Soil Environment Services Ltd

AGRICULTURAL LAND CLASSIFICATION

Postcombe and Lewknor Solar Farm Limited

Postcombe and Lewknor



Our Ref: SES/S2/L/#3 Date: 3rd August 2022

Client:

Postcombe and Lewknor Solar Farm Limited Linden House Mold Business Park Wrexham Road Mold CH7 1XP

AGRICULTURAL LAND CLASSIFICATION

Postcombe and Lewknor

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

Dr Robin S Davies BSc PhD F.I.SoilSci PGC Contaminated Land Management Managing Director

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Soil Environment Services

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CONTENTS

		Page
1.	INTRODUCTION	
	1.1 Methodology	4
	1.2 Previous ALC gradings	4
2.	CLIMATIC LIMITATIONS	5
	2.1 Overall climate	5
	2.2 Local climate	5
3.	SITE LIMITATIONS	5
	3.1 Gradient	5
	3.2 Microrelief	5
	3.3 Flooding	6
4.	SOIL LIMITATIONS	7
	4.1 Texture and structure	7
	4.2 Depth	7
	4.3 Stoniness	7
	4.4 Chemical	7
5.	INTERACTIVE LIMITATIONS	8
	5.1 Wetness	8
	5.2 Droughtiness	8
	5.3 Erosion	8
6.	AGRICULTURAL LAND CLASSIFICATION	9
	6.1 Most limiting factor	9
	6.2 Current ALC grading	9
DRA	AWING 1 ALC Grade and survey points	
APP	PENDIX A Survey profile data sheet	
STA	ATEMENT OF COMPETENCE	

GENERAL INFORMATION SOURCES

GLOSSARY

OStCOMBE AND LEWKNOT

1. INTRODUCTION

An Agricultural Land Classification (ALC) has been carried out on ~77 ha of land at Lewknor (Drawing 1). The site is centred on OS Grid Ref. 471404, 198772.

The survey was conducted on the 14th December 2021 and later for the north western area on the 17th July 2022 and classified the land into one or more of the below grades (see Drawing 1). On the survey dates, the site was in agricultural use.

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
3b	range of arable crops or moderate yields of a wider range of crops.
30	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 MAFF (1983) 1: 250 000 Provisional map indicated the site is located on ALC Grade 3 and borders ALC Grade 2. A detailed survey (ADAS, 1994) on part of the site indicates the land is graded as 3a and 3b due to droughtiness.

Soil Environment Services Page 4

02/04/2025

2. CLIMATIC LIMITATIONS

2.1 Overall climate

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

	Table 1	
Cli	matological informati	on ³
Factor	Units	Value
Altitude AOD	m	115
Accumulated temperature	day°C (Jan-June)	1381.0
Average Annual Rainfall	mm	696.2
Field Capacity Days	days	149.5
Moisture Deficit Wheat	mm	101.8
Moisture Deficit Potatoes	mm	91.9
Overall climate ALC	Gra	de 1
Grade		

Overall climate will not result in the most significant limiting factor for this site.

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 this site.

3.2 Microrelief

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

Soil Environment Services Page 5

3.3 Flooding

A low or no risk of flooding from surface waters or rivers has been identified (https://flood-warning-information.service.gov.uk/long-term-flood-risk).

Soil Environment Services Page 6

SOIL LIMITATIONS 4

4.1 **Texture and structure**

The soils are mainly heavy silty clay loam topsoils over shallow in places silty clay loam subsoils over chalk. The soils over the sandstone have deeper clayey subsoils. The structure in the subsoil is weak to moderate, medium sub angular blocky. Little significant variation exists over most of the site.

The site has previously been mapped as having soils of the Coombe 2 and Bignor Associations. The Coombe 2 soils are mapped as: Well drained calcareous fine silty soils over chalk or chalk rubble. Shallow soils in places especially on brows and steeper slopes.

The Bignor soils are mapped as: Fertile loamy grey salicaceous soils, mostly with impeded drainage, overlaying Cretaceous sandstone or chert. (www.landis.org.uk).

Table 1a. Particle size distribution (topsoil)

		Perce	ntages		Textural Class
No	Sand	Silt	Clay	Total	TOXICITOR CIUSS
11	15.27	55.83	28.90	100.00	HZCL
44	25.00	43.38	31.62	100.00	HCL
69	18.85	49.58	31.57	100.00	HZCL

Method: BS1377- Pipette method. UKAS No. 10768

Superficial Geology

1:50 000 scale superficial deposits description:

None recorded

Bedrock Geology

1:50 000 scale bedrock geology description:

Most of the site: West Melbury Marly Chalk Formation – Chalk

Glauconitic Marl Member - Sandstone, Glauconitic. Sedimentary Bedrock South west: Glauconitic Marl Member - Sandstone, Glauconitic. Sedimentary Bedrock North west Far northwest Upper Greensand Formation - Siltstone And Sandstone. Sedimentary Bedrock

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.

Page 7 Soil Environment Services

5. INTERACTIVE LIMITATIONS

5.1 Wetness

The combination of a Wetness Class of III for the soils the soils in the south west (see Appendix A) with the Field Capacity Days of 149.5 and a topsoil texture of calcareous heavy clay loam results in an ALC Grade of 3a.

5.2. **Droughtiness**

The Available Water Capacity which subsequently when considered with respect to the Moisture Deficit for wheat and potatoes resulted in a droughtiness limitation of Grade 3a or 3b over most of the site for wheat with the variation dictated by the depth to the chalk and root penetration into the fractured upper chalk.

5.3 **Erosion**

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

Page 8 Soil Environment Services

02/04/2025

AGRICULTURAL LAND CLASSIFICATION 6.

6.1 Most limiting factor/s

Grade 3a areas

These areas are limited by either wetness in the south west or droughtiness over the rest of the site.

Grade 3b areas

Droughtiness in the shallower soils over the hard chalk is the limitation in these areas.

6.2 Current grading

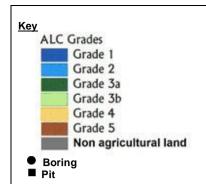
This survey has resulted in an Agricultural Land Classification of the following grades (Drawing 1):

Т	Table 2.	ALC	gradings and limitations
Grade	ha	%	Limitation
1			
2			
3a	35	45.5	Wetness and droughtiness
3b	41	53.2	Droughtiness
4			
5			
Non-agricultural land	1	1.3	Woodland
Total	77	100%	

Page 9 Soil Environment Services

DRAWING 1

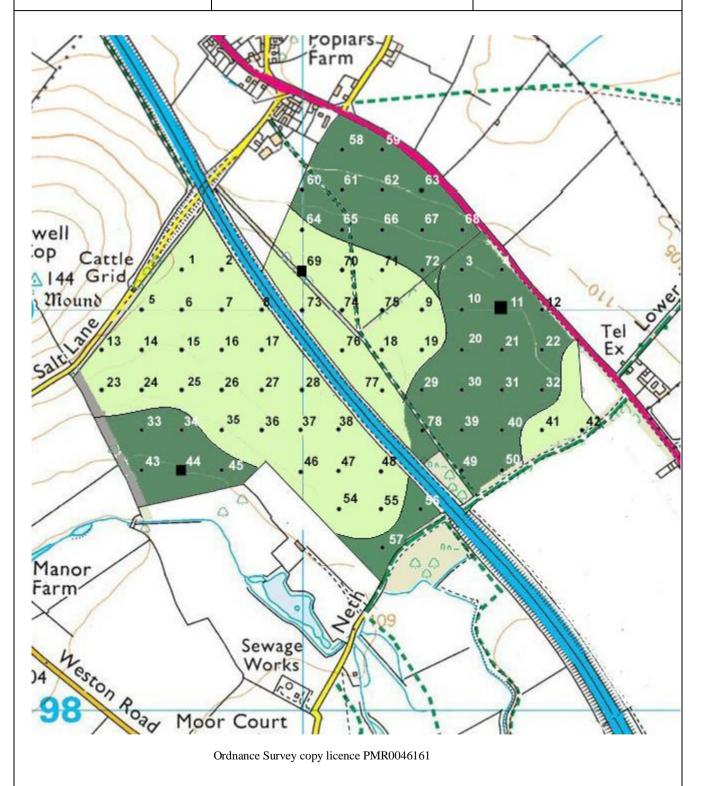
ALC Grade



Soil Environment Services

Drawing Title: ALC Grade Drawing No.: 1

Scale: 1:10000 Date: 14/12/2021



APPENDIX A

Soil profile data

Notes

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.

