



January 2026

Northgate Properties Ltd Agricultural Land Classification and Soil Resources

at
Land north of Summer Lane, Pagham

Beechwood Court,
Long Toll, Woodcote,
RG8 0RR


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1. Introduction

- 1.1. Reading Agricultural Consultants Ltd (RAC) is instructed by Northmead Properties Ltd to investigate the Agricultural Land Classification (ALC) and soil resources of land north of Summer Lane, Pagham, 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 Environment, Food and Rural Affairs/Welsh Government guidelines for grading the quality of agricultural land¹, and summarised in Natural England's Technical Information Note (TIN) 049².
- 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 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 guidance on agricultural land quality for planners. This Provisional Series of maps was published

¹ **Defra/Welsh Government (2025).** *Agricultural Land Classification of England and Wales. Guidelines for grading the quality of agricultural land.* JP069.

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

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 Grades 2 and 3 land. 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 7.8ha of mostly agricultural land in two fields. The larger field to the west is in arable use. The eastern field is under grass. The site is bordered to the east by housing at Nyetimber and to the north and north-west by other agricultural land separating the site from sewage works. The site includes a section of Summer Lane along the southern boundary, beyond which is land approved for residential development.
- 2.2. The land is level at 4-5m above Ordnance Datum (AOD). Drainage of the land is facilitated by a number of ditches and drains that direct water to Pagham Harbour south of the site.

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 a representative altitude of 5m AOD and are given in Table 1. The site is warm and moderately moist. Moisture deficits are large to very large. The number of Field Capacity Days is about average for lowland England (150) and is favourable for providing opportunities for agricultural field work. There is no overriding climatic limitation to agricultural land quality.

Table 1: Local agro-climatic conditions

Parameter	Value
Average Annual Rainfall	732mm
Accumulated Temperatures >0°C	1,547day°
Field Capacity Days	148 days
Average Moisture Deficit, wheat	122mm
Average Moisture Deficit, potatoes	119mm

Soil parent material and soil type

- 2.4. The underlying geology mapped by the British Geological Survey³ is the London Clay Formation, consisting of blue-grey or grey-brown, slightly calcareous, silty clay with some layers of sandy clay.
- 2.5. Superficial river terrace deposits of sand and gravel overlie the bedrock across the site. Raised beach deposits of sand and gravel are mapped around the northern periphery.
- 2.6. The Soil Survey of England and Wales soil association mapping⁴ (1:250,000 scale) shows the Park Gate association across most of the site. Park Gate soils are mainly silty clay loam throughout and are moderately permeable but affected by high winter water tables. Profiles are seasonally waterlogged and may vary from Wetness Class (WC) II to IV.
- 2.7. The Newchurch 1 association is mapped in proximity to the west of the site and includes calcareous clayey and fine silty soils. The drainage regime is variable depending upon groundwater levels and drainage systems and may also be of WC II to IV⁵.

³ **British Geological Survey (2026).** *Geology of Britain viewer*, <http://mapapps.bgs.ac.uk/geologyofbritain/home.html>

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

⁵ **Jarvis et al (1984).** *Soils and Their Use in South East England*. Soil Survey of England and Wales Bulletin 15, Harpenden.

3. Agricultural land quality

Soil survey methods

- 3.1. Nine soil profiles were examined using an Edelman (Dutch) auger at an observation density of approximately one per hectare in accordance with the established recommendations for ALC surveys. One soil pit was also excavated to examine subsoil structures and stone content. The locations of observations are indicated on Figure RAC/9466/1. At each observation point, the following characteristics were assessed for each soil horizon up to a maximum of 120cm or any 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, pH, organic matter content and nutrient contents (P, K, Mg). Results are presented in Appendix 1.
- 3.3. Soil 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.

