



Agricultural Land Classification (ALC) Report

Land North of Debdale Lane, Mansfield

March 2026

Mansfield District Council

Reference: 250905.06.AC.02

Agricultural Land Classification (ALC) Report

Land North of Debdale Lane,
Mansfield

Client: Mansfield District Council

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1. Scope & Objectives

The Services	Agricultural Land Classification (ALC) Report	
The Client	Mansfield District Council	
Appointment Details	The Services have been carried out in accordance with the Proposal dated 4 September 2025 and REL's Terms and Conditions of Engagement, (together " the Agreement ") as accepted by the Client on 5 September 2025.	
Site Name	Land North of Debdale Lane, Mansfield.	
Site Address	Debdale Lane, Mansfield Woodhouse, Mansfield NG19 7HA (" the Site ").	
Information Sources (Where appropriate documents are contained in appendices with data extracts provided and summarised within pertinent sections of this report. List not exhaustive)	Online Source	Natural England Provisional Agricultural Land Classification Grade (pre-1988), accessed via Magic Web Mapping Service, DEFRA, 2025.
		Natural England Agricultural Land Classification Grades Post-1988 Surveys (Polygons) Database and Mapping, accessed via Magic Web Mapping Service, DEFRA, 2025.
		British Geological Survey (BGS) Database and Mapping.
		BGS GeoIndex Web Mapping Service.
		BGS 1: 50,000 scale Provisional Series, Geological Map, England and Wales, Sheet 112 (Chesterfield), available on the BGS map portal.
		Google Historic Satellite Imagery.
		National Library of Scotland Historical Ordnance Survey England and Wales, 1830s-1880s Maps.
	Documentation Source	Soil Classification for Soil Survey, Monographs on Soil Survey, Butler, B E (1980), Clarendon Press, Oxford.
		Hodgson, J.M (ed.) (2022). <i>Soil Survey Field Handbook</i> . Soil Survey Technical Monograph No. 5, Cranfield.
		Meteorological Office (Met Office), 1989, Climatological Data for Agricultural Land Classification – Gridpoint Datasets of Climatic Variables, at 5km intervals, for England and Wales.
		MAFF, 1988, Agricultural Land Classification of England and Wales – Revised Guidelines and Criteria for Grading the Quality of Agricultural Land.
		Natural England, Technical Information Note TIN049 Second Edition, 2012.
		Soils and their use in in Midland and Western England, 1984, Soil Survey of England and Wales Memoir and accompanying 1:250,000 scale map.
	Previous Reports	No previous reports, including Post-1988 ALC surveys, are available for the site. However, following a review of the DEFRA Magic Mapping Portal shows there is a Post-1988 ALC surveys for the land northwest of the site. See further details in Section 4 .
	Site Works	The site works were undertaken by REL on 8 October 2025.

2. Site Details

National Grid Ref.	Approximate centre of the site: 452656, 362824.
Ground Level Topography	Range 113m-132m AOD, average for site: c.124m AOD.
Site Area	4.50 hectares (ha).
HELAA Reference	Site 46 , as identified in the Council's Housing and Economic Land Availability Assessment (HELAA), corresponding to the red line boundary shown in Error! Reference source not found. below.
Location	The subject site is located adjacent north of Debdale Lane, approximately 1.80km northwest of Mansfield town centre. Chesterfield Road is present approximately 350m west of the site, providing a link to Nottingham city centre 22.9km to the south.



Figure 1: Site Boundary (highlighted in red)

Current Site Description and Usage	The subject site comprises agricultural fields which are currently used for open grassland in the north and pumpkin crop in the south of the site.
Surrounding Land Uses	Surrounding land use comprises commercial and industrial development referred to as 'Millenium Business Park' adjacent to the northwest of the site, with residential development adjacent to the southwest and Debdale Solar Farm adjacent to the northeast. Following a review of the Google Earth aerial photography survey it is understood that the solar farm was constructed between c.2013 and 2016.
Site History	From the earliest mapping dated 1830-1880s, the site is shown as agricultural land denoted as 'Debdale Farm'.
Current Grading	The site is currently mapped as Grade 2 , with an area mapped as Urban in the southwest on the provisional 1: 250,000 scale ALC map (MAFF, 1983) see Appendix V for key to the gradings.

3. Methodology

Desk Study

This site-specific Agricultural Land Classification (ALC) assessment has been undertaken as part of a wider district-wide ALC study, which established the overarching baseline conditions, datasets, and methodological approach across the district. The desk study information presented within this report draws on that district-level assessment and applies it at a site-specific scale to inform the detailed field survey and subsequent ALC grading. This report therefore presents the findings for the site only, while being informed by the consistent district-wide evidence base.

Using published data sources, an initial desk-based study has been undertaken to provide a reconnaissance of the general site characteristics, including soil type(s) and agricultural classification.