- The pit data is detailed in this table and information on structure and stone content copied to the appropriate boring profiles.
- 3 Any blanks or zeros 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 (within 2 m accuracy) 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 will be moved 2-3 m off the point or omitted if surrounding points and soil types allow.
- 7. Borings that are potentially within 15 m of a gas pipeline are limited to 0.4 m depth and the strata description in the data table below this depth will be extrapolated from nearby borings and upper strata characteristics.
- 8. The Observation Density is 1 per ha on a 100 m grid using a semi Free Survey method if appropriate*. The letter 'B' in the second column of the data table refers to an observation point at which a boring may have been undertaken. In some situations it is not possible to visit the location due to for example crop status or animals in a field. In some cases the location is visited and observation of the soils at the surface is sufficient. In all cases the soil, geology, topography, flood risk and aerial crop patterns are assessed from published sources and the soils will be subject to a full 120 cm depth boring either side of a non-visited or non-bored point. If all data sources are agreeable, a soil pattern can be established.
 - * British Society of Soil Science. Working With Soil The Professional Competency Scheme. Agricultural Land Classification: England and Wales. How2 sheet 4.2.4. 2018.
- 9. For moisture balance calculations, *strongly, moderately* and *well developed* structure will equate to *good, moderate* or *poor* structure terms respectively in Table 14 of the guidelines.
- 10. Pit information in addition to that listed in the table below will be detailed in Section 4.1 and 4.3 if needed.

Obs point	Grid ref. if off intersection	Boring or Pit	Grad. (deg)	Base Depth (cm)	Text.	Calc	Matrix colour	Motts. %/ depth	Mott colour	Ped face colour	Stns %	Stns type	Porosity	Struct	Degree of development	SPL depth (cm)	Gleying depth (cm)	SWC	Grade (wetness)	TAv	EAv	StTAv	StEAv	MBW	Grade (Drought. WHEAT)	MBP	Grade (Drought. POTATOES)
				30	HCL	Υ	10YR22				5	СН								18		10					
1		В	≤7	40	HZCL		2.5Y62				25	СН	Р	MAB	WK				1	12	7	10	7	-23.99	3b	2.39	2
1			2/	55	CH		2.5Y71				0	СН	Р	М				'	1	10	7	0	0	-23.55	30	2.33	2
				0		.,	40/022				0									0	0	0	0				
				30 40	HZCL	Y	10YR22 2.5Y62				5 35	CH	Р	MAB	WK					18 12	7	10	7				
2		В	≤7	55	CH		2.5Y72				0	CH	P	M	VVIX			1	1	10	7	0	0	-24.19	3b	2.19	2
				0							0									0	0	0	0				
				25	HCL	Υ	10YR32				5	СН								18		10					
3		В	≤7	50	HZCL		2.5Y421				40	СН	Р	MAB	WK			1	1	12	7	10	7	-15.79	3a	11.69	1
				60	CL		2.5Y52				60	CH	G	MAB	MD					12	7	10	7				
				70 25	CH	Υ	2.5Y71 10YR32				5	СН	Р	M						10 18	7	10	0				
				50	HZCL	'	2.5Y421				25	CH	Р	MAB	WK					12	7	10	7				
4		В	≤7	60	CL		2.5Y52				40	СН	G	MAB	MD			1	1	12	7	10	7	-15.04	3a	13.24	1
				70	СН		2.5Y71				0		Р	М						10	7	0	0				
				25	HZCL	Υ	10YR32				5	СН								18		10					
5		В	≤7	40	HZCL		2.5Y62				25	СН	Р	MAB	WK			1	1	12	7	10	7	-27.04	3b	-0.66	2
				55	CH		2.5Y71				0	СН	Р	М						10	7	0	0				
				0							0									0	0	0	0				
				30	HZCL	Υ	10YR32				5	CH		144 D	14/1/					18	-	10	-				
6		В	≤7	40 55	HZCL		2.5Y62 2.5Y71				25 0	CH	P P	MAB	WK			1	1	12 10	7	10	7	-23.99	3b	2.39	2
				0	CII		2.31/1				0	CIT	-	IVI						0	0	0	0				
				30	HZCL	Υ	10YR32				5	СН								18	Ť	10					
_		_		40	HZCL		2.5Y62				25	СН	Р	MAB	WK				_	12	7	10	7				
7		В	≤7	55	СН		2.5Y71				0	СН	Р	М				ı	1	10	7	0	0	-23.99	3b	2.39	2
				0							0									0	0	0	0				
				25	HZCL	Υ	10YR32				5	СН								18		10					
8		В	≤7	40	HZCL		2.5Y62				40	CH	Р	MAB	WK			1	1	12	7	10	7	-27.49	3b	-1.11	2
				55	CH		2.5Y71				0	CH	Р	М						10	7	0	0				
				0	11761	V	10//022				0	CII								0	0	0	0				
				25 40	HZCL	Υ	10YR32 2.5Y62				5 25	CH	Р	MAB	WK					18 12	7	10	7				
9		В	≤7	55	CH		2.5Y71				0	CH	P	M	VVIX			1	1	10	7	0	0	-27.04	3b	-0.66	2
				0	C		2.5171				0	C								0	0	0	0				
				25	HZCL	Υ	10YR32				5	СН								18		10					
10		В	7	50	HZCL		2.5Y421				40	СН	Р	MAB	WK				1	12	7	10	7	15.70	2-	11.00	
10		ь	≤7	60	CL		2.5Y52				60	СН	G	MAB	MD			'	1	12	7	10	7	-15.79	3a	11.69	1
				70	CH		2.5Y71				0		Р	М						10	7	0	0				
				25	HZCL	Υ	10YR32				5	СН								18		10					
11		Р	≤7	50	HZCL		2.5Y421				25	CH	Р	MAB	WK			1	1	12	7	10	7	-15.04	3a	13.24	1
				60	CL		2.5Y52				40	CH	G	MAB	MD					12	7	10	7				
				70 25	CH HZCL	Υ	2.5Y71 10YR32				5	СН	Р	М						10 18	7	10	0				
				50	HZCL	'	2.5Y421				25	CH	Р	MAB	WK					12	7	10	7				
12		В	≤7	60	CL		2.5Y52				40	СН	G	MAB	MD			1	1	12	7	10	7	-15.04	3a	13.24	1
				70	СН		2.5Y72				0		Р	М						10	7	0	0				
				25	HZCL	Υ	10YR32				5	СН								18		10					
13		R	≤7	40	HZCL		2.5Y62				25	СН	Р	MAB	WK			1	1	12	7	10	7	-27.04	3b	-0.66	2
13				55	CH		2.5Y71				0	СН	Р	М				'	-	10	7	0	0	-27.04	30	-0.00	
				0							0									0	0	0	0				
				25	HZCL	Υ	10YR32				5	CH	_		,					18	_	10	-				
14		В	≤7	40	HZCL		2.5Y62				25	CH	P P	MAB	WK			1	1	12	7	10	7	-27.04	3b	-0.66	2
				55 0	СН		2.5Y71				0	СН	۲	М						10	0	0	0				
				25	HZCL	Υ	10YR32				5	СН								18		10					
				40	HZCL	ť	2.5Y62				25	СН	Р	MAB	WK					12	7	10	7				
15		В	≤7	55	СН		2.5Y71				0	СН	Р	М				1	1	10	7	0	0	-27.04	3b	-0.66	2
				0							0									0	0	0	0				
				25	HZCL	Υ	10YR32				5	СН								18		10					
16		В	≤7	40	HZCL		2.5Y62				25	СН	Р	MAB	WK			1	1	12	7	10	7	-27.04	3b	-0.66	2
-				55	СН		2.5Y71				0	CH	Р	М						10	7	0	0	-			_
				0	LIC:	v	10//022				0	CI.								0	0	0	0				
				25	HCL	Υ	10YR32				5	CH	n	BAA D	14/1/					18	7	10	7				
17		В	≤7	40 55	HZCL		2.5Y62 2.5Y71				40 0	CH	P P	MAB M	WK			1	1	12 10	7	10	7	-27.49	3b	-1.11	2
				0	СП		2.31/1				0	СП	r	iVI						0	0	0	0				
				25	HZCL	Υ	10YR32				5	СН								18		10					
10		_		40	HZCL		2.5Y62				25	СН	Р	MAB	WK				4	12	7	10	7	22.5		0.5-	_
18		В	≤7	55	СН		2.5Y71				0	СН	Р	М				ı	1	10	7	0	0	-27.04	3b	-0.66	2
				0							0									0	0	0	0				
				25	HZCL	Υ	10YR32				5	СН								18		10					
19		В	≤7	40	HZCL		2.5Y62				25	СН	Р	MAB	WK			1	1	12	7	10	7	-27.04	3b	-0.66	2
_5		_		55	СН		2.5Y71				0	СН	Р	М				•	_	10	7	0	0				-
				0			400:				0	<u></u>								0	0	0	0				
				25	HZCL	Υ	10YR32				5	CH	n	B 44 C	1400					18	7	10	7				
20		В	≤7	50 60	HZCL		2.5Y421 2.5Y52				40 60	CH	P	MAB	WK			1	1	12 12	7	10	7	-15.79	3a	11.69	1
				70	CL		2.5Y52 2.5Y71				0	СН	G P	MAB	MD					12	7	0	0				
				/U	C.H		2.51/1				U		۲	M						TÜ	/	U					

