

# AGRICULTURAL LAND CLASSIFICATION SURVEY

# LAND WEST OF PARK FARM THORNBURY

May 2018







# AGRICULTURAL LAND CLASSIFICATION SURVEY

# LAND WEST OF PARK FARM THORNBURY

May 2018

#### <u>COPYRIGHT</u>

The contents of this document must not be copied in whole or in part without the written consent of Kernon Countryside Consultants.

Authorised By vmd 05/18

Greenacres Barn, Stoke Common Lane, Purton Stoke, Swindon SN5 4LL T: 01793 771333 Email: info@kernon.co.uk Website: www.kernon.co.uk

Directors - Tony Kernon BSc(Hons), MRAC, MRICS, FBIAC Sarah Kernon Chartered Surveyor – Verity Drewett BSc(Hons), MRICS, MBIAC Consultant – Sam Eachus BSc (Hons)

## CONTENTS

- 1. INTRODUCTION
- 2. AGRICULTURAL LAND CLASSIFICATION
- 3. SUMMARY

## **APPENDICES**

- KCC1: Natural England Technical Information Note 049 'Agricultural Land Classification' (December 2012)
- KCC2: Summary of Soil Auger Bore Data
- KCC3: Pit Descriptions
- KCC4: Certificate of Laboratory Analysis

#### PLANS

- KCC1: ALC Sample Locations
- KCC2: Agricultural Land Classification

## 1 INTRODUCTION

#### Purpose

1.1 This report sets out the results of a detailed Agricultural Land Classification (ALC) survey carried out across approximately 36 hectares of predominately agricultural land on the western edge of Thornbury, South Gloucestershire.

#### The Site

1.2 The Site is located on the north western edge of Thornbury. It is bordered to the east by new development and the northern boundary adjoins Oldbury Lane. The Site is bordered by agricultural land and woodland to the south and west. There is a small stream which flows from east to west through the southern part of the Site, south of auger point 28.

#### The Agricultural Land Classification System

- 1.3 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. The ALC system divides agricultural land into five grades. Grade 1 of the ALC is described as being of excellent quality and Grade 5, at the other end of the scale, is described as being of very poor quality. The current guidelines and criteria for ALC were published by the Ministry of Agriculture, Fisheries and Food (MAFF) in 1988 ('Agricultural Land Classification of England and Wales : Revised Guidelines and Criteria for Grading the Quality of Agricultural Land'1).
- 1.4 Agricultural land within Grades 1, 2 and Subgrade 3a of the ALC is considered the "best and most versatile agricultural land" (BMV). This is land which is most flexible, productive and efficient in response to inputs. Further details of the ALC system and policy implications are set out by Natural England in its Technical Information Note 049, given as Appendix KCC 1.

#### The Author

1.5 This report has been prepared by Kernon Countryside Consultants Limited (KCC). KCC is a specialist consultancy advising farmers, developers and local authorities on farm business, diversification and development proposals. We are familiar with many different types of agricultural, horticultural and equine enterprises, and many forms of rural economic diversification, and the planning policy governing such enterprises.

<sup>&</sup>lt;sup>1</sup> Agricultural Land Classification of England and Wales: Revised Guidelines and Criteria for Grading the Quality of Agricultural Land', October, 1988. The Ministry of Agriculture, Fisheries and Food (MAFF) was incorporated within the Department for Environment, Food and Rural Affairs (Defra) in June 2001

# 2 AGRICULTURAL LAND CLASSIFICATION

#### **Methodology**

- 2.1 A detailed ALC survey was carried out across the Site on 26<sup>th</sup> April 2018 and the land has been graded according to the current ALC Guidelines.
- 2.2 The soil resources were determined from 31 inspection sites using a spade and a 5 cm diameter Dutch (Edleman) soil auger to a maximum depth of 120 cm (where possible). Bores were located at a density of approximately one bore every 100m. Normally the location of auger bores follows the Ordnance Survey grid at 100m intervals to avoid bias in selection. The sample 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. The sample auger locations are shown at **Plan KCC 1**.
- 2.3 To support hand texturing in the field, where topsoil texture is important for defining the Grade, it is common practice to select representative topsoil samples for analysis. At this Site four topsoil samples (4, 11, 21 and 28) were collected for topsoil particle size analysis i.e. the proportions of sand, silt and clay. This analysis determines the definitive texture class of the topsoil, especially with regard to distinguishing between medium clay loams (<27% clay) and heavy clay loams (27% to 35% clay).</p>
- 2.4 The soil profile at each sample location was described using the 'Soil Survey Field Handbook: Describing and Sampling Soil Profiles' (J.M. Hodgson, Cranfield University, 1997). Each soil profile was acscribed a grade following the ALC guidelines.

#### Factors Affecting Land Quality

- 2.5 As described in the ALC Guidelines, the main physical factors influencing agricultural land quality are:
  - Climate;
  - Site;
  - Soil; and
  - Interactive limitations.

#### <u>Climate</u>

- 2.6 Climate affects the grading of land through its influence on the potential for agricultural uses and the cost and level of production. Climate determines the energy available for photosynthesis and water supply to plant roots.
- 2.7 Interpolated climate data relevant to the determination of the ALC grade of land at the Site is given in **Table KCC 1** below.

Climate Parameter	Data
Average Altitude (m)	12
Accumulated Temperature above 0°C (January – June)	1526
Average Annual Rainfall (mm)	839
Moisture Deficit (mm) Wheat	102
Moisture Deficit (mm) Potatoes	94
Field Capacity Days (FCD)	183
Grade according to climate	1

Table KCC 1 : ALC Climate Data for National Grid Reference ST 6320 9160

- 2.8 With reference to Figure 1 '*Grade according to climate*' on page 6 of the ALC Guidelines, the quality of agricultural land at the Site is not limited by climate. As a result, agricultural land at the Site can be graded as high as Grade 1 in the absence of any other limiting factor (i.e site and/or soil).
- 2.9 Due to the average annual rainfall, agricultural land at the Site is predicted to be at field capacity (i.e. near saturation point) for 183 days per year, mainly over the late autumn, winter and early spring. This will, in combination with topsoil texture, cause an 'interactive limitation' to agricultural land quality at the Site namely soil wetness (see below).

<u>Site</u>

- 2.10 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.

#### Gradient and Micro-Relief

- 2.11 The land is relatively level and ranges in elevation from between approximately 10 metres (m) above ordnance datum (AOD) to approximately 14 m OAD. The quality of agricultural land is not limited by gradient, as the angle of slope does not exceed 7 °.
- 2.12 There is a small area of uneven ground in the south west part of the Site, between auger locations 14 and 15. Here, the localised topography (micro-relief) limits the quality of agricultural land to Subgrade 3b. However land quality in this area is also limited by soil wetness to Subgrade 3b, as described below.

#### Risk of Flooding

2.13 From a Government Flood Map for Planning<sup>2</sup>, most of the land in the north and eastern parts of the Site is located in Flood Zone 1, with a low risk of flooding. Land in the south and southwestern part of the Site is located in Flood Zone 3 (i.e. having a 1 in 100 or greater annual probability of river flooding). Therefore, there is a risk that the quality of agricultural land in the valley will be limited by the frequency and duration of flooding, as per Table 2 '*Grade according to flood risk in summer*' and Table 3 '*Grade according to flood risk in winter*' of the ALC Guidelines. However the quality of agricultural land in the south western parts of the Site is limited to Subgrade 3b and 4 due to soil wetness regardless of flooding issues.

<u>Soil</u>

## Geology/Soil Parent Material

2.14 From British Geological Survey (BGS) maps at 1:50,000 scale, the Site is underlain by bedrock (solid geology) in the Mercia Mudstone Group (marginal Facies) – Conglomerate, with Mudstone in the Mercia Mudstone Group in the south. The BGS maps indicate there are no superficial deposits in the northern and eastern parts of the Site, but the southern and southwestern parts (coinciding with land in the flood plain) is covered by Tidal Flats Deposits – Clay and Silt.

## Published Information on Soil

2.15 Soil information is available only at a small scale (1:250,000) on the National Soil Map (SSEW 1983), which shows soils of the Hodnet association over the northern and eastern parts of the Site. This group of soils comprises reddish, coarse (sandy) loamy soils with

<sup>&</sup>lt;sup>2</sup> Government Flood Risk for Planning available online @ https://flood-map-for-

planning.service.gov.uk/summary/494045/409728

slowly permeable subsoil and slight seasonal waterlogging (Wetness Class I-II). There are some similar fine loamy (clay loam) soils locally.

2.16 The National Soil Map (1:250,000) indicates the land in the southern and southwestern parts of the Site is covered by soils grouped in the Brockhurst 2 Association. This group of soils comprises slowly permeable and seasonally waterlogged clayey and silty soils over mudstone (mainly Wetness Class IV, but Wetness Class III with under-drainage).

