

AGRICULTURAL LAND CLASSIFICATION

MARSTON'S

*The Piercefield
St Arvans*



Our Ref: SES/MS/TPF/#1

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Client:

MARSTON'S
Marston's House
Brewery Road
Wolverhampton
WV1 4JT

AGRICULTURAL LAND CLASSIFICATION

*The Piercefield
St Arvans*

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

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Managing Director

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DRAWING 1 **ALC Grade and survey points**

APPENDIX A **Survey profile data sheet**

STATEMENT OF COMPETENCE

GENERAL INFORMATION SOURCES

1. INTRODUCTION

An Agricultural Land Classification (ALC) has been carried out on 1.05 ha of land at St Arvans (Drawing 1). The site is centred on OS Grid Ref 351851,196284.

The survey was conducted on the 13th July 2021 and classified the land into one or more of the below grades. On the survey date, the site was not in agricultural use and had a number of decades of thick shrub and small tree growth present throughout the site..

1.1 Methodology

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 classification includes an initial desktop investigation to examine previously mapped soil types and to note the drift and solid geology followed by the field survey consisting of auger borings at one every 100 m in general and a pit excavated in each of the main soil types to confirm the structures and stone content if needed. Laboratory analysis of soil textures is undertaken if needed in order to confirm textures such the *heavy/medium* clay and *medium/fine* sand categories or stone content. All site survey profile data is listed in Appendix A.

All of the potential limitations are assessed and then the most limiting factor dictating the ALC grade was determined for this site and is detailed in Table 2.

1.2 Previous ALC gradings

Grading on the Welsh Predictive ALC Map indicates the site is mapped as ALC Grade 2 land. No detailed surveys have been undertaken for the site.

2. CLIMATIC LIMITATIONS

2.1 Overall climate

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

Table 1		
Climatological information³		
Factor	Units	Value
Altitude AOD	m	107
Accumulated temperature	day°C (Jan-June)	1418.3
Average Annual Rainfall	mm	1018.6
Field Capacity Days (FCD)	days	211.1
Moisture Deficit Wheat	mm	76.0
Moisture Deficit Potatoes	mm	60.7
Overall climate ALC Grade	Grade 2	

Overall climate will result in a limiting factor for this site with an ALC of Grade 2.

2.2. Local climate

Local climate will not result in a significant limiting factor for this site.

3 SITE LIMITATIONS

3.1 Gradient

The gradient will not result in a significant limiting factor for the site.

3.2 Microrelief

The microrelief will not result in a significant limiting factor for this site.

3.3 Flooding

A low risk of flooding from surface water and very risk from rivers and sea has been identified (<https://flood-warning-information.service.gov.uk/long-term-flood-risk>).

4 SOIL LIMITATIONS

4.1 Texture and structure

The textures noted across the site were generally medium clay loam topsoils (Table 1a) over sandy clay loam or medium sandy loam. Subsoil structure was generally moderate medium sub angular blocky to massive or limestone below about 70 cm depth.

The site has previously been mapped as predominantly having soils of the Waltham Association which comprise loamy well drained soils.

Superficial Geology 1:50 000 scale superficial deposits description

None recorded.

Bedrock Geology 1:50 000 scale bedrock geology description:

Gully Oolite Formation - Limestone, Ooidal.

Table 1a Particle size distribution (% w/w)

No	Percentages				Textural Class	
	Sand	Silt	Clay	Total		
1	47.23	28.14	24.63	100.00	MCL	

Test method. BS1377 Part 2: Clause 9.2: 1990- Pipette method

4.2 Depth

Soil depth will not result in a significant limiting factor for this site.

4.3 Stoniness

Stoniness is not a direct significant limiting factor for soils noted on site.

4.4 Chemical

Chemical contamination will not result in a significant limiting factor for this site.

5. INTERACTIVE LIMITATIONS

5.1 Wetness

The soils have no slowly permeable layer and no gleying. This results in a Wetness Class of I and will produce an ALC Grade of 2 with a medium clay loam topsoil and FCD of 211.1.

5.2. Droughtiness

The Available Water Capacity which subsequently when considered with respect to the Moisture Deficit for wheat and potatoes resulted in no significant droughtiness limitation.

5.3 Erosion

Erosion will not result in a significant limiting factor for this site.

6. AGRICULTURAL LAND CLASSIFICATION

6.1 Most limiting factor/s

Overall climate and wetness limit the ALC Grade to 2 over all of the site.

6.2 Current grading

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

Table 2. ALC gradings and limitations			
Grade	ha	%	Limitation
1			
2	1.05	100	Overall climate and Wetness
3a			
3b			
4			
5			
Non-agricultural land			
Total	1.05	100%	

DRAWING 1

ALC Grade

Key

ALC Grades

- Grade 1
- Grade 2
- Grade 3a
- Grade 3b
- Grade 4
- Grade 5
- Non agricultural land

- Boring
- Pit

Soil Environment Services

Drawing Title: ALC Grade

Drawing No.: 1

Scale: 1:7700

Date: 14/07/2021



APPENDIX A

Soil profile data

Notes

- 1 All abbreviations relating to soil parameters are standard and derived from the guidance documents:

Agricultural Land Classification of England and Wales. Revised guidelines and criteria for grading the quality of agricultural land. MAFF. 1988.
Soil Survey Field Handbook. Technical Monograph No.5. Soil Survey of England and Wales.1976.
- 2 The pit data is detailed in this table and information on structure and stone content copied to the boring profiles as appropriate.
- 3 Any blanks in the cells indicate the data is not needed or appropriate for that cell.
- 4 If 'NA' is inserted in a cell the information is not appropriate on this occasion.
5. Boring or pit locations are directly on the grid reference corresponding to the points on the map unless otherwise stated. A point directly marked on a track, boundary or other feature may be moved 2-3 m off the point.