Obs	Grid ref. if off intersection	Boring or Pit	Grad. (deg)	Base Depth (cm)	Text.	Calc	Matrix colour	Motts. %/ depth	Mott colour	Ped face colour	Stns %	Stns type	Porosity	Struct	Degree of development	SPL depth (cm)	Gleying depth (cm)	SWC	Grade (wetness)	TAv	EAv	StTAv	StEAv	MBW	Grade (Drought. WHEAT)	MBP	Grade (Drought.
				25	HZCL	Υ	10YR32				5	СН								18		10					
21		В	≤7	50	HZCL		2.5Y421				25	CH	Р	MAB	WK				1	12	7	10	7	-15.04	2-	13.24	1
21		ь	2/	60	CL		2.5Y52				40	СН	G	MAB	MD			'	1	12	7	10	7	-13.04	3a	13.24	1
				70	СН		2.5Y71				0		Р	M						10	7	0	0				
				25	HZCL	Υ	10YR32				5	CH								18		10					
22		В	≤7	50	HZCL		2.5Y421				25	CH	Р	MAB	WK				1	12	7	10	7	-15.04	3a	13.24	1
				60	CL		2.5Y52				40	CH	G	MAB	MD			Ċ	-	12	7	10	7	15.04	50	15.24	•
				70	СН		2.5Y71				0		Р	M						10	7	0	0				
				25	HZCL	Υ	10YR22				5	CH								18		10					
23		В	≤7	50	HZCL		2.5Y62				25	CH	Р	MAB	WK			1	1	12	7	10	7	-22.04	3 b	0.84	2
				60	CH		2.5Y71				0	CH	Р	М						10	7	0	0				
				0							0									0	0	0	0				
				25	HZCL	Υ	10YR32				5	CH								18		10					
24		В	≤7	50	HZCL		2.5Y62				25	CH	Р	MAB	WK			1	1	12	7	10	7	-25.54	3b	0.84	2
				55	CH		2.5Y72				0	CH	Р	М						10	7	0	0				
				0							0									0	0	0	0				
				25	HZCL	Υ	10YR32				5	CH								18		10					
25		В	≤7	50	HZCL		2.5Y62				25	CH	Р	MAB	WK			1	1	12	7	10	7	-22.04	3b	0.84	2
				60	CH		2.5Y72				0	CH	Р	М						10	7	0	0				
				0							0									0	0	0	0				
				25	HZCL	Υ	10YR32				5	СН								18		10					
26		В	≤7	40	HZCL		2.5Y62				25	CH	Р	MAB	WK			1	1	12	7	10	7	-27.04	3b	-0.66	2
				55	СН		2.5Y71				0	CH	Р	М						10	7	0	0	-			
				0							0									0	0	0	0				
				25	HZCL	Υ	10YR32				5	CH								18		10					
27		В	≤7	40	HZCL		2.5Y62				25	CH	Р	MAB	WK			1	1	12	7	10	7	-27.04	3 b	-0.66	2
•		ľ	.	55	СН		2.5Y71				0	СН	Р	M						10	7	0	0				_
				0							0									0	0	0	0				
				25	HZCL	Υ	10YR32				5	CH								18		10					
28		В	≤7	40	HZCL		2.5Y62				40	CH	Р	MAB	WK				1	12	7	10	7	-27.49	3b	-1.11	2
20			-2,	55	CH		2.5Y71				0	CH	Р	M				Ė	-	10	7	0	0	-27.43	30	-1.11	
				0							0									0	0	0	0				
				25	HZCL	Υ	10YR32				5	CH								18		10					
29		В	≤7	50	HZCL		2.5Y421				25	CH	Р	MAB	WK			1	1	12	7	10	7	15.04	2.	12.24	1
29		ь	2/	60	CL		2.5Y52				40	CH	G	MAB	MD			'	1	12	7	10	7	-15.04	3a	13.24	1
				70	СН		2.5Y71				0		Р	M						10	7	0	0				
				25	HCL	Υ	10YR32				5	СН								18		10					
20		_	_	50	HZCL		2.5Y421				25	СН	Р	MAB	WK					12	7	10	7	45.04		42.24	
30		В	≤7	60	CL		2.5Y52				40	СН	G	MAB	MD			1	1	12	7	10	7	-15.04	3a	13.24	1
				70	СН		2.5Y71				0		Р	М						10	7	0	0				
				25	HZCL	Υ	10YR32				5	СН								18		10					
24				50	HZCL		2.5Y421				25	СН	Р	MAB	WK					12	7	10	7	Ī			
31		В	≤7	60	CL		2.5Y52				40	СН	G	MAB	MD			1	1	12	7	10	7	-15.04	3a	13.24	1
				70	СН		2.5Y71				0		Р	М						10	7	0	0				
				25	HZCL	Υ	10YR32				5	СН								18		10					
		_	_	50	HZCL		2.5Y421				25	СН	Р	MAB	WK					12	7	10	7				
32		В	≤7	60	CL		2.5Y52				40	СН	G	MAB	MD			1	1	12	7	10	7	-15.04	3a	13.24	1
				70	СН		2.5Y71				0		Р	М						10	7	0	0				
				30	HZCL	Υ	10YR32				2	HR								19		1					
				40	HZCL		2.5Y42				2	HR	Р	MAB	WK					17	10	1	0.5				
33		В	≤7	55	HZCL		2.5Y52	2/40	7.5YR56		0		G	MAB	MD	55	30	Ш	3a	16	10	1	0.5	43.81	1	48.19	1
				120	SC		1G4/10Y	19/55	5Y53		0		Р	CAB	WK					13	8	1	0.5				
				30	HCL	Υ	10YR32				2	HR								19		1					
				40	HCL		2.5Y42				2	HR	Р	MAB	WK				_	17	10	1	0.5	1.		1.	
34		В	≤7	55	HCL		2.5Y52	2/40	7.5YR56		0		G	MAB	MD	55	30	Ш	3a	16	10	1	0.5	37.31	1	48.19	1
				120	С		1G4/10Y	19/55	5Y53		0		Р	CAB	WK					13	7	1	0.5				
				25	HZCL	Υ	10YR32				5	СН								18		10					
эг		-		50	HZCL		2.5Y62				25	СН	Р	MAB	WK					12	7	10	7	22.5			
35		В	≤7	60	СН		2.5Y71				0	СН	Р	М				1	1	10	7	0	0	-22.04	3 b	0.84	2
				0							0									0	0	0	0				
				25	HZCL	Υ	10YR22				5	СН								18		10					
26				50	HZCL		2.5Y62				25	СН	Р	MAB	WK					12	7	10	7				
36		В	≤7	60	СН		2.5Y71				0	СН	Р	М				1	1	10	7	0	0	-22.04	3b	0.84	2
				0							0									0	0	0	0				
				25	HZCL	Υ	10YR22				5	СН								18		10					
				50	HZCL		2.5Y62				25	СН	Р	MAB	WK					12	7	10	7				
37		В	≤7	60	СН		2.5Y71				0	СН	Р	М				1	1	10	7	0	0	-22.04	3b	0.84	2
				0							0									0	0	0	0				
				25	HZCL	Υ	10YR22				10	СН								18		10					
				50	HZCL		2.5Y62				25	СН	Р	MAB	WK					12	7	10	7				
38		В	≤7	60	СН		2.5Y71				0	CH	P	М				1	1	10	7	0	0	-23.04	3b	-0.16	2
				0							0									0	0	0	0				
				25	HZCL	Υ	10YR32				5	СН								18		10	, ,				
				50	HZCL	Ė	2.5Y421				25	CH	Р	MAB	WK					12	7	10	7				
39		В	≤7	60	CL		2.5Y52				40	СН	G	MAB	MD			1	1	12	7	10	7	-15.04	3a	13.24	1
												CH			IVID												
				70	CH	.,	2.5Y71				0	C1 :	Р	M						10	7	0	0				
				25	HZCL	Y	10YR32				5	CH	_		1400					18	-	10	-				
40		В	≤7	50	HZCL		2.5Y421				25	CH	P	MAB	WK			1	1	12	7	10	7	-15.04	3a 13	13.24	1
				60	CL		2.5Y52				40	CH	G	MAB	MD					12	7	10	7				
				70	CH		2.5Y71				0		Р	M						10	7	0	0				

