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Crest Nicholson
Agricultural Land Classification, Soil Resources and
Appraisal

Land at Barkham Square, Barkham Street,
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1 Introduction

- 1.1 Reading Agricultural Consultants Ltd (RAC) is instructed by Crest Nicholson to investigate the Agricultural Land Classification (ALC) and soil resources of land at Barkham Square, Barkham, Wokingham by means of a detailed survey of soil and site characteristics, and to consider the effect of the proposed development on agricultural land quality, particularly on the best and most versatile (BMV) agricultural land.
- 1.2 Guidance for assessing the quality of agricultural land in England and Wales is set out in the Ministry of Agriculture, Fisheries and Food (MAFF) revised guidelines and criteria 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 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 in Annex 2 of the National Planning Policy Framework (NPPF³) as 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 **MAFF (1988).** *Agricultural Land Classification of England and Wales. Revised guidelines and criteria for grading the quality of agricultural land.*

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

³ **Ministry of Housing, Communities and Local Government (2024).** *National Planning Policy Framework.*

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 Grades 3 and 4. 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 44.89 ha of grassland which is used occasionally for sheep grazing. The site lies to the south-east of B3349 (Barkham Road/Langley Common Road), to the north-east of Princess Marina Drive and to the north-west of Commonfield Lane.
- 2.2 A small tree-lined tributary of the River Loddon flows north-east through the centre of the site. The land has gentle (2-3°) slopes towards the tributary from either side. The northern fields also slope slightly north-east. Altitude varies from 50 m to 60 m above Ordnance Datum (AOD).
- 2.3 The grassland has no risk of flooding except for the land adjoining the river which is in Environment Agency Flood Zones 2 and 3 (medium and high probability of flooding).

Agro-climatic conditions

- 2.4 Agro-climatic data for the site have been interpolated from the Meteorological Office's standard 5 km grid point data set at representative altitude of 54 m AOD and are given in Table 1. Rainfall is moderate for south-east England, the temperature is moderately warm and there are moderately large moisture deficits. The number of Field Capacity Days is below average for lowland England, meaning that there are longer than average opportunities for agricultural field work. There is no overriding climatic limitation to agricultural land quality.

Table 1: Local agro-climatic conditions

Parameter	Value
Grid Reference	477300 166500
Average Annual Rainfall	661 mm
Accumulated Temperatures >0°C	1,463 day°
Field Capacity Days	137 days
Average Moisture Deficit, wheat	114 mm
Average Moisture Deficit, potatoes	108 mm

Soil parent material and soil type

- 2.5 The bedrock geology is mapped by the British Geological Survey⁴ as the London Clay Formation which includes silty clay with layers of sandy clay and beds of fine sand. In the south-west, the bedrock is Bagshot Sand. There are superficial deposits of alluvium mapped alongside the stream.
- 2.6 The Soil Survey of England and Wales soil association mapping⁵ (1:250,000 scale) shows most of the soils at the site as the Wickham 4 association, which are described as slowly permeable, fine loamy over clayey soils⁶.
- 2.7 The soils in the south-west over the Bagshot Sand are mapped as Fyfield 4 association, which are described as deep, well-drained, often stoneless, coarse loamy and sandy soils. The association also includes some fine loamy soils with slowly permeable subsoils and slight seasonal waterlogging and some slowly permeable, seasonally waterlogged, fine loamy over clayey soils. There is some risk of water erosion.

⁴ **British Geological Survey (2025).** *Geology of Britain viewer.* <https://geologyviewer.bgs.ac.uk/>

⁵ **Soil Survey of England and Wales (1984).** *Soils of South East England* (1:250,000), Sheet 6. Harpenden.

⁶ **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 Thirty-two soil profiles were examined using a Dutch (Edelman) auger at an observation density of approximately one per hectare in accordance with the established recommendations for ALC surveys² in the area proposed for residential development north of the tributary. Observation density was reduced to one per 2 ha south of the tributary in the area proposed for Suitable Alternative Natural Greenspace (SANG). Three pits were also excavated to 60 cm depth to examine soil structures. The location of observations is shown on Figure RAC/10568/1.
- 3.2 At each observation point the following characteristics were assessed for each soil horizon up to 120 cm or impenetrable layer:
- soil texture;
 - significant stoniness;
 - colour (including localised mottling);
 - consistency;
 - structural condition;
 - free carbonate; and
 - depth.
- 3.3 Four topsoil samples were submitted for laboratory determination of particle size distribution, pH, organic matter content and nutrient contents (P, K, Mg). Results are in Appendix 1.
- 3.4 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 15 cm thick, in relation to the number of Field Capacity Days at the location.
- 3.5 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.

- 3.6 Assessment of agricultural land quality has been carried out according to the revised ALC guidelines¹. Soil profiles have been described according to Hodgson⁷ which is the recognised source for describing soil profiles and characteristics according to the revised ALC guidelines.

Soil types and agricultural land quality

- 3.7 There are five soil types present within the survey area, as shown in Figure 1, which covered a larger area than the current application site.

Figure 1: Soil types



Parent material	Topsoil texture
Gc London Clay within 38 cm	1 fine or medium sandy loam
G London Clay within 60 cm	2 medium clay loam or sandy clay loam
C Deeper loam soils	3 heavy clay loam
Y Alluvium	
S Bagshot Sand	

- 3.8 Agricultural land quality is limited mainly by soil wetness but also by soil droughtiness on the Bagshot Sand. Most of the site is classified as BMV land in Grades 2 and 3a, with about one-quarter limited to Subgrade 3b.

⁷ Hodgson, J. M. (Ed.) (1997). *Soil survey field handbook*. Soil Survey Technical Monograph No. 5, Silsoe.

- 3.9 The Subgrade 3b land (G2c) is WC IV with brown (10YR4/3) clay loam topsoil with iron mottles over slowly permeable clay subsoil with a poorly developed, massive structure (see Pit B description in Appendix 3). The alluvial clayey soil is also classified as Subgrade 3b due to wetness and groundwater limitations.
- 3.10 Other soils on London Clay (G1 and G2) are WC II or III with fine sandy loam to medium clay loam textured topsoils and upper subsoils overlying slowly permeable clay starting at depths of between 40 cm and 60 cm. These are classified as Grade 2 or Subgrade 3a, depending on topsoil texture and wetness class (see Pit A in Appendix 3).
- 3.11 An area of deeper loamy soil (C1) occurs on the plateau and is classified as Grade 2, with the occasional Grade 1 profile (see Pit C in Appendix 3).
- 3.12 South of the brook, there are colluvial soils (C2) of sandy clay loam to clay loam texture which become slowly permeable below 65 cm and are moderately well drained in WC II and classified as Grade 2.
- 3.13 Soils on the Bagshot sand (S) typically comprise brown (10YR4/3) medium sandy loam topsoil, with dark yellowish brown (10YR4/4) upper subsoil, passing to light yellowish brown (2.5Y6/4), loamy sand, sand or sandstone within 60 cm. These are WC I but are moderately droughty and limited to Subgrade 3a.
- 3.14 The ALC of the site is shown in Figure RAC/10568/2 and in Table 2.

