



Little Mill, Pontypool

Agricultural Land Classification

November 2024

ADAS GENERAL NOTES

Project No.: 1011446

Title: Little Mill, Pontypool – Agricultural Land Classification

Date: 26/11/2024

Office: ADAS Rosemaund, Preston Wynne, Hereford HR1 3PG

Status: ver 1.0

Author	<u>Thea Niemann</u> <u>BSc</u>	Technical reviewer	<u>Simon McMillan</u> <u>MISoilSci</u>
Date:	<u>25/11/2024</u>	Date:	<u>26/11/2024</u>

RSK ADAS Ltd (ADAS) has prepared this report for the sole use of the client, showing reasonable skill and care, for the intended purposes as stated in the agreement under which this work was completed. The report may not be relied upon by any other party without the express agreement of the client and ADAS. No other warranty, expressed or implied, is made as to the professional advice included in this report.

Where any data supplied by the client or from other sources have been used, it has been assumed that the information is correct. No responsibility can be accepted by ADAS for inaccuracies in the data supplied by any other party. The conclusions and recommendations in this report are based on the assumption that all relevant information has been supplied by those bodies from whom it was requested.

No part of this report may be copied or duplicated without the express permission of ADAS and the party for whom it was prepared.

Where field investigations have been carried out, these have been restricted to a level of detail required to achieve the stated objectives of the work.

This work has been undertaken in accordance with the quality management system of RSK ADAS Ltd.



EXECUTIVE SUMMARY

ADAS have been instructed by Powells Rural to undertake an Agricultural Land Classification survey of 4.2 ha at Little Mill, Pontypool, Monmouthshire, NP4 0HY (herein referred to as 'the site').

The survey has identified well-draining medium textured topsoil over light textured subsoil. These soils form agricultural land of Grade 2 (4.2 ha, 100%). The principal limitations to the agricultural use of the land are climate and soil wetness.

CONTENTS

1	INTRODUCTION.....	1
1.1	Site Environment	1
1.2	Agricultural Use.....	1
1.3	Published Information	1
1.3.1	Geology.....	1
1.3.2	Soils	1
1.3.3	Previous Agricultural Land Classification.....	2
2	METHODOLOGY.....	2
3	SOILS	3
3.1	Soil Types	3
3.1.1	Soil Type 1	3
	Profile Description:.....	3
3.2	Laboratory Analysis.....	4
4	AGRICULTURAL LAND CLASSIFICATION	5
4.1	Climate	5
4.2	Results	6
	Grade 1.....	6
	Grade 2.....	6
	Subgrade 3a	6
	Subgrade 3b	6
	Grade 4.....	6
	Grade 5.....	6
	Non-agricultural	6
	Urban	6
	Not Surveyed.....	7
4.3	Summary of grade areas	7
5	CONCLUSION	7
	APPENDIX 1 – OBSERVATION LOCATION MAP.....	I
	APPENDIX 2 – AGRICULTURAL LAND CLASSIFICATION MAP.....	II
	APPENDIX 3 – ALC SURVEY DETAILS	III
	APPENDIX 4 – LABORATORY ANALYSIS	V
	APPENDIX 5 – DESCRIPTION OF ALC GRADES	VII

1 INTRODUCTION

ADAS have been instructed by Powells Rural to undertake an Agricultural Land Classification (ALC) survey. This report provides information on the soils and agricultural quality of 4.2 ha of land at Little Mill, Pontypool, Monmouthshire, NP4 0HY. The report is based on a survey of the land undertaken in October 2024.

1.1 Site Environment

Along the northern and eastern boundaries are fields that are in agricultural use. At the southern border runs the A472. To the east directly adjacent is the urban area called Little Mill.

The site is in a Low Flood Risk Zone. This zone is deemed to be at lowest risk of flooding from rivers or sea, with less than 1 in 1000 annual probability of flooding in any year (<0.1%)¹.

1.2 Agricultural Use

The site is currently utilised as permanent pasture. It is bounded by more agricultural fields to the north and east, residential areas to the west, and the A472 with more agricultural fields beyond to the south.

