



# The Sizewell C Project

## 6.4 Volume 3 Northern Park and Ride Chapter 10 Soils and Agriculture Appendix 10A Agricultural Land Classification

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## Plates

None provided.

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None provided.

## Appendices

**Appendix 10A1** – Auger log and key

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## Executive Summary

An assessment of agricultural land quality, involving a desktop study and a detailed Agricultural Land Classification (ALC) survey, has been undertaken to determine the quality of agricultural land at the proposed Northern Park and Ride development for Sizewell C. The assessment was undertaken in accordance with the ALC system for England and Wales, October 1988 ('the ALC Guidelines').

The detailed survey found agricultural land in Grades 3a (21.8ha) and 3b (4.5ha), along with a small area of non-agricultural land (1.6ha). Grade 3a land is considered to be among the best and most versatile (BMV) agricultural land in England and Wales, the lowest ALC grade to fall in this category.

# 1 Northern Park and Ride Site: Agricultural Land Classification

## 1.1 Introduction

1.1.1 This report presents an assessment of agricultural land quality (Agricultural Land Classification; ALC) at the proposed northern park and ride development (hereafter referred to as the proposed development) for the Sizewell C Project.

1.1.2 The purpose of this report is to present details of the agricultural land quality at the site. This report has been prepared by Arcadis on behalf of SZC Co.

1.1.3 The site is approximately 27.9 hectares (ha) in size and is located to the west of the village of Darsham and the A12, to the east of the mainline railway and to the north of Darsham Station. The site includes approximately 26.3ha of agricultural land, and is approximately six kilometres (km) to the north-west of the main development site.

1.1.4 When surveyed the site was in arable production (wheat with some areas of fallow) with the southern tip excluded from cultivation.

### a) Agricultural Land Planning Policy and Context

1.1.5 This ALC assessment is consistent with the direction given by the National Planning Policy Framework (NPPF) (Ref. 1.1).

1.1.6 Section 15 of the NPPF deals with conserving and enhancing the natural environment. This includes a requirement that planning policies and decisions should recognise “*the intrinsic character and beauty of the countryside, and the wider benefits from natural capital and ecosystem services – including the economic and other benefits of the best and most versatile agricultural land, and of trees and woodland.*”

1.1.7 A footnote to this adds that “*Where significant development of agricultural land is demonstrated to be necessary, areas of poorer quality land should be preferred to those of a higher quality.*”

1.1.8 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. Grade 1 land is excellent quality agricultural land with very minor or no limitations to agricultural use, and Grade 5 is very poor quality land, with severe limitations due to adverse soil characteristics, relief, climate or a combination of these. Grade

3 land is subdivided into Subgrade 3a (good quality land) and Subgrade 3b (moderate quality land).

1.1.9 Grades 1, 2 and 3a are defined as the BMV land.

1.1.10 The site falls within the area covered by the Suffolk Coastal District Core Strategy and Development Management Policies (Ref. 1.2). A number of references are made to the need to, where possible, preserve prime agricultural land for essential food production. No specific policy is, however, set out and it should be considered therefore that guidance related to BMV land reverts to the NPPF.

b) [Agricultural Land Classification Methodology](#)

i. [MAFF Agricultural Land Classification System](#)

1.1.11 The Ministry of Agriculture, Fisheries and Food (MAFF) ALC (Ref. 1.3) system of grading land quality for use in land use planning purposes divides farmland into five grades according to the degree of limitation imposed upon land use by the inherent physical characteristics of climate, site and soils. As detailed above, Grade 1 land is of an excellent quality, whilst Grade 5 land has very severe limitations for agricultural use.

1.1.12 Accordingly, a detailed assessment of the proposal site has been undertaken using the MAFF revised guidelines and criteria for ALC published October 1988. The proposed approach to undertake detailed ALC surveys on areas which had not previously been surveyed was accepted by Natural England during consultation in 2016.

1.1.13 The detailed survey involved examination of the soil's physical properties at 28 locations on a 100m by 100m grid. The grid reference of the sample locations was recorded to enable these to be relocated for verification, if necessary.

1.1.14 At each location, the soil profile was examined to a maximum depth of approximately 1.2m by hand with the use of a 5cm diameter Dutch (Edleman) soil auger. A number of soil pits were excavated at selected locations with a spade in order to examine the physical soil profile characteristics, including subsoil structure, of the main representative soil types.

