



# Chiswell Green Lane, Chiswell Green

Agricultural Land Classification

November 2021



## ADAS GENERAL NOTES

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Where field investigations have been carried out, these have been restricted to a level of detail required to achieve the stated objectives of the work.

This work has been undertaken in accordance with the quality management system of RSK ADAS Ltd.

## EXECUTIVE SUMMARY

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ADAS have been instructed by McPartland Planning to undertake an agricultural land classification survey of 14.6 ha of land north of Chiswell Green Lane, Chiswell Green, Hertfordshire.

The survey has identified stony coarse loamy and stony loamy over clayey soils. These soils form agricultural land of subgrade 3a and subgrade 3b quality. The principal limitation to agricultural use of the land is topsoil stoniness.

At the time of survey and in recent years the survey area was in use as a polo pitch, grazing by horses and hay production. This is not productive agriculture, however, the land retains its agricultural potential and could be reverted to agricultural production with minimal effort.

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# 1 INTRODUCTION

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ADAS have been instructed by McPartland Planning to undertake an agricultural land classification survey. This report provides information on the soils and agricultural quality of 14.6 ha of land north of Chiswell Green Lane, Chiswell Green. The report is based on a survey of the land undertaken in October 2021.

## 1.1 Site Environment

The survey area is formed of eight grass fields plus surrounding borders which are comprised of grass or trees and shrubs. The largest of the eight fields has in recent years been used as a polo pitch (St Albans Polo Club). The remaining seven fields are variably used to graze horses and / or produce hay. Also within the survey area are four associated buildings and two areas of hard standing (site entrances).

The survey area is level (0-1°) over the highest ground in the south and slopes gently (2-3°) to moderately (4°) towards the lowest point in the north west. The survey area has an average elevation of approximately 105 m AOD.

## 1.2 Agricultural Use

At the time of survey, and in recent years, the survey area was not in use for productive agriculture. Rather, it has been in use for horse grazing, hay production (for horses) and as a polo pitch. However, the land does retain its productive potential entirely.

## 1.3 Published Information

### 1.3.1 Geology

1:50,000 scale BGS information<sup>1</sup> records the basal geology of the site as undifferentiated Lewes Nodular Chalk and Seaford Chalk. This is shown to be overlain, in all but the north west of the site, by sand and gravel of the Dunwich Group.

### 1.3.2 Soils

The national soils map, published at 1:250,000 scale, records the site as belonging to the Sonning 1 soil association throughout. This is described as an association of freely draining flinty coarse loamy and sandy soils, mainly over gravel, with some coarse loamy over clayey soils with slowly permeable subsoils and slight seasonal waterlogging.<sup>2</sup>

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<sup>1</sup> British Geological Survey, 2019. *Geology of Britain viewer*. Online resource: <http://www.bgs.ac.uk/discoveringGeology/geologyOfBritain/viewer.html>

<sup>2</sup> Hodge C.A.H. et al.; 1984. *Soils and their use in Eastern England*. Soil Survey of England and Wales; Harpenden.

### 1.3.3 Previous Agricultural Land Classification

No detailed post-1988 agricultural land classification is publicly available for this site. The provisional ALC map, published at 1:250,000 scale, records the land as being of grade 3 quality<sup>3</sup>.

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<sup>3</sup> Defra, 2020. *Interactive map of Great Britain*. Online resource: <https://magic.defra.gov.uk/MagicMap.aspx>

## 2 METHODOLOGY

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A detailed soil survey was carried out in October 2021. The survey was based on observations at intersects of a 100 m grid, giving a sampling density of one observation per hectare. During the survey soils were examined via a combination of auger borings and a soil description pit to a maximum depth of 1.2 m. A log of the details of each observation point is attached to this report as Appendix 3. A map showing the location of each observation point is attached to this report as Appendix 1, Map 1.

Three topsoil samples were submitted to NRM laboratories for particle size distribution analysis by the pipette methodology. This is in order to confirm field survey findings. The results of this analysis are given in Section 3 and in Appendix 4.

Stone content in the top 25 cm of the soil profile was assessed at every observation point using a 2 cm sieve.

## 3 SOILS

### 3.1 Soil Types

The soils across this small survey area are quite variable. They vary between stony coarse loamy soils, most commonly in the east, to stony loamy over clayey soils.

The stony coarse loamy soils tend to have well-structured subsoil and are permeable, ungleyed and freely-draining. They belong to soil wetness class I.

The stony loamy over clayey soils tend to have poorly-structured subsoil and are slowly permeable and gleyed<sup>4</sup> at variable depth. They are classed as moderately freely-draining to poorly-draining, depending on the depth to gleying and a slowly permeable horizon. They belong to wetness class II, III or IV.

Despite the variability described above, soils across the survey area have similar topsoil. The topsoil is either a medium-textured clay loam or a sandy loam. The topsoil is slightly (5-15 %) to moderately (15-25 %) stony, with common to many small (6 mm-2 cm), medium (2-6 cm) and large (6-20 cm) subrounded and subangular hard stones.

There is little variation in soil type from the polo pitch to the surrounding land.

An example soil profile is described in Appendix 4, taken from a soil pit at observation 7.