1.3 Published Information

1.3.1 Geology

1:50,000 scale BGS information² records; 1 bedrock geological unit Ragland Mudstone Formation – siltstone and mudstone, interbedded. Sedimentary bedrock formed between 423.6 and 419.2 million years ago during the Silurian period; 1 superficial deposit unit Glaciofluvial Sheet Deposits, Devensian – sand and gravel. Sedimentary superficial deposits formed between 116 and 11.8 thousand years ago during the Quaternary period; which underly the entire site area.

1.3.2 Soils

Soils belonging to two soil associations have been mapped on the Soil Survey of England and Wales:

- **Wick 1 Association** – Deep well drained coarse loamy and sandy soils locally over gravel. Some similar soils affected by groundwater. Slight risk of water erosion.
- **Lugwardine Association** – Deep stoneless permeable reddish fine silty soils. Similar coarse silty soils locally. Associated with fine silty soils variable affected by groundwater. Flat land. Risk of flooding. (Only makes up a small slither of land at the southern end of the site).

¹ Environment Agency - Flooding Service. Online resource at <https://flood-map-for-planning.service.gov.uk/flood-zone-results-explained?zone=FZ1>

² British Geological Survey, 2019. *Geology of Britain viewer*. Online resource: <http://www.bgs.ac.uk/discoveringGeology/geologyOfBritain/viewer.html>

1.3.3 Previous Agricultural Land Classification

The 'Predictive Agricultural Land Classification (ALC) Map 2 (Welsh Government, 2019)' ³ shows the survey area as ALC Grade 2 and Subgrade 3b.

2 METHODOLOGY

A detailed soil survey was carried out in October 2024. The survey was based on observations at intersects of a 100 m grid, giving a sampling density of at least one observation per hectare. During the survey soils were examined via a combination of auger borings and soil description pits to a maximum depth of 1.2 m. A map showing the location of each observation point is attached to this report as Appendix 1 and a log of the details of each observation point is attached to this report as Appendix 3.

One soil description pit was dug at this site (Pit 1 at auger boring 3). A topsoil sample was submitted to NRM Laboratories for particle size distribution analysis by the pipette methodology to confirm site findings. The results of this analysis are given in Section 3 and in Appendix 4.

³ Welsh Government (2019). Predictive Agricultural Land Classification (ALC) Map 2. Online resource: https://datamap.gov.wales/layers/inspire-wg:wg_predictive_alc2

3 SOILS

3.1 Soil Types

One soil type is found across the survey area. The survey area was found to be medium clay loam topsoils over very slightly to slightly stony medium sandy silt loam subsoils. Two observation points showed signs of gleying in the subsoil.

3.1.1 Soil Type 1

These soils have medium clay loam topsoil over medium sandy silt loam subsoil. They are well-drained and very slightly to slightly stony. Signs of subsoil wetness were apparent in some soil profiles.

An example soil profile is described below from the pit at observation auger point 3/ Pit 1.

Profile Description:	Photo of Pit Profile:
Topsoil: 37 cm of dark reddish grey (5YR4/2) MCL; 4% medium sized hard stones; non calcareous; no mottles; slightly moist, friable, moderately developed, medium subangular blocky structure; many medium sized pores; common medium fibrous roots; abrupt smooth boundary to:	
Subsoil: 37-120 cm of reddish brown (5YR5/3) MSZL; 9% medium sized rounded non-porous hard gravel; non calcareous; no mottles; slightly moist, friable, moderately developed, medium subangular blocky structure; common fine pores; few fine fibrous roots.	

The land is at a location with 223 Field Capacity Days (FCDs) and an annual rainfall of 1097 mm. The soil profiles are well-drained so fall into Wetness Class I. Where gleying is apparent between 40 and 70 cm of the soil surface, the profiles also fall into Wetness Class I due to having a sandy subsoil (<18% clay). With a medium clay loam topsoil at this relatively wet location, this land is limited to ALC Grade 2 by soil wetness and climate.