1.1.15 The soil profile at each sample location was described using the Soil Survey Field Handbook: Describing and Sampling Soil Profiles (Ref. 1.4). Each soil profile was ascribed an ALC grade following the MAFF ALC Guidelines.

- 1.1.16 These MAFF guidelines require that the following factors be investigated:
- climate: Average Annual Rainfall (AAR) and Accumulated Temperature above 0°C between January and June (AT0);
  - site: gradient, micro relief and flooding;
  - soils: texture, structure, depth, stoniness, and chemical toxicity; and
  - interactive factors: soil wetness, soil droughtiness and liability to erosion.
- 1.1.17 To confirm soil texture a topsoil sample was collected from 1 auger location and sent to an accredited laboratory for particle size distribution analysis. The data sheet is included as **Appendix 10A.2** of this volume of the **Environmental Statement (ES)**.
- ii. [Natural England Technical Advice Note 049](#)
- 1.1.18 Use of the ALC methodology is also supported by Natural England Technical Advice Note 049 (TIN049) (Ref. 1.5), published in 2012.
- 1.1.19 TIN049 describes a detailed ALC survey as having approximately one sample point per hectare. To achieve this sample density and to remove surveyor selection bias, as noted above, sample points were set at 100m intersections aligned with the national grid, located in the field by hand held GPS.
- c) [Agricultural Land Classification Assessment](#)
- i. [Climate](#)
- 1.1.20 Climatological data for ALC are provided for 5km intersections of the National Grid by the Meteorological Office, in collaboration with the National Soil Resources Institute. The data from these points can be interpolated providing climate data for specific sites. Interpolated data for the site is given in **Table 1.1**.

**Table 1.1 Northern park and ride ALC climate data**

Reference Point	National Grid Reference TM 407 702
Altitude (m)	27
AAR (mm)	595
AT0 (day degrees)	1411
Moisture Deficit for wheat (mm)	123

Reference Point	National Grid Reference TM 407 702
Moisture Deficit for potatoes (mm)	119
Field Capacity Days (FCD)	111

1.1.21 The main parameters used in the assessment of an overall climatic limitation are AAR as a measure of overall wetness, and AT0 as a measure of the warmth in the growing season.

1.1.22 Climate does not impose an overall limitation on ALC grade at this site. Climate does, however, have an important influence on the interactive limitations of soil wetness and soil droughtiness. The site has both relatively low rainfall and a long growing season, acting to decrease the severity of any potential soil wetness limitation, but increasing the severity of any potential soil droughtiness limitation.

ii. The Site

1.1.23 Land within the site is gently sloping down to the south and east, levelling out on the higher ground to the north-east. Gradient and microtopography do not limit ALC Grade within the site.

1.1.24 No natural watercourses adjoin the site which appears to drain to a surface water ditch running along the edge of the East Suffolk line.

1.1.25 There is no evidence that flood risk limits ALC grade at any part of the site (Ref. 1.6). However, the site is quite low lying so achieving adequate fall for field drainage may be problematic.

iii. Soils and Parent Materials

1.1.26 The British Geological Survey Geology of Britain Viewer (Ref. 1.7) shows the site to be underlain by an area mapped as the Crag Group (quaternary shallow-water marine and estuarine sands, gravels, silts and clays), with an overlying drift deposit of superficial diamicton of the Lowestoft Formation (an extensive sheet of poorly-sorted matrix-supported chalky till as well as outwash sands and gravels, silts and clays).

1.1.27 Field survey work at the site found soil material that was predominantly medium to heavy textured (loams to clays) with some lighter textured (sandy) material found at depth.

