Soil Environment Services Ltd

AGRICULTURAL LAND CLASSIFICATION

Land Allocation Limited

Land off Yapton Lane
Walberton

Soil Environment Services Ltd
April 2020

ARUN DISTRICT COUNCIL WA/80/21/OUT

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Client:

Land Allocation Limited
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AGRICULTURAL LAND CLASSIFICATION

Land off Yapton Lane
Walberton

A report prepared on behalf of ***Soil Environment Services*** by:

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Soil Environment Services
Agricultural Land Classification, Contaminated Land
[redacted]

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DRAWING 1 ALC Grade and survey points

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STATEMENT OF COMPETENCE

GENERAL INFORMATION SOURCES

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1. INTRODUCTION

An Agricultural Land Classification (ALC) has been carried out on 9.3 ha of land at Walberton, BN18 0AR (Drawing ALC/1). The site is centred on OS Grid Ref. 497794, 106013.

The survey was conducted on the 29th March 2021 and classified the land into one or more of the below grades.

The site is used for arable cropping.

1.1 Methodology

Agricultural land is classified into the following grades according to the 1988 guidelines[1].

Grade	Description
1	**Excellent quality agricultural land** with no or very minor limitations to agricultural use.
2	**Very good quality agricultural land** with minor limitations which affect crop yield, cultivation or harvesting.
3a 3b	**Good quality agricultural land** capable of producing moderate to high yields of a narrow range of arable crops or moderate yields of a wider range of crops. **Moderate quality agricultural land** capable of producing moderate yields of a narrow range of crops or lower yields of a wider range of crops.
4	**Poor quality agricultural land** with severe limitations which significantly restrict the range of crops and/or level of yields.
5	**Very poor quality agricultural land** with very severe limitations which restrict use to permanent pasture or rough grazing, except for occasional pioneer forage crops.

The classification includes an initial desktop investigation to examine previously mapped soil types and to note the drift and solid geology followed by the field survey consisting auger borings at one every 100 m in general and a pit excavated at least in each of the main soil types to confirm the structures and stone content. Laboratory analysis of soil textures is undertaken if needed in order to confirm textures such the *heavy/medium* clay and *medium/fine* sand categories or stone contents. All site survey profile data is listed in Appendix A.

All of the potential limitations are assessed and then the most limiting factor dictating the ALC grade was determined for this site and is detailed in Table 2.

1.2 Previous ALC gradings

Grading on the MAFF (1983) 1: 250 000 map indicated the site was mapped as **ALC Grade 2 land.**

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2. CLIMATIC LIMITATIONS

2.1 Overall climate

The climatological data for the entire site centre is detailed in Table 1.

Table 1
Climatological information[3]

Factor	Units	Value
Altitude AOD	m	20
Accumulated temperature	day°C (Jan-June)	1524
Average Annual Rainfall (AAR)	mm	791.7
Field Capacity Days (FCD)	days	163.1
Moisture Deficit Wheat (MDW)	mm	115.2
Moisture Deficit Potatoes (MDP)	mm	111.2
Overall climate ALC Grade	Grade 1	

Overall climate will not result in a significant limiting factor for this site.

2.2. Local climate

Local climate will not result in a significant limiting factor for this site.

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3 SITE LIMITATIONS

3.1 Gradient

The gradient will not result in a significant limiting factor for this site.

3.2 Microrelief

The microrelief will not result in a significant limiting factor for this site.

3.3 Flooding

A low risk of flooding from surface water and very low risk from rivers and sea has been identified (https[redacted]

Flooding will not result in a significant limiting factor for this site.

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4 SOIL LIMITATIONS

4.1 Texture and structure

The soils are found to be deep silty and moderately structured but with significant flint contents across part of the site.

The soils have previously been mapped as the Charity 1 Formation which comprise flinty silty drift of greyish brown, slightly or moderately stony silty clay over brown slightly or moderately stony silty clay loam over yellowish brown slightly or moderately stony silty clay loam, over strong brown, slightly or moderately stony silty clay loam.

