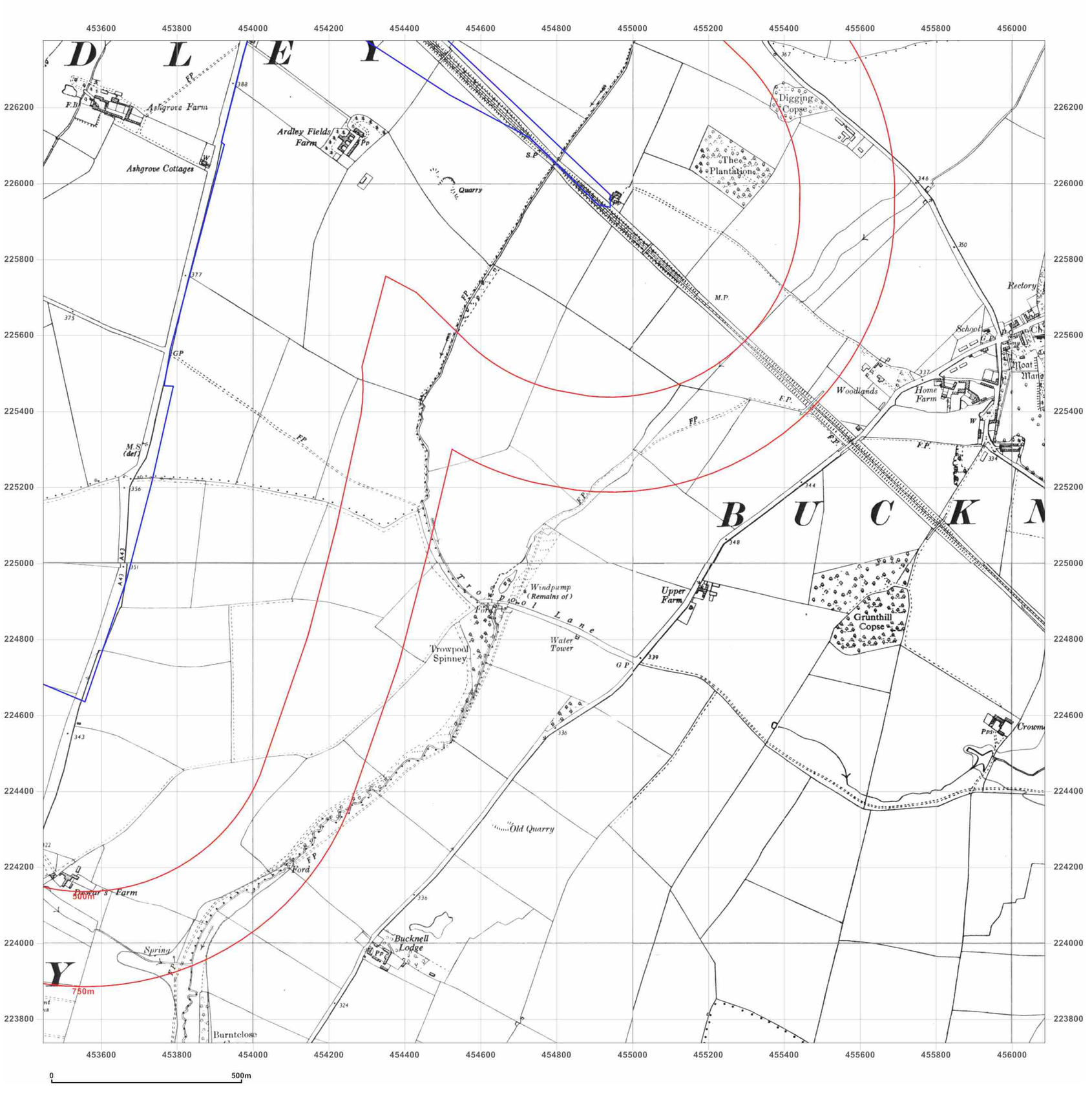
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Production date: 15 December 2020

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Groundsure INSIGHTS

Site Details:

Oxfordshire, Railfreight, Interchange

Client Ref: Oxfordshire, Railfreight, Interchange
Report Ref: GSIP-2020-10641-3484_SS_2_1
Grid Ref: 454766, 225056

Map Name: Provisional
Map date: **1950-1955**
Scale: 1:10,560
Printed at: 1:10,560

N
W E
S

Surveyed N/A
Revised 1954
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1950
Revised 1950
Edition N/A
Copyright N/A
Levelled N/A

Surveyed N/A
Revised 1954
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Copyright N/A
Levelled N/A

Surveyed N/A
Revised 1954
Edition N/A
Copyright 1955
Levelled N/A

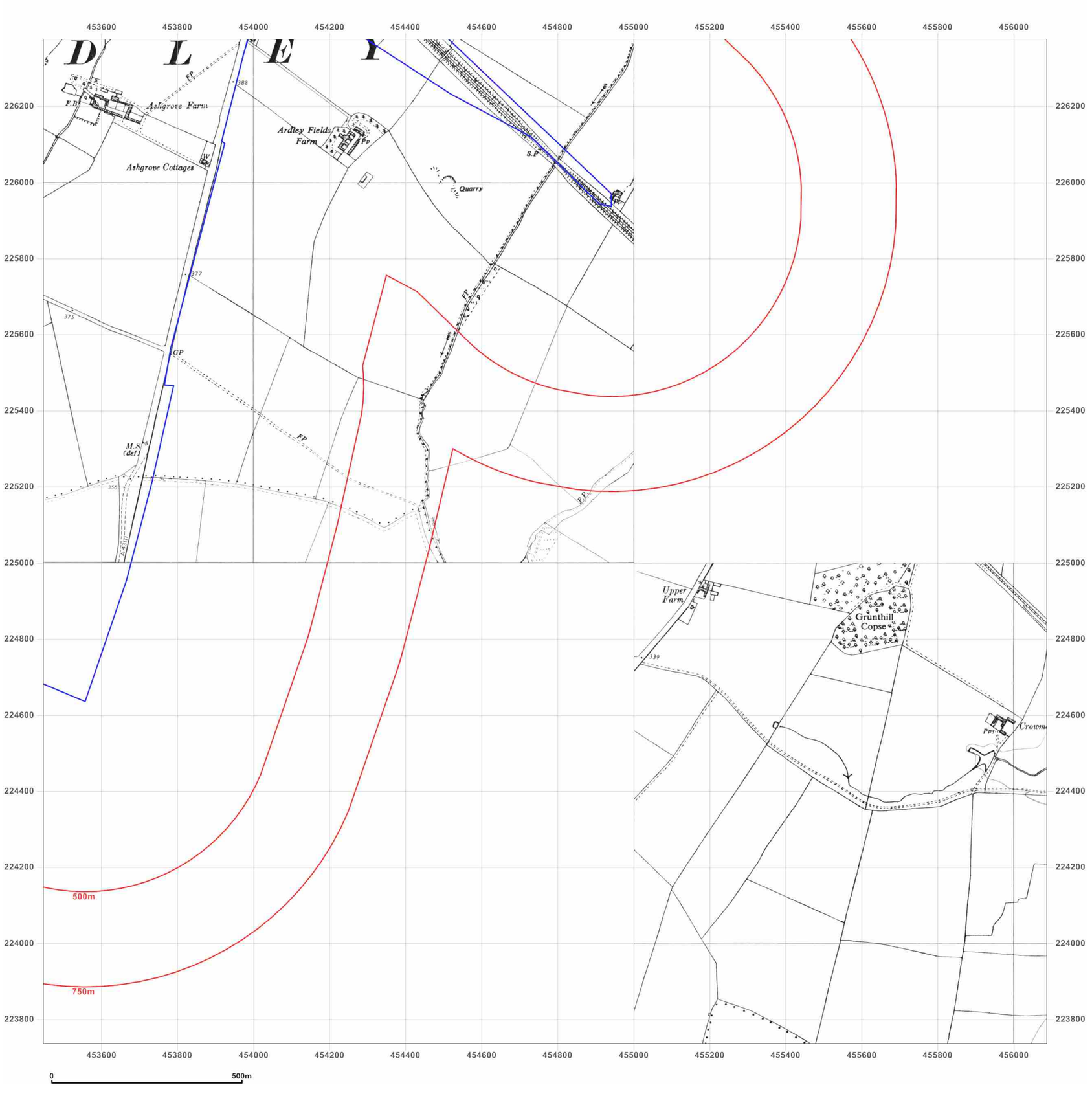
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Groundsure INSIGHTS

Site Details:

Oxfordshire, Railfreight, Interchange

Client Ref: Oxfordshire, Railfreight, Interchange
Report Ref: GSIP-2020-10641-3484_SS_2_1
Grid Ref: 454766, 225056

Map Name: Provisional

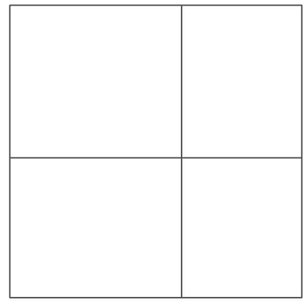
Map date: **1965-1966**

Scale: 1:10,560

Printed at: 1:10,560

N
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Surveyed N/A
Revised 1965
Edition N/A
Copyright N/A
Levelled N/A



Surveyed N/A
Revised 1966
Edition N/A
Copyright 1955
Levelled N/A

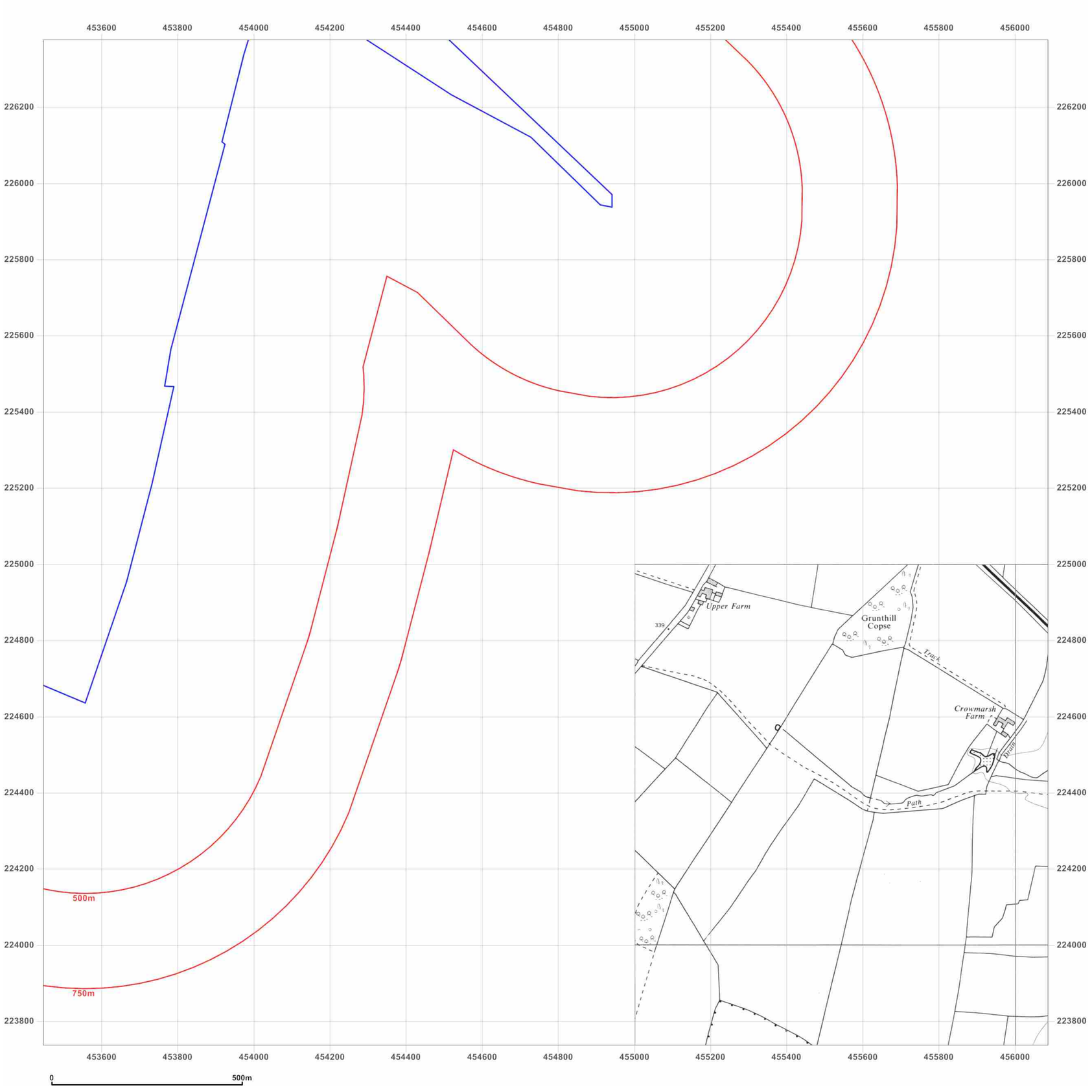
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Production date: 15 December 2020

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Groundsure INSIGHTS

Site Details:

Oxfordshire, Railfreight, Interchange

Client Ref: Oxfordshire, Railfreight, Interchange
Report Ref: GSIP-2020-10641-3484_SS_2_1
Grid Ref: 454766, 225056

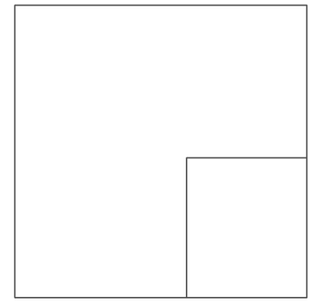
Map Name: Provisional

Map date: **1970**

Scale: 1:10,560

Printed at: 1:10,560

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W E
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Surveyed 1968
Revised 1970
Edition N/A
Copyright N/A
Levelled N/A

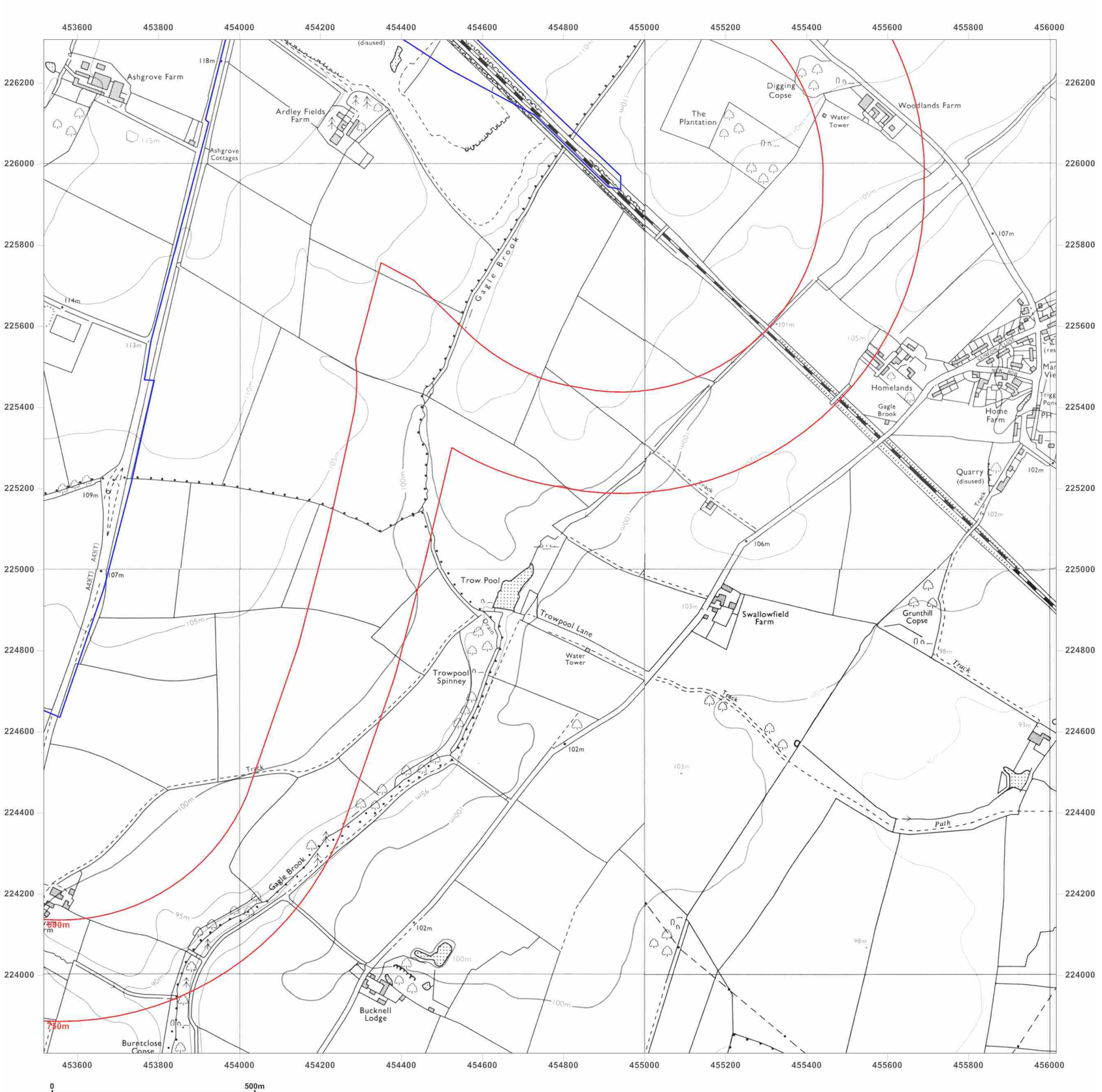
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Site Details:

Oxfordshire, Railfreight, Interchange

Client Ref: Oxfordshire, Railfreight, Interchange
Report Ref: GSIP-2020-10641-3484_SS_2_1
Grid Ref: 454766, 225056

Map Name: National Grid

Map date: **1980-1985**

Scale: 1:10,000

Printed at: 1:10,000

N
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Surveyed 1975
Revised 1980
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1975
Revised 1980
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1977
Revised 1981
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1983
Revised 1985
Edition N/A
Copyright N/A
Levelled N/A

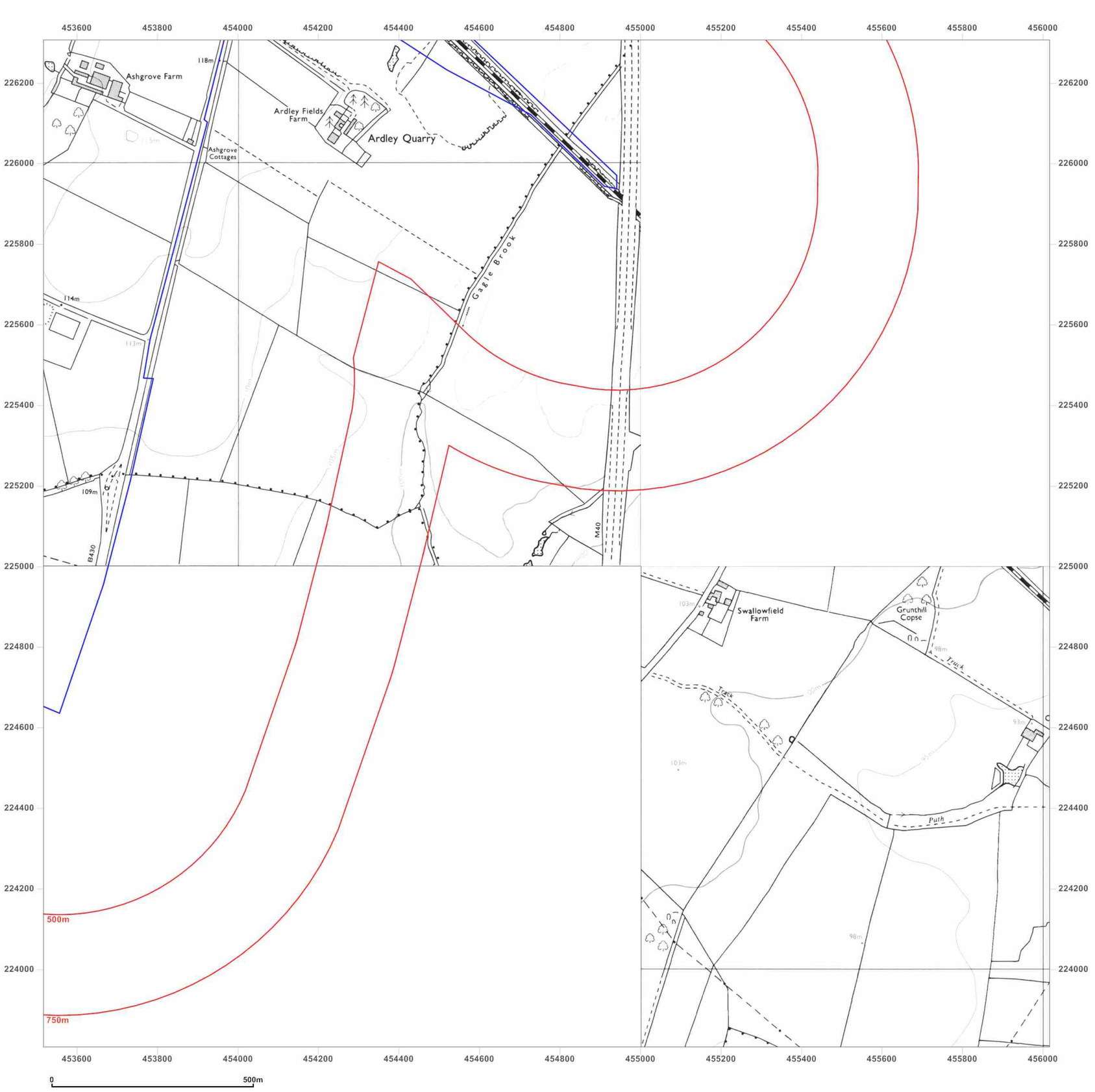
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Site Details:

Oxfordshire, Railfreight, Interchange

Client Ref: Oxfordshire, Railfreight, Interchange
Report Ref: GSIP-2020-10641-3484_SS_2_1
Grid Ref: 454766, 225056

Map Name: National Grid

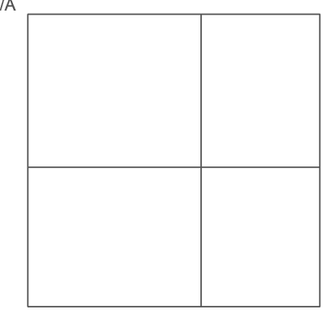
Map date: **1992-1995**

Scale: 1:10,000

Printed at: 1:10,000

N
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Surveyed 1975
Revised 1992
Edition N/A
Copyright N/A
Levelled N/A



Surveyed 1983
Revised 1995
Edition N/A
Copyright N/A
Levelled N/A

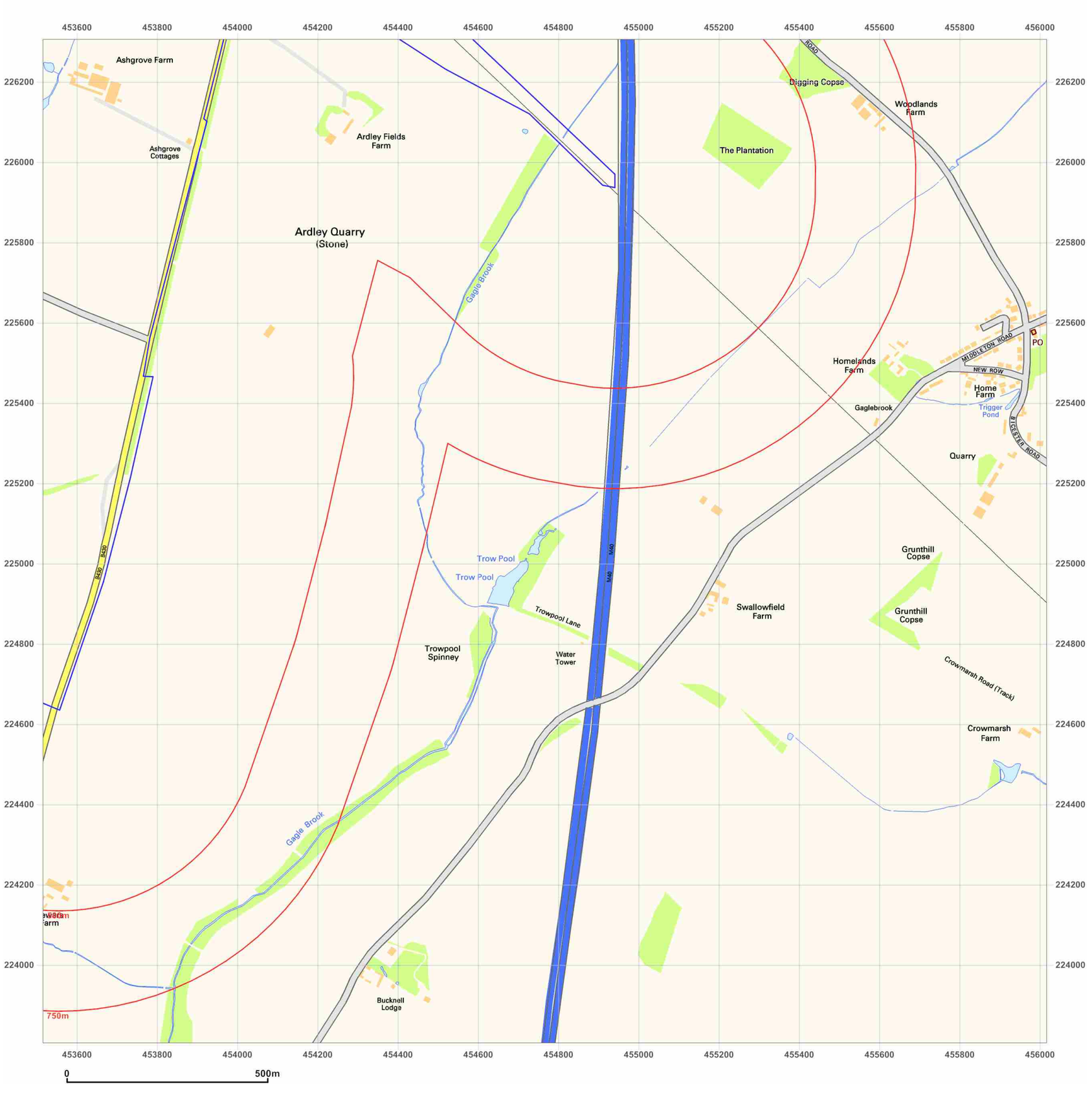
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Site Details:

Oxfordshire, Railfreight, Interchange

Client Ref: Oxfordshire, Railfreight, Interchange
Report Ref: GSIP-2020-10641-3484_SS_2_1
Grid Ref: 454766, 225056

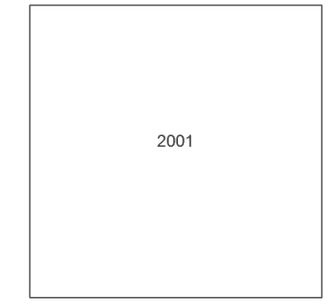
Map Name: National Grid

Map date: **2001**

Scale: 1:10,000

Printed at: 1:10,000

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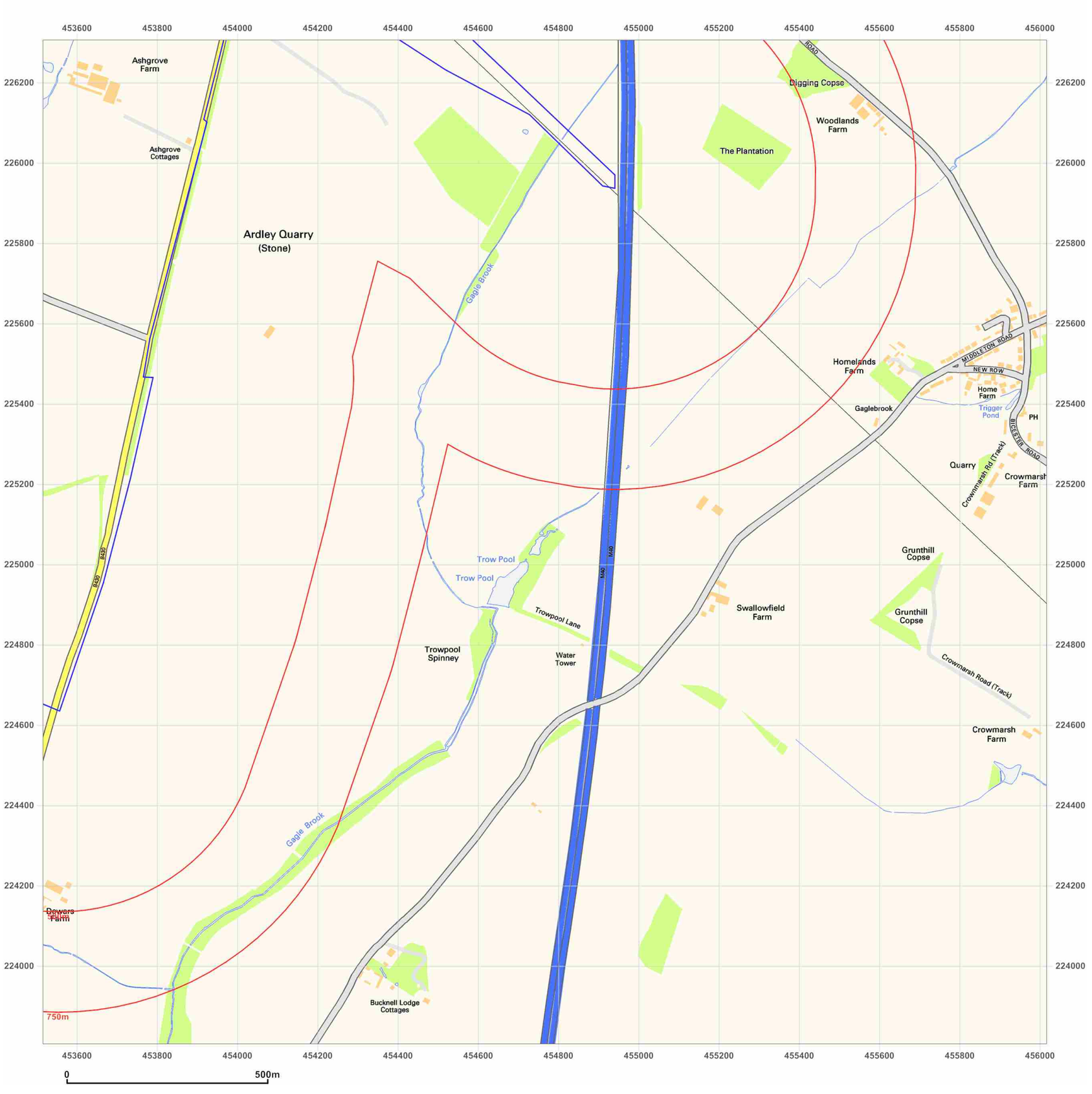
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Site Details:

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Client Ref: Oxfordshire, Railfreight, Interchange
Report Ref: GSIP-2020-10641-3484_SS_2_1
Grid Ref: 454766, 225056

Map Name: National Grid

Map date: **2010**

Scale: 1:10,000

Printed at: 1:10,000

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2010

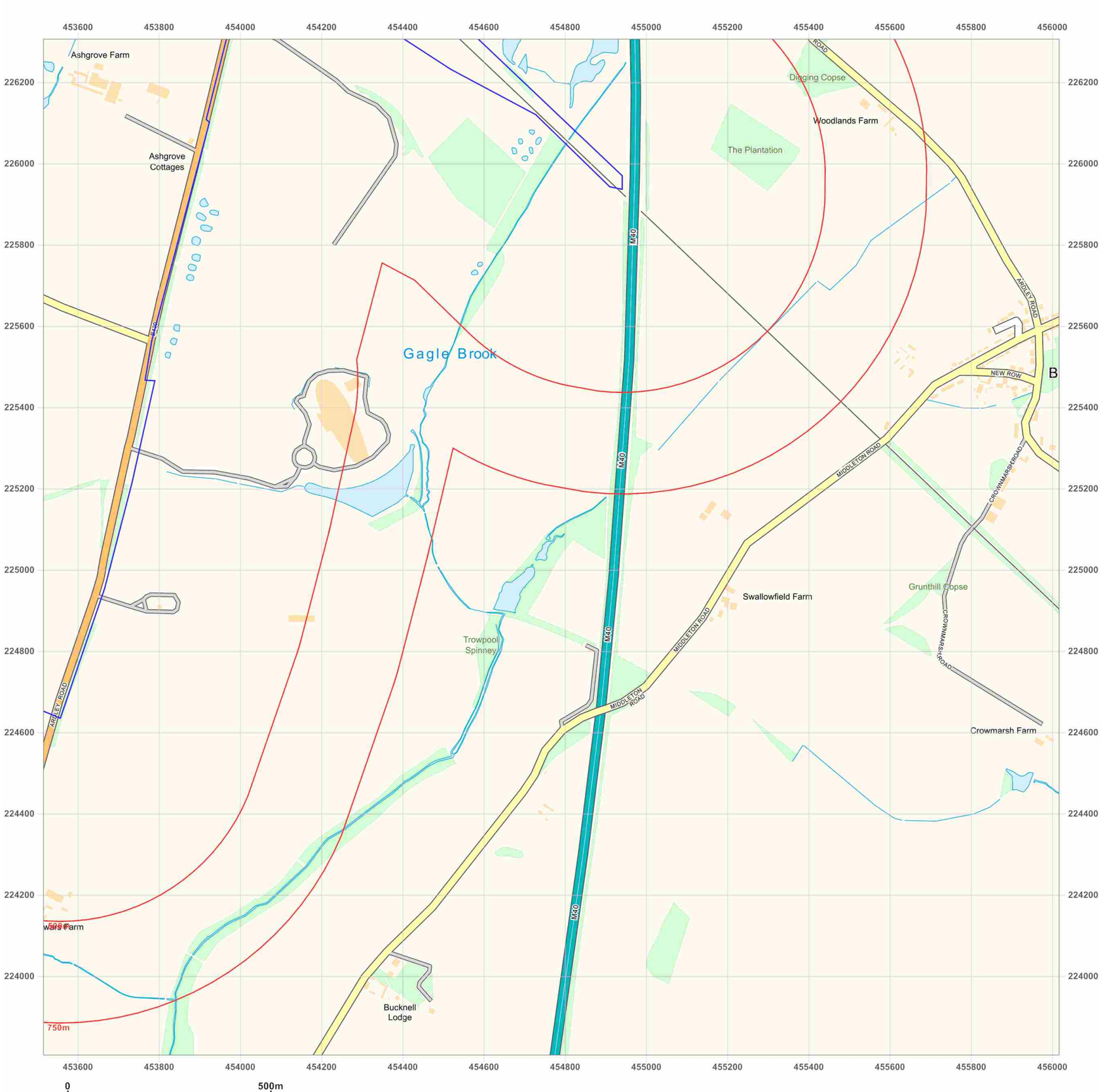
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Site Details:

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Client Ref: Oxfordshire, Railfreight, Interchange
Report Ref: GSIP-2020-10641-3484_SS_2_1
Grid Ref: 454766, 225056

Map Name: National Grid

Map date: **2020**

Scale: 1:10,000

Printed at: 1:10,000

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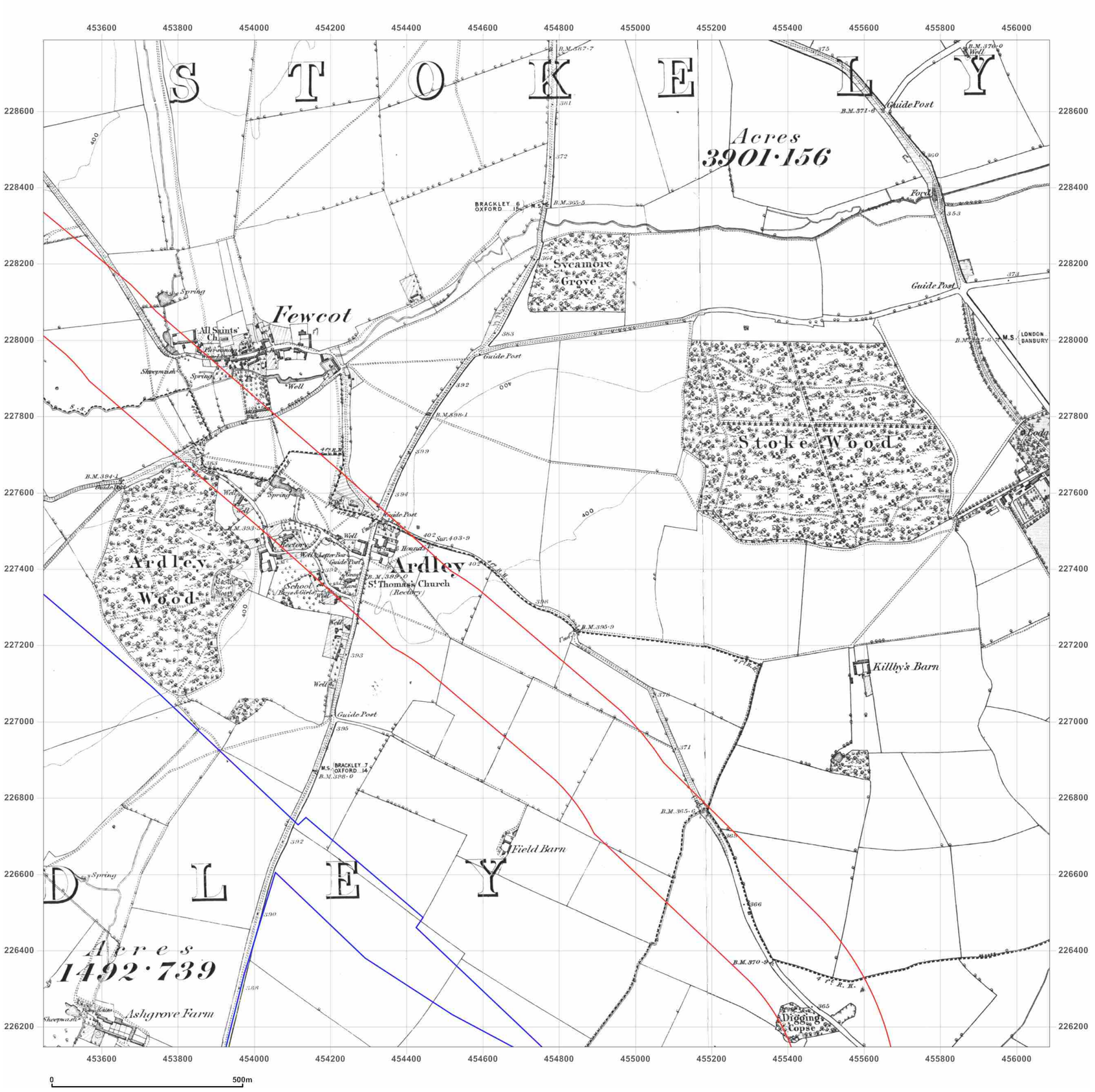
2020

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Site Details:

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Client Ref: Oxfordshire, Railfreight, Interchange
Report Ref: GSIP-2020-10641-3484_SS_2_2
Grid Ref: 454766, 227466

Map Name: County Series

Map date: **1880**

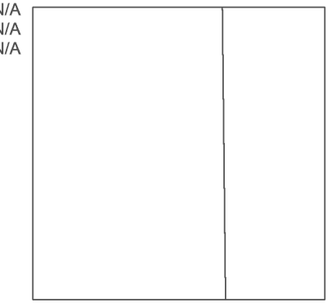
Scale: 1:10,560

Printed at: 1:10,560

N
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Surveyed 1880
Revised 1880
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1880
Revised 1880
Edition N/A
Copyright N/A
Levelled N/A



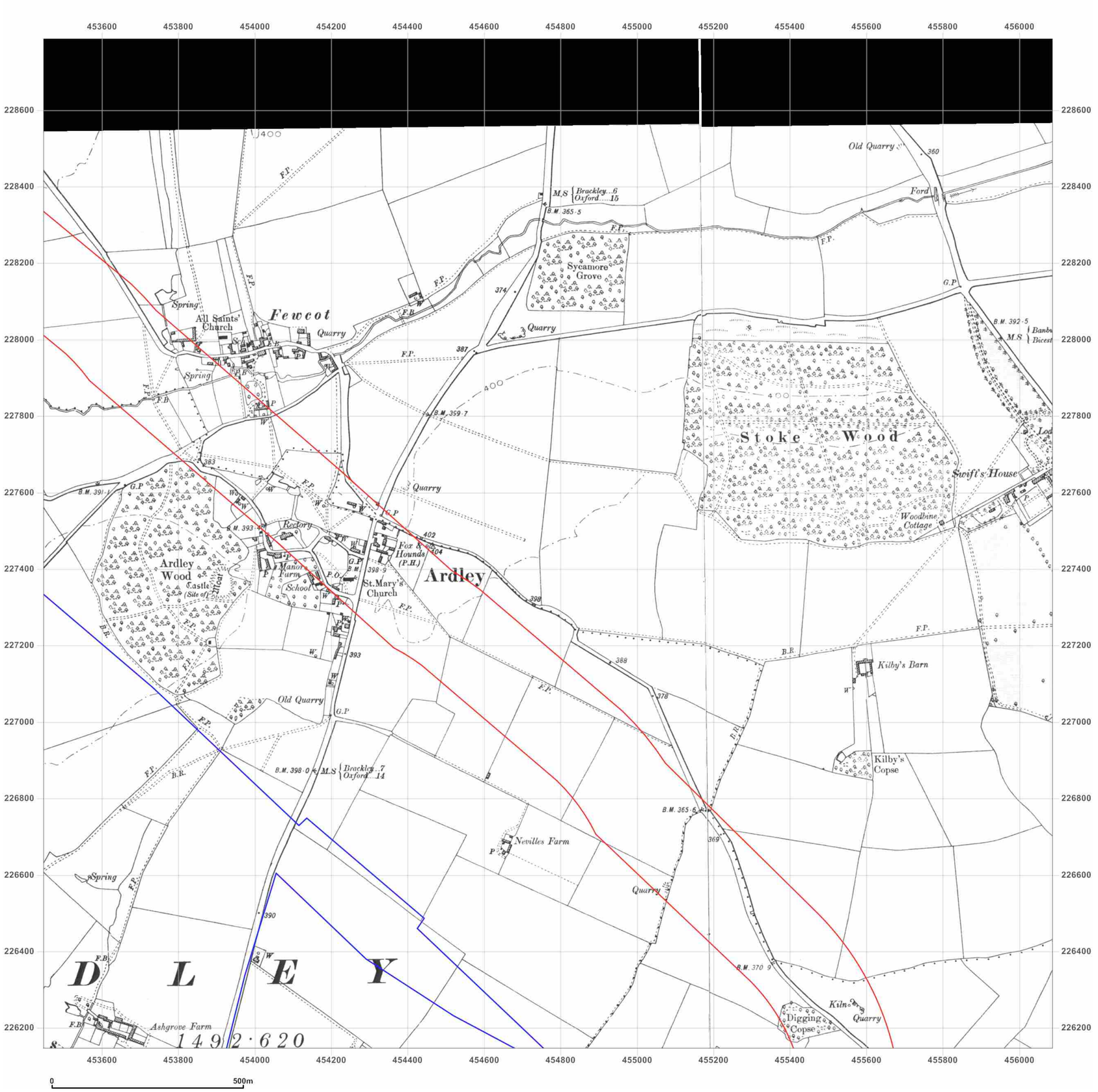
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Client Ref: Oxfordshire, Railfreight, Interchange
Report Ref: GSIP-2020-10641-3484_SS_2_2
Grid Ref: 454766, 227466

Map Name: County Series

Map date: **1898-1900**

Scale: 1:10,560

Printed at: 1:10,560

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Surveyed N/A
Revised N/A
Edition N/A
Copyright N/A
Levelled N/A

Surveyed N/A
Revised N/A
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1880
Revised 1898
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1879
Revised 1898
Edition N/A
Copyright N/A
Levelled N/A

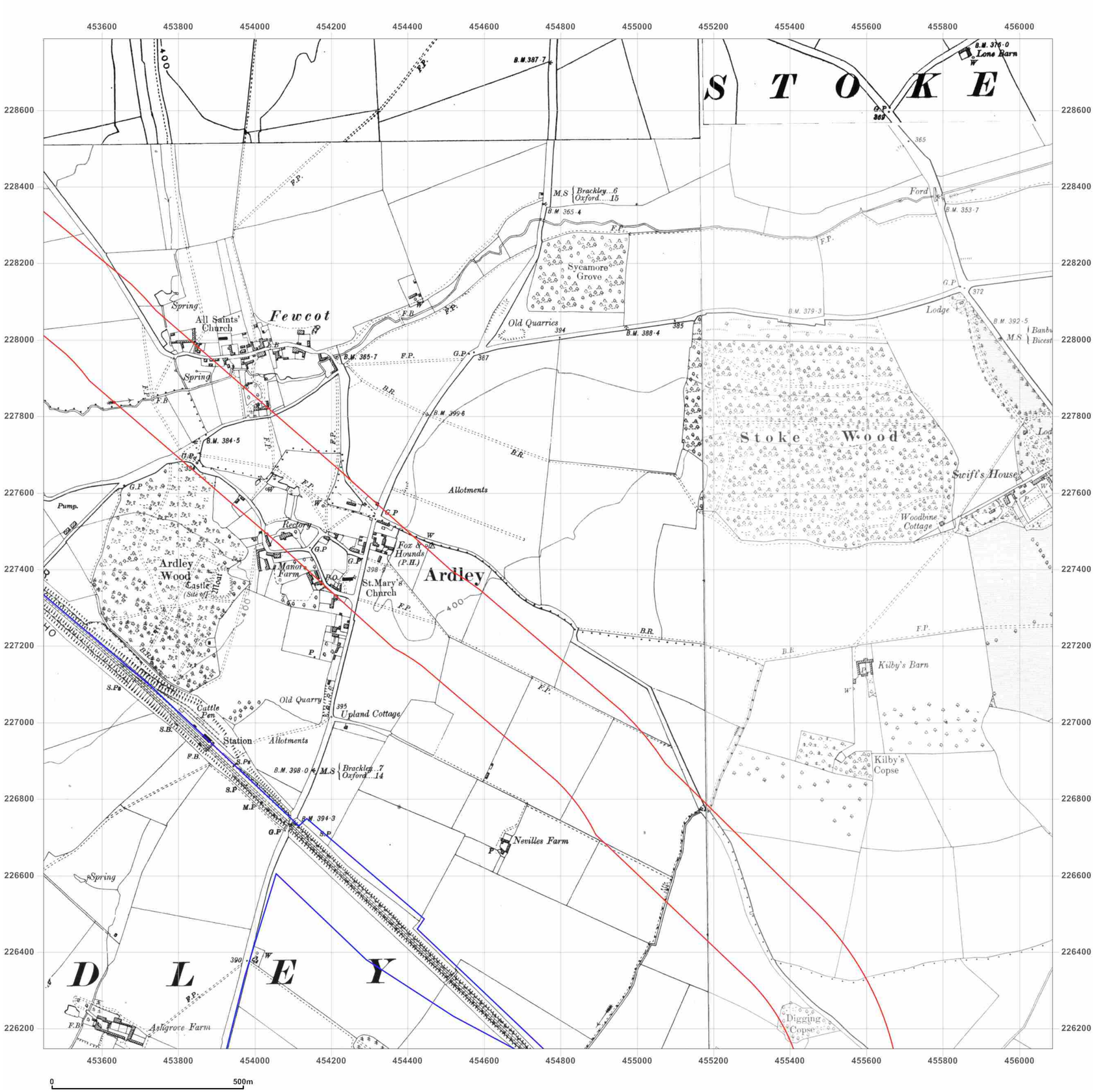
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Site Details:

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Client Ref: Oxfordshire, Railfreight, Interchange
Report Ref: GSIP-2020-10641-3484_SS_2_2
Grid Ref: 454766, 227466

Map Name: County Series

Map date: **1919-1920**

Scale: 1:10,560

Printed at: 1:10,560

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Surveyed N/A
Revised N/A
Edition N/A
Copyright N/A
Levelled N/A

Surveyed N/A
Revised N/A
Edition N/A
Copyright N/A
Levelled N/A

Surveyed N/A
Revised N/A
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1879
Revised 1920
Edition N/A
Copyright N/A
Levelled N/A

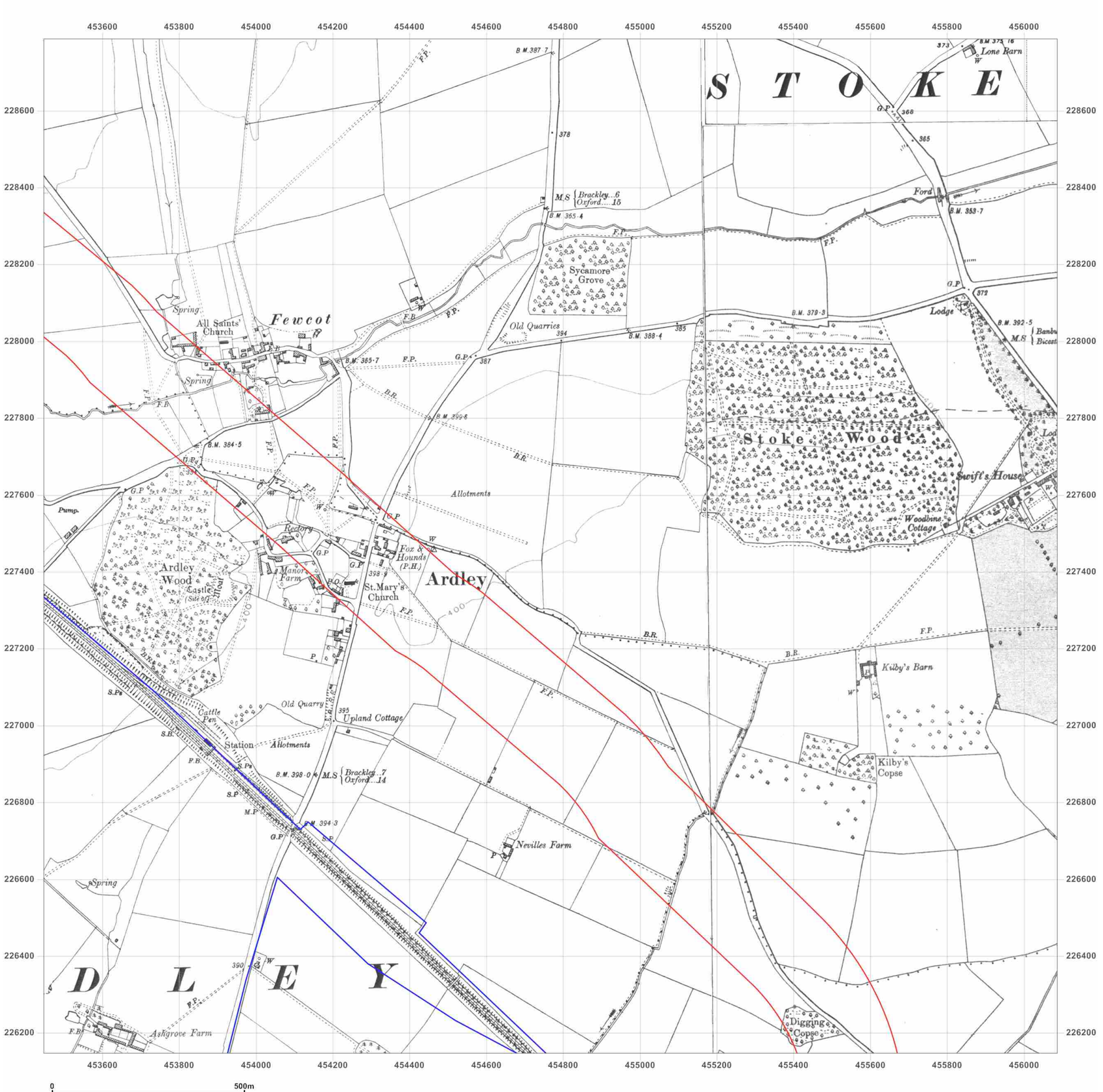
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Site Details:

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Client Ref: Oxfordshire, Railfreight, Interchange
Report Ref: GSIP-2020-10641-3484_SS_2_2
Grid Ref: 454766, 227466

Map Name: County Series

Map date: **1920-1923**

Scale: 1:10,560

Printed at: 1:10,560

N
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Surveyed 1882
Revised 1923
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1882
Revised 1920
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1879
Revised 1920
Edition N/A
Copyright N/A
Levelled N/A

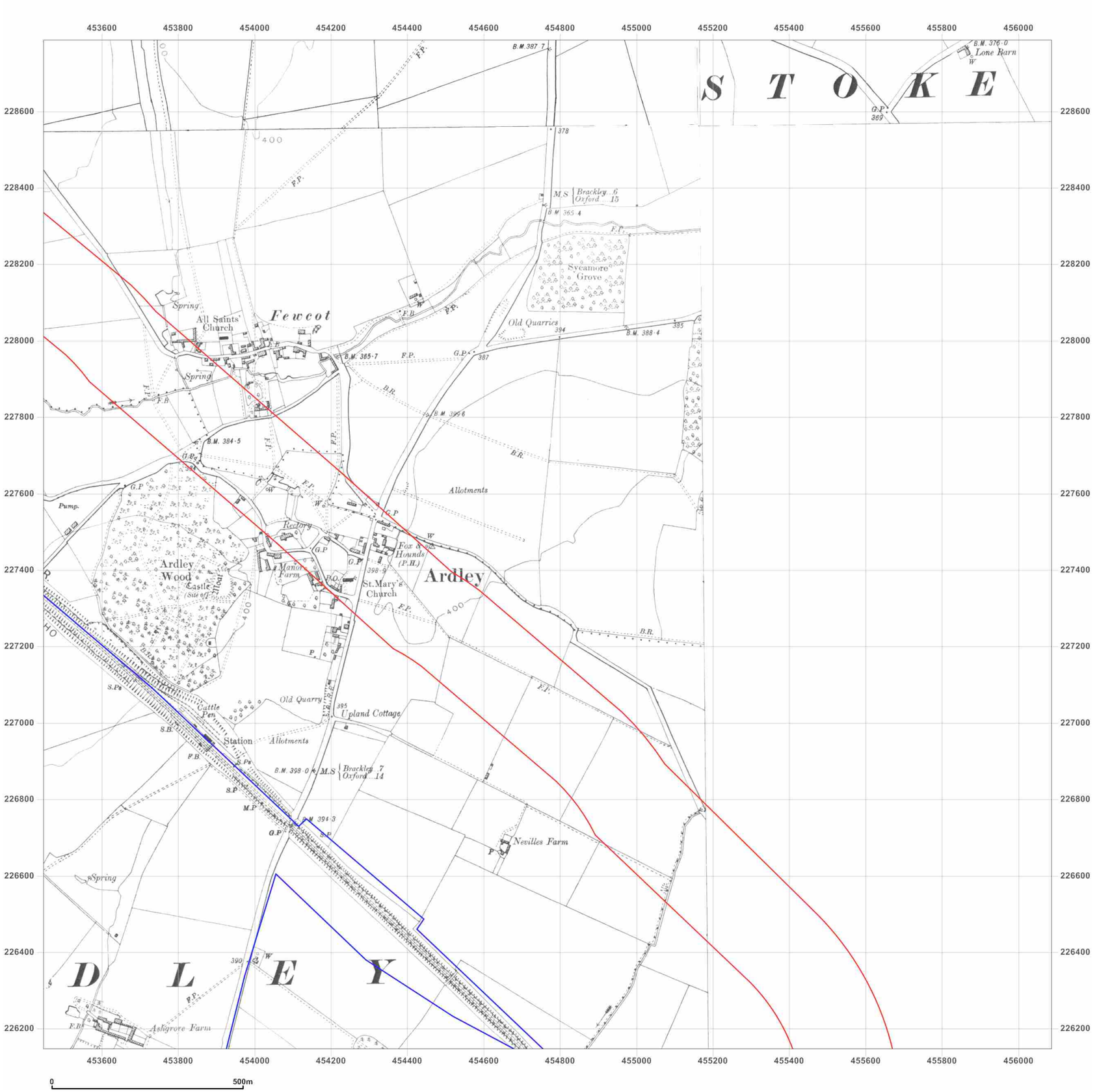
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Site Details:

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Client Ref: Oxfordshire, Railfreight, Interchange
Report Ref: GSIP-2020-10641-3484_SS_2_2
Grid Ref: 454766, 227466

Map Name: County Series

Map date: **1923**

Scale: 1:10,560

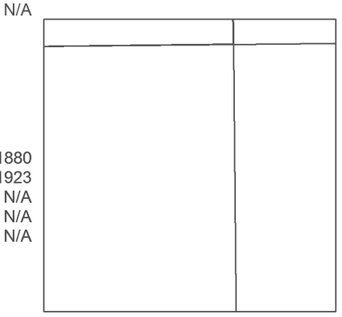
Printed at: 1:10,560

N
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Surveyed 1882
Revised 1923
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1882
Revised 1923
Edition 1923
Copyright N/A
Levelled N/A

Surveyed 1880
Revised 1923
Edition N/A
Copyright N/A
Levelled N/A



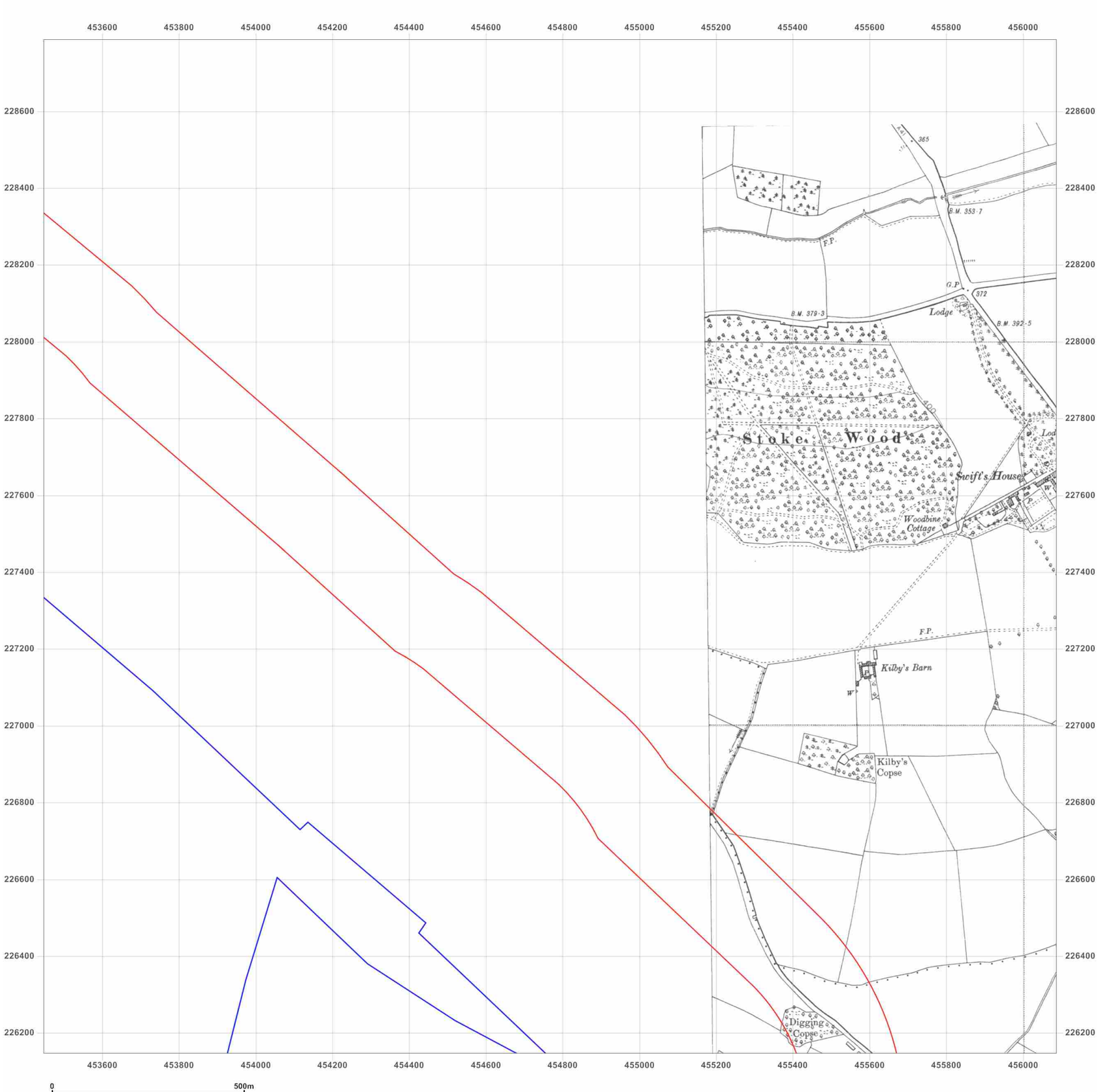
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Site Details:

Oxfordshire, Railfreight, Interchange

Client Ref: Oxfordshire, Railfreight, Interchange
Report Ref: GSIP-2020-10641-3484_SS_2_2
Grid Ref: 454766, 227466

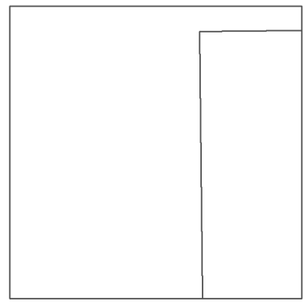
Map Name: County Series

Map date: **1950**

Scale: 1:10,560

Printed at: 1:10,560

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Surveyed 1879
Revised 1950
Edition N/A
Copyright N/A
Levelled N/A

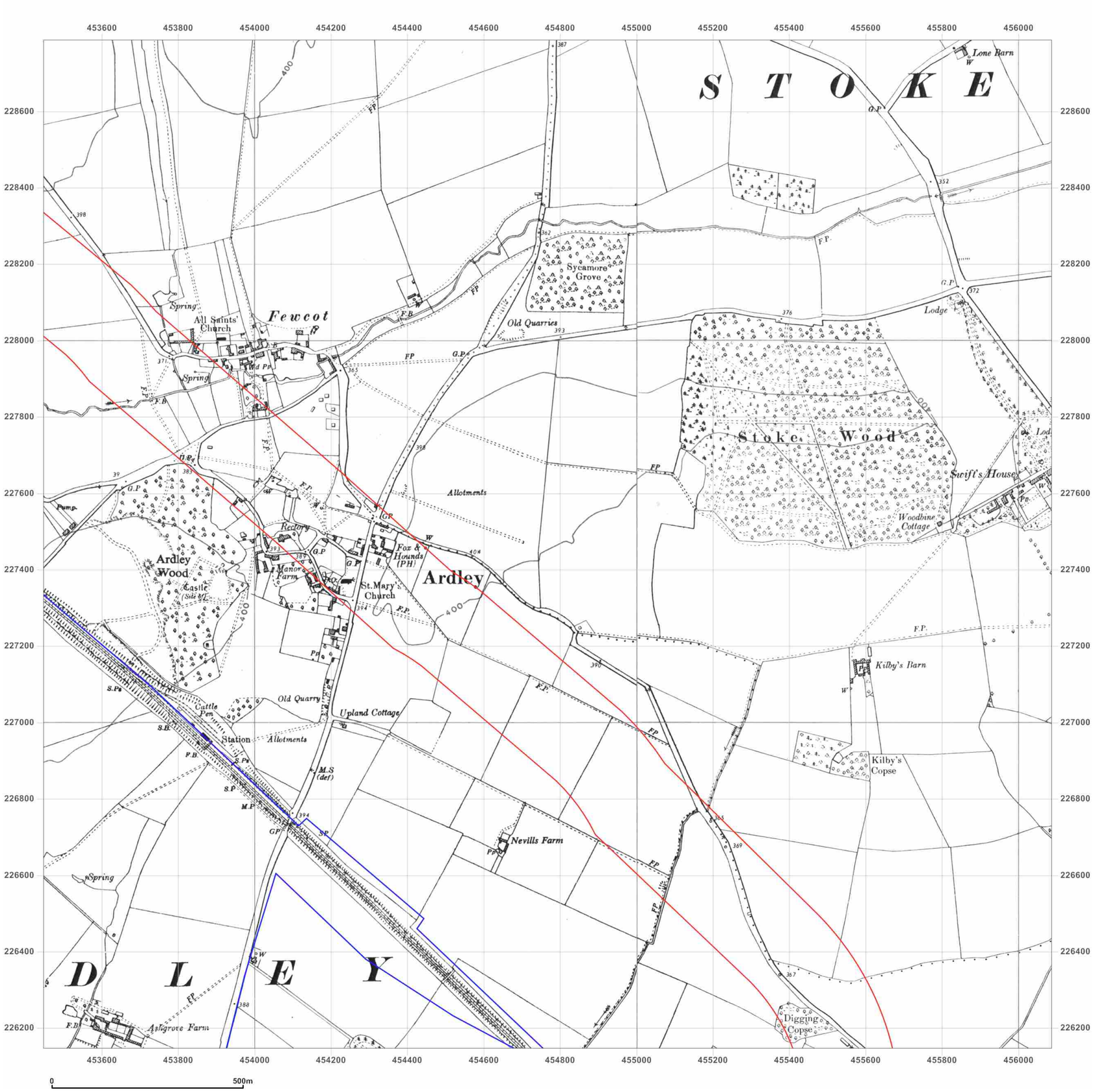
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Site Details:

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Client Ref: Oxfordshire, Railfreight, Interchange
Report Ref: GSIP-2020-10641-3484_SS_2_2
Grid Ref: 454766, 227466

Map Name: Provisional

Map date: **1950-1954**

Scale: 1:10,560

Printed at: 1:10,560

N
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Surveyed N/A
Revised 1954
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1950
Revised 1950
Edition N/A
Copyright N/A
Levelled N/A

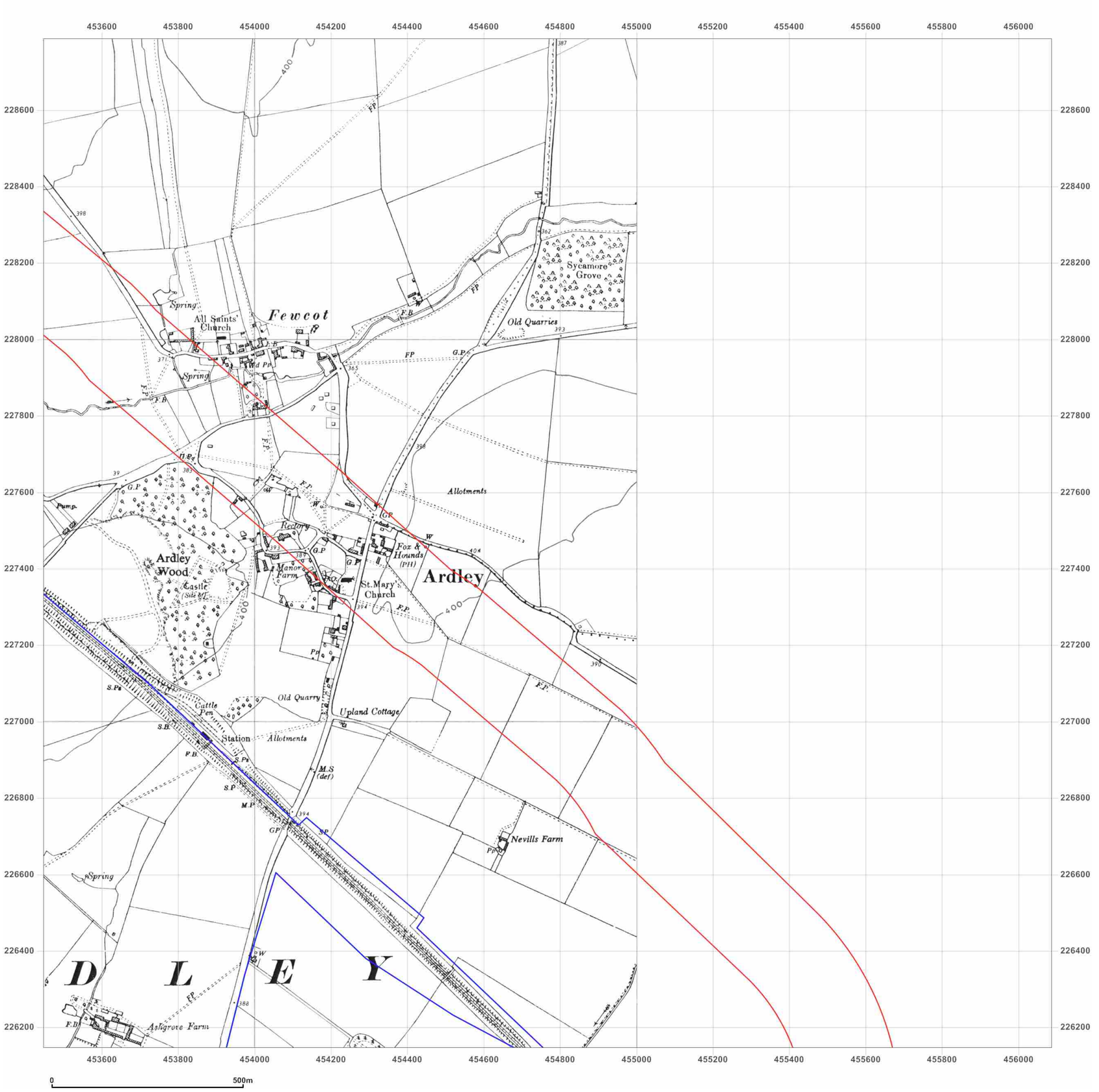
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Site Details:

Oxfordshire, Railfreight, Interchange

Client Ref: Oxfordshire, Railfreight, Interchange
Report Ref: GSIP-2020-10641-3484_SS_2_2
Grid Ref: 454766, 227466

Map Name: Provisional
Map date: **1965**
Scale: 1:10,560
Printed at: 1:10,560

N
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Surveyed N/A
Revised 1965
Edition N/A
Copyright N/A
Levelled N/A

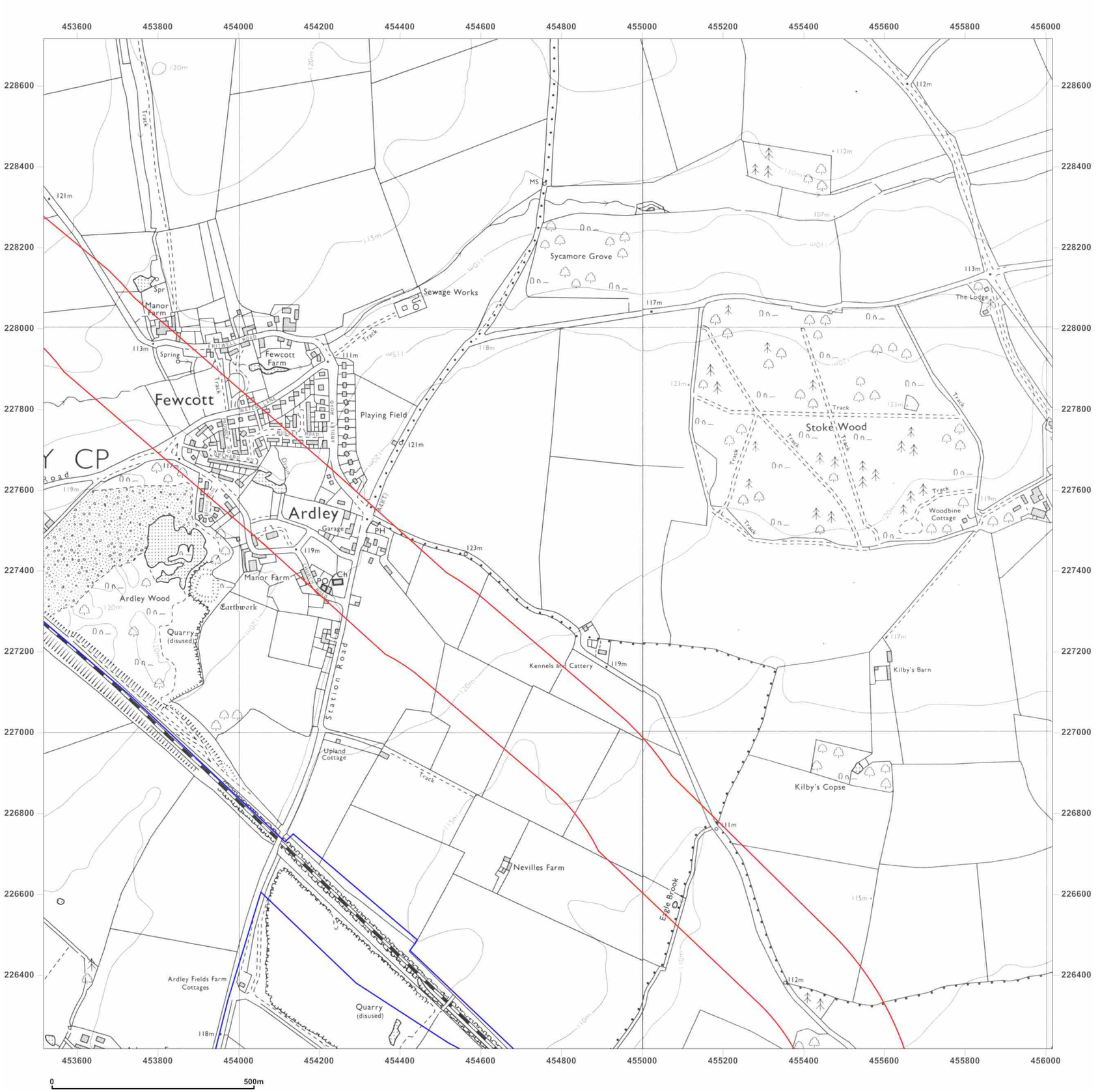
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Groundsure INSIGHTS

Site Details:

Oxfordshire, Railfreight, Interchange

Client Ref: Oxfordshire, Railfreight, Interchange
Report Ref: GSIP-2020-10641-3484_SS_2_2
Grid Ref: 454766, 227466

Map Name: National Grid

Map date: **1980**

Scale: 1:10,000

Printed at: 1:10,000

N
W E
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Surveyed 1975 Revised 1980 Edition N/A Copyright N/A Levelled N/A		Surveyed 1975 Revised 1980 Edition N/A Copyright N/A Levelled N/A

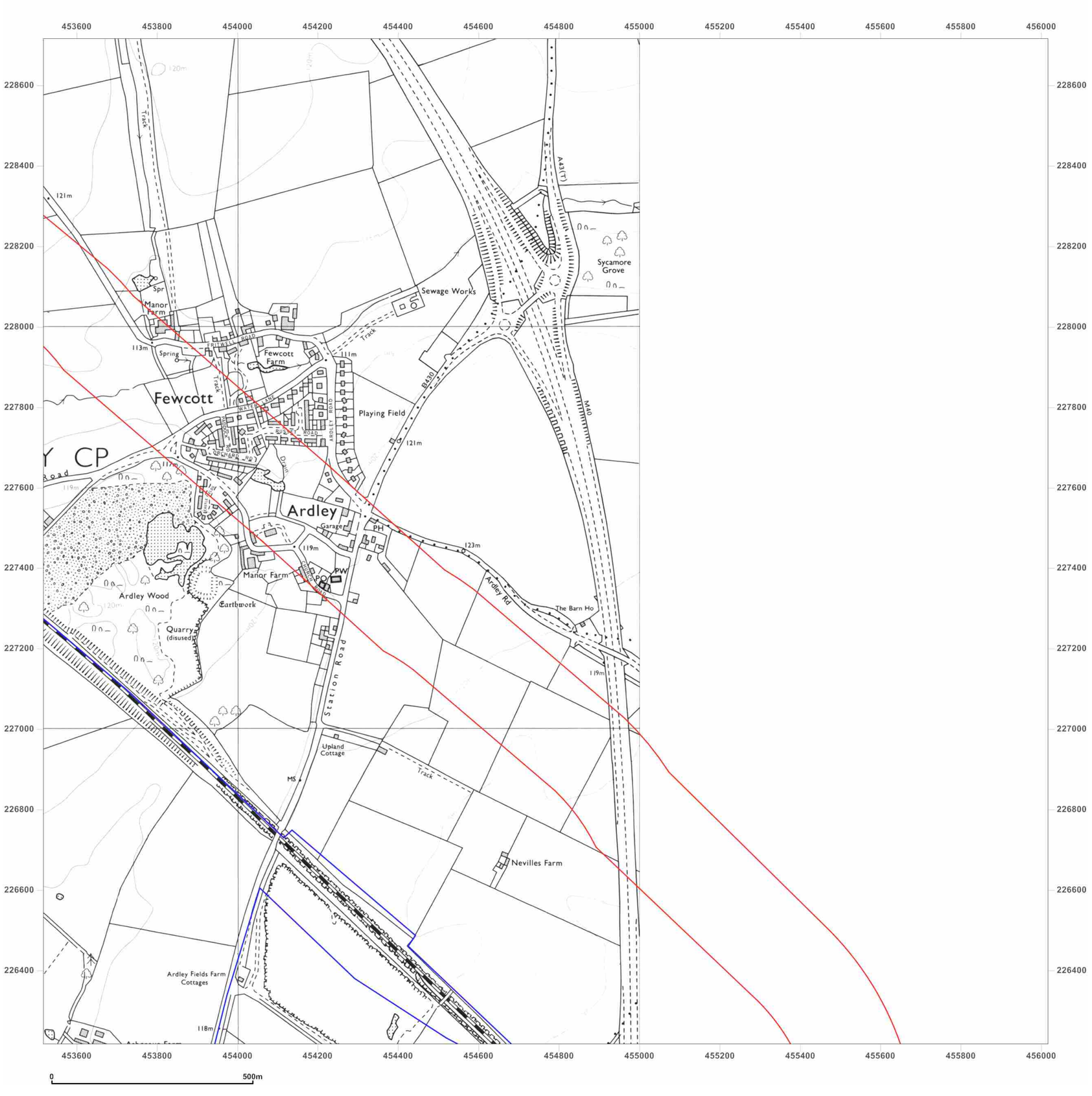
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Site Details:

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Client Ref: Oxfordshire, Railfreight, Interchange
Report Ref: GSIP-2020-10641-3484_SS_2_2
Grid Ref: 454766, 227466

Map Name: National Grid

Map date: **1992**

Scale: 1:10,000

Printed at: 1:10,000

N
W E
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Surveyed 1975
Revised 1992
Edition N/A
Copyright N/A
Levelled N/A

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Site Details:

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Client Ref: Oxfordshire, Railfreight, Interchange
Report Ref: GSIP-2020-10641-3484_SS_2_2
Grid Ref: 454766, 227466

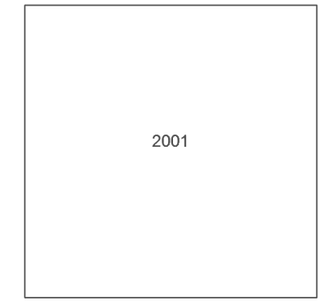
Map Name: National Grid

Map date: **2001**

Scale: 1:10,000

Printed at: 1:10,000

N
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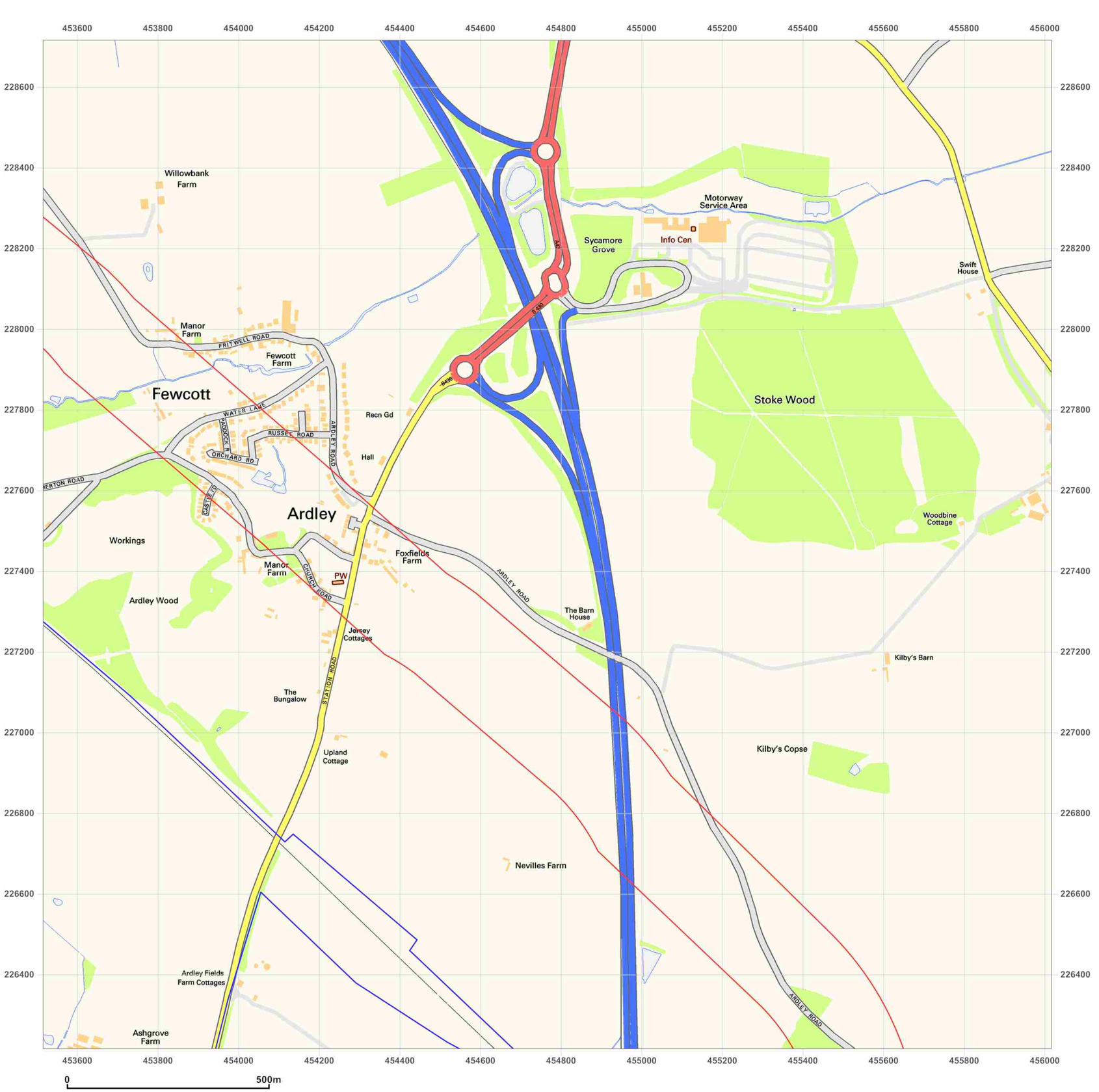
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Production date: 15 December 2020

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Groundsure INSIGHTS

Site Details:

Oxfordshire, Railfreight, Interchange

Client Ref: Oxfordshire, Railfreight, Interchange
Report Ref: GSIP-2020-10641-3484_SS_2_2
Grid Ref: 454766, 227466

Map Name: National Grid

Map date: **2010**

Scale: 1:10,000

Printed at: 1:10,000

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2010

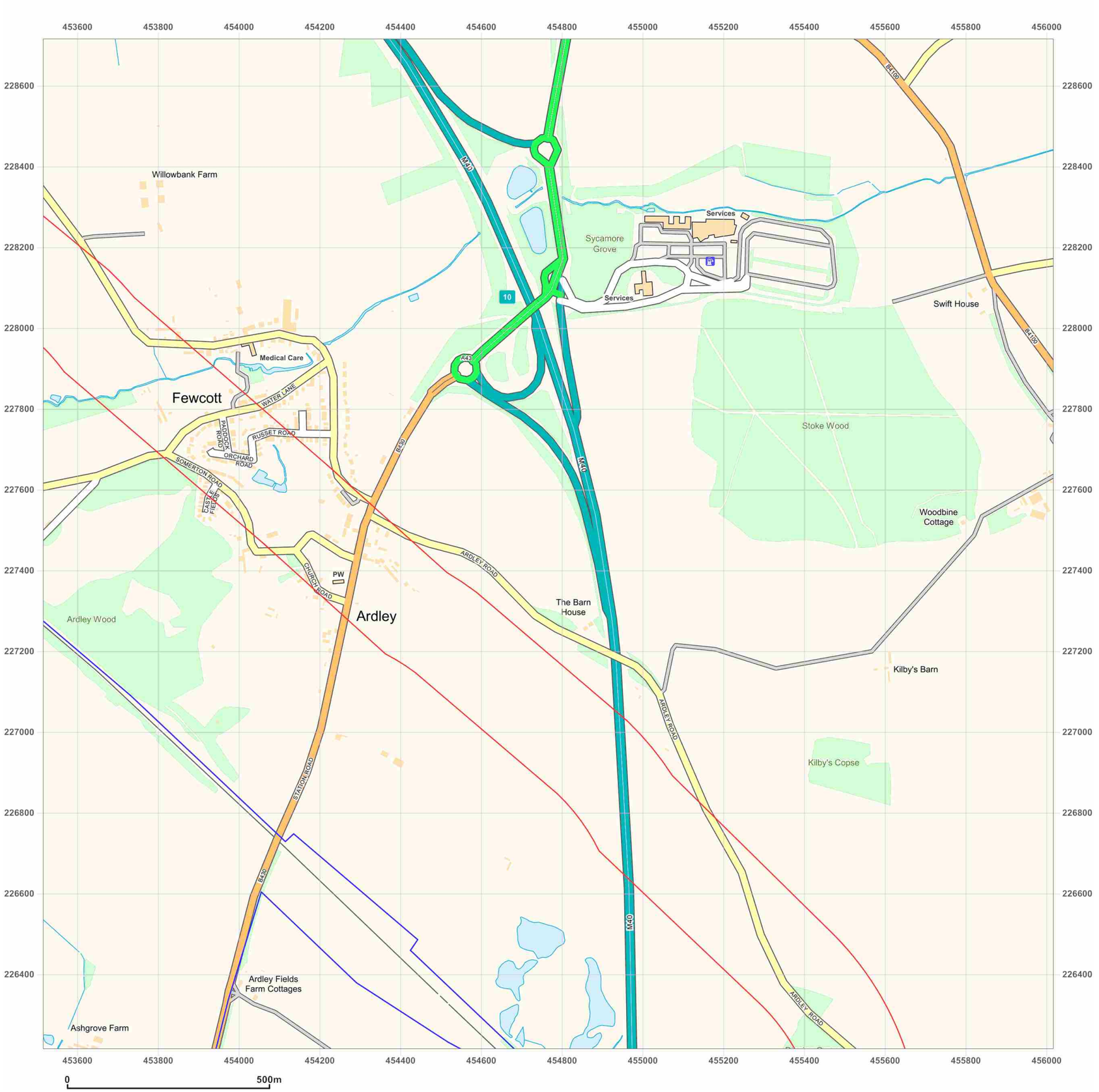
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Site Details:

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Report Ref: GSIP-2020-10641-3484_SS_2_2
Grid Ref: 454766, 227466

Map Name: National Grid

Map date: **2020**

Scale: 1:10,000

Printed at: 1:10,000

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Appendix D

Desk Study Research Information

Groundsure Enviro+Geo Insight

Database Report

Groundsure LOCATION INTELLIGENCE

Enviro+Geo Insight

Oxfordshire, Railfreight, Interchange

Order Details

Date: 15/12/2020

Your ref: Oxfordshire, Railfreight, Interchange

Our Ref: GSIP-2020-10641-3485

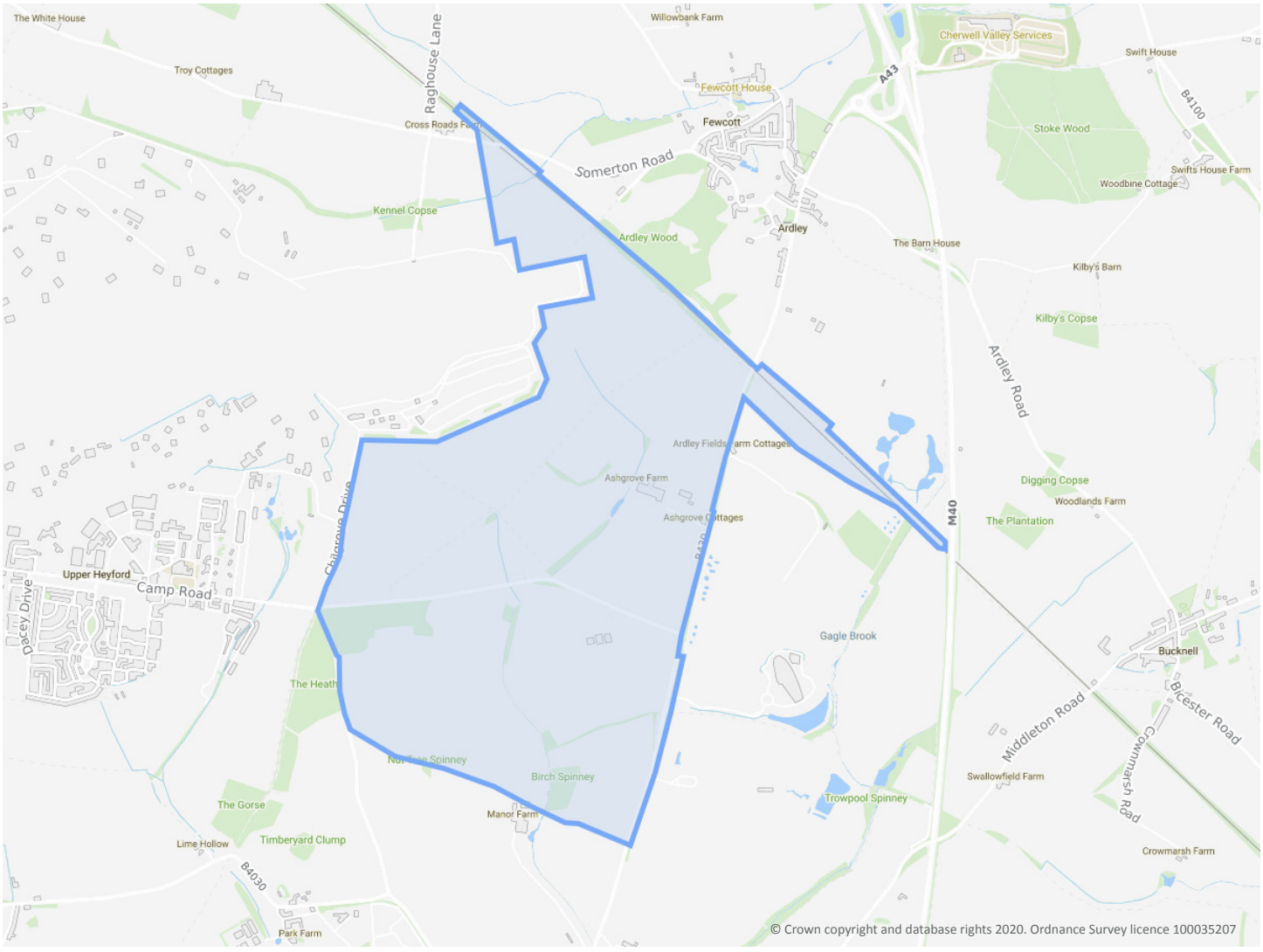
Client: Hydrock Consultants Ltd

Site Details

Location: 453276 226189

Area: 328.22 ha

Authority: Cherwell District Council



Summary of findings p. 2

Aerial image p. 8

OS MasterMap site plan N/A: >10ha

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Contact us with any questions at:
info@groundsure.com
08444 159 000

Summary of findings

Page	Section	Past land use	On site	0-50m	50-250m	250-500m	500-2000m
13	1.1	Historical industrial land uses	32	5	14	10	-
16	1.2	Historical tanks	3	0	4	3	-
17	1.3	Historical energy features	1	0	3	5	-
17	1.4	Historical petrol stations	0	0	0	0	-
18	1.5	Historical garages	0	0	0	0	-
18	1.6	Historical military land	0	0	0	0	-
Page	Section	Past land use - un-grouped	On site	0-50m	50-250m	250-500m	500-2000m
19	2.1	Historical industrial land uses	45	8	19	13	-
23	2.2	Historical tanks	3	0	4	3	-
23	2.3	Historical energy features	2	0	3	7	-
24	2.4	Historical petrol stations	0	0	0	0	-
24	2.5	Historical garages	0	0	0	0	-
Page	Section	Waste and landfill	On site	0-50m	50-250m	250-500m	500-2000m
25	3.1	Active or recent landfill	1	0	0	0	-
26	3.2	Historical landfill (BGS records)	0	0	1	1	-
26	3.3	Historical landfill (LA/mapping records)	0	0	0	0	-
26	3.4	Historical landfill (EA/NRW records)	1	3	0	1	-
27	3.5	Historical waste sites	5	4	0	1	-
31	3.6	Licensed waste sites	2	0	12	0	-
35	3.7	Waste exemptions	0	4	23	8	-
Page	Section	Current industrial land use	On site	0-50m	50-250m	250-500m	500-2000m
39	4.1	Recent industrial land uses	9	2	13	-	-
41	4.2	Current or recent petrol stations	0	0	0	0	-
41	4.3	Electricity cables	0	0	0	0	-
41	4.4	Gas pipelines	0	0	0	0	-
41	4.5	Sites determined as Contaminated Land	0	0	0	0	-

42	4.6	Control of Major Accident Hazards (COMAH)	0	0	0	1	-
42	4.7	Regulated explosive sites	1	0	0	0	-
42	4.8	Hazardous substance storage/usage	0	0	0	0	-
43	4.9	Historical licensed industrial activities (IPC)	0	0	0	0	-
43	4.10	Licensed industrial activities (Part A(1))	3	0	41	1	-
50	4.11	Licensed pollutant release (Part A(2)/B)	0	0	1	1	-
51	4.12	Radioactive Substance Authorisations	0	0	0	0	-
51	4.13	Licensed Discharges to controlled waters	0	0	0	4	-
52	4.14	Pollutant release to surface waters (Red List)	0	0	0	0	-
52	4.15	Pollutant release to public sewer	0	0	0	0	-
52	4.16	List 1 Dangerous Substances	0	0	0	0	-
52	4.17	List 2 Dangerous Substances	0	0	0	0	-
52	4.18	Pollution Incidents (EA/NRW)	1	0	0	0	-
53	4.19	Pollution inventory substances	1	0	14	0	-
60	4.20	Pollution inventory waste transfers	1	0	3	0	-
64	4.21	Pollution inventory radioactive waste	0	0	0	0	-

Page	Section	Hydrogeology	On site	0-50m	50-250m	250-500m	500-2000m
65	5.1	Superficial aquifer	Identified (within 500m)				
67	5.2	Bedrock aquifer	Identified (within 500m)				
69	5.3	Groundwater vulnerability	Identified (within 50m)				
75	5.4	Groundwater vulnerability- soluble rock risk	Identified (within 0m)				
76	5.5	Groundwater vulnerability- local information	None (within 0m)				
77	5.6	Groundwater abstractions	1	0	1	0	9
80	5.7	Surface water abstractions	0	0	0	0	0
80	5.8	Potable abstractions	0	0	0	0	1
81	5.9	Source Protection Zones	0	0	0	0	-
81	5.10	Source Protection Zones (confined aquifer)	0	0	0	0	-

Page	Section	Hydrology	On site	0-50m	50-250m	250-500m	500-2000m
82	6.1	Water Network (OS MasterMap)	28	2	18	-	-

86	6.2	Surface water features	1	18	22	-	-
87	6.3	WFD Surface water body catchments	3	-	-	-	-
87	6.4	WFD Surface water bodies	0	0	2	-	-
88	6.5	WFD Groundwater bodies	2	-	-	-	-

Page	Section	River and coastal flooding	On site	0-50m	50-250m	250-500m	500-2000m
89	7.1	Risk of Flooding from Rivers and Sea (RoFRaS)	High (within 50m)				
90	7.2	Historical Flood Events	0	0	0	-	-
90	7.3	Flood Defences	0	0	0	-	-
90	7.4	Areas Benefiting from Flood Defences	0	0	0	-	-
90	7.5	Flood Storage Areas	0	0	0	-	-
91	7.6	Flood Zone 2	Identified (within 50m)				
92	7.7	Flood Zone 3	Identified (within 50m)				

Page	Section	Surface water flooding	
93	8.1	Surface water flooding	1 in 30 year, Greater than 1.0m (within 50m)

Page	Section	Groundwater flooding	
95	9.1	Groundwater flooding	Low (within 50m)

Page	Section	Environmental designations	On site	0-50m	50-250m	250-500m	500-2000m
96	10.1	Sites of Special Scientific Interest (SSSI)	3	0	0	0	0
97	10.2	Conserved wetland sites (Ramsar sites)	0	0	0	0	0
97	10.3	Special Areas of Conservation (SAC)	0	0	0	0	0
97	10.4	Special Protection Areas (SPA)	0	0	0	0	0
97	10.5	National Nature Reserves (NNR)	0	0	0	0	0
98	10.6	Local Nature Reserves (LNR)	0	0	0	0	0
98	10.7	Designated Ancient Woodland	0	0	1	3	14
99	10.8	Biosphere Reserves	0	0	0	0	0
99	10.9	Forest Parks	0	0	0	0	0
99	10.10	Marine Conservation Zones	0	0	0	0	0
99	10.11	Green Belt	0	0	0	0	0
100	10.12	Proposed Ramsar sites	0	0	0	0	0

100	10.13	Possible Special Areas of Conservation (pSAC)	0	0	0	0	0
100	10.14	Potential Special Protection Areas (pSPA)	0	0	0	0	0
100	10.15	Nitrate Sensitive Areas	0	0	0	0	0
101	**10.16**	**Nitrate Vulnerable Zones**	6	0	1	1	2
102	**10.17**	**SSSI Impact Risk Zones**	9	-	-	-	-
105	**10.18**	**SSSI Units**	4	2	0	0	0
Page	Section	Visual and cultural designations	On site	0-50m	50-250m	250-500m	500-2000m
108	11.1	World Heritage Sites	0	0	0	-	-
109	11.2	Area of Outstanding Natural Beauty	0	0	0	-	-
109	11.3	National Parks	0	0	0	-	-
109	**11.4**	**Listed Buildings**	1	0	0	-	-
110	**11.5**	**Conservation Areas**	1	0	0	-	-
110	11.6	Scheduled Ancient Monuments	0	0	0	-	-
110	11.7	Registered Parks and Gardens	0	0	0	-	-
Page	Section	Agricultural designations	On site	0-50m	50-250m	250-500m	500-2000m
111	**12.1**	**Agricultural Land Classification**	Grade 2 (within 250m)				
112	12.2	Open Access Land	0	0	0	-	-
113	12.3	Tree Felling Licences	0	0	0	-	-
113	**12.4**	**Environmental Stewardship Schemes**	3	0	1	-	-
113	**12.5**	**Countryside Stewardship Schemes**	1	0	3	-	-
Page	Section	Habitat designations	On site	0-50m	50-250m	250-500m	500-2000m
115	**13.1**	**Priority Habitat Inventory**	32	18	22	-	-
118	**13.2**	**Habitat Networks**	5	0	8	-	-
119	**13.3**	**Open Mosaic Habitat**	0	2	1	-	-
120	13.4	Limestone Pavement Orders	0	0	0	-	-
Page	Section	Geology 1:10,000 scale	On site	0-50m	50-250m	250-500m	500-2000m
121	**14.1**	**10k Availability**	Identified (within 500m)				
122	**14.2**	**Artificial and made ground (10k)**	7	4	3	4	-
124	**14.3**	**Superficial geology (10k)**	8	0	4	2	-

125	14.4	Landslip (10k)	0	0	0	0	-
126	14.5	Bedrock geology (10k)	5	0	7	0	-
127	14.6	Bedrock faults and other linear features (10k)	2	0	0	0	-
Page	Section	Geology 1:50,000 scale	On site	0-50m	50-250m	250-500m	500-2000m
128	15.1	50k Availability	Identified (within 500m)				
129	15.2	Artificial and made ground (50k)	3	4	0	0	-
130	15.3	Artificial ground permeability (50k)	3	2	-	-	-
131	15.4	Superficial geology (50k)	7	1	3	1	-
132	15.5	Superficial permeability (50k)	Identified (within 50m)				
133	15.6	Landslip (50k)	0	0	0	0	-
133	15.7	Landslip permeability (50k)	None (within 50m)				
134	15.8	Bedrock geology (50k)	6	1	4	1	-
135	15.9	Bedrock permeability (50k)	Identified (within 50m)				
136	15.10	Bedrock faults and other linear features (50k)	2	1	0	0	-
Page	Section	Boreholes	On site	0-50m	50-250m	250-500m	500-2000m
137	16.1	BGS Boreholes	6	7	19	-	-
Page	Section	Natural ground subsidence					
140	17.1	Shrink swell clays	Low (within 50m)				
142	17.2	Running sands	Low (within 50m)				
144	17.3	Compressible deposits	Moderate (within 50m)				
146	17.4	Collapsible deposits	Very low (within 50m)				
147	17.5	Landslides	Low (within 50m)				
149	17.6	Ground dissolution of soluble rocks	Low (within 50m)				
Page	Section	Mining, ground workings and natural cavities	On site	0-50m	50-250m	250-500m	500-2000m
151	18.1	Natural cavities	0	0	0	0	-
152	18.2	BritPits	0	1	10	6	-
155	18.3	Surface ground workings	38	11	22	-	-
157	18.4	Underground workings	0	0	0	0	0
158	18.5	Historical Mineral Planning Areas	3	1	1	0	-

158	18.6	Non-coal mining	0	0	0	0	0
158	18.7	Mining cavities	0	0	0	0	0
159	18.8	JPB mining areas	None (within 0m)				
159	18.9	Coal mining	None (within 0m)				
159	18.10	Brine areas	None (within 0m)				
159	18.11	Gypsum areas	None (within 0m)				
159	18.12	Tin mining	None (within 0m)				
160	18.13	Clay mining	None (within 0m)				

Page	Section	Radon	
161	**19.1**	**Radon**	Between 1% and 3% (within 0m)

Page	Section	Soil chemistry	On site	0-50m	50-250m	250-500m	500-2000m
163	**20.1**	**BGS Estimated Background Soil Chemistry**	103	8	-	-	-
169	20.2	BGS Estimated Urban Soil Chemistry	0	0	-	-	-
169	20.3	BGS Measured Urban Soil Chemistry	0	0	-	-	-

Page	Section	Railway infrastructure and projects	On site	0-50m	50-250m	250-500m	500-2000m
170	21.1	Underground railways (London)	0	0	0	-	-
170	21.2	Underground railways (Non-London)	0	0	0	-	-
171	21.3	Railway tunnels	0	0	0	-	-
171	**21.4**	**Historical railway and tunnel features**	5	1	0	-	-
171	21.5	Royal Mail tunnels	0	0	0	-	-
172	21.6	Historical railways	0	0	0	-	-
172	**21.7**	**Railways**	10	0	2	-	-
172	21.8	Crossrail 1	0	0	0	0	-
173	21.9	Crossrail 2	0	0	0	0	-
173	21.10	HS2	0	0	0	0	-

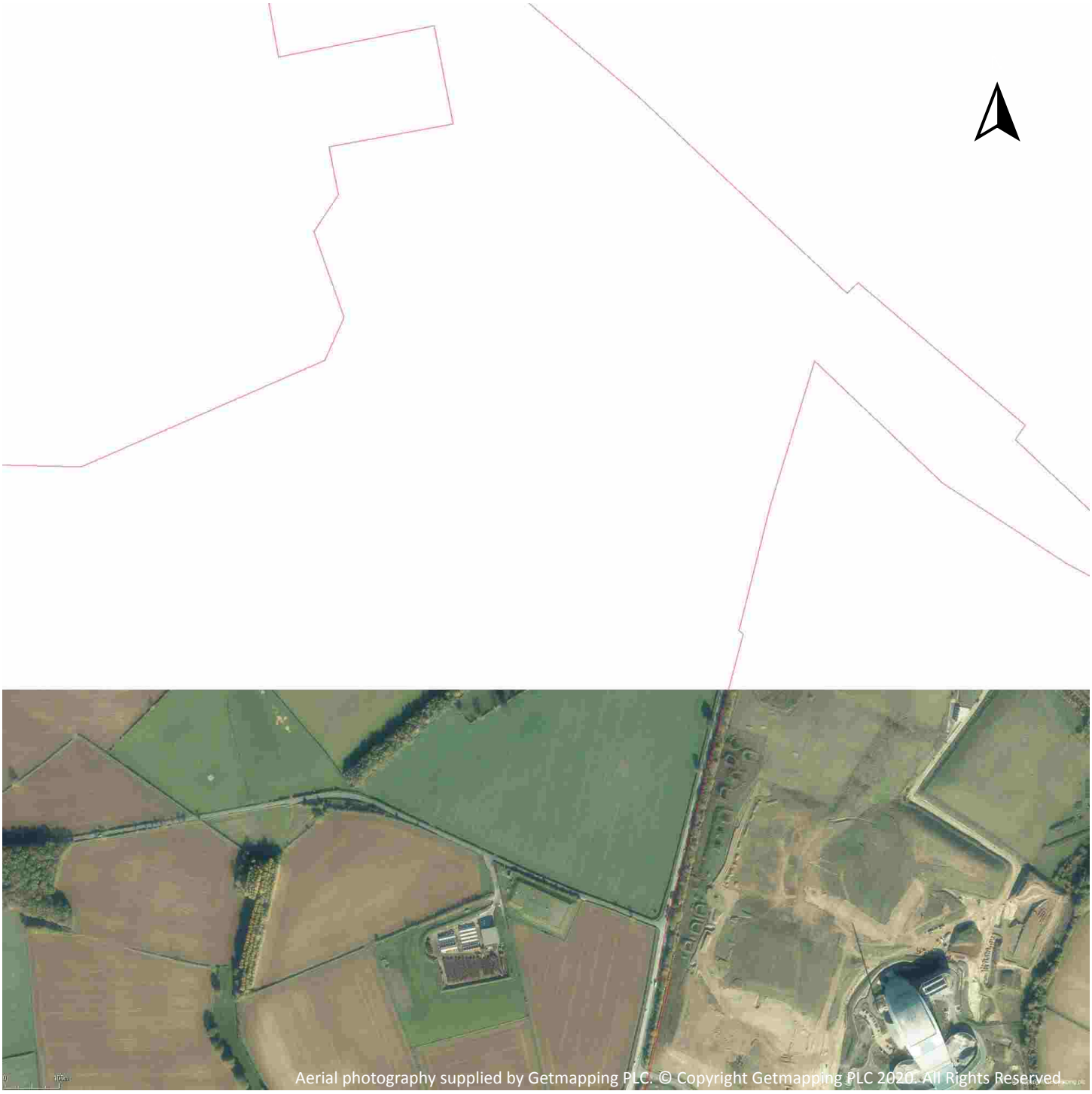
Recent aerial photograph



Capture Date: 05/07/2019

Site Area: 328.22ha

Recent site history - 2018 aerial photograph



Capture Date: 29/10/2018

Site Area: 328.22ha

Recent site history - 2015 aerial photograph



Capture Date: 28/08/2015

Site Area: 328.22ha

Recent site history - 2009 aerial photograph



Capture Date: 19/08/2009

Site Area: 328.22ha

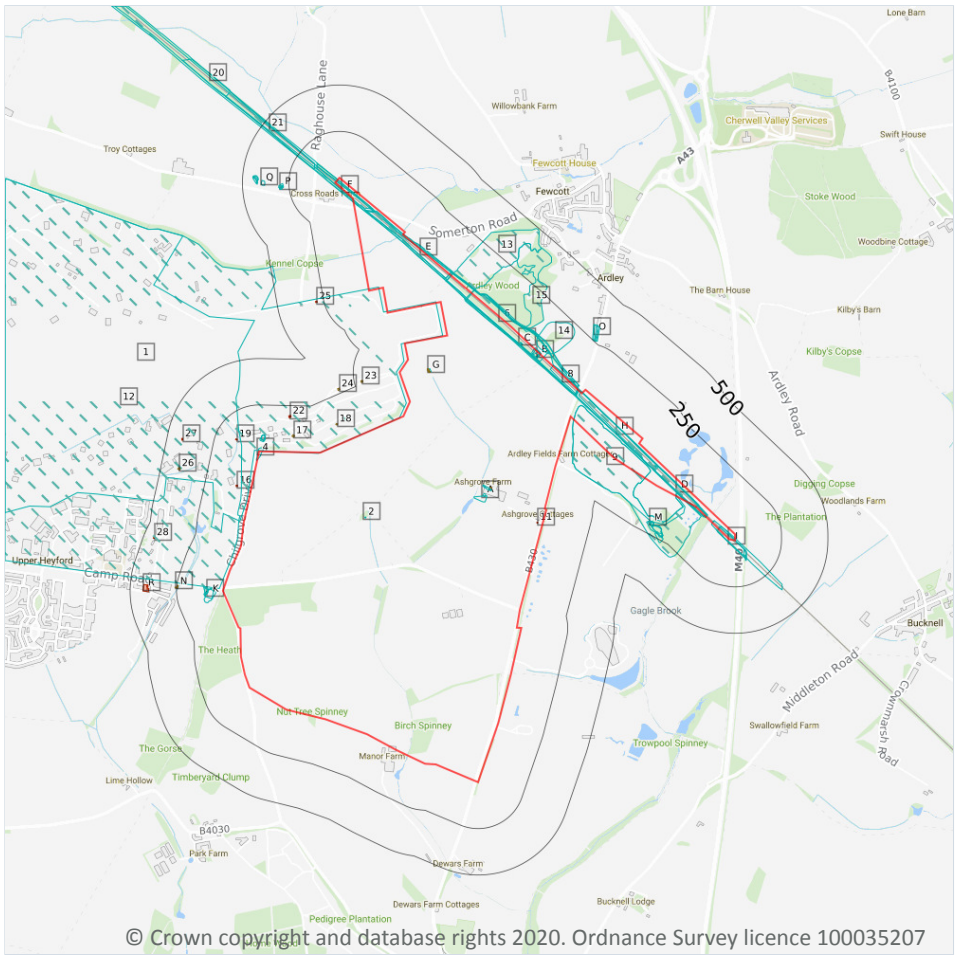
Recent site history - 1999 aerial photograph



Capture Date: 05/10/1999

Site Area: 328.22ha

1 Past land use



Site Outline

Search buffers in metres (m)

Historical industrial land uses

Historical tanks

Historical energy features

1.1 Historical industrial land uses

Records within 500m	61

Potentially contaminative land use features digitised from historical Ordnance Survey mapping at 1:10,000 and 1:10,560 scale, intelligently grouped into contiguous features. To prevent misrepresentation of the size of historical features at any given time, features are only grouped if they have similar geometries within immediately preceding or succeeding map editions. See section 2 for a breakdown of grouping if required. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use map on **page 13**

ID	Location	Land use	Dates present	Group ID
1	**On site**	**Airfield**	**1980 - 1992**	**1823975**

ID	Location	Land use	Dates present	Group ID
2	On site	Unspecified Tank	1880	1769046
3	On site	Unspecified Disused Quarry	1980	1775079
4	On site	Unspecified Pit	1880	1778130
5	On site	Cuttings	1954	1786227
6	On site	Cuttings	1980 - 1992	1786840
7	On site	Cuttings	1923	1801948
8	On site	Cuttings	1980 - 1992	1808956
9	On site	Unspecified Quarry	1992	1762569
10	On site	Cuttings	1923	1841468
A	On site	Refuse Heap	1880	1770798
A	On site	Unspecified Pit	1923	1778131
A	On site	Pump House	1880	1780139
B	On site	Railway Building	1923	1765339
B	On site	Railway Building	1923 - 1954	1819287
B	On site	Railway Station	1954	1837605
B	On site	Railway Station	1923	1843342
C	On site	Railway Building	1954	1765341
C	On site	Railway Sidings	1954	1788441
C	On site	Railway Sidings	1923	1840287
D	On site	Cuttings	1954	1780704
D	On site	Cuttings	1980 - 1992	1794693
E	On site	Cuttings	1980 - 1992	1781847
E	On site	Cuttings	1954	1832109
F	On site	Cuttings	1954	1793885
F	On site	Cuttings	1980 - 1992	1807041
G	On site	Unspecified Tanks	1980 - 1992	1803045
H	On site	Cuttings	1954	1803374
H	On site	Cuttings	1980 - 1992	1840321

ID	Location	Land use	Dates present	Group ID
I	**On site**	**Railway Sidings**	**1954**	**1751286**
I	**On site**	**Cuttings**	**1980 - 1992**	**1830314**
J	**On site**	**Cuttings**	**1923 - 1954**	**1847103**
12	16m W	Airfield	1954	1823429
13	19m NE	Refuse Heap	1980 - 1992	1802150
14	22m NE	Unspecified Old Quarry	1898	1773016
K	40m W	Unspecified Quarry	1954	1838046
15	43m NE	Unspecified Disused Quarry	1980 - 1992	1788288
K	50m W	Unspecified Quarry	1923	1826192
L	53m N	Unspecified Pit	1923	1804859
L	56m N	Unspecified Quarry	1898	1762583
L	60m N	Unspecified Pit	1954	1829845
J	70m SE	Cuttings	1992	1822346
K	78m W	Unspecified Quarry	1898	1831868
K	81m W	Sand Pit	1880	1753281
20	136m NW	Cuttings	1923 - 1954	1842436
21	136m NW	Cuttings	1980 - 1992	1820789
M	180m SW	Unspecified Pit	1923	1778113
M	184m SW	Unspecified Quarries	1898	1775297
M	184m SW	Unspecified Quarry	1923	1781684
M	185m SW	Unspecified Quarry	1923 - 1954	1845077
M	216m SW	Sand Pit	1880	1753598
O	251m NE	Unspecified Old Quarry	1923	1788668
O	251m NE	Unspecified Old Quarry	1954	1781971
O	254m NE	Unspecified Pit	1880	1778129
P	280m W	Unspecified Pit	1880	1817255
P	281m W	Unspecified Pit	1923 - 1954	1793606
P	285m W	Unspecified Pit	1923	1839032

ID	Location	Land use	Dates present	Group ID
Q	379m W	Unspecified Pit	1880	1778126
Q	415m W	Unspecified Quarry	1898	1762582
Q	415m W	Unspecified Pit	1923	1792319
Q	419m W	Unspecified Ground Workings	1954	1755478

This data is sourced from Ordnance Survey / Groundsure.

