

**LAND AT  
MINSTER LOVELL, WEST OXON**

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**AGRICULTURAL LAND  
CLASSIFICATION**

**November 2022**





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# 1 INTRODUCTION

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- 1.1 This report sets out the results of an Agricultural Land Classification (ALC) of land to the west of Minster Lovell, Oxfordshire.
- 1.2 The land was the subject of a detailed ALC survey in November 2022.
- 1.3 This survey considers the area outlined in red on the plan below.

*Insert 1: The Area Surveyed*



- 1.4 The area extends to 11.5 ha.
- 1.5 This report sets out the results as follows:
- (i) section 2 describes the methodology;
  - (ii) section 3 sets out the relevant considerations;
  - (iii) section 4 sets out the results;
  - (iv) and section 5 provides a brief planning assessment.

## **Summary**

- 1.6 The area is all Subgrade 3b “moderate” quality agricultural land. There is no planning policy constraint to the non-agricultural use of such land.

## 2 METHODOLOGY

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- 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). This ALC survey has been carried out by a soil scientist who meets the requirements of the BSSS Professional Competency Standard (PSC) scheme for ALC (see BSSS PCS Document 2 '*Agricultural Land Classification of England and Wales*'<sup>1</sup>). The BSSS PSC 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).
- 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').
- 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 Paragraphs 174 and 175 of the National Planning Policy Framework (NPPF), revised on 20<sup>th</sup> July 2021. Further details of the ALC system and national planning policy implications are set out in Natural England's '*Guide to assessing development proposals on agricultural land*' online<sup>3</sup>.
- 2.4 A detailed ALC survey was carried out on the 7<sup>th</sup> of November 2022. The survey involved examination of the soil's physical properties at 13 auger bore locations on a 100m by 100m grid, as shown on **Plan KCC3305/01**. One soil pit was excavated with a spade to examine certain soil physical properties, such as stone content and subsoil structure, in more detail.

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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 accessed November 2022

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

<sup>3</sup> Natural England (2022) '*Guide to assessing development proposals on agricultural land*'. Available online at <https://www.gov.uk/government/publications/agricultural-land-assess-proposals-for-development/guide-to-assessing-development-proposals-on-agricultural-land> Last accessed November 2022

- 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.
- 2.6 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. 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 a grade following the ALC Guidelines.

### 3 FACTORS AFFECTING LAND QUALITY

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

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

3.2 These factors are considered in turn below.

#### **Climate**

3.3 Interpolated climate data relevant to the determination of the ALC grade of land at the Site is given in Table 1 below.

*Table 1: ALC Climate Data for Minster Lovell, West Oxfordshire*

<b>Climate Parameter</b>	<b>Grid Ref: SP306105</b>
Average Altitude (m)	121
Average Annual Rainfall (mm)	732
Accumulated Temperature above 0°C (January – June)	1378
Moisture Deficit (mm) Wheat	96
Moisture Deficit (mm) Potatoes	85
Field Capacity Days (FCD)	161
Grade according to climate	1

3.4 Agricultural land quality at the Site does not have a climate limitation with reference to Figure 1 ‘Grade according to climate’ on page 6 of the ALC Guidelines. In this case, agricultural land at the Site could be graded as Grade 1 in absence of any overriding climate limitation.

3.5 The soil profiles across the Site are predicted to be at field capacity (i.e., the amount of soil moisture or water content held in the soil after excess water has drained away) for approximately 161 Field Capacity Days (FCD) per year, mainly over the late autumn, winter and early spring. The climate interacts with soil physical properties, i.e., soil texture and wetness class, and can limit agricultural land quality due to soil wetness as per Table 6 of the ALC Guideline ‘Grade according to soil wetness’. The number of FCD at this Site falls in the FCD category 151-175 for determining the grade according to wetness.

### **Site**

- 3.6 The Site is located to the west of Minster Lovell, West Oxfordshire. The Site is bordered by the B4047 to the north and by new residential development to the east. The land to the south and west is in agricultural use. The approximate centre of the Site is located at British National Grid (BNG) reference National Grid Reference (Centre of Site) SP 30660 10494.
- 3.7 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.

### **Gradient and Micro-Relief**

- 3.8 The Site is located on a slight, south-facing slope at an elevation of approximately 124 metres (m) Above Ordnance Datum (AOD) at the highest point in the north, and approximately 119 mAOD at lowest altitude in the south. The quality of agricultural land over the Site is not limited by gradient, which does not exceed 7°. Likewise, agricultural land quality is not limited by 'micro-relief', i.e., complex changes in slope angle and direction over short distances.