The soils are naturally well drained (Wetness Class I) and there is little surface run-off, they are generally mapped as slightly droughty for potatoes and grass and non-droughty for cereals.

Drift geology/ superficial deposits (1:50 000 scale)

1. River Terrace Deposits (undifferentiated) - Sand, Silt and Clay– majority of the site
2. Head - Gravel, Sand, Silt and Clay – eastern boundary

Bedrock geology (1:50 000 scale) in bands from NW to SE

1. *London Clay Formation - Clay, Silt and Sand*

4.2 Depth

Soil depth will not result in a significant limiting factor.

4.3 Stoniness

Stoniness is a direct significant limiting factor for soils across part of the site with 12.5% limiting some areas to Grade 3a.

4.4 Chemical

Chemical contamination will not result in a significant limiting factor for this site

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5. INTERACTIVE LIMITATIONS

5.1 Wetness

The combination of Wetness Class I soils with the Field Capacity Days of 163.1 and a topsoil texture of medium silty clay loam results in an **ALC Grade of 1.**

5.2. Droughtiness

The combination of the soil textures and stone contents combined with the climatic factors results in a slight droughtiness for wheat and potatoes across all of the site resulting an **ALC Grade of 2** and moderate droughtiness for potatoes in the stoney area and an **ALC Grade of 3a.**

5.3 Erosion

Erosion will not result in a significant limiting factor for this site.

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6. AGRICULTURAL LAND CLASSIFICATION

6.1 Most limiting factor

Grade 2 land – Droughtiness

The combination of the soil textures and stone contents combined with the climatic factors results in a slight droughtiness for wheat and potatoes across part of the site resulting in an ALC **Grade of 2.**

Grade 3a land – Droughtiness and topsoil stone content

The combination of the soil textures and stone contents combined with the climatic factors results in a moderate droughtiness for potatoes across part of the site and hence an **ALC Grade of 3a**. In addition, a topsoil stone content of 12.5% results in an **ALC Grade of 3a.**

6.2 Current grading

This survey has resulted in an Agricultural Land Classification of the following grades (Drawing 1):

Table 2. ALC gradings and limitations

Grade	ha	%	Limitation
1			
2	6.3	67.6	Droughtiness
3a	3.0	32.3	Droughtiness & Stoniness
3b			
4			
5			
Non-agricultural land			
Total	9.3	100%	

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DRAWING 1

ALC Grade

Key

ALC Grades
- Grade 1
- Grade 2
- Grade 3a
- Grade 3b
- Grade 4
- Grade 5
- Non agricultural land

● Boring
■ Pit

Soil Environment Services

Drawing Title: ALC Grade	Drawing No.: ALC/1
Scale: NA	Date: 15/04/2021

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APPENDIX A

Soil profile data

Notes

1 All abbreviations relating to soil parameters are standard and derived from the guidance documents:

Agricultural Land Classification of England and Wales. Revised guidelines and criteria for grading the quality of agricultural land. MAFF. 1988.
Soil Survey Field Handbook. Technical Monograph No.5. Soil Survey of England and Wales.1976.

