HyNet North West

ENVIRONMENTAL STATEMENT – (VOLUME III)

Appendix 11.5 Agricultural Land Classification and Soil Resources (Block Valve Stations) Report

HyNet Carbon Dioxide Pipeline DCO

Planning Act 2008

The Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009 – Regulations 5(2)(a)

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APPENDIX 11-5 AGRICULTURAL LAND CLASSIFICATION AND SOIL RESOURCES (BLOCK VALVE STATIONS) REPORT

1.1.1. It should be noted that this technical appendix was produced during the development of the Preliminary Design of the DCO Proposed Development. Therefore, the design information presented herein is indicative, and may be different to the final Preliminary Design (including the pipeline alignments and other construction layers) which is described in **Chapter 3 – Description of the DCO Proposed Development (Volume II).** It should also be noted that the terminology may not align with that presented in the **Glossary (Document reference**: **D.1.7**).

1.1.2. However, this technical appendix remains applicable to informing the Environmental Impact Assessment and any associated limitations or assumptions are discussed in **Chapter 11- Land and Soils (Volume II)**.

READING AGRICULTURAL CONSULTANTS

August 2022

WSP

HyNet Pipeline
Agricultural Land Classification and Soil Resources

Talacre and Block Valves

Beechwood Court,
Long Toll, Woodcote,
RG8 0RR

01491 684 233

[redacted]

1 Introduction

1.1 Reading Agricultural Consultants Ltd (RAC) is instructed by WSP to investigate the Agricultural Land Classification (ALC) and soil resources of land that will be affected either temporarily or permanently by works associated with the HyNet pipeline. The data is to be collected by means of a detailed survey of soil and site characteristics.

1.2 This report considers the landing site at Talacre and four block valve locations that are to be determined under a different permitting regime via an application under the Town and Country Planning Act rather than a Development Consent Order application.

1.3 Guidance for assessing the quality of agricultural land in England and Wales is set out in the Ministry of Agriculture, Fisheries and Food (MAFF) revised guidelines and criteria for grading the quality of agricultural land[1].

1.4 Agricultural land in England and Wales is graded between 1 and 5, depending on the extent to which physical or chemical characteristics impose long-term limitations on agricultural use. The principal physical factors influencing grading are climate, site and soil which, together with interactions between them, form the basis for classifying land into one of the five grades.

1.5 Grade 1 land is excellent quality agricultural land with very minor or no limitations to agricultural use. Grade 2 is very good quality agricultural land, with minor limitations which affect crop yield, cultivations or harvesting. Grade 3 land has moderate limitations which affect the choice of crops, timing and type of cultivation, harvesting or the level of yield, and is subdivided into Subgrade 3a (good quality land) and Subgrade 3b (moderate quality land). Grade 4 land is poor quality agricultural land with severe limitations which significantly restrict the range of crops and/or level of yields. Grade 5 is very poor quality land, with very severe limitations which restrict use to permanent pasture or rough grazing.

1.6 Land which is classified as Grades 1, 2 and 3a is defined in paragraph 3.58 of Planning Policy Wales[2] as the best and most versatile (BMV) agricultural land.

[1] **MAFF (1988).** *Agricultural Land Classification of England and Wales. Revised guidelines and criteria for grading the quality of agricultural land*. MAFF Publications.

[2] **Welsh Government (2021).** Planning Policy Wales, Edition 11, February 2021 https://gov.wales/sites/default/files/publications/2021-02/planning-policy-wales-edition-11_0.pdf

1.7 Natural Resources Wales has published a Predictive ALC Map for Wales[3]. The map is designed on a 50m grid. Criteria including climate, slope, soil wetness, droughtiness and stone contents have been considered and used to determine the most likely limitation to agricultural land quality within each grid square. The map predicts that the Talacre site is a mix of Subgrades 3a and 3b, and that the western two block valve locations are Grade 2 and the eastern two are Subgrade 3a.

1.8 However, as explained by the Welsh Government's Frequently Asked Questions on ALC [4], the only way to accurately determine the agricultural grade of land is by a detailed field survey in accordance with the current ALC guidelines. This survey follows the established methodology and guidelines for carrying out ALC surveys.

2 Site and climatic conditions

General features, land form and drainage

2.1 The survey area covers five separate parcels of agricultural grassland between Flint in the east and Talacre in the north-west.

- Land at Sylfaen Farm (Observations 295 and 296) – approximately 2.9ha on an east-facing slope, at altitudes between around 100 and 105m above Ordnance Datum (AOD). Drainage of the land is via the slope which is shallow at 3°. The land is not at risk of flooding.
- Land south of Cornist Lane (Observations 297 and 298) – approximately 2.5ha on a north-west-facing slope of 5° between altitudes of around 125m and 140m AOD. Drainage of the land is via the slope which directs water to Nant-y-Fflint in close proximity to the west of the parcel. The land is not at risk of flooding.
- Land south of Brynford (Observations 299 and 300) – approximately 2.8ha in total, of which 0.5ha is fenced off and used for storage of silage bales. The land is on a west-

[3] **Natural Resources Wales (2019)**. *Predictive Agricultural Land Classification (ALC) Map for Wales.* http://lle.gov.wales/map/alc2

[4] **Welsh Government (2020).** *Agricultural Land Classification, Frequently Asked Questions.* https://gov.wales/sites/default/files/publications/2020-06/agricultural-land-classification-frequently-asked-questions.pdf

facing slope of 2-3° at altitudes between around 210m and 215m AOD. The land is not at risk of flooding.

- Land east of Racecourse Lane (Observations 301 and 302) – approximately 2.6ha on a south-east-facing valley side, between around 175m and 185m AOD. The slopes measure up to 5° and drain the land into the valley that directs water southward. The land is not at risk of flooding.
- Land at Talacre (Observations 303-332) – extends to around 35.8ha in total, inclusive of two large ponds. The land is low-lying and level at 5m AOD. Drainage of the land is facilitated by two deep drainage ditches traversing through the survey area. There is no mapped flood risk.

Agro-climatic conditions

2.2 Agro-climatic data for each survey area have been interpolated from the Meteorological Office's standard 5km grid point data set at representative altitudes and are given in Table 1. The four smaller areas are all cool and wet with moderately small to moderate moisture deficits. The climate at Talacre is warm with moderate rainfall and moderate to moderately large moisture deficits. The number of Field Capacity Days (FCD) across all five survey areas is large and is unfavourable for providing opportunities for agricultural field work. There is an overriding climatic limitation at three of the survey areas: two to Grade 2 and one to Subgrade 3a.

Table 1: Local agro-climatic conditions

Parameter	**Measurement**				
Location	Obs 295/296	Obs 297/298	Obs 299/300	Obs 301/302	Obs 303-332
Grid Ref	322575 371973	321725 372503	317446 373229	314836 374600	311602 384349
Altitude AOD	105m	140m	215m	175m	5m
Average Annual Rainfall	822mm	841mm	861mm	839mm	688mm
Accumulated Temperatures >0°C	1,350 day°	1,310 day°	1,226 day°	1,327 day°	1,461 day°
Field Capacity Days	193 days	196 days	201 days	199 days	167 days
Average Moisture Deficit, wheat	86mm	81mm	71mm	75mm	102mm
Average Moisture Deficit, potatoes	71mm	65mm	51mm	56mm	93mm
ALC grade due to climate	1	2	3a	2	1

Soil parent material and soil type

2.3 The underlying geology is mapped by the British Geological Survey[5], and the mapped soil information[6] was produced by the Soil Survey of England and Wales.

- Land at Sylfaen Farm (Observations 295 and 296) is underlain by fine-grained Gwespyr Sandstone which converges with Pennine Lower Coal Measures Formation to the west. Superficial deposits of Devensian till over the bedrock across the survey area.

  Soils of the Clifton association are mapped across the site and include reddish fine and coarse loamy soils which are typically seasonally waterlogged, in Wetness Class (WC) IV[7].

- Land south of Cornist Lane (Observations 297 and 298) is underlain by the Bowland Shale Formation, comprising weakly calcareous, dark grey mudstone with interbedded limestone and sandstone. The bedrock borders on the Gwespyr Sandstone to the west. A pocket of superficial deposits of Devensian till are mapped in the north-east of the survey area.

  The Brickfield 2 association is mapped across the site and includes fine loamy soils with seasonal waterlogging, in WC IV.

- Land south of Brynford (Observations 299 and 300) is underlain by the Loggerheads Limestone Formation comprising pale grey shelly limestones. Superficial deposits of Devensian till overlie most of the area, with an intrusion of glaciofluvial sand and gravel from the north.

  Soils of the East Keswick 2 association are mapped across the site and include deep fine loamy soils which are well drained, in WC I.

- Land east of Racecourse Lane (Observations 301 and 302) is underlain by the Cefn Mawr Limestone Formation which includes limestone and mudstone with shelly limestones. Superficial glaciofluvial deposits of sand and gravel overlie much of the survey area.

  Soils of the East Keswick 2 association are mapped across the site and include deep fine loamy soils which are well drained, in WC I.

[5] **British Geological Survey (2022).** *Geology of Britain viewer*, [redacted]

[6] **Soil Survey of England and Wales (1984).** *Soils of Wales (1:250,000), Sheet 2.*

[7] **Rudeforth *et al* (1984).** Soils and Their Use in Wales. Soil Survey of England and Wales Bulletin 11, Harpenden

- Land at Talacre (Observations 303-332) is underlain by the Pennine Lower Coal Measures Formation and the Pennine Middle Coal Measures Formation, each comprising interbedded grey mudstone, siltstone and pale grey sandstone, the latter also including coal seams. Most of the area is overlain by tidal flat deposits of clay, silt and sand, with Blown Sand mapped across the north.