ooint	Grid ref. if off intersection	Boring or Pit	Grad. (deg)	Base Depth (cm)	Te	ct.	Calc	Matrix colour	Motts. %/ depth	Mott colour	Ped face colour	Stns %	Stns type	Porosity	Struct	Degree of development	SPL depth (cm)	Gleying depth (cm)	SWC	Grade (wetness)	TAv	EAv	StTAv	StEAv	MBW	Grade (Drought. WHEAT)	MBP	Grade (Drought.
				30	H	CL	Υ	10YR32				2	HR								19		1					
41		В	≤7	40	Н	CL		2.5Y42				2	HR	Р	MAB	WK	55	30	III	3a	17	10	1	0.5	43.81	1	48.19	1
71			-21	55	HZ	CL		2.5Y52	2/40	7.5YR56		0		G	MAB	MD	33	30		Ju	16	10	1	0.5	43.01	1	40.13	1
				120	S			1G4/10Y	19/55	5Y53		0		Р	CAB	WK					13	8	1	0.5				
				30	H		Υ	10YR32				2	HR								19		1					
42		Р	≤7	40	H			2.5Y42 2.5Y52	2/40	7.5YR56		0	HR	P G	MAB	WK MD	55	30	Ш	3a	17	10	1	0.5	37.31	1	48.19	1
				55 120	HZ			1G4/10Y	19/55	7.51K56 5Y53		0		P	MAB CAB	WK					16 13	7	1	0.5				
				30	HZ		Υ	104/101 10YR32	15/ 55	3133		2	HR	r	CAB	VVIC					19	-	1	0.5				
				40	HZ		Ė	2.5Y42				2	HR	Р	MAB	WK					17	10	1	0.5				
43		В	≤7	55	HZ			2.5Y52	2/40	7.5YR56		0		G	MAB	MD	55	30	Ш	3a	16	10	1	0.5	37.31	1	48.19	1
				120	(1G4/10Y	19/55	5Y53		0		Р	CAB	WK					13	7	1	0.5				
				25	HZ	CL	Υ	10YR32				5	СН								18		10					
14		В	≤7	50	HZ	CL		2.5Y421				25	CH	Р	MAB	WK				1	12	7	10	7	-15.04	3a	13.24	:
-				60	С			2.5Y52				40	CH	G	MAB	MD			ľ	-	12	7	10	7	13.04	30	15.24	
				70	С			2.5Y71				0		Р	М						10	7	0	0				
				25	HZ		Υ	10YR32				5	CH								18	-	10					
45		В	≤7	50	HZ			2.5Y421				25	CH	P	MAB	WK			1	1	12	7	10	7	-15.04	3a	13.24	
				60 70	C			2.5Y52				40 0	CH	G P	MAB	MD					12 10	7	10	0				
				25	C HZ		Υ	2.5Y71 10YR32				5	СП	Р	М						18		0 10	U				
				40	HZ			2.5Y62				25	CH	Р	MAB	WK					12	7	10	7				
16		В	≤7	55	C			2.5Y71				0	CH	P	M				1	1	10	7	0	0	-27.04	3b	-0.66	
				0								0									0	0	0	0				
				25	HZ	CL	Υ	10YR32				10	СН								18		10					
				40	HZ			2.5Y62				40	СН	Р	MAB	WK					12	7	10	7				
17		В	≤7	55	С			2.5Y71				0	СН	Р	М				1	1	10	7	0	0	-28.49	3b	-2.11	
				0								0									0	0	0	0				
				25	HZ	CL	Υ	10YR32				10	СН								18		10					
18		В	≤7	40	HZ	CL		2.5Y62				40	СН	Р	MAB	WK				1	12	7	10	7	-28.49	3b	-2.11	
ю		В	2/	55	С	Н		2.5Y71				0	СН	Р	М				ļ '	1	10	7	0	0	-28.49	30	-2.11	
				0								0									0	0	0	0				
				25	HZ	CL	Υ	10YR32				5	СН								18		10					
19		В	≤7	40	HZ	CL		2.5Y62				25	CH	Р	MAB	WK			1	1	12	7	10	7	-27.04	3b	-0.66	
_		_	ļ	55	С	Н		2.5Y71				0	СН	Р	М				ľ	_	10	7	0	0				
				0								0									0	0	0	0				
				25	HZ		Υ	10YR32				5	CH								18		10					
50		В	≤7	40	HZ			2.5Y62				25	CH	Р	MAB	WK			1	1	12	7	10	7	-27.04	3b	-0.66	
				55 0	С	Н		2.5Y71				0	CH	Р	М						10	7	0	0				
51													re	moved	from sur	vey												
51 52															from sur													
													re	moved		vey												
52				25	74	CI.	v	מכמעתן (כמעת)				5	re	moved	from sur	vey					19		10					
52				25 40	HZ		Y	10YR32 2.5Y62				5 25	re re CH	moved	from sur	vey					18	7	10	7				
2		В	≤7	40	HZ	CL	Y	2.5Y62				25	re re CH	moved moved P	from surr	vey			ı	1	12	7 7	10	7 0	-27.04	3b	-0.66	
2		В	≤7			CL	Y						re re CH	moved	from sur	vey			ı	1		7 7 7 0			-27.04	3b	-0.66	
2		В	≤7	40 55	HZ	CL H	Y	2.5Y62				25 0	re re CH	moved moved P	from surr	vey			ı	1	12 10	7	10 0	0	-27.04	3b	-0.66	
2				40 55 0	HZ	CL H CL		2.5Y62 2.5Y71				25 0 0	re re CH CH	moved moved P	from surr	vey					12 10 0	7	10 0 0	0				
3			≤7 ≤7	40 55 0 25	HZ C	CL CL		2.5Y62 2.5Y71 10YR32				25 0 0 10	re re CH CH CH	moved P P	from surr from surr MAB M	vey			ı	1	12 10 0 18	7	10 0 0 10	0	-27.04	3b	-0.66	
3				40 55 0 25 40	HZ C HZ HZ	CL CL		2.5Y62 2.5Y71 10YR32 2.5Y62				25 0 0 10 40	re CH CH CH CH CH	moved PPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPP	from surr from surr MAB M	vey					12 10 0 18 12	7 0 7	10 0 0 10 10	0 0 7				
3				40 55 0 25 40 55	HZ C HZ HZ	CL CL CL		2.5Y62 2.5Y71 10YR32 2.5Y62				25 0 0 10 40	re CH CH CH CH CH	moved PPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPP	from surr from surr MAB M	vey					12 10 0 18 12 10	7 0 7 7	10 0 0 10 10	0 0 7 0				
