M3 Junction 9 Improvement

Scheme Number: TR010055

6.3 Environmental Statement Appendix 9.2 - Agricultural Land Classification and Soil Resources

APFP Regulation 5(2)(a)

Planning Act 2008

Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009

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Planning Act 2008

Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009

M3 Junction 9 Improvement
Development Consent Order 202[x]

6.3 ENVIRONMENTAL STATEMENT- APPENDIX 9.2: AGRICULTURAL LAND CLASSIFICATION AND SOIL RESOURCES

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Author:	M3 Junction 9 Improvement Project Team, Highways England

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READING AGRICULTURAL CONSULTANTS

March 2021

Stantec UK Limited

Agricultural Land Classification and Soil Resources

at

M3 Junction 9, Winchester

Beechwood Court,
Long Toll, Woodcote,
RG8 0RR

01491 684 233
www.reading-ag.com

1 Introduction

1.1 Reading Agricultural Consultants Ltd (RAC) is instructed by Stantec UK Limited to investigate the Agricultural Land Classification (ALC) and soil resources of land at Junction 9 of the M3 at Winchester, by means of a detailed survey of site and soil characteristics. A small portion of the site was surveyed in 2017. The results of the previous survey have been incorporated into this report.

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 land (1988)[1], and summarised in Natural England's Technical Information Note 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 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] **MAFF (1988).** *Agricultural Land Classification of England and Wales. Revised guidelines and criteria for grading the quality of agricultural land*. MAFF Publications. http://publications.naturalengland.org.uk/publication/6257050620264448

[2] **Natural England (2012).** *Technical Information Note 049 - Agricultural Land Classification: protecting the best and most versatile agricultural land*, Second Edition. http://publications.naturalengland.org.uk/file/4424325

1.5 Land which is classified as Grades 1, 2 and 3a in the ALC system is defined[3] 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 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 2. 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 MAFF guidelines.

1.8 Paragraph 3.6.1 of the DMRB LA109[3] also indicates that a soil resource and ALC survey should be undertaken to inform the baseline scenario where data is incomplete or unavailable. Reference is also made within LA109 to the MAFF ALC guidelines[1], as well as to Defra's Construction Code of Practice[4] and British Standards for topsoil[5] and subsoil[6].

1.9 Paragraph 3.9 of the DMRB LA109 indicates that the baseline scenario within environmental assessments shall report on the proportion of identified ALC types within a region (i.e. the relative abundance of soil type in the wider geographic area and/or its contribution to a cohesive network). The appropriate region or wider geographic area is not defined but, as this site lies on the border of two National Character Areas, it is considered appropriate to refer to

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[3] **Highways England (2019)**. *Design Manual for Roads and Bridges, LA 109, Geology and Soils, England National Application Annex*, https://www.standardsforhighways.co.uk/prod/attachments/adca4c7d-4037-4907-b633-76eaed30b9c0

[4] **Defra (2009).** Construction code of practice for the sustainable use of soils on construction sites https://www.gov.uk/government/publications/code-of-practice-for-the-sustainable-use-of-soils-on-construction-sites

[5] **British Standards Institute (2015).** *BS 3882:2015, Specification for topsoil.*

[6] **British Standards Institute (2013).** *BS 8601:2013, Specification for subsoil and requirements for use.*

the Provisional ALC data available for the Winchester City Council area which covers approximately 62,000 ha of agricultural land. On the assumption that the Provisional Grade 3 land is divided between Subgrades 3a and 3b, the data show that approximately 44% (nearly 28,000 ha) of agricultural land in the area is likely to be classified as BMV agricultural land. This is a similar but slightly lower proportion than those estimated for the South East (48%) and England (47%), with both also calculated on the assumption that there is an even distribution of Subgrades 3a and 3b within the Provisional Grade 3.

2 Site and climatic conditions

General features, land form and drainage

2.1 The survey area extends to around 175ha in total of which around 85ha is agricultural land and located primarily on the eastern side of the M3 at Winchester. The remainder of the survey area is mostly highway land.

2.2 Most of the non-highway land in the survey area is in arable use, with two areas of grassland located in the north of the survey area. One is located at Christmas Hill, north of the A34 and Three Maids Hill roundabout, and is non-agricultural. The other is permanent pasture at Easton Down to the west of the M3 and east of the A34.

2.3 The main survey area extends southward from Easton and the River Itchen in the north to the field parcel south of the A31 Petersfield Road in the south.

2.4 The topography is characterised by valleys, both that of the main River Itchen valley and also by shallow valleys cut into convex slopes of the main valley side. The highest altitudes are found in the north at around 85m above Ordnance Datum (AOD) and fall to around 45m AOD to the River Itchen. The topography of the grassland parcel at Christmas Hill is gently sloping with a southerly aspect, between around 90m and 95m AOD.

Agro-climatic conditions

2.5 Agro-climatic data for the survey area have been interpolated from the Meteorological Office's standard 5km grid point dataset at three points, at representative altitudes of 91m, 75m and 60m AOD. The data are given in Table 1. The climate is warm and wet with moderate to moderately large moisture deficits. The number of Field Capacity Days (FCD) is larger than is average for lowland England (150) and is unfavourable for providing opportunities for agricultural field work.

Table 1: Local agro-climatic conditions

Parameter	Value		
Grid Ref	North – SU463339	Centre – SU499316	South – SU501291
Altitude	91m AOD	75m AOD	60m AOD
Average Annual Rainfall	895mm	827mm	818mm
Accumulated Temperatures >0°C	1,442 day°	1,461 day°	1,479 day°
Field Capacity Days	179 days	179 days	179 days
Average Moisture Deficit, wheat	100mm	102mm	104mm
Average Moisture Deficit, potatoes	91mm	93mm	96mm

Soil parent material and soil type

2.6 The underlying geology mapped by the British Geological Survey[7] includes five chalk formations belonging to the White Chalk Subgroup, generally including chalk and flints. Superficial glacial head deposits are mapped within the narrow valleys and across the valley sides in the north of the main survey area. Head deposits include poorly sorted gravel, sand and clay. The Clay-with-flints Formation is mapped over a summit west of Fulling Mill Lane and east of the M3. Alluvium is mapped in the valley of the River Itchen.

2.7 The Soil Survey of England and Wales soil association mapping[8] (1:250,000 scale) shows the Andover 1 association as the most extensive in the survey area. Andover 1 soils develop on slopes and are characterised by shallow, calcareous silty soils, overlying chalk. The soils are variably flinty and chalky, and well drained within Wetness Class (WC) I. The similar but flinty Charity 2 association is mapped in a limited area east of Fulling Mill Lane and west of Easton.

2.8 The south of the survey area, south of the A31 Petersfield Road, is mapped as having similar soils, of the Upton 1 association, which develops on moderately steep to very steep slopes.

2.9 The Adventurers' 3 association is mapped within the valley of the River Itchen. These soils are characterised by deep peats or some deep stoneless silty and clayey soils with humose surface horizons. They are typically affected by high groundwater and are severely waterlogged throughout the year, and are within WC V and VI[9].

[7] **British Geological Survey (2021).** *Geology of Britain viewer*, http://mapapps.bgs.ac.uk/geologyofbritain/home.html

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

[9] **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 The survey area is considered in seven blocks. Access was not permitted to one block, that east of Fulling Mill Lane and west of Easton, although it was observable from a public right of way to its north. The other blocks comprise land at Christmas Hill (Block 1); land north of the M3 (Block 2); land at Manor Farm (Block 3); land east of Junction 9 (Block 4); land north of St Swithun's School (Block 5); and land south of Petersfield Road (Block 6).

3.2 In total, 81 soil profiles were examined across the site; 11 were observed in 2017 and 70 in 2021. Soil cores were extracted using an Edelman (Dutch) auger at an observation density of one per hectare across the accessible agricultural land in accordance with the established recommendations for ALC surveys[2].

3.3 Seven observation pits were excavated to examine subsoil structures (two in 2017 and five in 2021). The locations of observations are indicated on Figures RAC/8945/1a and RAC/8945/1b. 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;
- significant stoniness;
- colour (including localised mottling);
- consistency;
- structural condition;
- free carbonate; and
- depth.