Agricultural land classification and site limitations

- 3.5. Assessment of land quality has been carried out according to the revised ALC guidelines¹. Soil profiles have been described according to Hodgson⁶ which is the recognised source for describing soil profiles and characteristics according to the revised ALC guidelines.
- 3.6. Agricultural land quality across the site is limited by soil wetness and/or droughtiness to Grades 2, 3a and 3b.
- 3.7. There is one main topsoil type across the site, comprising medium clay loam, medium silty clay loam or occasionally sandy silt loam. The topsoil is dark greyish brown (10YR4/2 in the Munsell soil colour charts⁷).
- 3.8. The western field was being ploughed on the day of the survey; therefore, all topsoil depths within this field are approximate. An average depth of 32cm was recorded across the collective site. Beneath the larger blocks turned over by the action of the ploughing, the topsoil was found to break to fine and medium angular blocky peds. The stone content is typically low at about 1 or 2% by volume, with 5% recorded in Observation 5.
- 3.9. In the western field, most of the subsoil is clay, and the drainage is variable. The upper subsoil clay is brown (10YR5/3) and includes common, distinct ochreous mottles, so is gleyed. The clay is firm but is predominantly moderately developed, with fine and medium angular blocky peds. The stone content is also variable and is either slight or contains around 10% by volume in the upper subsoil, increasing to around 20% large flints within 50-60cm depth. These profiles are in WC II or III. Profiles of WC II have a sandy silt loam topsoil and are limited by droughtiness to Grade 2. Profiles of WC III have a medium silty clay loam topsoil and are restricted to Subgrade 3a by an overriding wetness limitation
- 3.10. Within Observation 3, the upper subsoil is of brown (10YR5/3) clay. It is very slightly stony, distinctly mottled and dense, making it gleyed and slowly permeable. The lower subsoil is calcareous and light yellowish brown (2.5Y6/4). These upper subsoil characteristics place this profile in WC IV, resulting in a wetness limitation to Subgrade 3b.
- 3.11. Within Observations 1 and 2 in the eastern field and at Observation 5, the upper subsoil is brown (10YR4/3 or 10YR5/3), heavy or medium silty clay loam. There are common mottles

⁶ **Hodgson, J. M. (Ed.) (2022).** *Soil survey field handbook*. Soil Survey Technical Monograph No. 5, Cranfield University.

⁷ **Munsell Color (2009).** *Munsell Soil Color Book*. Grand Rapids, MI, USA

observed. Although the upper subsoil was initially in coarse blocks, it breaks into moderate fine and medium angular blocks under a small amount of pressure. Roots were commonly observed among the blocks. These characteristics often continue to depth, or else there is a lower subsoil, which is more dense and slowly permeable. These profiles are assessed as WC II to III and are limited to Grade 2 or Subgrade 3a by wetness. Observations of Grade 2 also have slight deficits in available water and are limited to the same extent by droughtiness.

- 3.12. The ALC distribution within the site is shown in Figure RAC/9466/2, and the areas of each grade are shown in Table 2. Photographs taken at the site are given in Appendix 3.

