Agricultural Land Classification:

Trowe's Lane, Swallowfield

Prepared for:

City and Country

Prepared by:
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Askew Land & Soil Limited

Date:
24th May 2022

Project Number:
C865

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Author:	Rob Askew
Date:	24th May 2022

Our interpretation of the site characteristics is based on available data made during our desktop study and soil survey. This desktop study and soil survey has assessed the characteristics of the site in relation to the assessment of its Agricultural Land Classification. It should not be relied on for alternative end-uses or for other schemes. This report has been prepared solely for the benefit of City and Country.

Version Control Record			
Issue	**Description of Status**	**Date**	**Initials**
A	First Draft	20/05/2022	RWA
1	First Issue to Client	24/05/2022	RWA

CONTENTS

1 INTRODUCTION

1.1 Background

1.1.1 This report was commissioned by City and Country to determine the quality of agricultural land at Trowe's Lane, Swallowfield, RG7 1RW ('the Site'). The assessment was made in accordance with the Agricultural Land Classification (ALC) system for England and Wales (see 'Methodology' below). The 5.5 hectare (ha) Site is located to the south of Swallowfield, Berkshire, as shown on **Figure 1**. The approximate centre of the Site is located at British National Grid (BNG) reference SU 72580 64436.

1.2 Competency

1.2.1 The work has been carried out by a Chartered Scientist (CSci), who is a Fellow (F.I. Soil Sci) of the British Society of Soil Science (BSSS). The soil surveyor meets the requirements of the BSSS Professional Competency Standard (PCS) scheme for ALC (see PCS Document 2 '*Agricultural Land Classification of England and Wales*'[1]. The BSSS PCS scheme is endorsed, amongst others, by the Department for Environment, Food and Rural Affairs (Defra), Natural England, the Science Council, and the Institute of Environmental Assessment and Management (IEMA).

1.3 Methodology

1.3.1 This assessment is based upon the findings of a study of published information on climate, geology and soil in combination with a soil investigation carried out in accordance with the Ministry of Agriculture, Fisheries and Food (MAFF)[2] '*Agricultural Land Classification of England and Wales: Revised Guidelines and Criteria for Grading the Quality of Agricultural Land*', October, 1988 (henceforth referred to as the 'the ALC Guidelines').

1.3.2 The 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. The ALC system divides agricultural land into five grades (Grade 1 '*Excellent*' to Grade 5 '*Very Poor*'), with Grade 3 subdivided into Subgrade 3a '*Good*' and Subgrade 3b '*Moderate*'. Agricultural land classified as Grade 1, 2 and Subgrade 3a falls in the '*best and most versatile*' category in Paragraph 174 and 175 of the National Planning Policy Framework (NPPF) revised in February 2019. Further details of the ALC system and national planning policy implications are set out in Natural England's '*Guide to assessing development proposals on agricultural land'*[3] online.

[1] British Society of Soil Science. Professional Competency Scheme Document 2 'Agricultural Land Classification of England and Wales'. Available online @ https://www.soils.org.uk/sites/default/files/events/flyers/ipss-competency-doc2.pdf Last accessed May 2022

[2] The Ministry of Agriculture, Fisheries and Food (MAFF) was incorporated within the Department for Environment, Food and Rural Affairs (Defra) in June 2001

[3] Natural England (2022) 'Guide to assessing development proposals on agricultural land'. Available online at https://www.gov.uk/government/publications/agricultural-land-assess-proposals-for-development/guide-to-assessing-development-proposals-on-agricultural-land Last accessed May 2022

1.3.3 A detailed soil survey and ALC of the Site was carried out in May 2022. The ALC survey involved examination of the soil's physical properties at 6 auger-bore locations on an approximate 100 m grid pattern, at a sampling density of approximately 1 auger bore per ha. The soil profile was examined at each sample location to a maximum depth of approximately 1.2 m by hand with the use of a 5cm diameter Dutch (Edleman) soil auger. One soil pit, i.e., Pit 1, was excavated by hand with a spade in order to examine certain soil physical properties, such as stone content and the structural condition of the subsoil, more closely. The locations of the auger bores and the soil pit is shown on **Figure 1**.

1.3.4 The auger-bore locations were located using a hand-held Garmin E-Trec Geographic Information System (GIS) to enable the sample locations to be relocated for verification, if necessary. Where auger locations on a 100 m grid pattern fall on headland, tramlines, or within 3 m of a hedgerow or tree, they were relocated on agricultural land close by, i.e., to avoid compacted ground or land affected by tree roots, etc.

1.3.5 The soil profile at each sample location was described using the 'Soil Survey Field Handbook: Describing and Sampling Soil Profiles' (Ed. J.M. Hodgson, Cranfield University, 1997). Each soil profile was ascribed an Agricultural Land Classification (ALC) grade following the MAFF ALC Guidelines.

1.3.6 A sample of topsoil was collected at auger-bore location 5 as shown on **Figure 1**. The sample were sent to an accredited laboratory for particle size analysis, i.e., the proportions of sand, silt and clay. This is to determine the definitive texture class of the topsoil, especially with regard to distinguishing between medium clay loams (i.e,. <27% clay) and heavy clay loams (27% to 35% clay).

1.4 Structure of the Remainder of this Report

1.4.1 The remainder of this report is structured as follows:

- Section 2 – Planning Policy Framework
- Section 3 – Agricultural Land Classification;
  - Climate;
  - Site (Gradient, Micro-relief, Risk of Flooding);
  - Soil (Geology, Soil Properties);
  - Interactive Limitations (Soil Droughtiness, Soil Wetness);
  - ALC Grading at the Site.
- Section 4 - ALC at the Site in a Wider Geographical Context;
- Section 5 – Summary and Conclusions

2 PLANNING POLICY FRAMEWORK

2.1 Background

2.1.1 This section of the report sets out the national and local planning framework in which to assess the opportunities and constraints to development at the Site in agricultural land quality terms.