#### Soil Survey

- 2.17 The detailed soil survey carried out on the 26<sup>th</sup> April 2018 determined a similar distribution of soils as described on the National Soil Map (see above). The soils in the northeast and eastern parts of the Site comprise well drained (Wetness Class I) reddish, sandy loam and sandy clay loam soils over similar textured subsoil (c.f. Hodnet Association). The soil in the north-western part of the Site is broadly similar to that in the east but has slowly permeable clay loam and clay subsoil (Wetness Class III).
- 2.18 The soils in the southern and south-western parts of the Site comprise clay topsoil over slowly permeable and seasonally waterlogged clay subsoil (Wetness Class IV). These soils are non-calcareous and very slightly stony (c.f. Brockhurst 2 Association).
- 2.19 A log of all the soil profiles recorded on Site is given as Appendix KCC 2. Two archaeological trial trenches (Pit 1 and Pit 2, Figure KCC 1) were examined to give more information about certain soil physical properties, such as subsoil structure, in more detail. The soil pit descriptions are given in Appendix KCC 3.
- 2.20 In order to substantiate topsoil texture determined during the ALC survey by hand-texturing, four samples of topsoil were collected over the Site (i.e. Auger Locations 4, 11, 21 and 28, see Figure 1). The topsoil samples were 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 4**. The findings of the PSD analysis are shown in **Table KCC 2** below:

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
4	63	20	17	Medium Sandy Loam
11	65	17	18	Sandy Clay Loam / Medium Sandy Loam
21	57	21	22	Sandy Clay Loam
28	24	34	42	Clay

## Table KCC 2 : Topsoil Texture (re Table 10, ALC Guidelines)

## **Interactive Limitations**

2.21 From the information above, together with the findings of the detailed soil survey (see Soil Profile Log given as Appendix KCC 2), it has been determined that the quality of agricultural land at the Site is limited mainly by soil wetness.

#### Soil Wetness

2.22 From the ALC Guidelines, a soil wetness limitation exists where 'the soil water regime adversely affects plant growth or imposes restrictions on cultivations or grazing by *livestock*'. Agricultural land quality is limited by soil wetness as per **Table KCC 3** below (based on Table 6 'Grade According to Soil Wetness – Mineral Soils' in the ALC Guidelines).

Wetness	Texture of the Top 25 cm	176-225
Class		Field Capacity Days
1	Sandy Loam, Sandy Silt Loam Medium Clay Loam*, Medium Silty Clay Loam* Heavy Silty Clay Loam**, Heavy Clay Loam** Clay, Silty Clay	1 2 3a 3b
11	Sandy Loam, Sandy Silt Loam Medium Clay Loam*, Medium Silty Clay Loam* Heavy Silty Clay Loam**, Heavy Clay Loam** Clay, Silty Clay	2 3a 3a 3b
	Sandy Loam, Sandy Silt Loam Medium Clay Loam*, Medium Silty Clay Loam* Heavy Silty Clay Loam**, Heavy Clay Loam** Clay, Silty Clay	3a 3a 3b 4

Table KCC 3.	Predicted	ALC Grade	According	to Soil Wetness
Table NUC 3.	Fredicted	ALC Graue	According	to Soll Wethess

	Sandy Loam, Sandy Silt Loam Medium Clay Loam*, Medium Silty Clay Loam* Heavy Silty Clay Loam**, Heavy Clay Loam** Clay, Silty Clay	3b 3b 4 4
Key *	<27% clay; and ** >27% clay	

- 2.23 Therefore, soil profiles at the Site which are well drained (Wetness Class I), and which have sandy clay loam topsoil, are limited by soil wetness to Grade 2 in this climate area (i.e. 183 field capacity days).
- 2.24 Where soil profiles have sandy clay loam or medium sandy loam topsoil over slowly permeable and seasonally waterlogged subsoil (Wetness Class III), the quality of agricultural land is limited by soil wetness to Subgrade 3a.
- 2.25 In the south of the Site, the soil profiles with clay topsoil over clay subsoil which is waterlogged for long periods over the winter (Wetness Class IV) are limited by soil wetness to Grade 4. Where the topsoil is medium clay loam or sandy clay loam, soil profiles in Wetness Class IV are limited by soil wetness to Subgrade 3b.

#### Previous ALC

2.26 Provisional ALC data (pre-1988) at a scale of 1:250,000 indicates agricultural land in the northern and eastern parts of the Site is Grade 2, with Grade 3 in the far south. There is no detailed (post 1988) ALC information covering the Site, but a MAFF semi-detailed ALC survey (Thornbury, North and East, July 1997. Job No. 2/97) determined Grade 2 adjacent to the east of the Site, and Subgrade 3b adjacent to the southeast.

## ALC Grading at the Site

2.27 The location and extent of agricultural land in the different ALC grades are shown on **Figure KCC 2**. The agricultural land at this Site is limited to Grade 2 in the north and northeast, with Subgrade 3a in the northwest. Heavier, seasonally waterlogged soils in the south of the Site are limited by soil wetness to Subgrade 3b and Grade 4. A small area of land in the southwest is also limited to Subgrade 3b due to a localised micro-relief limitation.

#### Non-agricultural / Other land

2.28 A small area of woodland in the southwest of the Site is classified as non-agricultural.

2.29 The area and proportion of agricultural land in each ALC grade has been measured from an ALC map given as **Figure KCC 2**. The findings are reported in **Table KCC 4** below.

ALC Grade	Area (Ha)	Area (% of Total Site)
Grade 1 (Excellent)	0	0
Grade 2 (Very Good)	14.4	40
Subgrade 3a (Good)	10.3	29
Subgrade 3b (Moderate)	3.0	8
Grade 4 (Poor)	7.1	20
Grade 5 (Very Poor)	0	0
Non-agricultural / Other land	1.0	3
Total	35.8	100

Table KCC 4: Agricultural Land Classification

#### 3 SUMMARY

- 3.1 This report sets out the results of a survey to determine the land quality of approximately 35 hectares of agricultural land to the north west of Thornbury, South Gloucestershire. The survey has been carried out in accordance with the Agricultural Land Classification (ALC) system for England and Wales, (MAFF, October 1988).
- 3.2 A detailed soil investigation was carried out on 26<sup>th</sup> April 2018.
- 3.3 The detailed ALC survey has determined that agricultural land across the Site comprises a mix of Grade 2 agricultural land (14.4 hectares), Subgrade 3a (10.3 hectares), Subgrade 3b land (3 hectares) and Grade 4 (7.1 hectares).

# Appendix KCC1

Natural England Technical Information Note 049 – Agricultural Land Classification (December 2012)

## Natural England Technical Information Note TIN049

# Agricultural Land Classification: protecting the best and most versatile agricultural land

Most of our land area is in agricultural use. How this important natural resource is used is vital to sustainable development. This includes taking the right decisions about protecting it from inappropriate development.

#### Policy to protect agricultural land

Government policy for England is set out in the National Planning Policy Framework (NPPF) published in March 2012 (paragraph 112). Decisions rest with the relevant planning authorities who should take into account the economic and other benefits of the best and most versatile agricultural land. Where significant development of agricultural land is demonstrated to be necessary, local planning authorities should seek to use areas of poorer quality land in preference to that of higher quality. The Government has also re-affirmed the importance of protecting our soils and the services they provide in the Natural Environment White Paper The Natural Choice:securing the value of nature (June 2011), including the protection of best and most versatile agricultural land (paragraph 2.35).

#### The ALC system: purpose & uses

Land quality varies from place to place. The Agricultural Land Classification (ALC) provides a method for assessing the quality of farmland to enable informed choices to be made about its future use within the planning system. It helps underpin the principles of sustainable development.



Agricultural Land Classification - map and key

Second edition 19 December 2012 www.naturalengland.org.uk



Natural England Technical Information Note TIN049 Agricultural Land Classification: protecting the best and most versatile agricultural land

The ALC system classifies land into five grades, with Grade 3 subdivided into Subgrades 3a and 3b. The best and most versatile land is defined as Grades 1, 2 and 3a by policy guidance (see Annex 2 of NPPF). This is the land which is most flexible, productive and efficient in response to inputs and which can best deliver future crops for food and non food uses such as biomass, fibres and pharmaceuticals. Current estimates are that Grades 1 and 2 together form about 21% of all farmland in England; Subgrade 3a also covers about 21%.

The ALC system is used by Natural England and others to give advice to planning authorities, developers and the public if development is proposed on agricultural land or other greenfield sites that could potentially grow crops. The Town and Country Planning (Development Management Procedure) (England) Order 2010 (as amended) refers to the best and most versatile land policy in requiring statutory consultations with Natural England. Natural England is also responsible for Minerals and Waste Consultations where reclamation to agriculture is proposed under Schedule 5 of the Town and Country Planning Act 1990 (as amended). The ALC grading system is also used by commercial consultants to advise clients on land uses and planning issues.