3.4 One composite topsoil sample was taken from each of the surveyed blocks and submitted for laboratory determination of particle size distribution, pH, organic matter content and nutrient contents (P, K, Mg).

3.5 Seven topsoil samples and five upper subsoil samples were submitted for laboratory determination of pH, organic matter content and nutrient contents (P, K, Mg) from Block 3, which is proposed as an ecological mitigation area. Results of all analysis are presented in Appendix 1.

3.6 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.

3.7 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

3.8 Assessment of land quality has been carried out according to the MAFF revised ALC guidelines (1988)[1]. Soil profiles have been described according to Hodgson (1997)[10] which is the recognised source for describing soil profiles and characteristics according to the revised ALC guidelines.

Block 1

3.9 All land within Block 1 is non-agricultural. Where soils are the least disturbed at Observations 80 and 81 the soil profile comprises brown (10YR4/3 in the Munsell soil colour charts[11]), moderately stony, heavy silty clay loam over soft chalk. Along the north of the block is a large soil bund orientated east to west composed of brown (10YR4/3), medium to heavy silty clay loam. Recordings were limited to the top of the bund with the auger and attempts to dig a pit were impeded by stone and a smaller portion of inert waste materials such as brick and glass.

Block 2

3.10 Agricultural land quality in Block 2 is limited by both site and soil conditions. Much of the land is strongly sloping with gradients ranging between 7 and 12°. Gradients of 7 to 11° limit land quality to Subgrade 3b whilst those of 11 to 18° limit more severely to Grade 4. The limitation arises from difficulties in accessing the land with machinery, with steeper slopes impacting on the safety and efficiency of operations.

3.11 Within the soil profiles, the topsoil generally comprises medium to heavy clay loam on the higher ground and medium silty clay loam on the lower ground. The average topsoil depth is 31cm. The colour is (very) dark greyish brown to dark brown (10YR3/2, 10YR3/3 or 10YR4/2).

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

[11] **Munsell Color (2009).** *Munsell Soil Color Book*. Grand Rapids, MI, USA

Stone content is slight to moderate, mostly comprising chalk with a smaller volume of hard flint. There are fewer stones at the lower altitudes in the south-west. The topsoil is moderately calcareous and has a fine subangular blocky to crumb structure.

3.12 The depth to chalk increases with decreasing altitude. At the highest points, the topsoil directly overlies chalk. At mid-points, there is an upper subsoil horizon of soft chalk mixed into a medium clay loam or medium silty clay loam soil horizon which varies from brown (7.5YR5/4) to light yellowish brown and very pale brown (10YR6/4 and 10YR7/3). Chalk is encountered at an average depth of 46cm.

3.13 Across the lower-lying land, the upper subsoil is brown (10YR5/3), medium clay loam or heavy clay loam. The chalk content increases with depth until an average of 73cm whereby pure chalk is encountered. The subsoil has a fine subangular to crumb structure and is permeable.

3.14 All profiles are well drained, of WC I, and are limited by droughtiness to Grade 2 or Subgrade 3a, depending upon the subsoil stone content and depth to chalk, and also by wetness to Grade 2 or Subgrade 3a where topsoils are medium loam or heavy loams respectively.

Block 3

3.15 Most of this block is proposed for the establishment of an ecological mitigation area. Much of the topsoil is medium silty clay loam or medium clay loam, with heavier variants in the centre and north where there are also instances of silty clay. The topsoil is dark greyish brown, brown or dark yellowish brown (10YR4/2, 10YR4/3 or 10YR4/4) and has an average depth of 30cm. The stone content is mostly slight, but higher along the western and northern boundaries, and includes chalk and flint. The topsoil is moderately calcareous and has a fine subangular blocky to crumb structure. Few fine roots are present.

3.16 In central areas the topsoil commonly directly overlies chalk, including both soft chalk and hard chalk stones. Where there is upper subsoil, there is a gradual boundary. Most of the upper subsoil is heavy clay loam or heavy silty clay loam, with medium textures mainly in the south. The upper subsoil is brown to yellowish brown (10YR4/3, 10YR5/3 or 10YR5/4), moderately to very calcareous and slightly to moderately chalky across most of the block. In line with the topsoil, the subsoil stone content is higher along the western boundary, including more of both hard chalk and flint pebbles. The structure is moderately well developed and forms fine or medium subangular blocky peds. Across most of the area, soft rootable chalk with hard chalk stones is present at an average depth of around 52cm.

3.17 Along the north and north-eastern boundaries, the subsoil is deeper, comprising slightly flinty, brown or strong brown (10YR4/3 or 7.5YR4/6), heavy silty clay loam or clay loam. The upper subsoil passes to clay at an average depth of around 50cm. The clay is slowly permeable and the profiles are of WC III. With heavy textured topsoils, there is a resultant wetness limitation to Subgrade 3b.

3.18 However, most of the profiles are well drained, WC I, and are limited by soil droughtiness and workability, due to the relatively large number of FCD (179). Most of the agricultural land within Block 3 is classified as Grade 2. Along the western edge of the block, the higher stone contents throughout the profiles, the higher proportion of flints and the prevalence of hard chalk over soft chalk, results in a more severe limitation to Subgrade 3a, or 3b where hard chalk with flint pebbles is not considered as easily rootable.

Block 4

3.19 The topsoil is dark greyish brown or brown (10YR4/2 or 10YR4/3), medium or heavy silty clay loam with an average depth of 28cm. The topsoil is slightly stony, slightly to moderately calcareous and has a moderate, fine subangular blocky structure and friable consistency.

3.20 Most of the topsoil directly overlies chalk. Where an upper subsoil horizon is distinguishable, it comprises moderately or very calcareous medium silty clay loam or medium clay loam which is brown or yellowish brown (10YR4/3 or 10YR5/4). The upper subsoil is moderately chalky, overlying mixed hard and soft chalk at an average depth of 37cm.

3.21 Profiles are well drained, WC I. Where the topsoil is medium silty clay loam, the profiles are limited to Grade 2 by both droughtiness and wetness/workability. Where the topsoil is heavy silty clay loam, there is a wetness limitation to Subgrade 3a.

Block 5

3.22 Topsoil comprises medium or heavy silty clay loam of 29cm average depth. The topsoil is dark greyish brown or dark yellowish brown (10YR4/2 or 10YR4/4), slightly stony with mixed flint and chalk, and slightly to moderately calcareous. The consistency is friable and the structure is moderately well developed with medium subangular blocky peds.

3.23 In most profiles there is a clear boundary to upper subsoil horizons of brown or light brownish grey (10YR4/3 or 10YR6/2), medium clay loam. The proportion of chalk increases through the subsoil which is moderately calcareous, has a friable consistency and a fine angular blocky

structure. Chalk, comprising soft chalk with hard chalk stones, is present from an average depth of 43cm.

3.24 All profiles are well drained, of WC I. Where the topsoil is medium silty clay loam, the profiles are limited to Grade 2 by both droughtiness and workability. Where the topsoil is heavy silty clay loam, there is a wetness limitation to Subgrade 3a.

Block 6

3.25 In the southern half of the block, the slopes measure around 7-8° which, as in Block 2, has an overriding limitation to Subgrade 3b.

3.26 Within the soil profiles, the topsoil is clay loam or silty clay loam with an average depth of 26cm. The topsoil is brown or greyish brown (10YR4/2 to 10YR5/3), slightly stony and slightly to moderately calcareous. The structure is moderately to weakly developed and forms fine subangular blocky peds. Few roots and two worms were observed. There is a gradual boundary to the upper subsoil.

3.27 The upper subsoil is moderately to very calcareous silty clay loam or clay loam which is most commonly yellowish brown (10YR5/4, 10YR5/6 or 10YR6/4). The upper subsoil has a moderately developed, fine subangular to crumb structure. Few roots were observed. Frequently around the block but occurring in no particular pattern, the upper subsoil contains a high proportion of soft and crushed chalk, estimated at 60-75%.

3.28 Where identified, lower subsoil horizons are often heavy silty clay loam and range from brown (10YR4/3) to light yellowish brown and very pale brown (10YR6/4 and 10YR7/3). The lower subsoils are strongly calcareous and include up to 30% chalk by volume.