### 3.2 Laboratory Analysis

Representative soil samples were taken from three locations. These soils were submitted to NRM Laboratories for particle size distribution (PSD) analysis. The soil textures are confirmed in the table below.

**Table 3.2: PSD analysis results**

Observation	Topsoil
2	Medium clay loam
7	Medium clay loam
9	Medium sandy loam

<sup>4</sup> Gleying is a pale, greyish and ochreous colouring indicative of soil waterlogging.



## 4 AGRICULTURAL LAND CLASSIFICATION

The Agricultural Land Classification (ALC) system provides a framework for classifying land according to the extent to which its physical or chemical characteristics impose long-term limitations on agricultural use for food production. The limitations can operate in one or more of four principal ways; they may affect the range of crops which can be grown, the level of crop yield, the consistency of crop yield, and the cost of obtaining a crop.

The classification system gives considerable weight to flexibility of cropping, whether actual or potential, however the ability of some land to produce consistently high yields of a narrower range of crops is also taken into account.

The Agricultural Land Classification (ALC) system classifies land into five grades numbered 1 to 5, with grade 3 divided into two subgrades (3a and 3b). The system was devised and introduced by the then Ministry of Agriculture, Fisheries and Food (MAFF) in the 1960s and revised in 1988. A description of the grades used in the ALC system is attached to this report as Appendix 6.

### 4.1 Climate

The agricultural climate is an important factor in assessing the agricultural quality of land, and the agricultural climate of this site has been calculated using the Climatological Data for Agricultural Land Classification<sup>5</sup>. The relevant site data for an average elevation of 105 m AOD is given below.

**Table 4.1: Agro-climatic variables**

<b>Average Annual Rainfall (AAR)</b>	693 mm
<b>January-June Accumulated Temperature (AT0)</b>	1380 day °C
<b>Field Capacity Days (FCD)</b>	145
<b>Moisture Deficit Wheat (MDW)</b>	105 mm
<b>Moisture Deficit Potatoes (MWP)</b>	96 mm
<b>Climate (upper grade limit)</b>	1

The site is located in lowland England and there is no agro-climatic limitation to agriculture.

### 4.2 Results

The results of the soil survey described in section 3 were used in conjunction with the agro-climatic data above to classify the land according to the revised guidelines for Agricultural

<sup>5</sup> Meteorological Office, (1989). *Climatological Data for Agricultural Land Classification*.

Land Classification issued in 1988 by the Ministry of Agriculture, Fisheries and Food (now Defra)<sup>6</sup>.

This report has identified agricultural land of subgrade 3a quality across the survey area. The principal limitation to agricultural use of the land is topsoil stoniness.

### Grade 1

No land of this quality has been mapped.

### Grade 2

No land of this quality has been mapped.

### Subgrade 3a

Subgrade 3a is the average land grade across 10.9 ha of the survey area (grade 2: 6 profiles, subgrade 3a: 5 profiles, subgrade 3b: 2 profiles). This land is formed on the variable stony coarse loamy and stony loamy over clayey soil types described in Section 3.1. The principal limitations to agricultural are topsoil stoniness, soil wetness and soil droughtiness. This is good quality agricultural land with moderate limitations to agricultural utilisation.

### Subgrade 3b

There are 2.8 ha of subgrade 3b land at this site. This land is formed on the variable stony coarse loamy and stony loamy over clayey soil types described in Section 3.1. The principal limitation to agricultural is topsoil stoniness. These soils have stones more than 15 % by volume of stones > 2 cm. This is a moderately severe limitation to agricultural utilisation and this is moderate quality agricultural land.

### Grade 4

No land of this quality has been mapped.

### Grade 5

No land of this quality has been mapped.

### Non-agricultural

Although the grass fields of the survey area are not currently and have not in recent years been in productive agriculture (see Section 1.2) they retain their productive potential fully and could be returned to productive agricultural use with minimal effort. These areas are therefore mapped as subgrade 3a and subgrade 3b according to their agricultural potential.

The areas mapped as non-agricultural are those which do not have agricultural potential, such as the areas of shrubs and trees along the borders, the four buildings and the two areas of hard standing associated with site entrances.

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<sup>6</sup> MAFF, (1988). *Agricultural Land Classification for England and Wales: Revised Guidelines and Criteria for Grading the Quality of Agricultural Land*.

## Urban

No land of this quality has been mapped.

### 4.3 Summary of grade areas

The boundaries between the different grades of land are shown on Appendix 2, Map 2. The area occupied by each grade is shown below.

