

# **Agricultural Land Classification:**

North Dairy Farm, Pulham, Dorset,

Prepared for:  
**BSR Energy Ltd**

Prepared by:  
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Date:  
**29<sup>th</sup> January 2020**

Project Number:  
**C677**

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Contract/Proposal No:	C677
Issue:	1
Author:	Rob Askew
Date:	29 <sup>th</sup> January 2020

*Our interpretation of the site characteristics is based on available data made during our desktop study and soil survey. This desktop study and soil survey has assessed the characteristics of the site in relation to the assessment of its Agricultural Land Classification. It should not be relied on for alternative end-uses or for other schemes. This report has been prepared solely for the benefit of BSR Energy Ltd. No warranty is provided to any third party and no responsibility or liability will be accepted for any loss or damage in the event that this report is relied upon by a third party or is used in circumstances for which it was not originally intended.*

<b>Version Control Record</b>			
<b>Issue</b>	<b>Description of Status</b>	<b>Date</b>	<b>Initials</b>
A	First Draft	24/01/2020	RWA
1	First issue to Client	29/01/2020	RWA

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# 1 INTRODUCTION

## 1.1 Background

1.1.1 This report was commissioned by BSR Energy Ltd to determine the quality of agricultural land proposed for development of a solar photovoltaic (PV) array at North Dairy Farm, Pulham, Dorset, DT10 2EH ('the Study Area'). The assessment was made in accordance with the Agricultural Land Classification (ALC) system for England and Wales (see 'Methodology' below).

1.1.2 The Study Area comprises approximately 168 hectares (ha) of agricultural land at North Dairy farm. The site is located to the east of Pulham and west of Hazelbury Bryan, Dorset, as shown on **Figure 1**. A detailed description of the Site is provided in Section 2.3.

## 1.2 Methodology

1.2.1 The work has been carried out by a Chartered Scientist (CSci), who is a Fellow (F.I. Soil Sci) of the British Society of Soil Science (BSSS). The soil surveyor also meets the requirements of the BSSS Professional Competency Scheme for ALC (see IPSS PCSS Document 2 '*Agricultural Land Classification of England and Wales*'<sup>1</sup>). The BSSS Professional Competency Scheme is endorsed, amongst others, by the Department for Environment, Food and Rural Affairs (Defra), Natural England, the Science Council, and the Institute of Environmental Assessment and Management (IEMA).

1.2.2 This assessment is based upon the findings of a study of published information on climate, geology and soil in combination with a soil investigation carried out in accordance with the Ministry of Agriculture, Fisheries and Food (MAFF)<sup>2</sup> '*Agricultural Land Classification of England and Wales: Revised Guidelines and Criteria for Grading the Quality of Agricultural Land*', October, 1988 (henceforth referred to as the 'the ALC Guidelines').

1.2.3 The ALC system 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 ALC system divides agricultural land into five grades (Grade 1 '*Excellent*' to Grade 5 '*Very Poor*'), with Grade 3 subdivided into Subgrade 3a '*Good*' and Subgrade 3b '*Moderate*'. Agricultural land classified as Grade 1, 2 and Subgrade 3a falls in the '*best and most versatile*' category in Paragraph 170 and 171 of the National Planning Policy Framework (NPPF) revised in February 2019. Further details of the ALC system and national planning policy implications are set out by Natural England in Technical Information Note 049<sup>3</sup>.

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<sup>1</sup> British Society of Soil Science. Professional Competency Scheme Document 2 '*Agricultural Land Classification of England and Wales*'. Available online @ <https://www.soils.org.uk/sites/default/files/events/flyers/ipss-competency-doc2.pdf> Last viewed 28<sup>th</sup> January 2020

<sup>2</sup> The Ministry of Agriculture, Fisheries and Food (MAFF) was incorporated within the Department for Environment, Food and Rural Affairs (Defra) in June 2001

<sup>3</sup> Natural England (December, 2012). '*Agricultural Land Classification: protecting the best and most versatile agricultural land (TIN049)*'. Available online @ <http://publications.naturalengland.org.uk/publication/35012> Last viewed 28<sup>th</sup> January 2020

- 1.2.4 A semi-detailed ALC survey of the Study Area was carried out on the 18<sup>th</sup> December 2019. The semi-detailed survey involved examination of the soil's physical properties at 42 locations located on a 200m by 200m grid, i.e. at a density of approximately 1 auger bore per 4 ha of land surveyed. The soil profile was examined at each sample location to a maximum depth of approximately 1.2 m by hand with the use of a 5 cm diameter Dutch (Edleman) soil auger. Two soil pits were hand dug with a spade to examine certain soil physical properties, such as soil structure and stone content, more closely. The locations of the auger bores and soil pits are shown on **Figure 1**.
- 1.2.5 The sample locations were located using a hand-held Garmin E-Trec Geographic Information System (GIS) to enable the sample locations to be relocated for verification, if necessary.
- 1.2.6 The soil profile at each sample location was described using the '*Soil Survey Field Handbook: Describing and Sampling Soil Profiles*' (Ed. J.M. Hodgson, Cranfield University, 1997). Each soil profile was ascribed an Agricultural Land Classification (ALC) grade following the MAFF ALC Guidelines.
- 1.2.7 A sample of topsoil was collected at auger bore locations 1, 7, 12, 23, 26 and 37. All six samples of topsoil were sent to an accredited laboratory for particle size analysis, i.e. the proportions of sand, silt and clay. This is to determine the definitive texture class of the topsoil, especially to distinguish between medium clay loams (i.e. <27% clay), heavy clay loams (27% to 35% clay) and clays (>35% clay).

## 2 AGRICULTURAL LAND CLASSIFICATION

### 2.1 Background

2.1.1 This section of the report sets out the findings of the semi-detailed Agricultural Land Classification (ALC). It is based on a desktop study of relevant published information on climate, topography, geology, and soil in conjunction with a soil survey carried out on Site by a Chartered Soil Scientist on 18<sup>th</sup> December 2019 (see 'Methodology' above).

