READING AGRICULTURAL CONSULTANTS

January 2026

Wates Developments Limited

Agricultural Land Classification and Soil Resources

at

Land West of Turners Hill Road and North of Huntsland, including land at Hurst Farm, Turners Hill Road, Crawley Down, West Sussex

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1 Introduction

1.1 Reading Agricultural Consultants Limited (RAC) is instructed by Wates Developments Limited to investigate the Agricultural Land Classification (ALC) and soil resources of land west of Turners Hill Road and north of Huntsland, including land at Hurst Farm, Turners Hill Road, Crawley Down, West Sussex by means of a detailed survey of soil and site characteristics.

1.2 Guidance for assessing the quality of agricultural land in England and Wales is set out in the Department for the Environment, Food and Rural Affairs (Defra) and Welsh Government guidelines for grading the quality of agricultural land[1], and summarised in Natural England's Technical Information Note (TIN) 049[2].

1.3 Agricultural land in England and Wales is graded between 1 and 5, depending on the extent to which physical or chemical characteristics impose long-term limitations on agricultural use. The principal physical factors influencing grading are climate, site conditions and soil which, together with interactions between them, form the basis for classifying land into one of the five grades.

1.4 Grade 1 land is excellent quality agricultural land with very minor or no limitations to agricultural use. Grade 2 is very good quality agricultural land, with minor limitations which affect crop yield, cultivations or harvesting. Grade 3 land has moderate limitations which affect the choice of crops, timing and type of cultivation, harvesting or the level of yield, and is subdivided into Subgrade 3a (good quality land) and Subgrade 3b (moderate quality land). Grade 4 land is poor quality agricultural land with severe limitations which significantly restrict the range of crops and/or level of yields. Grade 5 is very poor quality land, with very severe limitations which restrict use to permanent pasture or rough grazing.

1.5 Land which is classified as Grades 1, 2 and 3a in the ALC system is defined as best and most versatile (BMV) agricultural land.

1.6 As explained in Natural England's TIN049, the whole of England and Wales was mapped from reconnaissance field surveys in the late 1960s and early 1970s, to provide general strategic

[1] **Defra and Welsh Government (2025)** *Agricultural Land Classification of England and Wales. Guidelines for grading the quality of agricultural land.* Joint Publication 069.

[2] **Natural England (2012).** *Technical Information Note 049 - Agricultural Land Classification: protecting the best and most versatile agricultural land*, Second Edition.

guidance on agricultural land quality for planners. This Provisional Series of maps was published on an Ordnance Survey base at a scale of One Inch to One Mile (1:63,360). The Provisional ALC map shows the site as Grade 3. However, TIN049 explains that:

> *"These maps are not sufficiently accurate for use in assessment of individual fields or development sites, and should not be used other than as general guidance. They show only five grades: their preparation preceded the subdivision of Grade 3 and the refinement of criteria, which occurred after 1976. They have not been updated and are out of print. A 1:250 000 scale map series based on the same information is available. These are more appropriate for the strategic use originally intended …"*

1.7 TIN049 goes on to explain that a definitive ALC grading should be obtained by undertaking a detailed survey according to the published guidelines, at an observation density of one boring per hectare. This survey follows the detailed methodology set out in the ALC guidelines.

2 Site and climatic conditions

General features, land form and drainage

2.1 The site extends to approximately 15 hectares (ha) of permanent grassland used for sheep grazing (formerly grazed by dairy cattle). The land comprises redundant buildings at Hurst Farm and two fields. The site is bounded to the east by the settlement of Crawley Down, to the south by Huntsland, and to the west and north by woodland of Bushy Wood and Wins Wood.

2.2 The topography is characterised by a plateau in the south of the site at around 125 m above Ordnance Datum (AOD). There are gentle to moderate slopes of 4-7^{o} falling broadly to the north, to a low altitude of around 115 m AOD. Slope was measured by clinometer and does not exceed 7^{o} and so is not limiting to agricultural land quality.

Agro-climatic conditions

2.3 Agro-climatic data for the site have been interpolated from the Meteorological Office's standard 5km grid point data set at representative altitude of 120 m AOD. This is given in Table 1. The climate at the site is moderately cool and wet, with moderate moisture deficits. The number of Field Capacity Days is larger than average for lowland England (150) which is unfavourable for providing opportunities for agricultural field work. There is however no overriding climatic limitation to agricultural land quality.

Table 1: Local agro-climatic conditions

Parameter	Value
Grid Reference	533500 137800
Average Annual Rainfall	838 mm
Accumulated Temperatures >0°C	1,388 day°
Field Capacity Days	175 days
Average Moisture Deficit, wheat	95 mm
Average Moisture Deficit, potatoes	85 mm

Soil parent material and soil type

2.4 The bedrock geology is mapped by the British Geological Survey[3] as Tunbridge Wells Sand which comprises thinly bedded silty mudstones, siltstones and silty sandstones with fine sandstones exposed on the scarps.