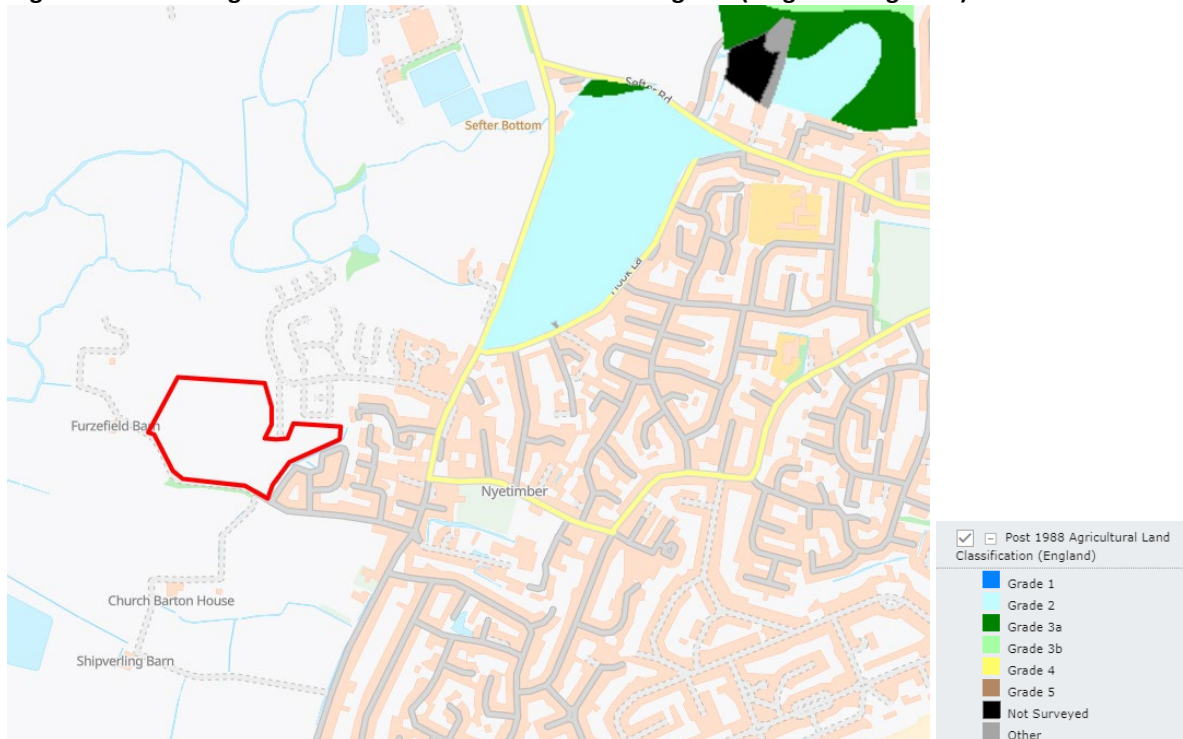
Table 2: ALC areas

Grade	Description	Area (ha)	%
Grade 2	Very good quality	3.5	45
Subgrade 3a	Good quality	2.8	36
Subgrade 3b	Moderate quality	1.2	15
Non-agricultural		0.3	4
Total		7.8	100

4. Assessment

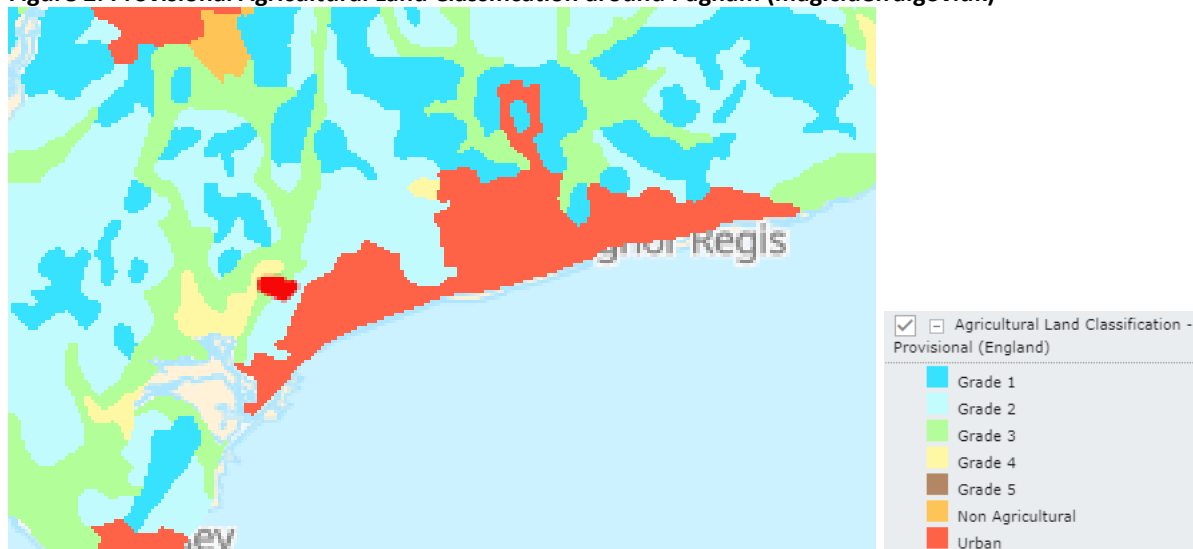
- 4.1. The classification of the site as BMV land in mostly Grades 2 and 3a is typical of agricultural land quality in the vicinity, as can be from the results of detailed ALC surveys undertaken by the former Ministry of Agriculture, Fisheries and Food (MAFF) and shown on defra.magic.gov.uk in Figure 1.
- 4.2. In addition, RAC has surveyed land to the south of Summer Lane which has also been classified as Grades 2 and 3a.

Figure 1: Detailed Agricultural Land Classification around Pagham (magic.defra.gov.uk)



- 4.3. As can be seen from the Provisional ALC plan (Figure 2), Pagham and Bognor Regis more generally are bordered by an area of high quality agricultural land in the coastal plain, and it is evident from the wider Provisional ALC and the detailed surveys that have been undertaken, that any necessary development around Pagham will involve the loss of BMV land, mostly in Grades 2 and 3a.