3.29 All profiles are well drained, of WC I, and are limited by droughtiness and/or workability, mostly to Grade 2. Two profiles are limited more severely by droughtiness to Subgrade 3a as they contain larger amounts of chalk in the upper subsoil than is typical across the block, however these occurrences are isolated.

Land East of Fulling Mill Lane

3.30 The land was observed from three points along a public right of way on the northern side of the field parcel. The surface conditions are similar to those seen in Block 3, including a moderate amount of surface stone characteristic of the Charity 2 association soils. Crop growth looked fairly uniform and there was no evidence of any surface water. It is likely that the underlying soil is also similar to that of a majority of Block 3, being well drained and silty, but may be more flinty

in accordance with the mapped soil type. Therefore it is considered likely that the land will be of Subgrade 3a quality.

3.31 There is potentially also a gradient limitation to Subgrade 3b in the western part of this block which was identified visually and estimated from measurements of available maps, although this could not be confirmed without accessing the land.

3.32 The ALC distribution across the survey area is shown in Figures RAC/8945/2a and RAC/8945/2b and the areas of each grade given in Table 2. Photographs of soil pits and profiles are given in Appendix 3.

Table 2: ALC Areas

Grade	Description	Area (ha)	%
2	Very good quality	31.3	37.0
3a	Good quality	37.1	43.9
3b	Moderate quality	16.1	19.0
4	Poor quality	0.1	0.1
	Total	84.6	100
	Non-agricultural	90.5	-

Appendix 1: Laboratory Data

Determinand	Block 1	Block 2	Block 3	Block 4	Block 5	Block 6	Units
Sand 2.00-0.063 mm	15	25	16	16	15	20	% w/w
Silt 0.063-0.002 mm	58	48	46	54	58	51	% w/w
Clay <0.002 mm	27	27	38	30	27	29	% w/w
Organic Matter	3.1	4.2	3.1	3.6	3.6	3.1	% w/w
Texture	Medium/Heavy Silty Clay Loam	Medium/Heavy Clay Loam	Silty Clay	Heavy Silty Clay Loam	Medium/Heavy Silty Clay Loam	Heavy Clay Loam/Heavy Silty Clay Loam	

Determinand	Block 1	Block 2	Block 3	Block 4	Block 5	Block 6	Units
Soil pH	8.3	8.4	8.3	8.3	8.4	8.4	
Phosphorus (P)	12.0	4.6	13.8	18.4	33.4	13.0	Mg/l (av)
Potassium (K)	119	75.8	147	71.7	139	137	Mg/l (av)
Magnesium (Mg)	42.0	43.2	65.0	41.4	48.4	32.1	Mg/l (av)

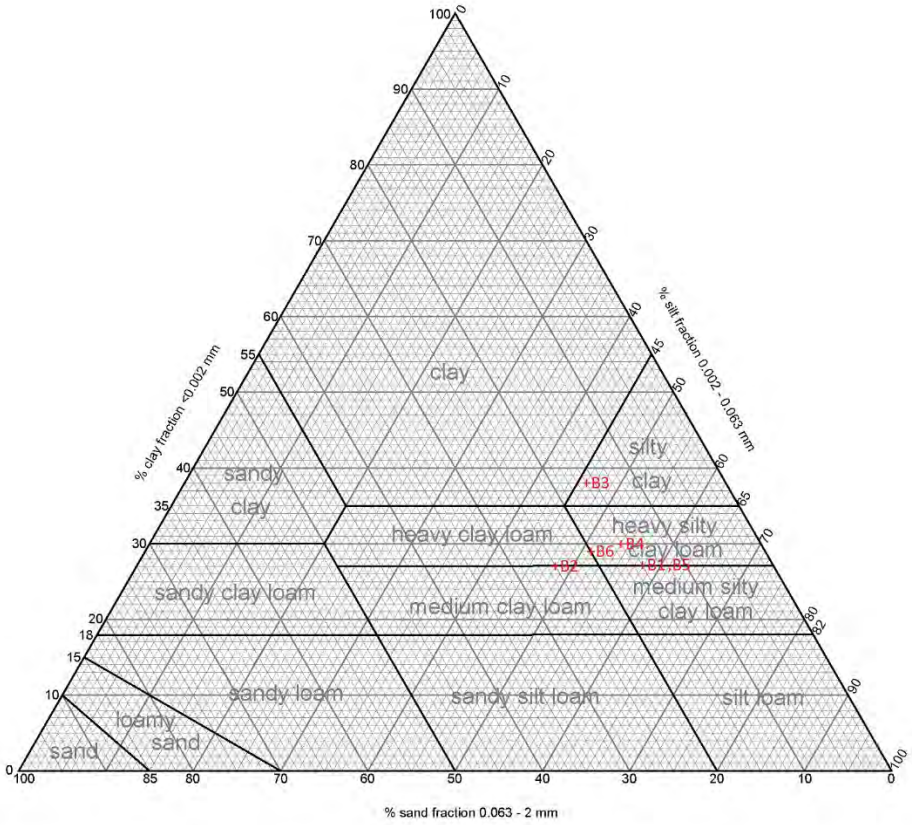
Determinand	Block 1	Block 2	Block 3	Block 4	Block 5	Block 6	Units
Phosphorus (P)	1	0	1	2	3	1	ADAS Index
Potassium (K)	1	1	2-	1	2-	2-	ADAS Index
Magnesium (Mg)	1	1	2	1	1	1	ADAS Index

Block 3 Nutrients

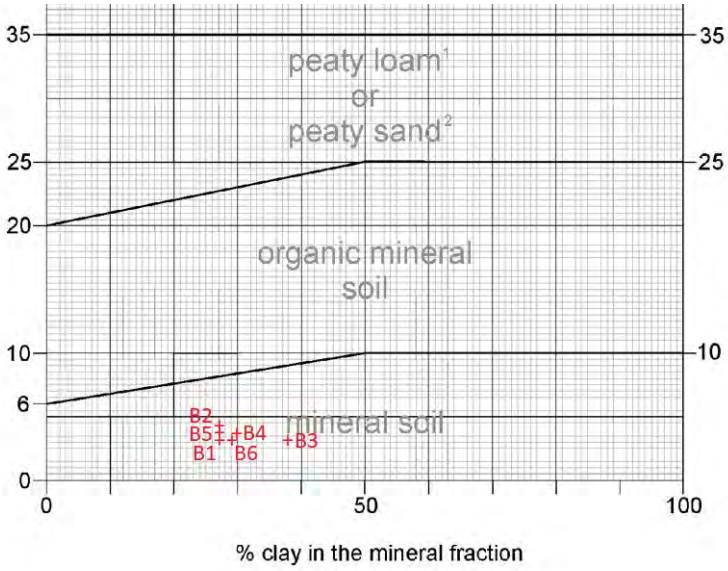
Determinand	41 Topsoil	42 Topsoil	42 Subsoil	48 Topsoil	50 Topsoil	50 Subsoil	Units
Organic Matter	2.6	5.1	2.5	3.8	4.1	3.1	% w/w
Soil pH	8.3	7.8	8.1	8.3	8.1	8.2	
Phosphorus (P)	14.4 (1)	21.2 (2)	10.2 (1)	12.8 (1)	9.0 (0)	19.4 (2)	Mg/l (av)
Potassium (K)	167 (2-)	125 (2-)	58.0 (0)	136 (2-)	164 (2-)	126 (2-)	Mg/l (av)
Magnesium (Mg)	51.5 (2)	63.1 (2)	37.1 (1)	55.4 (2)	61.1 (2)	60.5 (2)	Mg/l (av)

Determinand	52 Topsoil	52 Subsoil	54 Topsoil	54 Subsoil	58 Topsoil	58 Subsoil	Units
Organic Matter	4.4	2.5	4.9	0.8	4.5	1.7	% w/w
Soil pH	8.0	8.4	8.0	8.8	8.0	7.8	
Phosphorus (P)	22.4 (2)	5.8 (0)	15.4 (1)	3.4 (0)	19.6 (2)	<2.5 (0)	Mg/l (av)
Potassium (K)	163 (2-)	81.4 (1)	143 (2-)	23.0 (0)	154 (2-)	112 (1)	Mg/l (av)
Magnesium (Mg)	111 (2)	68.7 (2)	95.5 (2)	26.9 (1)	107 (3)	96.2 (2)	Mg/l (av)