2 The pit data is detailed in this table and information on structure and stone content copied to the boring profiles.

3 Any blanks in the cells indicate the data is not needed or appropriate for that cell.

4 If 'NA' is inserted in a cell the information is not appropriate on this occasion.

Obs point	Boring or Pit	Grad. (deg)	Base Depth (cm)	Subsoil horizon thickness for droughtiness calcs (cm)			Text.	Calc	Col.	Motts. %/ depth	Mott/Ped face colour	Stns %	Stns type	Pores <0.5 mm %	Struct	SPL depth (cm)	Gleying depth (cm)	SWC	Grade (wetness)	TAv	Eav	StTAv	StEAv	MBW	Grade (Drought, WHEAT)	MBR	Grade (Drought, POTATOES)
			40	To 50	50 to 120	To 70	ZCL	NA	10YR43	0		5.5	MXD							19		1					
1	B	≤7	100	10	50	10	ZCL	NA	7.5YR54	0		11.4	MXD	>0.5	SMSAB			1	1	16	10	1	0.5	33.34	1	3.38	2
			120	0	20	20	ZCL	NA	7.5YR54	0		12.5	MXD	>0.5	SMP					16	10	1	0.5				
			120	0	0	0						0								0	0	0	0				
			40	To 50	50 to 120	To 70	ZCL	NA	10YR43	0		5.5	MXD							19		1					
2	B	≤7	100	10	50	10	ZCL	NA	7.5YR43	0		11.4	MXD	>0.5	SMSAB			1	1	16	10	1	0.5	33.34	1	3.38	2
			120	0	20	20	ZCL	NA	7.5YR54	0		12.5	MXD	>0.5	SMP					16	10	1	0.5				
			120	0	0	0														0	0	0	0				
			30	To 50	50 to 120	To 70	ZCL	NA	10YR43	0		5.5	MXD							19		1					
3	B	≤7	70	20	20	40	ZCL	NA	7.5YR43	0		11.4	MXD	>0.5	SMSAB			1	1	16	10	1	0.5	29.3065	2	-0.01	2
			120	0	50	0	ZCL	NA	7.5YR54	0		12.5	MXD	>0.5	SMP					16	10	1	0.5				
			120	0	0	0						0								0	0	0	0				
			30	To 50	50 to 120	To 70	ZCL	NA	10YR43	0		22	MXD							19		1					
4	B	≤7	70	20	20	40	ZCL	NA	7.5YR43	0		24.5	MXD	>0.5	SMSAB			1	1	16	10	1	0.5	5.665	2	-16.78	3a
			120	0	50	0	ZCL	NA	7.5YR54	0		30	MXD	>0.5	SMP					16	10	1	0.5				
			120	0	0	0						0								0	0	0	0				
			30	To 50	50 to 120	To 70	ZCL	NA	10YR43	0		5.5	MXD							19		1					
5	B	≤7	70	20	20	40	ZCL	NA	7.5YR43	0		11.4	MXD	>0.5	SMSAB			1	1	16	10	1	0.5	29.3065	2	-0.01	2
			120	0	50	0	ZCL	NA	7.5YR54	0		12.5	MXD	>0.5	SMP					16	10	1	0.5				
			120	0	0	0						0								0	0	0	0				
			30	To 50	50 to 120	To 70	ZCL	NA	10YR43	0		5.5	MXD							19		1					
6	B	≤7	70	20	20	40	ZCL	NA	7.5YR43	0		11.4	MXD	>0.5	SMSAB			1	1	16	10	1	0.5	29.3065	2	-0.01	2
			120	0	50	0	ZCL	NA	7.5YR54	0		12.5	MXD	>0.5	SMP					16	10	1	0.5				
			120	0	0	0						0								0	0	0	0				
			30	To 50	50 to 120	To 70	ZCL	NA	10YR43	0		22	MXD							19		1					
7	P	≤7	70	20	20	40	ZCL	NA	7.5YR43	0		24.5	MXD	>0.5	SMSAB			1	1	16	10	1	0.5	5.665	2	-16.78	3a
			120	0	50	0	ZCL	NA	7.5YR54	0		30	MXD	>0.5	SMP					16	10	1	0.5				
			120	0	0	0						0								0	0	0	0				
			30	To 50	50 to 120	To 70	ZCL	NA	10YR43	0		5.5	MXD							19		1					
8	P	≤7	70	20	20	40	ZCL	NA	7.5YR43	0		11.4	MXD	>0.5	SMSAB			1	1	16	10	1	0.5	29.3065	2	-0.01	2
			120	0	50	0	ZCL	NA	7.5YR54	0		12.5	MXD	>0.5	SMP					16	10	1	0.5				
			120	0	0	0						0								0	0	0	0				
			30	To 50	50 to 120	To 70	ZCL	NA	10YR43	0		5.5	MXD							19		1					
9	B	≤7	70	20	20	40	ZCL	NA	7.5YR43	0		11.4	MXD	>0.5	SMSAB			1	1	16	10	1	0.5	29.3065	2	-0.01	2
			120	0	50	0	ZCL	NA	7.5YR54	0		12.5	MXD	>0.5	SMP					16	10	1	0.5				
			120	0	0	0						0								0	0	0	0				
			30	To 50	50 to 120	To 70	ZCL	NA	10YR43	0		22	MXD							19		1					
10	B	≤7	70	20	20	40	ZCL	NA	7.5YR43	0		24.5	MXD	>0.5	SMSAB			1	1	16	10	1	0.5	5.665	2	-16.78	3a
			120	0	50	0	ZCL	NA	7.5YR54	0		30	MXD	>0.5	SMP					16	10	1	0.5				
			120	0	0	0						0								0	0	0	0				
			30	To 50	50 to 120	To 70	ZCL	NA	10YR43	0		22	MXD							19		1					
11	B	≤7	70	20	20	40	ZCL	NA	7.5YR43	0		24.5	MXD	>0.5	SMSAB			1	1	16	10	1	0.5	5.665	2	-16.78	3a
			120	0	50	0	ZCL	NA	7.5YR54	0		30	MXD	>0.5	SMP					16	10	1	0.5				
			120	0	0	0						0								0	0	0	0				