Table 2: Agricultural Land Classification

Grade	Description	Area (ha)	%
Grade 2	Very good quality	16.9	38
Subgrade 3a	Good quality	14.7	33
Subgrade 3b	Moderate quality	9.6	21
Non-agricultural		3.7	8
Total		44.9	100

- 3.15 Most of the area proposed for SANG (8.3 ha of the 13.2 ha SANG) is BMV land in Grades 2 and 3a. Although this land would not be in agricultural use, the soils would remain undisturbed and the land use would be easily reversible if required. This would reduce the area of BMV land to irreversible development to approximately 23.3 ha.

4 Relevant Policies

4.1 Paragraph 187 of the NPPF indicates that planning policies and decisions should contribute to and enhance the natural and local environment by:

- protecting and enhancing soils; and
- recognising, amongst other matters, the wider benefits from natural capital and ecosystem services, including the economic and other benefits of BMV agricultural land.

4.2 Paragraph 188 goes on to state that plans should allocate land with the least environmental or amenity value, where consistent with other policies in the NPPF, and footnote 65 explains that where significant development of agricultural land is demonstrated to be necessary, areas of poorer quality land should be preferred to those of a higher quality.

4.3 Policy CP1 of the Wokingham Core Strategy (2010) indicates that planning permission will be granted for development proposals that, amongst other matters, *“avoid areas of best and most versatile agricultural land.”* No further guidance on development involving agricultural land is provided in the Core Strategy.

5 Appraisal

5.1 The proposed development would involve the loss of 31.6 ha of BMV land in Grade 2 and Subgrade 3a, of which 23.3 ha would represent irreversible development. National policy does not preclude the loss of BMV land but indicates that decisions should recognise the economic and other benefits of BMV agricultural land.

5.2 In this case, the economic benefits of BMV land are very limited, as the site is used for occasional sheep grazing.

5.3 The ALC guidelines describe very good quality Grade 2 land as:

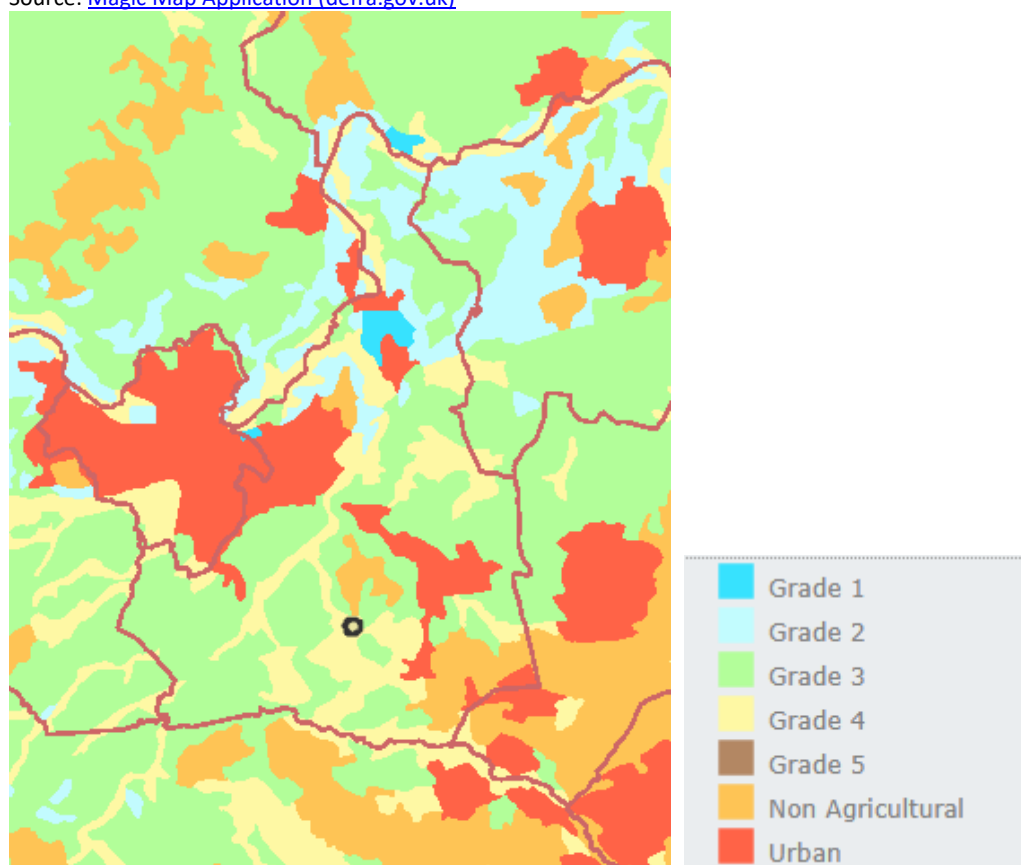
“Land with minor limitations which affect crop yield, cultivations or harvesting. A wide range of agricultural and horticultural crops can usually be grown but on some land in the grade there may be reduced flexibility due to difficulties with the production of the more demanding crops such as winter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

5.4 Good quality Subgrade 3a land is described as:

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

- 5.5 The expectation is that both Grade 2 and Subgrade 3a land should be capable of producing arable and horticultural crops, with Grade 2 capable of producing a wide range of crops to a generally high yield. It is apparent that this land does not and has not achieved its inherent potential largely due to issues of fragmented ownership and a weak local agricultural economy.
- 5.6 Even if the development area was farmed commercially rather than occasionally for sheep grazing, the gross margin (output less variable costs of feed, veterinary and medicine) would be less than £15,000 per annum. The economic benefits associated with the BMV land in the area proposed for development are very limited.
- 5.7 Core Strategy policy seeks to avoid areas of BMV agricultural land (although this is not consistent with the NPPF). The Provisional ALC mapping reproduced for Wokingham Borough in Figure 2 shows Grades 3 and 4 land around Barkham, with higher quality land in Provisional Grades 1 and 2 mapped in the north of the Borough.