2.2 National Planning Policy Statement (NPPF) July 2021

2.2.1 National planning policy guidance on development involving agricultural land is set out in National Planning Policy Framework (NPPF), which was revised on the 20th July 2021. The NPPF aims to provide a simplified planning framework which sets out the Government's economic, environmental and social planning policies for England. The NPPF includes policy guidance on '*Conserving and Enhancing the Natural Environment*' (Section 15). Paragraph 174 (a and b) (page 50) are of relevance to this assessment of agricultural land quality and soil and states that:

'174…Planning policies and decisions should contribute to and enhance the natural and local environment by:

a) protecting and enhancing valued landscapes, sites of biodiversity or geological value and soils (in a manner commensurate with their statutory status or identified quality in the development plan);

b) recognising the intrinsic character and beauty of the countryside, and the wider benefits from natural capital and ecosystem services – including the economic and other benefits of the best and most versatile agricultural land, and of trees and woodland;…'

2.2.2 Paragraph 175 of the NPPF (2021) goes on to describe that *'175. Plan should: distinguish between the hierarchy of international, national and locally designated sites; allocate land with the least environmental or amenity value, where consistent with other policies in this Framework[58] …'*

2.2.3 Footnote number 58 states 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.'*

2.3 Development Plan Policy

2.3.1 The Site is located in the Wokingham Borough Council 'Local Development Scheme (2021-2024)', yet there is no reference to best and most versatile land. In this case, consideration should be given to relevant policy in the NPPF (see above).

2.4 Best Practice Guidance

2.4.1 The soil information in this report can be utilised for soil management purposes following the Department for Environment, Food and Rural Affairs (Defra) '*Code of Practice for the Sustainable Use of Soils on Construction Sites*'[4].

[4] Department for Environment, Food and Rural Affairs (September, 2009) '*Code of Practice for the Sustainable Use of Soils on Construction Sites'*. Available online @ https://www.gov.uk/government/publications/code-of-practice-for-the-sustainable-use-of-soils-on-construction-sites. Last accessed May 2022

3 AGRICULTURAL LAND CLASSIFICATION

3.1 Background

3.1.1 This section of the report sets out the findings of the Agricultural Land Classification (ALC). It is based on a desktop study of relevant published information on climate, topography, geology, and soil in conjunction with a soil survey.

3.1.2 As described in the ALC Guidelines, the main physical factors influencing agricultural land quality are:

- climate;
- site;
- soil; and
- interactive limitations.

3.1.3 These factors are considered in turn below.

3.2 Climate

3.2.1 Interpolated climate data relevant to the determination of the Agricultural Land Classification (ALC) grade of land at the Site is given in Table 3.1 below.

Table 3.1: ALC Climate Data for Trowe's Lane, Swallowfield

Climate Parameter	**Grid Ref:** SU 72580 64436
Average Altitude (m)	45
Average Annual Rainfall (mm)	669
Accumulated Temperature above 0˚C (January – June)	1475
Moisture Deficit (mm) Wheat	113
Moisture Deficit (mm) Potatoes	107
Field Capacity Days (FCD)	139
Grade According to Climate	1

3.2.2 With reference to Figure 1 '*Grade according to climate*' on page 6 of the ALC Guidelines, there is no overall climatic limitation to the quality of agricultural land at the Site. This means that agricultural land at the Site could be graded as ALC Grade 1 in overall climatic terms, in the absence of any other limiting factor, i.e., site, soil and/or interactive limitations.

3.2.3 Agricultural land at the Site is predicted to be at a range of field capacity (i.e., near saturation point) from 139 days per year, mainly over the late autumn, winter and early spring.

3.2.4 The combination of topsoil texture, drainage status (Wetness Class) of the profile, and number of FCD affects the degree to which agricultural land is limited by soil wetness. The climate at the Site falls in the 126 - 150 category (regarding Table 6 of the ALC Guidelines), as described in more detail under 'interactive limitations' below.

3.3 Site

3.3.1 The approximately 5.5 ha Site is located in the south of Swallowfield. The land at the Site is mainly in agricultural production with an area of woodland (non-agricultural) in the south. The approximate centre of the Site is located at British National Grid (BNG) reference SU 72580 64436. The location and boundaries of the Site are shown on **Figure 1**.

3.3.2 With regard to the ALC Guidelines, agricultural land quality can be limited by one or more of three main site factors as follows:

- gradient;
- micro-relief (i.e., complex change in slope angle over short distances); and
- risk of flooding.

I. Gradient and Micro-Relief

3.3.3 The land at the Site is level at an elevation of 45 metres (m) Above Ordnance Datum (AOD) across the Site. The quality of agricultural land at the Site is not limited by gradient (as per Table 1 of the ALC Guidelines, 1988), as the gradient of the slope does not exceed 7°. Likewise, the quality of agricultural land at the Site is not limited by micro-relief, i.e., complex changes in slope angle and direction over short distances.

II. Risk of Flooding

3.3.4 From the Government Flood Map for Planning website[5], the Site is located in Flood Zone 1. The quality of agricultural land at the Site is not limited by flooding according to the criteria for frequency and duration in the ALC Guidelines (re Table 2 '*Grade according to flood risk in summer*' and/or Table 3 '*Grade according to flood risk in winter*' of the ALC Guidelines.

3.4 Soil

I. Geology/Soil Parent Material

3.4.1 British Geological Survey (BGS) information available online[6] has been utilised to identify the Bedrock underlying the Site and any Superficial (Drift) Deposits over the Bedrock. This information helps to determine the parent material from which the soil has formed.

3.4.2 The BGS information (1:50,000) indicates that Site is entirely underlain by the London Clay Formation (clay, silt and sand), which is covered by River Terrace Deposits (sand and gravel).

[5] Government Flood Map for Planning. Available online @ https://flood-map-for-planning.service.gov.uk/confirm-location?easting=454700&northing=272400&nationalGridReference=SP547724 Last accessed May 2022

[6] British Geological Survey 'Geology of Britain Viewer'. Available online @ http://www.bgs.ac.uk/discoveringGeology/geologyOfBritain/viewer.html Last accessed May 2022

II. Published Information on Soil

3.4.3 The Soil Survey of England and Wales (SSEW) soil map of South East England (Sheet 5) at a scale of 1:250,000 and accompanying Bulletin No. 15 '*Soils and their Use in South East England*' (M.G. Jarvis et al. Harpenden, 1984) reports that agricultural land at the Site is covered by soils in the Hurst Association.