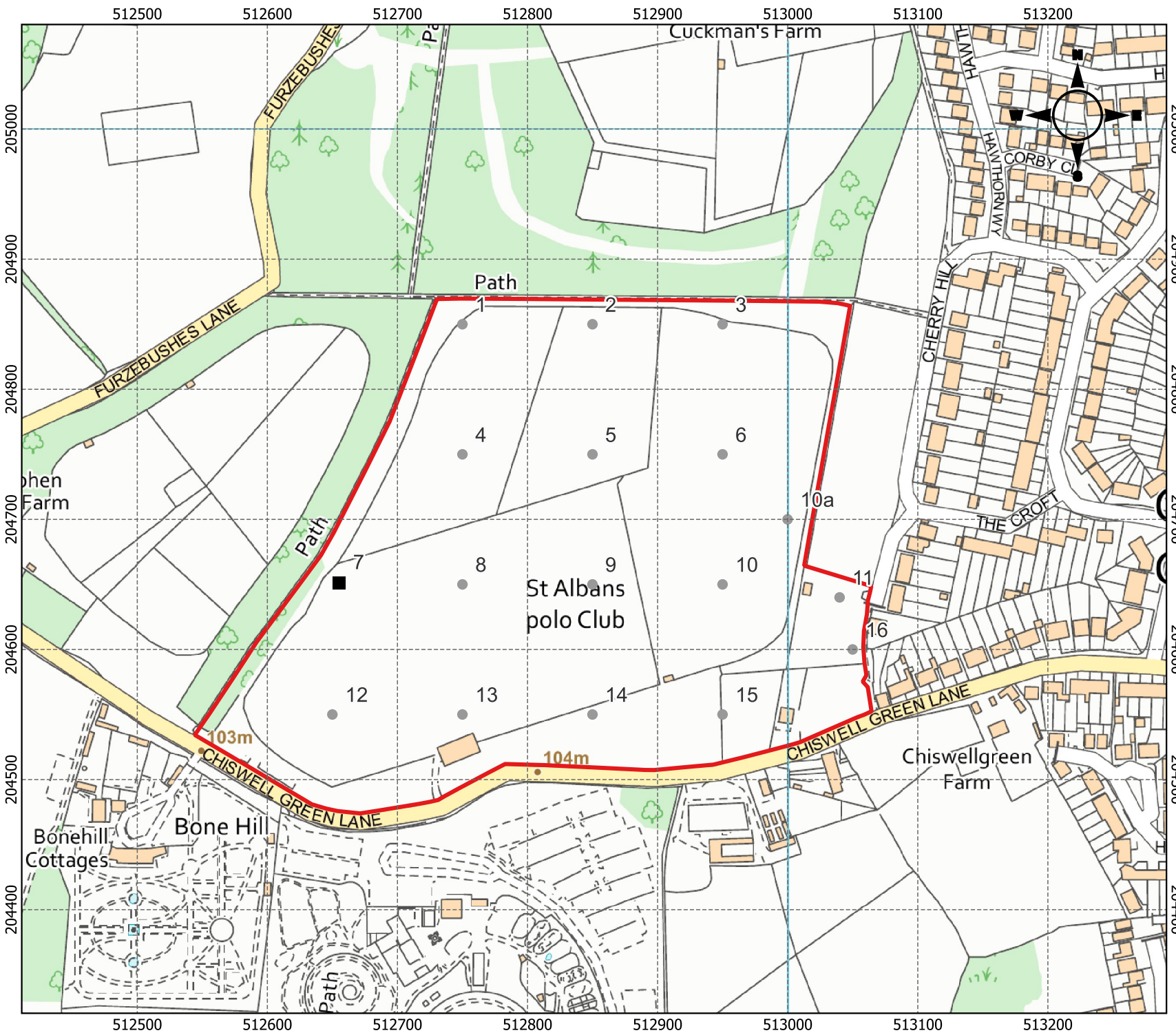
**Table 4.3: Grade areas**

Grade / subgrade	Area (ha)	Area (%)
Grade 1	-	-
Grade 2	-	-
Subgrade 3a	10.9	75
Subgrade 3b	2.8	19
Grade 4	-	-
Grade 5	-	-
Non-agricultural	0.9	6
Urban	-	-
<b>Total</b>	<b>14.6</b>	<b>100</b>

## 5 APPENDICES


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### Appendix 1 – Map 1: Location of Observations