Figure 2: Extract from the Provisional ALC map for Wokingham (approximate location of Barkham circled)
Source: [Magic Map Application \(defra.gov.uk\)](http://magic.map.application.defra.gov.uk)



- 5.8 Defra⁸ statistics based on the Provisional ALC estimate that there are approximately 14,000 ha of agricultural land in Wokingham Borough, of which it is estimated that 5,900 ha or 42% of agricultural land is likely to be BMV, mostly in Grades 2 and 3a. This is the same proportion as the national average of BMV land, according to Natural England's TIN049².
- 5.9 The proposed loss of 31.6 ha of BMV land would therefore represent 0.5% of the likely BMV land in a Borough that contains the national average proportion of such land and in a location away from the main concentration of the highest quality land in the Borough.
- 5.10 A recent appeal decision⁹ in respect of land adjacent to Blagrove Lane, Wokingham, which lies approximately 2 km to the north-east of the site, concluded at paragraph 100 that the proposed loss of a similar area (26 ha) of BMV land in Grades 2 and 3a would not result in a significant loss of BMV and therefore not affect the benefits of BMV land for food production. This was due to the site's fragmentation, investment required to improve drainage and the modest proportion that the site made up of the Borough's BMV land.
- 5.11 This decision demonstrates not only that the ALC of the site is typical of agricultural land quality in the vicinity but also that the loss of this quantum of BMV land in this locality is not to be considered as significant.

⁸ Department for Environment, Food and Rural Affairs (2014). *Agricultural Land Classification Statistics*

⁹ Appeal Ref: APP/X0360/W/24/3354667, 29 May 2025

Appendix 1: Laboratory Data

Determinand	A 0-25cm	B 0-25cm	C 0-25cm	D-29 0-25cm	Units
Sand 2.00-0.063mm %	56	25	61	73	% w/w
Coarse sand 2-0.6 mm			4	2	% w/w
Medium sand 0.6-0.2mm			16	23	% w/w
Fine sand 0.2-0.1mm			10	37	% w/w
V fine sand 0.1-0.063mm			31	11	% w/w
Silt 0.063-0.002mm	27	50	26	18	% w/w
Clay <0.002 mm	17	25	13	9	% w/w
Organic Matter	3.6	4.3	3.8	2.9	% w/w
Total Nitrogen	0.24	0.28	0.21	0.21	% w/w
Texture	Fine sandy loam	Medium clay loam	Fine sandy loam	Medium sandy loam	

Determinand	A	B	C	D	Units
Soil pH	6.3	6.3	6.5	6.0	
Phosphorus (P)	72.6	47.4	71.4	89.0	mg/l (av)
Potassium (K)	50.0	66.8	59.2	41.1	mg/l (av)
Magnesium (Mg)	73.3	85.2	66.6	51.5	mg/l (av)

Determinand	A	B	C	D	Units
Phosphorus (P)	5	4	5	5	ADAS Index
Potassium (K)	0	1	0	0	ADAS Index
Magnesium (Mg)	2	2	2	2	ADAS Index
Organic Matter (SOM)	moderate	moderate	moderate	low	SSEW ⁴

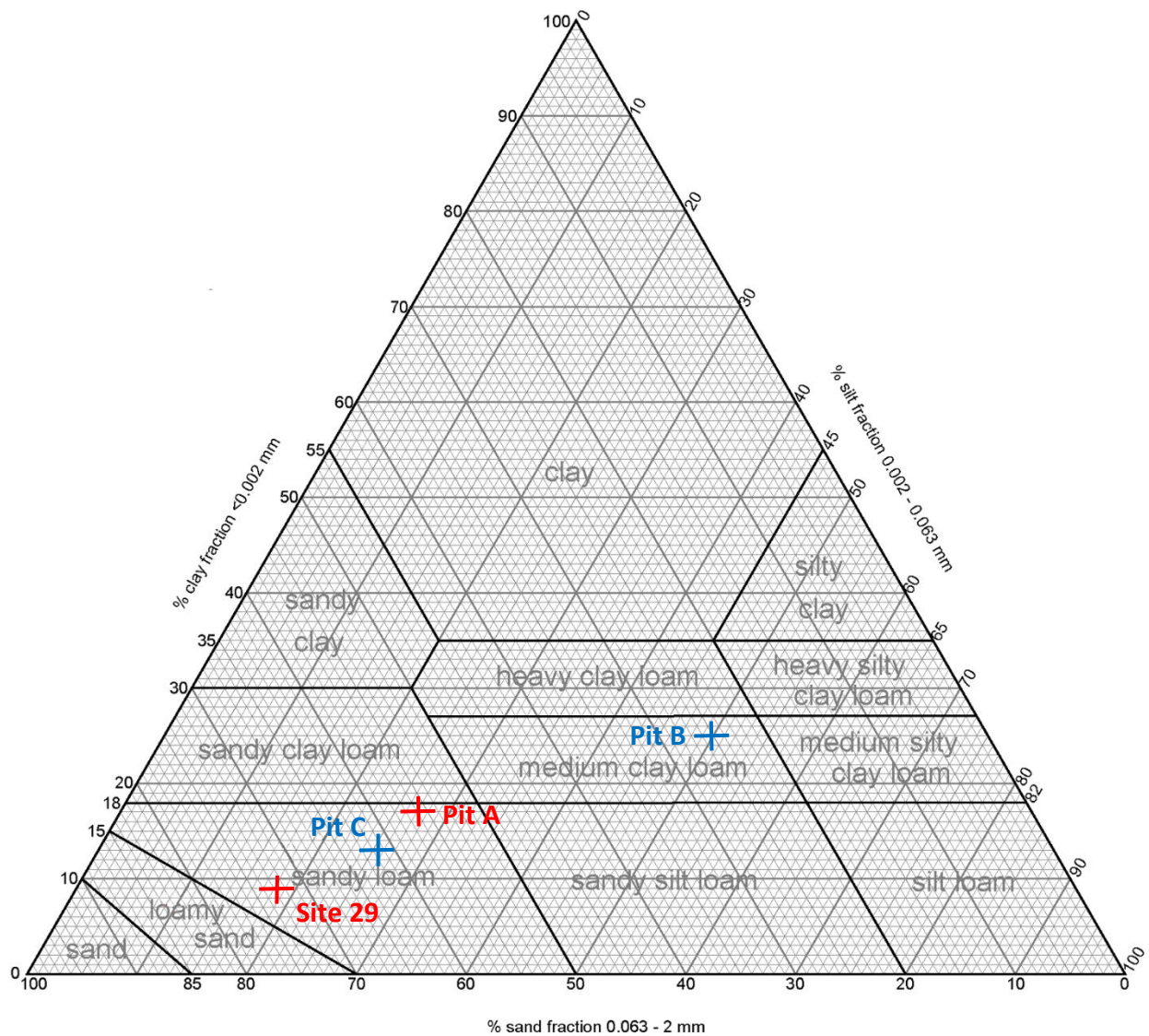
Samples are composites of 15-20 cores taken to 25cm depth.

