

AGRICULTURAL LAND CLASSIFICATION

PWA Planning

Dean Farm



Our Ref: SES/PWA/DF/#1

Date: 11th November 2019

Client:

PWA Planning
2 Lockside Office Park,
Lockside Road,
Preston,
PR2 2YS

AGRICULTURAL LAND CLASSIFICATION

Dean Farm

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

Robin S Davies BSc PhD

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Soil Environment Services

Agricultural Land Classification, Contaminated Land
Risk Assessment, Mineral Extraction Soil Planning
Unit 8, Stocksfield Hall, Stocksfield, Northumberland, NE43 7TN
Tel: 01661 844 827. Email: rd@soilenviromentservices.co.uk
www.soilenviromentservices.co.uk

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1. INTRODUCTION & METHODOLOGY

An Agricultural Land Classification (ALC) has been carried out on 1.6 ha at Dean Farm, Broughton (Drawing ALC/1). The site is centred on Grid Ref. 353963,435768.

Agricultural land is classified into the following grades according to the 1988 guidelines¹.

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	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.
3b	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 survey was conducted on the 11th November 2019 and classifies the land into one or more of the above grades.

The classification includes an initial desktop investigation to examine previously mapped soil types and to note the drift and solid geology. This included consultation from a number of maps and reference documents (References).

The field survey consisted of point observations on a 100 m grid and hand auger borings to a depth of 1.2 m depth as needed. Pit excavations were conducted to determine sub soil structure where necessary. This data was used to map the principal soil types for determining the ALC. The soil removed during augering and pit excavations was examined in accordance with the guidelines.

Climatological data³ was used to determine the overriding site limitation and for interaction with soil parameters. The ALC grade was then determined for this site and for the current survey and is detailed in Table 4.

2. SITE CONDITIONS

2.1. Climate and flooding

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

Factor	Units	Value
Altitude AOD	m	50
Accumulated temperature	day°C (Jan-June)	1395.1
Average Annual Rainfall	mm	1031.4
Field Capacity Days	days	239.4
Moisture Deficit Wheat	mm	69.4
Moisture Deficit Potatoes	mm	52.0

The site is not mapped within a flood risk area⁷.

2.2. Geology

Superficial Geology

1:50 000 scale superficial deposits description: Till, Devensian - Diamicton. Superficial Deposits formed up to 2 million years ago in the Quaternary Period. Local environment previously dominated by ice age conditions (U).

Bedrock Geology

1:50 000 scale bedrock geology description: Manchester Marls Formation - Mudstone. Sedimentary Bedrock formed approximately 252 to 272 million years ago in the Permian Period. Local environment previously dominated by lakes and lagoons.

2.3. Topography

The slope measured on site was a maximum of 5° and hence gradient will not limit the ALC Grade for the site. No significant variation in microrelief was noted.

2.4. Current agriculture or other land use

On the survey date the site was in grassland for grazing livestock or non agricultural areas: woodland, garden with paths and trees, pond or sand paddock.

3 SOIL CHARACTERISTICS

The soils across the majority of the site were noted as silty clay loams over clay to depth. Full profile data is listed in Appendix B. occasional sand pockets were noted in the clay and a band of deep organic silty material and possible made ground fringed the stream in the east.

A summary of the features of the soil type/s are listed in Table 2 and locations are shown within Drawing ALC/1.

Table 2. Soil Type descriptions			
Profile	Soil types		
Description	Type 1		
Horizon 1 (topsoil)	0-35 cm Dark greyish brown (10YR 4/2) stoneless silty clay loam, few fine ochreous mottles; weak fine subangular blocky structure.		
Horizon 2 (subsoil 1)	35-120 cm Strong brown (7.5Y 5/6) stoneless clay, many medium ochreous mottles; weak medium angular blocky structure to massive at depth.		
Horizon 3 (subsoil 2)			
Horizon 4 (subsoil 3)			
Wetness Class	IV		
Moisture Balance - Wheat	62.0		
Moisture Balance - Potatoes	59.2		
Survey points (Drawing ALC/1) and soil types: Borings/ Trial Pits			
Type 1 soil = 1 -4			
Notes:			

The site has previously been mapped as having soils of the *Salop Association* on the site .

Major soil group:	surface-water gley soils	Seasonally waterlogged slowly permeable soils, formed above 3 m O.D. and prominently mottled above 40 cm depth. They have no relatively permeable material starting within and extending below 1 m of the surface.
Soil Group:	stagnogley soils	With a distinct topsoil. They are found mainly in lowland Britain.
Soil Subgroup:	typical stagnogley soils	(with ordinary clay enriched subsoil)
Soil Series:		reddish medium loamy over clayey drift with siliceous stones

Cranfield University 2019. The Soils Guide. Available: www.landis.org.uk. Cranfield University, UK. Last accessed 29/10/2019

4. AGRICULTURAL LAND CLASSIFICATION

4.1. National 1:250 000 map grading

Grading on the MAFF (1983) 1: 250 000 map⁷ indicated the site was mapped as **ALC Grade 3**.

4.2. Current grading

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

Grade	Area		Limitation
1			
2			
3a			
3b	0.51 ha	100%	Type 1 Soils – Wetness Limitation
4			
5			
Non-agricultural land	1.09		na
Total	1.60 ha	100%	

Type 1 Soils – Wetness Limitation

The combination of the topsoil texture (silty clay loam), Wetness Class (IV) and the number of Field Capacity Days (239.4) results in **ALC Grade 3b** for Type 1 soils.

DRAWING ALC/1

ALC Grade

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- Key**
- Moderate quality – 3b
 - Non agricultural
 - Boring Location

Drawing Title: ALC Grade

Drawing No.: ALC/1

Scale: NA

Date: 10/11/2019



APPENDIX A

Soil profile data

Observation point	Base depth (cm)	Texture	Colour	Mottles %	Stones %	Slope over 7°
1	35	ZCL	10YR42	3	0	na
	120	C	7.5YR56	5+	0	
2	35	ZCL	10YR42	3	0	na
	120	C	7.5YR56	5+	0	
3	35	ZCL	10YR42	3	0	na
	120	C	7.5YR56	5+	0	
4	35	ZCL	10YR42	3	0	na
	120	SC	7.5YR56	5+	0	

INFORMATION SOURCES

1. *Agricultural Land Classification of England and Wales*. Guidance 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.
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6. *Agricultural Land Classification Map 1:250 000*. MAFF 1983.
7. *Risk of Flooding from Rivers and Sea: 1:15 000*. Environment Agency
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9. *Butler, B E. Soil Classification for Soil Survey Monographs on Soil Survey (1980)* Clarendon Press, Oxford