Where available, Post-1988 ALC Surveys (undertaken at varying scales and levels of detail, ranging from 1:5,000 to 1:50,000 scale) have been consulted. Surveys included on this map provide the most detailed and up to date ALC grading following surveys between 1989 and 1999 by MAFF (now part of DEFRA).

Climatological data provided by the Met Office has been used to determine the overriding agroclimatic site limitations, using interpolated values based on the central point of the site.

Intrusive Soil Survey

The intrusive soil survey comprised at least one hand auger boring per hectare to a depth of 1.20m below ground level (where achievable) in accordance with current guidance. These were undertaken to examine the soil profiles, using standard soil survey methods.

In addition, in order to determine subsoil structure, at least one inspection pit has been excavated for each soil type encountered.

ALC Grade Assessment

All potential limiting ALC grade factors (listed in **Appendix V**) have been considered as part of the assessment, including those which pose no limitation on the ALC grading for the site.

Using the information collected during the site survey and the MAFF ALC guidance documents, an ALC grade was then determined for the site, or for each soil type based on the most limiting ALC grade (**Appendix I**). A brief overview of relevant terminology is included in **Appendix V**.

4. Desk Based Reconnaissance

Agricultural Land Classification (ALC) provides a framework for assessing the quality of agricultural land and is briefly outlined below. It is a nationally standardised system used to classify land based on its inherent physical characteristics. The grading is determined by considering a range of baseline factors, including climate, topography, soils, and site drainage, with the most limiting factor governing the final classification. These factors are assessed against the requirements of a standard set of reference crops, such as cereals and root crops, to determine how consistently the land can support agricultural production. The presence and severity of any limitation influence the final ALC grade.

Prior to the intrusive site investigation, a review of available desk-based information was undertaken. Pertinent information has been summarised below.

Climate Data

Using the climatological data set (Met Office, 1989) the following information (**Table 1**) has been calculated for the site. Calculations comprised altitude adjustment and interpolation, using the formula presented within the data set.

Table 1: Summary of Agroclimatic Data for the Site

(Site Centre Grid Reference: 452656, 362824)		
Average Annual Rainfall (mm)	AAR	701.40
Accumulated Temperature (°C)	ATO	1302.80
Field Capacity Duration (Days)	FCD	158.41
Moisture Deficit Wheat (mm)	MDWHT	95.29
Moisture Deficit Potatoes (mm)	MDPOT	82.69

The site is identified to have an average AAR, with a below average ATO and slightly above average FCD when compared to the mapped values for the area of Mansfield (Soils and their Use in Midland and Western England, 1984).

Using the AAR and ATO values within **Table 1**, the site is considered to be ALC Grade 2 according to climate (Figure 1, MAFF 1988). Therefore, climate is considered to be a potential limiting factor on the site and is taken forward for further consideration.

Topography

The site was identified to have a gradient between 0° and 1°, therefore topography is identified to not be a limiting factor of the ALC grade of the site (Table 1, MAFF 1988).

BGS Published Data

A review of BGS information has identified that no Made Ground areas are indicated across the site.

The site is situated within an area free of superficial deposits.

The bedrock geology is indicated as the Cadeby Formation - Dolostone.

Published Soils Data

Soils mapping for the area as shown on *Soils and their use in Midland and Western England*, 1984, Soil Survey of England and Wales Memoir and accompanying 1:250,000 scale map has been reviewed as part of this assessment. The location of the site is shown in the soils mapping extract below in **Figure 2**.

The soils mapping suggests the soils on site comprise the Aberford Association. The soils are described as follows:

- **Aberford Association (511a)** - Shallow, locally brashy well drained calcareous fine loamy soils over limestone. Some deeper calcareous soils in colluvium.