Obs point	Boring or Pit	Grad. (deg)	Base Depth (cm)	Subsoil horizon thickness for droughtiness calcs (cm)				Text.	Calc	Col.	Motts. %/ depth	Mott/Ped face colour	Stns %	Stns type	Biopores <0.5% >0.5 mm	Struct	Dev.	SPL depth (cm)	Gleying depth (cm)	SWC	Grade (wetness)	TAv	Eav	StTAv	StEAv	Grade (Drought . WHEAT)		Grade (Drought. POTATOES)					
1	p	≤7	25	To 50	50 to 120	to 70	MCL	N	7.5YR41				0								1	2			18		4		41	1	45.8021	1	
			55	25	5	30	SCL		7.5YR34				0		No	MSAB	M									15	10	4					3
			75	0	20	15	MSL		7.5YR44				0		Yes	M	W									11	8	4					3
			120	0	45	0	R		2.5Y72				0		Yes	LS	R									4	3	4					3
2	B	≤7	20	To 50	50 to 120	to 70	MCL	N	7.5YR41				0								1	2			18		4		40.5	1	46.3021	1	
			60	30	10	40	SCL		7.5YR34				0		No	MSAB	M									15	10	4					3
			75	0	15	10	MSL		7.5YR44				0		Yes	M	W									11	8	4					3
			120	0	45	0			2.5Y72				0		Yes	LS	R									4	3	4					3
3	B	≤7	20	To 50	50 to 120	to 70	MCL	N	7.5YR31				0								1	2			18		4		65	1	50.8021	1	
			55	30	5	35	MCL		7.5YR33				0		No	MSAB	M									16	10	4					3
			120	0	65	15	SCL		7.5YR34				0		Yes	M	W									13	8	4					3
			120	0	0	0							0														4	3					4

Statement of competence - Agricultural land Classification

SES Ltd undertake several dozen Agricultural Land Classification (ALC) or Land Capability Classifications for Agriculture (LCCA- Scotland) surveys a year and have worked on sites up to 1000 ha including housing, roads, solar farm and mineral extraction developments.. We have been undertaking ALC surveys for 25 years and have won many contracts to supply Land Classification reports to local authorities as part of their strategic development plans. A number of our staff have attended the training course Agricultural Land Classification: England and Wales. Working with Soil – The IPSS Professional Competency Scheme. BSSS & DEFRA.

DR ROBIN DAVIES BSc PhD F.I.SoilSci. (Managing Director)

- Fellow of The British Society of Soil Science
- Council Member of The Institute of Professional Soil Scientists for 4 years.
- PhD Soil Physics - Agricultural land drainage - University of Newcastle upon Tyne
- Founder and Managing Director of Soil Environment Services Limited for 25 years.

Selected peer reviewed scientific papers:

- * **Soil nitrogen depletion - the threat from soil stockpiling.** Environmental Scientist: Journal of The Institution of Environmental Sciences, 1997.
- * **Nitrogen loss from a soil, restored after surface-mining.** Journal of Environmental Quality, 1995
- * **The influence of soil factors on the growth of a grass/clover sward on a restored site in Northumberland.** Grass & Forage Science, 1994.
- * **The effect of post-restoration cropping regime on some physical properties of a restored soil.** Soil Use & Management, 1994
- * **Water availability in a restored soil.** Soil Use & Management, 1992.
- * **A laboratory Method for Investigating the Stabilisation of Mole Channels.** J.Agric.Eng.Res.1991.

GENERAL INFORMATION SOURCES

1. ***Agricultural Land Classification of England and Wales***. Revised guidelines 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.
3. ***Climatological Data for Agricultural Land Classification***, The Met. Office 1989
4. ***Soil Map of England and Wales: 1:250 000***. Soil Survey of England and Wales, Harpenden.
5. ***Soils and Their Use in Wales***. Soil Survey of England and Wales,
6. ***Agricultural Land Classification Map*** 1:250 000. MAFF 1983.
7. ***Risk of Flooding***: <https://flood-warning-information.service.gov.uk/long-term-flood-risk>
8. ***Geology of Britain Viewer***. Reproduced with the permission of the British Geological Survey ©NERC. All rights Reserved
9. ***Butler, B E. Soil Classification for Soil Survey Monographs on Soil Survey (1980)*** Clarendon Press, Oxford
10. ***Munsell Soil Colour Charts***, Munsell Colour, Grand Rapids 1994.
11. ***Welsh Predictive ALC Map***