

***AGRICULTURAL LAND CLASSIFICATION***

**J A Jackson Contractors Preston**

**Land at Lightfoot Green Lane  
Fulwood**




**Client:**

J A Jackson Contractors Preston  
Bradleys Sandpit  
Lightfoot Green Lane  
Fulwood  
Preston  
PR4 0AP

***AGRICULTURAL LAND CLASSIFICATION***

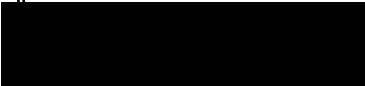
**Land at Lightfoot Green Lane  
Fulwood**

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

  
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Approved by:

  
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## **DRAWINGS**

    ALC/1          ALC Grade

**APPENDIX A**          Climatological data for agricultural land classification

**APPENDIX B**          Survey profile data sheet

## **INFORMATION SOURCES**

## 1. INTRODUCTION

An Agricultural Land Classification (ALC)<sup>1, 2</sup> has been carried out on 6.7 ha of land located off Lightfoot Green Lane, Fulwood, Preston (Drawing ALC/1). The site is centred on OS Grid Ref. 351836, 434016.

Agricultural land is classified into the following grades according to the 1988 guidelines<sup>1</sup> and the 1996 draft guidelines<sup>2</sup>.

Grade	Description
1	<b>Excellent quality agricultural land</b> with no or very minor limitations to agricultural use.
2	<b>Very good quality agricultural land</b> with minor limitations which affect crop yield, cultivation or harvesting.
3a	<b>Good quality agricultural land</b> capable of producing moderate to high yields of a narrow range of arable crops or moderate yields of a wider range of crops.
3b	<b>Moderate quality agricultural land</b> capable of producing moderate yields of a narrow range of crops or lower yields of a wider range of crops.
4	<b>Poor quality agricultural land</b> with severe limitations which significantly restrict the range of crops and/or level of yields.
5	<b>Very poor quality agricultural land</b> 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 1<sup>st</sup> May 2019 and classifies the land into one or more of the above grades.

On the survey date the site was in a grass crop.

### 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 1:250 000<sup>4</sup>*  
*British Geological Survey 1:50 000 solid and drift map<sup>8</sup>*

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 methods<sup>2</sup>. 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 Handbook<sup>2</sup>*  
*Describing and Sampling Soil Profiles*  
*Soil Survey of England and Wales, Technical Monograph No. 5, 1976*

*Soil Classification for Soil Survey<sup>9</sup>*  
*Monographs on Soil Survey*  
*Butler, B E (1980) Clarendon Press, Oxford*

Climatological data<sup>3</sup> was used to determine the overriding site limitation and for interaction with soil parameters (Appendix A). The above information was cross referenced with geological surveys<sup>8</sup>, previous soil surveys<sup>10</sup> and the national 1:250 000 series ALC survey<sup>4</sup> 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, slightly above average rainfall and a slightly below average number of field capacity days for the region.

<b>Table 1</b>		
<b>Climatological information<sup>3</sup></b>		
<b>Factor</b>	<b>Units</b>	<b>Value</b>
Altitude AOD	m	35
Accumulated temperature	day°C (Jan-June)	1396.0
Average Annual Rainfall	mm	1027.3
Field Capacity Days	days	233.5
Moisture Deficit Wheat	mm	71.8
Moisture Deficit Potatoes	mm	55.1

The site is not mapped within a flood risk area<sup>7</sup>.

#### 3.2. Soils, geology and topography

##### 3.2.1. Soils

The site has previously been mapped as having soils of the *Salop Association*<sup>4,5</sup>.

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

This study has identified the soils to be disturbed loamy sand over sand overlying sandstone to depth.

### **3.2.2. Geology<sup>8</sup>**

#### **Superficial Geology**

North east of the site

***1:50 000 scale superficial deposits description:** Glaciofluvial Deposits, Devensian - Sand And Gravel. Superficial Deposits formed up to 2 million years ago in the Quaternary Period. Local environment previously dominated by ice age conditions (UGF).*

South west of the site

***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 5° 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 disturbed loamy sand over sand overlying sandstone 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.

<b>Table 2. Soil Type descriptions</b>			
<b>Profile</b>	<b>Soil types</b>		
<b>Description</b>	<b>Type 1</b>		
Horizon 1 (topsoil)	0-35 cm Dark grey (10YR 4/1) slightly stony disturbed loamy sand, no mottles; friable weak fine subangular blocky structure.		
Horizon 2 (subsoil 1)	35-50 cm Dark brown (10YR 3/3) slightly stony loamy sand, no mottles; friable weak medium subangular blocky structure.		
Horizon 3 (subsoil 2)	50-60 cm Brown (7.5YR 4/4) moderately stony sand, no mottles; friable single grain structure.		
Horizon 4 (subsoil 3)	60 cm Reddish brown (5YR 4/3) sandstone.		
Survey points (Drawing ALC/1) and soil types: Borings/ Trial Pits  Type 1 soil = 1-7  Notes:			