  The mapped soil information shows the Tanvats association developed across the tidal flat deposits, characterised by deep, stoneless fine and coarse silty and clayey soils. Groundwater levels are usually controlled by ditches and pumps which can place the soils in WC III rather than IV or V.

  Soils of the Sandwich association are developed in the Blown Sand and comprise deep, variably calcareous sandy soils which are well drained but where present in hollows may become waterlogged. The soils are rarely used for agriculture.

3 Agricultural land quality

Soil survey methods

3.1 Two soil profiles were examined at each of the four smaller survey areas and 30 were observed at the larger Talacre site. Observations were made using 13mm arable gouge augers at an observation density of one per hectare in accordance with the established recommendations for ALC surveys. Three observation pits were also excavated to examine subsoil structures. The locations of observations are shown on Figure RAC/9188/1.1. At each observation point the following characteristics were assessed for each soil horizon up to a maximum of 120cm or any impenetrable layer:

- soil texture;
- significant stoniness;
- colour (including localised mottling);
- consistency;
- structural condition;
- free carbonate; and
- depth.

3.2 Three topsoil samples were submitted for laboratory determination of pH, organic matter content and nutrient contents (P, K, Mg). Two of the three were also analysed for particle size distribution to confirm the textures. Results are presented in Appendix 1.

3.3 Soil Wetness Class (WC) was determined from the matrix colour, presence or absence of, and depth to, greyish and ochreous gley mottling, and slowly permeable subsoil layers at least 15cm thick, in relation to the number of FCD at the location.

3.4 Soil droughtiness was investigated by the calculation of moisture balance equations (given in Appendix 2). Crop-adjusted Available Profile Water (AP) is estimated from texture, stoniness and depth, and then compared to a calculated moisture deficit (MD) for the standard crops, wheat and potatoes. The MD is a function of potential evapotranspiration and rainfall. Grading of the land can be affected if the AP is insufficient to balance the MD and droughtiness occurs.

Agricultural land classification and site limitations

3.5 Assessment of land quality has been carried out according to the revised ALC guidelines[1]. Soil profiles have been described according to Hodgson[8] which is the recognised source for describing soil profiles and characteristics according to the revised ALC guidelines.

3.6 Overall, wetness/workability is the most common limiting factor. Where there is clay subsoil, restricted permeability sets Wetness Class usually as III or IV. Coupled with heavy loam (>26% clay) or clay topsoil this limits to Subgrade 3b. Grading is better (3a) where topsoil is medium loam (and WC III) or sandy loam texture, and on the deeper sandy or silty profiles which are WC II.

3.7 Where unevenness would pose some difficulties in cultivation there is a limitation due to micro-relief to Subgrade 3a.

<u>Land at Sylfaen Farm (Observations 295 and 296)</u>

3.8 The topsoil is brown (7.5YR4/3 in the Munsell soil colour charts[9]) sandy silt loam or sandy clay loam of 25-28cm depth. The stone content is low at around 8% by volume. Upper subsoil horizons are similarly textured and are distinguished by colour, being brown or light brown (7.5YR5/3 or 7.5YR6/3) and mottled. The upper subsoil is assessed as gleyed but has good or moderate structure and is permeable. The stone content is around 10%.

[8] **Hodgson, J. M. (Ed.) (1997).** *Soil survey field handbook.* Soil Survey Technical Monograph No. 5, Silsoe.

[9] **Munsell Color (2009).** *Munsell Soil Color Book*. Grand Rapids, MI, USA

3.9 Both profiles pass to dense, reddish brown (2.5YR5/4 or 5YR4/3) heavy clay loam lower subsoils, present from depths of 60cm and 85cm. Although slowly permeable, the lower subsoil is sufficiently deep for soils to be Wetness Class (WC) II or II which limits the ALC to Subgrade 3a.

3.10 This grading fits with the land use (versatile productive ley) and the adjoining field is in arable use.

Land south of Cornist Lane (Observation 297 and 298)

3.11 The topsoil is olive brown (2.5Y4/3) medium clay loam of 23-25cm depth. The stone content is 12-15% by volume. The upper subsoil is dark greyish brown or greyish brown (2.5Y4/2 or 2.5Y5/2) medium clay loam or light yellowish brown (2.5Y6/3) heavy clay loam which is moderately stony at 20-25% by volume. The upper subsoil is mottled and is gleyed although is permeable.

3.12 The lower subsoil horizons differ, with Observation 297 having light olive brown (2.5Y5/3), poorly structured, medium silty clay loam passing to weathered soft siltstone, and Observation 298 having reddish yellow (7.5YR6/6) heavy clay loam passing to a very stony layer or sandstone at 70cm depth. The profiles are in WC III and II respectively and are limited by wetness to Subgrade 3a. At Observation 298, there is an additional and equal limitation caused by microrelief.

Land south of Brynford (Observations 299 and 300)

3.13 The topsoil is brown (7.5YR4/4) medium clay loam of 25-28cm depth. The stone content is around 12% by volume. Upper subsoil horizons are similar but distinguished by an increase in the stone content to around 20% or by colour, being strong brown (7.5YR4/6). The structure is good.

3.14 In the south-east of the survey area (299), the lower subsoil horizons include brownish yellow (10YR6/6) fine sandy silt loam passing to light yellowish brown (2.5Y6/4) medium silty clay loam. The lower subsoils are slightly stony and permeable, placing the profile in WC I. The main limitation to this profile is the overriding climatic limitation to Subgrade 3a.

3.15 In the north of the survey area (300), the lower subsoil is brown (10YR5/3) medium clay loam which includes many mottles and is gleyed. The stone content is moderate at 25% by volume. From a depth of 60cm, there is a bottom horizon of very stony (40%) sandy loam. Due to the large number of FCD (201), profiles gleyed within 40 and 70cm depth are in WC II or III, resulting in an equal wetness and climatic limitation to Subgrade 3a.

Land east of Racecourse Lane (Observations 301 and 302)

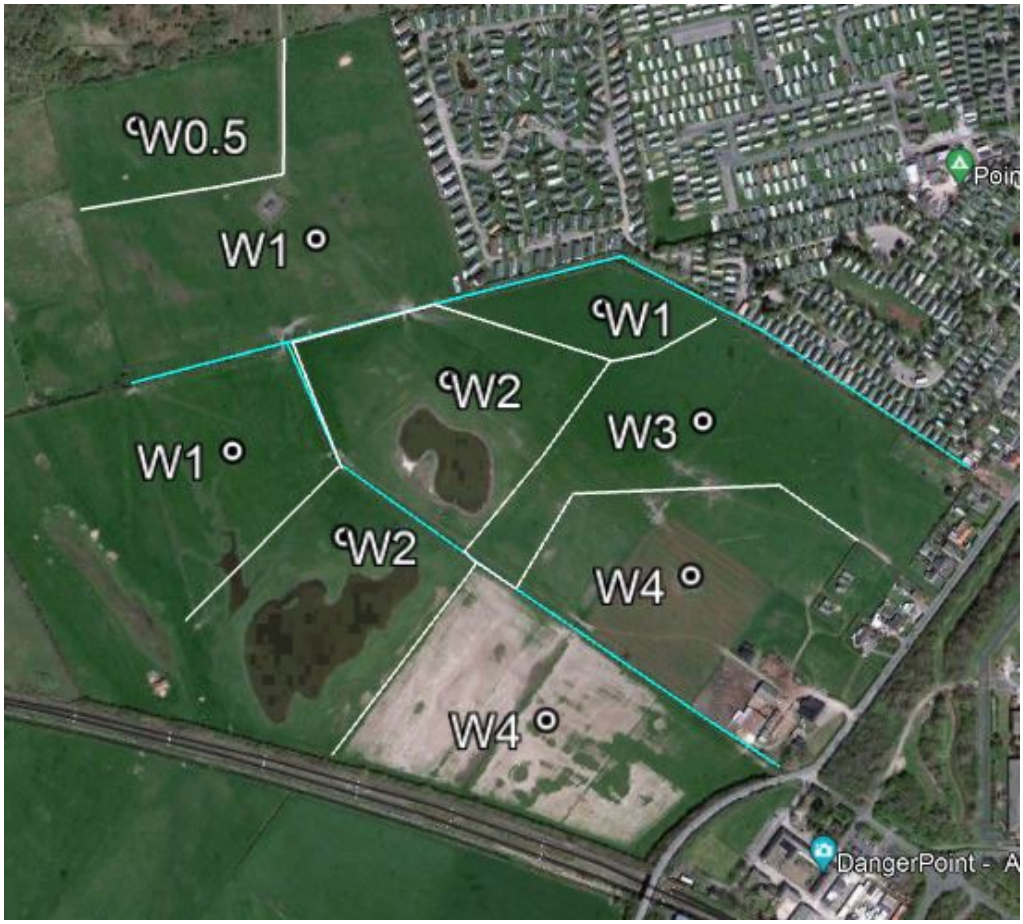
3.16 The topsoil is dark yellowish brown or brown (10YR4/4 or 10YR5/3) medium clay loam of 25-28cm depth. The stone content is low at around 4-8% by volume. At the south of the survey area in the valley (Observation 301), there are few mottles into the topsoil.

3.17 The frequency of mottling increases through the subsoil in the valley which passes to stoneless, pale yellow (2.5Y7/3) heavy silty clay loam. The profile is slowly permeable at depth and is in WC III. The valley may be prone to wetness following heavy rainfall, but is assessed as Subgrade 3a.

3.18 On the moderately sloping bank (Observation 302) the subsoil becomes lighter textured and moderately stony below 70cm but is unmottled in the top 40cm so is WC I. Available water is sufficient. Workability and climatic limitations results in a classification as Grade 2.