1.2 Historical tanks

Records within 500m	**10**

Tank features digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale, intelligently grouped into contiguous features. To prevent misrepresentation of the size of historical features at any given time, features are only grouped if they have similar geometries within immediately preceding or succeeding map editions. See section 2 for a breakdown of grouping if required. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use map on **page 13**

ID	Location	Land use	Dates present	Group ID
A	**On site**	**Unspecified Tank**	**1996**	**284713**
G	**On site**	**Tanks**	**1996**	**287618**
G	**On site**	**Unspecified Tanks**	**1974**	**287964**
17	80m N	Unspecified Tank	1998	284703
18	100m NW	Unspecified Tank	1998	284710
23	204m W	Unspecified Tank	1998	284712
N	242m W	Tanks	1975	287615
N	255m W	Unspecified Tank	1975	284892
24	268m NW	Unspecified Tank	1998	284711
26	396m W	Unspecified Tank	1998	284704

This data is sourced from Ordnance Survey / Groundsure.

1.3 Historical energy features

Records within 500m	9

Energy features digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale, intelligently grouped into contiguous features. To prevent misrepresentation of the size of historical features at any given time, features are only grouped if they have similar geometries within immediately preceding or succeeding map editions. See section 2 for a breakdown of grouping if required. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use map on **page 13**

ID	Location	Land use	Dates present	Group ID
11	**On site**	**Electricity Substation**	**1974 - 1996**	**185887**
16	74m W	Electricity Substation	1998	170606
19	133m NW	Electricity Substation	1998	170608
22	184m N	Electricity Substations	1998	171214
25	286m W	Electricity Substation	1998	170607
R	399m W	Electricity Substation	1994 - 1995	179756
R	404m W	Electricity Substation	1975	177871
27	414m W	Electricity Substation	1998	170604
28	442m NW	Electricity Substation	1975	170603

This data is sourced from Ordnance Survey / Groundsure.

1.4 Historical petrol stations

Records within 500m	0

Petrol stations digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale, intelligently grouped into contiguous features. To prevent misrepresentation of the size of historical features at any given time, features are only grouped if they have similar geometries within immediately preceding or succeeding map editions. See section 2 for a breakdown of grouping if required. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

This data is sourced from Ordnance Survey / Groundsure.

1.5 Historical garages

Records within 500m	0

Garages digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale, intelligently grouped into contiguous features. To prevent misrepresentation of the size of historical features at any given time, features are only grouped if they have similar geometries within immediately preceding or succeeding map editions. See section 2 for a breakdown of grouping if required. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

This data is sourced from Ordnance Survey / Groundsure.

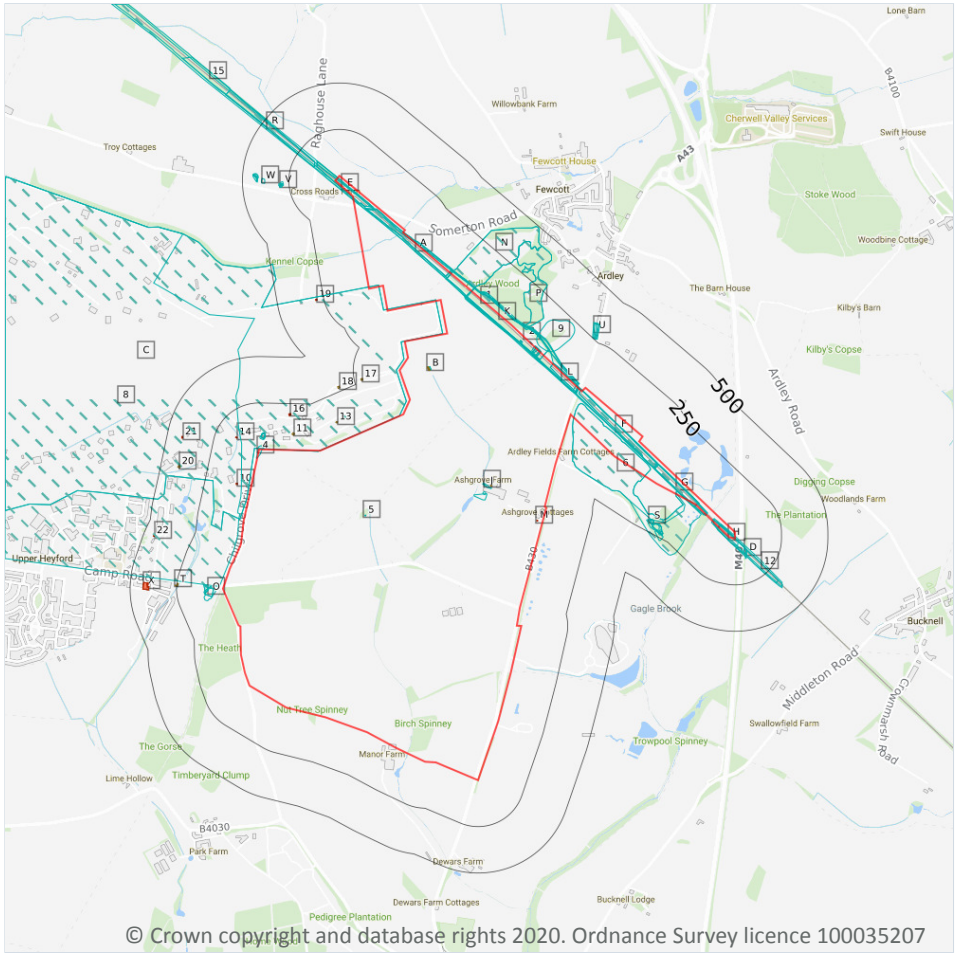
1.6 Historical military land

Records within 500m	0

Areas of military land digitised from multiple sources including the National Archives, local records, MOD records and verified other sources, intelligently grouped into contiguous features.

This data is sourced from Ordnance Survey / Groundsure / other sources.

2 Past land use - un-grouped



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2.1 Historical industrial land uses

Records within 500m	85

Potentially contaminative land use features digitised from historical Ordnance Survey mapping at 1:10,000 and 10,560 scale. Any records shown are available intelligently grouped in section 1. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use - un-grouped map on **page 19**

ID	Location	Land Use	Date	Group ID
1	**On site**	**Cuttings**	**1923**	**1841468**
2	**On site**	**Cuttings**	**1954**	**1786227**
3	**On site**	**Cuttings**	**1923**	**1801948**

ID	Location	Land Use	Date	Group ID
4	On site	Unspecified Pit	1880	1778130
5	On site	Unspecified Tank	1880	1769046
6	On site	Unspecified Disused Quarry	1980	1775079
7	On site	Unspecified Quarry	1992	1762569
A	On site	Cuttings	1954	1832109
A	On site	Cuttings	1980	1781847
A	On site	Cuttings	1992	1781847
B	On site	Unspecified Tanks	1980	1803045
B	On site	Unspecified Tanks	1992	1803045
C	On site	Airfield	1980	1823975
C	On site	Airfield	1992	1823975
D	On site	Cuttings	1923	1847103
D	On site	Cuttings	1923	1847103
E	On site	Cuttings	1954	1793885
E	On site	Cuttings	1980	1807041
E	On site	Cuttings	1992	1807041
F	On site	Cuttings	1954	1803374
F	On site	Cuttings	1980	1840321
F	On site	Cuttings	1992	1840321
G	On site	Cuttings	1954	1780704
G	On site	Cuttings	1980	1794693
G	On site	Cuttings	1992	1794693
H	On site	Cuttings	1954	1847103
H	On site	Railway Sidings	1954	1751286
H	On site	Cuttings	1980	1830314
H	On site	Cuttings	1992	1830314
I	On site	Railway Sidings	1923	1840287
I	On site	Railway Station	1923	1843342

ID	Location	Land Use	Date	Group ID
I	**On site**	**Railway Building**	**1923**	**1765339**
I	**On site**	**Railway Sidings**	**1954**	**1788441**
I	**On site**	**Railway Station**	**1954**	**1837605**
I	**On site**	**Railway Building**	**1954**	**1765341**
I	**On site**	**Railway Sidings**	**1923**	**1840287**
I	**On site**	**Railway Station**	**1923**	**1843342**
I	**On site**	**Railway Building**	**1923**	**1819287**
J	**On site**	**Pump House**	**1880**	**1780139**
J	**On site**	**Refuse Heap**	**1880**	**1770798**
J	**On site**	**Unspecified Pit**	**1923**	**1778131**
K	**On site**	**Cuttings**	**1980**	**1786840**
K	**On site**	**Cuttings**	**1992**	**1786840**
L	**On site**	**Cuttings**	**1980**	**1808956**
L	**On site**	**Cuttings**	**1992**	**1808956**
I	0m NE	Railway Building	1954	1819287
8	16m W	Airfield	1954	1823429
N	19m NE	Refuse Heap	1980	1802150
N	19m NE	Refuse Heap	1992	1802150
9	22m NE	Unspecified Old Quarry	1898	1773016
O	40m W	Unspecified Quarry	1954	1838046
P	43m NE	Unspecified Disused Quarry	1980	1788288
P	43m NE	Unspecified Disused Quarry	1992	1788288
O	50m W	Unspecified Quarry	1923	1826192
O	51m W	Unspecified Quarry	1923	1826192
Q	53m N	Unspecified Pit	1923	1804859
Q	56m N	Unspecified Quarry	1898	1762583
Q	56m N	Unspecified Pit	1923	1804859
Q	60m N	Unspecified Pit	1954	1829845

ID	Location	Land Use	Date	Group ID
D	70m SE	Cuttings	1992	1822346
O	78m W	Unspecified Quarry	1898	1831868
O	81m W	Sand Pit	1880	1753281
12	87m SE	Cuttings	1950	1847103
15	136m NW	Cuttings	1954	1842436
R	136m NW	Cuttings	1980	1820789
R	136m NW	Cuttings	1992	1820789
S	180m SW	Unspecified Pit	1923	1778113
S	184m SW	Unspecified Quarry	1923	1781684
S	184m SW	Unspecified Quarries	1898	1775297
S	185m SW	Unspecified Quarry	1923	1845077
S	188m SW	Unspecified Quarry	1954	1845077
S	216m SW	Sand Pit	1880	1753598
U	251m NE	Unspecified Old Quarry	1923	1788668
U	251m NE	Unspecified Old Quarry	1954	1781971
U	254m NE	Unspecified Pit	1880	1778129
U	254m NE	Unspecified Old Quarry	1923	1788668
V	280m W	Unspecified Pit	1880	1817255
V	281m W	Unspecified Pit	1923	1793606
V	285m W	Unspecified Pit	1923	1839032
V	289m W	Unspecified Pit	1954	1793606
W	379m W	Unspecified Pit	1880	1778126
W	415m W	Unspecified Quarry	1898	1762582
W	415m W	Unspecified Pit	1923	1792319
W	419m W	Unspecified Pit	1923	1792319
W	419m W	Unspecified Ground Workings	1954	1755478

This data is sourced from Ordnance Survey / Groundsure.

2.2 Historical tanks

Records within 500m	10

Tank features digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale. Any records shown are available intelligently grouped in section 1. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use - un-grouped map on **page 19**

ID	Location	Land Use	Date	Group ID
B	**On site**	**Tanks**	**1996**	**287618**
B	**On site**	**Unspecified Tanks**	**1974**	**287964**
J	**On site**	**Unspecified Tank**	**1996**	**284713**
11	80m N	Unspecified Tank	1998	284703
13	100m NW	Unspecified Tank	1998	284710
17	204m W	Unspecified Tank	1998	284712
T	242m W	Tanks	1975	287615
T	255m W	Unspecified Tank	1975	284892
18	268m NW	Unspecified Tank	1998	284711
20	396m W	Unspecified Tank	1998	284704

This data is sourced from Ordnance Survey / Groundsure.

2.3 Historical energy features

Records within 500m	12

Energy features digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale. Any records shown are available intelligently grouped in section 1. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use - un-grouped map on **page 19**

ID	Location	Land Use	Date	Group ID
M	**On site**	**Electricity Substation**	**1996**	**185887**
M	**On site**	**Electricity Substation**	**1974**	**185887**
10	74m W	Electricity Substation	1998	170606
14	133m NW	Electricity Substation	1998	170608

ID	Location	Land Use	Date	Group ID
16	184m N	Electricity Substations	1998	171214
19	286m W	Electricity Substation	1998	170607
X	399m W	Electricity Substation	1995	179756
X	399m W	Electricity Substation	1994	179756
X	399m W	Electricity Substation	1995	179756
X	404m W	Electricity Substation	1975	177871
21	414m W	Electricity Substation	1998	170604
22	442m NW	Electricity Substation	1975	170603

This data is sourced from Ordnance Survey / Groundsure.

2.4 Historical petrol stations

Records within 500m	0

Petrol stations digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale. Any records shown are available intelligently grouped in section 1. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

This data is sourced from Ordnance Survey / Groundsure.

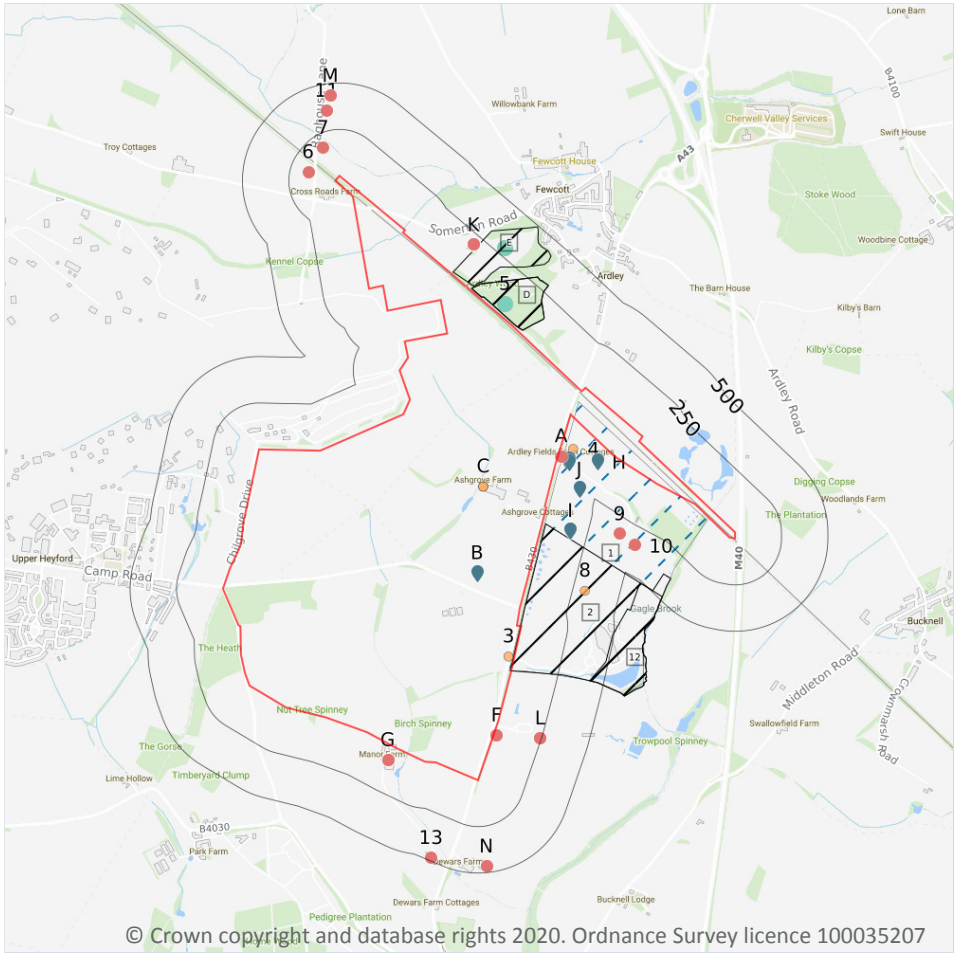
2.5 Historical garages

Records within 500m	0

Garages digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale. Any records shown are available intelligently grouped in section 1. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

This data is sourced from Ordnance Survey / Groundsure.

3 Waste and landfill



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Site Outline

Search buffers in metres (m)

- Active or recent landfill
- Historical landfill (EA/NRW)
- Historical landfill (BGS)
- Historical waste sites
- Licensed waste sites
- Waste exemptions

3.1 Active or recent landfill

Records within 500m	1

Active or recently closed landfill sites under Environment Agency/Natural Resources Wales regulation.

Features are displayed on the Waste and landfill map on **page 25**

ID	Location	Details	
1	**On site**	**Operator: Viridor Waste Management Ltd** **Site Address: Ardley Landfill, Ardley Fields Farm, Ardley, Oxfordshire, OX27 7PH**	**WML Number: 0** **EPR Reference: -** **Landfill type: WASTE LANDFILLING; >10 T/D WITH CAPACITY >25,000T EXCLUDING INERT WASTE** **Status: Effective** **IPPC Reference: -** **EPR Number: -**

This data is sourced from the Environment Agency and Natural Resources Wales.

3.2 Historical landfill (BGS records)

Records within 500m	2

Landfill sites identified on a survey carried out on behalf of the DoE in 1973. These sites may have been closed or operational at this time.

Features are displayed on the Waste and landfill map on **page 25**

ID	Location	Address	BGS Number	Risk	Waste Type
5	62m NE	Ardley Wood, Ardley, Oxon	853	Risk to major aquifer	N/A
E	291m NE	Ardley Wood, Ardley, Oxon	854	Risk to major aquifer	N/A

This data is sourced from the British Geological Survey.

3.3 Historical landfill (LA/mapping records)

Records within 500m	0

Landfill sites identified from Local Authority records and high detail historical mapping.

This data is sourced from the Ordnance Survey/Groundsure and Local Authority records.

3.4 Historical landfill (EA/NRW records)

Records within 500m	5

Known historical (closed) landfill sites (e.g. sites where there is no PPC permit or waste management licence currently in force). This includes sites that existed before the waste licensing regime and sites that have been licensed in the past but where a licence has been revoked, ceased to exist or surrendered and a certificate of completion has been issued.

Features are displayed on the Waste and landfill map on **page 25**

ID	Location	Details		
2	**On site**	**Site Address: Ardley Fields Farm 2, Ardley, Bicester, Oxfordshire** **Licence Holder Address: -**	**Waste Licence: Yes** **Site Reference: BV7346** **Waste Type: -** **Environmental Permitting Regulations (Waste) Reference: TF1/L/HAU004** **Licence Issue: 30/11/1992** **Licence Surrender: -**	**Operator: -** **Licence Holder: Viridor Waste Disposal Limited** **First Recorded -** **Last Recorded: -**

ID	Location	Details		
D	10m NE	Site Address: Ardley Wood, Ardley, Oxfordshire Licence Holder Address: -	Waste Licence: - Site Reference: - Waste Type: Commercial, Liquid sludge Environmental Permitting Regulations (Waste) Reference: - Licence Issue: - Licence Surrender: -	Operator: Ploughlye Rural District Council Licence Holder: - First Recorded - Last Recorded: -
D	10m NE	Site Address: Ardley Wood, Ardley, Oxfordshire Licence Holder Address: -	Waste Licence: - Site Reference: - Waste Type: Commercial, Household Environmental Permitting Regulations (Waste) Reference: - Licence Issue: - Licence Surrender: -	Operator: - Licence Holder: - First Recorded 31/12/1940 Last Recorded: -
E	13m NE	Site Address: Ardley Wood, Cherwell Licence Holder Address: -	Waste Licence: Yes Site Reference: OCC/R/02, W10034, 13.6.5327, TP0612 Waste Type: Inert, Industrial, Commercial, Household Environmental Permitting Regulations (Waste) Reference: - Licence Issue: 31/05/1977 Licence Surrender: 01/10/1985	Operator: Oxfordshire County Council Licence Holder: Oxfordshire County Council First Recorded 31/12/1965 Last Recorded: 31/12/1980
12	378m SW	Site Address: Ardley Quarry Inert Area, Ardley, Bicester, Oxfordshire Licence Holder Address: Malling House, Town Hill, West Malling, Kent	Waste Licence: Yes Site Reference: BV7346 Waste Type: Inert Environmental Permitting Regulations (Waste) Reference: TF1/L/VIR002 Licence Issue: 14/06/2002 Licence Surrender: -	Operator: Viridor Waste Management Limited Licence Holder: Viridor Waste Management Limited First Recorded - Last Recorded: -

This data is sourced from the Environment Agency and Natural Resources Wales.

3.5 Historical waste sites

Records within 500m	**10**

Waste site records derived from Local Authority planning records and high detail historical mapping.

Features are displayed on the Waste and landfill map on **page 25**

ID	Location	Address	Further Details	Date
3	**On site**	**Site Address: Ardley Landfill, Station Road, Ardley, Bicester, Oxfordshire, OX27 7PG**	**Type of Site: Energy From Waste Facility Planning application reference: 14/00338/CNMA Description: Scheme comprises Non Material Amendment of MW.0044/08 (Construction and operation of an Energy from waste (EFW) facility) - partially widen the access road to allow for a priority queuing lane. Data source: Historic Planning Application Data Type: Point**	**03/03/2014**
A	**On site**	**Site Address: Ardley Landfill, Station Road, Ardley, BICESTER, Oxfordshire, OX27 7PQ**	**Type of Site: Waste Recycling Facility Planning application reference: 08/02472/CM Description: Scheme comprises construction and operation of an energy from waste (EFW) facility with associated office, visitor centre, bottom ash recycling facilities, new access road and weighbridge facilities, the continuation of non-hazardous landfill operation and landfill gas utilisation with consequent amendments to the phasing and final restoration landform of the landfill, surface water attenuation features and improvements to the household waste recycling facility. An application (ref: 08/02472/CM) for de tailed planning permission was refused by Cherwell D.C. For related lead please see: 07540490. Detailed plans have been refused. Data source: Historic Planning Application Data Type: Point**	**-**
A	**On site**	**Site Address: Viridor Waste Management, Ardley Energy Recovery Facilit, Bicester, Oxfordshire, OX27 7PH**	**Type of Site: Waste Transfer Station (Extension) Planning application reference: 17/01151/CM Description: Scheme comprises scoping opinion for a increase in tonnage of waste. Data source: Historic Planning Application Data Type: Point**	**14/06/2017**

ID	Location	Address	Further Details	Date
C	**On site**	**Site Address: Ardley Landfill Site, Ardley Fields Farm, Ardley, BICESTER, Oxfordshire, OX27 7PH**	**Type of Site: Energy From Waste Facility Planning application reference: MW.0078/10 Description: Scheme comprises construction and operation of an Energy from Waste (EFW) facility with associated office, visitor centre, bottom ash recycling facilities, new access road and weighbridge facilities, continuation of non-hazardous landfill operations an landfill gas utilisation with consequent amendments to the phasing and final restoration landform of the landfill; surface water attenuation features and improvements to household waste recycling facility. The EfW facility will process up to 300,000 ton nes of residual waste, generating 24MW of electricity. Viridor has highlighted the importance of the energy produced by the facility and how this fits into policy regarding low carbon energy generation. Construction - pitched roof; concrete, steel c ladding walls; curved, standing seam, steel cladding roof; fire, industrial doors (unspecified), roller shutter, timber doors; comb. heat & pwr sys. heating; pad foundations; portal, steel frame; black top surfacing, drain covers, fencing, kerbing, manho les, sewer outfall, white lining, concrete block paving site works; bathroom, emergency lighting, energy from waste, fire alarm system, fire escapes, suspended ceilings fittings. Planning permission for the facility was granted by the Secretary of State on 17 February 2011, following the refusal of permission in 2009 and an appeal to the planning inspectorate. The appeal was held at a public inquiry in July 2010. Viridor also submitted a revised application which was approved by the Planning and Regul ation Committee on 15 October 2010. A legal challenge against the Secretary of State's decision to grant planning permission was submitted on 30 March 2011. The challenge by a local residents group Ardley Against Incineration will be decided by the h Data source: Historic Planning Application Data Type: Point**	**23/01/2012**

ID	Location	Address	Further Details	Date
C	**On site**	**Site Address: Ardley Fields Farm, Middleton Stoney Road, Ardley, Bicester, Oxfordshire, OX27 7PH**	**Type of Site: Energy From Waste Facility Planning application reference: MW.0074/13 Description: Scheme comprises non-material amendment of the approved development MW.0044/08 (The construction and operation of an Energy from Waste (EFW) facility). Data source: Historic Planning Application Data Type: Point**	**-**
A	40m E	Site Address: Ardley, Bicester, Oxfordshire, OX27 7PH	Type of Site: Recycling Facility Planning application reference: MW.0086/20 Description: Scheme comprises scoping opinion request for construction of polymers recycling facility (capacity 85,000 tonnes p/a). This project also includes associated infrastructure works and access roads. Data source: Historic Planning Application Data Type: Point	07/04/2020
A	41m E	Site Address: Ardley Landfill,Station Road, Ardley Fields Farm, Ardley, BICESTER, Oxfordshire, OX27 7PH	Type of Site: Waste Transfer Facility Planning application reference: 07/02202/CM Description: Scheme comprises installation of waste reception, transfer, recycling and pre-treatment facility. An application (ref: 07/02202/CM) for detailed planning permission was granted by Cherwell D.C. Planning decision obtained Data source: Historic Planning Application Data Type: Point	-
A	41m E	Site Address: Ardley Landfill, Station Road, Ardley, Bicester, Oxfordshire, OX27 7PH	Type of Site: Waste Recycling Facility Planning application reference: 13/01406/CM Description: Scheme comprises installation of a waste water pit and fuel tank required in connection with Energy from Waste Facility approved under planning reference 08/02472/CM. Data source: Historic Planning Application Data Type: Point	03/10/2013

ID	Location	Address	Further Details	Date
4	42m E	Site Address: Ardley Landfill, Station Road, Ardley, BICESTER, Oxfordshire, OX27 7PQ	Type of Site: Waste Recycling Facility Planning application reference: 08/02472/CM Description: Scheme comprises construction and operation of an energy from waste (EFW) facility with associated office, visitor centre, bottom ash recycling facilities, new access road and weighbridge facilities, the continuation of non-hazardous landfill operation and landfill gas utilisation with consequent amendments to the phasing and final restoration landform of the landfill, surface water attenuation features and improvements to the household waste recycling facility. An application (ref: 08/02472/CM) for de tailed planning permission was refused by Cherwell D.C. For related lead please see: 07540490. Detailed plans have been refused. Data source: Historic Planning Application Data Type: Point	-
8	290m E	Site Address: Ardley Landfill Site, Ardley, BICESTER, Oxfordshire, OX13 6BQ	Type of Site: Waste Transfer Station Planning application reference: 98/0139/CM Description: Scheme comprises part single and two storey waste transfer station building with open plan offices, material handling areas, baling plant area, storage area, toilets, staff room and kitchen facilities. Detailed plans approved. Tender details remain to be finalised. We have been advised that the scheme is currently in abeyance, due to lack of funding. The clients are unsure as to when the scheme will commence on site. We have been advised that the scheme is currently in abeyance, due to lack of funding . The clients are unsure as to when the scheme will commence on site. Data source: Historic Planning Application Data Type: Point	-

This data is sourced from Ordnance Survey/Groundsure and Local Authority records.

3.6 Licensed waste sites

Records within 500m	**14**

Active or recently closed waste sites under Environment Agency/Natural Resources Wales regulation.

Features are displayed on the Waste and landfill map on **page 25**

ID	Location	Details		
B	**On site**	**Site Name: Ardley Green Compost Centre** **Site Address: Ashgrove Farm, Ardley, Bicester, Oxfordshire, OX27 7PJ** **Correspondence Address: The Stables, Radford, Chipping Norton, Oxfordshire, OX7 4EB**	**Type of Site: Composting Facility** **Size: 25000 tonnes** **Environmental Permitting Regulations (Waste) Licence Number: AGR008** **EPR reference: -** **Operator: Agrivert Ltd** **Waste Management licence No: 86429** **Annual Tonnage: 24999**	**Issue Date: 28/06/2007** **Effective Date: -** **Modified:: -** **Surrendered Date: -** **Expiry Date: -** **Cancelled Date: -** **Status: Issued**
B	**On site**	**Site Name: Ardley Green Compost Centre** **Site Address: Ashgrove Farm, Upper Heyford Road, Ardley, Bicester, Oxfordshire, OX27 7PJ** **Correspondence Address: -**	**Type of Site: Composting in closed vessels** **Size: 25000 tonnes** **Environmental Permitting Regulations (Waste) Licence Number: AGR008** **EPR reference: EA/EPR/GP3295EN/V003** **Operator: Agrivert Ltd** **Waste Management licence No: 86429** **Annual Tonnage: 74999**	**Issue Date: 28/06/2007** **Effective Date: -** **Modified:: 09/10/2015** **Surrendered Date: -** **Expiry Date: -** **Cancelled Date: -** **Status: To PPC**
A	61m E	Site Name: Ardley Leachate Treatment Plant Site Address: Ardley Landfill, Ardley Fields Farm, Ardley, Bicester, Oxfordshire, OX27 7PH Correspondence Address: Malling House, Town Hill, West Malling, Kent, ME19 6QL	Type of Site: Biological Treatment Facility Size: >= 25000 tonnes 75000 tonnes Environmental Permitting Regulations (Waste) Licence Number: VIR005 EPR reference: - Operator: Viridor Waste Management Ltd Waste Management licence No: 86270 Annual Tonnage: 60000	Issue Date: 14/06/2002 Effective Date: - Modified:: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Issued
A	61m E	Site Name: Ardley Leachate Treatment Plant Site Address: Ardley Landfill, Ardley Fields Farm, Ardley, Bicester, Oxfordshire, OX27 7PH Correspondence Address: -	Type of Site: Biological Treatment Facility Size: >= 25000 tonnes 75000 tonnes Environmental Permitting Regulations (Waste) Licence Number: VIR005 EPR reference: EA/EPR/PP3495EL/V002 Operator: Viridor Waste Management Ltd Waste Management licence No: 86270 Annual Tonnage: 60000	Issue Date: 14/06/2002 Effective Date: - Modified:: 10/12/2003 Surrendered Date: - Expiry Date: - Cancelled Date: - Status: To PPC

ID	Location	Details		
A	66m E	Site Name: Ardley Landfill Site Site Address: Ardley Fields Farm, Ardley, Oxfordshire, OX27 7PH Correspondence Address: -	Type of Site: HCI Waste TS (no building) Size: 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: VIR509 EPR reference: EA/EPR/BV7346IM/V011 Operator: Viridor Waste Management Ltd Waste Management licence No: 102516 Annual Tonnage: 0	Issue Date: 21/06/2011 Effective Date: - Modified:: 08/01/2016 Surrendered Date: Dec 12 2016 12:00AM Expiry Date: - Cancelled Date: - Status: Surrendered
H	84m SW	Site Name: Ardley Fields Farm Site Address: Haul Waste Disposal Ltd, Ardley Landfill, Ardley Fields Farm, Ardley, Oxon, OX27 7PH Correspondence Address: Haul Waste Disposal Ltd, Great Western House, Station Approach, Taunton, Somerset, TA1 1QW	Type of Site: Household, Commercial & Industrial Waste T Stn Size: >= 75000 tonnes Environmental Permitting Regulations (Waste) Licence Number: VIR004 EPR reference: - Operator: Viridor Waste Disposal Ltd Waste Management licence No: 86128 Annual Tonnage: 24999	Issue Date: 14/04/1980 Effective Date: 21/03/2001 Modified:: 27/03/2001 Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Transferred
H	84m SW	Site Name: Ardley Fields Farm Site Address: Haul Waste Disposal Ltd, Ardley Landfill, Ardley Fields Farm, Ardley, Oxfordshire, OX27 7PH Correspondence Address: -	Type of Site: Household, Commercial & Industrial Waste T Stn Size: 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: VIR004 EPR reference: EA/EPR/NP3199EL/V006 Operator: Viridor Waste Disposal Ltd Waste Management licence No: 86128 Annual Tonnage: 24999	Issue Date: 14/04/1980 Effective Date: 21/03/2001 Modified:: 17/01/2005 Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Modified

ID	Location	Details		
H	84m SW	Site Name: Ardley Fields Farm Site Address: Haul Waste Disposal Ltd, Ardley Landfill, Ardley Fields Farm, Ardley, Oxfordshire, OX27 7PH Correspondence Address: -	Type of Site: Household, Commercial & Industrial Waste T Stn Size: 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: THO001 EPR reference: EA/EPR/FB3507US/T001 Operator: Thompson Geoffrey Waste Management licence No: 86128 Annual Tonnage: 24999	Issue Date: 14/04/1980 Effective Date: 01/10/2017 Modified:: 17/01/2005 Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Transferred
I	156m E	Site Name: Ardley Quarry (southern Extension) Site Address: Ardley Quarry Southern Ext, Ardley Fields Farm, Ardley, Oxfordshire, OX27 7PH Correspondence Address: Great Western House, Station Approach, Taunton, Somerset, TA1 1QW	Type of Site: Co-Disposal Landfill Site Size: >= 75000 tonnes Environmental Permitting Regulations (Waste) Licence Number: HAU005 EPR reference: - Operator: Viridor Waste Disposal Ltd Waste Management licence No: 86232 Annual Tonnage: 305000	Issue Date: 12/07/2000 Effective Date: - Modified:: 18/12/2001 Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Modified
I	156m E	Site Name: Ardley Quarry (southern Extension) Site Address: Ardley Quarry Southern Ext, Ardley Fields Farm, Ardley, Oxfordshire, OX27 7PH Correspondence Address: Great Western House, Station Approach, Taunton, Somerset, TA1 1QW	Type of Site: Co-Disposal Landfill Site Size: >= 75000 tonnes Environmental Permitting Regulations (Waste) Licence Number: HAU005 EPR reference: - Operator: Viridor Waste Disposal Ltd Waste Management licence No: 86232 Annual Tonnage: 305000	Issue Date: 12/07/2000 Effective Date: - Modified:: 18/12/2001 Surrendered Date: - Expiry Date: - Cancelled Date: - Status: IPPC
I	156m E	Site Name: Ardley Quarry (southern Extension) Site Address: Ardley Quarry Southern Ext, Ardley Fields Farm, Ardley, Oxfordshire, OX27 7PH Correspondence Address: Ken Rowe, Great Western House, Station Approach, Taunton, Somerset, TA1 1QW	Type of Site: Co-Disposal Landfill Site Size: >= 75000 tonnes Environmental Permitting Regulations (Waste) Licence Number: HAU005 EPR reference: - Operator: Viridor Waste Disposal Ltd Waste Management licence No: 86232 Annual Tonnage: 305000	Issue Date: 12/07/2000 Effective Date: - Modified:: 18/12/2001 Surrendered Date: - Expiry Date: - Cancelled Date: - Status: IPPC

ID	Location	Details		
I	156m E	Site Name: Ardley Quarry (southern Extension) Site Address: Ardley Quarry Southern Ext, Ardley Fields Farm, Ardley, Oxfordshire, OX27 7PH Correspondence Address: -	Type of Site: Co-Disposal Landfill Site Size: 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: HAU005 EPR reference: EA/EPR/JP3999EE/V002 Operator: Viridor Waste Disposal Ltd Waste Management licence No: 86232 Annual Tonnage: 250000	Issue Date: 12/07/2000 Effective Date: - Modified:: 18/12/2001 Surrendered Date: - Expiry Date: - Cancelled Date: - Status: To PPC
J	156m E	Site Name: Ardley Fields Farm 2 Site Address: Haul Waste Disposal Ltd, Ardley Fields Farm Quarry, Ardley, Bicester, Oxon, OX27 7PH Correspondence Address: Haul Waste Disposal Ltd, Great Western House, Station Approach, Taunton, Somerset, TA1 1QW	Type of Site: Co-Disposal Landfill Site Size: >= 75000 tonnes Environmental Permitting Regulations (Waste) Licence Number: HAU004 EPR reference: - Operator: Viridor Waste Disposal Ltd Waste Management licence No: 86150 Annual Tonnage: 0	Issue Date: 30/11/1992 Effective Date: - Modified:: 18/12/2001 Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Modified
J	156m E	Site Name: Ardley Fields Farm 2 Site Address: Haul Waste Disposal Ltd, Ardley Fields Farm Quarry, Ardley, Bicester, Oxfordshire, OX27 7PH Correspondence Address: -	Type of Site: Co-Disposal Landfill Site Size: 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: HAU004 EPR reference: EA/EPR/VP3199EF/V005 Operator: Viridor Waste Disposal Ltd Waste Management licence No: 86150 Annual Tonnage: 378802	Issue Date: 30/11/1992 Effective Date: - Modified:: 18/12/2001 Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Expired

This data is sourced from the Environment Agency and Natural Resources Wales.

3.7 Waste exemptions

Records within 500m	**35**

Activities involving the storage, treatment, use or disposal of waste that are exempt from needing a permit. Exemptions have specific limits and conditions that must be adhered to.

Features are displayed on the Waste and landfill map on **page 25**

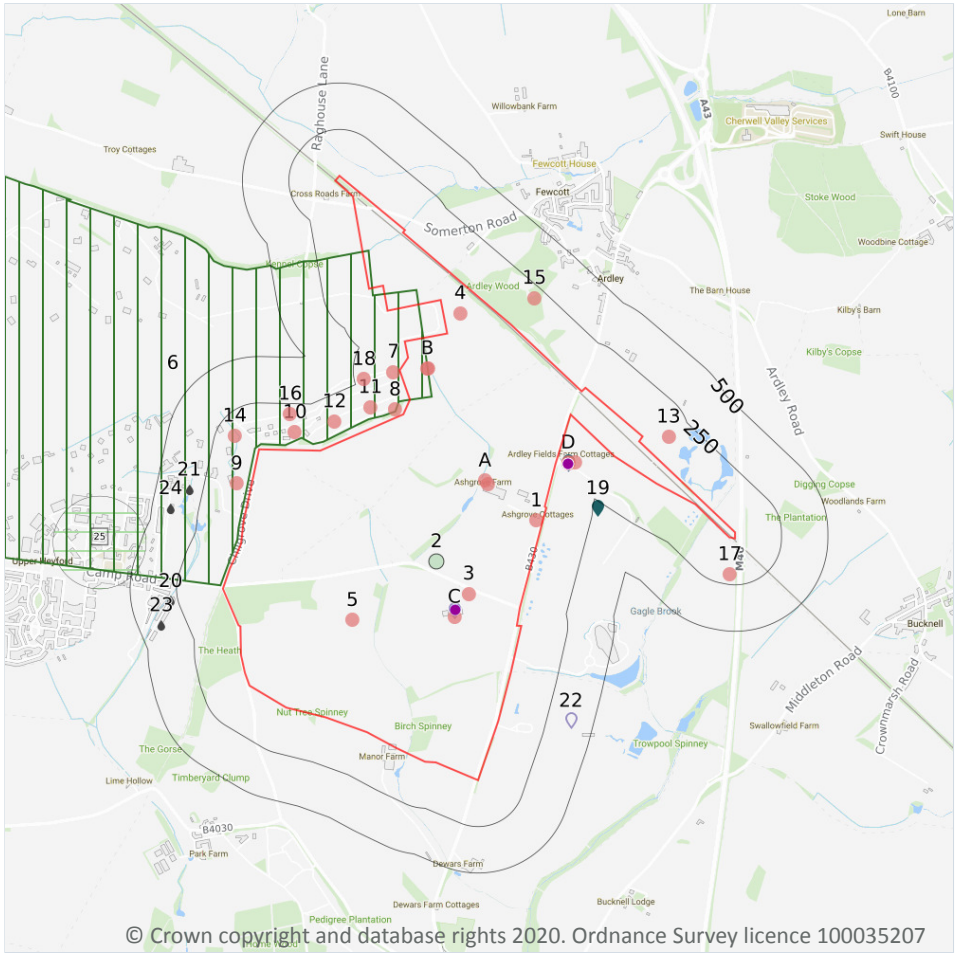
ID	Location	Site	Reference	Category	Sub-Category	Description
A	14m E	ARDLEY FIELDS FARM QUARRY, ARDLEY, OXON, OX27 7PH	WEX252241	Storing waste exemption	Not on a farm	Storage of waste in a secure place
F	16m E	DEWARS QUARRY, ARDLEY, BICESTER, OX27 7PH	WEX225116	Disposing of waste exemption	Not on a farm	Burning waste in the open
F	16m E	DEWARS QUARRY, ARDLEY, BICESTER, OX27 7PH	WEX076961	Disposing of waste exemption	Not on a farm	Burning waste in the open
A	19m E	ARDLEY FIELDS FARM QUARRY, ARDLEY, OXON, OX27 7PH	WEX108795	Storing waste exemption	Not on a farm	Storage of waste in a secure place
G	81m SW	MANOR FARM, ARDLEY ROAD, MIDDLETON STONEY, BICESTER, OX25 4AE	WEX201356	Storing waste exemption	On a Farm	Storage of waste in secure containers
G	81m SW	MANOR FARM, ARDLEY ROAD, MIDDLETON STONEY, BICESTER, OX25 4AE	WEX201356	Disposing of waste exemption	On a Farm	Burning waste in the open
G	81m SW	MANOR FARM, ARDLEY ROAD, MIDDLETON STONEY, BICESTER, OX25 4AE	WEX201356	Using waste exemption	On a Farm	Incorporation of ash into soil
G	81m SW	MANOR FARM, ARDLEY ROAD, MIDDLETON STONEY, BICESTER, OX25 4AE	WEX201356	Using waste exemption	On a Farm	Spreading waste on agricultural land to confer benefit
G	81m SW	MANOR FARM, ARDLEY ROAD, MIDDLETON STONEY, BICESTER, OX25 4AE	WEX201356	Using waste exemption	On a Farm	Use of waste in construction
G	81m SW	MANOR FARM, ARDLEY ROAD, MIDDLETON STONEY, BICESTER, OX25 4AE	WEX053260	Disposing of waste exemption	On a farm	Burning waste in the open
G	81m SW	MANOR FARM, ARDLEY ROAD, MIDDLETON STONEY, BICESTER, OX25 4AE	WEX053260	Storing waste exemption	On a farm	Storage of waste in secure containers

ID	Location	Site	Reference	Category	Sub-Category	Description
G	81m SW	MANOR FARM, ARDLEY ROAD, MIDDLETON STONEY, BICESTER, OX25 4AE	WEX053260	Using waste exemption	On a farm	Use of waste in construction
G	81m SW	MANOR FARM, ARDLEY ROAD, MIDDLETON STONEY, BICESTER, OX25 4AE	WEX053260	Using waste exemption	On a farm	Spreading waste on agricultural land to confer benefit
G	81m SW	MANOR FARM, ARDLEY ROAD, MIDDLETON STONEY, BICESTER, OX25 4AE	WEX053260	Using waste exemption	On a farm	Incorporation of ash into soil
6	154m W	Lodge Farm Fritwell Oxon OX27 7QF	EPR/PE5588CC /A001	Storing waste exemption	Non-Agricultural Waste Only	Storage of sludge
7	174m NW	Lodge Farm Fritwell Oxon OX27 7QF	EPR/JE5185CV /A001	Storing waste exemption	Non-Agricultural Waste Only	Storage of sludge
K	193m NE	1 Quarry Cottages Somerton Road BICESTER Oxfordshire OX27 7NU	EPR/PE5887LB /A001	Using waste exemption	Both agricultural and non-agricultural waste	Use of waste in construction
K	193m NE	1 Quarry Cottages Somerton Road BICESTER Oxfordshire OX27 7NU	EPR/PE5887LB /A001	Using waste exemption	Both agricultural and non-agricultural waste	Burning of waste as a fuel in a small appliance
K	193m NE	1 Quarry Cottages Somerton Road BICESTER Oxfordshire OX27 7NU	EPR/PE5887LB /A001	Using waste exemption	Both agricultural and non-agricultural waste	Use of waste for a specified purpose
K	196m NE	1 QUARRY COTTAGES, SOMERTON ROAD, ARDLEY, BICESTER, OX27 7NU	WEX193312	Using waste exemption	On a Farm	Use of waste in construction
K	196m NE	1 QUARRY COTTAGES, SOMERTON ROAD, ARDLEY, BICESTER, OX27 7NU	WEX193312	Using waste exemption	On a Farm	Burning of waste as a fuel in a small appliance
K	196m NE	1 QUARRY COTTAGES, SOMERTON ROAD, ARDLEY, BICESTER, OX27 7NU	WEX193312	Using waste exemption	On a Farm	Use of waste for a specified purpose
K	196m NE	1 QUARRY COTTAGES, SOMERTON ROAD, ARDLEY, BICESTER, OX27 7NU	WEX035501	Using waste exemption	On a farm	Use of waste in construction
K	196m NE	1 QUARRY COTTAGES, SOMERTON ROAD, ARDLEY, BICESTER, OX27 7NU	WEX035501	Using waste exemption	On a farm	Burning of waste as a fuel in a small appliance

ID	Location	Site	Reference	Category	Sub-Category	Description
K	196m NE	1 QUARRY COTTAGES, SOMERTON ROAD, ARDLEY, BICESTER, OX27 7NU	WEX035501	Using waste exemption	On a farm	Use of waste for a specified purpose
L	244m E	Dewars Farm Ardley Road BICESTER Oxfordshire OX25 4AE	EPR/AE5143VA/A001	Storing waste exemption	Non-Agricultural Waste Only	Storage of sludge
L	244m E	Dewars Farm Ardley Road BICESTER Oxfordshire OX25 4AE	EPR/DE5842SX/A001	Storing waste exemption	Non-Agricultural Waste Only	Storage of sludge
9	338m SW	Ardley Landfill Site BICESTER Oxfordshire OX27 7PH	EPR/GF0005UA/A001	Storing waste exemption	Non-Agricultural Waste Only	Storage of waste in a secure place
10	349m SW	Smith & Sons (Bletchington) Ltd Ardley Quarry BICESTER OX27 7PH	EPR/ME5180AG/A001	Disposing of waste exemption	Both agricultural and non-agricultural waste	Burning waste in the open
11	356m N	Lodge Farm	WEX049285	Storing waste exemption	On a farm	Storage of sludge
M	432m N	-	WEX218556	Storing waste exemption	On a farm	Storage of sludge
M	432m N	Lodge Farm Oxfordshire OX27 7QF	EPR/PE5354CY/A001	Storing waste exemption	Non-Agricultural Waste Only	Storage of sludge
N	468m S	Dewars Farm Ardley Road BICESTER Oxfordshire OX25 4AE	EPR/AE5743VX/A001	Storing waste exemption	Non-Agricultural Waste Only	Storage of sludge
N	468m S	Dewars Farm Ardley Road BICESTER Oxfordshire OX25 4AE	EPR/DE5642SS/A001	Storing waste exemption	Non-Agricultural Waste Only	Storage of sludge
13	486m SW	Manor Farm Ardley Road BICESTER Oxfordshire OX25 4AE	EPR/QF0633YR/A001	Using waste exemption	Non-Agricultural Waste Only	Use of waste in construction

This data is sourced from the Environment Agency and Natural Resources Wales.

4 Current industrial land use



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Site Outline

Search buffers in metres (m)

- Recent industrial land uses
- Control of Major Accident Hazards
- Regulated explosive sites
- Part A(1) industrial activities
- Licensed pollutant release (Part A(2)/B)
- Licensed Discharges to controlled waters
- Pollution Incidents (EA/NRW)
- Pollution inventory substances
- Pollution inventory waste transfers

4.1 Recent industrial land uses

Records within 250m	24

Current potentially contaminative industrial sites.

Features are displayed on the Current industrial land use map on **page 39**

ID	Location	Company	Address	Activity	Category
1	**On site**	**Electricity Sub Station**	**Oxfordshire, OX27**	**Electrical Features**	**Infrastructure and Facilities**
3	**On site**	**Pumping Station**	**Oxfordshire, OX25**	**Water Pumping Stations**	**Industrial Features**

ID	Location	Company	Address	Activity	Category
4	**On site**	**Runway Approach Lights**	**Oxfordshire, OX27**	**Aeronautical Features**	**Air**
5	**On site**	**Electricity Poles**	**Oxfordshire, OX25**	**Electrical Features**	**Infrastructure and Facilities**
A	**On site**	**Silo**	**Oxfordshire, OX27**	**Hoppers and Silos**	**Farming**
A	**On site**	**Silo**	**Oxfordshire, OX27**	**Hoppers and Silos**	**Farming**
B	**On site**	**Tank**	**Oxfordshire, OX27**	**Tanks (Generic)**	**Industrial Features**
B	**On site**	**Tank**	**Oxfordshire, OX27**	**Tanks (Generic)**	**Industrial Features**
C	**On site**	**Electricity Sub Station**	**Oxfordshire, OX25**	**Electrical Features**	**Infrastructure and Facilities**
7	35m W	Tank	Oxfordshire, OX27	Tanks (Generic)	Industrial Features
8	41m NW	Tank	Oxfordshire, OX27	Tanks (Generic)	Industrial Features
D	63m E	Viridor Ltd	Ardleyfield Farm, Ardley, Bicester, Oxfordshire, OX27 7PH	Waste Storage, Processing and Disposal	Infrastructure and Facilities
D	67m E	Ardley Fields Farm Landfill Site - Landfill Gas (DECC)	Ardley Fields Farm, Oxford, Oxfordshire, OX27	Energy Production	Industrial Features
9	80m W	Electricity Sub Station	Oxfordshire, OX25	Electrical Features	Infrastructure and Facilities
10	96m N	Tank	Oxfordshire, OX25	Tanks (Generic)	Industrial Features
D	98m E	Recycling Facility	Oxfordshire, OX27	Recycling Centres	Infrastructure and Facilities
11	107m NW	Tank	Oxfordshire, OX27	Tanks (Generic)	Industrial Features
12	113m NW	Tank	Oxfordshire, OX25	Tanks (Generic)	Industrial Features
13	127m NE	Workings (Dis)	Oxfordshire, OX27	Unspecified Quarries Or Mines	Extractive Industries
14	150m NW	Electricity Sub Station	Oxfordshire, OX25	Electrical Features	Infrastructure and Facilities
15	191m NE	Runway Approach Lights	Oxfordshire, OX27	Aeronautical Features	Air

ID	Location	Company	Address	Activity	Category
16	195m N	Electricity Sub Station	Oxfordshire, OX25	Electrical Features	Infrastructure and Facilities
17	195m S	Ardley - EfW Incineration (DECC)	Middleton Stoney Road, Ardley, Bicester, Oxon, Oxfordshire, OX25 3TH	Energy Production	Industrial Features
18	198m W	Tank	Oxfordshire, OX27	Tanks (Generic)	Industrial Features

This data is sourced from Ordnance Survey.

4.2 Current or recent petrol stations

Records within 500m	0

Open, closed, under development and obsolete petrol stations.

This data is sourced from Experian.

4.3 Electricity cables

Records within 500m	0

High voltage underground electricity transmission cables.

This data is sourced from National Grid.

4.4 Gas pipelines

Records within 500m	0

High pressure underground gas transmission pipelines.

This data is sourced from National Grid.

4.5 Sites determined as Contaminated Land

Records within 500m	0

Contaminated Land Register of sites designated under Part 2a of the Environmental Protection Act 1990.

This data is sourced from Local Authority records.

4.6 Control of Major Accident Hazards (COMAH)

Records within 500m	1

Control of Major Accident Hazards (COMAH) sites. This data includes upper and lower tier sites, and includes a historical archive of COMAH sites and Notification of Installations Handling Hazardous Substances (NIHHS) records.

Features are displayed on the Current industrial land use map on **page 39**

ID	Location	Company	Address	Operational status	Tier
25	458m W	Heyford Park Management Company Limited	Heyford Park Management Company Limited, Southern Bomb Store/Site, Heyford Park, Camp Road, Upper Heyford, Oxfordshire, OX25 5HD	Current COMAH Site	COMAH Upper Tier Operator

This data is sourced from the Health and Safety Executive.

4.7 Regulated explosive sites

Records within 500m	1

Sites registered and licensed by the Health and Safety Executive under the Manufacture and Storage of Explosives Regulations 2005 (MSER). The last update to this data was in April 2011.

Features are displayed on the Current industrial land use map on **page 39**

ID	Location	Company	Operational Address
6	**On site**	**Cosmic Fireworks Ltd**	**RAF Upper Heyford, Camp Road, Oxon, OX25 5HE**

This data is sourced from the Health and Safety Executive.

4.8 Hazardous substance storage/usage

Records within 500m	0

Consents granted for a site to hold certain quantities of hazardous substances at or above defined limits in accordance with the Planning (Hazardous Substances) Regulations 2015.

This data is sourced from Local Authority records.

4.9 Historical licensed industrial activities (IPC)

Records within 500m	0

Integrated Pollution Control (IPC) records of substance releases to air, land and water. This data represents a historical archive as the IPC regime has been superseded.

This data is sourced from the Environment Agency and Natural Resources Wales.

4.10 Licensed industrial activities (Part A(1))

Records within 500m	45

Records of Part A(1) installations regulated under the Environmental Permitting (England and Wales) Regulations 2016 for the release of substances to the environment.

Features are displayed on the Current industrial land use map on **page 39**

ID	Location	Details	
C	On site	Operator: SEVERN TRENT GREEN POWER (ARDLEY) LIMITED Installation Name: ARDLEY GREEN COMPOST CENTRE - EPR/SP3934QD Process: RECOVERY OR A MIX OF RECOVERY AND DISPOSAL OF > 50 T/D NON-HAZARDOUS WASTE (> 100 T/D IF ONLY AD) INVOLVING BIOLOGICAL TREATMENT Permit Number: LP3308PU Original Permit Number: SP3934QD	EPR Reference: - Issue Date: 24/04/2019 Effective Date: 24/04/2019 Last date noted as effective: 26/10/2020 Status: EFFECTIVE
C	On site	Operator: AGRIVERT (ARDLEY) LIMITED Installation Name: ARDLEY GREEN COMPOST CENTRE - EPR/SP3934QD Process: RECOVERY OR A MIX OF RECOVERY AND DISPOSAL OF > 50 T/D NON-HAZARDOUS WASTE (> 100 T/D IF ONLY AD) INVOLVING BIOLOGICAL TREATMENT Permit Number: SP3934QD Original Permit Number: SP3934QD	EPR Reference: - Issue Date: 12/10/2018 Effective Date: 12/10/2018 Last date noted as effective: 26/10/2020 Status: SUPERCEDED
C	On site	Operator: AGRIVERT LIMITED Installation Name: ARDLEY GREEN COMPOST CENTRE EPR/GP3295EN Process: RECOVERY OR A MIX OF RECOVERY AND DISPOSAL OF > 50 T/D NON-HAZARDOUS WASTE (> 100 T/D IF ONLY AD) INVOLVING BIOLOGICAL TREATMENT Permit Number: XP3832WB Original Permit Number: XP3832WB	EPR Reference: - Issue Date: 09/10/2015 Effective Date: 09/10/2015 Last date noted as effective: 26/10/2020 Status: SUPERCEDED

ID	Location	Details	
D	63m E	Operator: RAYMOND BROWN MINERALS & RECYCLING LTD Installation Name: ARDLEY ENERGY FROM WASTE PLANT Process: INCINERATION OF NON HAZARDOUS WASTE >1T/HR Permit Number: QP3131EK Original Permit Number: QP3131EK	EPR Reference: - Issue Date: 23/10/2016 Effective Date: 23/10/2016 Last date noted as effective: 26/10/2020 Status: SUPERCEDED
D	63m E	Operator: RAYMOND BROWN MINERALS AND RECYCLING LIMITED Installation Name: ARDLEY ENERGY FROM WASTE PLANT Process: INCINERATION OF NON HAZARDOUS WASTE >1T/HR Permit Number: SP3236DY Original Permit Number: QP3131EK	EPR Reference: - Issue Date: 24/10/2016 Effective Date: 24/10/2016 Last date noted as effective: 26/10/2020 Status: SUPERCEDED
D	63m E	Operator: VIRIDOR WASTE MANAGEMENT LTD Installation Name: ARDLEY LANDFILL SITE EPR/BV7346IM/V008 Process: CREATED BY IED - DISPOSAL OF > 50 T/D NON-HAZARDOUS WASTE (> 100 T/D IF ONLY AD) INVOLVING BIOLOGICAL TREATMENT Permit Number: FP3335NA Original Permit Number: BV7346IM	EPR Reference: - Issue Date: 30/05/2013 Effective Date: 30/05/2013 Last date noted as effective: 01/07/2013 Status: EFFECTIVE
D	63m E	Operator: VIRIDOR WASTE MANAGEMENT LTD Installation Name: ARDLEY EFW PLANT EPR/FP3134GU Process: INCINERATION OF NON HAZARDOUS WASTE >1T/HR Permit Number: ZP3632EU Original Permit Number: FP3134GU	EPR Reference: - Issue Date: 18/02/2014 Effective Date: 18/02/2014 Last date noted as effective: 26/10/2020 Status: SUPERCEDED
D	63m E	Operator: FORTIS IBA LIMITED Installation Name: ARDLEY IBA PLANT EPR/ZP3335JH Process: INCINERATION OF NON HAZARDOUS WASTE >1T/HR Permit Number: ZP3335JH Original Permit Number: ZP3335JH	EPR Reference: - Issue Date: 09/02/2018 Effective Date: 09/02/2018 Last date noted as effective: 26/10/2020 Status: SUPERCEDED
D	63m E	Operator: VIRIDOR WASTE MANAGEMENT LTD Installation Name: ARDLEY LANDFILL SITE Process: WASTE LANDFILLING; >10 T/D WITH CAPACITY >25,000T EXCLUDING INERT WASTE Permit Number: DP3238RP Original Permit Number: BV7346IM	EPR Reference: - Issue Date: 08/01/2016 Effective Date: 08/01/2016 Last date noted as effective: 26/10/2020 Status: SUPERCEDED

ID	Location	Details	
D	63m E	Operator: VIRIDOR WASTE MANAGEMENT LIMITED Installation Name: ARDLEY EFW PLANT EPR/FP3134GU Process: INCINERATION OF NON HAZARDOUS WASTE >1T/HR Permit Number: BP3434WQ Original Permit Number: FP3134GU	EPR Reference: - Issue Date: 21/04/2015 Effective Date: 21/04/2015 Last date noted as effective: 26/10/2020 Status: SUPERCEDED
D	63m E	Operator: VIRIDOR WASTE MANAGEMENT LIMITED Installation Name: ARDLEY EFW PLANT EPR/FP3134GU Process: THE INCINERATION OF NON-HAZARDOUS WASTE IN AN INCINERATION OR CO-INCINERATION PLANT WITH A CAPACITY EXCEEDING 3 TONNES PER HOUR. Permit Number: WP3203LP Original Permit Number: FP3134GU	EPR Reference: - Issue Date: 06/10/2020 Effective Date: 06/10/2020 Last date noted as effective: 26/10/2020 Status: EFFECTIVE
D	63m E	Operator: VIRIDOR WASTE MANAGEMENT LIMITED Installation Name: ARDLEY LANDFILL SITE - EPR/BV7346IM Process: ASSOCIATED PROCESS Permit Number: WP3703LH Original Permit Number: BV7346IM	EPR Reference: - Issue Date: 06/10/2020 Effective Date: 06/10/2020 Last date noted as effective: 26/10/2020 Status: EFFECTIVE
D	63m E	Operator: VIRIDOR WASTE MANAGEMENT LIMITED Installation Name: ARDLEY LANDFILL SITE - EPR/BV7346IM Process: DISPOSAL OF > 50 T/D NON-HAZARDOUS WASTE (> 100 T/D IF ONLY AD) INVOLVING BIOLOGICAL TREATMENT Permit Number: WP3703LH Original Permit Number: BV7346IM	EPR Reference: - Issue Date: 06/10/2020 Effective Date: 06/10/2020 Last date noted as effective: 26/10/2020 Status: EFFECTIVE
D	63m E	Operator: VIRIDOR WASTE MANAGEMENT LIMITED Installation Name: ARDLEY LANDFILL SITE - EPR/BV7346IM Process: WASTE LANDFILLING; >10 T/D WITH CAPACITY >25,000T EXCLUDING INERT WASTE Permit Number: WP3703LH Original Permit Number: BV7346IM	EPR Reference: - Issue Date: 06/10/2020 Effective Date: 06/10/2020 Last date noted as effective: 26/10/2020 Status: EFFECTIVE
D	63m E	Operator: VIRIDOR WASTE MANAGEMENT LTD Installation Name: ARDLEY LANDFILL SITE - EPR/BV7346IM Process: ASSOCIATED PROCESS Permit Number: AP3634RY Original Permit Number: BV7346IM	EPR Reference: - Issue Date: 12/12/2016 Effective Date: 12/12/2016 Last date noted as effective: 26/10/2020 Status: SUPERCEDED

ID	Location	Details	
D	63m E	Operator: VIRIDOR WASTE MANAGEMENT LTD Installation Name: ARDLEY LANDFILL SITE - EPR/BV7346IM Process: DISPOSAL OF > 50 T/D NON-HAZARDOUS WASTE (> 100 T/D IF ONLY AD) INVOLVING BIOLOGICAL TREATMENT Permit Number: AP3634RY Original Permit Number: BV7346IM	EPR Reference: - Issue Date: 12/12/2016 Effective Date: 12/12/2016 Last date noted as effective: 26/10/2020 Status: SUPERCEDED
D	63m E	Operator: VIRIDOR WASTE MANAGEMENT LTD Installation Name: ARDLEY LANDFILL SITE Process: WASTE LANDFILLING; >10 T/D WITH CAPACITY >25,000T EXCLUDING INERT WASTE Permit Number: BV7346IM Original Permit Number: BV7346IM	EPR Reference: - Issue Date: 29/06/2004 Effective Date: 29/06/2004 Last date noted as effective: 26/10/2020 Status: SUPERCEDED
D	63m E	Operator: VIRIDOR WASTE MANAGEMENT LTD Installation Name: ARDLEY LANDFILL SITE Process: RECOVERY OF WASTE; HAZARDOUS WASTE >10T/D BY USE AS A FUEL Permit Number: EP3030KJ Original Permit Number: BV7346IM	EPR Reference: EA/EPR/BV7346IM/V006 Issue Date: 15/04/2010 Effective Date: 16/04/2010 Last date noted as effective: 26/10/2020 Status: SUPERCEDED
D	63m E	Operator: VIRIDOR WASTE MANAGEMENT LTD Installation Name: ARDLEY LANDFILL SITE Process: WASTE LANDFILLING; >10 T/D WITH CAPACITY >25,000T EXCLUDING INERT WASTE Permit Number: EP3030KJ Original Permit Number: BV7346IM	EPR Reference: EA/EPR/BV7346IM/V006 Issue Date: 15/04/2010 Effective Date: 16/04/2010 Last date noted as effective: 26/10/2020 Status: SUPERCEDED
D	63m E	Operator: VIRIDOR WASTE MANAGEMENT LTD Installation Name: ARDLEY EFW PLANT EPR/FP3134GU Process: INCINERATION OF NON HAZARDOUS WASTE >1T/HR Permit Number: FP3134GU Original Permit Number: FP3134GU	EPR Reference: EA/EPR/FP3134GU/A001 Issue Date: 27/09/2010 Effective Date: 27/09/2010 Last date noted as effective: 26/10/2020 Status: SUPERCEDED
D	63m E	Operator: VIRIDOR WASTE MANAGEMENT LTD Installation Name: ARDLEY LANDFILL SITE Process: ASSOCIATED PROCESS Permit Number: FP3330WW Original Permit Number: BV7346IM	EPR Reference: - Issue Date: 28/01/2015 Effective Date: 28/01/2015 Last date noted as effective: 26/10/2020 Status: SUPERCEDED
D	63m E	Operator: VIRIDOR WASTE MANAGEMENT LTD Installation Name: ARDLEY LANDFILL SITE EPR/BV7346IM/V008 Process: WASTE LANDFILLING; >10 T/D WITH CAPACITY >25,000T EXCLUDING INERT WASTE Permit Number: FP3335NA Original Permit Number: BV7346IM	EPR Reference: - Issue Date: 30/05/2013 Effective Date: 30/05/2013 Last date noted as effective: 26/10/2020 Status: SUPERCEDED

ID	Location	Details	
D	63m E	Operator: VIRIDOR WASTE MANAGEMENT LTD Installation Name: ARDLEY LANDFILL SITE Process: WASTE LANDFILLING; >10 T/D WITH CAPACITY >25,000T EXCLUDING INERT WASTE Permit Number: KP3739LZ Original Permit Number: BV7346IM	EPR Reference: - Issue Date: 10/03/2006 Effective Date: 11/03/2006 Last date noted as effective: 26/10/2020 Status: SUPERCEDED
D	63m E	Operator: VIRIDOR WASTE MANAGEMENT LTD Installation Name: ARDLEY EFW PLANT EPR/FP3134GU Process: INCINERATION OF NON HAZARDOUS WASTE >1T/HR Permit Number: PP3837ET Original Permit Number: FP3134GU	EPR Reference: - Issue Date: 01/04/2014 Effective Date: 01/04/2014 Last date noted as effective: 26/10/2020 Status: SUPERCEDED
D	63m E	Operator: VIRIDOR WASTE MANAGEMENT LTD Installation Name: ARDLEY LANDFILL SITE Process: WASTE LANDFILLING; >10 T/D WITH CAPACITY >25,000T EXCLUDING INERT WASTE Permit Number: RP3631UF Original Permit Number: BV7346IM	EPR Reference: - Issue Date: 03/06/2008 Effective Date: 03/06/2008 Last date noted as effective: 26/10/2020 Status: SUPERCEDED
D	63m E	Operator: VIRIDOR WASTE MANAGEMENT LTD Installation Name: ARDLEY LANDFILL SITE Process: COMBUSTION; WASTE DERIVED FUEL =>3MW BUT 50MW Permit Number: WP3937HY Original Permit Number: BV7346IM	EPR Reference: - Issue Date: 21/06/2011 Effective Date: 21/06/2011 Last date noted as effective: 26/10/2020 Status: SUPERCEDED
D	63m E	Operator: VIRIDOR WASTE MANAGEMENT LTD Installation Name: ARDLEY LANDFILL SITE Process: RECOVERY OF WASTE; HAZARDOUS WASTE >10T/D BY USE AS A FUEL Permit Number: WP3937HY Original Permit Number: BV7346IM	EPR Reference: - Issue Date: 21/06/2011 Effective Date: 21/06/2011 Last date noted as effective: 26/10/2020 Status: SUPERCEDED
D	63m E	Operator: VIRIDOR WASTE MANAGEMENT LIMITED Installation Name: ARDLEY EFW PLANT EPR/FP3134GU Process: THE INCINERATION OF NON-HAZARDOUS WASTE IN AN INCINERATION OR CO-INCINERATION PLANT WITH A CAPACITY EXCEEDING 3 TONNES PER HOUR. Permit Number: YP3907PM Original Permit Number: FP3134GU	EPR Reference: - Issue Date: 03/10/2019 Effective Date: 03/10/2019 Last date noted as effective: 26/10/2020 Status: SUPERCEDED

ID	Location	Details	
D	63m E	Operator: VIRIDOR WASTE MANAGEMENT LTD Installation Name: ARDLEY LANDFILL SITE - EPR/BV7346IM Process: WASTE LANDFILLING; >10 T/D WITH CAPACITY >25,000T EXCLUDING INERT WASTE Permit Number: AP3634RY Original Permit Number: BV7346IM	EPR Reference: - Issue Date: 12/12/2016 Effective Date: 12/12/2016 Last date noted as effective: 26/10/2020 Status: SUPERCEDED
D	63m E	Operator: VIRIDOR WASTE MANAGEMENT LTD Installation Name: ARDLEY LANDFILL SITE Process: ASSOCIATED PROCESS Permit Number: DP3238RP Original Permit Number: BV7346IM	EPR Reference: - Issue Date: 08/01/2016 Effective Date: 08/01/2016 Last date noted as effective: 26/10/2020 Status: SUPERCEDED
D	63m E	Operator: VIRIDOR WASTE MANAGEMENT LTD Installation Name: ARDLEY LANDFILL SITE Process: DISPOSAL OF > 50 T/D NON-HAZARDOUS WASTE (> 100 T/D IF ONLY AD) INVOLVING BIOLOGICAL TREATMENT Permit Number: DP3238RP Original Permit Number: BV7346IM	EPR Reference: - Issue Date: 08/01/2016 Effective Date: 08/01/2016 Last date noted as effective: 26/10/2020 Status: SUPERCEDED
D	63m E	Operator: VIRIDOR WASTE MANAGEMENT LTD Installation Name: ARDLEY LANDFILL SITE Process: COMBUSTION; WASTE DERIVED FUEL =>3MW BUT 50MW Permit Number: EP3030KJ Original Permit Number: BV7346IM	EPR Reference: EA/EPR/BV7346IM/V006 Issue Date: 15/04/2010 Effective Date: 16/04/2010 Last date noted as effective: 26/10/2020 Status: SUPERCEDED
D	63m E	Operator: VIRIDOR WASTE MANAGEMENT LTD Installation Name: ARDLEY LANDFILL SITE Process: DISPOSAL OF > 50 T/D NON-HAZARDOUS WASTE (> 100 T/D IF ONLY AD) INVOLVING BIOLOGICAL TREATMENT Permit Number: FP3330WW Original Permit Number: BV7346IM	EPR Reference: - Issue Date: 28/01/2015 Effective Date: 28/01/2015 Last date noted as effective: 26/10/2020 Status: SUPERCEDED
D	63m E	Operator: VIRIDOR WASTE MANAGEMENT LTD Installation Name: ARDLEY LANDFILL SITE Process: WASTE LANDFILLING; >10 T/D WITH CAPACITY >25,000T EXCLUDING INERT WASTE Permit Number: FP3330WW Original Permit Number: BV7346IM	EPR Reference: - Issue Date: 28/01/2015 Effective Date: 28/01/2015 Last date noted as effective: 26/10/2020 Status: SUPERCEDED
D	63m E	Operator: VIRIDOR WASTE MANAGEMENT LTD Installation Name: ARDLEY LANDFILL SITE EPR/BV7346IM/V008 Process: ASSOCIATED PROCESS Permit Number: FP3335NA Original Permit Number: BV7346IM	EPR Reference: - Issue Date: 30/05/2013 Effective Date: 30/05/2013 Last date noted as effective: 26/10/2020 Status: SUPERCEDED

ID	Location	Details	
D	63m E	Operator: VIRIDOR WASTE MANAGEMENT LTD Installation Name: ARDLEY LANDFILL SITE EPR/BV7346IM/V008 Process: DISPOSAL OF > 50 T/D NON-HAZARDOUS WASTE (> 100 T/D IF ONLY AD) INVOLVING BIOLOGICAL TREATMENT Permit Number: FP3335NA Original Permit Number: BV7346IM	EPR Reference: - Issue Date: 30/05/2013 Effective Date: 30/05/2013 Last date noted as effective: 26/10/2020 Status: SUPERCEDED
D	63m E	Operator: VIRIDOR WASTE MANAGEMENT LTD Installation Name: ARDLEY LANDFILL SITE Process: WASTE LANDFILLING; >10 T/D WITH CAPACITY >25,000T EXCLUDING INERT WASTE Permit Number: KP3633MP Original Permit Number: BV7346IM	EPR Reference: - Issue Date: 17/05/2007 Effective Date: 11/07/2007 Last date noted as effective: 26/10/2020 Status: SUPERCEDED
D	63m E	Operator: VIRIDOR WASTE MANAGEMENT LTD Installation Name: ARDLEY LANDFILL SITE Process: WASTE LANDFILLING; >10 T/D WITH CAPACITY >25,000T EXCLUDING INERT WASTE Permit Number: KP3633MP Original Permit Number: BV7346IM	EPR Reference: - Issue Date: 17/05/2007 Effective Date: 11/07/2007 Last date noted as effective: 26/10/2020 Status: SUPERCEDED
D	63m E	Operator: VIRIDOR WASTE MANAGEMENT LTD Installation Name: ARDLEY LANDFILL SITE Process: WASTE LANDFILLING; >10 T/D WITH CAPACITY >25,000T EXCLUDING INERT WASTE Permit Number: KP3739LZ Original Permit Number: BV7346IM	EPR Reference: - Issue Date: 10/03/2006 Effective Date: 11/03/2006 Last date noted as effective: 26/10/2020 Status: SUPERCEDED
D	63m E	Operator: VIRIDOR WASTE MANAGEMENT LTD Installation Name: ARDLEY LANDFILL SITE Process: COMBUSTION; WASTE DERIVED FUEL =>3MW BUT 50MW Permit Number: RP3631UF Original Permit Number: BV7346IM	EPR Reference: - Issue Date: 03/06/2008 Effective Date: 03/06/2008 Last date noted as effective: 26/10/2020 Status: SUPERCEDED
D	63m E	Operator: VIRIDOR WASTE MANAGEMENT LTD Installation Name: ARDLEY LANDFILL SITE Process: RECOVERY OF WASTE; HAZARDOUS WASTE >10T/D BY USE AS A FUEL Permit Number: RP3631UF Original Permit Number: BV7346IM	EPR Reference: - Issue Date: 03/06/2008 Effective Date: 03/06/2008 Last date noted as effective: 26/10/2020 Status: SUPERCEDED
D	63m E	Operator: VIRIDOR WASTE MANAGEMENT LTD Installation Name: ARDLEY LANDFILL SITE Process: WASTE LANDFILLING; >10 T/D WITH CAPACITY >25,000T EXCLUDING INERT WASTE Permit Number: RP3631UF Original Permit Number: BV7346IM	EPR Reference: - Issue Date: 03/06/2008 Effective Date: 03/06/2008 Last date noted as effective: 26/10/2020 Status: SUPERCEDED

ID	Location	Details	
D	63m E	Operator: VIRIDOR WASTE MANAGEMENT LTD Installation Name: ARDLEY LANDFILL SITE Process: WASTE LANDFILLING; >10 T/D WITH CAPACITY >25,000T EXCLUDING INERT WASTE Permit Number: WP3937HY Original Permit Number: BV7346IM	EPR Reference: - Issue Date: 21/06/2011 Effective Date: 21/06/2011 Last date noted as effective: 26/10/2020 Status: SUPERCEDED
D	63m E	Operator: VIRIDOR WASTE MANAGEMENT LIMITED Installation Name: ARDLEY EFW PLANT EPR/FP3134GU Process: INCINERATION OF NON HAZARDOUS WASTE >1T/HR Permit Number: YP3907PM Original Permit Number: FP3134GU	EPR Reference: - Issue Date: - Effective Date: - Last date noted as effective: 01/10/2019 Status: DETERMINATION
22	378m E	Operator: VIRIDOR WASTE (EXETER) LTD Installation Name: - Process: WASTE LANDFILLING; >10 T/D WITH CAPACITY >25,000T EXCLUDING INERT WASTE Permit Number: BV7346 Original Permit Number: BV7346	EPR Reference: - Issue Date: - Effective Date: - Last date noted as effective: 01/10/2004 Status: SUPERSEDED BY PAS

This data is sourced from the Environment Agency and Natural Resources Wales.

4.11 Licensed pollutant release (Part A(2)/B)

Records within 500m	**2**

Records of Part A(2) and Part B installations regulated under the Environmental Permitting (England and Wales) Regulations 2016 for the release of substances to the environment.

Features are displayed on the Current industrial land use map on **page 39**

ID	Location	Address	Details	
D	65m E	Smith and Sons (Bletchington) Ltd, Dewars Farm Quarry, Ardley, Bicester, Oxfordshire, OX6 0PH	Process: Quarry Processes Status: Current Permit Permit Type: Part B	Enforcement: No Enforcements Notified Date of enforcement: No Enforcements Notified Comment: No Enforcements Notified
19	277m E	Smiths Limestone, Ardley, Bicester, Oxfordshire, OX27 7PH	Process: Use of Bulk Cement Status: Historical Permit Permit Type: Part B	Enforcement: No Enforcements Notified Date of enforcement: No Enforcements Notified Comment: No Enforcements Notified

This data is sourced from Local Authority records.

4.12 Radioactive Substance Authorisations

Records within 500m	0

Records of the storage, use, accumulation and disposal of radioactive substances regulated under the Radioactive Substances Act 1993.

This data is sourced from the Environment Agency and Natural Resources Wales.

4.13 Licensed Discharges to controlled waters

Records within 500m	4

Discharges of treated or untreated effluent to controlled waters under the Water Resources Act 1991.

Features are displayed on the Current industrial land use map on **page 39**

ID	Location	Address	Details	
20	289m W	HEYFORD PARK, UPPER HEYFORD, NEAR B, HEYFORD PARK UPPER HEYFORD NEA, R BICESTER OXFORDSHIRE	Effluent Type: TRADE DISCHARGES - SITE DRAINAGE Permit Number: CATM.2850 Permit Version: 1 Receiving Water: LEYS FARM DITCH	Status: NEW CONSENT, BY APPLICATION (WRA 91, SECTION 88) Issue date: 27/03/1997 Effective Date: 27/03/1997 Revocation Date: -
21	323m W	HEYFORD PARK, UPPER HEYFORD, NEAR B, HEYFORD PARK UPPER HEYFORD NEA, R BICESTER OXFORDSHIRE	Effluent Type: TRADE DISCHARGES - SITE DRAINAGE Permit Number: CATM.2848 Permit Version: 1 Receiving Water: LEYS FARM DITCH	Status: NEW CONSENT, BY APPLICATION (WRA 91, SECTION 88) Issue date: 27/03/1997 Effective Date: 27/03/1997 Revocation Date: -
23	382m SW	HEYFORD LEYS MOBILE HOME PARK, UPPER HEYFORD	Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - NOT WATER COMPANY Permit Number: CNTM.1883 Permit Version: 1 Receiving Water: LEYS FARM DITCH	Status: NEW CONSENT, BY APPLICATION (WRA 91, SECTION 88) Issue date: 30/06/1995 Effective Date: 30/06/1995 Revocation Date: -
24	399m W	HEYFORD PARK, UPPER HEYFORD, NEAR B, HEYFORD PARK UPPER HEYFORD NEA, R BICESTER OXFORDSHIRE	Effluent Type: TRADE DISCHARGES - SITE DRAINAGE Permit Number: CATM.2849 Permit Version: 1 Receiving Water: LEYS FARM DITCH	Status: NEW CONSENT, BY APPLICATION (WRA 91, SECTION 88) Issue date: 27/03/1997 Effective Date: 27/03/1997 Revocation Date: -

This data is sourced from the Environment Agency and Natural Resources Wales.

4.14 Pollutant release to surface waters (Red List)

Records within 500m	0

Discharges of specified substances under the Environmental Protection (Prescribed Processes and Substances) Regulations 1991.

This data is sourced from the Environment Agency and Natural Resources Wales.

4.15 Pollutant release to public sewer

Records within 500m	0

Discharges of Special Category Effluents to the public sewer.

This data is sourced from the Environment Agency and Natural Resources Wales.

4.16 List 1 Dangerous Substances

Records within 500m	0

Discharges of substances identified on List I of European Directive E 2006/11/EC, and regulated under the Environmental Damage (Prevention and Remediation) Regulations 2015.

This data is sourced from the Environment Agency and Natural Resources Wales.

4.17 List 2 Dangerous Substances

Records within 500m	0

Discharges of substances identified on List II of European Directive E 2006/11/EC, and regulated under the Environmental Damage (Prevention and Remediation) Regulations 2015.

This data is sourced from the Environment Agency and Natural Resources Wales.

4.18 Pollution Incidents (EA/NRW)

Records within 500m	1

Records of substantiated pollution incidents. Since 2006 this data has only included category 1 (major) and 2 (significant) pollution incidents.

Features are displayed on the Current industrial land use map on **page 39**

ID	Location	Details	
2	**On site**	**Incident Date: 23/08/2011** **Incident Identification: 916435** **Pollutant: Atmospheric Pollutants and Effects** **Pollutant Description: Other Odour**	**Water Impact: Category 4 (No Impact)** **Land Impact: Category 4 (No Impact)** **Air Impact: Category 2 (Significant)**

This data is sourced from the Environment Agency and Natural Resources Wales.

4.19 Pollution inventory substances

Records within 500m	**15**

The pollution inventory (substances) includes reporting on annual emissions of certain regulated substances to air, controlled waters and land. A reporting threshold for each substance is also included. Where emissions fall below the reporting threshold, no value will be given. The data is given for the most recent complete year available.

Features are displayed on the Current industrial land use map on **page 39**

ID: C, Location: On site, Permit: SP3934QD
Operator: Agrivert (Ardley) Limited
Activity: RECOVERY OR A MIX OF RECOVERY AND DISPOSAL OF > 50 T/D NON-HAZARDOUS WASTE (> 100 T/D IF ONLY AD) INVOLVING BIOLOGICAL TREATMENT
Address: Ardley Green Compost Centre Ashgrove Farm Ardley Oxfordshire OX27 7PJ
Sector Biowaste, Sub-sector: Biowaste
Releases:

Route	Substance	Reporting threshold (kg)	Quantity (kg)
Air	Ammonia	1000kg	Below Reporting Threshold
Air	Nitrous oxide	10000kg	Below Reporting Threshold
Air	Methane	10000kg	Below Reporting Threshold
Air	Nitrogen oxides (NO and NO2) as NO2	100000kg	Below Reporting Threshold
Air	Benzene	1000kg	Below Reporting Threshold
Air	Particulate matter - PM10	1000kg	Below Reporting Threshold
Air	Particulate matter - PM2.5	1000kg	Below Reporting Threshold
Air	Particulate matter - total	10000kg	Below Reporting Threshold
Air	Carbon dioxide	10000000kg	Below Reporting Threshold

ID: D, Location: 64m E, Permit: FP3134GU
Operator: Viridor Waste Management Limited
Activity: INCINERATION, OTHER THAN IN COURSE OF BURNING LANDFILL GAS, SOLID OR LIQUID WASTE, OF ANY GASEOUS COMPOUND CONTAINING HALOGENS IN A PLANT WHICH IS NOT AN INCINERATION OR A CO-INCINERATION PLANT.
Address: Ardley Landfill Ardley Fields Farm Ardley Oxfordshire OX27 7PH
Sector EfW, Sub-sector: EfW
Releases:

Route	Substance	Reporting threshold (kg)	Quantity (kg)
Air	Chromium	10kg	53kg

ID: D, Location: 64m E, Permit: FP3134GU
Operator: Viridor Waste Management Limited
Activity: INCINERATION, OTHER THAN IN COURSE OF BURNING LANDFILL GAS, SOLID OR LIQUID WASTE, OF ANY GASEOUS COMPOUND CONTAINING HALOGENS IN A PLANT WHICH IS NOT AN INCINERATION OR A CO-INCINERATION PLANT.
Address: Ardley Landfill Ardley Fields Farm Ardley Oxfordshire OX27 7PH
Sector EfW, Sub-sector: EfW
Releases:

Route	Substance	Reporting threshold (kg)	Quantity (kg)
Air	Nitrous oxide	10000kg	10953kg

ID: D, Location: 64m E, Permit: FP3134GU
Operator: Viridor Waste Management Limited
Activity: INCINERATION, OTHER THAN IN COURSE OF BURNING LANDFILL GAS, SOLID OR LIQUID WASTE, OF ANY GASEOUS COMPOUND CONTAINING HALOGENS IN A PLANT WHICH IS NOT AN INCINERATION OR A CO-INCINERATION PLANT.
Address: Ardley Landfill Ardley Fields Farm Ardley Oxfordshire OX27 7PH
Sector EfW, Sub-sector: EfW
Releases:

Route	Substance	Reporting threshold (kg)	Quantity (kg)
Air	Nickel	10kg	12.1kg

ID: D, Location: 64m E, Permit: FP3134GU
Operator: Viridor Waste Management Limited
Activity: INCINERATION, OTHER THAN IN COURSE OF BURNING LANDFILL GAS, SOLID OR LIQUID WASTE, OF ANY GASEOUS COMPOUND CONTAINING HALOGENS IN A PLANT WHICH IS NOT AN INCINERATION OR A CO-INCINERATION PLANT.
Address: Ardley Landfill Ardley Fields Farm Ardley Oxfordshire OX27 7PH
Sector EfW, Sub-sector: EfW
Releases:

Route	Substance	Reporting threshold (kg)	Quantity (kg)
Air	Cadmium	1kg	2.05kg

ID: D, Location: 64m E, Permit: FP3134GU
Operator: Viridor Waste Management Limited
Activity: INCINERATION, OTHER THAN IN COURSE OF BURNING LANDFILL GAS, SOLID OR LIQUID WASTE, OF ANY GASEOUS COMPOUND CONTAINING HALOGENS IN A PLANT WHICH IS NOT AN INCINERATION OR A CO-INCINERATION PLANT.
Address: Ardley Landfill Ardley Fields Farm Ardley Oxfordshire OX27 7PH
Sector EfW, Sub-sector: EfW
Releases:

Route	Substance	Reporting threshold (kg)	Quantity (kg)
Air	Dioxins and furans (PCDDs/PCDFs) - as ITEQ	1e-5kg	1e-5kg

ID: D, Location: 64m E, Permit: FP3134GU
Operator: Viridor Waste Management Limited
Activity: INCINERATION, OTHER THAN IN COURSE OF BURNING LANDFILL GAS, SOLID OR LIQUID WASTE, OF ANY GASEOUS COMPOUND CONTAINING HALOGENS IN A PLANT WHICH IS NOT AN INCINERATION OR A CO-INCINERATION PLANT.
Address: Ardley Landfill Ardley Fields Farm Ardley Oxfordshire OX27 7PH
Sector EfW, Sub-sector: EfW
Releases:

Route	Substance	Reporting threshold (kg)	Quantity (kg)
Air	Carbon Dioxide From Qualifying Renewable Fuel Sources	0kg	143476064kg

ID: D, Location: 64m E, Permit: FP3134GU
Operator: Viridor Waste Management Limited
Activity: INCINERATION, OTHER THAN IN COURSE OF BURNING LANDFILL GAS, SOLID OR LIQUID WASTE, OF ANY GASEOUS COMPOUND CONTAINING HALOGENS IN A PLANT WHICH IS NOT AN INCINERATION OR A CO-INCINERATION PLANT.
Address: Ardley Landfill Ardley Fields Farm Ardley Oxfordshire OX27 7PH
Sector EfW, Sub-sector: EfW
Releases:

Route	Substance	Reporting threshold (kg)	Quantity (kg)
Air	Mercury	1kg	6.73kg

ID: D, Location: 64m E, Permit: BV7346IM
Operator: VIRIDOR WASTE MANAGEMENT LTD
Activity: WASTE LANDFILLING; >10 T/D WITH CAPACITY >25,000T EXCLUDING INERT WASTE
Address: Ardley Landfill Ardley Fields Farm Ardley Oxfordshire OX27 7PH
Sector Landfill, Sub-sector: Non Hazardous Landfill
Releases:

Route	Substance	Reporting threshold (kg)	Quantity (kg)
Air	Carbon Dioxide From Qualifying Renewable Fuel Sources	0kg	17400000kg
Air	Carbon dioxide	10000000kg	17400000kg

ID: D, Location: 64m E, Permit: FP3134GU
Operator: Viridor Waste Management Limited
Activity: INCINERATION, OTHER THAN IN COURSE OF BURNING LANDFILL GAS, SOLID OR LIQUID WASTE, OF ANY GASEOUS COMPOUND CONTAINING HALOGENS IN A PLANT WHICH IS NOT AN INCINERATION OR A CO-INCINERATION PLANT.
Address: Ardley Landfill Ardley Fields Farm Ardley Oxfordshire OX27 7PH
Sector EfW, Sub-sector: EfW
Releases:

Route	Substance	Reporting threshold (kg)	Quantity (kg)
Air	Carbon dioxide	10000000kg	239126784kg

ID: D, Location: 64m E, Permit: FP3134GU
Operator: Viridor Waste Management Limited
Activity: INCINERATION, OTHER THAN IN COURSE OF BURNING LANDFILL GAS, SOLID OR LIQUID WASTE, OF ANY GASEOUS COMPOUND CONTAINING HALOGENS IN A PLANT WHICH IS NOT AN INCINERATION OR A CO-INCINERATION PLANT.
Address: Ardley Landfill Ardley Fields Farm Ardley Oxfordshire OX27 7PH
Sector EfW, Sub-sector: EfW
Releases:

Route	Substance	Reporting threshold (kg)	Quantity (kg)
Air	Ammonia	1000kg	Below Reporting Threshold
Air	Carbon monoxide	100000kg	Below Reporting Threshold
Air	Arsenic	1kg	Below Reporting Threshold
Air	Copper	10kg	Below Reporting Threshold
Air	Lead	100kg	Below Reporting Threshold
Air	Chlorine and inorganic chlorine compounds - as HCl	10000kg	Below Reporting Threshold
Air	Fluorine and inorganic fluorine compounds - as HF	1000kg	Below Reporting Threshold
Air	Non-methane volatile organic compounds (NMVOCs)	10000kg	Below Reporting Threshold
Air	Benzo(k)fluoranthene	1kg	Below Reporting Threshold
Air	Polychlorinated biphenyls (PCBs) - as WHO TEQ	1e-5kg	Below Reporting Threshold
Air	Benzo(a)pyrene	1kg	Below Reporting Threshold
Air	Indeno(1,2,3-cd)pyrene	1kg	Below Reporting Threshold
Air	Naphthalene	100kg	Below Reporting Threshold
Air	Polychlorinated biphenyls (PCBs)	0.1kg	Below Reporting Threshold
Air	Particulate matter - total	10000kg	Below Reporting Threshold
Air	Benzo(b)fluoranthene	1kg	Below Reporting Threshold
Air	Sulphur oxides (SO2 and SO3) as SO2	100000kg	Below Reporting Threshold
Air	Particulate matter - PM10	1000kg	Below Reporting Threshold
Air	Particulate matter - PM2.5	1000kg	Below Reporting Threshold

ID: D, Location: 64m E, Permit: BV7346IM
Operator: VIRIDOR WASTE MANAGEMENT LTD
Activity: WASTE LANDFILLING; >10 T/D WITH CAPACITY >25,000T EXCLUDING INERT WASTE
Address: Ardley Landfill Ardley Fields Farm Ardley Oxfordshire OX27 7PH
Sector Landfill, Sub-sector: Non Hazardous Landfill
Releases:

Route	Substance	Reporting threshold (kg)	Quantity (kg)
Air	Chlorofluorocarbons (CFCs)	1kg	3.23kg

ID: D, Location: 64m E, Permit: BV7346IM
Operator: VIRIDOR WASTE MANAGEMENT LTD
Activity: WASTE LANDFILLING; >10 T/D WITH CAPACITY >25,000T EXCLUDING INERT WASTE
Address: Ardley Landfill Ardley Fields Farm Ardley Oxfordshire OX27 7PH
Sector Landfill, Sub-sector: Non Hazardous Landfill
Releases:

Route	Substance	Reporting threshold (kg)	Quantity (kg)
Air	Carbon monoxide	100000kg	Below Reporting Threshold
Air	Nitrogen oxides (NO and NO2) as NO2	100000kg	Below Reporting Threshold
Air	Tetrachloroethane (1,1,2,2-Tetrachloroethane)	10kg	Below Reporting Threshold
Air	Perfluorocarbons (PFCs)	10kg	Below Reporting Threshold
Air	Benzene	1000kg	Below Reporting Threshold
Air	Butadiene (1,3-Butadiene)	100kg	Below Reporting Threshold
Air	Trichloroethylene	1000kg	Below Reporting Threshold
Air	Tetrachloroethylene (PER)	100kg	Below Reporting Threshold
Air	Methyl chloroform (1,1,1-Trichloroethane)	10kg	Below Reporting Threshold
Air	Vinyl chloride	1000kg	Below Reporting Threshold
Wastewater	Arsenic	5kg	Below Reporting Threshold
Wastewater	Cadmium	1kg	Below Reporting Threshold
Wastewater	Chromium	20kg	Below Reporting Threshold
Wastewater	Copper	20kg	Below Reporting Threshold
Wastewater	Lead	20kg	Below Reporting Threshold
Air	Chlorine and inorganic chlorine compounds - as HCl	10000kg	Below Reporting Threshold

Route	Substance	Reporting threshold (kg)	Quantity (kg)
Air	Non-methane volatile organic compounds (NMVOCs)	10000kg	Below Reporting Threshold
Air	Dichloromethane (DCM) (Methylene chloride)	1000kg	Below Reporting Threshold
Air	Hexachlorocyclohexane (HCH) -all isomers	1kg	Below Reporting Threshold
Air	Carbon tetrachloride (Tetrachloromethane)	10kg	Below Reporting Threshold
Air	Particulate matter - PM10	1000kg	Below Reporting Threshold
Air	Dioxins and furans (PCDDs/PCDFs) - as ITEQ	1e-5kg	Below Reporting Threshold
Air	Hydrofluorocarbons (HFCs)	100kg	Below Reporting Threshold
Air	Hydrochlorofluorocarbons (HCFCs)	1kg	Below Reporting Threshold
Air	Benzo(a)pyrene	1kg	Below Reporting Threshold
Air	Chloroform (Trichloromethane)	100kg	Below Reporting Threshold
Air	Ethylene dichloride (1,2-Dichloroethane)	1000kg	Below Reporting Threshold
Wastewater	Nickel	20kg	Below Reporting Threshold
Wastewater	Zinc	100kg	Below Reporting Threshold
Air	Trichlorobenzene - all isomers	1kg	Below Reporting Threshold
Air	Sulphur oxides (SO2 and SO3) as SO2	100000kg	Below Reporting Threshold
Wastewater	Chlorides - as Cl	2000000kg	Below Reporting Threshold
Wastewater	Cyanides - as CN	50kg	Below Reporting Threshold
Wastewater	Nitrogen - as total N	50000kg	Below Reporting Threshold
Wastewater	Phosphorus - as total P	5000kg	Below Reporting Threshold
Wastewater	Total organic carbon (TOC)	50000kg	Below Reporting Threshold

ID: D, Location: 64m E, Permit: FP3134GU
Operator: Viridor Waste Management Limited
Activity: INCINERATION, OTHER THAN IN COURSE OF BURNING LANDFILL GAS, SOLID OR LIQUID WASTE, OF ANY GASEOUS COMPOUND CONTAINING HALOGENS IN A PLANT WHICH IS NOT AN INCINERATION OR A CO-INCINERATION PLANT.
Address: Ardley Landfill Ardley Fields Farm Ardley Oxfordshire OX27 7PH
Sector: EfW, Sub-sector: EfW
Releases:

Route	Substance	Reporting threshold (kg)	Quantity (kg)
Air	Nitrogen oxides (NO and NO2) as NO2	100000kg	258499kg

ID: D, Location: 64m E, Permit: BV7346IM
Operator: VIRIDOR WASTE MANAGEMENT LTD
Activity: WASTE LANDFILLING; >10 T/D WITH CAPACITY >25,000T EXCLUDING INERT WASTE
Address: Ardley Landfill Ardley Fields Farm Ardley Oxfordshire OX27 7PH
Sector Landfill, Sub-sector: Non Hazardous Landfill
Releases:

Route	Substance	Reporting threshold (kg)	Quantity (kg)
Air	Methane	10000kg	688000kg

This data is sourced from the Environment Agency and the Scottish Environment Protection Agency.

4.20 Pollution inventory waste transfers

Records within 500m	**4**

The pollution inventory (waste transfers) includes reporting on annual transfers and recovery/disposal of controlled wastes from a site. A reporting threshold for each waste type is also included. Where releases fall below the reporting threshold, no value will be given. The data is given for the most recent complete year available.

Features are displayed on the Current industrial land use map on **page 39**

ID: C, Location: On site, Permit: SP3934QD
Operator: Agrivert (Ardley) Limited
Activity: RECOVERY OR A MIX OF RECOVERY AND DISPOSAL OF > 50 T/D NON-HAZARDOUS WASTE (> 100 T/D IF ONLY AD) INVOLVING BIOLOGICAL TREATMENT
Address: Ardley Green Compost Centre Ashgrove Farm Ardley Oxfordshire OX27 7PJ
Sector Biowaste, Sub-sector: Biowaste
Releases:

Route	Route description	Quantity (tonnes)	Release level	EWC code	EWC description	Hazardous waste
R3	Recycling/Reclamation of organic substances which are not used as solvents (including composting and other biological transformatin processes)	2513.48	Absolute Value	16 10 02	aqueous liquid wastes other than those mentioned in 16 10 01	No

Route	Route description	Quantity (tonnes)	Release level	EWC code	EWC description	Hazardous waste
R1	Use principally as a fuel or other means to generate energy	191.33	Absolute Value	19 05 01	non-composted fraction of municipal and similar wastes	No

ID: D, Location: 64m E, Permit: ZP3335JH
Operator: Fortis IBA Limited
Activity: INCINERATION, OTHER THAN IN COURSE OF BURNING LANDFILL GAS, SOLID OR LIQUID WASTE, OF ANY GASEOUS COMPOUND CONTAINING HALOGENS IN A PLANT WHICH IS NOT AN INCINERATION OR A CO-INCINERATION PLANT.
Address: Ardley IBA Plant Ardley Landfill Ardley Fields Farm Ardley Oxfordshire OX27 7PH
Sector: EfW, Sub-sector: EfW
Releases:

Route	Route description	Quantity (tonnes)	Release level	EWC code	EWC description	Hazardous waste
R4	Recycling/reclamation of metals and metal compounds	1973.86	Absolute Value	19 12 02	ferrous metal	No
R4	Recycling/reclamation of metals and metal compounds	2525.34	Absolute Value	19 12 03	non-ferrous metal	No
R5	Recycling/reclamation of other inorganic materials	58591.41	Absolute Value	19 12 12	other wastes (including mixtures of materials) from mechanical treatment of wastes other than those mentioned in 19 12 11	No

ID: D, Location: 64m E, Permit: BV7346IM
Operator: VIRIDOR WASTE MANAGEMENT LTD
Activity: WASTE LANDFILLING; >10 T/D WITH CAPACITY >25,000T EXCLUDING INERT WASTE
Address: Ardley Landfill Ardley Fields Farm Ardley Oxfordshire OX27 7PH
Sector: Landfill, Sub-sector: Non Hazardous Landfill
Releases:

Route	Route description	Quantity (tonnes)	Release level	EWC code	EWC description	Hazardous waste
D8	Biological treatment not specified elsewhere in this Table which results in final compounds or mixtures which are discarded by means of any of the operations numbers D1 to D12	197.96	Absolute Value	20 03 04	septic tank sludge	No
D15	Storage pending any of the operations numbered D1 to D14 (excluding temporary storage pending collection, on the site where it is produced)	0.314	Absolute Value	17 05 04	soil and stones other than those mentioned in 17 05 03	No
D8	Biological treatment not specified elsewhere in this Table which results in final compounds or mixtures which are discarded by means of any of the operations numbers D1 to D12	450.36	Absolute Value	19 07 03	landfill leachate other than those mentioned in 19 07 02	No
R7	recovery of components used for pollution abatement	3.6	Absolute Value	16 01 14	antifreeze fluids containing dangerous substances	Yes
R7	recovery of components used for pollution abatement	0.3	Absolute Value	16 01 07	oil filters	Yes
R7	recovery of components used for pollution abatement	0.24	Absolute Value	15 02 02	absorbents, filter materials (including oil filters not otherwise specified), wiping cloths, protective clothing contaminated by dangerous substances	Yes

ID: D, Location: 64m E, Permit: FP3134GU
Operator: Viridor Waste Management Limited
Activity: INCINERATION, OTHER THAN IN COURSE OF BURNING LANDFILL GAS, SOLID OR LIQUID WASTE, OF ANY GASEOUS COMPOUND CONTAINING HALOGENS IN A PLANT WHICH IS NOT AN INCINERATION OR A CO-INCINERATION PLANT.
Address: Ardley Landfill Ardley Fields Farm Ardley Oxfordshire OX27 7PH
Sector EfW, Sub-sector: EfW
Releases:

Route	Route description	Quantity (tonnes)	Release level	EWC code	EWC description	Hazardous waste
R4	Recycling/reclamation of metals and metal compounds	4641.78	Absolute Value	19 01 02	ferrous materials removed from bottom ash	No
D5	Specially engineered landfill (eg placement into lined discrete cells which are capped and isolated from one another and the environment, etc)	0	Absolute Value	19 01 02	ferrous materials removed from bottom ash	No
R5	Recycling/reclamation of other inorganic materials	0	Absolute Value	19 01 02	ferrous materials removed from bottom ash	No
D8	Biological treatment not specified elsewhere in this Table which results in final compounds or mixtures which are discarded by means of any of the operations numbers D1 to D12	0	Absolute Value	19 01 02	ferrous materials removed from bottom ash	No
R4	Recycling/reclamation of metals and metal compounds	0	Absolute Value	19 01 07	solid wastes from gas treatment	Yes
D5	Specially engineered landfill (eg placement into lined discrete cells which are capped and isolated from one another and the environment, etc)	1981	Absolute Value	19 01 07	solid wastes from gas treatment	Yes
R5	Recycling/reclamation of other inorganic materials	4619.44	Absolute Value	19 01 07	solid wastes from gas treatment	Yes
D8	Biological treatment not specified elsewhere in this Table which results in final compounds or mixtures which are discarded by means of any of the operations numbers D1 to D12	0	Absolute Value	19 01 07	solid wastes from gas treatment	Yes
R4	Recycling/reclamation of metals and metal compounds	0	Absolute Value	19 07 03	landfill leachate other than those mentioned in 19 07 02	No
D5	Specially engineered landfill (eg placement into lined discrete cells which are capped and isolated from one another and the environment, etc)	0	Absolute Value	19 07 03	landfill leachate other than those mentioned in 19 07 02	No
R5	Recycling/reclamation of other inorganic materials	0	Absolute Value	19 07 03	landfill leachate other than those mentioned in 19 07 02	No

Route	Route description	Quantity (tonnes)	Release level	EWC code	EWC description	Hazardous waste
D8	Biological treatment not specified elsewhere in this Table which results in final compounds or mixtures which are discarded by means of any of the operations numbers D1 to D12	20409.12	Absolute Value	19 07 03	landfill leachate other than those mentioned in 19 07 02	No

This data is sourced from the Environment Agency and the Scottish Environment Protection Agency.

