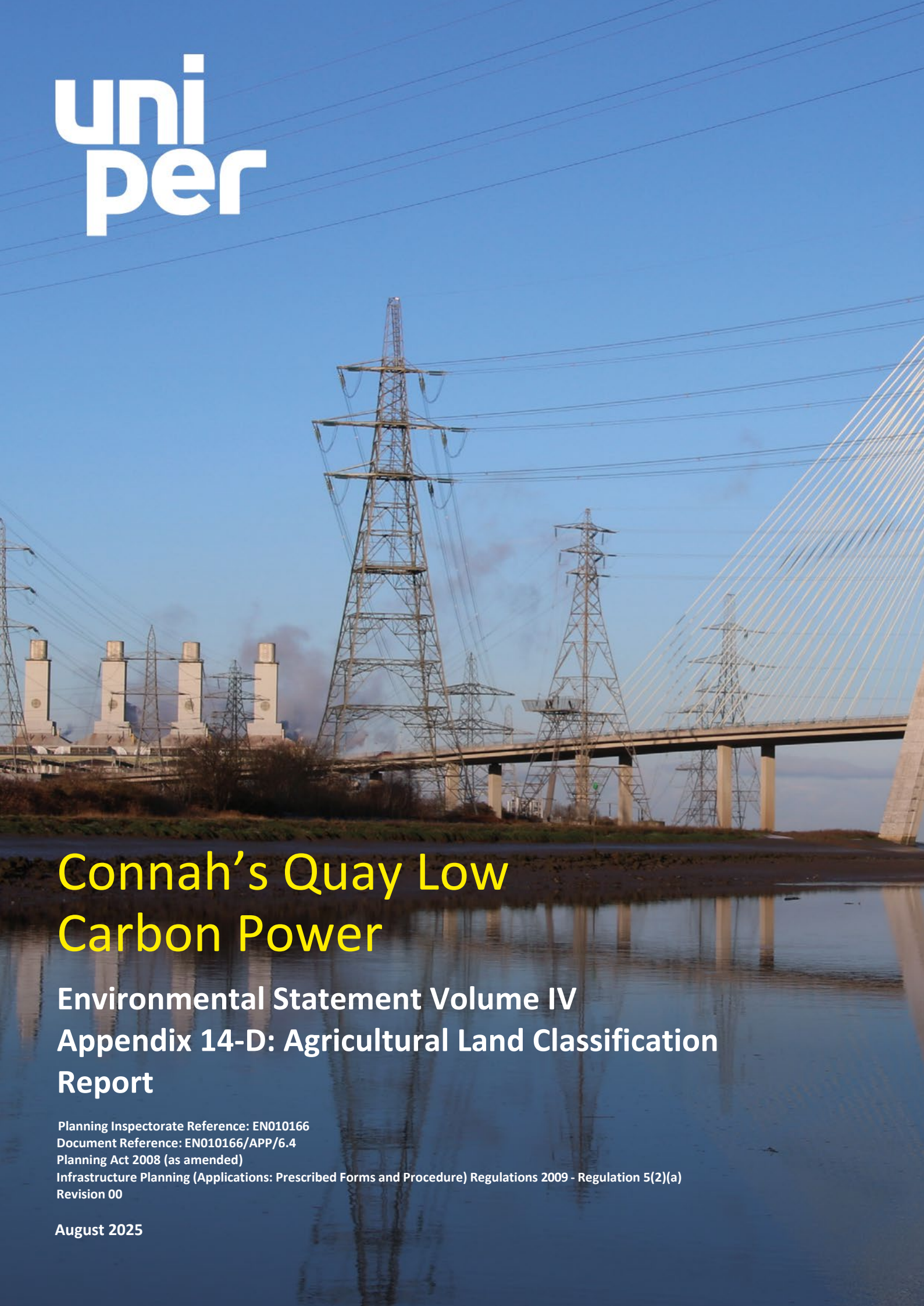

Connah's Quay Low Carbon Power

Environmental Statement Volume IV Appendix 14-D: Agricultural Land Classification Report

Planning Inspectorate Reference: EN010166
Document Reference: EN010166/APP/6.4
Planning Act 2008 (as amended)
Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009 - Regulation 5(2)(a)
Revision 00

August 2025

This report presents a survey of a larger area which was considered for the Proposed Development during the application and assessment process. As such there are areas surveyed and presented in this report which are no longer within the Order limits. This does not impact on the conclusions of this report.

ROBERTS
ENVIRONMENTAL LTD

Agricultural Land Classification Report

Connah's Quay, North Wales

July 2024

AECOM Ltd

Reference: 240317.PA.05

Agricultural Land Classification Report

Connah's Quay, North Wales

Client: AECOM Ltd

Reference:	Current Version:	Date:
240317.PA.05	Version 5.0	July 2024

Reference:	Previous Versions	Date
240317.PA.04	Version 4.0	June 2024
240317.PA.03	Version 3.0	June 2024
240317.PA.02	Version 2.0	April 2024
240317.PA.01	Version 1.0	March 2024

Author:	Checked / Approved by:
[redacted]	[redacted]
[redacted]	[redacted]
Position: Graduate Consultant	**Position:** Principal Consultant

Roberts Environmental Ltd.,
1 Croft Stairs,
Newcastle upon Tyne,
NE1 2HG

[redacted]

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Appendices

1. Scope & Objectives

The Services	Preparation of an Agricultural Land Classification (ALC) Report	
The Client	AECOM Ltd	
Appointment Details	The Services have been carried out in accordance with the Proposal dated 13 November 2023 and REL's Terms and Conditions of Engagement, (together "**the Agreement**") as accepted by the Client on 18 March 2024.	
Site Name	Land at Connah's Quay	
Site Address	Land at, and in the vicinity of, the existing Connah's Quay Power Station (Kelsterton Road, Connah's Quay, Flintshire, CH6 5SJ) ("**the Property**")	
Proposed Use	The proposed development is for a Combined Cycle Gas Turbine (CCGT) Generating Plant fitted with a Carbon Capture Plant (CCP).	
Information Sources (Where appropriate documents are contained in appendices with data extracts provided and summarised within pertinent sections of this report. List not exhaustive)	**Online Source**	Agricultural Land Classification (ALC) Database and Mapping, Natural Resources Wales (NRW), 2024.
		Welsh Government, Predictive Agricultural Land Classification (ALC) Map 2, accessed via DataMapWales, 2024.
		NRW, Post 1988 Agricultural Land Classification (Wales) Surveys, 2024.
		British Geological Survey (BGS) Database and Mapping.
		BGS Geoindex Web Mapping Service.
		BGS 1:50,000 scale Provisional Series, Geological Map, England and Wales, Sheet Number 108 (Flint), available on the BGS map portal.
		Google Historic Satellite Imagery.
		National Library of Scotland Historical Ordnance Survey England and Wales, 1930-1969 Maps.
	Documentation Source	Soil Classification for Soil Survey, Monographs on Soil Survey, Butler, B E (1980), Clarendon Press, Oxford.
		Soil Survey Field Handbook, Describing and Sampling Soil Profiles, Soil Survey of England and Wales, Technical Monograph No. 5, 1976.
		Meteorological Office (Met Office), 1989, Climatological Data for Agricultural Land Classification – Gridpoint Datasets of Climatic Variables, at 5km intervals, for England and Wales.
		MAFF, 1988, Agricultural Land Classification of England and Wales – Revised Guidelines and Criteria for Grading the Quality of Agricultural Land.
		Soils and their use in Wales, 1984, Soil Survey of England and Wales Memoir and accompanying 1:250,000 scale map.
	Previous Reports	A previous ALC and Soil Resources report is available for the area referenced as 'Proposed CO2 Connection Corridor' (undertaken to inform the HyNet Carbon Dioxide Pipeline DCO), dated August 2022 produced by Reading Agricultural Consultants Ltd, Ref: 9188. This report has been reviewed in Section8 of this report.