2.5 No superficial deposits are indicated.

2.6 The Soil Survey of England and Wales soil association mapping[4] (1:250,000 scale) indicates the plateau as Curtisden association, which comprises silty soils over siltstone with slowly permeable subsoils and slight seasonal waterlogging. The association also includes some similar well-drained soils. Wetness Class (WC) is typically imperfectly to poorly drained (III – IV) but can be improved to moderately well drained WC II by underdrainage[4].

[3] **British Geological Survey (2026).** *BGS Geology Viewer*, https://www.bgs.ac.uk/map-viewers/bgs-geology-viewer/

[4] **Soil Survey of England and Wales (1984).** *Soils of South East England* (1:250,000), Sheet 6, Bulletin 15.

3 Agricultural land quality

Soil survey methods

3.1 In total, 15 soil profiles were examined by augers. Due to a change in the site boundary subsequent to the survey work being undertaken, the grass area in the north at the farm buildings, was not surveyed. Observation density was approximately one per hectare in accordance with the established recommendations for ALC surveys[1]. One pit was also excavated to 50-65 cm depth to examine soil structures. At each observation point the following characteristics were assessed for each soil horizon up to 120 cm or impenetrable layer:

- soil texture;
- stone content;
- colour (including localised mottling);
- consistency;
- structural condition;
- free carbonate; and
- depth.

3.2 One topsoil sample was submitted for laboratory determination of particle size distribution, and pH, organic matter content and nutrient contents (P, K, Mg). Results are contained in Appendix 1.

3.3 Soil Wetness Class (WC) was determined from the matrix colour, presence or absence of, and depth to, greyish and ochreous gley mottling, and slowly permeable subsoil layers at least 15cm thick, in relation to the number of Field Capacity Days at the location.

3.4 Soil droughtiness was investigated by the calculation of moisture balance equations (given in Appendix 2). Crop-adjusted Available Profile Water (AP) is estimated from texture, stoniness and depth, and then compared to a calculated moisture deficit (MD) for the standard crops wheat and potatoes. The MD is a function of potential evapotranspiration and rainfall. Grading of the land can be affected if the AP is insufficient to balance the MD and droughtiness occurs.

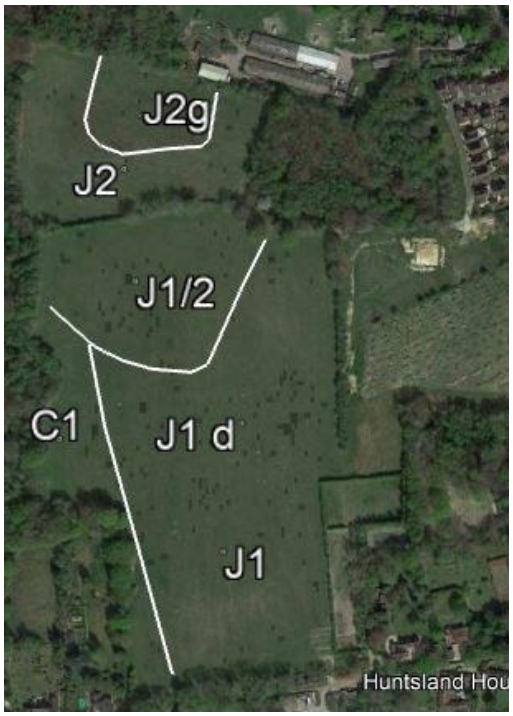
3.5 Assessment of agricultural land quality has been carried out according to the revised ALC guidelines[1]. Soil profiles have been described according to Hodgson[5] which is the recognised source for describing soil profiles and characteristics according to the revised ALC guidelines.

Soil types and agricultural land quality

3.6 There are two main soil types within the site, shown in Figure 1 below and comprising:

- medium silty soils over siltstone; and
- medium silty soils over silty mudstone.

Figure 1: Soil Types



J Siltstone within 80cm
d deeper silty soils
C Colluvial soils

Topsoil texture
1 fine sandy silt loam
2 medium silty clay loam

3.7 Generic descriptions of the two main soil types are given below. All profiles are non-droughty and the ALC grade is determined by soil wetness. For grading purposes very fine sandy silt loam, silty loam and medium silty clay loam topsoils are similar and ALC grade varies from 1, 2, 3a or 3b according to whether the Wetness Class is I, II, III or IV respectively.

3.8 Wetness Class is determined by the presence or absence of mottling in the top 40cm and by depth to a slowly permeable compact layer (unaugerable siltstone is assumed to be impermeable).

[5] **Hodgson, J. M. (Ed.) (2022).** *Soil survey field handbook.* Technical Monograph No. 5, Cranfield.