Figure 2: Provisional Agricultural Land Classification around Pagham (magic.defra.gov.uk)



4.4. The Pre-Application Advice received from Arun District Council (PAA/26/25, dated 17 June 2025) identified the site as the highest quality Grade 1 agricultural land. As can be seen from Figure 2, this is incorrect, and the site is shown as Provisional Grades 2 and 3, and classified in detail as a mix of Grades 2, 3a and 3b, as set out in Table 2 and Figure RAC/9466/2.

4.5. The Pre-Application Advice continued:

“Whilst it is accepted that some good quality agricultural land will need to be lost in the district to support the housing needs of the area, this land appears to be a very large plot with very limited physical restrictions in relation to modern machinery, and so this site could be more desirable for retention. The development of the proposed land could also, to some extent, impact the use and economic viability of the wider field being that it would be reduced in size.”

4.6. The site is in fact divided into two fields, the eastern one of which is restricted to pasture due to its size and configuration. The western part of the site forms part of a larger arable field but, as the ALC survey has shown, there are soil wetness limitations to agricultural land quality, and the site is not Grade 1 land with very limited physical restrictions as assumed in the Pre-Application Advice, and therefore not more desirable for retention than other agricultural land. Instead, it is typical of agricultural land quality in the vicinity.

4.7. The proposed development would leave the remaining arable field with more than 7 ha and an existing farm access. This is a typical field size in the locality and there is no reason why the remaining part of the field could not continue to be farmed as it is at present.