Land at Talacre (Observations 303-332)

3.19 The pattern of soils and limitations at Talacre is complex. Five soil types have been identified and are summarised below. The locations of each soil type are as follows:



CodeW0.5	Lighter deep sandy soils
Topsoil	25-30cm depth of dark greyish-brown (10YR4/2) loamy sand. Very friable fine subangular blocky with roots. Non-calcareous.
Upper Subsoil	Grey (10YR7/3) loamy medium sand or medium sand. Common manganese mottles below 40cm. Loose.
Lower Subsoil	Sandy clay loam starts at 70-90cm, more compact.
Limitations	Wetness Class I to III and can limit ALC to no worse than Grade 2 but droughtiness downgrades to Subgrade 3a.

Code W1	Light loams over clayey subsoil
Topsoil	25-30cm depth of dark greyish brown (10YR4/2) sandy loam. Very friable coarse granular structure with many roots. Non-calcareous.
Upper Subsoil	Pale brown (10YR5/3) or grey loamy sand or sandy loam with common iron and manganese mottles. Well-developed granular structure (where not wet).
Lower Subsoil	Clay or sandy clay starts at between 35 and 65cm depth, grey with many reddish brown mottles, firm weak angular blocks (slowly permeable). Locally passes to sandy loam within 1m.
Limitations	Wetness Class is IV or III due to slow permeability in the lower subsoil. Land is graded Subgrade 3a except in a wetter depression where it is downgraded to Subgrade 3b (Profiles 319-329).

Code W2	Medium loams over clayey subsoil
Topsoil	25-30cm depth of dark brown (10YR4/2) medium clay loam, locally greyish brown (10YR5/2) and mottled.
Upper Subsoil	Grey (N6/0) mottled sandy clay loam, locally sand.
Lower Subsoil	Clay or sandy clay starts between 35 and 50 cm depth, grey with many reddish brown mottles. Slowly permeable. Clay extends to at least 80cm depth.
Limitations	Wetness Class is III or IV due to slow permeability. Land is graded 3a or 3b.

Code W3	Medium or heavy siltier soils without clayey subsoil
Topsoil	25-30cm of dark brown topsoil (10YR4/2). Texture ranges from medium clay loam to silty clay. Friable fine subangular blocky structure.
Upper Subsoil	Light brownish grey (10YR6/2) silty clay loam or fine sandy silt loam, slightly calcareous, with common or many iron and manganese mottles.
Lower Subsoil	Commonly becomes sandy loam at about 80cm.

Limitations	No slowly permeable clay layer within 80cm so WC II. Limited to Subgrade 3a by wetness and locally by microrelief (317).

Code W4	Heavier clayey soils
Topsoil	23-28cm of silty clay, locally heavy (silty) clay loam or organic in top 5cm. Dark-brown (10YR4/2) or greyish brown (10YR5/2) and mottled. Friable fine subangular blocky fragments with many roots.
Upper Subsoil	Bluish-grey (N6/0) stoneless clay, locally silty clay loam. Many iron and manganese mottles but well-structured medium subangular blocky with roots.
Lower Subsoil	Below 40cm clay becomes less permeable, grey with reddish-brown mottles extending to 120 cm. In better drained areas subsoil is dry with well-developed prismatic structure; in wetter areas clay is compact with water perching on top.
Limitations	On better drained areas WC is III-IV and Subgrade 3b (310). In wet areas is judged WC V and Grade 4.

3.20 In addition to wetness/workability or droughtiness limitations, areas of land at Talacre are variably affected by groundwater. Over much of the survey area the deep ditches seem effective at keeping groundwater (saturated zones) below 70cm. The exception is the clay land lying in a slight depression (at Observations 304-307 and 313) where water was sitting at the surface and to up to 20cm depth at time of survey. Coring suggested the water was collecting over a slowly permeable subsoil (which in places seemed dry beneath). It is impractical to improve the drainage and WC is V if water is present within the top 40cm for more than 7 months in a year (in accordance with Table 11 of the ALC guidelines). Accordingly this zone is downgraded to Grade 4. There is also a small wet depression in the north field running between locations 326, 327 and 320 which is downgraded to Subgrade 3b.

3.21 Nutrient levels are shown in Appendix 1. All three samples are slightly acidic and have available phosphorus (P) and potassium (K) at target levels, except the K on the sandy sample. Magnesium levels are good to very high. Sodium levels are in the normal range, strongly indicative that the land has not been inundated by sea water in recent decades. Soil organic carbon levels are good on the heavier land (5.4% organic matter) and adequate on the sandy land (3.6%) and the topsoil is usually in good structural condition (Appendix 3).

3.22 The areas of each grade of agricultural land within the five survey areas and five TCPA boundary areas are given in Tables 2 and 3, and their distribution is shown in Figure RAC/9188/2.1. Photographs taken at the site are given in Appendix 3.

Table 2: Agricultural land classification of surveyed area

Grade	Description	Hectares	%
Grade 2	Very good quality	1.4	3
Subgrade 3a	Good quality	27.2	61
Subgrade 3b	Moderate quality	10.1	23
Grade 4	Poor quality	6.0	13
Total agricultural area		44.8	100

Table 3: Agricultural land classification of TCPA red line boundary area

Grade	Description	Hectares	%
Grade 2	Very good quality	1.4	6
Subgrade 3a	Good quality	18.5	80
Subgrade 3b	Moderate quality	3.1	13
Grade 4	Poor quality	0.1	1
Total agricultural area		23.1	100

Appendix 1: Laboratory Data

Determinand	304- 307	310-309	327,329	Units
Sand 2.00-0.063 mm		31	84	% w/w
Silt 0.063-0.002 mm		41	8	% w/w
Clay <0.002 mm		28	8	% w/w
Organic Matter	5.4	5.4	3.6	% w/w
Texture	(Silty Clay)	Heavy Clay Loam	Loamy Sand	

All samples are composites of at least 15 sub-samples taken 0- 25cm depth

Soil Organic Carbon is measured by Dumas method and expressed as Organic Matter based (Total Organic Carbon x 1.724).

4.5-6 % is a good organic matter level for heavier soils and 3.6% is satisfactory for light sand textures

Particle size analysis is by full pipette method.

Determinand	304-307	310-309	327,329	Units
Soil pH	6.3	6.1	6.1	
Phosphorus (P)	17.2 (2)	17.6 (2)	16.6 (2)	mg/l (ADAS index)
Potassium (K)	178 (2-)	219 (2+)	92 (1)	mg/l (ADAS index)
Magnesium (Mg)	323 (5)	199 (4)	102 (3)	mg/l (ADAS index)
Sodium (Na)	59 (2)	35 (1)	23 (1)	mg/l (ADAS index)

ADAS indices in parenthesis: 0 very low, 1 low, 2/2- medium, 3P/2+K good, 5 or 6 excess.

The sodium level is slightly higher in the wet area, but quite typical of reclaimed marine clays; >200 mg/l is the threshold of concern.

Appendix 2: Soil Profile Summaries and Droughtiness Calculations

Wetness / workability limitations are determined according to the methodology given in Appendix 3 of the ALC guidelines, MAFF 1988

Droughtiness calculations are made according to the methodology given in Appendix 4 of the ALC guidelines, MAFF 1988.

Grades are shown for drought, wetness and any other soil or site factors which are relevant. The overall Grade is set by the most limiting factor and shown on the right.

Stone types		
%	TAv	EAv
hard	1	0.5
Drift stones		

Climate Data	
MDwheat	86
MDpotato	71
FCD	193
AAR	822

Wetness Class Guidelines	*II*	*III*	*IV*	*V*
SPL within 80cm, gleying within 40cm		> 52cm	< 52 cm	
SPL within 80cm, gleying at 40-70cm	>70cm	< 70cm		
No SPL but gleying within 40cm	coarse subsoil	*I*	other cases	*II*

Maximum depth of auger penetration is underlined

Climate
1350 D°
Limitation
Grade 1-2
105 m

Site No.		Depth cm		Texture	$CaCO_3$	Colour	Mottle colour	abund-ance	stone% hard	stone%	Struct-ure	APwheat mm	AP potato mm	Gley	SPL	WC	Wetness grade WE	Final Grade	Limiting Factor(s)
295	T	0	28	SCL	n	7.5YR4/3			8		-	44	44	n	n	*II*	3a	**3a**	WE
		28	38	SL/SCL	n	7.5YR5/3	Mn	com	10		good	16	16	y	n				
		38	50	SL	n	7.5YR6/3	Mngrey	com	15			15	15	y	n				
		50	85	SCL	n	5YR4/4	Mn	com	10		m/poor	29	25	n	n				
		85	120	hCL	n	2.5YR5/4	MnGre	com	8		poor	23	0	n	y				
											Total	**127**	**101**		GR.gradient Grass ley			3 o	
											MB	41	30						
									Droughtiness grade (DR)			1	1						
296	T	0	25	SZL		7.5YR4/3			8		-	44	44	n	n	*III*	3a	**3a**	WE
		25	35	SZL		7.5YR5/3	Mn	com	10			15	15	y	n				
		35	60	hCL		5YR4/4	Mngrey	com	5		m/poor	28	33	n	n				
		60	120	hCL		5YR4/3	MnGre	com	5		poor	40	11	n	y				
											Total	**127**	**104**		GR.gradient Grass ley, some tractor marks			3 o	NE
											MB	41	33						
									Droughtiness grade (DR)			1	1						

Wetness / workability limitations are determined according to the methodology given in Appendix 3 of the ALC guidelines, MAFF 1988

Droughtiness calculations are made according to the methodology given in Appendix 4 of the ALC guidelines, MAFF 1988.

Grades are shown for drought, wetness and any other soil or site factors which are relevant. The overall Grade is set by the most limiting factor and shown on the right.