Particle size by Pipette method, Carbon by Skalar machine.

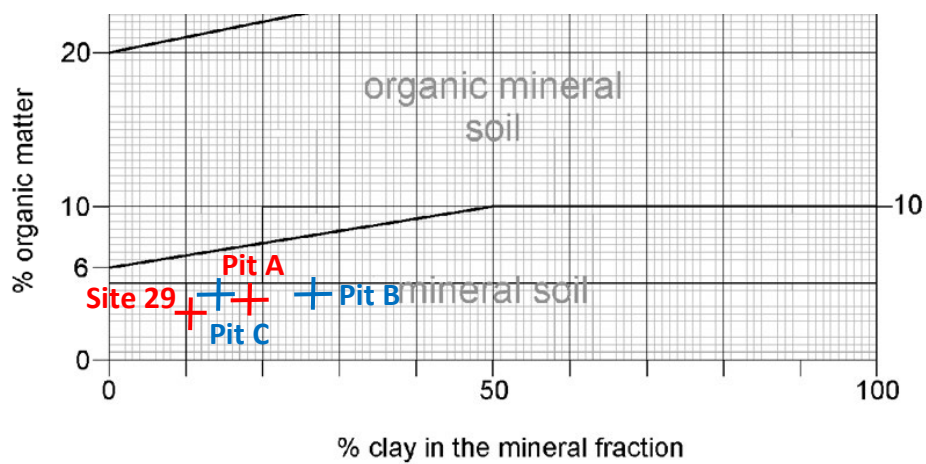
Organic Matter = Total Organic Carbon /0.58. Reported on 30°C dry sample basis

The topsoils (0-25cm) are slightly acid with very high levels of phosphorus, low potassium and moderate magnesium levels. The topsoils are in good structural condition with organic matter levels (2.9-4.3%) which are appropriate in relation to their clay content (9-25%).

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.

Grades are shown for drought, wetness and any other soil site factors which are relevant. The overall Grade is set by the most limiting factor and shown on the right.																						
Stone types %TAvEAv hard10.5 N/A					Climate Data MDwheat114 MDpotato108 FCD137				Wetness Class Guidelines IIIIIIVV SPL within 80cm, gleying within 40cm>64cm37-64cm<37cm SPL within 80cm, gleying at 40-70cm>46cm<46cm No SPL but gleying within 40cmcoarse subsoilIother casesII Maximum depth of auger penetration is <u>underlined</u>										Climate 1463 D° Limitation Grade 1			
hardflint & pebble					AAR661				54 m													
Site	Depth			Texture	CaCO ₃	Colour	Mottle	abund-	stone%	stone%	Struct-	APwheat	AP potato	Gley	SPL	WC	Wetness	Final	Limiting			
No.	cm						colour	ance	hard	N/A	ure	mm	mm				grade WE	Grade	Factor(s)			
1	T	0	38	mCL	n	10YR4/1	Fe	many	4		-	66	66	y	n	III	3a	3a	WE			
			38	58		hCL	10YR3/3	Fe	many	0		m/poor	24	28	(y)					n		
		58	110	hCL		10YR5/6	Fe, om	pred	0		poor	36	14	(y)	y							
		110	120	Mst						poor	5	0		y								
												Total	131	108	Ley							
												MB	17	0								
		Droughtiness grade (DR)										2	2									
2	T	0	25	mZCL	n	10YR3/4	Fe	com	0		-	48	48	(y)	n	III	3a	3a	WE			
			25	38		hZCL	10YR3/4	Fe	many	0		m/poor	19	19	(y)					n		
		38	110	C		10YR5/8	Fe	pred	0		poor	58	42	(y)	y							
		110	120	Mst						poor	5	0		y								
												Total	129	108	Ley							
												MB	15	0								
		Droughtiness grade (DR)										2	2									
3	T	0	28	mZCL	n	10YR3/4	Fe	com	0		-	48	48	(y)	n	III	3a	3a	WE			
			28	45		hZCL	10YR3/4	Mn	com	0		m/poor	19	19	(y)					n		
		45	120	C		10YR5/8	Fe	pred	0		poor	58	42	(y)	y							
												Total	129	108	Ley							
												MB	15	0								
Droughtiness grade (DR)										2	2											
4	T	0	28	mCL	n	10YR3/3	Fe	many	0		-	50	50	(y)	n	III	3a	3a	WE			

28	64	mCL	10YR3/4	Fe	many	0	m/poor	44	52	(y)	n						
64	100	hCL	10YR5/8	Fe	pred	0	poor	25	6	(y)	y						
100	120	Mst					poor	10	0		y						
								Total	128	108	Wet topsoil						
								MB	14	0	Ley						

Droughtiness grade (DR) 2 2

5	T	0	28	mCL	n	10YR4/1	Fe	many	0	-	50	50	y	n	//	2	2	WE DR
		28	85	mCL		2.5Y5/4	Fe	many	0		70	67	(y)	n				
		85	120	C		7.5YR5/8	grey	pred	0	poor	25	0	(y)	y				
									Total	145	118	Ley						
									MB	31	10							

Droughtiness grade (DR) 1 2

6	T	0	28	mCL	n	10YR4/1	Fe	many	0	-	50	50	y	n	IV	3b	3b	WE
		28	35	mCL		10YR4/1	Fe	pred	0	m/poor	10	10	y	n				
		35	120	C		7.5YR5/8	grey	pred	0	poor	69	46	(y)	y				
									Total	129	106	Ley						
									MB	15	-2							

Droughtiness grade (DR) 2 2

7	T	0	28	mCL	n	10YR4/3			5	-	48	48	n	n	IV	3b	3b	WE
		28	33	mCL		10YR5/3	Fe	com	5		8	8	y	n				
		33	60	C		7.5YR6/8	7/2	pred	0	poor	29	35	(y)	y				
		60	80	LC		7.5YR6/8	7/2	pred	0	poor	14	13	(y)	y				
		80	120	C	n	10YR6/6	&6/2	com	0	poor	28	0	(y)	y				

Total	127	103	Wet topsoil				
MB	13	-5	Ley				

Droughtiness grade (DR) 2 2

8	T	0	32	fSL+	n	10YR4/2			6	-	54	54	n	n	III	2	2	WE DR	
		32	45	mCL		10YR5/3			5		20	20	y	n					
		45	65	hCL		2.5Y6/2	Fe	many	0	poor	17	24	y	y					
		65	80	LC		2.5Y6/2	Fe	many	0	poor	11	6	y	y					
		80	120	C	n	10YR6/6	&6/3	com	0	poor	28	0	(y)	y					
									Total	129	104	Ley							
								MB		15	-4								