2. Site Details

National Grid Ref.	Approximate centre of the site: 327012, 371631
Site Area (ha)	c.80ha
Location	The site is located within land at, and in the vicinity of, the existing Connah's Quay Power Station (Kelsterton Road, Connah's Quay, Flintshire, CH6 5SJ). The nearest towns are Connah's Quay, located approximately 0.6 km to the south-east, and Flint, located approximately 0.8 km to the north-west (to their respective nearest extents).

Figure 1: Approximate Reporting Site Boundaries (indicated in red)

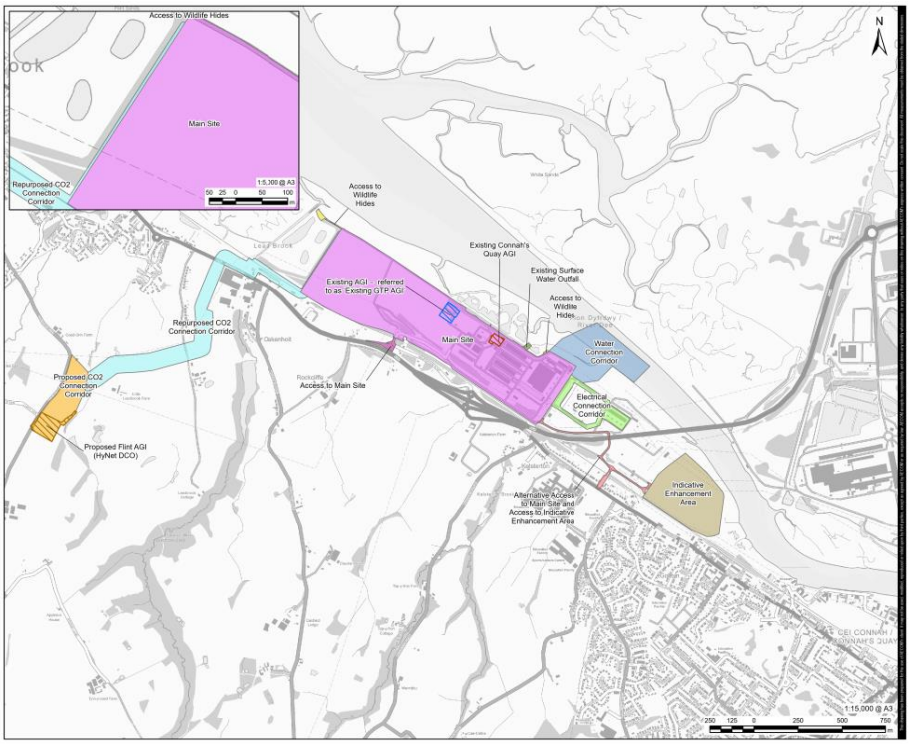

Figure 2: Proposed Site Layout Plan

Document Purpose

A desk-based study has been undertaken of the general site characteristics, including soil type(s) and ALC, using published data sources. This assessment has been made using available indicative soils and geology data to provide a predictive ALC grade for the site. Where available, Post-1988 ALC Surveys (undertaken at varying scales and levels of detail, ranging from 1:5,000 to 1:50,000 scale) have been consulted. Surveys included on this map provide the most detailed and up to date ALC grading following surveys between 1989 and 1999 by MAFF (now part of DEFRA).

Climatological data provided by the Met Office has been used to determine the overriding agroclimatic site limitations (if any), using interpolated values based on the central point of the site.

Publicly available Flood Risk mapping data, produced by Natural Resources Wales (NRW), has been reviewed as part of the assessment. No site-specific Flood Risk Assessment has been provided to inform this assessment.

A review of publicly available historic maps and Google Earth imagery has been undertaken to assess if significant Made Ground deposits may be anticipated as part of the site survey works.

3. Methodology

Agricultural Land Classification Survey Guidance

Ministry of Agricultural, Food and Fisheries (MAFF), Agricultural Land Classification of England and Wales – Revised October 1988

The ALC provides a framework for classifying land according to the extent to which its physical or chemical characteristics impose long- term limitations on agricultural use. The limitations can operate in one or more of four principal ways: they may affect the range of crops which can be grown; the level of yield; the consistency of yield and the cost of obtaining it. The classification system gives considerable weight to flexibility of cropping, whether actual or potential, but the ability of some land to produce consistently high yields of a somewhat narrower range of crops is also taken into account.

ALC grading is determined using the MAFF '*Agricultural Land Classification of England and Wales – Revised guidelines and criteria for grading the quality of agricultural land,* October 1988'. The above factors form the basis for classifying agricultural land into one of five grades (with Grade 3 land divided into Subgrades 3a and 3b since the guidelines were revised in 1988), ranked from Excellent (Grade 1) to Very Poor (Grade 5) (see **Table 1**).

Table 1: Definition of Agricultural Land Classification Grades

ALC Grade	Description
Grade 1	**Excellent Quality Agricultural Land** 'Land with no or very minor limitations to agricultural use. A very wide range of agricultural and horticultural crops can be grown and commonly includes top fruit, soft fruit, salad crops and winter harvested vegetables. Yields are high and less variable than on land of lower quality'.
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 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'.
Subgrade 3a (pre-1988 Grade 3)	**Good Quality Agricultural Land** 'Land capable of consistently producing moderate to high yields of a narrow range of arable crops, especially cereals, or moderate yields of a wide range of crops including cereals, grass, oilseed rape, potatoes, sugar beet and the less demanding horticultural crops'.
Subgrade 3b (pre-1988 Grade 3)	**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'.
Grade 4	**Poor Quality Agricultural Land** 'Land with severe limitations which significantly restrict the range of crops and/or level of yields. It is mainly suited to grass with occasional arable crops (e.g. cereals and forage crops) the yields of which are variable. In moist climates, yields of grass may be moderate to high but there may be difficulties in utilisation. The grade also includes very droughty arable land'
Grade 5	**Very Poor Quality Agricultural Land** 'Land with very severe limitations which restrict use to permanent pasture or rough grazing, except for occasional pioneer forage crops'.