Soil Texture by Particle Size Analysis



Organic Matter Class



[1] Less than 50% sand in the mineral fraction

[2] 50% sand or more in the mineral fraction

Appendix 2: Soil Profile Summaries and Droughtiness Calculations

2017 Data

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		
%	TAv	EAv
hard	1	0.5
chalk	10	7

hard flint & pebble

Climate Data	
MDwheat	104
MDpotato	96
FCD	178

Wetness Class Guidelines	//	///	*IV*	*V*
SPL within 80cm, gleying within 40cm	>76cm	48-76cm	<48cm	
SPL within 80cm, gleying at 40-70cm	>63cm	<63cm		
No SPL but gleying within 40cm	coarse subsoil	/	other cases	//

Maximum depth of auger penetration is underlined

Site No.		Depth cm		Texture	$CaCO_3$	Colour	Mottle colour	abund-ance	stone% hard	stone% chalk	Struct-ure	APwheat mm	AP potato mm	Gley	SPL	WC	Wetness grade WE	Final Grade	Limiting Factor(s)
1	T	0	28	mZCL	very	10YR4/3			10	5		47	47	n	n	/	1	**3a**	DR
		28	45	mZCL	very	10YR5/4			10	5		26	26	n	n				
		45	120	ChkGra	extr	white						24	13	n	n				
											Total	**96**	**85**						
											MD	-8	-11						
									Droughtiness grade(DR)			3a	3a						
2	T	0	26	mZCL	very	10YR4/3			15	5	-	41	41	n	n	/	1	**3a**	DR
		26	70	Chalk	extr	white			10	0		35	40	n	n				
		70	120	ChkGra	extr	white			0	0		15	0	n	n				
											Total	**91**	**81**						
											MD	-13	-15						
									Droughtiness grade(DR)			3a	3a						
3	T	0	30	mCL	very	10YR4/2			5	0	-	51	51	n	n	//	3a	**3a**	WE
		30	55	hZCL	very	7.5Y4/3	och	cff	20	0		32	35	n	n				
		55	120	hZCL	very	7.5Y4/3	och	cff	20	0		53	21	n	n				
											Total	**136**	**107**						
											MD	32	11						

							Droughtiness grade(DR)			1	1							
4	T	0	23	mZCL	very	10YR4/3	10	5	-	39	39	n	n	/	1	**3b**	DR	
		23	30	mZCL	very	10YR5/4	10	5		11	11	n	n					
		30	120	ChkGra	extr	white	0	0		31	20	n	n					
									Total	**80**	**69**							
									MD	-24	-27							
							Droughtiness grade(DR)			3b	3a							
5	T	0	18	mZCL	very	10YR4/3	10	5	-	30	30	n	n	/	1	**3b**	DR DE	
		18	25	mZCL	very	10YR5/4	10	40		9	9	n	n					
		25	30	mZCL	very	10YR5/4	10	80		5	5	n	n					
		30	120	ChkGra	extr	white	0	0		31	20	n	n					
									Total	**75**	**64**							
									MD	-29	-32							
							Droughtiness grade(DR)			3b	3b							
P1	T	0	26	hZCL	very	10YR5/3	2	15	-	45	45	n	n	/	1	**3b**	DR DE	
		26	30	hZCL	very	10YR5/4	2	60		5	5	n	n					
		30	120	ChkGra	extr	white	0	0		31	20	n	n					
									Total	**81**	**70**							
									MD	-23	-26							
							Droughtiness grade(DR)			3b	3a							
6	T	0	26	hZCL	very	10YR5/3	5	10	-	45	45	n	n	/	1	**3b**	DR DE	
		26	30	hZCL	very	10YR5/4	2	60		5	5	n	n					
		30	120	ChkGra	extr	white	0	0		31	20	n	n					
									Total	**81**	**70**							
									MD	-23	-26							
							Droughtiness grade(DR)			3b	3a							
7	T	0	30	hZCL	very	10YR5/3	5	10	-	52	52	n	n	/	1	**3a**	WK	
		30	50	mSL	very	10YR6/4	0	10		29	29	n	n					
		50	75	LcS	slight	10YR4/6	10	0		14	15	n	n					
		75	120	LcS	slight	10YR4/6	10	0		25	0	n	n					
									Total	**119**	**95**							
									MD	15	-1							
							Droughtiness grade(DR)			2	2							
8	T	0	30	mZCL	very	10YR5/1	15	2	-	48	48	n	n	/	1	**3b**	DR	

		30	40	Chalk	very	10YR6/4	10	0		9	10	n	n					
		40	120	ChkGra	extr	white	0	0		26	14	n	n					
									Total	**83**	**72**							
									MD	-21	-24							
									Droughtiness grade(DR)		3b	3a						
P2	T	0	24	mZCL	very	10YR5/2	15	10	-	37	37	n	n	/	1	**3a**	DR	
		24	44	mCL	very	10YR5/3	2	40		27	27	n	n					
		44	120	ChkGra	extr	white	0	0		24	13	n	n					
									Total	**88**	**77**							
									MD	-16	-19							
									Droughtiness grade(DR)		3a	3a						
9	T	0	30	mCL	very	10YR5/1	15	10	-	44	44	n	n	/	1	**3a**	DR	
		30	44	mCL	very	10YR5/3	2	40		19	19	n	n					
		44	120	ChkGra	extr	white	0	0		24	13	n	n					
									Total	**87**	**76**							
									MD	-17	-20							
									Droughtiness grade(DR)		3a	3a						
10	T	0	30	mZCL	very	10YR6/1	15	10	-	46	46	n	n	/	1	**2**	DR	
		30	110	Chalk	very	10YR6/4	0	0		62	40	n	n					
		110	120	ChkGra	extr	white	0	0		3	0	n	n					
									Total	**111**	**86**							
									MD	7	-10							
									Droughtiness grade(DR)		2	2						
11	T	0	24	mZCL	very	10YR5/2	10	0	-	41	41	n	n	/	1	**3a**	DR	
		24	60	mZCL	very	10YR5/3	0	30		48	54	n	n					
		60	120	ChkGra	extr	white	0	0		18	5	n	n					
									Total	**107**	**100**							
									MD	3	4							
									Droughtiness grade(DR)		3a	2						

2021 Data

Wetness calculations are made 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		
%	TAv	EAv
hard	1	0.5
Chalk	10	7

Climate Data	
MDwheat	103
MDpotato	95
FCD	179

Wetness Class Guidelines	*II*	*III*	*IV*	*V*
SPL within 80cm, gleying within 40cm	>76cm	48-76cm	<48cm	
SPL within 80cm, gleying at 40-70cm	>64cm	<64cm		
No SPL but gleying within 40cm	coarse subsoil	*I*	other cases	*II*

hard flint & pebble

Maximum depth of auger penetration is underlined

Site No.		Depth cm		Texture	$CaCO_3$	Colour	Mottle colour	abund-ance	stone% hard	stone% Chalk	Struct-ure	APwheat mm	AP potato mm	Gley	SPL	WC	Wetness grade WE	Final Grade	Limiting Factor(s)
1	T	0	22	mCL	very	10YR4/2			15	2		33	33	n	n	*I*	2	**3a**	DR
		22	25	mCL	very	10YR4/4				30		3	3	n	n				
		25	120	Chalk								74	45	n	n				
											Total	**110**	**81**			Top of 3b slope - 5de			
											MB	7	-14						
											Droughtiness grade (DR)	2	3a						
2		0	18	mZCL	mod.	10YR5/2				5		29	29	n	n	*I*	2	**3a**	DR
		18	38	mZCL	very	10YR6/4				60		14	14	n	n				
		38	120	Chalk								61	32	n	n				
											Total	**104**	**75**			USS - soft bedded chalk			
											MB	1	-20						
											Droughtiness grade (DR)	3a	3a						
3		0	22	hZCL	very	10YR4/2			0	20		30	30	n	n	*I*	3a	**3a**	DR WE
		22	50	Chalk								28	28	n	n				
		50	120	Chalk								49	20	n	n				
											Total	**107**	**78**			Slope 6de			
											MB	4	-17						
											Droughtiness grade (DR)	3a	3a						