### **Risk of Flooding**

- 3.9 From the Government Flood Map for Planning website<sup>4</sup>, the Site is located within Flood Zone 1. There is no evidence to determine agricultural land at the Site is at a risk of flooding, when assessed against the criteria for frequency and/or duration in Table 2 '*Grade according to flood risk in summer*' and/or Table 3 '*Grade according to flood risk in winter*' of the ALC Guidelines.

### **Soil**

- 3.10 **Geology/Soil Parent Material.** From British Geological Survey (BGS) maps at 1:50,000 scale, the land at the Site is underlain by the Forest Marble Formation (limestone), with smaller outcrops of White Limestone Formation (limestone) and Forest Marble Formation (mudstone). The bedrock is not covered by any superficial deposits. Therefore, the soil is developed directly over the limestone.
- 3.11 **Published Information on Soil.** Soil information is available only at a small scale (1:250,000) on the National Soil Map published by the Soil Survey of England and Wales

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<sup>4</sup> Government Flood Map for Planning website. Available online @ <https://flood-map-for-planning.service.gov.uk/> Last accessed November 2022



(SSEW) in 1983. This provisional soil map indicates that land at the Site is covered soils grouped in the Elmtun 3 Association.

- 3.12 As described by the SSEW, the soils of the Elmtun 3 Association consists of shallow loamy and clayey soils over limestone and deeper slowly permeable clayey soils on clay-shale. These soils are mainly well drained (Wetness Class I) but, in places, receive seepage or run-off water. The dominant Elmtun soils are brown rendzinas and the ancillary soils include: Moreton series, brown calcareous earths; Haselor and Evesham series, both calcareous pelosols; and Denchworth series, pelo-stagnogley soils.
- 3.13 **Soil Survey.** The soil profiles recorded at each auger-bore location are given as **Appendix 1**. A detailed description of Soil Pit 1 is given as **Appendix 2**. The detailed soil survey confirmed the presence of two type of soil, as follows.
- 3.14 **Type 1.** The predominant type of soil is found in the east, north and central-southern parts of the site. This type of soil comprises shallow (approximately 25cm deep), brown to yellowish brown, calcareous, slightly to moderately stony (brashy) heavy clay loam and clay soil over hard limestone. In the east, there is only a single layer of soil directly over the limestone, i.e., rendzina. Elsewhere, there is a thin layer (up to 10cm thick) of yellowish-brown subsoil which separates the topsoil from the limestone. This type of soil is well drained (Wetness Class I), and comparable to the Elmtun series described by the SSEW. Also see the description of Soil Pit 1 given as **Appendix 2**. This type of soil is mainly limited by soil droughtiness, and/or topsoil stone content to Subgrade 3b (see below for further information on soil droughtiness).
- 3.15 **Type 2.** The second type of soil occurs in the south-west and north-west corners of the Site. Here, the dark greyish brown, calcareous, very slightly stony clay topsoil overlies a yellowish brown, calcareous clay upper subsoil, and a greyish brown, moderately calcareous clay lower subsoil to 120cm and beyond. The lower subsoil is mottled with common, distinct ochreous mottles. Therefore, these profiles with slowly permeable and seasonally waterlogged clay subsoil are placed in Wetness Class II or III in the south-west. This type of soil is comparable with the Evesham series described by the SSEW. It is limited by soil wetness to Subgrade 3b, as described in more detail below.

#### **Interactive Limitations**

- 3.16 From the information above, together with the findings of the detailed soil survey (see Soil Profile Log given as **Appendix 1**), the quality of agricultural land with Type 1 soil is limited

mainly by soil droughtiness, while land with Type 2 soil is limited by soil wetness, as described below.

- 3.17 **Soil Droughtiness.** From the ALC Guidelines, a soil droughtiness limitation exists *‘in areas with relatively low rainfall or high evapotranspiration, or where the soil holds only small reserves of moisture available to plant roots.’* The ALC grade according to soil droughtiness is shown in Table 2 below (based on Table 8 ‘Grade According to Droughtiness’ in the ALC Guidelines). To be eligible for Grades 1 to 3b the moisture balances (MBs) must be equal to, or exceed, the stated minimum values for both wheat and potatoes. If the MB for either crop is less (i.e., more negative) than that shown for Subgrade 3b, the soil is Grade 4 on droughtiness).