Depth (cm)	Light silty soils over Siltstone (J1)
0-30 cm	Dark greyish brown or brown (10YR4/2-4/3) fine sandy silt loam. Friable, small rounded crumbs in top 5-10 cm. 10-25cm layer has subangular blocky structure. Fine roots are common throughout; a layer of buried stones can occur at 25-30cm.
30- 45 cm-	Brownish yellow (10YR6/6) to pale yellow (2.5Y7/4) fine sandy silt loam or silty clay loam. Variably mottled. Apedal, loose with little cohesion and some rooting. About 5% stones.
45 cm-	Pale yellow (5Y8/2) or grey sandy silt loam or silty clay loam with many iron mottles. Slightly stony.
65/80 cm-	Unaugerable dense or stony Siltstone or fine Sandstone (at greater depth in locations 13-15)

3.9 These soils are well or moderately well drained in WC I or II (Grade 1 or 2), although are WC III (Subgrade 3a) where the springlines occur on scarp edges.

Depth (cm)	Medium silty soils over Siltstone (J2)
0-30 cm	Brown (10YR4/3-5/3) medium silty clay loam. Non-calcareous
30- 60 cm	Brownish yellow (10YR6/6) to pale yellow (2.5Y7/4) medium silty clay loam. Variably mottled.
50/65 cm-	Pale yellow (5Y8/2) with many iron mottles – variable texture silt to heavy silty clay loam. Stoneless or Slightly stony.
70/100 cm-	Unaugerable dense or stony Siltstone

3.10 These soils are WC II or III, and classified as mostly Grade 2 and Subgrade 3a.

3.11 On the footslopes and valleys, deeper colluviated soils overlie siltstone at between 80 and 120 cm depth. Wetness Class also varies from I to IV where groundwater flows are influential.

3.12 The area of grassland in the north of the site that was not included in the original survey area is assumed to be of Subgrade 3a, in line with the surrounding confirmed characteristics.

3.13 The distribution of ALC at the site is shown in Figure RAC/10519/2 and the areas of each grade are given in Table 2.

Table 2: ALC area

Grade	Description	Area (ha)	%
Grade 1	Excellent quality	1.3	9
Grade 2	Very good quality	3.4	23
Subgrade 3a	Good quality	7.5	50
Subgrade 3b	Moderate quality	0.8	5
	Non-agricultural	2.0	13
	Total	15.0	100

Appendix 1: Laboratory Data

Determinand	A 0-25cm	Units
Coarse Sand 2-0.6 mm	5	% w/w
Medium Sand 0.6-0.2 mm	6	% w/w
Fine Sand 0.2-0.1 mm	4	% w/w
V fine Sand 0.1-0.063 mm	11	% w/w
Silt 0.063-0.002 mm	60	% w/w
Clay <0.002 mm	14	% w/w
Organic Matter	3.4	% w/w
Total Nitrogen	0.21	% w/w
Calcium Carbonate	< 1	% w/w
Texture	fine sandy silt loam *	

Determinand	A 0-25cm	Units
Soil pH	6.4	
Phosphorus (P)	48	mg/l (av)
Potassium (K)	81	mg/l (av)
Magnesium (Mg)	69	mg/l (av)