3.4.4 As described by the SSEW, the Hurst Association comprise of soils that are gravelly, and are developed principally in low-level river terrace deposits over Tertiary strata. These soils are developed across low-lying and level, or gently sloping, land. These soils are permeable soils and well drained (Wetness Class I), and the duration of waterlogging is readily reduced by drainage improvements except where outfalls are inadequate.

III. Soil Survey

3.4.5 A log of the 6 soil profiles recorded on Site (see Figure 1) is given as **Appendix 1**. A description of one soil pit (soil Pit 1) is given as **Appendix 2.** A single type of soil was determined. The main soil type comprised dark brown to brown (7.5YR3/2, 7.5YR3/3, 10YR3/3 to 7.5YR4/2), slightly stony, medium sandy loam topsoils. These soils overlay dark brown sandy clay loam to clay subsoils, which are permeable (Wetness Class I). Most of the soils at the Site are similar to those described as the Hurst series above.

Topsoil Particle Size Analysis

3.4.8 To substantiate topsoil texture determined during the ALC survey by hand-texturing, a sample of topsoil were collected over the Site (i.e., auger bore location 5, **Figure 1**). The topsoil sample was sent to an accredited laboratory for analysis of particle size distribution (PSD), based on the British Standard Institution particle size grades. The certificate of analysis is provided as **Appendix 3**. The findings of the PSD analysis are shown in Table 3.2 below:

Table 3.2: Topsoil Texture (re Table 10, ALC Guidelines)

Topsoil Sample Location (See Fig. 1)	% sand 0.063-2.0 mm	% silt 0.002-0.063 mm	% clay <0.002 mm	ALC Soil Texture Class
5	65	25	10	Medium Sandy Loam

3.5 Interactive Limitations

3.5.8 From the published information above, together with the findings of the detailed soil survey, it has been determined that the quality of agricultural land at the Site is limited mainly by soil droughtiness, as described below.

I. Soil Droughtiness

3.5.9 From the ALC Guidelines, a soil droughtiness limitation exists '*in areas with relatively low rainfall or high evapotranspiration, or where the soil holds only small reserves of moisture available to*

plant roots.' The ALC grade according to soil droughtiness is shown in Table 3.3 below (based on Table 8 'Grade According to Droughtiness' in the ALC Guidelines). To be eligible for Grades 1 to 3b the moisture balances (MBs) must be equal to, or exceed, the stated minimum values for both wheat and potatoes. If the MB for either crop is less (i.e. more negative) than that shown for Subgrade 3b, the soil is Grade 4 on droughtiness):

Table 3.3: ALC Grade According to Droughtiness (re Table 8 of the MAFF ALC Guidelines)

Grade/Subgrade	Moisture Balance (MB) Limits (mm)	
	Wheat	Potatoes
1	+30	+10
2	+5	-10
3a	-20	-30
3b	-50	-55
4	<-50	<-55

3.5.10 It has been calculated that auger locations 1 to 5 have a moisture balance (MB) value of between -13 mm and 3 mm for wheat, and -32 mm to -4 mm for potatoes, which limits them to Subgrade 3a. Of some variance, auger location 6 has a moisture balance (MB) value of 11 mm for wheat and -1 mm for potatoes, which limits it to Grade 2. However, following convention, this single, isolated auger-bore is not mapped out separately and is included within the predominant, surrounding unit, i.e., Subgrade 3a, on **Figure 2**.

3.6 ALC Grading at the Site

3.6.8 A detailed ALC survey has determined that agricultural land at the Site is limited by soil droughtiness to Subgrade 3a. The woodland in the south is classified as non-agricultural. The area of land in each ALC grade has been measured from **Figure 2** and the area (ha) and proportion (% of Site) is given in Table 3.4.

Table 3.4: Agricultural Land Classification – Trowe's Land, Swallowfield

ALC Grade	Area (Ha)	Area (%)
Grade 1 (Excellent)	0	0
Grade 2 (Very Good)	0	0
Subgrade 3a (Good)	3.8	69.1
Subgrade 3b (Moderate)	0	0
Grade 4 (Poor)	0	0
Grade 5 (Very Poor)	0	0
Other Land / Non-agricultural	1.7	30.9
Total	**5.5**	**100**

4 ALC AT THE SITE IN A WIDER GEOGRAPHICAL CONTEXT

4.4 Introduction

4.4.8 The aim of this section is to examine agricultural land quality at the Site in a national, regional, county and local context.

4.5 Pre-1988 ALC Information

4.5.8 During the 1960's and 1970's MAFF produced a series of maps to show the provisional ALC grade of agricultural land over the whole of England and Wales at a scale of 1:250,000. These provisional ALC maps are suitable for strategic land use planning only, i.e., they appropriate for land areas greater than 80 ha. The provisional MAFF ALC map of South East England (1:250,000, 1984) indicates that the quality of agricultural land at the Site is mainly Grade 3 (not differentiated between Subgrade 3a and Subgrade 3b). The proportion of agricultural land in each of the ALC grades (derived from MAFF provisional or pre-1988 ALC information) in England, South East Government Office, West Berkshire, and Wokingham Borough is shown for comparison in Table 4.1 below.

Table 4.1: Provisional ALC – National, Regional and Local Context (Proportion of ALC Grades as % of Total Land Area)[7]