Stone types		
%	TAv	EAv
hard	1	0.5

Drift stones

Climate Data	
MDwheat	81
MDpotato	65
FCD	196
AAR	841

Wetness Class Guidelines	*II*	*III*	*IV*	*V*
SPL within 80cm, gleying within 40cm		> 53cm	< 53 cm	
SPL within 80cm, gleying at 40-70cm	>71cm	< 71cm		
No SPL but gleying within 40cm	coarse subsoil	*I*	other cases	*II*

Maximum depth of auger penetration is underlined

Climate
1310 D°
Limitation
Grade 2
140 m

Site No.		Depth cm		Texture	$CaCO_3$	Colour	Mottle colour	abund-ance	stone% hard	stone%	Struct-ure	APwheat mm	AP potato mm	Gley	SPL	WC	Wetness grade WE	Final Grade	Limiting Factor(s)
297	T	0	25	mCL	n	2.5Y4/3			15		-	39	39	n	n	*III*	3a	**3a**	WE
		25	45	hCL	n	2.5Y6/3	MnFe	many	25			25	25	y	n				
		45	70	mZCL	n	2.5Y5/3		few	0			29	43	n	n				
		70	85	mZCL	n	2.5Y5/4	Fe	com	0		poor	9	0	n	y				
		85	120	ZSt	n							18	0	y	y				
											Total	**118**	**106**		GR.gradient			5 o	
											MB	37	41		ST.stone>2cm			> 5% ?	2
									Droughtiness grade (DR)			1	1		Grass ley				
298	T	0	23	mCL	n	2.5Y4/3			12		-	37	37	n	n	*II*	3a	**3a**	WE MR
		23	45	mCL	n	2.5Y4-5/2	Mn	com	20			29	29	y	n				
		45	70	hCL	n	7.5YR6/6	grey	many	10			25	36	y	n				
		70	120	mSst	n							10	0	y	n				
						Sandstone					Total	**101**	**102**		GR.gradient			5 o	
						or					MB	20	37		MR.Microrelief				3a
						v. stony			**Droughtiness grade (DR)**			2	1		Grass ley, uneven with track running through				

Wetness / workability limitations are determined according to the methodology given in Appendix 3 of the ALC guidelines, MAFF 1988

Droughtiness calculations are made according to the methodology given in Appendix 4 of the ALC guidelines, MAFF 1988.

Grades are shown for drought, wetness and any other soil or site factors which are relevant. The overall Grade is set by the most limiting factor and shown on the right.

Stone types		
%	TAv	Eav
hard	1	0.5

Drift stones

Climate Data	
MDwheat	71
MDpotato	51
FCD	201
AAR	861

Wetness Class Guidelines	*II*	*III*	*IV*	*V*
SPL within 80cm, gleying within 40cm		> 54cm	< 54 cm	
SPL within 80cm, gleying at 40-70cm	>73cm	< 73cm		
No SPL but gleying within 40cm	coarse subsoil	*II*	other cases	*III*

Maximum depth of auger penetration is underlined

Climate
1226 D°
Limitation
Grade 2
215 m

Site No.		Depth cm		Texture	$CaCO_3$	Colour	Mottle colour	abund-ance	stone% hard	stone%	Struct-ure	APwheat mm	AP potato mm	Gley	SPL	WC	Wetness grade WE	Final Grade	Limiting Factor(s)
299	T	0	25	mCL	n	7.5YR4/4			12		-	40	40	n	n	*I*	2	**2**	WK CL
		25	45	mCL	n	7.5YR4/6			12		good	28	28	n	n				
		45	85	fSZL	n	10YR6/6			10			57	48	n	n				
		85	120	mZCL	n	2.5Y6/4	Fe	com	5		m/poor	27	0	y	(y)				
											Total	**152**	**116**		GR.gradient 2 o Grass ley, very high soil available water				
											MB	81	65						
									Droughtiness grade (DR)			1	1						
300	T	0	28	mCL	n	7.5YR4/4			12		-	45	45	n	n	*II*	3a	**3a**	WE
		28	45	mCL	n	7.5YR4/4			20		good	29	29	n	n				
		45	60	mCL	n	10YR5/3	FeMn	many	25			14	18	y	n				
		60	120	SL	n				40			41	9	n	n				
											Total	**128**	**101**		GR.gradient 3 o ST.stone>2cm				
											MB	57	50						
									Droughtiness grade (DR)			1	1		Grass ley, footslope				

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Grades are shown for drought, wetness and any other soil or site factors which are relevant. The overall Grade is set by the most limiting factor and shown on the right.

Stone types		
%	TAv	EAv
hard	1	0.5

Climate Data	
MDwheat	75
MDpotato	56
FCD	199
AAR	839

Wetness Class Guidelines	*II*	*III*	*IV*	*V*
SPL within 80cm, gleying within 40cm		> 54cm	< 54 cm	
SPL within 80cm, gleying at 40-70cm	>72cm	< 72cm		
No SPL but gleying within 40cm	coarse subsoil	*I*	other cases	*II*

Maximum depth of auger penetration is underlined

Climate
1327 D°
Limitation
Grade 2
175 m

Site No.		Depth cm		Texture	$CaCO_3$	Colour	Mottle colour	abund-ance	stone% hard	stone%	Struct-ure	APwheat mm	AP potato mm	Gley	SPL	WC	Wetness grade WE	Final Grade	Limiting Factor(s)
301	T	0	25	mCL	n	10YR5/3	Fe	few	4		-	43	43	n	n	*III*	3a	**3a**	WE
		25	65	mCL	n	2.5Y5/3	Fe	com	5			52	61	y	n				
		65	75	hZCL	n	2.5Y7/3	Fe	com	0		m/poor	8	7	y	n				
		75	120	hZCL	n	2.5Y7/3	MnFe	many	0		poor	27	0	y	y				
											Total	**131**	**112**		GR.gradient			valley	
						Mottled					MB	56	56		Grass ley				
						42cm-			**Droughtiness grade (DR)**			1	1						
302	T	0	28	mCL	n	10YR4/4			8		-	47	47	n	n	*I*	2	**2**	WK CL
		28	45	mCL	n	10YR6/6			10			25	25	n	n				
		45	70	hCL	n	7.5YR5/6	greyish	many	10			25	36	(y)	n				
		70	100	SZL	n		Mn	com	25			25	0	y	n				
		100	120	R	n							0	0	n	n				
											Total	**122**	**107**		GR.gradient			5 o	SE
											MB	47	51		Grass ley				
									Droughtiness grade (DR)			1	1						

Wetness / workability limitations are determined according to the methodology given in Appendix 3 of the ALC guidelines, MAFF 1988

Droughtiness calculations are made according to the methodology given in Appendix 4 of the ALC guidelines, MAFF 1988.

Grades are shown for drought, wetness and any other soil or site factors which are relevant. The overall Grade is set by the most limiting factor and shown on the right.

311602
384349

Stone types		
%	TAv	EAv
hard	1	0.5

Climate Data	
MDwheat	102
MDpotato	93
FCD	167
AAR	688

Wetness Class Guidelines	II	III	IV	V
SPL within 80cm, gleying within 40cm	> 73cm	45-73cm	<45cm	
SPL within 80cm, gleying at 40-70cm	>59cm	<59cm		
No SPL but gleying within 40cm	coarse subsoil	I	other cases	II

Climate
1461 D°
Limitation
Grade 1

hard assorted

Maximum depth of auger penetration is underlined

5 m

Site No.		Depth cm		Texture	$CaCO_3$	Colour	Mottle colour	abund-ance	stone% hard	stone%	Struct-ure	APwheat mm	AP potato mm	Gley	SPL	WC	Wetness grade WE	Final Grade	Limiting Factor(s)
303	T	0	28	ZC		10YR4/2					-	48	48			II	3b	**3b**	WE
		28	45	C		10YR5/2	Fe	com				27	27	y					
		45	80	C		5YR6/3	Fe	com			m/poor	30	36	y					
		80	120	C	n	10YR6/2					poor	28	0	y	y				
											Total	**133**	**111**		FL.Flood Risk				
						Dry					MB	31	18						
						subsoil			**Droughtiness grade (DR)**			1	1		Grass ley (good)				
304	T	0	25	C	n	2.5Y5/1	Fe	com			-	43	43	y		IV	3b	**4**	WE-FL
		25	35	C		10YR5/2	Fe	many				16	16	y					
		35	80	C		5YR6/3	greyMn	pred			poor	41	46	y	y				
		80	120	C							poor	28	0	y	y				
						wet to 35 dry					Total	**127**	**104**		FL.Flood Risk			15 cm	4
						beneath					MB	25	11					water	
									Droughtiness grade (DR)			2	1		15cm of water on surface				
305	T	0	25	hZCL		10YR4/2					-	48	48			IV	3b	**4**	WE-FL
		25	45	C		10YR5/1	Fe	many				22	22	y					
		45	80	C		5YR6/3	greyMn	pred			poor	45	36	y	y				
		80	120	C							poor	14	0	y	y				
											Total	**129**	**106**		FL.Flood Risk			under	4
											MB	27	13					water	
									Droughtiness grade (DR)			2	1		Edge of water collecting area				