Title  
 Appendix 1: Map 1  
 Location of Observations

Project  
 Chiswell Green Lane

Client  


Key

-  Survey area
-  Soil pit
-  Soil auger

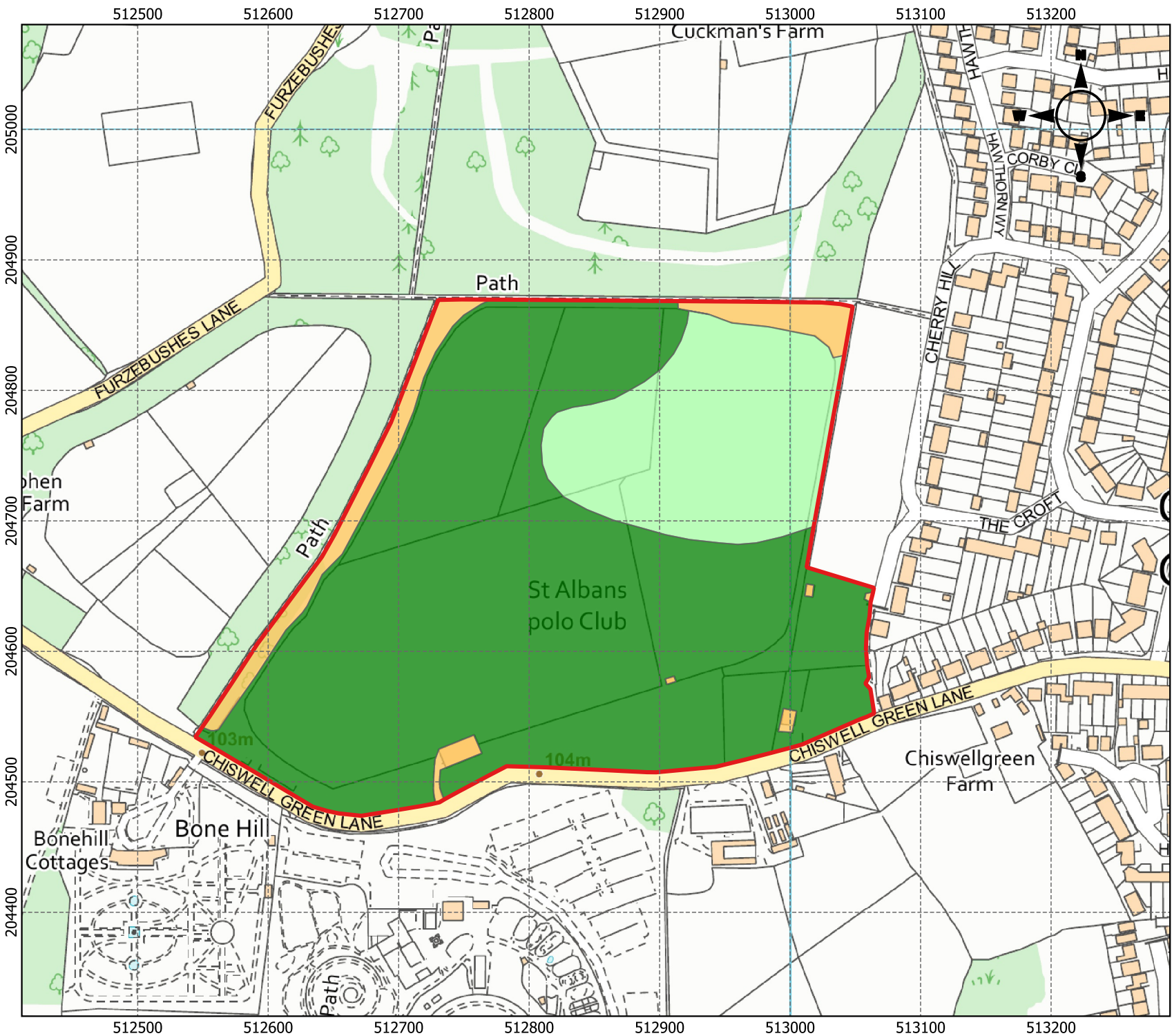
Date: 04 / 11 / 2021

Scale: 1 : 4,000 at A4



## Appendix 2 – Map 2: Agricultural Land Classification









Title  
 Appendix 2: Map 2  
 Agricultural Land Classification

Project  
 Chiswell Green Lane



- Key
-  Survey area
  -  Subgrade 3a
  -  Subgrade 3b
  -  Non-agricultural

Date: 04 / 11 / 2021  
 Scale: 1 : 4,000 at A4



## Appendix 3 – Soil auger details



### Appendix 3: Soil Auger Details

Auger	Depth (cm)	Colour	Soil Profile								Agricultural Land Classification						
			Texture	Mottling	SPL	CaCO <sub>3</sub>	Stones (%)			Notes	(^)	W C	WE grade	DR grade	Overall grade	Limit(s)	
							Total	>2cm	>6cm								Litho'
1	0 - 30	Dk Gr Br	MCL	-	-		14	11	3	1	Stones sieved	3	I	1	1	3a	ST
	30 - 85	Br	MCL	xx	no		5			1		Droughtiness Calculation					
	85 - 100	Li Rd Br	SC	xxx	yes		5			1		MDW	MDP	MBW	MBP	Grade W	Grade P
											105	96	32.4	11.9	1	1	
2	0 - 30	Dk Gr Br	MCL	-	-		6	4	2	1	Stones sieved	3	III	3a	2	3a	WE
	30 - 40	Li Br	SCL	xx	no		5			1		Droughtiness Calculation					
	40 - 60	Li Br	SCL-SC	xxx	borderline		5			1		MDW	MDP	MBW	MBP	Grade W	Grade P
	60 - 90	Li Rd Br	C	xxx	yes		5			1	105	96	24.1	10.2	2	1	
3	0 - 30	Dk Gr Br	MSL	-	-		25	23	0	1	Stones sieved	3	I	1	3a	3b	ST
	30 - 50	Br	MSL	o	no		15			1		Droughtiness Calculation					
	50 - 80	St Br	LCS	o	no		5			1		MDW	MDP	MBW	MBP	Grade W	Grade P
	80 - 100	St Br	CSL	o	no		5			1	105	96	36.3	-11.0	1	3a	
4	0 - 30	Dk Gr Br	MCL	-	-		11	8		1	Stones sieved	4	I	1	1	2	ST
	30 - 100	Yl Rd + Li Rd Br	C	xx	no		0			1		Droughtiness Calculation					
												MDW	MDP	MBW	MBP	Grade W	Grade P
											105	96	31.4	16.4	1	1	
5	0 - 32	Dk Gr Br	MCL	-	-		20	18	0	1	Stones sieved	3	I	1	2	3b	ST
	32 - 65	Br	SCL	xx	no		15			1		Droughtiness Calculation					
	65 - 90	Li Br + St Br	CSL	xxx	no		5			1		MDW	MDP	MBW	MBP	Grade W	Grade P
	90 - 100	Li Rd Br + Yl Rd	SC	xxx	yes		5			1	105	96	36.4	3.8	1	2	
6	0 - 33	Dk Gr Br	MSL	-	-		25	20	2	1	Stones sieved	2	I	1	1	3b	ST
	33 - 88	Dk Yl Br	CSL	o	no		15			1		Droughtiness Calculation					
	88 - 100	St Br	LCS	o	no		10			1		MDW	MDP	MBW	MBP	Grade W	Grade P
											105	96	34.9	16.6	1	1	
7	0 - 34	Dk Gr Br	MCL	-	-		13	11	2	1	Stones sieved	1	III	3a	2	3a	ST, WE
	34 - 56	Br + Pl Br	SCL	xxx	no		10			1		Droughtiness Calculation					
	56 - 120	Li Rd Br	SC	xxx	yes		5			1		MDW	MDP	MBW	MBP	Grade W	Grade P
											105	96	24.7	5.0	2	2	