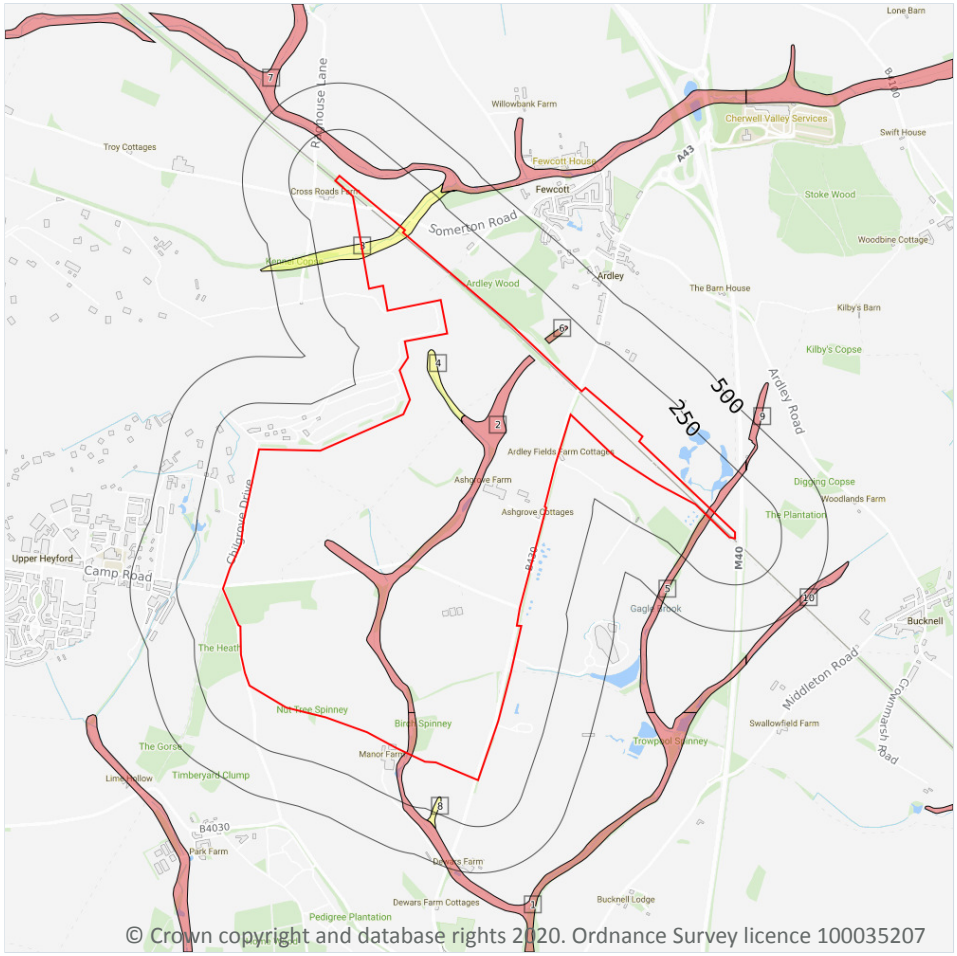
4.21 Pollution inventory radioactive waste

Records within 500m	**0**

The pollution inventory (radioactive wastes) includes reporting on annual releases of radioactive substances from a site, including the means of release. Where releases fall below the reporting threshold, no value will be given. The data is given for the most recent complete year available.

This data is sourced from the Environment Agency and the Scottish Environment Protection Agency.

5 Hydrogeology - Superficial aquifer



5.1 Superficial aquifer

Records within 500m	10

Aquifer status of groundwater held within superficial geology.

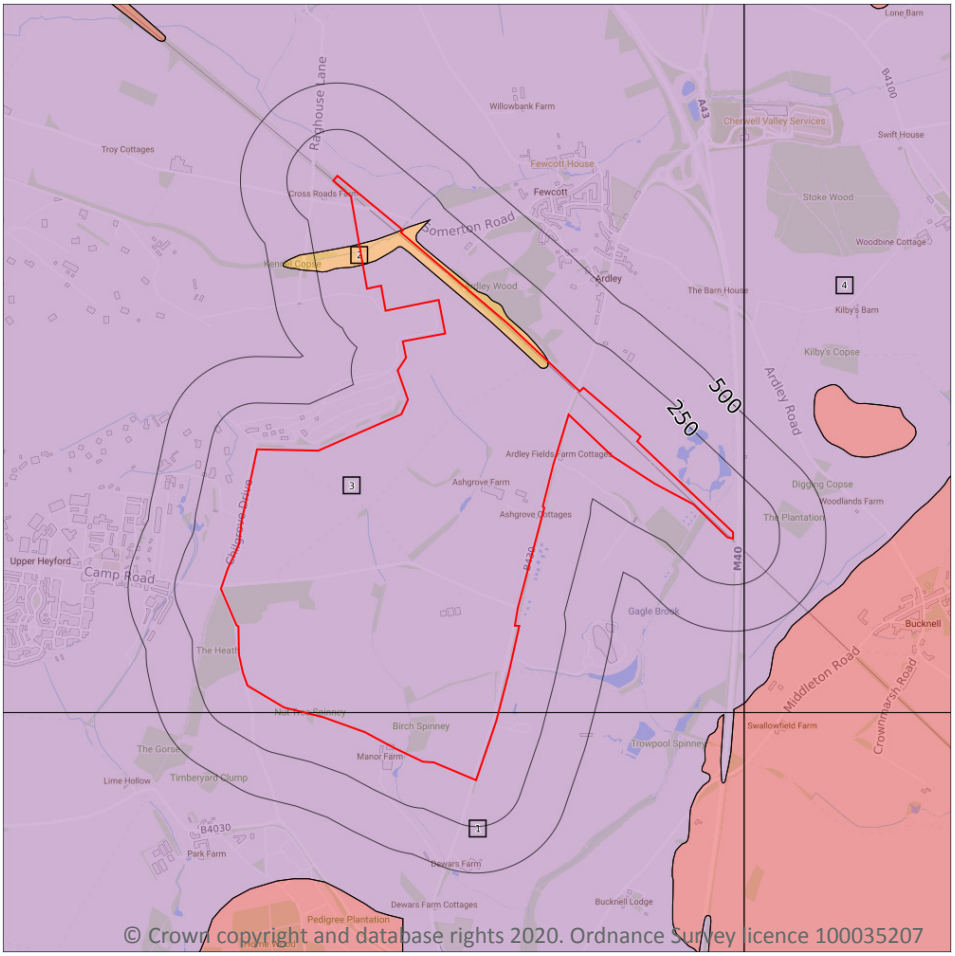
Features are displayed on the Hydrogeology map on **page 65**

ID	Location	Designation	Description
1	On site	Secondary A	Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers
2	On site	Secondary A	Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers

ID	Location	Designation	Description
3	**On site**	**Secondary Undifferentiated**	**Assigned where it is not possible to attribute either category A or B to a rock type. In general these layers have previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type**
4	**On site**	**Secondary Undifferentiated**	**Assigned where it is not possible to attribute either category A or B to a rock type. In general these layers have previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type**
5	**On site**	**Secondary A**	**Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers**
6	67m NE	Secondary A	Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers
7	75m NE	Secondary A	Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers
8	163m SW	Secondary Undifferentiated	Assigned where it is not possible to attribute either category A or B to a rock type. In general these layers have previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type
9	284m NE	Secondary A	Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers
10	472m SE	Secondary A	Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers

This data is sourced from the British Geological Survey, the Environment Agency and Natural Resources Wales.

Bedrock aquifer



Site Outline

Search buffers in metres (m)

- Principal
- Secondary A
- Secondary B
- Secondary Undifferentiated
- Unproductive

5.2 Bedrock aquifer

Records within 500m	4

Aquifer status of groundwater held within bedrock geology.

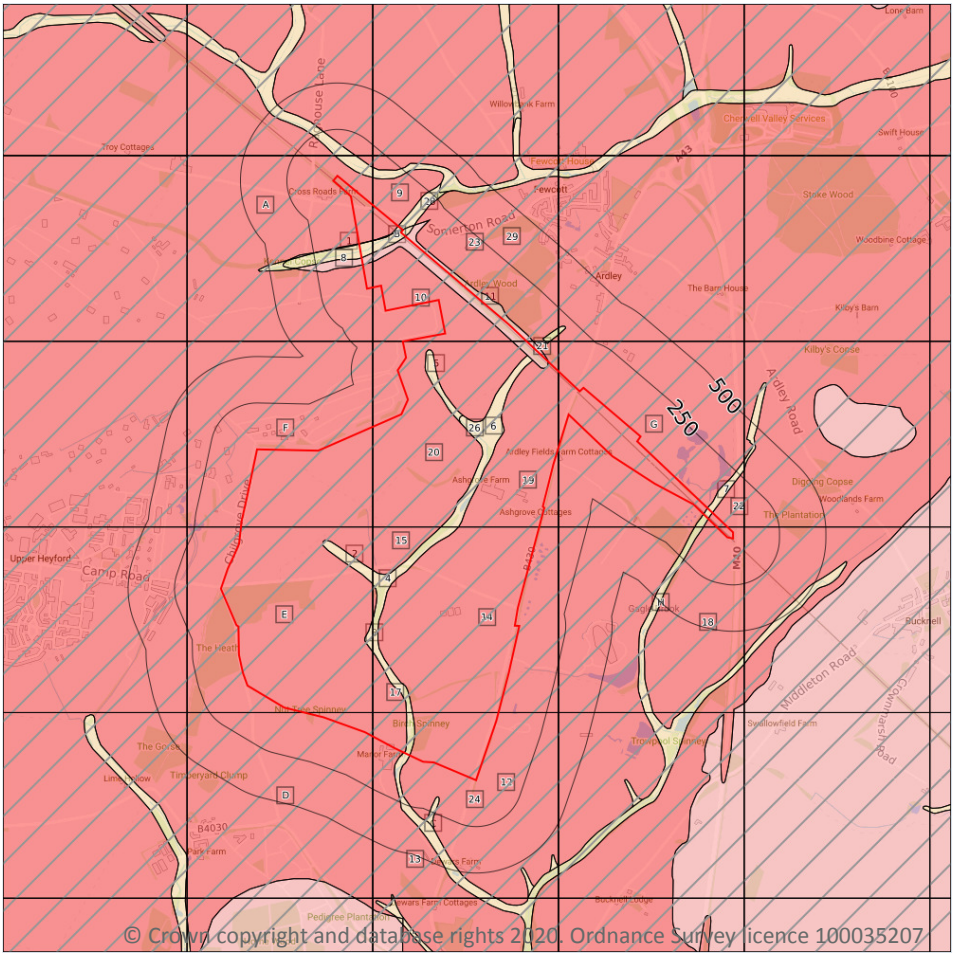
Features are displayed on the Bedrock aquifer map on **page 67**

ID	Location	Designation	Description
1	On site	Principal	Geology of high intergranular and/or fracture permeability, usually providing a high level of water storage and may support water supply/river base flow on a strategic scale. Generally principal aquifers were previously major aquifers
2	On site	Secondary B	Predominantly lower permeability layers which may store/yield limited amounts of groundwater due to localised features such as fissures, thin permeablehorizons and weathering. These are generally the water-bearing parts of the former non-aquifers

ID	Location	Designation	Description
3	**On site**	**Principal**	**Geology of high intergranular and/or fracture permeability, usually providing a high level of water storage and may support water supply/river base flow on a strategic scale. Generally principal aquifers were previously major aquifers**
4	60m E	Principal	Geology of high intergranular and/or fracture permeability, usually providing a high level of water storage and may support water supply/river base flow on a strategic scale. Generally principal aquifers were previously major aquifers

This data is sourced from the British Geological Survey, the Environment Agency and Natural Resources Wales.

Groundwater vulnerability



Site Outline

Search buffers in metres (m)

Superficial vulnerability

- Principal superficial aquifer, high vulnerability
- Secondary superficial aquifer, high vulnerability
- Principal superficial aquifer, medium vulnerability
- Secondary superficial aquifer, medium vulnerability
- Principal superficial aquifer, low vulnerability
- Secondary superficial aquifer, low vulnerability

Bedrock vulnerability

- Principal bedrock aquifer, high vulnerability
- Secondary bedrock aquifer, high vulnerability
- Principal bedrock aquifer, medium vulnerability
- Secondary bedrock aquifer, medium vulnerability
- Principal bedrock aquifer, low vulnerability
- Secondary bedrock aquifer, low vulnerability

Other information

- Unproductive aquifer
- Soluble rock risk
- Local information

5.3 Groundwater vulnerability

Records within 50m	34

An assessment of the vulnerability of groundwater to a pollutant discharged at ground level based on the hydrological, geological, hydrogeological and soil properties within a one kilometre square grid. Groundwater vulnerability is described as High, Medium or Low as follows:

- High - Areas able to easily transmit pollution to groundwater. They are likely to be characterised by high leaching soils and the absence of low permeability superficial deposits.
- Medium - Intermediate between high and low vulnerability.
- Low - Areas that provide the greatest protection from pollution. They are likely to be characterised by low leaching soils and/or the presence of superficial deposits characterised by a low permeability.

Features are displayed on the Groundwater vulnerability map on **page 69**

ID	Location	Summary	Soil / surface	Superficial geology	Bedrock geology
1	On site	Summary Classification: Secondary superficial aquifer - High Vulnerability Combined classification: Productive Bedrock Aquifer, Productive Superficial Aquifer	Leaching class: High Infiltration value: >70% Dilution value: <300mm/year	Vulnerability: High Aquifer type: Secondary Thickness: <3m Patchiness value: <90% Recharge potential: No Data	Vulnerability: High Aquifer type: Principal Flow mechanism: Well connected fractures
2	On site	Summary Classification: Secondary superficial aquifer - High Vulnerability Combined classification: Productive Bedrock Aquifer, Productive Superficial Aquifer	Leaching class: High Infiltration value: >70% Dilution value: <300mm/year	Vulnerability: High Aquifer type: Secondary Thickness: <3m Patchiness value: <90% Recharge potential: No Data	Vulnerability: High Aquifer type: Principal Flow mechanism: Well connected fractures
3	On site	Summary Classification: Secondary superficial aquifer - High Vulnerability Combined classification: Productive Bedrock Aquifer, Productive Superficial Aquifer	Leaching class: High Infiltration value: >70% Dilution value: <300mm/year	Vulnerability: High Aquifer type: Secondary Thickness: <3m Patchiness value: <90% Recharge potential: No Data	Vulnerability: High Aquifer type: Principal Flow mechanism: Well connected fractures
4	On site	Summary Classification: Secondary superficial aquifer - High Vulnerability Combined classification: Productive Bedrock Aquifer, Productive Superficial Aquifer	Leaching class: High Infiltration value: >70% Dilution value: <300mm/year	Vulnerability: High Aquifer type: Secondary Thickness: <3m Patchiness value: <90% Recharge potential: No Data	Vulnerability: High Aquifer type: Principal Flow mechanism: Well connected fractures
5	On site	Summary Classification: Secondary superficial aquifer - High Vulnerability Combined classification: Productive Bedrock Aquifer, Productive Superficial Aquifer	Leaching class: High Infiltration value: >70% Dilution value: <300mm/year	Vulnerability: High Aquifer type: Secondary Thickness: <3m Patchiness value: <90% Recharge potential: No Data	Vulnerability: High Aquifer type: Principal Flow mechanism: Well connected fractures
6	On site	Summary Classification: Secondary superficial aquifer - High Vulnerability Combined classification: Productive Bedrock Aquifer, Productive Superficial Aquifer	Leaching class: High Infiltration value: >70% Dilution value: <300mm/year	Vulnerability: High Aquifer type: Secondary Thickness: <3m Patchiness value: <90% Recharge potential: No Data	Vulnerability: High Aquifer type: Principal Flow mechanism: Well connected fractures

ID	Location	Summary	Soil / surface	Superficial geology	Bedrock geology
7	On site	Summary Classification: Secondary superficial aquifer - High Vulnerability Combined classification: Productive Bedrock Aquifer, Productive Superficial Aquifer	Leaching class: High Infiltration value: >70% Dilution value: <300mm/year	Vulnerability: High Aquifer type: Secondary Thickness: 3-10m Patchiness value: <90% Recharge potential: No Data	Vulnerability: High Aquifer type: Principal Flow mechanism: Well connected fractures
8	On site	Summary Classification: Secondary bedrock aquifer - High Vulnerability Combined classification: Productive Bedrock Aquifer, No Superficial Aquifer	Leaching class: High Infiltration value: >70% Dilution value: <300mm/year	Vulnerability: - Aquifer type: - Thickness: <3m Patchiness value: <90% Recharge potential: No Data	Vulnerability: High Aquifer type: Secondary Flow mechanism: Well connected fractures
9	On site	Summary Classification: Principal bedrock aquifer - High Vulnerability Combined classification: Productive Bedrock Aquifer, No Superficial Aquifer	Leaching class: High Infiltration value: >70% Dilution value: <300mm/year	Vulnerability: - Aquifer type: - Thickness: <3m Patchiness value: <90% Recharge potential: No Data	Vulnerability: High Aquifer type: Principal Flow mechanism: Well connected fractures
10	On site	Summary Classification: Principal bedrock aquifer - High Vulnerability Combined classification: Productive Bedrock Aquifer, No Superficial Aquifer	Leaching class: High Infiltration value: >70% Dilution value: <300mm/year	Vulnerability: - Aquifer type: - Thickness: <3m Patchiness value: <90% Recharge potential: No Data	Vulnerability: High Aquifer type: Principal Flow mechanism: Well connected fractures
11	On site	Summary Classification: Secondary bedrock aquifer - High Vulnerability Combined classification: Productive Bedrock Aquifer, No Superficial Aquifer	Leaching class: High Infiltration value: >70% Dilution value: <300mm/year	Vulnerability: - Aquifer type: - Thickness: <3m Patchiness value: <90% Recharge potential: No Data	Vulnerability: High Aquifer type: Secondary Flow mechanism: Well connected fractures
12	On site	Summary Classification: Principal bedrock aquifer - High Vulnerability Combined classification: Productive Bedrock Aquifer, No Superficial Aquifer	Leaching class: High Infiltration value: >70% Dilution value: <300mm/year	Vulnerability: - Aquifer type: - Thickness: <3m Patchiness value: <90% Recharge potential: No Data	Vulnerability: High Aquifer type: Principal Flow mechanism: Well connected fractures
13	On site	Summary Classification: Principal bedrock aquifer - High Vulnerability Combined classification: Productive Bedrock Aquifer, No Superficial Aquifer	Leaching class: High Infiltration value: >70% Dilution value: <300mm/year	Vulnerability: - Aquifer type: - Thickness: <3m Patchiness value: <90% Recharge potential: No Data	Vulnerability: High Aquifer type: Principal Flow mechanism: Well connected fractures

ID	Location	Summary	Soil / surface	Superficial geology	Bedrock geology
14	On site	Summary Classification: Principal bedrock aquifer - High Vulnerability Combined classification: Productive Bedrock Aquifer, No Superficial Aquifer	Leaching class: High Infiltration value: >70% Dilution value: <300mm/year	Vulnerability: - Aquifer type: - Thickness: <3m Patchiness value: <90% Recharge potential: No Data	Vulnerability: High Aquifer type: Principal Flow mechanism: Well connected fractures
15	On site	Summary Classification: Principal bedrock aquifer - High Vulnerability Combined classification: Productive Bedrock Aquifer, No Superficial Aquifer	Leaching class: High Infiltration value: >70% Dilution value: <300mm/year	Vulnerability: - Aquifer type: - Thickness: <3m Patchiness value: <90% Recharge potential: No Data	Vulnerability: High Aquifer type: Principal Flow mechanism: Well connected fractures
16	On site	Summary Classification: Principal bedrock aquifer - High Vulnerability Combined classification: Productive Bedrock Aquifer, No Superficial Aquifer	Leaching class: High Infiltration value: >70% Dilution value: <300mm/year	Vulnerability: - Aquifer type: - Thickness: <3m Patchiness value: <90% Recharge potential: No Data	Vulnerability: High Aquifer type: Principal Flow mechanism: Well connected fractures
17	On site	Summary Classification: Principal bedrock aquifer - High Vulnerability Combined classification: Productive Bedrock Aquifer, No Superficial Aquifer	Leaching class: High Infiltration value: >70% Dilution value: <300mm/year	Vulnerability: - Aquifer type: - Thickness: <3m Patchiness value: <90% Recharge potential: No Data	Vulnerability: High Aquifer type: Principal Flow mechanism: Well connected fractures
18	On site	Summary Classification: Principal bedrock aquifer - High Vulnerability Combined classification: Productive Bedrock Aquifer, No Superficial Aquifer	Leaching class: High Infiltration value: >70% Dilution value: <300mm/year	Vulnerability: - Aquifer type: - Thickness: 3-10m Patchiness value: <90% Recharge potential: No Data	Vulnerability: High Aquifer type: Principal Flow mechanism: Well connected fractures
19	On site	Summary Classification: Principal bedrock aquifer - High Vulnerability Combined classification: Productive Bedrock Aquifer, No Superficial Aquifer	Leaching class: High Infiltration value: >70% Dilution value: <300mm/year	Vulnerability: - Aquifer type: - Thickness: <3m Patchiness value: <90% Recharge potential: No Data	Vulnerability: High Aquifer type: Principal Flow mechanism: Well connected fractures
20	On site	Summary Classification: Principal bedrock aquifer - High Vulnerability Combined classification: Productive Bedrock Aquifer, No Superficial Aquifer	Leaching class: High Infiltration value: >70% Dilution value: <300mm/year	Vulnerability: - Aquifer type: - Thickness: <3m Patchiness value: <90% Recharge potential: No Data	Vulnerability: High Aquifer type: Principal Flow mechanism: Well connected fractures

ID	Location	Summary	Soil / surface	Superficial geology	Bedrock geology
21	On site	Summary Classification: Secondary bedrock aquifer - High Vulnerability Combined classification: Productive Bedrock Aquifer, No Superficial Aquifer	Leaching class: High Infiltration value: >70% Dilution value: <300mm/year	Vulnerability: - Aquifer type: - Thickness: <3m Patchiness value: <90% Recharge potential: No Data	Vulnerability: High Aquifer type: Secondary Flow mechanism: Well connected fractures
22	On site	Summary Classification: Principal bedrock aquifer - High Vulnerability Combined classification: Productive Bedrock Aquifer, No Superficial Aquifer	Leaching class: High Infiltration value: >70% Dilution value: <300mm/year	Vulnerability: - Aquifer type: - Thickness: 3-10m Patchiness value: <90% Recharge potential: No Data	Vulnerability: High Aquifer type: Principal Flow mechanism: Well connected fractures
27	On site	Summary Classification: Secondary superficial aquifer - High Vulnerability Combined classification: Productive Bedrock Aquifer, Productive Superficial Aquifer	Leaching class: High Infiltration value: >70% Dilution value: <300mm/year	Vulnerability: High Aquifer type: Secondary Thickness: <3m Patchiness value: <90% Recharge potential: No Data	Vulnerability: High Aquifer type: Secondary Flow mechanism: Well connected fractures
28	On site	Summary Classification: Secondary superficial aquifer - High Vulnerability Combined classification: Productive Bedrock Aquifer, Productive Superficial Aquifer	Leaching class: High Infiltration value: >70% Dilution value: <300mm/year	Vulnerability: High Aquifer type: Secondary Thickness: <3m Patchiness value: <90% Recharge potential: No Data	Vulnerability: High Aquifer type: Principal Flow mechanism: Well connected fractures
A	On site	Summary Classification: Principal bedrock aquifer - High Vulnerability Combined classification: Productive Bedrock Aquifer, No Superficial Aquifer	Leaching class: High Infiltration value: >70% Dilution value: <300mm/year	Vulnerability: - Aquifer type: - Thickness: <3m Patchiness value: <90% Recharge potential: No Data	Vulnerability: High Aquifer type: Principal Flow mechanism: Well connected fractures
B	On site	Summary Classification: Secondary superficial aquifer - High Vulnerability Combined classification: Productive Bedrock Aquifer, Productive Superficial Aquifer	Leaching class: High Infiltration value: >70% Dilution value: <300mm/year	Vulnerability: High Aquifer type: Secondary Thickness: <3m Patchiness value: <90% Recharge potential: No Data	Vulnerability: High Aquifer type: Secondary Flow mechanism: Well connected fractures
B	On site	Summary Classification: Secondary bedrock aquifer - High Vulnerability Combined classification: Productive Bedrock Aquifer, No Superficial Aquifer	Leaching class: High Infiltration value: >70% Dilution value: <300mm/year	Vulnerability: - Aquifer type: - Thickness: <3m Patchiness value: <90% Recharge potential: No Data	Vulnerability: High Aquifer type: Secondary Flow mechanism: Well connected fractures

ID	Location	Summary	Soil / surface	Superficial geology	Bedrock geology
C	**On site**	**Summary Classification: Secondary superficial aquifer - High Vulnerability Combined classification: Productive Bedrock Aquifer, Productive Superficial Aquifer**	**Leaching class: High Infiltration value: >70% Dilution value: <300mm/year**	**Vulnerability: High Aquifer type: Secondary Thickness: <3m Patchiness value: <90% Recharge potential: No Data**	**Vulnerability: High Aquifer type: Principal Flow mechanism: Well connected fractures**
D	**On site**	**Summary Classification: Principal bedrock aquifer - High Vulnerability Combined classification: Productive Bedrock Aquifer, No Superficial Aquifer**	**Leaching class: High Infiltration value: >70% Dilution value: 300-550mm/year**	**Vulnerability: - Aquifer type: - Thickness: <3m Patchiness value: <90% Recharge potential: No Data**	**Vulnerability: High Aquifer type: Principal Flow mechanism: Well connected fractures**
E	**On site**	**Summary Classification: Principal bedrock aquifer - High Vulnerability Combined classification: Productive Bedrock Aquifer, No Superficial Aquifer**	**Leaching class: High Infiltration value: >70% Dilution value: <300mm/year**	**Vulnerability: - Aquifer type: - Thickness: <3m Patchiness value: <90% Recharge potential: No Data**	**Vulnerability: High Aquifer type: Principal Flow mechanism: Well connected fractures**
F	**On site**	**Summary Classification: Principal bedrock aquifer - High Vulnerability Combined classification: Productive Bedrock Aquifer, No Superficial Aquifer**	**Leaching class: High Infiltration value: >70% Dilution value: <300mm/year**	**Vulnerability: - Aquifer type: - Thickness: <3m Patchiness value: <90% Recharge potential: No Data**	**Vulnerability: High Aquifer type: Principal Flow mechanism: Well connected fractures**
G	**On site**	**Summary Classification: Principal bedrock aquifer - High Vulnerability Combined classification: Productive Bedrock Aquifer, No Superficial Aquifer**	**Leaching class: High Infiltration value: >70% Dilution value: <300mm/year**	**Vulnerability: - Aquifer type: - Thickness: 3-10m Patchiness value: <90% Recharge potential: No Data**	**Vulnerability: High Aquifer type: Principal Flow mechanism: Well connected fractures**
29	17m NE	Summary Classification: Principal bedrock aquifer - High Vulnerability Combined classification: Productive Bedrock Aquifer, No Superficial Aquifer	Leaching class: High Infiltration value: >70% Dilution value: <300mm/year	Vulnerability: - Aquifer type: - Thickness: <3m Patchiness value: <90% Recharge potential: No Data	Vulnerability: High Aquifer type: Principal Flow mechanism: Well connected fractures
H	49m SW	Summary Classification: Secondary superficial aquifer - High Vulnerability Combined classification: Productive Bedrock Aquifer, Productive Superficial Aquifer	Leaching class: High Infiltration value: >70% Dilution value: <300mm/year	Vulnerability: High Aquifer type: Secondary Thickness: 3-10m Patchiness value: <90% Recharge potential: No Data	Vulnerability: High Aquifer type: Principal Flow mechanism: Well connected fractures

This data is sourced from the British Geological Survey, the Environment Agency and Natural Resources Wales.

5.4 Groundwater vulnerability- soluble rock risk

Records on site	10

This dataset identifies areas where solution features that enable rapid movement of a pollutant may be present within a 1km grid square.

ID	Maximum soluble risk category	Percentage of grid square covered by maximum risk
23	**Significant soluble rocks are likely to be present. Low possibility of localised subsidence or dissolution-related degradation of bedrock occurring naturally, but may be possible in adverse conditions such as high surface or subsurface water flow.**	**2.0%**
24	**Significant soluble rocks are likely to be present. Low possibility of localised subsidence or dissolution-related degradation of bedrock occurring naturally, but may be possible in adverse conditions such as high surface or subsurface water flow.**	**7.000000000000001%**
25	**Significant soluble rocks are likely to be present. Low possibility of localised subsidence or dissolution-related degradation of bedrock occurring naturally, but may be possible in adverse conditions such as high surface or subsurface water flow.**	**5.0%**
26	**Significant soluble rocks are likely to be present. Low possibility of localised subsidence or dissolution-related degradation of bedrock occurring naturally, but may be possible in adverse conditions such as high surface or subsurface water flow.**	**8.0%**
A	**Significant soluble rocks are likely to be present. Low possibility of localised subsidence or dissolution-related degradation of bedrock occurring naturally, but may be possible in adverse conditions such as high surface or subsurface water flow.**	**2.0%**
D	**Significant soluble rocks are likely to be present. Low possibility of localised subsidence or dissolution-related degradation of bedrock occurring naturally, but may be possible in adverse conditions such as high surface or subsurface water flow.**	**0.0%**
E	**Significant soluble rocks are likely to be present. Low possibility of localised subsidence or dissolution-related degradation of bedrock occurring naturally, but may be possible in adverse conditions such as high surface or subsurface water flow.**	**2.0%**
F	**Significant soluble rocks are likely to be present. Problems unlikely except with considerable surface or subsurface water flow.**	**100.0%**
G	**Significant soluble rocks are likely to be present. Low possibility of localised subsidence or dissolution-related degradation of bedrock occurring naturally, but may be possible in adverse conditions such as high surface or subsurface water flow.**	**1.0%**

ID	Maximum soluble risk category	Percentage of grid square covered by maximum risk
H	**Significant soluble rocks are likely to be present. Low possibility of localised subsidence or dissolution-related degradation of bedrock occurring naturally, but may be possible in adverse conditions such as high surface or subsurface water flow.**	**5.0%**

This data is sourced from the British Geological Survey and the Environment Agency.

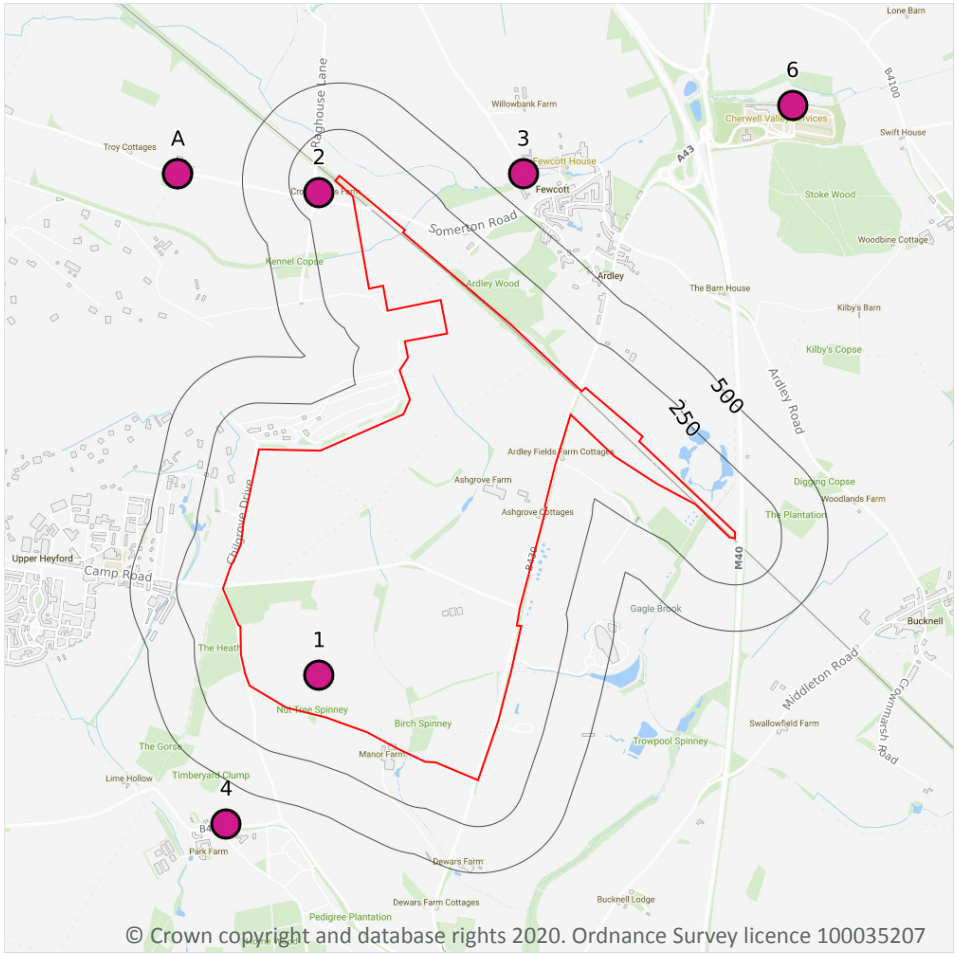
5.5 Groundwater vulnerability- local information

Records on site	**0**

This dataset identifies areas where additional local information affecting vulnerability is held by the Environment Agency. Further information can be obtained by contacting the Environment Agency local Area groundwater team through the Environment Agency National Customer Call Centre on 03798 506 506 or by email on enquiries@environment-agency.gov.uk.

This data is sourced from the British Geological Survey and the Environment Agency.

Abstractions and Source Protection Zones



Site Outline

Search buffers in metres (m)

- Source Protection Zone 1 — Inner catchment
- Source Protection Zone 2 — Outer catchment
- Source Protection Zone 3 — Total catchment
- Source Protection Zone 4 — Zone of Special Interest
- Source Protection Zone 1c — Inner catchment - confined aquifer
- Source Protection Zone 2c — Outer catchment - confined aquifer
- Source Protection Zone 3c — Total catchment - confined aquifer
- Drinking water abstraction licences
- Drinking water abstraction licences — Polygon features
- Drinking water abstraction licences — Linear features
- Groundwater abstraction licence (point)
- Groundwater abstraction licence (area)
- Groundwater abstraction licence (linear)
- Surface Water Abstractions (point)
- Surface Water Abstractions (area)
- Surface Water Abstractions (linear)

5.6 Groundwater abstractions

Records within 2000m	11

Licensed groundwater abstractions for sites extracting more than 20 cubic metres of water a day and includes active and historical records. The data may be for a single abstraction point, between two points (line data) or a larger area.

Features are displayed on the Abstractions and Source Protection Zones map on **page 77**

ID	Location	Details	
1	**On site**	**Status: Active** **Licence No: 28/39/14/0102** **Details: General Farming & Domestic** **Direct Source: THAMES GROUNDWATER** **Point: MANOR FARM, MIDDLETON STONEY (A)** **Data Type: Point** **Name: HILSDON** **Easting: 452700** **Northing: 225200**	**Annual Volume (m^3): 7,319** **Max Daily Volume (m^3): 20.23** **Original Application No: -** **Original Start Date: 12/12/1996** **Expiry Date: -** **Issue No: 100** **Version Start Date: 01/09/1998** **Version End Date: -**
2	108m SW	Status: Historical Licence No: 6/33/02/*G/0092 Details: General Farming & Domestic Direct Source: GROUND WATER SOURCE OF SUPPLY Point: BOREHOLE AT ARDLEY Data Type: Point Name: PARKER Easting: 452700 Northing: 227800	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 01/11/1967 Expiry Date: - Issue No: 100 Version Start Date: 01/03/1977 Version End Date: -
3	660m NE	Status: Historical Licence No: 6/33/02/*G/0091 Details: General Farming & Domestic Direct Source: GROUND WATER SOURCE OF SUPPLY Point: WELL AT FEWCOTT Data Type: Point Name: GODWIN Easting: 453800 Northing: 227900	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 15/01/1968 Expiry Date: - Issue No: 102 Version Start Date: 21/11/2003 Version End Date: -
4	705m SW	Status: Historical Licence No: 28/39/14/0304 Details: General Farming & Domestic Direct Source: THAMES GROUNDWATER Point: PARK FARM, MIDDLETON STONEY (A) Data Type: Point Name: J H NORMAN & SONS Easting: 452200 Northing: 224400	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 09/11/1989 Expiry Date: - Issue No: 100 Version Start Date: 09/11/1989 Version End Date: -
A	847m W	Status: Historical Licence No: 6/33/02/*G/0128 Details: General Farming & Domestic Direct Source: GROUND WATER SOURCE OF SUPPLY Point: BOREHOLE AT SOMERTON Data Type: Point Name: POWER Easting: 451940 Northing: 227900	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 01/03/1994 Expiry Date: - Issue No: 100 Version Start Date: 01/03/1994 Version End Date: -

ID	Location	Details	
A	847m W	Status: Historical Licence No: 6/33/02/*G/0128 Details: Drinking, Cooking, Sanitary, Washing, (Small Garden) - Household Direct Source: GROUND WATER SOURCE OF SUPPLY Point: BOREHOLE AT SOMERTON Data Type: Point Name: POWER Easting: 451940 Northing: 227900	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 01/03/1994 Expiry Date: - Issue No: 100 Version Start Date: 01/03/1994 Version End Date: -
-	1496m E	Status: Historical Licence No: 28/39/14/0143 Details: General Farming & Domestic Direct Source: THAMES GROUNDWATER Point: MANOR FARM, BUCKNELL (A) Data Type: Point Name: MRS C M HEDGES & MRS E MILLIGAN Easting: 456400 Northing: 226300	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 09/01/1967 Expiry Date: - Issue No: 100 Version Start Date: 09/01/1967 Version End Date: -
-	1687m N	Status: Historical Licence No: 6/33/02/*G/0012 Details: Spray Irrigation - Direct Direct Source: GROUND WATER SOURCE OF SUPPLY Point: WELL AT FRITWELL Data Type: Point Name: DALTON Easting: 452300 Northing: 229500	Annual Volume (m^3): 15092 Max Daily Volume (m^3): 41.36 Original Application No: - Original Start Date: 01/06/1967 Expiry Date: - Issue No: 101 Version Start Date: 01/04/2008 Version End Date: -
-	1687m N	Status: Historical Licence No: 6/33/02/*G/0012 Details: General Farming & Domestic Direct Source: GROUND WATER SOURCE OF SUPPLY Point: WELL AT FRITWELL Data Type: Point Name: DALTON Easting: 452300 Northing: 229500	Annual Volume (m^3): 15092 Max Daily Volume (m^3): 41.36 Original Application No: - Original Start Date: 01/06/1967 Expiry Date: - Issue No: 101 Version Start Date: 01/04/2008 Version End Date: -
6	1885m NE	Status: Historical Licence No: 6/33/02/*G/0130 Details: Spray Irrigation - Direct Direct Source: GROUND WATER SOURCE OF SUPPLY Point: BOREHOLE AT STOKE LYNE Data Type: Point Name: MOTO HOSPITALITY LTD Easting: 455250 Northing: 228270	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 01/08/1994 Expiry Date: 30/09/2004 Issue No: 101 Version Start Date: 11/11/2003 Version End Date: -

ID	Location	Details	
-	1974m NE	Status: Historical Licence No: 6/33/02/*G/0056 Details: General Farming & Domestic Direct Source: GROUND WATER SOURCE OF SUPPLY Point: WELL AT GREEN FARM FRITWELL Data Type: Point Name: EVANS Easting: 453600 Northing: 229700	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 01/06/1966 Expiry Date: - Issue No: 100 Version Start Date: 01/06/1966 Version End Date: -

This data is sourced from the Environment Agency and Natural Resources Wales.

5.7 Surface water abstractions

Records within 2000m	**0**

Licensed surface water abstractions for sites extracting more than 20 cubic metres of water a day and includes active and historical records. The data may be for a single abstraction point, a stretch of watercourse or a larger area.

This data is sourced from the Environment Agency and Natural Resources Wales.

5.8 Potable abstractions

Records within 2000m	**1**

Licensed potable water abstractions for sites extracting more than 20 cubic metres of water a day and includes active and historical records. The data may be for a single abstraction point, a stretch of watercourse or a larger area.

Features are displayed on the Abstractions and Source Protection Zones map on **page 77**

ID	Location	Details	
A	847m W	Status: Historical Licence No: 6/33/02/*G/0128 Details: Drinking, Cooking, Sanitary, Washing, (Small Garden) - Household Direct Source: GROUND WATER SOURCE OF SUPPLY Point: BOREHOLE AT SOMERTON Data Type: Point Name: POWER Easting: 451940 Northing: 227900	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 01/03/1994 Expiry Date: - Issue No: 100 Version Start Date: 01/03/1994 Version End Date: -

This data is sourced from the Environment Agency and Natural Resources Wales.

5.9 Source Protection Zones

Records within 500m	0

Source Protection Zones define the sensitivity of an area around a potable abstraction site to contamination.

This data is sourced from the Environment Agency and Natural Resources Wales.

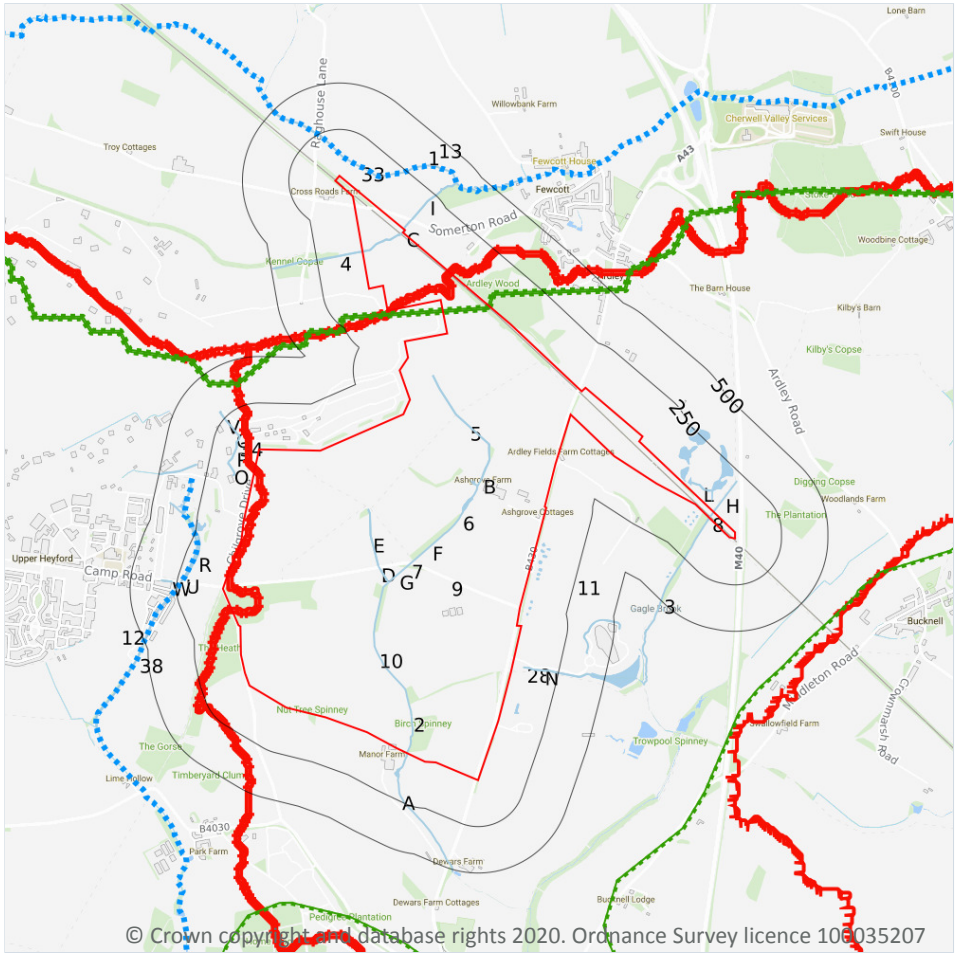
5.10 Source Protection Zones (confined aquifer)

Records within 500m	0

Source Protection Zones in the confined aquifer define the sensitivity around a deep groundwater abstraction to contamination. A confined aquifer would normally be protected from contamination by overlying geology and is only considered a sensitive resource if deep excavation/drilling is taking place.

This data is sourced from the Environment Agency and Natural Resources Wales.

6 Hydrology



6.1 Water Network (OS MasterMap)

Records within 250m	48

Detailed water network of Great Britain showing the flow and precise central course of every river, stream, lake and canal.

Features are displayed on the Hydrology map on **page 82**

ID	Location	Type of water feature	Ground level	Permanence	Name
2	**On site**	**Inland river not influenced by normal tidal action.**	**Not provided**	**Watercourse contains water year round (in normal circumstances)**	**-**

ID	Location	Type of water feature	Ground level	Permanence	Name
3	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	Gagle Brook
4	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
5	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
6	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
7	On site	Inland river not influenced by normal tidal action.	Not provided	Watercourse contains water year round (in normal circumstances)	-
8	On site	Inland river not influenced by normal tidal action.	Underground	Watercourse contains water year round (in normal circumstances)	Gagle Brook
10	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
A	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
B	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
B	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
B	On site	Lake, loch or reservoir.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
B	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
B	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-

ID	Location	Type of water feature	Ground level	Permanence	Name
B	On site	Inland river not influenced by normal tidal action.	Not provided	Watercourse contains water year round (in normal circumstances)	-
C	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
C	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
C	On site	Lake, loch or reservoir.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
C	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
C	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
D	On site	Inland river not influenced by normal tidal action.	Not provided	Watercourse contains water year round (in normal circumstances)	-
D	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
D	On site	Inland river not influenced by normal tidal action.	Underground	Watercourse contains water year round (in normal circumstances)	-
D	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
E	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
F	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
G	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-

ID	Location	Type of water feature	Ground level	Permanence	Name
H	**On site**	**Inland river not influenced by normal tidal action.**	**On ground surface**	**Watercourse contains water year round (in normal circumstances)**	**Gagle Brook**
I	9m NE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
L	33m NE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
28	58m E	Inland river not influenced by normal tidal action.	Underground	Watercourse contains water year round (in normal circumstances)	-
N	79m E	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
33	96m NE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
O	101m W	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
P	119m W	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
Q	122m NW	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
34	122m W	Inland river not influenced by normal tidal action.	Underground	Watercourse contains water year round (in normal circumstances)	-
O	146m W	Inland river not influenced by normal tidal action.	Underground	Watercourse contains water year round (in normal circumstances)	-
R	186m NW	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
R	200m W	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-

ID	Location	Type of water feature	Ground level	Permanence	Name
U	215m W	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
U	218m W	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
U	222m W	Inland river not influenced by normal tidal action.	Underground	Watercourse contains water year round (in normal circumstances)	-
U	233m W	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
V	240m NW	Inland river not influenced by normal tidal action.	Underground	Watercourse contains water year round (in normal circumstances)	-
38	240m W	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
W	240m W	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
V	248m NW	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-

This data is sourced from the Ordnance Survey.

6.2 Surface water features

Records within 250m	**41**

Covering rivers, streams and lakes (some overlap with OS MasterMap Water Network data in previous section) but additionally covers smaller features such as ponds. Rivers and streams narrower than 5m are represented as a single line. Lakes, ponds and rivers or streams wider than 5m are represented as polygons.

Features are displayed on the Hydrology map on **page 82**

This data is sourced from the Ordnance Survey.

6.3 WFD Surface water body catchments

Records on site	3

The Water Framework Directive is an EU-led framework for the protection of inland surface waters, estuaries, coastal waters and groundwater through river basin-level management planning. In terms of surface water, these basins are broken down into smaller units known as management, operational and water body catchments.

Features are displayed on the Hydrology map on **page 82**

ID	Location	Type	Water body catchment	Water body ID	Operational catchment	Management catchment
11	**On site**	**River WB catchment**	**Langford Brook (Bicester to Ray inc Gagle Brook)**	**GB106039030140**	**Oxon Ray**	**Cherwell and Ray**
12	**On site**	**River WB catchment**	**Gallos Brook**	**GB106039030130**	**Oxon Ray**	**Cherwell and Ray**
13	**On site**	**River WB catchment**	**Padbury Brook**	**GB105033038210**	**Upper Great Ouse**	**Upper and Bedford Ouse**

This data is sourced from the Environment Agency and Natural Resources Wales.

6.4 WFD Surface water bodies

Records identified	3

Surface water bodies under the Directive may be rivers, lakes, estuary or coastal. To achieve the purpose of the Directive, environmental objectives have been set and are reported on for each water body. The progress towards delivery of the objectives is then reported on by the relevant competent authorities at the end of each six-year cycle. The river water body directly associated with the catchment listed in the previous section is detailed below, along with any lake, canal, coastal or artificial water body within 250m of the site. Click on the water body ID in the table to visit the EA Catchment Explorer to find out more about each water body listed.

Features are displayed on the Hydrology map on **page 82**

ID	Location	Type	Name	Water body ID	Overall rating	Chemical rating	Ecological rating	Year
32	97m NE	River	Padbury Brook	GB105033038210	Moderate	Good	Moderate	2016
37	201m W	River	Gallos Brook	GB106039030130	Moderate	Good	Moderate	2016
-	5472m SE	River	Langford Brook (Bicester to Ray inc Gagle Brook)	GB106039030140	Poor	Good	Poor	2016

This data is sourced from the Environment Agency and Natural Resources Wales.

6.5 WFD Groundwater bodies

Records on site	2

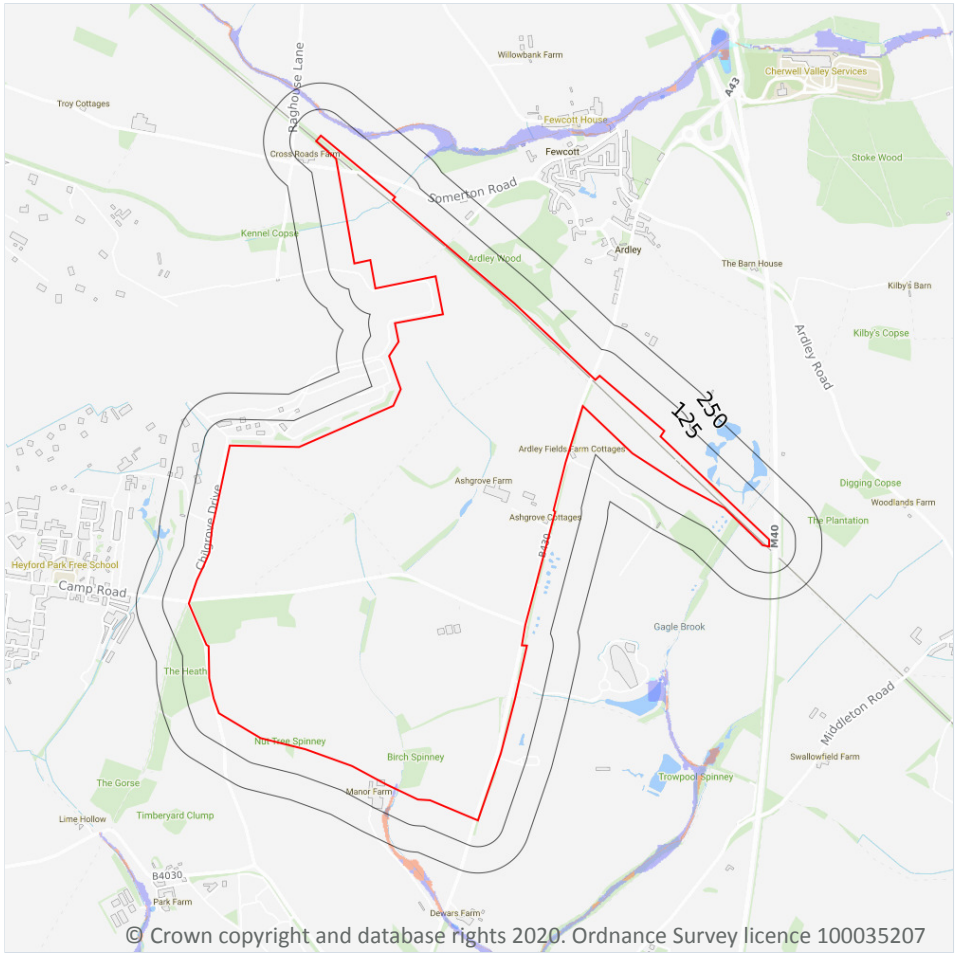
Groundwater bodies are also covered by the Directive and the same regime of objectives and reporting detailed in the previous section is in place. Click on the water body ID in the table to visit the EA Catchment Explorer to find out more about each groundwater body listed.

Features are displayed on the Hydrology map on **page 82**

ID	Location	Name	Water body ID	Overall rating	Chemical rating	Quantitative	Year
1	**On site**	**Upper Bedford Ouse Oolite Principal 1**	**GB40501G402300**	**Good**	**Good**	**Good**	**2015**
9	**On site**	**Tackley Jurassic**	**GB40601G603100**	**Good**	**Good**	**Good**	**2015**

This data is sourced from the Environment Agency and Natural Resources Wales.

7 River and coastal flooding



Site Outline

Search buffers in metres (m)

Environment Agency river and coastal flooding:

- High
- Medium
- Low
- Very Low
- Historical Flood Events
- Areas Used for Flood Storage
- Areas Benefiting from Flood Defences
- Flood Defences

7.1 Risk of Flooding from Rivers and Sea (RoFRaS)

Records within 50m	2

The chance of flooding from rivers and/or the sea in any given year, based on cells of 50m. Each cell is allocated one of four flood risk categories, taking into account flood defences and their condition; Very low (less than 1 in 1000 chance in any given year), Low (less than 1 in 100 but greater than or equal to 1 in 1000 chance), Medium (less than 1 in 30 but greater than or equal to 1 in 100 chance) or High (greater than or equal to 1 in 30 chance).

Features are displayed on the River and coastal flooding map on **page 89**

Distance	RoFRaS flood risk
On site	**Medium**
0 - 50m	High

This data is sourced from the Environment Agency and Natural Resources Wales.

7.2 Historical Flood Events

Records within 250m	0

Records of historic flooding from rivers, the sea, groundwater and surface water. Records began in 1946 when predecessor bodies started collecting detailed information about flooding incidents, although limited details may be included on flooding incidents prior to this date. Takes into account the presence of defences, structures, and other infrastructure where they existed at the time of flooding, and includes flood extents that may have been affected by overtopping, breaches or blockages.

This data is sourced from the Environment Agency and Natural Resources Wales.

7.3 Flood Defences

Records within 250m	0

Records of flood defences owned, managed or inspected by the Environment Agency and Natural Resources Wales. Flood defences can be structures, buildings or parts of buildings. Typically these are earth banks, stone and concrete walls, or sheet-piling that is used to prevent or control the extent of flooding.

This data is sourced from the Environment Agency and Natural Resources Wales.

7.4 Areas Benefiting from Flood Defences

Records within 250m	0

Areas that would benefit from the presence of flood defences in a 1 in 100 (1%) chance of flooding each year from rivers or 1 in 200 (0.5%) chance of flooding each year from the sea.

This data is sourced from the Environment Agency and Natural Resources Wales.

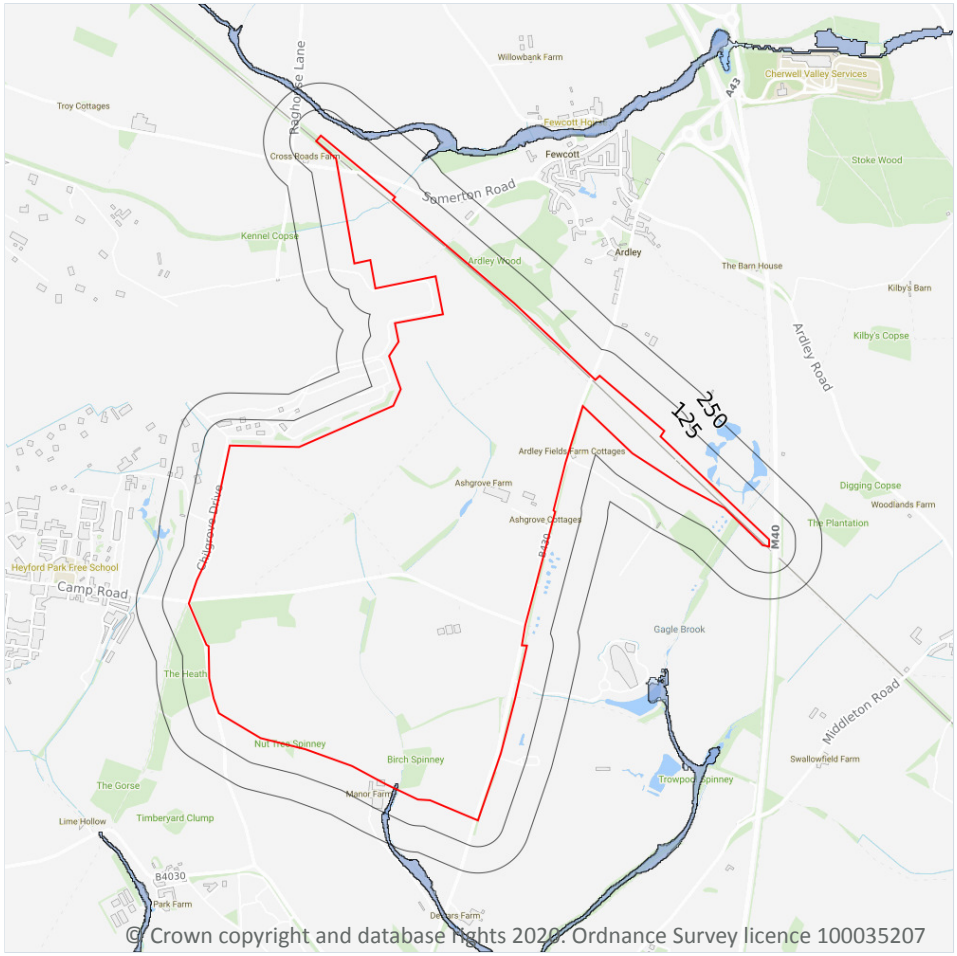
7.5 Flood Storage Areas

Records within 250m	0

Areas that act as a balancing reservoir, storage basin or balancing pond to attenuate an incoming flood peak to a flow level that can be accepted by the downstream channel or to delay the timing of a flood peak so that its volume is discharged over a longer period.

This data is sourced from the Environment Agency and Natural Resources Wales.

River and coastal flooding - Flood Zones



Site Outline

Search buffers in metres (m)

Flood zone 2

Flood zone 3

7.6 Flood Zone 2

Records within 50m	1

Areas of land at risk of flooding, when the presence of flood defences are ignored. Covering land between Flood Zone 3 (see next section) and the extent of the flooding from rivers or the sea with a 1 in 1000 (0.1%) chance of flooding each year.

Features are displayed on the River and coastal flooding map on **page 89**

Location	Type
On site	**Zone 2 - (Fluvial /Tidal Models)**

This data is sourced from the Environment Agency and Natural Resources Wales.

7.7 Flood Zone 3

Records within 50m	1

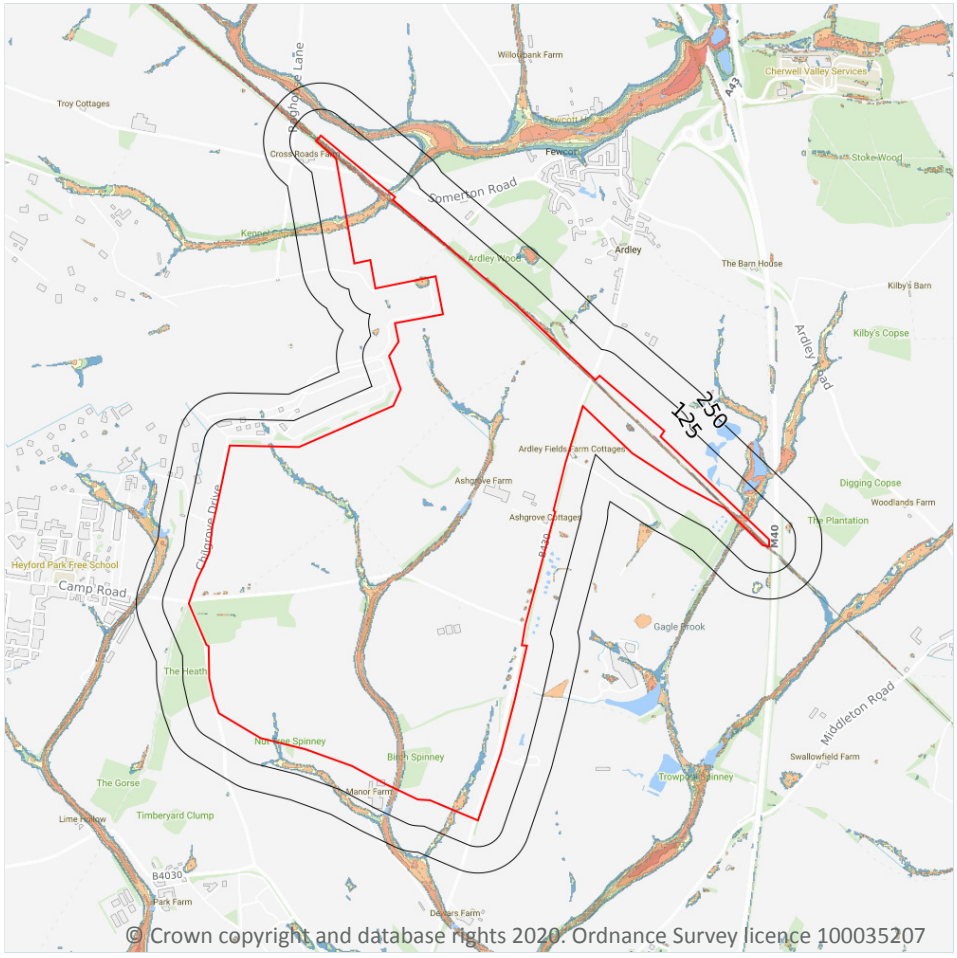
Areas of land at risk of flooding, when the presence of flood defences are ignored. Covering land with a 1 in 100 (1%) or greater chance of flooding each year from rivers or a 1 in 200 (0.5%) or greater chance of flooding each year from the sea.

Features are displayed on the River and coastal flooding map on **page 89**

Location	Type
On site	**Zone 3 - (Fluvial Models)**

This data is sourced from the Environment Agency and Natural Resources Wales.

8 Surface water flooding



Site Outline

Search buffers in metres (m)

1 in 1000 return period
- Depth between 0.1m - 0.3m
- Depth between 0.3m - 1.0m
- Depth greater than 1.0m

1 in 250 return period
- Depth between 0.1m - 0.3m
- Depth between 0.3m - 1.0m
- Depth greater than 1.0m

1 in 100 return period
- Depth between 0.1m - 0.3m
- Depth between 0.3m - 1.0m
- Depth greater than 1.0m

1 in 30 return period
- Depth between 0.1m - 0.3m
- Depth between 0.3m - 1.0m
- Depth greater than 1.0m

8.1 Surface water flooding

Highest risk on site	**1 in 30 year, Greater than 1.0m**
Highest risk within 50m	**1 in 30 year, Greater than 1.0m**

Ambiental Risk Analytics surface water (pluvial) FloodMap identifies areas likely to flood as a result of extreme rainfall events, i.e. land naturally vulnerable to surface water ponding or flooding. This data set was produced by simulating 1 in 30 year, 1 in 100 year, 1 in 250 year and 1 in 1,000 year rainfall events. Modern urban drainage systems are typically built to cope with rainfall events between 1 in 20 and 1 in 30 years, though some older ones may flood in a 1 in 5 year rainfall event.

Features are displayed on the Surface water flooding map on **page 93**

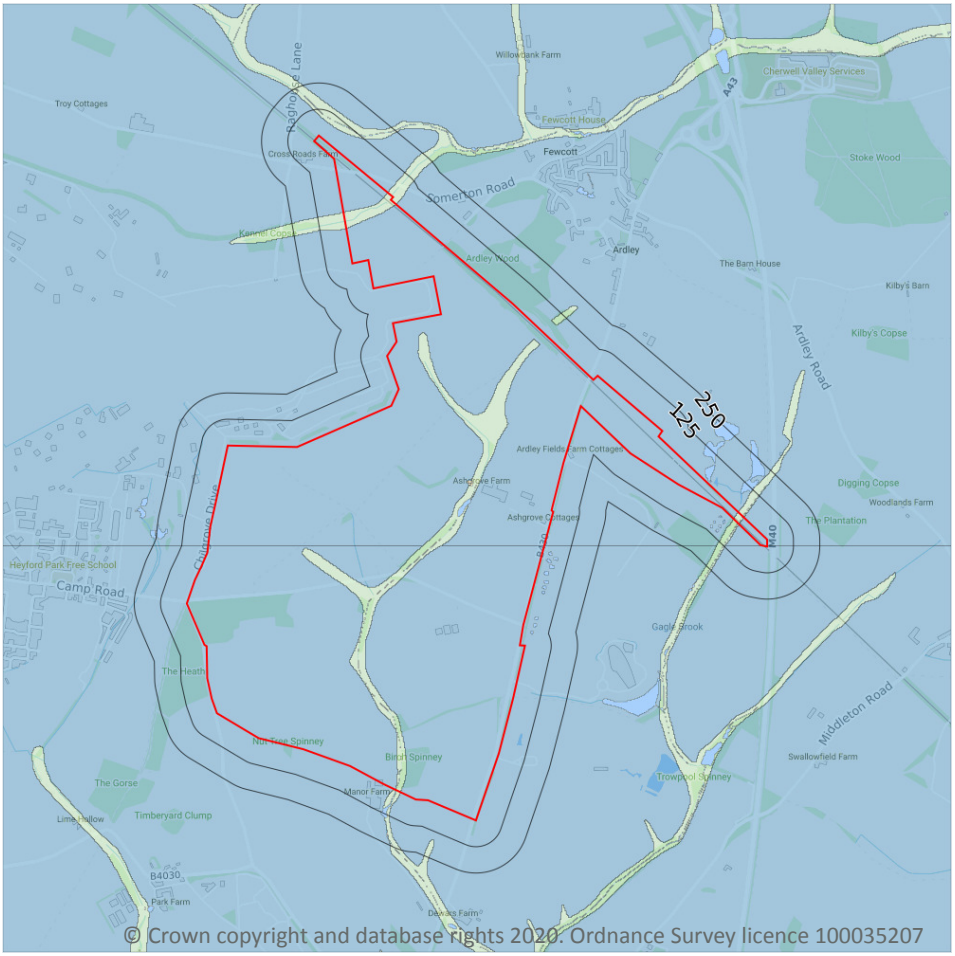
The data shown on the map and in the table above shows the highest likelihood of flood events happening at the site. Lower likelihood events may have greater flood depths and hence a greater potential impact on a site.

The table below shows the maximum flood depths for a range of return periods for the site.

Return period	Maximum modelled depth
1 in 1000 year	Greater than 1.0m
1 in 250 year	Greater than 1.0m
1 in 100 year	Greater than 1.0m
1 in 30 year	Greater than 1.0m

This data is sourced from Ambiental Risk Analytics.

9 Groundwater flooding



Site Outline

Search buffers in metres (m)

- High
- Moderate - High
- Moderate
- Low
- Negligible

9.1 Groundwater flooding

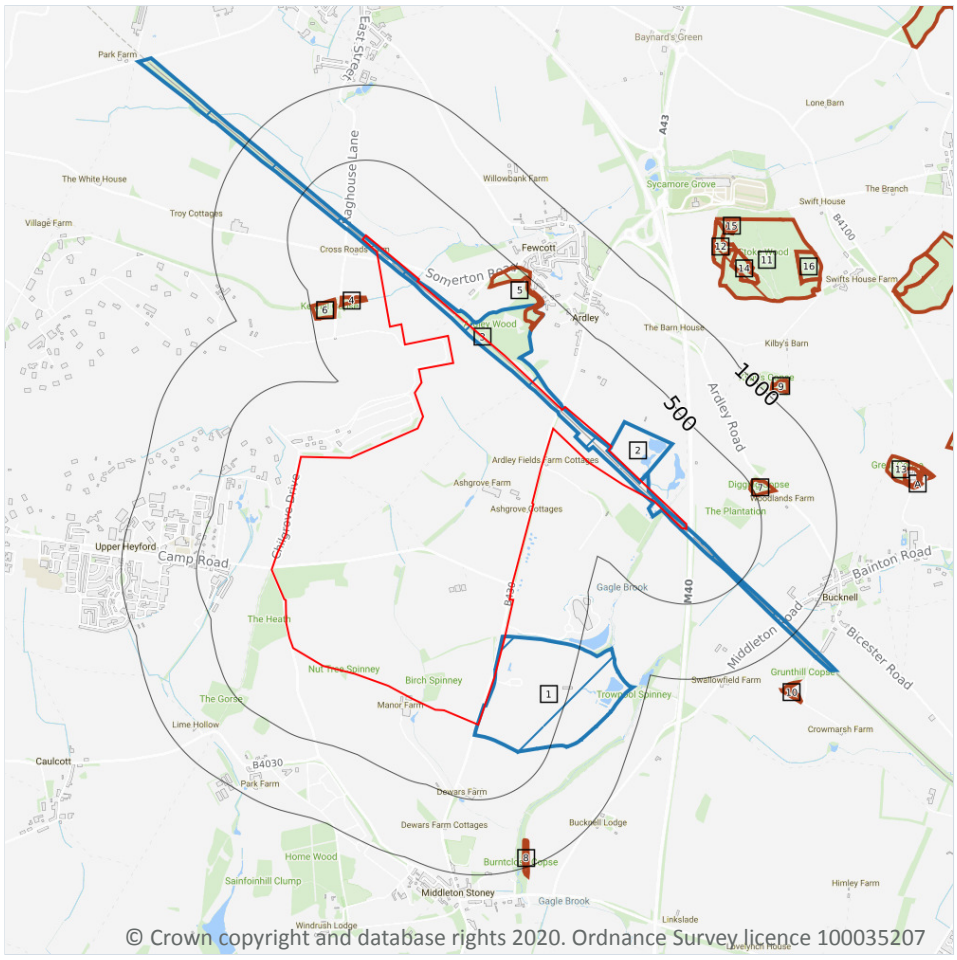
Highest risk on site	**Low**
Highest risk within 50m	**Low**

Groundwater flooding is caused by unusually high groundwater levels. It occurs when the water table rises above the ground surface or within underground structures such as basements or cellars. Groundwater flooding tends to exhibit a longer duration than surface water flooding, possibly lasting for weeks or months, and as a result it can cause significant damage to property. This risk assessment is based on a 1 in 100 year return period and a 5m Digital Terrain Model (DTM).

Features are displayed on the Groundwater flooding map on **page 95**

This data is sourced from Ambiental Risk Analytics.

10 Environmental designations



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10.1 Sites of Special Scientific Interest (SSSI)

Records within 2000m	3

Sites providing statutory protection for the best examples of UK flora, fauna, or geological or physiographical features. Originally notified under the National Parks and Access to the Countryside Act 1949, SSSIs were re-notified under the Wildlife and Countryside Act 1981. Improved provisions for the protection and management of SSSIs were introduced by the Countryside and Rights of Way Act 2000 (in England and Wales) and (in Scotland) by the Nature Conservation (Scotland) Act 2004 and the Wildlife and Natural Environment (Scotland) Act 2010.

Features are displayed on the Environmental designations map on **page 96**

ID	Location	Name	Data source
1	**On site**	**Ardley Trackways**	**Natural England**

ID	Location	Name	Data source
2	**On site**	**Ardley Trackways**	**Natural England**
3	**On site**	**Ardley Cutting and Quarry**	**Natural England**

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.2 Conserved wetland sites (Ramsar sites)

Records within 2000m	**0**

Ramsar sites are designated under the Convention on Wetlands of International Importance, agreed in Ramsar, Iran, in 1971. They cover all aspects of wetland conservation and wise use, recognizing wetlands as ecosystems that are extremely important for biodiversity conservation in general and for the well-being of human communities. These sites cover a broad definition of wetland; marsh, fen, peatland or water, whether natural or artificial, permanent or temporary, with water that is static or flowing, fresh, brackish or salt, and even some marine areas.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.3 Special Areas of Conservation (SAC)

Records within 2000m	**0**

Areas which have been identified as best representing the range and variety within the European Union of habitats and (non-bird) species listed on Annexes I and II to the Directive. SACs are designated under the EC Habitats Directive.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.4 Special Protection Areas (SPA)

Records within 2000m	**0**

Sites classified by the UK Government under the EC Birds Directive, SPAs are areas of the most important habitat for rare (listed on Annex I to the Directive) and migratory birds within the European Union.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.5 National Nature Reserves (NNR)

Records within 2000m	**0**

Sites containing examples of some of the most important natural and semi-natural terrestrial and coastal ecosystems in Great Britain. They are managed to conserve their habitats, provide special opportunities for scientific study or to provide public recreation compatible with natural heritage interests.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.6 Local Nature Reserves (LNR)

Records within 2000m	0

Sites managed for nature conservation, and to provide opportunities for research and education, or simply enjoying and having contact with nature. They are declared by local authorities under the National Parks and Access to the Countryside Act 1949 after consultation with the relevant statutory nature conservation agency.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.7 Designated Ancient Woodland

Records within 2000m	18

Ancient woodlands are classified as areas which have been wooded continuously since at least 1600 AD. This includes semi-natural woodland and plantations on ancient woodland sites. 'Wooded continuously' does not mean there is or has previously been continuous tree cover across the whole site, and not all trees within the woodland have to be old.

Features are displayed on the Environmental designations map on **page 96**

ID	Location	Name	Woodland Type
4	127m W	Unknown	Ancient & Semi-Natural Woodland
5	251m NE	Ardley Wood	Ancient & Semi-Natural Woodland
6	333m W	Kennel Copse	Ancient & Semi-Natural Woodland
7	484m NE	Digging Copse	Ancient & Semi-Natural Woodland
8	827m S	Burntclose Copse	Ancient & Semi-Natural Woodland
9	1041m NE	Unknown	Ancient & Semi-Natural Woodland
10	1238m SE	Grunthill Copse	Ancient & Semi-Natural Woodland
11	1284m NE	Stoke Wood	Ancient & Semi-Natural Woodland
12	1377m NE	Stoke Wood	Ancient Replanted Woodland
13	1381m E	Great Copse	Ancient & Semi-Natural Woodland
14	1401m NE	Stoke Wood	Ancient Replanted Woodland
A	1531m E	Great Copse	Ancient & Semi-Natural Woodland
A	1572m E	Great Copse	Ancient & Semi-Natural Woodland
15	1592m NE	Stoke Wood	Ancient Replanted Woodland

ID	Location	Name	Woodland Type
A	1604m E	Great Copse	Ancient & Semi-Natural Woodland
16	1668m NE	Stoke Wood	Ancient Replanted Woodland
-	1793m E	Nettle Copse	Ancient & Semi-Natural Woodland
18	1810m E	Twelveacre Copse	Ancient & Semi-Natural Woodland

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.8 Biosphere Reserves

Records within 2000m	0

Biosphere Reserves are internationally recognised by UNESCO as sites of excellence to balance conservation and socioeconomic development between nature and people. They are recognised under the Man and the Biosphere (MAB) Programme with the aim of promoting sustainable development founded on the work of the local community.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.9 Forest Parks

Records within 2000m	0

These are areas managed by the Forestry Commission designated on the basis of recreational, conservation or scenic interest.

This data is sourced from the Forestry Commission.

10.10 Marine Conservation Zones

Records within 2000m	0

A type of marine nature reserve in UK waters established under the Marine and Coastal Access Act (2009). They are designated with the aim to protect nationally important, rare or threatened habitats and species.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.11 Green Belt

Records within 2000m	0

Areas designated to prevent urban sprawl by keeping land permanently open.

This data is sourced from the Ministry of Housing, Communities and Local Government.

10.12 Proposed Ramsar sites

Records within 2000m	0

Ramsar sites are areas listed as a Wetland of International Importance under the Convention on Wetlands of International Importance especially as Waterfowl Habitat (the Ramsar Convention) 1971. The sites here supplied have a status of 'Proposed' having been identified for potential adoption under the framework.

This data is sourced from Natural England.

10.13 Possible Special Areas of Conservation (pSAC)

Records within 2000m	0

Special Areas of Conservation are areas which have been identified as best representing the range and variety within the European Union of habitats and (non-bird) species listed on Annexes I and II to the Directive. SACs are designated under the EC Habitats Directive. Those sites supplied here are those with a status of 'Possible' having been identified for potential adoption under the framework.

This data is sourced from Natural England and Natural Resources Wales.

10.14 Potential Special Protection Areas (pSPA)

Records within 2000m	0

Special Protection Areas (SPAs) are areas designated (or ‘classified’) under the European Union Wild Birds Directive for the protection of nationally and internationally important populations of wild birds. Those sites supplied here are those with a status of 'Potential' having been identified for potential adoption under the framework.

This data is sourced from Natural England.

10.15 Nitrate Sensitive Areas

Records within 2000m	0

Areas where nitrate concentrations in drinking water sources exceeded or was at risk of exceeding the limit of 50 mg/l set by the 1980 EC Drinking Water Directive. Voluntary agricultural measures as a means of reducing the levels of nitrate were introduced by DEFRA as MAFF, with payments being made to farmers who complied. The scheme was started as a pilot in 1990 in ten areas, later implemented within 32 areas. The scheme was closed to further new entrants in 1998, although existing agreements continued for their full term. All Nitrate Sensitive Areas fell within the areas designated as Nitrate Vulnerable Zones (NVZs) in 1996 under the EC Nitrate Directive (91/676/EEC).

This data is sourced from Natural England.

10.16 Nitrate Vulnerable Zones

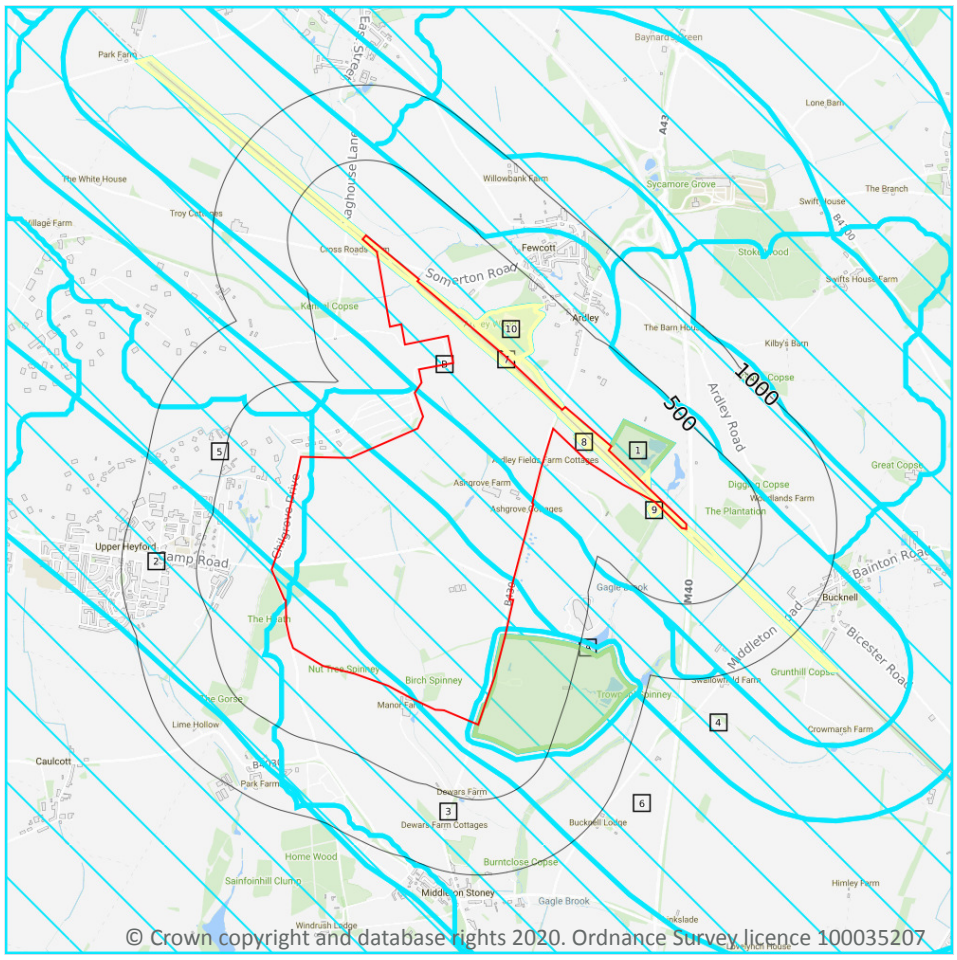
Records within 2000m	10

Areas at risk from agricultural nitrate pollution designated under the EC Nitrate Directive (91/676/EEC). These are areas of land that drain into waters polluted by nitrates. Farmers operating within these areas have to follow mandatory rules to tackle nitrate loss from agriculture.

Location	Name	Type	NVZ ID	Status
On site	**Great Ouse NVZ**	**Surface Water**	**S391**	**Existing**
On site	**Anglian Great Oolite**	**Groundwater**	**G73**	**Existing**
On site	**Cherwell (Ray to Thames) and Woodeaton Brook NVZ**	**Surface Water**	**S472**	**Existing**
On site	**Cherwell (Ray to Thames) and Woodeaton Brook NVZ**	**Surface Water**	**S472**	**Existing**
On site	**Cherwell (Ray to Thames) and Woodeaton Brook NVZ**	**Surface Water**	**S472**	**Existing**
On site	**Cherwell (Ray to Thames) and Woodeaton Brook NVZ**	**Surface Water**	**S472**	**Existing**
71m NE	Anglian Great Oolite	Groundwater	G73	Existing
457m NE	Great Ouse NVZ	Surface Water	S391	Existing
505m E	Bicester North	Groundwater	G162	Existing
842m E	Bicester North	Groundwater	G162	Existing

This data is sourced from Natural England and Natural Resources Wales.

SSSI Impact Zones and Units



Site Outline

Search buffers in metres (m)

SSSI Impact Risk Zones

SSSI Units

- Not recorded
- Favourable
- Unfavourable - Recovering
- Unfavourable - No change
- Unfavourable - Declining
- Partially destroyed
- Destroyed

10.17 SSSI Impact Risk Zones

Records on site	9

Developed to allow rapid initial assessment of the potential risks to SSSIs posed by development proposals. They define zones around each SSSI which reflect the particular sensitivities of the features for which it is notified and indicate the types of development proposal which could potentially have adverse impacts.

Features are displayed on the SSSI Impact Zones and Units map on **page 102**

ID	Location	Type of developments requiring consultation
2	On site	Infrastructure - Airports, helipads and other aviation proposals. Minerals, Oil and Gas - Planning applications for quarries, including: new proposals, Review of Minerals Permissions (ROMP), extensions, variations to conditions etc. Oil & gas exploration/extraction. Air pollution - Livestock & poultry units with floorspace > 500m², slurry lagoons > 750m² & manure stores > 3500t. Discharges - Any discharge of water or liquid waste of more than 20m³/day to ground (ie to seep away) or to surface water, such as a beck or stream (NB This does not include discharges to mains sewer which are unlikely to pose a risk at this location)
3	On site	Infrastructure - Airports, helipads and other aviation proposals. Minerals, Oil and Gas - Planning applications for quarries, including: new proposals, Review of Minerals Permissions (ROMP), extensions, variations to conditions etc. Oil & gas exploration/extraction. Air pollution - Livestock & poultry units with floorspace > 500m², slurry lagoons > 750m² & manure stores > 3500t.
4	On site	Infrastructure - Pipelines, pylons and overhead cables. Any transport proposal including road, rail and by water (excluding routine maintenance). Airports, helipads and other aviation proposals Minerals, Oil and Gas - Planning applications for quarries, including: new proposals, Review of Minerals Permissions (ROMP), extensions, variations to conditions etc. Oil & gas exploration/extraction. Residential - Residential development of 100 units or more. Rural residential - Any residential development of 50 or more houses outside existing settlements/urban areas. Air pollution - Any industrial/agricultural development that could cause AIR POLLUTION (incl: industrial processes, livestock & poultry units with floorspace > 500m², slurry lagoons > 200m² & manure stores > 250t). Combustion - General combustion processes >20MW energy input. Incl: energy from waste incineration, other incineration, landfill gas generation plant, pyrolysis/gasification, anaerobic digestion, sewage treatment works, other incineration/ combustion Waste - Landfill. Incl: inert landfill, non-hazardous landfill, hazardous landfill. Composting - Any composting proposal with more than 500 tonnes maximum annual operational throughput. Incl: open windrow composting, in-vessel composting, anaerobic digestion, other waste management. Water supply - Large infrastructure such as warehousing / industry where net additional gross internal floorspace is > 1,000m² or any development needing its own water supply

ID	Location	Type of developments requiring consultation
5	On site	Infrastructure - Pipelines, pylons and overhead cables. Any transport proposal including road, rail and by water (excluding routine maintenance). Airports, helipads and other aviation proposals Minerals, Oil and Gas - Planning applications for quarries, including: new proposals, Review of Minerals Permissions (ROMP), extensions, variations to conditions etc. Oil & gas exploration/extraction. Air pollution - Any industrial/agricultural development that could cause AIR POLLUTION (incl: industrial processes, livestock & poultry units with floorspace > 500m², slurry lagoons > 200m² & manure stores > 250t). Combustion - General combustion processes >20MW energy input. Incl: energy from waste incineration, other incineration, landfill gas generation plant, pyrolysis/gasification, anaerobic digestion, sewage treatment works, other incineration/ combustion Waste - Landfill. Incl: inert landfill, non-hazardous landfill, hazardous landfill. Composting - Any composting proposal with more than 75000 tonnes maximum annual operational throughput. Incl: open windrow composting, in-vessel composting, anaerobic digestion, other waste management Discharges - Any discharge of water or liquid waste of more than 20m³/day to ground (ie to seep away) or to surface water, such as a beck or stream (NB This does not include discharges to mains sewer which are unlikely to pose a risk at this location) Water supply - Large infrastructure such as warehousing / industry where total net additional gross internal floorspace following development is 1,000m² or more.
6	On site	Infrastructure - Pipelines, pylons and overhead cables. Any transport proposal including road, rail and by water (excluding routine maintenance). Airports, helipads and other aviation proposals Minerals, Oil and Gas - Planning applications for quarries, including: new proposals, Review of Minerals Permissions (ROMP), extensions, variations to conditions etc. Oil & gas exploration/extraction. Air pollution - Any industrial/agricultural development that could cause AIR POLLUTION (incl: industrial processes, livestock & poultry units with floorspace > 500m², slurry lagoons > 200m² & manure stores > 250t). Combustion - General combustion processes >20MW energy input. Incl: energy from waste incineration, other incineration, landfill gas generation plant, pyrolysis/gasification, anaerobic digestion, sewage treatment works, other incineration/ combustion Waste - Landfill. Incl: inert landfill, non-hazardous landfill, hazardous landfill. Composting - Any composting proposal with more than 75000 tonnes maximum annual operational throughput. Incl: open windrow composting, in-vessel composting, anaerobic digestion, other waste management Water supply - Large infrastructure such as warehousing / industry where total net additional gross internal floorspace following development is 1,000m² or more.
A	On site	All applications - All Planning Applications - Except Householder Applications.
A	On site	All applications - All Planning Applications.
B	On site	All applications - All Planning Applications - Except Householder Applications.
B	On site	All applications - All Planning Applications.

This data is sourced from Natural England.

10.18 SSSI Units

Records within 2000m	6

Divisions of SSSIs used to record management and condition details. Units are the smallest areas for which Natural England gives a condition assessment, however, the size of units varies greatly depending on the types of management and the conservation interest.

Features are displayed on the SSSI Impact Zones and Units map on **page 102**

ID: 1
Location: On site
SSSI name: Ardley Trackways
Unit name: Ardley North
Broad habitat: Inland Rock
Condition: Favourable
Reportable features:

Feature name	Feature condition	Date of assessment
EA - Jurassic - Cretaceous Reptilia	Favourable	15/10/2009

ID: 7
Location: On site
SSSI name: Ardley Cutting and Quarry
Unit name: Cutting
Broad habitat: Calcareous Grassland - Lowland
Condition: Unfavourable - Recovering
Reportable features:

Feature name	Feature condition	Date of assessment
ER - Bathonian	Favourable	22/08/2012
Invert. assemblage F112 open short sward	-	-
Lowland calcareous grassland (CG3-5)	Unfavourable - Recovering	22/08/2012
Populations of nationally scarce butterfly species - Hamearis lucina, Duke of Burgundy	-	-

ID: 8
Location: On site
SSSI name: Ardley Cutting and Quarry
Unit name: South East
Broad habitat: Earth Heritage

Condition: Unfavourable - Recovering
Reportable features:

Feature name	Feature condition	Date of assessment
ED - Bathonian	Unfavourable - Recovering	01/10/2009

ID: A
Location: On site
SSSI name: Ardley Trackways
Unit name: Dewars Farm
Broad habitat: Inland Rock
Condition: Favourable
Reportable features:

Feature name	Feature condition	Date of assessment
EA - Jurassic - Cretaceous Reptilia	Favourable	15/10/2009

ID: 9
Location: 8m SW
SSSI name: Ardley Cutting and Quarry
Unit name: South East
Broad habitat: Earth Heritage
Condition: Unfavourable - Recovering
Reportable features:

Feature name	Feature condition	Date of assessment
ED - Bathonian	Unfavourable - Recovering	01/10/2009

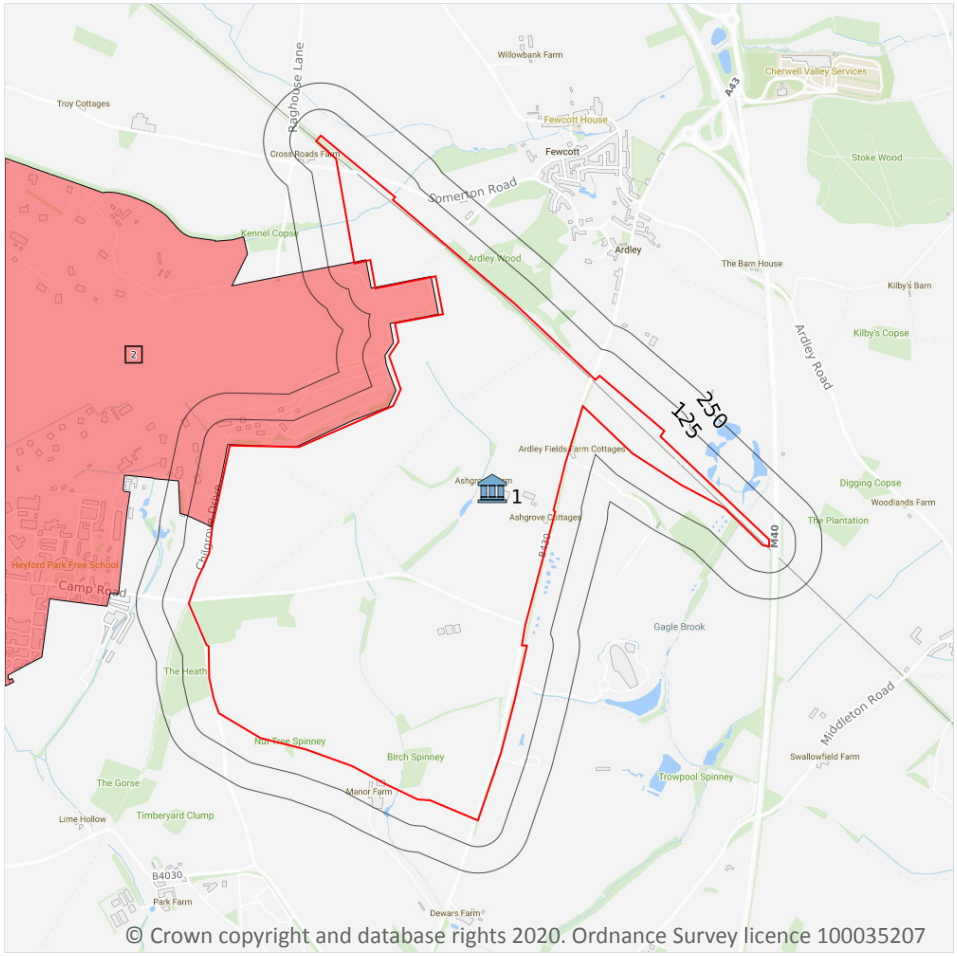
ID: 10
Location: 22m NE
SSSI name: Ardley Cutting and Quarry
Unit name: Ardley Wood
Broad habitat: Calcareous Grassland - Lowland
Condition: Unfavourable - Recovering
Reportable features:

Feature name	Feature condition	Date of assessment
ED - Bathonian	Unfavourable - Recovering	27/09/2012
Invert. assemblage F112 open short sward	-	-

Feature name	Feature condition	Date of assessment
Lowland calcareous grassland (CG3-5)	Unfavourable - Recovering	27/09/2012
Populations of nationally scarce butterfly species - Hamearis lucina, Duke of Burgundy	-	-

This data is sourced from Natural England and Natural Resources Wales.

11 Visual and cultural designations



Site Outline

Search buffers in metres (m)

- Listed buildings
- Conservation areas
- Conservation areas - no data
- National Parks
- Areas of Outstanding Natural Beauty
- Registered parks and gardens
- Scheduled Monuments
- World Heritage Sites

11.1 World Heritage Sites

Records within 250m	0

Sites designated for their globally important cultural or natural interest requiring appropriate management and protection measures. World Heritage Sites are designated to meet the UK's commitments under the World Heritage Convention.

This data is sourced from Historic England, Cadw and Historic Environment Scotland.

11.2 Area of Outstanding Natural Beauty

Records within 250m	0

Areas of Outstanding Natural Beauty (AONB) are conservation areas, chosen because they represent 18% of the finest countryside. Each AONB has been designated for special attention because of the quality of their flora, fauna, historical and cultural associations, and/or scenic views. The National Parks and Access to the Countryside Act of 1949 created AONBs and the Countryside and Rights of Way Act, 2000 added further regulation and protection. There are likely to be restrictions to some developments within these areas.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

11.3 National Parks

Records within 250m	0

In England and Wales, the purpose of National Parks is to conserve and enhance landscapes within the countryside whilst promoting public enjoyment of them and having regard for the social and economic well-being of those living within them. In Scotland National Parks have the additional purpose of promoting the sustainable use of the natural resources of the area and the sustainable social and economic development of its communities. The National Parks and Access to the Countryside Act 1949 established the National Park designation in England and Wales, and The National Parks (Scotland) Act 2000 in Scotland.

This data is sourced from Natural England, Natural Resources Wales and the Scottish Government.

11.4 Listed Buildings

Records within 250m	1

Buildings listed for their special architectural or historical interest. Building control in the form of 'listed building consent' is required in order to make any changes to that building which might affect its special interest. Listed buildings are graded to indicate their relative importance, however building controls apply to all buildings equally, irrespective of their grade, and apply to the interior and exterior of the building in its entirety, together with any curtilage structures.

Features are displayed on the Visual and cultural designations map on **page 108**

ID	Location	Name	Grade	Reference Number	Listed date
1	**On site**	**Barn Approximately 30 Metres North Of Ashgrove Farmhouse (Not Included), Ardley, Cherwell, Oxfordshire, OX27**	**II**	**1046879**	**26/02/1988**

This data is sourced from English Heritage, Cadw and Historic Environment Scotland.

11.5 Conservation Areas

Records within 250m	1

Local planning authorities are obliged to designate as conservation areas any parts of their own area that are of special architectural or historic interest, the character and appearance of which it is desirable to preserve or enhance. Designation of a conservation area gives broader protection than the listing of individual buildings. All the features within the area, listed or otherwise, are recognised as part of its character. Conservation area designation is the means of recognising the importance of all factors and of ensuring that planning decisions address the quality of the landscape in its broadest sense.

Features are displayed on the Visual and cultural designations map on **page 108**

ID	Location	Name	District	Date of designation
2	**On site**	**RAF Upper Heyford**	**Cherwell**	**04/2006**

This data is sourced from English Heritage, Cadw and Historic Environment Scotland.

11.6 Scheduled Ancient Monuments

Records within 250m	0

A scheduled monument is an historic building or site that is included in the Schedule of Monuments kept by the Secretary of State for Digital, Culture, Media and Sport. The regime is set out in the Ancient Monuments and Archaeological Areas Act 1979. The Schedule of Monuments has c.20,000 entries and includes sites such as Roman remains, burial mounds, castles, bridges, earthworks, the remains of deserted villages and industrial sites. Monuments are not graded, but all are, by definition, considered to be of national importance.

This data is sourced from English Heritage, Cadw and Historic Environment Scotland.

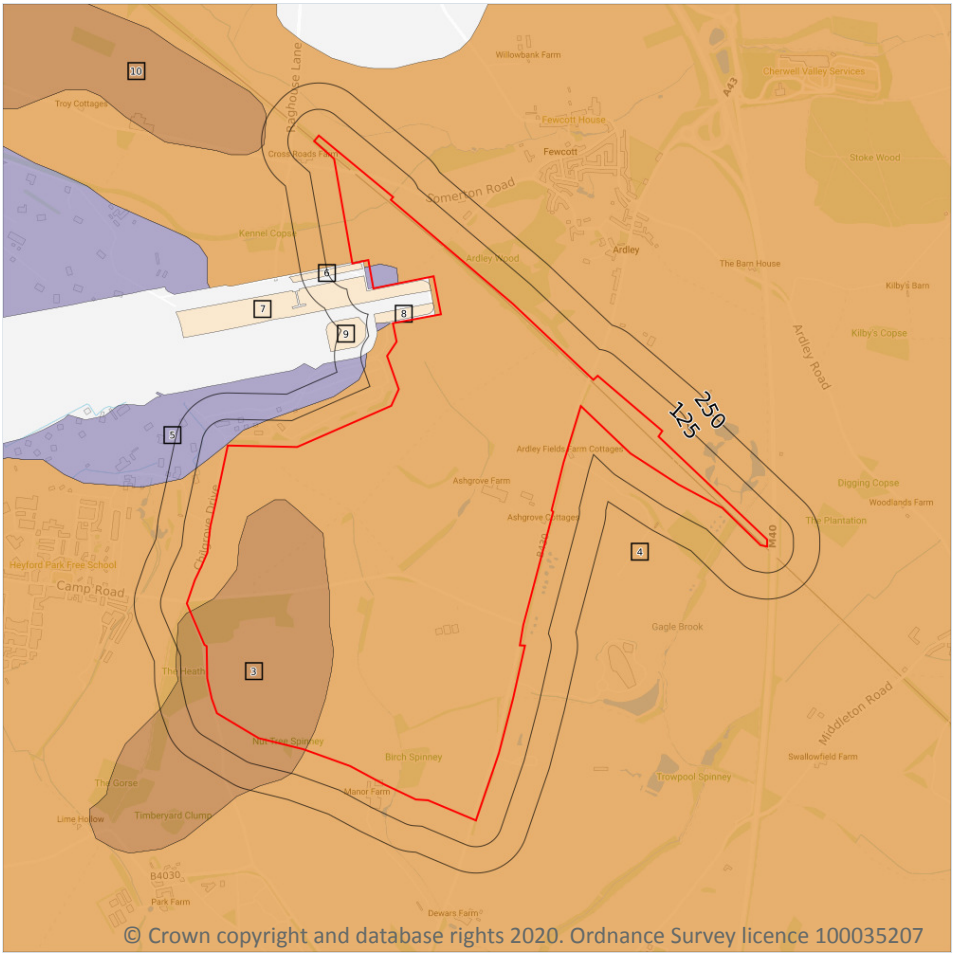
11.7 Registered Parks and Gardens

Records within 250m	0

Parks and gardens assessed to be of particular interest and of special historic interest. The emphasis being on 'designed' landscapes, rather than on planting or botanical importance. Registration is a 'material consideration' in the planning process, meaning that planning authorities must consider the impact of any proposed development on the special character of the landscape.

This data is sourced from English Heritage, Cadw and Historic Environment Scotland.

12 Agricultural designations



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Site Outline

Search buffers in metres (m)

- Grade 1 - excellent quality
- Grade 2 - very good quality
- Grade 3 - good to moderate quality
- Grade 3a - good quality
- Grade 3b - moderate quality
- Grade 4 - poor quality
- Grade 5 - very poor quality
- Non-agricultural land
- Urban land
- Exclusion land
- Tree felling licences
- Open Access land

12.1 Agricultural Land Classification

Records within 250m	8

Classification of the quality of agricultural land taking into consideration multiple factors including climate, physical geography and soil properties. It should be noted that the categories for the grading of agricultural land are not consistent across England, Wales and Scotland.

Features are displayed on the Agricultural designations map on **page 111**

ID	Location	Classification	Description
3	**On site**	**Grade 2**	**Very good quality agricultural land. Land with minor limitations which affect crop yield, cultivations or harvesting. A wide range of agricultural and horticultural crops can usually be grown but on some land in the grade there may be reduced flexibility due to difficulties with the production of the more demanding crops such as winter harvested vegetables and arable root crops. The level of yield is generally high but may be lower or more variable than Grade 1.**
4	**On site**	**Grade 3**	**Good to moderate quality agricultural land. Land with moderate limitations which affect the choice of crops, timing and type of cultivation, harvesting or the level of yield. Where more demanding crops are grown yields are generally lower or more variable than on land in Grades 1 and 2.**
5	**On site**	**Non Agricultural**	**-**
6	4m S	Grade 3b	Moderate quality agricultural land. Land capable of producing moderate yields of a narrow range of crops, principally cereals and grass or lower yields of a wider range of crops or high yields of grass which can be grazed or harvested over most of the year.
7	6m S	Grade 3b	Moderate quality agricultural land. Land capable of producing moderate yields of a narrow range of crops, principally cereals and grass or lower yields of a wider range of crops or high yields of grass which can be grazed or harvested over most of the year.
8	10m N	Grade 3b	Moderate quality agricultural land. Land capable of producing moderate yields of a narrow range of crops, principally cereals and grass or lower yields of a wider range of crops or high yields of grass which can be grazed or harvested over most of the year.
9	130m W	Grade 3b	Moderate quality agricultural land. Land capable of producing moderate yields of a narrow range of crops, principally cereals and grass or lower yields of a wider range of crops or high yields of grass which can be grazed or harvested over most of the year.
10	236m W	Grade 2	Very good quality agricultural land. Land with minor limitations which affect crop yield, cultivations or harvesting. A wide range of agricultural and horticultural crops can usually be grown but on some land in the grade there may be reduced flexibility due to difficulties with the production of the more demanding crops such as winter harvested vegetables and arable root crops. The level of yield is generally high but may be lower or more variable than Grade 1.

This data is sourced from Natural England.

12.2 Open Access Land

Records within 250m	**0**

The Countryside and Rights of Way Act 2000 (CROW Act) gives a public right of access to land without having to use paths. Access land includes mountains, moors, heaths and downs that are privately owned. It also includes common land registered with the local council and some land around the England Coast Path. Generally permitted activities on access land are walking, running, watching wildlife and climbing.

This data is sourced from Natural England and Natural Resources Wales.

12.3 Tree Felling Licences

Records within 250m	0

Felling Licence Application (FLA) areas approved by Forestry Commission England. Anyone wishing to fell trees must ensure that a licence or permission under a grant scheme has been issued by the Forestry Commission before any felling is carried out or that one of the exceptions apply.

This data is sourced from the Forestry Commission.

12.4 Environmental Stewardship Schemes

Records within 250m	4

Environmental Stewardship covers a range of schemes that provide financial incentives to farmers, foresters and land managers to look after and improve the environment.

Location	Reference	Scheme	Start Date	End date
On site	**AG00456291**	**Entry Level Stewardship**	**01/10/2013**	**30/09/2018**
On site	**AG00476091**	**Entry Level Stewardship**	**01/09/2013**	**31/08/2018**
On site	**AG00282978**	**Higher Level Stewardship**	**01/07/2010**	**30/06/2020**
159m NW	AG00501589	Entry Level Stewardship	01/10/2013	30/09/2018

This data is sourced from Natural England.

12.5 Countryside Stewardship Schemes

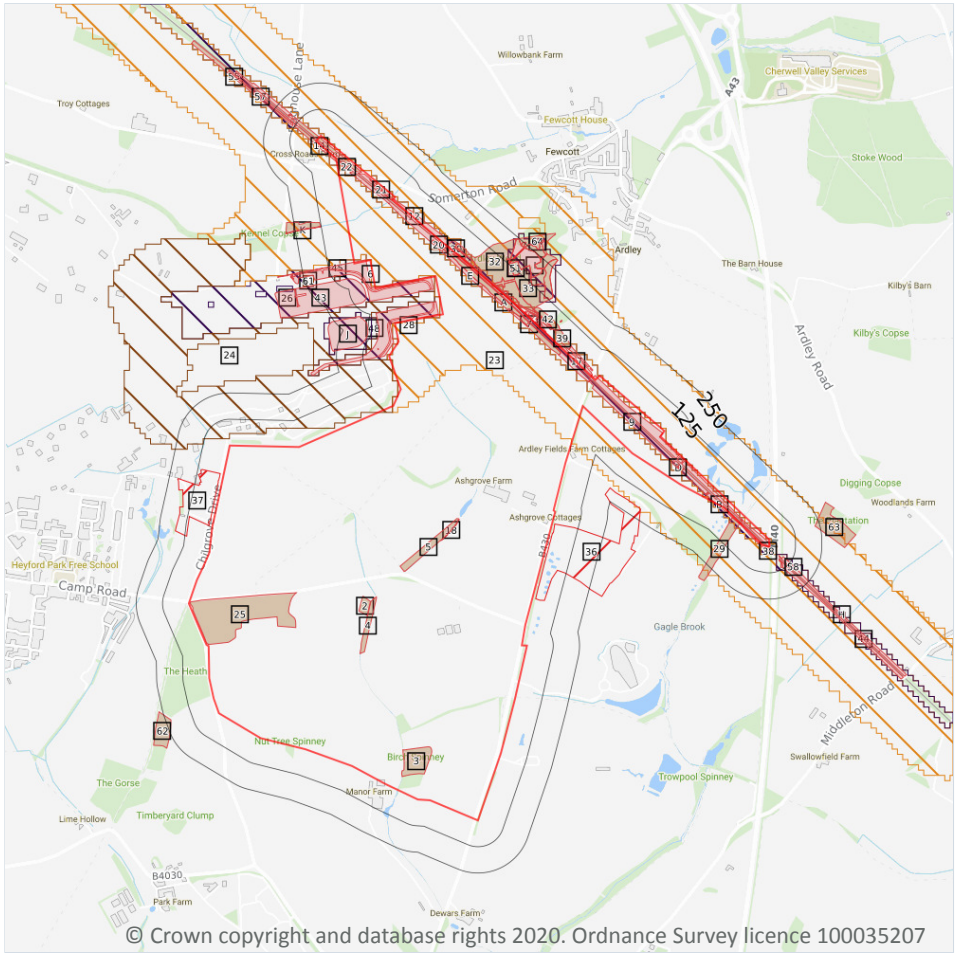
Records within 250m	4

Countryside Stewardship covers a range of schemes that provide financial incentives to farmers, foresters and land managers to look after and improve the environment. Main objectives are to improve the farmed environment for wildlife and to reduce diffuse water pollution.

