



LAND AT PENTRE MEYRICK

AGRICULTURAL CONSIDERATIONS

June 2014





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1 **INTRODUCTION**

1.1 This report relates to a small site of approximately 0.4 ha (1 acre) at Pentre Meyrick, in the Vale of Glamorgan. The site is shown below.

Insert 1: The Site



1.2 This report considers the agricultural land quality of the site.

1.3 The site is shown below, from the south east.



2 **EXECUTIVE SUMMARY**

2.1 The land quality of the site is Subgrade 3b, based on laboratory analysis which confirms that the clay content exceeds 27% in the samples. It therefore comprises poorer quality land.

3 **AGRICULTURAL LAND CLASSIFICATION SYSTEM**

- 3.1 The ALC system divides land into five grades according to the degree to which inherent factors limit its potential to be exploited for agricultural use. Grade 1 is the best, being excellent quality. Grade 5 is the poorest. Grade 3 is divided into Subgrades of 3a and 3b.

4 **POLICY CONTEXT**

- 4.1 Planning Policy Wales (6th Edition) paragraph 4.10.1 notes that land of Grades 1, 2 and 3a should only be developed if there is an overriding need for the development.
- 4.2 It goes on to note that if land of Grades 1, 2 and 3a does need to be developed, and there is a choice between sites of different quality, development should be directed to land of the lowest grade.

5 **AGRICULTURAL LAND CLASSIFICATION**

- 5.1 In **Appendix KCC1** a detailed desk-based assessment is set out. This has been carried out by a qualified and experienced soil scientist. This has been supplemented by soil sampling subjected to laboratory analysis, such that we can be definitive about the ALC grade.
- 5.2 There are no gradient, micro-relief or flooding limitations.
- 5.3 The wet climate of the area means that land cannot be graded any higher than Subgrade 3a.
- 5.4 With high levels of rainfall, the grading will be highly influenced by the clay content of the land. Soils that are medium clay loams or medium silty clay loams, with clay contents below 27%, will classify as Subgrade 3a. If soils fall into the heavy clay loam, heavy silty clay loam, clay or silty clay, where clay content exceeds 27%, the land will classify as Subgrade 3b.
- 5.5 Land in this area is typically a mix of Subgrades 3a and 3b, in a patchy layout, given that it is on the boundary between the two Subgrades. Definitive conclusions can only be reached following particle size analysis of the soil samples by a recognised laboratory.

5.6 Consequently two pits were dug, during a site inspection on 8th May 2014. The pits are photographed below.



5.7 These were submitted for laboratory analysis. The results are set out in **Appendix KCC2**.

5.8 Clay content from pit 1 is 28% and from pit 2 is 30%.

5.9 Accordingly the site is Subgrade 3b.

6 **IMPLICATIONS**

6.1 This is a small site, extending to about 0.4 ha (1 acre).

6.2 It is proposed for a rural-exception affordable housing scheme. As such the location of the proposed development is sensitive. It is not a use that can be translocated elsewhere. Therefore there are few choices possible between sites.

6.3 The site comprises Subgrade 3b, based upon clay content. It is, therefore, not of best and most versatile quality. It is poorer quality land.

6.4 The site comprises an awkward corner of a much larger arable field. In practical terms it is of limited utility.

6.5 Overall there should be no policy constraint to the development, for key local housing, of this small site.

APPENDIX KCC1
Desk-based ALC

DESKTOP AGRICULTURAL LAND CLASSIFICATION

Background

- 1 This report sets out the findings of a desktop Agricultural Land Classification (ALC). It is based on a desktop study of relevant published information on climate, topography, geology and soil.

Methodology

- 2 The work has been carried out by a Chartered Scientist, who is a Member of the Institute of Professional Soil Scientists (IPSS).
- 3 This assessment is based upon the findings of a study of published information on climate, geology and soil. It follows the approach of the Ministry of Agriculture, Fisheries and Food (MAFF) ¹ '*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').
- 4 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 112 and Annex 2 of the National Planning Policy Framework (NPPF) of March 2012.
- 5 As described in the ALC Guidelines, the main physical factors influencing agricultural land quality are:
 - climate;
 - site;
 - soil; and
 - Interactive limitations.
- 6 These factors are considered in turn below.

¹ The Ministry of Agriculture, Fisheries and Food (MAFF) was incorporated within the Department for Environment, Food and Rural Affairs (Defra) in June 2001

Climate

- 7 Interpolated climate data relevant to the determination of the Agricultural Land Classification (ALC) grade of land within the proposed extraction area is given in Table 1 below.

Table 1: ALC Climate Data for National Grid Reference SS 9663 7595

Climate Parameter	Data
Average Altitude (m)	88
Accumulated Temperature above 0°C (January – June)	1462
Average Annual Rainfall (mm)	1290
Field Capacity Days (FCD)	252
Moisture Deficit (mm) Wheat	62
Moisture Deficit (mm) Potatoes	44

- 8 With reference to Figure 1 '*Grade according to climate*' on page 6 of the ALC Guidelines, the quality of agricultural land at the Site has a slight climatic limitation due to the high rainfall. As a result agricultural land at the Site can be graded no higher than Subgrade 3a in the absence of any other limiting factor (ie site and/or soil).
- 9 Due to the average annual rainfall, agricultural land at the Site is predicted to be at field capacity (i.e. near saturation point) for 252 days per year, mainly over the late autumn, winter and early spring. This will, in an interaction with topsoil texture, cause an 'interactive limitation' to agricultural land quality at the Site - namely soil wetness (see below).

Site

- 10 The approximately 0.4 ha Site is located approximately 2.8km to the north west of Cowbridge, Vale of Glamorgan, centred at Grid Reference SS 9663 7595. Residential buildings of Pentre Meyrick border the Site to the south with an unnamed road bordering to the east. The Site is part of a larger agricultural field which is a total of approximately 8ha.
- 11 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

- 12 The Site is located on a very gently sloping, broadly east facing slope, ranging from 86 metres (m) Above Ordnance Datum (AOD) in the west to 89 mAOD in the east. Gradient is not considered to be a limiting factor for agricultural land at the Site.
- 13 Micro-relief, i.e. complex changes in slope angle and direction over short distances, are not thought to limit the agricultural grading at the Site.

Risk of Flooding

- 14 From an Environment Agency (EA) Flood Risk Map², the Site is not predicted to be at risk of flooding. Therefore the risk of flooding is not known to be limiting to agricultural land quality (re Table 2 '*Grade according to flood risk in summer*' and Table 3 '*Grade according to flood risk in winter*' of the ALC Guidelines).

Soil

Geology/Soil Parent Material

- 15 British Geological Survey (BGS) information available online has been utilised to show the Superficial Deposits (Drift) and Bedrock underlying the Site³. This provides information on the geological materials in which the soil has formed.
- 16 The BGS Superficial Deposit map (1:50,000) indicates that the Site is underlain by Shell-Limestone of the Blue Lias Formation (Marginal Facies). There are no superficial (drift) deposits are present at the Site.

Published Information on Soil

- 17 Provisional information for soils at the Site was gathered from the Soil Survey of England and Wales (SSEW) soil map of Wales (Sheet 5) at a scale of 1:250,000 and accompanying Bulletin No. 11 '*Soils and their Use in Wales*' (C. C. Rudeforth *et al*, Harpenden, 1984) as well as the soil memoir '*Soils of the Vale of Glamorgan*' (C. B. Crampton, Harpenden, 1972) and associated sheets 261 and 262. The information provided indicates that agricultural land at the Site is covered by soil grouped in the Ston Easton Association and the Malham 2 Association with the more detailed soil memoir indicating that the Site is covered by soil in the Nordrach Series. The main physical characteristics of these soils are summarised below.

² Environment Agency Flood Risk Map. Available online @ <http://maps.environment-agency.gov.uk/wiyby/wiybyController?value=CF71+7DU&submit.x=15&submit.y=9&submit=Search%09&lang=e&ep=map&topic=floodmap&layerGroups=default&scale=9&textonly=off> Last viewed 25th March 2014

³ British Geological Survey 'Geology of Britain Viewer'. Available online @ <http://www.bgs.ac.uk/discoveringGeology/geologyOfBritain/viewer.html> Last viewed 25th March 2014.

- 18 Soils in the Ston Easton Association comprise of dark greyish brown stoneless or slightly stony silty clay loam over yellowish brown, moderately stony silty clay with limestone present within 60cm. the soils are well drained and are placed in Wetness Class I as a result.
- 19 The Malham 2 Association consists of dark brown, stoneless silty clay loam over brown, stoneless or slightly stony clay loam with limestone present at 70cm. The soils are well drained and are placed in Wetness Class I as a result.
- 20 The Nordrach Series comprises of deep, well drained soils formed in silty drift over carboniferous limestone. A typical profile consists of dark yellowish brown silt loam or silty clay loam over pale brown silt loam or silty clay with limestone present at a depth of approximately 130cm.

Previous ALC

- 21 The Welsh Government's Natural Environment and Agriculture Team (NEAT) have been contacted as part of this assessment.
- 22 NEAT confirmed that the Site is shown on the Provisional (1:250 000) scale Agricultural Land Classification map as being Grade 2 agricultural land. This map was published in 1977 and is the only available map showing ALC at a strategic level for all of Wales. Please note the purpose of the provisional map is to provide broad-brush ALC, appropriate for **strategic** land use assessment. Additional and more detailed survey work according to the '*Revised guidelines and criteria for grading the quality of agricultural land (MAFF 1988)*' is needed where site specific ALC is required.
- 23 NEAT has no records of any site specific ALC survey work carried out in the current search area. However, the Site adjoins a 1979 **reconnaissance** level ALC survey, covering a very large area of land immediately to the north. This shows adjoining land to the north of the site to be ALC Grade 2. Importantly, this survey predates the above 1988 MAFF guidelines. Further assessment according to the 1988 MAFF guidelines would be needed to confirm the 1979 survey gradings.

Interactive Limitations

- 24 From the published above, together with the findings of the detailed soil survey, it has been determined that the quality of agricultural land at the Site is limited mainly by a soil wetness limitation, mainly due to the high number of field capacity days (252).

25 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'*. The ALC grade according to soil wetness is shown in Table 2 below (based on Table 6 'Grade According to Soil Wetness – Mineral Soils' in the ALC Guidelines):

Table 2: Predicted ALC Grade According to Soil Wetness

Table 2: ALC Grade According to Soil Wetness (re Table 6 of the MAFF ALC Guidelines)		
Wetness Class	Texture of the Top 25 cm	>225 Field Capacity Days
I	Silt Loam, Medium Clay Loam*, Medium Silty Clay Loam*	3a
	Heavy Clay Loam**, Heavy Silty Clay Loam**	3b
	Clay, Silty Clay	3b
Key * <27% clay; and ** >27% clay		

26 Therefore, soil profiles on Site with silt loam, medium clay loam or medium silty clay loam topsoil (i.e. all < 27% clay content) which are placed in Wetness Class I are limited by soil wetness to Subgrade 3a in this climate area (>225 field capacity days).

27 Soil profiles on Site with heavy clay loam or heavy silty clay loam topsoil (i.e. all > 27% clay content) which are placed in Wetness Class I are limited by soil wetness to Subgrade 3b in this climate area (>225 field capacity days).

ALC Grading at the Site

28 This desktop assessment of agricultural land quality at the Site (with 252 field capacity days) has determined the main limitations to be:

- (i) overall climate limitation – no agricultural land at the Site can be graded higher than Subgrade 3a;
- (ii) soil profiles with medium textured topsoil (<27% clay) in Wetness Class I are limited by Soil Wetness to Subgrade 3a; and
- (iii) soil profiles with heavy textured topsoil (>27% clay) in Wetness Class I are limited by Soil Wetness to Subgrade 3b.

APPENDIX KCC2
Laboratory Analysis Results



ANALYTICAL REPORT										
Report Number	34743-14	N717	ROB ASKEW	Client PENTRE MEYRICK						
Date Received	23-MAY-2014		RW ASKEW	VALE OF GLAMORGAN						
Date Reported	29-MAY-2014		THE OLD STABLES							
Project	SOILS		UPEXE							
Reference	PENTRE MEYRICK		EXETER							
Order Number			DEVON EX5 5ND							
Laboratory Reference		SOIL254240	SOIL254241							
Sample Reference		1	2							
Determinand	Unit	SOIL	SOIL							
Sand 2.00-0.063mm	% w/w	25	24							
Silt 0.063-0.002mm	% w/w	47	46							
Clay <0.002mm	% w/w	28	30							
Textural Class **		1	1							
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. This test report shall not be reproduced, except in full, without the written approval of the laboratory.									
Document Control	** Please see the attached document for the definition of textural classes.									
Reported by	<i>J Doyle</i> Natural Resource Management, a trading division of Cawood Scientific Ltd. Coopers Bridge, Braziers Lane, Bracknell, Berkshire, RG42 6NS Tel: 01344 886338 Fax: 01344 890972 email: enquiries@nrm.uk.com									



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