4		0	20	mZCL	mod.	10YR5/3		5	5		32	32	n	n	*I*	2	**3a**	DR
		20	30	mZCL	very	10YR5/4			75		12	12	n	n				
		30	120	Chalk							69	40	n	n				
										Total	**112**	**83**			Soft, rootable chalk to 45 cm			
										MB	9	-12						
										Droughtiness grade (DR)	2	3a						
5		0	28	mZCL	mod.	10YR4/3			2		47	47	n	n	*I*	2	**2**	WE
		28	50	mZCL	very	10YR5/6			30		26	26	n	n				
		50	120	hZCL	extr.	10YR6/4			30		70	24	n	n				
										Total	**143**	**97**			USS - hard chalk			
										MB	40	2			LSS - both hard & soft chalk, matrix v.crumbly			
										Droughtiness grade (DR)	1	2						
6		0	26	mCL	slight	10YR4/3		2	5		39	39	n	n	*I*	2	**2**	WE
		26	52	mCL	very	10YR5/6			20		33	33	n	n				
		52	120	mZCL	very	10YR7/3			20		68	24	n	n				
										Total	**139**	**96**			USS - hard chalk			
										MB	36	1			LSS - both hard & soft chalk, matrix v.crumbly			
										Droughtiness grade (DR)	1	2						
7		0	20	mZCL	mod.	10YR5/3		5	5		31	31	n	n	*I*	2	**3a**	DR
		20	55	mZCL	very	10YR5/4			65		23	21	n	n				
		55	120	Chalk							46	15	n	n				
										Total	**99**	**66**			USS - rounded pieces of hard chalk approx. 65% LSS - coloured chalk			
										MB	-4	-29						
										Droughtiness grade (DR)	3a	3a						
8	T	0	30	hZCL	very	10YR4/2		10	2		50	50	n	n	*I*	3a	**3b**	GR
		30	120	Chalk							69	40	n	n				
										Total	**119**	**90**			GR-7-8de			
										MB	16	-5						
										Droughtiness grade (DR)	2	2						
9	T	0	30	hZCL	very	10YR4/2		10	2		45	45	n	n	*I*	3a	**3b**	GR

		30	38	hZCL	very	10YR4/4		0	20		7	7	n	n					
		38	120	Chalk							67	38	n	n					
										Total	**119**	**90**			GR-7-8de				
										MB	16	-5							
										Droughtiness grade (DR)	2	2							
10	T	0	27	hZCL	very	10YR4/2		10	2		45	45	n	n	*I*	3a	**3a**	WE	
		27	32	hZCL	very	10YR4/4		0	20		7	7	n	n					
		32	120	Chalk							67	38	n	n					
										Total	**119**	**90**			GR-5-6de				
										MB	16	-5							
										Droughtiness grade (DR)	2	2							
11	T	0	26	hZCL	very	10YR4/2		10	2		43	43	n	n	*I*	3a	**3a**	WE	
		26	120	Chalk							73	44	n	n					
										Total	**116**	**87**			GR-5-6de				
										MB	13	-8							
										Droughtiness grade (DR)	2	2							
12	T	0	30	mZCL	mod	10YR4/2		8	2		51	51	n	n	*I*	2	**2**	WE DR	
		30	60	hZCL	mod	10YR4/3			15		39	43	n	n					
		60	65	Chalk							4	5	n	n					
		65	120	Chalk							39	5	n	n					
										Total	**132**	**105**							
										MB	29	10							
										Droughtiness grade (DR)	2	2							
13	T	0	36	mZCL	mod	10YR4/2		10	2		60	60	n	n	*I*	2	**2**	WE DR	
		36	50	mZCL	very	10YR8/1			75		6	6	n	n					
		50	120	Chalk							49	20	n	n					
										Total	**115**	**86**							
										MB	12	-9							
										Droughtiness grade (DR)	2	2							

14	T	0	34	ZCL	mod	10YR4/2		8	1		59	59	n	n	*I*	2	**2**	WE
Pit		34	70	hZCL	mod	10YR4/3		10	2		42	54	n	n				
		70	120	hZCL	mod	10YR4/3		5	5		48	0	n	n				
										Total	**149**	**113**			Pit - dug to 70cm then augered to 120cm			
										MB	46	18						
										Droughtiness grade (DR)	1	1						
15	T	0	20	ZCL	slight	10YR5/2		8	2		34	34	n	n	*I*	2	**3a**	DR
		20	50	ZCL	very	10YR8/1			75		13	13	n	n				
		50	120	Chalk							49	20	n	n				
										Total	**96**	**67**						
										MB	-7	-28						
										Droughtiness grade (DR)	3a	3a						

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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		
%	TAv	EAv
hard	1	0.5
Chalk	10	7

Climate Data	
MDwheat	103
MDpotato	95
FCD	179

Wetness Class Guidelines	*II*	*III*	*IV*	*V*
SPL within 80cm, gleying within 40cm	>76cm	48-76cm	<48cm	
SPL within 80cm, gleying at 40-70cm	>64cm	<64cm		
No SPL but gleying within 40cm	coarse subsoil	*I*	other cases	*II*

hard flint & pebble

Maximum depth of auger penetration is underlined

Site No.		Depth cm		Texture	$CaCO_3$	Colour	Mottle colour	abund-ance	stone% hard	stone% Chalk	Struct-ure	APwheat mm	AP potato mm	Gley	SPL	WC	Wetness grade WE	Final Grade	Limiting Factor(s)
16	T	0	26	mZCL	slight	10YR4/2			5	1		46	46	n	n	*I*	2	**2**	WE DR
		26	50	mCL	mod	7.5YR4/3			5	15		31	31	n	n				
		50	120	Chalk								49	20	n	n				
											Total	**126**	**97**			Impeded @ 50cm.			
											MB	23	2						
									Droughtiness grade (DR)			2	2						
17	T	0	20	mZCL	slight	10YR4/4			10	2		33	33	n	n	*I*	2	**2**	WE DR
		20	50	mCL	mod	10YR6/2				15		41	41	n	n				
		50	120	Chalk								49	20	n	n				
											Total	**123**	**94**						
											MB	20	-1						
									Droughtiness grade (DR)			2	2						
18	T	0	40	hZCL	mod	10YR4/2			2	15		63	63	n	n	*I*	3a	**3a**	WE
		40	46	hZCL	mod	10YR4/3				20		8	8	n	n				
		46	72	Chalk								19	24	n	n				
		72	120	Chalk								34	0	n	n				
											Total	**124**	**95**						
											MB	21	0						
									Droughtiness grade (DR)			2	2						

19	T	0	27	hZCL	mod	10YR4/2		2	15		43	43	n	n	/	3a	**3a**	WE
		27	70	Chalk							37	43	n	n				
		70	120	Chalk							35	0	n	n				
										Total	**115**	**86**						
										MB	12	-9						
										Droughtiness grade (DR)	2	2						
20	T	0	25	hZCL	mod	10YR4/2		10	0		43	43	n	n	/	3a	**3a**	WE
		25	120	Chalk							74	45	n	n				
										Total	**117**	**88**						
										MB	14	-7						
										Droughtiness grade (DR)	2	2						
21	T	0	33	hZCL	mod	10YR4/2		15	0		53	53	n	n	/	3a	**3a**	WE
		33	120	Chalk							66	37	n	n				
										Total	**119**	**90**						
										MB	16	-5						
										Droughtiness grade (DR)	2	2						
22	T	0	30	mZCL	mod	10YR4/2		15	0		48	48	n	n	/	2	**2**	WE DR
		30	73	hZCL	mod	10YR4/4		5	5		53	61	n	n				
		73	120	Chalk							33	0	n	n				
										Total	**134**	**110**						
										MB	31	15						
										Droughtiness grade (DR)	1	1						
23	T	0	27	hZCL	mod	10YR4/2		10	0		46	46	n	n	/	3a	**3a**	WE
		27	120	Chalk							72	43	n	n				
										Total	**118**	**89**		Borderline topsoil heavy /medium				
										MB	15	-6						
										Droughtiness grade (DR)	2	2						
24	T	0	38	mZCL	slight	10YR4/2		12	1		63	63	n	n	/	2	**2**	WE DR
		38	50	mCL	mod	10YR4/3		2	10		17	17	n	n				