Location	Reference	Scheme	Start Date	End Date
On site	**639896**	**Countryside Stewardship (Middle Tier)**	**01/01/2019**	**31/12/2023**
117m N	639896	Countryside Stewardship (Middle Tier)	01/01/2019	31/12/2023
159m NW	645383	Countryside Stewardship (Middle Tier)	01/01/2019	31/12/2023
170m N	639896	Countryside Stewardship (Middle Tier)	01/01/2019	31/12/2023

This data is sourced from Natural England.

13 Habitat designations



Site Outline

Search buffers in metres (m)

- Priority Habitat Inventory
- Open Mosaic Habitat
- Limestone Pavement Orders

Habitat Networks

- Primary Habitat
- Restorable Habitat
- Associated Habitats
- Habitat Restoration-Creation
- Network Enhancement Zone 1
- Network Enhancement Zone 2

13.1 Priority Habitat Inventory

Records within 250m	72

Habitats of principal importance as named under Natural Environment and Rural Communities Act (2006) Section 41.

Features are displayed on the Habitat designations map on **page 115**

ID	Location	Main Habitat	Other habitats
1	On site	Lowland calcareous grassland	Main habitat: LCGRA (INV > 50%, ENSIS L1)
2	On site	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
3	On site	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
4	On site	Deciduous woodland	Main habitat: DWOOD (INV > 50%)

ID	Location	Main Habitat	Other habitats
5	On site	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
6	On site	Lowland calcareous grassland	Main habitat: LCGRA (INV > 50%)
7	On site	Lowland calcareous grassland	Main habitat: LCGRA (ENSIS L1)
8	On site	Lowland calcareous grassland	Main habitat: LCGRA (ENSIS L1)
9	On site	Lowland calcareous grassland	Main habitat: LCGRA (INV > 50%, ENSIS L1)
10	On site	Lowland calcareous grassland	Main habitat: LCGRA (INV > 50%, ENSIS L1)
11	On site	Lowland calcareous grassland	Main habitat: LCGRA (INV > 50%, ENSIS L1)
12	On site	Lowland calcareous grassland	Main habitat: LCGRA (INV > 50%, ENSIS L1)
13	On site	Lowland calcareous grassland	Main habitat: LCGRA (INV > 50%, ENSIS L1)
14	On site	Lowland calcareous grassland	Main habitat: LCGRA (INV > 50%, ENSIS L1)
15	On site	Lowland calcareous grassland	Main habitat: LCGRA (INV > 50%, ENSIS L1)
16	On site	Lowland calcareous grassland	Main habitat: LCGRA (INV > 50%, ENSIS L1)
17	On site	Lowland calcareous grassland	Main habitat: LCGRA (INV > 50%, ENSIS L1)
18	On site	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
19	On site	Lowland calcareous grassland	Main habitat: LCGRA (INV > 50%, ENSIS L1)
20	On site	Lowland calcareous grassland	Main habitat: LCGRA (INV > 50%, ENSIS L1)
21	On site	Lowland calcareous grassland	Main habitat: LCGRA (INV > 50%, ENSIS L1)
22	On site	Lowland calcareous grassland	Main habitat: LCGRA (INV > 50%, ENSIS L1)
25	On site	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
A	On site	Lowland calcareous grassland	Main habitat: LCGRA (ENSIS L1)
A	On site	Lowland calcareous grassland	Main habitat: LCGRA (INV > 50%, ENSIS L1)
B	On site	Lowland calcareous grassland	Main habitat: LCGRA (INV > 50%, ENSIS L1)
B	On site	Lowland calcareous grassland	Main habitat: LCGRA (INV > 50%, ENSIS L1)
C	On site	Lowland calcareous grassland	Main habitat: LCGRA (INV > 50%, ENSIS L1)
C	On site	Lowland calcareous grassland	Main habitat: LCGRA (INV > 50%, ENSIS L1)
D	On site	Lowland calcareous grassland	Main habitat: LCGRA (INV > 50%, ENSIS L1)
D	On site	Lowland calcareous grassland	Main habitat: LCGRA (INV > 50%, ENSIS L1)
E	On site	Lowland calcareous grassland	Main habitat: LCGRA (INV > 50%, ENSIS L1)

ID	Location	Main Habitat	Other habitats
G	1m NE	Lowland calcareous grassland	Main habitat: LCGRA (INV > 50%, ENSIS L1)
27	3m NE	Deciduous woodland	Main habitat: DWOOD (INV > 50%); LCGRA (INV > 50%, ENSIS L1)
28	3m N	Lowland calcareous grassland	Main habitat: LCGRA (INV > 50%)
29	3m SW	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
30	5m NE	Lowland calcareous grassland	Main habitat: LCGRA (INV > 50%, ENSIS L1)
31	6m NE	Deciduous woodland	Main habitat: DWOOD (INV > 50%); LCGRA (INV > 50%, ENSIS L1)
32	7m NE	Deciduous woodland	Main habitat: DWOOD (INV > 50%); LCGRA (ENSIS L1)
33	7m NE	Deciduous woodland	Main habitat: DWOOD (INV > 50%); LCGRA (ENSIS L1)
34	8m NE	Deciduous woodland	Main habitat: DWOOD (INV > 50%); LCGRA (ENSIS L1)
35	10m S	Lowland calcareous grassland	Main habitat: LCGRA (INV > 50%)
G	14m NE	Lowland calcareous grassland	Main habitat: LCGRA (INV > 50%, ENSIS L1)
G	14m NE	Lowland calcareous grassland	Main habitat: LCGRA (INV > 50%, ENSIS L1)
38	17m S	Lowland calcareous grassland	Main habitat: LCGRA (ENSIS L1)
39	18m NE	Deciduous woodland	Main habitat: DWOOD (INV > 50%); LCGRA (INV > 50%, ENSIS L1)
40	19m NE	Lowland calcareous grassland	Main habitat: LCGRA (INV > 50%, ENSIS L1)
F	20m N	Lowland calcareous grassland	Main habitat: LCGRA (INV > 50%)
41	21m NE	Lowland calcareous grassland	Main habitat: LCGRA (INV > 50%)
42	37m NE	Deciduous woodland	Main habitat: DWOOD (INV > 50%); LCGRA (ENSIS L1)
43	50m W	Lowland calcareous grassland	Main habitat: LCGRA (INV > 50%)
H	65m SE	Lowland calcareous grassland	Main habitat: LCGRA (INV > 50%, ENSIS L1)
H	75m SE	Lowland calcareous grassland	Main habitat: LCGRA (ENSIS L1)
46	77m SE	Lowland calcareous grassland	Main habitat: LCGRA (ENSIS L1)
47	85m NE	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
51	100m NE	Lowland calcareous grassland	Main habitat: DWOOD (INV > 50%); LCGRA (INV > 50%, ENSIS L1)
52	114m NE	Lowland calcareous grassland	Main habitat: DWOOD (INV > 50%); LCGRA (ENSIS L1)
53	120m NE	Lowland calcareous grassland	Main habitat: DWOOD (INV > 50%); LCGRA (INV > 50%, ENSIS L1)
K	127m W	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
K	127m W	Deciduous woodland	Main habitat: DWOOD (INV > 50%)

ID	Location	Main Habitat	Other habitats
54	129m NE	Lowland calcareous grassland	Main habitat: LCGRA (INV > 50%, ENSIS L1)
J	132m W	Lowland calcareous grassland	Main habitat: LCGRA (INV > 50%)
55	134m NW	Lowland calcareous grassland	Main habitat: LCGRA (INV > 50%, ENSIS L1)
56	135m NE	Deciduous woodland	Main habitat: DWOOD (INV > 50%); LCGRA (ENSIS L1)
57	141m NW	Lowland calcareous grassland	Main habitat: LCGRA (INV > 50%, ENSIS L1)
58	146m SE	Lowland calcareous grassland	Main habitat: LCGRA (INV > 50%, ENSIS L1)
59	152m NW	Lowland calcareous grassland	Main habitat: LCGRA (INV > 50%, ENSIS L1)
60	197m NE	Deciduous woodland	Main habitat: DWOOD (INV > 50%); LCGRA (ENSIS L1)
62	225m W	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
63	227m E	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
64	231m NE	Deciduous woodland	Main habitat: DWOOD (INV > 50%); LCGRA (ENSIS L1)
65	231m NE	Lowland calcareous grassland	Main habitat: DWOOD (INV > 50%); LCGRA (INV > 50%, ENSIS L1)

This data is sourced from Natural England.

13.2 Habitat Networks

Records within 250m **13**

Habitat networks for 18 priority habitat networks (based primarily, but not exclusively, on the priority habitat inventory) and areas suitable for the expansion of networks through restoration and habitat creation.

Features are displayed on the Habitat designations map on **page 115**

ID	Location	Type	Habitat
23	**On site**	**Network Enhancement Zone 1**	**Not specified**
24	**On site**	**Network Enhancement Zone 2**	**Not specified**
26	**On site**	**Primary Habitat**	**Lowland calcareous grassland**
E	**On site**	**Primary Habitat**	**Lowland calcareous grassland**
F	**On site**	**Primary Habitat**	**Lowland calcareous grassland**
44	51m SE	Primary Habitat	Lowland calcareous grassland
45	69m W	Network Enhancement Zone 2	Not specified
I	81m NE	Primary Habitat	Lowland calcareous grassland

ID	Location	Type	Habitat
48	87m W	Network Enhancement Zone 2	Not specified
49	90m W	Network Enhancement Zone 2	Not specified
50	90m SW	Network Enhancement Zone 2	Not specified
J	112m W	Primary Habitat	Lowland calcareous grassland
61	202m W	Network Enhancement Zone 2	Not specified

This data is sourced from Natural England.

13.3 Open Mosaic Habitat

Records within 250m **3**

Sites verified as Open Mosaic Habitat. Mosaic habitats are brownfield sites that are identified under the UK Biodiversity Action Plan as a priority habitat due to the habitat variation within a single site, supporting an array of invertebrates.

Features are displayed on the Habitat designations map on **page 115**

ID	Location	Site reference	Identification confidence	Primary source	Secondary source	Tertiary source
36	13m E	BRITPITS ref: 3603; HLD_refs: EAHLD13215; EAHLD13217	Low	British Geological Survey BRITPITS database	UK Perspectives Aerial Photography	Environment Agency Historic Landfill Sites
37	15m W	NLUD Ref: 310500241; BRITPITS ref: 57206	Low	National Land Use Database - Previously Developed Land	British Geological Survey BRITPITS database	UK Perspectives Aerial Photography
I	100m NE	BRITPITS ref: 6933	Low	British Geological Survey BRITPITS database	Environment Agency Historic Landfill Sites	UK Perspectives Aerial Photography

This data is sourced from Natural England.

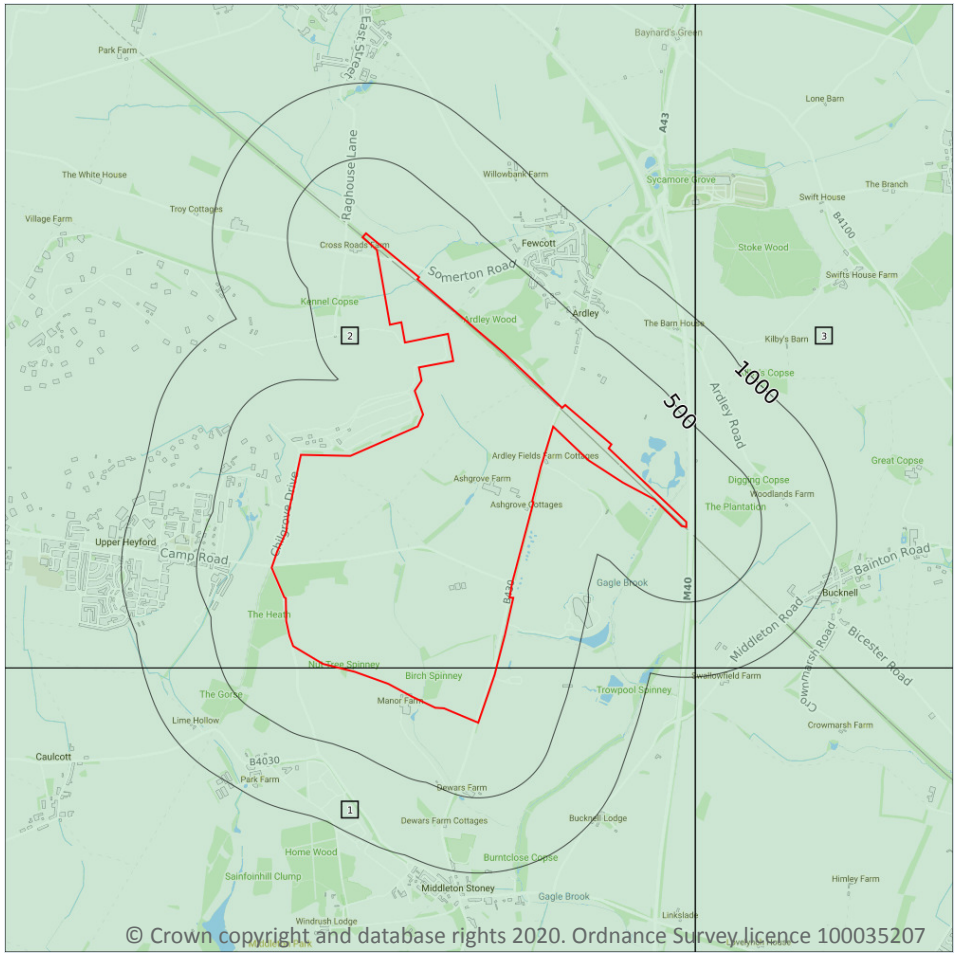
13.4 Limestone Pavement Orders

Records within 250m	0

Limestone pavements are outcrops of limestone where the surface has been worn away by natural means over millennia. These rocks have the appearance of paving blocks, hence their name. Not only do they have geological interest, they also provide valuable habitats for wildlife. These habitats are threatened due to their removal for use in gardens and water features. Many limestone pavements have been designated as SSSIs which affords them some protection. In addition, Section 34 of the Wildlife and Countryside Act 1981 gave them additional protection via the creation of Limestone Pavement Orders, which made it a criminal offence to remove any part of the outcrop. The associated Limestone Pavement Priority Habitat is part of the UK Biodiversity Action Plan priority habitat in England.

This data is sourced from Natural England.

14 Geology 1:10,000 scale - Availability



14.1 10k Availability

Records within 500m	3

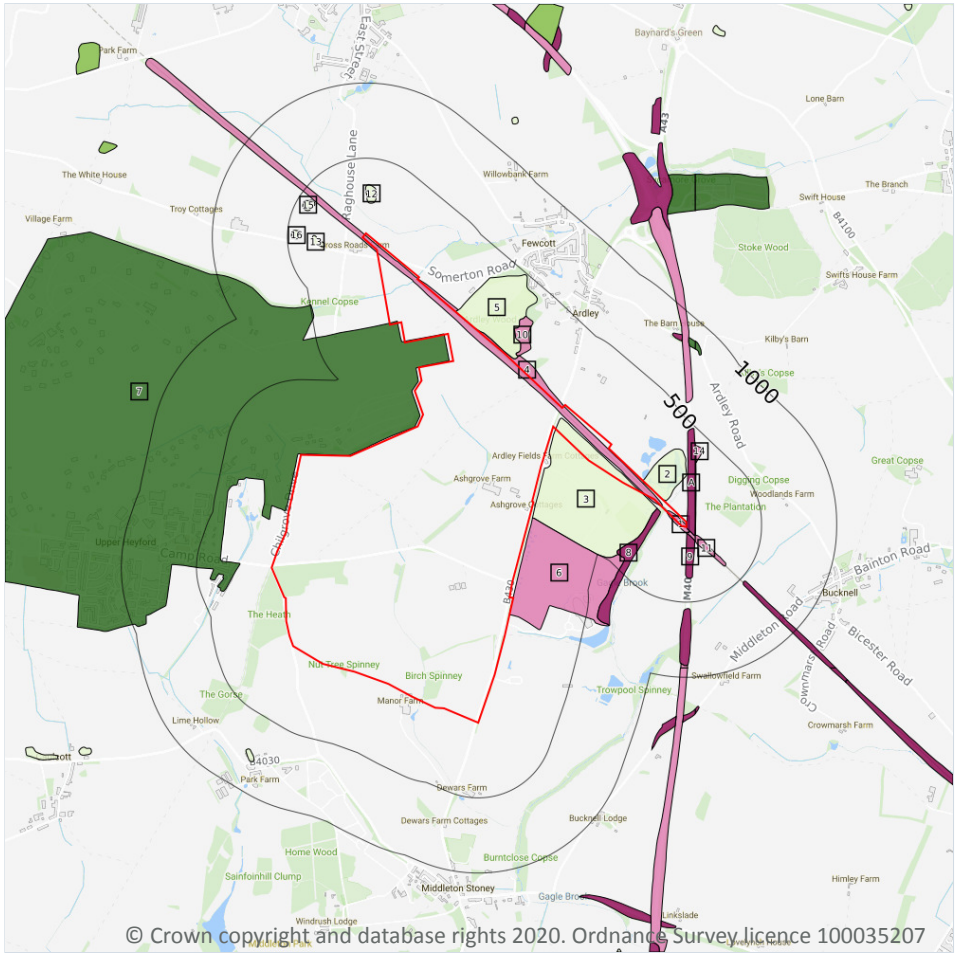
An indication on the coverage of 1:10,000 scale geology data for the site, the most detailed dataset provided by the British Geological Survey. Either 'Full', 'Partial' or 'No coverage' for each geological theme.

Features are displayed on the Geology 1:10,000 scale - Availability map on **page 121**

ID	Location	Artificial	Superficial	Bedrock	Mass movement	Sheet No.
1	**On site**	**Full**	**Full**	**Full**	**No coverage**	**SP52SW**
2	**On site**	**Full**	**Full**	**Full**	**No coverage**	**SP52NW**
3	60m E	Full	Full	Full	No coverage	SP52NE

This data is sourced from the British Geological Survey.

Geology 1:10,000 scale - Artificial and made ground



Site Outline

Search buffers in metres (m)

- Reclaimed ground
- Made ground
- Worked ground
- Infilled ground
- Disturbed ground
- Landscaped ground

14.2 Artificial and made ground (10k)

Records within 500m	18

Details of made, worked, infilled, disturbed and landscaped ground at 1:10,000 scale. Artificial ground can be associated with potentially contaminated material, unpredictable engineering conditions and instability.

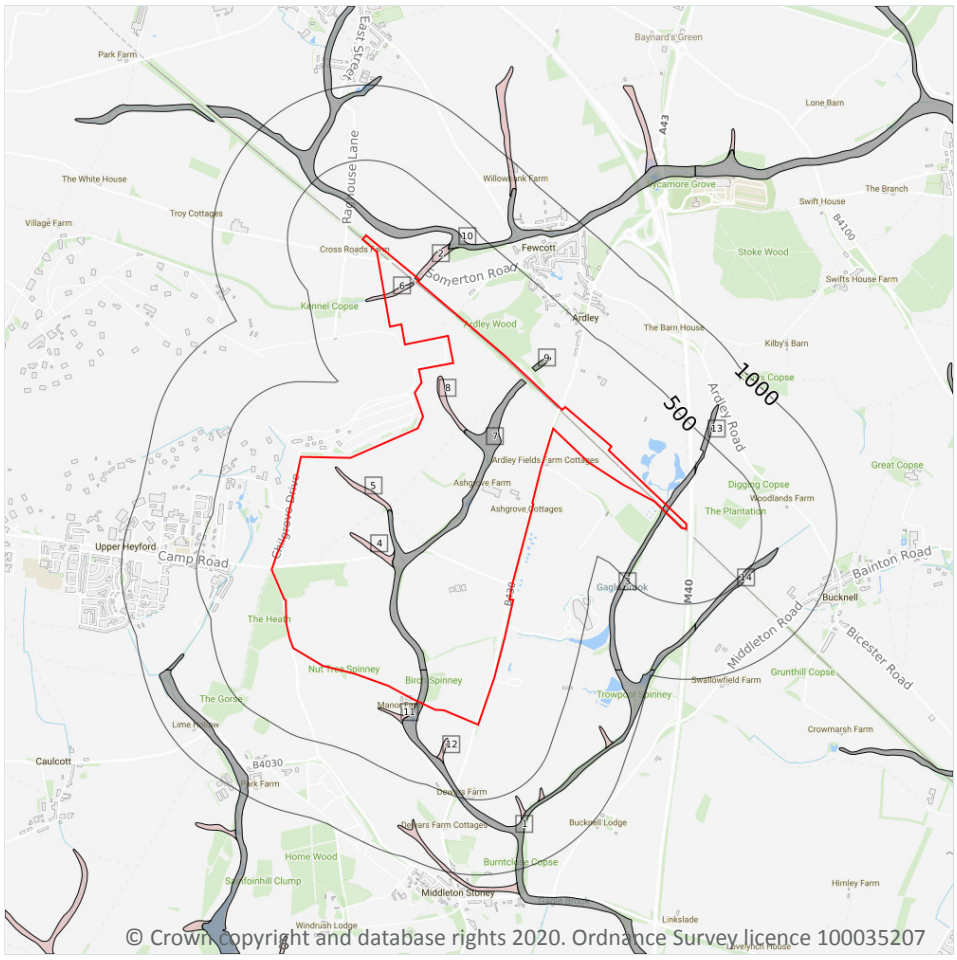
Features are displayed on the Geology 1:10,000 scale - Artificial and made ground map on **page 122**

ID	Location	LEX Code	Description	Rock description
1	On site	WGR-VOID	Worked Ground (Undivided)	Void
2	On site	WMGR-ARTDP	Infilled Ground	Artificial Deposit
3	On site	WMGR-ARTDP	Infilled Ground	Artificial Deposit
4	On site	WGR-VOID	Worked Ground (Undivided)	Void

ID	Location	LEX Code	Description	Rock description
5	**On site**	**WMGR-ARTDP**	**Infilled Ground**	**Artificial Deposit**
6	**On site**	**WGR-VOID**	**Worked Ground (Undivided)**	**Void**
7	**On site**	**LSGR-UKNOWN**	**Landscaped Ground (Undivided)**	**Unknown/unclassified Entry**
A	5m E	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
8	29m SW	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
9	42m S	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
10	48m NE	WGR-VOID	Worked Ground (Undivided)	Void
A	60m E	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
11	81m SE	WGR-VOID	Worked Ground (Undivided)	Void
12	203m N	WMGR-ARTDP	Infilled Ground	Artificial Deposit
13	259m W	WMGR-ARTDP	Infilled Ground	Artificial Deposit
14	330m NE	WGR-VOID	Worked Ground (Undivided)	Void
15	385m NW	WMGR-ARTDP	Infilled Ground	Artificial Deposit
16	406m W	WMGR-ARTDP	Infilled Ground	Artificial Deposit

This data is sourced from the British Geological Survey.

Geology 1:10,000 scale - Superficial



Site Outline

Search buffers in metres (m)

Landslip (10k)

Superficial geology (10k)
Please see table for more details.

14.3 Superficial geology (10k)

Records within 500m **14**

Superficial geological deposits at 1:10,000 scale. Also known as 'drift', these are the youngest geological deposits, formed during the Quaternary. They rest on older deposits or rocks referred to as bedrock.

Features are displayed on the Geology 1:10,000 scale - Superficial map on **page 124**

ID	Location	LEX Code	Description	Rock description
1	On site	ALV-CSV	Alluvium - Sandy Gravelly Clay	Clay, Sandy, Gravelly
2	On site	HEAD-XCZ	Head - Clay And Silt	Clay And Silt
3	On site	ALV-CSV	Alluvium - Sandy Gravelly Clay	Clay, Sandy, Gravelly
4	On site	HEAD-XCZ	Head - Clay And Silt	Clay And Silt

ID	Location	LEX Code	Description	Rock description
5	**On site**	**HEAD-XCZ**	**Head - Clay And Silt**	**Clay And Silt**
6	**On site**	**HEAD-XCZ**	**Head - Clay And Silt**	**Clay And Silt**
7	**On site**	**ALV-CSV**	**Alluvium - Sandy Gravelly Clay**	**Clay, Sandy, Gravelly**
8	**On site**	**HEAD-XCZ**	**Head - Clay And Silt**	**Clay And Silt**
9	65m NE	ALV-CSV	Alluvium - Sandy Gravelly Clay	Clay, Sandy, Gravelly
10	77m NE	ALV-CSV	Alluvium - Sandy Gravelly Clay	Clay, Sandy, Gravelly
11	111m SW	HEAD-XCZ	Head - Clay And Silt	Clay And Silt
12	164m SW	HEAD-XCZ	Head - Clay And Silt	Clay And Silt
13	289m NE	ALV-CSV	Alluvium - Sandy Gravelly Clay	Clay, Sandy, Gravelly
14	471m SE	ALV-CSV	Alluvium - Sandy Gravelly Clay	Clay, Sandy, Gravelly

This data is sourced from the British Geological Survey.

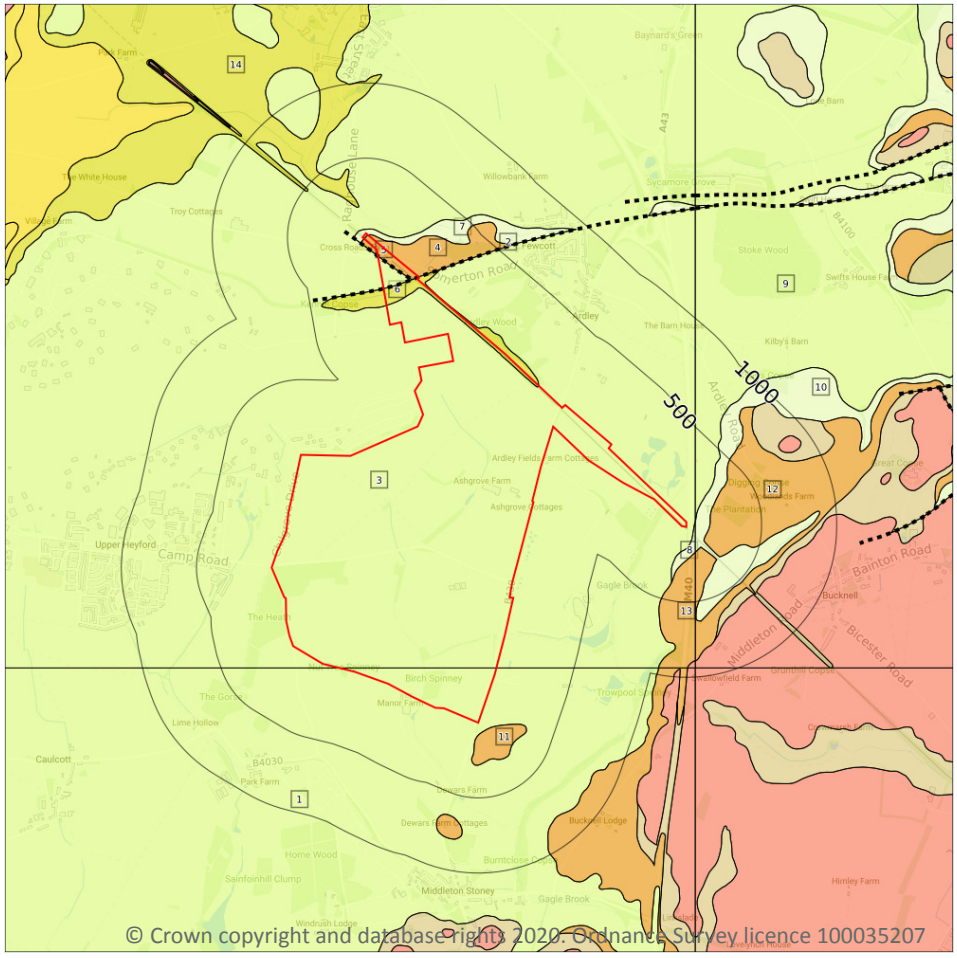
14.4 Landslip (10k)

Records within 500m	**0**

Mass movement deposits on BGS geological maps at 1:10,000 scale. Primarily superficial deposits that have moved down slope under gravity to form landslips. These affect bedrock, other superficial deposits and artificial ground.

This data is sourced from the British Geological Survey.

Geology 1:10,000 scale - Bedrock



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Site Outline

Search buffers in metres (m)

Bedrock faults and other linear features (10k)

Bedrock geology (10k)
Please see table for more details.

14.5 Bedrock geology (10k)

Records within 500m	12

Bedrock geology at 1:10,000 scale. The main mass of rocks forming the Earth and present everywhere, whether exposed at the surface in outcrops or concealed beneath superficial deposits or water.

Features are displayed on the Geology 1:10,000 scale - Bedrock map on **page 126**

ID	Location	LEX Code	Description	Rock age
1	On site	WHL-LMST	White Limestone Formation - Limestone	Bathonian Age
3	On site	WHL-LMST	White Limestone Formation - Limestone	Bathonian Age
4	On site	FMB-LMST	Forest Marble Formation - Limestone	Bathonian Age
6	On site	RLD-MDST	Rutland Formation - Mudstone	Bathonian Age - Bajocian Age

ID	Location	LEX Code	Description	Rock age
7	**On site**	**BLAD-MDLM**	**Bladon Member - Mudstone And Limestone, Interbedded**	**Bathonian Age**
8	51m E	BLAD-MDLM	Bladon Member - Mudstone And Limestone, Interbedded	Bathonian Age
9	60m E	WHL-LMST	White Limestone Formation - Limestone	Bathonian Age
10	60m E	BLAD-MDLM	Bladon Member - Mudstone And Limestone, Interbedded	Bathonian Age
11	67m SE	FMB-LMST	Forest Marble Formation - Limestone	Bathonian Age
12	141m SE	FMB-LMST	Forest Marble Formation - Limestone	Bathonian Age
13	178m S	FMB-LMST	Forest Marble Formation - Limestone	Bathonian Age
14	181m N	RLD-MDST	Rutland Formation - Mudstone	Bathonian Age - Bajocian Age

This data is sourced from the British Geological Survey.

14.6 Bedrock faults and other linear features (10k)

Records within 500m **2**

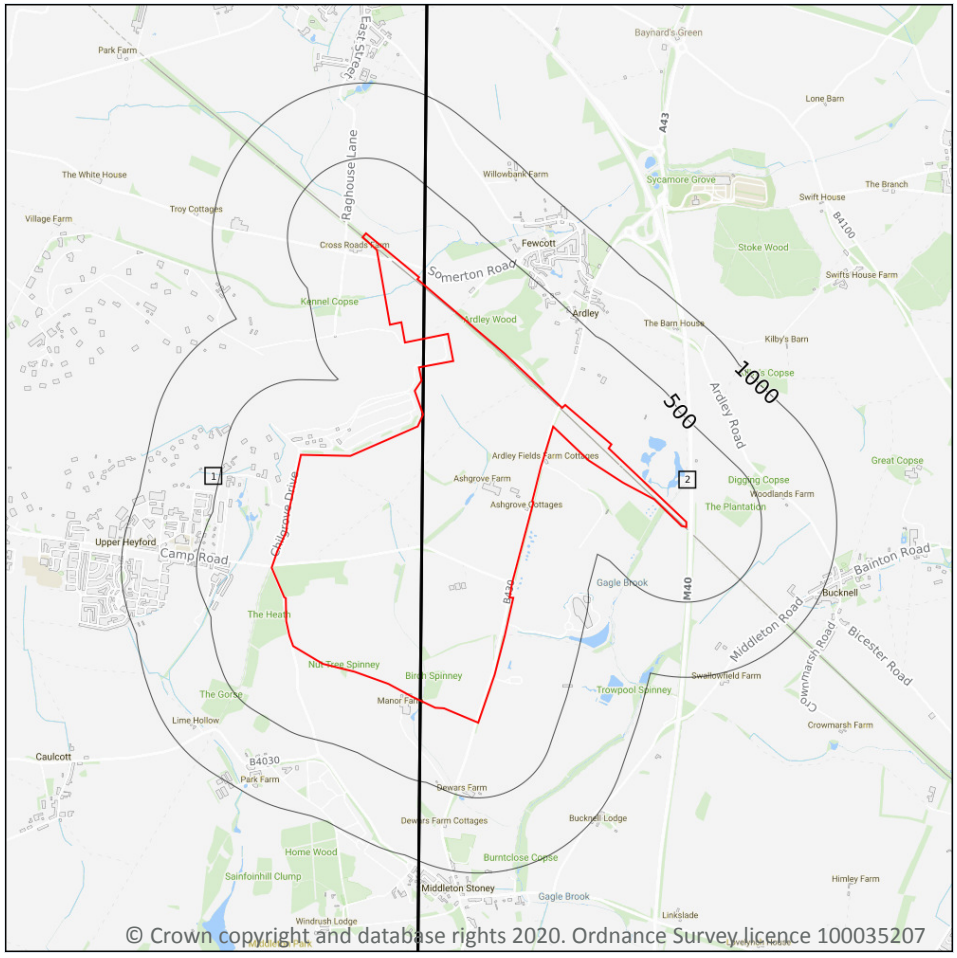
Linear features at the ground or bedrock surface at 1:10,000 scale of six main types; rock, fault, fold axis, mineral vein, alteration area or landform. Features are either observed or inferred, and relate primarily to bedrock.

Features are displayed on the Geology 1:10,000 scale - Bedrock map on **page 126**

ID	Location	Category	Description
2	**On site**	**FAULT**	**Normal fault, inferred; crossmarks on downthrow side**
5	**On site**	**FAULT**	**Normal fault, inferred; crossmarks on downthrow side**

This data is sourced from the British Geological Survey.

15 Geology 1:50,000 scale - Availability



15.1 50k Availability

Records within 500m	2

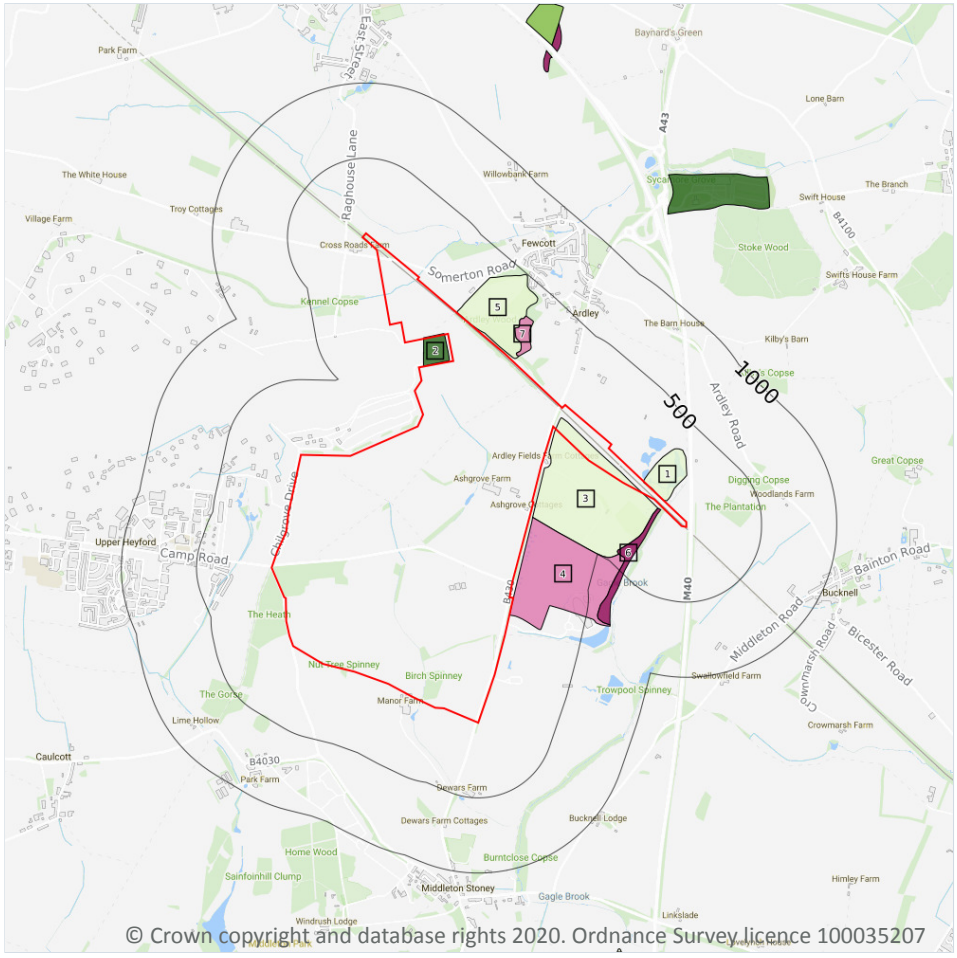
An indication on the coverage of 1:50,000 scale geology data for the site. Either 'Full' or 'No coverage' for each geological theme.

Features are displayed on the Geology 1:50,000 scale - Availability map on **page 128**

ID	Location	Artificial	Superficial	Bedrock	Mass movement	Sheet No.
1	On site	Full	Full	Full	Full	EW218_chipping_norton_v4
2	On site	Full	Full	Full	Full	EW219_buckingham_v4

This data is sourced from the British Geological Survey.

Geology 1:50,000 scale - Artificial and made ground



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15.2 Artificial and made ground (50k)

Records within 500m	7

Details of made, worked, infilled, disturbed and landscaped ground at 1:50,000 scale. Artificial ground can be associated with potentially contaminated material, unpredictable engineering conditions and instability.

Features are displayed on the Geology 1:50,000 scale - Artificial and made ground map on **page 129**

ID	Location	LEX Code	Description	Rock description
1	**On site**	**WMGR-ARTDP**	**INFILLED GROUND**	**ARTIFICIAL DEPOSIT**
2	**On site**	**LSGR-ARTGR**	**LANDSCAPED GROUND (UNDIVIDED)**	**ARTIFICIALLY MODIFIED GROUND**
3	**On site**	**WMGR-ARTDP**	**INFILLED GROUND**	**ARTIFICIAL DEPOSIT**
4	1m E	WGR-VOID	WORKED GROUND (UNDIVIDED)	VOID

ID	Location	LEX Code	Description	Rock description
5	3m NE	WMGR-ARTDP	INFILLED GROUND	ARTIFICIAL DEPOSIT
6	20m SW	MGR-ARTDP	MADE GROUND (UNDIVIDED)	ARTIFICIAL DEPOSIT
7	49m NE	WGR-VOID	WORKED GROUND (UNDIVIDED)	VOID

This data is sourced from the British Geological Survey.

15.3 Artificial ground permeability (50k)

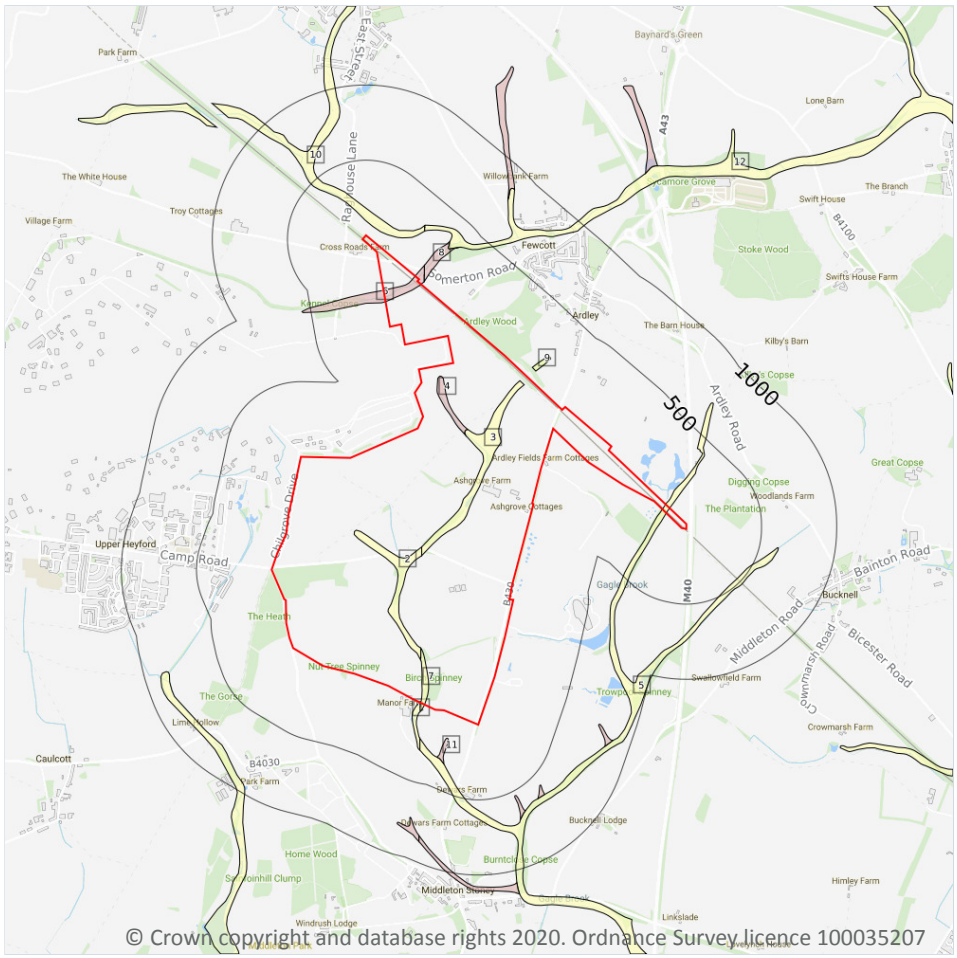
Records within 50m	**5**

A qualitative classification of estimated rates of vertical movement of water from the ground surface through the unsaturated zone of any artificial deposits (the zone between the land surface and the water table).

Location	Flow type	Maximum permeability	Minimum permeability
On site	**Mixed**	**Very High**	**Low**
On site	**Mixed**	**Very High**	**Low**
On site	**Mixed**	**Very High**	**Low**
3m N	Mixed	Very High	Low
20m E	Mixed	Very High	Low

This data is sourced from the British Geological Survey.

Geology 1:50,000 scale - Superficial



15.4 Superficial geology (50k)

Records within 500m	12

Superficial geological deposits at 1:50,000 scale. Also known as 'drift', these are the youngest geological deposits, formed during the Quaternary. They rest on older deposits or rocks referred to as bedrock.

Features are displayed on the Geology 1:50,000 scale - Superficial map on **page 131**

ID	Location	LEX Code	Description	Rock description
1	On site	ALV-XCZSV	ALLUVIUM	CLAY, SILT, SAND AND GRAVEL
2	On site	ALV-XCZSV	ALLUVIUM	CLAY, SILT, SAND AND GRAVEL
3	On site	ALV-XCZSV	ALLUVIUM	CLAY, SILT, SAND AND GRAVEL

ID	Location	LEX Code	Description	Rock description
4	**On site**	**HEAD-XCZSV**	**HEAD**	**CLAY, SILT, SAND AND GRAVEL**
5	**On site**	**ALV-XCZSV**	**ALLUVIUM**	**CLAY, SILT, SAND AND GRAVEL**
6	**On site**	**HEAD-XCZSV**	**HEAD**	**CLAY, SILT, SAND AND GRAVEL**
7	**On site**	**ALV-XCZSV**	**ALLUVIUM**	**CLAY, SILT, SAND AND GRAVEL**
8	28m NE	HEAD-XCZSV	HEAD	CLAY, SILT, SAND AND GRAVEL
9	67m NE	ALV-XCZSV	ALLUVIUM	CLAY, SILT, SAND AND GRAVEL
10	75m NE	ALV-XCZSV	ALLUVIUM	CLAY, SILT, SAND AND GRAVEL
11	163m SW	HEAD-XCZSV	HEAD	CLAY, SILT, SAND AND GRAVEL
12	271m NE	ALV-XCZSV	ALLUVIUM	CLAY, SILT, SAND AND GRAVEL

This data is sourced from the British Geological Survey.

15.5 Superficial permeability (50k)

Records within 50m **5**

A qualitative classification of estimated rates of vertical movement of water from the ground surface through the unsaturated zone of any superficial deposits (the zone between the land surface and the water table).

Location	Flow type	Maximum permeability	Minimum permeability
On site	**Intergranular**	**High**	**Very Low**
On site	**Mixed**	**High**	**Very Low**
On site	**Mixed**	**High**	**Very Low**
On site	**Intergranular**	**High**	**Very Low**
On site	**Intergranular**	**High**	**Very Low**

This data is sourced from the British Geological Survey.

15.6 Landslip (50k)

Records within 500m	0

Mass movement deposits on BGS geological maps at 1:50,000 scale. Primarily superficial deposits that have moved down slope under gravity to form landslips. These affect bedrock, other superficial deposits and artificial ground.

This data is sourced from the British Geological Survey.

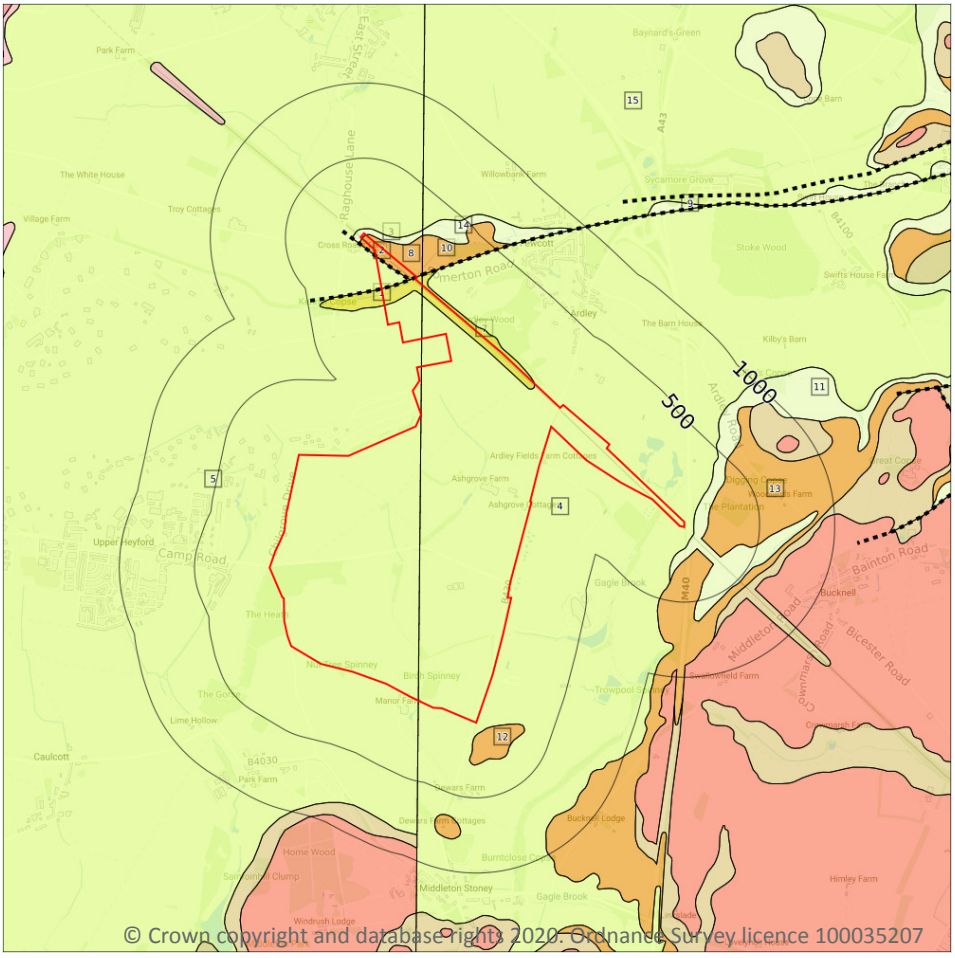
15.7 Landslip permeability (50k)

Records within 50m	0

A qualitative classification of estimated rates of vertical movement of water from the ground surface through the unsaturated zone of any landslip deposits (the zone between the land surface and the water table).

This data is sourced from the British Geological Survey.

Geology 1:50,000 scale - Bedrock



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Site Outline

Search buffers in metres (m)

Bedrock faults and other linear features (50k)

Bedrock geology (50k)
Please see table for more details.

15.8 Bedrock geology (50k)

Records within 500m	12

Bedrock geology at 1:50,000 scale. The main mass of rocks forming the Earth and present everywhere, whether exposed at the surface in outcrops or concealed beneath superficial deposits or water.

Features are displayed on the Geology 1:50,000 scale - Bedrock map on **page 134**

ID	Location	LEX Code	Description	Rock age
1	On site	RLD-MDST	RUTLAND FORMATION - MUDSTONE	BAJOCIAN
3	On site	BLAD-MDLM	BLADON MEMBER - MUDSTONE AND LIMESTONE, INTERBEDDED	BATHONIAN
4	On site	WHL-LMST	WHITE LIMESTONE FORMATION - LIMESTONE	BATHONIAN

ID	Location	LEX Code	Description	Rock age
5	**On site**	**WHL-LMST**	**WHITE LIMESTONE FORMATION - LIMESTONE**	**BATHONIAN**
7	**On site**	**RLD-MDST**	**RUTLAND FORMATION - MUDSTONE**	**BAJOCIAN**
8	**On site**	**FMB-LMST**	**FOREST MARBLE FORMATION - LIMESTONE**	**BATHONIAN**
10	39m NE	FMB-LMST	FOREST MARBLE FORMATION - LIMESTONE	BATHONIAN
11	63m E	BLAD-MDLM	BLADON MEMBER - MUDSTONE AND LIMESTONE, INTERBEDDED	BATHONIAN
12	69m SE	FMB-LMST	FOREST MARBLE FORMATION - LIMESTONE	BATHONIAN
13	137m SE	FMB-LMST	FOREST MARBLE FORMATION - LIMESTONE	BATHONIAN
14	238m NE	BLAD-MDLM	BLADON MEMBER - MUDSTONE AND LIMESTONE, INTERBEDDED	BATHONIAN
15	266m NE	WHL-LMST	WHITE LIMESTONE FORMATION - LIMESTONE	BATHONIAN

This data is sourced from the British Geological Survey.

15.9 Bedrock permeability (50k)

Records within 50m **7**

A qualitative classification of estimated rates of vertical movement of water from the ground surface through the unsaturated zone of bedrock (the zone between the land surface and the water table).

Location	Flow type	Maximum permeability	Minimum permeability
On site	**Fracture**	**Low**	**Very Low**
On site	**Fracture**	**High**	**High**
On site	**Fracture**	**High**	**Very Low**
On site	**Fracture**	**Very High**	**Very High**
On site	**Fracture**	**Very High**	**Very High**
On site	**Fracture**	**Very High**	**Low**
On site	**Fracture**	**Very High**	**Low**

This data is sourced from the British Geological Survey.

15.10 Bedrock faults and other linear features (50k)

Records within 500m	**3**

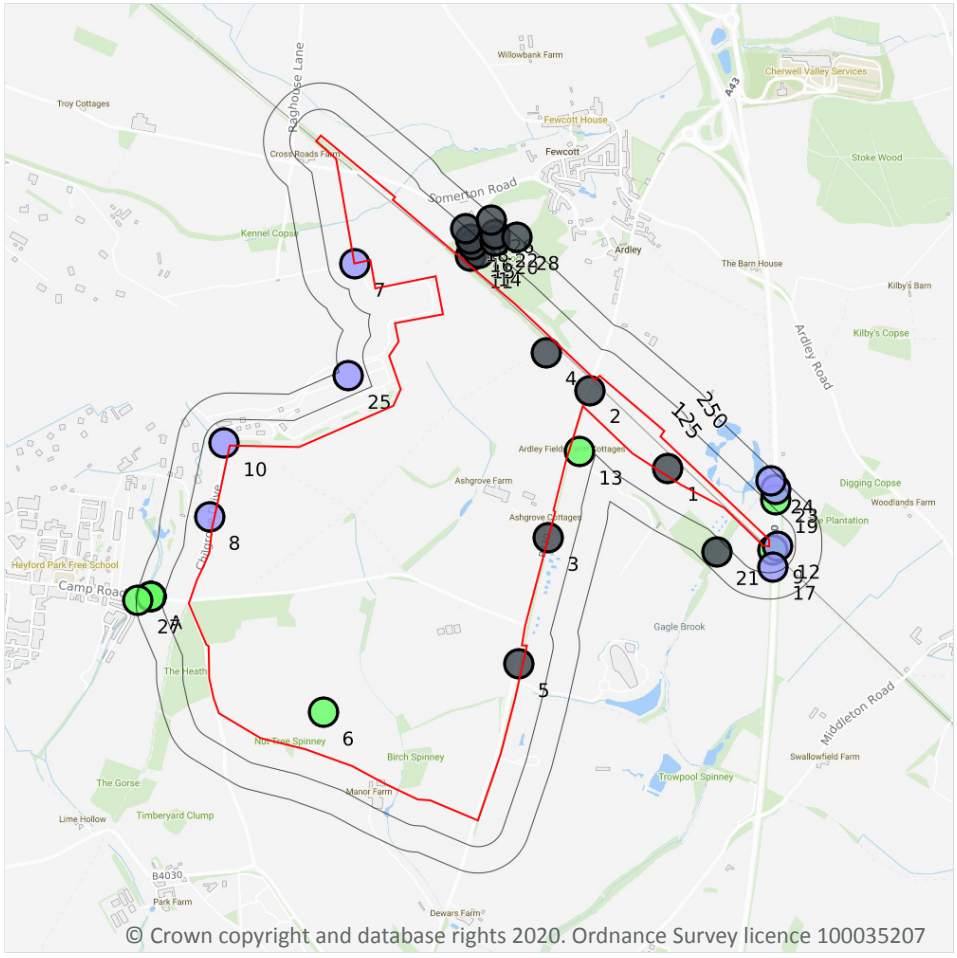
Linear features at the ground or bedrock surface at 1:50,000 scale of six main types; rock, fault, fold axis, mineral vein, alteration area or landform. Features are either observed or inferred, and relate primarily to bedrock.

Features are displayed on the Geology 1:50,000 scale - Bedrock map on **page 134**

ID	Location	Category	Description
2	**On site**	**FAULT**	**Fault, inferred**
6	**On site**	**FAULT**	**Fault, inferred**
9	39m NE	FAULT	Fault, inferred

This data is sourced from the British Geological Survey.

16 Boreholes



Site Outline

Search buffers in metres (m)

- Confidential
- 0 - 10m
- 10 - 30m
- 30m+
- Unknown

16.1 BGS Boreholes

Records within 250m	32

The Single Onshore Boreholes Index (SOBI); an index of over one million records of boreholes, shafts and wells from all forms of drilling and site investigation work held by the British Geological Survey. Covering onshore and nearshore boreholes dating back to at least 1790 and ranging from one to several thousand metres deep.

Features are displayed on the Boreholes map on **page 137**

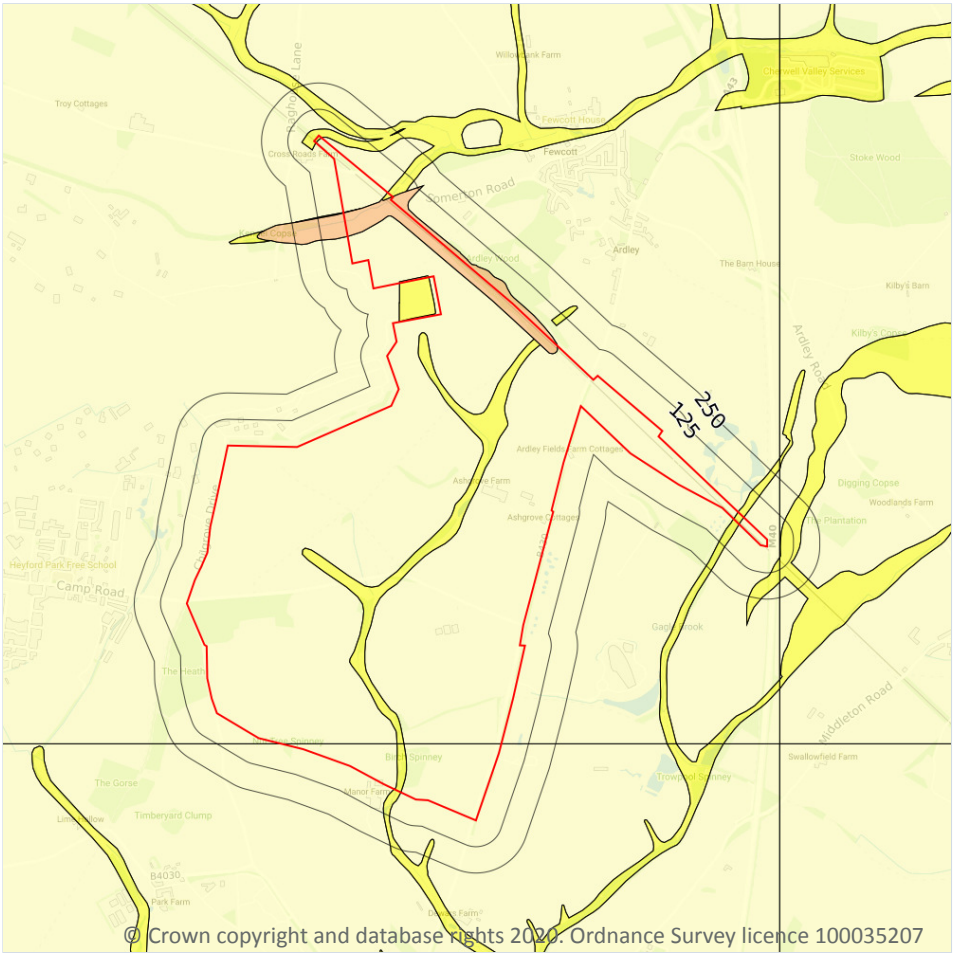
ID	Location	Grid reference	Name	Length	Confidential	Web link
1	On site	454460 226310	ARDLEY FIELDS NO.1	-	Y	N/A
2	On site	454090 226680	ARDLEY FIELDS NO.2	-	Y	N/A
3	On site	453890 225980	ARDLEY FIELDS NO.4	-	Y	N/A

ID	Location	Grid reference	Name	Length	Confidential	Web link
4	**On site**	**453880 226860**	**ARDLEY FIELDS NO.9**	**-**	**Y**	**N/A**
5	**On site**	**453750 225380**	**ARDLEY FIELDS NO.7**	**-**	**Y**	**N/A**
6	**On site**	**452820 225150**	**MANOR FARM MIDDLETON STONEY**	**18.28**	**N**	**336693**
7	3m S	452970 227280	RAF UPPER HEYFORD OXFORDSHIRE 24	1.5	N	15951659
8	24m W	452280 226080	RAF UPPER HEYFORD OXFORDSHIRE 37	1.51	N	15951662
9	27m SE	454960 225920	BUCKNELL EMBKMENT E11 24000-24570 BHY3	19.0	N	336467
10	29m NW	452350 226430	RAF UPPER HEYFORD OXFORDSHIRE 32	0.9	N	15951661
11	37m NE	453520 227320	CLOSED LANDFILL SITES OXFORDSHIRE ARDLEY RNG29	-	Y	N/A
12	40m E	454980 225940	BUCKNELL EMBKMENT E11 24000-24570 TP534	1.0	N	336468
13	49m E	454040 226390	ARDLEY FIELDS	10.2	N	336639
14	71m NE	453560 227330	CLOSED LANDFILL SITES OXFORDSHIRE ARDLEY RNG28	-	Y	N/A
15	82m NE	453530 227370	CLOSED LANDFILL SITES OXFORDSHIRE ARDLEY NG35	-	Y	N/A
16	98m NE	453520 227400	CLOSED LANDFILL SITES OXFORDSHIRE ARDLEY NG36	-	Y	N/A
17	100m S	454960 225840	BUCKNELL EMBKMENT E11 24000-24570 TP531	4.0	N	336466
18	123m NE	453500 227450	CLOSED LANDFILL SITES OXFORDSHIRE ARDLEY NG37/RNG37	-	Y	N/A
19	158m NE	454970 226160	BUCKNELL EMBKMENT E11 24000-24570 BH069	20.0	N	336469
20	168m NE	453640 227390	CLOSED LANDFILL SITES OXFORDSHIRE ARDLEY NG27/RNG27	-	Y	N/A
21	177m SW	454690 225910	ARDLEY FIELDS NO.3	-	Y	N/A
A	185m W	452000 225700	UPPER HEYFORD AERODROME	19.81	N	336692
A	185m W	452000 225700	RAF UPPER HEYFORD OXON 218/33C	18.29	N	336641
A	185m W	452000 225700	RAF UPPER HEYFORD OXON 218/33D	19.81	N	336642
A	185m W	452000 225700	UPPER HEYFORD AERODROME	18.29	N	336691
22	191m NE	453640 227420	CLOSED LANDFILL SITES OXFORDSHIRE ARDLEY NG33	-	Y	N/A
23	194m NE	454970 226210	BUCKNELL EMBKMENT E11 24000-24570 TP537	1.0	N	336470
24	209m NE	454950 226250	BUCKNELL EMBKMENT E11 24000-24570 TP536	1.0	N	336471

ID	Location	Grid reference	Name	Length	Confidential	Web link
25	214m W	452940 226750	RAF UPPER HEYFORD OXFORDSHIRE 28	1.11	N	15951660
26	231m NE	453620 227490	CLOSED LANDFILL SITES OXFORDSHIRE ARDLEY NG34	-	Y	N/A
27	242m W	451940 225680	UPPER HEYFORD AERODROME	26.82	N	336450
28	248m NE	453740 227410	CLOSED LANDFILL SITES OXFORDSHIRE ARDLEY NG26/RNG26	-	Y	N/A

This data is sourced from the British Geological Survey.

17 Natural ground subsidence - Shrink swell clays



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Site Outline

Search buffers in metres (m)

- No data
- Negligible
- Very low
- Low
- Moderate
- High

17.1 Shrink swell clays

Records within 50m	3

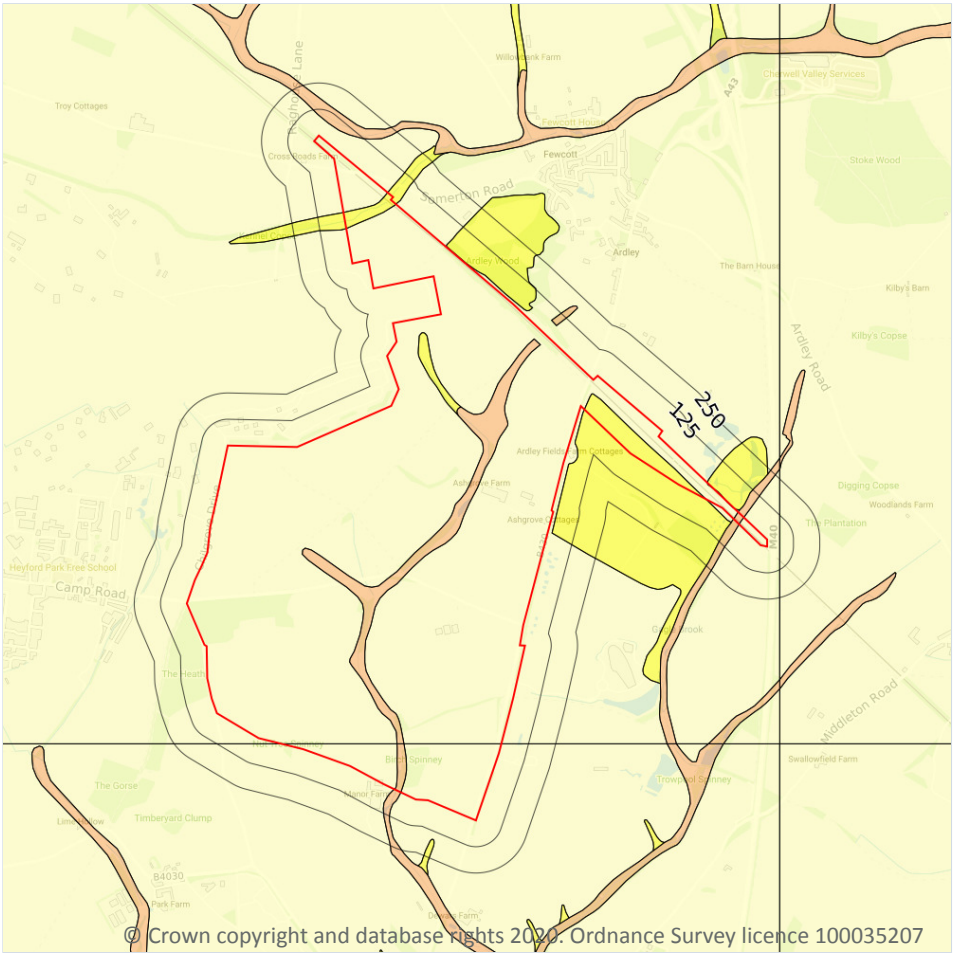
The potential hazard presented by soils that absorb water when wet (making them swell), and lose water as they dry (making them shrink). This shrink-swell behaviour is controlled by the type and amount of clay in the soil, and by seasonal changes in the soil moisture content (related to rainfall and local drainage).

Features are displayed on the Natural ground subsidence - Shrink swell clays map on **page 140**

Location	Hazard rating	Details
On site	**Negligible**	**Ground conditions predominantly non-plastic.**
On site	**Very low**	**Ground conditions predominantly low plasticity.**
On site	**Low**	**Ground conditions predominantly medium plasticity.**

This data is sourced from the British Geological Survey.

Natural ground subsidence - Running sands



Site Outline

Search buffers in metres (m)

- No data
- Negligible
- Very low
- Low
- Moderate
- High

17.2 Running sands

Records within 50m	4

The potential hazard presented by rocks that can contain loosely-packed sandy layers that can become fluidised by water flowing through them. Such sands can 'run', removing support from overlying buildings and causing potential damage.

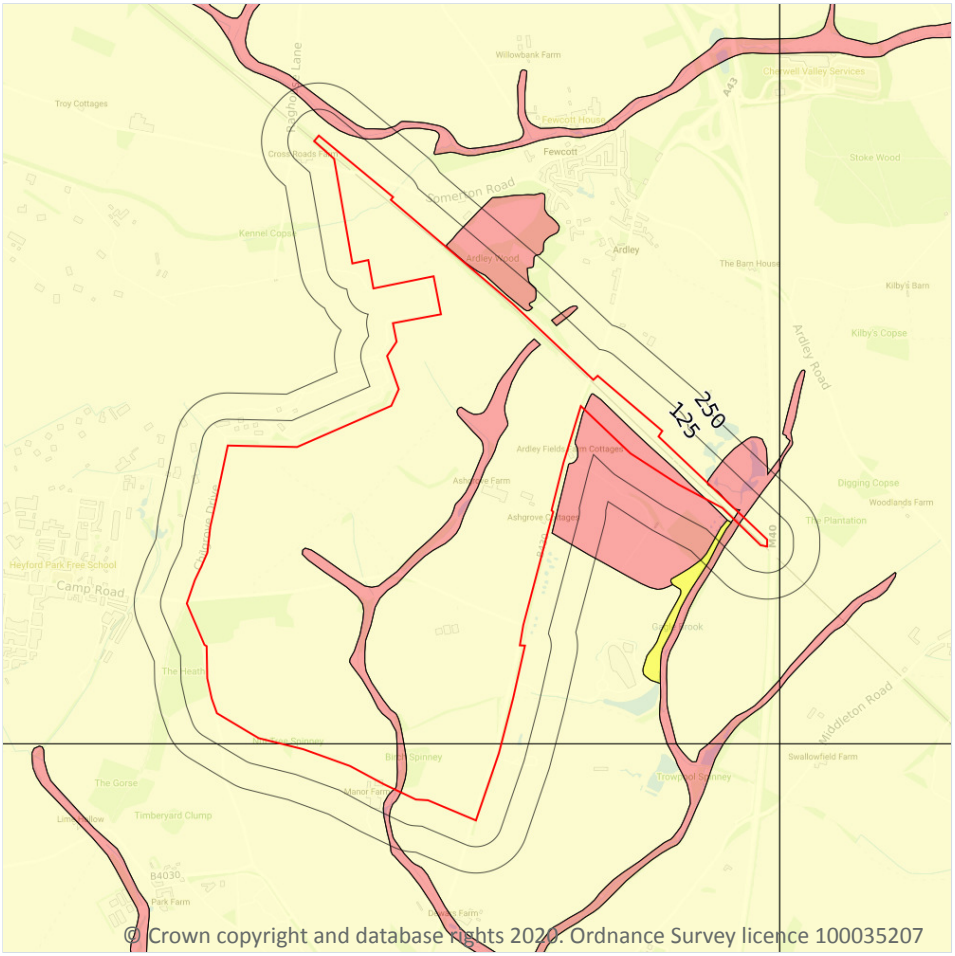
Features are displayed on the Natural ground subsidence - Running sands map on **page 142**

Location	Hazard rating	Details
On site	**Negligible**	**Running sand conditions are not thought to occur whatever the position of the water table. No identified constraints on lands use due to running conditions.**

Location	Hazard rating	Details
On site	**Very low**	**Running sand conditions are unlikely. No identified constraints on land use due to running conditions unless water table rises rapidly.**
On site	**Low**	**Running sand conditions may be present. Constraints may apply to land uses involving excavation or the addition or removal of water.**
3m NE	Very low	Running sand conditions are unlikely. No identified constraints on land use due to running conditions unless water table rises rapidly.

This data is sourced from the British Geological Survey.

Natural ground subsidence - Compressible deposits



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Site Outline

Search buffers in metres (m)

- No data
- Negligible
- Very low
- Low
- Moderate
- High

17.3 Compressible deposits

Records within 50m	4

The potential hazard presented by types of ground that may contain layers of very soft materials like clay or peat and may compress if loaded by overlying structures, or if the groundwater level changes, potentially resulting in depression of the ground and disturbance of foundations.

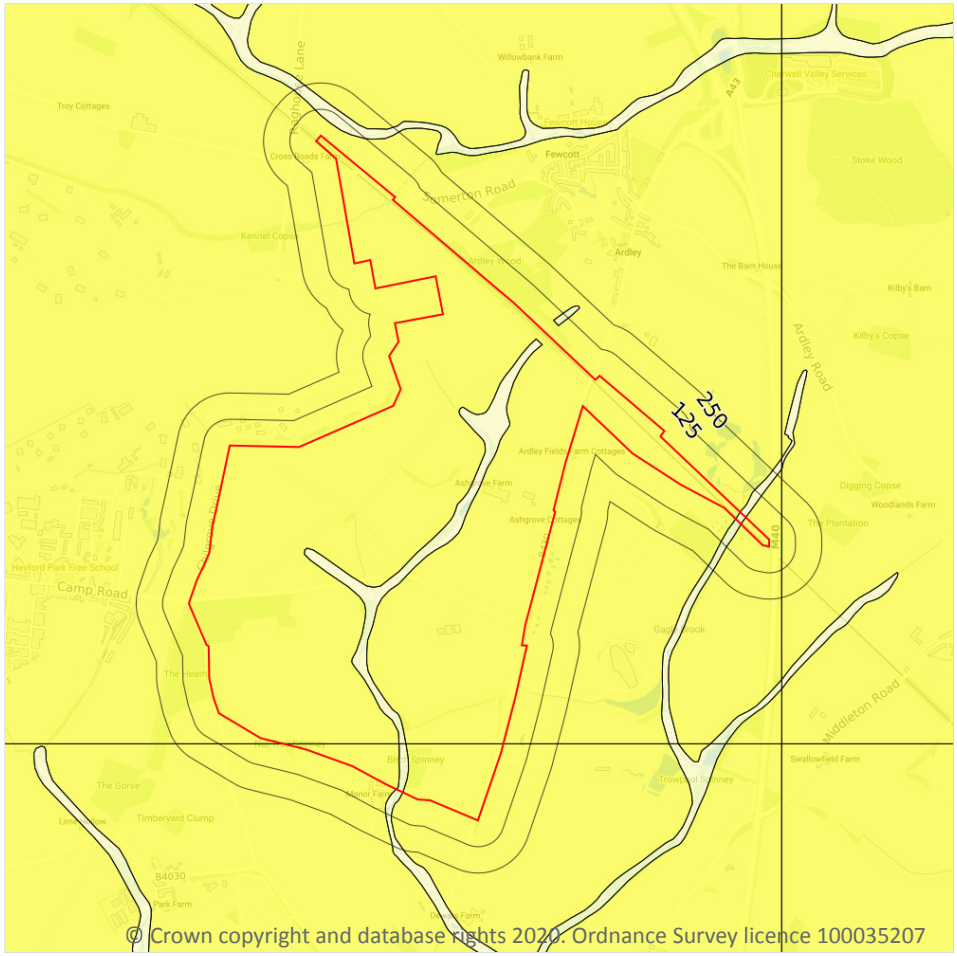
Features are displayed on the Natural ground subsidence - Compressible deposits map on **page 144**

Location	Hazard rating	Details
On site	**Negligible**	**Compressible strata are not thought to occur.**
On site	**Moderate**	**Compressibility and uneven settlement hazards are probably present. Land use should consider specifically the compressibility and variability of the site.**

Location	Hazard rating	Details
3m NE	Moderate	Compressibility and uneven settlement hazards are probably present. Land use should consider specifically the compressibility and variability of the site.
20m SW	Very low	Compressibility and uneven settlement problems are not likely to be significant on the site for most land uses.

This data is sourced from the British Geological Survey.

Natural ground subsidence - Collapsible deposits



Site Outline

Search buffers in metres (m)

- No data
- Negligible
- Very low
- Low
- Moderate
- High

17.4 Collapsible deposits

Records within 50m	2

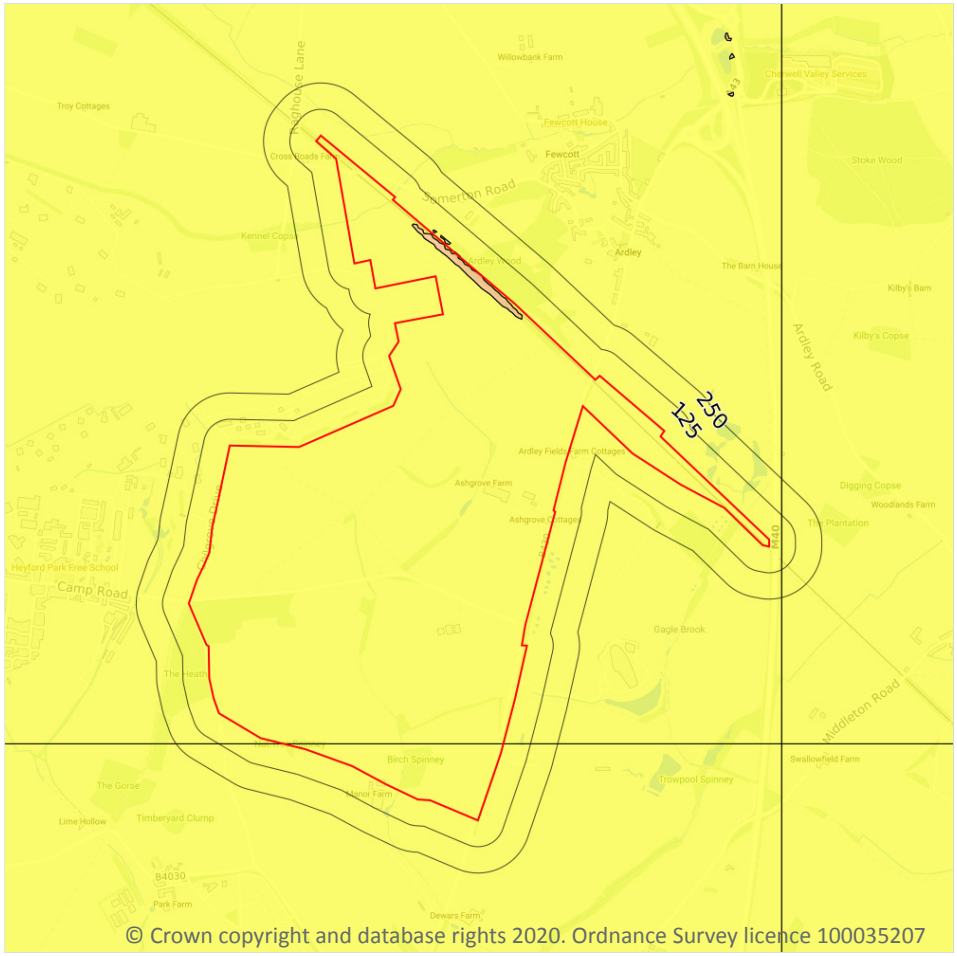
The potential hazard presented by natural deposits that could collapse when a load (such as a building) is placed on them or they become saturated with water.

Features are displayed on the Natural ground subsidence - Collapsible deposits map on **page 146**

Location	Hazard rating	Details
On site	**Negligible**	**Deposits with potential to collapse when loaded and saturated are believed not to be present.**
On site	**Very low**	**Deposits with potential to collapse when loaded and saturated are unlikely to be present.**

This data is sourced from the British Geological Survey.

Natural ground subsidence - Landslides



Site Outline

Search buffers in metres (m)

- No data
- Negligible
- Very low
- Low
- Moderate
- High

17.5 Landslides

Records within 50m	4

The potential for landsliding (slope instability) to be a hazard assessed using 1:50,000 scale digital maps of superficial and bedrock deposits, combined with information from the BGS National Landslide Database and scientific and engineering reports.

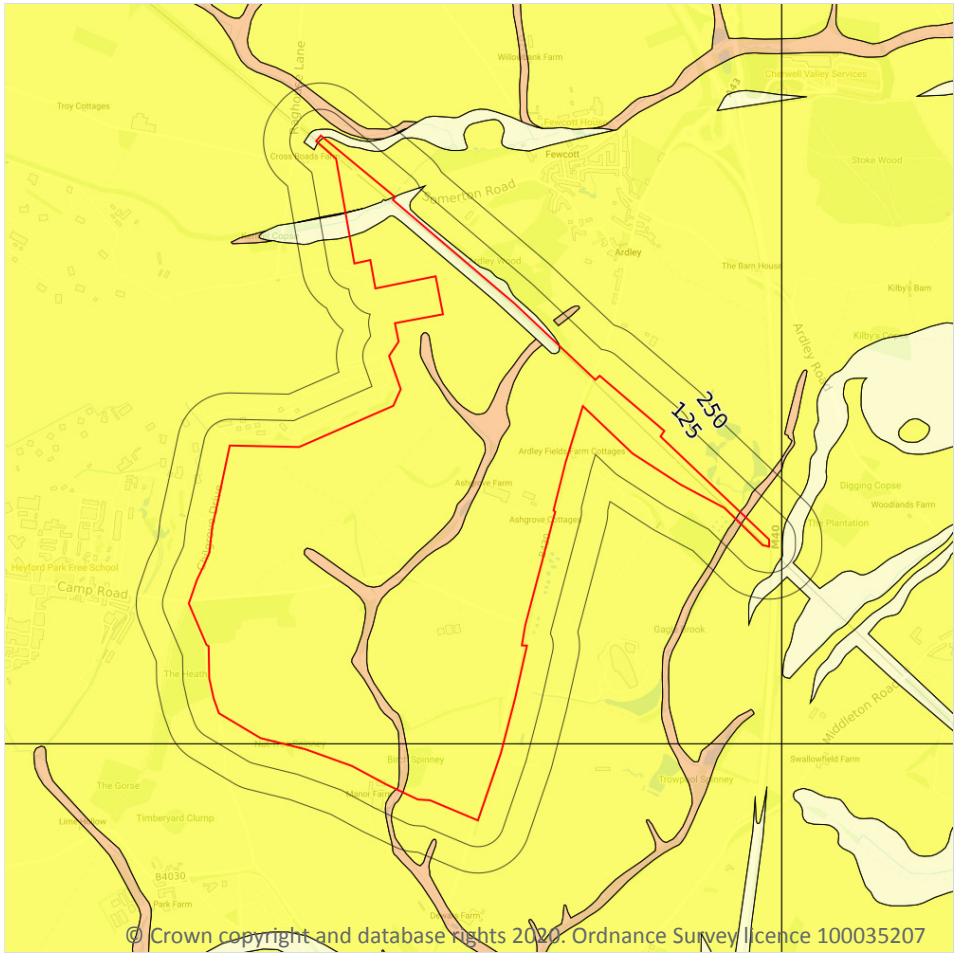
Features are displayed on the Natural ground subsidence - Landslides map on **page 147**

Location	Hazard rating	Details
On site	**Very low**	**Slope instability problems are not likely to occur but consideration to potential problems of adjacent areas impacting on the site should always be considered.**

Location	Hazard rating	Details
On site	**Low**	**Slope instability problems may be present or anticipated. Site investigation should consider specifically the slope stability of the site.**
6m NE	Low	Slope instability problems may be present or anticipated. Site investigation should consider specifically the slope stability of the site.
9m NE	Low	Slope instability problems may be present or anticipated. Site investigation should consider specifically the slope stability of the site.

This data is sourced from the British Geological Survey.

Natural ground subsidence - Ground dissolution of soluble rocks



Site Outline

Search buffers in metres (m)

- No data
- Negligible
- Very low
- Low
- Moderate
- High

17.6 Ground dissolution of soluble rocks

Records within 50m	3

The potential hazard presented by ground dissolution, which occurs when water passing through soluble rocks produces underground cavities and cave systems. These cavities reduce support to the ground above and can cause localised collapse of the overlying rocks and deposits.

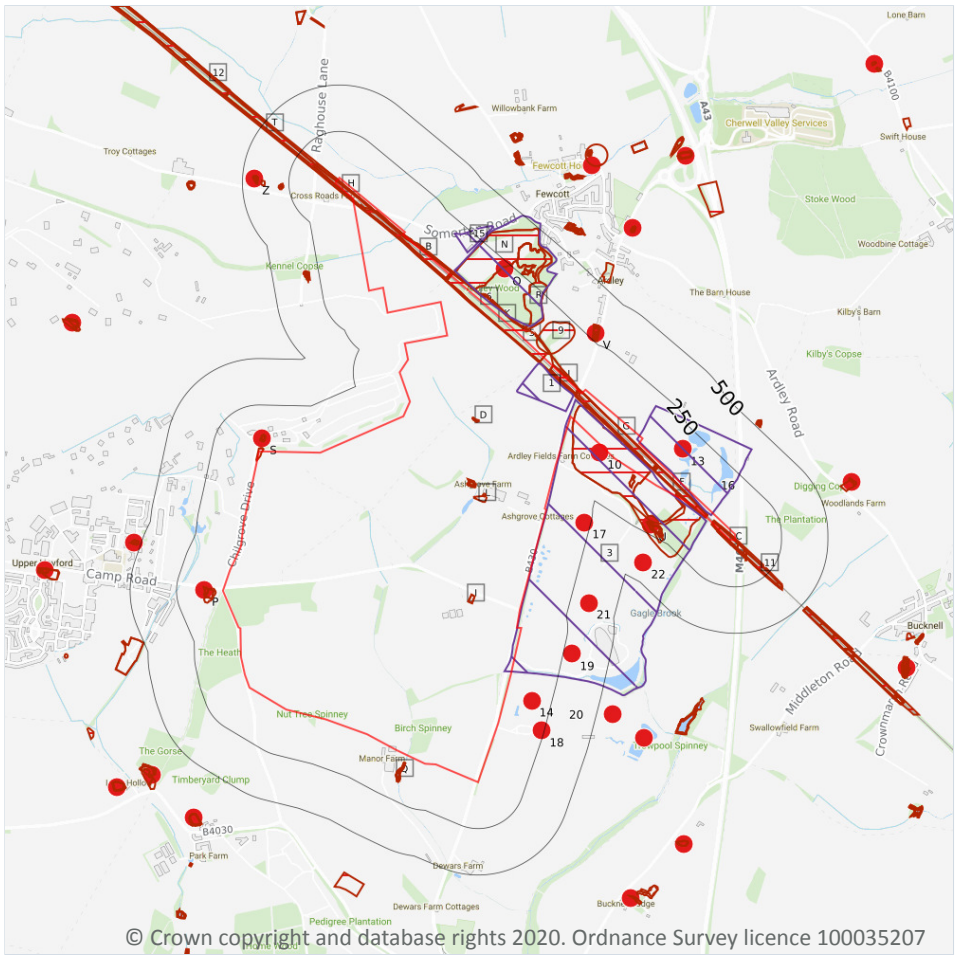
Features are displayed on the Natural ground subsidence - Ground dissolution of soluble rocks map on **page 149**

Location	Hazard rating	Details
On site	**Negligible**	**Soluble rocks are either not thought to be present within the ground, or not prone to dissolution. Dissolution features are unlikely to be present.**

Location	Hazard rating	Details
On site	**Very low**	**Soluble rocks are present within the ground. Few dissolution features are likely to be present. Potential for difficult ground conditions or localised subsidence are at a level where they need not be considered.**
On site	**Low**	**Soluble rocks are present within the ground. Some dissolution features may be present. Potential for difficult ground conditions are at a level where they may be considered, localised subsidence need not be considered except in exceptional circumstances.**

This data is sourced from the British Geological Survey.

18 Mining, ground workings and natural cavities



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18.1 Natural cavities

Records within 500m	0

Industry recognised national database of natural cavities. Sinkholes and caves are formed by the dissolution of soluble rock, such as chalk and limestone, gulls and fissures by cambering. Ground instability can result from movement of loose material contained within these cavities, often triggered by water.

This data is sourced from Peter Brett Associates (PBA).

18.2 BritPits

Records within 500m	17

BritPits (an abbreviation of British Pits) is a database maintained by the British Geological Survey of currently active and closed surface and underground mineral workings. Details of major mineral handling sites, such as wharfs and rail depots are also held in the database.

Features are displayed on the Mining, ground workings and natural cavities map on **page 151**

ID	Location	Details	Description
10	31m SW	Name: Ardley Quarry Address: Ardley, BICESTER, Oxfordshire Commodity: Limestone Status: Ceased	Type: A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site Status description: Site which, at date of entry, has ceased to extract minerals. May be considered as Closed by operator. May be considered to have Active, Dormant or Expired planning permissions by Mineral Planning Authority
S	72m N	Name: North Leys Farm Address: Upper Heyford, OXFORD, Oxfordshire Commodity: Limestone Status: Ceased	Type: A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site Status description: Site which, at date of entry, has ceased to extract minerals. May be considered as Closed by operator. May be considered to have Active, Dormant or Expired planning permissions by Mineral Planning Authority
P	101m W	Name: Leys Farm Address: Upper Heyford, OXFORD, Oxfordshire Commodity: Limestone Status: Ceased	Type: A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site Status description: Site which, at date of entry, has ceased to extract minerals. May be considered as Closed by operator. May be considered to have Active, Dormant or Expired planning permissions by Mineral Planning Authority
13	139m NE	Name: Ardley Quarry Extension Address: Ardley, BICESTER, Oxfordshire Commodity: Limestone Status: Ceased	Type: A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site Status description: Site which, at date of entry, has ceased to extract minerals. May be considered as Closed by operator. May be considered to have Active, Dormant or Expired planning permissions by Mineral Planning Authority
14	144m E	Name: Dewar's Farm Quarry Address: Middleton Stoney, BICESTER, Oxfordshire Commodity: Limestone Status: Active	Type: A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site Status description: Site which is actively extracting mineral products, or in the case of wharfs and rail depots, is actively handing minerals

ID	Location	Details	Description
16	157m NE	Name: Ardley Quarry Extension Address: Ardley, BICESTER, Oxfordshire Commodity: Limestone Status: Ceased	Type: A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site Status description: Site which, at date of entry, has ceased to extract minerals. May be considered as Closed by operator. May be considered to have Active, Dormant or Expired planning permissions by Mineral Planning Authority
U	200m SW	Name: Ardley Fields Farm Address: Bucknell, OXFORD, Oxfordshire Commodity: Limestone Status: Ceased	Type: A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site Status description: Site which, at date of entry, has ceased to extract minerals. May be considered as Closed by operator. May be considered to have Active, Dormant or Expired planning permissions by Mineral Planning Authority
U	209m SW	Name: Ardley Fields Farm Address: Bucknell, OXFORD, Oxfordshire Commodity: Limestone Status: Ceased	Type: A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site Status description: Site which, at date of entry, has ceased to extract minerals. May be considered as Closed by operator. May be considered to have Active, Dormant or Expired planning permissions by Mineral Planning Authority
O	214m NE	Name: Ardley Woods Address: Ardley, BICESTER, Oxfordshire Commodity: Limestone Status: Ceased	Type: A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site Status description: Site which, at date of entry, has ceased to extract minerals. May be considered as Closed by operator. May be considered to have Active, Dormant or Expired planning permissions by Mineral Planning Authority
17	217m E	Name: Ardley Quarry Address: Ardley, BICESTER, Oxfordshire Commodity: Limestone Status: Ceased	Type: A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site Status description: Site which, at date of entry, has ceased to extract minerals. May be considered as Closed by operator. May be considered to have Active, Dormant or Expired planning permissions by Mineral Planning Authority
18	237m E	Name: Dewar's Farm Quarry Address: Middleton Stoney, BICESTER, Oxfordshire Commodity: Incinerator Bottom Ash Status: Active	Type: A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site Status description: Site which is actively extracting mineral products, or in the case of wharfs and rail depots, is actively handing minerals

ID	Location	Details	Description
V	285m NE	Name: Manor Farm Address: Ardley, OXFORD, Oxfordshire Commodity: Limestone Status: Ceased	Type: A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site Status description: Site which, at date of entry, has ceased to extract minerals. May be considered as Closed by operator. May be considered to have Active, Dormant or Expired planning permissions by Mineral Planning Authority
19	298m E	Name: Ardley Quarry Address: Ardley, BICESTER, Oxfordshire Commodity: Limestone Status: Ceased	Type: A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site Status description: Site which, at date of entry, has ceased to extract minerals. May be considered as Closed by operator. May be considered to have Active, Dormant or Expired planning permissions by Mineral Planning Authority
20	301m E	Name: Dewar's Farm Quarry Address: Middleton Stoney, BICESTER, Oxfordshire Commodity: Limestone Status: Inactive	Type: A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site Status description: Site which, at date of entry, is not extracting minerals, but which still has a valid planning permission to do so, and can restart at any time. May be considered Mothballed by operator.May be considered to have Active or Dormant planning permission
21	349m E	Name: Ardley Quarry Address: Ardley, BICESTER, Oxfordshire Commodity: Limestone Status: Ceased	Type: A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site Status description: Site which, at date of entry, has ceased to extract minerals. May be considered as Closed by operator. May be considered to have Active, Dormant or Expired planning permissions by Mineral Planning Authority
22	398m SW	Name: Ardley Quarry Address: Ardley, BICESTER, Oxfordshire Commodity: Limestone Status: Ceased	Type: A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site Status description: Site which, at date of entry, has ceased to extract minerals. May be considered as Closed by operator. May be considered to have Active, Dormant or Expired planning permissions by Mineral Planning Authority
Z	435m W	Name: Troy Farm Address: Ardley, OXFORD, Oxfordshire Commodity: Limestone Status: Ceased	Type: A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site Status description: Site which, at date of entry, has ceased to extract minerals. May be considered as Closed by operator. May be considered to have Active, Dormant or Expired planning permissions by Mineral Planning Authority

This data is sourced from the British Geological Survey.

18.3 Surface ground workings

Records within 250m	71

Historical land uses identified from Ordnance Survey mapping that involved ground excavation at the surface. These features may or may not have been subsequently backfilled.

Features are displayed on the Mining, ground workings and natural cavities map on **page 151**

ID	Location	Land Use	Year of mapping	Mapping scale
4	On site	Cuttings	1923	1:10560
5	On site	Cuttings	1954	1:10560
6	On site	Cuttings	1923	1:10560
7	On site	Unspecified Quarry	1992	1:10000
8	On site	Unspecified Pit	1880	1:10560
A	On site	Cuttings	1923	1:10560
A	On site	Cuttings	1923	1:10560
B	On site	Cuttings	1980	1:10000
B	On site	Cuttings	1992	1:10000
B	On site	Cuttings	1954	1:10560
C	On site	Cuttings	1980	1:10000
C	On site	Cuttings	1992	1:10000
C	On site	Cuttings	1954	1:10560
D	On site	Pond	1923	1:10560
D	On site	Pond	1880	1:10560
E	On site	Pond	1923	1:10560
E	On site	Pond	1954	1:10560
E	On site	Pond	1898	1:10560
E	On site	Pond	1923	1:10560
E	On site	Pond	1880	1:10560
F	On site	Cuttings	1980	1:10000
F	On site	Cuttings	1992	1:10000
F	On site	Cuttings	1954	1:10560

ID	Location	Land Use	Year of mapping	Mapping scale
G	**On site**	**Cuttings**	**1980**	**1:10000**
G	**On site**	**Cuttings**	**1992**	**1:10000**
G	**On site**	**Cuttings**	**1954**	**1:10560**
H	**On site**	**Cuttings**	**1980**	**1:10000**
H	**On site**	**Cuttings**	**1992**	**1:10000**
H	**On site**	**Cuttings**	**1954**	**1:10560**
I	**On site**	**Covered Reservoir**	**1980**	**1:10000**
I	**On site**	**Covered Reservoir**	**1992**	**1:10000**
J	**On site**	**Cuttings**	**1980**	**1:10000**
J	**On site**	**Cuttings**	**1992**	**1:10000**
K	**On site**	**Cuttings**	**1980**	**1:10000**
K	**On site**	**Cuttings**	**1992**	**1:10000**
L	**On site**	**Unspecified Pit**	**1923**	**1:10560**
L	**On site**	**Refuse Heap**	**1880**	**1:10560**
M	**On site**	**Unspecified Disused Quarry**	**1980**	**1:10000**
N	19m NE	Refuse Heap	1980	1:10000
N	19m NE	Refuse Heap	1992	1:10000
M	21m SW	Pond	1980	1:10000
M	21m SW	Pond	1992	1:10000
9	22m NE	Unspecified Old Quarry	1898	1:10560
P	40m W	Unspecified Quarry	1954	1:10560
Q	42m SW	Pond	1898	1:10560
R	43m NE	Unspecified Disused Quarry	1980	1:10000
R	43m NE	Unspecified Disused Quarry	1992	1:10000
Q	44m SW	Pond	1981	1:10000
Q	44m SW	Pond	1954	1:10560
P	50m W	Unspecified Quarry	1923	1:10560
P	51m W	Unspecified Quarry	1923	1:10560

ID	Location	Land Use	Year of mapping	Mapping scale
S	53m N	Unspecified Pit	1923	1:10560
S	56m N	Unspecified Pit	1923	1:10560
S	56m N	Unspecified Quarry	1898	1:10560
S	60m N	Unspecified Pit	1954	1:10560
A	70m SE	Cuttings	1992	1:10000
Q	77m SW	Pond	1919	1:10560
Q	77m SW	Pond	1923	1:10560
Q	77m SW	Pond	1875	1:10560
P	78m W	Unspecified Quarry	1898	1:10560
P	81m W	Sand Pit	1880	1:10560
11	87m SE	Cuttings	1950	1:10560
12	136m NW	Cuttings	1954	1:10560
T	136m NW	Cuttings	1980	1:10000
T	136m NW	Cuttings	1992	1:10000
U	180m SW	Unspecified Pit	1923	1:10560
U	184m SW	Unspecified Quarry	1923	1:10560
U	184m SW	Unspecified Quarries	1898	1:10560
U	185m SW	Unspecified Quarry	1923	1:10560
U	188m SW	Unspecified Quarry	1954	1:10560
U	216m SW	Sand Pit	1880	1:10560

This is data is sourced from Ordnance Survey/Groundsure.

18.4 Underground workings

Records within 1000m	0

Historical land uses identified from Ordnance Survey mapping that indicate the presence of underground workings e.g. mine shafts.

This is data is sourced from Ordnance Survey/Groundsure.

18.5 Historical Mineral Planning Areas

Records within 500m	5

Boundaries of mineral planning permissions for England and Wales. This data was collated between the 1940s (and retrospectively to the 1930s) and the mid 1980s. The data includes permitted, withdrawn and refused permissions.

Features are displayed on the Mining, ground workings and natural cavities map on **page 151**

ID	Location	Site Name	Mineral	Type	Planning Status	Planning Status Date
1	**On site**	**Ardley Fields**	**Limestone**	**Surface mineral working**	**Valid**	**17/1/51**
2	**On site**	**Ardley Fields**	**Limestone**	**Surface mineral working**	**Valid**	**17/1/51**
3	**On site**	**Ardley Fields**	**Limestone**	**Surface mineral working**	**Valid**	**17/1/51**
O	23m NE	Ardley Woods	Limestone	Surface mineral working	Valid	17/1/51
15	152m NE	Ardley Woods	Limestone	Surface mineral working	Refused	Not available

This data is sourced from the British Geological Survey.

18.6 Non-coal mining

Records within 1000m	0

The potential for historical non-coal mining to have affected an area. The assessment is drawn from expert knowledge and literature in addition to the digital geological map of Britain. Mineral commodities may be divided into seven general categories - vein minerals, chalk, oil shale, building stone, bedded ores, evaporites and 'other' commodities (including ball clay, jet, black marble, graphite and chert).

This data is sourced from the British Geological Survey.

18.7 Mining cavities

Records within 1000m	0

Industry recognised national database of mining cavities. Degraded mines may result in hazardous subsidence (crown holes). Climatic conditions and water escape can also trigger subsidence over mine entrances and workings.

This data is sourced from Peter Brett Associates (PBA).

18.8 JPB mining areas

Records on site	0

Areas which could be affected by former coal mining. This data includes some mine plans unavailable to the Coal Authority.

This data is sourced from Johnson Poole and Bloomer.

18.9 Coal mining

Records on site	0

Areas which could be affected by past, current or future coal mining.

This data is sourced from the Coal Authority.

18.10 Brine areas

Records on site	0

The Cheshire Brine Compensation District indicates areas that may be affected by salt and brine extraction in Cheshire and where compensation would be available where damage from this mining has occurred. Damage from salt and brine mining can still occur outside this district, but no compensation will be available.

This data is sourced from the Cheshire Brine Subsidence Compensation Board.

18.11 Gypsum areas

Records on site	0

Generalised areas that may be affected by gypsum extraction.

This data is sourced from British Gypsum.

18.12 Tin mining

Records on site	0

Generalised areas that may be affected by historical tin mining.

This data is sourced from Mining Searches UK.

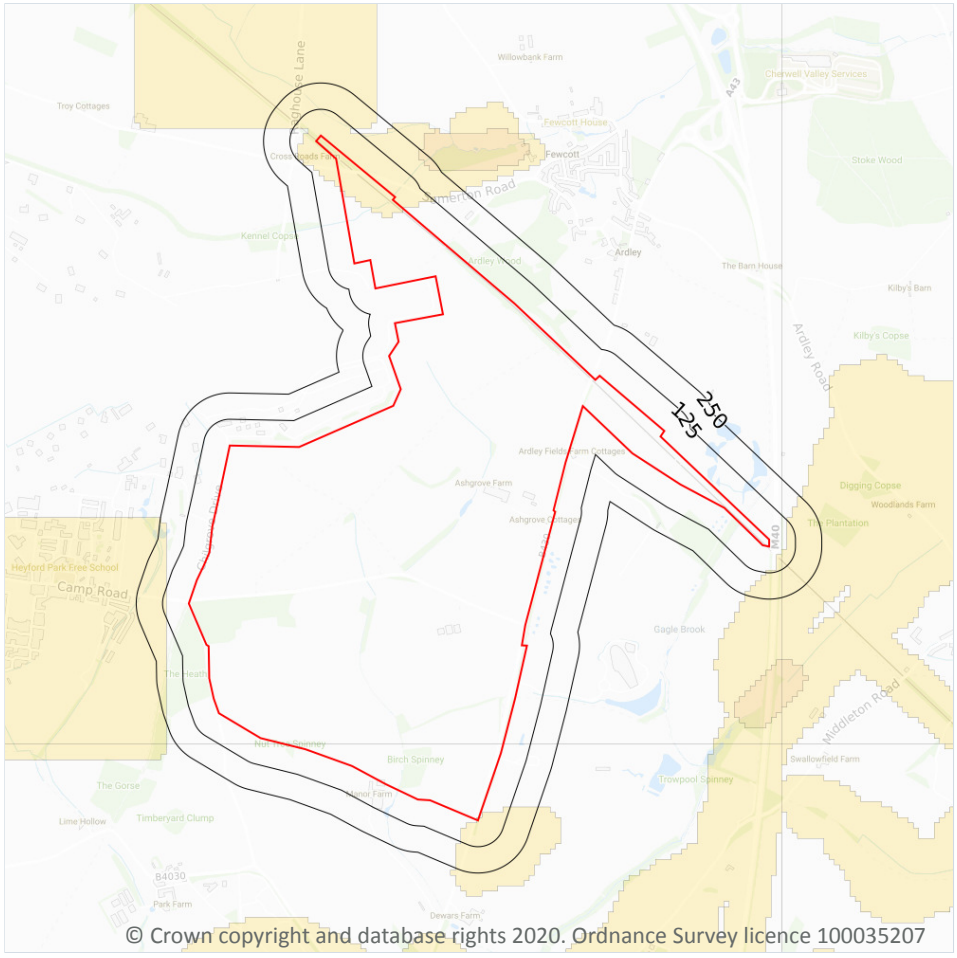
18.13 Clay mining

Records on site	0

Generalised areas that may be affected by kaolin and ball clay extraction.

This data is sourced from the Kaolin and Ball Clay Association (UK).

19 Radon



Site Outline

Search buffers in metres (m)

- Greater than 30%
- Between 10% and 30%
- Between 5% and 10%
- Between 3% and 5%
- Between 1% and 3%
- Less than 1%

19.1 Radon

Records on site	2

Estimated percentage of dwellings exceeding the Radon Action Level. This data is the highest resolution radon dataset available for the UK and is produced to a 75m level of accuracy to allow for geological data accuracy and a 'residential property' buffer. The findings of this section should supersede any estimations derived from the Indicative Atlas of Radon in Great Britain. The data was derived from both geological assessments and long term measurements of radon in more than 479,000 households.

Features are displayed on the Radon map on **page 161**

Location	Estimated properties affected	Radon Protection Measures required
On site	**Between 1% and 3%**	**None**
On site	**Less than 1%**	**None****

This data is sourced from the British Geological Survey and Public Health England.

20 Soil chemistry

20.1 BGS Estimated Background Soil Chemistry

Records within 50m	111

The estimated values provide the likely background concentration of the potentially harmful elements Arsenic, Cadmium, Chromium, Lead and Nickel in topsoil. The values are estimated primarily from rural topsoil data collected at a sample density of approximately 1 per 2 km^2. In areas where rural soil samples are not available, estimation is based on stream sediment data collected from small streams at a sampling density of 1 per 2.5 km^2; this is the case for most of Scotland, Wales and southern England. The stream sediment data are converted to soil-equivalent concentrations prior to the estimation.

Location	Arsenic	Bioaccessible Arsenic	Lead	Bioaccessible Lead	Cadmium	Chromium	Nickel
On site	**15 - 25 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
On site	**15 - 25 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
On site	**15 - 25 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
On site	**15 - 25 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
On site	**15 - 25 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
On site	**15 - 25 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
On site	**15 - 25 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
On site	**15 - 25 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
On site	**15 - 25 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
On site	**15 - 25 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
On site	**15 - 25 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
On site	**15 - 25 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
On site	**15 - 25 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**

Location	Arsenic	Bioaccessible Arsenic	Lead	Bioaccessible Lead	Cadmium	Chromium	Nickel
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg

Location	Arsenic	Bioaccessible Arsenic	Lead	Bioaccessible Lead	Cadmium	Chromium	Nickel
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	30 - 45 mg/kg
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg

Location	Arsenic	Bioaccessible Arsenic	Lead	Bioaccessible Lead	Cadmium	Chromium	Nickel
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	30 - 45 mg/kg

Location	Arsenic	Bioaccessible Arsenic	Lead	Bioaccessible Lead	Cadmium	Chromium	Nickel
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	30 - 45 mg/kg
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	30 - 45 mg/kg
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg

Location	Arsenic	Bioaccessible Arsenic	Lead	Bioaccessible Lead	Cadmium	Chromium	Nickel
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg

Location	Arsenic	Bioaccessible Arsenic	Lead	Bioaccessible Lead	Cadmium	Chromium	Nickel
On site	**15 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
17m N	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
18m N	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
24m NE	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
28m N	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
35m SW	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
35m SW	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
39m N	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
50m E	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	30 - 45 mg/kg

This data is sourced from the British Geological Survey.

20.2 BGS Estimated Urban Soil Chemistry

Records within 50m	0

Estimated topsoil chemistry of Arsenic, Cadmium, Chromium, Copper, Nickel, Lead, Tin and Zinc and bioaccessible Arsenic and Lead in 23 urban centres across Great Britain. These estimates are derived from interpolation of the measured urban topsoil data referred to above and provide information across each city between the measured sample locations (4 per km^2).

This data is sourced from the British Geological Survey.

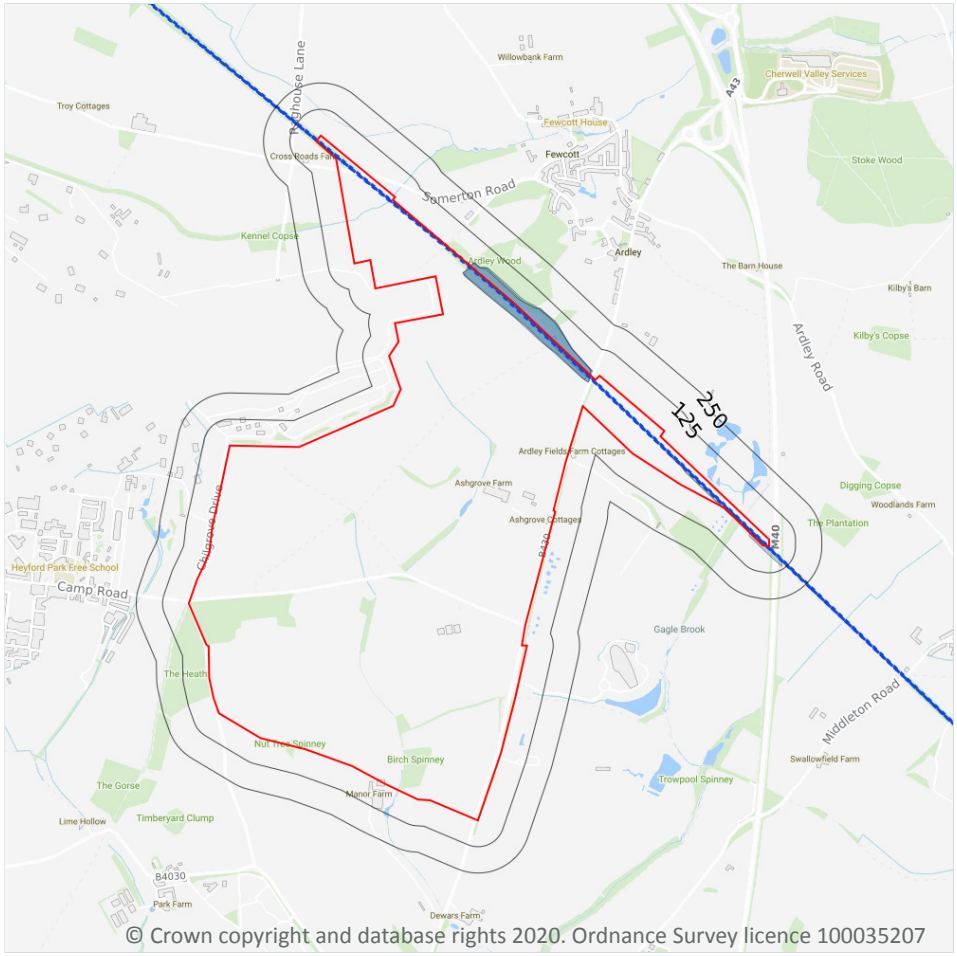
20.3 BGS Measured Urban Soil Chemistry

Records within 50m	0

The locations and measured total concentrations (mg/kg) of Arsenic, Cadmium, Chromium, Copper, Nickel, Lead, Tin and Zinc in urban topsoil samples from 23 urban centres across Great Britain. These are collected at a sample density of 4 per km^2.