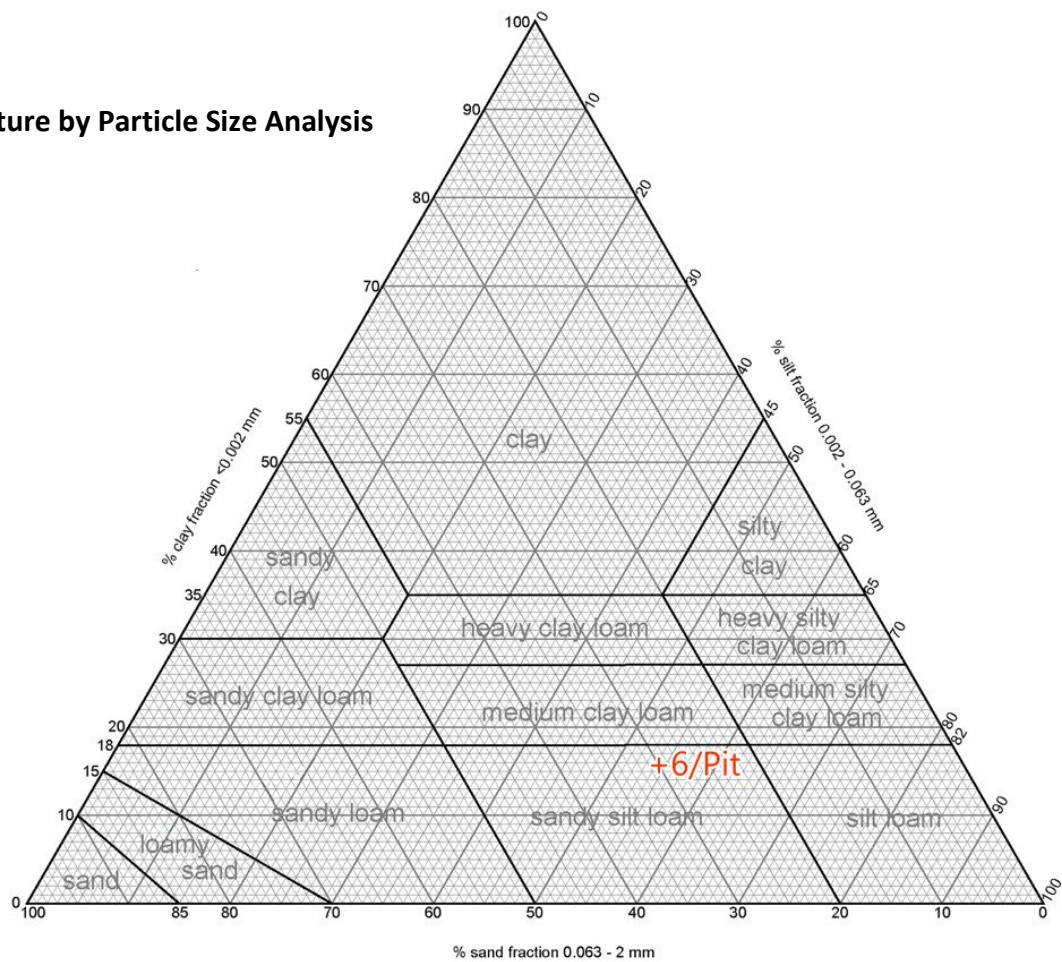
Appendix 1: Laboratory Data

Determinand	Site 6/Pit	Units
Sand 2.00-0.063 mm	30	% w/w
Silt 0.063-0.002 mm	54	% w/w
Clay <0.002 mm	16	% w/w
Organic Matter	2.1	% w/w
Texture	Sandy silt loam	

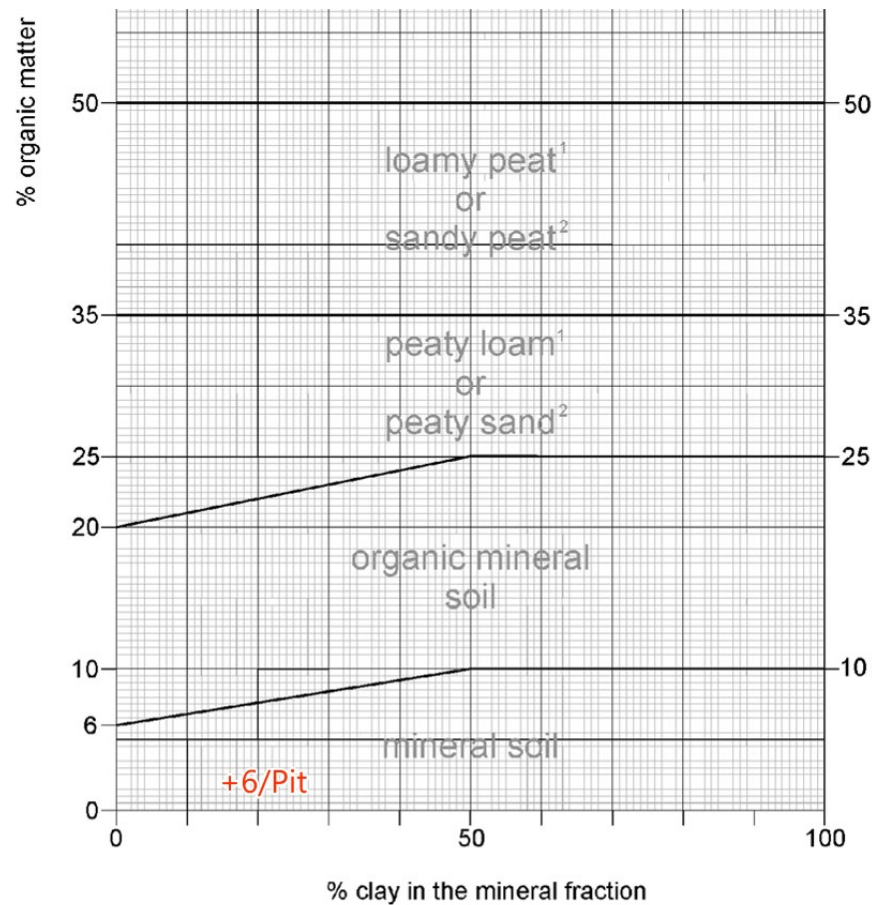
Determinand	Site 6/Pit	Units
Soil pH	7.0	
Phosphorus (P)	17.0	mg/l (av)
Potassium (K)	124	mg/l (av)
Magnesium (Mg)	65.3	mg/l (av)

Determinand	Site 6/Pit	Units
Phosphorus (P)	2	ADAS Index
Potassium (K)	2-	ADAS Index
Magnesium (Mg)	2	ADAS Index

Soil Texture by Particle Size Analysis



Organic Matter Class



Appendix 2: Soil Profile Summaries and Droughtiness Calculations

Wetness / workability limitations are determined according to the methodology given in Appendix 3 of the ALC guidelines, MAFF 1988

Droughtiness calculations are made according to the methodology given in Appendix 4 of the ALC guidelines, MAFF 1988.