#### Criteria and guidelines

The Classification is based on the long term physical limitations of land for agricultural use. Factors affecting the grade are climate, site and soil characteristics, and the important interactions between them. Detailed guidance for classifying land can be found in: *Agricultural Land Classification of England and Wales:* revised guidelines and criteria for grading the quality of agricultural land (MAFF, 1988):

- Climate: temperature and rainfall, aspect, exposure and frost risk.
- · Site: gradient, micro-relief and flood risk.
- Soil: texture, structure, depth and stoniness, chemical properties which cannot be corrected.

The combination of climate and soil factors determines soil wetness and droughtiness. Wetness and droughtiness influence the choice of crops grown and the level and consistency of yields, as well as use of land for grazing livestock. The Classification is concerned with the inherent potential of land under a range of farming systems. The current agricultural use, or intensity of use, does not affect the ALC grade.

#### Versatility and yield

The physical limitations of land have four main effects on the way land is farmed. These are:

- the range of crops which can be grown;
- . the level of yield;
- . the consistency of yield; and
- . the cost of obtaining the crop.

The ALC gives a high grading to land which allows more flexibility in the range of crops that can be grown (its 'versatility') and which requires lower inputs, but also takes into account ability to produce consistently high yields of a narrower range of crops.

#### Availability of ALC information

After the introduction of the ALC system in 1966 the whole of England and Wales was mapped from reconnaissance field surveys, to provide general strategic guidance on 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 in the period 1967 to 1974. 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 and can be downloaded from the Natural England website. This data is also available on 'Magic', an interactive, geographical information website http://magic.defra.gov.uk/.

Since 1976, selected areas have been resurveyed in greater detail and to revised

Page 2

Natural England Technical Information Note TIN049 Agricultural Land Classification: protecting the best and most versatile agricultural land

guidelines and criteria. Information based on detailed ALC field surveys in accordance with current guidelines (MAFF, 1988) is the most definitive source. Data from the former Ministry of Agriculture, Fisheries and Food (MAFF) archive of more detailed ALC survey information (from 1988) is also available on

http://magic.defra.gov.uk/. Revisions to the ALC guidelines and criteria have been limited and kept to the original principles, but some assessments made prior to the most recent revision in 1988 need to be checked against current criteria. More recently, strategic scale maps showing the likely occurrence of best and most versatile land have been prepared. Mapped information of all types is available from Natural England (see Further information below).

#### New field survey

Digital mapping and geographical information systems have been introduced to facilitate the provision of up-to-date information. ALC surveys are undertaken, according to the published Guidelines, by field surveyors using handheld augers to examine soils to a depth of 1.2 metres, at a frequency of one boring per hectare for a detailed assessment. This is usually supplemented by digging occasional small pits (usually by hand) to inspect the soil profile. Information obtained by these methods is combined with climatic and other data to produce an ALC map and report. ALC maps are normally produced on an Ordnance Survey base at varying scales from 1:10,000 for detailed work to 1:50 000 for reconnaissance survey

There is no comprehensive programme to survey all areas in detail. Private consultants may survey land where it is under consideration for development, especially around the edge of towns, to allow comparisons between areas and to inform environmental assessments. ALC field surveys are usually time consuming and should be initiated well in advance of planning decisions. Planning authorities should ensure that sufficient detailed site specific ALC survey data is available to inform decision making.

#### Consultations

Natural England is consulted by planning authorities on the preparation of all development.

plans as part of its remit for the natural environment. For planning applications, specific consultations with Natural England are required under the Development Management Procedure Order in relation to best and most versatile agricultural land. These are for non agricultural development proposals that are not consistent with an adopted local plan and involve the loss of twenty hectares or more of the best and most versatile land. The land protection policy is relevant to all planning applications, including those on smaller areas, but it is for the planning authority to decide how significant the agricultural land issues are, and the need for field information. The planning authority may contact Natural England if it needs technical information or advice.

Consultations with Natural England are required on all applications for mineral working or waste disposal if the proposed afteruse is for agriculture or where the loss of best and most versatile agricultural land agricultural land will be 20 ha or more. Non-agricultural afteruse, for example for nature conservation or amenity, can be acceptable even on better quality land if soil resources are conserved and the long term potential of best and most versatile land is safeguarded by careful land restoration and aftercare.

#### Other factors

The ALC is a basis for assessing how development proposals affect agricultural land within the planning system, but it is not the sole consideration. Planning authorities are guided by the National Planning Policy Framework to protect and enhance soils more widely. This could include, for example, conserving soil resources during mineral working or construction, not granting permission for peat extraction from new or extended mineral sites, or preventing soil from being adversely affected by pollution. For information on the application of ALC in Wales, please see below.

Page 3

Natural England Technical Information Note TIN049 Agricultural Land Classification: protecting the best and most versatile agricultural land

#### Further information

Details of the system of grading can be found in: Agricultural Land Classification of England and Wales: revised guidelines and criteria for grading the quality of agricultural land (MAFF, 1988).

Please note that planning authorities should send all planning related consultations and enquiries to Natural England by e-mail to consultations@naturalengland.org.uk. If it is not possible to consult us electronically then consultations should be sent to the following postal address:

Natural England Consultation Service Hornbeam House Electra Way Crewe Business Park CREWE Cheshire CW1 6GJ

ALC information for Wales is held by Welsh Government. Detailed information and advice is available on request from Ian Rugg (ian.rugg@wales.gsi.gov.uk) or David Martyn (david.martyn@wales.gsi.gov.uk). If it is not possible to consult us electronically then consultations should be sent to the following postal address: Welsh Government Rhodfa Padam Llanbadarn Fawr Aberystwyth Ceredigion SY23 3UR

Natural England publications are available to download from the Natural England website: www.naturalengland.org.uk.

For further information contact the Natural England Enquiry Service on 0300 060 0863 or email enquiries@naturalengland.org.uk.

#### Copyright

This note is published by Natural England under the Open Government Licence for public sector information. You are encouraged to use, and reuse, information subject to certain conditions. For details of the licence visit

www.naturalengland.org.uk/copyright. If any information such as maps or data cannot be used commercially this will be made clear within the note.

© Natural England 2012

Page 4

Appendix KCC2 Summary of Soil Auger Bore Data

						10	Г
Project Number	Project Name					Parcel	Т
KCC2570	Thornbury, South Glo	oucestershire				ALC	
Date of Survey	Survey Type		Surveyor(s)		Company		
26/04/2018	ALC		RWA		Askew Lan	d and Soil	
Woather		Raliaf		I and lise a	nd vegetati	a	Г
Cold, dry, sunny		Broadly level		CER (Cerea	ls)		Т
				-			1
Grid Reference			Postcode	Altitude		Area	
ST63209160			BS35 1RD	12		35	
MAFF prov		MAFF detailed		Flooding			
Grade 2, some Grade	3 in southern tip	None at site; Grade 2	adjacent to east	Flood Zone	2 and 3 in	far southern end	
AAR	ATO	MDw	MDp	FCD		Climate grade	
839	1526	102	94	183		1	
							Γ
Bedrock			Superficial dep	osits			
Mercia Mudstone Gro	dn		Tidal Flats Dep	osit in South (none	elsewhere)		
Soil association(s) 1:25	20,000		Det	ailed soil informati	on		
Hodnet (572c); Brockh	urst (711c) in far sout	hern end	No	detailed SSEW soil	data		
<b>Revision Number</b>			Date Revised				
2			24/05/2018				
							1