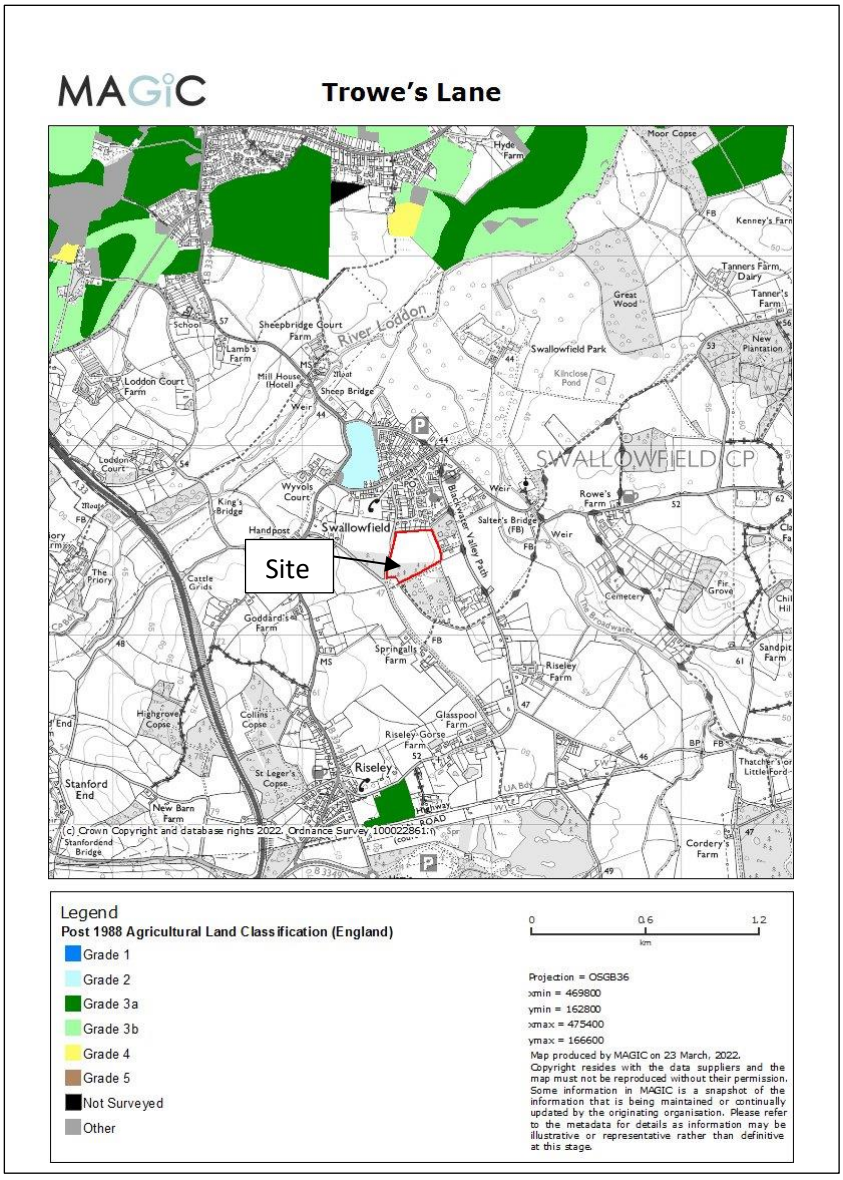
ALC Grade	England	South East Office	West Berkshire County	Wokingham Borough
1 (excellent)	2.7	2.5	0.7	1.5
2 (very good)	14.2	10.4	23.0	8.2
3 (good to moderate)	48.2	52.4	61.2	46.3
4 (poor)	14.1	16.1	7.5	22.9
5 (very poor)	8.4	1.3	0.9	0.0
Non-Agricultural	5.0	9.6	4.5	7.2
Urban	7.3	7.7	2.2	13.9

4.5.9 Of note, the MAFF provisional (Pre 1988) ALC information shows that agricultural land in Wokingham is mainly in Grade 3 (not differentiated between Subgrade 3a and Subgrade 3b). The proportion of land in Grade 3 in Wokingham (i.e., 46.3%) is comparable to the in England as a whole (i.e., 48.2%).

[7] Ministry of Agriculture, Fisheries and Food, Land and Water Service, Technical Notes, Resource Planning (February 1983) 'Agricultural Land Classification of England and Wales – The Distribution of the Grades' (TN/RP/01 TFS 846)

4.6 Post-1988 ALC Information

4.6.8 The former MAFF has not carried a Post-1988 ALC survey of agricultural land covering the Site. An extract from the Post-1988 Agricultural Land Classification map online[8] surrounding the Site is given below.



4.6.9 As shown on the Post-1988 ALC survey above, MAFF determined that there is a mix of Grade 2, Subgrade 3a, Subgrade 3b and Grade 4 to the north of the Site.

[8] Multi Agency Geographic Information for the Countryside. Post 1988 Agricultural Land Classification. Available online @ www.MAGIC.gov.uk Last accessed May 2022

5 SUMMARY AND CONCLUSIONS

5.1.1 This report was commissioned by City and Country determine the quality of agricultural land at Trowe's Lane, Swallowfield, RG7 1RW ('the Site'). The assessment was made in accordance with the Agricultural Land Classification (ALC) system for England and Wales. The 5.5 hectare (ha) Site is located to the south of Swallowfield, Berkshire, as shown on Figure 1. The approximate centre of the Site is located at British National Grid (BNG) reference SU 72580 64436.

5.1.2 British Geological Survey (BGS) information (1:50,000) indicates that Site is entirely underlain by London Clay Formation (clay, silt and sand), which is covered by River Terrace Deposits (sand and gravel).