### Appendix 3: Soil Auger Details

Auger	Depth (cm)	Colour	Soil Profile								Notes	Agricultural Land Classification						
			Texture	Mottling	SPL	CaCO <sub>3</sub>	Stones (%)			Limit(s)		W C	WE grade	DR grade	Overall grade			
							Total	>2cm	>6cm							Litho'		
8	0 - 38	Dk Gr Br	MCL	-	-		4			1	Stones sieved	1	IV	3b	2	3b	WE	
	38 - 80	Li Br + Rd	C	xxx	yes		3			1		Droughtiness Calculation						
												MDW	MDP	MBW	MBP	Grade W	Grade P	
												105	96	23.6	10.3	2	1	
9	0 - 30	Dk Gr Br	SCL	-	-		11	8	0	1	Stones sieved	1	III	3a	2	3a	WE	
	30 - 45	Br	SCL	xx	no		10			1		Droughtiness Calculation						
	45 - 80	Li Rd Br	C	xxx	yes		5			1		MDW	MDP	MBW	MBP	Grade W	Grade P	
												105	96	14.0	1.1	2	2	
10	0 - 30	Dk Gr Br	SCL	-	-		14	9	0	1	Stones sieved	1	I	1	2	2	ST, DR	
	30 - 46	Br	SCL	o	no		15			1		Droughtiness Calculation						
	46 - 75	Li Br	SCL	xx	no		5			1		MDW	MDP	MBW	MBP	Grade W	Grade P	
	75 - 100	Li Rd Br	SC	xxx	yes		5			1								
												105	96	29.2	8.7	2	2	
10A	0 - 32	Dk Gr Br	MSL	-	-		19	17	0	1	Stones sieved	1	I	1	1	3b	ST	
	32 - 70	Br + Br	CSL	o	no		10			1		Droughtiness Calculation						
												MDW	MDP	MBW	MBP	Grade W	Grade P	
												105	96	70.3	24.3	1	1	
11	0 - 25	Dk Gr Br	MSL	-	-		14	9	0	1	Stones sieved	2	I - II	1	2	2	ST, DR	
	25 - 40	Br	SCL	o	no		25			1		Droughtiness Calculation						
	40 - 45	Pl Br	MCL	xx	no		20			1		MDW	MDP	MBW	MBP	Grade W	Grade P	
												105	96	8.6	-4.3	2	2	
12	0 - 33	Dk Gr Br	MCL	-	-		10	8	0	1	Stones sieved	1	II	2	2	2	ST, WE, DR	
	33 - 58	Br	HCL	xx	no		5			1		Droughtiness Calculation						
	58 - 100	Li Rd Br	HCL	xxx	yes		5			1		MDW	MDP	MBW	MBP	Grade W	Grade P	
												105	96	26.7	12.6	2	1	
13	0 - 30	Dk Gr Br	MCL	-	-		12	11	0	1	Stones sieved	1	III	3a	3	3a	WE, ST	
	30 - 42	Li Br	HCL	xx	no		10			1		Droughtiness Calculation						
	42 - 80	Li Rd Br	C	xxx	yes		5			1		MDW	MDP	MBW	MBP	Grade W	Grade P	
												105	96					