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			Climate Data		Wetness Class Guidelines					Climate	
%	TAv	EAv	MDwheat	122		II	III	IV	V	1,547	
Hard	1	0.5	MDpotato	119		SPL within 80cm, gleying within 40cm	>68cm	40-68cm	<40cm	Limitation	
Lstone	4	3	FCD	148		SPL within 80cm, gleying at 40-70cm	>51cm	<51cm			
			AAR	732		No SPL but gleying within 40cm	coarse subsoil	I	other cases	II	Grade 1
					Maximum depth of auger penetration is <u>underlined</u>						

Site No.		Depth cm	Texture	CaCO ₃	Colour	Mottle colour	abundance	stone% Hard	stone% Lstone	Structure	AP wheat mm	AP potato mm	Gley	SPL	WC	Wetness grade WE	Final Grade	Limiting Factor(s)
1	T	0	37	mZCL	10YR4/2			1	0		70	70	n	n	III	3a	3a	WE
		37	55	hZCL	10YR5/3	Fe	com	10	0		25	28	y	n				
		55	80	hZCL	10YR5/3	Fe	com	5	0	poor	14	17	y	y				
		80	120	hZCL	10YR5/3	Fe	com	10	0	poor	22	0	y	y				
										Total	130	115						
										MB	8	-4						
										Droughtiness grade (DR)	2	2						
2	T	0	36	mZCL	10YR4/2			1	0		68	68	n	n	II	2	2	WE DR
		36	50	mZCL	10YR4/3	Fe	com	10	0		22	22	n	n				
		50	55	mZCL	10YR4/3	Fe	com	10	0		5	8	n	n				
		55	120	hZCL	10YR5/3	Fe	com	10	0	poor	35	16	y	y				
										Total	129	113						
										MB	7	-6						
										Droughtiness grade (DR)	2	2						
3	T	0	35	mZCL	10YR4/2			2	0		65	65	n	n	IV	3b	3b	WE
		35	90	C	10YR5/3	FeMn	com	0	2	poor	47	45	y	y				

90	120	hCL	very	2.5Y6/4	Fe	com	0	10	poor	20	0	y	y				
										Total	132	110					
										MB	10	-9					
Droughtiness grade (DR)											2	2					

4	T	0	30	mZCL	10YR4/2			2	0		56	56	n	n	///	3a	3a	WE
		30	65	C	10YR5/3	FeMn	com	1	0	m/poor	44	57	y	n				
		65	120	C	10YR5/3	Fe	com	1	0	poor	35	0	y	y				
											Total	134	113					
											MB	12	-6					
Droughtiness grade (DR)											2	2						

5	T	0	28	mCL	10YR4/2			1	0	50	50	n	n	/	1	2	DR
		28	60	hZCL	10YR4/3	Fe	com	1	0	47	54	n	n				
		60	80	C	10YR5/3	FeMn	com	1	0	16	16	y	n				
		80	120	C	10YR5/3	Fe	com	2	0	31	0	y	n				
										Total	144	120					
									MB	22	1						
Droughtiness grade (DR)										2	2						

6	T	0	35	SZL	10YR4/2			2	0		65	65	n	n	//	1	2	DR
Pit		35	55	C	10YR5/3	Fe	com	10	0		25	29	y	n				
		55	60	C	10YR5/3	Fe	com	20	0		3	7	y	n				
		60	120	C	10YR5/3	Fe	com	20	0		39	13	y	n				
											Total	133	114					
										MB	11	-5						
Droughtiness grade (DR)											2	2						

7	T	0	28	SZL	10YR4/2			2	0		52	52	n	n	//	1	2	DR
		28	55	C	10YR5/3	Fe	com	10	0		36	39	y	n				

55	60	C	10YR5/3	Fe	com	20	0		3	7	y	n				
<u>60</u>	120	C	10YR5/3	Fe	com	20	0		39	13	y	n				
Total									130	111						
MB									8	-8						
Droughtiness grade (DR)									2	2						