/2018
t/05
e 24
Dat
Revision
2
Revision
Gloucestershire
South
Thornbury,
KCC2570

<b>_</b>					-							
2												
tofile no												
T	3a 3a	3a	an Ma	3a	3a	as.	3a	re.	a.	2	~	~
	fation 3											
al ALC	n 2 [tim											
Fin	Umitatio											
	ation 1 ghtiness	ssae	ő	5	5588	54	55	2	5	554	5500	ssa
-	3a Drou	Sa Wetr	Sa Wetr	Sa Wetr	ta Wetr	ta Wetr	ta Wetr	ka Wetr	ta Wetr	Wets	Wetr	Wetr
Wet	MC NC	WCIII	WC III	WC III	WCIII 3	WC III 3	WC III 3	MCIII 3	MC III	MC II 3	MC1 3	MCI 2
ught	2 50	~	2	~	2	~	~	~	~	1 5	8 1	1
Dro	25 8 25	26 9	24 7	25 8	24 7	23 6	23 6	26 9	56 92	48 1	48 1	8
An C SPL	0 0 8	005	0 0 X	005	000	008	008	e e X	e e 1	0 0 1	0 0 0	000
CaCO3 N	NON NON	NN - NON NN - NON VN - NON	NN - NON NN - NON	NN - NON	NON - NON	NN - NON	NN - NON NN - NON	NN - NON NN - NON	NON - NON	NN - NON	NN - NON	NA - NON
BS STR	of Applic	ot Applied oderate	of Applied	of Applic	Applicate of a contract of the	oderate of	of Applied	of Applie	oderate l	oderate	oderate oderate	at Applie
Ť	e. tho N e. tho N e. tho P	e. tho N e. tho M e. tho Pc	e. tho N	e. tho Ni e. tho M	e. tho N e. tho M e. tho Pc	e. tho N e. tho M e. tho Pc	e. the N e. the M e. the Pc	e. tho Ni e. tho PC	e. tho N e. tho M e. tho Pc	e. tho N e. tho M e. tho M	e. tho N. e. tho M.	e. tho Ni e. tho M
Ped	Size 5 stones (i stones (i	stones () stones () stones ()	stones (i stones (i stones (i	stones () stones () stones ()	stones (i stones (i	stones () stones () stones ()	stones () stones () stones ()	stones (i stones (i	stones () stones () stones ()	stones () stones () stones ()	stones () stones () stones ()	stones () stones ().
	rocks of rocks of rocks of	rocks or rocks or rocks or	Iracks or Iracks or Iracks or	rocks or rocks or rocks or	rocks or rocks or rocks or	rocks or rocks or rocks or	rocks or rocks or rocks or	rocks or rocks or rocks or	rocks or rocks or rocks or	rocks or rocks or rocks or	rocks or rocks or rocks or	rocks or rocks or rocks or
Н	All hard	- All hard	All hard	- All hard	All hard	All hard	- All hard	- All hard	All hard	- All hard	- All hard	- All hard
type 2	175 HR HR HR HR HR	유 유	꽃 뜻 뜻	뜻 뜻 뜻	뜻 뜻 뜻	新 装 装	위 위	RH RH	또 또 또	또 또 또	R H	분 분 분
Stones -	0 0 0 0	000	000	000	0 0 0	000	000	000	0 0 0	0 0 0	000	000
L	*	000	000	000	000	000	000	000	000	000	000	000
_	Type HR - AI HR - AI HR - AI	HR - AI HR - AI HR - AI	HR - AI HR - AI HR - AI	HR - AI HR - AI HR - AI	HR - AI HR - AI HR - AI	HR - AI HR - AI HR - AI	HR - AI HR - AI HR - AI	HR - AI HR - AI HR - AI	HR - AI HR - AI HR - AI	HR - AI HR - AI HR - AI	HR - AI HR - AI HR - AI	HR - AI HR - AI
nes - type	E39 0 0	000	000	000	000	000	000	000	000	000	000	000
Sto	- 0 0 0	000	000	000	0 0 0	000	000	000	0 0 0	0 0 0		000
dure	K Claro	4 - Me2 L - San 0 L - Cla 0	L - Claro	4 - Me2 L - San 2 L - Clar2	4 - Md3 L - San2 L - Clar0	4Me4 L-San2 L-Clar0	R Med L - San 2 L - Claro	it - Me2 L - San 0 L - Clar 0	a - Me1 1 - Claro 1 - Claro	4. Me4 4. Me0 1. Cla0	L - San 2 L - San 0 CL - Cl40	L - San 1 L - Cla0 L - Cla0
Glev Te	Ves SO Yes Hc	Ves Mo Ves SO	No Mo No Mo Yes HC	Ne MS Ne SO	No MS No SCI Yes HC	Ves M6 Yes SO	Ne MS Ne SCI Yes HC	No Ms Yes SO Yes HC	No MG Yes HC	No MG No MG Yes MC	No SC No SC	No No MC
tles	colour											
irey Mot	Munsell 2.5Y6/1	2.5Y6/1	1/922	(2.5Y6/1	12.5Y6/1	2.5%6/1	2.576/1	2.5Y6/1	2.576/1	2.5Y6/1		
	8 0 0 0	9.9		e	e	0.0	e.	8.8		0.0		
Mottles	left colou /8 /8	8/	8/	8	8	8/8/	8/	8/	8	8/		
Ochreous	m Mum - C.5YR6 - C.5YR6	- CI SYR6	- CLSYRE	- Ci5YR6	- CISYR6	- CISYR6	- CISYRG	- CI SYR6	- Ci SYR6	- CISYRG		
H	00 00 10 10 10 10 10 10 10 10 10 10 10 1	8.8	8	8	e	8.8	8	85	8	8		
atrix	SYRA/3 SYRA/3 (R5/3 (R5/2	SYRAJ2 (RS/3 (RS/2	5YR4/3 /R5/3 /R5/2	5YR4/2 (R5/3 (R5/2	5YR4/3 (R5/3 (R5/2	5YR4/2 (R5/3 (R5/2	5YR4/3 (R5/3 (R5/2	5YR4/2 (R5/3 (R5/2	SYR4/2 (R5/3 (R5/2	5YR4/2 (R5/3 (R5/2	5YR4/2 (R5/3 (R5/2	5YR4/3 (R5/3 (R5/2
(m	Thick M 25 7. 20 59 75 59	28 7.	22 7. 17 51 81 51	28 7. 20 57 72 57	25 7. 22 51 23 51	24 7. 22 51 74 51	26 7. 18 57 76 57	28 7. 20 51	26 7. 16 51 78 51	25 25 7. 40 51 55 53	25 7. 20 51 75 51	24 7. 23 51 73 51
Depth (c	120 120 120 120 120 120 120 120 120 120	28 48 120	22 39 120	28 48 120	25 47 120	24 46 120	26 44 120	28 48 120	26 42 120	25 65 120	25 45 120	24 47 120
- axe	<u> </u>	0 28 48	0 Z S	48	0 25 47	0 2.4 46	44	0 48 48	45 Q	0 55 65	0 X X	0 24 47
rt land	68	CER	CER	CER	CE	CER	CER	CER	CER	ABT	AI	A31
· Acor	<u>4</u>											
n) Chan	ca7	(=>	6e7	c:1	cel	61 <b>7</b>	ca7	(a)	(e)	61	4a7	<i>t=</i> >
Alt	000 10	000 11	900 10	11 006	11 000	900 13	800 10	800 11	800 11	800 14	\$00 12	750 12
	192	1200 192	161 0011	101 101	161 0061	1400 191	100 191	191 0021	191 0051	161 0550	191 0011	800 191
Grid ref.	000 363	000 363	900 363	900 363	900 363	900 363	800 363	800 363	800 363	800 363	800 363	750 363
	63100 92	63200 92	6310091	63200.91	63300.91	63400.91	63100 91	63200.91	63300 91	63550 91	16 002 89	16 00819
Daine	1	2 51	5 21	4 51	5 51	6 51	7 ST	8 ST	9 ST	10 51	11 51	12 51
-												