Droughtiness grade (DR)														2	2			
9	T	0	28	fSL+	n	10YR5/3			6	-	48	48	n	n	IV	3a	3a	WE
		28	34	mCL			10YR5/3	Fe	com	5		9	9	y	n			
		34	48	CL			2.5Y6/3	Fe	com	0	m/poor	20	20	y	y			
		48	75	LC			2.5Y6/2	Fe	many	0	poor	20	28	y	y			
		75	120	C	n	10Y7/1	Fe	many	0	poor	32	0	y	y				
											Total	128	104	Wet topsoil				
										MB	14	-4	Ley					
Droughtiness grade (DR)														2	2			
10	T	0	28	fSL+	n	10YR4/3			6	-	48	48	n	n	III	2	2	WE DR
		28	42	fSL			10YR6/3	FeOM	com	5	good	29	29	y	n			
		42	70	C			2.5Y6/2	Fe	many	0	poor	24	36	y	y			
		70	120	C	n	10Y7/1	Fe	many	0	poor	35	0	y	y				
										Total	136	113	Ley					
										MB	22	5						
Droughtiness grade (DR)														2	2			
pit A	T	0	29	fSL+	n	10YR5/3			6	-	49	49	n	n	III	2	2	WE DR
		29	35	fSL			10YR5/3	Fe	many	5	good	13	13	y	n			
		35	47	C/CL			7.5YR6/8	N6/1	pred	0	m/poor	17	17	(y)	n			
		47	120	C	n	2.5Y6/1	Fe	many	0	poor	53	30	y	y				
										Total	132	109	Ley					
										MB	18	1						
Droughtiness grade (DR)														2	2			
11	T	0	28	fSL+	n	10YR4/3			6	-	48	48	n	n	III	2	2	WE DR
		28	45	mCL			10YR5/3	FeOM	com	10	good	32	32	y	n			
		45	60	C			7.5YR6/8	N6/1	pred	0	poor	14	20	(y)	y			
		60	120	C	n	10Y7/1	Fe	many	0	poor	42	13	y	y				
										Total	135	112	Ley					
										MB	21	4						
Droughtiness grade (DR)														2	2			
12	T	0	28	mCL	n	10YR4/3			4	-	48	48	n	n	IV	3b	3b	WE
		28	35	hCL			2.5Y7/2	Fe	many	0		11	11	y	n			
		35	80	LC			7.5YR6/8	N6/1	pred	0	poor	40	44	(y)	y			

		80	120	C	n	10YR6/6	&6/2	com	0	poor	28	0	(y)	y			
										Total	127	103					Wet topsoil
										MB	13	-5					Ley
										Droughtiness grade (DR)		2	2				
13	T	0	27	fSL	n	10YR5/3			6	-	46	46	n	n	III	2	2 WE DR
		27	35	fSL		2.5Y6/2	Fe	many	5		14	14	y	n			
		35	42	CL		2.5Y7/2	Fe	many	5		11	11	y	n			
		42	55	C		7.5YR6/8	N6/1	pred	0	poor	14	17	(y)	y			
		55	80	hSCL	n	7.5YR6/8	N6/1	pred	5	poor	19	19	(y)	y			
		80	100	SC		7.5YR6/8	N6/1	pred	5	poor	15	0	(y)	y			
		100	120	SL	n				10	poor	15	0	n	n			
										Total	133	106					Subsoil -clay & sand mix
										MB	19	-2					Ley
										Droughtiness grade (DR)		2	2				
14	T	0	27	mCL	n	10YR5/2			6	-	46	46	n	n	III	3a	3a WE
		27	35	hCL		10YR6/3	Fe	many	5		12	12	y	n			
		35	44	LC		7.5YR6/8	N6/1	pred	5	m/poor	12	12	(y)	n			
		44	95	C		10YR6/6	&6/3	many	0	poor	39	34	(y)	y			
		95	120	Mst						poor	13	0		y			
										Total	122	104					Ley (weed patches)
										MB	8	-4					
										Droughtiness grade (DR)		2	2				
15	T	0	27	fSL+	n	10YR5/2			6	-	46	46	n	n	III	2	2 WE DR
		27	42	fSL		2.5Y7/1	Mn	many	5		26	26	y	n			
		42	50	LC		7.5YR6/8	N6/1	pred	5	m/poor	11	11	(y)	(y)			
		50	100	C		7.5YR6/8	N6/1	pred	0	poor	35	26	(y)	y			
		100	120	Mst						poor	10	0		y			
										Total	128	109					Ley (weed patches)
										MB	14	1					
										Droughtiness grade (DR)		2	2				
16	T	0	38	fSL	n	10YR3/3			4	-	66	66	n	n	I	1	1 none
		38	100	fSL		10YR5/8	om	pred	0		87	58	n	n			
		100	120	C		7.5YR5/6	om grey	pred	0	poor	14	0	(y)	y			

										Total	166	123	Ley				
										MB	52	15					
Droughtiness grade (DR)										1	1						
17	T	0	28	fSL	n	10YR5/3		6	-	48	48	n	n	//	1	2	DR
		28	45	fSL		2.5Y7/3	Mn	many	5		29	29	y	n			
		45	55	hCL		2.5Y7/2	Fe	many	5		12	15	y	n			
		55	68	SCL				10		12	18	n	n				
		68	100	C	n	N6/1	Fe	many	5	poor	21	2	y	y			
		100	120	Mst						poor	10	0		y			
										Total	132	112	Ley				
										MB	18	4					
Droughtiness grade (DR)										2	2						
18	T	0	28	fSL	n	10YR4/3		0	-	50	50	n	n	//	1	1	none
		28	55	fSL		10YR5/4	Fe	com f	0		46	49	(y)	n			
		55	70	fSL		10YR6/2	Fe	com	0		20	27	y	n			
		70	90	hCL	n	N6/1	Fe	many	0	m/poor	17	0	y	(y)			
		90	120	C		10YR6/6	&6/3	many	0	poor	21	0	(y)	y			
												Total	154	126	Ley		
										MB	40	18					
Droughtiness grade (DR)										1	1						
Pit C	T	0	25	fSL	n	10YR5/3		6	-	42	42	n	n	//	1	2	DR
		25	40	fSL		2.5Y6/3	OMFe	com f	5	good	31	31	y	n			
		40	65	mCL		2.5Y6/4	Fe	com	5		30	38	y	n			
		65	75	hCL		2.5Y7/1	Fe	many	0	m/poor	9	7	y	(y)			
		75	120	C	n	10YR6/6	&6/3	many	0	poor	32	0	(y)	y			
												Total	143	119	Ley		
										MB	29	11					
Droughtiness grade (DR)										2	1						
19	T	0	32	mCL	n	10YR4/3			-	58	58	n	n	///	3a	3a	WE
		32	50	mCL		10YR4/3	Mn,Fe	pred		m/poor	25	25	(y)	n			
		50	90	C		7.5YR5/6	Grey	pred		poor	28	26	(y)	y			
		90	120	Mst						poor	15	0		y			
												Total	126	109	Ley		