Best and Most Versatile (BMV) Agricultural Land

The National Planning Policy Framework (NPPF, Department for Levelling Up, Housing and Communities, September 2023) is followed in the UK with the inclusion of Welsh Annex where appropriate. The NPPF sets out national planning practice guidance with reference to agricultural land, which regulators need to consider when making planning decisions about applications involving agricultural land.

The NPPF Annex 2 – Glossary defines Best and Most Versatile (BMV) agricultural land as '*Land in grades 1, 2 and 3a of the Agricultural Land Classification*'. BMV land is provided a degree of protection against development within planning policy, with most Local Plans including specific policies which refer to the protection of BMV agricultural land.

Non-BMV agricultural land, i.e. Moderate, Poor and Very Poor quality agricultural land is designated subgrade 3b or Grades 4 and 5 respectively, and is restricted to a narrower range of agricultural uses. Limited to no protection is provided against development on this grade land within planning policy.

4. Climate Data

Using the climatological data set (Met Office, 1989) the following information (**Table 2**) has been calculated for the site. Calculations comprised altitude adjustment and interpolation, using the formula presented within the data set.

Table 2: Summary of Agroclimatic Data for the Site

Land at Connah's Quay (Site Centre Grid Reference: 327012, 371631)		
Average Annual Rainfall (AAR) (mm)	AAR	744.37
Accumulated Temperature (ATO) (˚C)	ATO	1459.49
Field Capacity Duration (FCD) (Days)	FCD	175.86
Moisture Deficit Wheat (MDWHT) (mm)	MDWHT	102.15
Moisture Deficit Potatoes (MDPOT) (mm)	MDPOT	92.75

The site is identified to have an average ATO and FCD, and slightly below average AAR when compared to the mapped values for the area south-east of Flint (Soils and their Use in Wales, 1984).

Using the AAR and ATO values within **Table 2,** the site is considered to be Grade 1 according to climate (Figure 1 of the MAFF guidance document). Therefore, climate is considered to not be a limiting factor on the site.

5. British Geological Survey and Soils Published Data

Geology

Information gathered from the British Geological Survey (BGS) Geology Sheet 108 (Flint) and the BGS Onshore GeoIndex suggests that the Main Site is located in an area in which Made Ground (Undivided) – Artificial Deposits are recorded to be present. As such, a significant depth of Made Ground may be present on site. The remainder of the site is not shown as having Artificial Ground overlying the site.

The Main Site is denoted as being underlain by superficial deposits named as Tidal Flat Deposits, comprising clay, silt and sand. The Proposed CO2 Connection Corridor is recorded to be underlain by superficial deposits named as Devensian Till, comprising diamicton. Additionally, superficial deposits named as Glaciofluvial Deposits, comprising sand and gravel may encroach onto the western site of the Proposed CO2 Connection Corridor.

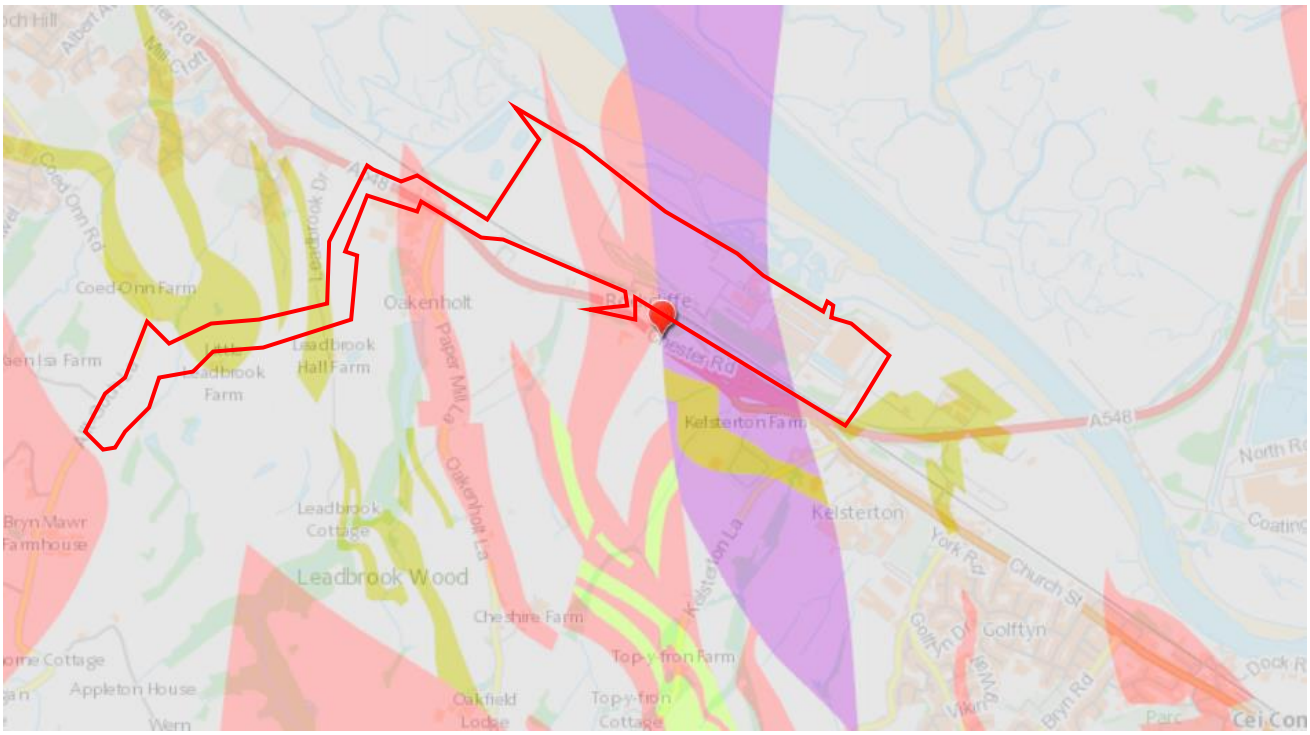

Figure 3: Bedrock geology from Geoindex (approx. site boundary in red)

Bedrock geology varies across the site and is summarised below, with reference to **Figure 3** above:

Colour (as Figure 2)	Bedrock Geology
	Pennine Lower Coal Measures Formation comprising mudstone, siltstone, and sandstone.
	Gwespyr Sandstone Formation comprising interbedded sandstone and (subequal/subordinate) argillaceous rocks.
	Etruria Formation comprising mudstone, sandstone and conglomerate.
	Pennine Lower Coal Measures Formation comprising sandstone.