306	T	0	25	C		22	Fe	few		-	48	48			*IV*	3b	**4**	WE-FL
		25	40	C		N6/0	Fe	many			22	22	y					
		40	80	C	n	10YR5/2	Mn	com		poor	31	36	y	y				
		80	120	C						poor	28	0	y	y				
										Total	**129**	**106**		FL.Flood Risk			15 cm water	4
										MB	27	13						
									Droughtiness grade (DR)		2	1		Rise in middle of wet area				
307	T	0	23	ZC		2.5Y5/1	Fe	com		-	48	48			*IV*	3b	**3b**	WE
		23	40	C		N6/0	Fe	many			22	22	y					
		40	80	C	n	7.5YR4/2	Mn	many		poor	31	36	y	y				
		80	120	C						poor	28	0	y	y				
										Total	**129**	**106**						
										MB	27	13						
									Droughtiness grade (DR)		2	1		Grass ley, edge of wet area				
308	T	0	25	hZCL	n	10YR4/3				-	48	48			*II*	3a	**3a**	WE MR
		25	35	hZCL		10YR5/4	Fe	few			17	17	(y)					
		35	80	hZCL		10YR6/2	Mn	com		m/poor	46	51	y					
		80	120	SL		10YR7/1	Mn	com		poor	32	0	y					
										Total	**142**	**115**		MR.Microrelief			hollows	3a
						saturated				MB	40	22						
						80cm			**Droughtiness grade (DR)**		1	1		Grass ley				
309	T	0	25	hCL	n	10YR4/2				-	45	45			*II*	3a	**3a**	WE MR
		25	40	mZCL		10YR6/2	Fe	com			26	26	y					
		40	80	fSZL	mod	10YR6/3	Mn	com			66	63	y					
		80	120	SL						poor	32	0	y					
										Total	**168**	**134**		MR.Microrelief			hollows	3a
										MB	66	41						
									Droughtiness grade (DR)		1	1		Grass ley				
310	T	0	25	hCL	n	10YR5/2	Fe	few		-	45	45			*IV*	3b	**3b**	WE
pit		25	40	hCL		N6/0	FeMn	many			24	24	y					

		40	55	C		10Y6/1	Mn	com		poor	17	20	y	y					
		55	80	C		5YR5/4	Mn	com		m/poor	19	22	y	(y)					
		80	120	ZC		10YR7/1	Mn	com		poor	28	0	y	y					
										Total	**132**	**110**							
						moist				MB	30	17							
						80cm			**Droughtiness grade (DR)**		1	1		Grass ley					
311	T	0	28	ZC	n	10YR 4/2				-	48	48			*IV*	3b	**3b**	WE	
		28	42	C	n	N6/0	Fe	many			22	22	y						
		42	80	C		7.5Y5/1	Mn	com		poor	31	36	y	(y)					
		80	120	C						poor	28	0	y	y					
										Total	**129**	**106**							
										MB	27	13							
									Droughtiness grade (DR)		2	1		Grass ley					
312	T	0	28	hZCL		10YR 5/2	Fe	many		-	48	48			*IV*	3b	**4**	WE-FL	
		28	42	C		N6/0	Fe	many			22	22	y						
		42	100	C		5YR6/3	greyMn	com		poor	45	36	y	(y)					
		100	120	C						poor	14	0	y	y					
						organic				Total	**129**	**106**		FL.Flood Risk			under	4	
						0-5cm				MB	27	13							
						Dry 42cm-			**Droughtiness grade (DR)**		2	1		Water collecting area, no grass, bird footprints					
313	T	0	26	ZC	n	10YR5/2				-	44	44			*II*	3b	**3b**	WE	
		26	45	hZCL		5Y6/2	Fe	com			32	32	y						
		45	70	mCL		10Y6/1	Mn	com			28	40	y						
		70	80	SL		10YR7/2					11	0	y						
		80	120	SL						poor	32	0	y						
						saturated				Total	**148**	**117**							
						70cm				MB	46	24							
									Droughtiness grade (DR)		1	1		Grass ley					
314	T	0	25	CL	n	10YR4/2				-	45	45			*II*	3a	**3a**	WE	
		25	33	CL		10YR4/1	Mn	many		good	17	17	y						

		33	80	ZCL	slight	7.5YR5/4	Mngrey	com		m/poor	49	54	y							
		80	120	SL						poor	32	0	y							
						dry				Total	**142**	**115**								
						subsoil				MB	40	22								
									Droughtiness grade (DR)		1	1		Grass ley						
315	T	0	23	SL	n	7.5YR4/2				-	39	39			*III or IV*	3a	**3a**		WE	
		23	38	SL-		7.5YR4/3				good	26	26								
		38	65	C		10YR6/2	Fe	many		poor	26	35	y	y						
		65	90	C	mod	10Y6/1	red	many		poor	18	7	y	y						
		90	120	SL						poor	24	0	y							
						SPL 44				Total	**132**	**106**								
						Saturated				MB	30	13								
						90 cm			**Droughtiness grade (DR)**		1	1		Grass ley						
317	T	0	15	mCL		7.5YR4/2				-	27	27			*II*	2	**2**		WE DR	
pit	T	15	30	mCL		10YR5/2	Fe	com			27	27	y							
		30	42	SCL		5YR6/3	Fe	many			18	18	y							
		42	70	LmS		10YR5/3	Fe	many			19	25	y							
		70	120	fSZL	mod	10YR7/2	Mn	com			75	0	y							
										Total	**166**	**97**		FL.Flood Risk			raised			
										MB	64	4								
									Droughtiness grade (DR)		1	2		Grass ley						
318	T	0	30	SCL		10YR4/2				-	51	51			*III*	3a	**3a**		WE	
		30	48	mS		10YR7/2	Mn	com			13	13	y							
		48	80	LC		N6/0	FeMn	many		poor	24	28	y	y						
		80	120	C						poor	28	0	y	y						
										Total	**115**	**91**		FL.Flood Risk						
										MB	13	-2								
									Droughtiness grade (DR)		2	2		Grass ley (good)						
319	T	0	25	SL+		10YR4/2				-	43	43			*IV*	3a	**3a**		WE	
pit		25	35	SL		10YR5/3	FeMn	com		good	17	17	y							

		35	55	C		N6/0	FeMn	many		poor	23	26	y	y						
		55	120	C		5YR6/3	Mngrey	com		poor	46	20	y	y						
										Total	**128**	**105**								
						saturated				MB	26	12								
						75cm			**Droughtiness grade (DR)**		2	1		Grass ley (good)						
320	T	0	32	SL		2.5Y6/1	Fe	com		-	54	54	y		*IV*	3a	**3a**		WE	
		32	40	SC		10YR5/2	Fe	pred		m/poor	11	11	y							
		40	80	C		5YR6/3	Mngrey	com		poor	34	39	y	y						
		80	120	C						poor	28	0	y	y						
										Total	**128**	**105**								
										MB	26	12								
									Droughtiness grade (DR)		2	1		Grass ley (good)						
321	T	0	30	mCL		10YR5/2	Fe	com		-	54	54			*IV*	3b	**3b**		WE	
		30	40	mCL		N6/0	FeMn	many		good	21	21	y							
		40	70	C		7.5Y5/1	Mn	com		poor	27	39	y	y						
		70	120	ZC		10YR7/2	Mn	com		m/poor	38	0	y	y						
										Total	**140**	**114**								
						Deep				MB	38	21								
						topsoil?			**Droughtiness grade (DR)**		1	1		Grass ley (good)						
322	T	0	25	hCL		10YR5/2	Fe	com	4	-	43	43	y		*IV*	3b	**3b**		WE	
		25	43	SL		N6/0	FeMn	com	10	good	28	28	y							
		43	75	C	slight	7.5Y5/1	Mn	com		poor	27	35	y	y						
		75	120	SCL	mod	10YR7/2	Mn	many		poor	36	0	y	y						
										Total	**134**	**106**								
						saturated				MB	32	13								
						75cm			**Droughtiness grade (DR)**		1	1		Grass ley (good)						
323	T	0	27	LmS	n	7.5YR4/2				-	35	35			*III*	2	**2**		WE DR TX	
		27	40	LmS		10YR5/4				good	16	16								
		40	60	C		N6/0	Fe	many		poor	20	26	y	y						
		60	90	mCL	mod	10YR6/2	Mn	com			30	16	y							
		90	120	SL						poor	24	0	y							

						LSS					Total	**125**	**93**							
						ZCL+SL					MB	23	0							
						90 cm				**Droughtiness grade (DR)**		2	2		Grass ley with mole hills					
324	T	0	23	mCL	n	10YR4/2			4		-	40	40			*III*	3a	**3a**	WE	
		23	35	SCL		10YR5/3						18	18			*or* *II*				
		35	60	C	n	2.5Y5/2	Fe	few				32	40	(y)						
		60	80	C	n	10YR5/3	Fe	com			poor	14	13	y	y					
		80	120	C							poor	28	0	y						
											Total	**132**	**111**							
						or SCL					MB	30	18							
										Droughtiness grade (DR)		1	1		Grass ley; deep ditch to south					
325	T	0	28	LmS	n	10YR5/2	Fe				-	36	36			*IV*	3a	**3a**	WE	
		28	40	SCL		N6/0	Fe	many			good	23	23	y						
		40	90	C		10Y6/1	FeMn	many			poor	41	39	y	y					
		90	120	C							poor	21	0	y						
											Total	**121**	**98**							
											MB	19	5							
										Droughtiness grade (DR)		2	2		Grass ley with mole hills					
326	T	0	30	SL		10YR4/2	Fe	few			-	51	51			*III*	2	**3a**	WE-FL	
		30	50	LmS		10YR5/3	FeMn	com				18	18	y						
		50	80	LC		10YR7/2	Mn	com			poor	21	25	y	y					
		80	120	LC	mod	10YR7/2	Mn	com			poor	28	0	y	y					
											Total	**118**	**94**		FL.Flood Risk				3a	
						saturated					MB	16	1							
						80cm				**Droughtiness grade (DR)**		2	2		Grass ley (near edge of saturated zone)					
327	T	0	25	LmS		10YR4/2					-	33	33			*III*	2	**3a**	DR	
		25	48	LmS		10YR7/3	Mn	com				21	21	y						
		48	80	SC		10Y6/1	FeMn	many			poor	27	29	y	y					
		80	120	SC							poor	32	0	y	y					
						moist					Total	**112**	**82**		FL.Flood Risk			SW	3a	