									MB	12	1						
									Droughtiness grade (DR)	2	2						
20	T	0	27	hCL	n	10YR4/3		0	-	49	49	n	n	IV	3b	3b	WE GW
		27	35	C		N7/1	MnFe	many	0		13	13	y	n			
		35	50	C		N7/1	FeMn	many	0	poor	20	20	y	y			
		50	70	CL				many	10	m/poor	15	25	y	y			
		<u>70</u>	120	CL					30	m/poor	31	0	y	y			
									Total	127	106						
									MB	13	-2						
									Droughtiness grade (DR)	2	2						
21	T	0	28	mCL	n	10YR5/2		4	-	48	48	n	n	III	3a	3a	WE
		28	40	mCL		2.5Y7/2	MnOM	many	5		18	18	y	n			
		40	55	CL		7.5YR6/8	&N6/1	pred	5		20	23	y	n			
		55	100	LC		10Y7/1	Fe	many	5	poor	30	18	y	y			
		<u>100</u>	120	Mst						poor	10	0		y			
									Total	127	108						
									MB	13	0						
									Droughtiness grade (DR)	2	2						
22	T	0	22	mCL	n	10YR4/2	Fe	few	0	-	40	40	n	n	III	3a	3a
		22	53	mCL		10YR5/2	Fe	many	0		48	50	y	n			WE
		53	65	mCL		10YR5/2	Fe	many	0	poor	8	14	y	y			
		65	110	C		2.5Y5/2	Fe	pred	0	poor	32	7	y	y			
		<u>110</u>	120	Mst						poor	5	0		y			
									Total	132	110						
									MB	18	2						
									Droughtiness grade (DR)	2	2						
23	T	0	32	mCL	n	10YR4/3		0	-	58	58	n	n	III	3a	3a	WE
		32	53	mCL		10YR4/3	Fe	many	0	m/poor	28	29	(y)	n			
		53	100	mCL		10YR4/6	Grey	pred	0	poor	33	20	(y)	y			
		<u>100</u>	120	Mst						poor	10	0		y			
									Total	128	107						
									MB	14	-1						
									Droughtiness grade (DR)	2	2						

24	T	0	33	mCL	n	10YR4/3	Fe	few	0	-	59	59	n	n	III	3a	3a	WE		
		33	42	hCL		2.5Y5/2	Fe	pred	0	m/poor	13	13	y	n						
		42	95	C		10YR4/6	Grey	pred	0	poor	42	36	(y)	y						
		95	120	Mst					poor	13	0		y							
												Total	126	108	Ley					
										MB	12	0								
Droughtiness grade (DR)											2	2								
25	T	0	29	mCL	n	10YR4/2	Fe	many	0	-	52	52	y	n	IV	3b	3b	WE		
		29	120	C		2.5Y5/2	Fe	pred	0	m/poor	83	59	y	y						
												Total	135	112	Ley					
												MB	21	4						
		Droughtiness grade (DR)											2	2						
pit B	T	0	20	mCL	n	10YR4/3	Fe	com	0	-	36	36	(y)	n	III	3a	3a	WE		
		20	41	C		10YR5/2	Fe	pred	0		34	34	y	n						
		41	60	C		10YR5/2	Fe	pred	0	poor	19	25	y	y						
		60	80	C		10YR5/2	Fe	pred	0		16	16	y	y						
		80	120	Mst					poor	20	0		y							
												Total	124	110	Ley					
												MB	10	2						
Droughtiness grade (DR)											2	2								
26	T	0	30	mZCL	n	10YR3/4	Fe	com	0	-	57	57	(y)	n	IV	3b	3b	WE		
		30	120	C		2.5Y5/2	Fe	pred	0	m/poor	82	58	y	y						
												Total	138	115	Ley					
												MB	24	7						
		Droughtiness grade (DR)											2	2						
27	T	0	20	mCL	n	10YR4/2	Fe	com	0	-	36	36	y	n	III	3a	3a	WE		
		20	55	mCL		2.5Y5/2	Fe	pred	0	m/poor	46	49	y	n						
		55	120	C		2.5Y5/2	Fe	pred	0	poor	46	20	y	y						
												Total	128	105	Ley					
												MB	14	-4						
Droughtiness grade (DR)											2	2								
28	T	0	40	SCL	n	10YR4/3			0	-	68	68	n	n	II	2	2	WE DR		
		40	80	hCL		10YR5/6	Fe, om	many	0		46	48	(y)	n						

		80	120	C		10YR5/4	Fe	pred	0	poor	28	0	(y)	y			
										Total	142	116		Ley			
										MB	28	8					
										Droughtiness grade (DR)	2	2					
29	T	0	32	mCL	n	10YR3/4			0	-	58	58	n	n	//	2	2 WE DR
		32	50	mCL		10YR3/4			0		29	29	n	n			
		50	85	C		7.5YR5/8	om, grey	pred	0	poor	25	26	(y)	y			
		85	120	LS		10YR5/6	Fe	many	0		21	0	(y)	n			
										Total	132	112		Ley			
										MB	18	4					
										Droughtiness grade (DR)	2	2					
30	T	0	30	mCL	n	10YR4/2			0	-	54	54	n	n	//	2	2 DR WE
		30	65	hSCL		2.5Y7/2	Mn, Fe	pred	0		45	53	y	n			
		65	105	hSCL		2.5Y7/2	Fe	com	0		40	8	y	n			
		65	120	hSCL		7.5YR4/6	Grey		0	m/poor	50	0	(y)	n			
										Total	188	114		Ley			
										MB	74	6					
										Droughtiness grade (DR)	1	2					
31	T	0	35	hCL	n	10YR4/2	Mn, Fe		0	-	63	63	y	n	IV	3b	3b WE
		35	100	C		2.5Y6/1	Fe	pred	0	poor	55	46	y	y			
		100	120	Mst						poor	10	0		y			
										Total	128	109		Ley			
										MB	14	1					
										Droughtiness grade (DR)	2	2					
32	T	0	37	mCL	n	10YR4/2	Mn, Fe		0	-	70	70	y	n	III-IV	3b	3b WE
		37	90	C		2.5Y6/1	Fe	pred	0	poor	42	40	y	y			
		90	120	Mst						poor	15	0		y			
										Total	128	111		Ley			
										MB	14	3					
										Droughtiness grade (DR)	2	2					

Appendix 3: Pit Descriptions and Photographs

Pit A		Description (grass ley)
Ap	0-29 cm	Brown (10YR4/3) fine sandy loam, mottled at base. Friable, coarse granular structure with many roots. ~ 5% pebbles. Some worms.
Eg	29-35 cm	Brown (10YR5/3) fine sandy loam with many iron mottles. Strongly developed friable fine and medium angular blocky with roots. ~5% pebbles.
Btg	35-47 cm	Clay loam and clay. Ochreous (7.5YR6/8) and grey (N6/1) predominantly mottled. Moderate medium subangular blocky passing to angular blocky. Fine root.
BCg	47-80 cm	Ochreous and grey (2.5Y6/1) clay. Weak (adherent) very coarse subangular blocky. Slowly permeable.
BC(g)	80-100 cm	Brownish yellow (10YR6/6) and pale brown (10YR6/3) clay. Non-calcareous.