Published Soils Data

Soils mapping for the area as shown on *Soils and their use in Wales* has been reviewed as part of this assessment. The location of the site is shown in the soils mapping extract below in **Figure 4**.

The soils mapping suggests the soils on the Main Site primarily comprise the Clifton Association, with potential for soils of the Wisbech Association along the north-eastern boundary of the Main Site, and soils of the Wick 1 Association on the Repurposed CO2 Connection Corridor and Proposed CO2 Connection Corridor parts of the site. The soils are described as follows:

- **Clifton Association (711n)** - Slowly permeable seasonally waterlogged reddish fine and coarse loamy soils and similar soils with slight seasonal waterlogging. Some deep coarse loamy soils seasonally affected by groundwater.
- **Wisbech Association (812b) -** Deep stoneless calcareous coarse silty soils. Groundwater usually controlled by ditches or pumps. Flat land with low ridges. Risk of wind erosion locally
- **Wick 1 Association (541r) -** Deep well drained coarse loamy and sandy soils locally over gravel. Some similar soils affected by groundwater. Slight risk of water erosion.

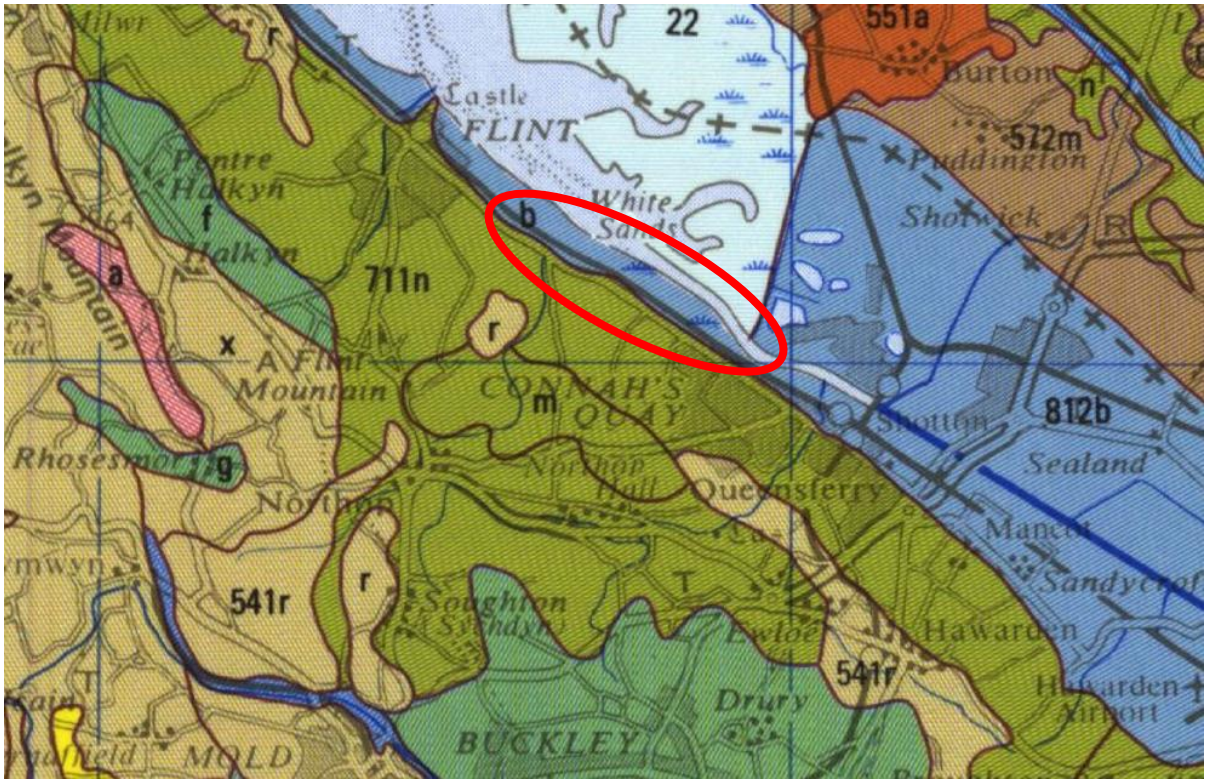

Figure 4: Soils Mapping for the Site and Surrounding Area (approximate site location indicated in red)

6. Historical Mapping Review

The review of the publicly available historical maps has shown that the Main Site historically comprised saltings and sand and mud (tidal mud flats) as part of the River Dee, with areas of the site below the high tide line up until pre-1969.

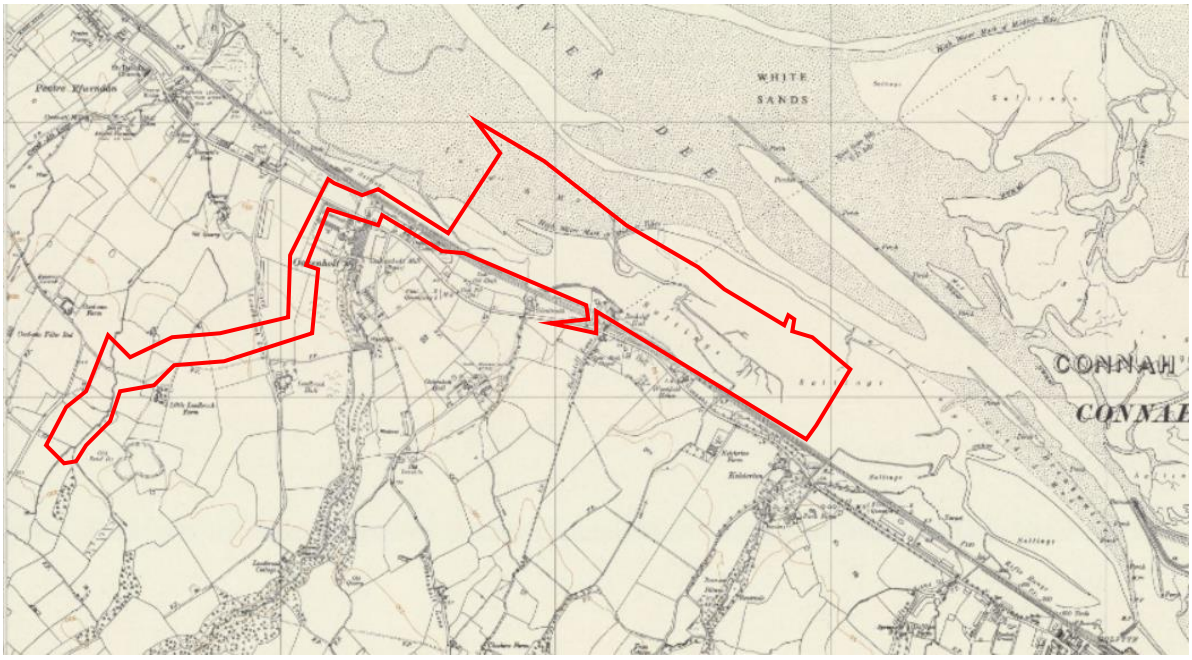

Figure 5: OS 1:10,560 Mapping (SJ27SE – A), Surveyed / Revised: Pre-1930 to 1953, Published: 1954 (Approximate site boundary in red)