1.1.28 Stone content often rises in the lower subsoil but the topsoil content of larger stones (above 2cm) is not high enough to limit ALC Grade.

iv. Interactive Factors

- 1.1.29 A typical soil profile found at the site has a clay loam topsoil over a clayey subsoil.
- 1.1.30 The clayey subsoil impedes the drainage of excess water down through the soil profile, trapping water in the topsoil after rain and leaving this land vulnerable to persistent structural damage from livestock hooves, vehicle wheels and cultivators.
- 1.1.31 Avoiding or minimising such damage limits land management options. However, due to the relatively low rainfall the land is only occasionally wet (Wetness Class III) rather than seasonally waterlogged. Soil wetness limitations at the site are dependent on the topsoil clay content and the presence of carbonates. A higher clay content increases the vulnerability of topsoil to structural damage when wet, giving rise to a stronger soil wetness limitation. The presence of calcium carbonate in the topsoil can mitigate this limitation as it acts to improve soil structural development.
- 1.1.32 The slowly permeable clayey subsoil has a poor structure that limits root penetration as well as drainage. As a result, the volume of water held by the soil that is available to the plant is further limited. Soil profiles across the site are all limited to ALC Grade 3a by soil droughtiness; however, some have an equal or greater limitation due to soil wetness.

v. Agricultural Land Classification Grade Distribution

- 1.1.33 A small area of the site is classed as non-agricultural land. This comprises the section of the A12 that falls within the site. The remainder of the site is agricultural land in ALC Grades 3a and 3b.
- 1.1.34 The extent of ALC grades across the site shown on **Figure 17.1** attached to the **ES** chapter, with area measurements given in **Table 1.2** below.

**Table 1.2 ALC grade distribution**

ALC Grade	Area (ha)	Area (%)
3a - good quality agricultural land	21.8	78.14
3b – moderate quality agricultural land	4.5	16.13
Non-agricultural	1.6	5.73
<b>Total</b>	27.9	100.00

- 1.1.35 Grade 3a land covers approximately 78% of the site, an area of 21.8ha, comprising soils with a number of key characteristics. There are small areas of land with medium textured topsoil over a light textured subsoil.



This land is limited to Grade 3a by soil droughtiness. The majority of the land falling within Grade 3a has a medium textured non-calcareous topsoil over a slowly permeable heavy textured subsoil. The land is occasionally waterlogged (Wetness Class III) and limited to Grade 3a by both soil wetness and soil droughtiness. Some soil profiles are present with a calcareous heavy textured topsoil, also limited to Grade 3a by soil wetness and droughtiness.

- 1.1.36 Grade 3b land comprises 4.5ha in total (approximately 16% of the site) in three parts of the site. Soil profiles comprise a heavy textured and non-calcareous topsoil above a heavy textured and slowly permeable subsoil. As for the Grade 3a land described above the land is occasionally wet (Wetness Class III) but has a more severe soil wetness limitation as the higher clay content of the topsoil increases the vulnerability to structural damage.

d) **Conclusions**

- 1.1.37 A detailed ALC survey of the site found agricultural land in Grades 3a (21.8ha) and 3b (4.5ha). Grade 3a land is considered to be among the best and most versatile agricultural land in England and Wales, the lowest ALC grade to fall in this category.

## References

- 1.1 National Planning Policy Framework. Department for Communities and Local Government, February 2019  
<https://www.gov.uk/government/publications/national-planning-policy-framework--2>
- 1.2 Suffolk Coastal Core Strategy Adopted July 2013  
<http://www.eastsuffolk.gov.uk/planning/local-plans/suffolk-coastal-district-local-plan/>
- 1.3 Agricultural Land Classification of England and Wales: Revised guidelines and criteria for grading the quality of agricultural land. Ministry of Agriculture Fisheries and Food, October 1988.  
<http://archive.defra.gov.uk/foodfarm/landmanage/land-use/documents/alc-guidelines-1988.pdf>
- 1.4 Soil Survey Field Handbook: Describing and Sampling Soil Profiles' (Ed. J.M. Hodgson, Cranfield University, 1997.
- 1.5 Agricultural Land Classification: protecting the best and most versatile agricultural land (TIN049). Natural England, 2012.  
<http://publications.naturalengland.org.uk/publication/35012>
- 1.6 Environment Agency Flood map for Planning. <http://apps.environment-agency.gov.uk/wiyby/37837.aspx>
- 1.7 British Geological Survey Geology of Britain viewer.  
<http://www.bgs.ac.uk/data/mapViewers/home.html?src=topNav>