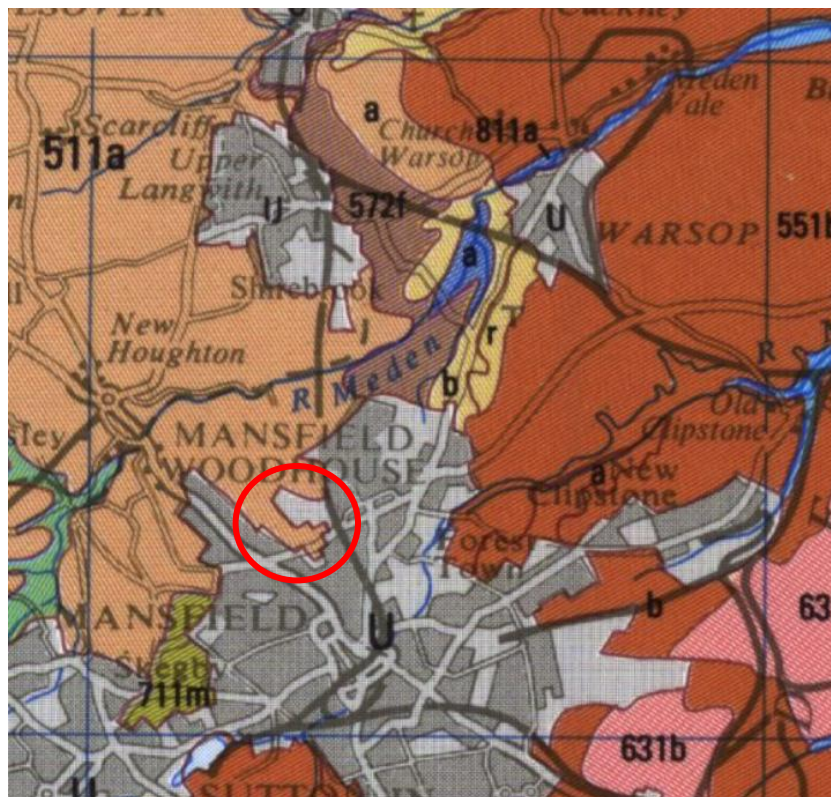


Figure 2: Soils Mapping for the Site and Surrounding Area (site location indicated in red)

Historic Mapping

According to the national Library of Scotland OS Six Inch 1830s-1880s map, no significant historic developments have been noted. However, there is presence of a 'Quarry' adjacent southeast of the site, which is only reported until 1880s.

Previous Reports

No previous ALC reports are available for the site, however there is a Post-1988 ALC Report available for a site adjacent to the northwest and west. The majority of which are Grade 2 and 3a, with some areas Graded 3b.

Flood Risk Assessment

Since the ALC guidance document was published in 1988, the Environment Agency (EA) has updated the way the risk of flooding is assessed. Therefore, the terms used in the MAFF 1988 guidance (**Table 2**) have been paired to the current EA flood risk classifications below.

Table 2: Summary of Flood Risk for the Site

EA Flood Classification	MAFF Flood Classifications
Zone 3a High Probability	Frequent
Zone 3b Functional Floodplain	Frequent
Zone 2 Medium Probability	Occasional
Zone 1 Low Probability	Rare to Very Rare

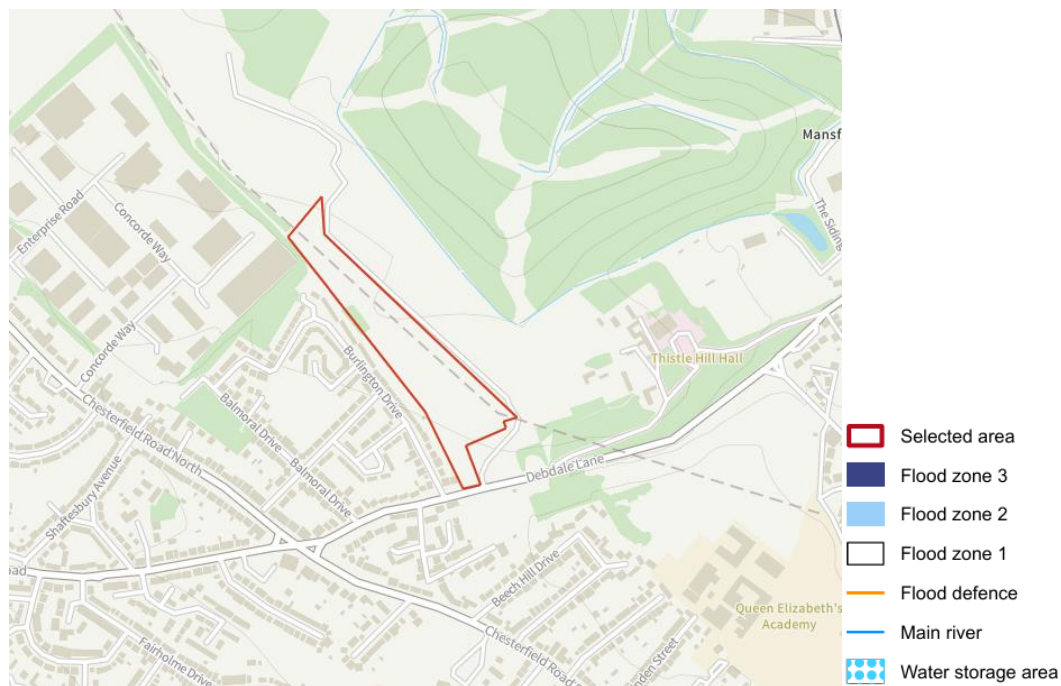


Figure 3: Flood Risk Present from Rivers and the Sea for the Site (site boundary defined in red)

The interactive EA Flood Map for Planning on the UK Government website identifies the site to be within a Flood Zone 1 (Low Probability) area (**Figure 3**). After reviewing the flood risk map, REL considers that the site is not in an area of risk from flooding.