		E									
		f limitatio									
		cro-relie val?									
ile note:		alised mi ge remo									
de Prof		Loca			_						
3 Gra	#	48	~~~~	~	8	~	2	4	ą,	30	~ ~ ~
mitation											
01 2 10		field									
Umtat		Microre									
ation 1	5	sa	ssa	sees	sa	stat	5	õ	sac	stau	see
w Limit	Wetr	e Wetr	Wetz	Weti	Wetr	Wet	Weti	Wet	p Met	Net	Met
VC 0	VCIV 31	VCIV 31	VCI 2	VCI 2	VCII 2	WCI 2	WCI 2	NCIV 4	MCIV 3	NCI 2	WCI 2
> P5	-	~	-	-	1	1	1	2	2	-	-
W MBr	13	12	20	22	15	20	19	1	ŵ	19	10
WE	No 30 No Yes	No 29 No Yes	8	25	47	8	67	No 22 Yes Yes	No 21 Yes Yes	40	49
	NN	NN	N N N N N N N N N N N N N N N N N N N	N N N N N N N N N N N N N N N N N N N	NN NO	N NO N NO N NO	N N N N N N N N N N N N N N N N N N N	N N N	No Vo	NN NO	N N N N N N N N N N N N N N N N N N N
	NON -	e NON	e NON -	e NON e	e NON -	e NON e	e NON e NON	NON	NON	e NON e NON	tic NON te NON
	fot Appl Moderati	Vot Appl Moderat.	Vot Appl Moderat. Aoderat	Vot Appl Noderat. Aoderat	Vot Appl Moderati	Vot Appl Voderat. Voderat	Not Appl Moderat.	Not App	Not App oor	Not App Vioderat	Not App Moderat Vioderat
Shape	e. thor	e. thor	e. thore	e. thor	e thoi	Le. thou	e. thou	Le. thor	Le. thou	Le. thou	Le tho
47e   5	tones () tones ().	tones () tones ()	tones (i tones (i	tones (i tones (i tones (i	tones (i tones (i tones (i	tones () tones ()	tones () tones ()	tiones (i tiones (i	tones () tones ()	tones () tones ()	tiones (
12	acks or s acks or s acks or s	ocks or s ocks or s ocks or s	ocks or 1 ocks or 1 ocks or 1	acks or 1 acks or 1 acks or 1	acks or 1 acks or 1 acks or 1	ocks or ocks or ocks or	acks or - acks or - acks or -	acks or acks or ocks or	ocks or ucks or ucks or	ocks or ocks or ocks or	ocks or ocks or
Strei	Il hards	ll hard r ll hard r	ll hard r	di hard r	di hard r di hard r di hard r	di hard	di hard	ul hard	ul hard	ul hard	All hard
Type	HR - A HR - A HR - A	HR - A HR - A HR - A	HR - A HR - A HR - A	HR - A HR - A HR - A	HR - A HR - A HR - A	HR - A HR - A HR - A	HR - A HR - A HR - A	HR - A HR - A HR - A	HR - A HR - A	HR - A HR - A	HR - J HR - J
× 663	000	000	000	000	000	000	000			000	000
> 20m	000			000	000			000	000	000	000
1	000	0 0 0	000		0 0 0	0 0 0	VII 0	AIL 0	AIL O AIL O	9 I I 0	VIII 0
Type	HH H	HR - H	HR - HR	HR - HR	HR	HR HR	HR HR	쁥	HR. HR.	HR .	HR . HR .
~ 6¢m	000	000	000	000	000	000	000	000	000	000	000
> 2cm	000	000	000	000	000	000	000	000	000	- 0 0	000
*	Cla0 Cla0	0.000	San 1 Cta 0 Cta 0	080	Med Claro	San 1 - Cl40 - Cl40	San 2 - Cla 1 - Cla 1	lay 0 lay 0 Saty 0	Sam0 - Cla0 lay 0	5an3 - Ca0	- Cla0
	MGL HCL-	MCL. HCL -	sci Mci.	MCL MCL	MSL MSL MCL	MCL - MCL	SCL- MCL MCL	C-0	SCL- MCL C-C	SCL- MCL MCL	SCL- MCL MCL
5	Yes	Ver Ver	N N N	No No	No No	N N N	N N N	No Xe	Ne	NG	NC
sell colo	1/9	1/9			1/9			6/1	1/9		
m Mur	-62.57	- 62.57			-02.51			- 62.5	- 62.5		
our Fo.		8.8			0			8.8	8		
15ell cole	4/6	4/6			8/9			4/6	14/6		
rm Mut	A-CISYR	7- CI SYR			) - Ci SYB			D - N SYR D - N SYR	D - N SYR		
our Fo	e M	8 ¥			8			2 2	×		
nsell col-	R3/2 R5/2 R6/2	R4/2 R5/2 'R6/2	YR4/3 15/3 15/2	YR4/2 15/3 15/2	YR3/2 15/3 15/2	YR4/3 15/3 15/2	X84/3 15/3 15/2	YR4/2 (R5/2 (R6/2	YR4/2 YR5/3 YR6/3	VR4/2 15/3 15/2	XR4/2 RS/3 R5/2
nick Mu	107	101	275 578 578	5 7.5 5YR	5 5YB	2.5 2.7 2.7 2.7 2.7 2.7 2.7 2.7 2.7 2.7 2.7	2 7/5 5 Yrs 3 SYR	10 10	4 10 5 7.5	7 571 571 571 571	3 7.5 9 SYI
ttm II	27 27 5 18 20 75	14 24 14 26 20 76	24 24 17 23 20 73	25 25 26 20 23	24 2/ 20 35	23 23	22 22 22 22 22 22 22 22 22 22 22 22 22	26 21 20 44	24 2 24 1(	24 2 11 1: 120 7:	23 2 42 I 120 71
Top 6	0 2 27 4 45 1	0 2 24 4 44 1	0 2 24 4 47 1	0 2 25 4 45 1	0 1 24 6 60 1	0 2 23 4 46 1	0 22 42 1	10 10	34 0	41 41	42 3
250 Date	2	*	2	2	4	A.	AL.	2	43	2	2
n bad	3	ш	12	3	1	3	-	-	-	-	
ad		~	-	1	2	2	2	-	2	-	6
orc (m)	6	5	5	8	3	4	8	5	5	Ş	Ŷ
¥	700 10	6 00/	200 12	200 12	700 13	700 14	200 14	6 009	600 12	600 12	600 13
*	161 00	161 00	161 00	191	161 00	161 00	161 005	191	191	161 000	191
×	0 3630	1635 00	00 3632	0 3633	00 3634	00 3635	3636	00 3631	00 3631	00 363	00 3634
	7/16 000	716 001	200 917(	X16 008	400 91 7	500 917	600.917	916 001	200.916	916 005	400 916
NGR	51 63(	ST 63	51 63	ST 63	ST 63	ST 63	ST 63	ST 63	51 63	57 63	ST 63
Point	13	14	12	16	11	99	19	20	21	22	23

	1	1		1	1	1		
otes								
sofile n								
rade								0
5 E UG	~	2	3	4	4	m	4	m
Limitati								
inal AL								
Limital								
ation 1	ŝ	õ	55	ŝ	ŝ	ŝ	550	ss
v Limit	Wetn	Wetn	Wetn	Wetn	Wetn	Wetn	Wetn	Weth
C Gw	61 2	61 2	C 10	CIV 4	CIV 4	20 39 CIN 39	CIN 4	20 3P
M PS	1 1	1 W	1	~	2 W	1	2 2	-
MBp	80	<b>80</b>	8	0	80	15	o.	15
MBW	88	8	48	2 2	5 23	32	5 54	35
th C SP	0 0 0	000		o o Ve	0 0 10	0 0 0	o o o Ye	0 0 0
9C03	- NO		NO NO	- NO	2 2 2	NO NO	N N N N N N N N N N N N N N N N N N N	NO
STR C	Applic N erate N erate N	Applic N erate N erate N	Applic N erate N erate N	Applica	Applica	kpplic N erate	Applic	Applic
* SUBS	to Not J to Mod	to Not J	Not L Node	Not L No Poor	se Not J se Poer	or Not J to Mod	io Not / io Poor	so Not J so Poor
Shape	(i.e. th (i.e. th (i.e. th	(i.e. th (i.e. th	(i.e. th (i.e. th	(i.e. th (i.e. th (i.e. th	(i.e. th (i.e. th	(i.e. th (i.e. th	(i.e. th (i.e. th	(i.e. th (i.e. th
Site	r stoner r stoner	r stoner r stoner	r stoner r stoner	r stoner r stoner	r stones r stones	r stoner r stoner	r stones r stones	r stones r stones
ength	rocks o rocks o rocks o	rocks o rocks o rocks o	rocks o rocks o rocks o	rocks o rocks o rocks o	rocks o rocks o rocks o	rocks o rocks o rocks o	rocks o rocks o rocks o	rocks o rocks o
ŝ	All hard All hard	All hard All hard	All hard All hard All hard	All hard All hard All hard	All hard All hard All hard	All hard All hard All hard	All hard All hard All hard	All hard All hard All hard
e 2 Type	HR . HR .	H H H	HR HR	HR .	HR . HR .	HR . HR .	HH HH	HR HR
es - typ		0 0 0	0 0 0	000				
Ston > 2cm								
*	000	000	0 0 0	000	0.0.0	2 2 2	000	000
Type	HR - A HR - A HR - A	HR A HR A	HR - A HR - A HR - A	HR - A HR - A HR - A	HR - A HR - A HR - A	HR - A HR - A HR - A	HR - A HR - A HR - A	HR A H
s - type > 6cm	000	000	000	000	000	000	000	000
Stone 2cm								
*	000	4 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	200	000	000	000	000	000
Texture	SCL - Sa SCL - Sa MCL - C	MCL - C	SCL - Sa SCL - Sa MCL - C	C - Clay C - Clay ZC - Silty	C - Clay C - Clay ZC - Silt	MGL - 0 MGL - 0 HGL - 0	C - Clay C - Clay ZC - Silt	MCL - 0 HCL - 0
Gley	N N N	°N °N	N N N	No Yes	N K K K K	N Kei Kei	N X 48	No Yes Yes
tes colour								
ry Mott				1/945	1/945	576/1	5Y6/1	576/1
form A				89.52	89.62	9-62	23 - B	0 · C2
ties olour								
ous Mot insell co				84/6	R4/6 R4/6	84/6	84/6	84/6
Ochred orm Mi				N24 - 0	0 - NSY	D-A5M	D-05M	D - M SM
- Ee				2 2	22	52	02	25
rix tsell col	94/2 5/3 5/2	5/3 5/3 5/2	'R4/2 5/3 5/2	R4/2 R5/2 R6/2	R3/2 R5/2 R6/2	R3/2 R5/2 R6/2	R4/2 R5/2 R6/2	R4/2 R5/2 R6/2
Mat ck Mur	7.57 SYR SYR	7.5YR 5YR 5YR	7.5V SYR SYR	101 101 101	10Y 10Y	101 101 101	10Y 10Y	10/1
m Thi	22 20 78	21 20 20	25 14 0 81	26 30 64	28 62 0 30	28 20 20 20	38 30	28 20 72
op Btt	22 22	11 41	25 39 90 11	6 56 6 12	8 50 0 12	8 88 8	0 8 0	8 48 8 12
asn	0 1 4	0 1 4	3.5.0	2 10 10	0 ~ 6	0 10 4	0 1 10	0 1 4
t Land	LEY	(EV	IEV	LEY L	IEV	LEY.	LEY LEY	LEY LEY
Aspe								
Slope	<i>t=</i> <sup>1</sup>	63 C	es7	¢a7	c.]	10	ce7	¢=1
Alt (m)	14	77	12	3	a	E	12	5
Í	91600	91500	01500	01400	91400	91400	91300	91300
X	3500 1	3200 1	3300 1	3200 1	3300 1	3400 1	3300 1	3400 1
Grid re	96 009	36 0036	96 005	400 36	400 36	400 36	300 36	300 36
	3500 91.	3200.91	3300.91	3200.91	3300 91	3400 91	3300 91.	3400.91
d NGR	ST 6.	51 6	51.6	51 6	ST 6.	ST 6.	ST 6.	51.6
Poin	24	25	36	27	28	\$2	8	31