Table 2: ALC Grade According to Soil Droughtiness

Grade/Subgrade	Moisture Balance (MB) Limits (mm)	
	Wheat	Potatoes
1	+30	+10
2	+5	-10
3a	-20	-30
3b	-50	-55
4	<-50	<-55

- 3.18 The grade according to soil droughtiness per auger log is shown in **Appendix 1**. Well drained profiles (Wetness Class I) in Type 1 are limited by soil droughtiness to Subgrade 3b. This is because this type of soil is shallow over the limestone, and the soil which is present has a restricted water-holding capacity due to the amount of hard stones (limestone) present. One auger-bore (Auger-Bore 13) was calculated to be limited by soil droughtiness to Grade 4. However, this single occurrence has not been mapped as a separate unit and is included in the predominant Subgrade 3b following convention for ALC (see page 7 of the ALC Guidelines, i.e., *‘...a degree of variability in physical characteristics within a discrete are is to be expected. If the area includes a small proportion of land of different quality, the variability can be considered as a function of the mapping scale.’*
- 3.19 **Soil Wetness.** From the ALC Guidelines, a soil wetness limitation exists where *‘the soil water regime adversely affects plant growth or imposes restrictions on cultivations or grazing by livestock’*. Agricultural land quality with Type 2 soil is limited by soil wetness as per Table 3 below (based on Table 6 ‘Grade According to Soil Wetness – Mineral Soils’ in the ALC Guidelines).

Table 3: ALC Grade According to Soil Wetness

Wetness Class	Texture of the Top 25 cm	151-175 Field Capacity Days
I	Sand, Loamy Sand, Sandy Loam, Sandy Silt Loam	1
	Sandy Clay Loam/Medium Silty Clay Loam /Medium Clay	1
	Loam*	2
	Heavy Silty Clay Loam/Heavy Clay Loam**	3a
	Sandy Clay/Silty Clay/Clay	
II	Sand, Loamy Sand, Sandy Loam, Sandy Silt Loam	1
	Sandy Clay Loam/Medium Silty Clay Loam /Medium Clay	2
	Loam*	3a
	Heavy Silty Clay Loam/Heavy Clay Loam**	3b
	Sandy Clay/Silty Clay/Clay	
III	Sand, Loamy Sand, Sandy Loam, Sandy Silt Loam	2
	Sandy Clay Loam/Medium Silty Clay Loam /Medium Clay	3a
	Loam*	3b
	Heavy Silty Clay Loam/Heavy Clay Loam**	3b
	Sandy Clay/Silty Clay/Clay	
IV	Sand, Loamy Sand, Sandy Loam, Sandy Silt Loam	3a
	Sandy Clay Loam/Medium Silty Clay Loam /Medium Clay	3b
	Loam*	3b
	Heavy Silty Clay Loam/Heavy Clay Loam**	3b
	Sandy Clay/Silty Clay/Clay	
Key: * 18% to <27% clay; and ** 27% to 35% clay		

- 3.20 In a climate area with 161 FCD, profiles which are seasonally waterlogged (Wetness Classes II and III) are limited by soil wetness to Subgrade 3b where the topsoil is clay.

## 4 AGRICULTURAL LAND CLASSIFICATION

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- 4.1 By detailed ALC survey, it has been determined that the quality of agricultural land at the Site is limited mainly by soil droughtiness in Type 1 soil, and by soil wetness in Type 2 to Subgrade 3b (see above for descriptions of Type 1 and Type 2 soils). Some soils in Type 1 are also limited to Subgrade 3b due to amount of hard stone (limestone) in the topsoil.
- 4.2 The area and proportion of agricultural land in each ALC grade has been measured from an ALC map given as **Plan KCC3305/02**. The findings are reported in Table 4 below.