The impact of flood risk is assessed to confirm if it can pose a limitation to the ALC grade of the site, in accordance with the guidance available in Tables 2 and 3 of MAFF, 1988.

The mapping identifies a Low risk of flooding within the boundary of the site and as such, the flood risk is not considered to pose enough of a limitation to the cultivation of the site to reduce the overall site ALC Grade.

5. Intrusive Survey Findings

The survey identified One Soil Type, with two variants across the entire site. Generalised profiles of the soil type encountered have been described as below (**Table 3**) however, please note some localised variations were recorded. Complete soil logs are provided in **Appendix II** and photographs of the surveyed soils are presented in **Appendix III**.

Table 3: Summary of Soils Identified on Site

	Depth (cm)	Texture	Colour	Stones (%)	Mottles	Structure
Soil Type 1a	0-35	Sandy Clay Loam (SCL)	Dark Reddish Brown (5YR 3/3)	0	No	Medium Subangular Blocky
	35-120	Medium Sandy Loam (mSL)	Reddish Brown (5YR 5/4)	0	No	Coarse Subangular Blocky
Soil Type 1b	0-35	Sandy Clay Loam (SCL)	Dark Reddish Brown (5YR 3/3)	0	No	Coarse Subangular Blocky
	35-60	Sandy Clay Loam (SCL)	Reddish Brown (5YR 5/4)	0	No	Coarse Subangular Blocky

Soil Descriptions

The soils on site were homogenous across the site, with profiles varying in subsoil texture from medium sandy loam to sandy clay loam, and the depth to the bedrock.

Soil Type 1a consist of stoneless, non-calcareous, dark reddish brown sandy clay loam (5YR 3/3) Ap horizon with no visible mottling to an average depth of 35cm bgl. One sample in the north was identified with a dark brown (7.5YR 3/3) munsell colour. The structure was moderately developed medium subangular blocky, to coarse subangular blocky in one sample, with a friable consistency. This was underlain by stoneless reddish brown sandy loam (5YR 5/4) B horizon of the medium texture classification, with no mottling visible. The structure was observed as moderately developed coarse subangular blocky with a friable consistency. Discrete areas of this soil type in the south of the site were identified with a slightly stony topsoil, the absence of subsoil and the presence of shallow bedrock identified between c.35-45cm bgl.

Soil Type 1b was observed with identical topsoil to Soil Type 1a, with the absence of medium sandy loam and the presence of stoneless reddish brown sandy clay loam (5YR 5/4) B horizon

to a depth of c.60cm bgl over gravelly bedrock. The structure was observed as strongly developed coarse subangular blocky of friable consistency and no mottling were visible.

Soil Calcium Carbonate determinations

The soils on site were observed with a negative test for Calcium Carbonate.

The general profiles for the soil types identified on the Site has been used to assess the Wetness Class (WC) for the Soil Type (see **Appendix V** for the MAFF decision flow chart). The general profile is reflective of the findings in the soil pit associated with the Soil Type identified on site. The assessment process and results of the in-field wetness assessment is provided within **Table 4** below with a plan of the distribution of the soil types across the site shown in **Appendix I**.

Table 4: Wetness Class Assessment for Soil Types Encountered on Site

Soil Type	Parameters (Figure 6, MAFF)						Wetness Class
	Disturbed	FCD	SPL (depth cm) Justification	Colour	Gleying (depth cm) Justification	Ref	
Soil Type 1a	No	158.41	No SPL layer was identified to be present within the top 120cm.	Other	Gleying was not identified to be present within the top 120cm.	N/A	I
Soil Type 1b	No	158.41	No SPL layer was identified to be present within the top 120cm.	Other	Gleying was not identified to be present within the top 120cm.	N/A	I

Notes: This Table follows the flow chart of Figure 6 of the MAFF ALC guidance to identify the wetness classification per Soil Type.

Soil Interactive Limitations

Soil Type 1a – Climate Limitation

The combination of the topsoil texture (Sandy Clay Loam), Wetness Class (I) and the number of Field Capacity Days (158.41), together with the climate calculations results in **ALC Grade 2** for Type 1a soils.

Soil Type 1a – Droughtiness Limitation

Two samples of this soil type have been identified with the combination of the topsoil texture (Sandy Clay Loam), Wetness Class (I) and the number of Field Capacity Days (158.41), together with the climate calculations which results in **ALC Grade 3a** or **ALC Grade 3b** due to shallow bedrock.

Soil Type 1b - Droughtiness Limitation

The combination of the topsoil texture (Sandy Clay Loam), Wetness Class (I) and the number of Field Capacity Days (158.41), together with the climate calculations results in **ALC Grade 3a** for Type 1b soils due to shallow bedrock.

Soil Calcium Carbonate determinations

The topsoils (Sandy Clay Loam) demonstrated a negative test for calcium carbonate content.