2 3 4		В	≤7	40 55 0 25 40 55 0 25 40	HZ C HZ HZ C	CL H CL CL CL	Y	2.5Y62 2.5Y71 10YR32 2.5Y62 2.5Y71 10YR32 2.5Y62				25 0 0 10 40 0 5 25	re CH CH CH CH CH CH CH CH	moved P P P	from surr	vey				1	12 10 0 18 12 10 0 18 12	7 0 7 7 0	10 0 0 10 10 0 0 10	0 0 7 0 0	-28.49	3b	-2.11	
2 3				40 55 0 25 40 55 0 25 40 55	HZ C HZ HZ C	CL H CL CL CL	Y	2.5Y62 2.5Y71 10YR32 2.5Y62 2.5Y71				25 0 0 10 40 0 5 25	re CH CH CH CH CH CH CH	moved P P P	from surr	wk			I		12 10 0 18 12 10 0 18 12	7 0 7 7 0	10 0 0 10 10 0 0 10	0 0 7 0 0 7				
;		В	≤7	40 55 0 25 40 55 0 25 40 55 0	HZ C	CL CL CL CL H	Y	2.5Y62 2.5Y71 10YR32 2.5Y62 2.5Y71 10YR32 2.5Y62 2.5Y71				25 0 0 10 40 0 5 25 0	re re CH CH CH CH CH CH CH CH	moved P P P	from surr	wk			I	1	12 10 0 18 12 10 0 18 12 10	7 0 7 7 0	10 0 0 10 10 0 0 10 10	0 0 7 0 0	-28.49	3b	-2.11	
2		В	≤7	40 55 0 25 40 55 0 25 40 55 0 25 40 55	HZ C HZ C HZ C HZ HZ C HZ HZ	CCL CCL HH	Y	2.5Y62 2.5Y71 10YR32 2.5Y62 2.5Y71 10YR32 2.5Y62 2.5Y71				25 0 0 10 40 0 5 25 0 0	re CH	moved PPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPP	from sur from sur MAB M	wk WK			I	1	12 10 0 18 12 10 0 18 12 10 0 18	7 0 7 7 0 7 7	10 0 0 10 10 0 0 10 10 0 0	7 0 0 7 0	-28.49	3b	-2.11	
3		В	≤7	40 55 0 25 40 55 0 25 40 55 0 25 50	HZ HZ HZ C HZ C HZ HZ HZ HZ HZ HZ HZ	CL CL CL CL CL	Y	2.5Y62 2.5Y71 10YR32 2.5Y62 2.5Y71 10YR32 2.5Y62 2.5Y71 10YR32 2.5Y421				25 0 0 10 40 0 5 25 0 0 10 40	re re CH CH CH CH CH CCH CCH CCH CCH CCH CC	moved PPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPP	from sur	wk Wk			I	1	12 10 0 18 12 10 0 18 12 10 0 18 12 10	7 0 7 7 0 7 7	10 0 0 10 10 0 0 10 10 0 0 10	7 0 0 7 0 7 0	-28.49	3b	-2.11	
3		В	≤7	40 55 0 25 40 55 0 25 40 55 0 25 50 60	HZ C C	CL C	Y	2.5Y62 2.5Y71 10YR32 2.5Y62 2.5Y71 10YR32 2.5Y62 2.5Y71 10YR32 2.5Y421 2.5Y52				25 0 0 10 40 0 5 25 0 0 10 40	re CH	moved P P P P P G	from sur	wk WK			ı	1	12 10 0 18 12 10 0 18 12 10 0 18 12 10 12 12 12 12	7 0 7 7 0 7 7 0	10 0 0 10 10 0 0 10 10 0 0 10 10	7 0 0 7 0 0 7 0	-28.49	3b	-2.11	
3		В	≤7	40 55 0 25 40 55 0 25 40 55 0 25 50 60 70	HZZ CC CC CC	CCL HH CCL CCL HH CCL CL CL HH	Y	2.5Y62 2.5Y71 10YR32 2.5Y62 2.5Y71 10YR32 2.5Y62 2.5Y71 10YR32 2.5Y421 2.5Y52 2.5Y52				25 0 0 10 40 0 5 25 0 0 10 40 60	re re CH CH CH CH CH CCH CCH CCH CCH CCH CC	moved PPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPP	from sur	wk Wk			ı	1	12 10 0 18 12 10 0 18 12 10 0 18 12 10 10 18 12 10	7 0 7 7 0 7 7	10 0 0 10 10 0 0 10 10 0 0 10 10 10	7 0 0 7 0 7 0	-28.49	3b	-2.11	
33 35 55		В	≤7	40 55 0 25 40 55 0 25 40 55 0 25 50 60 70 30	HZZ CC C	CL C	Y	2.5Y62 2.5Y71 10YR32 2.5Y62 2.5Y71 10YR32 2.5Y62 2.5Y71 10YR32 2.5Y421 2.5Y52 2.5Y71 10YR51				25 0 0 10 40 0 5 25 0 0 10 40 60 0	re re re re CH	P P P P G P	from sur	wk wk			ı	1	12 10 0 18 12 10 0 18 12 10 0 18 12 10 12 12 12 17	7 0 7 7 0 7 7 0	10 0 0 10 10 0 0 10 10 0 0 10 10 10 10 0 3	7 0 0 7 0 0 7 0 0	-28.49	3b	-2.11	
33 3 5 5 7 7		В	≤7	40 55 0 25 40 55 0 25 40 55 0 25 50 60 70 30 50	HZZ CC HZZ CC CC CC CC HHZ	CL C	Y	2.5Y62 2.5Y71 10YR32 2.5Y62 2.5Y71 10YR32 2.5Y62 2.5Y71 10YR32 2.5Y421 2.5Y52 2.5Y71 10YR51				25 0 0 10 40 0 5 25 0 0 10 40 60 0 0	re re CH CH CH CH CH CCH CCH CCH CCH CCH CC	moved P P P P P P P P P P P P P P P P P P	from surr from surr MAB M MAB M MAB MAB MAB MAB MAB MAB	wk wk			ı	1	12 10 0 18 12 10 0 18 12 10 0 18 12 10 12 11 10 12 12 11 12 11 10 11 11 11 11 11 11 11 11 11 11 11	7 0 7 7 0 7 7 0	10 0 0 10 10 0 0 10 10 0 0 10 10 10 10 0 3 3 3	7 0 0 7 0 0 7 0 7 7	-28.49	3b	-2.11	
33 3 5 5 7 7		ВВВ	\$7 \$7	40 55 0 25 40 55 0 25 40 55 0 25 50 60 70 30 50 70	HZ C C C C C C C C C C C C C C C C C C C	CL H CL	Y	2.5Y62 2.5Y71 10YR32 2.5Y62 2.5Y71 10YR32 2.5Y62 2.5Y71 10YR32 2.5Y421 2.5Y52 2.5Y71 10YR51 10YR51 2.5Y52				25 0 0 10 40 0 0 5 25 0 0 10 40 60 0 0	re re re re CH	P P P P G P	from sur	wk wk			1	1 1	12 10 0 18 12 10 0 18 12 10 0 18 12 11 10 17 12 11 10	7 0 7 7 0 7 7 0 7 7 7	10 0 0 10 10 0 0 10 10 0 0 10 10 10 10 0 3 3 3	7 0 0 7 0 0 7 0 0 7 7 0	-28.49 -27.04	3b 3b	-2.11 -0.66	