2.1.2 As described in the ALC Guidelines, the main physical factors influencing agricultural land quality are:

- climate;
- site;
- soil;
- interactive limitations.

3.1.2 These factors are considered in turn below.

### 2.2 Climate

2.2.1 Interpolated climate data relevant to the determination of the Agricultural Land Classification (ALC) grade of land within the Study Area is given in Table 2.1 below.

<b>Table 2.1: ALC Climate Data for National Grid Reference ST728082</b>	
<b>Climate Parameter</b>	<b>Data</b>
Average Altitude (m)	83
Average Annual Rainfall (mm)	980
Accumulated Temperature above 0°C (January – June)	1480
Moisture Deficit (mm) Wheat	94
Moisture Deficit (mm) Potatoes	83
Field Capacity Days (FCD)	199
Grade According to Climate	1

2.2.2 With reference to Figure 1 'Grade according to climate' on page 6 of the ALC Guidelines, there is no overall climatic limitation to the quality of agricultural land within the Study Area.

- 2.2.3 The Study Area has 199 Field Capacity Days (FCD), i.e. it is predicted the land will be at field capacity (i.e. near saturation point) for 199 days per year, mainly over the late autumn, winter and early spring. This is a relatively long period in comparison with central, lowland England, i.e. approximately 150 FCD.

## 2.3 Study Area

- 2.3.1 As shown on the location map given as **Figure 1**, the approximately 168 ha Site is located to the west of Pulham and east of Hazelbury Bryan, Dorset. The National Grid Reference at the centre of the Study Area is ST 72659 08177. The River Lydden enters the Study Area in the west, to the north of Cannings Court, and passes through a shallow valley towards the northeast.

- 2.3.2 With regard to the ALC Guidelines, agricultural land quality can be limited by one or more of three main site factors as follows:

- gradient;
- micro-relief (i.e. complex change in slope angle over short distances); and
- risk of flooding.

### I. Gradient and Micro-Relief

- 2.3.3 The land at the Site is level to gently sloping. The lowest ground, at an elevation of approximately 80 metres (m) Above Ordnance Datum (AOD), is in the centre, and in the shallow valley of the River Lydden, orientated west to northeast, through the northern half of the Study Area. The highest ground, at an elevation of between 85 - 90 mAOD, is located in: (i) the northeast, to the north of North Dairy Farm, (ii) the northwest, to the south of East Pulham and Manor Farm, (iii) the southwest, and (iv) the southeast near Boywood Farm.
- 2.3.4 The quality of agricultural land is not limited by gradient as the angle of slope does not exceed 7° (see Table 1 of the ALC Guidelines, 1988). Likewise, the quality of agricultural land at the Site is not limited by micro-relief, i.e. complex changes in slope angle and direction over short distances.

### II. Risk of Flooding

- 2.1.1 From the Government Flood Map for Planning website<sup>4</sup>, the lower-lying parts of the Study Area in the centre, and in the shallow valley of the River Lydden, are in Flood Zones 2 and 3, with a medium and high risk of fluvial flooding, respectively. The higher ground in the northeast, northwest and southern parts of the Study Area, i.e. above an elevation of approximately 85 mAOD, are in Flood Zone 1, at low risk of flooding.

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<sup>4</sup> Available online @ <https://flood-map-for-planning.service.gov.uk/>

- 2.1.2 It is predicted that the quality of agricultural land on the lower-lying parts of the Study Area, in the centre and shallow valley of the River Lydden, is limited by flood risk, especially in during the winter. However, there no records of flooding which confirm this in terms of the ALC Guidelines, i.e. Table 2 '*Grade according to flood risk in summer*' and/or Table 3 '*Grade according to flood risk in winter*'.

## 2.4 Soil

### I. Geology/Soil Parent Material

- 2.4.1 British Geological Survey (BGS) information available online<sup>5</sup> has been utilised to identify the Bedrock underlying the Site and any Superficial (Drift) Deposits over the Bedrock. This information helps to determine the parent material from which the soil has formed.
- 2.4.2 The BGS information (1:50,000) indicates the Study Area is underlain by bedrock mainly in the Stewartby Member And Weymouth Member (undifferentiated, mudstone). There are small areas of Hazelbury Bryan Formation (mudstone) in the northeast and the south, and Stour Formation (mudstone) in the south. An outcrop of limestone in the Sturminster Pisolite Member (limestone, ooidal), and Clavellata Formation (limestone, argillaceous rocks and subordinate sandstone, interbedded), occurs on higher ground (i.e. 85 – 90 mAOD) in the southwest.
- 2.4.3 The BGS information (1:50,000) indicates that most of the Study Area is not covered by any superficial deposits. However, there is Alluvium (clay, silt, sand and gravel) adjacent to the River Lydden, with a narrow band of River Terrace Deposits (sand and gravel), in the river valley and in lower-lying parts (i.e. 80 – 85 mAOD) in the centre and southeast.

### II. Published Information on Soil

- 2.4.4 The Soil Survey of England and Wales (SSEW) soil map of South West England (Sheet 5) at a scale of 1:250,000 and accompanying Bulletin No. 14 '*Soils and their Use in South West England*' (D.C Findlay *et al*, Harpenden, 1984) reports that agricultural land within the Study Area is covered by soil grouped mainly within the Wickham 2 association, with soils in the Fladbury 1 association in the northeast, and stony soils in the Sherborne association in the southwest.
- 2.4.5 The SSEW describes how the Wickham 2 association consists mainly of silty clay loam or clay loam topsoils over stoneless or slightly stony clay subsoils, developed extensively where thin loamy drift covers Jurassic and Cretaceous clay shales. Occurring mainly on level or gently sloping sites, these soils which have slowly permeable subsoils are seasonally waterlogged (Wetness Class III and IV). In the South West of England, the proportion of slowly permeable

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<sup>5</sup> British Geological Survey 'Geology of Britain Viewer'. Available online @ <http://www.bgs.ac.uk/discoveringGeology/geologyOfBritain/viewer.html>  
Last viewed 28th January 2020



and seasonally waterlogged Wickham and clayey Denchworth soils is greater than in the Midlands. Likewise, soils in South West England on level and gently sloping sites, are waterlogged for prolonged periods during the growing season.

