

AGRICULTURAL LAND CLASSIFICATION

Story Homes

**Land off Jepps Lane
Barton**



Our Ref: SES/SH/JL/#1

Date: 2nd May 2019

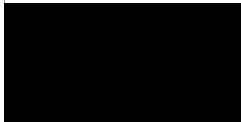
Client:

Story Homes
Kensington House
Ackhurst Business Park
Foxhole Road
Chorley
PR7 1NY

AGRICULTURAL LAND CLASSIFICATION

**Land off Jepps Lane
Barton**

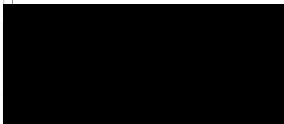
A report prepared on behalf of *Soil Environment Services* by:



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INFORMATION SOURCES

1. INTRODUCTION

An Agricultural Land Classification (ALC)¹ has been carried out on 5 ha of land located off Jepps Lane, Barton, Preston (Drawing ALC/1). The site is centred on OS Grid Ref. 351718, 437803.

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 16th April 2019 and classifies the land into one or more of the above grades.

On the survey date the majority of the site was in a grass crop ready for cutting.

Statement of competence

The survey was undertaken by Rebecca Jordan BSc MSc, an Environmental Consultant who is a member of BSSS with 3 years ALC survey experience and has attended the *Agricultural Land Classification: England and Wales Training Event* (November 2018) and the *Introduction to Soil Classification Training Event* (June 2016) organised by BSSS. The report was checked by Dr Robin Davies who has been a member of the BSSS for over 30 years, the IPSS since it was formed in 1991 and has been undertaking ALC surveys for 25 years.

2. METHODOLOGY

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:

Soil Survey of England and Wales 1:250 000⁴
British Geological Survey 1:50 000 solid and drift map⁸

The field survey consisted of hand auger borings to a depth of 1.2 m (where possible) to examine soil profiles on a 100 m grid (1 boring per hectare) using standard soil survey methods². 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:

Soil Survey Field Handbook²
Describing and Sampling Soil Profiles
Soil Survey of England and Wales, Technical Monograph No. 5, 1976

Soil Classification for Soil Survey⁹
Monographs on Soil Survey
Butler, B E (1980) Clarendon Press, Oxford

Climatological data³ was used to determine the overriding site limitation and for interaction with soil parameters (Appendix A). The above information was cross referenced with geological surveys⁸, previous soil surveys¹⁰ and the national 1:250 000 series ALC survey⁴ relevant for this site to substantiate the findings. The ALC grade was then determined for this site and for the current survey and is detailed in Drawing ALC/1.

3. BASELINE CONDITIONS

3.1. Climate and flooding

The climatological data (Table 1) indicates average temperature, average rainfall and an average number of field capacity days for the region.

Table 1		
Climatological information³		
Factor	Units	Value
Altitude AOD	m	36
Accumulated temperature	day°C (Jan-June)	1393.3
Average Annual Rainfall	mm	1043.9
Field Capacity Days	days	235.8
Moisture Deficit Wheat	mm	69.3
Moisture Deficit Potatoes	mm	52.4

The site is not mapped within a flood risk area⁷.

3.2. Soils, geology and topography

3.2.1. Soils

The site has previously been mapped as having soils of the *Salop Association*^{4,5}.

One general soil type was noted for the purposes of ALC grading.

This study has identified the soils to be clay loams over clays to depth.

3.2.2. Geology⁸

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: Sherwood Sandstone Group - Sandstone. Sedimentary Bedrock formed approximately 237 to 272 million years ago in the Triassic and Permian Periods. Local environment previously dominated by rivers.

3.2.3. Topography

The slope measured on site was a maximum of 2° and hence gradient will not limit the ALC Grade for the site.

No significant variation in microrelief was noted on the site.

4. FIELDWORK RESULTS

4.1. Descriptions of soil types

The soils across the site were noted as clay loams over clays to depth. Full profile data is listed in Appendix B.

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)	0-30 cm Dark brown (10YR 3/3) stoneless clay loam, no mottles; friable weak fine subangular blocky structure.		
Horizon 2 (subsoil 1)	30-50 cm Very dark greyish brown (10YR 3/2) very slightly stony clay loam, few fine ochreous mottles; firm weak medium angular blocky structure.		
Horizon 3 (subsoil 2)	50-90 cm Brown (7.5YR 5/4) very slightly stony clay, numerous medium ochreous and greyish mottles; firm moderate coarse angular blocky structure.		
Horizon 4 (subsoil 3)	90-120 cm Brown (7.5YR 4/3) slightly stony clay, many medium ochreous and greyish mottles; firm moderate coarse prismatic structure.		
<p>Survey points (Drawing ALC/1) and soil types: Borings/ Trial Pits</p> <p>Type 1 soil = 1-5 (pit 4)</p> <p>Notes:</p>			

4.2. Field study photographs

Photo 1. Boring location 2 – Profile of Soil Type 1



NB Photographs of auger borings are included for an illustration of horizons, to verify profile depth and provide an indication of colour but are not intended to verify any structure.

Photo 2. Pit location 4 – Soil Type 1



Photo 3. Structure of Pit location 4



4.3. In-field wetness class assessment

An in-field wetness assessment was conducted for the soil types (Table 3).

Table 3. In-field Wetness Class Assessment						
Soil Type	Feature	Parameters	Findings	WC		
1	Site conditions	Undisturbed/ disturbed	Undisturbed	IV		
		FCD	235.8			
	Potential Slowly Permeable Layer (SPL)	Horizon depth (cm)	30-50			
		Texture	CL			
		Structure	FWMAB			
		Biopores > 0.5 mm (%)	< 0.5			
		Evidence of wetness	Mottles			
	Potential Gleyed Horizon	Matrix colour	10YR 3/2			
		Ped faces colour	Greyish – 10YR 4/2			
		Mottles	Ochreous – 10YR 4/6			
		Depth to gleying (cm)	30			
	Figure reference in ALC guidelines – 7					
	<p>Key FCD – Field Capacity Days CL – Clay Loam WC – Wetness Class FWMAB – Firm Weak Medium Angular Blocky</p>					
	Notes:					

5. AGRICULTURAL LAND CLASSIFICATION

5.1. National 1:250 000 map grading

Grading on the MAFF (1983) 1: 250 000 map⁷ indicated the site was mapped as **Grades 1 and 2**.

5.2. Current grading

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

Table 4. ALC gradings and limitations			
Grade	Area		Limitation
1			
2			
3a			
3b	5 ha	100%	Type 1 Soils - Wetness
4			
5			
Non-agricultural land			
Total	5 ha	100%	

Type 1 Soils – Wetness Limitation



The combination of the topsoil texture (clay loam), Wetness Class (IV) and the number of Field Capacity Days (235.8) results in **ALC Grade 3b** for Type 1 soils.

DRAWING ALC/1

ALC Grade

Soil Environment Services

Key

-  Moderate Quality – 3b
-  Non Agricultural
-  Boring Location
-  Pit Location

Drawing Title: ALC Grade

Drawing No.: ALC/1

Scale: 1:5828

Date: 16/04/2019



APPENDIX A

Climatological data for
Agricultural Land Classification

Droughtiness (moisture balance) determination for each soil type and restored profile

Moisture availability data for each texture from MAFF ALC Guidelines 1988

Moisture Balance (MB) = AP - MD for wheat and potatoes (adjusted for stones)

	Horizon	Type 1		Type 2		Type 3	
		texture	water	texture	water	texture	water
TAvt - Topsoil w ater available (mm)		CL	18.00	0	0.00	0	0.00
LTt - Topsoil thickness (cm)		0	30.00	0	0.00	0	0.00
TAvs - Subsoil total available	1	CL	11.45	0	0.00	0	0.00
	2	C	12.40	0	0.00	0	0.00
	3	C	12.88	0	0.00	0	0.00
	4	0	0.00	0	0.00	0	0.00
EAvs - Subsoil (SS) easily available	1	CL	6.68	0	0.00	0	0.00
	2	C	6.68	0	0.00	0	0.00
	3	C	6.93	0	0.00	0	0.00
	4	0	0.00	0	0.00	0	0.00
LT50 - Thickness ss layers to 50cm	1	CL	20.00	0	0.00	0	0.00
	2	C	0.00	0	0.00	0	0.00
	3	C	0.00	0	0.00	0	0.00
	4	0	0.00	0	0.00	0	0.00
LT120 - Thickness ss layers 50 to 120cm	1	CL	0.00	0	0.00	0	0.00
	2	C	40.00	0	0.00	0	0.00
	3	C	30.00	0	0.00	0	0.00
	4	0	0.00	0	0.00	0	0.00
LT0 - Thickness ss layers to 70cm	1	CL	20.00	0	0.00	0	0.00
	2	C	20.00	0	0.00	0	0.00
	3	C	0.00	0	0.00	0	0.00
	4	0	0.00	0	0.00	0	0.00
Total profile thickness for soil type cm		0	120	0	0	0	0

SOIL Droughtiness (moisture balance) results

Type 1

Grade

Results

AP wheat =

124.4

Moisture balance wheat =

55.1 1

AP potatoes =

99.8

Moisture balance potatoes =

47.4 1

Notes

ALC Grade	Moisture Balance Limits	
	wheat	potatoes
1	30	10
2	5	-10
3a	-20	-30
3b	-50	-55
4	<-50	<-55

APPENDIX B

Site Survey Field Notes

Topsoil							Subsoil 1						Subsoil 2						Subsoil 3					
Boring no.	Depth (cm)	Texture	Colour (Munsell)	Stoniness (%)	Mottles	Structure	Depth (cm)	Texture	Colour (Munsell)	Stoniness (%)	Mottles	Structure	Depth (cm)	Texture	Colour (Munsell)	Stoniness (%)	Mottles	Structure	Depth (cm)	Texture	Colour (Munsell)	Stoniness (%)	Mottles	Structure
1	0-30	CL	10YR 3/3	0	No	FWFSAB	30-50	CL	10YR 3/2	5	FFO	FWMAB	50-90	C	7.5YR 5/4	3	NMOG	FM CAB	90-120	C	7.5YR 4/3	7	M MOG	FMCP
2	0-30	CL	10YR 3/3	1	No	FWFSAB	30-50	CL	10YR 3/2	4	FFO	FWMAB	50-90	C	7.5YR 5/4	5	NMOG	FM CAB	90-120	C	7.5YR 4/3	10	M MOG	FMCP
3	0-30	CL	10YR 3/3	0	No	FWFSAB	30-50	CL	10YR 3/2	5	FFO	FWMAB	50-90	C	7.5YR 5/4	4	NMOG	FM CAB	90-120	C	7.5YR 4/3	10	M MOG	FMCP
4	0-30	CL	10YR 3/3	2	No	FWFSAB	30-50	CL	10YR 3/2	6	FFO	FWMAB	50-90	C	7.5YR 5/4	5	NMOG	FM CAB	90-120	C	7.5YR 4/3	9	M MOG	FMCP
5	0-30	CL	10YR 3/3	0	No	FWFSAB	30-50	CL	10YR 3/2	5	FFO	FWMAB	50-90	C	7.5YR 5/4	5	NMOG	FM CAB	90-120	C	7.5YR 4/3	8	M MOG	FMCP

Key:

CL - Clay Loam
C - Clay

No - No Mottles
FFO - Few Fine Ochreous Mottles

NMOG - Numerous Medium Ochreous and Greyish Mottles
M MOG - Many Medium Ochreous and Greyish Mottles

FWFSAB - Friable Weak Fine Subangular Blocky Structure
FWMAB - Firm Weak Medium Angular Blocky Structure

FM CAB - Firm Moderate Coarse Angular Blocky Structure
FMCP - Firm Moderate Coarse Prismatic Structure

INFORMATION SOURCES

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