Geology: London Clay

Comment: Drains better than land on west. Not saturated. Wetness Class III and Subgrade 3a. Wickham series.

A: structures reassembled.
Yellow marker 30 cm

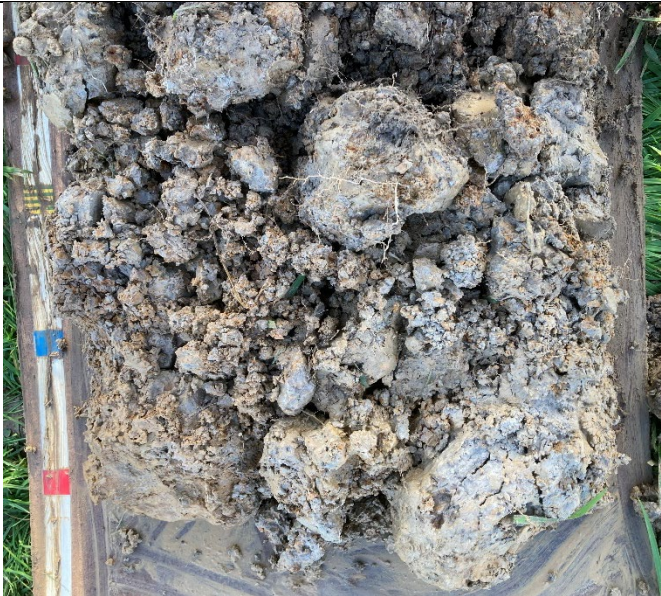


A: subsoil, biopores in soil above 47 cm
but not in very firm soil beneath



Pit B		Description (grazed grass)
Ap	0-20 cm	Brown (10YR4/3) medium clay loam, common iron mottles, fine granular structure, strongly developed, weak consistence, organic matter mixed with mineral matter, abundant roots, non-calcareous.
Eb	20-41 cm	Greyish brown (2.5Y5/2) clay, predominant iron mottles, medium sub-angular blocky structure, moderately developed, moderate consistence, many roots.
Btg	41-60 cm	Greyish brown (2.5Y5/2) clay, predominant iron mottles, very coarse sub-angular blocky structure, poorly developed, massive consistence, few roots.
BCg	60-80 cm	Greyish brown (2.5Y5/2) clay, predominant iron mottles, non-calcareous.

Geology: London Clay

B: structures reassembled. Yellow marker 30 cm	B: subsoil, very mottled and massive.
	

Pit C		Description (grass ley)
Ap	0-25 cm	Brown (10YR5/3) fine sandy loam. Very friable, coarse granular structure with many roots. ~ 5% pebbles. Some worms.
Eb(g)	25-40 cm	Light yellowish brown (2.5Y6/3) fine sandy loam, with some faint iron mottles and organic matter inclusion. Strongly developed friable fine subangular blocky with roots. ~5% pebbles.
Btg	40-65 cm	Medium clay loam. Light yellowish brown (2.5Y6/4) with common iron mottles. Strongly developed friable medium angular blocky structure with some fine root.
2Btg	47-75 cm	Ochreous and light grey (2.5Y7/1) heavy clay loam. Moderately developed friable coarse angular blocky structure.
BC(g)	75-100 cm	Yellow brown (10YR6/6 and 6/2) London Clay. Non-calcareous.

Geology: Loamy Drift over London Clay

Comment: Slowly permeable from 65 or 75 cm depth. Moderately well drained (WC II) and good available water supply in profile (Grade 2).

C: structures reassembled.
Yellow marker 30 cm



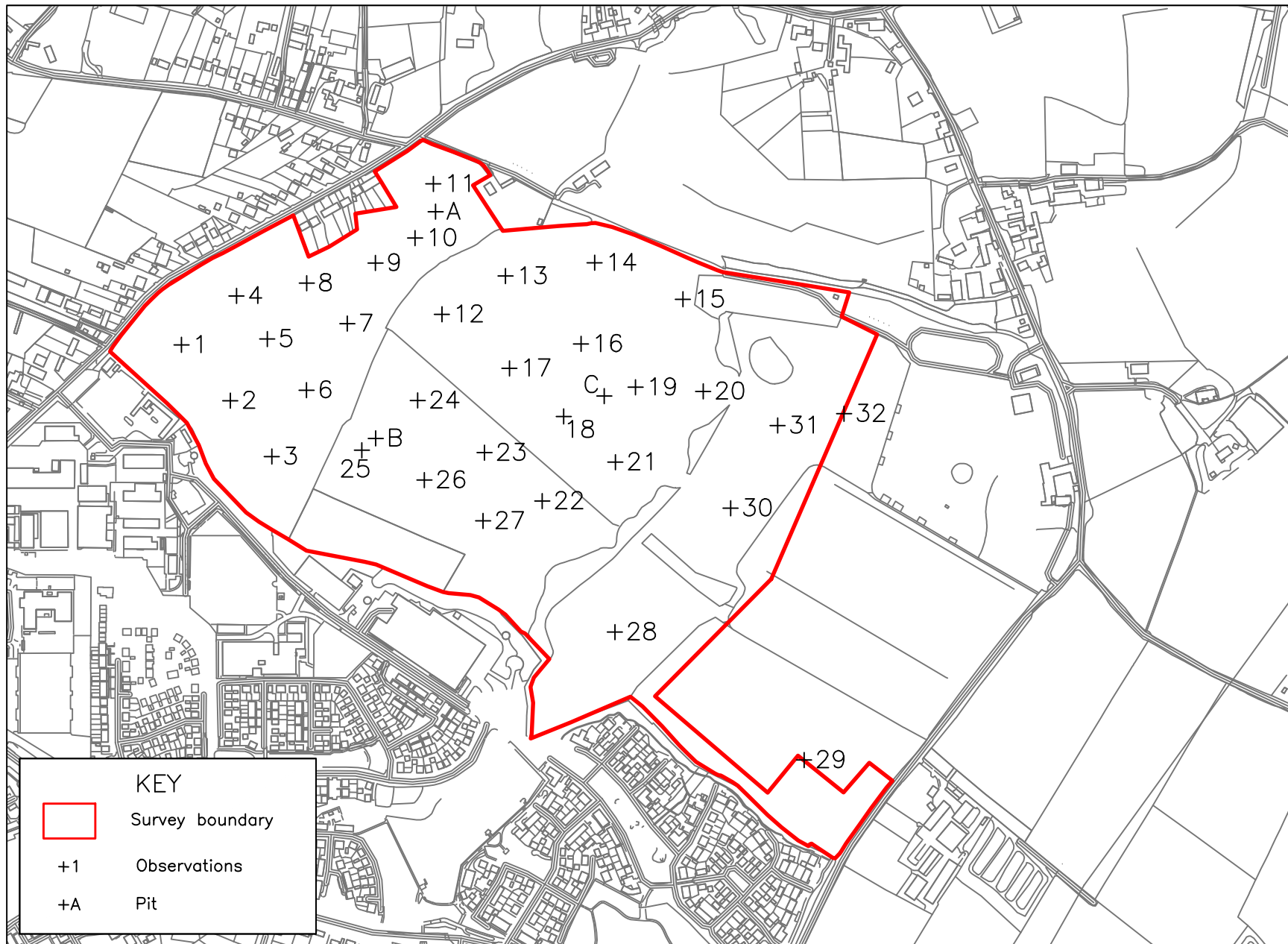
C: subsoil, less permeable below 65 cm and very mottled but fractures readily.