Ped. Shape	SG - Single grain	GRA - Granular	SAB - Subangular Blocky	AB - Angular Blocky	PLAT - Platy	MASS - Massive	NA - N/A	Subsoil Structure Condition	Not Applicable	Good	Moderate	Poor	Soil or Ped. Strength	loose	Very friable	Friable	HITT Vacuities	Extremely firm	Extremely hard	N/A		NON - Non-relearance (-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)																		listed above)	: scratched with a finger nail)		tones		
Mottle form	FF - Few Faint	FD - Few Distinct	FP - Few Prominent	CF - Common Faint	CP - Common Platmac CP - Common Prominent	MF - Many Faint	MD - Many Distinct	MP - Many Prominent	VD - Very many Distinct	VP - Very many Prominent	The second s	C - Clav	CHK - Chalk	CS - Coarse Sand	CSL - Coarse sandy loam	CS2L - Coarse sandy silt loam	FP - Fibrous and semifibrous peats	FSL - Fine sandy loam	FSZL - Fine sandy silt loam	HCL - Clay loam (heavy)	HP - Humified peats	HZCL - Silty clay loam (heavy)	IIVIP - Imperetratie to roots LCS - Loamy Coarse Sand	LFS - Loamy fine sand	LMS - Loamy medium sand	LP - Loamy peats	MCL - Clay Ioam (medium)	MS - Medium Sand	MSL - Medium sandy loam	MSZL - Medium sandy sirt loam MZ - Marine Liebt Silts	MZCL - Sitv clav loam (medium)	OC - Organic clays	OL - Organic loams	OS - Organic sands	PL - Peaty loams	SC - Sandy clay	SCL - Sandy clay loam	SP - Sandy peats	ZC - Silty clay	ZL - Silt loam	Stone Type CH _ Chalk ar shalk stones	ECCT - Cristin of cristin stories	GH - Gravel with non-porous (hard) stones	GS - Gravel with porous stones (mainly soft stone types	HR - All hard rocks or stones (i.e. those which cannot be	MSST - Soft, medium or coarse grained sandstones	51 - Soft Weathered Igneous or metamorphic rocks or s SLET - Soft politie or dolomitic limestones.	ZR - Soft, argillaceous or silty rocks or stones	The double of the second

None	Gley		5	4	3b	3a	2	1	ALL Grades	ALC Grades	WC VI	WC V	WC IV	WC III	WC II	WC I	Wetness Class	NA - Not applicable	5 - Strong	M - Moderate	W - Weak	Degree of Ped. Development	NA - N/A	VC - Very Coarse	C - Coarse	M - Medium	F - Fine	VF - Very Fine	Ped. Size
PF - Very Fine FF - Fine - Fine - Andedum - C- Coarse VC - Very Coarse VC - Very Coarse VC - Very Coarse VC - Verk MA - Not applicable MA - VOT MC III WC V WC V WC V MC V MC III MA - MO - MO - MO - MO - MO - MO - MO - MO	VF - Very Fine VF - Very Fine F - Fine M - Medium C - Coarse M - MA - MA M - Moderate M - Not applicable M - Moderate M - Not applicable M - Not a	Pre-Very Frie F-Frie - Frie - Frie - Carate - Carate - Vory Coarse - Vory Coarse - Vory Coarse - Vor A - Not applicable - Not	VF - Very Frie VF - Very Frie F - Frie M - Medium C - Coarse M - MC - Coarse NA - MC Degree of Ped. Development M - Moderate S-Store M - Moderate NA - Not applicable M - Moderate S-Store M - Moderate NA - Not applicable M - Moderate M - Moderate NA - Not applicable M - Moderate M - M - M - M - M - M - M - M - M - M -	Per - Preny Free Free - Free F - Free A - Medium C - Coarse VC - Very Coarse MA - N/A Destree Of Peut Development W - Vers A M - Moderate M - M - Moderate M - M - M - M - M - M - M - M - M - M -	VF - Very Fiele Site VF - Very Fine F - Fine M - Medium C - Coarse M - MG M - VMC M - Vork M - Vork M - Note Set M - Not splitcable M - Not applicable M - Not applic	Per-View Field F-Fine M-Medium A-Medium C- Conse NA - N/C Degree of Pet Development W- Weak NA - NA and Policable NA - Nat applicable NA - Nat applicable NA - Nat applicable WC II WC III	VF - Very Fine VF - Very Fine F - Fine M - Medium C - Carlse M - M/A M - Molecarlse M - Not applicable M - N	Pre-Very Fiele Site Pre-Very Fine F - Finery Fine F - Finery Fine C - Carise W - Wash M - Moderate M - M - M - M - M - M - M - M - M - M -	VF - Very Fiele Site VF - Very Fiele F - Fiele M - Medium C - Castra M - Mole M - Not active M -	VF - Very Fine VF - Very Fine F - Fine M - Medium C - Canse M - MA - MA - MA - MA - MA - MA - MA -	Pre-Very Field Stree F - Finery Fine F - Finery Fine C - Carrise MA - Nyl Carrise MA - Nyl Carrise MA - Nyl Carrise MA - Not applicable MA - Not applicable MA - Not applicable MC - Wortherst Class WC III WC III WC III WC WC W	Pre-Veny Fiele Site - Veny Fine - Fine M - Medium - Catase - Vara - Vara M - Moderate - Store M - Not applicable M - Not applicable M - Not applicable W - Not W - W - W - W - W - W - W - W - W - W	VF - Very Field Site VF - Very Fine F - Finery Fine F - Finery Fine C - Carls VC - Very Canse MA - N/A MA - N	Pre-Very Field Stree VF-Very Fine F-Fine M- Medium C- Coarse VC-Very Coarse M- N/A Desree C/ Ped. Development M- Noterate M- Not applicable M- Not applicable VCI Vetness Clss WCI VCI	VF - Vers Fine VF - Vers Fine F - Fine F - Fine C - Catas C - Catas C - Catas C - Versy Canase NA - NA Degree of Pest. Development NA - NA Methods NA - NA applicable NA - NA -	PF - Very Field Site - Finery Fine - Field M - Medium - C- Carise VC - Very Carise MA - N/A MA - N/A M - Moderate MA - Not applicable MA - Not applicable	Per Very Foel Site VF - Very Fine F - Fine M - Medium - Coarse VC - Very Coarse M - N/A M - Not M - Not M - Not MA - Not applicable MA - Not applicable	VF - Veny Field Site VF - Veny Field F - Field M - Medium C - Canise M - M/S M - M/S Destree M - M/S M - Mode M - Mode M - Mode S - Strong	VF - Vers Field VF - Vers Field F - Field M - Andum C - Catas NG - Versy Castse NA - WA Degree of Poel Development NA - Wak M - Workarde	Pe-Very Fiel Size F - Fine M - Medium - C - Carise VC - Very Carise MA - N/A MA - N/A W - Vesk W - Vesk	Ped Size VF - Very Fine F - Time A - Medium C - Cartse VC - Very Cartse MA - N/A Degrae of Ped Development	Ped Size VF - Very Fine F - Fine C - Coarse VC - Very Coarse NA - N/A	Pedi Size VF - Very Fine F - Fine M - Medium M - Coarse VC - Very Coarse	Ped Size VF - Very Fine F - Fine M - Medium C - Coarse	Ped. Size VF - Very Fine F - Fine M - Medium	Ped. Size VF - Very Fine F - Fine	Ped. Size VF - Very Fine	Ped. Size	

Page 1 of 1

C612 KCC2570 Thornbury, South Gloucestershire Revision 1 Revision Date 25/04/2018

Appendix KCC 3 Profile Pit Description

	П			T			۲,	1	9	9		9					1		1	đ		9	5	1	a
	Ш						ores S	m	<u>ء</u>	-	*	<u>ء</u> بر								ores S		~	>	*	- 
	H			tation			Biopo	>0.5r	>0.55	_	>0.59	n >0.55					ation			Biopo		20.5 20.5		\$ 9	0.55
d and sc				Precipit	Dry		undary	Form	Smooth	Smooth		Smooth					Dracini	ριλ		undary	Form	Smooth	Smooth		Smooth
Sompany Askew Lan							Horizon bo	Distinct	Abrupt	Abrupt		Abrupt								Horizon bo	Distinct	Abrupt	Abrupt		Abrupt
				wind	slight		-	Strength 1	Firm	Firm		Firm					Wind	Slight			Strength 1	Firm	Firm		Ē
			onditions	ky	loudy			tructure	AB	9		Aassive				2		Vpnoj			tructure	AB	rismatic		ungular Nocky
			eather and c	du	arm		cture	e S	le S	edium /		A				,	mn and c	E E		cture	a	e e	arse P		arse
eyor(s)			3	<u>م</u>	×		soil stru	Siz	erateFir	erateM	-	N					5 6	3		soil stru	Siz	erateFir	8	+	8
RWA							c Ped/	Dev.	ne Mod	ne Mod	_	N/A								c Ped/	Dev.	nod Mod	he Poor	+	Poor
	H						alc. Mn	_	on dNor	on d Nor		on dNor								alc. Mn		on dNor	on dNor	+	ondNor
							8		ž	ž		ž								8		ž	ž	+	ž
				s				Type									50				Type				
pril 201				tion typ	assland			S									tion tun	assland			s			1	
Date 26th A	H	al trend		Veget	Ley gr		conten	Type									Vacat	Lever		conten	Type				
	H	logy tri		a			Stone	Н %	0	•		0			.u		9			Stone	H %	•	•		•
	Votes	Vear archaeo	lora	Culivation typ	oloughed			Munsell						Votes	oit in floodpla		Tora Tuliustion tun	oloughed			Munsell		SYR4/6		5YR4/6
				face	/el	•		lour I						_			-	e.			lour 1		llowish		lowish B
	Π			3	a		Aottles	orm Co			-			1			J	<u> </u>		Aottles	orm Co		AD Ye	ē	AD F
		orkability		e form	ar		•	nsell F									ia form	ja Ja		<	nsell F	R3/2	R5/2 N		R6/2
	(s)uo	ness / wo		Slop	Line			Mur			_			(s)uo	5		clos	Ë,			Mur	40 T	101	+	10/
	Limitati	Soil wet					8	Colour						Limitati	Wetnes					50	Colour	Very dark grepish bro	Greyish	brown	Pinkish grey
				Aspec	s		Gleyin	Gley	None	None		None	l r				Acner	'n		Gleyin	Gley	Yes	Yes		Yes
stershire	Grade	7	Toporraphy	Gradient	1°			Munsell	7.5YR4/3	SYRS/3		5YR5/3		Grade	4	-	Cradiant	1°			Munsell	10YR3/2	10YR5/2		10YR6/2
outh Glouce			Nearest	point	12			Colour	Brown	Reddish	Brown	Reddish Gray					Nearest	58			Colour	Very dark greyish brown	Greyish	brown	Pinkish grey
ocation hornbury, S	VC		ltitude		12		Aatrix	exture	andy Clay oam	Aedium	lay Loam	Aedium Say Loam		ş	>		autitude	12		Matrix	exture	day	Jay		yet
	2			North	191		•	Bttm T	24 5	47 N		120	1	2	2	ľ	4tron	16		-	Bttm 1	8	8	1	2
	Π			East	638 1		Depth	Top	0	24		47					trea	633		Depth	Top	•	28		8
roject (CC2570	ŧ		nid Ref.	duare	L.		lorizon		9			c		ų.			TIO KET.	F		lorizon		<b>e</b>		T	