						25cm					MB	10	-11						
										Droughtiness grade (DR)		2	3a		Grass ley; waterlogged area to SW and SE				
328	T	0	25	LmS		10YR4/2					-	33	33			*I*	1	**3a**	DR
		25	40	LmS		10YR4/1						14	14						
		40	65	mS		10YR7/3						15	18						
		65	90	LmS			Mn	com				15	5	y					
		90	120	SCL							poor	24	0	y					
						Moist from 65cm					Total	**100**	**68**						
											MB	-2	-25						
										Droughtiness grade (DR)		3a	3a		Grass ley				
329	T	0	22	LmS		10YR4-5/1	Fe	com			-	29	29			*IV*	2	**3a**	GW DR
pit		22	45	LmS		10YR6/1	MnOM	com			good	28	28	y				3b	
		45	52	SC			FeMn	many			poor	8	9	y					
		52	65	mS		10YR6/4	OM Mn	com				7	9	y					
		65	120	SC		10YR7/1					poor	44	7	y	y				
						Wet from					Total	**115**	**81**		GW.Groundwater				3a N
						25cm					MB	13	-12						3b S
										Droughtiness grade (DR)		2	3a		Grass ley, edge of waterlogged area				
330	T	0	27	LmS		10YR4/2					-	35	35			*III*	2	**3a**	MR
		27	45	LmS		10YR6/1	Mn	com			good	22	22	y					
		45	65	SC/SCL			Fe	many			m/poor	21	28	y					
		65	80	ZC	n	10YR5/2	Mn	com			poor	11	6	y	y				
		80	120	ZC							poor	28	0	y	y				
						Wet from					Total	**116**	**91**		MR.Microrelief			uneven	3a
						27 cm					MB	14	-2						
										Droughtiness grade (DR)		2	2		Grass ley, edge of waterlogged area				
331	T	0	30	LmS		10YR4/2					-	39	39			*III*	2	**3a**	DR
		30	70	mS		10YR7/3	Mn	com				24	28	y					
		70	120	SCL			Fe	many			poor	40	0	y	y				
						Wet from					Total	**103**	**67**						

						50 cm				MB	1	-26						
									Droughtiness grade (DR)		3a	3a		Grass ley				
332	T	0	30	LmS		10YR4/2				-	39	39			*I*	1	**2**	DR TX
		30	50	LmS		10YR5/2					18	18						
		50	80	SL-	n	10YR6/3	Mn	com			33	30	y					
		80	120	SCL						poor	32	0	y					
						Dry				Total	**122**	**87**						
						to 80cm				MB	20	-6						
									Droughtiness grade (DR)		2	2		Grass ley				

Appendix 3: Site Photographs and Pit Descriptions

Location 297 : spit of topsoil and underlying upper subsoil.

Friable upper subsoil with many medium and small drift stones.

Some iron and manganese mottles.

Overlies (stoneless) soft siltstone at 45cm.

Location 299 : spit of topsoil and underlying upper subsoil.

Very friable.

Slightly stony.

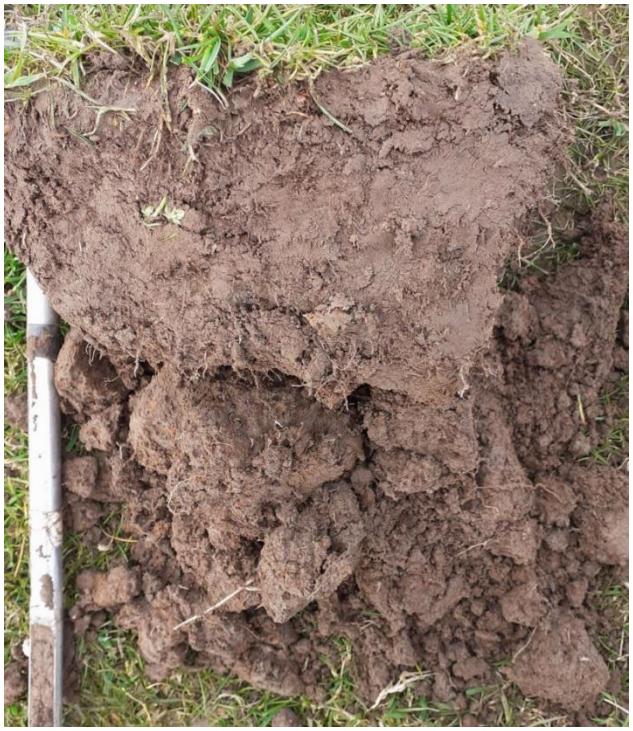
Unmottled subsoil of similar consistence and texture to topsoil (but lower organic matter).

Pit	**310**	Ley sheep grazed.
Ap(g)	0-25cm	Dark greyish brown (10YR5/1) heavy clay loam with some iron mottles. Friable fine subangular blocky fragments with many roots.
Eg	25-40cm	Grey (N6/0) heavy clay loam with many iron mottles. Friable medium subangular blocky structure. Non-calcareous.
Btg	40-65cm	Light grey (10Y7/1) clay with common reddish-brown (7.5YR5/4) and manganese mottles. Firm well-developed medium prismatic structure with roots.
BCg	65-120cm	Stoneless grey clay (10YR6/1) with common manganese mottles. Moderate medium subangular blocky. Not saturated.

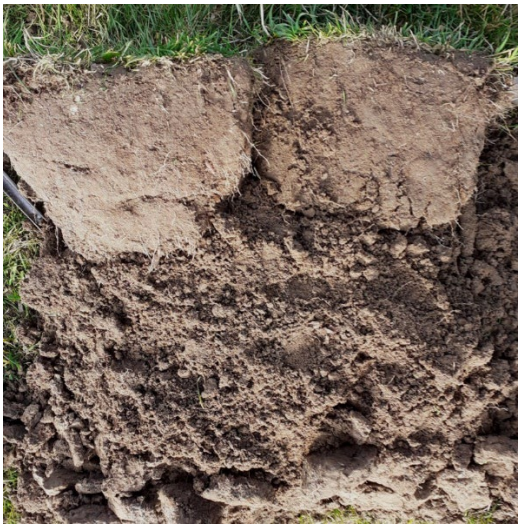
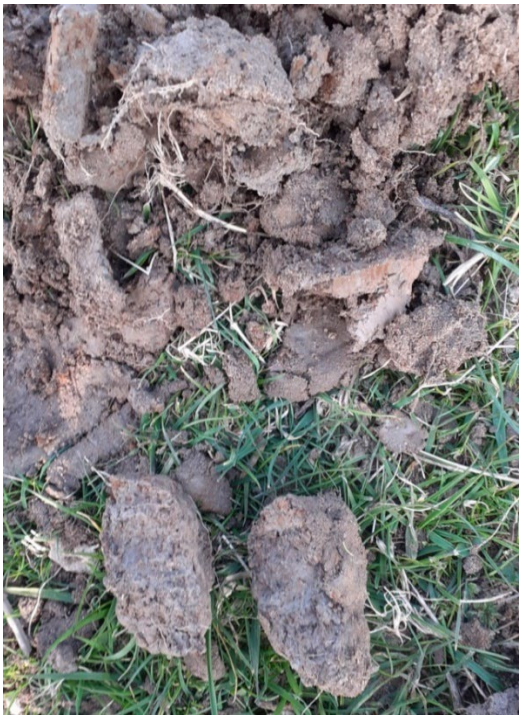
Location 310**:** pit to 60cm.

310 : structures

Pit	**317**	Grass ley
A1	0-15cm	Dark brown (7.5Y4/2) medium clay loam with many roots.
A2(g)	15-30cm	As above but greyish brown (7.5YR5/2) with iron mottles. Roots
Eg1	30-42cm	Medium clay loam/ sandy clay loam with many mottles.
Eg2	42-70cm	Pale brown (10YR5/3) loamy medium sand with many mottles.
BCg	70-100cm	Pale grey (10YR7/2) fine sandy silt loam. More compact.