6. Conclusions

The ALC grading for the site area is summarised below within **Table 5**, overall findings of this assessment can be found in **Appendix IV**. The table below identifies the grades of the areas of agricultural land present across the site (**Appendix I**).

Table 5: ALC Classification

ALC Grade	Area (Ha)	Percentage
Grade 1	0.00	0.00%
Grade 2	1.40	31.1%
Subgrade 3a	2.50	55.6%
Subgrade 3b	0.60	13.3%
Grade 4	0.00	0.00%
Grade 5	0.00	0.00%
Non-Agricultural	0.00	0.00%
Total BMV	3.90	86.7%
Total Non-BMV	0.60	13.3%
Total Site Area	4.50	100%

Overall Site ALC Grade and Conclusions

The majority of the land surveyed as part of this assessment has been identified as **ALC Grade 3a** due to droughtiness limitation for wheat, with approximately 1.40ha in the north of this site identified as **ALC Grade 2** due to climate limitations, and 0.60ha in the southeastern corner of the site identified as **ALC Grade 3b** due to droughtiness for wheat. As such, BMV land has been identified on 86.7% of the overall site area.

APPENDIX I

SITE PLANS

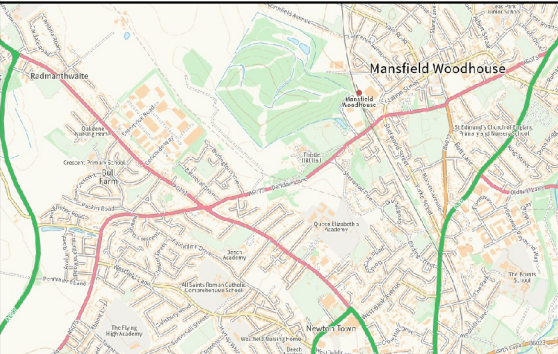


Legend

-  Site Boundary
-  Auger Sample
-  ALC Grade 2
-  ALC Grade 3a
-  ALC Grade 3b

0 10 20 30 40 50 m



Figure Auger Samples and ALC Grade Distribution		
Job Land North of Debdale Lane		
Client Mansfield District Council		
Figure No. 1	Revision 1	Date 27 March 2026
Drawn by CL	Checked by EH	Scale 1:1,973.91522
Job No. 250905.06		
		
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Legend

- Site Boundary
- HELAA 46
- ALC Grade 2
- ALC Grade 3a
- ALC Grade 3b

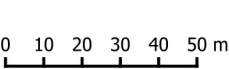
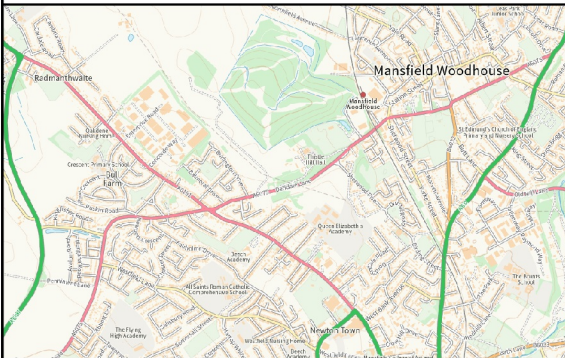


Figure ALC Grades and HELAA References		
Job Land North of Debdale Lane		
Client Mansfield District Council		
Figure No. 2	Revision 1	Date 27 March 2026
Drawn by CL	Checked by EH	Scale 1:1,973.91522
Job No. 250905.06		
		
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Legend

- Site Boundary
- ALC Grade 2
- ALC Grade 3a
- ALC Grade 3b

Agricultural_Land_Classification_Provisional_England

- Grade 1
- Grade 2
- Grade 3
- Grade 4
- Grade 5
- Non Agricultural
- Urban

0 10 20 30 40 50 m



Figure

ALC Grades with the Provisional ALC Grades

Job

Land North of Debdale Lane

Client

Mansfield District Council

Figure No.

3

Revision

1

Date

27 March 2026

Drawn by

CL

Checked by

EH

Scale

1:1,973.91522

Job No.