		50	120	Chalk						49	20	n	n						
									Total	**129**	**100**								
									MB	26	5								
								Droughtiness grade (DR)		2	2								
25	T	0	29	hZCL	slight	10YR4/2		2	15	46	46	n	n	*I*	3a	**3a**		WE	
Pit		29	60	Chalk		10YR8/1				28	31	n	n						
		60	120	Chalk						42	10	n	n						
									Total	**116**	**87**								
									MB	13	-8								
								Droughtiness grade (DR)		2	2								
26	T	0	23	mZCL	slight	10YR4/4		10	2	38	38	n	n	*I*	2	**2**		WE DR	
		23	50	mCL	mod	10YR6/2			15	37	37	n	n						
		50	120	Chalk						49	20	n	n						
									Total	**124**	**95**			Rootable chalk to 45cm					
									MB	21	0								
								Droughtiness grade (DR)		2	2								
27	T	0	25	mZCL	mod	10YR4/2		5	1	45	45	n	n	*I*	2	**2**		WE DR	
		25	50	mCL	mod	10YR6/2		1	15	34	34	n	n						
		50	120	Chalk						49	20	n	n						
									Total	**127**	**98**								
									MB	24	3								
								Droughtiness grade (DR)		2	2								
28	T	0	25	mZCL	slight	10YR4/2			2	47	47	n	n	*I*	2	**2**		WE DR	
		25	32	mCL	mod	10YR5/4			20	9	9	n	n						
		32	120	Chalk						67	38	n	n						
									Total	**123**	**94**			USS - soft chalk					
									MB	20	-1								
								Droughtiness grade (DR)		2	2								
29	T	0	30	hZCL	mod	10YR4/2		10	0	51	51	n	n	*I*	3a	**3a**		WE	

		30	120	Chalk						69	40	n	n						
									Total	**120**	**91**								
									MB	17	-4								
								Droughtiness grade (DR)		2	2								
30	T	0	35	hZCL	mod	10YR4/2		10	0		60	60	n	n	*I*	3a	**3a**	WE	
		35	120	Chalk				0			64	35	n	n					
									Total	**124**	**95**								
									MB	21	0								
								Droughtiness grade (DR)		2	2								
31	T	0	28	mZCL	slight	10YR4/2		2	1		52	52	n	n	*I*	2	**3a**	DR	
		28	55	Chalk				2			0	0	n	n					
		55	120	Chalk							46	15	n	n					
									Total	**97**	**67**			Soft, rootable chalk to 55cm					
									MB	-6	-28								
								Droughtiness grade (DR)		3a	3a								
32	T	0	28	mZCL	slight	10YR4/2		2	2		51	51	n	n	*I*	2	**2**	WE DR	
		28	120	Chalk							71	42	n	n					
									Total	**122**	**93**								
									MB	19	-2								
								Droughtiness grade (DR)		2	2								
33	T	0	25	mZCL	slight	10YR4/3		2	5		44	44	n	n	*I*	2	**2**	WE DR	
		25	40	mZCL	mod	10YR4/3			10		23	23	n	n					
		40	120	Chalk							59	30	n	n					
									Total	**126**	**97**			USS - Hard and soft chalk					
									MB	23	2			Impeded @ 65cm, rootable chalk from 45 to 65cm					
								Droughtiness grade (DR)		2	2								
34	T	0	22	mZCL	slight	10YR4/3		2	5		39	39	n	n	*I*	2	**2**	WE DR	
		22	65	Chalk							39	43	n	n					
		65	120	Chalk							39	5	n	n					
									Total	**116**	**87**								

										MB	13	-8			Impeded @ 65cm, rootable chalk from 22 to 65cm			
									Droughtiness grade (DR)		2	2						
35	T	0	30	mZCL	mod	10YR4/3		5	5		51	51	n	n	*I*	2	**2**	WE DR
Pit		30	40	mZCL	very	10YR5/4		5	25		12	12	n	n				
		40	120	Chalk							59	30	n	n				
										Total	**122**	**93**			USS - Hard and soft chalk Impeded @ 40cm - breakable chalk with soil in between			
										MB	19	-2						
									Droughtiness grade (DR)		2	2						

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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
hard	1	0.5
Chalk	10	7

hard flint & pebble

Climate Data	
MDwheat	102
MDpotato	94
FCD	179

Wetness Class Guidelines	*II*	*III*	*IV*	*V*
SPL within 80cm, gleying within 40cm	>76cm	48-76cm	<48cm	
SPL within 80cm, gleying at 40-70cm	>64cm	<64cm		
No SPL but gleying within 40cm	coarse subsoil	*I*	other cases	*II*

Maximum depth of auger penetration is underlined

Site No.		Depth cm		Texture	$CaCO_3$	Colour	Mottle colour	abund-ance	stone% hard	stone% Chalk	Struct-ure	APwheat mm	AP potato mm	Gley	SPL	WC	Wetness grade WE	Final Grade	Limiting Factor(s)
36	T	0	30	mZCL	mod	10YR4/3			5	5		51	51	n	n	*I*	2	**2**	WE DR
		30	45	mZCL	very	10YR5/4			5	25		18	18	n	n				
		45	120	Chalk								54	25	n	n				
											Total	**123**	**94**						
											MB	21	0						
									Droughtiness grade (DR)			2	2						
37	T	0	28	mZCL	mod	10YR4/4			2	2		51	51	n	n	*I*	2	**2**	WE
		28	50	hZCL	mod	10YR5/4				20		30	30	n	n				
		50	120	Chalk								49	20	n	n				
											Total	**130**	**101**						
											MB	28	7						
									Droughtiness grade (DR)			2	2						
38	T	0	30	mZCL	mod	10YR4/3			5	8		50	50	n	n	*I*	2	**2**	WE DR
		30	40	mZCL	very	10YR5/4			5	30		11	11	n	n				
		40	120	Chalk								59	30	n	n				
											Total	**120**	**91**						
											MB	18	-3						
									Droughtiness grade (DR)			2	2						
39	T	0	35	mZCL	slight	10YR4/2			10	2		59	59	n	n	*I*	2	**2**	WE DR
		35	50	mCL	mod	10YR4/3				20		19	19	n	n				

USS - Hard and soft chalk
Impeded @ 50cm - chalk with soil in between

		50	60	Chalk							7	10	n	n				
		60	120	Chalk							42	10	n	n				
										Total	**127**	**98**						
										MB	25	4						
										Droughtiness grade (DR)	2	2						
40	T	0	32	mZCL	slight	10YR4/2		8	2		55	55	n	n	*I*	2	**2**	WE DR
		32	58	mCL	mod	10YR5/3			20		31	33	n	n				
		58	65	Chalk							5	7	n	n				
		65	120	Chalk							39	5	n	n				
										Total	**129**	**100**						
										MB	27	6						
										Droughtiness grade (DR)	2	2						
41	T	0	28	mZCL	slight	10YR4/2		8	3		47	47	n	n	*I*	2	**2**	WE DR
		28	32	Chalk							4	4	n	n				
		32	120	Chalk							67	38	n	n				
										Total	**118**	**89**						
										MB	16	-5						
										Droughtiness grade (DR)	2	2						
42	T	0	40	mCL	mod	10YR4/3		8			66	66	n	n	*I*	2	**2**	WE DR
		40	50	hCL	mod	10YR5/3		2	5		15	15	n	n				
		50	60	Chalk							7	10	n	n				
		60	120	Chalk							42	10	n	n				
										Total	**130**	**101**						
										MB	28	7						
										Droughtiness grade (DR)	2	2						
43	T	0	27	mCL	mod	10YR4/3		8			45	45	n	n	*I*	2	**2**	WE DR