3.2 Laboratory Analysis

A sample representative of the top 25 cm of the soil profile was taken from the pit at observation point 3/ Pit 1. This soil was submitted to NRM Laboratories for particle size distribution (PSD) analysis by the pipette methodology. The laboratory report is given in Appendix 4 and the laboratory texture detailed in the table below.

It should be noted that the clay content of the topsoil was reported as 19%. The cutoff between a medium clay loam (MCL) and sandy silt loam (SZL) topsoil is 18%, so it is possible that some or all of this site has a SZL topsoil. These soils are less susceptible to soil wetness than clay loams and profiles with this topsoil would be ALC Grade 1 for soil wetness. However, this does not impact the overall grading as climate limits the entire site to ALC Grade 2.

Table 3.2: PSD analysis results

Observation	PSD Analysis
3/ Pit 1	Medium clay loam

4 AGRICULTURAL LAND CLASSIFICATION

The Agricultural Land Classification (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 for food production. The limitations can operate in one or more of four principal ways; they may affect the range of crops which can be grown, the level of crop yield, the consistency of crop yield, and the cost of obtaining a crop.

The classification system gives considerable weight to flexibility of cropping, whether actual or potential, however the ability of some land to produce consistently high yields of a narrower range of crops is also taken into account.

The Agricultural Land Classification (ALC) system classifies land into five grades numbered 1 to 5, with grade 3 divided into two subgrades (3a and 3b). The system was devised and introduced by the then Ministry of Agriculture, Fisheries and Food (MAFF) in the 1960s and revised in 1988. A description of the grades used in the ALC system is attached to this report as Appendix 5.

4.1 Climate

The agricultural climate is an important factor in assessing the agricultural quality of land, and the agricultural climate of this site has been calculated using the Climatological Data for Agricultural Land Classification⁴. The relevant site data for an average elevation of 60 m AOD is given below.

Table 4.1: Agro-climatic variables

	SO 326030
Altitude(m)	60
Average Annual Rainfall (AAR)	1097 mm
January-June Accumulated Temperature (AT0)	1473 day °C
Field Capacity Days (FCD)	223
Field Capacity Period	Late Sep – early May
Moisture Deficit Wheat (MDW)	83 mm
Moisture Deficit Potatoes (MWP)	71 mm
Climate (upper grade limit)	2

The site has a climate limitation of grade 2.

⁴ Meteorological Office, (1989). *Climatological Data for Agricultural Land Classification*.

4.2 Results

The results of the soil survey described in Section 3 were used in conjunction with the agro-climatic data above to classify the land according to the revised guidelines for Agricultural Land Classification issued in 1988 by the Ministry of Agriculture, Fisheries and Food (now Defra)⁵.

This report has identified agricultural land of Grade 2 quality. The principal limitations to agricultural use of the land are climate and soil wetness.

Grade 1

No land of this quality has been mapped.

Grade 2

There are 4.2 ha of Grade 2 land within the survey area. This land is formed of medium clay loam topsoil over well draining medium sandy silt loam subsoils. Some areas of the site have gleyed sandy silt loam subsoils between 40 and 70 cm of the soil surface.

All profiles fall into Wetness Class I and with a medium clay loam topsoil into ALC Grade 2.

Despite the sandy soils, this site does not have a droughtiness limitation due to the high rainfall in this area.

The principal limitation to the agricultural use of the land is climate and wetness. The relatively high average annual rainfall and high field capacity days limit crop production and restrict the site to ALC Grade 2.

Subgrade 3a

No land of this quality has been mapped.

Subgrade 3b

No land of this quality has been mapped.

Grade 4

No land of this quality has been mapped.

Grade 5

No land of this quality has been mapped.

Non-agricultural

No land of this quality has been mapped.

Urban

No land of this description has been mapped.

⁵ MAFF, (1988). *Agricultural Land Classification for England and Wales: Revised Guidelines and Criteria for Grading the Quality of Agricultural Land*.