250905.06

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APPENDIX II

SITE SURVEY LOGS

FCD:	158.41	MDWHT:	95.29	MDPOT:	82.69
------	--------	--------	-------	--------	-------

Auger Sample	Top Depth(cm)	Bottom Depth (cm)	Texture	Matrix			colour	Mottles 1			colour	Mottles 2			colour	Stones	Structure	SPL	GLEYING	Figure	Wetness class	Wetness Grade	condition	Droughtiness Grade			Overriding Limitation
				Hue	value	chroma		Hue	value	chroma		Hue	value	chroma										Wheat	Potatoes		
1	0	33	SCL	5YR	3	3	Reddish	n/a	n/a	n/a	-	n/a	n/a	n/a	-	0	MSAB	No	No	WC1	I	1	good	1	1	2	Climate
	33	120	MSL	5YR	5	4	Reddish	n/a	n/a	n/a	n/a	n/a	n/a	n/a	-	0	CSAB	No	No				moderate				
																		No	No				moderate				
2	0	32	SCL	7.5R	3	2	Reddish	n/a	n/a	n/a	-	n/a	n/a	n/a	-	0	MSAB	No	No	WC1	I	1	good	1	1	2	Climate
	32	120	MSL	5YR	5	4	Reddish	n/a	n/a	n/a	n/a	n/a	n/a	n/a	-	0	CSAB	No	No				moderate				
																		No	No				moderate				
3	0	35	SCL	5YR	3	3	Reddish	n/a	n/a	n/a	-	n/a	n/a	n/a	-	0	CSAB	No	No	WC1	I	1	good	3a	1	3a	Droughtiness Wheat
	35	60	SCL	5YR	5	4	Reddish	n/a	n/a	n/a	n/a	n/a	n/a	n/a	-	0	CSAB	No	No				moderate				
															100			No	No				moderate				
4	0	45	SCL	5YR	3	3	Reddish	n/a	n/a	n/a	-	n/a	n/a	n/a	-	5	CSAB	No	No	WC1	I	1	good	3a	2	3a	Droughtiness Wheat
															100			No	No				moderate				
																		No	No				moderate				
5	0	35	SCL	5YR	3	3	Reddish	n/a	n/a	n/a	-	n/a	n/a	n/a	-	5	MSAB	No	No	WC1	I	1	good	3b	3a	3b	Droughtiness Wheat
															100			No	No				moderate				
																		No	No				moderate				

Structure	
MSAB	Medium Subangular Blocky
AB	Angular Blocky
CP	Coarse Prismatic
MSAB	Massive
SAB	Subangular Blocky
CP	Coarse
W	Weak

Stones	
5	Very Slightly Stony
15	Slightly Stony
35	Moderately Stony

Texture	
C	Clay
ZC	Silty Clay
SC	Sandy Clay
CL	Clay Loam
ZCL	Silty Clay Loam
SCL	Sandy Clay Loam
SZL	Sandy Silty Loam
SL	Sandy Loam
LS	Loamy Sand
S	Sand
ZS	Silty Sand
MG	Made Ground
F (sand)	Fine
M (sand)	Medium
C (sand)	Coarse
H (clay)	Heavy
M (clay)	Medium

Rock Type	
Ca	Calcareous

Mottling	
*	No Mottling
X	Fine Grey
O	Fine Ochreous
N	Numerous Mottles
F	Few Mottles
D	Fine Brown

Cell Colours	Reason
	Livestock in field - not accessed
	Woodland/Made Ground/Urban
	Inaccessible areas
	N/A

APPENDIX III

SITE SURVEY PHOTOGRAPHS

Photograph Number	Photograph Description	Photograph
1.	Land North of Debdale Lane, Mansfield General Site View	
2.	Land North of Debdale Lane, Mansfield General Site View	

Photograph Number	Photograph Description	Photograph
3.	Land North of Debdale Lane, Mansfield General Site View	
4.	Land North of Debdale Lane, Mansfield Auger sample	
5.	Land North of Debdale Lane, Mansfield Topsoil	

Photograph Number	Photograph Description	Photograph
6.	Land North of Debdale Lane, Mansfield Subsoil of Soil Type 1b	

APPENDIX IV

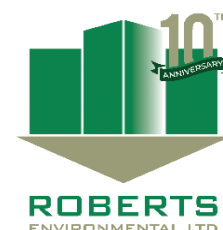
SUMMARY OF FINDINGS

Job Name:	Land North of Debdale Lane, Mansfield
Job Number:	250905.06
Date:	23/12/2025
Completed By:	CL

Site Altitude:	124
Centre Grid Ref:	452656 362824

AAR	701.40
ATO	1302.80
FCD	158.41
MDMWHT	95.29
MDMPOT	82.69

	Soil Type 1a	Soil Type 1b
AP WHT	159.00	92.00
MB WHT	63.71	-3.29
AP POT	112	97
MB POT	29.31	14.31



Site Limitations Summary		
	Soil Type 1a	Soil Type 1b
Wetness Class	1	1
Wetness Grading	1	1
Droughtiness Wheat	1 / 3a / 3b	3a
Droughtiness Potato	1 / 2 / 3a	1
Gradient Limitation	1	1
Soil Depth Limitation	1	2
Stoniness Limitation	1	1
	Overall	
Site Climatic Limitation	2	2
Overall Grade	2 / 3a / 3b	3a

Agricultural Land Classification (ALC)

The Agricultural Land Classification (ALC) provides a framework for classifying land according to the extent to which its physical or chemical characteristics impose long-term limitations on agricultural use. 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 yield; the consistency of yield and the cost of obtaining it. The classification system gives considerable weight to flexibility of cropping, whether actual or potential, but the ability of some land to produce consistently high yields of a somewhat narrower range of crops is also taken into account.