33 44 55 77		ВВВ	\$7 \$7	40 55 0 25 40 55 0 25 40 55 0 25 50 60 70 30 50 70 120	H2 H2 H2 CC H2 H2 CC H2 H2 H2 CC H4 H2	CL H CL CL CL H CL CL CL CL ST	Y	2.5Y62 2.5Y71 10YR32 2.5Y62 2.5Y71 10YR32 2.5Y62 2.5Y71 10YR32 2.5Y421 2.5Y52 2.5Y71 10YR51 10YR51 2.5Y52				25 0 0 10 40 0 0 5 25 0 0 10 40 60 0 0 10	re re re re CH	moved P P P P P P P P P P P P P P P P P P	from surr from surr MAB M MAB M MAB MAB MAB MAB MAB MAB	wk wk			1	1 1	12 10 0 18 12 10 0 18 12 10 0 18 12 10 10 12 11 12 12 12 12 12 13 13 14 15 16 17 17 17 18 18 18 18 18 18 18 18 18 18 18 18 18	7 0 7 7 0 7 7 0	10 0 0 10 10 0 0 10 10 0 0 10 10 10 10 0 3 3 3	7 0 0 7 0 0 7 0 7 7	-28.49 -27.04	3b 3b	-2.11 -0.66	
22 33 44 55		ВВВ	\$7 \$7	40 55 0 25 40 55 0 25 40 55 0 25 50 60 70 30 50 70 120	HZ HZ C C C C C C C C C C C C C C C C C	CL H CL CL CL H CL CL CL CL CL CL CL CL CCL C	Y	2.5Y62 2.5Y71 10YR32 2.5Y62 2.5Y71 10YR32 2.5Y62 2.5Y71 10YR32 2.5Y421 2.5Y52 2.5Y71 10YR51 10YR51 10YR51 10YR51				25 0 0 10 40 0 5 25 0 0 10 40 60 0 0 0 0	re CH	moved P P P P P P P P P P P P P P P P P P P	from sur from sur MAB M MAB MAB MAB MAB MAB	wk wk MD			1	1 1	12 10 0 18 12 10 0 18 12 10 0 18 12 10 10 12 11 12 12 12 12 13 14 15 16 17 17 17 17 17 17 17 17 17 17 17 17 17	7 0 7 7 0 7 7 0 7 7 7 7	10 0 0 10 10 0 0 10 10 0 0 10 10 10 0 3 3 3 0	7 0 0 7 0 0 7 7 0 0	-28.49 -27.04	3b 3b	-2.11 -0.66	
22 33 44 77		ВВВ	\$7 \$7	40 55 0 25 40 55 0 25 40 55 0 25 50 60 70 30 50 120 30 50	H2Z C C C C C C C C C C C C C C C C C C C	CL H CL CL CL H CL CCL CC	Y	2.5Y62 2.5Y71 10YR32 2.5Y62 2.5Y71 10YR32 2.5Y62 2.5Y71 10YR32 2.5Y421 2.5Y52 2.5Y71 10YR51 10YR51 2.5Y52 2.5Y52 2.5Y52				25 0 0 10 40 0 5 25 0 0 10 40 60 0 0 0 0 10 0 0 0 0 0 0 0 0 0 0 0 0	re re re re CH	moved P P P P P P P P P P P P P P P P P P P	from surr from surr MAB M MAB MAB MAB MAB MAB	wk wk wk			1	1 1	12 10 0 18 12 10 0 18 12 10 0 18 12 10 0 18 12 11 17 12 12 17 12 12 13	7 0 7 7 0 7 7 0 7 7 7 7 2	10 0 0 10 10 0 0 10 10 0 10 10 10 0 3 3 3 0	7 0 0 0 7 0 0 0 7 7 0	-28.49 -27.04	3b 3b	-2.11 -0.66	
2 3 4 4 7		B B B	\$7 \$7 \$7	40 55 0 25 40 55 0 25 40 55 0 25 50 60 70 30 50 70 120 50 70	H2C C C C C C C C C C C C C C C C C C C	CL H CL CL CL H CL CL CL H CCL CL CCL CC	Y	2.5Y62 2.5Y71 10YR32 2.5Y62 2.5Y71 10YR32 2.5Y62 2.5Y71 10YR32 2.5Y421 2.5Y52 2.5Y71 10YR51 10YR51 2.5Y52 2.5Y62 10YR51 2.5Y52				25 0 0 10 40 0 5 25 0 0 10 40 60 0 0 0 10 0 0	re CH	moved P P P P P P P P P P P P P P P P P P P	from sur from sur MAB M MAB MAB MAB MAB MAB	wk wk MD			1	1 1 1	12 10 0 18 12 10 0 18 12 10 0 18 12 10 0 18 12 11 10 17 12 12 12 12 12 12 12 12 12 12 12 12 12	7 0 7 7 7 0 7 7 7 7 7 2	10 0 0 10 10 0 0 10 10 0 0 10 10 0 0 10 1	7 0 0 0 7 0 0 0 7 7 0	-28.49 -27.04 -16.79	3b 3b 3a 3a	-2.11 -0.66 10.69	
2 3 4 4 7		B B B	\$7 \$7 \$7	40 55 0 25 40 55 0 25 40 55 0 25 50 60 70 30 50 70 120	H22	CL H CL CL CL H CL CL CL CL CL CL CL ST	Y	2.5Y62 2.5Y71 10YR32 2.5Y62 2.5Y71 10YR32 2.5Y62 2.5Y71 10YR32 2.5Y421 2.5Y52 2.5Y71 10YR51 10YR51 2.5Y52 2.5Y52 2.5Y52 2.5Y52 2.5Y52				25 0 0 10 40 0 0 5 25 0 0 10 40 60 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	re CH	moved P P P P P P P P P P P P P P P P P P P	from surr from surr MAB M MAB MAB MAB MAB MAB	wk wk wk			1	1 1 1	12 10 0 18 12 10 0 18 12 10 0 18 12 10 10 17 12 12 13 17 12 12 13 13 14 15 16 17 17 18 18 18 18 18 18 18 18 18 18 18 18 18	7 0 7 7 0 7 7 0 7 7 7 7 2	10 0 0 10 10 0 0 10 10 0 0 10 10 10 0 3 3 3 3	7 0 0 0 7 0 0 0 7 7 0	-28.49 -27.04 -16.79	3b 3b 3a 3a	-2.11 -0.66 10.69	
2		B B B	\$7 \$7 \$7	40 55 0 25 40 55 0 25 40 55 0 25 50 60 70 30 50 70 120 30 30	H22 CC C	CL H CL CL CL H CL CL CL H CCL CCL CCL C	Y	2.5Y62 2.5Y71 10YR32 2.5Y62 2.5Y71 10YR32 2.5Y62 2.5Y71 10YR32 2.5Y421 2.5Y52 2.5Y71 10YR51 10YR51 2.5Y52 2.5Y62 10YR51 10YR51 2.5Y52 2.5Y62				25 0 0 10 40 0 0 5 25 0 0 10 40 60 0 0 0 10 0 0 0 0 0 0 0 0 0 0 0 0 0	re re CH	moved P P P P P P P P P P P P P P P P P P	from sur from sur MAB M MAB MAB MAB MAB MAB CAB	wk wk wk wk			1	1 1 1	12 10 0 18 12 10 0 0 18 12 10 0 0 18 12 10 10 17 12 12 12 13 17 12 12 13 17 12 13 14 15 16 17 17 18 18 18 18 18 18 18 18 18 18 18 18 18	7 0 7 7 0 7 7 0 7 7 7 7 7 2	10 0 0 10 10 0 0 10 10 0 0 10 10 10 0 3 3 3 3	7 0 0 0 7 0 0 7 7 0 0 2 2 2 0	-28.49 -27.04 -16.79	3b 3b 3a 3a	-2.11 -0.66 10.69	