### Appendix 3: Soil Auger Details

Auger	Depth (cm)	Colour	Soil Profile								Agricultural Land Classification						
			Texture	Mottling	SPL	CaCO <sub>3</sub>	Stones (%)			Notes	(°)	W C	WE grade	DR grade	Overall grade	Limit(s)	
							Total	>2cm	>6cm								Litho'
												105	96	16.9	4.0	2	2
14	0 - 25	Dk Gr Br	MSL	-	-		14	8	0	1	Stones sieved	1	I	1	1	2	ST, DR
	25 - 38	Br	MCL	o	no		15			1		Droughtiness Calculation					
	38 - 55	Br	SCL	o	no		25			1		MDW	MDP	MBW	MBP	Grade W	Grade P
												105	96	10.8	-3.1	2	2
15	0 - 25	Dk Gr Br	MSL	-	-		25	20		1	Stones sieved	1	I	1	2	3b	ST
	25 - 40	Br	SCL	o	no		30			1		Droughtiness Calculation					
												MDW	MDP	MBW	MBP	Grade W	Grade P
												105	96	2.8	-10.1	3a	3a
16	0 - 30	Dk Gr Br	MSL	-	-		7	4		1	Stones sieved	2	II	1	2	2	DR
	30 - 60	Li Rd Br	MCL	xx	no		4			1		Droughtiness Calculation					
	60 - 100	Li Rd Br + Pi	C	xxx	yes		5			1		MDW	MDP	MBW	MBP	Grade W	Grade P
												105	96	23.1	10.2	2	1

## Key to Soil Augers:

Colour	Texture	Mottling	CaCO <sub>3</sub>
<b>Bk</b> - black <b>Br</b> - brown(ish) <b>Bu</b> - blue(ish) <b>Dk</b> - dark <b>Du</b> - dusky <b>Gn</b> - green(ish) <b>Gr</b> - grey(ish) <b>Li</b> - light <b>OI</b> - olive <b>Pi</b> - pink(ish) <b>Pl</b> - pale <b>Rd</b> - red(dish) <b>St</b> - strong <b>V</b> - very <b>Wk</b> - weak <b>Yl</b> - yellow(ish)	<b>C</b> - clay <b>ZC</b> - silty clay <b>SC</b> - sandy clay <b>CL</b> - clay loam (H-heavy, M-medium) <b>ZCL</b> - silty clay loam (H-heavy, M-medium) <b>SCL</b> - sandy clay loam <b>SZL</b> - sandy silt loam (F-fine, M-medium, C-coarse) <b>ZL</b> - silt loam <b>SL</b> - sandy loam (F-fine, M-medium, C-coarse) <b>LS</b> - loamy sand (F-fine, M-medium, C-coarse) <b>S</b> - sand (F-fine, M-medium, C-coarse) <b>Org</b> - organic (S-sand, L-loam, C-clay) <b>Pty</b> - peaty (S-sand, L-loam) <b>Pt</b> - peat (S-sandy, L-loamy, H-humified, SF-semi-fibrous, F-fibrous) <b>R</b> - bedrock	<b>o</b> – unmottled soil; <b>x</b> – a few (<2%) <i>ochreous</i> mottles; <b>xx</b> – common (2-20%) to many (20-40%) <i>ochreous</i> mottles <u>OR</u> <i>greyish</i> or <i>pale</i> soil, typically with a few <i>ochreous</i> mottles; <b>xxx</b> – <i>greyish</i> or <i>pale</i> colours dominant in matrix and/or ped faces and common to very many (>40%) <i>ochreous</i> mottles <u>OR</u> if <i>reddish</i> colours are dominant in the matrix, > 2% <i>greyish</i> , <i>brownish</i> or <i>ochreous</i> mottles or ferri-manganiferous concentrations, and dominantly <i>pale</i> coloured ped faces ( <b>gleyed horizon</b> ); <b>xxxx</b> – dominantly grey soil, often with some <i>ochreous</i> mottles ( <b>gleyed horizon</b> ). <i>'greyish', 'pale', 'brownish', 'ochreous' and 'reddish'</i> colours are assessed in the field using a Munsell Soil Colour Book and defined according to Appendix 3 of the ALC Guidelines.	<b>non</b> - non-calcareous <b>v sl ca</b> - very slightly calcareous <b>sl ca</b> - slightly calcareous <b>ca</b> - calcareous <b>v ca</b> - very calcareous  <b>Stone lithology</b> <b>1</b> - all hard rocks or stones <b>2</b> - soft, medium or coarse grained sandstones <b>3</b> - soft 'weathered' igneous or metamorphic rocks or stones <b>4</b> - soft oolitic or dolomitic limestones <b>5</b> - soft fine grained sandstones <b>6</b> - soft, argillaceous or silty rocks or stones <b>7</b> - chalk or chalk stones <b>8</b> - gravel with non-porous stones <b>9</b> - gravel with porous stones
<b>SPL</b>		<b>Notes</b>	
<b>yes</b> - a slowly permeable layer. <b>borderline</b> - a borderline slowly permeable layer. <b>no</b> - not a slowly permeable layer.		<b>FMCs</b> – ferri-manganiferous concentrations	
<b>Principal Limitation(s) to Agriculture</b>			
<b>CL</b> - climate <b>GR</b> - gradient	<b>DE</b> - depth <b>MR</b> - microrelief	<b>DR</b> - droughtiness <b>ST</b> - stoniness	<b>ER</b> - erosion <b>TX</b> - texture <b>FL</b> - flooding <b>WE</b> - wetness
<b>Droughtiness Calculation</b>			
<b>MDW</b> - moisture deficit wheat (mm); <b>MDP</b> - moisture deficit potatoes (mm); <b>MBW</b> - moisture balance wheat (mm); <b>MBP</b> - moisture balance potatoes (mm); <b>Grade W</b> - droughtiness grade for wheat; <b>Grade P</b> - droughtiness grade for potatoes.			
Descriptions and classifications are made in accordance with <i>Soil Survey Field Handbook</i> (Hodgson, J.M., 1997), <i>Technical Information Note TIN037: Soil Texture</i> (Natural England, 2008) and <i>Agricultural Land Classification of England and Wales: Revised guidelines and criteria for grading the quality of agricultural land</i> (MAFF, 1988).			