These factors form the basis for classifying agricultural land into one of five grades (with Grade 3 land divided into Subgrades 3a and 3b since the guidelines were revised in 1988), ranked from Excellent (Grade 1) to Very Poor (Grade 5). ALC grading is determined using the Ministry of Agriculture Food and Fisheries (MAFF) '*Agricultural Land Classification of England and Wales – Revised guidelines and criteria for grading the quality of agricultural land*'.

Definition of Agricultural Land Classification Grades

ALC Grade	Description
Grade 1	Excellent quality agricultural land No or very minor limitations to agricultural use.
Grade 2	Very good quality agricultural land Minor limitation which affect crop yield, cultivation or harvesting.
Subgrade 3a (pre-1988 Grade 3)	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.
Subgrade 3b (pre-1988 Grade 3)	Moderate quality agricultural land Capable of producing moderate yields of a narrow range of arable crops and/or lower yields of a wider range of crops.
Grade 4	Poor quality agricultural land Severe limitations which significantly restrict the range of crops and/or levels of yield.
Grade 5	Very poor quality agricultural land Very severe limitations which restrict use to permanent pasture or rough grazing.

Best and Most Versatile (BMV) Agricultural Land

The National Planning Policy Framework (NPPF) (Department for Communities and Local Government, 2012) defines Best and Most Versatile (BMV) agricultural land as land of Excellent (ALC Grade 1), Very Good (Grade 2) and Good (Grade 3a) agricultural quality. BMV land is provided a degree of protection against development within planning policy, with most Local Plans including specific policies which refer to the protection of BMV agricultural land.

Non-BMV agricultural land, i.e. Moderate, Poor and Very Poor quality agricultural land is designated subgrade 3b or Grades 4 and 5 respectively, and is restricted to a narrower range of agricultural uses. Limited to no protection is provided against development on this grade land within planning policy.

Limiting Factors

Main Factor	Sub Factor	Explanation
Climatic Limitations	Overall Climatic Limitation	Using a dataset of five parameters, as set on a 5km grid for the whole of the UK, the site climatic values are used to determine if there is an overriding limiting factor for the site with regard to the wider climate.
	Local Climatic Factors	Where the above climatic factors are liable to be modified by local factors such as aspect, gradient and elevation then one or more of these factors may become a limiting factor for the site.
Site Limitations	Gradient	Gradient may have an impact on mechanised farm operations and also on soil erosion. The ALC grade limitations with reference to gradient are given in Table 1 of the MAFF guidance.
	Microrelief	Complex changes in slope angle and direction over short distances may have an impact on agricultural machinery. The effect of microrelief is considered in conjunction with overall gradient.
	Flooding	The extent, duration, frequency and timing of flooding may have an influence over the ALC Grade and could become the limiting site factor. The ALC grade limitations with reference to flooding are given in Tables 2 and 3 of the MAFF guidance.
Soil Limitations	Soil Texture and Structure	Soil texture and structure can influence the water retention, water movement and aeration of the soil and therefore affect the workability, trafficability, poaching risk and suitability for plant growth. Soil texture is determined by the proportions of sand, silt and clay and is used to assess the wetness class of the soil.
	Soil Depth	Soil depth can influence the available water capacity of the soil, restrict nutrient uptake, root growth and root anchorage. The ALC grade limitations with reference to soil depth are given in Table 4 of the MAFF guidance.
	Stoniness	Stone content can influence the cultivation, harvesting and crop growth and may negatively impact machinery. The ALC grade limitations with reference to stoniness are given in Table 5 of the MAFF guidance.
	Chemical Limitations	Certain physical limitations may limit soil chemical properties, such as saline conditions, organic matter and toxic elements.
Interactive Limitations	Soil Wetness	Soil wetness is assessed using a combination of factors including climate, soil water regime and soil texture. The ALC grade limitations with reference to soil wetness are given in Tables 6 and 7 of the MAFF guidance.
	Droughtiness	Soil droughtiness is assessed using a combination of factors including available water capacity, moisture deficit, moisture balance and irrigation. The ALC grade limitations with reference to droughtiness are given in Table 8 of the MAFF guidance.
	Soil Erosion	Soil erosion may be caused by wind or water action and is determined by interactions between weather, soil type, topography and vegetation cover.

Soil Series

Soil series is the lowest categorical level used for classifying soils in England and Wales. According to the Soil Survey of England and Wales 1984:

"Soil series are defined using a combination of three main properties, the broad type of parent material present (substrate type), the texture of the soil material (textural grouping) and the presence or absence of material with a distinctive mineralogy."