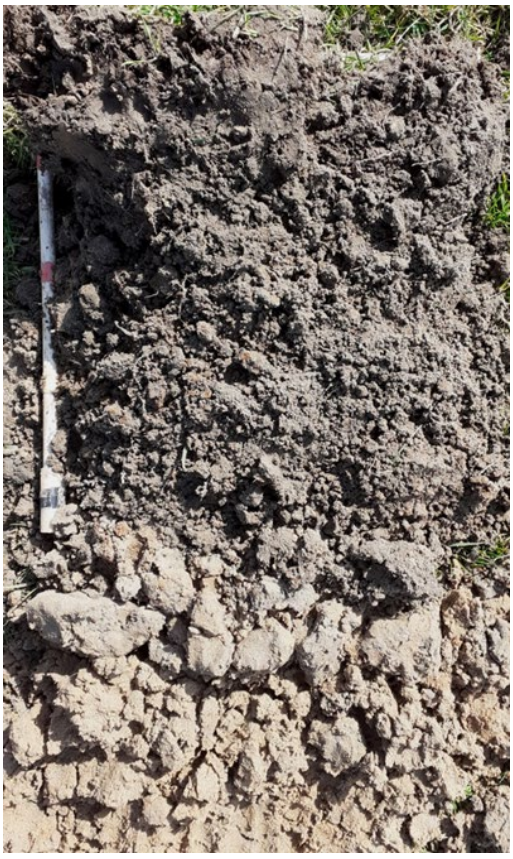


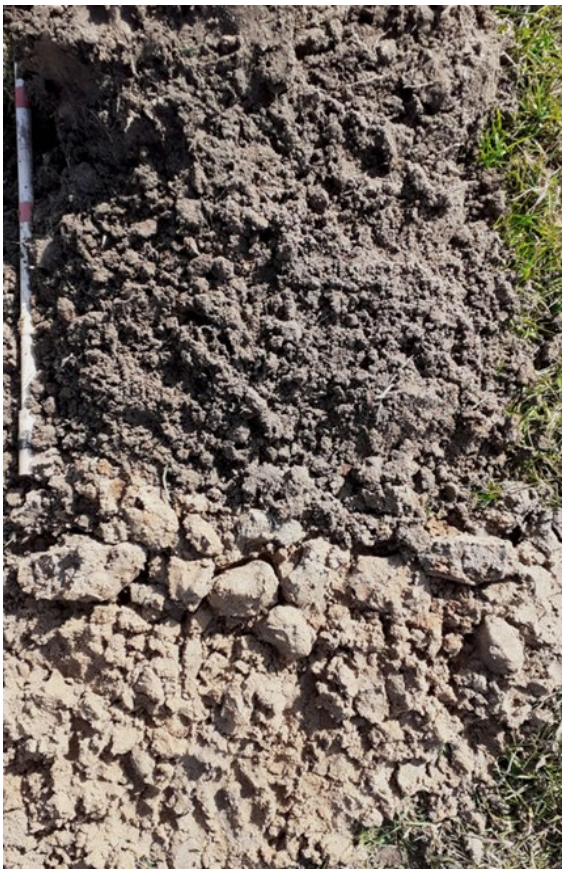
Pit	**319**	Grass ley
Ap	0-25cm	Dark brown (7.5YR4/2) sandy loam. Compact with many roots breaking to coarse granular structure.
Eg	23-35cm	Pale brown (10YR5/3) sandy loam with common faint iron mottles. Very friable granular structure with roots
Btg	35-75cm	Grey (N6/0) clay with many greyish reddish brown mottles (7.5YR5/2). Firm moderate medium angular blocky structure.
	75cm +	As above but moist (groundwater level).

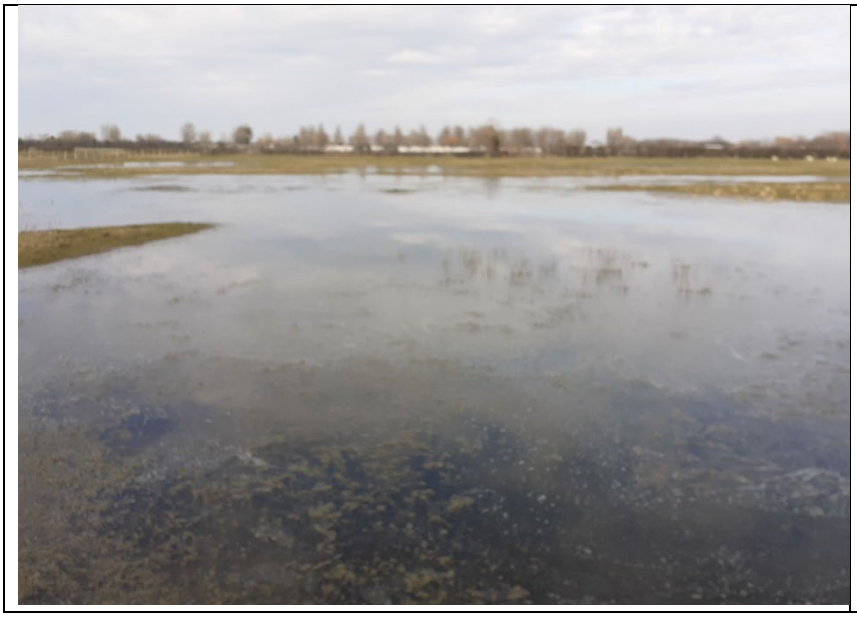
Location 319: structures 0-35cm	319: clay subsoil (35cm -)
	

Pit	**329**	Grass (improved)
Ap	0-23cm	Dark brown (10Y4/1-5-1) light sandy loam. Very friable coarse granular structure with many roots.
Eg	23-41cm	Greyish brown (10YR6/1) loamy medium sand. Wet and mottled. Loose with roots and organic matter coats.
Btg	41-65cm	Greyish brown (10YR6/4) mottled sandy clay loam, firmer medium angular blocky structure.
BCg	65cm-	Compact sandy clay on one side of pit extending to 120cm depth. Other side of pit was saturated sand to 80cm depth.

Location 329: structures (black marker is 40cm deep)





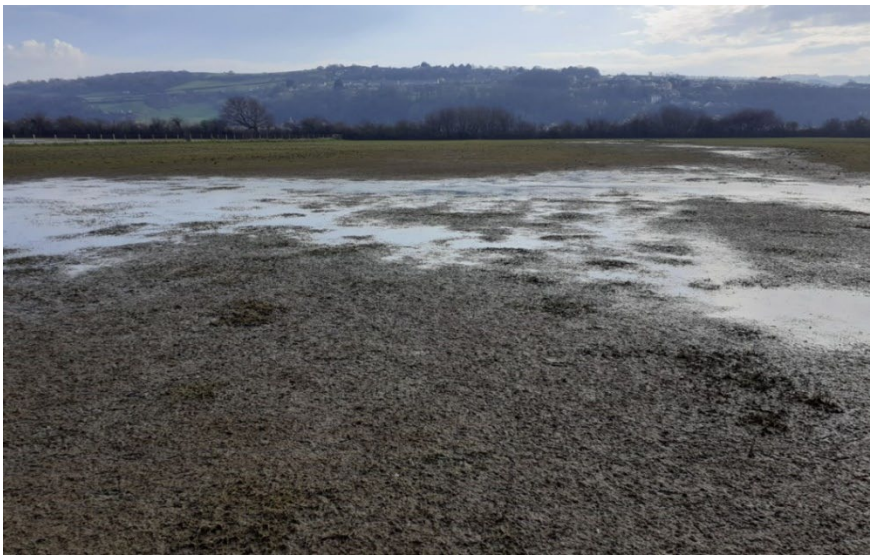


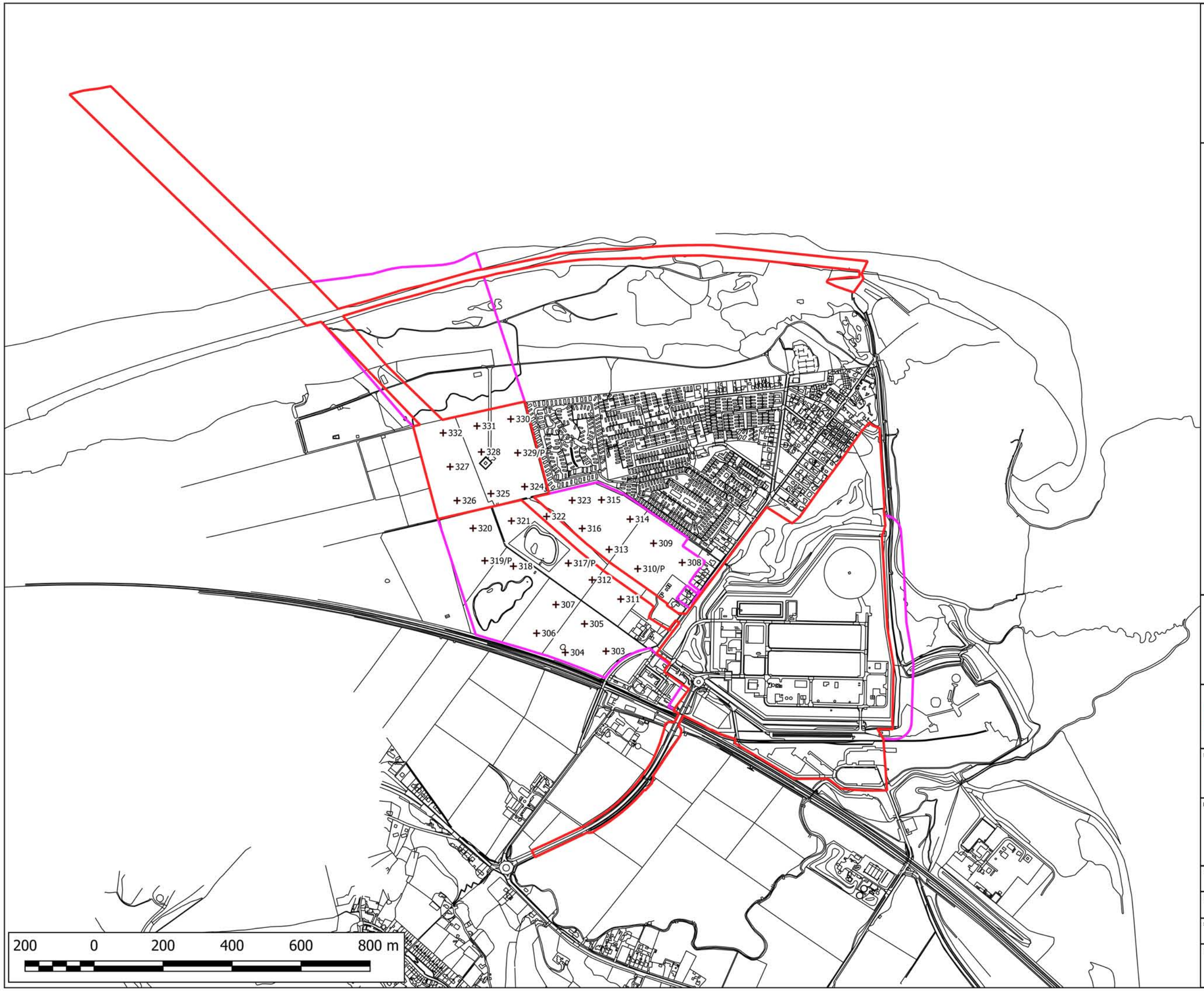
View from 304 to 305.