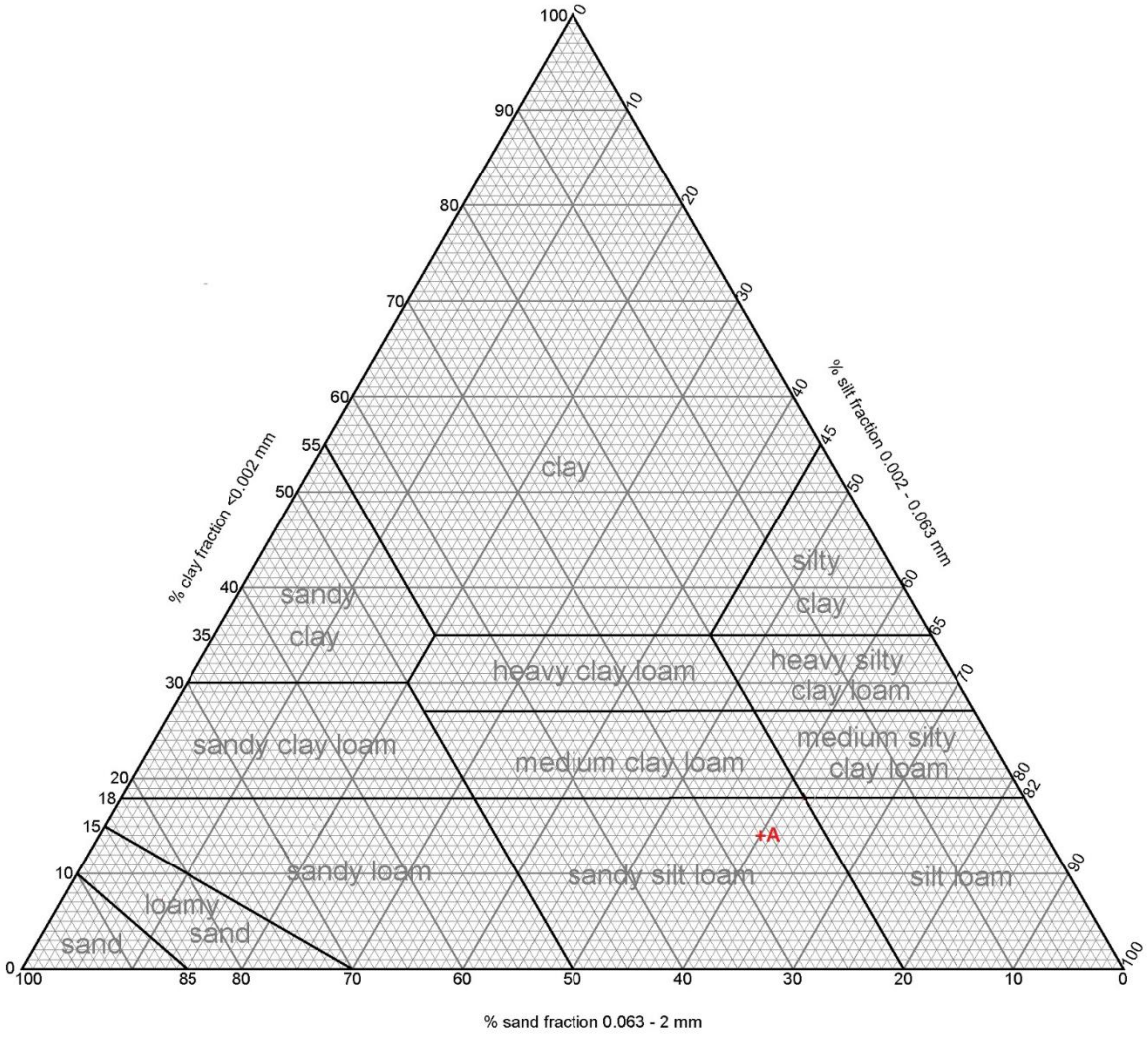
Determinand	A 0-25cm	Units
Phosphorus (P)	4	ADAS Index
Potassium (K)	1	ADAS Index
Magnesium (Mg)	2	ADAS Index
Organic Matter (SOM)	moderate	SSEW [4]

* because 85% of the soil is finer than 0.1 mm should be treated as a silt loam for wetness grading purposes.

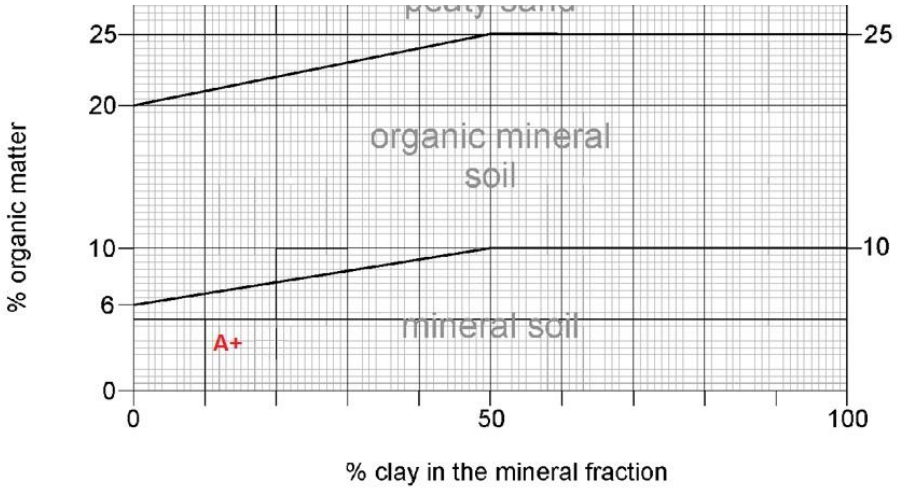
Samples are composites of 15-20 cores taken to 25cm depth.
Particle size by Pipette method, Carbon by Skalar machine.
Organic Matter = Total Organic Carbon /0.58. Reported on 30^{o}C dry sample basis

Samples taken around pits (0-25cm) indicate high (4) soil phosphorus and low (1) potassium levels, moderate magnesium and slightly acid pH. Topsoil is well structured and organic matter levels (3.4%) are good in view of clay content.

Soil Texture by Particle Size Analysis



Organic Matter Class



Appendix 2: Soil Profile Summaries and Droughtiness Calculations

Unaugerable siltstone assumed to contain 8% available water and 5% easily available. For Curtisden series (imperfectly drained) Soil survey memoirs[4] cite typical AP values of 155 wheat & 135 mm potatoes; Cranbrook (groundwater-affected) 155 & 110 mm; Stanway (slowly permeable) 135 & 115 mm

Wetness / workability limitations are determined according to the methodology given in Appendix 3 of the ALC guidelines

Droughtiness calculations are made according to the methodology given in Appendix 4 of the ALC guidelines.