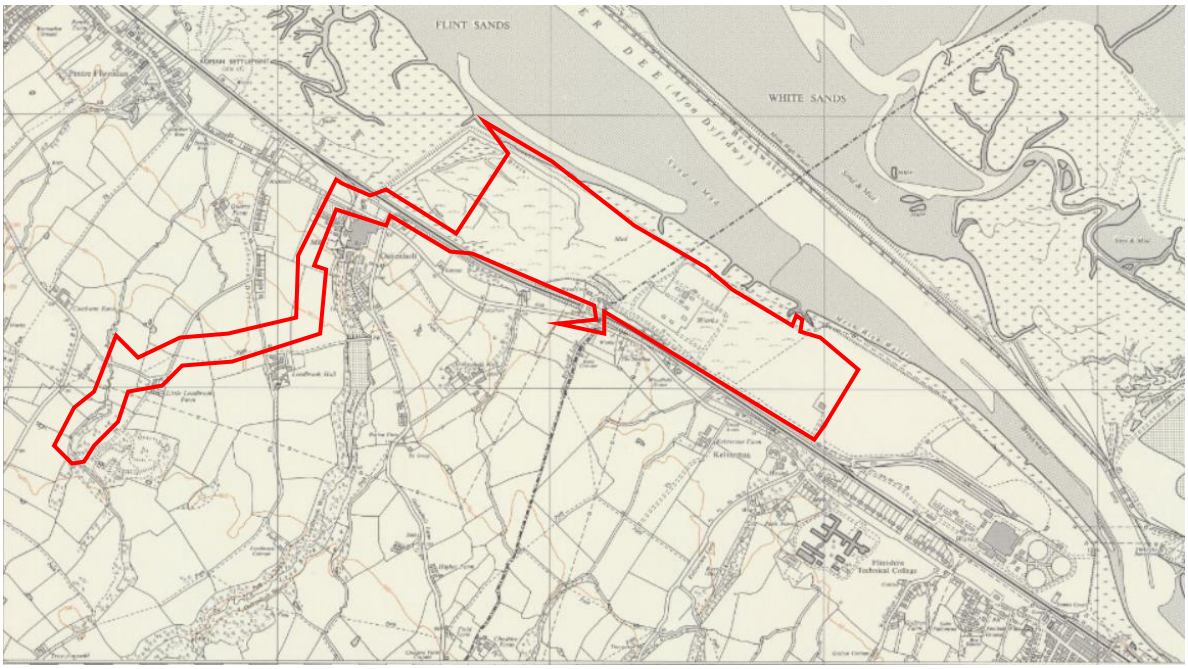

Figure 6: OS 1:10,560 Mapping (SJ27SE – A), Surveyed / Revised: 1962 to 1968, Published: 1969 (Approximate site boundary red)

By mapping dated 1969, the central area of the Main Site appears to have been reclaimed and is no longer saltings or below the high tide line. Areas of the Main Site are also developed with works and

tanks present. Therefore, it is considered that a significant depth of Made Ground may be present across the Main Site, related to this reclamation and/or development.

In addition, although not shown on the historic mapping, DataMapWales mapping indicates that there were three historic landfills which overlie the Main Site. They are named as follows:

- Name: Connah's Quay Power Station 3, Ash Lagoon, accepted: Inert and Industrial waste, last input 1962;
- Name: Connah's Quay Power Station, accepted: Inert, Industrial and Commercial, last input 1991;
- Name: Connah's Quay Power Station No.1, accepted: Inert and Industrial waste, last input not given.

7. Flood Risk Limitations

The potential limitations due to flood risk on the site have been assessed using publicly available flood risk mapping. Since the ALC guidance document was published in 1988, NRW has updated the way the risk of flooding is assessed. Therefore, the terms used in the 1988 guidance (Table 2, MAFF ALC Guidance 1988) have been paired to the current NRW flood risk classifications below.

Table 3: Summary of Flood Risk for the Site in Accordance with MAFF Guidance

NRW Flood Classification	MAFF Flood Classifications
High Risk (greater than 1 in 30 / 3.3%)	Frequent
Medium Risk (between 1 in 100 / 1% and 1 in 30 / 3.3%)	Occasional
Low Risk (between 1 in 1000 / 0.1% and 1 in 100 / 1%)	Rare to Very Rare
Very Low Risk (less than 1 in 1000 / 0.1%)	Very Rare