## Appendix 4 – Soil pit description

## Appendix 4: Soil Pit Description

Site	Chiswell Green Lane, Chiswell Green			Point	7	Easting	512655		Northing	204651		
Land Use	grassland			Relief	interfluvial: crest			Slope	1°			
Profile Description											Other	
Horizon	Depth	Matrix	Faces	Mottles	Texture	FMCs	Gleyed	Stones	Roots	Stones in Top 25 cm		
1	34	10YR42	-	-	MCL	-	No	13%   S,M,L   SubRnd,SubAng   1	M   F,VF   Fibrous C   C   Woody	11% >2cm	2% >6cm	
	<b>Calc</b>	<b>Structure</b>			<b>Consistence</b>	<b>MPs</b>	<b>SPL</b>	<b>Notes</b>	<b>Boundary</b>	<b>APW</b>	<b>APP</b>	
	Non	Mod   F   SubAng Blocky			Friable	-	-	-	Clear   Wavy	461.7	461.7	
2	56	75YR54	75YR63	C   ExF   75YR56	SCL		Yes	5%   S,M   SubRnd,SubAng   1 5%   L,M   Ang   1	C   VF   Fibrous C   C   Woody			
	<b>Calc</b>	<b>Structure</b>			<b>Consistence</b>	<b>MPs</b>	<b>SPL</b>	<b>Notes</b>	<b>Boundary</b>	<b>APW</b>	<b>APP</b>	
	Non	Mod   M   Ang Blocky			Firm	>0.5%	No	-	Gradual   Wavy	271.9	299.2	
3	120	5YR64 5YR63		C   VF   5YR56	SC		Yes	5%   S   Ang   1 5%   L   Ang   1	F   VF   Fibrous -			
	<b>Calc</b>	<b>Structure</b>			<b>Consistence</b>	<b>MPs</b>	<b>SPL</b>	<b>Notes</b>	<b>Boundary</b>	<b>APW</b>	<b>APP</b>	
	Non	Massive			Very Firm	<0.5%	Yes	-	-	406.4	165.2	
4												
	<b>Calc</b>	<b>Structure</b>			<b>Consistence</b>	<b>MPs</b>	<b>SPL</b>	<b>Notes</b>	<b>Boundary</b>	<b>APW</b>	<b>APP</b>	
5												
	<b>Calc</b>	<b>Structure</b>			<b>Consistence</b>	<b>MPs</b>	<b>SPL</b>	<b>Notes</b>	<b>Boundary</b>	<b>APW</b>	<b>APP</b>	

Climate			
AAR	693	MDW	105
ATO	1380	MDP	96
FCD	145		

Wetness	
Wetness Class	III
Drainage Status	imperfectly draining
Grade	3a

Droughtiness		
	Wheat	Potatoes
Σ AP	114.0	92.6
Moisture Balance	9.0	-3.4
Grade	2	2

**Overall ALC Grade** 3a

**Principal Limitation(s)** Stoniness, wetness

+4 mm

## Key to Soil Pits:

Profile Description															
Depth	Matrix	Faces	Mottles			Texture	FMCs	Gleyed	Stones				Roots		
cm	Colour	Abundance	Size	Colour		Abundance		%	Size	Shape	Lithology	Abundance	Size	Nature	
	Munsell code	<b>F</b> -few <b>C</b> -common <b>M</b> -many <b>VM</b> -very many	<b>ExF</b> -extremely fine <b>VF</b> -very fine <b>F</b> -fine <b>M</b> -medium <b>C</b> -coarse	Munsell code	See soil auger key.	<b>F</b> -few <b>C</b> -common <b>M</b> -many	Yes No	Vol.	<b>VS</b> -very small <b>S</b> -small <b>M</b> -medium <b>L</b> -large <b>VL</b> -very large <b>B</b> -boulders	Platy Tabular Rounded SubRounded SubAngular Angular	See soil auger key.	<b>F</b> -few <b>C</b> -common <b>M</b> -many <b>A</b> -abundant	<b>VF</b> -very fine <b>F</b> -fine <b>M</b> -medium <b>C</b> -coarse	Fleshy Fibrous Woody	
Calcareous		Structure				Consistence		MPs	SPL	Boundary		Other			
<i>CaCO<sub>3</sub></i>		<i>Development</i>	<i>Size</i>	<i>Shape</i>				<i>Porosity</i>		<i>Distinction</i>	<i>Form</i>	<b>Stone Size</b>		<b>APW</b>	<b>APP</b>
None		Single Grain	<b>F</b> -fine	Granular		Loose		Abundance (%) macropores >0.5 mm	Yes	Sharp	Smooth	>2 cm	>6 cm	<i>mm</i>	
Very Slightly Calcareous		Massive	<b>M</b> -medium	SubAngular Blocky		Very Friable			No	Abrupt	Wavy	Volume (%) in top 0-25 cm of soil	<b>APW</b> -available water wheat <b>APP</b> -available water potatoes		
Slightly Calcareous		Weakly	<b>C</b> -coarse	Angular Blocky		Friable			Clear	Irregular					
Calcareous		Weakly, Adherent	<b>VC</b> -very coarse	Prismatic		Firm			Gradual	Broken					
Very Calcareous		Moderately Strongly		Columnar Platy		Very Firm Extremely Firm Extremely Hard			Diffuse						
Climate															
<b>AAR</b> -average annual rainfall (mm)			<b>ATO</b> - January-June Accumulated Temperature (day °C)			<b>FCD</b> -field capacity days			<b>MDW</b> -moisture deficit wheat (mm)			<b>MDP</b> -moisture deficit potatoes (mm)			
Principal Limitation(s) to agriculture															
<b>CL</b> -climate			<b>DE</b> -depth			<b>DR</b> -droughtiness			<b>ER</b> -erosion			<b>FL</b> -flooding			
<b>GR</b> -gradient			<b>MR</b> -microrelief			<b>ST</b> -stoniness			<b>TX</b> -texture			<b>WE</b> -wetness			
Descriptions and classifications are made in accordance with <i>Soil Survey Field Handbook</i> (Hodgson, J.M., 1997), <i>Technical Information Note TIN037: Soil Texture</i> (Natural England, 2008) and <i>Agricultural Land Classification of England and Wales: Revised guidelines and criteria for grading the quality of agricultural land</i> (MAFF, 1988).															