8	T	0	28	mZCL	10YR4/2			5	0		51	51	n	n	///	3a	3a	WE
		28	65	C	10YR4/4	Fe	com	2	0	m/poor	50	60	y	n				
		65	120	C	10YR5/3	Fe	com	2	0	poor	31	0	y	y				
										Total	131	110						
										MB	9	-9						
Droughtiness grade (DR)											2	2						
9	T	0	40	hZCL	10YR4/2			2	0		75	75	n	n	//	3a	3a	WE
		40	50	hCL	10YR5/2	Fe	com	1	0		16	16	y	n				
		50	70	hCL	10YR5/2	Fe	com	1	0		20	32	y	n				
		70	120	C	10YR5/3	Fe	com	1	0	poor	35	0	y	y				
										Total	145	122						
									MB	23	3							
Droughtiness grade (DR)											2	2						

Appendix 3: Site Photographs



6/Pit



6/Pit topsoil



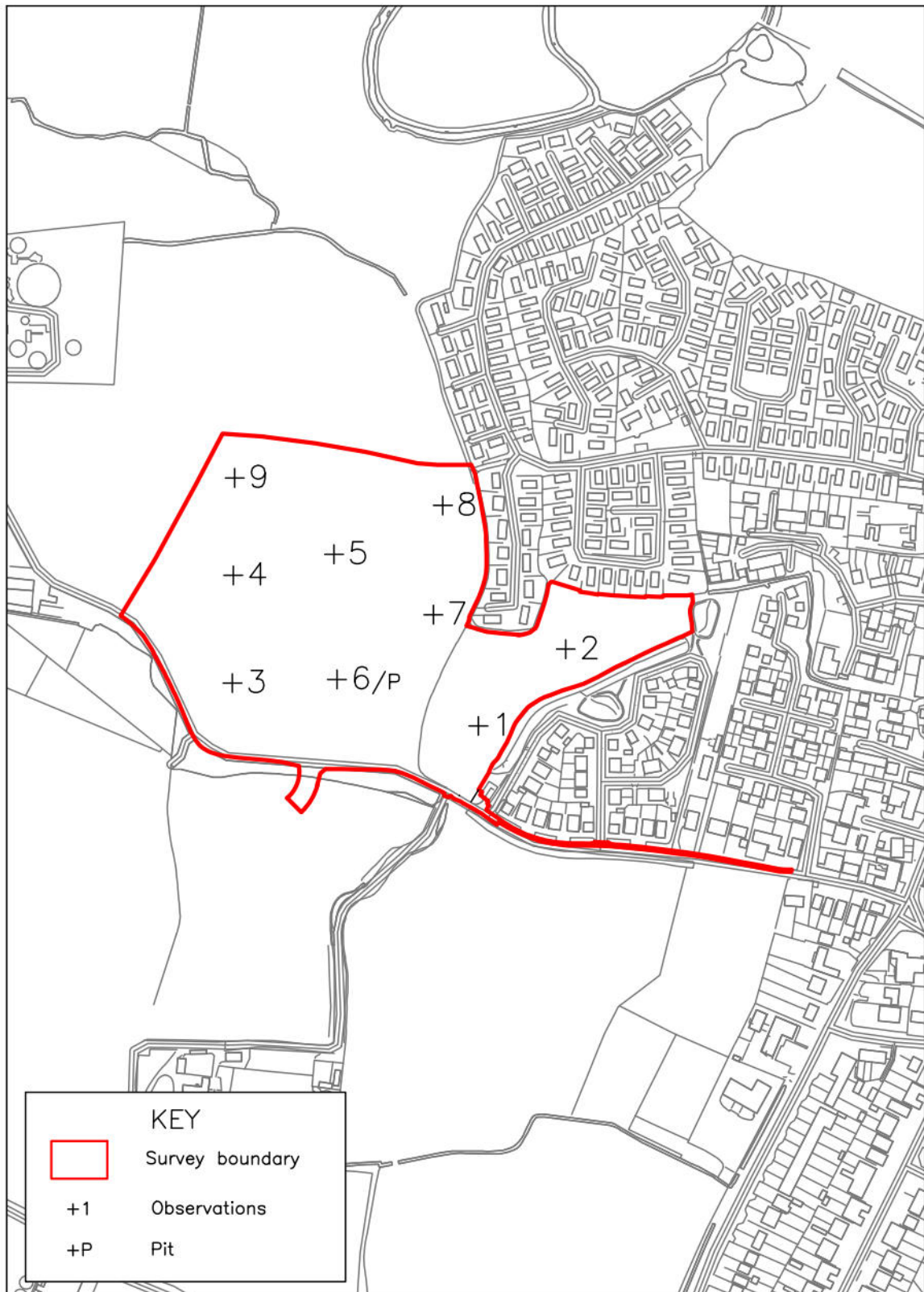
6/Pit subsoil



6/Pit subsoil stone



Slowly permeable clay subsoil type



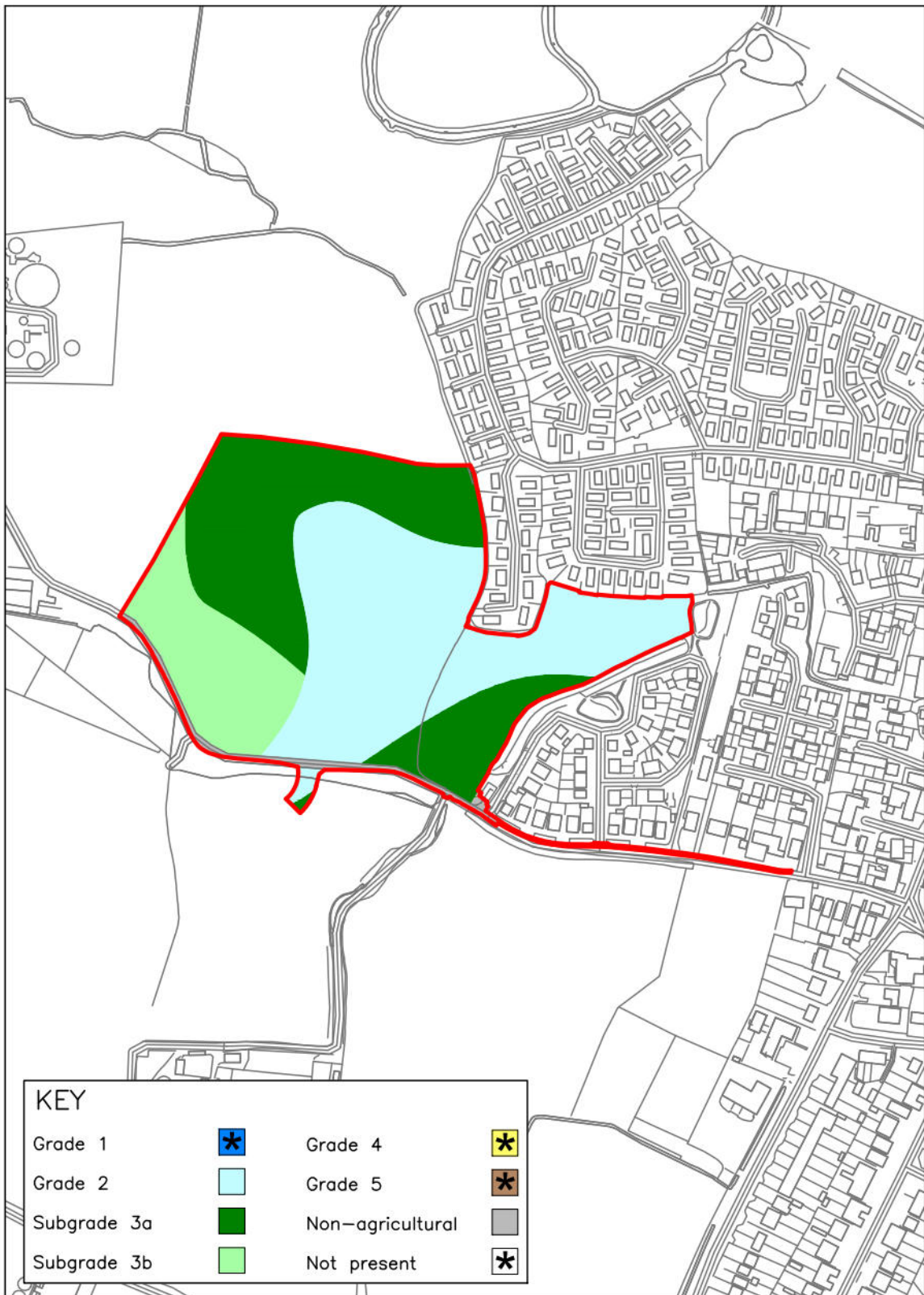
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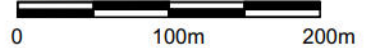




KEY			
Grade 1		Grade 4	
Grade 2		Grade 5	
Subgrade 3a		Non-agricultural	
Subgrade 3b		Not present	

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