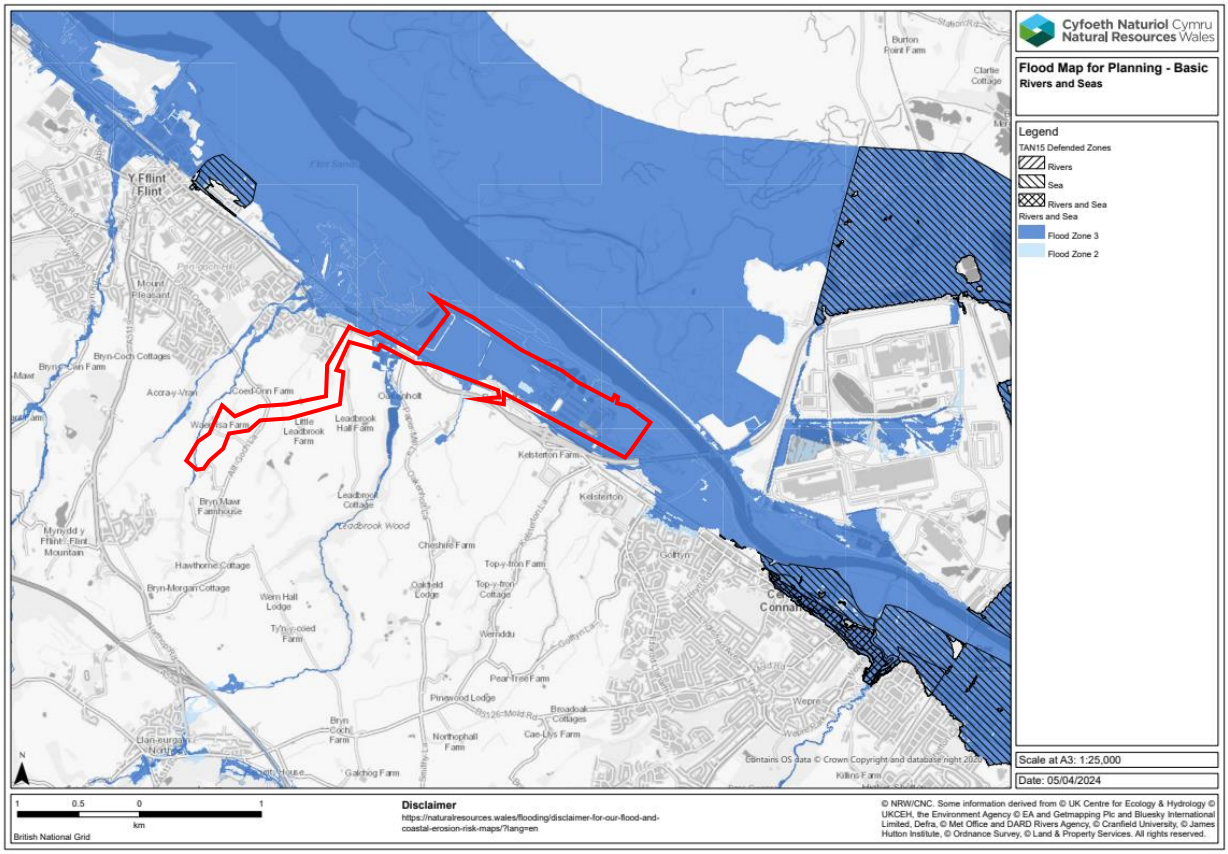

Figure 7: Flood Risk Map for Planning for the Site from Rivers and Seas (approx. site boundary defined in red)

The majority of the Main Site, Indicative Enhancement Area and northern extent of the CO2 Connection Corridor lies within a Flood Zone 3 (**Figure 7**) and is therefore considered to be at higher risk of flooding from rivers and seas.

Additionally, a number of discrete areas of the Main Site and Indicative Enhancement Area are shown to be in Flood Zone 2 and 3 with respect to surface water flooding (**Figure 8**).

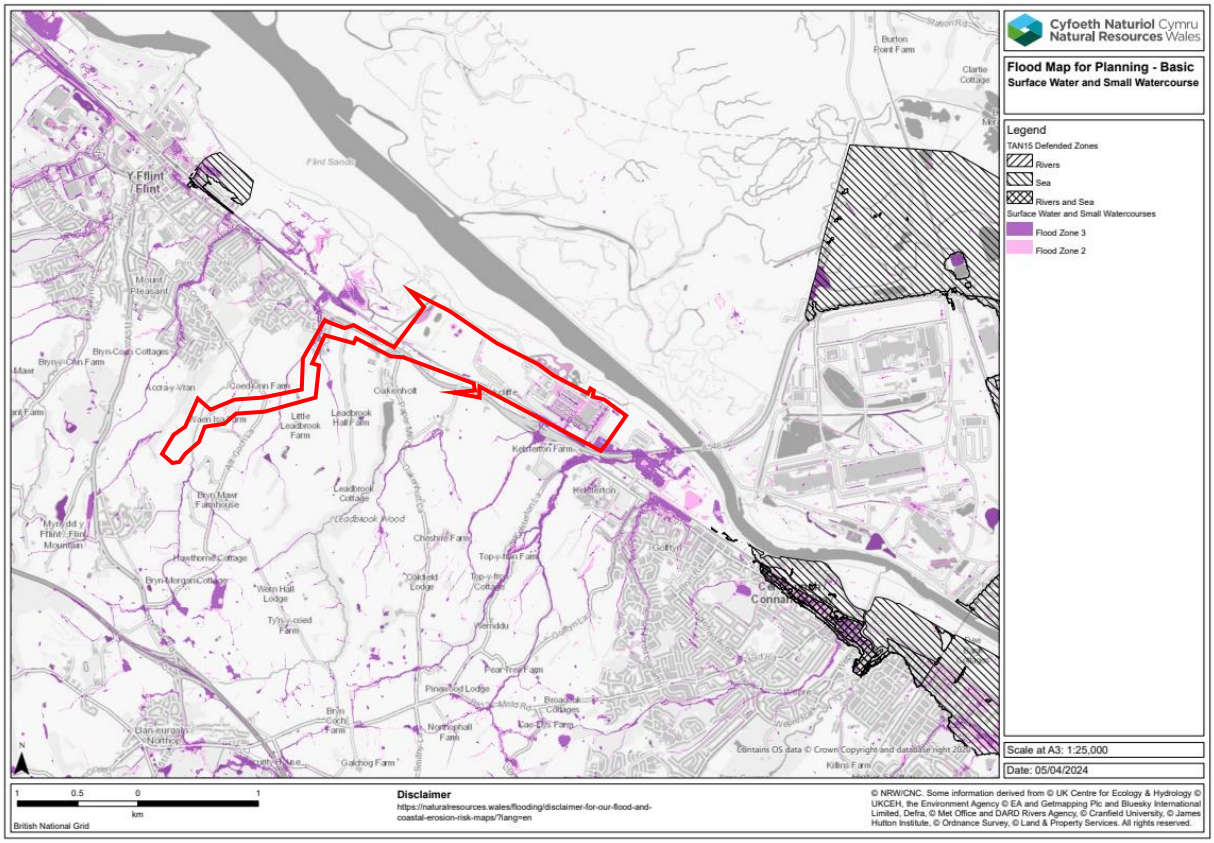

Figure 8: Flood Risk Map for Planning for the Site from Surface Water (approx. site boundary defined in red)