Not Surveyed

All land was surveyed.

4.3 Summary of grade areas

The boundaries between the different grades of land are shown in Appendix 2. The area occupied by each grade is shown below.

Table 4.3: Grade areas

Grade / subgrade	Area (ha)	Area (%)
Grade 1	-	-
Grade 2	4.2	100 %
Subgrade 3a	-	-
Subgrade 3b	-	-
Grade 4	-	-
Grade 5	-	-
Non-agricultural	-	-
Urban	-	-
Not Surveyed	-	-
Total	4.2	100 %

5 CONCLUSION

The survey has identified clay loam topsoils over sandy subsoils. These form agricultural land of ALC Grade 2 (4.2 ha, 100 %) quality.

The principal limitations to the agricultural use of the land are climate and soil wetness.



Appendix 1: Observation Location Map

Project

Little Mill

Client

Powells Rural

Key

- Site boundary
- ◆ Pit location
- Auger locations

Google Satellite



www.adas.uk



Appendix 2: Agricultural Land Classification Map

Project

Little Mill

Client

Powells Rural

Key

 Site Boundary

ALC Grades

 2



www.adas.co.uk

APPENDIX 3 – ALC SURVEY DETAILS

Soil Auger Log												Agricultural Land Classification					
Auger	Depth (cm)	Colour	Munsell Colours		Soil Profile		SPL	CaCO ₃	Stones (%)		Notes	Slope (°)	W C	WE grade	DR grade	Overall grade	Limit(s)
			1	2	Texture	Mottling			Total	Litho'							
1	0 - 39	Rd Br	5yr43		MCL	-	-		4	1	Few fmcs	1	I	2	1	2	CL, WE
	39 - 120	Rd Br	5yr53		MSZL	o	no		9	1		Droughtiness Calculation					
												MDW	MDP	MBW	MBP	Grade W	Grade P
												83	71	72.0	44.8	1	1
2	0 - 40	Br	75yr42		MCL	-	-		4	1		1	I	2	1	2	CL, WE
	40 - 120	Br + Rd Br	75yr52		MSZL	xxx	no		5	1		Droughtiness Calculation					
												MDW	MDP	MBW	MBP	Grade W	Grade P
												83	71	75.8	46.9	1	1
3	0 - 40	Rd Br	5yr43		MCL	-	-		5	1	Stopped on gravel	1	I	2	1	2	CL, WE
	40 - 70	Rd Br	5yr53		MSZL	o	no		9	1		Droughtiness Calculation					
												MDW	MDP	MBW	MBP	Grade W	Grade P
												83	71	71.5	44.3	1	1
4	0 - 38	Rd Br	5yr43		MCL	-	-		4	1	Stopped on stone	1	I	2	1	2	CL, WE
	38 - 90	Rd Br	5yr53		MSZL	o	no		10	1		Droughtiness Calculation					
												MDW	MDP	MBW	MBP	Grade W	Grade P
												83	71	71.4	44.1	1	1
5	0 - 32	Dk Rd Gr	5yr42		MCL	-	-		5	1	Few fmcs	1	I	2	1	2	CL, WE
	32 - 120	Rd Br	5yr53		MSZL	o	no		8	1		Droughtiness Calculation					
												MDW	MDP	MBW	MBP	Grade W	Grade P
												83	71	71.3	43.6	1	1
6	0 - 33	Dk Rd Gr	5yr42		MCL	-	-		4	1	Fmcs	1	I	2	1	2	CL, WE
	33 - 48	Rd Br	5yr43	5yr53	MSZL	o	no		5	1		Droughtiness Calculation					
	48 - 120	Br + Rd Br	75yr52	5yr53	MSZL	xxx	no		1	1		MDW	MDP	MBW	MBP	Grade W	Grade P
												83	71	78.1	47.5	1	1

Key to auger records:

Colour	Texture	Mottling	CaCO ₃
Bk - black Br - brown(ish) Bu - blue(ish) Dk - dark Du - dusky Gn - green(ish) Gr - grey(ish) Li - light Ol - olive Pi - pink(ish) Pl - pale Rd - red(dish) St - strong V - very Wk - weak Yl - yellow(ish)	C - clay ZC - silty clay SC - sandy clay CL - clay loam (H-heavy, M-medium) ZCL - silty clay loam (H-heavy, M-medium) SCL - sandy clay loam SZL - sandy silt loam (F-fine, M-medium, C-coarse) ZL - silt loam SL - sandy loam (F-fine, M-medium, C-coarse) LS - loamy sand (F-fine, M-medium, C-coarse) S - sand (F-fine, M-medium, C-coarse) Org - organic (S-sand, L-loam, C-clay) Pty - peaty (S-sand, L-loam) Pt - peat (S-sandy, L-loamy, H-humified, SF-semi-fibrous, F-fibrous) R - bedrock	o – unmottled soil; x – a few (<2%) <i>ochreous</i> mottles; xx – common (2-20%) to many (20-40%) <i>ochreous</i> mottles <u>OR</u> <i>greyish</i> or <i>pale</i> soil, typically with a few <i>ochreous</i> mottles; xxx – <i>greyish</i> or <i>pale</i> colours dominant in matrix and/or ped faces and common to very many (>40%) <i>ochreous</i> mottles <u>OR</u> if <i>reddish</i> colours are dominant in the matrix, > 2% <i>greyish</i> , <i>brownish</i> or <i>ochreous</i> mottles or ferri-manganiferous concentrations, and dominantly <i>pale</i> coloured ped faces (<i>gleyed horizon</i>); xxxx – dominantly grey soil, often with some <i>ochreous</i> mottles (<i>gleyed horizon</i>). 'greyish', 'pale', 'brownish', 'ochreous' and 'reddish' colours are assessed in the field using a Munsell Soil Colour Book and defined according to Appendix 3 of the ALC Guidelines.	non - non-calcareous v sl ca - very slightly calcareous sl ca - slightly calcareous ca - calcareous v ca - very calcareous Stone lithology 1 - all hard rocks or stones 2 - soft, medium or coarse grained sandstones 3 - soft 'weathered' igneous or metamorphic rocks or stones 4 - soft oolitic or dolomitic limestones 5 - soft fine grained sandstones 6 - soft, argillaceous or silty rocks or stones 7 - chalk or chalk stones 8 - gravel with non-porous stones 9 - gravel with porous stones
SPL			Notes
yes - a slowly permeable layer. borderline - a borderline slowly permeable layer. no - not a slowly permeable layer.			FMCs – ferri-manganiferous concentrations
Principal Limitation(s) to Agriculture			
CL - climate GR - gradient	DE - depth MR - microrelief	DR - droughtiness ST - stoniness	ER - erosion TX - texture FL - flooding WE - wetness
Droughtiness Calculation			
MDW - moisture deficit wheat (mm); MDP - moisture deficit potatoes (mm); MBW - moisture balance wheat (mm); MBP - moisture balance potatoes (mm); Grade W - droughtiness grade for wheat; Grade P - droughtiness grade for potatoes.			
Descriptions and classifications are made in accordance with <i>Soil Survey Field Handbook</i> (Hodgson, J.M., 1997), <i>Technical Information Note TIN037: Soil Texture</i> (Natural England, 2008) and <i>Agricultural Land Classification of England and Wales: Revised guidelines and criteria for grading the quality of agricultural land</i> (MAFF, 1988).			