## APPENDIX A: APPENDIX 10A1: AUGER LOG AND KEY

Point	Grid ref.			Alt	Grad	Aspect	Land use	Depth (cm)			Soil matrix		Mottle 1		Mottle 2		Gley	Texture	Stones		SUBS STR	Calc.	Mn C	SPL	Drought			Wet		Classification		Point notes				
	Sqr.	E	N					Top	Bttm	Thick	Munsell colour	Form	Munsell colour	Form	Munsell colour	%			Type	MBw					MBp	Gd	WC	Gw	Grade	Limitation						
1	TM	40506	69809	11	2	NW	FLW	0	30	30	10yr32							8	HR		M				-1	-24	3a	III	2	3a	DR					
								30	55	25	10yr56	CD	10yr52			Y	HCL	5	HR	P				Y												
								55	60	5	10yr56	CD	10yr52			Y	HCL	30	CH	P				Y												
								60	120	60							HCL	50	CH	P				Y												
2	TM	40504	69907	11	2	NW	FLW	0	25	25	10yr32							10	HR		N				15	-20	3a	III	3a	3a	Drought/Wet					
								25	40	15	10yr54							MCL	5	HR	M															
								40	75	35	10yr56	CD	10yr51			Y	HCL	2	HR	P				Y												
								75	110	35	10yr56						MSL	0		M				Y												
								110	120	10	10yr51	CD	10yr54			Y	C	2	HR	P				Y												
3	TM	40598	69907	16	3	NW	WHT	0	25	25	10yr32							5	HR		N				1	-18	3a	III	3b	3b	Wet					
								25	65	40	10yr54	CD	10yr51	CD	10yr58	Y	C	2	CH	P				Y												
								65	75	10	10yr51	CD	10yr56			Y	C	10	CH	P				Y												
								75	120	45							C	50	CH	P				Y												
4	TM	40599	70006	17	3	NW	WHT	0	25	25	10yr32							8	HR		N				-1	-22	3a	III	3b	3b	Wet					
								25	55	30	10yr56	CD	10yr51	CD	10yr68	Y	C	15	CH	P			C	Y												
								55	120	65							C	50	CH	P				Y												
5	TM	40702	70008	22	0		WHT	0	25	25	10yr32							8	HR		N				-4	-26	3a	III	3a	3a	Drought/Wet					
								25	40	15	10yr54	FD	10yr52	CD	10yr56	Y	HCL	8	HR	P				Y												
								40	60	20	10yr54	FD	10yr51				HCL	15	CH	P			C	Y												
								60	120	60							HCL	50	CH	P				Y												
6	TM	40602	70108	16	4	NW	WHT	0	25	25	10yr32							8	HR		S				-6	-29	3a	III	2	3a	Drought					
								25	40	15	10yr54	CD	10yr52	FD	10yr56	Y	HCL	15	HR	P				Y												
								40	45	5	10yr54	CD	10yr61	FD	10yr58	Y	HCL	20	CH	P				Y												
								45	120	75							HCL	50	CH	P				Y												
7	TM	40699	70109	19	0		FLW	0	25	25	10yr32							5	HR		N				-1	-22	3a	III	3a	3a	Drought/Wet					
								25	110	85	10yr54	CD	10yr51	CD	10yr65	Y	HCL	4	CH	P			C	Y												
								110	120	10	10yr51					Y	C	10	CH	P				Y												
8	TM	40701	70206	19	2	W	ARA STB	0	25	25	10yr32							8	HR		N				7	-15	3a	II	2	3a	Drought					
								25	60	35	10yr61	CD	10yr52	CD	10yr66	Y	SCL	3	HR	M				N												
								60	75	15	10yr61	CD	5y54	CD	10yr56	Y	HCL	20	CH	P				Y												
								75	120	45							HCL	50	CH	P				Y												
9	TM	40616	70308	22	2	NW	ARA STB	0	25	25	10yr32							10	HR		N				8	-17	3a	III	3b	3b	Wet					
								25	50	25	10yr51	CD	10yr56			Y	C	10	CH	P		M		Y												
								50	80	30	10yr56	CD	10yr51			Y	HCL	20	CH	M																
								80	90	10	10yr51	CD	10yr56			Y	MSL	30	CH	M																