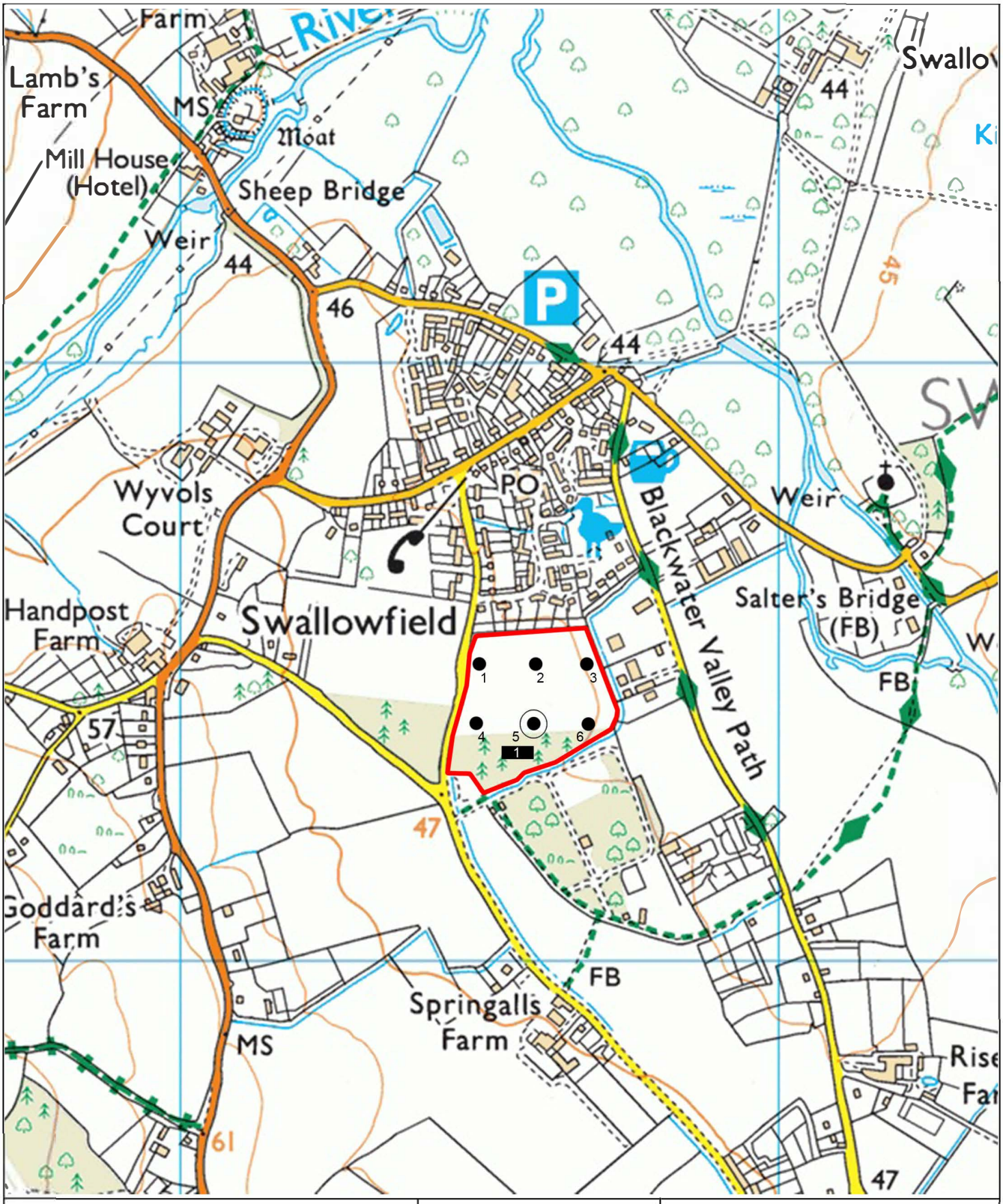
5.1.3 The National Soil Map (1:250,000) shows the Site is covered by soils in the Hurst Association. This Association comprises of gravelly soils that are permeable well drained (Wetness Class I).

5.1.4 The quality of agricultural land at the Site is limited by soil droughtiness to Subgrade 3a, i.e., 3.8ha, or 69.1% of the Site. Approximately 1.7ha of woodland in the south of the Site is classified as non-agricultural (i.e., 30.9% of the Site).

5.1.5 MAFF provisional (Pre 1988) ALC information shows that agricultural land in Wokingham is mainly in Grade 3 (not differentiated between Subgrade 3a and Subgrade 3b). The proportion of land in Grade 3 in Wokingham (i.e., 46.3%) is comparable to the in England as a whole (i.e., 48.2%). A MAFF detailed (Post 1988) survey has determined a mixture of Subgrade 3a and Subgrade 3b to the north of the Site, with some Grade 2 to the south east.

5.1.6 Therefore, the presence of mainly Grade 3, and some Grade 2, agricultural land at the Site is unsurprising as these grades, and proportions of grades, are common in Workingham Borough.

Figures



Site boundary

Auger location

Topsoil Sample

Soil Pit

N

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Figure 1

Sample Locations

Project Name

Trowe's Lane, Swallowfield

Project No	C865
Dwg. No	1
Scale	NTS
Date	23/05/2022
Drawn By	ELA

R W Askew BSc(Hons) MISoilSci MSc CSCi
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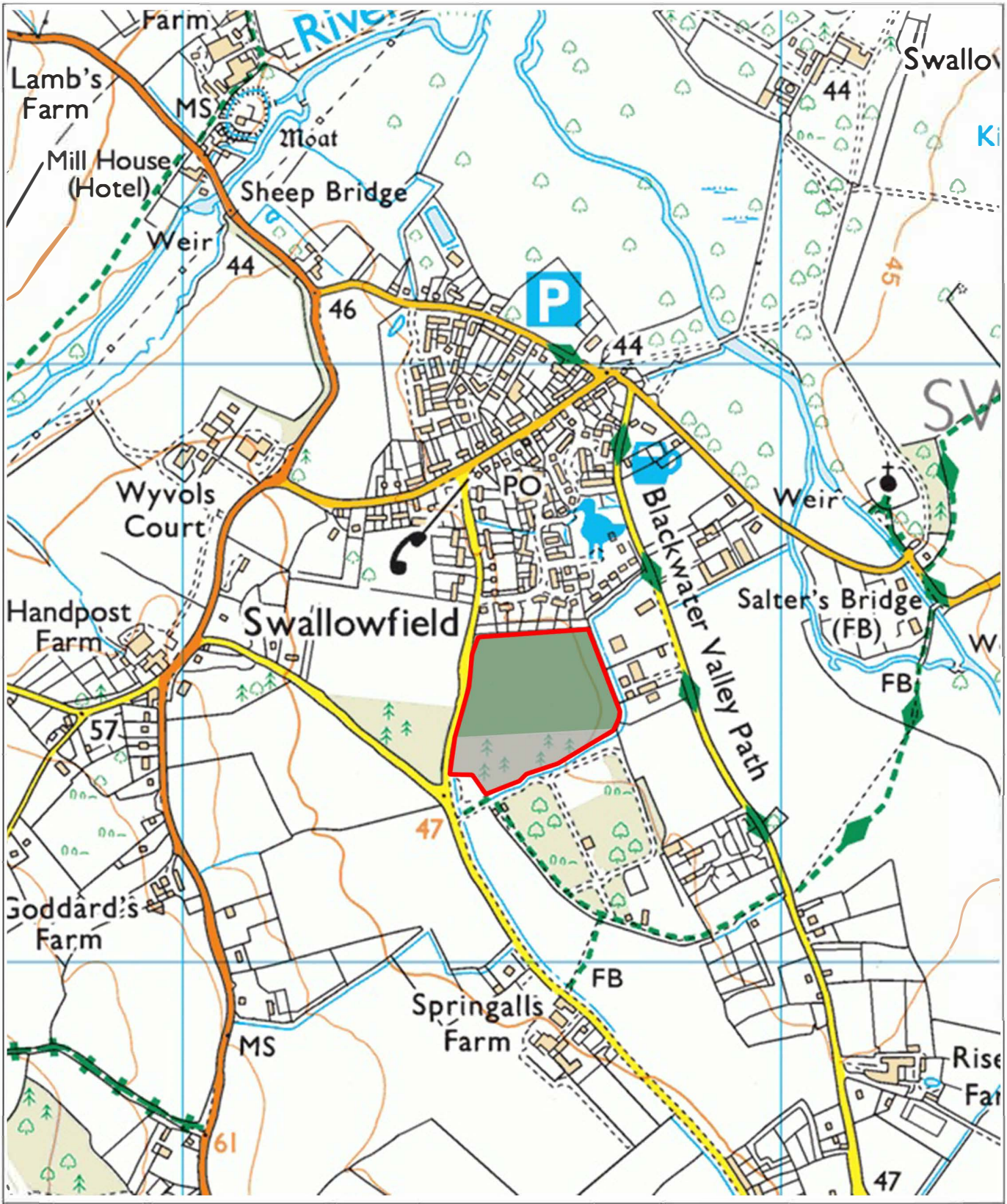