Slight depression in conjunction with slowly permeable clay subsoil has caused up to 20cm of water to collect in this area.

If soil within 40cm is subject to wetness for more than 210 days in a typical year sets WC at V and Grade 4.

307 view to 306 – wet or submerged area. Left shows the compact subsoil clay at 35cm on which the water seems to be perching.





Key:

KEY

Observation

+ 1 Auger

+ P Pit

TCPA Boundary

Survey Boundary

HyNet North West

PROJECT TITLE

HyNet North West CO2 Pipeline TCPA

DRAWING TITLE

OBSERVATION PLAN

DRAWING STATUS

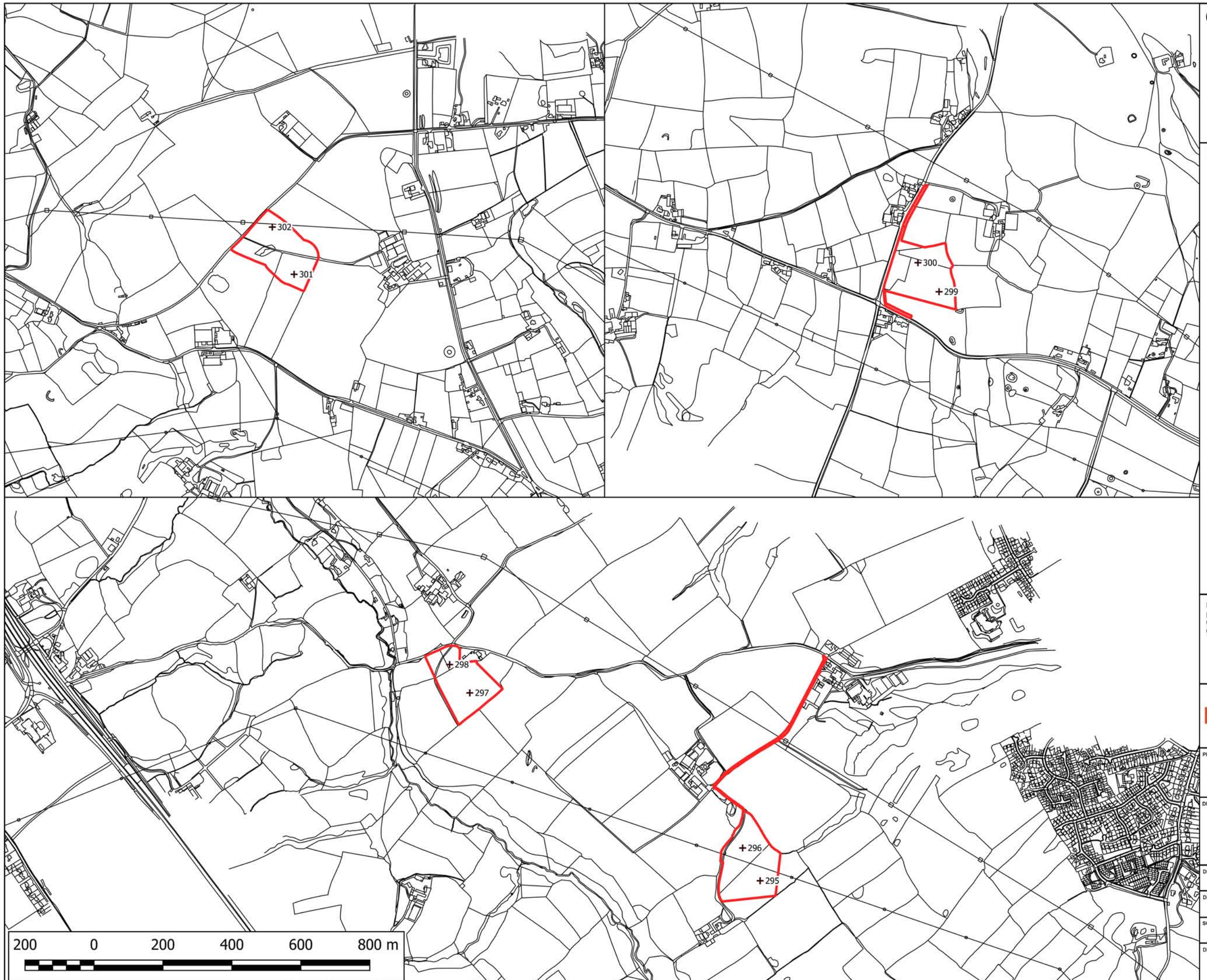
FOR INFORMATION

DRAWN	CHECKED	APPROVED	AUTHORISED
AGM	SRW	AIF	EM

SCALE @ A3 SIZE	DATE	REVISION
1:10,000@A3	15/06/2022	P01

DRAWING NUMBER

RAC/9188/1.1



Key:

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Observation

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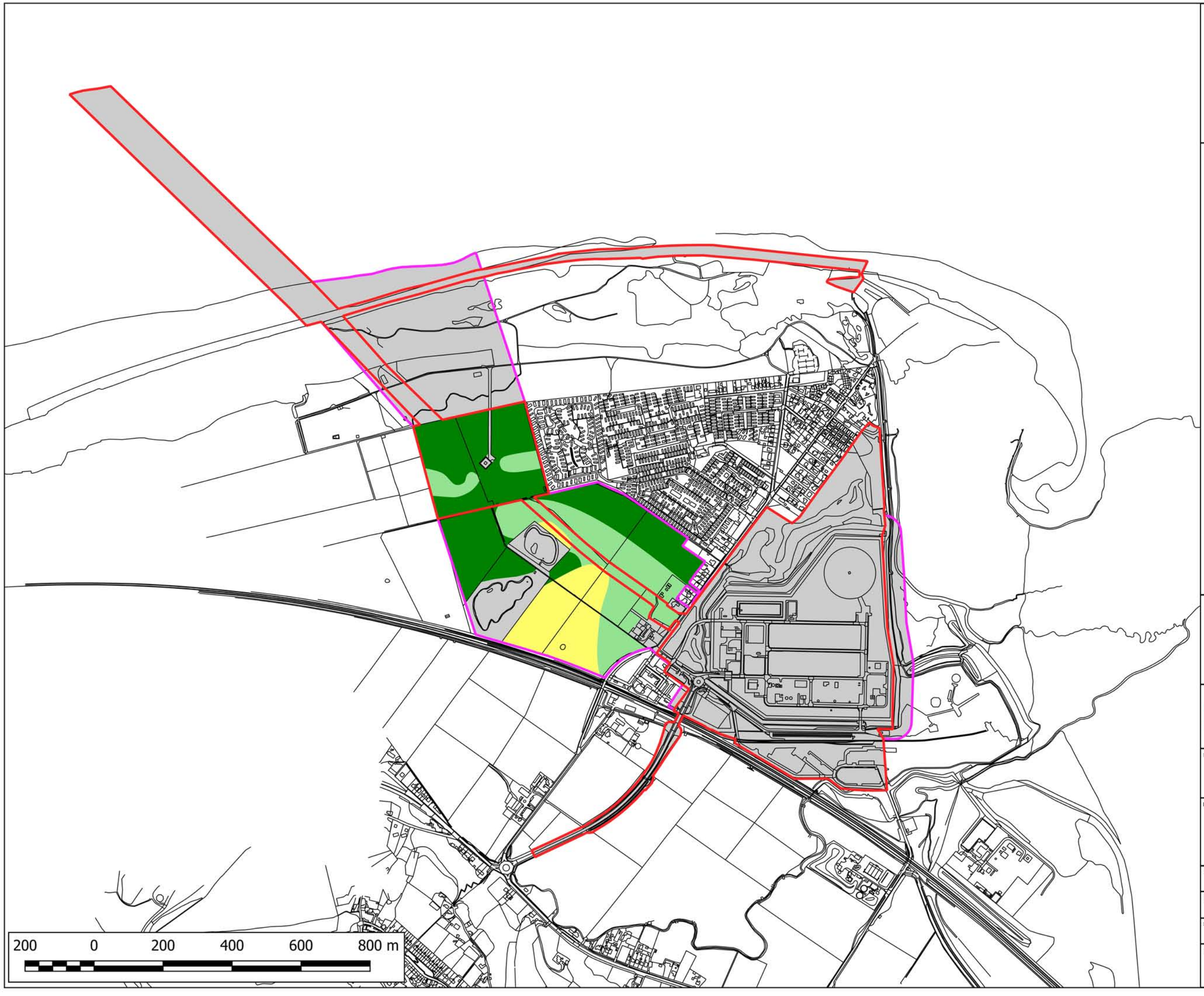
1:10,000@A3	15/06/2022	P01

DRAWING NUMBER

RAC/9188/1.1



Key:

KEY

Agricultural Land Classification

- Grade 1
- Grade 2
- Subgrade 3a
- Subgrade 3b
- Grade 4
- Grade 5
- Non-agricultural
- Not present

HyNet North West

PROJECT TITLE
HyNet North West CO2 Pipeline TCPA

DRAWING TITLE
AGRICULTURAL LAND CLASSIFICATION

DRAWING STATUS
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SCALE @ A3 SIZE	DATE	REVISION
1:10,000@A3	15/06/2022	P01

DRAWING NUMBER
RAC/9188/2.1

Key:

KEY

Agricultural Land Classification

- Grade 1
- Grade 2
- Subgrade 3a
- Subgrade 3b
- Grade 4
- Grade 5
- Non-agricultural
- Not present

200 0 200 400 600 800 m

HyNet North West

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DRAWING NUMBER
RAC/9188/2.1