## 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.

### 4.3. In-field wetness class assessment

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

<b>Table 3. In-field Wetness Class Assessment</b>						
<b>Soil Type</b>	<b>Feature</b>	<b>Parameters</b>	<b>Findings</b>	<b>WC</b>		
1	Site conditions	Undisturbed/ disturbed	Disturbed	I		
		FCD	233.5			
	Potential Slowly Permeable Layer (SPL)	Horizon depth (cm)	35-50			
		Texture	LS			
		Structure	FWMSAB			
		Biopores > 0.5 mm (%)	> 0.5			
		Evidence of wetness	None			
	Potential Gleyed Horizon	Matrix colour	10YR 3/3			
		Ped faces colour	Brownish – 10YR 4/3			
		Mottles	None			
		Depth to gleying (cm)	>60			
	<b>Figure reference in ALC guidelines – 6</b>					
	<p><b>Key</b>            FCD – Field Capacity Days            LS –Loamy Sand            WC – Wetness Class            FWMSAB – Friable Weak Medium Subangular Blocky</p>					
	<b>Notes:</b>					

## 5. AGRICULTURAL LAND CLASSIFICATION

### 5.1. National 1:250 000 map grading

Grading on the MAFF (1983) 1: 250 000 map<sup>7</sup> indicated the site was mapped as **ALC Grade 3**.

### 5.2. Current grading

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

<b>Grade</b>	<b>Area</b>		<b>Limitation</b>
1			
2			
3a			
3b	6.7 ha	100%	Type 1 Soils – Droughtiness Limitations
4			
5			
Non-agricultural land			
<b>Total</b>	<b>6.7 ha</b>	<b>100%</b>	

#### ***Type 1 Soils – Droughtiness Limitation***

The combination of the disturbed profile texture, stoniness, depths and climatic factors results in **ALC Grade 3b** for Type 1 soils.

# **DRAWING ALC/1**

**ALC Grade**

Key

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

## Soil Environment Services

Drawing Title: ALC Grade

Drawing No.: ALC/1

Scale: 1:3836

Date: 01/05/2019



# **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

$$\text{Moisture Balance (MB)} = \text{AP} - \text{MD for wheat and potatoes (adjusted for stones)}$$

	Horizon	Type 1		Type 2		Type 3	
		texture	water	texture	water	texture	water
TAvt - Topsoil w ater available (mm)		LS	8.65	0	0.00	0	0.00
LTt - Topsoil thickness (cm)		0	35.00	0	0.00	0	0.00
TAvs - Subsoil total available	1	LS	4.40	0	0.00	0	0.00
	2	S	3.80	0	0.00	0	0.00
	3	SST	2.98	0	0.00	0	0.00
	4	0	0.00	0	0.00	0	0.00
EAvs - Subsoil (SS) easily available	1	LS	3.48	0	0.00	0	0.00
	2	S	2.95	0	0.00	0	0.00
	3	SST	1.98	0	0.00	0	0.00
	4	0	0.00	0	0.00	0	0.00
LT50 - Thickness ss layers to 50cm	1	LS	15.00	0	0.00	0	0.00
	2	S	0.00	0	0.00	0	0.00
	3	SST	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	LS	0.00	0	0.00	0	0.00
	2	S	10.00	0	0.00	0	0.00
	3	SST	60.00	0	0.00	0	0.00
	4	0	0.00	0	0.00	0	0.00
LT0 - Thickness ss layers to 70cm	1	LS	15.00	0	0.00	0	0.00
	2	S	10.00	0	0.00	0	0.00
	3	SST	10.00	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 =	51.7
Moisture balance wheat =	-20.1 3b
AP potatoes =	41.3
Moisture balance potatoes =	-13.9 3a

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### 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**

Boring no.	Topsoil						Subsoil 1						Subsoil 2						Subsoil 3					
	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	0-35	LS	10YR 4/1	15	No	FWFSAB	35-50	LS	10YR 3/3	14	No	FWMSAB	50-55	S	7.5YR 4/4	32	No	SG	55-120	SST	5Y 4/3	100		
2	0-35	LS	10YR 4/1	12	No	FWFSAB	35-50	LS	10YR 3/3	16	No	FWMSAB	50-60	S	7.5YR 4/4	30	No	SG	60-120	SST	5Y 4/3	100		
3	0-30	LS	10YR 4/1	13	No	FWFSAB	30-50	LS	10YR 3/3	15	No	FWMSAB	50-55	S	7.5YR 4/4	31	No	SG	55-120	SST	5Y 4/3	100		
4	0-35	LS	10YR 4/1	15	No	FWFSAB	35-50	LS	10YR 3/3	15	No	FWMSAB	50-60	S	7.5YR 4/4	33	No	SG	60-120	SST	5Y 4/3	100		
5	0-35	LS	10YR 4/1	12	No	FWFSAB	35-50	LS	10YR 3/3	15	No	FWMSAB	50-60	S	7.5YR 4/4	30	No	SG	60-120	SST	5Y 4/3	100		
6	0-28	LS	10YR 4/1	10	No	FWFSAB	28-50	LS	10YR 3/3	16	No	FWMSAB	50-60	S	7.5YR 4/4	32	No	SG	60-120	SST	5Y 4/3	100		
7	0-35	LS	10YR 4/1	15	No	FWFSAB	35-50	LS	10YR 3/3	14	No	FWMSAB	50-60	S	7.5YR 4/4	31	No	SG	60-120	SST	5Y 4/3	100		

Key:  
 LS - Loamy Sand  
 S - Sand

SST - Sandstone  
 No - No Mottles

FWFSAB - Friable Weak Fine Subangular Blocky  
 FWMSAB - Friable Weak Medium Subangular Blocky  
 SG - Single Grain

## INFORMATION SOURCES

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