Grades are shown for drought, wetness and any other soil or site factors which are relevant. The overall Grade is set by the most limiting factor and shown on the right.

Stone types		
%	TAv	EAv
siltstn	8	5

Climate Data	
MDwheat	95
MDpotato	84
FCD	175
AAR	838

Wetness Class Guidelines	*II*	*III*	*IV*	*V*
SPL within 80cm, gleying within 40cm	>75cm	48-75cm	<48cm	
SPL within 80cm, gleying at 40-70cm	>63cm	<63cm		
No SPL but gleying within 40cm	coarse subsoil		*I* other cases	*II*

Climate
1,388 D°
Limitation
Grade 1

ZSt = dense / hard Siltstone

Maximum depth of auger penetration is underlined

120m

Site No.		Depth cm		Texture	$CaCO_3$	Colour	Mottle colour	abund-ance	stone% siltstn	stone%	Struct-ure	APwheat mm	AP potato mm	Gley	SPL	WC	Wetness grade WE	Final Grade	Limiting Factor(s)
1		0	38	mCL		10YR4/3	Fe	com			-	61	61	n	n	*III*	3a	**3a**	WE
		38	60	mCL		10YR5/4	Fe	com				29	35	(y)	n				
		60	80	ZC		10YR7/6	grey	many			poor	14	12	(y)	y				
		60	85	mCL							poor	18	0	n	y				
		85	120	ZSt								18	0	n	y				
											Total	**139**	**108**		Grass (no clover)				
											MB	44	24						
										Droughtiness grade (DR)		1	1						
2		0	23	mZCL		10YR4/2					-	39	39	n	n	*IV*	3b	**3b**	WE
		23	40	mZCL		5Y8/2	Fe	very				29	29	y	n				
		40	50	ZL		5Y8/2	Fe	very			poor	15	15	y	y				
		40	70	mZCL		5Y8/2	Fe	many			poor	24	36	y	y				
		70	120	ZSt								25	0	n	y				
											Total	**132**	**119**		Grass (no clover). Rushes				
											MB	37	35						
										Droughtiness grade (DR)		1	1						
3	T	0	32	mZCL		10YR4/3			0		-	61	61	n	n	*III*	3a	**3a**	WE
		32	50	mZCL		2.5Y7/3	MnFe	com	0		m/poor	26	26	y	n				
		50	97	ZCL		10Y8/2	Fe	com	0		m/poor	38	29	y	(y)				

		97	120	ZSt						12	0	n	y						
									Total	**136**	**116**		GR.gradient				1o	N	
									MB	41	32		Mottled from 25cm				Grass (no clover)		
								Droughtiness grade (DR)		1	1								
4	T	0	30	mZCL	10YR4/3			2	-	56	56	n	n	*III*	3a	**3a**		WE	
		30	40	mZCL	10YR5/3	Mn	com	2		17	17	y	n						
		40	60	ZL	10YR7/3	Fe	com	2		36	43	y	n						
		60	82	ZL	10YR6/8	grey	pred	10		29	21	(y)	(y)						
		82	120	ZSt						19	0	n	y						
									Total	**157**	**137**		Grass ley (no clover)						
									MB	62	53								
								Droughtiness grade (DR)		1	1								
5		0	35	fSZL	10YR4/3				-	74	74	n	n	*III*	3a	**3a**		WE	
		35	50	fSZL	10YR5/8	Fe	com			32	32	(y)	n						
		50	60	fSZL	2.5Y7/3	Fe	com			15	21	y	n						
		60	75	ZL	2.5Y7/3	Fe	many		poor	14	15	y	y						
		75	120	ZSt						23	0	n	y						
									Total	**156**	**141**		Grass ley (no clover)						
									MB	61	57								
								Droughtiness grade (DR)		1	1								
6	T	0	29	fSZL	10YR4/3			4	-	62	62	n	n	*III*	3a	**3a**		WE	
		29	45	fSZL	2.5Y7/4	Fe	com	8		32	32	y	n						
		45	75	ZL	10YR7/3	Fe	com	5		45	53	y	n						
		75	120	Zst						23	0	n	y						
									Total	**161**	**147**		Grass ley (no clover)						
									MB	66	63								
								Droughtiness grade (DR)		1	1								
7	T	0	35	mZCL	10YR4/3			2	-	66	66	n	n	*I-II*	3a	**3a**		WE	
		35	80	fSZL	10YR6/6	Fe	com	2		76	73	(y)	n						
		80	120	Zst						20	0	n	y						
									Total	**161**	**138**		Grass ley (no clover)						
									MB	161	138								