Point	Grid ref.			Alt	Grad	Aspect	Land use	Depth (cm)			Soil matrix		Mottle 1		Mottle 2		Gley	Texture	Stones		SUBS STR	Calc.	Mn	C	SPL	Drought			Wet		Classification		Point notes				
	Sqr.	E	N					Top	Bttm	Thick	Munsell colour	Form	Munsell colour	Form	Munsell colour	%			Type	MBw						MBp	Gd	WC	Gw	Grade	Limitation						
10	TM	40698	70307	27	3	NW	ARA STB	0	25	25	10yr32	CD	10yr52	CD	10yr46	Y	MCL	8	HR	P	N			Y	16	-11	3a	I	1	3a	Drought						
								25	100	75	10yr56	FD	10yr52	CD	10yr46	Y	SCL	2	HR	M																	
								100	120	20	10yr56			CD	10yr46	Y	LMS	0		M																	
11	TM	40802	70310	22	0	NW	ARA STB	0	25	25	10yr32	CD	10yr56	CD	10yr52		HCL	8	HR	M	V				1	-21	3a	III	3a	3a	Wet	subsoil clods on surface					
								25	35	10	10yr53	CD	10yr51	CD	10yr58	Y	MCL	3	HR	M		F															
								35	75	40	10yr64	CD	10yr51	CD	10yr58	Y	HCL	15	CH	P				Y													
								75	80	5	10yr61	CD	10yr64			Y	C	25	CH	P				Y													
								80	120	40						Y	C	50	CH	P																	
12	TM	40595	70408	21	2	NW	ARA STB	0	25	25	10yr32	CD	10yr52	CD	10yr56	Y	HCL	5	HR	P	N				1	-18	3a	III	3b	3b	Wet						
								25	80	55	10yr54			CD	10yr56	Y	C	2	CH	P		F		Y													
								80	120	40						Y	C	50	CH	P																	
13	TM	40698	70408	27	2	NW	ARA STB	0	20	20	10yr32	CD	10yr51	CD	10yr56	Y	HCL	2	HR	P	N				-3	-25	3a	III	3b	3b	Wet						
								20	40	20	10yr54	CD	10yr58			Y	HCL	2	HR	P		F		Y													
								40	65	25	10yr51			CD	10yr56	Y	HCL	10	CH	P				Y													
								65	120	55						Y	HCL	50	CH	P																	
14	TM	40801	70390	20	0		ARA STB	0	25	25	10yr32	CD	10yr52	FD	10yr56	Y	MCL	4	HR	P	M				4	-19	3a	III	2	3a	Drought						
								25	55	30	10yr54	CD	10yr52	FD	10yr56	Y	HCL	4	HR	P		F		Y													
								55	70	15	10yr54	CD	10yr52	FD	10yr56	Y	SCL	4	HR	M				Y													
								70	85	15	10yr51	CD	10yr58			Y	C	10	CH	P				Y													
								85	100	15	10yr56	CD	10yr51			Y	SCL	2	HR	M																	
								100	120	20	10yr56	CD	10yr51			Y	LMS	2	HR	M																	
15	TM	40640	70470	24	2		ARA STB	0	26	26	10YR32	CF	10YR58			Y	CL	1	HR	P	S				-8.01	-15.7	3a	III	2	3a	Drought						
								26	63	37	10YR52	CF	10YR58			Y	CL	1	HR	P				Y													
								63	85	22	10YR54	CF	10YR58			Y	SC	1	CH	P	M	Y		Y													
								85	110	25	Gley1 4N	FD	5YR46			Y	C	5	CH	P	V	Y		Y													
								IMP																												Stop @ stiff clay	
16	TM	40741	70457	26	2		ARA STB	0	40	40	10YR42	CD	10YR46	MP	10YR51	Y	ZCL	1	CH	P	S				5.54	-6.52	2	II	1	2	Drought						
								40	85	45	10YR41	CD	10YR56			Y	C	5	CH	P	V	Y		Y													
								85	110	25	10YR61	CD	10YR56			Y	C	15	CH	P	V																
								IMP																													Stop @ stiff clay
17	TM	40841	70457	27	0		ARA STB	0	30	30	10YR44	FD	7.5YR68			Y	CL	1	CH	P	S				-5.54	-19.8	3a	III	2	3a	Drought						
								30	74	44	10YR64	FD	7.5YR68			Y	C	5	CH	P	V	Y		Y													
								74	110	36	GLEY1 7N	FD	7.5YR68			Y	C	10	CH	P	V	Y		Y													
								IMP																													Stop @ stiff clay
18	TM	40556	70558	27	0		ARA STB	0	35	35	10YR32	CF	10YR58			Y	C	2	HR	P	S				2.63	-22	3a	III	3a	3a	Drought/Wet						
								35	80	45	10YR44					Y	C	2	HR	P	M	Y		Y													