		27	50	Chalk							23	23	n	n				
		50	120	Chalk							49	20	n	n				
										Total	**117**	**88**						
										MB	15	-6						
										Droughtiness grade (DR)	2	2						
44	T	0	28	mZCL	mod	10YR4/3		5	1		50	50	n	n	*I*	2	**2**	WE DR
		28	35	Chalk							7	7	n	n				
		35	120	Chalk							64	35	n	n				
										Total	**121**	**92**						
										MB	19	-2						
										Droughtiness grade (DR)	2	2						
45	T	0	27	mZCL	mod	10YR3/3		2			50	50	n	n	*I*	2	**2**	WE
		27	60	mCL	mod	10YR4/3		5	2		44	49	n	n				
		60	70	mCL	mod	10YR4/3		5	5		10	14	n	n				
		70	120	Chalk							35	0	n	n				
										Total	**139**	**114**						
										MB	37	20						
										Droughtiness grade (DR)	1	1						
46	T	0	30	mZCL	mod	10YR4/2		5	2		53	53	n	n	*I*	2	**2**	WE DR
		30	45	Chalk							15	15	n	n				
		45	120	Chalk							54	25	n	n				
										Total	**122**	**93**						
										MB	20	-1						
										Droughtiness grade (DR)	2	2						
47	T	0	38	mZCL	mod	10YR4/2		10	2		64	64	n	n	*I*	2	**2**	WE
		38	80	hCL	mod	10YR4/3		12	2		43	44	n	n				

		80	120	Chalk							28	0	n	n				
										Total	**135**	**108**						
										MB	33	14						
										Droughtiness grade (DR)	1	1						
48	T	0	30	mZCL	mod	10YR4/2		5	1		54	54	n	n	*I*	2	**2**	WE DR
Pit		30	60	Chalk							27	30	n	n				
		60	120	Chalk							42	5	n	n				
										Total	**123**	**89**						
										MB	21	-5						
										Droughtiness grade (DR)	2	2						
49	T	0	30	hCL	mod	10YR4/2		10	1		48	48	n	n	*I*	3a	**3a**	WE
		30	45	hCL	mod	10YR4/3		2	2		23	23	n	n				
		45	60	Chalk							12	15	n	n				
		60	120	Chalk							42	10	n	n				
										Total	**125**	**96**						
										MB	23	2						
										Droughtiness grade (DR)	2	2						
50	T	0	29	hZCL	mod	10YR4/2		10	1		49	49	n	n	*I*	3a	**3a**	WE
		29	35	hCL	mod	10YR4/3		2	2		9	9	n	n				
		35	45	Chalk							10	10	n	n				
		45	120	Chalk							54	25	n	n				
										Total	**122**	**93**						
										MB	20	-1						
										Droughtiness grade (DR)	2	2						
51	T	0	24	hZCL	mod	10YR4/2		17	0		34	34	n	n	*I*	3a	**3a**	WE
		24	50	C	mod	7.5YR4/6		10	0		37	37	n	n				

		50	120	Chalk						49	20	n	n					
									Total	**120**	**91**							
									MB	18	-3							
								Droughtiness grade (DR)		2	2							
52	T	0	24	hZCL	mod	10YR4/2		17	0		34	34	n	n	*I*	3a	**3a**		WE
		24	45	hZCL	mod	7.5YR4/6		20	0		29	29	n	n					
		45	120	Chalk							54	25	n	n					
									Total	**116**	**87**							
									MB	14	-7							
								Droughtiness grade (DR)		2	2							
53	T	0	28	hZCL	mod	10YR4/2		17	0		44	44	n	n	*I*	3a	**3a**		WE
		28	70	Chalk							36	42	n	n					
		70	120	Chalk							35	0	n	n					
									Total	**115**	**86**							
									MB	13	-8							
								Droughtiness grade (DR)		2	2							
54	T	0	30	ZC	mod	10YR4/2		17	0		47	47	n	n	*I*	3b	**3b**		WE
		30	60	Chalk							27	30	n	n					
		60	120	Chalk							42	10	n	n					
									Total	**116**	**87**							
									MB	14	-7							
								Droughtiness grade (DR)		2	2							
55	T	0	24	hZCL		10YR4/2		17	0		38	38	n	n	*I*	3a	**3a**		WE
		24	60	C		7.5YR4/6		10	0		45	52	n	n					
		60	120	Chalk							42	10	n	n					
									Total	**125**	**100**							
									MB	23	6							
								Droughtiness grade (DR)		2	2							
56	T	0	30	hZCL		10YR4/2		13	0		50	50	n	n	*III*	3b	**3b**		WE
		30	32	hZCL		10YR4/4		15	0		3	3	n	n					

		32	50	ZC	10YR4/4			20	0		24	24	n	n					
		50	120	C	7.5YR4/6	Mn	com	5	0	poor	69	47	n	y					
										Total	**146**	**124**							
										MB	44	30							
										Droughtiness grade (DR)	1	1							
57	T	0	29	hZCL	10YR4/2			23	0		46	46	n	n	*III*	3b	**3b**	WE	
		29	52	hCL	7.5YR4/6			10	0		19	19	n	n					
		52	120	C	7.5YR4/6	Mn	com	5	0	poor	53	32	n	y					
										Total	**117**	**96**							
										MB	15	2							
										Droughtiness grade (DR)	2	2							
58	T	0	30	hZCL	10YR4/2			17	0		47	47	n	n	*III*	3b	**3b**	WE	
		30	48	hZCL	10YR4/3			15	0		26	26	n	n					
		48	120	C	7.5YR4/6	Mn	com	10	0	poor	47	26	n	y					
										Total	**120**	**99**							
										MB	18	5							
										Droughtiness grade (DR)	2	2							
59	T	0	30	hZCL	10YR4/2			20	0		41	41	n	n	*III*	3b	**3b**	WE	
		30	55	hZCL	7.5YR4/6	Mn	com	15	0		29	32	n	n					
		55	120	C	7.5YR4/6	Mn	com	10	0	poor	42	18	n	y					
										Total	**111**	**90**							
										MB	9	-4							
										Droughtiness grade (DR)	2	2							
60	T	0	32	hCL	10YR4/2			20		-	46	46	n	n	*I*	3a	**3a**	WE ST	
		32	38	hCL	10YR4/3			25			7	7	n	n					
		38	80	hCL	10YR4/3			25			38	38	n	n					
		80	120	hCL				25			31	0	n	n					
										Total	**122**	**92**							
										MB	20	-2							
										Droughtiness grade (DR)	2	2							

61	T	0	35	mZCL	slight	10YR4/2		2	2		64	64	n	n	*I*	2	**2**	WE DR	
		35	50	mCL	mod	10YR5/3		8	15		18	18	n	n					
		50	60	mCL	mod	10YR5/3		8	20		9	12	n	n					
		60	120	Chalk							42	10	n	n					
										Total	**134**	**104**							
										MB	32	10							
										Droughtiness grade (DR)	1	2							
62	T	0	28	mCL	mod	10YR4/2		12	0		44	44	n	n	*I*	2	**3b**	GR	
		28	86	hCL	very	10YR6/3		5	10		64	57	n	n					
		86	120	Chalk							24	0	n	n					
										Total	**132**	**101**			7-8de slope at point similar upslope/ levels out below point.				
										MB	30	7							
										Droughtiness grade (DR)	1	2							
63	T	0	30	hCL	mod	10YR3/3		5	15		43	43	n	n	*I*	2	**3a**	WE DR	
		30	50	Chalk							20	20	n	n					
		50	120	Chalk							49	20	n	n					
										Total	**112**	**83**			Top of 8° slope				
										MB	10	-11							
										Droughtiness grade (DR)	2	3a							
64	T	0	33	mCL	mod	10YR3/3		5	15		48	48	n	n	*I*	2	**3b**	GR	
		33	40	mCL	very	10YR7/3			40		7	7	n	n					
		40	120	Chalk							59	30	n	n					
										Total	**113**	**84**			9° slope				
										MB	11	-10							
										Droughtiness grade (DR)	2	2							
65	T	0	24	mCL	mod	7.5YR3/2		2	10		38	38	n	n	*I*	2	**2**	WE DR	
		24	120	Chalk							75	46	n	n					

										Total	**113**	**84**						
										MB	11	-10						
									Droughtiness grade (DR)		2	2						
66	T	0	30	mCL	mod	10YR3/2		2	15		45	45	n	n	*I*	2	**2**	DR
		30	43	mZCL	very	10YR6/4			30		15	15	n	n				
		43	120	Chalk							56	27	n	n				
										Total	**116**	**87**			USS - lenses of soft bedded chalk throughout. USS - possibly mCL			
										MB	14	-7						
									Droughtiness grade (DR)		2	2						
67	T	0	32	mZCL	mod	10YR3/2		5	15		49	49	n	n	*I*	2	**2**	WE DR
		32	55	mZCL	very	7.5YR5/4			35		25	25	n	n				
		55	120	Chalk							46	15	n	n				
										Total	**119**	**89**						
										MB	17	-5						
									Droughtiness grade (DR)		2	2						