## Appendix 5 – PSD Analysis





**ANALYTICAL REPORT**

<b>Report Number</b>	<b>72786-21</b>	<b>W195</b>	<b>MARTIN WORSLEY</b>	<b>Client CHISWELL GREEN LANE</b>
<b>Date Received</b>	<b>19-OCT-2021</b>		<b>ADAS GLEADTHORPE</b>	
<b>Date Reported</b>	<b>26-OCT-2021</b>		<b>MEDEN VALE</b>	
<b>Project</b>	<b>1010886</b>		<b>MANSFIELD</b>	
<b>Reference</b>	<b>CHISWELL GREEN LANE</b>		<b>NOTTINGHAMSHIRE</b>	
<b>Order Number</b>	<b>P69101MW1410</b>		<b>NG20 9PD</b>	

Laboratory Reference		SOIL531749	SOIL531750	SOIL531751						
Sample Reference		TOPSOIL 2	TOPSOIL 7	TOPSOIL 9						
Determinand	Unit	SOIL	SOIL	SOIL						
Sand 2.00-0.063mm	% w/w	37	40	52						
Silt 0.063-0.002mm	% w/w	43	41	33						
Clay <0.002mm	% w/w	20	19	15						
Textural Class **		MCL	MCL	SL						

**Notes**

Analysis Notes      The sample submitted was of adequate size to complete all analysis requested.  
 The results as reported relate only to the item(s) submitted for testing.  
 The results are presented on a dry matter basis unless otherwise stipulated.

Document Control      **This test report shall not be reproduced, except in full, without the written approval of the laboratory.**

Reported by      ***Myles Nicholson***  
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\*\* Please see the attached document for the definition of textural classes.

## APPENDIX 6 – DESCRIPTION OF ALC GRADES

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The ALC grades and subgrades are described below in terms of the types of limitation which can occur, typical cropping range and the expected level and consistency of yield. The ‘best and most versatile agricultural land’ falls into grades 1, 2 and subgrade 3a – which collectively comprises about one-third of the agricultural land in England and Wales. About half the land in England and Wales is either of moderate quality (subgrade 3b) or poor quality (grade 4). Although less significant on a national scale, such land can be locally valuable to agriculture and the rural economy where poorer farmland predominates. The remainder is very poor quality land in grade 5, which mostly occurs in the uplands.

### Grade 1 – excellent quality agricultural land

Land with no or very minor limitations to agricultural use. A very wide range of agricultural and horticultural crops can be grown and commonly includes top fruit, soft fruit, salad crops and winter harvested vegetables. Yields are high and less variable than on land of lower quality.

### Grade 2 - very good quality agricultural land

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.

### Grade 3 - good to moderate quality agricultural land

Land with moderate limitations which affect the choice of crops, timing and type of cultivation, harvesting or the level of yield. Where more demanding crops are grown yields are generally lower or more variable than on land in Grades 1 and 2.

#### Subgrade 3a - good quality agricultural land

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.

#### Subgrade 3b - moderate quality agricultural land

Land capable of producing moderate yields of a narrow range of crops, principally cereals and grass or lower yields of a wider range of crops or high yields of grass which can be grazed or harvested over most of the year.

### Grade 4 - poor quality agricultural land

Land with severe limitations which significantly restrict the range of crops and/or level of yields. It is mainly suited to grass with occasional arable crops (e.g. cereals and forage crops) the yields of which are variable. In moist climates, yields of grass may be moderate to high but there may be difficulties in utilisation. The grade also includes very droughty arable land.

### Grade 5 - very poor quality agriculture land

Land with very severe limitations which restrict use to permanent pasture or rough grazing, except for occasional pioneer forage crops.