- 2.4.6 The SSEW describe how the deep, clayey, alluvial soils of the Fladbury 1 association are widespread on flat valley floors in the Midlands and South West England. Fladbury soils, pe-lo-alluvial gley soils, are clayey throughout and prominently mottled directly below the topsoil. Fladbury, Wyre and Thames subsoils are usually slowly permeable. However, the primary source of waterlogging is groundwater which fluctuates seasonally with changes in the river level. The duration of waterlogging is often related to elevation. In winter months, a water-table is at shallow depth for long periods in many Thames and Fladbury soils (Wetness Class IV) and locally they suffer prolonged waterlogging (Wetness Class V). Flooding is a perennial problem, its frequency and distribution depending on rainfall, catchment configuration and flood control measures. Many areas suffer partial inundation two or three times annually although, duration is short.
- 2.4.7 The SSEW describes how the Sherborne association is extensive in South West England. The soils are developed on Jurassic limestone with thin interbedded clays giving a varied soil pattern. Sherborne and Moreton soils are very permeable and naturally well drained (Wetness Class I). Evesham soils have slowly permeable subsoils and are usually seasonally waterlogged (Wetness Class III). Denchworth soils, which commonly occupy receiving sites, e.g. at the bottom of slopes, have slowly permeable subsoils and are difficult to drain effectively.

### III. Soil Survey

- 2.4.7.1 A log of the 42 soil profiles recorded over the Study Area (see Figure 1) is given as **Appendix A**. A description of two soil pits is provided as **Appendix B**. The semi-detailed survey has determined the presence of three main type of soil, as follows:
- (i) Type 1 (c.f. Wickham 2 association): This type of soil is extensive over the whole Study Area, and comprises heavy clay loam or clay topsoil, overlying slowly permeable clay subsoil which is waterlogged for long periods over the winter (Wetness Class IV). Occasional profiles were placed in Wetness Class III.
  - (ii) Type 2 (c.f. Fladbury 1 association): This type of soil, which comprises grey clay topsoil overlying slowly permeable, grey clay subsoil which is waterlogged for long periods over the winter (Wetness Class IV). This type of soil is associated with low-lying parts of the Study Area which are waterlogged by groundwater and may be the subject of seasonal flooding for short durations, in the winter.
  - (iii) Type 3 (c.f. Sherborne association): This type of soil occurs on higher ground (i.e. 85 – 90 mAOD) in the southwest. BGS information (1:50,000) indicates this part of the

Study area is underlain by limestone. The topsoil is medium clay loam to heavy clay loam and it is moderately stony (brashy), with a mixture of medium (2 – 6 cm), hard stones (flint and limestones). The subsoil is moderately stony clay, which is gleyed and has many distinct ochreous mottles. The lower subsoil also has a few small manganese concretions. The profiles are slowly permeable and seasonally waterlogged (Wetness Class IV).

- 2.4.8 To substantiate topsoil texture determined during the ALC survey by hand-texturing, six samples of topsoil were collected over the Site (i.e. auger location 1, 7, 12, 23, 26 and 37, Figure 1). The six topsoil samples were sent to an accredited laboratory for analysis of particle size distribution (PSD), based on the British Standard Institution particle size grades. The certificate of analysis is provided as **Appendix C**. The findings of the PSD analysis are shown in Table 2.2 below:

<b>Topsoil Sample Location (See Fig. 1)</b>	<b>% sand 0.063-2.0 mm</b>	<b>% silt 0.002- 0.063 mm</b>	<b>% clay &lt;0.002 mm</b>	<b>ALC Soil Texture Class</b>
<b>AB1</b>	8	26	66	Clay (C)
<b>AB7</b>	39	34	27	Heavy Clay Loam (HCL)
<b>AB12</b>	9	28	63	Clay (C)
<b>AB23</b>	45	27	28	Heavy Clay Loam (HCL)
<b>AB26</b>	49	27	24	Medium Clay Loam (MCL)
<b>AB37</b>	47	30	23	Medium Clay Loam (MCL)

## 2.5 Interactive Limitations

- 2.1.3 From the published information above, together with the findings of the semi-detailed soil survey, it has been determined that the quality of agricultural land at the Site is limited mainly by a soil wetness limitation. This occurs where the soil water regime adversely affects plant growth or imposes restrictions on cultivations or grazing by livestock. The ALC grade according to soil wetness at the Site is given in Table 2.3 below (based on Table 6 'Grade According to Soil Wetness – Mineral Soils' in the ALC Guidelines):

<b>Table 2.3: ALC Grade According to Soil Wetness</b>		
<b>Wetness Class</b>	<b>Texture of the Top 25 cm</b>	<b>176-225 Field Capacity Days</b>
III	Sand, Loamy Sand, Sandy Loam, Sandy Silt Loam	3a
	Sandy Clay Loam/Medium Silty Clay Loam /Medium Clay Loam*	3a
	Heavy Clay Loam**	3b
	Sandy Clay/Silty Clay/Clay	4
IV	Sand, Loamy Sand, Sandy Loam, Sandy Silt Loam	3b
	Sandy Clay Loam/Medium Silty Clay Loam /Medium Clay Loam*	3b
	Heavy Clay Loam**	4
	Sandy Clay/Silty Clay/Clay	4
Key * <27% clay; and ** >27% clay		

2.1.4 In a climate area with 199 FCD, soil profiles with medium clay loam topsoil and slowly permeable clay subsoil which is waterlogged for a long period over the winter (i.e. Wetness Class IV) are limited by soil wetness to Subgrade 3b.

2.1.5 Where the topsoil is heavy clay loam or clay overlying slowly permeable clay subsoil which is waterlogged for a long period over the winter (i.e. Wetness Class IV), the profiles are limited by soil wetness to Grade 4 in this climate area (i.e. 199 FCD).