Point	Grid ref.			Alt	Grad	Aspect	Land use	Depth (cm)			Soil matrix		Mottle 1		Mottle 2		Gley	Texture	Stones		SUBS STR	Calc.	Mn C	SPL	Drought			Wet		Classification		Point notes					
	Sqr.	E	N					Top	Bttm	Thick	Munsell colour	Form	Munsell colour	Form	Munsell colour	%			Type	MBw					MBp	Gd	WC	Gw	Grade	Limitation							
								80	115	35	10YR51	CF	Gley1 5N	FF	10YR56	Y	C	10	CH	P	V	Y									Stop @ - stiff clay						
19	TM	40641	70564	28	2		ARA STB	0	27	27	10YR44							2	HR	P					-30.3	-20.5	3b	III	3a	3b	Drought	Stop @ - stiff clay					
								27	60	33	2.5Y71	CD	10YR68			Y	C	2	HR	P	S	Y	Y														
								60	67	7	2.5Y61	CD	10YR58			Y	C	10	CH	P	S	Y	Y														
								67	75	8	10YR72	CD	7.5YR58			Y	C	80	CH	P	S																
								IMP																													
20	TM	40741	70557	30	0		ARA STB	0	25	25	10YR33			FP	10YR62	Y	CL	2	HR	P					-17.1	-16.6	3a	III	2	3a	Drought	Stop @ - stiff clay					
								25	70	45	10YR54	CF	10YR58			Y	C	2	CH	P	V	Y	Y														
								70	92	22	Gley1 7N	CD	10YR56			Y	C	15	CH	P	V																
								IMP																													
21	TM	40843	70562	30	0		ARA STB	0	30	30	7.5YR33							2	HR	P					-9.14	-14.3	3a	III	2	3a	Drought	Stop @ stiff clay					
								30	80	50	10YR62	CF	7.5YR68			Y	C	1	HR	P			Y	Y													
								80	100	20	10YR61	CF	7.5YR58			Y	C	5	CH	P	V	Y	Y														
								IMP																													
22	TM	40970	70512	31	2		ARA STB	0	30	30	10YR32							1	HR	P					-9.46	-14.5	3a	III	2	3a	Drought	Stop @ - stiff clay					
								30	70	40	Gley1 6N	CD	7.5YR68			Y	C	5	CH	P	V		Y														
								70	105	35	Gley1 6N	CD	10YR58			Y	C	10	CH	P	V		Y														
								IMP																													
23	TM	41046	70588	28	2		ARA STB	0	30	30	7.5YR41							2	HR	P		S			23.2	-17.7	3a	III	3a	3a	Drought/Wet	Intimate clay and sand lenses					
								30	60	30	2.5Y54	CD	10YR68			Y	C	5	CH	P	S	Y	Y														
								60	86	26	5Y71	CD	10YR58			Y	C	10	CH	P	V	Y	Y														
								86	120	34	7.5YR68	CD	Gley17N			Y	SC	5	HR / CH	G	V																
24	TM	40556	70558	26	2		ARA STB	0	35	35	10YR42			CD	10YR54	Y	C	1	HR	P		M			-7.14	-15.4	3a	III	3a	3a	Drought/Wet	Stop @ - stiff clay					
								35	90	55	10YR53	CF	10YR56			Y	C	2	HR	P		S	Y	Y													
								90	105	15	10YR41	FD	5YR46			Y	C	2	HR	P	S	Y															
								IMP																													
25	TM	40647	70655	31	1	SW	ARA STB	0	23	23	10YR44							2	HR	P		S			1.56	-18	3a	III	3a	3a	Drought/Wet						
								23	60	37	Gley1 7N	CD	7.5YR58			Y	C	2	CH	P	S	Y	Y														
								60	120	60	Gley1 6N	CD	7.5YR68			Y	C	10	CH	P	V	Y	Y														
26	TM	40738	70656	34	1	WSW	ARA STB	0	25	25	10YR32			CF	7.5YR71	Y	CL	1	HR	P		Y			55.3	-13.5	3a	III	3a	3a	Drought/Wet	Sand Lense					
								25	65	40	10YR53	FF	7.5YR58			Y	SC	1	CH	P	V	Y	Y														
								65	75	10	10YR56							10	CH	G	M																
								75	105	30	10YR56	FF	7.5YR58			Y	C	1	CH	P	V		Y														
								105	120	15	10YR61	CD	7.5YR56			Y	C	5	CH	P	V																

Point	Grid ref.			Alt	Grad	Aspect	Land use	Depth (cm)			Soil matrix		Mottle 1		Mottle 2		Gley	Texture	Stones		SUBS STR	Calc.	Mn C	SPL	Drought			Wet		Classification		Point notes		
	Sqr.	E	N					Top	Bttm	Thick	Munsell colour	Form	Munsell colour	Form	Munsell colour	%			Type	MBw					MBp	Gd	WC	Gw	Grade	Limitation				
27	TM	40941	70647	29	0		ARA STB	0	30	30	10YR42	CD	10YR32	FF	10YR58	Y	SC	5	HR						-0.78	-19.4	3a	III	3a	3a	Drought/Wet	Sand lense		
								30	80	50	10YR54	CF	10YR66			Y	C	2	HR	P		Y	Y											
								80	90	10	10YR53	CF	10YR66			Y	SC	15	CH	M		Y												
								90	98	8	Gley1 6N	CF	10YR66			Y	C	10	CH	P		Y												
							IMP																											
28	TM	41037	70652	29	0		ARA STB	0	28	28	10YR32	CD	Gley1 6N			Y	CL								32.8	-15.2	3a	III	3a	3a	Drought/Wet	Stop @ - stiff clay		
								28	62	34	10YR54	CD	Gley1 6N			Y	C	2	HR	P		Y	Y											
								62	97	35	10YR54	CD	Gley1 6N	FD	7.5YR58	Y	C	15	CH / HR	P		Y	Y											
								97	115	18	Gley1 4N	CD	10YR56	CD	7.5YR58	Y	C	15	CH / HR	P		Y												
							IMP																											
29	TM	40523	70746	28	0		ARA STB	0	25	25	10YR32	CD	5YR58	CF	10YR61	Y	SC	1	HR						38.9	-32.2	3b	III	3a	3b	Drought			
								25	85	60	10YR44					Y	C	2	HR	P		Y	Y											
								85	105	20	10YR66					Y	SC	10	HR	G														
								105	120	15	2.5Y61	CD	10YR66			Y	C	10	CH	P		Y												

## Auger Log key

### Depth - Top

xx Underlining denotes depth to the top of a slowly permeable layer

Land use	Mottle 1,2 - Form	Texture	Limitations
ARA Arable	FF Few Feint	CS Coarse Sand	NN None
CER Cereal	FD Few Distinct	MS Medium sand	OC Overall climate
WHT Wheat	FP Few Prominent	FS Fine Sand	AE Aspect
BAR Barley	CF Common Feint	LCS Loamy Coarse Sand	EX Exposure
MZE Maize	CD Common Distinct	LMS Loamy Medium Sand	FR Frost risk
OAT Oats	CP Common Prominent	LFS Loamy Fine Sand	GR Gradient
OSR Oilseed rape	MF Many Feint	CSL Coarse Sandy Loam	MR Microrelief
LIN Linseed	MD Many Distinct	MSL Medium sandy loam	FL Flood risk
FBE Field beans	MP Many Prominent	FSL Fine Sandy Loam	TX Texture
POT Potatoes	VF Very many Feint	CSZL Coarse Sandy Silt Loam	DP Soil depth
SBT Sugar beet	VD Very many Distinct	MSZL Medium Sandy Silt Loam	CH Chemical
BRA Brassicas	VP Very many Prominent	FSZL Fine Sandy Silt Loam	WE Wetness
FOD Fodder crops		ZL Silt Loam	WK Workability
FRT Soft and top fruit		SCL Sandy Clay Loam	DR Droughtiness
HRT Horticultural crops		MCL Medium Clay Loam	ER Erosion risk
PAS Pasture		HCL Heavy Clay Loam	WD Wetness/Droughtiness
LEY Ley grass		MZCL Medium Silty Clay loam	ST Topsoil stoniness
PGR Permanent pasture		HZCL Heavy Silty Clay Loam	
RGR Rough grazing		SC Sandy Clay	
SCR Scrub		ZL Silty Clay	
HTH Heathland		C Clay	
BOG Bog or marsh		P Peat	
DCW Deciduous Woodland		SP Sandy Peat	
CFW Coniferous woodland		LP Loamy Peat	
PLO Ploughed		PL Peaty Loam	
STB Crop stubble		PS Peaty Sand	
FLW Fallow (inc. set aside)		MZ Marine Light Silts	
SAS Set aside (where known)		IMP Impenetrable to roots	
OTH Other			

### Stones - Type

HR	All hard rocks and stones
MSST	Soft, medium or coarse grained sandstone
SI	Soft weathered igneous or metamorphic rock
SLST	Soft oolitic or dolomitic limestone
FSST	Soft, fine grained sandstone
ZR	Soft, argillaceous or silty rocks
CH	Chalk or chalk stones
GH	Gravel composed of non-porous (hard) stones
GS	Gravel composed of porous (soft) stones

### Subs Str (subsoil structural condition)

G	Good
M	Moderate
P	Poor

### Calcareousness

N	Non-calcareous (<0.5% CaCO <sub>3</sub> )
VS	Very slightly calcareous (0.5 - 1% CaCO <sub>3</sub> )
S	Slightly calcareous (1 - 5% CaCO <sub>3</sub> )
M	Moderately calcareous (5 - 10% CaCO <sub>3</sub> )
V	Very calcareous (>10% CaCO <sub>3</sub> )
Y	Calcareous (>1% CaCO <sub>3</sub> )

### Mn C (ferrimanganous concretions)

F	Few
C	Common
M	Many
V	Very many
Y	Common or greater





APPENDIX B: APPENDIX  
DISTRIBUTION SHEETS

10A1:

PARTICLE

SIZE



# Analysis Results (SOIL)

**Customer** ARCADIS (UK) LIMITED  
THE MILL  
BRINSCOMBE PORT  
STROUD  
GL5 2QG

**Distributor** ARCADIS (UK) LTD  
THE MILL  
BRINSCOMBE PORT  
BRINSCOMBE  
STROUD  
GLOS  
GL5 2QG

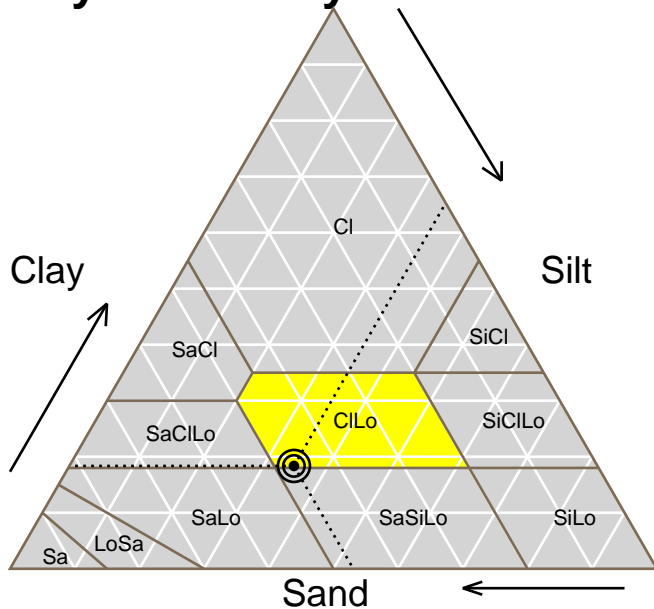
**Sample Ref** DARSHAM TS 13

**Date Received** 30/07/2019 ( Date Issued: 05/08/2019 )

**Sample No** E337879/25

**Crop**

## Physical Analysis



Analysis	Result (%)
Sand	46.93
Silt	34.71
Clay	18.36
Very Fine Sand	6.06
Fine Sand	14.72
Medium Sand	22.01
Coarse Sand	4.13
Very Coarse Sand	< 0.01
Stones >2mm	2.80
Soil Type	CI Lo Clay Loam

Property	Assessment
Available Water	Medium to High
Drainage Rate	Medium to Slow
Inherent Fertility	Medium to High
Potential C.E.C.	Medium to High
Leaching Risk	Moderate to Low
Warming Rate	Medium