*Table 4: Agricultural Land Classification – Minster Lovell, West Oxfordshire*

<b>ALC Grade</b>	<b>Area (Ha)</b>	<b>Area (% of Total Site)</b>
Grade 1 (Excellent)	0	0
Grade 2 (Very Good)	0	0
Subgrade 3a (Good)	0	0
Subgrade 3b (Moderate)	11.5	100
Grade 4 (Poor)	0	0
Grade 5 (Very Poor)	0	0
Non-agricultural / Other land	0	0
<b>Total</b>	<b>11.5</b>	<b>100</b>

## **5 PLANNING ASSESSMENT**

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- 5.1 The site comprises wholly of Subgrade 3b land.
- 5.2 Under the ALC, Subgrade 3b is described as “moderate quality” land.
- 5.3 The National Planning Policy Framework (2021) defines land in Grades 1, 2 and 3a as the “best and most versatile” (BMV) agricultural land. This site is not, therefore, best and most versatile agricultural land.
- 5.4 Policy in the NPPF at paragraphs 174 and 175, including footnote 58, refer only to agricultural land of BMV quality. This site is not of BMV quality.
- 5.5 Paragraph 8.69 of the West Oxfordshire Local Plan 2031 (September 2018) recognises the need to make prudent use of soils. There is no policy governing agricultural land in the Local Plan.

### **Conclusion**

- 5.6 The land is poorer quality. There is no planning policy constraint to the non-agricultural development of this site of Subgrade 3b quality.

**Appendix KCC1**  
**Summary of Auger Bore Data**

Project Number	Project Name	Parcel
C934	KCC3305 Minster Lovell, West Oxon	C934

Date of Survey	Survey Type	Surveyor(s)	Company
08/11/2022	ALC	RWA	Askew Land and Soil

Weather	Relief	Land use and vegetation
Dry, Sunny	Level	

Grid Reference	Postcode	Altitude	Area
SP306104	OX290BH	122	11.5

MAFF prov	MAFF detailed	Flooding
Grade 3	None	Flood Zone 1

AAR	ATO	MDw	MDp	FCD	Climate grade
733	1377	96	85	161	1

Bedrock	Superficial deposits
Forest Marble Formation	None

Soil association(s) 1:250,000	Detailed soil information
Elmton 3	None

Revision Number	Date Revised
2	08/11/2022







**Appendix KCC2**  
**Soil Pit Description**

Soil Survey					Surveyor	RA	
Easting (X)	430800	Northing (Y)	210400	Alt (m)	120	Grid Reference	SP 30800 10400
Land Use		Reference	12 (Pit 1)	Slope °	≤7	Date	04/11/2022
Bedrock	Forest Marble Formation	Superficial	None	Aspect	S		