This data is sourced from the British Geological Survey.

21 Railway infrastructure and projects



21.1 Underground railways (London)

Records within 250m	0

Details of all active London Underground lines, including approximate tunnel roof depth and operational hours.

This data is sourced from publicly available information by Groundsure.

21.2 Underground railways (Non-London)

Records within 250m	0

Details of the Merseyrail system, the Tyne and Wear Metro and the Glasgow Subway. Not all parts of all systems are located underground. The data contains location information only and does not include a depth assessment.

This data is sourced from publicly available information by Groundsure.

21.3 Railway tunnels

Records within 250m	0

Railway tunnels taken from contemporary Ordnance Survey mapping.

This data is sourced from the Ordnance Survey.

21.4 Historical railway and tunnel features

Records within 250m	6

Railways and tunnels digitised from historical Ordnance Survey mapping as scales of 1:1,250, 1:2,500, 1:10,000 and 1:10,560.

Features are displayed on the Railway infrastructure and projects map on **page 170**

Location	Land Use	Year of mapping	Mapping scale
On site	**Railway Sidings**	**1975**	**2500**
On site	**Railway Sidings**	**1974**	**2500**
On site	**Railway Sidings**	**1922**	**2500**
On site	**Railway Sidings**	**1923**	**10560**
On site	**Railway Sidings**	**1954**	**10560**
14m NE	Railway Sidings	1922	2500

This data is sourced from Ordnance Survey/Groundsure.

21.5 Royal Mail tunnels

Records within 250m	0

The Post Office Railway, otherwise known as the Mail Rail, is an underground railway running through Central London from Paddington Head District Sorting Office to Whitechapel Eastern Head Sorting Office. The line is 10.5km long. The data includes details of the full extent of the tunnels, the depth of the tunnel, and the depth to track level.

This data is sourced from Groundsure/the Postal Museum.

21.6 Historical railways

Records within 250m	0

Former railway lines, including dismantled lines, abandoned lines, disused lines, historic railways and razed lines.

This data is sourced from OpenStreetMap.

21.7 Railways

Records within 250m	12

Currently existing railway lines, including standard railways, narrow gauge, funicular, trams and light railways.

Features are displayed on the Railway infrastructure and projects map on **page 170**

Location	Name	Type
On site	**Chiltern Main Line**	**rail**
On site	**Chiltern Main Line**	**rail**
On site	**Not given**	**Multi Track**
On site	**Not given**	**Multi Track**
On site	**Not given**	**Multi Track**
On site	**Not given**	**Multi Track**
On site	**Not given**	**Multi Track**
On site	**Not given**	**Multi Track**
On site	**Not given**	**Multi Track**
On site	**Not given**	**Multi Track**
On site	**Not given**	**Multi Track**
72m SE	Not given	Multi Track
153m NW	Not given	Multi Track

This data is sourced from Ordnance Survey and OpenStreetMap.

21.8 Crossrail 1

Records within 500m	0

The Crossrail railway project links 41 stations over 100 kilometres from Reading and Heathrow in the west, through underground sections in central London, to Shenfield and Abbey Wood in the east.

This data is sourced from publicly available information by Groundsure.

21.9 Crossrail 2

Records within 500m	0

Crossrail 2 is a proposed railway linking the national rail networks in Surrey and Hertfordshire via an underground tunnel through London.

This data is sourced from publicly available information by Groundsure.

21.10 HS2

Records within 500m	0

HS2 is a proposed high speed rail network running from London to Manchester and Leeds via Birmingham. Main civils construction on Phase 1 (London to Birmingham) of the project began in 2019, and it is currently anticipated that this phase will be fully operational by 2026. Construction on Phase 2a (Birmingham to Crewe) is anticipated to commence in 2021, with the service fully operational by 2027. Construction on Phase 2b (Crewe to Manchester and Birmingham to Leeds) is scheduled to begin in 2023 and be operational by 2033.

This data is sourced from HS2 ltd.

Data providers

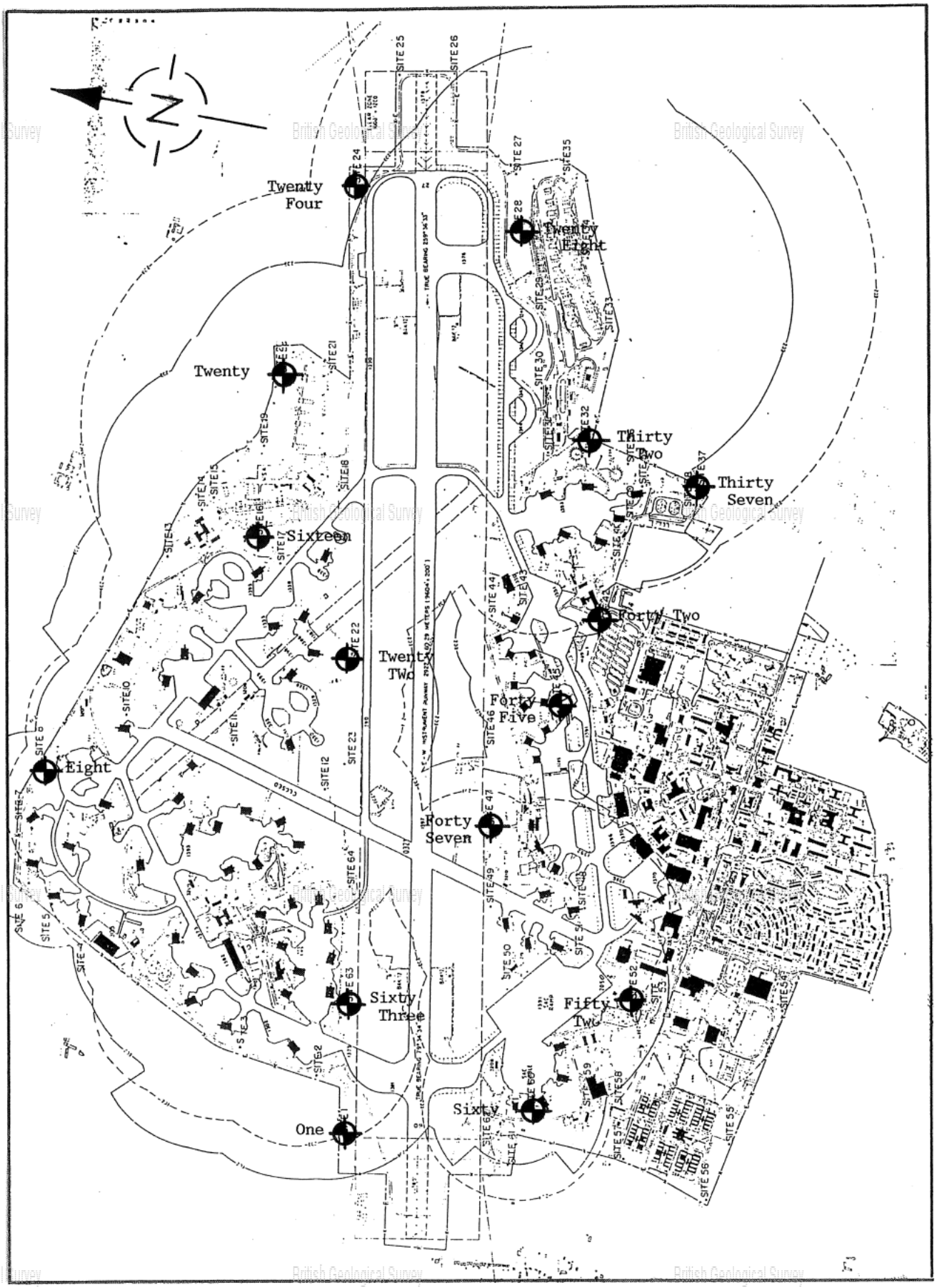
Groundsure works with respected data providers to bring you the most relevant and accurate information. To find out who they are and their areas of expertise see https://www.groundsure.com/sources-reference.

Terms and conditions

Groundsure's Terms and Conditions can be accessed at this link: https://www.groundsure.com/terms-and-conditions-jan-2020/.

Publicly available borehole data

BGS archive records - Heyford Park



Borehole Locations

Scale 1:16320

Date	BOREHOLE LOCATION PLAN	Report No.
June 1987	TYRONE	S.894

British Geological Survey

LOCATION : R.A.F. Upper Heyford, Oxfordshire

BOREHOLE No. Twenty Four

DATE OF BORING : 01.07.1987

Description of Strata	STRATA CHANGE LEGEND	STRATA CHANGE DEPTH M	S P T / C P T N-VALUE	SAMPLES DEPTH M	SAMPLES TYPE	WATER LEVEL M	DEPTH of CASING M
TOPSOIL Grass over dark brown clayey silty TOPSOIL							
WEATHERED ZONE Soft to firm light brown silty CLAY with abundant limestone fragments		0.50					
- increasing clay content - becoming creamy buff							
Buff creamy yellow rubbly moderately strong weathered LIMESTONE		1.00		1.00	B		
- highly weathered		1.50		1.50	B	DRY	
		2.00					

BOREHOLE DIAMETER : 100mm
LINING TUBES : None
GROUND LEVEL :
REMARKS : Borehole sunk from existing ground level

▽ - Water strike
▼ - Water (standing level)
W - Water Sample
B/J - Bulk/Jar Sample
S.P.T. - Standard Penetration Test
C.P.T. - Cone Penetration Test
(U) - Undisturbed Sample (38mm & 100mm)

Date.	BOREHOLE LOG	Report No.
June 1987		S.894

LOCATION : R.A.F. Upper Heyford, Oxfordshire

BOREHOLE No. Twenty Eight

DATE OF BORING : 30.06.1987

Description of Strata	STRATA CHANGE LEGEND	STRATA CHANGE DEPTH M	S P T / C P T N-VALUE	SAMPLES DEPTH M	SAMPLES TYPE	WATER LEVEL M	DEPTH of CASING M
TOPSOIL Grass overlying dark brown clayey silty TOPSOIL							
WEATHERED ZONE Buff yellow rubbly moderately strong weathered LIMESTONE							
- interlaminated hard and soft horizons		0.50					
		1.00		1.00	B	DRY	
GREAT OOLITE LIMESTONE Buff yellow moderately strong LIMESTONE							
		1.50					
		2.00					

BOREHOLE DIAMETER : 100mm
LINING TUBES : None
GROUND LEVEL :
REMARKS : Borehole sunk from existing ground level

▽ - Water strike
▼ - Water (standing level)
W - Water Sample
B/J - Bulk/Jar Sample
S.P.T. - Standard Penetration Test
C.P.T. - Cone Penetration Test
(U) - Undisturbed Sample (38mm & 100mm)

Date.	BOREHOLE LOG	Report No.
June 1987		S.894

British Geological Survey

LOCATION : R.A.F. Upper Heyford, Oxfordshire

BOREHOLE No. Thirty Two

DATE OF BORING : 30.06.1987

Description of Strata	STRATA CHANGE LEGEND	STRATA CHANGE DEPTH M	S P T / C P T N-VALUE	SAMPLES DEPTH M	SAMPLES TYPE	WATER LEVEL M	DEPTH of CASING M
TOPSOIL. Grass over dark brown clayey silty TOPSOIL							
WEATHERED ZONE Medium to coarse buff yellow clayey silty SAND with included limestone fragments		0.50					
GREAT OOLITE LIMESTONE Buff yellow moderately strong LIMESTONE				0.80	B	DRY	
		1.00					
		1.50					
		2.00					

BOREHOLE DIAMETER : 100mm
LINING TUBES : None
GROUND LEVEL :
REMARKS : Borehole sunk from existing ground level

▽ - Water strike
▼ - Water (standing level)
W - Water Sample
B/J - Bulk/Jar Sample
S.P.T. - Standard Penetration Test
C.P.T. - Cone Penetration Test
(U) - Undisturbed Sample (38mm & 100mm)

Date.	BOREHOLE LOG	Report No.
June 1987		S.894

British Geological Survey

LOCATION : R.A.F. Upper Heyford, Oxfordshire

BOREHOLE No. Thirty Seven

DATE OF BORING : 30.06.1987

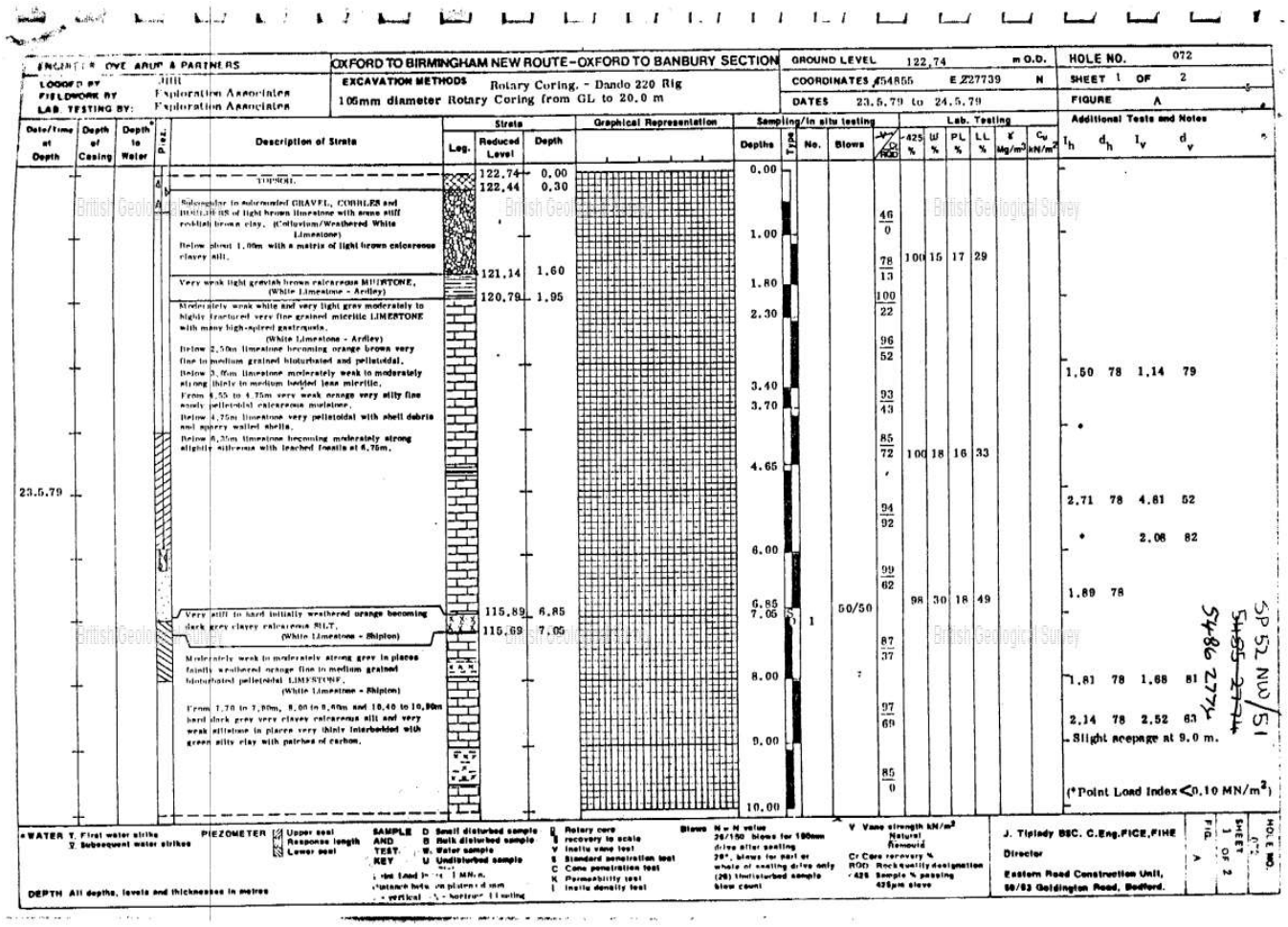
Description of Strata	STRATA CHANGE LEGEND	STRATA CHANGE DEPTH M	S P T / C P T N-VALUE	SAMPLES DEPTH M	SAMPLES TYPE	WATER LEVEL M	DEPTH of CASING M
MADE GROUND Red brick, concrete and limestone rubble Firm brown sandy clay with included fragments of red brick		0.50					
WEATHERED ZONE Medium to coarse dark brown clayey sandy SILT with included fragments of limestone rubble		1.00		1.00	B		
-occasional coarse hard limestone rubble							
GREAT OOLITE LIMESTONE Buff yellow moderately strong LIMESTONE		1.50		1.50	B	DRY	
		2.00					

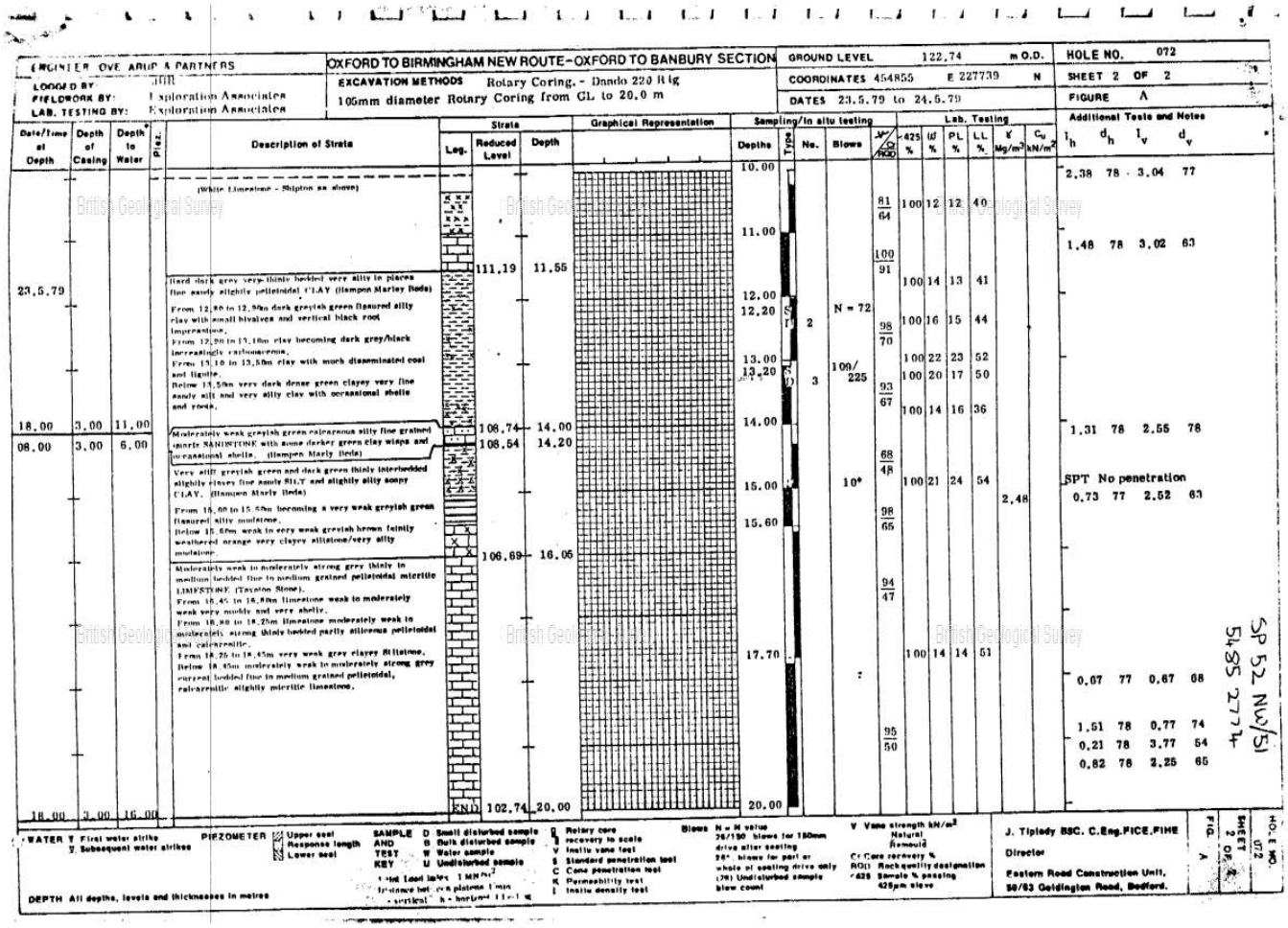
BOREHOLE DIAMETER : 100mm
LINING TUBES : None
GROUND LEVEL :
REMARKS : Borehole sunk from existing ground level

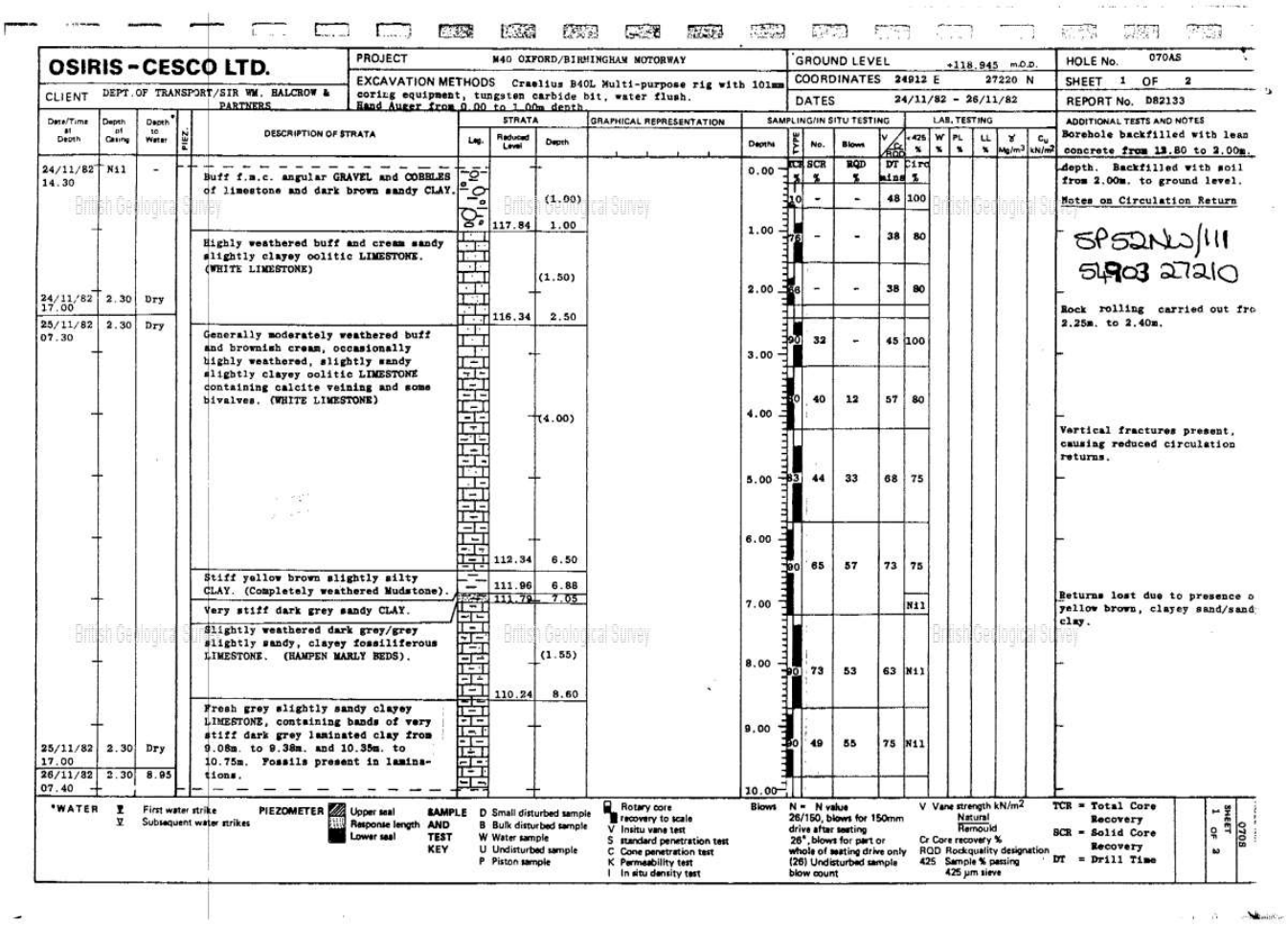
▽ - Water strike
▼ - Water (standing level)
W - Water Sample
B/J - Bulk/Jar Sample
S.P.T. - Standard Penetration Test
C.P.T. - Cone Penetration Test
(U) - Undisturbed Sample (38mm & 100mm)

Date.	BOREHOLE LOG	Report No.
June 1987		S.894

BGS archive records - M40


OXFORD TO BIRMINGHAM NEW ROUTE - OXFORD TO BANBURY SECTION
GROUND LEVEL 122.74 m O.D.
HOLE NO. 072
SHEET 1 OF 2
FIGURE A
COORDINATES 454855 E 227739 N
DATES 23.5.79 to 24.5.79
EXCAVATION METHODS Rotary Coring. - Dando 220 Rig
105mm diameter Rotary Coring from GL to 20.0 m
Exploration Associates
Exploration Associates
Strata
Graphical Representation
Sampling/in situ testing
Lab. Testing
Additional Tests and Notes
Description of Strata
Leg.
Reduced Level
Depth
Depths
Type
No.
Blows
425 %
w %
PL %
LL %
Mg/m³
kN/m²
23.5.79
122.74 0.00
122.44 0.30
121.14 1.60
120.79 1.95
115.89 6.85
115.69 7.05
50/50
1.50 78 1.14 79
2.71 78 4.61 52
2.08 82
1.89 78
1.81 78 1.68 81
2.14 78 2.52 63
Slight seepage at 9.0 m.
(*Point Load Index <0.10 MN/m²)
SP 52 NW/51
5485 2274
WATER T. First water strike
Subsequent water strikes
PIEZOMETER
Upper seal
Response length
Lower seal
DEPTH All depths, levels and thicknesses in metres
J. Tiplady BSC. C.Eng.FICE,FIHE
Director
Eastern Road Construction Unit,
50/53 Goldington Road, Bedford.


ENGINEER OVE ARUP & PARTNERS
LOGGED BY: JDR
FIELDWORK BY: Exploration Associates
LAB. TESTING BY: Exploration Associates
OXFORD TO BIRMINGHAM NEW ROUTE–OXFORD TO BANBURY SECTION
EXCAVATION METHODS Rotary Coring. - Dando 220 Rig
105mm diameter Rotary Coring from GL to 20.0 m
GROUND LEVEL 122.74 m O.D.
COORDINATES 454855 E 227739 N
DATES 23.5.79 to 24.6.79
HOLE NO. 072
SHEET 2 OF 2
FIGURE A
Strata
Graphical Representation
Sampling/in situ testing
Lab. Testing
Additional Tests and Notes
Date/Time at Depth
Depth of Casing
Depth to Water
Description of Strata
Leg.
Reduced Level
Depth
Depths
Type
No.
Blows
Lab. Testing
(White Limestone - Shipton as above)
111.19
11.55
Hard dark grey very thinly bedded very silty in places fine sandy slightly pelletoidal CLAY (Hampen Marley Beds)
From 12.80 to 12.90m dark greyish green fissured silty clay with small bivalves and vertical black root impressions.
From 12.90 to 13.10m clay becoming dark grey/black increasingly calcareous.
From 13.10 to 13.50m clay with much disseminated coal and lignite.
Below 13.50m very dark dense green clayey very fine sandy silt and very silty clay with occasional shells and roots.
23.5.79
18.00 3.00 11.00
08.00 3.00 6.00
Moderately weak greyish green calcareous silty fine grained quartz SANDSTONE with some darker green clay wisps and occasional shells. (Hampen Marly Beds)
108.74 14.00
108.54 14.20
Very stiff greyish green and dark green thinly interbedded slightly clayey fine sandy SILT and slightly silty sandy CLAY. (Hampen Marly Beds)
From 14.00 to 15.50m becoming a very weak greyish green fissured silty mudstone.
Below 15.50m weak to very weak greyish brown faintly weathered orange very clayey siltstone/very silty mudstone.
106.69 16.05
Moderately weak to moderately strong grey thinly to medium bedded fine to medium grained pelletoidal micritic LIMESTONE (Taynton Stone).
From 16.45 to 16.80m limestone weak to moderately weak very muddy and very shelly.
From 16.80 to 18.25m limestone moderately weak to moderately strong thinly bedded partly siliceous pelletoidal and calcarenitic.
From 18.25 to 18.45m very weak grey clayey siltstone.
Below 18.45m moderately weak to moderately strong grey current bedded fine to medium grained pelletoidal, calcarenitic slightly micritic limestone.
END 102.74 20.00
18.00 3.00 16.00
10.00
11.00
12.00
12.20
13.00
13.20
14.00
15.00
15.60
17.70
20.00
N = 72
10*
100/225
1.48 78 3.02 63
1.31 78 2.55 78
SPT No penetration
0.73 77 2.52 63
0.07 77 0.67 68
1.51 78 0.77 74
0.21 78 3.77 54
0.82 78 2.25 65
2.48
SP 52 NW/51
5485 2774
WATER 1. First water strike
2. Subsequent water strikes
PIEZOMETER
Upper seal
Response length
Lower seal
SAMPLE AND TEST KEY
D Small disturbed sample
B Bulk disturbed sample
W Water sample
U Undisturbed sample
R Rotary core recovery to scale
V Insitu vane test
S Standard penetration test
C Cone penetration test
K Permeability test
I Insitu density test
Blows N = N value 26/150 blows for 150mm drive after seating
26* blows for part or whole of seating drive only
(78) Undisturbed sample blow count
V Vane strength kN/m²
Natural
Remould
Cr Core recovery %
RQD Rock quality designation
425 Sample % passing 425μm sieve
DEPTH All depths, levels and thicknesses in metres
J. Tiplady BSC. C.Eng.FICE.FIHE
Director
Eastern Road Construction Unit,
50/53 Goldington Road, Bedford.
FIG. A
SHEET 2 OF 2
HOLE NO. 072



OSIRIS - CESCO LTD.

CLIENT DEPT. OF TRANSPORT/SIR WM. HALCROW & PARTNERS

PROJECT M40 OXFORD/BIRMINGHAM MOTORWAY

EXCAVATION METHODS Craelius B40L Multi-purpose rig with 101mm coring equipment, tungsten carbide bit, water flush. Hand Auger from 0.00 to 1.00m depth.

GROUND LEVEL +118.945 m.O.D.

COORDINATES 24912 E 27220 N

DATES 24/11/82 - 26/11/82

HOLE No. 070AS

SHEET 1 OF 2

REPORT No. D82133

ADDITIONAL TESTS AND NOTES: Borehole backfilled with lean concrete from 13.80 to 2.00m. Backfilled with soil from 2.00m. to ground level.

Notes on Circulation Return

SP52NW/111
454903 227210

Rock rolling carried out fro 2.25m. to 2.40m.

Vertical fractures present, causing reduced circulation returns.

Returns lost due to presence o yellow brown, clayey sand/sand clay.

Date/Time at Depth	Depth of Casing	Depth to Water	PIEZ.	DESCRIPTION OF STRATA	Leg.	Reduced Level	Depth
24/11/82 14.30	Nil	-		Buff f.m.c. angular GRAVEL and COBBLES of limestone and dark brown sandy CLAY.			(1.00)
				Highly weathered buff and cream sandy slightly clayey oolitic LIMESTONE. (WHITE LIMESTONE)		117.84	1.00
							(1.50)
24/11/82 17.00	2.30	Dry				116.34	2.50
25/11/82 07.30	2.30	Dry		Generally moderately weathered buff and brownish cream, occasionally highly weathered, slightly sandy slightly clayey oolitic LIMESTONE containing calcite veining and some bivalves. (WHITE LIMESTONE)			(4.00)
						112.34	6.50
				Stiff yellow brown slightly silty CLAY. (Completely weathered Mudstone).		111.96	6.88
				Very stiff dark grey sandy CLAY.		111.79	7.05
				Slightly weathered dark grey/grey slightly sandy, clayey fossiliferous LIMESTONE. (HAMPEN MARLY BEDS).			(1.55)
						110.24	8.60
25/11/82 17.00	2.30	Dry		Fresh grey slightly sandy clayey LIMESTONE, containing bands of very stiff dark grey laminated clay from 9.08m. to 9.38m. and 10.35m. to 10.75m. Fossils present in laminations.			
26/11/82 07.40	2.30	8.95					

Depths	TYPE	No.	Blows	V	TCR %	SCR %	RQD %	DT mins	Circ %	W %	PL %	LL %	γ Mg/m³	C_u kN/m²
0.00														
	D	-	-		10	-	-	48	100					
1.00	D	-	-		78	-	-	38	80					
2.00	D	-	-		68	-	-	38	80					
	D	32	-		90			45	100					
3.00														
	D	40	12		80			57	80					
4.00														
5.00	D	44	33		83			68	75					
6.00														
	D	65	57		90			73	75					
7.00									Nil					
8.00	D	73	53		90			63	Nil					
9.00	D	49	55		80			75	Nil					
10.00														

*WATER: First water strike; Subsequent water strikes

PIEZOMETER: Upper seal; Response length; Lower seal

SAMPLE AND TEST KEY: D Small disturbed sample; B Bulk disturbed sample; W Water sample; U Undisturbed sample; P Piston sample

Rotary core recovery to scale; V Insitu vane test; S standard penetration test; C Cone penetration test; K Permeability test; I In situ density test

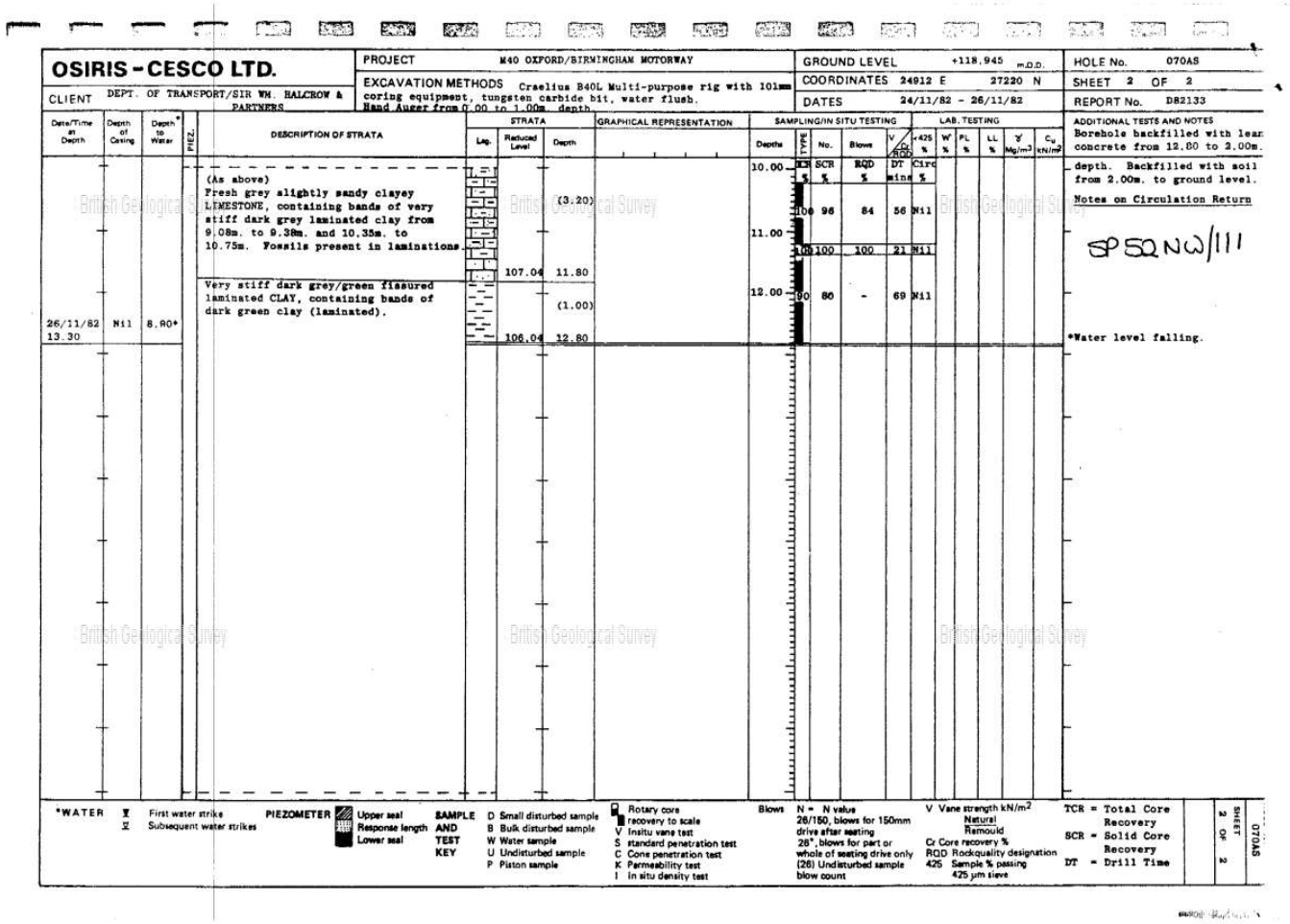
Blows: N = N value 26/150, blows for 150mm drive after seating 26*, blows for part or whole of seating drive only (26) Undisturbed sample blow count

V Vane strength kN/m² Natural Remould

Cr Core recovery %; RQD Rockquality designation; 425 Sample % passing 425 μm sieve

TCR = Total Core Recovery; SCR = Solid Core Recovery; DT = Drill Time

SHEET 1 OF 2 070B



OSIRIS - CESCO LTD.

CLIENT DEPT. OF TRANSPORT/SIR WM. HALCROW & PARTNERS

PROJECT M40 OXFORD/BIRMINGHAM MOTORWAY

EXCAVATION METHODS Craelius B40L Multi-purpose rig with 101mm coring equipment, tungsten carbide bit, water flush. Hand Auger from 0.00 to 1.00m depth

GROUND LEVEL +118.945 m.O.D.

COORDINATES 24912 E 27220 N

DATES 24/11/82 - 26/11/82

HOLE No. 070AS

SHEET 2 OF 2

REPORT No. D82133

ADDITIONAL TESTS AND NOTES
Borehole backfilled with lean concrete from 12.80 to 2.00m. depth. Backfilled with soil from 2.00m. to ground level.
Notes on Circulation Return

SP52NW/111

Date/Time at Depth	Depth of Casing	Depth* to Water	PIEZ.	DESCRIPTION OF STRATA	Leg.	Reduced Level	Depth
				(As above) Fresh grey slightly sandy clayey LIMESTONE, containing bands of very stiff dark grey laminated clay from 9.08m. to 9.38m. and 10.35m. to 10.75m. Fossils present in laminations.			(3.20)
				Very stiff dark grey/green fissured laminated CLAY, containing bands of dark green clay (laminated).		107.04	11.80
26/11/82 13.30	Nil	8.90*				106.04	(1.00) 12.80

Depths	TYPE	No.	Blows	V / RQD	+425 %	W %	PL %	LL %	γ Mg/m³	C_u kN/m²
	% SCR	% RQD	DT mins	Circ %						
10.00	100	96	84	56	Nil					
11.00	100	100	100	21	Nil					
12.00	100	80	-	69	Nil					

*Water level falling.

*WATER ▼ First water strike ▽ Subsequent water strikes

PIEZOMETER Upper seal, Response length, Lower seal

SAMPLE AND TEST KEY
D Small disturbed sample
B Bulk disturbed sample
W Water sample
U Undisturbed sample
P Piston sample

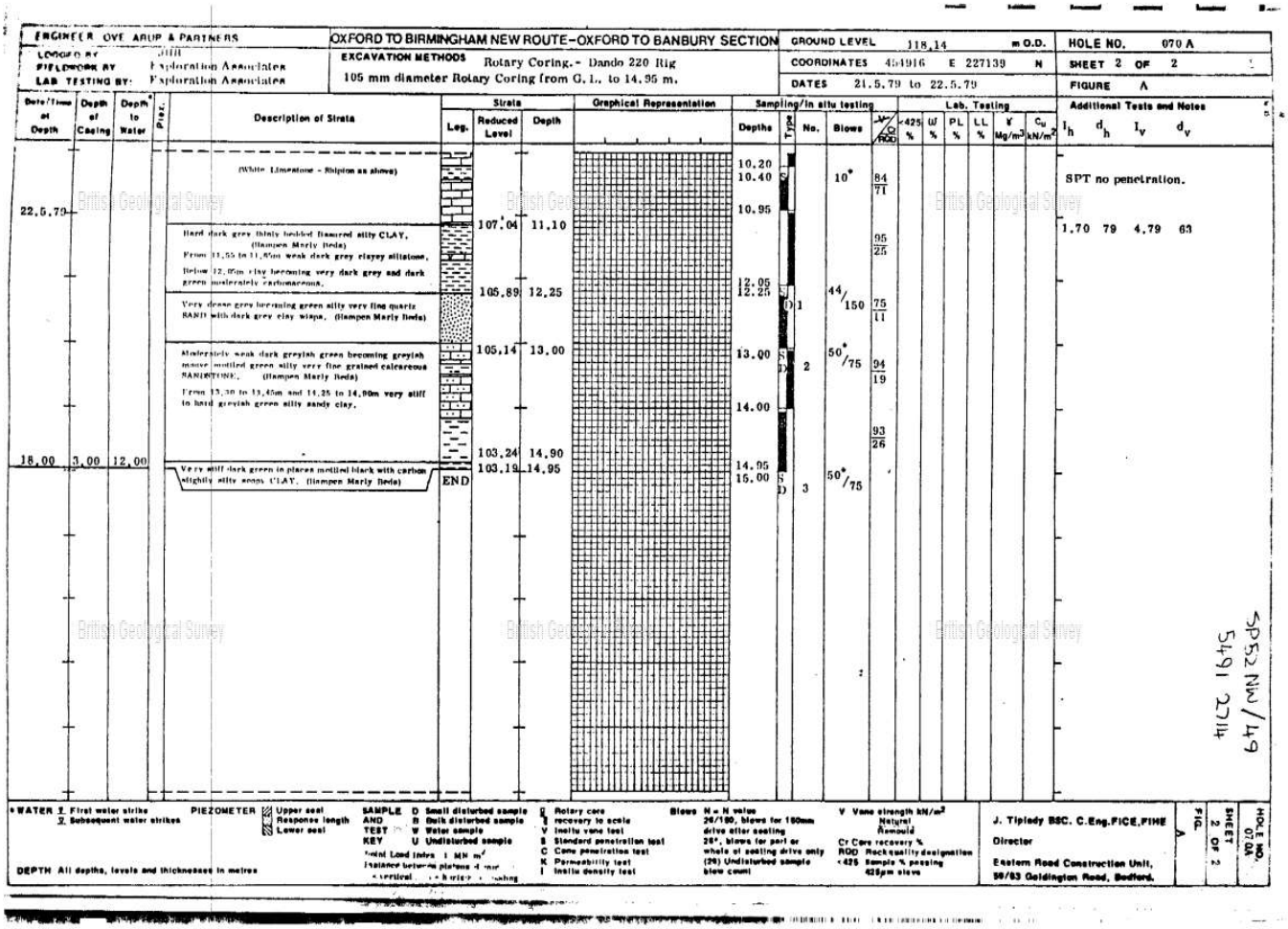
Rotary core recovery to scale
V Insitu vane test
S standard penetration test
C Cone penetration test
K Permeability test
I In situ density test

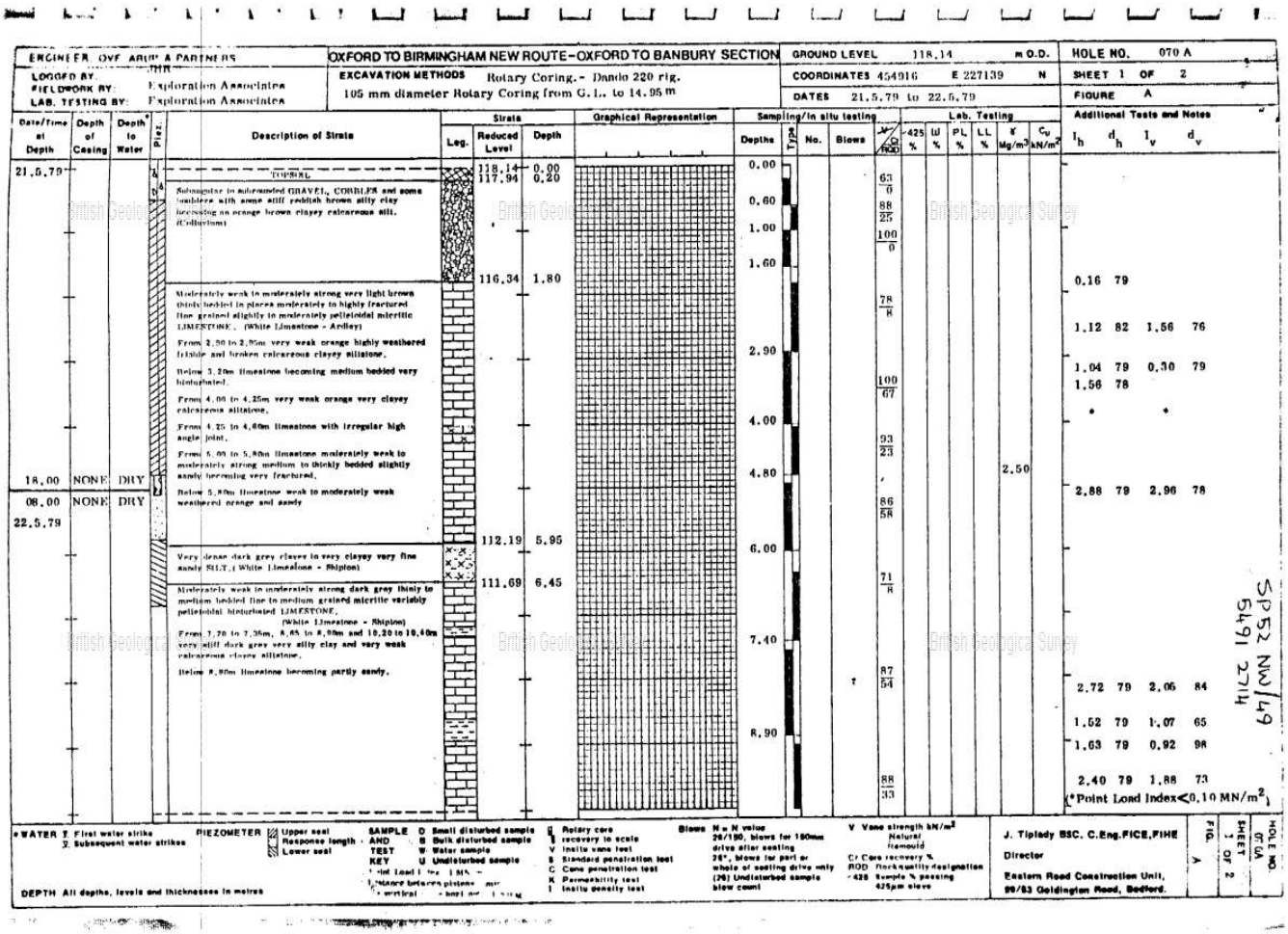
Blows N = N value 26/150, blows for 150mm drive after seating 26*, blows for part or whole of seating drive only (26) Undisturbed sample blow count

V Vane strength kN/m² Natural Remould
Cr Core recovery %
RQD Rockquality designation
425 Sample % passing 425 μm sieve

TCR = Total Core Recovery
SCR = Solid Core Recovery
DT = Drill Time

SHEET 2 OF 2 070AS

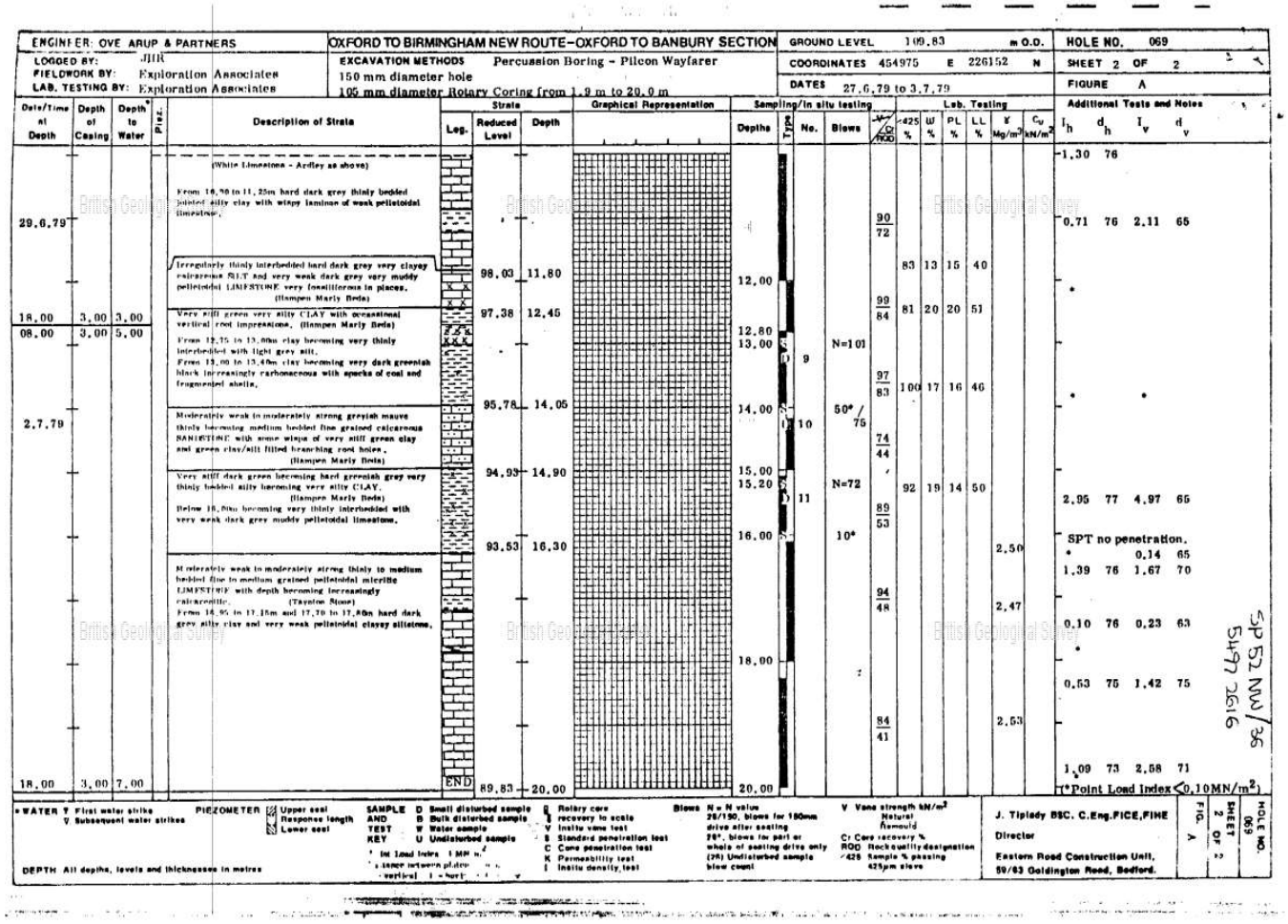

ENGINEER OVE ARUP & PARTNERS
OXFORD TO BIRMINGHAM NEW ROUTE–OXFORD TO BANBURY SECTION
GROUND LEVEL 118.14 m O.D.
HOLE NO. 070 A
FIELDWORK BY Exploration Associates
LAB TESTING BY Exploration Associates
EXCAVATION METHODS Rotary Coring.- Dando 220 Rig
105 mm diameter Rotary Coring from G.L. to 14.95 m.
COORDINATES 454916 E 227139 N
DATES 21.5.79 to 22.5.79
SHEET 2 OF 2
FIGURE A
Strata
Graphical Representation
Sampling/in situ testing
Lab. Testing
Additional Tests and Notes
Description of Strata
Reduced Level
Depth
Depths
Blows
SPT no penetration.
1.70 79 4.79 63
22.5.79
18.00 3.00 12.00
107.04 11.10
105.89 12.25
105.14 13.00
103.24 14.90
103.19 14.95
END
SP52 NW/49
5491 2714
DEPTH All depths, levels and thicknesses in metres
J. Tiplady BSC. C.Eng.FICE.FIHE
Director
Eastern Road Construction Unit,
99/83 Goldington Road, Bedford.
FIG. A
SHEET 2 OF 2
HOLE NO. 070A


ENGINEER OVE ARUP & PARTNERS
LOGGED BY THR
FIELDWORK BY Exploration Associates
LAB. TESTING BY Exploration Associates
OXFORD TO BIRMINGHAM NEW ROUTE - OXFORD TO BANBURY SECTION
EXCAVATION METHODS Rotary Coring.- Dando 220 rig.
105 mm diameter Rotary Coring from G.L. to 14.95 m
GROUND LEVEL 118.14 m O.D.
COORDINATES 454916 E 227139 N
DATES 21.5.79 to 22.5.79
HOLE NO. 070 A
SHEET 1 OF 2
FIGURE A
Date/Time at Depth
Depth of Casing
Depth to Water
Description of Strata
Strata
Leg.
Reduced Level
Depth
Graphical Representation
Sampling/in situ testing
Depths
Type
No.
Blows
Lab. Testing
Additional Tests and Notes
TOPSOIL
118.14 0.00
117.94 0.20
116.34 1.80
112.19 5.95
111.69 6.45
21.5.79
18.00 NONE DRY
08.00 NONE DRY
22.5.79
0.00
0.60
1.00
1.60
2.90
4.00
4.80
6.00
7.40
8.90
2.50
0.16 79
1.12 82 1.56 76
1.04 79 0.30 79
1.56 78
2.88 79 2.96 78
2.72 79 2.06 84
1.62 79 1.07 65
1.63 79 0.92 98
2.40 79 1.88 73
(*Point Load Index<0.10 MN/m²)
SP52 NW/49 2714
WATER
PIEZOMETER
SAMPLE AND TEST KEY
DEPTH All depths, levels and thicknesses in metres
J. Tiplady BSC. C.Eng.FICE,FIHE
Director
Eastern Road Construction Unit,
20/83 Goldington Road, Bedford.

Version 2.0.6.3

BGS ID: 336469 : BGS Reference: SP52NW36
British National Grid (27700) : 454970,226160
Report an issue with this borehole

<< < Prev Page 2 of 2 Next > >>



ENGINEER: OVE ARUP & PARTNERS
OXFORD TO BIRMINGHAM NEW ROUTE–OXFORD TO BANBURY SECTION
GROUND LEVEL 109.83 m O.D.
HOLE NO. 069
LOGGED BY: JHR
FIELDWORK BY: Exploration Associates
LAB. TESTING BY: Exploration Associates
EXCAVATION METHODS Percussion Boring – Pilcon Wayfarer
150 mm diameter hole
105 mm diameter Rotary Coring from 1.9 m to 20.0 m
COORDINATES 454975 E 226152 N
DATES 27.6.79 to 3.7.79
SHEET 2 OF 2
FIGURE A

Date/Time at Depth	Depth of Casing	Depth to Water	Piez.	Description of Strata	Leg.	Reduced Level	Depth	Depths	Type	No.	Blows	Sampling/in situ testing	Lab. Testing	Additional Tests and Notes
				(White Limestone – Ardley as above)										
				From 10.90 to 11.25m hard dark grey thinly bedded jointed silty clay with wispy laminae of weak pelletoidal limestone.								90/72		
29.6.79				Irregularly thinly interbedded hard dark grey very clayey calcareous SILT and very weak dark grey very muddy pelletoidal LIMESTONE very fossiliferous in places. (Hampen Marly Beds)		98.03	11.80	12.00				83	13 15 40	
18.00	3.00	3.00		Very stiff green very silty CLAY with occasional vertical root impressions. (Hampen Marly Beds)		97.38	12.45	12.80				99/84	81 20 20 51	
08.00	3.00	5.00		From 12.75 to 13.00m clay becoming very thinly interbedded with light grey silt. From 13.00 to 13.40m clay becoming very dark greenish black increasingly carbonaceous with specks of coal and fragmented shells.				13.00	D	9	N=101			
2.7.79				Moderately weak to moderately strong greyish mauve thinly becoming medium bedded fine grained calcareous SANDSTONE with some wisps of very stiff green clay and green clay/silt filled branching root holes. (Hampen Marly Beds)		95.78	14.05	14.00	U	10	50*/75	97/83	100 17 16 46	
				Very stiff dark green becoming hard greenish grey very thinly bedded silty becoming very silty CLAY. (Hampen Marly Beds) Below 15.80m becoming very thinly interbedded with very weak dark grey muddy pelletoidal limestone.		94.93	14.90	15.00				74/44		
								15.20	D	11	N=72		92 19 14 50	
												89/53		2.95 77 4.97 65
				Moderately weak to moderately strong thinly to medium bedded fine to medium grained pelletoidal micritic LIMESTONE with depth becoming increasingly calcarenitic. (Taynton Stone) From 16.95 to 17.15m and 17.70 to 17.80m hard dark grey silty clay and very weak pelletoidal clayey siltstone.		93.53	16.30	16.00			10*			SPT no penetration.
													2.50	0.14 65
														1.39 76 1.67 70
												94/48	2.47	
														0.10 76 0.23 63
								18.00						
														0.53 75 1.42 75
												84/41	2.53	
18.00	3.00	7.00			END	89.83	20.00	20.00						1.09 73 2.58 71

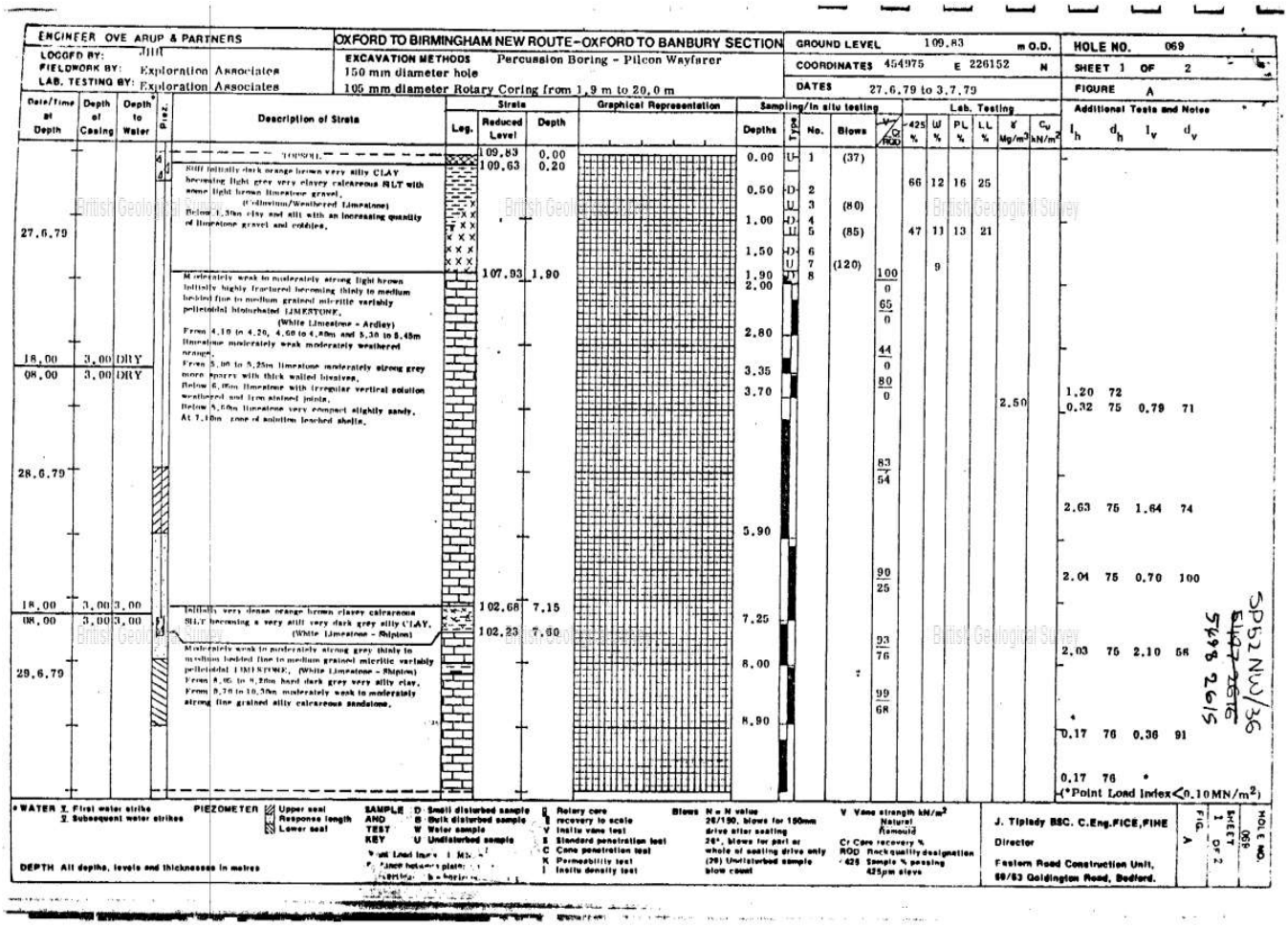
(*Point Load Index <0.10MN/m²)

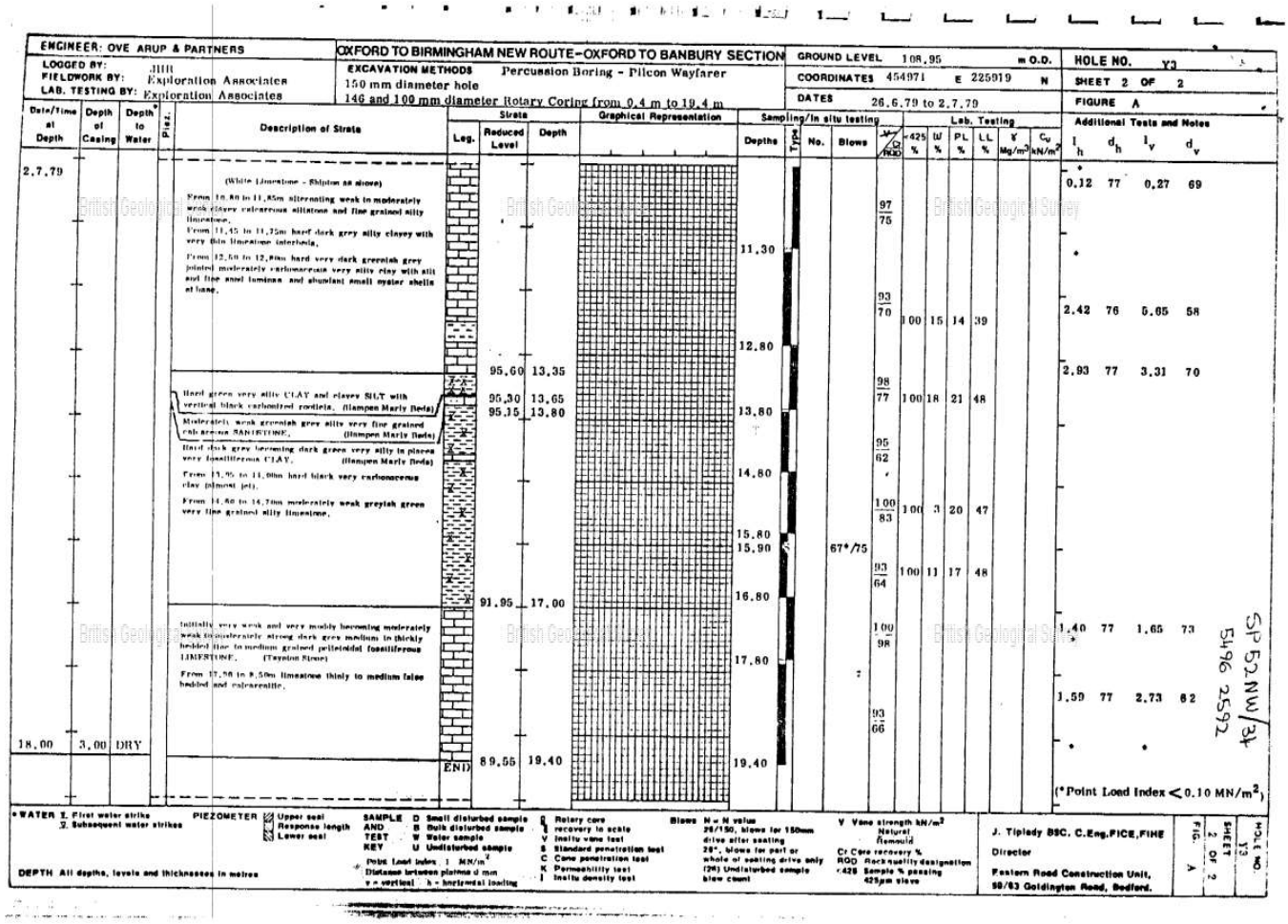
SP 52 NW/36 5497 3616

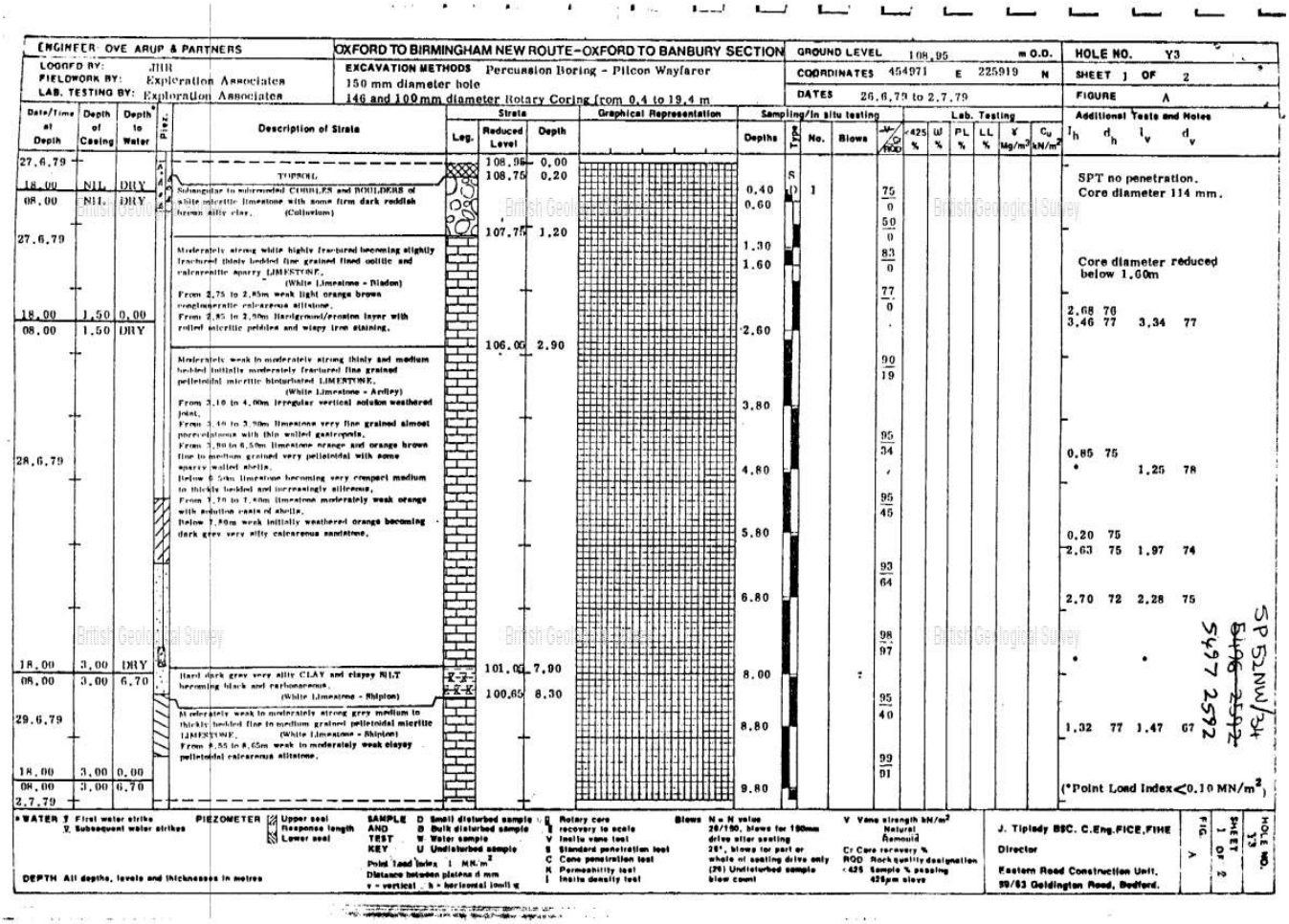
WATER ▼ First water strike ▽ Subsequent water strikes
PIEZOMETER Upper seal, Response length, Lower seal
SAMPLE AND TEST KEY: D Small disturbed sample, B Bulk disturbed sample, W Water sample, U Undisturbed sample, R Rotary core, I recovery to scale, V Insitu vane test, S Standard penetration test, C Cone penetration test, K Permeability test, J Insitu density test
Blows N = N value 26/150, blows for 150mm drive after seating 75*, blows for part of whole of seating drive only (2N) Undisturbed sample blow count
V Vane strength kN/m² Natural Remould
Cr Core recovery % RQD Rock quality designation %425 Sample % passing 425µm sieve
DEPTH All depths, levels and thicknesses in metres

J. Tiplady BSC. C.Eng.FICE,FIHE
Director
Eastern Road Construction Unit,
59/63 Goldington Road, Bedford.

FIG. A SHEET 2 OF 2 HOLE NO. 069


ENGINEER OVE ARUP & PARTNERS
OXFORD TO BIRMINGHAM NEW ROUTE–OXFORD TO BANBURY SECTION
LOGGED BY: JHH
FIELDWORK BY: Exploration Associates
LAB. TESTING BY: Exploration Associates
EXCAVATION METHODS Percussion Boring - Pilcon Wayfarer
150 mm diameter hole
105 mm diameter Rotary Coring from 1,9 m to 20,0 m
GROUND LEVEL 109.83 m O.D.
COORDINATES 454975 E 226152 N
DATES 27.6.79 to 3.7.79
HOLE NO. 069
SHEET 1 OF 2
FIGURE A
Date/Time at Depth
Depth of Casing
Depth to Water
Description of Strata
Strata
Leg.
Reduced Level
Depth
Graphical Representation
Sampling/In situ testing
Depths
Type
No.
Blows
Lab. Testing
Additional Tests and Notes
TOPSOIL
109.83 0.00
Stiff initially dark orange brown very silty CLAY becoming light grey very clayey calcareous SILT with some light brown limestone gravel.
(Cornbrash/Weathered Limestone)
109.63 0.20
Below 1.30m clay and silt with an increasing quantity of limestone gravel and cobbles.
Moderately weak to moderately strong light brown initially highly fractured becoming thinly to medium bedded fine to medium grained micritic variably pelletoidal bioturbated LIMESTONE.
(White Limestone - Ardley)
107.93 1.90
From 4.10 to 4.20, 4.60 to 4.80m and 5.30 to 5.45m limestone moderately weak moderately weathered orange.
From 5.80 to 5.25m limestone moderately strong grey more heavily with thick walled bivalves.
Below 6.05m limestone with irregular vertical solution weathered and iron stained joints.
Below 6.60m limestone very compact slightly sandy.
At 7.10m zone of solution leached shells.
27.6.79
18.00 3.00 DRY
08.00 3.00 DRY
28.6.79
Initially very dense orange brown clayey calcareous SILT becoming a very stiff very dark grey silty CLAY.
(White Limestone - Shipton)
102.68 7.15
102.23 7.60
Moderately weak to moderately strong grey thinly to medium bedded fine to medium grained micritic variably pelletoidal LIMESTONE. (White Limestone - Shipton)
From 8.05 to 8.20m hard dark grey very silty clay.
From 8.70 to 10.30m moderately weak to moderately strong fine grained silty calcareous sandstone.
18.00 3.00 3.00
08.00 3.00 3.00
29.6.79
0.00 1 (37)
0.50 2
0.50 3 (80)
1.00 4
1.00 5 (85)
1.50 6
1.90 7 (120)
1.90 8
2.00
2.80
3.35
3.70
5.90
7.25
8.00
8.90
100 0
66 0
44 0
80 0
83 54
90 25
93 76
99 68
66 12 16 25
47 11 13 21
9
2.50
1.20 72
0.32 75 0.79 71
2.63 75 1.64 74
2.04 75 0.70 100
2.03 75 2.10 58
0.17 76 0.36 91
0.17 76 *
(*Point Load Index <0.10MN/m²)
SP52NW/36
5498 2615
WATER ▽ First water strike ▽ Subsequent water strikes
PIEZOMETER Upper seal Response length Lower seal
SAMPLE AND TEST KEY D Small disturbed sample B Bulk disturbed sample W Water sample U Undisturbed sample
R Rotary core I recovery to scale V Insitu vane test S Standard penetration test C Cone penetration test K Permeability test I Insitu density test
Blows N = N value 26/150, blows for 150mm drive after seating 26*, blows for part of whole of seating drive only (26) Undisturbed sample blow count
V Vane strength kN/m² Natural Remould
Cr Core recovery % ROD Rock quality designation 425 Sample % passing 425µm sieve
DEPTH All depths, levels and thicknesses in metres
J. Tiplady BSC. C.Eng.FICE,FIHE
Director
Eastern Road Construction Unit,
88/83 Goldington Road, Bedford.
FIG. A
SHEET 1 OF 2
HOLE No. 069


ENGINEER: OVE ARUP & PARTNERS
OXFORD TO BIRMINGHAM NEW ROUTE–OXFORD TO BANBURY SECTION
LOGGED BY: JHH
FIELDWORK BY: Exploration Associates
LAB. TESTING BY: Exploration Associates
EXCAVATION METHODS Percussion Boring - Pilcon Wayfarer
150 mm diameter hole
146 and 100 mm diameter Rotary Coring from 0.4 m to 19.4 m
GROUND LEVEL 108.95 m O.D.
COORDINATES 454971 E 225919 N
DATES 26.6.79 to 2.7.79
HOLE NO. Y3
SHEET 2 OF 2
FIGURE A
Date/Time at Depth
Depth of Casing
Depth to Water
Description of Strata
Strata
Leg.
Reduced Level
Depth
Graphical Representation
Sampling/In situ testing
Depths
Type
No.
Blows
Lab. Testing
Additional Tests and Notes
2.7.79
18.00
3.00
DRY
95.60 13.35
95.30 13.65
95.15 13.80
91.95 17.00
89.55 19.40
END
11.30
12.80
13.80
14.80
15.80
15.90
16.80
17.80
19.40
67*/75
0.12 77 0.27 69
2.42 76 5.65 58
2.93 77 3.31 70
1.40 77 1.65 73
1.59 77 2.73 82
SP 52 NW/34
5496 2592
(*Point Load Index < 0.10 MN/m²)
WATER 1. First water strike 2. Subsequent water strikes
PIEZOMETER Upper seal Response length Lower seal
SAMPLE AND TEST KEY D Small disturbed sample B Bulk disturbed sample W Water sample U Undisturbed sample
Point Load Index I MN/m² Distance between platens d mm v = vertical h = horizontal loading
R Rotary core recovery in scale V Insitu vane test S Standard penetration test C Cone penetration test K Permeability test I Insitu density test
Blows N = N value 25/150, blows for 150mm drive after seating 25*, blows for part or whole of seating drive only (24) Undisturbed sample blow count
V Vane strength kN/m² Natural Remould
Cr Core recovery % RQD Rock quality designation <425 Sample % passing 425μm sieve
DEPTH All depths, levels and thicknesses in metres
J. Tipledy BSC. C.Eng.FICE,FIHE
Director
Eastern Road Construction Unit,
98/63 Goldington Road, Bedford.
FIG. A
SHEET 2 OF 2
HOLE NO. Y3



ENGINEER OVE ARUP & PARTNERS
OXFORD TO BIRMINGHAM NEW ROUTE–OXFORD TO BANBURY SECTION
GROUND LEVEL 108.95 m O.D.
HOLE NO. Y3
LOGGED BY: JHR
FIELDWORK BY: Exploration Associates
LAB. TESTING BY: Exploration Associates
EXCAVATION METHODS Percussion Boring - Pilcon Wayfarer 150 mm diameter hole 146 and 109 mm diameter Rotary Coring from 0.4 to 19.4 m
COORDINATES 454971 E 225919 N
DATES 26.6.79 to 2.7.79
SHEET 1 OF 2
FIGURE A

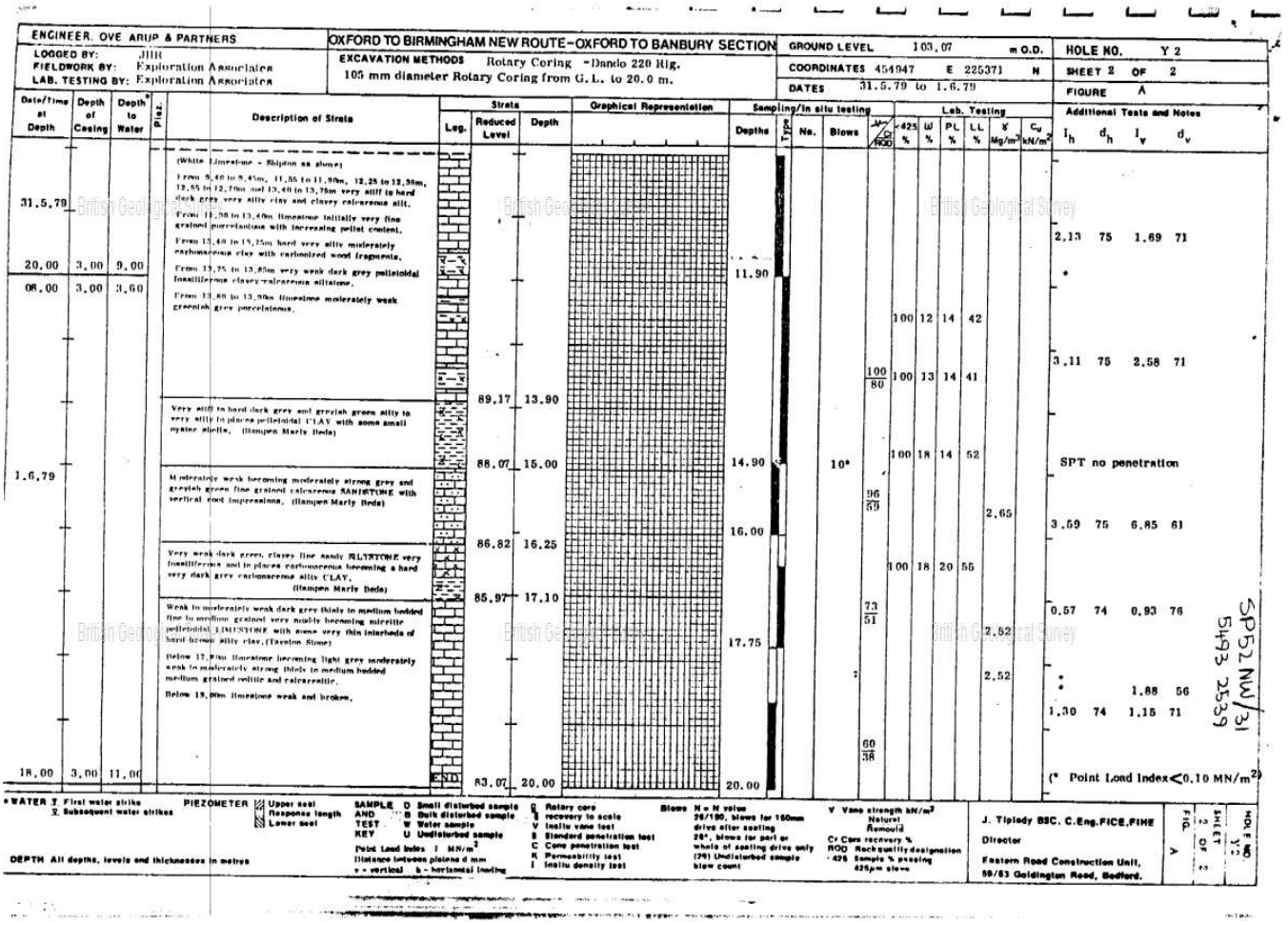
Date/Time at Depth	Depth of Casing	Depth to Water	Piez.	Description of Strata	Leg.	Reduced Level	Depth	Depths	Type	No.	Blows	RQD %	<425 %	w %	PL %	LL %	γ Mg/m³	C_u kN/m²	Additional Tests and Notes I_h	d_h	I_v	d_v
27.6.79				TOPSOIL		108.95	0.00															
18.00	NIL	DRY				108.75	0.20															
08.00	NIL	DRY		Subangular to subrounded COBBLES and BOULDERS of white micritic limestone with some firm dark reddish brown silty clay. (Colluvium)				0.40	D	1		75							SPT no penetration. Core diameter 114 mm.			
								0.60				0										
												50										
27.6.79						107.75	1.20					0										
				Moderately strong white highly fractured becoming slightly fractured thinly bedded fine grained fined oolitic and calcarenitic sparry LIMESTONE. (White Limestone - Bladon)				1.30				83										
								1.60				0							Core diameter reduced below 1.00m			
												77										
18.00	1.50	0.00		From 2.75 to 2.85m weak light orange brown conglomeratic calcareous siltstone. From 2.85 to 2.90m Hardground/erosion layer with rolled micritic pebbles and wispy iron staining.								0							2.68	70		
08.00	1.50	DRY																	3.46	77	3.34	77
						106.00	2.90	2.60														
				Moderately weak to moderately strong thinly and medium bedded initially moderately fractured fine grained pelletoidal micritic bioturbated LIMESTONE. (White Limestone - Ardley) From 3.10 to 4.00m irregular vertical solution weathered joint. From 3.40 to 3.50m limestone very fine grained almost pure calcarenite with thin walled gastropods. From 3.80 to 6.50m limestone orange and orange brown fine to medium grained very pelletoidal with some sparry walled shells. Below 6.50m limestone becoming very compact medium to thickly bedded and increasingly silicarous. From 7.20 to 7.40m limestone moderately weak orange with solution casts of shells. Below 7.80m weak initially weathered orange becoming dark grey very silty calcareous sandstone.								90	19								
								3.80														
												95										
28.6.79												34							0.85	75		
								4.80													1.25	78
												95										
												45							0.20	75		
								5.80											2.63	75	1.97	74
												93										
								6.80				64							2.70	72	2.28	75
												98										
18.00	3.00	DRY										97										
08.00	3.00	6.70		Hard dark grey very silty CLAY and clayey SILT becoming black and carbonaceous. (White Limestone - Shipton)		101.05	7.90	8.00														
						100.65	8.30					95										
29.6.79				Moderately weak to moderately strong grey medium to thickly bedded fine to medium grained pelletoidal micritic LIMESTONE. (White Limestone - Shipton) From 8.55 to 8.65m weak to moderately weak clayey pelletoidal calcareous siltstone.				8.80				40							1.32	77	1.47	67
												99										
18.00	3.00	0.00						9.80				91							(*Point Load Index<0.10 MN/m²)			
08.00	3.00	6.70																				
2.7.79																						

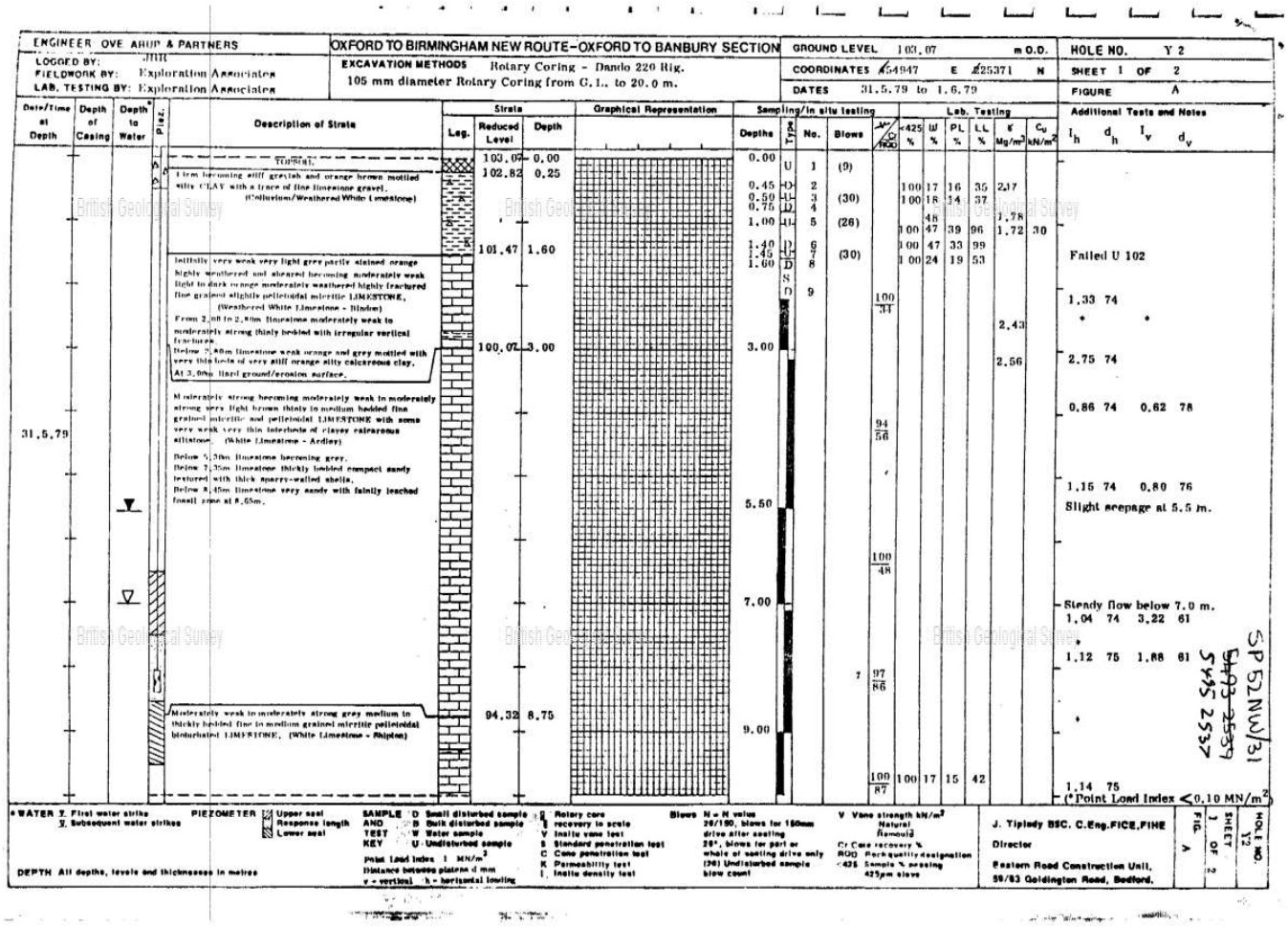
SP 52NW/34
5496 2592
5497 2592

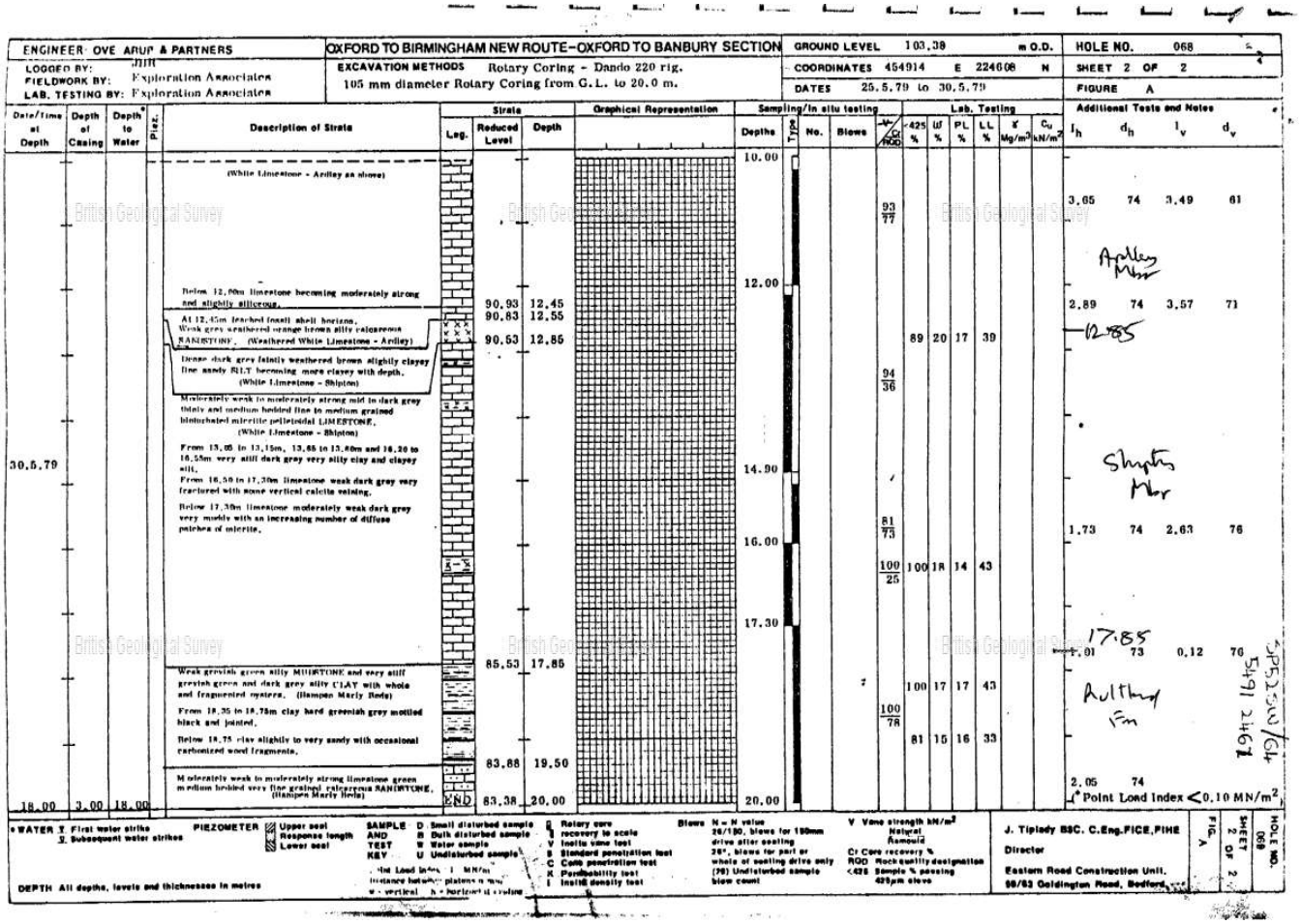
* WATER ▼ First water strike ▽ Subsequent water strikes
PIEZOMETER Upper seal Response length Lower seal
SAMPLE AND TEST KEY: D Small disturbed sample, B Bulk disturbed sample, W Water sample, U Undisturbed sample
Point Load Index I MN.m⁻² Distance between platens d mm v = vertical h = horizontal load
R Rotary core recovery to scale, V Insltu vane tool, S Standard penetration test, C Cone penetration test, K Permeability test, I Insitu density test
Blows N = N value 20/150, blows for 150mm drive after seating 25*, blows for part or whole of seating drive only (26) Undisturbed sample blow count
V Vane strength kN/m² Natural Remould
Cr Core recovery % RQD Rock quality designation <425 Sample % passing 425µm sieve
DEPTH All depths, levels and thicknesses in metres

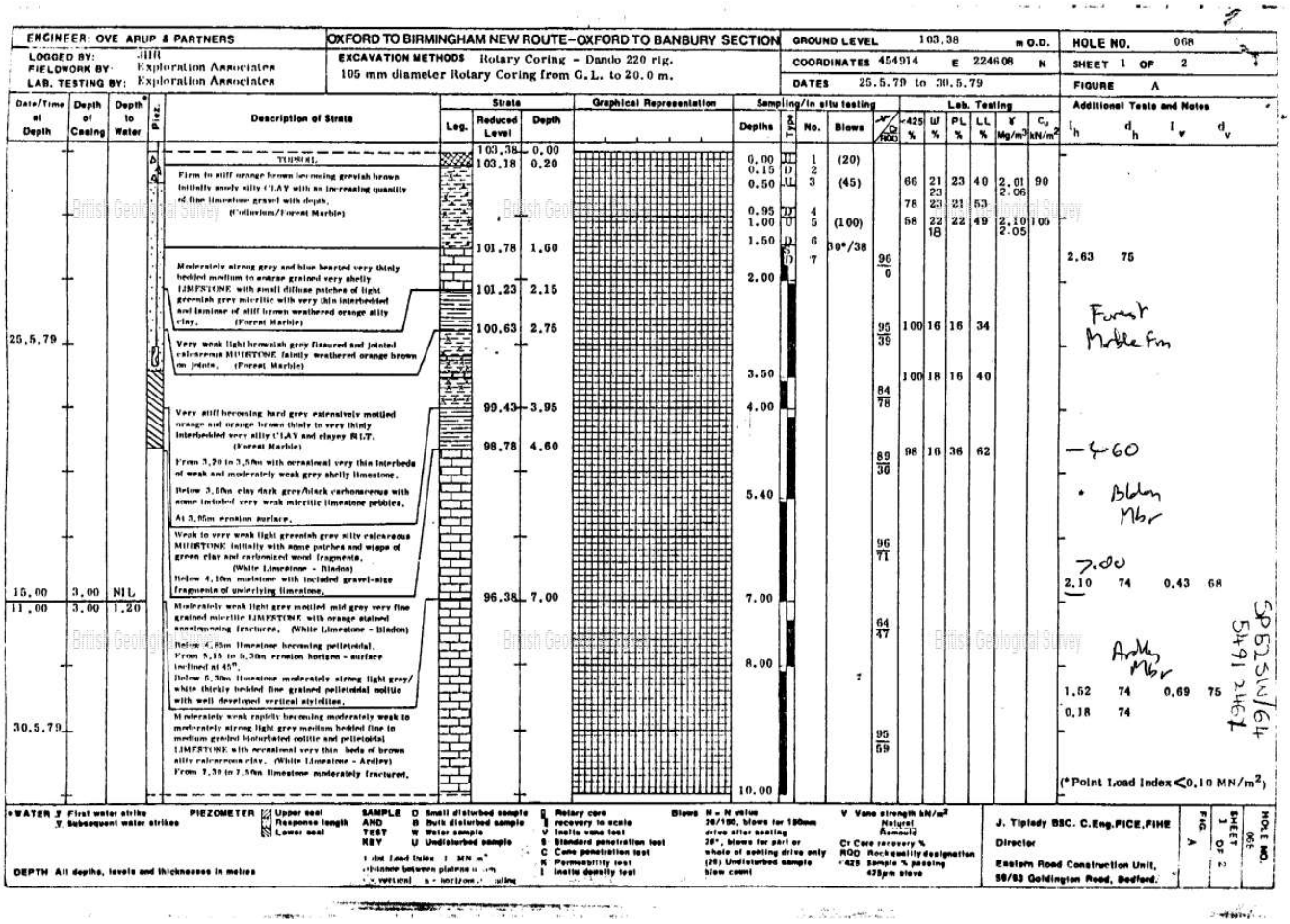
J. Tiplady BSC. C.Eng.FICE,FIHE
Director
Eastern Road Construction Unit.
99/63 Goldington Road, Bedford.

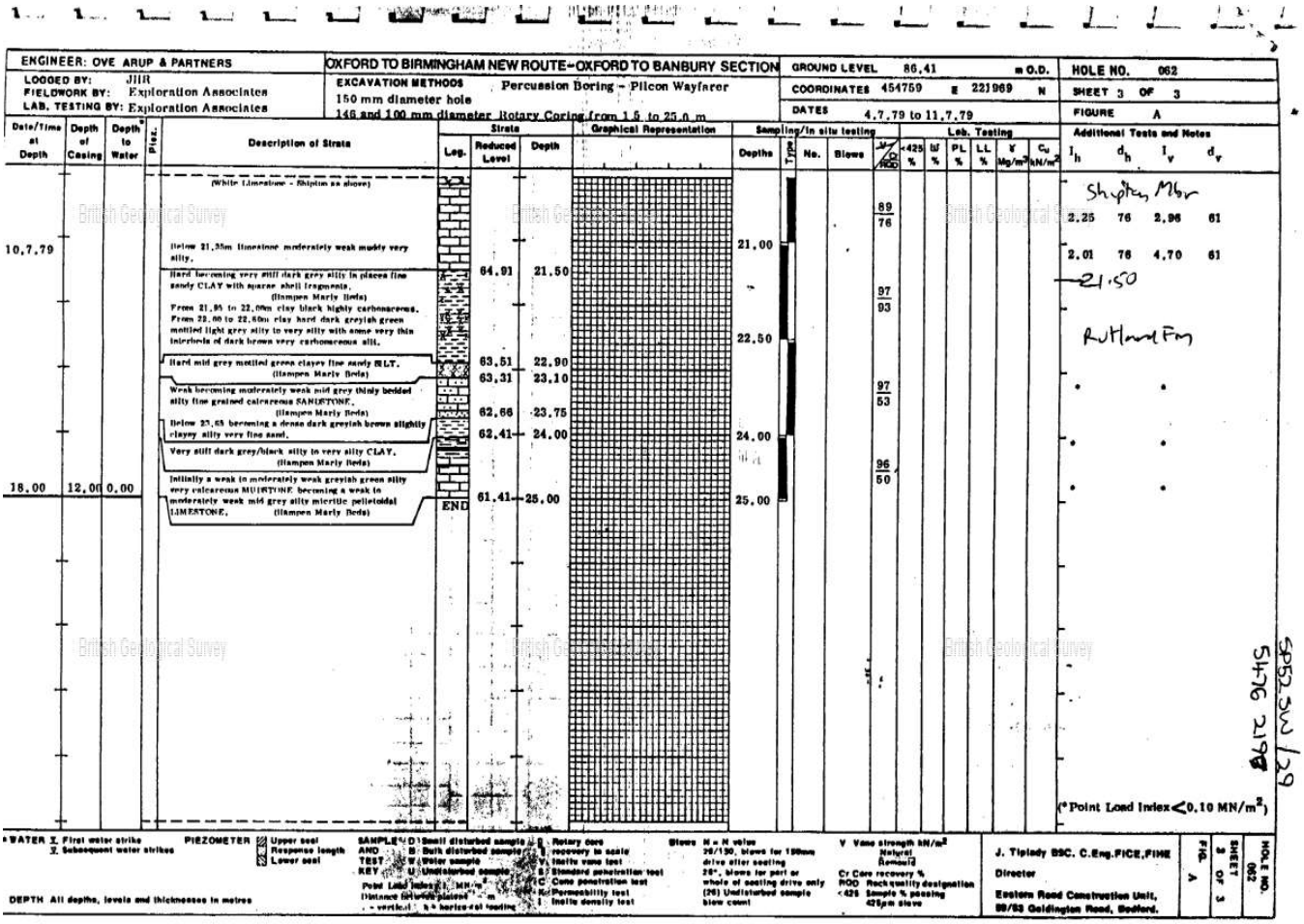
FIG. A SHEET 1 OF 2 HOLE NO. Y3


ENGINEER OVE ARUP & PARTNERS
OXFORD TO BIRMINGHAM NEW ROUTE-OXFORD TO BANBURY SECTION
LOGGED BY: JHH
FIELDWORK BY: Exploration Associates
LAB. TESTING BY: Exploration Associates
EXCAVATION METHODS Rotary Coring -Dando 220 Rig.
105 mm diameter Rotary Coring from G.L. to 20.0 m.
GROUND LEVEL 103.07 m O.D.
COORDINATES 454947 E 225371 N
DATES 31.5.79 to 1.6.79
HOLE NO. Y 2
SHEET 2 OF 2
FIGURE A
Strata
Graphical Representation
Sampling/In situ testing
Lab. Testing
Additional Tests and Notes
Description of Strata
Reduced Level
Depth
Depths
Type
No.
Blows
SPT no penetration
SP52 NW/31
5493 2539
J. Tiplady BSC. C.Eng.FICE,FIHE
Director
Eastern Road Construction Unit,
59/63 Goldington Road, Bedford.


ENGINEER OVE ARUP & PARTNERS
OXFORD TO BIRMINGHAM NEW ROUTE–OXFORD TO BANBURY SECTION
LOGGED BY:
FIELDWORK BY: Exploration Associates
LAB. TESTING BY: Exploration Associates
EXCAVATION METHODS Rotary Coring - Dando 220 Rig. 105 mm diameter Rotary Coring from G.L. to 20.0 m.
GROUND LEVEL 103.07 m O.D.
COORDINATES 454947 E 225371 N
DATES 31.5.79 to 1.6.79
HOLE NO. Y 2
SHEET 1 OF 2
FIGURE A
Strata
Graphical Representation
Sampling/In situ testing
Lab. Testing
Additional Tests and Notes
Description of Strata
Reduced Level
Depth
Depths
Type
No.
Blows
TOPSOIL
103.07 0.00
Firm becoming stiff greyish and orange brown mottled silty CLAY with a trace of fine limestone gravel. (Colluvium/Weathered White Limestone)
102.82 0.25
Initially very weak very light grey partly stained orange highly weathered and sheared becoming moderately weak light to dark orange moderately weathered highly fractured fine grained slightly pelletoidal micritic LIMESTONE. (Weathered White Limestone - Burford)
101.47 1.60
From 2.00 to 2.80m limestone moderately weak to moderately strong thinly bedded with irregular vertical fractures.
Below 2.80m limestone weak orange and grey mottled with very thin beds of very stiff orange silty calcareous clay.
At 3.00m Hard ground/erosion surface.
100.07 3.00
Moderately strong becoming moderately weak to moderately strong very light brown thinly to medium bedded fine grained micritic and pelletoidal LIMESTONE with some very weak very thin interbeds of clayey calcareous siltstone. (White Limestone - Ardley)
Below 5.30m limestone becoming grey.
Below 7.35m limestone thickly bedded compact sandy textured with thick quarry-walled shells.
Below 8.40m limestone very sandy with faintly leached fossil zone at 8.65m.
31.5.79
Moderately weak to moderately strong grey medium to thickly bedded fine to medium grained micritic pelletoidal bioturbated LIMESTONE. (White Limestone - Shipton)
94.32 8.75
Failed U 102
Steady flow below 7.0 m.
Slight seepage at 5.5 m.
(*Point Load Index <0.10 MN/m²)
WATER Y. First water strike Y. Subsequent water strikes
PIEZOMETER Upper seal Response length Lower seal
SAMPLE AND TEST KEY D Small disturbed sample B Bulk disturbed sample W Water sample U Undisturbed sample
Point Load Index I MN/m² Distance between platens d mm v - vertical h - horizontal loading
R Rotary core recovery in scale V Inslte vane test S Standard penetration test C Cone penetration test K Permeability test Inslte density test
Blows N = N value 26/150, blows for 150mm drive after seating 26*, blows for part or whole of seating drive only (26) Undisturbed sample blow count
V Vane strength kN/m² Natural Remould
Cr Cone recovery % RQD Rock quality designation <425 Sample % passing 425μm sieve
DEPTH All depths, levels and thicknesses in metres
J. Tiplady BSC. C.Eng.FICE,FIHE
Director
Eastern Road Construction Unit, 59/63 Goldington Road, Bedford.
FIG. A
SHEET 1 OF 2
HOLE NO. Y2
SP 52 NW/31
SP 5455 2537


ENGINEER: OVE ARUP & PARTNERS
OXFORD TO BIRMINGHAM NEW ROUTE–OXFORD TO BANBURY SECTION
LOGGED BY: Exploration Associates
FIELDWORK BY: Exploration Associates
LAB. TESTING BY: Exploration Associates
EXCAVATION METHODS Rotary Coring - Dando 220 rig. 105 mm diameter Rotary Coring from G.L. to 20.0 m.
GROUND LEVEL 103.38 m O.D.
COORDINATES 454914 E 224608 N
DATES 25.5.79 to 30.5.79
HOLE NO. 068
SHEET 2 OF 2
FIGURE A
Strata
Graphical Representation
Sampling/In situ testing
Lab. Testing
Additional Tests and Notes
Date/Time at Depth
Depth of Casing
Depth to Water
Piez.
Description of Strata
Leg.
Reduced Level
Depth
Depths
Type
No.
Blows
SCR/ROD
-425 %
wf %
PL %
LL %
γ Mg/m³
Cu kN/m²
Ih
dh
Iv
dv
(White Limestone - Ardley as above)
Below 12.00m limestone becoming moderately strong and slightly siliceous.
At 12.45m leached fossil shell horizon.
Weak grey weathered orange brown silty calcareous SANDSTONE. (Weathered White Limestone - Ardley)
Dense dark grey faintly weathered brown slightly clayey fine sandy SILT becoming more clayey with depth. (White Limestone - Shipton)
Moderately weak to moderately strong mid to dark grey thinly and medium bedded fine to medium grained bioturbated micritic pelletoidal LIMESTONE. (White Limestone - Shipton)
From 13.05 to 13.15m, 13.65 to 13.80m and 16.20 to 16.55m very stiff dark grey very silty clay and clayey silt.
From 16.50 to 17.30m limestone weak dark grey very fractured with some vertical calcite veining.
Below 17.30m limestone moderately weak dark grey very muddy with an increasing number of diffuse patches of micrite.
30.5.79
Weak greyish green silty MUDSTONE and very stiff greyish green and dark grey silty CLAY with whole and fragmented oysters. (Hampen Marly Beds)
From 18.35 to 18.75m clay hard greenish grey mottled black and jointed.
Below 18.75 clay slightly to very sandy with occasional carbonized wood fragments.
Moderately weak to moderately strong limestone green mottled bedded very fine grained calcareous SANDSTONE. (Hampen Marly Beds)
END
18.00
3.00
18.00
90.93 12.45
90.83 12.55
90.53 12.85
85.53 17.85
83.88 19.50
83.38 20.00
10.00
12.00
14.90
16.00
17.30
20.00
93/77
94/36
81/73
100/25
100/78
89 20 17 39
100 18 14 43
100 17 17 43
81 15 16 33
3.65 74 3.49 81
2.89 74 3.57 71
1.73 74 2.63 76
1.01 73 0.12 76
2.05 74
Ardley Mbr
12.85
Shipton Mbr
17.85
Aulthorp Fm
SP52SW/64
5491 2461
Point Load Index <0.10 MN/m²
WATER ▽ First water strike ▽ Subsequent water strikes
PIEZOMETER Upper seal Response length Lower seal
SAMPLE AND TEST KEY D Small disturbed sample B Bulk disturbed sample W Water sample U Undisturbed sample
R Rotary core I recovery to scale V Insitu vane test S Standard penetration test C Cone penetration test K Permeability test I Insitu density test
Blows N = N value 26/150, blows for 150mm drive after seating 26*, blows for part of whole of seating drive only (26) Undisturbed sample blow count
V Vane strength kN/m² Natural Remould
Cr Core recovery % RQD Rock quality designation <425 Sample % passing 425μm sieve
DEPTH All depths, levels and thicknesses in metres
J. Tiplady BSC. C.Eng.FICE,FIHE
Director
Eastern Road Construction Unit.
98/63 Goldington Road, Bedford.
FIG. A
SHEET 2 OF 2
HOLE NO. 068


ENGINEER: OVE ARUP & PARTNERS
OXFORD TO BIRMINGHAM NEW ROUTE–OXFORD TO BANBURY SECTION
GROUND LEVEL 103.38 m O.D.
HOLE NO. 068
LOGGED BY: Jiffi
FIELDWORK BY: Exploration Associates
LAB. TESTING BY: Exploration Associates
EXCAVATION METHODS Rotary Coring - Dando 220 rig. 105 mm diameter Rotary Coring from G.L. to 20.0 m.
COORDINATES 454914 E 224608 N
DATES 25.5.79 to 30.5.79
SHEET 1 OF 2
FIGURE A
Date/Time at Depth
Depth of Casing
Depth to Water
Description of Strata
Strata
Leg.
Reduced Level
Depth
Graphical Representation
Sampling/in situ testing
Depths
Type
No.
Blows
Lab. Testing
Additional Tests and Notes
TOPSOIL
Firm to stiff orange brown becoming greyish brown initially sandy silty CLAY with an increasing quantity of fine limestone gravel with depth. (Cotswold/Forest Marble)
Moderately strong grey and blue hearted very thinly bedded medium to coarse grained very shelly LIMESTONE with small diffuse patches of light greenish grey micritic with very thin interbedded and laminae of stiff brown weathered orange silty clay. (Forest Marble)
Very weak light brownish grey fissured and jointed calcareous MUDSTONE faintly weathered orange brown on joints. (Forest Marble)
Very stiff becoming hard grey extensively mottled orange red orange brown thinly to very thinly interbedded very silty CLAY and clayey SILT. (Forest Marble)
From 3.20 to 3.50m with occasional very thin interbeds of weak and moderately weak grey shelly limestone.
Below 3.50m clay dark grey/black carbonaceous with some included very weak micritic limestone pebbles.
At 3.80m erosion surface.
Weak to very weak light greenish grey silty calcareous MUDSTONE initially with some patches and wisps of green clay and carbonized wood fragments. (White Limestone - Blndon)
Below 4.10m mudstone with included gravel-size fragments of underlying limestone.
Moderately weak light grey mottled mid grey very fine grained micritic LIMESTONE with orange stained anastomosing fractures. (White Limestone - Blndon)
Below 4.85m limestone becoming pelletoidal.
From 5.15 to 5.30m erosion horizon - surface inclined at 45°.
Below 6.30m limestone moderately strong light grey/white thickly bedded fine grained pelletoidal oolitic with well developed vertical stylolites.
Moderately weak rapidly becoming moderately weak to moderately strong light grey medium bedded fine to medium grained bioturbated oolitic and pelletoidal LIMESTONE with occasional very thin beds of brown silty calcareous clay. (White Limestone - Ardley)
From 7.30 to 7.50m limestone moderately fractured.
25.5.79
15.00
3.00
NIL
11.00
3.00
1.20
30.5.79
Forest Marble Fm
Blndon Mbr
Ardley Mbr
SP52SW/64
5491 2467
(* Point Load Index <0.10 MN/m²)
WATER ▼ First water strike ▽ Subsequent water strikes
PIEZOMETER Upper seal Response tenglh Lower seal
SAMPLE AND TEST KEY
DEPTH All depths, levels and thicknesses in metres
J. Tiplady BSC. C.Eng.FICE.FIHE
Director
Eastern Road Construction Unit,
58/63 Goldington Road, Bedford.
FIG. A
SHEET 1 OF 2
HOLE NO. 068



ENGINEER: OVE ARUP & PARTNERS
LOGGED BY: JHR
FIELDWORK BY: Exploration Associates
LAB. TESTING BY: Exploration Associates

OXFORD TO BIRMINGHAM NEW ROUTE–OXFORD TO BANBURY SECTION
EXCAVATION METHODS: Percussion Boring – Pilcon Wayfarer
150 mm diameter hole
146 and 100 mm diameter Rotary Coring from 1.6 to 25.0 m

GROUND LEVEL 86.41 m O.D.
COORDINATES 454759 E 221969 N
DATES 4.7.79 to 11.7.79

HOLE NO. 062
SHEET 3 OF 3
FIGURE A

Date/Time at Depth | Depth of Casing | Depth to Water | Piez. | Description of Strata | Strata: Leg. | Reduced Level | Depth | Graphical Representation | Sampling/In situ testing: Depths | Type | No. | Blows | Lab. Testing: <425 % | wf % | PL % | LL % | Additional Tests and Notes

10.7.79
18.00 | 12.00 | 0.00

(White Limestone – Rhiston as above)

Below 21.35m limestone moderately weak muddy very silty.