Wetness calculations are made 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		
%	TAv	EAv
hard	1	0.5
Chalk	10	7

Climate Data	
MDwheat	100
MDpotato	91
FCD	179

Wetness Class Guidelines	*II*	*III*	*IV*	*V*
SPL within 80cm, gleying within 40cm	>76cm	48-76cm	<48cm	
SPL within 80cm, gleying at 40-70cm	>64cm	<64cm		
No SPL but gleying within 40cm	coarse subsoil	*I*	other cases	*II*

hard flint & pebble

Maximum depth of auger penetration is underlined

Site No.		Depth cm		Texture	$CaCO_3$	Colour	Mottle colour	abund-ance	stone% hard	stone% Chalk	Struct-ure	APwheat mm	AP potato mm	Gley	SPL	WC	Wetness grade WE	Final Grade	Limiting Factor(s)
68	T	0	37	hZCL	calc	10YR4/3			17	0		58	58	n	n	*I*	3a	**N/A**	**Other Land**
		37	120	Chalk								62	33	n	n				
											Total	**120**	**91**		Made ground- bike race track				
											MB	20	0						
											Droughtiness grade (DR)	2	2						
69	T	0	24	hZCL	calc	10YR4/3			15	0		39	39	n	n	*I*	3a	**N/A**	**Other Land**
		24	60	Chalk								33	36	n	n				
		60	120	Chalk								42	10	n	n				
											Total	**114**	**85**		Edge of soil bund				
											MB	14	-6						
											Droughtiness grade (DR)	2	2						
70		In soil bund		ZCL soil with brick and other debris														**N/A**	**Other Land**

Appendix 3: Site Photographs

Block 1

Block 2

Pit at Ob 62

Pit Topsoil

Pit Subsoil

Ob 63

Block 3

Pit at 48

Pit Topsoil

Pit Mixed Chalk

Ob 37 With Subsoil

Ob 57 Clay Subsoil

Block 4

Pit at 35

Pit Topsoil

Pit Chalky Subsoil

Block 5

Pit at 25

Pit Topsoil Over Chalk

Ob 25 Mixed Chalk and Subsoil

Block 6

Pit at Ob 14

Pit Topsoil

Pit Subsoil

Chalky Subsoil at Ob 4

Land East of Fulling Mill Lane

Potential gradient limitation, moderate total topsoil stone, uniform crop growth.

N

0 100 200 300 400 m

KEY

Proposed scheme boundary

Observations

2021 Auger

2021 Pit

2017 Auger

2017 Pit

Title
OBSERVATION MAPPING

Reading Agricultural Consultants Ltd
Gate House
Beechwood Court
Long Toll
Woodcote
RG8 0RR
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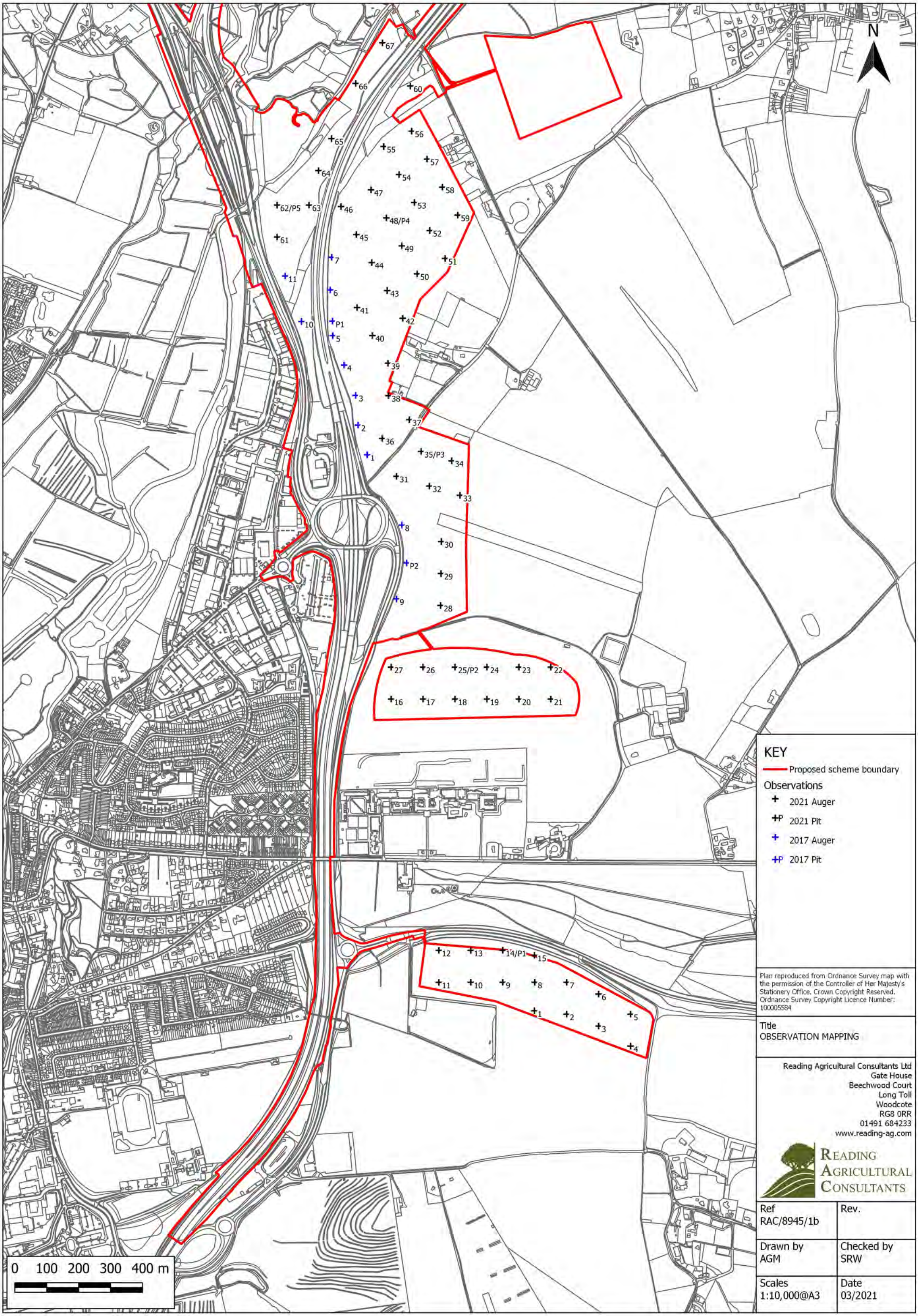
Scales 1:10,000@A3	Date 03/2021


N
67
66
60
56
65
55
57
64
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58
47
53
62/P5
63
46
48/P4
59
52
61
45
49
7
44
51
11
50
6
43
41
42
10
P1
40
5
39
4
3
38
37
2
36
35/P3
34
1
31
32
33
8
30
P2
29
9
28
27
26
25/P2
24
23
22
16
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18
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20
21
12
13
14/P1
15
11
10
9
8
7
6
1
2
5
3
4
0 100 200 300 400 m
KEY
Proposed scheme boundary
Observations
2021 Auger
2021 Pit
2017 Auger
2017 Pit
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Date
03/2021

N

KEY

Proposed scheme boundary

Agricultural Land Classification

- Grade 1
- Grade 2
- Subgrade 3a
- Subgrade 3b
- Grade 4
- Grade 5
- Non-agricultural

0 100 200 300 400 m

Title
AGRICULTURAL LAND CLASSIFICATION MAPPING

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N

0 100 200 300 400 m

KEY

Proposed scheme boundary

Agricultural Land Classification

- Grade 1
- Grade 2
- Subgrade 3a
- Subgrade 3b
- Grade 4
- Grade 5
- Non-agricultural

Title
AGRICULTURAL LAND CLASSIFICATION MAPPING

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