Higher categories are: Major Soil Group, Soil Group, and Soil Subgroup, which are not explicitly used in this report.

Soil Association

A soil association is a geographic grouping of soils identified by the name of the most frequently occurring soil series and by the combination of additional soil series.

Gleying

Gleying is the process of iron reduction (opposite to oxidation) in soils from ferric (reddish in colour) to ferrous compounds (grey or colourless), by microorganisms or by-products of decomposing organic matter. Gleying occurs in areas devoid of oxygen when the soil is waterlogged. The resulting mottling (spots or blotches of colour) can therefore be used to identify the existence of a Slowly Permeable Layer (SPL); as defined within the MAFF ALC guidance.

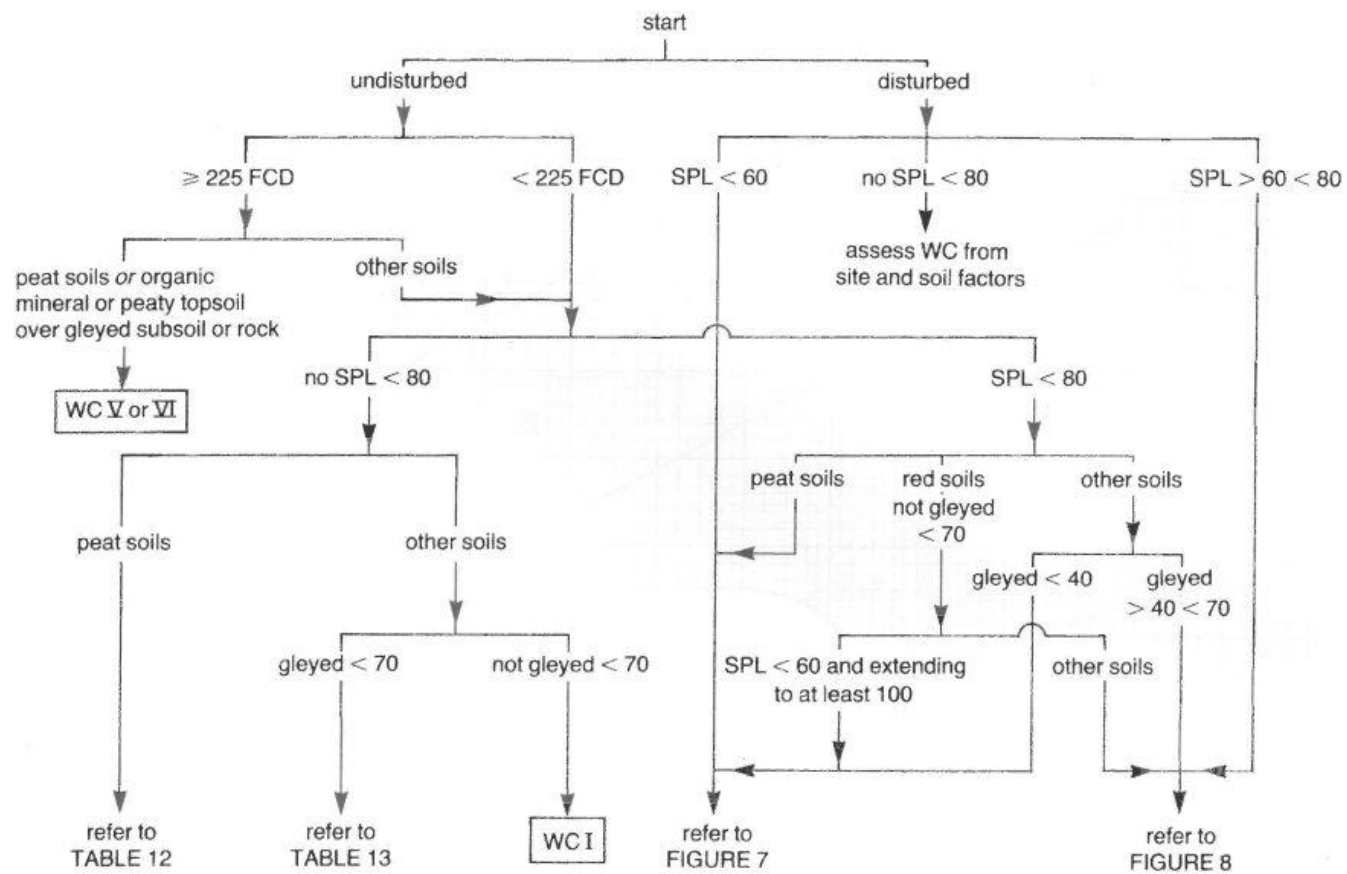


Figure 6. Flow diagram for assessing soil wetness class (WC) from field capacity days (FCD), depth to gleying (in cm) and depth to a slowly permeable layer (SPL, in cm)

Figure 6