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Obs	Grid ref. if off intersection	Boring or Pit	Grad. (deg)	Base Depth (cm)	Text.	Calc	Matrix colour	Motts. %/ depth	Mott colour	Ped face colour	Stns %	Stns type	Porosity	Struct	Degree of development	SPL depth (cm)	Gleying depth (cm)	SWC	Grade (wetness)	TAv	EAv	StTAv	StEAv	MBW	Grade (Drought. WHEAT)	MBP	Grade (Drought. POTATOES)
				30	С	Υ	10YR51				0									17		3					
		_		50	HCL	Ė	10YR51				10	MSST	Р	MAB	WK					12	7	3	2				
61		В	≤7	85	HZCL		2.5Y52				0		Р	CAB	WK			ı	1	12	7	3	2	2.91	3a	5.29	2
				120	MSST		2.5Y62				0									3	2	0	0				
				30	С	Υ	10YR51				0									17		3					
62		В	≤7	50	HCL		10YR51				10	MSST	P	MAB	WK			1	1	12	7	3	2	2.91	3a	5.29	2
				85 120	HZCL MSST		2.5Y52 2.5Y62				0		Р	CAB	WK					12	7	3	0				
				30	C	Υ	10YR51				0									17		3	U				
				50	HCL		10YR51				10	MSST	Р	MAB	WK					12	7	3	2				
63		В	≤7	85	HZCL		2.5Y52				0		Р	CAB	WK			ı	1	12	7	3	2	2.91	3a	5.29	2
				120	MSST		2.5Y62				0									3	2	0	0				
				25	HZCL	Υ	10YR32				5	CH								18		10					
64		В	≤7	50	HZCL		2.5Y421				25	CH	P	MAB	WK			1	1	12	7	10	7	-15.04	3a	13.24	1
				60	CL		2.5Y52				40	СН	G	MAB	MD					12	7	10	7				
				70 30	CH	Υ	2.5Y71 10YR51				0		Р	М						10 17	7	0	0				
				50	HCL		10YR51				10	MSST	Р	MAB	WK					12	7	3	2				
65		В	≤7	95	HZCL		2.5Y52				15		P	CAB	WK			ı	1	12	7	3	2	4.54	3a	2.59	2
				120	MSST		2.5Y62				0									3	2	0	0				
				30	С	Υ	10YR51				0									17		3					
66		В	≤7	50	HCL		10YR51				10	MSST	Р	MAB	WK			1	1	12	7	3	2	4.54	3a	2.59	2
				95	HZCL		2.5Y52				15		Р	CAB	WK					12	7	3	2				
				120	MSST	.,	2.5Y62				0									3	2	0	0				
				30 50	C HCL	Υ	10YR51 10YR51				10	MSST	Р	MAB	WK					17 12	7	3	2				
67		В	≤7	95	HZCL		2.5Y52				15	101331	P	CAB	WK			ı	1	12	7	3	2	4.54	3a	2.59	2
				120	MSST		2.5Y62				0		·	Crib						3	2	0	0				
				30	С	Υ	10YR51				0									17		3					
60		В	7	50	HCL		10YR51				10	MSST	Р	MAB	WK			,	1	12	7	3	2	454	2-	3.50	
68		В	≤7	95	HZCL		2.5Y52				15		Р	CAB	WK			'	1	12	7	3	2	4.54	3a	2.59	2
				120	MSST		2.5Y62				0									3	2	0	0				
				30	HZCL	Υ	10YR32				5	CH								18		10					
69		р	≤7	40	HZCL		2.5Y62				25	CH	P	MAB	WK			1	1	12	7	10	7	-23.99	3b	2.39	2
				55 0	СН		2.5Y71				0	СН	Р	М						10 0	0	0	0				
				30	HZCL	Υ	10YR32				5	СН								18		10					
70				40	HZCL		2.5Y62				25	СН	Р	MAB	WK					12	7	10	7				
70		В	≤7	55	СН		2.5Y71				0	СН	Р	М				ı	1	10	7	0	0	-23.99	3b	2.39	2
				0							0									0	0	0	0				
				30	HZCL	Υ	10YR32				5	CH								18		10					
71		В	≤7	40	HZCL		2.5Y62				25	CH	P	MAB	WK			1	1	12	7	10	7	-23.99	3b	2.39	2
				55 0	СН		2.5Y71				0	СН	Р	М						10 0	7	0	0				
				30	С	Υ	10YR51				0									17	0	3	U				
				50	HCL		10YR51				10	MSST	Р	MAB	WK					12	7	3	2				
72		В	≤7	100	HZCL		2.5Y52				15		Р	CAB	WK			1	1	12	7	3	2	-4.04	3a	2.59	2
				120	MSST		2.5Y62				0									3	2	0	0				
				30	HZCL	Υ	10YR32				5	CH								18		10					
73		В	≤7	40	HZCL		2.5Y62				25	CH	P	MAB	WK			1	1	12	7	10	7	-23.99	3b	2.39	2
				55 0	СН		2.5Y71				0	CH	Р	М						10 0	7	0	0				
				30	HZCL	Υ	10YR32				5	СН								18	U	10	U				
				40	HZCL	Ė	2.5Y62				25	CH	Р	MAB	WK					12	7	10	7				
74		В	≤7	55	СН		2.5Y71				0	СН	Р	М				ı	1	10	7	0	0	-23.99	3b	2.39	2
				0							0									0	0	0	0				
				30	HZCL	Υ	10YR32				5	СН								18		10					
75		В	≤7	40	HZCL		2.5Y62				25	СН	Р	MAB	WK			ı	1	12	7	10	7	-23.99	3b	2.39	2
				55	СН		2.5Y71				0	CH	Р	М						10	7	0	0				
				0	_	.,	1000000				0	CII								0	0	0	0				
				30 50	C HZCL	Υ	10YR32 2.5Y62				5 40	CH	P	MAB	WK					17 12	7	10	7				
76		В	≤7	55	55		2.5Y71				0	СН	P	M	AA IV			1	1	10	7	0	0	-25.94	3b	0.44	2
				0							0		·	· · ·						0	0	0	0				
				30	С	Υ	10YR32				5	СН								17		10					
77		В	_	50	HZCL		2.5Y62				40	СН	Р	MAB	WK				1	12	7	10	7	-25.04	21-	0.44	_
77		В	≤7	55	55		2.5Y71				0	СН	Р	М				'	1	10	7	0	0	-25.94	3b	0.44	2
				0							0									0	0	0	0				