							Droughtiness grade (DR)		1	1							
8	T	0	30	fSZL	10YR4/3		2	-	65	65	n	n	*II*	2	**2**	WE
		30	40	fSZL	10YR5/3	OM	2		21	21	n	n				
		40	70	SZL	5Y8/2	FeMn	com 10		37	48	y	n				
		70	82	mZCL	2.5Y7/2	Fe	many 0	poor	7	0	y	y				
		82	120	ZSt					19	0	n	y				
								Total	**149**	**134**		GR.gradient Grass ley (no clover)			3o	W
								MB	54	50						
					Colluvium		**Droughtiness grade (DR)**		1	1						
9	T	0	28	fSZL	10YR4/3		8	-	58	58	n	n	*II*	2	**2**	WE
		28	40	fSZL	10YR5/3		20		22	22	n	n				
		40	75	ZL	5Y8/2	Fe	com 5		55	64	y	n				
		75	120	Zst					23	0	n	y				
								Total	**158**	**144**		Grass ley (no clover)				
								MB	63	60						
							Droughtiness grade (DR)		1	1						
pit A		0	25	fSZL	10YR4/2		5	-	51	51	n	n	*I*	1	**2**	DR
		25	30	SZL	10YR5/4		50		6	6	n	n				
		30	50	SZL	10YR5/4		5		33	33	n	n				
		50	120	fSst					21	10	n	n				
								Total	**111**	**100**		Grass ley (no clover)				
								MB	16	16						
							Droughtiness grade (DR)		2	1						
10	T	0	30	fSZL	10YR5/3		4	-	64	64	n	n	*III*	3a	**3a**	WE
		30	43	ZCL	10YR6/8	OMFe	com 4		22	22	(y)	n				
		43	65	mZCL	5Y8/2	Fe	com 4		26	37	y	n				
		65	120	Zst					28	4	n	y				
								Total	**140**	**127**		Grass ley (no clover)				
								MB	45	43						
							Droughtiness grade (DR)		1	1						
11		0	33	mZCL	10YR4/3		2	-	56	56	n	n	*III*	3a	**3a**	WE
		33	60	fSZL	10YR6/6		2		50	56	n	n				

		60	80	fSZL	10YR7/4	Fe	many	2	poor	18	15	y	y						
		80	120	ZSt						20	0	n	y						
									Total	**143**	**126**		GR.gradient Grass ley (no clover)				4 o		SE
									MB	143	126								
									Droughtiness grade (DR)	1	1								
12		0	30	fSZL	10YR4/3				-	63	63	n	n	*I-II*	2		**2**		WE
		30	35	fSZL	10YR4/3			5		10	10	n	n						
		35	45	SZL	10YR7/6	Fe	com	10		16	16	(y)	n						
		45	70	SZL	10YR8/3	Fe	many	10		29	40	y	n						
		70	120	fSst						15	0	n	n						
									Total	**133**	**130**		GR.gradient Grass ley (no clover)				4o		SE
									MB	38	46								
									Droughtiness grade (DR)	1	1								
13		0	30	fSZL	10YR4/3				-	63	63	n	n	*I*	1		**1**		none
		30	44	fSZL	10YR5/2					29	29	n	n						
		44	55	fSZL	10YR6/8					20	23	n	n						
		55	60	ZL	10YR6/8	Fe	com	5		7	11	(y)	n						
		60	90	SZL	10YR5/8			5		32	17	n	n						
		90	120	fSst						9	0	n	n						
									Total	**161**	**143**		Grass ley (no clover)						
									MB	66	59								
									Droughtiness grade (DR)	1	1								
14		0	40	fSZL	10YR4/4				-	84	84	n	n	*I*	1		**1**		none
		40	50	fSZL	10YR4/4	OM	com			21	21	n	n						
		50	75	fSZL	10YR4/4					38	42	n	n						
		75	85	fSZL	10YR5/6					15	0	n	n						
		85	120	ZSt						18	0	n	y						
									Total	**175**	**147**		Grass ley (no clover)						
									MB	80	63								
									Droughtiness grade (DR)	1	1								
15	T	0	32	fSZL	10YR5/3			4	-	69	69	n	n	*I-II*	2		**2**		WE
		32	40	ZL	10YR6/3			2		17	17	n	n						
		40	60	ZL	10YR5/8 &5/3	Fe	com	2		36	43	y	n						
		60	80	ZL	10YR7/8	Fe	com	10	m/poor	1	17	(y)	n						

80	120	ZSt

	20	0	n	y
Total	**143**	**146**		Grass ley (no clover)
MB	48	62		
Droughtiness grade (DR)	1	1		

Appendix 3: Pit Descriptions and Photographs

Pit A		Description (grazed grass ley (since 2021) Top 5 cm is thatch (soil with many live and dead roots)
Ap	0-25 cm	Dark greyish brown (10YR4/2) fine sandy silt loam. Friable, small round crumbs <6mm in top 5-10 cm, 10-25cm has subangular blocky structure; fine roots are common throughout
	25-30 cm	50% stone 3-10cm in size.
Bw	30-50 cm	Yellowish brown (10YR5/4) sandy silt loam, unmottled. Apedal/ single grains with no cohesion. 5-10% stone.
BCu	50 cm +	Grey (5Y8/2) mottled fine sandstone.