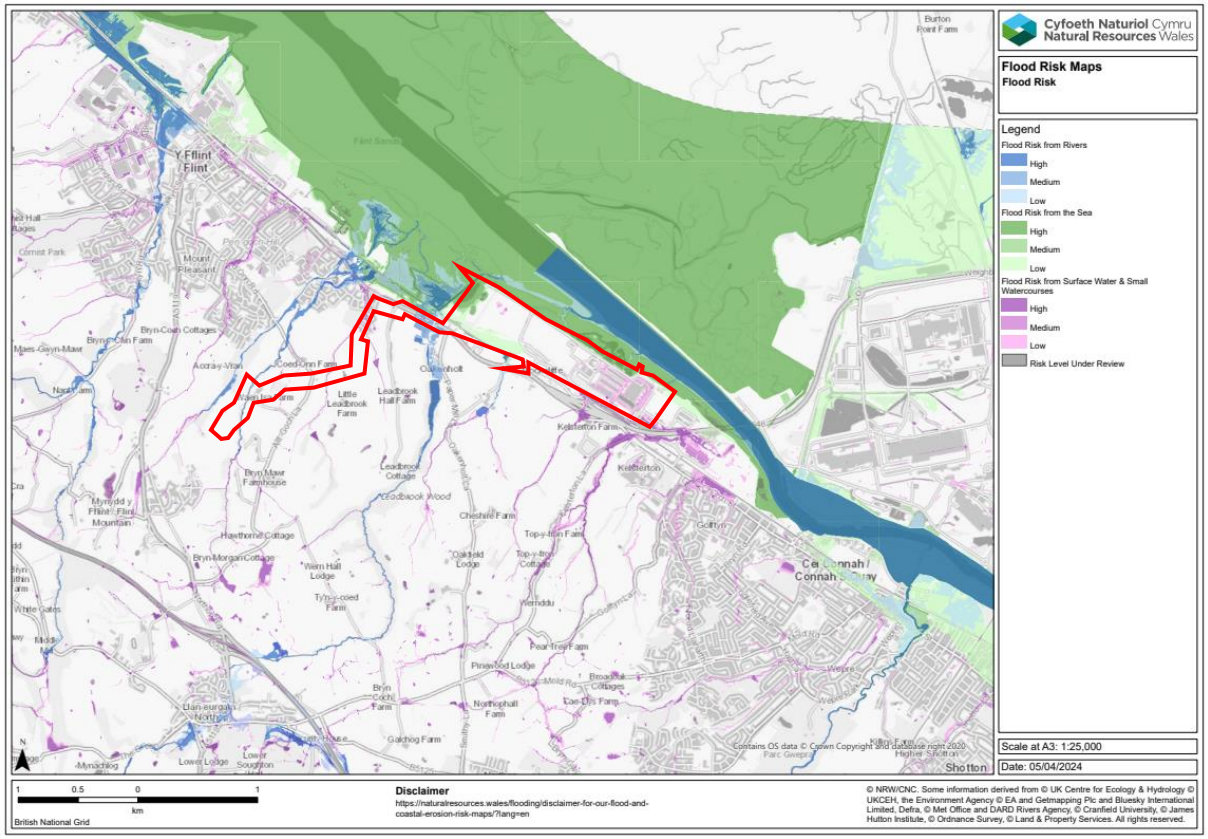

Figure 9: Flood and Coastal Erosion Risk Maps for the Site (approx. site boundary defined in red)

Areas along the north-western boundary of the Main Site are shown to be at High Risk of flooding from the sea, whilst areas in the centre of the Main Site are shown to be at Low to Medium risk of surface water flooding (**Figure 9**).

The impact of flood risk is assessed to confirm if it can pose a limitation to the ALC grade of the site, in accordance with the guidance available (MAFF, 1988).

Table 4: Summary of Flood Risk from Natural Resources Wales

ALC Grade	Frequency and Duration
1	Rare (short)
2	Rare (medium)
	Occasional (short)
3a	Rare (long)
	Occasional (medium)
	Frequent (short)
3b	Occasional (long)
	Frequent (medium)
4	Frequent (long)

The mapping identifies that areas of the Main Site are at High risk of flooding from rivers and the sea and a Low to High risk of surface water flooding.

For the purpose of grading, due to the lack of detailed site information relating to the duration of flooding, the areas impacted by fluvial flooding are considered to be impacted on an Occasional frequency and Long duration or a Frequent frequency and Medium duration during the Winter period. As such this would limit the site ALC Grade to Grade 3b based on a potential flood risk limitation. For the purposes of a planning submission, a detailed Flood Consequence Assessment will be undertaken for the Site and included within the Development Consent Order Application.

Table 5: Flood Risk Limitation in Winter for the Site

ALC Grade	Frequency and Duration	Area Affected (ha)
1	Rare (short)	~21.00
2	Rare (medium)	0.00
	Occasional (short)	
3a	Rare (long)	0.00
	Occasional (medium)	
	Frequent (short)	
3b	Occasional (long)	~59.00
	Frequent (medium)	
4	Frequent (long)	0.00

Of the above c.59ha of land assessed as being ALC Grade 3b, the majority of this area falls within the Main Site. Of the c.59ha indicated as ALC Grade 3b, c.27ha of this land is indicated to be Urban land and is therefore outside of the scope of the ALC assessment.

The remainder of the Site (c.21ha) is not considered to have any potential limitation due to Flood Risk and is therefore indicated as ALC Grade 1 with respect to a Flood Risk Limitation.

8. Available ALC Data

Post-1988 ALC Grade

No publicly available post-1988 ALC surveys are available for the site or the immediate surrounding area, however, an ALC survey for the Proposed CO2 Connection Corridor has been provided for review below.

Welsh Government Predictive ALC Map

The predictive ALC grades mapping would indicate the Proposed CO2 Connection Corridor and Repurposed CO2 Connection Corridor areas of the site are predicted to be ALC Grade 3a, with a small area of ALC Grade 3b within the Repurposed CO2 Connection Corridor. The western (undeveloped) part of the Main Site is predicted to be ALC Grade 2, whilst the east of the eastern side of the Main Site and Indicative Enhancement Area is recorded as Urban land. Land bordering the site to the north and north-west is predicted to be classed as ALC Grade 5.

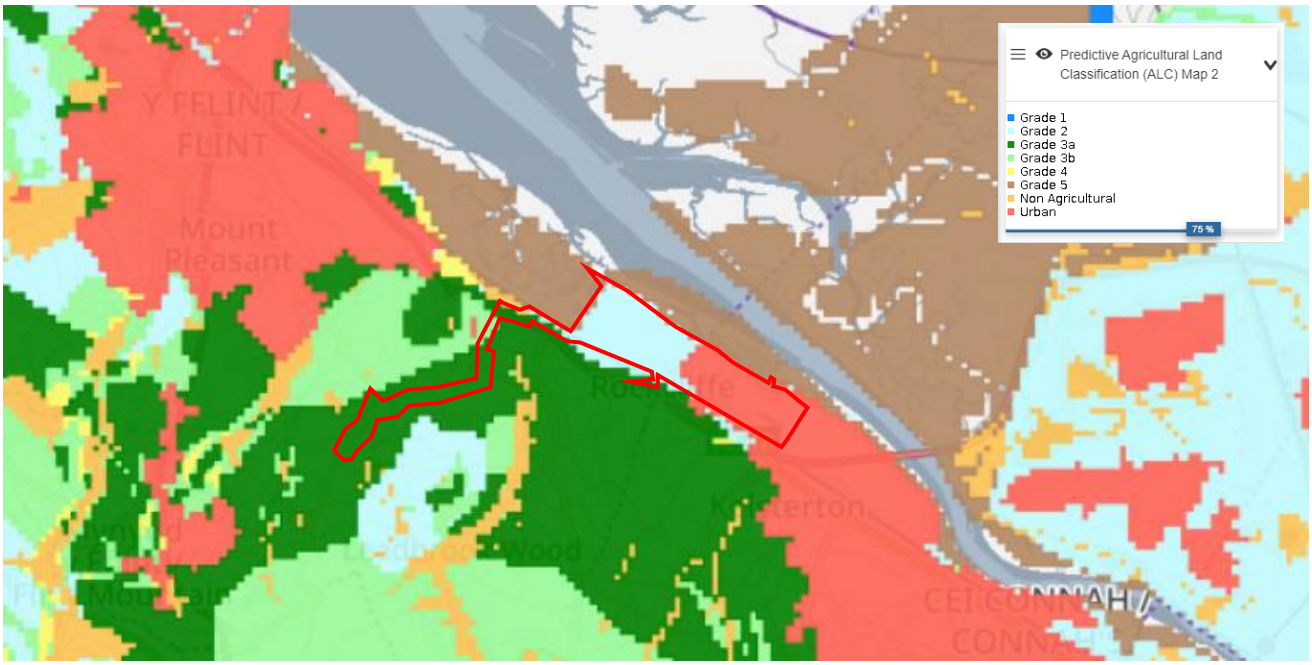

Figure 10: Predictive ALC Map Extract (approx. site boundary indicated in red)