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.

Louise Tavasso BSc (Hons). (Soil surveyor/ Environmental Consultant)

Member of British Society of Soil Science

Postgraduate short course Contaminated Land Risk assessment – LQM Nottingham University

Worked for Soil Environment Services Limited for 16 years. Environmental consultant with initial work in contaminated land risk assessment and since 2011 as assistant soil surveyor with last three years as lead consultant on agricultural land classification surveys. All work areas have required field survey and identification and description of soils combined with an understanding of soil processes for reporting.

Completed the BSSS Agricultural Land Classification Course -2021.



Main areas of specialisation

1 Agricultural Land Classification

Soil survey and Agricultural Land Classification for planning applications –, roads, housing, solar parks. Fully conversant with the procedures of the *Agricultural Land Classification of England and Wales, Guidelines and criteria for grading the quality of agricultural land*, 1988, MAFF, London.

2 Soil survey for habitat restoration

Soil survey and nutrient analysis assessment for conversion of farmland to species rich grassland.

3 Contaminated land risk assessment

Phase 1 site survey risk assessment of contaminated land; site investigation, on-site monitoring; risk analysis, modelling and communication; recommendations for Phase 2 and remediation options.

Examples of Agricultural Land Classification (ALC or LCCA Scotland) consultancy work

Kier Mining. Greenburn Opencast Coal Site. Soils and deep peat survey for LCCA report soil resources planning. 2011

Newcastle International Airport Ltd. ALC survey for solar park development. 2021.

Examples of soil survey habitat creation consultancy work

BSG Ecology. Backwork Estate – farmland conversion to wildflower meadow. 2020.

Private garden owner. Soil survey and recommendation for drainage system design. 2021

Examples of contaminated land consultancy work

Numerous risk assessments on petrol stations for hydrocarbon leakages (2006-2019) Farm building risk assessments for conversion to residential housing (2006-2019)

SES Ltd ALC CS V1 2021

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 South East England. 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-floodrisk
- **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.

GLOSSARY

1. Terms used on computer database, in order of occurrence.

SBT:

GRID REF: National 100 km grid square and 8 figure grid reference.

LAND USE: At the time of survey

Wheat

WHT:

BAR: Barley **BRA**: Brassicas **BOG:** Bog or Marsh OAT: Oats FCD: Fodder Crops DCW: Deciduous Wood Coniferous Woodl CER: Cereals FRT: Soft and Top Fruit CFW: Horticultural Crops Ploughed MZE: Maize HRT: PLO: OSR: Oilseed Rape LEY: Ley Grass FLW: Fallow (inc. Set as

Sugar Beet

Heathland

HTH:

POT: Potatoes PGR: Permanent Pasture SAS: Set Aside (where kased LIN: Linseed RGR: Rough Grazing OTH: Other

BEN: Field Beans SCR: Scrub

GRDNT: Gradient as estimated or measured by hand-held optical clinometer.

GLEY, SPL: Depth in centimetres to gleying or slowly permeable layer.

AP (WHEAT/POTS): Crop-adjusted available water capacity.

MB (WHEAT/POTS): Moisture Balance. (Crop adjusted AP - crop potential

MD)

DRT: Best grade according to soil droughtiness.

If any of the following factors are considered significant, 'Y' will be entered in the relevant column.

MREL: Microrelief limitation FLOOD: Flood risk EROSN: Soil erosion FROST: Frost prone DIST: Disturbed land

CHEM: Chemical limitation

LIMIT: The main limitation to land quality: The following abbreviations are used.

OC: Overall Climate EX: AE: Aspect Exposure FR: Frost Risk GR: Gradient MR: Microrelief FL: Flood Risk TX: Topsoil Texture DP: Soil Depth

S:	Sand	LS:	Loamy Sand	SL:	Sandy Loam
SZL:	Sandy Silt Loam	CL:	Clay Loam	ZCL	Silty Clay Loam
ZL:	Silt Loam	SCL:	Sandy Clay	C:	Clay
			Loam		
SC:	Sandy clay	ZC:	Silty clay	OL:	Organic Loam
P:	Peat	SP:	Sandy Peat	LP:	Loamy Peat
PL:	Peaty Loam	PS:	Peaty Sand	MZ:	Marine Light Silts

For the sand, loamy sand, sandy loam and sandy silt loam classes, the predominant size of sand fraction will be indicated by the use of the following prefixes:-

F: Fine (more than 66% of the sand less than 0.2mm)

M: Medium (less than 66% fine sand and less than 33% coarse sand)

C: Coarse (more than 33% of the sand larger than 0.6mm)

The clay loam and silty clay loam classes will be sub-divided according to the clay content: **M:** Medium (< 27% clay) **H:** heavy (27 - 35% clay)

MOTTLE COL: Mottle colour using Munsell notation.

MOTTLE ABUN: Mottle abundance, expressed as a percentage of the matrix or surface described.

F: few <2% C: common 2 - 20% M: many 20 - 40% VM: very many 40%+

MOTTLE CONT: Mottle contrast

F: faint - indistinct mottles, evident only on close inspection

D: distinct - mottles are readily seen

P: Prominent - mottling is conspicuous and one of the outstanding features of the horizon.

PED. COL: Ped face colour using Munsell notation.

GLEY: If the soil horizon is gleyed a 'Y' will appear in this column. If slightly gleyed, an 'S' will appear.

STONE LITH: Stone Lithology - One of the following is used.

HR: All hard rocks and stones
CH: Chalk

SLST: Soft oolitic or dolimitic limestone
FSST: Soft, fine grained sandstone

ST: MD: Moderately Strongly develop developed F: Medium Ped size Fine M: C: Coarse VC: Very coarse S: Single grain M: Massive Ped Shape GR: Granular AB: Angular blocky SAB: Sub-angular blocky PR: Prismatic PL: Platy

CONSIST: Soil consistence is described using the following notation:

Adherent

L: Loose VF: Very Friable FR: Friable FM: Firm VM: Very firm EM: Extremely firm EH: Extremely Hard

SUBS STR: Subsoil structural condition recorded for the purpose of calculating profile droughtiness: G: Good M: Moderate P: Poor

POR: Soil porosity. If a soil horizon has poor porosity with less than 0.5% biopores >0.5mm, a 'Y' will appear in this column.

IMP: If the profile is impenetrable to rooting a 'Y' will appear in this column at the appropriate horizon.

SPL: Slowly permeable layer. If the soil horizon is slowly permeable a 'Y' will appear in this column.

CALC: If the soil horizon is calcareous with naturally occurring calcium carbonate exceeding 1% a 'Y' will appear this column.

2. Additional terms and abbreviations used mainly in soil pit descriptions.

STONE ASSESSMENT:

V: Visual S: Sieved D: Displacement

MOTTLE COLOUR: May be described by Munsell notation or as ochreous

(OM) or grey (GM).

ROOT CHANNELS: In topsoil the presence of 'rusty root channels' might

also be noted as RRC.

MANGANESE CONCRETIONS: Assessed by volume

 N:
 None
 M:
 Many
 20-40%

 F:
 Few
 <2%</th>
 VM:
 Very Many
 >40%

C: Common 2-20%

POROSITY:

P: Poor - less than 0.5% biopores at least 0.5mm in diameter G: Good - more than 0.5% biopores at least 0.5mm in diameter

ROOT ABUNDANCE:

The number of roots per 100cm²: Very Fine and Fine Medium and Coarse Few 1-10 1 or 2 F: C: Common 10.25 2 - 5 25-200 M: Many >5 A: Abundant >200

ROOT SIZE

 VF:
 Very fine
 <1mm</th>
 M:
 Medium
 2 - 5mm

 F:
 Fine
 1-2mm
 C:
 Coarse
 >5mm

HORIZON BOUNDARY DISTINCTNESS:

 Sharp:
 <0.5cm</td>
 Gradual:
 6 - 13cm

 Abrupt:
 0.5 - 2.5cm
 Diffuse:
 >13cm

Clear: 2.5 - 6cm

HORIZON BOUNDARY FORM: Smooth, wavy, irregular or broken.*

^{*} See Soil Survey Field Handbook (Hodgson, 1997) for details.