Hard becoming very stiff dark grey silty in places fine sandy CLAY with sparse shell fragments. (Hampen Marly Beds)
From 21.95 to 22.09m clay black highly carbonaceous.
From 22.60 to 22.65m clay hard dark greyish green mottled light grey silty to very silty with some very thin laminations of dark brown very carbonaceous silt.

Hard mid grey mottled green clayey fine sandy SILT. (Hampen Marly Beds)

Weak becoming moderately weak mid grey thinly bedded silty fine grained calcareous SANDSTONE. (Hampen Marly Beds)

Below 23.65 becoming a dense dark greyish brown slightly clayey silty very fine sand.

Very stiff dark grey/black silty to very silty CLAY. (Hampen Marly Beds)

Initially a weak to moderately weak greyish green silty very calcareous MUDSTONE becoming a weak to moderately weak mid grey silty micritic pelletoidal LIMESTONE. (Hampen Marly Beds)

END

Leg.	Reduced Level	Depth
	64.91	21.50
	63.51	22.90
	63.31	23.10
	62.66	23.75
	62.41	24.00
END	61.41	25.00

Depths	Type	No.	Blows	RQD %	<425 %	wf %	PL %	LL %	γ Mg/m³	c_u kN/m²
21.00				89						
				76						
22.50				97						
				93						
24.00				97						
				53						
25.00				96						
				50						

Shipton Mbr
2.25 76 2.96 61
2.01 76 4.70 61
21.50
Rutland Fm

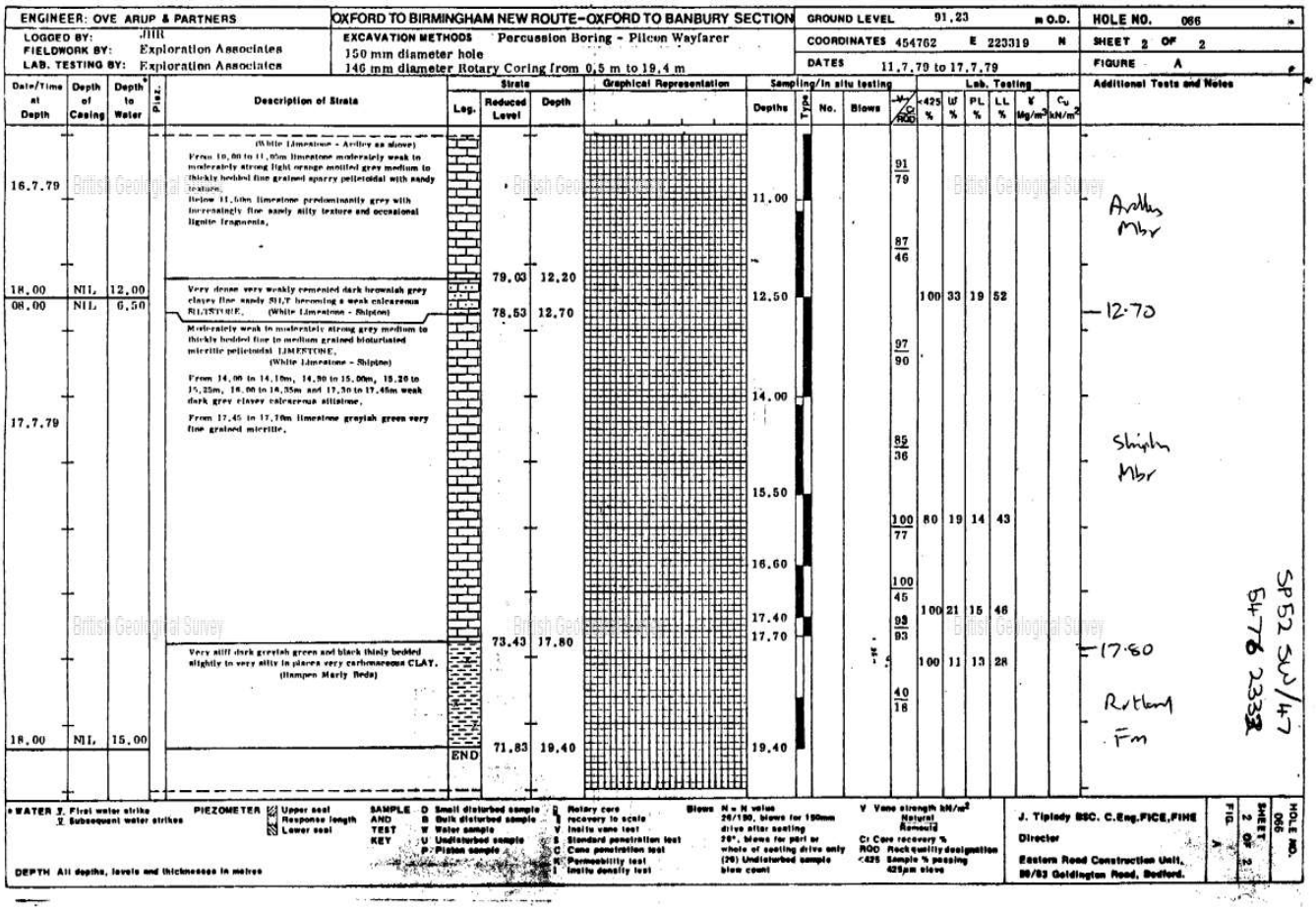
(*Point Load Index < 0.10 MN/m²)

SP52SW/29 B612 9476

WATER ▽ First water strike ▼ Subsequent water strikes
PIEZOMETER Upper seal, Response length, Lower seal
SAMPLES AND TEST KEY: D Small disturbed sample; B Bulk disturbed sample; W Water sample; U Undisturbed sample; Point Load Index I_s MN/m² (Distance between platens) m; a vertical, b horizontal testing
R Rotary core, recovery to scale; V Vane test; S Standard penetration test; C Cone penetration test; K Permeability test; I Insitu density test
Blows N = N value 26/150, blows for 150mm drive after seating 26*, blows for part or whole of seating drive only (26) Undisturbed sample blow count
V Vane strength kN/m² Peak(r) Remould
Cr Core recovery % ROD Rock quality designation <425 Sample % passing 425μm sieve
DEPTH All depths, levels and thicknesses in metres

J. Tiplady BSC. C.Eng.FICE,FIHE
Director
Eastern Road Construction Unit, 99/93 Goldington Road, Bedford.

FIG. A | SHEET 3 OF 3 | HOLE NO. 062



ENGINEER: OVE ARUP & PARTNERS
OXFORD TO BIRMINGHAM NEW ROUTE–OXFORD TO BANBURY SECTION
GROUND LEVEL 91.23 m O.D.
HOLE NO. 066
LOGGED BY: JHH
FIELDWORK BY: Exploration Associates
LAB. TESTING BY: Exploration Associates
EXCAVATION METHODS Percussion Boring - Pilcon Wayfarer
150 mm diameter hole
146 mm diameter Rotary Coring from 0,5 m to 19,4 m
COORDINATES 454762 E 223319 N
DATES 11.7.79 to 17.7.79
SHEET 2 OF 2
FIGURE A

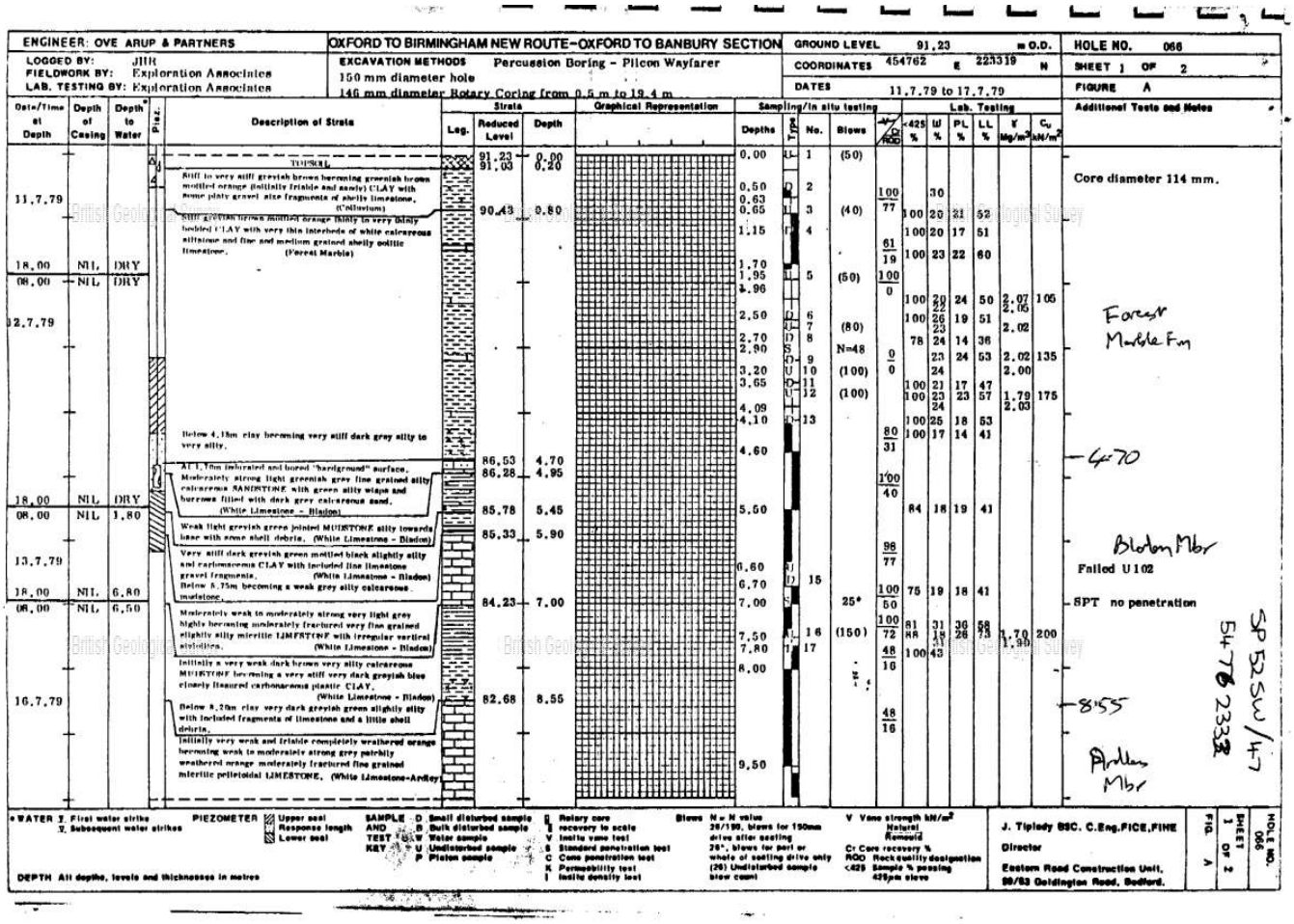
Date/Time at Depth	Depth of Casing	Depth to Water	Piez.	Description of Strata	Leg.	Reduced Level	Depth	Depths	Type	No.	Blows	Core Recovery % / ROD	<425 %	LI %	PL %	LL %	γ Mg/m³	C_u kN/m²	Additional Tests and Notes
16.7.79				(White Limestone - Ardley as above) From 10,80 to 11,05m limestone moderately weak to moderately strong light orange mottled grey medium to thickly bedded fine grained sparry pelletoidal with sandy texture. Below 11,05m limestone predominantly grey with increasingly fine sandy silty texture and occasional lignite fragments.								91/79							Ardley Mbr
18.00	NIL	12,00				79,03	12,20	11,00				87/46							
08.00	NIL	6,50		Very dense very weakly cemented dark brownish grey clayey fine sandy SILT becoming a weak calcareous SILTSTONE. (White Limestone - Shipton)		78,53	12,70	12,50					100	33	19	52			12·70
17.7.79				Moderately weak to moderately strong grey medium to thickly bedded fine to medium grained bioturbated micritic pelletoidal LIMESTONE. (White Limestone - Shipton) From 14,00 to 14,10m, 14,80 to 15,00m, 15,20 to 15,25m, 16,00 to 16,35m and 17,30 to 17,45m weak dark grey clayey calcareous siltstone. From 17,45 to 17,70m limestone greyish green very fine grained micritic.				14,00				97/90							
								15,50				85/36							Shipton Mbr
								16,60				100/77	80	19	14	43			
								17,40				100/45							
								17,70				93/93	100	21	15	46			17·80
				Very stiff dark greyish green and black thinly bedded slightly to very silty in places very carbonaceous CLAY. (Hampen Marly Beds)		73,43	17,80						100	11	13	28			
												40/18							Rutland Fm
18.00	NIL	15,00																	
						71,83	19,40	19,40											
						END													

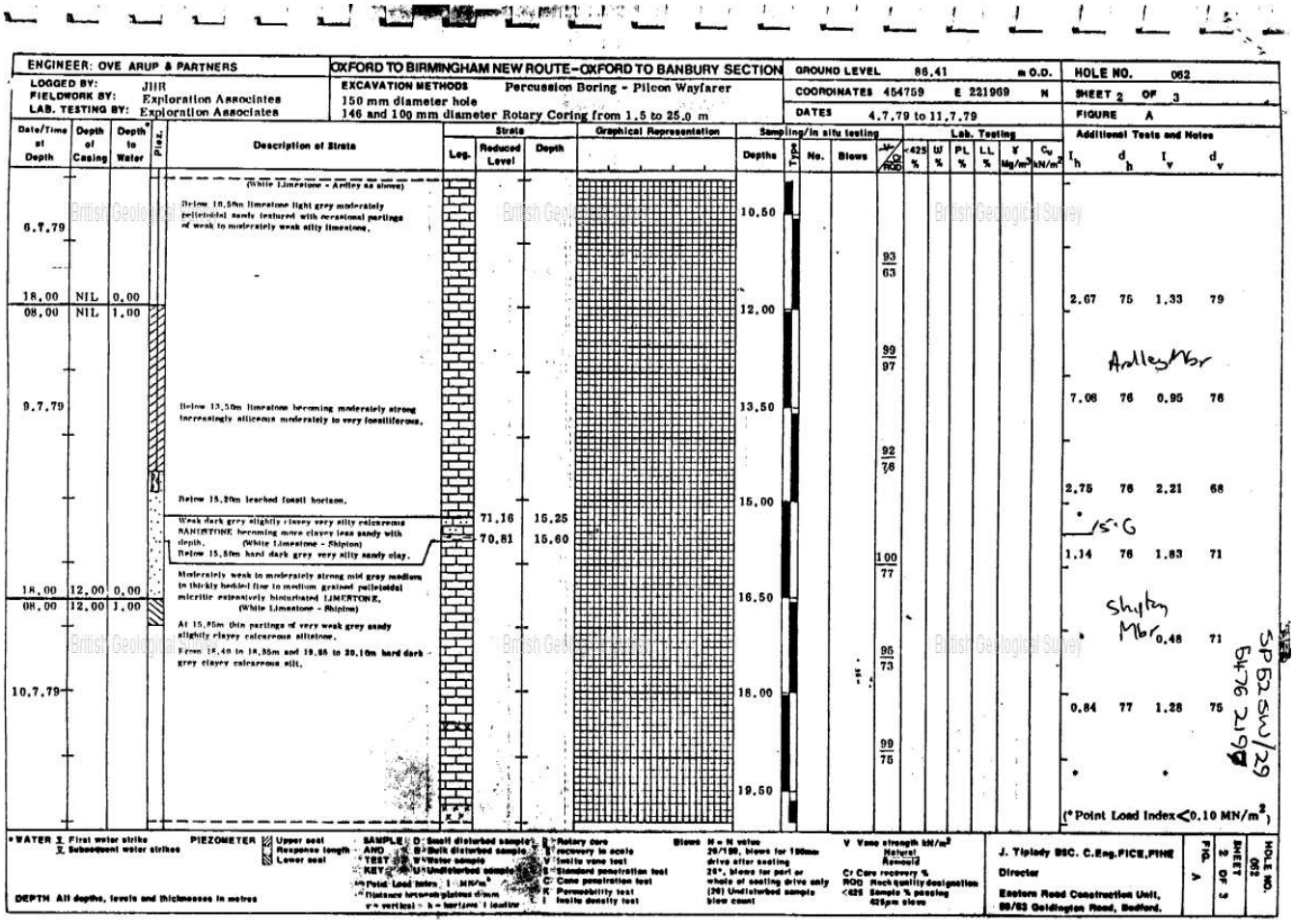
SP52 SW/47 5476 2333

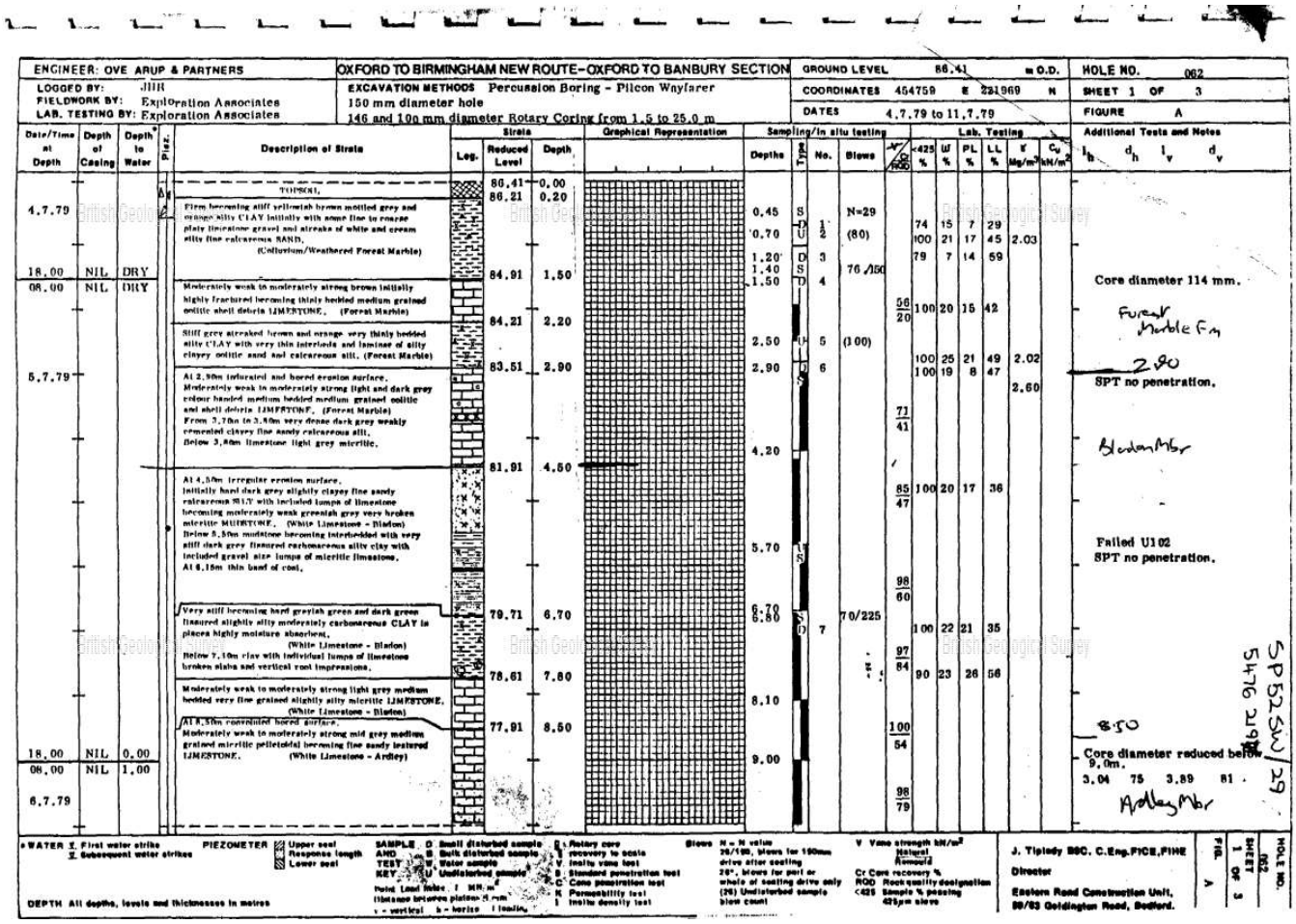
WATER ▽ First water strike ▼ Subsequent water strikes
PIEZOMETER Upper seal, Response length, Lower seal
SAMPLE AND TEST KEY: D Small disturbed sample, B Bulk disturbed sample, W Water sample, U Undisturbed sample, P Piston sample, R Rotary core recovery to scale, V Insitu vane test, S Standard penetration test, C Cone penetration test, K Permeability test, I Insitu density test
Blows N = N value 26/150, blows for 150mm drive after seating 26*, blows for part or whole of seating drive only (26) Undisturbed sample blow count
V Vane strength kN/m² Natural Remould
Cr Core recovery % ROD Rock quality designation <425 Sample % passing 425µm sieve
DEPTH All depths, levels and thicknesses in metres

J. Tiplady BSC. C.Eng.FICE,FIHE
Director
Eastern Road Construction Unit,
59/63 Goldington Road, Bedford.

FIG. A | SHEET 2 OF 2 | HOLE NO. 066


ENGINEER: OVE ARUP & PARTNERS
OXFORD TO BIRMINGHAM NEW ROUTE-OXFORD TO BANBURY SECTION
GROUND LEVEL 91.23 m O.D.
HOLE NO. 066
LOGGED BY: JHR
FIELDWORK BY: Exploration Associates
LAB. TESTING BY: Exploration Associates
EXCAVATION METHODS Percussion Boring - Pilcon Wayfarer
150 mm diameter hole
146 mm diameter Rotary Coring from 0.5 m to 19.4 m
COORDINATES 454762 E 223319 N
DATES 11.7.79 to 17.7.79
SHEET 1 OF 2
FIGURE A
Strata
Graphical Representation
Sampling/in situ testing
Lab. Testing
Additional Tests and Notes
Core diameter 114 mm.
Forest Marble Fm
Bladon Mbr
Failed U102
SPT no penetration
Arddun Mbr
SP 52 SW/47
5477 2332
J. Tiplady BSC. C.Eng.FICE,FIHE
Director
Eastern Road Construction Unit,
99/83 Goldington Road, Bedford.
DEPTH All depths, levels and thicknesses in metres


ENGINEER: OVE ARUP & PARTNERS
OXFORD TO BIRMINGHAM NEW ROUTE–OXFORD TO BANBURY SECTION
GROUND LEVEL 86.41 m O.D.
HOLE NO. 052
LOGGED BY: JHR
FIELDWORK BY: Exploration Associates
LAB. TESTING BY: Exploration Associates
EXCAVATION METHODS Percussion Boring - Pilcon Wayfarer
150 mm diameter hole
146 and 100 mm diameter Rotary Coring from 1.5 to 25.0 m
COORDINATES 454759 E 221969 N
DATES 4.7.79 to 11.7.79
SHEET 2 OF 3
FIGURE A
Description of Strata
Strata
Graphical Representation
Sampling/in situ testing
Lab. Testing
Additional Tests and Notes
Below 10.50m limestone light grey moderately pelletoidal sandy textured with occasional partings of weak to moderately weak silty limestone.
Below 13.50m limestone becoming moderately strong increasingly siliceous moderately to very fossiliferous.
Below 15.20m leached fossil horizon.
Weak dark grey slightly clayey very silty calcareous SANDSTONE becoming more clayey less sandy with depth. (White Limestone - Shipton)
Below 15.50m hard dark grey very silty sandy clay.
Moderately weak to moderately strong mid grey medium to thickly bedded fine to medium grained pelletoidal micritic extensively bioturbated LIMESTONE. (White Limestone - Shipton)
At 15.95m 0in partings of very weak grey sandy slightly clayey calcareous siltstone.
From 18.40 to 18.55m and 19.85 to 20.10m hard dark grey clayey calcareous silt.
Ardley Mbr
Shipton Mbr
SP52SW/29
5476 2196
(* Point Load Index <0.10 MN/m²)
WATER
PIEZOMETER
DEPTH All depths, levels and thicknesses in metres
J. Tiplady BSC. C.Eng.FICE,FIHE
Director
Eastern Road Construction Unit,
88/83 Goldington Road, Bedford.
FIG. A
SHEET 2 OF 3
HOLE NO. 052



ENGINEER: OVE ARUP & PARTNERS
OXFORD TO BIRMINGHAM NEW ROUTE–OXFORD TO BANBURY SECTION
GROUND LEVEL 86.41 m O.D.
HOLE NO. 062
LOGGED BY: JHR
FIELDWORK BY: Exploration Associates
LAB. TESTING BY: Exploration Associates
EXCAVATION METHODS Percussion Boring - Pilcon Wayfarer 150 mm diameter hole 146 and 100 mm diameter Rotary Coring from 1.5 to 25.0 m
COORDINATES 454759 E 221969 N
DATES 4.7.79 to 11.7.79
SHEET 1 OF 3
FIGURE A

Date/Time at Depth	Depth of Casing	Depth to Water	Description of Strata	Leg.	Reduced Level	Depth
			TOPSOIL.		86.41	0.00
4.7.79			Firm becoming stiff yellowish brown mottled grey and orange silty CLAY initially with some fine to coarse platy limestone gravel and streaks of white and cream silty fine calcareous SAND. (Colluvium/Weathered Forest Marble)		86.21	0.20
18.00	NIL	DRY				
08.00	NIL	DRY	Moderately weak to moderately strong brown initially highly fractured becoming thinly bedded medium grained oolitic shell debris LIMESTONE. (Forest Marble)		84.91	1.50
			Stiff grey streaked brown and orange very thinly bedded silty CLAY with very thin interbeds and laminae of silty clayey oolitic sand and calcareous silt. (Forest Marble)		84.21	2.20
5.7.79			At 2.90m indicated and bored erosion surface. Moderately weak to moderately strong light and dark grey colour banded medium bedded medium grained oolitic and shell debris LIMESTONE. (Forest Marble) From 3.70m to 3.90m very dense dark grey weakly cemented clayey fine sandy calcareous silt. Below 3.80m limestone light grey micritic.		83.51	2.90
			At 4.50m irregular erosion surface. Initially hard dark grey slightly clayey fine sandy calcareous SILT with included lumps of limestone becoming moderately weak greenish grey very broken micritic MUDSTONE. (White Limestone - Bladon) Below 5.50m mudstone becoming interbedded with very stiff dark grey fissured carbonaceous silty clay with included gravel size lumps of micritic limestone. At 6.15m thin band of coal.		81.91	4.50
			Very stiff becoming hard greyish green and dark green fissured slightly silty moderately carbonaceous CLAY in places highly moisture absorbent. (White Limestone - Bladon) Below 7.10m clay with individual lumps of limestone broken slabs and vertical root impressions.		79.71	6.70
			Moderately weak to moderately strong light grey medium bedded very fine grained slightly silty micritic LIMESTONE. (White Limestone - Bladon)		78.61	7.80
			At 8.50m convoluted bored surface. Moderately weak to moderately strong mid grey medium grained micritic pelletoidal becoming fine sandy textured LIMESTONE. (White Limestone - Ardley)		77.91	8.50
18.00	NIL	0.00				
08.00	NIL	1.00				
6.7.79						

Depths	Type	No.	Blows	Lab. Testing <425 %	W %	PL %	LL %	γ Mg/m³	Cv kN/m²	Additional Tests and Notes
0.45	S	1	N=29							
0.70	U	2	(80)	74	15	7	29			
1.20	D	3		100	21	17	45	2.03		
1.40	S		76/150	79	7	14	59			
1.50	D	4								Core diameter 114 mm.
				56/20	100	20	15	42		Forest Marble Fm
2.50	U	5	(100)							2.80
2.90	D	6		100	25	21	49	2.02		SPT no penetration.
	S			100	19	8	47		2.60	
				71/41						Bladon Mbr
4.20										
				85/47	100	20	17	36		
5.70	S									Failed U102 SPT no penetration.
				98/60						
6.70										
6.80	D	7	70/225		100	22	21	35		
				97/84	90	23	26	56		
8.10										
				100/54						8.50
9.00										Core diameter reduced below 9.0m.
				98/79						3.04 75 3.89 81 Ardley Mbr

SP52SW/29 SW 1969

WATER ▽ First water strike ▼ Subsequent water strikes
PIEZOMETER Upper seal, Response length, Lower seal
DEPTH All depths, levels and thicknesses in metres
SAMPLE AND TEST KEY: D Small disturbed sample, B Bulk disturbed sample, W Water sample, U Undisturbed sample
R Rotary core, I Insitu vane test, S Standard penetration test, C Cone penetration test, K Permeability test, I Insitu density test
Blows N = N value 75/10mm, blows for 150mm drive after seating 25*, blows for part or whole of seating drive only (25) Undisturbed sample blow count
V Vane strength kN/m² Natural Remould
Cr Core recovery % RQD Rock quality designation <425 Sample % passing 425μm sieve

J. Tiplady BSC. C.Eng.FICE,FIHE
Director
Eastern Road Construction Unit, 99/83 Goldington Road, Bedford.

FIG. A | SHEET 1 OF 3 | HOLE NO. 062

Waterman records (2012)

ALLIED EXPLORATION & GEOTECHNICS LTD

DRILLHOLE LOG

Status:- **FINAL**
Date:- **04/06/97**

Project: **Site Investigation at RAF Upper Heyford**			DRILLHOLE No **BH-04**
Client: **Defence Estate Organisation**	Location: **Oxfordshire E453354.10 N227054.10**		
Method & Equipment: **Openhole using a UMM C10TW**	Ground Level(m(AOD)): **121.88**	Date: **29-04-97**	Sheet: **1 of 3**

RUN DETAILS			STRATA						
Depth	TCR (SCR) RQD	(SPT) Fracture Index	Red'cd Level	Legend	Depth (Thick-ness)	DESCRIPTION Discontinuities	Detail	Main	Geology / Instrument / Backfill
			121.68		(0.20) 0.20	0.00-19.80m ... Openhole drilling.		Firm to stiff brown sandy CLAY.	
			121.28		(0.40) 0.60			Yellow brown highly weathered LIMESTONE weak to very weak. (Boulders)	
			121.18		(0.10) 0.70			Firm brown sandy CLAY.	
			120.82		(0.36) 1.06			Yellow brown highly weathered LIMESTONE weak to very weak.	
					(1.47)			Yellow brown slightly to moderately weathered LIMESTONE moderately weak to moderately strong.	
			119.35		2.53				
			118.96		(0.39) 2.92			Yellow brown moderately weathered LIMESTONE weak.	
					(1.17)			Yellow brown moderately to slightly weathered LIMESTONE moderately weak.	
			117.79		4.09				
			117.51		(0.28) 4.37			Grey moderately weathered MUDSTONE weak.	
					(1.18)			Grey moderately to slightly weathered MUDSTONE moderately weak.	
			116.33		5.55				
					(0.88)			Grey moderately weathered MUDSTONE weak.	
			115.45		6.43			Grey moderately to slightly weathered MUDSTONE weak.	

Drilling Progress and Water Observations

Date		Depth	Casing	Core Dia mm	Water (mBGL) Strike	Water (mBGL) RWL	Flush Type	Flush Returns
29/04/97		0.00	0.00					
29/04/97		19.80	0.00		16.82		air	100%

GENERAL REMARKS

1) Inspection pit excavated prior to drilling (1.0 x 1.0 x 0.20m). 2) Jar samples taken every 1.00m. 3) 50mm diameter standpipe installed to 19.80m.

All dimensions in metres
Scale 1:50

For Explanation of Symbols and Abbreviations see Key Sheets

[redacted]

Contract No. **1742**

Date Printed:- 04/06/97

Form AEG22

ALLIED EXPLORATION & GEOTECHNICS LTD

DRILLHOLE LOG

Status:- **FINAL**
Date:- **04/06/97**

Project: **Site Investigation at RAF Upper Heyford**			DRILLHOLE No **BH-04**
Client: Defence Estate Organisation	Location: Oxfordshire E453354.10 N227054.10		
Method & Equipment: Openhole using a UMM C10TW	Ground Level(m(AOD)): 121.88	Date: 29-04-97	Sheet: **2 of 3**

RUN DETAILS			STRATA						
Depth	TCR (SCR) RQD	(SPT) Fracture Index	Red'cd Level	Legend	Depth Thick-ness)	DESCRIPTION Discontinuities	Detail	Main	Geology / Instrument / Backfill
					(4.53)			(As sheet 1 of 3) Grey moderately to slightly weathered MUDSTONE weak. between c.8.00-10.00m BGL ... greenish grey.	
			110.92		10.96				
					(0.37)			Grey moderately to slightly weathered sandy MUDSTONE moderately weak to weak.	
			110.55		11.33				
					(0.24)			Grey fine grained moderately to slightly weathered SANDSTONE moderately weak to weak.	
			110.31		11.57				
					(1.25)			Grey moderately to slightly weathered sandy MUDSTONE weak to moderately weak.	
			109.06		12.82				
					(0.20)			Grey fine grained moderately to slightly weathered SANDSTONE moderately weak.	
			108.86		13.02				
					(0.58)			Grey moderately to slightly weathered sandy MUDSTONE weak to moderately weak.	
			108.28		13.60				
					(0.48)			Grey fine grained moderately to slightly weathered SANDSTONE weak to moderately weak.	
			107.80		14.08				
					(1.85)			Grey slightly weathered MUDSTONE weak to moderately weak.	
			105.95		15.93				

Drilling Progress and Water Observations

Date		Depth	Casing	Core Dia mm	Water (mBGL) Strike	Water (mBGL) RWL	Flush Type	Flush Returns
29/04/97		0.00	0.00					
29/04/97		19.80	0.00		16.82		air	100%

GENERAL REMARKS

1) Inspection pit excavated prior to drilling (1.0 x 1.0 x 0.20m). 2) Jar samples taken every 1.00m. 3) 50mm diameter standpipe installed to 19.80m.

All dimensions in metres
Scale 1:50

For Explanation of Symbols and Abbreviations see Key Sheets

[redacted]

Contract No. **1742**

Date Printed:- 04/06/97

Form AEG22

ALLIED EXPLORATION & GEOTECHNICS LTD

DRILLHOLE LOG

Status:- **FINAL**
Date:- **04/06/97**

Project: **Site Investigation at RAF Upper Heyford**			DRILLHOLE No **BH-04**
Client: Defence Estate Organisation	Location: Oxfordshire E453354.10 N227054.10		
Method & Equipment: Openhole using a UMM C10TW	Ground Level(m(AOD)): 121.88	Date: 29-04-97	Sheet: **3 of 3**

RUN DETAILS			STRATA							
Depth	TCR (SCR) RQD	(SPT) Fracture Index	Red'cd Level	Legend	Depth Thick-ness)	DESCRIPTION Discontinuities	Detail	Main	Geology	Instru-ment / Backfill
			105.06		(0.89) 16.82			Dark grey brown moderately weathered MUDSTONE weak.		
			103.82		(1.24) 18.06			Dark grey moderately weathered MUDSTONE weak.		
			102.08		(1.74) 19.80			Grey moderately weathered sandy MUDSTONE weak to moderately weak.		
								Drillhole complete at 19.80m BGL.		

Drilling Progress and Water Observations

Date		Depth	Casing	Core Dia mm	Water (mBGL) Strike	RWL	Flush Type	Returns
29/04/97		0.00	0.00					
29/04/97		19.80	0.00		16.82		air	100%

GENERAL REMARKS

1) Inspection pit excavated prior to drilling (1.0 x 1.0 x 0.20m). 2) Jar samples taken every 1.00m. 3) 50mm diameter standpipe installed to 19.80m.

All dimensions in metres
Scale 1:50

For Explanation of Symbols and Abbreviations see Key Sheets

[redacted]

ract No.
742
n AEG22

Date Printed:- 04/06/97

Geocore Site Investigations Ltd

Location **Heyford Park, Oxfordshire**				BOREHOLE No **BH214**
Job No **RT/11/52204**	Date **10-05-11**	Ground Level (m) 125.71	Co-ordinates () E 452,961.0 N 227,253.0	
Client Waterman Energy, Environment and Design Ltd				Sheet 1 of 2

Drilling Progress	Casing depth/size	Water level/ time/ date	Flush Return %	CORE RECOVERY & TESTS: Depth (m) AL/ from to	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Depth	Fracture Index	Tests	STRATA: Legend	Reduced Level	Depth (Thickness) (m)	Description	Instrument/ Backfill
												+125.71	0.00		
													(0.30)	MADE GROUND dark brown very clayey medium sand (topsoil).	
												+125.41	0.30		
													(1.20)	Firm brown slightly gravelly CLAY. Gravel is of angular fine to coarse limestone.	
												+124.21	1.50		
													(0.50)	Yellow brown weathered LIMESTONE. (Rotary open hole)	
												+123.71	2.00		
				2.00-3.00	70	29	0	2.00	NI					Weak light brown/yellow brown partially crystalline calcaceous LIMESTONE. Frequent recrystallised shell material. Generally completely weathered with the exception of some isolated core stones. Stength reduced to extremely weak and recovered as light brown very clayey gravel where most intensely weathered.	
								2.30	40					2.30-2.70m - Fractures sub horizontal, extremely closely spaced undulating, rough and open with orange brown discolouration on fracture surface.	
								2.35	NI						
								2.39	25						
								2.47	NI						
								2.63	29						
								2.70	No Rec					3.60-3.66m - Fractures extremely closely spaced sub horizontal, undulating, rough and tight with some orange brown discolouration on fracture surface.	
				3.00-6.00	42	20	7	3.00	NI				(2.01)		
								3.60	33.3						
								3.66	NI						
								3.72	11.1						
								3.90	NI						
								4.01	7.7			+121.70	4.01		
													(0.26)	Weak thinly laminated, grey slightly calcaceous fine grained argillaceous SILTSTONE. Highly weathered throughout entire horizon. Retains original structure but recovered as very stiff clay.	
								4.27	No Rec			+121.44	4.27	Fractures very closely spaced, sub horizontal, planar rough and tight with slight dark grey discolouration on fracture surface. No recovery. Drill loss no evidence of voiding.	

REMARKS

Hand excavated 0.0-1.2m
Rotary Open Hole 1.2-2.0m
Rotary Coring 2.0-9.0m.
Flushing medium-Air/Mist
Standing water was observed at 8.2m on completion.

All dimensions in metres Scale 1:32.3	Client Freddie Alcock	Equipment Comacchio 450-P	Logged By [redacted]

GEOCORE ROTARY 204 WATERMAN - ROCK CORE LOGS.GPJ AGS3_ALL.GDT 4/7/11

Geocore Site Investigations Ltd

Location	Heyford Park, Oxfordshire			BOREHOLE No
Job No RT/11/52204	Date 10-05-11	Ground Level (m) 125.71	Co-ordinates () E 452,961.0 N 227,253.0	BH214
Client Waterman Energy, Environment and Design Ltd				Sheet 2 of 2

Drilling Progress	Casing depth/size	Water level/ time/ date	Flush Return %	CORE RECOVERY & TESTS: Depth (m) AL/ from to	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Depth	Fracture Index	Tests	Legend	STRATA: Reduced Level	Depth (Thickness) (m)	Description	Instrument/ Backfill
												+120.70	5.01		
													(1.73)	No recovery. Drill loss no evidence of voiding. *(continued)*	
												+119.71	6.00		
				6.00-7.50	75	58	30	6.00	13.3					Strong light grey crystalline fine to medium grained calcaceous LIMESTONE. Generally fresh with slight greenish grey penetrative discolouration.	
								6.15	NI						
								6.26	7.4				(0.68)	6.00-6.15m - Fractures sub horizontal, stepped, rough and open with slight orange brown and greenish grey discolouration on fracture surface.	
														6.26-6.68m - Fractures sub horizontal, stepped, rough and open with slight orange brown and greenish grey discolouration on fracture surface.	
								6.68	NI			+119.03	6.68		
								6.78	0					Very weak becoming medium strong at 8.13m thinly laminated greenish grey slightly calcaceous fine grained argillaceous MUDSTONE. Completely weathered becoming slightly weathered at 8.13m. Strength reduced to very weak with extensive blue grey clay weathering products where most intensely weathered.	
								7.15	No Rec					Fractures medium spaced, sub horizontal, stepped rough and tight with slight orange brown discolouration on fracture surface.	
				7.50-9.00	97	94	78	7.50	2.9				(1.94)		
								8.08	NI						
								8.13	4.1						
												+117.09	8.62		
								8.62	0					Strong dark grey slightly argillaceous medium to fine grained calcaceous LIMESTONE. Frequent fossilised shell fragments and oolites. Fresh. Unfractured insitu.	
00:00 10.05.11	1.5m	8.2m											(0.38)		
												+116.71	9.00		

REMARKS

Hand excavated 0.0-1.2m
Rotary Open Hole 1.2-2.0m
Rotary Coring 2.0-9.0m.
Flushing medium-Air/Mist
Standing water was observed at 8.2m on completion.

All dimensions in metres Scale 1:32.3	Client Freddie Alcock	Equipment Comacchio 4

GEOCORE ROTARY 204 WATERMAN - ROCK CORE LOGS.GPJ AGS3_ALL.GDT 4/7/11

Geocore Site Investigations Ltd

Location **Heyford Park, Oxfordshire**				BOREHOLE No **BH215**
Job No **RT/11/52204**	Date **09-05-11**	Ground Level (m) 122.87	Co-ordinates () E 453,318.9 N 227,202.0	
Client Waterman Energy, Environment and Design Ltd				Sheet 1 of 6

Drilling Progress	Casing depth/size	Water level/ time/ date	Flush Return %	CORE RECOVERY & TESTS: Depth (m) AL/ from to	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Depth	Fracture Index	Tests	Legend	Reduced Level	Depth (Thickness) (m)	STRATA: Description	Instrument/ Backfill
												+122.87	0.00	Firm brown slightly gravelly CLAY. Gravel is of angular fine to coarse limestone.	
													(1.20)		
												+121.67	1.20	Light brown LIMESTONE. (Rotary open hole)	
													(0.70)		
												+120.97	1.90	Strong light brown/yellow brown, partially crystalline fine grained calcaceous LIMESTONE. Frequent recrystallised shell material. Generally fresh to slightly weathered but becoming highly weathered at 3.0m. Strength is reduced to weak with extensive light brown clayey weathering products where most intensely weathered. Fractures extremely closely spaced, sub horizontal, undulating rough and open with orange brown and slight dark grey discolouration on fracture surface.	
				1.90-3.00	85	68	36	1.90 2.15 2.20 2.62 2.77 2.84	4 NI 14.3 NI 0 No Rec				(1.45)		
				3.00-6.00	57	46	11	3.00 3.35 3.46 3.59	5.7 18.9 7.7 8.2			+119.52	3.35	Strong grey crystalline fine grained calcaceous LIMESTONE. Frequent calcite veining and fossilised shell fragements. Generally slightly weathered but highly weathered neighbouring fractures where strength is reduced to weak with grey sandy clay weathering products. 3.35-3.46m - Fractures very closely spaced, undulating, rough and tight with orange brown discolouration on fracture surface. 3.46-3.59m - 1 no sub vertical fracture (136mm). Undulating rough and wide with orange brown discolouration on fracture surface.	
													(0.85)		
								4.20 4.65 4.70	4.4 NI No Rec			+118.67	4.20	3.59-4.20m - Fractures very closely spaced, sub horizontal, stepped rough and tight with orange brown discolouration on fracture surface.	
													(0.45)	Very weak, thinly laminated light grey calcaceous fine grained SILTSTONE. Slightly fossiliferous. Highly weathered/poorly litified throughout. Fractures very closely spaced, stepped, rough and tight. Clean.	
												+118.22	4.65		

REMARKS

Hand excavated 0.0-1.2m
Rotary Open Hole 1.2-1.9m
Rotary Coring 1.9-30m.
Flushing medium-Air/Mist
Standing water was observed at12.7m on completion.

All dimensions in metres Scale 1:32.3	Client Freddie Alcock	Equipment Comacchio 450

GEOCORE ROTARY 204 WATERMAN - ROCK CORE LOGS.GPJ AGS3_ALL.GDT 4/7/11

Geocore Site Investigations Ltd

Location	Heyford Park, Oxfordshire			BOREHOLE No
Job No RT/11/52204	Date 09-05-11	Ground Level (m) 122.87	Co-ordinates () E 453,318.9 N 227,202.0	BH215
Client Waterman Energy, Environment and Design Ltd				Sheet 2 of 6

Drilling Progress	Casing depth/size	Water level/ time/ date	Flush Return %	CORE RECOVERY & TESTS: Depth (m) AL/ from to	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Depth	Fracture Index	Tests	STRATA: Legend	Reduced Level	Depth (Thickness) (m)	Description	Instrument/ Backfill
												+117.86	5.01	Medium strong light grey crystalline fine grained calcaceous LIMESTONE. Frequent fossilised shell fragments. Generally highly weathered with the exception of isolated very strong fresh core stones. Strength reduced to weak with green grey discolouration where most intensely weathered. Fractures sub horizontal, stepped, smooth and tight. No infill. *(continued)*	
				6.00-9.00	97	93	58	6.00	1.7				(2.05)		
								6.60	NI			+116.17	6.70		
								6.70	1.0					Weak, becoming medium strong with depth, thinly laminated greenish grey slightly calcaceous fine grained argillaceous MUDSTONE. Fissile. Highly weathered 6.7-7.6m with extensive green grey clayey weathering products. Slightly weathered thereafter. Fractures medium spaced, sub horizontal, stepped rough and wide with up to 10mm grey sandy clay infill.	
													(2.10)		
								8.80	0			+114.07	8.80		
								8.90	No Rec					Very strong light grey crystalline fine grained calcaceous LIMESTONE. Frequent calcite veining and recrystallised shell material. Localised argillaceous rich horizons. Fresh. Fractures closely spaced, sub horizontal, stepped rough and tight with dark grey discolouration on fracture surface.	
				9.00-12.00	93	93	79	9.00	2.7						

REMARKS

Hand excavated 0.0-1.2m
Rotary Open Hole 1.2-1.9m
Rotary Coring 1.9-30m.
Flushing medium-Air/Mist
Standing water was observed at12.7m on completion.

All dimensions in metres Scale 1:32.3	Client Freddie Alcock	Equipment Comacchio 450-P	[redacted]

GEOCORE ROTARY 204 WATERMAN - ROCK CORE LOGS.GPJ AGS3_ALL.GDT 4/7/11

Geocore Site Investigations Ltd

Location	Heyford Park, Oxfordshire			BOREHOLE No
Job No RT/11/52204	Date 09-05-11	Ground Level (m) 122.87	Co-ordinates () E 453,318.9 N 227,202.0	BH215
Client Waterman Energy, Environment and Design Ltd				Sheet 3 of 6

Drilling Progress	Casing depth/size	Water level/ time/ date	Flush Return %	CORE RECOVERY & TESTS: Depth (m) AL/ from to	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Depth	Fracture Index	Tests	STRATA: Legend	Reduced Level	Depth (Thickness) (m)	Description	Instrument/ Backfill
												+112.85	10.02	Very strong light grey crystalline fine grained calcaceous LIMESTONE. Frequent calcite veining and recrystallised shell material. Localised argillaceous rich horizons. Fresh. Fractures closely spaced, sub horizontal, stepped rough and tight with dark grey discolouration on fracture surface. *(continued)*	
								10.50	3.8				(3.50)		
								11.80	No Rec						
				12.00-15.00	77	72	52	12.00	0						
								12.30	NI			+110.57	12.30	Very strong dark grey crystalline medium grained calcaceous LIMESTONE. Extensive micritic cementation and frequent fossilised shell fragments. Highly weathered 12.3-12.6 becoming slightly weathered thereafter. Strength is reduced to medium strong with dark grey sandy clay weathering products where most intensely weathered. 12.36-12.66m - Fractures very closely spaced, sub horizontal, stepped, rough and open. Clean.	
								12.36	6.7						
								12.66	1.0					12.66-13.70m - 1 No sub vertical fractures (1040mm). Undulating, rough and wide with dark orange brown discolouration penetrating up to 40mm fromfracture surface. 13.70-14.30m - 1 no sub vertical fractures (700mm). Undulating, rough and wide with dark orange brown discolouration penetrating up to 40mm fromfracture surface.	
								13.70	5				(2.00)		
								14.30	No Rec			+108.57	14.30	No recovery. Drill loss. No evidence of voiding.	

REMARKS

Hand excavated 0.0-1.2m
Rotary Open Hole 1.2-1.9m
Rotary Coring 1.9-30m.
Flushing medium-Air/Mist
Standing water was observed at12.7m on completion.

All dimensions in metres Scale 1:32.3	Client Freddie Alcock	Equipment Comacchio 450-P

GEOCORE ROTARY 204 WATERMAN - ROCK CORE LOGS.GPJ AGS3_ALL.GDT 4/7/11

Geocore Site Investigations Ltd

Location	Heyford Park, Oxfordshire			BOREHOLE No
Job No RT/11/52204	Date 09-05-11	Ground Level (m) 122.87	Co-ordinates () E 453,318.9 N 227,202.0	BH215
Client Waterman Energy, Environment and Design Ltd				Sheet 4 of 6

Drilling Progress	Casing depth/size	Water level/ time/ date	Flush Return %	CORE RECOVERY & TESTS: Depth (m) AL/ from to	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Depth	Fracture Index	Tests	STRATA: Legend	Reduced Level	Depth (Thickness) (m)	Description	Instrument/ Backfill
				15.00-18.00	0	0	0	15.00	No Rec			+107.84	15.03	No recovery. Drill loss. No evidence of voiding. *(continued)*	
													(3.70)		
												+104.87	18.00	WATER STRIKE AT18.0m.	
				18.00-21.00	83	79	9	18.00	18					Extremely weak, thinly cross laminated dark grey fine grained arenaceous SANDSTONE. Frequent interlaminated lignite and fossilised wood. Fresh.	
													(0.55)	Fractures extremely closely spaced, planar, rough and tight with slight light grey discolouration on fracture surface.	
								18.50 / 18.55	NI / 1.3			+104.32	18.55		
														Medium strong, thinly laminated fine grained arenaceous SANDSTONE. Fissile. Fresh.	
														Fractures medium spaced, sub horizontal, undulating rough and tight with reddish brown discolouration penetrating up to 10mm from fracture surface.	
													(2.75)		

REMARKS

Hand excavated 0.0-1.2m
Rotary Open Hole 1.2-1.9m
Rotary Coring 1.9-30m.
Flushing medium-Air/Mist
Standing water was observed at12.7m on completion.

All dimensions in metres Scale 1:32.3	Client Freddie Alcock	Equipment Comacchio 450-P

GEOCORE ROTARY 204 WATERMAN - ROCK CORE LOGS.GPJ AGS3_ALL.GDT 4/7/11

Geocore Site Investigations Ltd

Location	Heyford Park, Oxfordshire			BOREHOLE No
Job No RT/11/52204	Date 09-05-11	Ground Level (m) 122.87	Co-ordinates () E 453,318.9 N 227,202.0	BH215
Client Waterman Energy, Environment and Design Ltd				Sheet 5 of 6

Drilling Progress	Casing depth/size	Water level/ time/ date	Flush Return %	CORE RECOVERY & TESTS: Depth (m) AL/ from to	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Depth	Fracture Index	Tests	STRATA: Legend	Reduced Level	Depth (Thickness) (m)	Description	Instrument/ Backfill
								20.15	NI			+102.83	20.04	Medium strong, thinly laminated fine grained arenaceous SANDSTONE. Fissile. Fresh.	
								20.20	3.6					Fractures medium spaced, sub horizontal, undulating rough and tight with reddish brown discolouration penetrating up to 10mm from fracture surface. *(continued)*	
								20.48	No Rec						
				21.00-24.00	100	54	52	21.00	3.3						
								21.30	0			+101.57	21.30	Very strong light grey crystalline fine grained calcaceous LIMESTONE. Frequent interbedded argillaceous laminae up to 2mm thick. Fresh.	
													(0.80)	Fractures sub horizontal, stepped, rough and tight with dark grey discolouration on fracture surface.	
								21.80	NI						
								21.90	5			+100.77	22.10		
								22.10	NI					Weak thinly interlaminated dark grey and brown fine grained argillaceous SILTSTONE and fine grained arenaceous sandstone. Frequent interbedded coal laminae. Slightly weathered throughout.	
								22.20	3.3				(0.70)	Fractures closely spaced, sub horizontal, undulating, rough and open with up to 2.5m dark grey sandy clay infill.	
												+100.07	22.80		
								22.80	5					Medium strong, thickly interlaminated grey crystalline fine grained calcaceous LIMESTONE and dark grey fine grained argillaceous siltstone. Fresh in limestone horizons but highly weathered in siltstone where strength is reduced to weak with dark grey sandy clay weathering products.	
								23.00	NI						
								23.20	5.4					Fractures very closely spaced, sub horizontal, undulating, rough and open with up to 1mm dark grey sandy clay infill and slight orange brown discolouration on fracture surface.	
													(1.85)		
				24.00-27.00	32	20	4								
								24.50	NI			+98.22	24.65		
								24.65	NI					Strong thinly laminated grey fine grained argillaceous MUDSTONE. Fissile. Frequent interbedded tabular limestone nodules up to 5mm thick. Fresh.	
								24.95	No Rec					Fractures medium spaced, sub horizontal, planar smooth and tight. No infill.	

REMARKS

Hand excavated 0.0-1.2m
Rotary Open Hole 1.2-1.9m
Rotary Coring 1.9-30m.
Flushing medium-Air/Mist
Standing water was observed at12.7m on completion.

All dimensions in metres Scale 1:32.3	Client Freddie Alcock	Equipment Comacchio 450-P

GEOCORE ROTARY 204 WATERMAN - ROCK CORE LOGS.GPJ AGS3_ALL.GDT 4/7/11

Geocore Site Investigations Ltd

Location	Heyford Park, Oxfordshire			BOREHOLE No
Job No RT/11/52204	Date 09-05-11	Ground Level (m) 122.87	Co-ordinates () E 453,318.9 N 227,202.0	BH215
Client Waterman Energy, Environment and Design Ltd				Sheet 6 of 6

CORE RECOVERY & TESTS

Drilling Progress	Casing depth/size	Water level/ time/ date	Flush Return %	Depth (m) AL/ from to	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Depth	Fracture Index	Tests
				27.00-28.50	0	0	0			
				28.50-30.00	48	36	0	28.50 29.22	2.8 No Rec	
00:00 09.05.11	1.5m	12.7m								

STRATA

Legend	Reduced Level	Depth (Thickness) (m)	Description
	+97.82	25.05	Strong thinly laminated grey fine grained argillaceous MUDSTONE. Fissile. Frequent interbedded tabular limestone nodules up to 5mm thick. Fresh. Fractures medium spaced, sub horizontal, planar smooth and tight. No infill. *(continued)*
		(5.35)	
	+92.87	30.00	

Instrument/ Backfill

REMARKS

Hand excavated 0.0-1.2m
Rotary Open Hole 1.2-1.9m
Rotary Coring 1.9-30m.
Flushing medium-Air/Mist
Standing water was observed at12.7m on completion.

All dimensions in metres Scale 1:32.3	Client Freddie Alcock	Equipment Comacchio 450-P

GEOCORE ROTARY 204 WATERMAN - ROCK CORE LOGS.GPJ AGS3_ALL.GDT 4/7/11

Geocore Site Investigations Ltd

Location	Heyford Park, Oxfordshire			BOREHOLE No
Job No **RT/11/52204**	Date **05-05-11**	Ground Level (m) 124.03	Co-ordinates () E 453,143.8 N 226,911.5	**BH216**
Client Waterman Energy, Environment and Design Ltd				Sheet 1 of 2

Drilling Progress	Casing depth/size	Water level/ time/ date	Flush Return %	CORE RECOVERY & TESTS: Depth (m) AL/ from to	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Depth	Fracture Index	Tests	STRATA: Legend	Reduced Level	Depth (Thickness) (m)	Description	Instrument/ Backfill
												+124.03	0.00	Firm brown slightly gravelly CLAY. Gravel is of angular fine to coarse limestone.	
													(1.00)		
				1.00-2.90	21	5	0	1.00	NI			+123.03	1.00	Strong light brown/yellow brown partially crystalline calcaceous LIMESTONE. Frequent recrystallised shell material. Gnerally fresh but completely weathered in non intact areas where recovered as weak gravel sized fragments or firm orange brown slightly sandy clay.	
								1.31	0					3.00-3.22m - 1 No sub vertical fracture (220mm) undulating rough and wide with orange brown sand gravel infill and discolouration on fracture surface.	
								1.40	No Rec					3.22-4.00m - Fractures sub horizontal, very closely spaced, undulating, rough and open with orange brown penetrative discolouration on fracture surface and up to 2.5m orange brown sandy clay infill.	
														4.00-4.27m - 1 no sub vertical fracture (270mm), undulating rough and wide with orange brown discolouration on fracture surface.	
														4.27-4.48m - 1 no sub vertical fracture (270mm), undulating rough and wide with orange brown discolouration on fracture surface.	
														4.60-4.95m - 1 no sub vertical fracture (270mm), undulating rough and wide with orange brown discolouration on fracture surface.	
														5.00-5.13m - 1 no sub vertical fracture (270mm), undulating rough and wide with orange brown discolouration on fracture surface.	
				2.90-5.90	90	79	39	2.90	NI				(4.13)		
								3.00	4.5						
								3.22	11.5						
								4.00	3.7						
								4.27	4.8						
								4.48	NI						
								4.60	2.9						
								4.95	NI						

REMARKS
Hand excavated 0.0-1.0m
Rotary Coring 1.0-10m.
Flushing medium-Air/Mist

All dimensions in metres Scale 1:32.3	Client Freddie Alcock	Equipment Comacchio 450-P

GEOCORE ROTARY 204 WATERMAN - ROCK CORE LOGS.GPJ AGS3_ALL.GDT 4/7/11

Geocore Site Investigations Ltd

Location	Heyford Park, Oxfordshire			BOREHOLE No
Job No **RT/11/52204**	Date **05-05-11**	Ground Level (m) 124.03	Co-ordinates () E 453,143.8 N 226,911.5	**BH216**
Client Waterman Energy, Environment and Design Ltd				Sheet 2 of 2

Drilling Progress	Casing depth/size	Water level/ time/ date	Flush Return %	CORE RECOVERY & TESTS: Depth (m) AL/ from to	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Depth	Fracture Index	Tests	Legend	Reduced Level	Depth (Thickness) (m)	STRATA: Description	Instrument/ Backfill
								5.00	7.7			+119.02	5.01		
								5.13	5			+118.90	5.13		
								5.33	11.1			+118.70	5.33	Weak thinly laminated fine grained slightly calcaceous argillaceous MUDSTONE. Slightly weathered.	
								5.60	No Rec					Fractures sub horizontal, planar, smooth and tight. Clean. Very weak, becoming strong at 5.5m, grey crystalline medium grained calcaceous LIMESTONE. Abundant recrystallised oolites. Frequent calcite veining. Completely weathered 5.33-5.5m becoming fresh thereafter. Considerable reduction in strength and recovered as grey sandy clay where most intensely weathered.	
													(0.67)		
				5.90-8.90	90	81	62	5.90	10			+118.03	6.00	Fractures, sub horizontal, very closely spaced, undulating rough and open with slight orange brown discolouration on fracture surface.	
								6.00	NI					Medium strong thickly interlaminated fine grained argillaceous MUDSTONE and medium grained calcaceous limestone. Frequent fossilised shells and shell fragments centred along bedding surfaces. Highly weathered throughout with greenish grey penentrative discolouration. Fractures sub horizontal, undulating, rough and open with slight orange brown discolouration on fracture surface and dark grey sandy clay infill.	
								6.12	5.2						
													(0.70)		
												+117.33	6.70		
								6.70	2.5					Medium strong thinly laminated fine grained argillaceous MUDSTONE. Frequent interlaminated calcaceous material. Slightly weathered but poorly lithified throughout. Highly weathered in non intact areas where strength is reduced to very weak. Fractures sub horizontal, closely spaced stepped, smooth and tight with slight light grey clayey sand coatings.	
													(1.20)		
												+116.13	7.90		
								7.90	10					Medium strong becoming weak with depth, thinly laminated greenish grey calcaceous fine grained argillaceous MUDSTONE. Fresh/slightly weathered becoming highly weathered at 8.6m. Recovered as stiff green/grey slightly sandy clay where most intensely weathered. 7.90-8.20m - Fractures extremely closely spaced, sub horizontal undulating, rough and wide with up to 10mm green grey gravelly coarse sand infill. 8.20-9.25m - Unfractured insitu.	
								8.20	0						
								8.60	No Rec						
				8.90-10.00	32	32	23	8.90	0				(2.10)		
								9.25	No Rec						
												+114.03	10.00		

REMARKS
Hand excavated 0.0-1.0m
Rotary Coring 1.0-10m.
Flushing medium-Air/Mist

All dimensions in metres Scale 1:32.3	Client Freddie Alcock	Equipment Comacchio 450-P

GEOCORE ROTARY 204 WATERMAN - ROCK CORE LOGS.GPJ AGS3_ALL.GDT 4/7/11

Geocore Site Investigations Ltd

Location **Heyford Park, Oxfordshire**				BOREHOLE No **BH217**
Job No **RT/11/52204**	Date **04-05-11**	Ground Level (m) 120.99	Co-ordinates () E 452,578.5 N 226,447.1	
Client Waterman Energy, Environment and Design Ltd				Sheet 1 of 6

Drilling Progress	Casing depth/size	Water level/ time/ date	Flush Return %	CORE RECOVERY & TESTS: Depth (m) AL/ from to	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Depth	Fracture Index	Tests	Legend	Reduced Level	Depth (Thickness) (m)	STRATA: Description	Instrument/ Backfill
												+120.99	0.00	MADE GROUND. Dark brown slightly clayey slightly gravelly fine sand. Gravel is of angular fine to coarse limestone.	
													(0.50)		
												+120.49	0.50	Stiff orange brown very gravelly CLAY with many cobbles. Gravel is of angular fine to coarse limestone. Cobbles are angular limestone.	
													(0.40)		
												+120.09	0.90	Yellow brown LIMESTONE (rotary open hole)	
													(1.20)		
												+118.89	2.10	Strong light brown/yellow brown partially crystalline fine grained calcaceous LIMESTONE. Frequent recrystallised shell material. Generally slightly weathered but completely weathered in non intact areas where recovered as orange brown very sandy clay.	
				2.10-2.90	94	75	13	2.10	8.3					Fractures extremely closely spaced, sub horizontal, undulating rough and open with orange brown discolouration on fracture surface.	
								2.70	NI				(0.90)		
								2.85	No Rec						
				2.90-5.90	79	63	40	2.90	NI			+117.99	3.00	Extremely weak, becoming very strong at 3.25m, crystalline fine to medium grained calcaceous LIMESTONE. Frequent recrystallised shell material. Generally fresh but completely weathered 3.0-3.25m where recovered as stiff blue grey silty gravely clay.	
								3.00	0					3.00-3.16m - Unfractured insitu.	
								3.16	NI				(0.70)		
								3.25	8.9					3.25-3.70m - Fractures very closely spaced, sub horizontal, undulating rough and wide with orange brown penetrative discolouration on fracture surface.	
								3.70	NI			+117.29	3.70	Weak thinly laminated dark grey slightly calcaceous fine grained argillaceous SILTSTONE. Completely weathered recovered as firm grey sandy clay.	
													(0.30)		
								4.00	5			+116.99	4.00	Very strong light grey crystalline fine grained calcaceous LIMESTONE. Frequent recrystallised shell material. Fresh.	
													(0.40)		
								4.40	3.4			+116.59	4.40	Weak to medium strong, thinly laminated slightly greenish grey calcaceous fine grained argillaceous MUDSTONE. Frequent interlaminated siltstone horizons. Generally moderately weathered but locally highly weathered where strength is reduced to weak with greenish grey clayey weathering products.	
													(0.86)		

REMARKS

Hand excavated 0.0-1.2m
Rotary Open Hole 1.2-2.1m
Rotary Coring 2.1-30m.
Flushing medium-Air/Mist

All dimensions in metres Scale 1:32.3	Client Freddie Alcock	Equipment Comacchio 450-P

GEOCORE ROTARY 204 WATERMAN - ROCK CORE LOGS.GPJ AGS3_ALL.GDT 4/7/11

Geocore Site Investigations Ltd

Location	Heyford Park, Oxfordshire			BOREHOLE No
Job No RT/11/52204	Date 04-05-11	Ground Level (m) 120.99	Co-ordinates () E 452,578.5 N 226,447.1	BH217
Client Waterman Energy, Environment and Design Ltd				Sheet 2 of 6

Drilling Progress	Casing depth/size	Water level/ time/ date	Flush Return %	CORE RECOVERY & TESTS: Depth (m) AL/ from to	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Depth	Fracture Index	Tests	Legend	Reduced Level	Depth (Thickness) (m)	STRATA: Description	Instrument/ Backfill
												+115.98	5.01		
												+115.73	5.26		
								5.28	No Rec					Strong light grey crystalline fine grained calcaceous LIMESTONE. Generally fresh but locally completely weathered where recovered as extremely weak geenish grey very sandy clay. Fractures medium spaced, stepped rough and tight. No infill.	
				5.90-8.90	85	70	43	5.90	2.2				(1.54)		
												+114.19	6.80		
								6.80	0					Stiff dark brown/grey very sandy CLAY.	
												+113.99	7.00		
								7.00	5					Medium strong thinly interlaminated grey fine grained calcaceous MUDSTONE and fine grained argillaceous siltstone. Locally slightly weathered but generally highly to completely weathered. Recovered as weak blue grey fine to coarse gravel sized fragments where most intensely weathered.	
								7.40	0					7.0-7.4m - 2 No extremely closely spaced, sub vertical fractures, stepped, smooth and tight with greenish grey penetrative discolouration.	
								7.60	NI				(1.05)		
								7.70	0					7.90-8.05m - Fractures sub horizontal, stepped, rough and tight. No infill.	
								7.80	NI						
								7.90	6.7						
												+112.94	8.05		
								8.05	5.1					Very strong grey partially crystalline medium grained oolitic LIMESTONE. Frequent fossilised shell material localised in argillaceous laminae. Fresh.	
								8.44	No Rec					8.05-8.44m - Fractures very closely spaced, undulating, rough and wide with slight orange brown discolouration on fracture surface.	
				8.90-11.90	95	88	56	8.90	0					WATER STRIKE AT 9.0m.	
													(3.45)		

REMARKS
Hand excavated 0.0-1.2m
Rotary Open Hole 1.2-2.1m
Rotary Coring 2.1-30m.
Flushing medium-Air/Mist

All dimensions in metres Scale 1:32.3	Client Freddie Alcock	Equipment Comacchio 450-P

GEOCORE ROTARY 204 WATERMAN - ROCK CORE LOGS.GPJ AGS3_ALL.GDT 4/7/11

Geocore Site Investigations Ltd

Location **Heyford Park, Oxfordshire**				BOREHOLE No **BH217**
Job No **RT/11/52204**	Date **04-05-11**	Ground Level (m) 120.99	Co-ordinates () E 452,578.5 N 226,447.1	
Client Waterman Energy, Environment and Design Ltd				Sheet 3 of 6

Drilling Progress	Casing depth/size	Water level/ time/ date	Flush Return %	CORE RECOVERY & TESTS: Depth (m) AL/ from to	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Depth	Fracture Index	Tests	STRATA: Legend	Reduced Level	Depth (Thickness) (m)	Description	Instrument/ Backfill
												+110.97	10.02	Very strong grey partially crystalline medium grained oolitic LIMESTONE. Frequent fossilised shell material localised in argillaceous laminae. Fresh. *(continued)*	
								10.40	2					10.4-10.9m - 1 no sub vertical fractures (500mm). Undulating rough and open with dark grey discolouration on fracture surface.	
								10.90	0					11.2-11.3m - 1 no sub vertical fracture (100mm). Undulating, rough and wide with light brown discolouration on fracture surface.	
								11.10	NI					11.3-11.5m - Fractures very closely spaced, sub horizontal, stepped, rough and open with up to 2.5mm grey slightly sandy clay infill.	
								11.20	10						
								11.30	10						
												+109.49	11.50		
								11.50	4					Medium strong thinly laminated, grey slightly calcaceous fine grained argillaceous SILTSTONE. Fresh.	
								11.75	No Rec					Fractures medium spaced, sub horizontal, planar smooth and tight with slight light grey discolouration on fracture surface.	
				11.90-14.90	90	90	57	11.90	1.1				(2.20)		
												+107.29	13.70		
								13.70	2.2					Weak blue grey thinly laminated calcaceous fine grained argillaceous MUDSTONE. Highly fossiliferous. Abundant partially fossilised shell fragments centred along bedding surfaces. Localised coarse grained sand laminae up to 5mm thick. Poorly lithified throughout but generally fresh. Highly weathered neighbouring sandy areas where strength is reduced with blue grey sandy clay weathering products.	
								14.60	No Rec					Fractures medium spaced, sub horizontal, stepped, rough and tight with slight dark greenish grey discolouration on fracture surface.	
				14.90-17.90	55	47	35	14.90	2.6				(2.50)		

REMARKS

Hand excavated 0.0-1.2m
Rotary Open Hole 1.2-2.1m
Rotary Coring 2.1-30m.
Flushing medium-Air/Mist

All dimensions in metres Scale 1:32.3	Client Freddie Alcock	Equipment Comacchio 450-P

GEOCORE ROTARY 204 WATERMAN - ROCK CORE LOGS.GPJ AGS3_ALL.GDT 4/7/11

Geocore Site Investigations Ltd

Location	Heyford Park, Oxfordshire			BOREHOLE No
Job No RT/11/52204	Date 04-05-11	Ground Level (m) 120.99	Co-ordinates () E 452,578.5 N 226,447.1	BH217
Client Waterman Energy, Environment and Design Ltd				Sheet 4 of 6

Drilling Progress	Casing depth/size	Water level/ time/ date	Flush Return %	CORE RECOVERY & TESTS: Depth (m) AL/ from to	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Depth	Fracture Index	Tests	STRATA: Legend	Reduced Level	Depth (Thickness) (m)	Description	Instrument/ Backfill
												+105.96	15.03	Weak blue grey thinly laminated calcaceous fine grained argillaceous MUDSTONE. Highly fossiliferous. Abundant partially fossilised shell fragments centred along bedding surfaces. Localised coarse grained sand laminae up to 5mm thick. Poorly lithified throughout but generally fresh. Highly weathered neighbouring sandy areas where strength is reduced with blue grey sandy clay weathering products. Fractures medium spaced, sub horizontal, stepped, rough and tight with slight dark greenish grey discolouration on fracture surface. *(continued)*	
								16.05	NI						
								16.20	0			+104.79	16.20	Weak grey fine grained very calcaceous SILTSTONE. Slightly weathered.	
													(0.35)	Unfractured insitu.	
								16.55	No Rec			+104.44	16.55	No recovery. Drill loss. No evidence of voiding.	
													(1.35)		
												+103.09	17.90		
				17.90-20.90	31	5	5	17.90	NI					Weak dark grey fine grained arenaceous SANDSTONE. Generally completely weathered with the exception of some isolated core stones. Recovered as extremely weak fine grained sand fragments where most intensely weathered.	
													(0.94)	Fractures medium spaced, sub horizontal, stepped smooth and tight with slight light brown silty sand coatings.	
								18.60	4.2						
								18.84	No Rec			+102.15	18.84	No recovery. Drill loss. No evidence of voiding.	
													(2.06)		

REMARKS

Hand excavated 0.0-1.2m
Rotary Open Hole 1.2-2.1m
Rotary Coring 2.1-30m.
Flushing medium-Air/Mist

All dimensions in metres Scale 1:32.3	Client Freddie Alcock	Equipment Comacchio 450-P	Logged By Edward Lodge

GEOCORE ROTARY 204 WATERMAN - ROCK CORE LOGS.GPJ AGS3_ALL.GDT 4/7/11

Geocore Site Investigations Ltd

Location	Heyford Park, Oxfordshire			BOREHOLE No
Job No RT/11/52204	Date 04-05-11	Ground Level (m) 120.99	Co-ordinates () E 452,578.5 N 226,447.1	BH217
Client Waterman Energy, Environment and Design Ltd				Sheet 5 of 6

Drilling Progress	Casing depth/size	Water level/ time/ date	Flush Return %	CORE RECOVERY & TESTS: Depth (m) AL/ from to	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Depth	Fracture Index	Tests	STRATA: Legend	Reduced Level	Depth (Thickness) (m)	Description	Instrument/ Backfill
												+100.95	20.04	No recovery. Drill loss. No evidence of voiding. *(continued)*	
												+100.09	20.90		
				20.90-23.90	100	48	26	20.90	NI					Light grey silty medium SAND.	
													(1.10)		
												+98.99	22.00		
								22.20	0					Very weak thinly cross laminated, dark grey/brown fine grained arenaceous SANDSTONE. Poorly lithified throughout but generally fresh. Highly weathered in non intact areas and neighbouring fractures where recovered as extremely weak coarse grained sand fragments.	
								22.45	NI					Fractures medium spaced, sub horizontal, planar rough and tight. No infill.	
								22.50	20						
								22.55	NI						
								22.60	5						
								22.80	NI						
								22.85	1.8				(1.90)		
								23.42	NI						
								23.50	0						
												+97.09	23.90		
				23.90-26.90	62	58	36	23.90	3.0					Weak thinly interlaminated dark grey and grey fine grained argillaceous MUDSTONE and fine grained argillaceous siltstone. Abundant fossilised shell remains. Highly weathered/poorly lithified throughout. Recovered as very stiff sandy slightly gravelly clay.	
														23.90-25.56m - Fractures closely spaced, sub horizontal, undulating rough and tight with slight orange brown discolouration on fracture surface.	
														25.65-25.75m - Fractures medium spaced, sub horizontal, planar rough and tight. No infill.	
													(1.85)		

REMARKS

Hand excavated 0.0-1.2m
Rotary Open Hole 1.2-2.1m
Rotary Coring 2.1-30m.
Flushing medium-Air/Mist

All dimensions in metres Scale 1:32.3	Client Freddie Alcock	Equipment Comacchio 450-P

GEOCORE ROTARY 204 WATERMAN - ROCK CORE LOGS.GPJ AGS3_ALL.GDT 4/7/11

Geocore Site Investigations Ltd

Location	Heyford Park, Oxfordshire			BOREHOLE No
Job No RT/11/52204	Date 04-05-11	Ground Level (m) 120.99	Co-ordinates () E 452,578.5 N 226,447.1	BH217
Client Waterman Energy, Environment and Design Ltd				Sheet 6 of 6

Drilling Progress	Casing depth/size	Water level/ time/ date	Flush Return %	CORE RECOVERY & TESTS: Depth (m) AL/ from to	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Depth	Fracture Index	Tests	STRATA: Legend	Reduced Level	Depth (Thickness) (m)	Description	Instrument/ Backfill
								25.56	NI						
								25.65	10			+95.24	25.75		
								25.75	No Rec					No recovery. Drill loss. No evidence of voiding.	
													(1.15)		
								26.80	1			+94.09	26.90		
				26.90-30.00	79	82	74							Strong thinly laminated dark grey fine grained argillaceous MUDSTONE. Fissile. Occasional interlaminated tabular limestone nodules up to 10mm thick. Fresh. Fractures widely spaced, sub horizontal, planar smooth and tight with stiff light grey discolouration on fracture surface.	
													(3.10)		
								29.36	No Rec			+90.99	30.00		

REMARKS
Hand excavated 0.0-1.2m
Rotary Open Hole 1.2-2.1m
Rotary Coring 2.1-30m.
Flushing medium-Air/Mist

All dimensions in metres Scale 1:32.3	Client Freddie Alcock	Equipment Comacchio 450-P

GEOCORE ROTARY 204 WATERMAN - ROCK CORE LOGS.GPJ AGS3_ALL.GDT 4/7/11

Geocore Site Investigations Ltd

Location	Heyford Park, Oxfordshire			BOREHOLE No
Job No RT/11/52204	Date 05-05-11	Ground Level (m) 124.22	Co-ordinates () E 452,320.4 N 226,406.4	BH218
Client Waterman Energy, Environment and Design Ltd				Sheet 1 of 2

Drilling Progress	Casing depth/size	Water level/ time/ date	Flush Return %	CORE RECOVERY & TESTS: Depth (m) AL/ from to	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Depth	Fracture Index	Tests	Legend	Reduced Level	Depth (Thickness) (m)	Description	Instrument/ Backfill
												+124.22	0.00		
												+124.02	0.20	MADE GROUND dark brown very clayey medium sand (topsoil).	
													(0.70)	Firm orange brown slightly gravelly CLAY with some cobbles. Gravel is of angular fine to coarse limestone. Cobbles are angular limestone.	
												+123.32	0.90		
				0.90-3.00	40	27	0	0.90	16.7					Strong light brown/yellow brown partially crystalline calcaceous LIMESTONE. Frequent recrystallised shell material. Generally fresh/slightly weathered but highly weathered neighbouring sub vertical fractures, where strength is reduced to weak with yellow brown sandy clay weathering products. Fractures sub horizontal, very closely spaced, undulating, rough and open with slight orange brown discolouration on fracture surface	
								1.20	10					1.20-1.30m - 1 No. sub vertical fracture (100mm) undulating rough and wide with some red brown discolouration on fracture surface.	
								1.30	8						
								1.55	11.1					1.55-1.73m - 2 No. extremely closely spaced sub vertical fractures (200mm) .Undulating rough and tight with orange brown discolouration and light brown sandy clay infill.	
								1.73	No Rec				(2.50)		
				3.00-6.00	86	78	43	3.00	7.5						
												+120.82	3.40		
								3.40	40					Medium strong light grey fine grained calcaceous LIMESTONE. Generally slightly weathered. Highly weathered neighbouring fractures where strength is reduced to weak with dark grey clay weathering products.	
								3.45	NI						
								3.70	10					3.40-3.9m - Fractures extremely closely spaced, sub horizontal undulating, rough and open with up to 2.5mm orange brown clayey sand infill.	
								3.90	0					3.70-3.90m - Fractures extremely closely spaced, sub horizontal undulating, rough and open with up to 2.5mm orange brown clayey sand infill.	
								4.90	3						

REMARKS

Hand excavated 0.0-0.9m
Rotary Coring 0.9-10m.
Flushing medium-Air/Mist
Standing water was observed at 8.0m on competion and remained at 8.0m after 20 minutes.

All dimensions in metres Scale 1:32.3	Client Freddie Alcock	Equipment Comacchio 450-P

GEOCORE ROTARY 204 WATERMAN - ROCK CORE LOGS.GPJ AGS3_ALL.GDT 4/7/11

Geocore Site Investigations Ltd

Location	Heyford Park, Oxfordshire			BOREHOLE No
Job No **RT/11/52204**	Date **05-05-11**	Ground Level (m) 124.22	Co-ordinates () E 452,320.4 N 226,406.4	**BH218**
Client Waterman Energy, Environment and Design Ltd				Sheet 2 of 2

Drilling Progress	Casing depth/size	Water level/ time/ date	Flush Return %	CORE RECOVERY & TESTS: Depth (m) AL/ from to	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Depth	Fracture Index	Tests	Legend	Reduced Level	Depth (Thickness) (m)	STRATA: Description	Instrument/ Backfill
												+119.21	5.01	Medium strong light grey fine grained calcaceous LIMESTONE. Generally slightly weathered. Highly weathered neighbouring fractures where strength is reduced to weak with dark grey clay weathering products. *(continued)*	
													(3.83)		
								5.57	No Rec					4.90-5.57m - Fractures, medium spaced, sub horizontal, undulating, rough and open with up to 2.5mm grey sandy clay infill.	
				6.00-9.00	97	96	68	6.00	3.3					6.00-7.23m - Fractures very closely spaced, sub horizontal, undulating rough and wide with slight grey clayey sand coatings (possibly drill induced).	
												+116.99	7.23		
								7.23	5.7					Weak thinly laminated dark grey slightly calcaceous fine grained argillaceous MUDSTONE. Frequent interbedded silty sand laminae up to 0.5mm thick.	
													(0.37)	Fractures very closely spaced, sub horizontal, planar, rough and tight with slight orange brown clayey sand coatings.	
								7.60	0			+116.62	7.60	Strong grey crystalline medium grained calcaceous LIMESTONE. Frequent calcite veining and fossilised shell fragments. Fresh.	
													(0.53)	Fractures extremely closely spaced, sub horizontal, stepped, rough and open with slight orange brown and dark grey discolouration on fracture surface.	
								8.03	30			+116.09	8.13		
								8.13	3.4					Weak thinly laminated, strong blue grey slightly calcaceous fine grained argillaceous MUDSTONE. Highly weathered throughout.	
													(0.58)	8.13-8.71m - Fractures medium spaced, planar, rough and tight. No infill.	
								8.71	NI			+115.51	8.71		
								8.80	0					Very strong crystalline grey medium grained calcaceous LIMESTONE. Generally fresh with slight greenish grey discolouration.	
								8.91	No Rec						
				9.00-10.00	83	83	38	9.00	6.7					9.00-9.15m - Fractures medium spaced, sub horizontal, planar, rough and tight. No infill.	
								9.15	4.4					9.15-9.83m - Fractures closely spaced, sub horizontal, planar, rough and tight with slight greenish grey discolouration on fracture surface.	
													(1.29)		
00:00 05.05.11	1.5m	8m						9.83	No Rec			+114.22	10.00		

REMARKS

Hand excavated 0.0-0.9m
Rotary Coring 0.9-10m.
Flushing medium-Air/Mist
Standing water was observed at 8.0m on competion and remained at 8.0m after 20 minutes.

All dimensions in metres Scale 1:32.3	Client Freddie Alcock	Equipment Comacchio 450-P

GEOCORE ROTARY 204 WATERMAN - ROCK CORE LOGS.GPJ AGS3_ALL.GDT 4/7/11

Geocore Site Investigations Ltd

Location **Heyford Park, Oxfordshire**				BOREHOLE No **BH219**
Job No **RT/11/52204**	Date **05-05-11**	Ground Level (m) 121.32	Co-ordinates () E 452,242.8 N 226,132.9	
Client Waterman Energy, Environment and Design Ltd				Sheet 1 of 2

Drilling Progress	Casing depth/size	Water level/ time/ date	Flush Return %	CORE RECOVERY & TESTS: Depth (m) AL/ from to	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Depth	Fracture Index	Tests	Legend	Reduced Level	Depth (Thickness) (m)	STRATA: Description	Instrument/ Backfill
												+121.32	0.00		
												+121.22	0.10	MADE GROUND dark brown very clayey medium sand (topsoil).	
												+120.92	(0.30) 0.40	Firm orange gravelly CLAY with some cobbles. Gravel is of angular fine to coarse limestone. Cobbles are angular limestone.	
														Light brown LIMESTONE. (Rotary open hole)	
												+119.32	(1.60) 2.00		
				2.00-5.00	83	53	14	2.00	NI					Medium strong light brown/yellow brown partially crystalline fine grained calcaceous LIMESTONE. Frequent recrystallised shell material. Generally moderately weathered but completely weathered in non intact areas where recovered as stiff light brown gravelly clay. Strength reduced to extremely weak where most intensely weathered.	
								2.40	18.9					Fractures extremely closely spaced sub horizontal, undulating rough and open with slight orange brown discolouration on fracture surface.	
								2.62	NI						
								2.80	20						
								2.85	NI						
								3.00	13.3						
								3.30	8.3			+118.02	(1.30) 3.30		
								3.54	NI					Strong grey partially crystalline medium grained oolitic calcaceous LIMESTONE. Generally fresh/slightly weathered but highly weathered neighbouring fractures and in non intact areas. Strength reduced to weak with grey clayey sand weathering products where most intensely weathered.	
								3.60	3.4					Fractures very closely spaced, stepped, rough and open with up to 1mm orange brown sandy clay infill and orange brown discolouration on fracture surface.	
								4.48	No rec				(2.15)		

REMARKS
Hand excavated 0.0-0.5m
Rotary open Hole 0.5m-2.0m
Rotary Coring 2.0m-10m.
Flushing medium-Air/Mist

All dimensions in metres Scale 1:32.3	Client Freddie Alcock	Equipment Comacchio 450-P

GEOCORE ROTARY 204 WATERMAN - ROCK CORE LOGS.GPJ AGS3_ALL.GDT 4/7/11

Geocore Site Investigations Ltd

Location **Heyford Park, Oxfordshire**				BOREHOLE No **BH219**
Job No **RT/11/52204**	Date **05-05-11**	Ground Level (m) 121.32	Co-ordinates () E 452,242.8 N 226,132.9	
Client Waterman Energy, Environment and Design Ltd				Sheet 2 of 2

Drilling Progress	Casing depth/size	Water level/ time/ date	Flush Return %	CORE RECOVERY & TESTS: Depth (m) AL/ from to	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Depth	Fracture Index	Tests	STRATA: Legend	Reduced Level	Depth (Thickness) (m)	Description	Instrument/ Backfill
				5.00-8.00	73	66	44	5.00	0			+116.31	5.01		
								5.20	NI						
								5.45	2.6			+115.87	5.45		
													(1.15)	Very strong light grey crystalline fine grained calcaceous LIMESTONE. Frequent recrystallised shell fragments. Fresh. Fractures closely spaced, sub horizontal, undulating rough, and open with up to 1.5mm grey silty clay infill.	
												+114.72	6.60		
								6.60	0				(0.40)	Weak thinly laminated dark grey fine grained argillaceous SILTSTONE. Highly weathered throughout with light grey silty sand weathering products. Unfractured insitu.	
												+114.32	7.00		
								7.00	0					Very strong light grey crystalline fine grained calcaceous LIMESTONE. Fresh. Unfractured insitu.	
								7.20	No rec						
													(1.40)		
				8.00-10.00	100	88	88	8.00	0			+112.92	8.40		
								8.40	NI						
								8.51	2.8					Weak, thinly laminated, slightly greenish grey slightly calcaceous fine grained argillaceous MUDSTONE. Fissile. Generally highly weathered but locally completely weathered where recovered as stiff grey slightly sandy clay.	
													(1.00)	8.51-9.23m - Fractures medium spaced, sub horizontal, planar smooth and tight. Clean. 9.23-9.40m - Fractures extremely closely spaced, stepped rough and tight with light grey clayey sand coatings.	
								9.23	23.5						
								9.40	0			+111.92	9.40	Medium strong blue grey very calcaceous fine grained argillaceous SILTSTONE. Fresh. Unfractured insitu.	
													(0.30)		
								9.70	3.3			+111.62	9.70	Strong grey crystalline fine grained calcaceous LIMESTONE. Generally fresh with slight greenish grey penetrative discolouration. Fractures sub horizontal, stepped, rough and tight. Clean.	
													(0.30)		
												+111.32	10.00		

REMARKS

Hand excavated 0.0-0.5m
Rotary open Hole 0.5m-2.0m
Rotary Coring 2.0m-10m.
Flushing medium-Air/Mist

All dimensions in metres Scale 1:32.3	Client Freddie Alcock	Equipment Comacchio 450-P

GEOCORE ROTARY 204 WATERMAN - ROCK CORE LOGS.GPJ AGS3_ALL.GDT 4/7/11

Hydrock records (2014) Extract of unreferenced SLR report

Appendix A
Borehole Logs

BOREHOLE LOG

BOREHOLE No **BH101**

Client: **Viridor Waste Management**

Project No:	Date:	Ground Level:	Co-ordinates:
403.0036.00174		113.60mATBM	E 453,868 N 225,832

Project: **Ardley Landfill Site Monitoring Borehole Installations**

Sheet: 1 of 3

SAMPLES & TESTS				Water	STRATA				Instrument/ Backfill
Depth	Type No	Test Type	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION	
					113.40		0.20	TOPSOIL	
								Yellow buff LIMESTONE	
							(5.80)		
					107.60		6.00		
								Soft, dark grey sandy CLAY	
							(0.90)		
					106.70		6.90		
								Interbedded LIMESTONES and MUDSTONES	

Boring Progress and Water Observations				Casing		Chiselling			Water Added		General Remarks
Date	Time	Depth	Water Dpt	Depth	Dia. mm	From	To	Hours	From	To	

All dimensions in metres Scale 1:50	Contractor : Site Investigation Services Plant: Massenza mini	Method:	Logged By:	Approved By:

Form SLR AGS3 UK BH File ARDLEY BOREHOLES GPJ 30-11-06

BOREHOLE LOG

BOREHOLE No **BH101**

Client: **Viridor Waste Management**

Project No:	Date:	Ground Level:	Co-ordinates:
403.0036.00174		113.60mATBM	E 453,868 N 225,832

Project: **Ardley Landfill Site Monitoring Borehole Installations**

Sheet: 2 of 3

SAMPLES & TESTS				Water	STRATA				Instrument/ Backfill
Depth	Type No	Test Type	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION	
								Interbedded LIMESTONES and MUDSTONES *(continued)*	
							(3.60)		
9									
10					103.10		10.50		
								Dark grey MUDSTONE	
11							(1.30)		
					101.80		11.80		
								Stiff Sandy CLAY	
12							(1.10)		
					100.70		12.90		
13					100.40		13.20	Hard dark LIMESTONE	
								Dark grey sandy CLAY	
							(0.60)		
14					99.80		13.80		
								Dark grey MUDSTONE interbedded with hard dark grey LIMESTONE	
15									

Boring Progress and Water Observations				Casing		Chiselling			Water Added		General Remarks
Date	Time	Depth	Water Dpt	Depth	Dia. mm	From	To	Hours	From	To	

All dimensions in metres Scale 1:50	Contractor : Site Investigation Services Plant: Massenza M4	Method:	Logged By:	Approved By:

Form SLR AGS3 UK BH File ARDLEY BOREHOLES GPJ 30-11-06

BOREHOLE LOG

BOREHOLE No **BH101**

Client: **Viridor Waste Management**

Project No:	Date:	Ground Level:	Co-ordinates:
403.0036.00174		113.60mATBM	E 453,868 N 225,832

Project: **Ardley Landfill Site Monitoring Borehole Installations**

Sheet: 3 of 3

SAMPLES & TESTS				Water	STRATA				Instrument/ Backfill
Depth	Type No	Test Type	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION	
								Dark grey MUDSTONE interbedded with hard dark grey LIMESTONE *(continued)*	
17									
							(8.20)		
18									
19									
20									
21									
					91.60		22.00		
22								Borehole complete at 22.00m	
23									

Boring Progress and Water Observations				Casing		Chiselling			Water Added		General Remarks
Date	Time	Depth	Water Dpt	Depth	Dia. mm	From	To	Hours	From	To	

All dimensions in metres	Contractor : Site Investigation Services	Method:	Logged By:	Approved By:
Scale 1:50	Plant: Massenza MT4			

Form SLR AGS3 UK BH File ARDLEY BOREHOLES.GPJ 30-11-06

BOREHOLE LOG

BOREHOLE No **BH102**

Client: **Viridor Waste Management**

Project No:	Date:	Ground Level:	Co-ordinates:
403.0036.00174		114.88mATBM	E 453,845 N 225,754

Project: **Ardley Landfill Site Monitoring Borehole Installations**

Sheet: 1 of 2

SAMPLES & TESTS				Water	STRATA				Instrument/ Backfill
Depth	Type No	Test Type	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION	
					114.58		0.30	Soft, Orange/Brown, Slightly Clayey SAND (TOPSOIL)	
							(1.20)	Moderately strong, very pale brown/yellow oolitic LIMESTONE.	
					113.38		1.50		
							(0.90)	Moderately weak, very pale brown/yellow oolitic LIMESTONE.	
					112.48		2.40		
							(1.60)	Moderately strong, very pale brown/yellow oolitic LIMESTONE.	
					110.88		4.00		
							(3.00)	Strong, very pale brown/yellow oolitic LIMESTONE.	
					107.88		7.00		
					107.48		(0.40) 7.40	Soft, dark grey, sandy CLAY.	
					106.98		(0.50) 7.90	Soft, dark grey MUDSTONE	

Boring Progress and Water Observations				Casing		Chiselling			Water Added		General Remarks
Date	Time	Depth	Water Dpt	Depth	Dia. mm	From	To	Hours	From	To	

All dimensions in metres Scale 1:50	Contractor : Site Investigation Services Plant:	Method:	Logged By:	Approved By:

Form SLR AGS3 UK BH File ARDLEY BOREHOLES.GPJ 30-11-06

BOREHOLE LOG

BOREHOLE No **BH102**

Client: **Viridor Waste Management**

Project No:	Date:	Ground Level:	Co-ordinates:
403.0036.00174		114.88mATBM	E 453,845 N 225,754

Project: **Ardley Landfill Site Monitoring Borehole Installations**

Sheet: 2 of 2

SAMPLES & TESTS				Water	STRATA				Instrument/ Backfill
Depth	Type No	Test Type	Test Result		Reduced Level	Legend	Depth (Thickness)	DESCRIPTION	
								Weak, dark grey MUDSTONE, with occasional limestone bands. *(continued)*	
9							(2.60)		
10					104.38		10.50		
							(0.80)	Strong, dark grey LIMESTONE.	
11					103.58		11.30		
							(1.20)	Stiff, dark grey, sandy CLAY	
12					102.38		12.50		
							(0.50)	Strong, grey LIMESTONE.	
13					101.88		13.00		
							(2.00)	Weak, dark grey MUDSTONE, with occasional clayey sand bands.	
14									
15					99.88		15.00		
								Borehole complete at 15.00m	

Boring Progress and Water Observations				Casing		Chiselling			Water Added		General Remarks
Date	Time	Depth	Water Dpt	Depth	Dia. mm	From	To	Hours	From	To	

All dimensions in metres	Contractor : Site Investigation Services	Method:	Logged By:	Approved By:
Scale 1:50	Plant:			

Form SLR AGS3 UK BH File ARDLEY BOREHOLES.GPJ 30-11-06

BOREHOLE LOG

BOREHOLE No **BH103**

Client: **Viridor Waste Management**

Project No:	Date:	Ground Level:	Co-ordinates:
403.0036.00174		114.37mATBM	E 453,835 N 225,703

Project: **Ardley Landfill Site Monitoring Borehole Installations**

Sheet: 1 of 2

SAMPLES & TESTS				Water	STRATA				Instrument/ Backfill
Depth	Type No	Test Type	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION	
					114.07		0.30	Soft, orange/brown sandy CLAY (TOPSOIL).	
							(2.20)	Strong, very pale brown/yellow oolitic LIMESTONE.	
					111.87		2.50		
							(0.90)	Moderately strong, pale brown/yellow oolitic LIMESTONE.	
					110.97		3.40		
							(2.90)	Strong, very pale brown/yellow oolitic LIMESTONE.	
					108.07		6.30		
					107.87		6.50	Very strong, fresh grey LIMESTONE.	
							(0.50)	Soft, brown sandy CLAY.	
					107.37		7.00		
							(0.50)	Weak, dark grey silty MUDSTONE.	
					106.87		7.50		
							(0.40)	Strong, grey LIMESTONE.	
					106.47		7.90		

Boring Progress and Water Observations				Casing		Chiselling			Water Added		General Remarks
Date	Time	Depth	Water Dpt	Depth	Dia. mm	From	To	Hours	From	To	

All dimensions in metres Scale 1:50	Contractor : Site Investigation Services Plant:	Method:	Logged By:	Approved By:

Form SLR AGS3 UK BH File ARDLEY BOREHOLES.GPJ 30-11-06

BOREHOLE LOG

BOREHOLE No **BH103**

Client: **Viridor Waste Management**

Project No:	Date:	Ground Level:	Co-ordinates:
403.0036.00174		114.37mATBM	E 453,835 N 225,703

Project: **Ardley Landfill Site Monitoring Borehole Installations**

Sheet: 2 of 2

SAMPLES & TESTS				Water	STRATA				
Depth	Type No	Test Type	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION	Instrument/ Backfill
							(1.10)	Moderately strong, grey MUDSTONE, with occasional limestone bands. *(continued)*	
9					105.37		9.00	Borehole complete at 9.00m	
10									
11									
12									
13									
14									
15									

Boring Progress and Water Observations				Casing		Chiselling			Water Added		General Remarks
Date	Time	Depth	Water Dpt	Depth	Dia. mm	From	To	Hours	From	To	

All dimensions in metres Scale 1:50	Contractor : Site Investigation Services Plant:	Method:	Logged By:	Approved By:

Form SLR AGS3 UK BH File ARDLEY BOREHOLES.GPJ 30-11-06

BOREHOLE LOG

BOREHOLE No **BH104**

Client: **Viridor Waste Management**

Project No:	Date:	Ground Level:	Co-ordinates:
403.0036.00174		113.98mATBM	E 453,825 N 225,655

Project: **Ardley Landfill Site Monitoring Borehole Installations**

Sheet: 1 of 2

SAMPLES & TESTS				Water	STRATA				
Depth	Type No	Test Type	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION	Instrument/ Backfill
					113.48		(0.50) 0.50	Soft, orange/brown sandy CLAY.	
					111.98		(1.50) 2.00	Moderately strong, very pale brown/yellow oolitic LIMESTONE.	
					109.98		(2.00) 4.00	Strong, very pale brown and yellow oolitic LIMESTONE.	
					108.98		(1.00) 5.00	Very weathered, weak, light brown sandy LIMESTONE.	
					108.68		5.30	Strong, very pale brown and yellow oolitic LIMESTONE.	
					108.38		5.60	Weathered, weak, light brown sandy LIMESTONE.	
					107.18		(1.20) 6.80	Moderately strong, very pale brown/yellow oolitic LIMESTONE.	
					106.98		7.00	Weathered, weak, light brown sandy LIMESTONE.	
					106.48		(0.50) 7.50	Stiff, grey silty/sandy CLAY.	
								Moderately strong, grey MUDSTONE, with occasional limestone bands.	

Boring Progress and Water Observations				Casing		Chiselling			Water Added		General Remarks
Date	Time	Depth	Water Dpt	Depth	Dia. mm	From	To	Hours	From	To	

All dimensions in metres Scale 1:50	Contractor : Site Investigation Services Plant:	Method:	Logged By:	Approved By:

Form SLR AGS3 UK BH File ARDLEY BOREHOLES.GPJ 30-11-06

BOREHOLE LOG

BOREHOLE No **BH104**

Client: **Viridor Waste Management**

Project No:	Date:	Ground Level:	Co-ordinates:
403.0036.00174		113.98mATBM	E 453,825 N 225,655

Project: **Ardley Landfill Site Monitoring Borehole Installations**

Sheet: 2 of 2

SAMPLES & TESTS				Water	STRATA				
Depth	Type No	Test Type	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION	Instrument/ Backfill
9							(4.00)	Moderately strong, grey MUDSTONE, with occasional limestone bands. *(continued)*	
10									
11					102.48		11.50		
12								Borehole complete at 11.50m	
13									
14									
15									

Boring Progress and Water Observations				Casing		Chiselling			Water Added		General Remarks
Date	Time	Depth	Water Dpt	Depth	Dia. mm	From	To	Hours	From	To	

All dimensions in metres Scale 1:50	Contractor : Site Investigation Services Plant:	Method:	Logged By:	Approved By:

Form SLR AGS3 UK BH File ARDLEY BOREHOLES.GPJ 30-11-06

BOREHOLE LOG

BOREHOLE No **BH105**

Client: **Viridor Waste Management**

Project No:	Date:	Ground Level:	Co-ordinates:
403.0036.00174		113.46mATBM	E 453,815 N 225,606

Project: **Ardley Landfill Site Monitoring Borehole Installations**

Sheet: 1 of 2

SAMPLES & TESTS				Water	STRATA				Instrument/ Backfill
Depth	Type No	Test Type	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION	
							(0.70)	Weak, weathered, light brown sandy LIMESTONE.	
					112.76		0.70	Strong, very pale brown and yellow oolitic LIMESTONE.	
							(1.80)		
					110.96		2.50	Moderately strong, very pale brown/yellow oolitic LIMESTONE.	
							(1.00)		
					109.96		3.50	Strong, very pale brown and yellow oolitic LIMESTONE.	
					109.66		3.80	Moderately strong, very pale brown/yellow oolitic LIMESTONE.	
					109.46		4.00	Strong, very pale brown and yellow oolitic LIMESTONE.	
							(1.00)		
					108.46		5.00	Moderately strong, very pale brown/yellow oolitic LIMESTONE.	
							(0.70)		
					107.76		5.70	Strong, very pale brown and yellow oolitic LIMESTONE.	
							(0.80)		
					106.96		6.50	Strong, fresh light grey LIMESTONE.	
					106.66		6.80	Firm, brown sandy CLAY.	
					106.56		6.90	Stiff, dark grey silty CLAY.	
					106.26		7.20	Moderately strong, gey silty MUDSTONE, with occasional limestone bands.	

Boring Progress and Water Observations				Casing		Chiselling			Water Added		General Remarks
Date	Time	Depth	Water Dpt	Depth	Dia. mm	From	To	Hours	From	To	

All dimensions in metres Scale 1:50	Contractor : Site Investigation Services Plant:	Method:	Logged By:	Approved By:

Form SLR AGS3 UK BH File ARDLEY BOREHOLES GPJ 30-11-06

BOREHOLE LOG

BOREHOLE No **BH105**

Client: **Viridor Waste Management**

Project No:	Date:	Ground Level:	Co-ordinates:
403.0036.00174		113.46mATBM	E 453,815 N 225,606

Project: **Ardley Landfill Site Monitoring Borehole Installations**

Sheet: 2 of 2

SAMPLES & TESTS				Water	STRATA				
Depth	Type No	Test Type	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION	Instrument/ Backfill
							(2.60)	Moderately strong, gey silty MUDSTONE, with occasional limestone bands. *(continued)*	
					103.66		9.80		
							(0.70)	Weak, dark grey silty MUDSTONE.	
					102.96		10.50		
					102.66		10.80	Strong, grey LIMESTONE.	
							(0.70)	Moderately strong, grey silty MUDSTONE.	
					101.96		11.50		
							(0.50)	Strong, grey LIMESTONE.	
					101.46		12.00		
							(1.50)	Weak, grey silty MUDSTONE.	
					99.96		13.50		
								Borehole complete at 13.50m	

9 10 11 12 13 14 15

Boring Progress and Water Observations				Casing		Chiselling			Water Added		General Remarks
Date	Time	Depth	Water Dpt	Depth	Dia. mm	From	To	Hours	From	To	

All dimensions in metres Scale 1:50	Contractor : Site Investigation Services Plant:	Method:	Logged By:	Approved By:

Form SLR AGS3 UK.BH File ARDLEY BOREHOLES.GPJ 30-11-06

BOREHOLE LOG

BOREHOLE No **BH106**

Client: **Viridor Waste Management**

Project No:	Date:	Ground Level:	Co-ordinates:
403.0036.00174		112.95mATBM	E 453,805 N 225,557

Project: **Ardley Landfill Site Monitoring Borehole Installations**

Sheet: 1 of 2

SAMPLES & TESTS				Water	STRATA				
Depth	Type No	Test Type	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION	Instrument/ Backfill
					112.75		0.20	Orange/brown, sandy, silty CLAY (TOPSOIL).	
							(0.80)	Firm, light brown sandy CLAY.	
					111.95		1.00		
1							(1.30)	Pale orange and brown oolitic LIMESTONE.	
2					110.65		2.30		
							(2.00)	Strong, fresh light grey LIMESTONE.	
3					108.65		4.30		
4							(2.20)	Strong, light grey and green LIMESTONE.	
5					106.45		6.50		
6							(0.40)	Orange/brown sandy CLAY.	
					106.05		6.90		
7					105.95		7.00	Weak, dark grey to black SHALE.	
							(0.50)	Weak, dark grey, very silty MUDSTONE.	
					105.45		7.50		
								Weak, grey silty MUDSTONE with occasional limestone bands.	

Boring Progress and Water Observations				Casing		Chiselling			Water Added		General Remarks
Date	Time	Depth	Water Dpt	Depth	Dia. mm	From	To	Hours	From	To	

All dimensions in metres Scale 1:50	Contractor : Site Investigation Services Plant:	Method:	Logged By:	Approved By:

Form SLR AGS3 UK BH File ARDLEY BOREHOLES.GPJ 30-11-06

BOREHOLE LOG

BOREHOLE No **BH106**

Client: **Viridor Waste Management**

Project No:	Date:	Ground Level:	Co-ordinates:
403.0036.00174		112.95mATBM	E 453,805 N 225,557

Project: **Ardley Landfill Site Monitoring Borehole Installations**

Sheet: 2 of 2

SAMPLES & TESTS				Water	STRATA				
Depth	Type No	Test Type	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION	Instrument/ Backfill
								Weak, grey silty MUDSTONE with occasional limestone bands. *(continued)*	
							(4.00)		
					101.45		11.50	Borehole complete at 11.50m	

9 10 11 12 13 14 15

Boring Progress and Water Observations				Casing		Chiselling			Water Added		General Remarks
Date	Time	Depth	Water Dpt	Depth	Dia. mm	From	To	Hours	From	To	

All dimensions in metres Scale 1:50	Contractor : Site Investigation Services Plant:	Method:	Logged By:	Approved By:

Form SLR AGS3 UK BH File ARDLEY BOREHOLES GPJ 30-11-06

BOREHOLE LOG

BOREHOLE No **BH107**

Client: **Viridor Waste Management**

Project No:	Date:	Ground Level:	Co-ordinates:
403.0036.00174		112.33mATBM	E 453,801 N 225,507

Project: **Ardley Landfill Site Monitoring Borehole Installations**

Sheet: 1 of 3

SAMPLES & TESTS				Water	STRATA				Instrument/ Backfill
Depth	Type No	Test Type	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION	
					112.03		0.30	Soft to firm, brown sandy CLAY (TOPSOIL).	
					111.83		0.50	Firm, brown to orange sandy CLAY.	
							(1.00)	Strong, very pale brown and yellow oolitic LMESTONE.	
					110.83		1.50		
							(1.50)	Very strong, pale brown and yellow oolitic LIMESTONE.	
					109.33		3.00		
							(1.60)	Strong, very pale brown and yellow oolitic LMESTONE.	
					107.73		4.60		
							(1.90)	Soft, light brown sandy CLAY.	
					105.83		6.50		
					105.53		6.80	Stiff, dark grey, silty, sandy CLAY.	
							(1.20)	Moderately weak, grey MUDSTONE, with occasional limestone bands.	
					104.33		8.00		

Boring Progress and Water Observations				Casing		Chiselling			Water Added		General Remarks
Date	Time	Depth	Water Dpt	Depth	Dia. mm	From	To	Hours	From	To	

All dimensions in metres Scale 1:50	Contractor : Site Investigation Services Plant:	Method:	Logged By:	Approved By:

Form SLR AGS3 UK BH File ARDLEY BOREHOLES GPJ 30-11-06

BOREHOLE LOG

BOREHOLE No **BH107**

Client: **Viridor Waste Management**

Project No:	Date:	Ground Level:	Co-ordinates:
403.0036.00174		112.33mATBM	E 453,801 N 225,507

Project: **Ardley Landfill Site Monitoring Borehole Installations**

Sheet: 2 of 3

SAMPLES & TESTS				Water	STRATA				Instrument/ Backfill
Depth	Type No	Test Type	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION	
					103.93		(0.40) 8.40	Strong, fresh light grey MUDSTONE.	
9							(2.10)	Moderately strong, fresh light grey LIMESTONE.	
10					101.83		10.50		
					101.53		10.80	Soft to firm, grey silty CLAY.	
11					100.83		(0.70) 11.50	Moderately fresh, light grey LIMESTONE, with occasional weak mudstone bands.	
					100.63		11.70	Soft to firm, grey silty CLAY.	
12					99.83		(0.80) 12.50	Moderately strong, grey silty MUDSTONE, with occasional limestone bands.	
13					98.93		(0.90) 13.40	Firm to stiff, dark grey silty CLAY.	
14					97.83		(1.10) 14.50	Moderately strong, grey MUDSTONE.	
					97.33		(0.50) 15.00	Very soft, black clayey SILT.	
15					96.33		(1.00) 16.00	Firm, dark grey, slightly silty grey CLAY.	

Boring Progress and Water Observations				Casing		Chiselling			Water Added		General Remarks
Date	Time	Depth	Water Dpt	Depth	Dia. mm	From	To	Hours	From	To	

All dimensions in metres Scale 1:50	Contractor : Site Investigation Services Plant:	Method:	Logged By:	Approved By:

Form SLR AGS3 UK BH File ARDLEY BOREHOLES.GPJ 30-11-06

BOREHOLE LOG

BOREHOLE No **BH107**

Client: **Viridor Waste Management**

Project No:	Date:	Ground Level:	Co-ordinates:
403.0036.00174		112.33mATBM	E 453,801 N 225,507

Project: **Ardley Landfill Site Monitoring Borehole Installations**

Sheet: 3 of 3

SAMPLES & TESTS				Water	STRATA				Instrument/ Backfill
Depth	Type No	Test Type	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION	
								Moderately weak, dark grey MUDSTONE, with very thin bands of silty clay and limestone bands with occasional fossil fragments.	
17									
18									
19							(6.00)		
20									
21									
					90.33		22.00		
22								Borehole complete at 22.00m	
23									

Boring Progress and Water Observations				Casing		Chiselling			Water Added		General Remarks
Date	Time	Depth	Water Dpt	Depth	Dia. mm	From	To	Hours	From	To	

All dimensions in metres Scale 1:50	Contractor : Site Investigation Services Plant:	Method:	Logged By:	Approved By:

Form SLR AGS3 UK BH File ARDLEY BOREHOLES GPJ 30-11-06

BOREHOLE LOG

BOREHOLE No **BH108**

Client: **Viridor Waste Management**

Project No:	Date:	Ground Level:	Co-ordinates:
403.0036.00174		111.83mATBM	E 453,790 N 225,458

Project: **Ardley Landfill Site Monitoring Borehole Installations**

Sheet: 1 of 2

SAMPLES & TESTS				Water	STRATA				Instrument/ Backfill
Depth	Type No	Test Type	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION	
							(0.50)	Firm, orange/brown sandy CLAY	
					111.33		0.50		
							(1.50)	Moderately strong, very pale brown/yellow oolitic LIMESTONE.	
					109.83		2.00		
							(2.00)	Strong, very pale brown and yellow oolitic LIMESTONE.	
					107.83		4.00		
					107.53		4.30	Weak, weathered, very sandy LIMESTONE.	
							(0.70)	Strong, very pale brown and yellow oolitic LIMESTONE.	
					106.83		5.00		
							(0.60)	Weak, weathered, very sandy LIMESTONE.	
					106.23		5.60		
					106.13		5.70	Dark orange, slightly clayey SAND.	
							(0.70)	Firm, dark grey silty CLAY.	
					105.43		6.40		
					105.33		6.50	Moderately weak, dark grey MUDSTONE.	
							(0.80)	Moderately fresh, light grey LIMESTONE.	
					104.53		7.30		
								Moderately fresh, grey LIMESTONE, with occasional mudstone bands.	

Boring Progress and Water Observations				Casing		Chiselling			Water Added		General Remarks
Date	Time	Depth	Water Dpt	Depth	Dia. mm	From	To	Hours	From	To	

All dimensions in metres
Scale 1:50

Contractor : Site Investigation Services
Plant:

Method:

Logged By:

Approved By:

Form SLR AGS3 UK BH File ARDLEY BOREHOLES.GPJ 30-11-06

BOREHOLE LOG

BOREHOLE No **BH108**

Client: **Viridor Waste Management**

Project No:	Date:	Ground Level:	Co-ordinates:
403.0036.00174		111.83mATBM	E 453,790 N 225,458

Project: **Ardley Landfill Site Monitoring Borehole Installations**

Sheet: 2 of 2

SAMPLES & TESTS				Water	STRATA				Instrument/ Backfill
Depth	Type No	Test Type	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION	
							(2.70)	Moderately fresh, grey LIMESTONE, with occasional mudstone bands. *(continued)*	
					101.83		10.00		
								Borehole complete at 10.00m	

9 10 11 12 13 14 15

Boring Progress and Water Observations				Casing		Chiselling			Water Added		General Remarks
Date	Time	Depth	Water Dpt	Depth	Dia. mm	From	To	Hours	From	To	

All dimensions in metres Scale 1:50	Contractor : Site Investigation Services Plant:	Method:	Logged By:	Approved By:

Form SLR AGS3 UK BH File ARDLEY BOREHOLES.GPJ 30-11-06

BOREHOLE LOG

BOREHOLE No **BH109**

Client: **Viridor Waste Management**

Project No:	Date:	Ground Level:	Co-ordinates:
403.0036.00174		111.26mATBM	E 453,779 N 225,408

Project: **Ardley Landfill Site Monitoring Borehole Installations**

Sheet: 1 of 2

SAMPLES & TESTS				Water	STRATA				Instrument/ Backfill
Depth	Type No	Test Type	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION	
					110.76		(0.50) 0.50	Firm, orange/brown sandy CLAY.	
							(1.80)	Moderately strong, pale brown/yellow oolitic LIMESTONE.	
					108.96		2.30		
							(3.20)	Strong, very pale brown and yellow oolitic LIMESTONE.	
					105.76		5.50		
					105.56		5.70	Soft, brown sandy CLAY.	
					105.26		6.00	Soft, grey, silty, sandy CLAY.	
							(3.00)	Moderately strong, grey silty MUDSTONE, with occasional limestone bands.	

1 2 3 4 5 6 7

Boring Progress and Water Observations				Casing		Chiselling			Water Added		General Remarks
Date	Time	Depth	Water Dpt	Depth	Dia. mm	From	To	Hours	From	To	

All dimensions in metres Scale 1:50	Contractor : Site Investigation Services Plant:	Method:	Logged By:	Approved By:

Form SLR AGS3 UK BH File ARDLEY BOREHOLES.GPJ 30-11-06

SLR CONSULTING LTD, SLR HOUSE, MEADOWBANK WAY, EASTWOOD, NOTTINGHAMSHIRE. NG16 3TT, Tel: 01773 766020, Fax: 01772 7

BOREHOLE LOG

BOREHOLE No **BH109**

Client: **Viridor Waste Management**

Project No:	Date:	Ground Level:	Co-ordinates:
403.0036.00174		111.26mATBM	E 453,779 N 225,408

Project: **Ardley Landfill Site Monitoring Borehole Installations**

Sheet: 2 of 2

SAMPLES & TESTS				Water	STRATA				
Depth	Type No	Test Type	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION	Instrument/ Backfill
					102.26		9.00	Moderately strong, grey silty MUDSTONE, with occasional limestone bands. *(continued)*	
9								Borehole complete at 9.00m	
10									
11									
12									
13									
14									
15									

Boring Progress and Water Observations				Casing		Chiselling			Water Added		General Remarks
Date	Time	Depth	Water Dpt	Depth	Dia. mm	From	To	Hours	From	To	

All dimensions in metres Scale 1:50	Contractor : Site Investigation Services Plant:	Method:	Logged By:	Approved By:

Form SLR AGS3 UK BH File ARDLEY BOREHOLES GPJ 30-11-06

BOREHOLE LOG

BOREHOLE No **BH110**

Client: **Viridor Waste Management**

Project No:	Date:	Ground Level:	Co-ordinates:
403.0036.00174		110.86mATBM	E 453,769 N 225,360

Project: **Ardley Landfill Site Monitoring Borehole Installations**

Sheet: 1 of 2

SAMPLES & TESTS				Water	STRATA				
Depth	Type No	Test Type	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION	Instrument/ Backfill
					109.96		(0.90) 0.90	Firm, brown sandy CLAY.	
1					109.66		1.20	Fairly weathered, very pale brown/yellow oolitic LIMESTONE.	
					109.26		(0.40) 1.60	Moderately strong, very pale brown/yellow oolitic LIMESTONE.	
					109.06		1.80	Strong, very pale brown and yellow oolitic LIMESTONE.	
2					108.26		(0.80) 2.60	Moderately strong, pale brown/yellow oolitic LIMESTONE.	
3					106.86		(1.40) 4.00	Strong, pale brown and yellow oolitic LIMESTONE.	
4					106.36		(0.50) 4.50	Moderately strong, pale brown oolitic LIMESTONE.	
					105.86		(0.50) 5.00	Strong, pale brown and yellow oolitic LIMESTONE.	
5					104.86		(1.00) 6.00	Moderately strong, grey LIMESTONE.	
6					104.56		6.30	Soft, brown sandy CLAY.	
					104.36		6.50	Stiff, dark grey, silty, sandy CLAY.	
7							(2.50)	Moderately strong, grey MUDSTONE, with occasional limestone bands.	

Boring Progress and Water Observations				Casing		Chiselling			Water Added		General Remarks
Date	Time	Depth	Water Dpt	Depth	Dia. mm	From	To	Hours	From	To	

All dimensions in metres Scale 1:50	Contractor : Site Investigation Services Plant:	Method:	Logged By:	Approved By:

Form SLR ACS3 UK BH File ARDLEY BOREHOLES.GPJ 30-11-06

BOREHOLE LOG

BOREHOLE No **BH110**

Client: **Viridor Waste Management**

Project No:	Date:	Ground Level:	Co-ordinates:
403.0036.00174		110.86mATBM	E 453,769 N 225,360

Project: **Ardley Landfill Site Monitoring Borehole Installations**

Sheet: 2 of 2

SAMPLES & TESTS				Water	STRATA				
Depth	Type No	Test Type	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION	Instrument/ Backfill
								Moderately strong, grey MUDSTONE, with occasional limestone bands. *(continued)*	
					101.86		9.00		
9								Borehole complete at 9.00m	
10									
11									
12									
13									
14									
15									

Boring Progress and Water Observations				Casing		Chiselling			Water Added		General Remarks
Date	Time	Depth	Water Dpt	Depth	Dia. mm	From	To	Hours	From	To	

All dimensions in metres Scale 1:50	Contractor : Site Investigation Services Plant:	Method:	Logged By:	Approved By:

Form SLR AGS3 UK BH File ARDLEY BOREHOLES.GPJ 30-11-06

BOREHOLE LOG

BOREHOLE No **BH111**

Client: **Viridor Waste Management**

Project No:	Date:	Ground Level:	Co-ordinates:
403.0036.00174		110.24mATBM	E 453,758 N 225,305

Project: **Ardley Landfill Site Monitoring Borehole Installations**

Sheet: 1 of 2

SAMPLES & TESTS				Water	STRATA				Instrument/ Backfill
Depth	Type No	Test Type	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION	
					109.94		0.30	Soft to firm, orange/brown sandy CLAY.	
					109.24		(0.70) 1.00	Moderately strong, brown/yellow oolitic LIMESTONE.	
1									
							(1.50)	Moderately strong, pale brown and yellow oolitic LIMESTONE.	
2					107.74		2.50		
					107.24		(0.50) 3.00	Strong, pale brown and yellow oolitic LIMESTONE, with occasional sand bands.	
3									
					106.74		(0.50) 3.50	Moderately strong, pale brown and yellow oolitic LIMESTONE.	
								Moderately strong, pale brown and yellow oolitic LIMESTONE.	
4									
							(2.30)		
5									
					104.44		5.80		
					104.24		6.00	Soft, orange/brown sandy CLAY.	
6					103.84		(0.40) 6.40	Stiff, dark grey, silty, sandy CLAY.	
					103.64		6.60	Moderately weak, grey MUDSTONE.	
					103.24		(0.40) 7.00	Strong, fresh light grey LIMESTONE.	
7								Moderately weak, dark grey silty MUDSTONE, with occasional limestone bands.	

Boring Progress and Water Observations				Casing		Chiselling			Water Added		General Remarks
Date	Time	Depth	Water Dpt	Depth	Dia. mm	From	To	Hours	From	To	

All dimensions in metres Scale 1:50	Contractor : Site Investigation Services Plant:	Method:	Logged By:	Approved By:

Form SLR AGS3 UK BH File ARDLEY BOREHOLES.GPJ 30-11-06

BOREHOLE LOG

BOREHOLE No **BH111**

Client: **Viridor Waste Management**

Project No:	Date:	Ground Level:	Co-ordinates:
403.0036.00174		110.24mATBM	E 453,758 N 225,305

Project: **Ardley Landfill Site Monitoring Borehole Installations**

Sheet: 2 of 2

SAMPLES & TESTS				Water	STRATA				Instrument/ Backfill
Depth	Type No	Test Type	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION	
							(3.40)	Moderately weak, dark grey silty MUDSTONE, with occasional limestone bands. *(continued)*	
					99.84		10.40		
					99.54		10.70	Moderately strong, light grey LIMESTONE.	
					99.04		(0.50) 11.20	Stiff, dark grey silty CLAY.	
					98.74		11.50	Moderately strong, grey MUDSTONE.	
					96.74		(2.00) 13.50	Stiff, dark grey silty CLAY.	
					96.24		(0.50) 14.00	Strong, fresh grey LIMESTONE, with occasional mudstone bands.	
								Borehole complete at 14.00m	

9 10 11 12 13 14 15

Boring Progress and Water Observations				Casing		Chiselling			Water Added		General Remarks
Date	Time	Depth	Water Dpt	Depth	Dia. mm	From	To	Hours	From	To	

All dimensions in metres Scale 1:50	Contractor : Site Investigation Services Plant:	Method:	Logged By:	Approved By:

Form SLR AGS3 UK BH File ARDLEY BOREHOLES.GPJ 30-11-06

BOREHOLE LOG

BOREHOLE No **BH112**

Client: **Viridor Waste Management**

Project No:	Date:	Ground Level:	Co-ordinates:
403.0036.00174		109.63mATBM	E 453,748 N 225,256

Project: **Ardley Landfill Site Monitoring Borehole Installations**

Sheet: 1 of 2

SAMPLES & TESTS				Water	STRATA				
Depth	Type No	Test Type	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION	Instrument/ Backfill
					~~109.53~~		0.10	Grass over brown SAND (TOPSOIL).	
					109.13		(0.40) 0.50	Firm, brown sandy CLAY.	
							(1.50)	Moderately strong, cream LIMESTONE.	
					107.63		2.00		
					106.83		(0.80) 2.80	Very strong, cream LIMESTONE.	
					106.63		3.00	Weak, brown sandy LIMESTONE.	
					105.33		(1.30) 4.30	Strong, brown/cream LIMESTONE.	
					105.13		4.50	Moderately strong, brown sandy LIMESTONE.	
					104.93		4.70	Strong, cream LIMESTONE.	
					~~104.83~~		4.80	Weak, brown sand LIMESTONE.	
					104.53		5.10	Strong, light grey LIMESTONE.	
					104.23		5.40	Moderately weak, brown sandy LIMESTONE.	
					104.03		5.60	Moderately strong, light grey LIMESTONE.	
					~~103.93~~		5.70	Very strong, light grey LIMESTONE.	
					~~103.83~~		5.80	Firm, light brown silty SAND.	
					~~103.63~~		6.00	soft to firm, dark grey/black CLAY.	
					102.93		(0.70) 6.70	Moderately strong, grey slightly sandy MUDSTONE.	
					102.63		7.00	Strong, grey LIMESTONE.	
					102.23		(0.40) 7.40	Moderately strong, grey slightly sandy MUDSTONE.	
					101.83		(0.40) 7.80	Strong, grey LIMESTONE.	
					101.63		8.00	Moderately strong, grey slightly sandy MUDSTONE.	

Boring Progress and Water Observations				Casing		Chiselling			Water Added		General Remarks
Date	Time	Depth	Water Dpt	Depth	Dia. mm	From	To	Hours	From	To	

All dimensions in metres Scale 1:50	Contractor : Site Investigation Services Plant:	Method:	Logged By:	Approved By:

Form SLR AGS3 UK BH File ARDLEY BOREHOLES.GPJ 30-11-06

BOREHOLE LOG

BOREHOLE No **BH112**

Client: **Viridor Waste Management**

Project No:	Date:	Ground Level:	Co-ordinates:
403.0036.00174		109.63mATBM	E 453,748 N 225,256

Project: **Ardley Landfill Site Monitoring Borehole Installations**

Sheet: 2 of 2

SAMPLES & TESTS				Water	STRATA				Instrument/ Backfill
Depth	Type No	Test Type	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION	
								Borehole complete at 8.00m	

9
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Boring Progress and Water Observations				Casing		Chiselling			Water Added		General Remarks
Date	Time	Depth	Water Dpt	Depth	Dia. mm	From	To	Hours	From	To	

All dimensions in metres Scale 1:50	Contractor: Site Investigation Services Plant:	Method:	Logged By:	Approved By:

Form SLR AGS3 UK BH File ARDLEY BOREHOLES GPJ 30-11-06

BOREHOLE LOG

BOREHOLE No **BH113**

Client: **Viridor Waste Management**

Project No:	Date:	Ground Level:	Co-ordinates:
403.0036.00174		109.40mATBM	E 453,737 N 225,223

Project: **Ardley Landfill Site Monitoring Borehole Installations**

Sheet: 1 of 3

SAMPLES & TESTS				Water	STRATA				
Depth	Type No	Test Type	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION	Instrument/ Backfill
					109.30		0.10	TOP SOIL Strong, buff LIMESTONE.	
							(7.10)		
					102.20		7.20		
							(1.30)	Moderately strong, grey MUDSTONE.	

1 2 3 4 5 6 7

Boring Progress and Water Observations				Casing		Chiselling			Water Added		General Remarks
Date	Time	Depth	Water Dpt	Depth	Dia. mm	From	To	Hours	From	To	

All dimensions in metres Scale 1:50	Contractor : Site Investigation Services Plant:	Method:	Logged By:	Approved By:

Form SLR AGS3 UK BH File ARDLEY BOREHOLES.GPJ 30-11-06

BOREHOLE LOG

BOREHOLE No **BH113**

Client: **Viridor Waste Management**

Project No:	Date:	Ground Level:	Co-ordinates:
403.0036.00174		109.40mATBM	E 453,737 N 225,223

Project: **Ardley Landfill Site Monitoring Borehole Installations**

Sheet: 2 of 3

SAMPLES & TESTS				Water	STRATA				Instrument/ Backfill
Depth	Type No	Test Type	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION	
					100.90		8.50	Moderately strong, grey MUDSTONE. *(continued)*	
9					99.90		(1.00) 9.50	Dark grey MUDSTONE.	
					99.40		(0.50) 10.00	Strong, grey LIMESTONE.	
10					99.00		(0.40) 10.40	Dark grey CLAY.	
					98.40		(0.60) 11.00	Strong, grey LIMESTONE.	
11					98.00		(0.40) 11.40	Stiff, dark grey silty CLAY	
					97.90		11.50	Strong, grey LIMESTONE.	
12					95.90		(2.00) 13.50	Grey silty CLAY interbedded with strong, grey LIMESTONE.	
13					95.20		(0.70) 14.20	Strong, grey LIMESTONE.	
14					93.40		(1.80) 16.00	Very stiff, dark grey silty CLAY.	
15									

Boring Progress and Water Observations				Casing		Chiselling			Water Added		General Remarks
Date	Time	Depth	Water Dpt	Depth	Dia. mm	From	To	Hours	From	To	

All dimensions in metres Scale 1:50	Contractor : Site Investigation Services Plant:	Method:	Logged By:	Approved By:

Form SLR AGS3 UK BH File ARDLEY BOREHOLES.GPJ 30-11-06

BOREHOLE LOG

BOREHOLE No **BH113**

Client: **Viridor Waste Management**

Project No:	Date:	Ground Level:	Co-ordinates:
403.0036.00174		109.40mATBM	E 453,737 N 225,223

Project: **Ardley Landfill Site Monitoring Borehole Installations**

Sheet: 3 of 3

SAMPLES & TESTS				Water	STRATA				Instrument/ Backfill
Depth	Type No	Test Type	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION	
								Moderately strong, grey MUDSTONE interbedded with LIMESTONES	
17									
18							(4.00)		
19									
					89.40		20.00		
20								Borehole complete at 20.00m	
21									
22									
23									

Boring Progress and Water Observations				Casing		Chiselling			Water Added		General Remarks
Date	Time	Depth	Water Dpt	Depth	Dia. mm	From	To	Hours	From	To	

All dimensions in metres Scale 1:50	Contractor : Site Investigation Services Plant:	Method:	Logged By:	Approved By:

Form SLR AGS3 UK BH File ARDLEY BOREHOLES.GPJ 30-11-06

BOREHOLE LOG

BOREHOLE No **BH114**

Client: **Viridor Waste Management**

Project No:	Date:	Ground Level:	Co-ordinates:
403.0036.00174		109.66mATBM	E 453,765 N 225,222

Project: **Ardley Landfill Site Monitoring Borehole Installations**

Sheet: 1 of 2

SAMPLES & TESTS				Water	STRATA				Instrument/ Backfill
Depth	Type No	Test Type	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION	
					109.16		(0.50) 0.50	Grass over gravelly, sandy TOPSOIL. Sand is fine.	
					108.16		(1.00) 1.50	Weak, cream LIMESTONE.	
					107.66		(0.50) 2.00	Moderately strong, cream LIMESTONE.	
					107.36		2.30	Moderately strong/strong, cream LIMESTONE.	
					106.96		(0.40) 2.70	Moderately strong, cream LIMESTONE.	
					105.66		(1.30) 4.00	Strong, cream LIMESTONE.	
					103.36		(2.30) 6.30	Very strong, cream LIMESTONE.	
					103.16		6.50	Light brown, silty, fine sand.	
					102.66		(0.50) 7.00	Firm, dark grey sandy CLAY.	
					101.66		(1.00) 8.00	Strong, grey LIMESTONE.	

Boring Progress and Water Observations				Casing		Chiselling			Water Added		General Remarks
Date	Time	Depth	Water Dpt	Depth	Dia. mm	From	To	Hours	From	To	

All dimensions in metres Scale 1:50	Contractor : Site Investigation Services Plant:	Method:	Logged By:	Approved By:

Form SLR AGS3 UK BH File ARDLEY BOREHOLES.GPJ 30-11-06

BOREHOLE LOG

BOREHOLE No **BH114**

Client: **Viridor Waste Management**

Project No:	Date:	Ground Level:	Co-ordinates:
403.0036.00174		109.66mATBM	E 453,765 N 225,222

Project: **Ardley Landfill Site Monitoring Borehole Installations**

Sheet: 2 of 2

SAMPLES & TESTS				Water	STRATA				Instrument/ Backfill
Depth	Type No	Test Type	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION	
								Borehole complete at 8.00m	

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10
11
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14
15

Boring Progress and Water Observations				Casing		Chiselling			Water Added		General Remarks
Date	Time	Depth	Water Dpt	Depth	Dia. mm	From	To	Hours	From	To	

All dimensions in metres Scale 1:50	Contractor : Site Investigation Services Plant:	Method:	Logged By:	Approved By:

Form SLR AGS3 UK BH File ARDLEY BOREHOLES.GPJ 30-11-06

BOREHOLE LOG

BOREHOLE No **BH115**

Client: **Viridor Waste Management**

Project No:	Date:	Ground Level:	Co-ordinates:
403.0036.00174		109.70mATBM	E 453,815 N 225,219

Project: **Ardley Landfill Site Monitoring Borehole Installations**

Sheet: 1 of 2

SAMPLES & TESTS				Water	STRATA				Instrument/ Backfill
Depth	Type No	Test Type	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION	
					109.40		0.30	Grass overlying TOPSOIL.	
							(1.70)	Blocky, saprolitic rock. LIMESTONE	
					107.70		2.00		
							(2.20)	Iron stained, weathered LIMESTONE.	
					105.50		4.20		
							(2.30)	Yellowish grey to buff white weathered LIMESTONE, plus zones of intensely weathered silt.	
					103.20		6.50		
					102.70		(0.50) 7.00	Brownish yellow to orange, water bearing, calcareous siltstone underlain by dark grey clay, MUDSTONE.	
							(1.00)	Fresh looking, medium grey LIMESTONE, with occasional shaly or micaceous mudstone bands.	
					101.70		8.00		

Boring Progress and Water Observations				Casing		Chiselling			Water Added		General Remarks
Date	Time	Depth	Water Dpt	Depth	Dia. mm	From	To	Hours	From	To	

All dimensions in metres Scale 1:50	Contractor : Site Investigation Services Plant:	Method:	Logged By:	Approved By:

Form SLR AGS3 UK BH File ARDLEY BOREHOLES GPJ 30-11-06

BOREHOLE LOG

BOREHOLE No **BH115**

Client: **Viridor Waste Management**

Project No:	Date:	Ground Level:	Co-ordinates:
403.0036.00174		109.70mATBM	E 453,815 N 225,219

Project: **Ardley Landfill Site Monitoring Borehole Installations**

Sheet: 2 of 2

SAMPLES & TESTS				Water	STRATA				Instrument/ Backfill
Depth	Type No	Test Type	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION	
								Borehole complete at 8.00m	

9
10
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Boring Progress and Water Observations				Casing		Chiselling			Water Added		General Remarks
Date	Time	Depth	Water Dpt	Depth	Dia. mm	From	To	Hours	From	To	

All dimensions in metres Scale 1:50	Contractor : Site Investigation Services Plant:	Method:	Logged By:	Approved By:

Form SLR AGS3 UK BH File ARDLEY BOREHOLES GPJ 30-11-06

BOREHOLE LOG

BOREHOLE No **BH116**

Client: **Viridor Waste Management**

Project No:	Date:	Ground Level:	Co-ordinates:
403.0036.00174		109.46mATBM	E 453,865 N 225,216

Project: **Ardley Landfill Site Monitoring Borehole Installations**

Sheet: 1 of 2

SAMPLES & TESTS				Water	STRATA				Instrument/ Backfill
Depth	Type No	Test Type	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION	
					109.21		0.25	Brownish grey, silty soil with fragments of limestone (TOPSOIL).	
							(1.85)	Saprolite. Blocky, weathered yellowish LIMESTONE with soil horizons.	
					107.36		2.10		
							(3.90)	Yellowish-buff grey LIMESTONE. Generally massive but Mg coarse grained texture common.	
					103.46		6.00		
							(1.10)	Hard, iron stained LIMESTONE.	
					102.36		7.10		
					102.26		7.20	Soil/ CLAY	
							(0.80)	Dark grey, fresh LIMESTONE.	
					101.46		8.00		

Boring Progress and Water Observations				Casing		Chiselling			Water Added		General Remarks
Date	Time	Depth	Water Dpt	Depth	Dia. mm	From	To	Hours	From	To	

All dimensions in metres Scale 1:50	Contractor : Site Investigation Services Plant:	Method:	Logged By:	Approved By:

Form SLR AGS3 UK BH File ARDLEY BOREHOLES GPJ 30-11-06

BOREHOLE LOG

BOREHOLE No **BH116**

Client: **Viridor Waste Management**

Project No:	Date:	Ground Level:	Co-ordinates:
403.0036.00174		109.46mATBM	E 453,865 N 225,216

Project: **Ardley Landfill Site Monitoring Borehole Installations**

Sheet: 2 of 2

SAMPLES & TESTS				Water	STRATA				Instrument/ Backfill
Depth	Type No	Test Type	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION	
								Borehole complete at 8.00m	

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10
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14
15

Boring Progress and Water Observations				Casing		Chiselling			Water Added		General Remarks
Date	Time	Depth	Water Dpt	Depth	Dia. mm	From	To	Hours	From	To	

All dimensions in metres Scale 1:50	Contractor : Site Investigation Services Plant:	Method:	Logged By:	Approved By:

Form SLR AGS3 UK BH File ARDLEY BOREHOLES GPJ 30-11-06

BOREHOLE LOG

BOREHOLE No **BH117**

Client: **Viridor Waste Management**

Project No:	Date:	Ground Level:	Co-ordinates:
403.0036.00174		109.00mATBM	E 453,914 N 225,211

Project: **Ardley Landfill Site Monitoring Borehole Installations**

Sheet: 1 of 2

SAMPLES & TESTS				Water	STRATA				Instrument/ Backfill
Depth	Type No	Test Type	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION	
					108.50		(0.50) 0.50	TOPSOIL.	
							(5.90)	Weathered, yellowish brown and grey LIMESTONE, with isolated bands of decomposed silt.	
					102.60		6.40		
					102.40		6.60	Upper marl, SILTSTONE/dark clay, with interbeds of shale and dark grey shale.	
							(2.50)	Dark grey LIMESTONE, varicoloured locally.	

1 2 3 4 5 6 7

Boring Progress and Water Observations				Casing		Chiselling			Water Added		General Remarks
Date	Time	Depth	Water Dpt	Depth	Dia. mm	From	To	Hours	From	To	

All dimensions in metres Scale 1:50	Contractor : Site Investigation Services Plant:	Method:	Logged By:	Approved By:

Form SLR AGS3 UK BH File ARDLEY BOREHOLES.GPJ 30-11-06

BOREHOLE LOG

BOREHOLE No **BH117**

Client: **Viridor Waste Management**

Project No:	Date:	Ground Level:	Co-ordinates:
403.0036.00174		109.00mATBM	E 453,914 N 225,211

Project: **Ardley Landfill Site Monitoring Borehole Installations**

Sheet: 2 of 2

SAMPLES & TESTS				Water	STRATA				
Depth	Type No	Test Type	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION	Instrument/ Backfill
								Dark grey LIMESTONE, varicoloured locally. *(continued)*	
9					99.90		9.10		
					99.50		(0.40) 9.50	SILTSTONE with clay	
10							(2.00)	Dark grey to light grey LIMESTONE, with shale and siltstone interbeds.	
11					97.50		11.50		
					97.10		(0.40) 11.90	SILTSTONE and dark grey shale (clay). (Middle Marl?)	
12							(1.10)	Light grey LIMESTONE.	
13					96.00		13.00		
								Borehole complete at 13.00m	
14									
15									

Boring Progress and Water Observations				Casing		Chiselling			Water Added		General Remarks
Date	Time	Depth	Water Dpt	Depth	Dia. mm	From	To	Hours	From	To	

All dimensions in metres Scale 1:50	Contractor : Site Investigation Services Plant:	Method:	Logged By:	Approved By:

Form SLR AGS3 UK BH File ARDLEY BOREHOLES GPJ 30-11-06

BOREHOLE LOG

BOREHOLE No **BH118**

Client: **Viridor Waste Management**

Project No:	Date:	Ground Level:	Co-ordinates:
403.0036.00174		108.42mATBM	E 453,964 N 225,207

Project: **Ardley Landfill Site Monitoring Borehole Installations**

Sheet: 1 of 1

SAMPLES & TESTS				Water	STRATA				Instrument/ Backfill
Depth	Type No	Test Type	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION	
					108.07		0.35	TOPSOIL.	
							(4.65)	Weathered, iron stained, yellowish grey LIMESTONE with rare laminae of highly decomposed silt	
					103.42		5.00		
					102.92		(0.50) 5.50	Weak zone, yellowish brown SILT.	
							(1.20)	Iron stained, yellowish grey LIMESTONE.	
					101.72		6.70		
					101.42		7.00	SILTSTONE. Dark grey limestone at base of upper marl.	
								Borehole complete at 7.00m	

Boring Progress and Water Observations				Casing		Chiselling			Water Added		General Remarks
Date	Time	Depth	Water Dpt	Depth	Dia. mm	From	To	Hours	From	To	

All dimensions in metres Scale 1:50	Contractor : Site Investigation Services Plant:	Method:	Logged By:	Approved By:

Form SLR AGS3 UK BH File ARDLEY BOREHOLES.GPJ 30-11-06

BOREHOLE LOG

BOREHOLE No **BH119**

Client: **Viridor Waste Management**

Project No:	Date:	Ground Level:	Co-ordinates:
403.0036.00174		107.76mATBM	E 454,013 N 225,199

Project: **Ardley Landfill Site Monitoring Borehole Installations**

Sheet: 1 of 3

SAMPLES & TESTS				Water	STRATA				Instrument/ Backfill
Depth	Type No	Test Type	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION	
					107.46		0.30	TOPSOIL.	
							(5.70)	Weathered, yellowish grey LIMESTONE, plus bands of highly decomposed, medium yellow sandy silt. Becoming hard to drill at base.	
					101.76		6.00		
					101.36		(0.40) 6.40	Light grey SILTSTONE, with clay at base.	
								Medium grey, fresh LIMESTONE.	

Boring Progress and Water Observations				Casing		Chiselling			Water Added		General Remarks
Date	Time	Depth	Water Dpt	Depth	Dia. mm	From	To	Hours	From	To	

All dimensions in metres Scale 1:50	Contractor : Site Investigation Services Plant:	Method:	Logged By:	Approved By:

Form SLR AGS3 UK BH File ARDLEY BOREHOLES.GPJ 30-11-06

BOREHOLE LOG

BOREHOLE No **BH119**

Client: **Viridor Waste Management**

Project No:	Date:	Ground Level:	Co-ordinates:
403.0036.00174		107.76mATBM	E 454,013 N 225,199

Project: **Ardley Landfill Site Monitoring Borehole Installations**

Sheet: 2 of 3

SAMPLES & TESTS				Water	STRATA				
Depth	Type No	Test Type	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION	Instrument/ Backfill
							(3.90)	Medium grey, fresh LIMESTONE. *(continued)*	
9									
10					97.46		10.30		
					97.06		(0.40) 10.70	SILTSTONE/clay.	
11								Blocky ground (jointed or fractured) LIMESTONE and clay.	
12							(2.30)		
13					94.76		13.00		
					93.96		(0.80) 13.80	Mainly SILTSTONE.	
14								Grey LIMESTONE.	
							(1.30)		
15					92.66		15.10		
					92.26		(0.40) 15.50	Light grey SILTSTONE interbedded with dark grey clay. Plus water.	
								Medium grey Mg LIMESTONE, with occcasional bands of silty shales.	

Boring Progress and Water Observations				Casing		Chiselling			Water Added		General Remarks
Date	Time	Depth	Water Dpt	Depth	Dia. mm	From	To	Hours	From	To	

All dimensions in metres Scale 1:50	Contractor : Site Investigation Services Plant:	Method:	Logged By:	Approved By:

Form SLR AGS3 UK BH File ARDLEY BOREHOLES GPJ 30-11-06

BOREHOLE LOG

BOREHOLE No **BH119**

Client: **Viridor Waste Management**

Project No:	Date:	Ground Level:	Co-ordinates:
403.0036.00174		107.76mATBM	E 454,013 N 225,199

Project: **Ardley Landfill Site Monitoring Borehole Installations**

Sheet: 3 of 3

SAMPLES & TESTS				Water	STRATA				Instrument/ Backfill
Depth	Type No	Test Type	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION	
								Medium grey Mg LIMESTONE, with occcasional bands of silty shales. *(continued)*	
17							(3.50)		
18									
19					88.76		19.00		
								Borehole complete at 19.00m	
20									
21									
22									
23									

Boring Progress and Water Observations				Casing		Chiselling			Water Added		General Remarks
Date	Time	Depth	Water Dpt	Depth	Dia. mm	From	To	Hours	From	To	

All dimensions in metres Scale 1:50	Contractor : Site Investigation Services Plant:	Method:	Logged By:	Approved By:

Form SLR AGS3 UK BH File ARDLEY BOREHOLES.GPJ 30-11-06

BOREHOLE LOG

BOREHOLE No **BH120**

Client: **Viridor Waste Management**

Project No:	Date:	Ground Level:	Co-ordinates:
403.0036.00174		107.09mATBM	E 454,062 N 225,192

Project: **Ardley Landfill Site Monitoring Borehole Installations**

Sheet: 1 of 1

SAMPLES & TESTS				Water	STRATA				Instrument/ Backfill
Depth	Type No	Test Type	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION	
					106.74		0.35	TOPSOIL.	
							(1.20)	Weathered, yellowish grey LIMESTONE.	
					105.54		1.55	Iron stained, yellowish (buff) grey LIMESTONE. Quite hard locally, though in places thin bands of highly weathered sandy silt occur.	
							(4.95)		
					100.59		6.50		
					100.24		6.85	Interbedded weak siltstone and dark grey shale (CLAY).	
					100.09		7.00	Dark grey, fresh LIMESTONE, shaly locally.	
								Borehole complete at 7.00m	

1 2 3 4 5 6 7

Boring Progress and Water Observations				Casing		Chiselling			Water Added		General Remarks
Date	Time	Depth	Water Dpt	Depth	Dia. mm	From	To	Hours	From	To	

All dimensions in metres Scale 1:50	Contractor : Site Investigation Services Plant:	Method:	Logged By:	Approved By:

Form SLR AGS3 UK BH File ARDLEY BOREHOLES.GPJ 30-11-06

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BOREHOLE LOG

BOREHOLE No **BH121**

Client: **Viridor Waste Management**

Project No:	Date:	Ground Level:	Co-ordinates:
403.0036.00174		106.29mATBM	E 454,112 N 225,181

Project: **Ardley Landfill Site Monitoring Borehole Installations**

Sheet: 1 of 1

SAMPLES & TESTS				Water	STRATA				Instrument/ Backfill
Depth	Type No	Test Type	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION	
					105.89		(0.40) 0.40	Medium brownish grey soil with fragments of limestone. TOPSOIL.	
							(3.40)	Iron stained and weathered, yellowish buff white LIMESTONE with occasional bands highly decomposed sandy silt. Very hard to drill at base.	
					102.49		3.80		
					102.29		4.00	Brownish yellow and grey sandy SILT.	
							(3.00)	Light yellowish grey and white. Massive LIMESTONE. Very competent.	
					99.29		7.00		
								Borehole complete at 7.00m	

1 2 3 4 5 6 7

Boring Progress and Water Observations				Casing		Chiselling			Water Added		General Remarks
Date	Time	Depth	Water Dpt	Depth	Dia. mm	From	To	Hours	From	To	

All dimensions in metres Scale 1:50	Contractor : Site Investigation Services Plant:	Method:	Logged By:	Approved By:

Form SLR AGS3 UK BH File ARDLEY BOREHOLES GPJ 30-11-06

BOREHOLE LOG

BOREHOLE No **BH122**

Client: **Viridor Waste Management**

Project No:	Date:	Ground Level:	Co-ordinates:
403.0036.00174		105.75mATBM	E 454,161 N 225,172

Project: **Ardley Landfill Site Monitoring Borehole Installations**

Sheet: 1 of 2

SAMPLES & TESTS				Water	STRATA				Instrument/ Backfill
Depth	Type No	Test Type	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION	
					105.45		0.30	TOPSOIL.	
							(2.10)	Saprock: Weathered yellowish/buff grey iron stained LIMESTONE. Locally Mg rich.	
					103.35		2.40		
					103.25		2.50	Highly decomposed SANDY SILT zone.	
							(1.50)	Moderately hard, buff white LIMESTONE plus trace haematite.	
					101.75		4.00		
					101.65		4.10	SANDY SILT band.	
							(2.40)	Grey LIMESTONE.	
					99.25		6.50		
					98.75		(0.50) 7.00	Weak, brownish grey SILTSTONE with dark grey clay (shale) plus damp.	
					97.75		(1.00) 8.00	Dark grey LIMESTONE interbedded with shales and siltstones.	

Boring Progress and Water Observations				Casing		Chiselling			Water Added		General Remarks
Date	Time	Depth	Water Dpt	Depth	Dia. mm	From	To	Hours	From	To	

All dimensions in metres Scale 1:50	Contractor : Site Investigation Services Plant:	Method:	Logged By:	Approved By:

Form SLR AGS3 UK BH File ARDLEY BOREHOLES.GPJ 30-11-06

BOREHOLE LOG

BOREHOLE No **BH122**

Client: **Viridor Waste Management**

Project No:	Date:	Ground Level:	Co-ordinates:
403.0036.00174		105.75mATBM	E 454,161 N 225,172

Project: **Ardley Landfill Site Monitoring Borehole Installations**

Sheet: 2 of 2

SAMPLES & TESTS				Water	STRATA				Instrument/ Backfill
Depth	Type No	Test Type	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION	
								Borehole complete at 8.00m	

9
10
11
12
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14
15

Boring Progress and Water Observations				Casing		Chiselling			Water Added		General Remarks
Date	Time	Depth	Water Dpt	Depth	Dia. mm	From	To	Hours	From	To	

All dimensions in metres Scale 1:50	Contractor : Site Investigation Services Plant:	Method:	Logged By:	Approved By:

Form SLR AGS3 UK BH File ARDLEY BOREHOLES.GPJ 30-11-06

BOREHOLE LOG

BOREHOLE No **BH123**

Client: **Viridor Waste Management**

Project No:	Date:	Ground Level:	Co-ordinates:
403.0036.00174		104.84mATBM	E 454,209 N 225,163

Project: **Ardley Landfill Site Monitoring Borehole Installations**

Sheet: 1 of 2

SAMPLES & TESTS				Water	STRATA				Instrument/ Backfill
Depth	Type No	Test Type	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION	
					104.54		0.30	light brown sandy TOPSOIL with fragments of limestone.	
							(1.70)	Saprolitic rock- Weathered LIMESTONE with occasional bands of completely decomposed zones. Iron staining widespread.	
					102.84		2.00		
							(1.20)	Moderately hard, yellowish to buff white LIMESTONE.	
					101.64		3.20		
					101.54		3.30	Decomposed brownish SANDY SILT.	
							(2.50)	Yellowish grey, massive LIMESTONE. occasionally Mg rich.	
					99.04		5.80		
					98.54		(0.50) 6.30	Weak zone of decomposed SILTSTONE/ clay. Slightly damp.	
								Fresh looking, medium grained dark LIMESTONE. Thin laminae of shale or silty shale may be common.	

Boring Progress and Water Observations				Casing		Chiselling			Water Added		General Remarks
Date	Time	Depth	Water Dpt	Depth	Dia. mm	From	To	Hours	From	To	

All dimensions in metres Scale 1:50	Contractor : Site Investigation Services Plant:	Method:	Logged By:	Approved By:

Form SLR AGS3 UK BH File ARDLEY BOREHOLES.GPJ 30-11-06

BOREHOLE LOG

BOREHOLE No **BH123**

Client: **Viridor Waste Management**

Project No:	Date:	Ground Level:	Co-ordinates:
403.0036.00174		104.84mATBM	E 454,209 N 225,163

Project: **Ardley Landfill Site Monitoring Borehole Installations**

Sheet: 2 of 2

SAMPLES & TESTS				Water	STRATA				Instrument/ Backfill
Depth	Type No	Test Type	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION	
							(3.70)	Fresh looking, medium grained dark LIMESTONE. Thin laminae of shale or silty shale may be common. *(continued)*	
					94.84		10.00		
								Borehole complete at 10.00m	

9 10 11 12 13 14 15

Boring Progress and Water Observations				Casing		Chiselling			Water Added		General Remarks
Date	Time	Depth	Water Dpt	Depth	Dia. mm	From	To	Hours	From	To	

All dimensions in metres Scale 1:50	Contractor : Site Investigation Services Plant:	Method:	Logged By:	Approved By:

Form SLR AGS3 UK BH File ARDLEY BOREHOLES.GPJ 30-11-06

BOREHOLE LOG

BOREHOLE No **BH124**

Client: **Viridor Waste Management**

Project No:	Date:	Ground Level:	Co-ordinates:
403.0036.00174		103.84mATBM	E 454,256 N 225,146

Project: **Ardley Landfill Site Monitoring Borehole Installations**

Sheet: 1 of 2

SAMPLES & TESTS				Water	STRATA				
Depth	Type No	Test Type	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION	Instrument/ Backfill
					103.54		0.30	TOPSOIL.	
							(4.50)	Iron stained, yellowish to buff grey, medium grained LIMESTONE. Interbedded with highly decomposed zones usually 0.2m thick. Locally hard drilling conditions.	
					99.04		4.80		
					98.74		5.10	Decomposed sandy SILTSTONE laminae.	
					98.04		(0.70) 5.80	Strong, grey LIMESTONE.	
					97.74		6.10	Brownish grey SILTSTONE, interbedded with dark grey clay (shale).	
					96.44		(1.30) 7.40	Medium grey LIMESTONE.	
					95.84		(0.60) 8.00	Light grey interbeds of shales and siltstones.	

Boring Progress and Water Observations				Casing		Chiselling			Water Added		General Remarks
Date	Time	Depth	Water Dpt	Depth	Dia. mm	From	To	Hours	From	To	

All dimensions in metres Scale 1:50	Contractor : Site Investigation Services Plant:	Method:	Logged By:	Approved By:

Form SLR AGS3 UK BH File ARDLEY BOREHOLES.GPJ 30-11-06

BOREHOLE LOG

BOREHOLE No **BH124**

Client: **Viridor Waste Management**

Project No:	Date:	Ground Level:	Co-ordinates:
403.0036.00174		103.84mATBM	E 454,256 N 225,146

Project: **Ardley Landfill Site Monitoring Borehole Installations**

Sheet: 2 of 2

SAMPLES & TESTS				Water	STRATA				Instrument/ Backfill
Depth	Type No	Test Type	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION	
								Borehole complete at 8.00m	

9
10
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Boring Progress and Water Observations				Casing		Chiselling			Water Added		General Remarks
Date	Time	Depth	Water Dpt	Depth	Dia. mm	From	To	Hours	From	To	

All dimensions in metres Scale 1:50	Contractor : Site Investigation Services Plant:	Method:	Logged By:	Approved By:

Form SLR AGS3 UK BH File ARDLEY BOREHOLES.GPJ 30-11-06

SLR CONSULTING LTD, SLR HOUSE, MEADOWBANK WAY, EASTWOOD, NOTTINGHAMSHIRE. NG16 3TT, Tel: 01773 766020, Fax: 01772 7

BRD records (2015)

TRIAL PIT RECORD

Client: Mr J and Mrs R Pickford
Project Title: [redacted]
Project No: BRD2409
Logged By: J McDermott
Date Completed: 15/06/2015
Method Used: 180° Backhoe excavator (JCB 3CX type)

Trial Pit No.

TP01

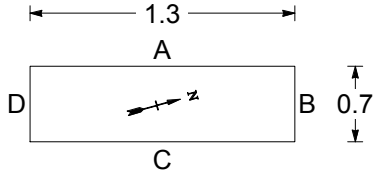
Sheet 1 of 1

Samples & Tests			Description of Strata	Depth / (Level)	Geology	Legend
Depth	Type & No	Value				
0.10	PID J1	0.0 ppm	MADE GROUND: Dark brown/black, sandy, gravelly clay. Gravel of fine to coarse, angular to rounded flint, brick and concrete.	0.20 ()	MG	
0.40	PID D1	0.0 ppm	Orange brown, sandy, gravelly CLAY. Gravel of fine to coarse, angular to subangular limestone with tabular limestone cobbles.	0.50 ()	WHITE LIMESTONE FORMATION	
0.60	J2 B1		Light grey and cream brown, sandy, clayey GRAVEL of fine to coarse angular to subangular, limestone with cobbles of tabular limestone.	1		
1.20	PID J2	0.0 ppm		1.60 ()		
				2		
				3		
				4		

Pit Stability: Generally stable throughout
Groundwater: Not encountered

Surface Elevation Level:

Plan of Trial Pit:



General Remarks:
Trial pit terminated at 1.60m bgl on suspected Limestone rock.

All dimensions in metres
Log Scale 1:25

BRD
Telephone: 01295 272244
Email: info@brduk.com

TRIAL PIT RECORD

Client: Mr J and Mrs R Pickford
Project Title: [redacted]
Project No: BRD2409
Logged By: J McDermott
Date Completed: 15/06/2015
Method Used: 180° Backhoe excavator (JCB 3CX type)

Trial Pit No.

TP02

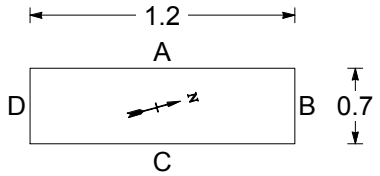
Sheet 1 of 1

Samples & Tests			Description of Strata	Depth / (Level)	Geology	Legend
Depth	Type & No	Value				
			MADE GROUND: Scrub over: Dark brown, sandy, gravelly clay. Gravel of fine to coarse, angular to rounded flint, limestone, brick and concrete.	0.10 ()	M	
0.30	PID J1	0.0 ppm	Orange brown and yellow brown, very sandy, very gravelly CLAY. Gravel of fine to coarse, angular to subangular, limestone, with tabular limestone cobbles.		WLF	
0.50	D1					
0.60	PID J2	0.0 ppm				
				0.70 ()		
0.80	B1		Orange brown and cream brown, sandy, clayey GRAVEL of fine to coarse, angular to subangular limestone with tabular limestone cobbles.	0.85 ()		
				1		
				2		
				3		
				4		

Pit Stability: Generally stable throughout
Groundwater: Not encountered

Surface Elevation Level:

Plan of Trial Pit:



General Remarks:
Trial pit terminated at 0.85m bgl on suspected Limestone rock.

All dimensions in metres
Log Scale 1:25

BRD
Telephone: 01295 272244
Email: info@brduk.com

TRIAL PIT RECORD

Client: Mr J and Mrs R Pickford
Project Title: [redacted]
Project No: BRD2409
Logged By: J McDermott
Date Completed: 15/06/2015
Method Used: 180° Backhoe excavator (JCB 3CX type)

Trial Pit No.

TP03

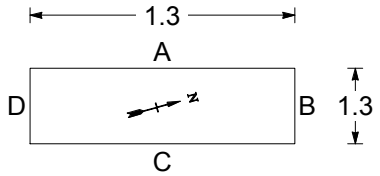
Sheet 1 of 1

Samples & Tests			Description of Strata	Depth / (Level)	Geology	Legend
Depth	Type & No	Value				
			MADE GROUND: Brown and orange brown, sandy, gravelly clay. Gravel of fine to coarse, angular to rounded flint, half to whole bricks, concrete and occasional ceramic tiles with some cobbles of tabular limestone.		MADE GROUND	
0.30	PID J1	0.0 ppm				
0.50	D1					
0.60	PID J2	0.1 ppm				
			0.70 m: Becoming very sandy and slightly moist with a faint hydrocarbon odour.	1		
1.35	PID D2 J3	150 ppm	1.35 m: Grey/black staining with a hydrocarbon odour.	1.40 ()		
				2		
				3		
				4		

Pit Stability: Unstable in Made Ground
Groundwater: Not encountered

Surface Elevation Level:

Plan of Trial Pit:



General Remarks:
Trial pit terminated at 1.40m bgl on suspected Limestone rock.

All dimensions in metres
Log Scale 1:25

BRD
Telephone: 01295 272244
Email: info@brduk.com

TRIAL PIT RECORD

Client: Mr J and Mrs R Pickford
Project Title: [redacted]
Project No: BRD2409
Logged By: J McDermott
Date Completed: 15/06/2015
Method Used: 180° Backhoe excavator (JCB 3CX type)

Trial Pit No.

TP04

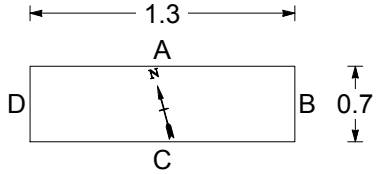
Sheet 1 of 1

Samples & Tests			Description of Strata	Depth / (Level)	Geology	Legend
Depth	Type & No	Value				
			MADE GROUND: Tarmac/Roadstone.	0.10 ()	M	
0.25	PID J1	0.1 ppm	Medium dense to dense, grey brown/yellow brown, sandy, clayey GRAVEL of fine to coarse, angular to subangular limestone with cobbles of limestone.		WLF	
0.40	D1			0.50 ()		
0.60	D2		Yellow brown, sandy, gravelly CLAY. Gravel of fine to coarse, angular to tabular limestone			
0.70	PID	0.0 ppm		0.75 ()		
0.80	J2 B1		Yellow brown, weak LIMESTONE, recovered as sandy gravel of fine to coarse, angular limestone and tabular cobbles of limestone.	0.82 ()		
				1		
				2		
				3		
				4		

Pit Stability: Generally stable throughout
Groundwater: Not encountered

Surface Elevation Level:

Plan of Trial Pit:



General Remarks:
Trial pit terminated at 0.82m bgl on suspected Limestone rock.

All dimensions in metres
Log Scale 1:25

BRD
Telephone: 01295 272244
Email: info@brduk.com

TRIAL PIT RECORD

Client: Mr J and Mrs R Pickford
Project Title: [redacted]
Project No: BRD2409
Logged By: J McDermott
Date Completed: 15/06/2015
Method Used: 180° Backhoe excavator (JCB 3CX type)

Trial Pit No.

TP05

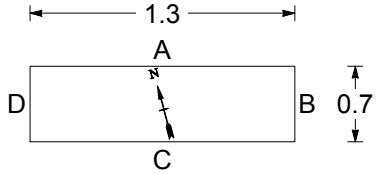
Sheet 1 of 1

Samples & Tests			Description of Strata	Depth / (Level)	Geology	Legend
Depth	Type & No	Value				
			MADE GROUND: Concrete	0.10 ()	WLF	
0.20	PID J1	0.0 ppm	Medium dense to dense, grey brown/yellow brown, sandy, clayey GRAVEL of fine to coarse, angular to subangular limestone with cobbles of tabular limestone.			
0.40	D1					
			0.50 m: 30mm diameter iron pipe crossing centre of pit FACE A - C	0.55 ()		
				1		
				2		
				3		
				4		

Pit Stability: Generally stable throughout
Groundwater: Not encountered

Surface Elevation Level:

Plan of Trial Pit:



General Remarks:
Trial pit terminated at 0.55m bgl due to service pipe encountered.

All dimensions in metres
Log Scale 1:25

BRD
Telephone: 01295 272244
Email: info@brduk.com

TRIAL PIT RECORD

Client: Mr J and Mrs R Pickford
Project Title: [redacted]
Project No: BRD2409
Logged By: J McDermott
Date Completed: 15/06/2015
Method Used: 180° Backhoe excavator (JCB 3CX type)

Trial Pit No.

TP06

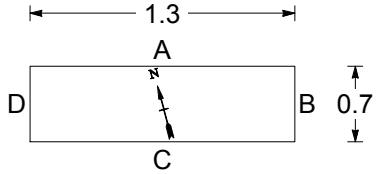
Sheet 1 of 1

Samples & Tests			Description of Strata	Depth / (Level)	Geology	Legend
Depth	Type & No	Value				
0.10	B1		MADE GROUND: Dense, cream brown, sandy, clayey gravel of fine to medium, angular to rounded limestone. - Possible historic concrete/cement mix.	0.10 ()	M	
			m: Unable to excavate further.			

Pit Stability: Generally stable throughout
Groundwater: Not encountered

Surface Elevation Level:

Plan of Trial Pit:



General Remarks:
Trial pit abandoned at 0.1m bgl as unable to excavate further.

All dimensions in metres
Log Scale 1:25

Telephone: 01295 272244
Email: info@brduk.com

TRIAL PIT RECORD

Client: Mr J and Mrs R Pickford
Project Title: [redacted]
Project No: BRD2409
Logged By: J McDermott
Date Completed: 15/06/2015
Method Used: 180° Backhoe excavator (JCB 3CX type)

Trial Pit No.

TP07

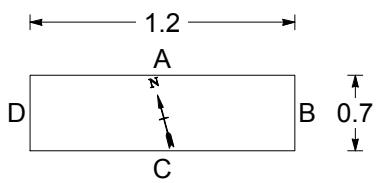
Sheet 1 of 1

Samples & Tests			Description of Strata	Depth / (Level)	Geology	Legend
Depth	Type & No	Value				
			MADE GROUND: Medium dense to dense, cream brown, sandy, slightly clayey gravel of fine to coarse angular to rounded limestone with cobbles of tabular limestone.		MADE GROUND	
0.30	PID J1	0.0 ppm				
0.50	D1					
			0.60 m: Face B - D: 50mm diameter cast iron pipe - expected to be an old drainage pipe.	0.70 ()		
0.80	D2		Orange to yellow, sandy, slightly clayey GRAVEL of fine to coarse angular to subangular limestone with cobbles of tabular limestone.		WLF	
0.90	PID	0.0 ppm				
0.95	J2 B1			1.00 ()		
				1		
				2		
				3		
				4		

Pit Stability: Generally stable throughout
Groundwater: Not encountered

Surface Elevation Level:

Plan of Trial Pit:



General Remarks:
Trial pit terminated at 1.0m bgl on suspected Limestone rock.

All dimensions in metres
Log Scale 1:25

BRD
Telephone: 01295 272244
Email: info@brduk.com

Trial Pit Photographs

TP01





Project Title: [redacted]
Client: Mr J and Mrs R Pickford
BRD Reference: BRD2409-OP4-A
Date Issued: July 2015

BRD
01295 272244
info@brduk.com

Trial Pit Photographs

TP02





Project Title: [redacted]
Client: Mr J and Mrs R Pickford
BRD Reference: BRD2409-OP4-A
Date Issued: July 2015

BRD
01295 272244
info@brduk.com

Trial Pit Photographs

TP03





Project Title: [redacted]
Client: Mr J and Mrs R Pickford
BRD Reference: BRD2409-OP4-A
Date Issued: July 2015

BRD
01295 272244
info@brduk.com

Trial Pit Photographs

TP04





Project Title: [redacted]
Client: Mr J and Mrs R Pickford
BRD Reference: BRD2409-OP4-A
Date Issued: July 2015

BRD
01295 272244
info@brduk.com

Trial Pit Photographs

TP05



Project Title: [redacted]
Client: Mr J and Mrs R Pickford
BRD Reference: BRD2409-OP4-A
Date Issued: July 2015

BRD
01295 272244
info@brduk.com

Trial Pit Photographs

TP06





Project Title: [redacted]
Client: Mr J and Mrs R Pickford
BRD Reference: BRD2409-OP4-A
Date Issued: July 2015

BRD
01295 272244
info@brduk.com

Trial Pit Photographs

TP07





Project Title: [redacted]
Client: Mr J and Mrs R Pickford
BRD Reference: BRD2409-OP4-A
Date Issued: July 2015

BRD
01295 272244
info@brduk.com

BOREHOLE RECORD

Client: Mr J and Mrs R Pickford
Project Title: [redacted]
Project No: BRD2409
Logged By: I Hibberd
Date Commenced: 11/09/2015
Date Completed: 11/09/2015
Method Used: Dynamic Sampling with follow on Rotary Coring (Water Flush)

Borehole No.

BH01

Sheet 1 of 1

Samples & Tests			Water	Description of Strata	Depth / (Level)	Legend	Geology	Installation /Backfill
Depth	Type & No	Value						
0.60	PID	0.0 ppm		MADE GROUND: Light brown/beige, very clayey, slightly sandy, clay bound gravel of medium to coarse, subangular to angular limestone and rare concrete.	1		MADE GROUND	
1.35	PID	96.7 ppm		Weathered LIMESTONE: Recovered as white/light grey, slightly clayey gravel of subangular limestone with hydrocarbon odour.	1.30 ()		WHITE LIMESTONE	
1.50	J1				1.40 ()			
	PID	55.1 ppm		Recovered as very stiff, light grey with orange mottling, very gravelly CLAY. Gravel of coarse, tabular limestone with hydrocarbon odour.	1.60 () 2			
			1					
2.55	PID	22.1 ppm		LIMESTONE: Recovered as coarse gravel of subangular limestone.	2.50 ()			
2.80	J2			1.60 - 2.50 m: Poor recovery. Only 25%.				
	PID	28.7 ppm		Medium strong to strong, thinly bedded, crystalline, light grey / white with some orange LIMESTONE.	3			
3.40	PID	3.5 ppm	1	2.50 - 2.60 m: Vertical fractures with hydrocarbon staining at surfaces.	3.20 ()			
	J3			3.00 - 4.00 m: 1m core length with 70% recovery.				
				Strong, light grey / white with occasional orange specks, thinly to medium bedded crystalline LIMESTONE with occasional shells.	4 3.95 ()			
4.20	PID	5.3 ppm		Firm grey silty CLAY.			R. FM.	
	J4			4.00 m: Very stiff, dark grey/blue, silty CLAY with occasional shells/fossils.	4.50 ()			
4.70	PID	0.0 ppm		Extremely weak, dark grey with light grey lenses, thinly laminated, silty SANDSTONE.	4.80 () 5 5.00 ()			
				Extremely weak, thinly laminated, green/grey, silty MUDSTONE.				
					6			
					7			
					8			

Drilling Progress

Date	Hole Depth	Casing Depth	Casing Dia (mm)	Water Depth	Water depth after 20mins
11-09-15	1.60	-	-	-	-
11-09-15	3.00	1.60	92.5	-	-
11-09-15	3.40	1.60	92.5	3.40	2.23
11-09-15	4.00	1.60	92.5	-	-
11-09-15	5.00	3.00	92.5	-	-

Chiselling

From	To	Hours

General Remarks:

Borehole terminated at 5.00m bgl.
Borehole fitted with gas and groundwater monitoring installation and flush metal cover.
Dynamic sample to 1.60m and then coring to base.

Surface Elevation Level:

All dimensions in metres
Log Scale 1:50

BRD
Telephone: 01295 272244
Email: info@brduk.com

BOREHOLE RECORD

Client: Mr J and Mrs R Pickford
Project Title: [redacted]
Project No: BRD2409
Logged By: I Hibberd
Date Commenced: 11/09/2015
Date Completed: 11/09/2015
Method Used: Dynamic Sampling with follow on Rotary Coring (Water Flush)

Borehole No.

BH02

Sheet 1 of 1

Samples & Tests			Water	Description of Strata	Depth / (Level)	Legend	Geology	Installation /Backfill
Depth	Type & No	Value						
				MADE GROUND: Loose, brown and white, silty, sandy gravel of fine to coarse, subangular to tabular limestone with cobbles of limestone.	0.20 ()		MG	
0.30	PID	0.0 ppm						
0.50	PID	0.0 ppm		Medium dense, yellow brown with some orange, sandy, very clayey GRAVEL of subangular limestone.	0.70 ()			
0.80	PID	0.0 ppm		Recovered as yellow, slightly clayey SAND with limestone fragments. No hydrocarbon odour or staining. (Open hole drilling to install casing).	1			
				LIMESTONE: Recovered as medium strong, light grey / white with orange, clayey, coarse, subangular gravel.	1.30 ()		WHITE LIMESTONE	
2.00	PID	0.0 ppm			2			
				Extremely weak, thickly laminated, light grey with orange lenses LIMESTONE with clayey infill.	2.20 ()			
			1		2.50 ()			
2.70	PID J1	0.0 ppm		Very stiff, light grey with orange CLAY with some tabular limestone gravel.	3			
				LIMESTONE: Recovered as medium strong, light grey / white with orange, clayey, coarse, subangular gravel.	3.00 ()			
3.50	PID	0.0 ppm	1					
					4			
				Very stiff, slightly fissured, dark grey, silty CLAY.	4.00 ()		RF	
4.20	PID	0.0 ppm						
					4.80 ()			
					5			
					6			
					7			
					8			

Drilling Progress

Date	Hole Depth	Casing Depth	Casing Dia (mm)	Water Depth	Water depth after 20mins
11-09-15	0.60	-	-	-	-
11-09-15	2.80	1.30	92.5	-	-
11-09-15	3.70	1.30	92.5	3.70	2.60
11-09-15	4.30	1.30	92.5	-	-
11-09-15	4.80	1.30	92.5	-	-

Chiselling

From	To	Hours

General Remarks:

Borehole terminated at 4.80m bgl.
Borehole fitted with gas and groundwater monitoring installation and flush metal cover.
Hand dug pit to 0.60m, open hole 1.30m to allow casing to be installed, coring to 4.30m and dynamic sample to 4.80m.

Surface Elevation Level:

All dimensions in metres
Log Scale 1:50

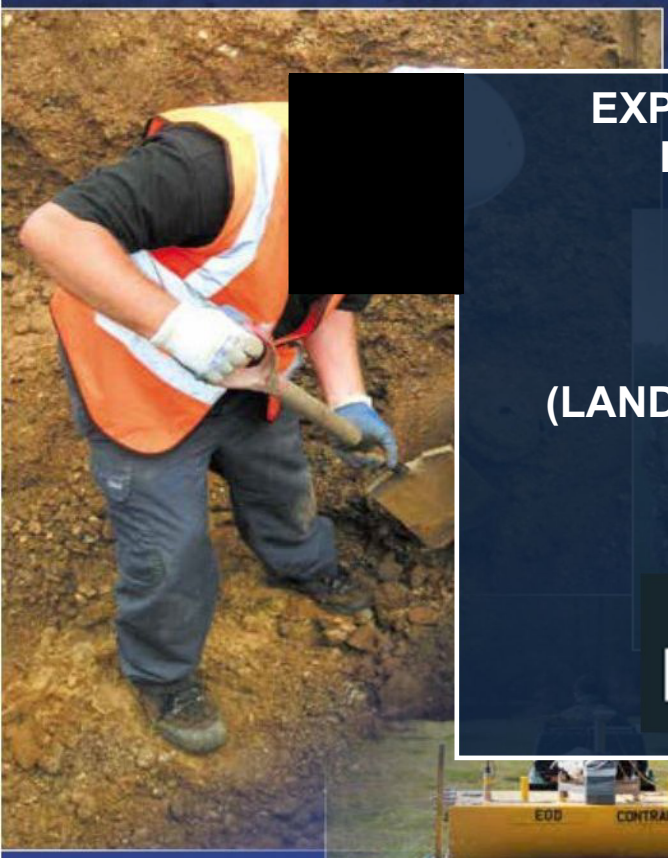
BRD
Telephone: 01295 272244
Email: info@brduk.com

Specialist UXO Desk Top Study

EOD Contracts Ltd

International Unexploded Ordnance Risk Mitigation

Many People... One Aim



EXPLOSIVE ORDNANCE DESKTOP STUDY FOR:

PROJECT 21056

(LAND TO THE NE, E, SE OF) RAF HEYFORD OXFORDSHIRE

Hydrock





ISOQAR REGISTERED
UKAS MANAGEMENT SYSTEMS 0026

Institute of Explosives Engineers
VOICE OF THE EXPLOSIVES INDUSTRIES

www.eodcontractsltd.com Tel 01386 578 405

EXPLOSIVE ORDNANCE DESKTOP STUDY

Of

LAND TO THE NE, E, SE OF – RAF HEYFORD OXFORDSHIRE

Conducted by EOD Contracts Limited

On behalf of

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TERMS AND DEFINITIONS

Anti-Aircraft Shells (AA)

Small High Explosive Shells (HE) shells ranging up to 100mm in diameter.

Battlefield Area Clearance (BAC)

The systematic clearance of munitions from military property or old battle sites e.g., ranges, airfields etc.

Borehole Search

The placing of boreholes in a set pattern, then using a magnetometer to take readings at specific depths along each borehole. When used with a geophysical survey system this will give a magnetic signature of the area. The depth of the borehole and the pattern will depend upon the type of Unexploded Bombs (UXB) and the geology of the ground.

Doodle Bug (See Pilotless Aircraft)

Explosive Ordnance (EO)

All munitions containing explosives, nuclear fission/fusion materials and or biological and chemical agents. This includes bombs and warheads; guided and ballistic missiles; artillery, mortar, rocket and Small Arms Ammunition (SAA); all mines, torpedoes and depth charges; pyrotechnics; clusters and dispensers; cartridge and propellant actuated devices; electro-explosive devices; clandestine and improvised explosive devices (IED); and all similar or related items or components explosive in nature.

Explosive Ordnance Clearance (EOC)

See BAC.

Explosive Ordnance Disposal (EOD)

The detection, identification, field evaluation, render safe, recovery and disposal of **UXO**.

Geophysical Survey

The survey of an area using a Magnetometer and geophysical gathering device, after interpretation, this will produce a geophysical map and an object list for any metallic anomalies.

High Explosive (HE)

High explosives burn/detonate at rates of up to 9,000 m/per second.

Incendiary Bomb (IB)

Incendiary bombs ranged from 1kg in size to 500kg the larger sizes were sometimes called Oil Bombs. Fills range from thermite mixtures, phosphorus to kerosene.

Intrusive Survey

The use of a cone penetrometer (MagCone) or drilled boreholes (MagDrill) to take magnetometer test in a set pattern (see borehole search), or to prove pile positions.

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Land Service Ammunition (LSA)

LSA is defined as “All items containing explosives or pyrotechnic compounds which are placed, thrown or projected so as to cause damage to men and equipment during land warfare.

Long Range Rocket (LRR)

The long-range rocket sometimes codenamed Big Ben is the V2 rocket designed to deliver an approximate payload of 1000 kg.

Oil Bomb (OB)

A bomb containing a flammable liquid, normally the KC 250 Flam or the C 500 flam.

Pilotless Aircraft (PAC)

A flying bomb (Fly) or doodlebug is the V1 rocket or predecessors designed to deliver an explosive payload of approximately 500kg - 800kg.

Parachute Mine (PM)

Air dropped mine may have been used as a blast effect bomb maximum explosive content 1600lb always fitted with anti-handling and anti-stripping equipment.

Unexploded Bomb (UXB)

Any air dropped bomb that has failed to operate.

Unexploded Ordnance (UXO)

Explosive ordnance that has been primed, fused, armed or otherwise prepared for use or used. It may have been fired, dropped, launched or projected yet remains unexploded either through malfunction or design or for any other cause.

Vengeance Weapons (V)

V1 see Pilotless Aircraft.
V2 see Long Range Rocket.

WWI

First World War 1 (1914 – 1918)

WWII

Second World War 2 (1939 – 1945)

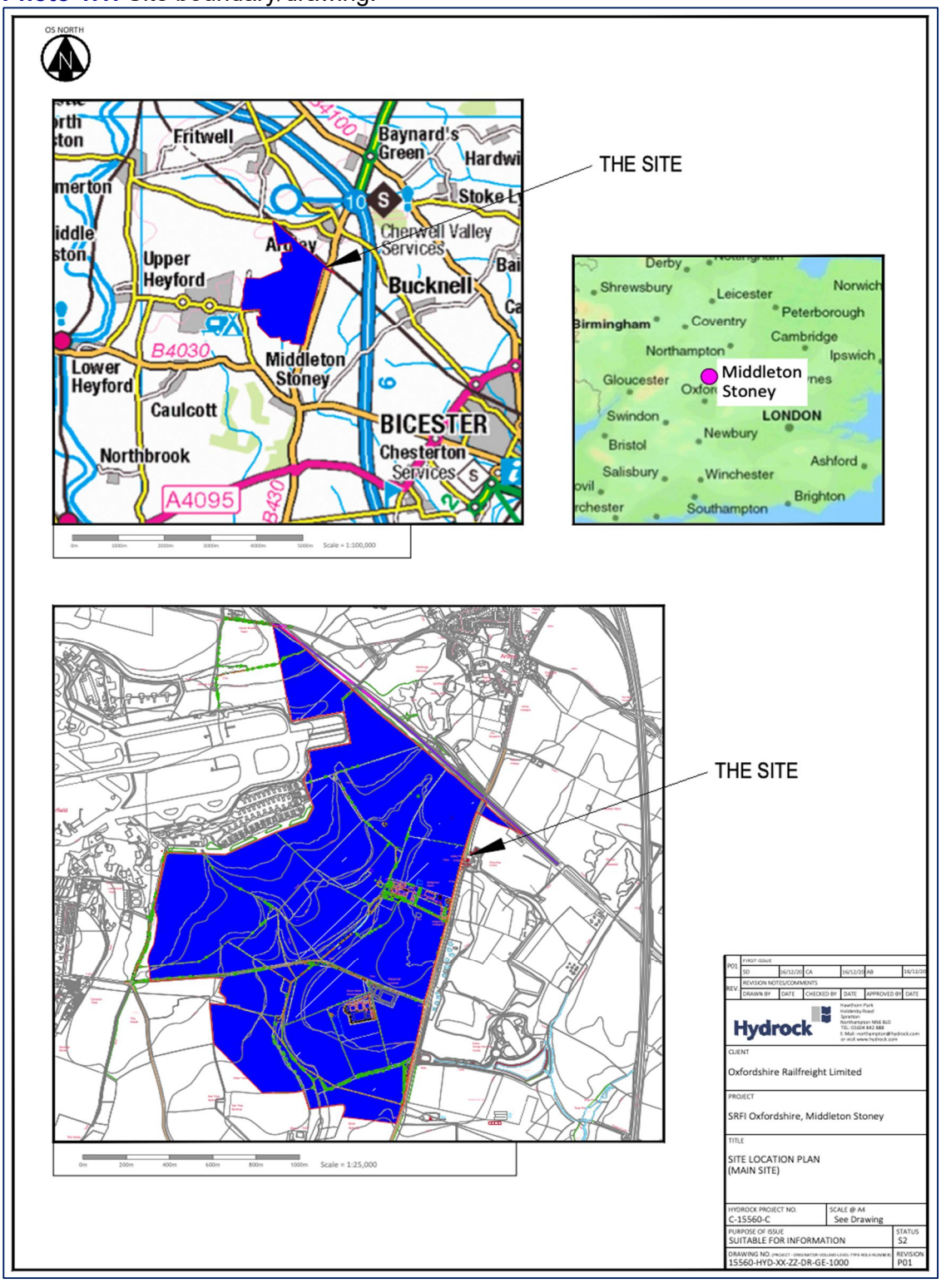
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EXECUTIVE SUMMARY

1 INSTRUCTION

EOD Contracts Ltd (ECL), have been commissioned by HYDROCK (hereafter, "the Client") to undertake a desktop study for potential historic Unexploded Ordnance (UXO) contamination for the future works being carried out within the Highlighted areas provided within the CLIENTS drawing below (**Photo 1.1**).

Photo 1.1: Site boundary/drawing.



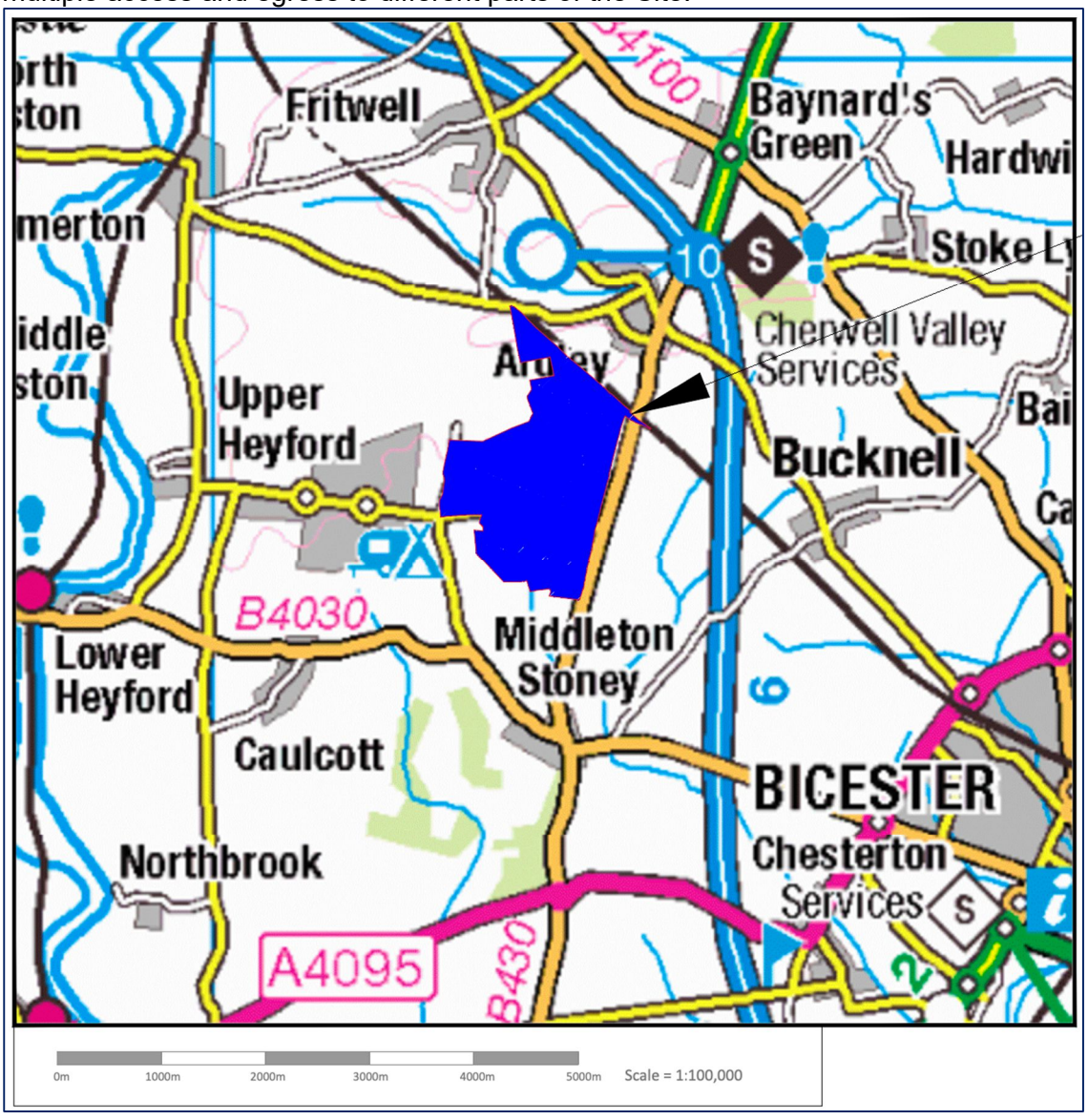
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2 SCOPE OF WORK

The scope of this EO Risk Assessment/Desk Study is to assess the likelihood of buried EO/UXO within the environs of "the site" (See **Photo 1.1**), in view of further development. A further aim was to evaluate the implication from UXO contamination during any future intrusive land use.

2.1 LOCATION

The Site area is located east of RAF Heyford. Due to the size of the area there are multiple access and egress to different parts of the Site.



TITLE	DESCRIPTION (CENTRE OF SITE)
Site Post Code	OX27 7PJ (Ashgrove Farm)
Grid Reference	SP 536262 / SP 5365626209
OS (X)	453656
OS (Y)	226209

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3 SOURCES OF UXO CONTAMINATION

3.1 Through the use of thorough research (utilising both modern and historic data) EOD Contracts Ltd deem that the main source of UXO contamination pertaining to the site are as follows.

- Air delivered ordnance bombs and sub munitions/incendiaries.
- Military Usage (potentially)
- Close proximity to RAF Base

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4 KEY FINDINGS

4.1 Based on the information researched by EOD Contracts Ltd for the proposed works being carried out on the land to the NE, E, SE of RAF Heyford, EOD Contracts Ltd can conclude the following.

4.2 There are no recorded incidents of the site being the subject of bombardment throughout WW1. However, the RAF station was operational throughout this period but only for training purposes.

4.3 Upper Heyford/RAF Heyford was targeted on at least four separate occasions throughout WW2. The exact location of where these bombs landed is not available (or likely exists).

4.4 The Site area itself would not have been considered a viable target to the Luftwaffe. However, its close proximity to RAF Heyford negates this fact. The Site area is situated at the eastern edge of the main runway, bombing accuracy throughout this period was very low meaning bombs dropped could easily overshoot their intended target.

4.5 There was no evidence to suggest that there was a HAA/LAA Gun Emplacement located within the Site area. However, again due to the Sites proximity to the RAF station this cannot be ruled out. This premise is also relevant when considering the placement of trenching/defensive positioning & military troop training.

4.6 The Site has remained relatively unchanged post WW2.

4.7 Therefore (to summarise) EOD Contracts Ltd deem that there is a **MEDIUM** Risk pertaining to items of UXO being located within the Site location.

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5 RECOMMENDATIONS

5.1 It is recommended that the following risk mitigation strategy be executed during phases of the project indicated previously indicated as a **MEDIUM** risk.

5.2 Communicating the risks, all stakeholders should be made aware of the UXO situation on the site and the possible impact it may have on the project works and day to day running of the district. Clients have a legal duty under the Construction Design & Management Regulations (CDM) and Health & Safety at Work legislation to provide Designers and Contractors with project specific information needed to identify hazards and risks associated with the design and construction work. The possibility that UXO may be encountered on site falls within the category of a significant risk and as such it should be addressed as early as possible in the lifecycle of the project.

5.3 Further planning; the risks posed by UXO should be brought to the attention of the Project CDM Coordinators and other individuals with a responsibility for project safety and operations at the site. The matter of UXO should be considered critical to project safety and one requiring high priority action.

5.4 UXO safety awareness training should be given at all levels of site personnel and selected individuals on the project staff with relevant responsibilities. A competent person as part of the project safety induction course should provide the awareness training. It should be reinforced with specific safety briefings and toolbox talks to individuals involved in conducting intrusive earthworks.

5.5 Project overview and the responsibilities of those working on site with regard to duty of care and public safety.

5.6 UXO recognition and safety procedures to be followed on discovery of a suspicious object or the alarm being sounded.

5.7 Emergency procedures to be followed in the event of an explosion. Evacuation routes, muster stations and accounting for personnel.

5.8 Work permits, works methodology and specific UXO risk mitigation methods. Post-incident inspections and returning to normal works.

5.9 Prior to any intrusive piling or drilling commencing, UXO safety testing and appropriate clearance certification into the ground to sufficient depth to provide clearance from UXO. This can be done using a progressive drilling process or (where large numbers of piles are to be placed and ground permitting) using a vehicle borne hydraulic system to push a magnetometer into the ground to test for the presence of UXO prior to piling.

5.10 UXO safety monitoring of all “at risk” excavations, including geotechnical or archaeological trial pits to be conducted during the project. This should be provided by a UK Home Office Authorised EOD/UXO Contractor using qualified EOD Engineer with specialist locators and detectors to scan the ground ahead of the excavation wherever possible.

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6 SPECIFICALLY

6.1 Geotechnical investigations, percussive drilling/trial pits/window/samples, require an EOD Engineer over watch.

6.2 The removal of all building foundations within the site footprint can be removed down to natural ground level (including basements).

6.5 New foundations with piling should be mitigated by the insertion of a magnetometer to encompass the pile position, this would be carried out using a CPT rig (magcone), the expected radius of the magcone is 1.5m therefore multiple piles could be checked.

6.6 Non-Intrusive Magnetometer surveys generally prove inconclusive on “Brownfield sites”, this is due to the high ferromagnetic background, therefore this methodology is not recommended for this site and shallow excavations should be overseen by a qualified EOD Engineer. This methodology could however be used on the grassed areas within the site confines.

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7.0 **EOD Contracts Ltd can supply a turnkey solution to your UXO requirements. Therefore, the following mitigation strategies can be supplied for land or water-based operations**:

7.1 Intrusive survey using CPT *(Cone Pressure Testing)* or borehole equipment, *supplying risk mitigation to all Borehole and Pile locations, down to a maximum bomb penetration depth determined within this document.*

7.2 Non-Intrusive Survey using multiple array system with DGPS *(Digital Global targets be identified.*

7.3 Offshore, near-shore, estuarine and freshwater water environments magnetic, side scan and bathymetric supported by state-of-the-art DGPS.

7.4 The aforementioned surveys are supported with post processing of data and intrusive investigations if required.

7.5 EOD Engineer over watch using Suitably Qualified and Experienced Personnel, normally former British Army, Navy or RAF Bomb Disposal specialists.

7.6 Explosive Ordnance Safety Presentations.

7.7 EOD Contracts Ltd now offer Utility/Services Detection.

5.11

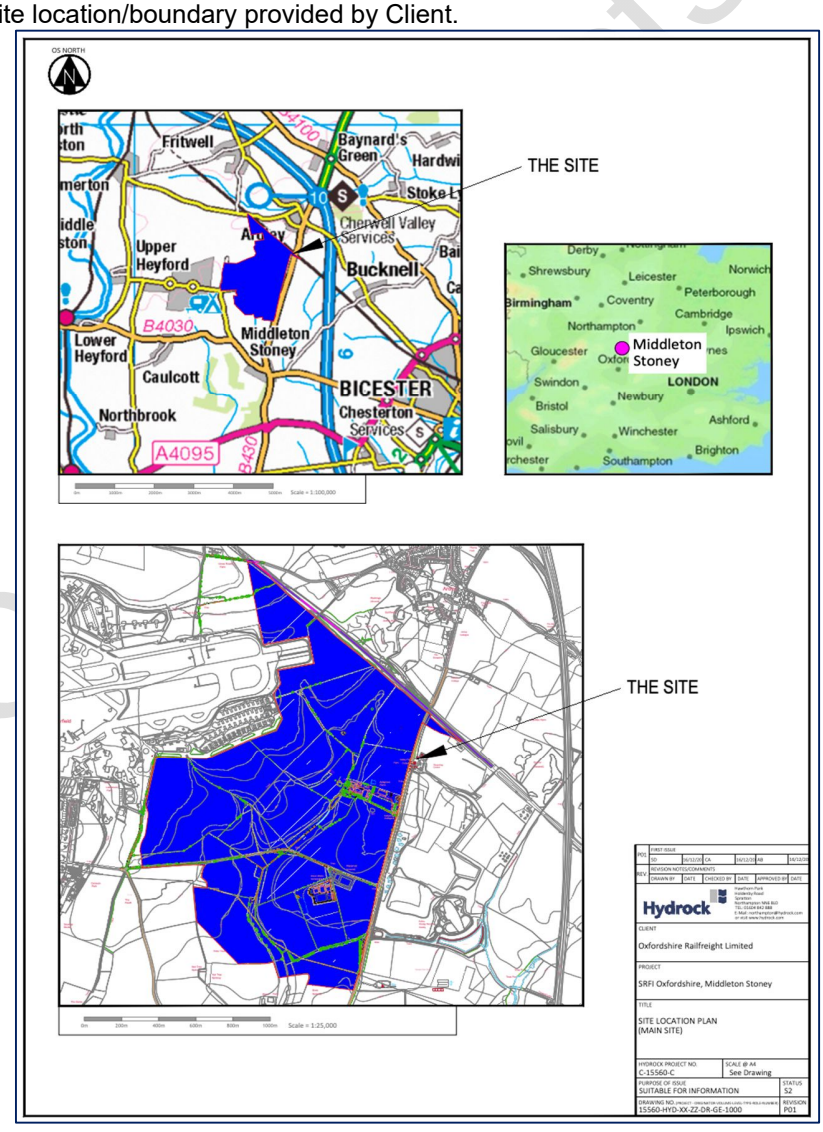
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1.0 INTRODUCTION

1.1 Instruction

EOD Contracts Ltd (ECL), have been commissioned by the Client to undertake a desktop study for potential historic Unexploded Ordnance (UXO) contamination for the future works being carried out within the Highlighted areas provided within the CLIENTS drawing below (**Photo 1.1**).

Photo 1.1: Site location/boundary provided by Client.



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1.2 Scope of Work

The scope of this EO Risk Assessment/Desk Study is to assess the likelihood of buried EO/UXO within the environs of “the sites”, in view of further development. A further aim was to evaluate the implication from UXO contamination during any future intrusive land use.

1.3 Restrictions

It must be emphasized that a desk study can only indicate the potential for UXO to be present on the site. A geophysical survey and intrusive investigation are fundamentally important to provide proof that the site is free of the UXO threat.

This study was written with the site conditions prevailing at the time of the study and no liability can be accepted for any change in the condition of the area.

Please note that our appraisal relies on the accuracy of the information contained in the documents consulted and that EOD Contacts Ltd will in no circumstances be held responsible for the accuracy of such information or data supplied.

1.4 Sensitive Documentation

Information may be classified, restricted or deemed to be confidential in nature to EOD Contracts Limited, where such material has been gained a summary of the documentation has been approved.

1.5 Objective

The objective of this document is to define the UXO contamination routes as defined in Unexploded ordnance (UXO) A guide for the construction industry (C681) dated July 2015 and offer remediation methodologies if required.

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2.0 SOURCES OF INFORMATION

Research of the site's history, with regard to military usage, bombing raids and bomb impacts has been undertaken to establish the following:

- Frequency and intensity of enemy bombing raids for the site and immediate vicinity up to 500m.
- Bomb impacts and associated damage on the Site and in the immediate vicinity.
- The potential for UXO to remain on the Site and in the vicinity.
- Records of UXO removal activities for the Site and immediate vicinity.

The main sources of information consulted include:

- EOD Contracts Ltd company records
- Ministry of Defence records
- Central and Local Government Records
- Public Records Office (Kew)
- Historic Maps and Air Photography
- Open-Source information (Internet)
- Drawing Number – Clients RED Line.

2.1 Ministry of Defence (MOD) Records

33 Engineer Regiment (Explosive Ordnance Disposal) Royal Engineers is the unit responsible for maintaining the records concerning conventional Bomb incidents, reports, clearances and related UXO matters. These records are known to be incomplete and are no longer supplied. Based on in-house information released by the MOD previously, it is considered unlikely that any information released will have any significant impact on the findings of this study.

2.2 Attack Record Keeping

In general, the quality and accuracy of bombing and shelling records prior to 1939 varied greatly from one region to another. Records relating to the limited air attacks on the United Kingdom are considered to be sufficiently accurate in urban areas to provide a reasonable level of confidence in determining the likelihood that an area was or was not bombed during this period. Wartime records, maps etc held within the civil archives are considerably more comprehensive than those still in existence within the MOD, where it is acknowledged that large numbers of records have been disposed of since 1945. Records from some areas, particularly rural districts or near large bodies of water should still be regarded as an incomplete picture of the extent and effect of the bombing campaign.

2.3 Attack Record Accuracy.

While an Air Raid was in progress it was inevitable that mistakes would be made in the transcription of rushed verbal reports into the written records. Discrepancies did occur between the total of bombs dropped against detonations witnessed. In some cases, records were made several hours after the event and mistakes were inevitable. Some reports were drafted before the full extent of the raid had been determined which has led to significant omissions in the records. Reports of raids on rural areas were often witnessed and submitted by untrained individuals and passed through third parties before being recorded. Suspect UXB's occasionally went unreported by local farmers and

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freeholders who saw the event as insignificant or were reluctant to report their findings for fear of valuable land or crops being destroyed by the authorities in their attempts to find the UXB.

2.4 Errors and Omissions

The accuracy of bombing records has been shown to vary greatly; this may have been a result of the individual record keeper's expertise. Additionally, in some cases, errors occurred as a result of poor or incomplete transcription and copying. Some "errors and omissions" were intentional, designed to serve as dis-information to confuse German intelligence. So long after the event, official verification of such incidents has often proven to be impossible to obtain. At present, UXBs are found on construction sites and other locations where there had been no documentary evidence to suggest their presence. These events, although infrequent, do serve as confirmation that records cannot be considered definitive.

2.5 Bibliography

The significant published documents referred to during this study are listed below:

- HO 193 series from National Archives
- HO 198 series from National Archives
- HO 203/5 series (War-state and Society)
- The Blitz Then and Now Volumes 1 to 3
- AA Command Colin Dobinson
- German Air Raids on Britain 1914-1918
- Oxford City Council Records/Archives
- https://www.forces-war-records.co.uk/units/712/raf-upper-heyford
- https://en.wikipedia.org/wiki/RAF_Upper_Heyford
- https://www.oxfordmail.co.uk/news/17546873.unexploded-bomb-upper-heyford-cordon-lifted/
- https://archaeologydataservice.ac.uk/library/browse/issue.xhtml?recordId=1152087&recordType=GreyLitSeries
- https://www.heyfordparkresidents.org.uk/history/
- https://www.raf-upper-heyford.org/History.html
- https://military.wikia.org/wiki/RAF_Upper_Heyford
- http://www.hauntedhovel.com/rafupperheyford.html
- https://www.thetimechamber.co.uk/beta/sites/military/uk-sites/raf-upper-heyford
- https://www.28dayslater.co.uk/threads/raf-upper-heyford-oxfordshire-march-2020.124025/
- http://www.bbc.co.uk/oxford/content/articles/2009/02/16/raf_upper_heyford.shtml
- https://www.sofo.org.uk/ww2-bombings/

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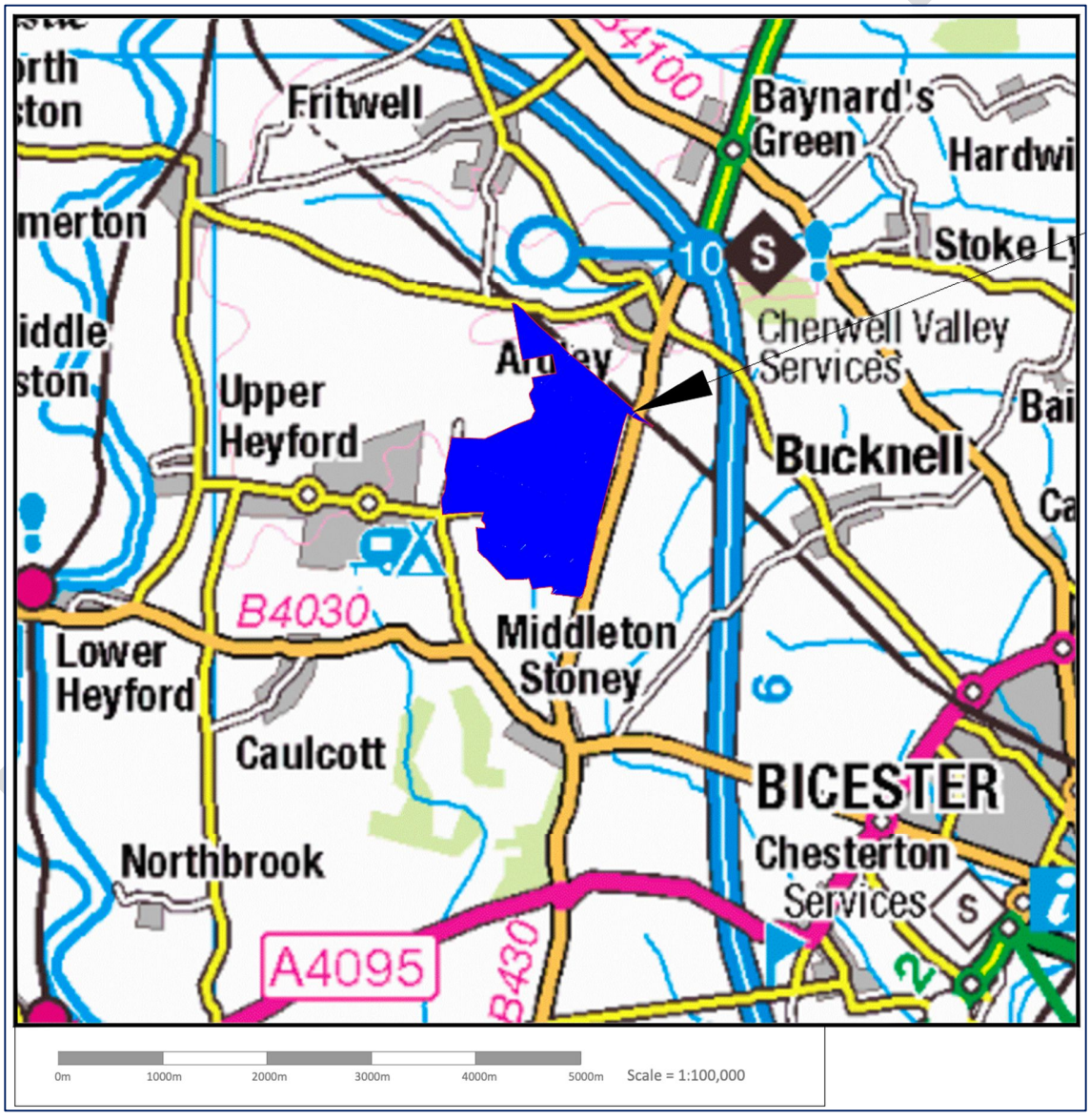
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3.0 SITE DESCRIPTION AND DETAILS

3.1 Location

The Site area is located east of RAF Heyford. Due to the size of the area there are multiple access and egress to different parts of the Site.

TITLE	DESCRIPTION (CENTRE OF SITE)
Site Post Code	OX27 7PJ (Ashgrove Farm)
Grid Reference	SP 536262 / SP 5365626209
OS (X)	453656
OS (Y)	226209



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3.2 Description

Photo 3.1: *The Site area at present predominantly undeveloped with only two obvious dwellings within the Site boundary (Farms). The remainder of the land appears to be agricultural in its usage.*



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3.3 Geology

Lithological Description:	A pale grey to off-white or yellowish limestone, peloidal wackestone and packstone with subordinate ooidal and shell fragmental grainstone; with recrystallised limestone and/or hardgrounds at some levels with rare sandy limestone, muddy limestone, calcareous mudstone and silicate mudstone/clay. Coralliferous units (including Fairford Coral Bed) occur at or close to the top.
Definition of Lower Boundary:	The base of the described peloidal wackestone, packstone or grainstone, overlying calcareous mudstone or fine-grained ooidal grainstones of the Hampen Formation or calcareous mudstone of the Rutland Formation.
Definition of Upper Boundary:	Generally, a sharp, erosive boundary, with a cross-bedded shell-fragmental ooidal limestone of the Forest Marble Formation or mudstone of the Forest Marble Formation or Blisworth Clay Formation.
Thickness:	Up to 30 m, and typically 20 m thick in the type area.
Geographical Limits:	The Stroud to Cirencester area, where it passes south-westwards through passage into the high energy ooid limestone of the Athelstan Oolite Formation, and north-eastward through Oxon and Bucks to the south Northamptonshire area, where it passes through gradual facies change into limestone with greater terrigenous influence of the Blisworth Limestone Formation. In the subcrop, passes south-east in Berkshire into the Athelstan Oolite and Chalfield Oolite formations of the Weald (Wyatt, 2011).

Source: https://webapps.bgs.ac.uk/lexicon/lexicon.cfm?pub=WHL

3.4 Current Site Use

See **3.2 Description** & **Annex A**.

3.5 Future Works

At the time of writing this report it is understood that the site will be redeveloped. Therefore, it is assumed that the following intrusive construction works will be carried out:

NOTE: *The full scope of works has not been made available to ECL at the time of writing this report. However, it is believed that the carpark to the rear of the building is to be developed into 15 storey residential housing.*

- Geotechnical investigations, percussive drilling/trial pits/window/samples
- Removal of building foundations to natural ground level
- Foundations with large diameter rotary bored piling

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4.0 HISTORICAL REVIEW

4.1 Historical Mapping & Aerial Photograph

Annex B contains all historic maps from which the below data has been analysed.

- Aerial Photo 1946 – The Site area at this time contains only one steading (farm). The remainder of the land appears to be utilised for agricultural purposes. No real evidence can be seen of the RAF base in close proximity to the Site.
- Historic Map 1955 – The Site has remained unchanged post WW2.
- Modern-day Aerial Photo, the Site at present is predominantly unchanged from the previous map. However, there has been significant development within close proximity to the Site location.

4.2 WWI

Although many people associate wartime bombing with The Blitz during World War II, the first airborne terror campaign in Britain took place during the First World War. Air raids in World War One caused significant damage and took many lives. German raids on Britain, for example, caused 1,413 deaths and 3,409 injuries. Air raids provided an unprecedented means of striking at resources vital to an enemy's war effort. Many of the novel features of the war in the air between 1914 and 1918—the lighting restrictions and blackouts, the air raid warnings and the improvised shelters—became central aspects of the Second World War less than 30 years later. The East End of London was one of the most heavily targeted places. Poplar, in particular, was struck badly by some of the air raids during the First World War. Initially these were at night by Zeppelins, which bombed the area indiscriminately, leading to the death of innocent civilians.

The first daylight bombing attack on London by a fixed-wing aircraft took place on 13 June 1917. Fourteen German Gotha G bombers led by Squadron Commander Hauptmann Ernst Brandenberg flew over Essex and began dropping their bombs. It was a hot day, and the sky was hazy; nevertheless, onlookers in London's East End were able to see 'a dozen or so big aeroplanes scintillating like so many huge silver dragonflies'. These three-seater bombers were carrying shrapnel bombs, which, were dropped just before noon. Numerous bombs fell in rapid succession in various districts. In the East End alone 104 people were killed, 154 seriously injured and 269 slightly injured.

The gravest incident that day was a direct hit on a primary school in Poplar. In the Upper North Street School at the time were girls' class on the top floor, a boys' class on the middle floor and an infant class of about 50 students on the ground floor. The bomb fell through the roof into the girls' class; it then proceeded to fall through the boys' classroom before finally exploding in the infant class. Eighteen students were killed, of whom sixteen were aged from 4 to 6 years old. The tragedy shocked the British public at the time.

There are no recorded incidents of the Site being targeted during WWI.

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4.3 WWII

4.4 The Blitz Around Britain

The 'Blitz' – from the German term Blitzkrieg ('lightning war') – was the sustained campaign of aerial bombing attacks on British towns and cities carried out by the Luftwaffe (German Air Force) from September 1940 until May 1941.

The Blitz began on 7 September, 'Black Saturday', when German bombers attacked London, leaving 430 dead and 1,600 injured. London was then bombed for 57 consecutive nights, and often during daytime too. London experienced regular attacks and on 10-11 May 1941 was hit by its biggest raid. German bombers dropped 711 tons of high explosive and 2,393 incendiaries. 1,436 civilians were killed. However, this proved to be the last major raid until January 1943.

While London was bombed more heavily and more often than anywhere else in Britain, the Blitz was an attack on the whole country. Very few areas were left untouched by air raids. In relatively small compact cities, the impact of a severe air raid could be devastating.

From mid-November 1940, major provincial cities and industrial centres were targeted. In early 1941 another wave of attacks began, primarily against ports. Respite finally came from June when much of the Luftwaffe was directed against Russia and targets in the Mediterranean.

4 .5 Oxfordshire during the Blitz

PHOTO 4.1: *This shows that there were 3831 bombs of all types dropped over Oxfordshire, causing 20 deaths and 60 other casualties, as well as 65 head of cattle. Over 300 houses were damaged as well as other buildings and utilities.*
NOTE: *Upper Heyford falls within the Rural district of Banbury.*

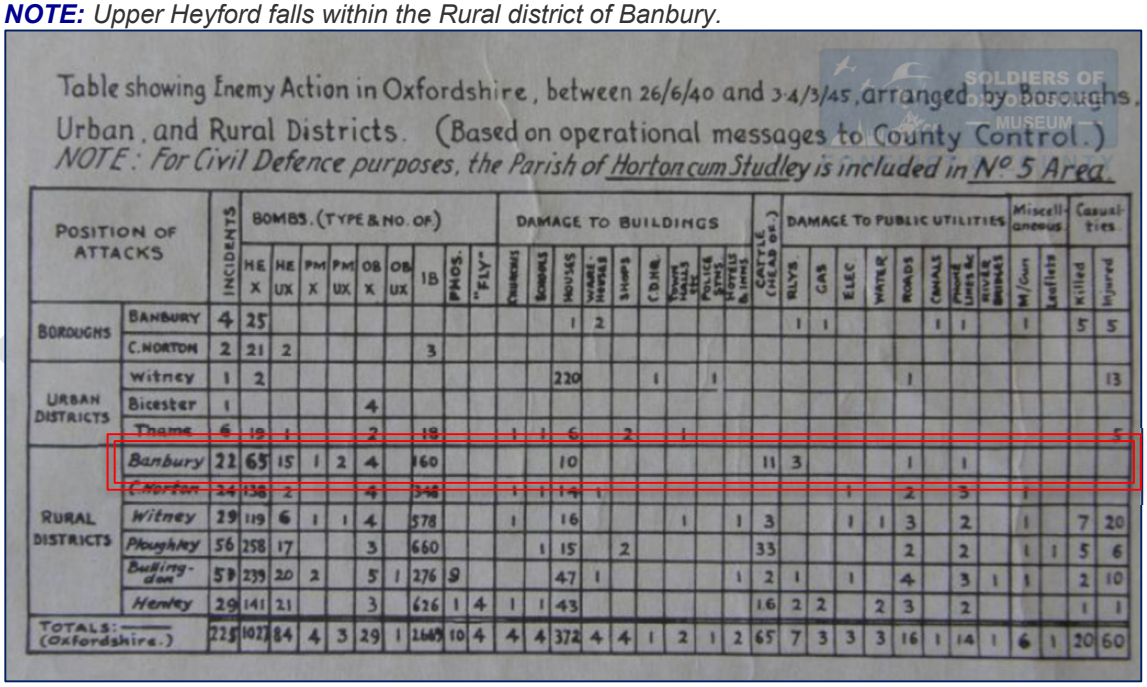


Table showing Enemy Action in Oxfordshire, between 26/6/40 and 3-4/3/45, arranged by Boroughs, Urban, and Rural Districts. (Based on operational messages to County Control.)
NOTE: For Civil Defence purposes, the Parish of Horton cum Studley is included in No 5 Area.