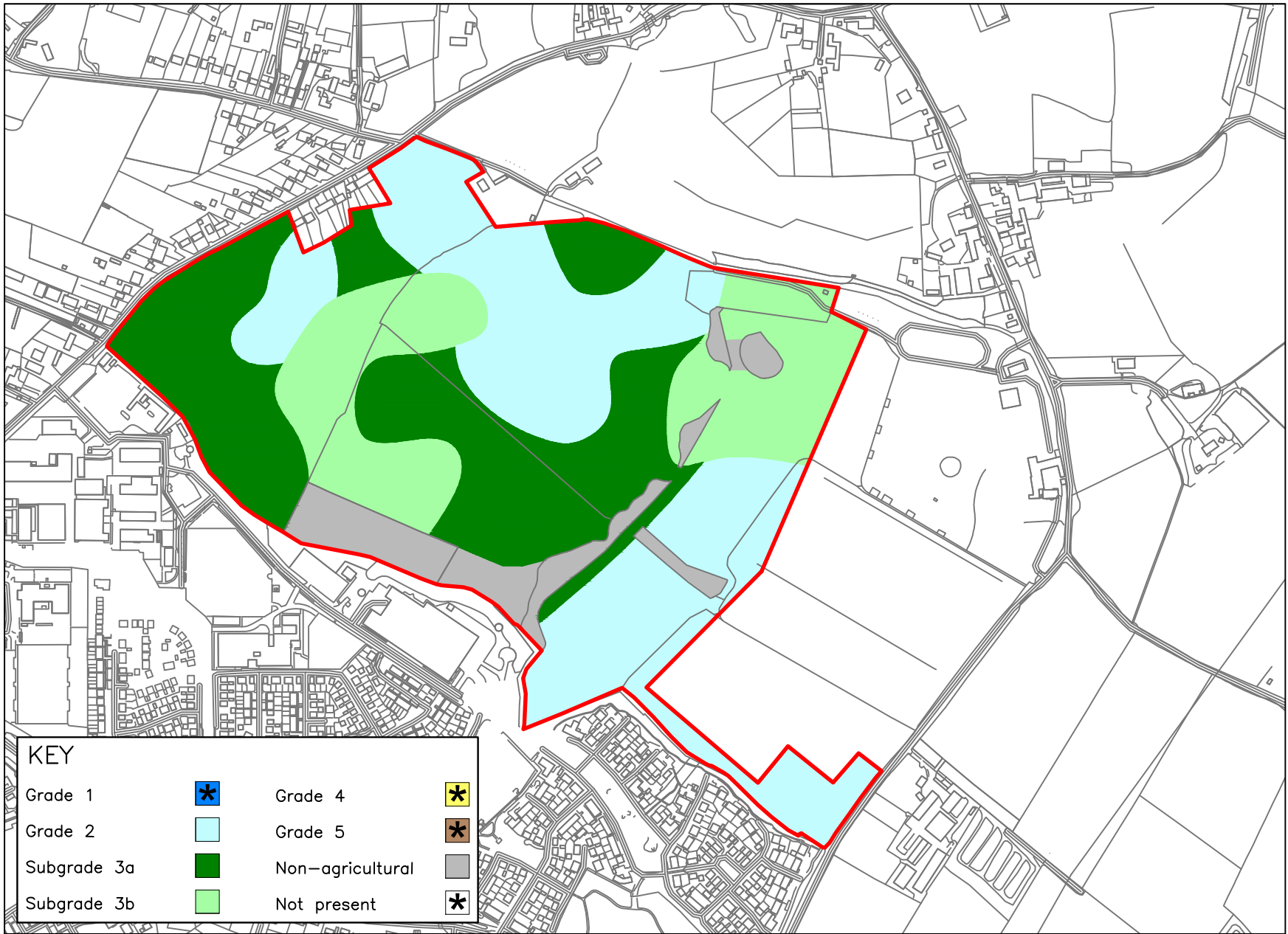
Site 08 80-100 cm.

London Clay is brown and light brownish grey mottled.





11/25	RLB	1125
-	-	0125
Rev.	Comment	Date
Drawing title OBSERVATION MAPPING		
Contract BARKHAM SQUARE		
Reading Agricultural Consultants Ltd Gate House Beechwood Court Long Toll Woodcote RG8 0RR 01491 684233 www.reading-ag.com		
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Ref. RAC/10568/1	Rev. 11/2025	
Drawn by AGM	Checked by AIF	
Scales 1:7,500@A4	Date 11/2025	



11/25	RLB	1125
-	-	0125
Rev.	Comment	Date

Drawing title
OBSERVATION MAPPING

Contract

BARKHAM SQUARE

Reading Agricultural Consultants Ltd
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Woodcote
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Ref. RAC/10568/2	Rev. 11/2025
Drawn by AGM	Checked by AIF
Scales 1:7,500@A4	Date 11/2025

SCALE 1:7,500