Agricultural land Classification

Statement of competence

SES Ltd undertake several dozen Agricultural Land Classification (ALC) or Land Capability Classifications for Agriculture (LCCA- Scotland) surveys a year and have worked on sites up to 1000 ha including housing, roads, solar farm and mineral extraction developments. We have been undertaking ALC surveys for 25 years and have won many contracts to supply Land Classification reports to local authorities as part of their strategic development plans.

A number of our staff have attended the training course Agricultural Land Classification: England and Wales. Working with Soil – The IPSS Professional Competency Scheme. BSSS & DEFRA.

DR ROBIN DAVIES BSc PhD F.I.SoilSci.

- Managing Director – 25 years
- Fellow of The British Society of Soil Science
- Council Member of The Institute of Professional Soil Scientists for 4 years.
- PhD Soil Physics - Agricultural land drainage - University of Newcastle upon Tyne
- Founder and Managing Director of Soil Environment Services Limited for 25 years.

Selected peer reviewed scientific papers:

* **Soil nitrogen depletion - the threat from soil stockpiling**. Environmental Scientist: Journal of The Institution of Environmental Sciences, 1997.
* **Nitrogen loss from a soil, restored after surface-mining**. Journal of Environmental Quality, 1995
* **The influence of soil factors on the growth of a grass/clover sward on a restored site in Northumberland.** Grass & Forage Science, 1994.
* **The effect of post-restoration cropping regime on some physical properties of a restored soil.** Soil Use & Management, 1994
* **Water availability in a restored soil.** Soil Use & Management, 1992.
* **A laboratory Method for Investigating the Stabilisation of Mole** Channels.J.Agric.Eng.Res.1991.

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GENERAL INFORMATION SOURCES

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

2. ***Soil Survey Field Handbook.*** Technical Monograph No.5. Soil Survey of England and Wales.1976.

3. ***Climatological Data for Agricultural Land Classification***, The Met. Office 1989

4. ***Soil Map of England and Wales: 1:250 000***. Soil Survey of England and Wales, Harpenden.

5. ***Soils and Their Use in South East England.*** Soil Survey of England and Wales,

6. ***Agricultural Land Classification Map*** 1:250 000. MAFF 1983.

7. ***Risk of Flooding:*** https://flood-warning-information.service.gov.uk/long-term-flood-risk

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9. ***Butler, B E.*** *Soil Classification for Soil Survey Monographs on Soil Survey (1980) Clarendon Press, Oxford*

10. ***Munsell Soil Colour Charts****, Munsell Colour, Grand Rapids* ***1994,***