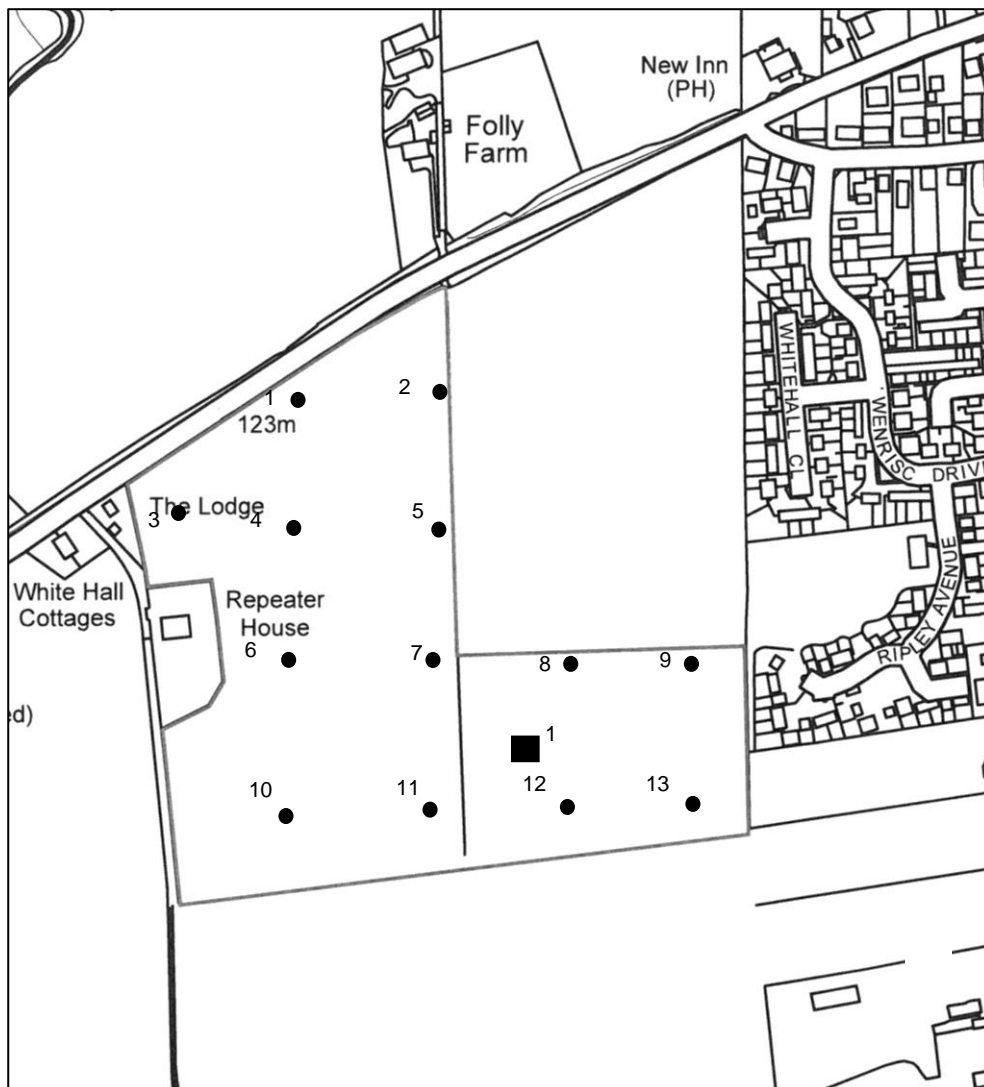
Layer		Topsoil	2	3	4	5	6	7
Lower Depth (cm)		25	35					
Texture		C - Clay	C - Clay					
Matrix Colour		10YR4/4	10YR4/6					
Gley (Y/N)		No	No					
Ochreous Mottles	Form							
	Munsell Colour							
Grey Mottles	Form							
	Munsell Colour							
Manganese (Y/N)		No	No					
% Stones (type 1)		12	15					
Stones > 2cm		8						
Stones > 6cm		2						
Stone Type		HR - All hard rock	HR - All hard rocks or stones (i.e. those which cannot be scratched with a finger nail)					
% Stones (type 2)								
Stones > 2cm								
Stones > 6cm								
Stone Type								
CaCO <sub>3</sub>		SC - Slightly calcareous	MC - Moderately calcareous (5 - 10% CaCO <sub>3</sub> )					
Shape of Peds.		SAB - Subangular	AB - Angular Blocky					
Size of Peds.		M - Medium	M - Medium					
Subsoil Structure		Not Applicable	Moderate					
Soil or Ped. Strength		Firm	Firm					
Degree of Ped. Development		M - Moderate	M - Moderate					
Slowly Permeable Layer (Y/N)		No	No					

MDw	MDp	FCD
96	85	161

Wetness	Class (WC)	WC I
	Grade (WE)	3a

Notes	Impenetrable due to limestone at 25cm. Rooting to 35cm. Calculated Moisture Balance (MB) values: Wheat -45mm (3b droughtiness); Potatoes -34mm (3b droughtiness)
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**Plan KCC3305/01**  
**Auger Point Plan**



# **KEY**

- Auger sample location
- Topsoil texture sample
- Soil Pit

1

<b>PLAN</b>	<b>KCC3305/01</b>		
<b>TITLE</b>	<b>Auger Points Plan</b>		
<b>SITE</b>	Minster Lovell, West Oxon		
<b>CLIENT</b>	Catesby Estates PLC		
<b>NUMBER</b>	<b>KCC3305/01 11/22hr</b>		
<b>DATE</b>	November 2022	<b>SCALE</b>	NTS

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**Plan KCC3305/02**  
**Agricultural Land Classification Plan**



KEY		Ha	%	PLAN	KCC3305/02		
	Grade 1			TITLE	Agricultural Land Classification Plan		
	Grade 2			SITE	Minster Lovell, West Oxon		
	Grade 3a			CLIENT	Catesby Estates PLC		
	Grade 3b	11.5	100	NUMBER	KCC3305/02 11/22hr		
	Grade 4			DATE	November 2022	SCALE	NTS
	Grade 5			<b>KERNON COUNTRYSIDE CONSULTANTS LTD</b> <b>GREENACRES BARN, PURTON STOKE, SWINDON,</b> <b>WILTSHIRE, SN5 4LL</b> Tel 01793 771 333 Email: <a href="mailto:info@kernon.co.uk">info@kernon.co.uk</a> This plan is reproduced from the Ordnance Survey under copyright license 100015226			
	Non-agricultural						
	Urban						
	Not surveyed						



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