ALC Grade

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

Site Boundary

N

Client

City & Country

Project No C865
Dwg. No 2
Scale NTS
Date 23/05/2022
Drawn By ELA

Figure 2:

Agricultural Land Classification

Project Name

Trowe's Lane, Swallowfield

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Appendix 1:
Soil Profile Logs

Project Number	Project Name	Parcel
C865	Trowes Lane, Swallowfield	

Date of Survey	Survey Type	Surveyor(s)	Company
22/04/2022	ALC	RDM	Askew Land and Soil

Weather	Relief	Land use and vegetation
Dry,Sunny	Level	

Grid Reference	Postcode	Altitude	Area
SU725644	RG71RW	45	5.5

MAFF prov	MAFF detailed	Flooding
Grade 3	None	Flood Zone 1

AAR	AT0	MDw	MDp	FCD	Climate grade
669	1475	113	107	139	1

Bedrock	Superficial deposits
London Clay Formation	River Tertace Deposits

Soil association(s) 1:250,000	Detailed soil information
Hurst	None

Revision Number	Date Revised
2	24/05/2022

Point	Grid ref.			Alt (m)	Slope °	Aspect	Land use	Depth (cm)			Matrix	Ochreous Mottles		Grey Mottles		Gley	Texture	Stones - type 1				Stones - type 2				Ped			SUBS STR	CaCO3	Mn C	SPL	Drought			Wet		Final ALC			
	NGR	X	Y					Top	Bttm	Thick	Munsell colour	Form	Munsell colour	Form	Munsell colour			%	> 2cm	> 6cm	Type	%	> 2cm	> 6cm	Type	Strength	Size	Shape					MBw	MBp	Gd	WC	Gw	Limitation 1	Limitation 2	Limitation 3	Grade
1	SU 72500 64500	472500	164500	45		≤7		0	25	25	7.5YR3/2					No	MSL - Me	3	3		HR - All hard rocks or stones (i.e. those which cannot be scratched w								Not Applic	NON - N	No	No	3	-4	3a	WC I	1	Droughtiness			3a
								25	70	45	10YR5/3	MD - M	10YR5/6			Yes	MSL - Me	10			HR - All hard rocks or stones (i.e. those which cannot be scratched w								Moderate		No	No									
								70	120	50							SCL - San	50			HR - All hard rocks or stones (i.e. those which cannot be scratched w								Poor			No									
2	SU 72600 64500	472600	164500	45		≤7		0	40	40	7.5YR3/2					No	MSL - Me	3	3		HR - All hard rocks or stones (i.e. those which cannot be scratched w								Not Applic	NON - N	No	No	3	-6	3a	WC I	1	Droughtiness			3a
								40	55	15	10YR5/3	MD - M	10YR5/6			Yes	MSL - Me	10			HR - All hard rocks or stones (i.e. those which cannot be scratched w								Moderate		No	No									
								55	70	15							MSL - Me	15			HR - All hard rocks or stones (i.e. those which cannot be scratched w								Poor			Yes									
								70	120	50							MSL - Me	50			HR - All hard rocks or stones (i.e. those which cannot be scratched w								Poor												
3	SU 72700 64500	472700	164500	45		≤7		0	30	30	7.5YR3/3	CD - C	10YR5/6			No	MSL - Me	3	3		HR - All hard rocks or stones (i.e. those which cannot be scratched w								Not Applic	NON - N	No	No	-13	-23	3a	WC I	1	Droughtiness			3a
								30	40	10	7.5YR3/3	MD - M	10YR5/6			Yes	MSL - Me	10			HR - All hard rocks or stones (i.e. those which cannot be scratched w								Moderate		No	No									
								40	120	80							SCL - San	50			HR - All hard rocks or stones (i.e. those which cannot be scratched w								Poor			No									
4	SU 72500 64400	472500	164400	45		≤7		0	30	30	7.5YR3/3	CD - C	10YR5/6			No	MSL - Me	5	5	2	HR - All hard rocks or stones (i.e. those which cannot be scratched w								Not Applic	NON - N	No	No	3	-8	3a	WC I	1	Droughtiness			3a
								30	40	10	7.5YR3/3	CF - Cc	10YR5/6			No	MSL - Me	5			HR - All hard rocks or stones (i.e. those which cannot be scratched w								Moderate		No	No									
								40	80	40	10YR5/3	MD - M	10YR5/6			Yes	SCL - San	20			HR - All hard rocks or stones (i.e. those which cannot be scratched w								Moderate			No									
								80	120	40							SCL - San	50			HR - All hard rocks or stones (i.e. those which cannot be scratched w								Poor			Yes									
5	SU 72600 64400	472600	164400	45		≤7		0	40	40	10YR3/3					No	MSL - Me	8	8	1	HR - All hard rocks or stones (i.e. those which cannot be scratched w								Not Applicable		No	No	-9	-18	3a	WC I	1	Droughtiness			3a
								40	50	10							MSL - Me	23			HR - All hard rocks or stones (i.e. those which cannot be scratched w								Moderate			No									
								50	50	0							SCL - San	30			HR - All hard rocks or stones (i.e. those which cannot be scratched w								Moderate			No									
								50	120	70							SCL - San	50			HR - All hard rocks or stones (i.e. those which cannot be scratched w								Poor			Yes									
6	SU 72700 64400	472700	164400	45		≤7		0	35	35	7.5YR4/2					Yes	MSL - Me	7	7	1	HR - All hard rocks or stones (i.e. those which cannot be scratched w								Not Applicable		Yes	No	11	-1	2	WC I	1	Droughtiness			2
								35	38	3	7.5YR4/2	CF - Common Faint				Yes	MSL - Me	5			HR - All hard rocks or stones (i.e. those which cannot be scratched w								Moderate		Yes	No									
								38	65	27	10YR5/4	CD - Common Distinct				No	MSL - Me	5			HR - All hard rocks or stones (i.e. those which cannot be scratched w								Moderate		No	No									
								65	80	15	10YR5/4	CD - Common Distinct				No	SCL - San	5			HR - All hard rocks or stones (i.e. those which cannot be scratched w								Moderate		No	No									
								80	120	40							SCL - San	50			HR - All hard rocks or stones (i.e. those which cannot be scratched w								Poor			No									
	END																																						