POSITION OF ATTACKS		INCIDENTS	BOMBS. (TYPE & NO. OF)								DAMAGE TO BUILDINGS									DAMAGE TO PUBLIC UTILITIES								Miscellaneous		Casualties	
			HE X	HE UX	PM X	PM UX	OB X	OB UX	IB	PHOS.	"FLY"	CHURCHES	SCHOOLS	HOUSES	WAR HOUSES	SHOPS	C.D.H.Q.	TOWN HALLS ETC.	POLICE & FIRE STNS.	HOSPITALS & CLINICS	CATTLE (HEAD OF.)	RLYS.	GAS	ELEC.	WATER	ROADS	CANALS	PHONE LINES &C.	RIVER BRIDGES	M/Guns	Leaflets	Killed	Injured
BOROUGHS	BANBURY	4	25											1	2							1	1			1	1		1		5	5
	C.NORTON	2	21	2					3																							
URBAN DISTRICTS	Witney	1	2											220			1		1						1							13
	Bicester	1					4																									
	Thame	6	19	1			2		18			1	1	6		2		1														5
RURAL DISTRICTS	Banbury	22	65	15	1	2	4		160					10							11	3			1		1					
	C.Norton	34	138	2			4		348			1	1	14	1									1	2		3		1			
	Witney	29	119	6	1	1	4		578			1		16				1		1	3			1	1	3		2		1		7	20
	Ploughley	56	258	17			3		660				1	15		2					33					2		2		1	1	5	6
	Bullingdon	59	239	20	2		5	1	276	9				47	1					1	2	1		1		4		3	1	1		2	10
	Henley	29	141	21			3		626	1	4	1	1	43							16	2	2		2	3		2				1	1
TOTALS: (Oxfordshire.)		225	1027	84	4	3	29	1	1669	10	4	4	4	372	4	4	1	2	1	2	65	7	3	3	3	16	1	14	1	6	1	20	60

SOLDIERS OF OXFORDSHIRE MUSEUM

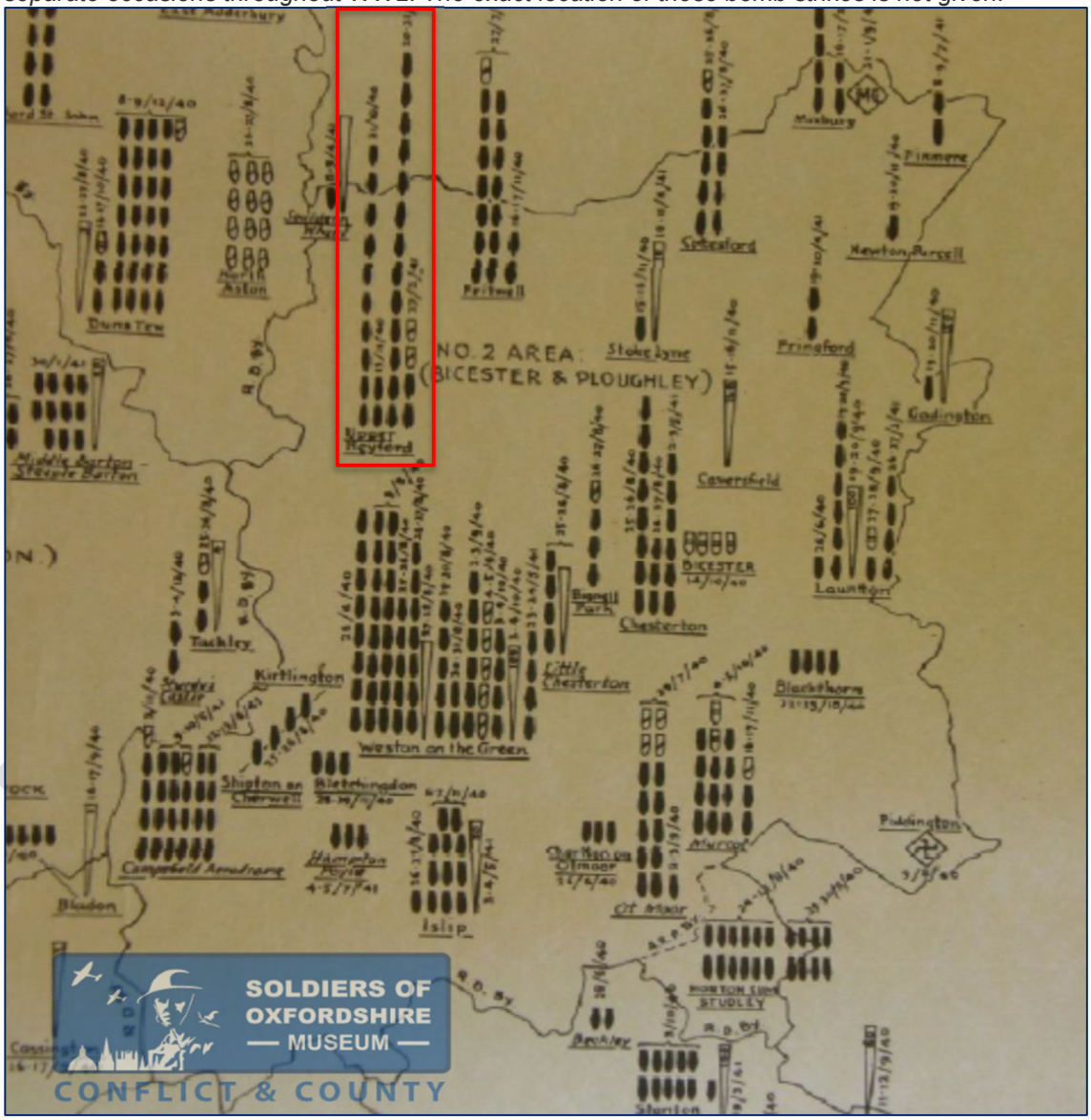
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Upper Heyford & RAF Heyford During WW2

Towards the end of World War 1, RAF Upper Heyford was established by the Royal Flying Corps. During World War 2 it served a number of units and was predominantly involved in the training of bomber crews in the 16th OTU (operational training unit), flying Handley Page Hampden bombers. Number 18 squadron, equipped with Bristol Blenheim Bombers, was also based at Upper Heyford at the start of the war by 1944, the airfield had three concrete runways and six aircraft hangars (Type A). After World War 2, the base was the home of the No. 1 Parachute Training School.

Although bomb maps indicating the exact location of strikes could not be identified ECL does hold within its archives the below map which shows the Site location.

PHOTO 4.2: *The below map is number 2 of 5 maps drawn up by F.C. Condon, the Chief BRO (Bomb Recording Officer) in Oxfordshire in 1945. It shows that Upper Heyford was targeted on 4 separate occasions throughout WW2. The exact location of these bomb strikes is not given.*



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During the Cold War, the base was leased to the United States and taken over by the US Air Force and initially served as a base for the United States Air Force Strategic Air Force Command. Three other airfields that were surplus after World War 2 were also leased to the Americans, these being Brize Norton, Fairford and Greenham Common. On the 26th of June 1950, 801st Aviation Engineering Battalion moved to the site and extended the runway from 6000ft to 8300ft and constructed hard stands capable of holding the Strategic Air Commands B-36 & B-50 bombers. On the 15th of May 1951, the base was formally handed over to the USAF 3rd Air Force and 328th Bombardment Squadron moved to the base. The first Aircraft to arrive at the airfield were 15 B-50s, and six months later, the full complement of 45 aircraft arrived at the base, and in 1954, the B-36 Peacemakers started to arrive.

In the 1960's, the arrival of B-52 bombers started, and became a regular occurrence throughout the 60's. In the summer of 1962, the Soviets escalated their testing of nuclear weapons behind the Iron Curtain and this saw a detachment of U-2 spy planes operating from the base. Their mission was to take air samples from the upper atmosphere to try and determine the characteristics of the new weapons. In 1964, the base was re-designated the 3918th strategic wing. Later that year, the SAC (Strategic Air Command) bomber aircraft in the UK were stood down, and the bases at Greenham Common, Brize Norton and Fairford were put on care and maintenance and were in a state of deployment without equipment, ready to be reactivated in a short period of time.

With France pulling out of NATO in 1966, and American units being ordered to leave the country, Upper Heyford was now to serve as a base for the 66th Tactical Reconnaissance Wing. The Unit moved in during September of that year and brought with them the RF-101 aircraft. In 1968, the RF-101 were replaced with the new RF-4C Phantoms. However, these planes were moved from the base 2 years later. That same year the 20th Fighter Tactical Wing were moved to the base, because of the stand down of RAF Wethersfield. With the move of the 20th fighter Tactical Wing, new aircraft arrived at the base. These were the F-111 Aardvark tactical strike aircraft.

During the operation of RAF Upper Heyford, the base was involved in two major sorties. The first was Operation El Dorado Canyon, which was a strike on Libya, where 20 F-111's and 5 EF- 111 were launched from the base. The second was during Operation Desert Storm, where 1,798 combat sorties were flown, and 4,714 tonnes of ordnance dropped on various targets throughout Iraq. Upper Heyford saw zero losses during these operations. After the Cold War, and the Gulf War, RAF Upper Heyford was deemed surplus to requirements and gradually phased out. The last plane left on the 7th of December 1993. On the 30th of September 1994, the base was returned to the Ministry of Defence. The base now stands derelict, with various activities happening on site, and English Heritage have listed the site as a conservation area as it is the best-preserved Cold War airbase in England.

During the 1980's when the Cold War was at its height, the base was home to a Nuclear Peace Camp, similar to the one at Greenham Common. The camp was protesting the fact that there were planes on fast responses armed with Nuclear Weapons. One of the largest demonstrations happened in 1983, and over 700 people were arrested as a result.

4.6 Abandoned Bombs/UXO

EOD Contracts records could find no evidence of any items of UXO abandoned in or around the subject site.

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4.7 Anti-Aircraft Artillery

There is no evidence to suggest there was a HAA Gun Emplacement within the Site location. However, due to the nature of the Site location this cannot be ruled out.

4.8 Prior Clearance Operations

EOD Contracts could find no evidence to suggest that there have been any prior UXO clearance operations in or around the site footprint.

4.9 V1 & V2 Bomb strikes

There is no evidence to suggest that the Site or its surrounding area was targeted with one of these weapon systems.

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5.0 SOURCES OF UXO CONTAMINATION

The main source of UXO contamination that are deemed a threat to the Site are:

- Air delivered ordnance bombs and sub-munitions/incendiaries.
- Buried or discarded items of ordnance.
- Close proximity to a military establishment

5.1 GENERAL

EOD Contracts conclude that a **MEDIUM** risk is considered to exist with respect to UXO for areas within the site footprint.

- The Site area has remained relatively unchanged, with very little construction works carried out within its boundary.
- RAF Heyford/Upper Heyford was the subject of bombardment throughout WW2, being targeted on at least four separate occasions. The exact whereabouts of where these bombs landed is unknown.
- HAA gun emplacements could have been located within the Site boundary.

UXOs are essentially dangerous; therefore, further information on UXO and Safety is detailed in **Annex D.**

5.2 BOMB PENETRATION DEPTHS

5.3 Weapon Sub-surface Penetration.

Weapons penetrate a significant depth into the ground and other types of ammunition are designed to permit the weapon time to penetrate deeply into the target before detonating a short time after coming to rest or a considerable number of hours afterwards. The second reason is where the weapon has failed to function as designed becoming a UXB. A number of studies have been carried out into weapon penetration and it is an inevitable consequence of a number of variable factors acting on the bombs trajectory that figures can and do differ significantly. Careful consideration must be given to the weapon's velocity, trajectory and shape. Also surface conditions and subsurface geology. The largest of the common German bombs, (500kg) can penetrate to significant depths given favourable conditions for penetration. In the case of projectiles and shells, the potential for deep penetration is significantly less.

5.4 Penetration Assumptions.

A number of assumptions were used in determining the maximum threat depth within the project footprint, which were.

5.5 Factors Affecting Penetration

The penetration of sub-surface bombs will be affected by the following:

- Height of release
- Weight, shape and design of bomb
- Aerodynamic qualities
- Angle of flight and impact
- Nature of impact surface

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- Nature of sub soil

The expected bomb depths for the site assuming the following criteria:

- 15,000 feet, the vast majority of bombs were dropped from height to avoid AA fire and balloons
- General Purpose Bombs of 50kg to 1000kg
- Near Vertical impact 80 to 90 degrees
- Surface geotechnical conditions are made ground
- Subsurface geotechnical conditions are generally clays.

Therefore, the expected depths for Air dropped UXBs on site are indicated in **RED** in the following table:

TABLE 5.1: *Bomb Penetration Depths*

	Bomb Weights			
Sub Soil Type	50kg	250kg	500kg	1000kg
Soft Rock	**2.442**	**5.016**	**6.006**	**7.062**
Gravel	2.442	5.016	6.006	7.062
Sand	**2.442**	**5.016**	**6.006**	**7.062**
Chalk	3.7	7.6	9.1	10.7
Shingle	3.7	7.6	9.1	10.7
Dry Clay	3.7	7.6	9.1	10.7
Wet Sand	5.55	11.4	13.65	16.05
Wet Clay	5.55	11.4	13.65	16.05
Average Offset (m)	**0.8-1.6**	**1.6-3.7**	**3-4.5**	**3.4-5.3**

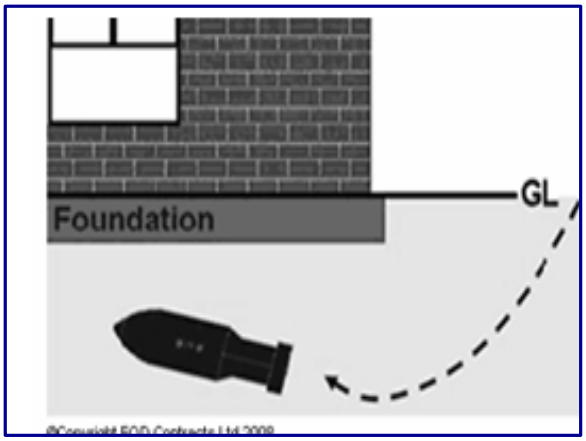
Bombs on penetration of the surface do not follow a straight-line trajectory they can and do curve; this is called a “J” curve where the bomb’s path bends back towards the surface. This gives what is known as the Offset, which may place a bomb under a structure and at a shallow depth.

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Figure 5.1 – 5.3: Sub-Surface Trajectories & Safety Buffers

Figure 5.1: *Common Sub-Surface Trajectory &* ***Figure 5.2:*** *Anomalous Sub-Surface Trajectory*



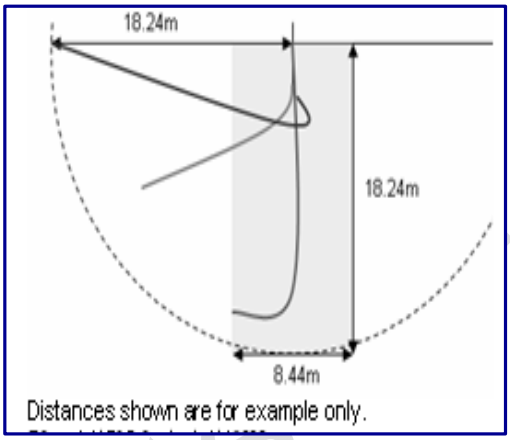
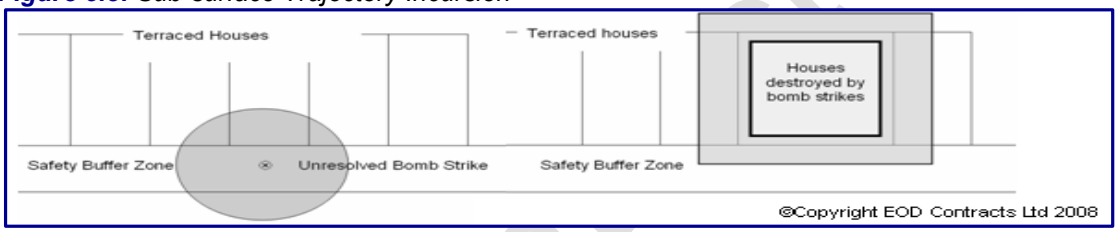


Figure 5.3: *Sub-surface Trajectory Incursion*



NOTE: *the common sub-surface trajectory will follow a path best described as a 'J' curve. The curve can result in a weapon coming to rest some distance from its impact point. The distance from impact point to resting place is referred to as the "Off set Distance and is normally considered to be 1/3 of the depth. This mechanism can permit a weapon to strike outside a building and travel below ground finally coming to rest within the building footprint. Where a strike is known to have occurred close to a building or structure such as a dock wall, a danger zone should be considered to exist around the area of the strike of sufficient size to accommodate the likely sub-surface travel distance for the weapon.*

NOTE: *the typical offset distance is shown as the shaded area, on rare occasions a near surface deflection of the weapon can occur and the offset distance can be substantially increased up to 5/4 of the penetration depth. This mechanism does however reduce the penetration depth considerably with the net result that while the offset is increased the overall travel distance is for the most part unaffected.*

NOTE: *scenario 1 (Figure 5.1) shows a hypothetical bomb strike outside a structure or building. The strike location has been accurately identified and as a consequence; a potential danger zone (circular shaded area) can be placed around the point of impact. Scenario 2 shown top right; depicts a direct HE bomb or Incendiary strike within a building which totally destroyed the building. In circumstances such as this UXB entry the building rubble may have concealed hole and the weapon may still be present within the building footprint or it may have travelled sub-surface and come to rest outside the footprint. Here the danger zone (square shaded Area) extends outwards on all sides of the original building footprint.*

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5.6 Recent UXO finds within the UK

The present-day threat of finding items of UXO within the UK is still high, as highlighted within **Annex E**.

PHOTO 5.1*: On (or around the) 2nd April 2019. Two items of ordnance were located within a construction site on Camp road (Upper Heyford). The two devices were subsequently destroyed by a bomb disposal team from the RAF.*
SOURCE*: https://www.oxfordmail.co.uk/news/17546873.unexploded-bomb-upper-heyford-cordon-lifted/*



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6.0 RISK ASSESSMENT

6.1 Risk Assessment

Assessing both the likelihood of occurrence and the consequences of the encounter has derived the overall risk for the site from unexploded ordnance. Review of the site's history and geographic location can provide an overall likelihood of encounter factor, which is used in the subsequent determination of a risk level when a Figure can be determined for the consequence.

6.2 Likelihood of Encounter

Given the study findings and other criteria (See **Annex F** Tables) it is considered that there is a **MEDIUM** risk of encountering UXO within the site footprint. This finding is based on assessment of all of the available information.

6.3 Consequence of Encounter

The consequence (See **Annex D**) of an uncontrolled encounter with UXO, given its lethal design and its unpredictable nature could be catastrophic and warrants a high severity factor. With regards to the consequences, the following factors were considered:

The project works may make use of a number of common ground investigation and construction techniques in its methodology during the project. Any intrusive groundwork has the potential to encounter UXO.

Intrusive earthwork, piling driving and dynamic ground compaction are by nature, aggressive, significant force (kN) is often required to achieve the desired results. As a precaution it is prudent to assume that any external stimulus, no matter how slight, may result in an unstable weapon detonating.

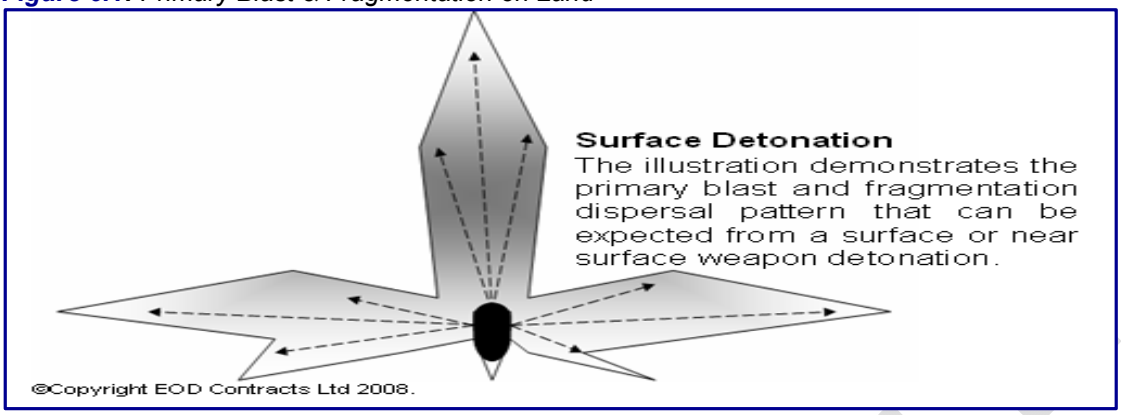
Records of encounters with UXO, particularly where plant machinery has been involved have resulted in detonations of the items with varying degrees of consequence; ranging from slight injuries sustained to piling contractors when a bomb detonated at 6.0m bgl to fatal injuries sustained to a construction worker while conducting near surface machine works on a motorway.

Detonation on land; the effects of a detonation at depth will be more localised and less destructive than one occurring on the surface. Figure 6.1 shows an illustration of the primary blast and fragmentation dispersal from explosive ordnance when it detonates on the surface. The weapon's design, and other key factors such as the ratio of explosive charge weight to total weapon weight (CWR) and the Net Explosive Quantity (NEQ) will determine the size and effects of a blast. The effects will also be enhanced or reduced by a number of factors including, the presence of other energetic materials in close proximity to the blast or if the weapon is buried or exposed on the surface. As a guide Figure 6.1 gives an indication of the likely blast radius for common types of UXO.

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Figure 6.1: *Primary Blast & Fragmentation on Land*



In addition to the dangers of explosion, many common chemicals used in the manufacture of explosive ordnance fillings are; in sufficient quantity, and level of exposure, toxic or poisonous. Although it is unlikely that such chemicals would be encountered in significant quantity to represent a significant risk to personnel, leakage or venting could pose a risk to the local marine environment. In addition to heavy metals; copper, lead, zinc etc used in the weapon body and fuze, hydrocarbon propellants such as Kerosene may also be present.

6.4 Risk Level

The overall risk has been determined to apply to all of the ground within the site footprint.

The prevailing risk level has been determined to be **MEDIUM** risk.

6.5 Encounter Consequences

It is acknowledged that when viewed from a “likelihood versus consequence” scenario; the consequences of an explosion may have the potential to include:

- Multiple casualties or fatalities.
- Extensive damage to high value private and public assets and property.
- Significant delays to the construction project.

6.6 Those at Risk

The risk is considered to have the potential to pose a direct and indirect threat to a wide range of individuals and facilities. While the impact on fixed assets can be estimated based on the asset’s proximity to the seat of the explosion. The impact to transient assets and people will, for the most part, be the result of both; proximity to the explosion and the time at which the event occurs. The overall impact therefore has the potential to range from little more than a minor localised event to a level, which may be considered to be a more widespread major incident involving some or all of the following:

- Construction and other specialist personnel carrying out the work.
- General public in open spaces, at their places of work and transient population on foot or road users in proximity to the construction work.
- Public services including transport, water, gas and electricity supplies.

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- Public facilities, including buildings, vehicles, other high value assets and equipment.
- Private business property including construction equipment.
- Private residential property in proximity to the work.

6.7 At Risk Activities

Based on our understanding of the scope of the most common construction projects, it is considered that a wide range of intrusive processes may be required to complete the project. Any intrusive groundwork's have the potential to encounter UXO and each activity therefore has a degree of risk attached to it. The severity or level of the risk is derived as a consequence of activity's; location, methodology and volume or quantity of risk material to be worked, at risk activities are considered to include:

- Intrusive geotechnical and archaeological investigations including drilling and pitting.
- Foundation construction, trenching and other excavations.
- Intrusive construction works, which may include piling. The study findings and other criteria (See **Annex F** Tables) it is considered that there is a **MEDIUM** risk of encountering UXO within the site footprint.

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7.0 CONCLUSIONS

Based on the information researched by EOD Contracts Ltd for the proposed works being carried out on the land to the NE, E, SE of RAF Heyford, EOD Contracts Ltd can conclude the following.

There are no recorded incidents of the site being the subject of bombardment throughout WW1. However, the RAF station was operational throughout this period but only for training purposes.

Upper Heyford/RAF Heyford was targeted on at least four separate occasions throughout WW2. The exact location of where these bombs landed is not available (or likely exists).

The Site area itself would not have been considered a viable target to the Luftwaffe. However, its close proximity to RAF Heyford negates this fact. The Site area is situated at the eastern edge of the main runway, bombing accuracy throughout this period was very low meaning bombs dropped could easily overshoot their intended target.

There was no evidence to suggest that there was a HAA/LAA Gun Emplacement located within the Site area. However, again due to the Sites proximity to the RAF station this cannot be ruled out. This premise is also relevant when considering the placement of trenching/defensive positioning & military troop training.

The Site has remained relatively unchanged post WW2.

Therefore (to summarise) EOD Contracts Ltd deem that there is a **MEDIUM** Risk pertaining to items of UXO being located within the Site location.

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8.0 RECOMMENDATIONS

It is recommended that the following risk mitigation strategy be executed during phases of the project indicated previously indicated as a **MEDIUM** risk.

Communicating the risks, all stakeholders should be made aware of the UXO situation on the site and the possible impact it may have on the project works and day to day running of the district. Clients have a legal duty under the Construction Design & Management Regulations (CDM) and Health & Safety at Work legislation to provide Designers and Contractors with project specific information needed to identify hazards and risks associated with the design and construction work. The possibility that UXO may be encountered on site falls within the category of a significant risk and as such it should be addressed as early as possible in the lifecycle of the project.

Further planning; the risks posed by UXO should be brought to the attention of the Project CDM Coordinators and other individuals with a responsibility for project safety and operations at the site. The matter of UXO should be considered critical to project safety and one requiring high priority action.

UXO safety awareness training should be given at all levels of site personnel and selected individuals on the project staff with relevant responsibilities. A competent person as part of the project safety induction course should provide the awareness training. It should be reinforced with specific safety briefings and toolbox talks to individuals involved in conducting intrusive earthworks.

Project overview and the responsibilities of those working on site with regard to duty of care and public safety.

UXO recognition and safety procedures to be followed on discovery of a suspicious object or the alarm being sounded.

Emergency procedures to be followed in the event of an explosion. Evacuation routes, muster stations and accounting for personnel.

Work permits, works methodology and specific UXO risk mitigation methods. Post-incident inspections and returning to normal works.

Prior to any intrusive piling or drilling commencing, UXO safety testing and appropriate clearance certification into the ground to sufficient depth to provide clearance from UXO. This can be done using a progressive drilling process or (where large numbers of piles are to be placed and ground permitting) using a vehicle borne hydraulic system to push a magnetometer into the ground to test for the presence of UXO prior to piling.

UXO safety monitoring of all “at risk” excavations, including geotechnical or archaeological trial pits to be conducted during the project. This should be provided by a UK Home Office Authorised EOD/UXO Contractor using qualified EOD Engineer with specialist locators and detectors to scan the ground ahead of the excavation wherever possible.

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9.0 SPECIFICALLY

Geotechnical investigations, percussive drilling/trial pits/window/samples, require an EOD Engineer over watch.

The removal of all buildings within the site footprint can be removed down to natural ground level (including basements).

New foundations with piling should be mitigated by the insertion of a magnetometer to encompass the pile position, this would be carried out using a CPT rig (magcone), the expected radius of the magcone is 1.5m therefore multiple piles could be checked.

Non-Intrusive Magnetometer surveys generally prove inconclusive on “Brownfield sites”, this is due to the high ferromagnetic background, therefore this methodology is not recommended for this site and shallow excavations should be overseen by a qualified EOD Engineer. This methodology could however be used on the grassed areas within the site confines.

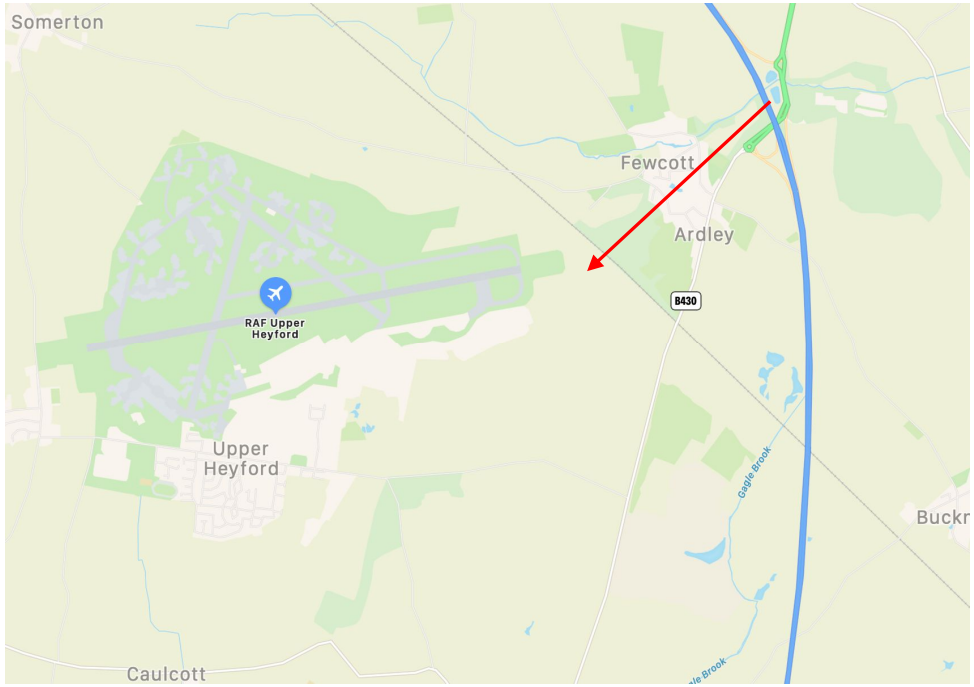
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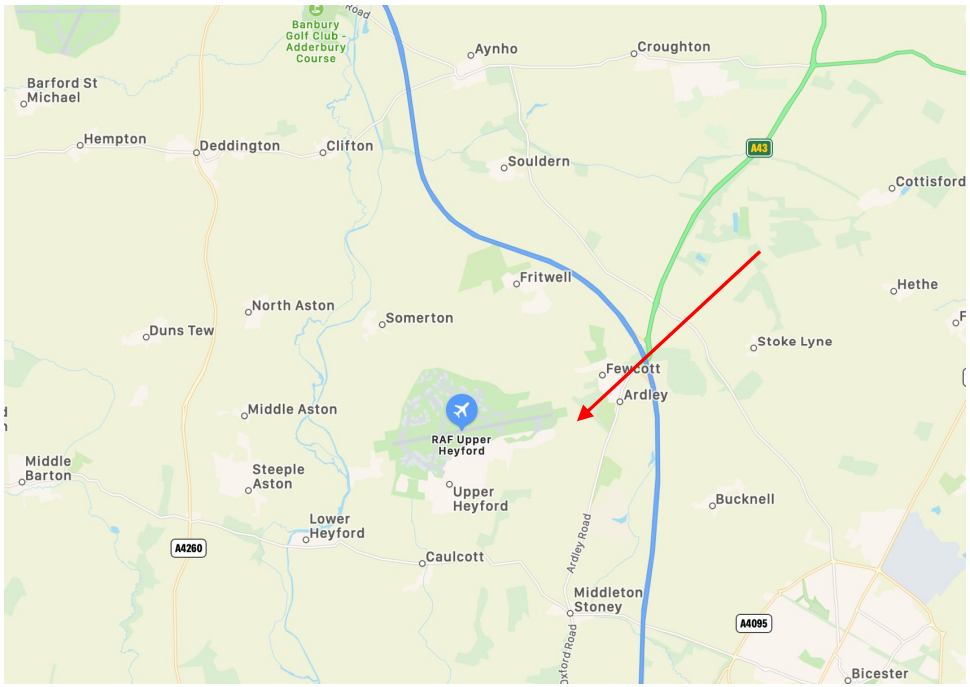
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Annex A

SITE LOCATION

NOTE: *Site indicated by red arrow. Due to the size of the Site area, there are multiple access and egress.*





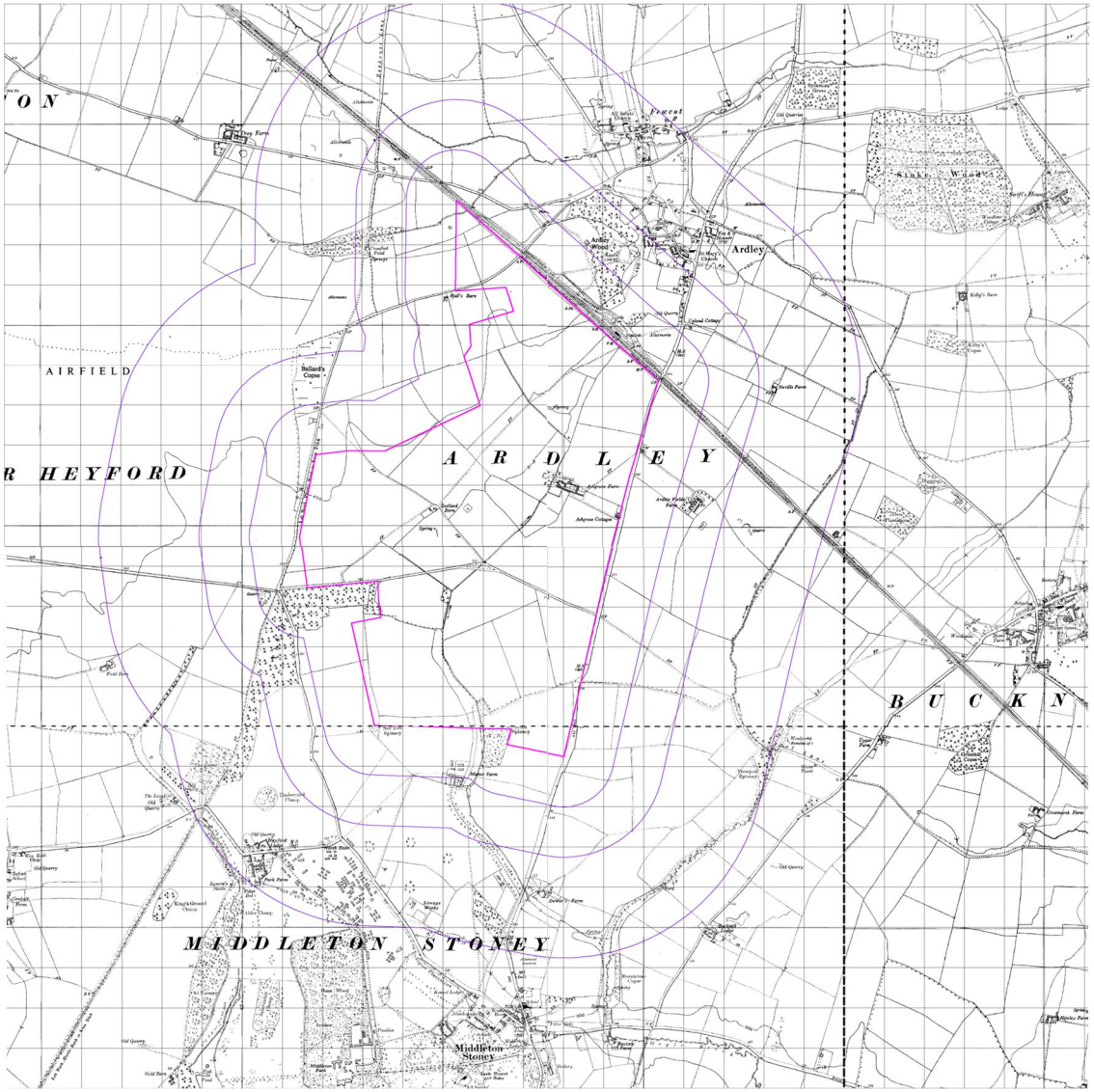
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Annex B

HISTORIC MAPPING



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Annex C

BOMB RAIDS WWI

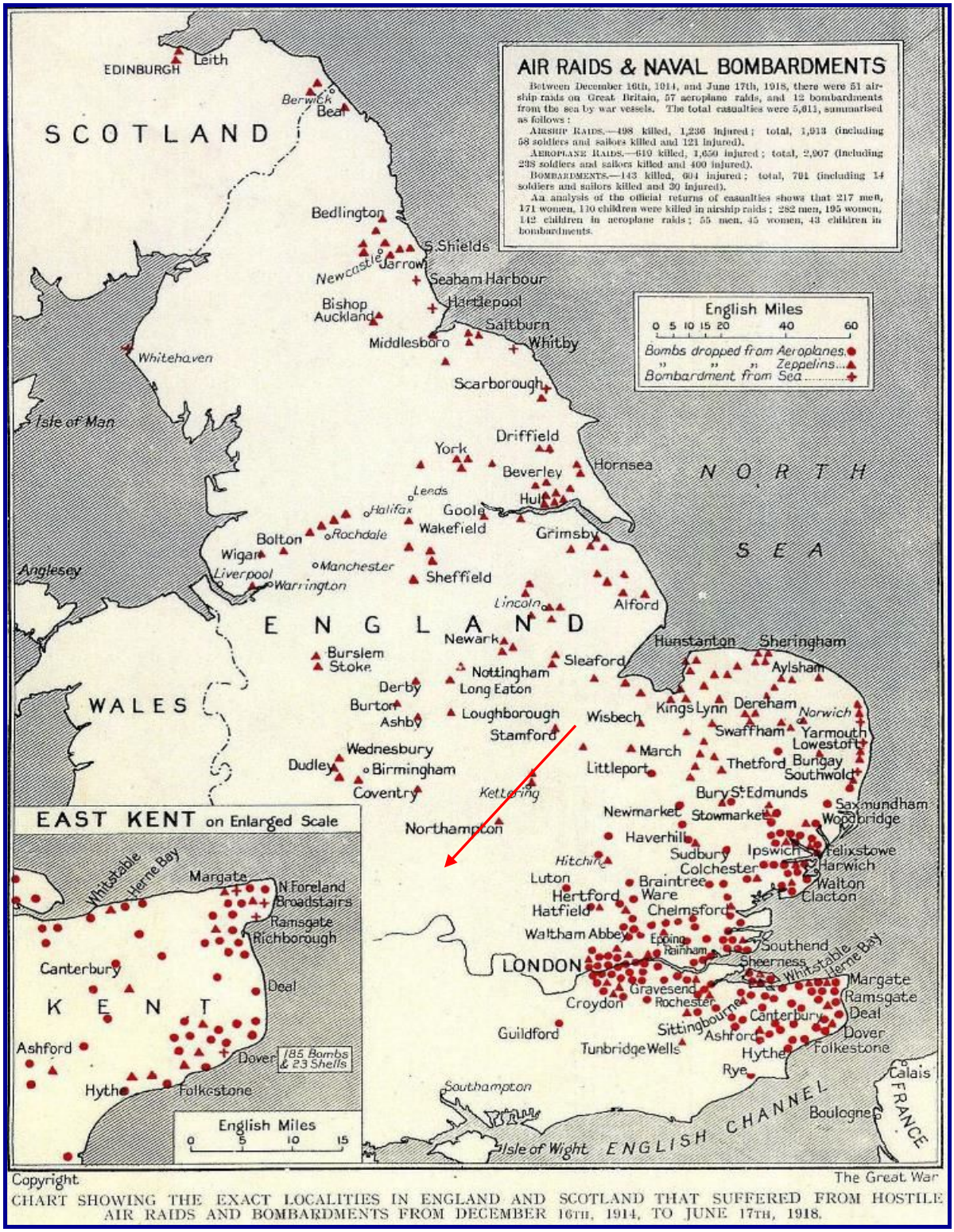


CHART SHOWING THE EXACT LOCALITIES IN ENGLAND AND SCOTLAND THAT SUFFERED FROM HOSTILE AIR RAIDS AND BOMBARDMENTS FROM DECEMBER 16TH, 1914, TO JUNE 17TH, 1918.

NOTE: Site indicated by red arrow.

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Annex D

EXPLOSIVE ORDNANCE SAFETY AND INFORMATION

UNEXPLODED ORDNANCE

Since the end of WWII, there have been a limited number of recorded incidents in the UK where bombs have detonated during engineering works, though a significant number of bombs have been discovered.

The threat to any proposed investigation or development on the site may arise from the effects of a partial or full detonation of a bomb or ordnance item. The major effects usually being shock, blast, heat and shrapnel damage. It should be noted that the detonation of a 50kg buried bomb could damage brick/concrete structures up to 16m away and unprotected personnel on the surface up to 70m away from the blast. Larger ordnance is obviously more destructive. Table 1 denotes recommended safe distance for UXO.

Table 1: Safety Distances for Personnel

UXO (Kg)	Safety Distances (m)			
	Surface UXO		Buried UXO	
	Protected	Unprotected	Protected	Unprotected
2	2O	200	10	20
10	50	400	20	50
50	70	900	40	70
250	185	1100	120	185
500	200	1250	140	200
1000	275	1375	185	275
3000	450	1750	300	450
5000	575	1850	400	575

Explosives rarely become inert or lose effectiveness with age. Over time, fuzing mechanisms can become more sensitive and therefore more prone to detonation.

This applies equally to items that have been submersed in water or embedded in silt, clay, peat or similar materials.

Once initiated, the effects of the detonation of the explosive ordnance such as shells or bombs are usually extremely fast, often catastrophic and invariably traumatic to the personnel involved.

The degradation of a shell or bomb may also offer a source of explosive contamination into the underlying soils. Although this contamination may still present an explosion hazard, it is not generally recognised that explosives offer a significant toxicological risk at concentrations well below that at which a detonation risk exists.

TYPES OF ORDNANCE

German Air Delivered Ordnance. Technical information on the nature and characteristics of the ordnance used by the German Air Force during both world wars has been available for a number of years. Assessment that began during the 1930's has continued to the present day. Experts have conducted research in many countries as part of national research programmes and as individual research projects. Consequently, a well-informed assessment of the threat posed by unexploded

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ordnance, and the hazards that they represent, can be made with a high degree of confidence.

Terminology. It should be noted that two terms used in bomb records can lead to some confusion as to their meaning and therefore significance. The term Unexploded Bomb (UXB) refers to a bomb that has fallen, failed to function and has been subsequently dealt with and removed from the site. The term Abandoned Bomb (A/UXB) refers to a UXB that could not be found or recovered, or the decision was taken not to pursue the matter further. Consequently the unexploded bomb remains where it came to rest when it was dropped or fell to the present day. It should also be noted the word 'bomb' can be used to describe an airdropped bomb or a shell as in some cases no differentiation was made and the term was interchangeable.

Abandoned Bombs. The records of known abandoned unexploded bomb locations in the London area were released in response to a written Parliamentary Question from Simon Hughes. (Hansard: Volume; 282. Dated 15th October 1996). The information was provided by the Ministry of Defence (MOD) and supplied under an indemnity.

Explosive Ordnance Failure Rates. Over the course of both World Wars a considerable quantity of ordnance dropped on UK targets failed to function as designed and subsequently penetrated the ground without exploding. Information gathered during the war by the MOD and its research partners provide typical failure rates for different types of ordnance. Figures significant to this study are:

- 10% of all German airdropped bombs failed to function as intended.
- 30% of all anti-aircraft and other types of shells failed to function as intended.

Deductions & Considerations. The following points were considered as part of the assessment and have been given due consideration:

Records were found that indicated that the general area was subjected to heavy bombing.

Bombs, which struck previously, hit or burned out targets and did not function; consequently their impact was unseen and therefore no report was ever made.

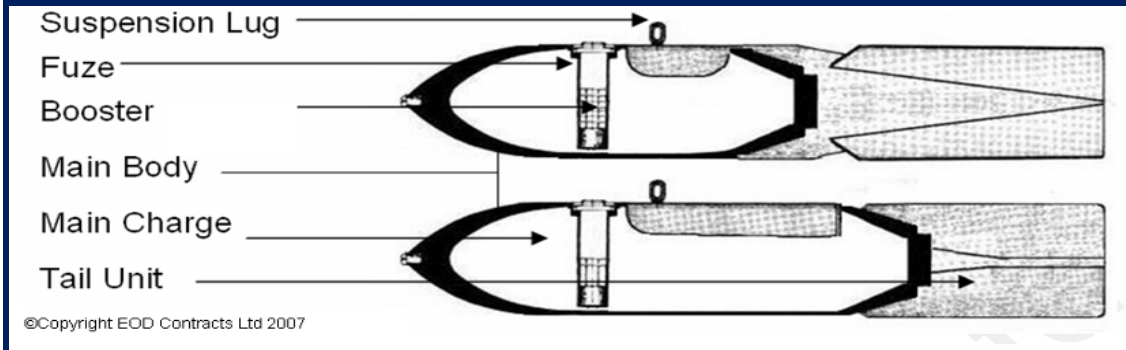
In all likelihood, the local anti-aircraft battery would have fired a far higher number of shells than the bombers dropped HE bombs. Contamination by anti aircraft shells cannot be rules out.

Generic German Bomb Types. The majority of German bombs dropped were 50kg in weight, accounting for approximately 16% of the total bombs dropped. The range of common bombs increased in weight to a maximum of 1700kg. Regardless of size, German bombs were fitted with one or more Electrical Condenser Resistance (ECR) fuzes many of which included a mechanical component. The fuzes were mounted transversely in the bomb body with the booster directly below, and in contact with, the fuze. The booster; sometimes referred to as the Gaine, is composed of a sensitive explosive material (Picric Acid). Picric Acid is known to deteriorate over time becoming increasingly unstable. The internal layout of two common German bombs and a German fuze is shown in Figures 6.1 & 6.2.

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FIGURE 1: Generic German Bomb Design.

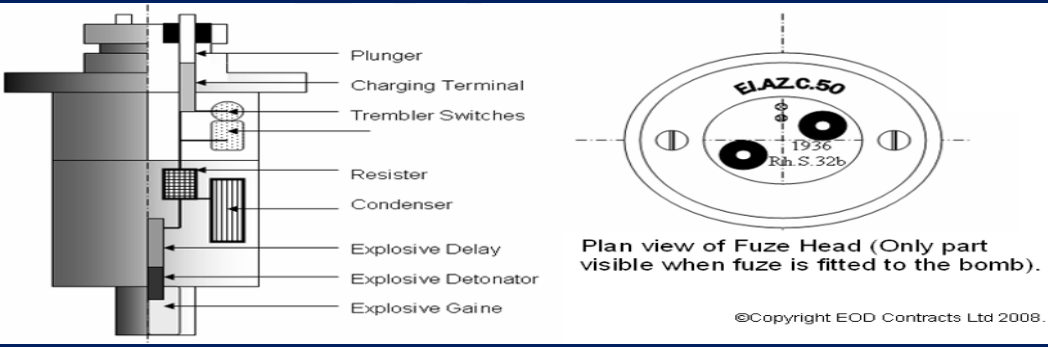
Graphic Cross Section through the most common German bombs (50kg)



NOTE: the diagram shows that there can be a significant difference in the quantity of High Explosive contained within bombs of similar size and shape; the Grade 1 bomb on the bottom having 30% more HE than the Grade 2 shown at the top. This serves to demonstrate the importance of an accurate identification of any item of UXO.

FIGURE 2: Generic German Bomb Fuze Design.

Graphic Cross Section through a typical German fuze (ECR)



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FIGURE 3: Range of HE bombs dropped on the United Kingdom.



NOTE: The smaller sub-munitions (Bomblets) seen to the right, ranged in size between 1 and 3kg, were dropped in large numbers and were intended as incendiary bombs, anti-personnel bombs or as bombs filling both roles. The smaller bomblets were dropped in larger container bombs designed to hold between 360 and 620 of the bomblets. The containers were designed to burst open at a predetermined height above ground level, dispersing the bomblets over a wide area. Air raid damage was far greater by using both incendiary, and HE bombs on a single raid. The fires started by the incendiaries being rapidly spread by the blast waves from the HE bomb. This scenario was shown to devastating effect on the 14th February 1945 in the German city of Dresden. Where fires started and spread by the bombing increased to a point where the oxygen was being sucked into the flames at such a high speed that the fire became a “Fire Storm”. At the time the city's population had increased due to a high number of refugees fleeing the Russian advance to the east, the exact civilian death toll from fire and suffocation will never be known, but is considered to be somewhere between 25,000 and 100,000.

High Explosive (HE) Bomb. Some of the most common type of ordnance to be dropped on the United Kingdom, HE bombs are often the type encountered as UXBs. Relatively thick cased, they are still recovered in remarkably good condition. Ranging in size from 50 to 1700 kg, their typical release height (1,500m) allowed them to penetrate deep into the ground as a result of design or flaw. Towards the end of the bombing campaign, as steel became scarce the German Engineers produced a range of bombs that used steel reinforced concrete as the bomb body. Figure 6.3 shows the range of steel HE bombs dropped on the UK.

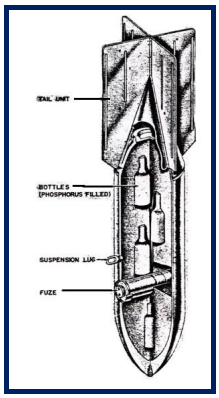
Incendiary Bomb. The larger incendiary bombs, containing bottles of white phosphorus and an incendiary mixture contained within a thin steel case were designed to burst on contact with the ground. A fixed dispenser on the aircraft delivered the smaller type of bomb or ‘Bomblet’ to the target area in container bombs or; both types of container would open dispersing the smaller Incendiary bombs. Relatively small and light they were unlikely to penetrate the ground to any significant depth. However, once concealed in bomb damage rubble or below water they were easily missed and are still unearthed today from in-fill and drained land. Later versions of the incendiary bomb contained an additional explosive charge used as a short delay “Booby Trap” device that contained a significant amount of high explosive. The Booby Trap component was designed to kill or injure fire fighters and hinder the damage control. See Figure 4.

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FIGURE 4: Incendiary Bombs.

Common German Incendiary Bombs





Left, 1kg incendiary bomblet, and right a 50kg incendiary bomb containing bottles of white phosphorus.

NOTE: Incendiary bomblets were made of a flammable alloy similar in appearance to aluminium, which resists corrosion well. The tail unit was made of thin tin-plate steel and is more prone to have rusted away. Some Incendiary models were fitted with a High Explosive (HE) steel nose. With the tail and explosive nose attached the bomb was 480mm long.

Blast Bomb / Parachute Mine. The parachute mine was extensively used on land and at sea and was fitted with specialist fuzes designed to trigger the weapon at a predetermined altitude, water depth or to switch on other magnetic influence mechanisms to trigger the weapon when a ship approached (Magnetic or Acoustic influence). While early versions were based on the standard 1000kg SD Bomb case others were specially designed and manufactured with an aluminium body, making them extremely difficult to detect using magnetometers. The thin cased versions would normally disintegrate on impact on land and are normally considered to pose little threat to work on land based projects, but the risk increases significantly on projects over water or in marshland. Thicker cased versions however will survive impact and pose a significant risk regardless of the local ground conditions. (See Figure 5)

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FIGURE 5: Common Airdropped Mines.

Parachute & Ground Mines



NOTE: all mine fuzes were designed to arm after deployment from the ship, submarine or aircraft, some fuze designs incorporated anti-removal booby traps. Unexploded mines found today are the result of a failure within the arming mechanism or procedure whereby the mine never fully armed. Sudden shock or jarring of a weapon in this state has the potential to complete the arming sequence and could result in the mine detonating with lethal consequences.

Non-Steel Cased Bombs. Used primarily in the construction of training or practice bombs, some high explosive variants were introduced towards the end of the war. With resources running scarce, German Engineers produced a small number of blast bombs with a concrete body. The design utilised a steel framework onto which concrete was cast. The explosive filling was also contained within a thin steel container within the bomb body. Very few “concrete” bombs were dropped on the UK. In common with standard steel cased weapons, this type of bomb can be detected using standard magnetometer detection techniques (albeit; providing a smaller ferromagnetic signature than its all steel counterparts). This type of bomb represents a very small percentage of the total number of bombs dropped worldwide and are not considered a significant threat, particularly when viewed from an overall bomb threat in the UK.

Anti-Personnel Bomb. Generally these were small weapons of 1-3 kilograms in weight and are often referred to as ‘Bomblets’ and possessing similar ground penetration ability as the Incendiary Bomblets. They were often located during the post-raid searches. This type of bomb has been recovered within the bomb rubble being cleared or used as in-fill on construction projects and poses the same potential to function as the Incendiary bomb with a greater potential to cause localised casualties.

Specialist Bomb. These types of bombs were designed to meet a specific mission requirement. Typically, this would be a design modification or special fusing to enable the bomb to destroy hardened/armoured targets or deep buried and sub-marine targets. Similar to the more common HE bombs, they differ in that they rarely contain large amounts of high explosive. Therefore the consequence of a detonation is reduced but remains a significant risk, particularly when the detonation occurs on or near the surface.

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Depth Bombs & Depth Charges. These types of weapons were designed to meet a specific mission requirement. Typically, the modifications would include the type of explosive filling and special fusing to enable the bomb to penetrate to a significant depth into the ground or water before detonating. Depth bombs intended for maritime attack and sub-marine targets would be fitted with one or more fuzes, one of which would be a hydrostatic fuze designed to detonate the bomb at a predetermined depth. The bomb would be fitted with an anti skip ring to reduce the deflection of the bomb as it entered the water. Similar in many ways to Depth Bombs, Depth Charges were exclusively designed to detonate at a predetermined depth. This was achieved by fitting the Charge with a short time delay or hydrostatic fuze. Depth bombs; having a similar configuration to general purpose bombs had the potential to penetrate deeply into the sea bed where an attack occurred in the relatively shallower water of a dock.

Unmanned Rocket Bombs & Missiles. The most famous in this category of weapons were the V1 (Fi103 flying bomb) commonly known as the Doodlebug and the Larger V2 (A4 missile). Both V1 & V2 with high explosive warheads containing 850kg & 1000kg (respectively) represent some of the largest weapons to land in the United Kingdom. Both types were built in a similar manner to an aircraft and would generally disintegrate on impact even if the warhead failed to detonate. The impact would spread debris over a wide area which was difficult to miss and any resulting unexploded 'V' weapons were comprehensively dealt with at the time. For this reason they are rarely encountered on land. However, where a 'V' weapon landed in water the opportunity for the event to have been missed and/or follow-up action abandoned was greater and they continue to pose a significant risk. Other, less well known rocket bombs were also produced by the Luftwaffe to attack maritime targets. Some were equipped with TV/Radio guidance from the parent bomber. Two of the most common were the Fritz X which consisted of an adapted SD1400kg bomb and the Henschel Hs293 which was based on a smaller 500kg bomb. No record of one having been recovered on land as a UXB can be found but these large HE bombs are considered to pose a significant risk, particularly to maritime projects. No records were found to indicate this type of bomb was ever used on targets in the area.

Photoflash Bomb. This type of bomb was dropped by specialist "Pathfinder" aircraft and although this type of bomb can be included with the category of specialist bombs, it is worthy of specific comment due to the danger it may still pose. Photoflash bombs were designed to explode with a blinding flash, rather like a camera flashbulb. They were used to enable photographs to be taken of targets at night and also served to identify ground targets for other aircraft to attack. The speed at which the highly energetic filling detonated, and energy it produced in doing so, was significant. Although these bombs were thin skinned and are prone to corrosion the functioning of one can be compared to a high explosive bomb detonation.

High Explosive Shells & Projectiles. As mentioned previously, one of the most common sources of UXO contamination encountered in the United Kingdom is High Explosive Shells and Projectiles. This is most commonly found to be as the result of firing practice ranges, bombardment and anti-aircraft defence, the latter often positioned to defend Major cities and Strategic installations and ports from German Bombing. Anti Aircraft Shells and projectiles are generally smaller (Up to 4.7" inch diameter) than the airdropped bombs and as a consequence were more easily missed amongst the bomb rubble. However, coastal bombardment guns could fire a shell weighing 1000kg, (larger than most common airdropped bombs) and capable of significant ground penetration. The generic layout of a projectile can be found at Figure 6.6. It should be noted that the fatal incident on the German autobahn in 2006 was thought to be the result of a shell or projectile detonating, not an airdropped bomb as first reported.

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The Fuzes used in Anti-Aircraft Ammunition were designed to ensure the projectile would detonate in contact with the target, or at a pre-set altitude, or in close proximity to the target. The fuzes employed different means to achieve this, including; direct impact, or indirect impact, Barometric, Delay and Electro-magnetic influence. Some were fitted with more than one fuze, which served to reduce the chance of the projectile falling to earth and detonating. Artillery fuzes are activated during the firing process, using the projectile's acceleration or spin within the gun barrel to switch off the safety mechanisms. For this reason fired projectiles are considered more dangerous than unfired ones.

FIGURE 6: Generic Shell Design

Generic High Explosive (HE) Shells (recent finds on site around the UK)





Other Types of Ordnance. The following additional sources of ordnance types have been considered, and inherent risks taken account of:

Flares and Pyrotechnics. Flares and pyrotechnics were used for a variety of reasons throughout the war and continue to be found today in the most unlikely places. However, due to the thin casings of these weapons a high level of corrosion is likely to have occurred since manufacture. Depending on the specific nature of the weapon, this effectively renders them inert with the exception of any white phosphorous content or explosive gaine.

Land Service Ammunition (LSA). While as the name implies this type of ammunition was designed for use on land, it was also issued to naval personnel for close protection of vessels and their crew and to provide a limited offensive capability even to relatively small craft. This type of ammunition includes some shells and projectiles such as those covered previously. Other natures of LSA range from Small Arms Ammunition (SAA), having little or no high explosive content to Grenades, Mortars and Rockets which may pose a risk of detonation due to their explosive content and the design of their fuzes (impact) which; if subjected to sufficient shock or friction may result in the weapon functioning. (See Figure 7)

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FIGURE 7: Common Categories of Land Service Ammunition

Land Service Ammunition

Small Arms Ammunition



Grenades



Mortar Bombs

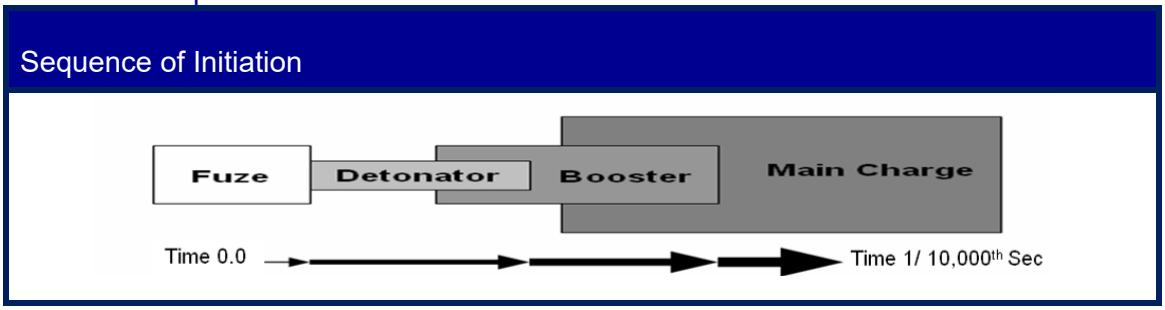


Initiation of Unexploded Ordnance. Explosive Ordnance is highly unlikely to spontaneously explode. The energetic chemical compounds, (Explosives) used in weapon manufacture are chosen to be as stable as possible and they all require a significant application of additional energy to create the right conditions for detonation to

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occur. If stored correctly, most explosive materials are designed to remain stable for the duration of their expected lifespan (typically 20 years). During this time, the correct functioning of the weapon is achieved by means of the 'Initiation Train' (See Figure 8).

FIGURE 8: Explosive Ordnance Initiation Train.



Initiation Train. This is a means by which, once the safety features have been switched off or removed, a chain reaction occurs through the weapon. Starting within the fusing system as a small ignition or spark, causing a detonator to explode, which in turn causes the booster charge to detonate with a greater energy and ending in the full detonation of the main explosive filling. Each part of the process has in-built safety features to prevent an unintended detonation. A failure in any of the components within the Initiation Train can result in a UXO. In the case of a UXB; the chain reaction has broken down and the Initiation Train is brought to a halt, albeit, a temporary one. There are a number of ways that sufficient energy could be introduced to the otherwise stable UXB / UXO that may allow the Initiation Train to set off once more, overcoming the initial reason for failure. In addition to subjecting the weapon to excessive heat, such as a fire, the most common methods to bring about an explosive detonation in such items are considered to be:

Direct impact onto the main body of the bomb by mechanical excavation or pile driving: Such an occurrence can cause the bomb to detonate, should the point of impact be on the bomb fuze; less force would be required to bring about a full or partial explosive detonation.

Re-starting the clock timer in the bomb fuze. Only a small percentage of bombs were fitted with clockwork fuzes. It is likely that corrosion has taken place within the fuze that may prevent the clockwork mechanism from functioning. However, the restarting of the clock is by no means a scenario that can be completely ruled out. This is considered to be one of the two most credible mechanisms by which sufficient energy could be introduced to the bomb and result in a detonation.

Induction of a static charge or exposure to an external power source (Electrical Services), causing a current in an electrical fuze. The majority of German bombs employed an electrical component within the fuzes, it is likely that corrosion would have taken place within the fuze mechanism and that it would no longer contain, or conduct sufficient electrical charge to initiate the bomb.

Friction initiating the sensitive fuze explosive. Some chemical constituents may have deteriorated, due to oxidisation. Components designed with a high degree of stability at the time of manufacture may no longer be as safe. **This is considered to be the most likely mechanism by which sufficient energy could be introduced to the bomb and result in a detonation.**

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Annex G

Unexploded World War 2 bomb found on a Soho building site

LONDON | LONDON | SOHO | Monday 3 February 2020, 3:33pm

Bomb disposal teams have removed an unexploded Second World War bomb from a busy area of central London.

Officers were called to a building site near Dean Street in Soho at 1.42pm after reports of the suspected explosive device.
Videos posted on Twitter showed people leaving buildings and gathering as police set up a cordon.

Witnesses described "lots of commotion" as the area surrounding the site was shut off.
A Royal Engineers bomb disposal unit was called in and removed the half-tonne device.
Shortly after 8.30pm, the Metropolitan Police's Soho team said the cordons in Oxford Street, Charing Cross Road, Shaftesbury Avenue, Lexington Street and Poland Street had been lifted.

A Ministry of Defence spokeswoman said: "An Army explosive ordnance disposal team has been called out to Soho to support the Metropolitan Police after discovery of a 500kg Second World War device.

"The Army EOD team have confirmed the bomb was safe to remove overnight to a location where it will be detonated," the spokesperson continued.
"Military personnel are regularly required to assist with the disposal of historic ordnance such as this, ensuring every situation is dealt with as quickly as possible for the safety of the general public."

https://www.itv.com/news/london/2020-02-03/suspected-world-war-2-bomb-discovered-at-building-site-in-soho

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Bomb disposal teams called to Luton after 'cannonball' found on a building site

ANGLIA | BOMB | CANNONBALL | POLICE

Friday 13 March 2020, 12:00pm



Bomb disposal teams and police cordoned off an area in Luton today (Friday 13) after what is thought to have been a cannonball was found on a building site.
Hitchin Road was closed between Stopsley Way and Stockingstone Road.

Police were called at around 10.30am after someone reported seeing something suspicious on a nearby construction site.

Bedfordshire police say the explosive ordnance disposal team were called as a precaution. The roads have since reopened.

https://www.itv.com/news/anglia/2020-03-13/bomb-disposal-teams-called-to-luton-after-cannonball-found-on-a-building-site

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Mirror

World War 2 bomb 'found yards away from West Ham's London Stadium' ahead of Arsenal clash

The Hammers' clash with Arsenal on December 9 could now be postponed although their match with Tottenham next Saturday will go ahead as planned



Police cordoned off an area after an object believed to be a bomb was found near the stadium (Image: PA)

A bomb that dates back to World War Two has reportedly been found just yards away from West Ham's London Stadium. Ongoing work on an apartment development nearby had to be halted after the bomb was discovered on Friday morning.

Police officers set up a 150 metre cordon around the site after they were called to the scene just before midday, reports the Sun .
The area has been declared safe by experts for the time being, with a specialist mining team set to attend the site on November 25.

West Ham's match with Arsenal scheduled for December 9 is now under threat of postponement if there is any change in the safety status of the site.

Due to the timeframe of the visit from specialists, the Hammers clash with Tottenham next Saturday November 23 is due to go ahead as planned.

“It’s crazy to think of all the people walking around here during the Olympics and we had no idea it was here.
"The bomb is in a tricky position, so could take up to two weeks to sort it out, which takes us into the second week of December.
“We will continue our efforts to safely establish what the object is but the park and its venues will continue to remain open.” “Between now and 25 November teams will be putting together a plan of what to do.” However, despite suggestions that the object is a bomb, a spokesman for the London Legacy Development Corporation (LLDC) who handle Olympic Park, were keen to stress the item is as yet unidentified.

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Andover Advertiser

02nd March 2019



Schools and homes have been evacuated after a Second World War bomb was discovered on a building site.

Army bomb disposal experts are on the scene after the unexploded device was found in Brent, north-west London.

Work on the site is expected to continue until at least Friday afternoon, Brent Council said.
A police cordon has been established at the scene and will be extended to around 300m on Friday morning, forcing more residents to leave their homes.
More than 50 people are currently staying at a rest centre set up at St Martin's Church on Mortimer Road, Kensal Green.

Several British Red Cross volunteers are on hand to provide support to affected residents.
Scotland Yard said it was called to The Avenue, near Brondesbury Park, at around 11.30am on Thursday following the discovery.

Nearby schools, businesses and residents were evacuated, and roads closed.

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Mail Online

5th February 2019

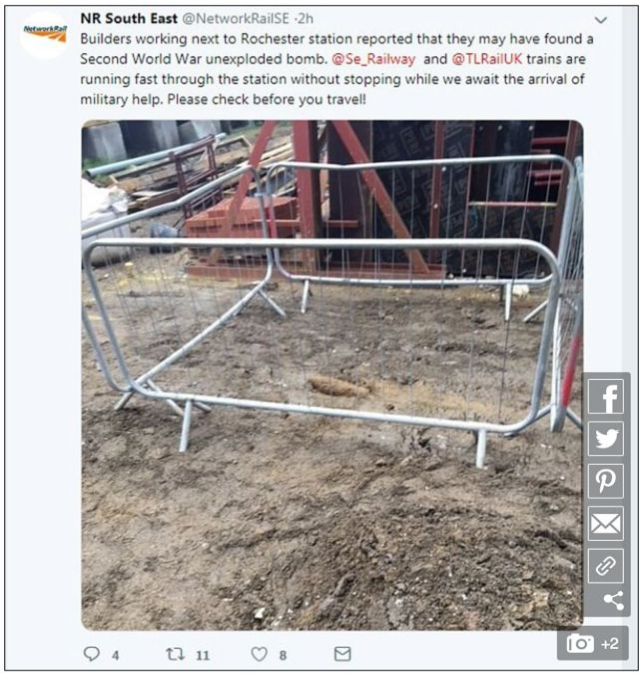
Railway station is evacuated and trains ordered not to stop when builders find unexploded World War Two bomb;

- Rochester Station was closed for over two hours after the bomb was found
- The military and British Transport Police were called in to deal with the threat
- While they worked trains were allowed to run fast through the station
- Builders at a nearby construction site found the shell in the mud at around 1pm

A railway station was evacuated this afternoon after a WWII bomb was discovered by builders working in Rochester, Kent.

British Transport Police and military personnel descended on the train station following the construction workers finding the unexploded shell underground.

The station was evacuated at 1.25pm and trains could run fast through the station while they worked to remove the hazard.



By 3pm - and in time for rush hour - the bomb had been safely removed by the bomb squad and Rochester Station could resume normal service.
South Eastern Tweeted: 'Builders working next to Rochester station reported that they may have found a Second World War unexploded bomb.
'@Se_Railway (Southeastern) and @TLRailUK (Thameslink) trains are running fast through the station without stopping while we await the arrival of military help. Please check before you travel!'
The WWII bomb was discovered on a building site off the station's land, but close enough that trains were unable to stop as a safety precaution.
Later on Network Rail updated passengers and wrote: 'The bomb has been removed and normal service has resumed. Thank you for your patience.'

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Annex F

Risk Assessment Tables

Table 1: Summary of Potential Contamination Sources

Source	Applicable	Not Applicable
Enemy Attack & Counter Measures		
Bombing WW1		☒
Manned Aircraft Bombing WW2 (potentially)	☒	
Unmanned V1 & V2 Rocket Attack		☒
Shelling		☒
Anti-Shipping Mines & Depth Charges		☒
Anti-Aircraft Shells & Rockets		☒
Beach Mines & Coastal Defences.		☒
Airfield/Key Point Defensive Mines/Charges		☒
Abandoned Unexploded Bomb (A/UXB)		☒
Migration of UXO		
UXO Migration in Rubble & Infill		☒
UXO Migration by Tide & River Current		☒
UXO Migration by Marine Dredging		☒
Shipwrecks		☒
Dispersal by Explosion, Fire & Accident		☒
Aeroplane Crash		☒
Private Collections		☒
MOD Facilities		
Bombing Range		☒
Artillery, Mortar & Tank Range		☒
Grenade Range		☒
Small Arms Firing Range		☒
Weapon Research & Development Facilities		☒
Ammunition Burial Grounds		☒
Docks & Harbour Facilities		☒
Offshore Ammunition Dumping Grounds		☒
Ammunition Storage & Manufacture Sites		☒
Airfields & Air Stations (close proximity)	☒	
Bombing Decoy Site		☒
Army Barracks & Camps		☒
MOD Training / Concentration Areas		☒
Home Guard & SOE Weapon Caches		☒

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Table 2: Airdropped Weapon Strike Indicators (UK)

Item	Increasing Potential level ⇨			
Site Location	Rural	Small Town	Brown Field Large Towns	**Cities**
Site Description and Use	**Greenfield or Agricultural Land**	Near Strategic Target	Adjacent to Strategic Target	Strategic Target
Site History	No history of Attack	Near area of Attack	Immediate Area Attacked	Direct Attack

Strategic Target: Military Installation, Industrial or Munitions Manufacturer, Power Station, Gas or Water Works, Port, Dock, Railway Yard, Decoy Site.

Table 3: Weapon Strike Records (UK)

Source	Availability			
Archive	None	Non-specific	Specific	**Extensive**
In-house	None	Non-specific	**Specific**	Extensive
Anecdotal	None	**Non-specific**	Specific	Confirmed

Table 4: Anti-Aircraft Weapon Strike Indicators (UK)

Item	Increasing Potential level ⇨			
Site Location	**Rural**	Town	City	Military Site
Fixed Battery Location	None	**General Area**	Nearby	Onsite
Mobile Battery	**Rural**	Town	City	Military Site

Military Site: Airfield, Port, Radar, Barracks, Depots, Arsenal or Similar.

Table 5: Abandoned Bomb Records (UK)

Item	Increasing Potential level ⇨		
In-house	**None**	Yes	On-site
Other	**None**	Yes	On-site

Table 6: Bomb Strike Density Assessment

Bombs & Mines	There were 3831 bombs of all types dropped over Oxfordshire, causing 20 deaths and 60 other casualties, as well as 65 head of cattle. Over 300 houses were damaged as well as other buildings and utilities.

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Table 7: Opportunity to have detected Bomb or Shell Strikes (UK)

Increasing Potential level ⇨
No bombs recorded
Good ARP cover
Significant development (carried out prior to WW2)
No significant ground cover
Bomb recorded within close proximity to Site boundary
Moderate ARP cover
Moderate development (across some areas of the site)
Frequent public access
Little ground cover
Bombs recorded within Site boundary
Poor ARP cover
Minimal development limited to shallow excavations (within some areas of the site location)
Infrequent public access
Moderate ground cover
Heavy bomb damage/total destruction
No ARP cover
None too little development
Controlled private access
Heavy ground cover, vegetation, ploughing or body of water

Table 8: Post Contamination Development Indicators (UK)

Nature of Post Contamination Development	Highlighted
	100% excavations of the entire site to below contamination depth.
	Significant development (across some areas of the site, post WW2)
	Moderate development (across some areas of the site)
	Minimal development (across some areas of the site)
	No development

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Table 9: Construction Activities Encounter Indicators

Activities	Highlighted
	Borehole Drilling
	Dynamic Sampling
	Shallow Trial Pit (within made ground)
	Services Trenching (within made ground)
	Bored (CFA) Piling
	Sheet Piling
	Shallow Excavations over extended area (within made ground)
	Deep Excavations over a limited area
	High Density Piles
	Deep Excavations over extended area
	Bulk Excavations

Risk Category Key	Mitigation Requirement
Green	No/Minimum Mitigation measures required (see document recommendations)
Amber	Medium risk of encountering items of UXO (or items there off) within the site boundary, mitigation required for safe systems of work.
Red	High risk of finding items of UXO (or items there off) within the site boundary, mitigation required for safe systems of work.

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SSSI Citations

COUNTY: OXFORDSHIRE **SITE NAME:** ARDLEY CUTTING AND QUARRY

Status: Site of Special Scientific Interest (SSSI) notified under Section 28 of the Wildlife and Countryside Act 1981(as amended)

Local Planning Authorities: Cherwell District Council, Oxfordshire County Council

National Grid Reference: SP540269

Ordnance Survey Sheet 1:50,000: 164 **1:10,000:** SP52 NW, NE

Date Notified (Under 1949 Act): 1972 **Date of Last Revision:**

Date Notified (Under 1981 Act): 1988 **Date of Last Revision:** 28 July 1999

Area: 40.13 ha 99.12 ac

Other information: Part of the site is managed by the Berkshire, Buckinghamshire and Oxfordshire Wildlife Tru

Description and Reasons for Notification

This site lies in the eastern part of the Oxfordshire Cotswolds along a section of the London to Birmingham railway line. It is of geological interest for its exposures of Jurassic rocks and has biological interest associated with limestone grassland, scrub, ancient woodland and wetland habitats. The soils are mostly shallow loams of the Aberford Series, interrupted in places by bands of ill-draining clays and outcrops of Northants sands giving rise to changes in the flora.

The railway cutting and southernmost quarry constitute one of southern England's key sites for Jurassic strata. It has exposures ranging from the lowest Bathonian Chipping Norton Formation to the White Limestone Formation thus exhibiting the entire local Bathonian development with the exception of the Forest Marble.

The Chipping Norton Formation is composed of oolitic limestones, sandy limestones, and mudstones. The formation is deeply excavated by sand-filled channels which themselves are topped by rootlet horizons and a lignite, indicating a period of emergence as low, marshy land. The overlying Sharps Hill Formation here consists of a thin oyster-bearing clay horizon and indicates the return of marine conditions.

The Taynton Formation, consisting of flaggy, oolitic limestones and a basal oyster bed was deposited in a relatively inshore site under turbulent conditions. The Hampden Marly Formation contains a rich fauna of oysters and brachiopods at a number of horizons. The cutting is the only site where an ammonite has been recovered from this formation and places it in the *Procerites progacilis* Zone, correlating it with the Acuminata Beds of the South Cotswolds and Somerset. The uppermost White Limestone Formation consists of approximately seven metres of micritic and peloidal limestones with subsidiary marls and clays. The site is the type locality for the Ardley Member of this formation. The abundant gastropods, bivalves and brachiopods preserved in these limestones enable correlations with the White Limestone Formation to the south in the Cotswolds, and with the Blisworth Limestone Formation in Lincolnshire and Northamptonshire.

This is a key site for its fossil marker horizons, palaeontology, sedimentary features such as channels and emergent surfaces, and its stratigraphy. The rocks of Ardley enable the Bathonian sections of the Midlands to be correlated with those of the Oxford area and Cotswolds and as such is of national importance for the understanding of the Jurassic Period in Britain.

The limestone grassland on the steep banks of the railway cutting and the adjacent quarry forms the main biological interest. It is one of the largest limestone grassland sites in the Oxfordshire Cotswolds where unimproved grassland is now very

rare.

The grassland is a characteristically tall sward either dominated by upright brome *Bromopsis erectus* or a mixture of brome and tor-grass *Brachypodium pinnatum*. The grassland contains a variety of species associated with limestone grassland including quaking grass *Briza media*, basil thyme *Acinos arvensis*, clustered bellflower *Campanula glomerata*, dropwort *Filipendula vulgaris* and sainfoin *Onobrychis viciifolia*. Other species which are locally common in the sward include horseshoe vetch *Hippocrepis comosa*, kidney vetch *Anthyllis vulneraria*, glaucous sedge *Carex flacca*, blue fleabane *Erigeron acer*, bee orchid *Ophrys apifera*, green-winged orchid *Orchis morio* and cowslip *Primula veris*, as well as a number of well-established introductions such as dragon's teeth *Tetragonolobus maritimus*, elecampane *Inula helenium* and broad-leaved everlasting pea *Lathyrus latifolius*.

The flora of the woodland includes lords and ladies *Arum maculatum*, wood anemone *Anemone nemorosa* and the uncommon green hellebore *Helleborus viridis*. The eastern edge of the quarry has a near vertical rock face with a seasonally dry pool at its base. This pool is contiguous with a low lying, marshy section containing willow carr and a flora dominated by soft rush *Juncus effusus*, reedmace *Typha latifolia*, reed canary grass *Phalaris arundinacea*, and water mint *Mentha aquatica*.

The invertebrate fauna is particularly rich along the railway cutting, with large populations of calcareous grassland butterflies like small blue *Cupido minimus*, brown argus *Aricia agestis*, dark green fritillary *Argynnis aglaja*, green hairstreak *Callophrys rubi* and Duke of Burgundy *Hamearis lucina*, all of which are uncommon in Oxfordshire. There is also a colony of the nationally rare four-spotted moth *Tyta luctuosa* whose larvae feed on field bindweed *Convolvulus arvensis*, as well as the nationally uncommon leaf beetles *Cryptocephalus hypochaeridis* and *C. moraei*.

The Cutting and adjacent quarry also support a notably wide range of vertebrates. These include part of a large population of the internationally protected great crested newt *Triturus cristatus* which spreads into several adjacent quarries.

Site Name: Ardley Trackways SSSI **County:** Oxfordshire

District: Cherwell

Status: Site of Special Scientific Interest (SSSI) notified under section 28 of the Wildlife and Countryside Act 1981, as substituted by Schedule 9 to the Countryside and Rights of Way Act 2000.

Local Planning Authority: Cherwell District Council

National Grid reference: SP540248 **Area:** 63.59 ha

Ordnance Survey Sheet: **1:50,000:** 164 **1:10,000:** SP 52 NW, SP 52 SW

Notification date: 19 January 2010

Reasons for notification:

Ardley Trackways SSSI is a nationally important site containing a rock horizon close to the top of the Shipton Member of the White Limestone Formation which, in the immediate vicinity of the SSSI, has revealed the presence of an array of fossilised trackways. These trackways were formed by the passage of a herd of sauropod dinosaurs, and several theropod dinosaurs, along a shoreline in what is now north-eastern Oxfordshire, during the Middle Jurassic (approximately 165 million years ago). Such extensive and relatively complete assemblages of trackways are otherwise unknown in England and are rare in the Middle Jurassic worldwide. The rarity of these trackways and their geological and environmental context for future research, mean that Ardley Trackways SSSI can be regarded as being of international importance. Based on the orientation of the trackways studied to date, the SSSI has been identified as containing a finite buried reserve of the trackway bed, which is accessible for scientific study.

General description:

Ardley Trackways SSSI consists of a series of working quarries lying either side of the railway line from Bicester to Banbury, to the south of the village of Ardley, about 4 km northwest of Bicester in Oxfordshire. The bedding-plane in which the trackways lie is near the top of the Shipton Member of the White Limestone Formation. The general trend of the trackways is on a bearing north-north-east to south-south-west, although a few trend north-east to south-west. The Shipton Member of the White Limestone Formation is of Bathonian age (Middle Jurassic – approximately 165 million years ago) and was deposited within a belt of near-shore lagoons on the north-western margin of the London Platform (a land mass extending over part of the area now consisting of south-eastern England, the southern North Sea and Belgium).

In locations where it has previously been exposed immediately adjacent to the SSSI, the bedding-plane surface has so far revealed the presence of over 40 more-or-less continuous trackways attributed to two-legged, carnivorous (theropod) dinosaurs and four-legged vegetarian (sauropod) dinosaurs. The trackways yield information relevant to our understanding of dinosaur locomotion, their burial and how they came to be preserved (taphonomy), the implications these trackways have for the classification (systematic taxonomy) of the footprints, the evolutionary relationships of the dinosaurs thought to be represented by the trackways, the taxonomic composition of this particular ecosystem, and insights into the behaviour (ethology) of these animals.

Evidence of a change in the stride (gait transition) associated with a temporary increase in speed on a theropod trackway has important implications for understanding the mechanics of the limb movement and the evolution of the oldest theropods. The interpretation of many of the sauropod tracks as having been formed by members of the Titanosauria (a large group of sauropods characterised by their wide-gauge limb posture), pushes the origins of this group back into the Middle Jurassic. This provides evidence to counter theories that titanosaurs originated in Gondwana (the continent consisting of Africa, Antarctica, Australia and South America) after the break-up of Pangea (the supercontinent consisting of Gondwana combined with Eurasia and North America) during the late Middle Jurassic. The similar directions of the trackways, combined with the relatively limited time period over which the tracks could have been formed, may suggest that the sauropods were moving in a mixed herd. It has also been speculated that the theropods were following the sauropod herds and that additional evidence from the site might provide insights into pack behaviour in large theropod dinosaurs.

Appendix E

Preliminary Geotechnical Risk Register

Geotechnical Hazard Identification – Desk Study Stage

Potential geotechnical hazards have been assessed in accordance with the general requirements of ICE/DETR Document 'Managing Geotechnical Risk' and the HE documents HD 41/15 and CD 622. The following pages set out the identified geotechnical risks and hazards which are associated with the proposed development and establish the approach which is to be taken to manage the risks including the geotechnical input and analysis.

Table E.1 is a preliminary assessment of possible geotechnical hazards at the site at Desk Study stage. This information is used to assist with site investigation design.

Table E.1: Possible geotechnical hazards

Hazard	Comment	Hazard status based on desk study	
		Could be present and / or affect site (i.e. Plausible)	Unlikely to be present and/or affect site
Uncontrolled Made Ground (variable strength and compressibility).	Will be present, as Made Ground has been proven in historical investigation. Likely to be limited in extent and depth, but recorded/noted in Field 3, Field 5, Ashgrove Farm and isolated areas around the site.	✓	
	Historical landfill in the north-west of the site, to the east of the B430. The proposed rail line connection from the rail terminal to the mainline passes across / through the former Ardley Quarry / Ardley Landfill.		
Soft / loose compressible ground (low strength and high settlement potential).	In areas of superficial deposits (e.g. Alluvium) and rock joint / weathering profiles.	✓	
Shrinkage/ swelling of the clay fraction of soils under the influence of vegetation.	Clay in areas of superficial deposits and weathered rock. Likely to be limited in extent and depth.	✓	
Variable lateral and vertical changes in ground conditions.	Variations between rock and superficial soils (Alluvium and Head Deposits). Variations in rock material strength, with varied lithological units (limestone, marl, mudrock and siltstone) within the geological units. Variations in rock mass characteristics (fracture spacing, aperture, infilling etc). Variations in the weathering profile of limestone or other bedrock.	✓	
High sulphates present in the soils.	The soils are not expected to have high sulphate concentrations. However, testing is required to prove this.		✓
Adverse chemical ground conditions, (e.g. expansive slag).	There is no evidence of such materials from historical investigation.		✓
Obstructions.	Including existing foundations at Ashgrove Farm, historical structures on the site and the drainage structure present in the north.	✓	

Hazard	Comment	Hazard status based on desk study	
		Could be present and / or affect site (i.e. Plausible)	Unlikely to be present and/or affect site
Difficult excavation.	Rock of differing strengths and fracturing will be encountered. The limestone rock is anticipated to be difficult to excavate and will require heavy duty plant / rippers, and may require wide spaced blasting.	✓	
Existing below ground structures to remain	Some existing buildings to be retained and potential vibration damage associated with excavation in close proximity. Some of the farm buildings are Grade 2 listed. The covered reservoir in the south-east of the site is to be retained. Review of the preliminary cut to fill indicates limited cut in this section of the site. Impact of construction will need to be accounted for in the design and in temporary works.	✓	
Shallow groundwater.	Potential for shallow groundwater at existing spring lines and close to the level of the existing streams.	✓	
	Potential impact on proposed surface water attenuation features.	✓	
Changing groundwater conditions.	Impact of groundwater in cuttings and excavations. Multiple groundwater bodies are expected, with the cut surface likely to intercept springs, leading to wet or flooded conditions.	✓	
Running sands and / or loose Made Ground, leading to difficulty with excavation and collapse of side walls.	Generally low risk across the majority of the site. However, likely to be a significant risk in the alluvial soils in the base of the valley and the landfill Made Ground in the north-east of the site (to the east of the B430).	✓	
Risk from flooding.	Risk from erosion due to surface water and groundwater flooding.	✓	
	Changes in surface water run-off to neighbouring land.		
Earthworks – suitability of site won material to be reused as fill.	Selective excavation of soils will be required. Differing engineering classifications likely to be assigned to the: Made Ground, Topsoil, Alluvium, Head, significantly (near surface) weathered limestone, partially weathered limestone, unweathered limestone and mudrock/ siltstone.	✓	
Earthworks – suitability of site won material to be reused as fill.	Significant processing of excavated limestone is likely to be required to allow reuse as an engineered fill. The limestone is currently processed to a 6F5 / 6F2 class from Dewars Farm Quarry adjacent to the site.	✓	

Hazard	Comment	Hazard status based on desk study	
		Could be present and / or affect site (i.e. Plausible)	Unlikely to be present and/or affect site
Earthworks - differential bearing capacity and settlement	Will vary according to: • The underlying ground conditions (rock or clay soils (Alluvium and Head Deposits)). • Varying rock units (limestone, marl, mudrock and siltstone). • The thickness and type of fill. • Transition from cut rock to fill.	✓	
Slope stability issues – general existing slopes.	There are no significantly steep existing slopes on the majority of the site. No evidence of slope instability during the walkover.		✓
	Steep slopes are present to the north in the railway cutting. These appear poorly maintained.	✓	
Slope stability issues - instability of cut and fill slopes and excavations.	Significant, steep, cut slopes are proposed, especially in the north. Slope stability will depend on: geology (rock or clay), rock mass quality, dip of the strata, fracturing, presence of unsupported boulders and blocks of rock and groundwater conditions. Fill slopes are also prosed for development plateaux and landscape bunds	✓	
Slope stability issues – retaining walls.	Significant sub-vertical cut is required in the north-west, associated with the intermodal terminal. Significant retaining walls will be required to support interbedded limestone and mudrock of the White Limestone Group and the Rutland Formation.	✓	
Effect of earthworks and construction on assets outside the site boundaries such as the railway cutting slopes.	The railway line is close to the northern site boundary. Consideration of earthworks and impacts on the railway will need to be considered.	✓	
Earthworks – poor bearing capacity of new fill.	Unlikely to be a significant issue. However, Topsoil will only be suitable for Class 4 fill (non-structural) and Alluvium and Head Deposits may need improvement to increase bearing capacity.	✓	
Faults	Faults are present in the north of the site and will need to be reviewed in detail as investigation progresses. These are not likely to be tectonically active.	✓	
Solution features in limestone.	Noted as low risk in the Groundsure database report and no evidence of cavities in the wider area.		✓
Cavities in the Superficial Deposits due to solution features.	As above		✓

Hazard	Comment	Hazard status based on desk study	
		Could be present and / or affect site (i.e. Plausible)	Unlikely to be present and/or affect site
Dissolution (associated with 'wet rock head').	The site is not in area affected by these hazards.		✓
Brine extraction.			✓
Mining.	Low risk from underground mining. Historical surface mining recorded to the east and north. No known mining on the site. Minerals are assessed in the separate Minerals Resource Assessment Report.		✓
Cambered ground with gulls possibly present.	No periglacial slopes nearby and the depth to clay strata is likely to be relatively deep.		✓
Relic slip surfaces.			✓
Solifluction.			✓
Impacts to SSSIs.	The Ardley Cutting and Quarry SSSI is on the northern site boundary, and the proposed connections from the rail terminal to the mainline will pass through it.	✓	
	The Ardley Trackways SSSI is off-site to the north-west, south, and south-east. Whilst specific impacts to the SSSI are likely to be low, the top of the Shipton Member will be exposed in the cut surfaces in the west of the site.	✓	
Problematic soils (silts and rewetting etc.).	Likely only to be a potential issue with soils won from the Alluvium, the Head Deposits and heavily weathered limestone (top 1.0m).	✓	

Appendix F

Plausible Source-Pathway-Receptor Contaminant Linkages

Summary of Potential Contaminant Linkages

Table F.2 lists the plausible contaminant linkages which have been identified. These are considered as potentially unacceptable risks in line with guidelines published in CLR 11 and additional risk assessment is required.

Source – Pathway – Receptor Linkages have been assessed in general accordance with guidance in CIRIA Report C552 (Rudland et al 2001) but with the addition of a 'no linkage' category (See Table F.1).

It should be noted that whilst the risk assessment process undertaken in this report may identify potential risks to site demolition and redevelopment workers, consideration of occupational health and safety issues is beyond the scope of this report and need to be considered separately in the Construction Phase Health and Safety Plan.

Table F.1: Consequence versus probability assessment.

		Consequence			
Probability		Severe	Medium	Mild	Minor
	High Likelihood	Very high risk	High risk	Moderate risk	Low risk
	Likely	High risk	Moderate risk	Low risk	Very low risk
	Low Likelihood	Moderate risk	Low risk	Low risk	Very low risk
	Unlikely	Low risk	Very low risk	Very low risk	Very low risk
	No Linkage	No risk			

Table F.2: Exposure model – preliminary risk assessment of source-pathway-receptor contaminant linkages

Sources	Possible Pathways	Receptors	Probability	Consequence	Risk Level	Comments	
Made Ground associated with isolated areas of historical development and field spreading. (metals, metalloids and PAH).	Ingestion, inhalation or direct contact.	Site users.	Likely	Medium	Moderate	Made Ground is only likely in the limited areas of historical development (Ashgrove Farm, Ashgrove Cottages, Scotland Barn, the water tower, the caravan park and isolated historical construction (drainage features and made-up tracks). Also associated with Field 3 and Field 5, where man-made items are prolific and have been spread. The source of Made Ground is unknown and may contain metals, metalloids and PAH. Contact with these materials is likely in limited areas of landscaping, especially at the proposed conversion of Ashgrove Farm. However, over the majority of the site, the risk will be low as the proposed development will comprise hardstanding and building footprints.	Mitigation measures may be required to break the S-P-R linkage. Mitigation would generally comprise materials management and reuse of Made Ground soils at depth in landscaped areas. Made Ground is unlikely to be suitable for use as fill in the construction platforms, but will be suitable for landscape bunds.
	Inhalation of fugitive dust.	Neighbours.	Low likelihood	Medium	Low		The risk of significant generation of dust is likely only during site development process and can therefore be controlled.
	Leaching through unsaturated zone.	Groundwater.	Low likelihood	Medium	Low		The site is underlain by high permeability strata and the waterbodies below the site are a Principal Aquifer. However, there are no active groundwater abstractions within 1km of the site and any impact from the small areas of isolated Made Ground will be limited.
	Surface run-off.	Aquatic ecosystems. Surface water and possible abstractors.	Low likelihood	Medium	Low		The topography of the site would cause surface water to run into on-site drainage ditches and off site. Mitigation would generally comprise materials management and reuse of Made Ground soils at depth, or in landscaped bunds on the edge of the site (a significant distance from the watercourses). There are no active groundwater abstractions within 1km of the site and any impact from the small areas of isolated Made Ground will be limited.
	Base flow from contaminated groundwater.		Low likelihood	Medium	Low		The site is underlain by high permeability strata. Groundwater flow is anticipated to be to the south-east, but also locally to the stream in the centre of the site. Any impact from the small areas of isolated Made Ground will be limited.
	Direct contact	Water supply pipes.	Likely	Medium	Moderate		It is possible that the Made Ground will contain contaminants of concern at levels in excess of the GAC. Direct contact with buried water supply pipes is therefore possible. However, it will be limited to small areas of the site.

Sources	Possible Pathways	Receptors	Probability	Consequence	Risk Level	Comments	
Made Ground associated with isolated areas of historical development and also associated with field spreading. (metals and metalloids).	Root uptake.	Landscape planting	Likely	Minor	Low	Made Ground is only likely in the limited areas of historical development (Ashgrove Farm, Ashgrove Cottages, Scotland Barn, the water tower, the caravan park and isolated historical construction (drainage features and made-up tracks). Although is also associated with Field 3 and Field 5, where man-made items are prolific and have been spread. The source of Made Ground is unknown and may contain metals and metalloids. Whilst root uptake is possible in areas of landscaping, the plants currently on site did not show any signs of growth issues.	
Made Ground associated with isolated areas of historical development and also associated with field spreading. (asbestos).	Inhalation of fugitive dust.	Site users.	Likely	Severe	Very High	Made Ground is only likely in the limited areas of historical development (Ashgrove Farm, Ashgrove Cottages, Scotland Barn, the water tower, the caravan park and isolated historical construction (drainage features and made-up tracks). Although is also associated with Field 3 and Field 5, where man-made items are prolific and have been spread. The source of the Made Ground is unknown and ACM and asbestos fibres may be present.	Contact with these materials is likely in limited areas of landscaping. However, over the majority of the site, the risk will be low as the proposed development will comprise hardstanding and building footprint. Mitigation measures may be required to break the S-P-R linkage. Mitigation would generally comprise hand picking and possibly disposal, along with materials management and reuse of Made Ground soils at depth in landscaped areas.
		Neighbours.	Unlikely	Severe	Low		The risk of significant generation of dust is likely only during site development process and can therefore be controlled. Distances to the boundaries from potential Made Ground sources means it is unlikely to result in significant Made Ground derived dust at the site boundaries.

Cont.....

Sources	Possible Pathways	Receptors	Probability	Consequence	Risk Level	Comments	
Landfill Made Ground materials present in the in the historical landfill in the north-east of the site, to the east of the B430. (metals, metalloids, PAHs and petroleum hydrocarbons, phenols, VOCs, SVOCs).	Ingestion, inhalation or direct contact.	Site users.	High Likelihood	Medium	High	Landfill is present in the north-west of the site. The source of Made Ground is landfill and may contain (metals, metalloids, PAHs and petroleum hydrocarbons, phenols, VOCs and SVOCs. This section of the site is proposed as a rail link to the main rail line.	Users of this part of the site are likely to be limited to rail workers, and therefore unlikely to come into contact with the soils. No landscaping likely for this part of the site (railway siding). Mitigation measures may be required to break the S-P-R linkage. Mitigation would generally comprise materials management and reuse of Made Ground soils at depth in landscaped areas and may require disposal, or the placement of a cover system.
	Inhalation of fugitive dust.	Neighbours.	Low likelihood	Medium	Low		The risk of significant generation of dust is likely only during site development process and can therefore be controlled.
	Leaching through unsaturated zone.	Groundwater.	Low likelihood	Medium	Low		There is a potentially significant source at the site, the site is underlain by high permeability strata and the waterbodies below the site are Principal Aquifers. However, the site forms part of the existing Ardley Landfill and the existing leachate collection systems will limit the risk that leachate from this small section of a larger landfill would have.
	Surface run-off.	Aquatic ecosystems. Surface water and possible abstractors.	Likely	Medium	Low		The topography of the site may cause surface water to run into off-site drainage ditches. Mitigation may be needed to limit contact between the landfill materials and surface water via the use of impermeable barriers.
	Base flow from contaminated groundwater.		Low likelihood	Medium	Low		There is a potentially significant source at the site, the site is underlain by high permeability strata and the waterbodies below the site are Principal Aquifers. However, the site forms part of the existing Ardley Landfill and the existing leachate collection systems will limit the risk that leachate from this small section of a larger landfill would have.
	Direct contact	Water supply pipes.	Low likelihood	Medium	Low		It is possible that the Made Ground will contain contaminants of concern at levels in excess of the GAC. Direct contact with buried water supply pipes is therefore possible. However, it will be limited to small areas of the site.

Sources	Possible Pathways	Receptors	Probability	Consequence	Risk Level	Comments	
Landfill Made Ground materials present in the in the historical landfill in the north-east of the site, to the east of the B430. (asbestos fibres and Asbestos Containing Materials (ACM).	Inhalation of fugitive dust.	Site users.	Likely	Severe	Very High	There is likely to be Made Ground in localised areas of the site, and ACM and asbestos fibres may be present. Users of this part of the site are likely to be rail workers, and therefore unlikely to come into contact with the soils. No landscaping is likely for this part of the site (railway siding). Mitigation measures may be required to break the S-P-R linkage. Mitigation would generally comprise materials management and reuse of Made Ground soils at depth in landscaped areas and may require disposal or the placement of a cover system.	
		Neighbours.	Likely	Severe	Very High	The risk of significant generation of dust is high during site development process but can be controlled. This part of the site is proposed as a railway sidings and risk of dust generation is high and cannot be controlled during operation. Mitigation measures may be required to break the S-P-R linkage. Mitigation would generally comprise materials management and reuse of Made Ground soils at depth in landscaped areas and may require disposal or the placement of a cover system.	
Petroleum hydrocarbons and VOCs associated with spills and leaks from tanks at Ashgrove Farm.	Ingestion, inhalation or direct contact.	Site users.	Likely	Medium	Moderate	Spills and leaks from vehicles and tanks on site are likely. However, the extent of contamination will be very limited (relative to the size of the site). Testing required to confirm.	Contact with these materials is likely only in limited areas. However, over the majority of the site, the risk will be low as the proposed development will comprise hardstanding and building footprints. Mitigation measures may be required to break the S-P-R linkage. Mitigation may comprise small scale excavation, reuse of Made Ground / impacted soils at depth in landscaped areas and possibly small scale bio-remediation or disposal.
	Vapours.	Neighbours.	Low	Medium	Low		No significant vapours detected in historical investigations.
	Inhalation of fugitive dust.	Neighbours.		Medium	Low		The risk of significant generation of dust is likely only during site development process and can therefore be controlled.
	Leaching through unsaturated zone.	Groundwater and possible abstractors.	Low	Medium	Low		The site is underlain by high permeability strata and the waterbodies below the site are a Principal Aquifer. However, there are no active groundwater abstractions within 1km of the site and any impact from the small areas of isolated Made Ground will be limited. Historical investigations did not identify a significant risk.

Sources	Possible Pathways	Receptors	Probability	Consequence	Risk Level	Comments	
Petroleum hydrocarbons and VOCs associated with spills and leaks from tanks at Ashgrove Farm. (Cont…)	Surface run-off.	Aquatic ecosystems. Surface water and possible abstractors.	Low likelihood	Medium	Low	Spills and leaks from vehicles and tanks on site are likely. However, the extent of contamination will be very limited (relative to the size of the site). Testing required to confirm.	The topography of the site would cause surface water to run into on-site drainage ditches and potentially off site. Mitigation would generally comprise materials management and reuse of Made Ground soils at depth in landscaped areas. However, no significant impact identified in previous investigations.
	Base flow from contaminated groundwater.						The site is underlain by high permeability strata and the waterbodies below the site are a Principal Aquifer. However, there are no active groundwater abstractions within 1km of the site and any impact from the small areas of isolated Made Ground will be limited. Historical investigations did not identify a significant risk.
	Direct contact	Water supply pipes.	Likely	Medium	Moderate		It is possible that the Made Ground will contain contaminants of concern at levels in excess of the GAC. Direct contact with buried water supply pipes is therefore possible. However, it will be limited to small areas of the site.
PCBs and oils from transformers in the electricity sub-station on site	Ingestion, dermal contact	Site users	Unlikely	Medium	Very Low	An electrical substation has been present on the site, which has the potential to have leaked. Testing required to confirm.	Contact with these materials is likely in limited areas. However, over the majority of the site, the risk will be low as the proposed development will comprise hardstanding and building footprints. Mitigation measures may be required to break the S-P-R linkage. Mitigation may comprise small scale excavation, re-use of Made Ground / impacted soils at depth in landscaped areas and possibly small scale bio-remediation or disposal.
	Inhalation and ingestion of dust.	Site users Neighbours	Unlikely	Medium	Very Low		The risk of significant generation of dust is likely only during site development process and can therefore be controlled.
	Leaching through unsaturated zone	Groundwater	Unlikely	Medium	Very Low		The site is underlain by high permeability strata and the waterbodies below the site are a Principal Aquifer. However, there are no active groundwater abstractions within 1km of the site and any impact from the small areas of isolated Made Ground will be limited.

Sources	Possible Pathways	Receptors	Probability	Consequence	Risk Level	Comments
Ground gases (carbon dioxide and methane) from organic materials in the Made Ground below the site.	Migration, build up and asphyxiation.	Site users.	Unlikely	Medium to Severe	Low to Moderate	Ground gas concentrations from Made Ground and Alluvium are unlikely to be significantly elevated.
		Neighbours.	No Linkage			There are no neighbours within influencing distance of the proposed development.
Ground gases (methane) from organic materials in the Made Ground.	Migration, build up and explosion.	Site users.	Unlikely	Medium to Severe	Low to Moderate	Ground gas concentrations from Made Ground and Alluvium are unlikely to be significantly elevated.
		Neighbours.	No Linkage			There are no neighbours within influencing distance of the proposed development.
		Buildings on site.	Unlikely	Medium to Severe	Low to Moderate	Ground gas concentrations from Made Ground and Alluvium are unlikely to be significantly elevated.
		Buildings on adjacent sites.	No Linkage			The closest building to the Made Ground and Alluvial materials are built on an historical landfill and the site is not considered a risk to these properties
Ground gases (carbon dioxide and methane) from the Ardley landfill located to the east of the site.	Migration, build up and asphyxiation.	Site users.	Likely	Medium to Severe	Moderate to High	Ground gas concentrations from the off-site landfill have been reported as significantly elevated, although gas flow was not recorded. Rocks on site are permeable and will transmit ground gas. Ground gas protection measures may be required.
Ground gases (methane) from organic materials from the Ardley landfill located to the east of the site.	Migration, build up and explosion.	Site users.	Likely	Medium to Severe	Moderate to High	
		Buildings on site.	Likely	Medium to Severe	Moderate to High	

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Sources	Possible Pathways	Receptors	Probability	Consequence	Risk Level	Comments	
Petroleum hydrocarbons and phenols contaminated groundwater from the former RAF Upper Heyford from its use as an airbase and leaks from POL storage.	Ingestion, or direct contact.	Site users.	Low likelihood to Likely	Medium	Low to Moderate	Petroleum hydrocarbons and phenol have been historically recorded in groundwater on the immediate western edge of the site. Although the risks were classified as low in historical reports and the risks were reviewed and the proposed remedial measures approved by the Environment Agency. There is the potential for petroleum hydrocarbons and phenols to be present.	If present petroleum hydrocarbons and phenol may be present in groundwater exposed in cut rock faces.
	Surface run-off.	Aquatic ecosystems.	Low likelihood to Likely	Medium	Low to Moderate		If present in groundwater petroleum hydrocarbons and phenol may emerge in spring lines (natural or made by cut surfaces) and migrate as surface water to the stream in the central-east of the site.
		Surface water and possible abstractors.	Unlikely	Medium	Very Low		No surface water abstractions in close proximity to the site.
	Base flow from contaminated groundwater.	Aquatic ecosystems.	Low likelihood to Likely	Medium	Low to Moderate		If present in groundwater petroleum hydrocarbons and phenol may contaminate a wide area, as the groundwater below the airfield is in continuity with the wider aquifer.
		Surface water and possible abstractors.	Unlikely	Medium	Very Low		No surface water abstractions in close proximity to the site.

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Sources	Possible Pathways	Receptors	Probability	Consequence	Risk Level	Comments	
PFOS / PFAS contaminated groundwater from the former RAF Upper Heyford from its use as an airbase and the potential use of firefighting foam.	Ingestion, or direct contact.	Site users.	Low likelihood to likely	Medium to sever	Low to Very High	PFOS / PFAS may be present in groundwater from the former RAF Upper Heyford. The site is located at the edge of the former runway and firefighting foams may have been used. To Hydrock's knowledge, no testing has been historically undertaken. There is the potential for PFOS / PFAS to be present.	If present in groundwater PFAS / PFOS may emerge in cut rock faces.
	Surface run-off.	Aquatic ecosystems.	Low likelihood to likely	Medium to sever	Low to Very High		If present in groundwater PFAS / PFOS may emerge in spring lines (natural or made by cut surfaces) and migrate as surface water to the stream in the central east of the site.
		Surface water and possible abstractors.	Unlikely	Medium to sever	Very Low to Low		There are no surface water abstractions in close proximity to the site.
	Base flow from contaminated groundwater.	Aquatic ecosystems.	Low likelihood to likely	Medium to sever	Low to Very High		If present in groundwater PFAS / PFOS may contaminate a wide area, as the groundwater below the airfield is in continuity with the wide aquifer.
		Surface water and possible abstractors.	Unlikely	Medium to sever	Very Low to Low		There are no surface water abstractions in close proximity to the site.
Asbestos fibres from insulation or asbestos-containing materials in the buildings.	Fugitive dust.	On Site	Likely	Severe	High	Asbestos may be present in existing buildings and in Made Ground. Careful removal from buildings will be required during demolition. However, removal under controlled conditions should limit release of fibres to the air and the ground.	
		Neighbours.	Unlikely	Severe	Low	The risk of significant generation of dust is likely only during site development process and can therefore be controlled.	

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Sources	Possible Pathways	Receptors	Probability	Consequence	Risk Level	Comments	
Agricultural chemicals (pesticides / herbicides)	Ingestion, inhalation or direct contact.	Site users.	Unlikely	Medium	Low	It is very likely pesticides and herbicides have been used on the site in the past. However, persistent chemicals are likely to be unlikely. Testing required to confirm.	Contact with these materials is likely in limited areas of landscaping. However, over the majority of the site, the risk will be low as the proposed development will comprise hardstanding and building footprint.
	Inhalation of fugitive dust.	Neighbours.	Unlikely	Medium	Low		The risk of significant generation of dust is likely only during site development process and can therefore be controlled.
	Leaching through unsaturated zone.	Groundwater and possible abstractors.	Unlikely	Medium	Low		The site is underlain by high permeability strata and the waterbodies below the site are a Principal Aquifer. However, there are no active groundwater abstractions within 1km of the site.
	Surface run-off.	Aquatic ecosystems.	Unlikely	Medium	Low		The topography of the site would cause surface water to run into on-site drainage ditches.
	Base flow from contaminated groundwater.	Surface water and possible abstractors.	Unlikely	Medium	Low		The site is underlain by high permeability strata and the waterbodies below the site are a Principal Aquifer. However, there are no active groundwater abstractions within 1km of the site.
Radon	Inhalation.	Site users.	No Linkage			BR211 indicates the site is in a low radon area and no radon protection is required.	