Geology: Upper Tunbridge Wells Sand

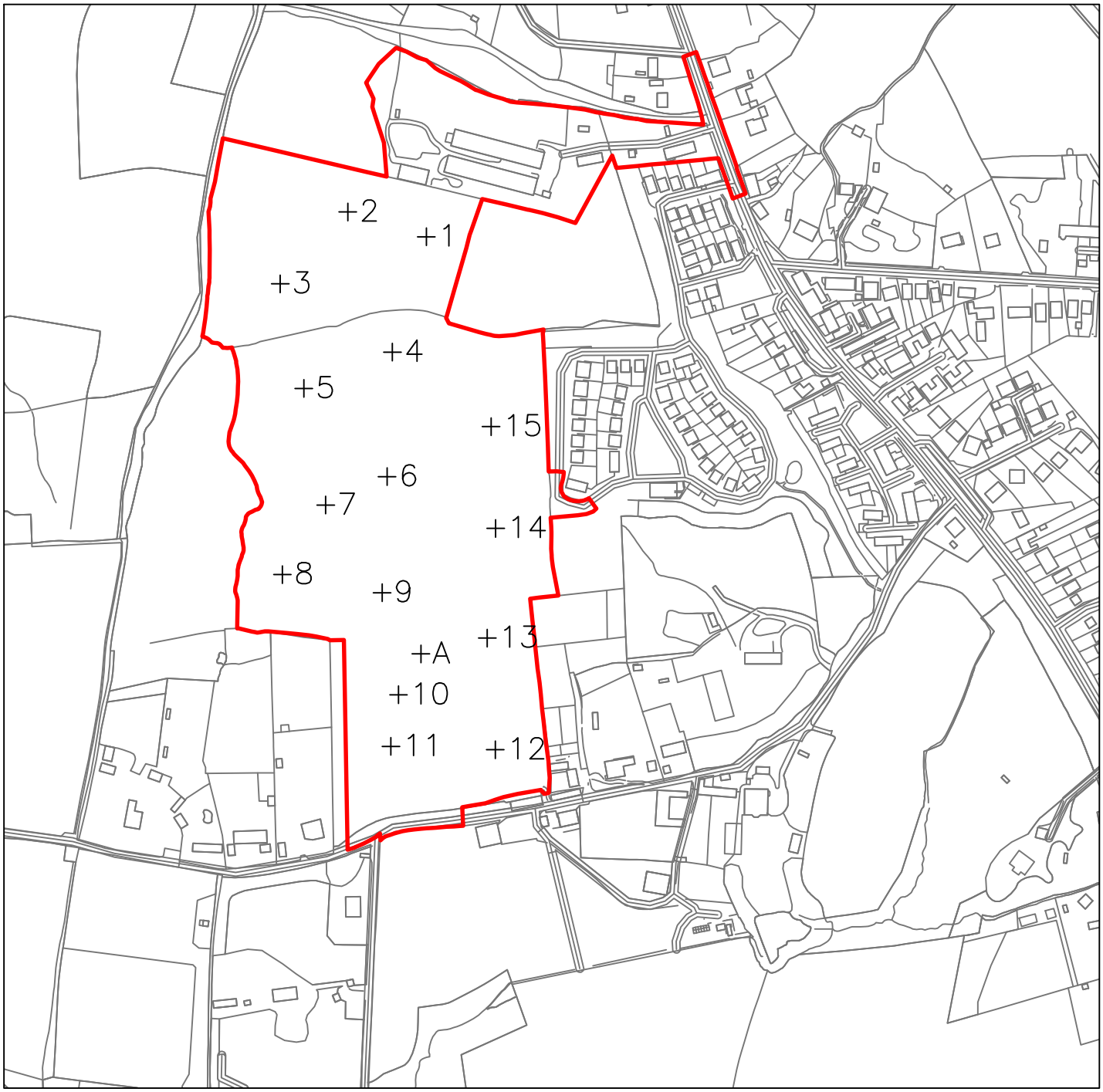
Comment: permeable, unmottled upper subsoil passing to siltstone likely to become slowly permeable within 80cm. Wetness Class II and limited to Grade 2 by wetness and by drought.

A: pit

A: structures reassembled. Yellow marker 30cm

9. 50-65 cm Mottled below 40 cm over SP siltstone at 65 cm WC II	13. 60-80 cm ZL/SZL with some OM penetration (free drain) WC I	14. 40-50 cm, very mottled ZCL, compact 45 cm (WC IV)	5. 40-50 cm gleying starts at 45 cm (WC III)
			

2. marshy area in northern field (Subgrade 3b).



1:5,000

0 100m 200m

KEY

Survey boundary

+1 Observations

+A Pit

Drawing title OBSERVATION MAPPING	Ref. RAC/10519/1	Rev.			
Contract LAND AT CRAWLEY DOWN, SUSSEX	Drawn by AGM	Checked by SRW	A	RLB	01.26
	Scales 1:5,000@A4	Date 01/2026	–	–	10.24
			Rev.	Comment	Date

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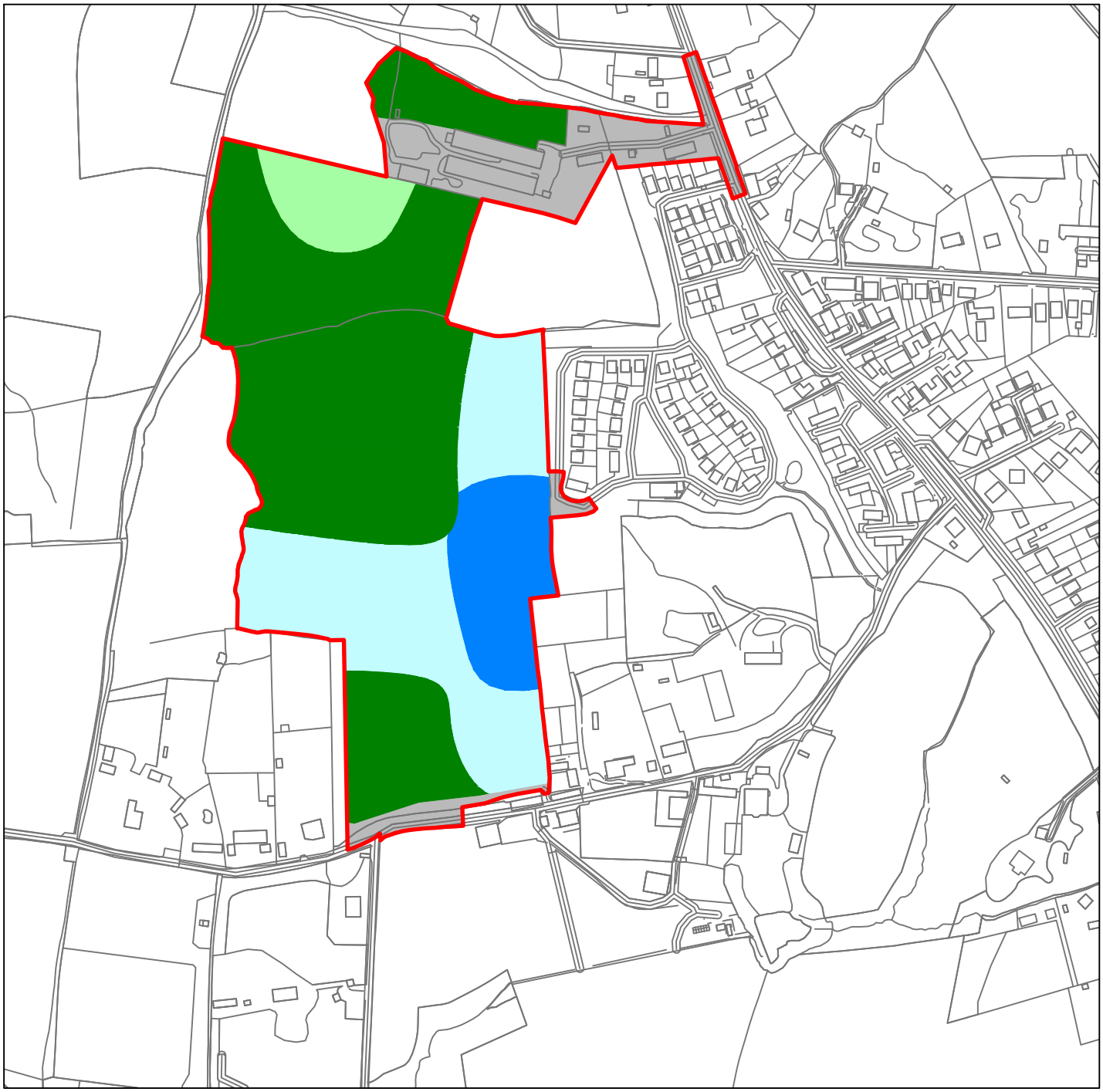

KEY

Grade 1		Grade 4	*
Grade 2		Grade 5	*
Subgrade 3a		Non–agricultural	
Subgrade 3b		Not present	*

1:5,000

0 100m 200m

Drawing title AGRICULTURAL LAND CLASSIFICATION	Ref. RAC/10519/2	Rev.			
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