Mottle form
FF - Few Faint
FD - Few Distinct
FP - Few Prominent
CF - Common Faint
CD - Common Distinct
CP - Common Prominent
MF - Many Faint
MD - Many Distinct
MP - Many Prominent
VF - Very many Faint
VD - Very many Distinct
VP - Very many Prominent

Texture
C - Clay
CHK - Chalk
CS - Coarse Sand
CSL - Coarse sandy loam
CSZL - Coarse sandy silt loam
FP - Fibrous and semifibrous peats
FS - Fine Sand
FSL - Fine sandy loam
FSZL - Fine sandy silt loam
HCL - Clay loam (heavy)
HP - Humified peats
HZCL - Silty clay loam (heavy)
IMP - Impenetrable to roots
LCS - Loamy Coarse Sand
LFS - Loamy fine sand
LMS - Loamy medium sand
LP - Loamy peats
MCL - Clay loam (medium)
MS - Medium Sand
MSL - Medium sandy loam
MSZL - Medium sandy silt loam
MZ - Marine Light Silts
MZCL - Silty clay loam (medium)
OC - Organic clays
OL - Organic loams
OS - Organic sands
PL - Peaty loams
PS - Peaty sands
SC - Sandy clay
SCL - Sandy clay loam
SP - Sandy peats
ZC - Silty clay
ZL - Silt loam

Stone Type
CH - Chalk or chalk stones
FSST - Soft fine grained sandstones
GH - Gravel with non-porous (hard) stones
GS - Gravel with porous stones (mainly soft stone types listed above)
HR - All hard rocks or stones (i.e. those which cannot be scratched with a finger nail)
MSST - Soft, medium or coarse grained sandstones
SI - Soft 'weathered' igneous or metamorphic rocks or stones
SLST - Soft oolitic or dolomitic limestones
ZR - Soft, argillaceous or silty rocks or stones

Ped. Shape
SG - Single grain
GRA - Granular
SAB - Subangular Blocky
AB - Angular Blocky
PRIS - Prismatic
PLAT - Platy
MASS - Massive
NA - N/A

Subsoil Structure Condition
Not Applicable
Good
Moderate
Poor

Soil or Ped. Strength
Loose
Very friable
Friable
Firm
Very firm
Extremely firm
Extremely hard
N/A

Calcareousness
NON - Non-calcareous (<0.5% CaCO3)
VSC - Very slightly calcareous (0.5 - 1% CaCO3)
SC - Slightly calcareous (1 - 5% CaCO3)
MC - Moderately calcareous (5 - 10% CaCO3)
VC - Very calcareous (>10% CaCO3)

Ped. Size
VF - Very Fine
F - Fine
M - Medium
C - Coarse
VC - Very Coarse
NA - N/A

Degree of Ped. Development
W - Weak
M - Moderate
S - Strong
NA - Not applicable

Wetness Class
WC I
WC II
WC III
WC IV
WC V
WC VI

ALC Grades
1
2
3a
3b
4
5
Non-Ag

Gley
None
Gley
N/A

Appendix 2:
Soil Pit Description

Project	Location	Date	Surveyor(s)	Company
C865	Trowes Lane	22-Apr-22	RM	Askew Land and Soil

Pit	WC	Grade	Limitation(s)	Notes
1	I	2	topsoil stone content >2cm 8% tot	stones sieved; assumed subsoil spl at depth (Hurst soil association massive structure sandy clay loam). Irrigation present on site (not part of ALC assessr

Grid Ref.			Altitude	Nearest	Topography				Flora		Weather and conditions			
Square	East	North		point	Gradient	Aspect	Slope form	Surface	Culivation type	Vegetation types	Temp	Sky	Wind	Precipitation
SU	726	644	45	5			<1							

Horizon	Depth		Matrix			Gleying			Mottles			Stone content					Calc.	Mn C	Ped/soil structure				Horizon boundary		Biopores	SPL
	Top	Bttm	Texture	Colour	Munsell	Gley	Colour	Munsell	Form	Colour	Munsell	%	H		S	Type			Dev.	Size	Structure	Strength	Distinct	Form		
1	0	30	scl		10YR3/3									20% hr					wk	f	sab	friable				
2	30	40	scl		10YR3/3				com		10YR5/46			25% hr					wk	m	ab	friable				
3	40	45	scl											30% hr					wk		granular	v friable				