APPENDIX 4 – LABORATORY ANALYSIS



ANALYTICAL REPORT										
Report Number	62630-24	L129	THEA NIEMANN							
Date Received	01-NOV-2024		RSK ADAS LTD							
Date Reported	20-NOV-2024		ADAS ROSEMAUND							
Project	1011446		PRESTON WYNNE							
Reference	THEA NIEMANN		HEREFORD							
Order Number			HR1 3PG							
Laboratory Reference	SOIL720330									
Sample Reference	LITTLE MILL PIT 1 TS									
Determinand	Unit	SOIL								
Sand 2.00-0.063mm	% w/w	41								
Silt 0.063-0.002mm	% w/w	40								
Clay <0.002mm	% w/w	19								
Textural Class **		MCL								
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. Document Control This test report shall not be reproduced, except in full, without the written approval of the laboratory. Reported by <i>Teresa Clyne</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										

ADAS (UK) Textural Class Abbreviations

The texture classes are denoted by the following abbreviations:

Class	Code
Sand	S
Loamy sand	LS
Sandy loam	SL
Sandy Silt loam	SZL
Silt loam	ZL
Sandy clay loam	SCL
Clay loam	CL
Silt clay loam	ZCL
Clay	C
Silty clay	ZC
Sandy clay	SC

For the *sand*, *loamy sand*, *sandy loam* and *sandy silt loam* classes the predominant size of sand fraction may be indicated by the use of prefixes, thus:

vf	Very Fine (more than 2/3's of sand less than 0.106 mm)
f	Fine (more than 2/3's of sand less than 0.212 mm)
c	Coarse (more than 1/3 of sand greater than 0.6 mm)
m	Medium (less than 2/3's fine sand and less than 1/3 coarse sand).

The subdivisions of *clay loam* and *silty clay loam* classes according to clay content are indicated as follows:

M	medium (less than 27% clay)
H	heavy (27-35% clay)

Organic soils i.e. those with an organic matter greater than 10% will be preceded with a letter O.

Peaty soils i.e. those with an organic matter greater than 20% will be preceded with a letter P.

APPENDIX 5 – DESCRIPTION OF ALC GRADES

The ALC grades and subgrades are described below in terms of the types of limitation which can occur, typical cropping range and the expected level and consistency of yield. The *'best and most versatile agricultural land'* falls into grades 1, 2 and subgrade 3a – which collectively comprises about one-third of the agricultural land in England and Wales. About half the land in England and Wales is either of moderate quality (subgrade 3b) or poor quality (grade 4). Although less significant on a national scale, such land can be locally valuable to agriculture and the rural economy where poorer farmland predominates. The remainder is very poor quality land in grade 5, which mostly occurs in the uplands.

Grade 1 – excellent quality agricultural land

Land with no or very minor limitations to agricultural use. A very wide range of agricultural and horticultural crops can be grown and commonly includes top fruit, soft fruit, salad crops and winter harvested vegetables. Yields are high and less variable than on land of lower quality.

Grade 2 – very good quality agricultural land

Land with minor limitations which affect crop yield, cultivations or harvesting. A wide range of agricultural and horticultural crops can usually be grown but on some land in the grade there may be reduced flexibility due to difficulties with the production of the more demanding crops such as winter harvested vegetables and arable root crops. The level of yield is generally high but may be lower or more variable than Grade 1.

Grade 3 – good to moderate quality land

Land with moderate limitations which affect the choice of crops, timing and type of cultivation, harvesting or the level of yield. Where more demanding crops are grown yields are generally lower or more variable than on land in Grades 1 and 2.

Subgrade 3a – good quality agricultural land

Land capable of consistently producing moderate to high yields of a narrow range of arable crops, especially cereals, or moderate yields of a wide range of crops including cereals, grass, oilseed rape, potatoes, sugar beet and the less demanding horticultural crops.

Subgrade 3b – moderate quality agricultural land

Land capable of producing moderate yields of a narrow range of crops, principally cereals and grass or lower yields of a wider range of crops or high yields of grass which can be grazed or harvested over most of the year.

Grade 4 – poor quality agricultural land

Land with severe limitations which significantly restrict the range of crops and/or level of yields. It is mainly suited to grass with occasional arable crops (e.g. cereals and forage crops) the yields of which are variable. In moist climates, yields of grass may be moderate to high but there may be difficulties in utilisation. The grade also includes very droughty arable land.

Grade 5 – very poor quality agriculture land

Land with very severe limitations which restrict use to permanent pasture or rough grazing, except for occasional pioneer forage crops.