Previous Site Reports

An ALC survey undertaken for the Proposed CO2 Connection Corridor section of the site has been provided for review as part of this assessment. The report concluded that this section of the site has been identified as **ALC Grade 3a**.

9. Published Soil Descriptions

A generalised profile of the anticipated Soil Types, based on available published mapping (**Figure 4**) is described as below (**Table 6**).

Table 6: Generalised Soil Profiles on Site

	Depth (cm)	Texture	Colour	Stones (%)	Mottles	Structure
Soil Type 1 (Clifton)	0 - 25	Clay Loam (CL) or Sandy Clay Loam (SCL)	Dark Greyish Brown	15	NP	NP
	25 - 35	Sandy Loam (SL) or Sandy Clay Loam (SCL)	Greyish Brown	15	Mottled	Medium Subangular Blocky
	35 - 80	Clay Loam (CL) or Sandy Clay Loam (SCL)	Reddish Brown	15	Mottled	Coarse Prismatic
	80 - 100	Clay Loam (CL)	Reddish Brown	15	Mottled	Coarse Prismatic or Massive
Soil Type 2 (Wisbech)	0 - 30	Silt Loam (ZL)	Dark Greyish Brown	5	Slightly Mottled	NP
	30 - 50	Silt Loam (ZL) or Fine Sandy Silt Loam (FSZL)	Greyish Brown	5	Mottled	Coarse Blocky
	50 - 100	Fine Sandy Silt Loam (FSZL)	Grey	5	Mottled	Relic Laminar
Soil Type 3 (Wick 1)	0 - 30	Sandy Silt Loam (SZL)	Dark Brown	15	NP	NP
	30 - 60	Sandy Loam (SL) or Sandy Silt Loam (SZL)	Brown	15	NP	Medium Subangular Blocky
	60 - 80	Loamy Sand (LS) or Sandy Loam (SL)	Yellowish Brown	15 - 35	NP	Medium Angular Blocky or Single Grain
	80 - 120	Sand (S) or Loamy Sand (LS)	Brownish Yellow	15 - 35	NP	Coarse Angular Blocky or Single Grain

Notes – NP = Not Provided

10. Indicative ALC Grade and Conclusions

Using the MAFF 1988 guidance, the following ALC Grades have been calculated (see **Appendix 1** for calculations).

Site Flood Risk Limitation

Based on the available data, the Main Site is largely within Flood Zone 3. Additionally, areas bounding the Main Site to the north are recorded to be at High risk of flooding from the sea. As such, areas of the Main Site are considered to be limited to **ALC Grade 3b** based on flood risk.

Soil Type 1 – Clifton Association (CO2 Connection Corridor) – Wetness Limitation

The combination of the topsoil texture (Sandy Clay Loam), Wetness Class (IV) and the number of Field Capacity Days (175.86) results in **ALC Grade 3b** for Clifton Association soils.

Soil Type 2 – Wisbech Association (Main Site and Indicative Enhancement Area) – Wetness Limitation

The combination of the topsoil texture (Silt Loam), Wetness Class (IV) and the number of Field Capacity Days (175.86) results in **ALC Grade 3b** for Wisbech Association soils.

Soil Type 3 – Wick 1 Association (CO2 Connection Corridor) – No Limitations

Soils of the Wick 1 Association are not found to have any limitations to the ALC Grade.

Discussion and Conclusions

It is important to note that the BGS data indicates the majority of the Main Site area is underlain by Artificial deposits (Made Ground). This directly conflicts the Soil Survey of England and Wales mapping which indicates the underlying soils across the Main Site to be either soils of the Clifton or Wisbech Association.

In addition, the Main Site area is shown to be underlain by three historic landfills. This would therefore tie with the BGS data, rather than the soils data. Should the Main Site be identified as having been landfilled, this would mean the site soils are disturbed, or may be non-agricultural (Made Ground) material, which would change the Wetness Class assessment of the soil, which could in turn result in a reduction to the ALC Grade, or for the area to be mapped as Non-Agricultural land.

It is possible that soils of the Wick 1 Association are present across the Repurposed CO2 Connection Corridor and/or the Proposed CO2 Connection Corridor areas of the site. Should this be the case, there may not be any limitation to the ALC Grade and these soils may be concluded to be ALC Grade 1.

However, based on the information available, the indicative desk-based assessment for the site has been assessed as **ALC Grade 3b**. Limitations relate to either site Flood Risk or a Wetness limitation of the soils.

It is recommended that a site-specific intrusive survey is undertaken for the western part of the Main Site and Repurposed CO2 Connection Corridor areas of the site to confirm the ALC Grade for these parts of the site. The eastern side of the Main Site can be discounted from the survey as this area is Urban land and the Proposed CO2 Connection Corridor area can also be discounted from further survey as there is existing ALC data for this area.

A detailed Flood Consequences Assessment will be undertaken for the Site and included within the Development Consent Order Application.

APPENDIX 1 ALC GRADE CALCULATIONS DATA SHEET

Job Name:	Land at Connah's Quay
Job Number:	240317
Date:	12/06/2024
Completed By:	RS

Site Altitude:	8
Centre Grid Ref:	327012 371631

AAR	744.37
ATO	1459.49
FCD	175.86
MDMWHT	102.15
MDMPOT	92.75

	Soil Type 1	Soil Type 2	Soil Type 3
AP WHT	114.23	176.95	132.76
MB WHT	12.08	74.80	30.61
AP POT	99.225	205.7	122.6
MB POT	6.48	112.95	29.85

Site Limitations Summary

	Soil Type 1	Soil Type 2	Soil Type 3
Wetness Class	IV	IV	I
Wetness Grading	3b	3b	1
Droughtiness Wheat	2	1	1
Droughtiness Potato	2	1	1
Gradient Limitation	1	1	1
Soil Depth Limitation	1	1	1
Stoniness Limitation	1	1	1
	Overall		
Site Climatic Limitation	1	1	1
Flooding Limitation	3b	3b	1
Overall Grade	**3b**	**3b**	**1**