Appendix KCC 4 Certificate of Laboratory Analysis



Report Number   11372-18   P248   SRAH KERNON     Date Received   0:44X7-2018   KERNON COUNTRYSIDE     Date Received   0:44X7-2018   KERNON COUNTRYSIDE     Date Reported   0:44X7-2018   KERNON COUNTRYSIDE     Date Reported   0:44X7-2018   KERNON COUNTRYSIDE     Date Reported   0:44X7-2018   KERNON COUNTRYSIDE     Order Number   KC32570   HORNBURY     Order Number   KC32570   MITTENAR ELL     Date   Solution   Solution     Sample Reference   Solution   Solution     Sample Reference <th>ANALYTICAL REPORT</th>	ANALYTICAL REPORT
Date Received   CLAMY 2018   KENON COUNTYYSIDE     Date Reported   0-44AY 2018   CONSULTATIS LTD     Project   0.44AY 2018   CONSULTATIS LTD     Project   SOL   SOL     Project   Northold SOL   SOL     Defenence   KCC2570   MUTSINERS BAIN     Defenence   KCC2570   MUTSINERS BAIN     Defenence   KCC2570   MUTSINERS BAIN     Bample Reference   SOL   SOL     Bample Reference   SOL   SOL     Bample Reference   SOL   SOL     Band 2.00-0.063mm   Solut   Dol     Determinand   Unit   SOL   SOL     Data 2.00-0.063mm   Solut   DOL   Dol     Data 2.00-0.063mm   Solut   DOL   Dol     Sample Reference   SOL   DOL   DOL     Sample Reference   SOL   Doc   Doc     Sample Reference   Solut   Doc   Doc     Sample Reference   Solut   Doc   Doc     Sample Reference   Solut   Doc   Doc     Data 20050000000000000000000000000000000000	RAH KERNON
Date Reported   06-MAY-2018   CONSULTANTS LTD     Project   SOL   AFENACRES BARN     Project   SOL   Project   CC2570     Reference   KCC2570   MultiShifts Estis 4.1.   Unit     Aboratory Reference   KCC2570   MultiShifts Estis 4.1.     Ample Faterence   SOL38474   MultiShifts Estis 4.1.     Determinand   Unit   SOIL     Aships Notes   The sample submitted was of adequate size to complete all analysis requested.     Anaysis Notes   The sample submitted was of adequate size to complete all analysis requested.     Anaysis Notes   The sample submitted or testing.     Period   Dout/OC   The results are reported relate only to the item(s) submitted for testing.     Anaysis Notes   The results are reported relate only to the item(s) submitted for testing.     Protect   The results are reported relate only to the item(s) submitted for testing.     Protect   The results are reported relate only to the item(s) submitted for testing.     Protect   The results are reported relate only to the item(s) submitted for testing. <th>ANON COUNTRYSIDE</th>	ANON COUNTRYSIDE
Reference       KCC3570       THORNBURY       PURTON STOKE         Order Number       KCC3570       MULTSHIRE SNS 41.         Aboratory Reference       SOU.38474       NULTSHIRE SNS 41.         Sample Reference       SOU.38474       NULTSHIRE SNS 41.         Sample Reference       So       SOU.38474       NULTSHIRE SNS 41.         Sample Reference       Sou       Sou       Sou       Sou         Sample Reference       Sou       Sou       Sou       Sou       Sou         Sample Reference       Sou       <	NSULTANTS LTD EENACRES BARN
Laboratory Reference   Solt.384744     Sample Reference   28     Sample Reference   28     Sample Reference   28     Determinand   Unit   Solt.     Determinand   Unit   Solt.     Sand 2.00-0.065mm   % w/w   24     Sand 2.00-0.065mm   % w/w   24     Determinand   % w/w   24     Salt 0.065-0.005mm   % w/w   34     Analysis Notes   Teacute state out of the lamely state to complete all analysis requested.     Analysis Notes   The sample submitted for restrig.     Notes   The sample submitted for restrig.     Document Control   The sample submitted for restrig.     Haporatol   The results as reported relate only to the lamely state to complete all analysis requested.     Hones   The results are reported relate only to the lamely state state to complete all analysis	RTON STOKE "TSHIRE SN5 4LL
Sample Reference   28     Determinand   Unit   Soll     Determinand   Unit   Soll     Stard 2.00-0.063mm   % w/w   24     Band 2.00-0.063mm   % w/w   24     Stard 2.00-0.063mm   % w/w   34     Stard 2.00-003mm   % w/w   34     Stard 2.00-003mm   % w/w   34     Stard 2.00-003mm   % w/w   34     Stard 2.002mm   % w/w   34     Stard 2.002mm   % w/w   34     Stard 2.002mm   % w/w   34     Analysis Notes   The sample submitted value of the malysis requested.     Analysis Notes   The results as reported related on the mess subless of the malysis requested.     Date   The results as reported relation of the table of the aboratory     Determit   The results as reported relation of the table of the aboratory     Date   The results as reported relation of the table of the aboratory     Date   The results as reported relation of the table of the aboratory     Start Resource   This test report shall not be reproduced, except in full, wit	
Determinand       Unit       SolL       No       Perminand       No         Sand 2.00-0.063mm       % w/w       24       No       No <td></td>	
Sand 2.00-0050mm     % w/w     24     P     P       Silt 0.063-0.002mm     % w/w     34     P     P     P       Silt 0.063-0.002mm     % w/w     34     P     P     P       Silt 0.063-0.002mm     % w/w     34     P     P     P       Fabra 1.002mm     % w/w     34     O     P     P     P       Fabra 2.002mm     % w/w     34     O     O     O     P <t< td=""><td></td></t<>	
Silt 0.063-0.002mm     % w/w     34     0 <td></td>	
Clay -c0.002mm   % w/w   42     Textural Class '   0-C     Textural Class '   0-C     Totalysis Notes   The sample submitted was of adequate size to complete all analysis requested. The results are presented on a dy matter basis unless otherwise stipulated. The results are presented on a dy matter basis unless otherwise stipulated. The results are presented on a dy matter basis unless otherwise stipulated. The results are presented on a dy matter basis unless otherwise stipulated. The results are presented on a dy matter basis unless otherwise stipulated. The results are presented on a dy matter basis unless otherwise stipulated. This test report shall not be reproduced, except in full, without the written approval of the laboratory of Dotyfe Natural Resource Management, a trading division of Cawood Scientific Ltd. Coopers Bridge, Braziers Lane, Bracknell, Berkshire, FiG42 BNS Test: 01344 886338 Fax: 01344 886372 email: enquiries@nm.uk.com	
Textural Class **     O-C       Notes     The sample submitted was of adequate size to complete all analysis requested.       Analysis Notes     The sample submitted was of adequate size to complete all analysis requested.       The results are presented on a dy matter basis unless otherwise sipulated.     The results are presented on a dy matter basis unless otherwise sipulated.       Document Control     This test report shall not be reproduced, except in full, without the written approval of the laboratory       Reported by     \$\$ Dotyle       Natural Resource Management, a trading division of textural classes.       \$\$ Dotyle       Te: 01344 80:072       email: enquiries @mm.uk.com	
Notes       The sample submitted was of adequate size to complete all analysis requested.         Analysis Notes       The results are presented relate only to the item(s) submitted for testing.         Document Control       The results are presented on a dy matter basis unless otherwise stipulated.         Pleoted by       This test report shall not be reproduced, except in full, without the written approval of the laboratory         Reported by       The place see the attached document for the definition of textural classes.         Reported by       The address are the attached document for the definition of textural classes.         Reported by       The value Base are the attached document for the definition of textural classes.         Reported by       The value Base are the attached document for the definition of textural classes.         Reported by       The value Base are the attached document for the definition of textural classes.         Reported by       The value Base are the attached document for the definition of textural classes.         Reported by       The value Base are the attached document, a trading division of Cawood Scientific Ltd.         Coopers Bridge, Braziers Lane, Bracknell, Berkshire, FiG42 6NS       Tel: 01344 880372         Fax: 01344 880372       Eax: 01344 880372         Fax: 01344 880372       Eax: 01344 880372	
Analysis Notes   The sample submitted was of adequate size to complete all analysis requested.     The results as reported relate only to the itemn(s) submitted for testing.     Document Control   The results as reported relate only to the itemn(s) submitted for testing.     Document Control   The results as reported relate only to the itemn(s) submitted for testing.     Please see the statement of the definition of textural classes.   Please see the attached document for the definition of textural classes.     Reported by   Instant Resource Management, a tracing division of Cawood Scientific Ltd.     Coopers Bigge, Braziers Lane, Bracknell, Berkshire, RG42 6NS     Test: 01344 880338     Fax: 01344 880372     email: enquiries@nm.uk.com	
Document Control       This test report shall not be reproduced, except in full, without the written approval of the laboratory         "Please see the attached document for the definition of textural classes.       "Please see the attached document for the definition of textural classes.         Reported by       "Doup(E       Natural Resource Management, a trading division of Cawood Scientific Ltd.         Coopers Bridge, Braziers Lane, Bracknell, Berkshire, RG42 6NS       Ted.       Ted.         Tel: 01344 880372       Eax: 01344 880372       Matural enduries @nm.uk.com	all analysis requested. d for testing. herwise stipulated.
•• Please see the attached document for the definition of textural classes. Reported by $\mathcal{FDot}(\mathcal{E})$ Natural Resource Management, a trading division of Cawood Scientific Ltd. Coopers Bridge, Braziers Lane, Brackmell, Berkshire, RG42 6NS Tal: 01344 800372 Eax: 01344 800372 email: enquiries@nm.uk.com	I, without the written approval of the laboratory.
Reported by 3 Douple Natural Resource Management, a trading division of Cawood Scientific Ltd. Coopers Bridge, Braziers Lane, Bracknell, Berkshire, RG42 6NS Tel: 01344 880372 Fax: 01344 880372 email: enquiries@mm.uk.com	textural classes.
Page 1 of 1	ood Scientific Ltd. 42 6NS
Page 1 of 1	
Parent of 1	
	Page 1 of 1



Report Number					
	11373-18		P248	SARAH KERNC	ON
Date Received	02-MAY-2018 09-MAV-2018			KERNON COUNTS	INTRYSIDE
Project	SOIL			GREENACRES	SBARN
Order Number	KCC2570	THUS		VILTSHIRE SN	ve V5 4LL
Laboratory Reference		SOIL384745	SOIL384746	SOIL384747	
Sample Reference		4	F	21	
Determinand	Unit	SOIL	SOIL	SOIL	
Coarse Sand 2.00-0.63mm	M/M %	5	10	4	
Medium Sand 0.63-0.212mm	M/M %	39	38	36	
Fine Sand 0.212-0.063mm	M/M %	19	17	17	
Silt 0.063-0.002mm	W/W %	20	17	21	
Clay <0.002mm	M/M %	17	18	22	
Textural Class **		mSL	SCL/mSL	SCL	
Notes					
Analysis Notes Document Control	The sample submitt The results as repoi The results are pres <b>This test report sh</b> a	ted was of adequa rted relate only to sented on a dry me all not be reprodi	ate size to comple the item(s) subm atter basis unless uced, except in	pte all analysis n nitted for testing. s otherwise stipu full, without th	requested. 3) uulated. he written approval of the laboratory.
	** Please see the at	ttached document	for the definition	of textural class	
Reported by	J Doyle Natural Resource N Coopers Bridge, Bri Tel: 01344 886338 Fax: 01344 8863972 email: enquiries@nr	lanagement, a trai aziers Lane, Brach m.uk.com	ding division of C knell, Berkshire, I	awood Scientifi RG42 6NS	fic Ltd.
				Page	e1 of 1



# **Textural Class Abbreviations**

The texture classes are denoted by the following abbreviations:

Class	Code
Sand	S
Loamy sand	LS
Sandy loam	SL
Sandy Silt loam	SZL
Silt Ioam	ZL
Sandy clay loam	SCL
Clay loam	CL
Silt clay loam	ZCL
Clay	С
Silty clay	ZC
Sandy clay	SC

For the *sand, loamy sand, sandy loam* and *sandy silt loam* classes the predominant size of sand fraction may be indicated by the use of prefixes, thus:

- vf Very Fine (more than 2/3's of sand less than 0.106 mm)
- f Fine (more than 2/3's of sand less than 0.212 mm)
- c Coarse (more than 1/3 of sand greater than 0.6 mm)
- m Medium (less than 2/3's fine sand and less than 1/3 coarse sand).

The subdivisions of *clay loam* and *silty clay loam classes* according to clay content are indicated as follows:

- M medium (less than 27% clay)
- H heavy (27-35% clay)

Organic soils i.e. those with an organic matter greater than 10% will be preceded with a letter O.  $\!\!$ 

Peaty soils i.e. those with an organic matter greater than 20% will be preceded with a letter  $\mathsf{P}.$ 



For further information on all analyses and services available from NRM Laboratories contact us one fail (1) 543-886 3-88 Fax: DI-544-890-972 Ennad engoine-doormal com Verbate, www.finnaik.com

Plan KCC 1 Location of Auger Points



Plan KCC 2 Distribution of ALC Grades



Greenacres Barn, Stoke Common Lane, Purton Stoke, Swindon, Wiltshire SN5 4LL Telephone: 01793 771333 • Email: info@kernon.co.uk • Website: www.kernon.co.uk

And a start of the start of the