## 2.6 ALC Grading at the Site

2.6.1 The semi-detailed ALC survey carried out as part of this investigation in December 2020 has determined that the quality of agricultural land at the Site is limited mainly by soil wetness to Subgrade 3b and Grade 4, as follows (see ALC limitations in Soil Profile Logs given as **Appendix A**):

### I. Subgrade 3b

2.6.2 In a climate area with 199 FCD, soil profiles with medium clay loam topsoil and slowly permeable clay subsoil which is waterlogged for a long period over the winter (i.e. Wetness Class IV) are limited by soil wetness to Subgrade 3b.

### II. Grade 4

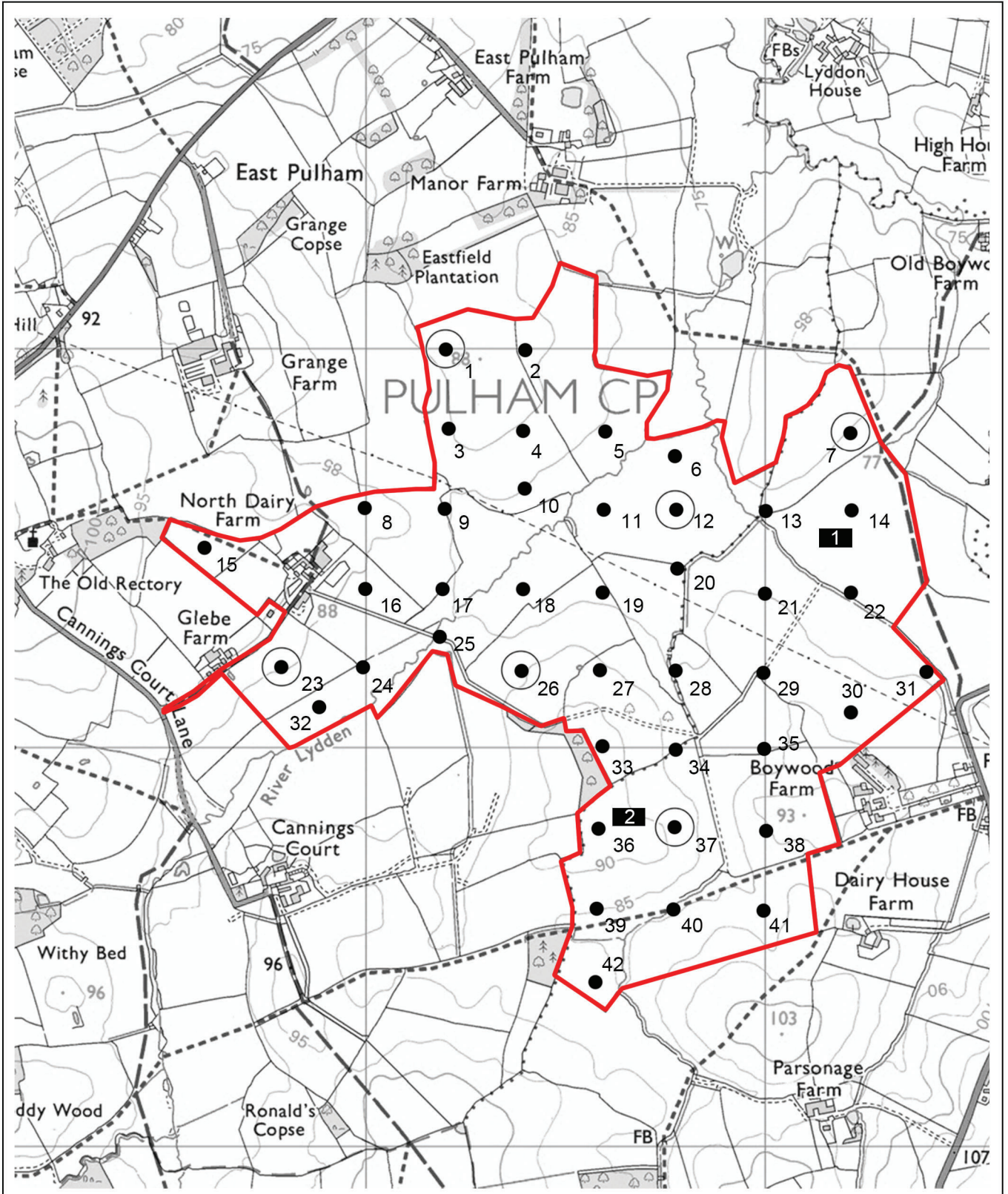
2.6.3 Where the topsoil is heavy clay loam or clay overlying slowly permeable clay subsoil which is waterlogged for a long period over the winter (i.e. Wetness Class IV), the profiles are limited by soil wetness to Grade 4 in this climate area (i.e. 199 FCD).

### III. Non-agricultural / Other Land

- 2.6.4 The farm buildings, roads and areas of hardstanding at North Dairy Farm are classed as non-agricultural / other land.
- 2.6.5 The area (ha) and proportion (%) of agricultural land in the difference ALC grades have been measured from an ALC map given as Figure 2, and the measurements are given in Table 2.4.

<b>ALC Grade</b>	<b>Area (Ha)</b>	<b>Area (%)</b>
Grade 1 (Excellent)	0	0
Grade 2 (Very Good)	0	0
Subgrade 3a (Good)	0	0
Subgrade 3b (Moderate)	25.0	15
Grade 4 (Poor)	136.5	81
Grade 5 (Very Poor)	0	0
Other Land / Non-agricultural	6.5	4
<b>Total</b>	<b>168.0</b>	<b>100</b>

# Figures



 Site Boundary

 Auger Borings



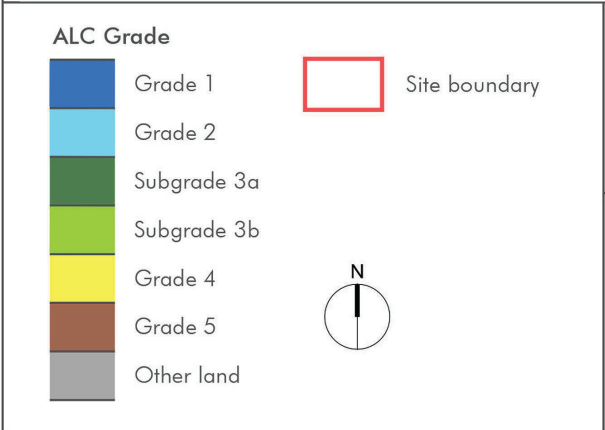
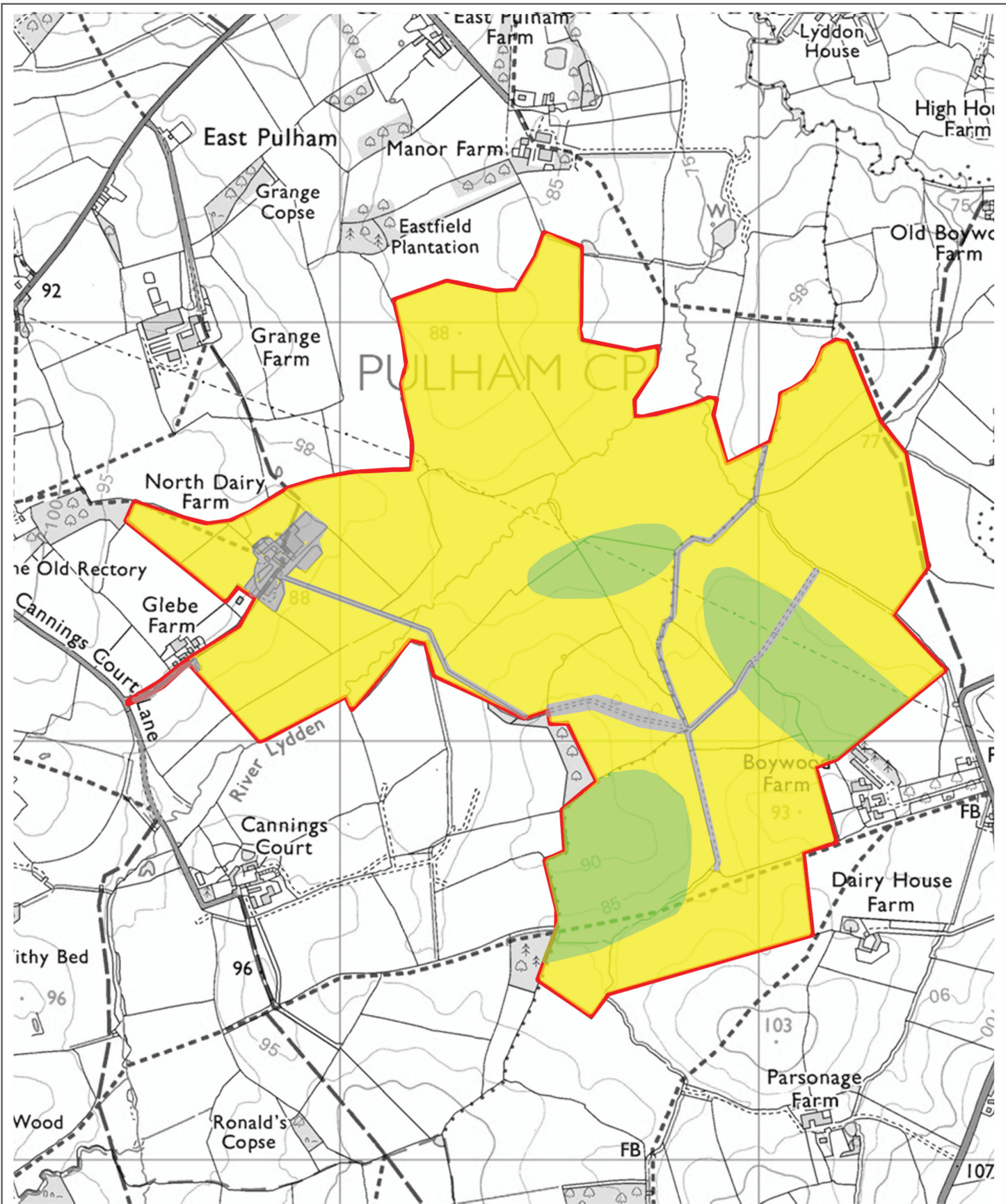
Client  
BSR Energy Ltd

Project No C677  
Dwg. No 1  
Scale NTS  
Date 28/01/20  
Drawn By ELA

Figure 1:  
Sample Locations

Project Name  
North Dairy Farm, Dorchester,  
Dorset

**Askew Land and Soil Limited**  
Registered Office The Old Stables, Upexe,  
Exeter, Devon, EX5 5ND Company No.8758891  
Tel:07753 227224  
Email: robaskew@btinternet.com



Client	
BSR Energy Ltd	
Project No	C677
Dwg. No	02
Scale	NTS
Date	28/01/20
Drawn By	ELA

Figure 2: Agricultural Land Classification	
Project Name	
North Dairy Farm, Dorchester, Dorset	
<b>R W Askew</b> BSc(Hons) MSc MSc CSci The Old Stables, Upexe, Exeter, EX5 5ND Tel: 07753 227 224 Email: rw.askew@btinternet.com	

# Appendix A: Auger Bore Logs



Project Number	Project Name	Parcel
C677	North Dairy Farm, Pulham, Dorset	Farm

Date of Survey	Survey Type	Surveyor(s)	Company
18/12/2019	Semi-detailed ALC	RWA/ELA	Askew Land and Soil

Weather	Relief	Land use and vegetation
Cold, cloudy, showers	Level to gently sloping	LEY (Ley Grass)

Grid Reference	Postcode	Altitude	Area
ST728082	DT10 2EH	83	168

MAFF prov	MAFF detailed	Flooding
Grade 3	None	Flood Zone 1/2/3

AAR	AT0	MDw	MDp	FCD	Climate grade
980	1480	94	83	199	1

Bedrock	Superficial deposits
Mudstone/Sandstone	None/alluvium/river deposits

Soil association(s) 1:250,000	Detailed soil information
Mainly Wickham 2; Sherborne in SW; Faldbury in NE	None

Revision Number	Date Revised
2	28/01/2020







Point	Grid ref.			Alt (m)	Slope °	Aspect	Land use	Depth (cm)			Matrix		Ochreous Mottles		Grey Mottles		Gley	Texture	Stones - type 1			Stones - type 2			Ped			SUBS STR	CaCO3	Mn C	SPL	Drought			Wet		Final ALC			
	NGR	X	Y					Top	Btm	Thick	Munsell colour	Form	Munsell colour	Form	Munsell colour	%			> 2cm	> 6cm	Type	%	> 2cm	> 6cm	Type	Strength	Size					Shape	MBw	MBp	Gd	WC	Gw	Limitation 1	Limitation 2	Limitation 3
33	ST 72600 08000	372600	108000	88				0	20	20	10YR5/2					No	C - Clay	0	0	0	HR - All hard rocks or stones (i.e. those which cannot be scratched with	Not Applic	NON - N	No	No	37	25	1	WC IV	4	Wetness				4					
								20	50	30	10YR5/3		CD - Common Distinct		Yes	C - Clay	0				HR - All hard rocks or stones (i.e. those which cannot be scratched with	Moderate	NON - N	No	No															
								50	120	70	10YR5/2		MD - Many Distinct		Yes	C - Clay	0				HR - All hard rocks or stones (i.e. those which cannot be scratched with	Poor	NON - N	Yes	Yes															
34	ST 72800 08000	372800	108000	83				0	20	20	10YR5/2				No	C - Clay	0	0	0	HR - All hard rocks or stones (i.e. those which cannot be scratched with	Not Applic	NON - N	No	No	36	24	1	WC IV	4	Wetness				4						
								20	46	26	10YR5/3		CD - C 7.5YR5/6		Yes	C - Clay	0				HR - All hard rocks or stones (i.e. those which cannot be scratched with	Moderate	NON - N	No	No															
								46	120	74	10YR5/2		MD - I 10YR5/8		Yes	C - Clay	0				HR - All hard rocks or stones (i.e. those which cannot be scratched with	Poor	NON - N	Yes	Yes															
35	ST 73000 08000	373000	108000	83				0	26	26	10YR5/3		FD - F 7.5YR/6		Yes	HCL - Clay	6	4	2	HR - All hard rocks or stones (i.e. those which cannot be scratched with	Not Applic	NON - N	No	No	29	19	2	WC IV	4	Wetness				4						
								26	38	12	10YR6/4		CD - C 7.5YR5/8		Yes	C - Clay	6				HR - All hard rocks or stones (i.e. those which cannot be scratched with	Moderate	NON - Non-cal	No	No															
								38	120	82	10YR6/1		MD - I 7.5YR5/8		Yes	C - Clay	6				HR - All hard rocks or stones (i.e. those which cannot be scratched with	Poor	NON - N	Yes	Yes															
36	ST 72600 07800	372600	107800	90				0	25	25	10YR5/3		FD - F 10YR5/6		Yes	MCL - Clay	16	11	4	HR - All hard rocks or stones (i.e. those which cannot be scratched with	Not Applic	NON - N	No	No	17	9	2	WC IV	3b	Wetness				3b						
								25	48	23	10YR6/4		CD - C 10YR5/8		Yes	C - Clay	18				HR - All hard rocks or stones (i.e. those which cannot be scratched with	Moderate	NON - N	No	No															
								48	120	72	2.5Y6/1		MD - I 10YR5/6		Yes	C - Clay	20				HR - All hard rocks or stones (i.e. those which cannot be scratched with	Poor	NON - N	Yes	Yes															
37	ST 72800 07800	372800	107800	85				0	25	25	10YR5/3		FD - F 10YR5/6		Yes	MCL - Clay	10	6	2	HR - All hard rocks or stones (i.e. those which cannot be scratched with	Not Applic	NON - N	No	No	23	13	2	WC IV	3b	Wetness				3b						
								25	34	9	10YR6/4		CD - C 10YR5/8		Yes	C - Clay	10				HR - All hard rocks or stones (i.e. those which cannot be scratched with	Moderate	NON - N	No	No															
								34	120	86	10YR6/1		MD - I 10YR5/6		Yes	C - Clay	10				HR - All hard rocks or stones (i.e. those which cannot be scratched with	Poor	NON - N	Yes	Yes															
38	ST 73000 07800	373000	107800	87				0	20	20	10YR4/2		FD - F 7.5YR5/6		Yes	HCL - Clay	4	2	0	HR - All hard rocks or stones (i.e. those which cannot be scratched with	Not Applic	NON - N	No	No	28	16	2	WC IV	4	Wetness				4						
								20	44	24	10YR6/4		CD - C 7.5YR6/8		Yes	C - Clay	2				HR - All hard rocks or stones (i.e. those which cannot be scratched with	Poor	NON - N	No	Yes															
								44	120	76	2.5Y6/2		MD - I 10YR6/6		Yes	C - Clay	0				HR - All hard rocks or stones (i.e. those which cannot be scratched with	Poor	NON - N	Yes	Yes															
39	ST 72600 07600	372600	107600	88				0	22	22	10YR5/3		FD - F 10YR5/6		Yes	MCL - Clay	18	12	8	HR - All hard rocks or stones (i.e. those which cannot be scratched with	Not Applic	NON - N	No	No	14	6	2	WC IV	3b	Wetness				4						
								22	44	22	10YR6/4		CD - C 10YR5/8		Yes	C - Clay	20				HR - All hard rocks or stones (i.e. those which cannot be scratched with	Moderate	NON - N	No	No															
								44	120	76	2.5Y6/1		MD - I 10YR5/6		Yes	C - Clay	20				HR - All hard rocks or stones (i.e. those which cannot be scratched with	Poor	NON - N	Yes	Yes															
40	ST 72800 07600	372800	107600	86				0	24	24	10YR4/2		FD - F 10YR5/6		Yes	MCL - Clay	10	4	2	HR - All hard rocks or stones (i.e. those which cannot be scratched with	Not Applic	NON - N	No	No	25	15	2	WC IV	3b	Wetness				3b						
								24	40	16	10YR6/4		CD - C 10YR5/8		Yes	C - Clay	10				HR - All hard rocks or stones (i.e. those which cannot be scratched with	Moderate	NON - N	No	No															
								40	120	80	2.5Y6/2		MD - I 10YR5/6		Yes	C - Clay	10				HR - All hard rocks or stones (i.e. those which cannot be scratched with	Poor	NON - N	Yes	Yes															
41	ST 73000 07600	373000	107600	86				0	24	24	10YR4/2		FD - F 10YR5/6		Yes	HCL - Clay	4	2	0	HR - All hard rocks or stones (i.e. those which cannot be scratched with	Not Applic	NON - N	No	No	37	25	1	WC IV	4	Wetness				4						
								24	48	24	10YR6/4		CD - C 10YR6/8		Yes	C - Clay	2				HR - All hard rocks or stones (i.e. those which cannot be scratched with	Moderate	NON - N	No	No															
								48	120	72	2.5Y6/2		MD - I 10YR6/6		Yes	C - Clay	0				HR - All hard rocks or stones (i.e. those which cannot be scratched with	Poor	NON - N	Yes	Yes															
42	ST 72600 07400	372600	107400	86				0	20	20	10YR5/3		FD - F 10YR5/6		Yes	HCL - Clay	2	0	0	HR - All hard rocks or stones (i.e. those which cannot be scratched with	Not Applic	NON - N	No	No	35	23	1	WC IV	4	Wetness				4						
								20	40	20	10YR6/4		CD - C 10YR6/8		Yes	C - Clay	0				HR - All hard rocks or stones (i.e. those which cannot be scratched with	Moderate	NON - N	No	No															
								40	120	80	2.5Y6/2		MD - I 10YR6/6		Yes	C - Clay	0				HR - All hard rocks or stones (i.e. those which cannot be scratched with	Poor	NON - N	Yes	Yes															
END																																								

**Mottle form**

FF - Few Faint  
 FD - Few Distinct  
 FP - Few Prominent  
 CF - Common Faint  
 CD - Common Distinct  
 CP - Common Prominent  
 MF - Many Faint  
 MD - Many Distinct  
 MP - Many Prominent  
 VF - Very many Faint  
 VD - Very many Distinct  
 VP - Very many Prominent

**Texture**

C - Clay  
 CHK - Chalk  
 CS - Coarse Sand  
 CSL - Coarse sandy loam  
 CSZL - Coarse sandy silt loam  
 FP - Fibrous and semifibrous peats  
 FS - Fine Sand  
 FSL - Fine sandy loam  
 FSZL - Fine sandy silt loam  
 HCL - Clay loam (heavy)  
 HP - Humified peats  
 HZCL - Silty clay loam (heavy)  
 IMP - Impenetrable to roots  
 LCS - Loamy Coarse Sand  
 LFS - Loamy fine sand  
 LMS - Loamy medium sand  
 LP - Loamy peats  
 MCL - Clay loam (medium)  
 MS - Medium Sand  
 MSL - Medium sandy loam  
 MSZL - Medium sandy silt loam  
 MZ - Marine Light Silts  
 MZCL - Silty clay loam (medium)  
 OC - Organic clays  
 OL - Organic loams  
 OS - Organic sands  
 PL - Peaty loams  
 PS - Peaty sands  
 SC - Sandy clay  
 SCL - Sandy clay loam  
 SP - Sandy peats  
 ZC - Silty clay  
 ZL - Silt loam

**Stone Type**

CH - Chalk or chalk stones  
 FSST - Soft fine grained sandstones  
 GH - Gravel with non-porous (hard) stones  
 GS - Gravel with porous stones (mainly soft stone types listed above)  
 HR - All hard rocks or stones (i.e. those which cannot be scratched with a finger nail)  
 MSST - Soft, medium or coarse grained sandstones  
 SI - Soft 'weathered' igneous or metamorphic rocks or stones  
 SLST - Soft oolitic or dolomitic limestones  
 ZR - Soft, argillaceous or silty rocks or stones

**Ped. Shape**

SG - Single grain  
 GRA - Granular  
 SAB - Subangular Blocky  
 AB - Angular Blocky  
 PRIS - Prismatic  
 PLAT - Platy  
 MASS - Massive  
 NA - N/A

**Subsoil Structure Condition**

Not Applicable  
 Good  
 Moderate  
 Poor

**Soil or Ped. Strength**

Loose  
 Very friable  
 Friable  
 Firm  
 Very firm  
 Extremely firm  
 Extremely hard  
 N/A

**Calcareousness**

NON - Non-calcareous (<0.5% CaCO<sub>3</sub>)  
 VSC - Very slightly calcareous (0.5 - 1% CaCO<sub>3</sub>)  
 SC - Slightly calcareous (1 - 5% CaCO<sub>3</sub>)  
 MC - Moderately calcareous (5 - 10% CaCO<sub>3</sub>)  
 VC - Very calcareous (>10% CaCO<sub>3</sub>)

**Ped. Size**

VF - Very Fine  
 F - Fine  
 M - Medium  
 C - Coarse  
 VC - Very Coarse  
 NA - N/A

**Degree of Ped. Development**

W - Weak  
 M - Moderate  
 S - Strong  
 NA - Not applicable

**Wetness Class**

WC I  
 WC II  
 WC III  
 WC IV  
 WC V  
 WC VI

**ALC Grades**

1  
 2  
 3a  
 3b  
 4  
 5  
 Non-Ag

**Gley**

None  
 Gley  
 N/A

# Appendix B: Soil Pit Descriptions

Project	Location	Date	Surveyor(s)	Company
C677	North Dairy Farm, Pulham, Dorset	18-Dec-19	RWA/ELA	Askew Land and Soil

Pit	WC	Grade	Limitation(s)	Notes
1	IV	4	Wetness	

Grid Ref.			Altitude	Nearest point	Topography				Flora				Weather and conditions			
Square	East	North			Gradient	Aspect	Slope form	Surface	Cultivation type	Vegetation types			Temp	Sky	Wind	Precipitation
ST	732	086	77	AB14	1°	West	Straight	Level	Not ploughed	Permenant grassland (possibly ley)			Cold	Cloudy	Slight	Showers

Horizon	Depth		Matrix			Gleying			Mottles			Stone content				Calc.	Mn C	Ped/soil structure			Horizon boundary		Biopores >0.5mm diameter	SPL	
	Top	Bttm	Texture	Colour	Munsell	Gley	Colour	Munsell	Form	Colour	Munsell	%	H	Type	S			Type	Dev.	Size	Structure	Strength			Distinct
Topsoil	0	15	Clay	Greyish Brown	10YR5/2	No					0			0		No	None	Mod	Fine	Subangular blocky	Firm	Abrupt	Smooth	>0.5%	No
Upper Subsoil	15	42	Clay	Light Olive Brown	2.5Y5/3	Yes	Light Olive Brown	2.5Y5/3	CD	Yellowish Brown	10YR5/6	0		0		No	None	Poor	Coarse	Angular	Firm	Abrupt	Smooth	<0.5%	Yes
Lower Subsoil	42	120	Clay	Greyish Brown	2.5Y5/2	Yes	Greyish Brown	2.5Y5/2	MD	Yellowish Brown	10YR5/8	0		0		No	Few	Poor	Massive	Massive	Firm	N/A	N/A	<0.5%	Yes

Pit	WC	Grade	Limitation(s)	Notes
2	IV	3b	Wetness & topsoil stones	Stony/brashy field

Grid Ref.			Altitude	Nearest point	Topography				Flora				Weather and conditions			
Square	East	North			Gradient	Aspect	Slope form	Surface	Cultivation type	Vegetation types			Temp	Sky	Wind	Precipitation
ST	726	078	90	AB36	4°	East	Convex	Level	Ploughed	Arable			Cold	Cloudy	Slight	Showers

Horizon	Depth		Matrix			Gleying			Mottles			Stone content				Calc.	Mn C	Ped/soil structure			Horizon boundary		Biopores >0.5mm diameter	SPL		
	Top	Bttm	Texture	Colour	Munsell	Gley	Colour	Munsell	Form	Colour	Munsell	%	H	Type	S			Type	Dev.	Size	Structure	Strength			Distinct	Form
Topsoil	0	25	MCL	Brown	10YR5/3	Yes	Light Brownish Grey	2.5Y6/2	FD	Yellowish Brown	10YR5/6	16	11	Hard/Lmst	0		VSC	None	Mod	Fine	Subangular blocky	Firm	Abrupt	Smooth	>0.5%	No
Upper Subsoil	25	48	Clay	Light Yellowish Brown	10YR6/4	Yes	Grey	2.5Y6/1	CD	Yellowish Brown	10YR5/8	4	4	Hard/Lmst	0		No	None	Poor	Coarse	Subangular blocky	Firm	Abrupt	Smooth	>0.5%	No
Lower Subsoil	48	120	Clay	Grey	2.5Y6/1	Yes	Grey	2.5Y6/1	MD	Yellowish Brown	10YR5/8	2	2	Hard/Lmst	0		No	Few	Poor	Coarse	Angular	Firm	N/A	N/A	<0.5%	Yes



# Appendix C: Topsoil Particle Size Distribution



**ANALYTICAL REPORT**

<b>Report Number</b>	<b>82202-20</b>	<b>N717 ROB ASKEW</b>
<b>Date Received</b>	<b>06-JAN-2020</b>	
<b>Date Reported</b>	<b>10-JAN-2020</b>	
<b>Project</b>	<b>SOIL</b>	
<b>Reference</b>	<b>C677 NORTH DAIRY FRM</b>	
<b>Order Number</b>		

Laboratory Reference		SOIL465859	SOIL465860	SOIL465861	SOIL465862	SOIL465863	SOIL465864			
Sample Reference		AB1	AB7	AB12	AB23	AB26	AB37			
Determinand	Unit	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL			
Sand 2.00-0.063mm	% w/w	8	39	9	45	49	47			
Silt 0.063-0.002mm	% w/w	26	34	28	27	27	30			
Clay <0.002mm	% w/w	66	27	63	28	24	23			
Textural Class **		O-C	HCL	O-C	HCL	MCL	MCL			

**Notes**

Analysis Notes      The sample submitted was of adequate size to complete all analysis requested.  
 The results as reported relate only to the item(s) submitted for testing.  
 The results are presented on a dry matter basis unless otherwise stipulated.

Document Control      **This test report shall not be reproduced, except in full, without the written approval of the laboratory.**

\*\* Please see the attached document for the definition of textural classes.

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## ADAS (UK) Textural Class Abbreviations

The texture classes are denoted by the following abbreviations:

<b>Class</b>	<b>Code</b>
Sand	S
Loamy sand	LS
Sandy loam	SL
Sandy Silt loam	SZL
Silt loam	ZL
Sandy clay loam	SCL
Clay loam	CL
Silt clay loam	ZCL
Clay	C
Silty clay	ZC
Sandy clay	SC

For the *sand*, *loamy sand*, *sandy loam* and *sandy silt loam* classes the predominant size of sand fraction may be indicated by the use of prefixes, thus:

vf	Very Fine (more than 2/3's of sand less than 0.106 mm)
f	Fine (more than 2/3's of sand less than 0.212 mm)
c	Coarse (more than 1/3 of sand greater than 0.6 mm)
m	Medium (less than 2/3's fine sand and less than 1/3 coarse sand).

The subdivisions of *clay loam* and *silty clay loam* classes according to clay content are indicated as follows:

M	medium (less than 27% clay)
H	heavy (27-35% clay)

Organic soils i.e. those with an organic matter greater than 10% will be preceded with a letter O.

Peaty soils i.e. those with an organic matter greater than 20% will be preceded with a letter P.