Pit	WC	Grade	Limitation(s)	Notes

Grid Ref.			Altitude	Nearest	Topography				Flora		Weather and conditions			
Square	East	North		point	Gradient	Aspect	Slope form	Surface	Culivation type	Vegetation types	Temp	Sky	Wind	Precipitation

Horizon	Depth		Matrix			Gleying			Mottles			Stone content					Calc.	Mn C	Ped/soil structure				Horizon boundary		Biopores	SPL
	Top	Bttm	Texture	Colour	Munsell	Gley	Colour	Munsell	Form	Colour	Munsell	%	H	Type	S	Type			Dev.	Size	Structure	Strength	Distinct	Form		

Appendix 3:
Topsoil Particle Size Distribution (PSD)

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 06/05/2022

0998

Contract	**Trowes Lane**
Serial No.	**40667_1**

Client:

Askew Land and Soil Ltd

The Old Stables
Upexe
Exeter
EX5 5ND

Soil Property Testing Ltd

15, 16, 18 Halcyon Court, St Margaret's Way,
Stukeley Meadows, Huntingdon,
Cambridgeshire, PE29 6DG

Tel: 01480 455579
Email: enquiries@soilpropertytesting.com
Website: www.soilpropertytesting.com

Samples Submitted By:

Askew Land and Soil Ltd

Samples Labelled:

Trowes Lane

Approved Signatories:

☑ **J.C. Garner B.Eng (Hons) FGS**
Technical Director & Quality Manager

☐ **W. Johnstone**
Materials Lab Manager

[redacted]

Date Received: 22/04/2022

Samples Tested Between: 22/04/2022 **and** 06/05/2022

Remarks:

For the attention of Robert Askew
Your Reference No: C865

Notes:

1. All remaining samples or remnants from this contract will be disposed of after 21 days from today, unless we are notified to the contrary.
2. Opinions and interpretations expressed herein are outside the scope of UKAS accreditation.
3. Tests marked "NOT UKAS ACCREDITED" in this test report are not included in the UKAS Accreditation Schedule for this testing laboratory.
4. This test report may not be reproduced other than in full except with the prior written approval of the issuing laboratory.
5. The results within this report only relate to the items tested or sampled.

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 06/05/2022

0998

Contract	**Trowes Lane**		
Serial No.	**40667_1**	**Target Date**	06/05/2022
Scheduled By	Askew Land and Soil Ltd		
Schedule Remarks			

Bore Hole No.	Type	Sample Ref.	Top Depth	Particle Size Distribution (BS1377)																		Sample Remarks
-	D	5	0.00	1																		
Totals				**1**																		**End of Schedule**

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 06/05/2022

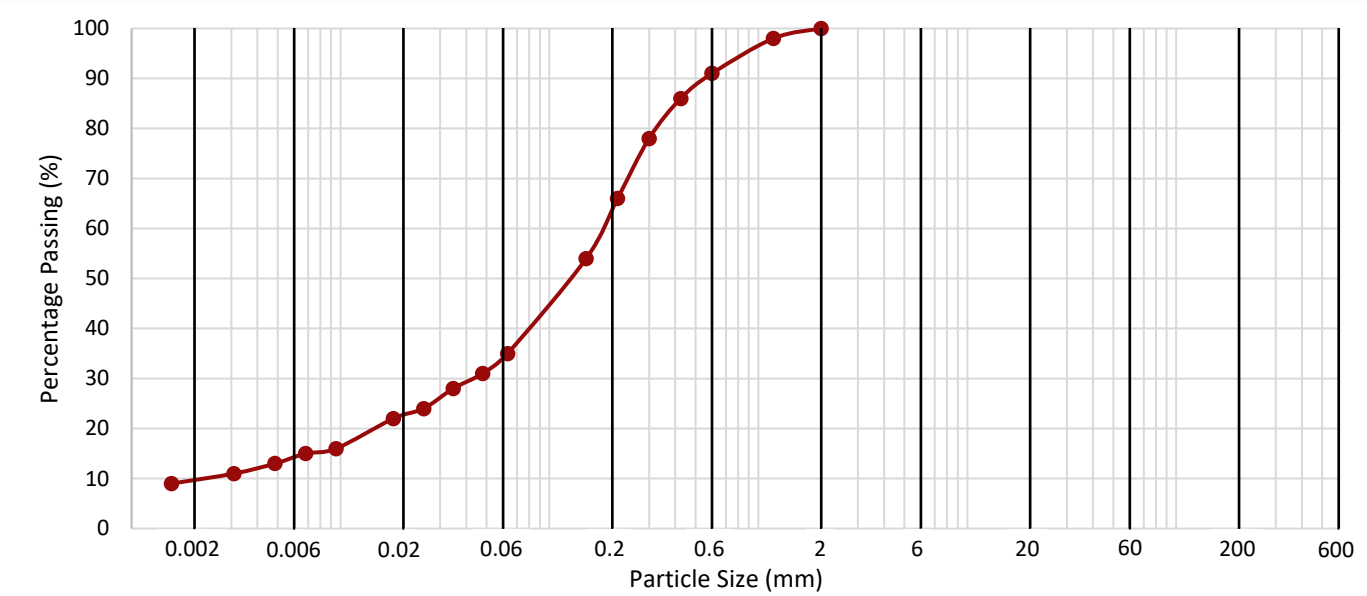
0998

Contract	**Trowes Lane**
Serial No.	**40667_1**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
-	0.00 - 0.25	D	5	Dark greyish brown slightly gravelly clayey very silty SAND with rare decayed roots. Gravel is fine and medium chert	Material greater than 2mm removed before test

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Not required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
	0.0479	31	25
	0.0346	28	
	0.0250	24	
	0.0179	22	Clay by Dry Mass (%)
	0.0095	16	
	0.0068	15	
	0.0049	13	10
	0.0031	11	
	0.0016	9	

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	100	65
1.18	98	
0.600	91	
0.425	86	
0.300	78	
0.212	66	
0.150	54	
0.063	35	

Fines By Dry Mass (%)	
<0.063mm	35

Sieve Size (mm)	Passing (%)	2mm+ By Dry Mass (%)
300		0
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3		
5		

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part 2: 1990: 9.2,9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments: