



The Sizewell C Project

6.8 Volume 7 Yoxford Roundabout and Other Highways Improvements Chapter 10 Soils and Agriculture Appendix 10A Agricultural Land Classification Report

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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 Yoxford roundabout 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 3b (1.6ha) and 4 (0.3ha), along with a small area of non-agricultural land (1.0ha). Neither Grade 3b nor 4 are considered to be among the best and most versatile agricultural land in England and Wales.

1. 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 Yoxford roundabout 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 2.9 hectares (ha) in size and is located in the eastern limits of the village of Yoxford with the A12 to the west and Middleton Road to the south. The site includes approximately 1.9ha of agricultural land, and is approximately six kilometres (km) to the north-west of the main development site.

1.1.4 When surveyed in July 2019 the site was under pasture management.

1.2 Agricultural Land Classification planning policy and context

1.2.1 This ALC assessment is consistent with the direction given by the National Planning Policy Framework¹ (NPPF).

1.2.2 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.”

1.2.3 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.”

1.2.4 Agricultural land in England and Wales is graded between 1 and 5, depending on the extent to which physical or chemical characteristics impose

¹ National Planning Policy Framework. Department for Communities and Local Government, February 2019
<https://www.gov.uk/government/publications/national-planning-policy-framework--2>

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).

1.2.5 Grades 1, 2 and 3a are defined as the Best and Most Versatile land (BMV).

1.2.6 The site falls within the area covered by the Suffolk Coastal District Core Strategy and Development Management Policies². 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.

1.3 Agricultural Land Classification methodology

a) Ministry of Agriculture, Food and Fisheries Agricultural Land Classification System

1.3.1 The Ministry of Agriculture Fisheries and Food (MAFF) ALC³ 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.

1.3.2 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.

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

² Suffolk Coastal Core Strategy Adopted July 2013 <http://www.eastsuffolk.gov.uk/planning/local-plans/suffolk-coastal-district-local-plan/>

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>

1.3.4 At each location, the soil profile was examined to a maximum depth of approximately 1.2m by hand with the use of a 5 centimetre (cm) 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.

1.3.5 The soil profile at each sample location was described using the Soil Survey Field Handbook: Describing and Sampling Soil Profiles⁴. Each soil profile was ascribed an ALC grade following the MAFF ALC Guidelines.

1.3.6 These MAFF guidelines require that the following factors be investigated:

- Climate: average annual rainfall and accumulated temperature above 0°C between January and June.
- Site: gradient, micro relief and flooding.
- Soils: texture, structure, depth, stoniness, and chemical toxicity.
- Interactive factors: soil wetness, soil droughtiness and liability to erosion.

b) [Natural England technical advice note 049](#)

1.3.7 Use of the ALC methodology is also supported by Natural England Technical Advice Note 049⁵ (TIN049), published in 2012.

1.3.8 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 Global Positioning System.

1.4 [Agricultural Land Classification assessment](#)

a) [Climate](#)

1.4.1 Climatological data for ALC are provided for 5km intersections of the National Grid by the Meteorological Office, in collaboration with the National Soil

⁴ Soil Survey Field Handbook: Describing and Sampling Soil Profiles' (Ed. J.M. Hodgson, Cranfield University, 1997).

⁵ Agricultural Land Classification: protecting the best and most versatile agricultural land (TIN049). Natural England, 2012. <http://publications.naturalengland.org.uk/publication/35012>

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: Yoxford Roundabout and Other Highway Improvements ALC climate data.

Reference Point.	National Grid Reference TM 407 702.
Altitude (m).	16
Average Annual Rainfall (millimetres (mm)).	585
Accumulated Temperature (day degrees).	1424
Moisture Deficit for wheat (mm).	125
Moisture Defecit for potatoes (mm).	121
Field Capacity Days.	109

1.4.2 The main parameters used in the assessment of an overall climatic limitation are average annual rainfall as a measure of overall wetness, and accumulated temperature above 0°C between January and June as a measure of the warmth in the growing season.

1.4.3 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.

b) The site

1.4.4 Land within the site is gently sloping down from the south west corner to the north and east. Gradient and microtopography do not limit ALC Grade within the site.

1.4.5 No natural watercourses adjoin the site which appears to drain to a small pond to the north east of the proposed development.

1.4.6 There is no evidence that flood risk limits ALC grade at any part of the site⁶. However, the site is quite low lying so achieving adequate fall for field drainage may be problematic.

c) Soils and parent materials

1.4.7 The British Geological Survey Geology of Britain Viewer⁷ 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 deposit of sedimentary superficial quaternary deposit (clay, silt and gravel).

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

1.4.9 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.

d) Interactive factors

1.4.10 A typical soil profile found at the site has a loamy sand topsoil over a loamy sand or sand subsoil.

1.4.11 The soil profiles are freely draining restricting availability of water to crops and leaving the land vulnerable to droughtiness.

1.4.12 Soil profiles across the site are limited to either Grade 3b or 4 due to soil droughtiness limiting water available for crops.

e) Agricultural Land Classification grade distribution

1.4.13 A small area of the site is classed as non-agricultural land. This comprises the sections of the A12 and Middleton Road that falls within the site. The remainder of the site is agricultural land in ALC Grades 3b and 4.

1.4.14 The extent of ALC grades across the site shown on **Figure A1**, with area measurements given in **Table 1.2**.

⁶ Environment Agency Flood map for Planning. <http://apps.environment-agency.gov.uk/wiyby/37837.aspx>

⁷ British Geological Survey Geology of Britain viewer.

<http://www.bgs.ac.uk/data/mapViewers/home.html?src=topNav>

Table 1.2: ALC Grade distribution.

ALC Grade.	Area (ha)	Area (%)
3b – moderate quality agricultural land.	1.6	55.17
4 - poor quality agricultural land.	0.3	10.35
Non-agricultural.	1.0	34.48
Total	2.9	100

1.4.15 Grade 3b land covers approximately 55% of the site, an area of 1.6ha, comprising soils with a number of key characteristics. The Grade 3b area of land comprises predominantly a medium textured topsoil over a medium textured upper and lower subsoil. The area is rarely waterlogged (Wetness Class I) and the soil is limited to Grade 3b by droughtiness.

1.4.16 Grade 4 land comprises 0.3ha in total (approximately 10.35% of the site), characterised by a medium textured topsoil over a medium textured upper and lower subsoil which is impenetrable beyond 0.46m due to gravel. The area is rarely waterlogged (Wetness Class I) and the soil is limited to Grade 4 by droughtiness.

1.4.17 There is an area of non-agricultural land to the south and west comprising the A12 and Middleton Road, which takes up 1.0ha of the site, approximately 34.48%.

1.5 Conclusions

1.5.1 A detailed ALC survey of the site found agricultural land in Grades 3b (1.6ha) and 4 (0.3ha). Neither Grade 3b nor 4 are considered to be among the best and most versatile agricultural land in England and Wales.



Appendix 10A1: Auger Log

Point	Grid ref.			Alt	Land use	Depth (cm)			Soil matrix		Mottle 1		Mottle 2		Gley	Text	Stones		SUB	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	39944	68787	14	Grazing/ Meadow	0	28	28	10YR43					N	LS	5	HR		N	N			-74.8	-70.8	4	I	1	4	Drought	Flint; >2cm 5% Flint; >2cm 5% STOP @ Gravel	
						28	46	18	10YR44					N	LS	5	HR	M	N	N											
						IMP																									
2	TM	39911	68727	17	Grazing/ Meadow	0	38	38	10YR34					N	LS	5	HR		N	N			-24.1	-46.4	3b	I	1	3b	Drought	Flint; >2cm 5% Flint; >2cm 2%	
						38	120	88	10YR46					N	LS	5	HR	M	N	N											
3	TM	39967	68735	16	Grazing/ Meadow	0	38	38	10YR43					N	LS	10	HR		N	N			-39.4	-49.9	3b	I	1	3b	Drought	Flint; >2cm 5%, >5cm 1% Flint; >2cm 5%, >5cm 1% Flint; >2cm 5%, >5cm 1% STOP @ Gravel	
						38	90	52	10YR44					N	LS	10	HR	M	N	N											
						90	110	20	10YR54	C	10YR63	C	7.5YR58	Y	S	10	HR	M	N	N											
						IMP																									
4	TM	40042	68696	12	Grazing/ Meadow	0	24	24	10YR33					N	SL	5	HR		N	N			-41.5	-36.8		I	1	3b	Drought	Flint; >2cm 2% Flint; >2cm 2% STOP @ Gravel	
						24	52	28	10YR34					N	SL	5	HR	G	N	N											
						IMP																									

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

Mn C (ferrimanganous concretions)

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