AGRICULTURAL LAND CLASSIFICATION SURVEY

LAND WEST OF PARK FARM
THORNBURY

May 2018

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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

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

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APPENDICES

PLANS

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.

[1] 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 26th 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).

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.

Climate

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.

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

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

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).

Site

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 º.

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[2], 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 southern and south western parts of the Site is limited to Subgrade 3b and 4 due to soil wetness regardless of flooding issues.

Soil

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

[2] 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 26th 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:

Table KCC 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
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

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).

Table KCC 3: Predicted ALC Grade According to Soil Wetness

Wetness Class	Texture of the Top 25 cm	176-225 Field Capacity Days
I	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
II	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
III	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

IIII	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.

Table KCC 4: Agricultural Land Classification

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**

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 26th 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

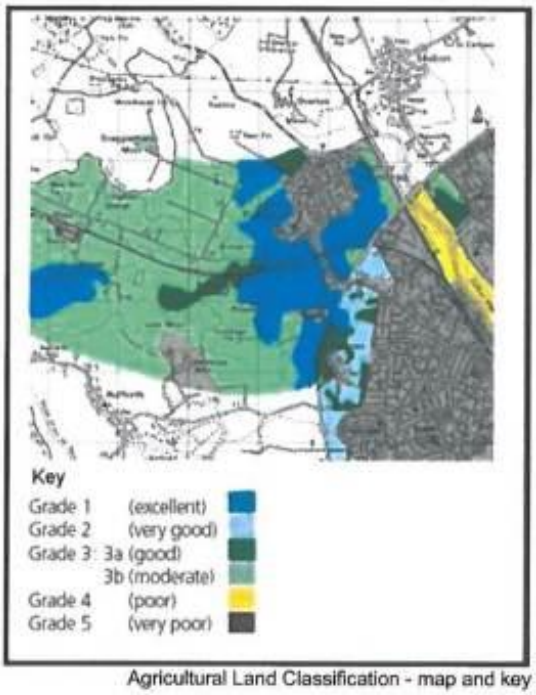
Most of our land area is in agricultural use. How this important natural resource is used is vital to sustainable development. This includes taking the right decisions about protecting it from inappropriate development.

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

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 re-surveyed in greater detail and to revised

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.

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 Padarn
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 e-mail **enquiries@naturalengland.org.uk**.

Appendix KCC2

Summary of Soil Auger Bore Data

Project Number	Project Name	Parcel
KCC2570	Thornbury, South Gloucestershire	ALC

Date of Survey	Survey Type	Surveyor(s)	Company
26/04/2018	ALC	RWA	Askew Land and Soil

Weather	Relief	Land use and vegetation
Cold, dry, sunny	Broadly level	CER (Cereals)

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	AT0	MDw	MDp	FCD	Climate grade
839	1526	102	94	183	1

Bedrock	Superficial deposits
Mercia Mudstone Group	Tidal Flats Deposit in South (none elsewhere)

Soil association(s) 1:250,000	Detailed soil information
Hodnet (572c); Brockhurst (711c) in far southern end	No detailed SSEW soil data

Revision Number	Date Revised
2	24/05/2018

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				Profile notes
	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	ST 63100 92000	363100	192000	10	<=7		CER	0	25	25	7.5YR4/3					No	SCL - San	2	0	0	HR - All	0	0	0	HR - All	hard rocks or stones (i.e. thos			Not Applic	NON - N	No		25	8	2	WC III	3a	Droughtiness			3a	
								25	45	20	5YR5/3	CD - C	5YR6/8			Yes	SCL - San	0	0	0	HR - All	0	0	0	HR - All	hard rocks or stones (i.e. thos			Moderate	NON - N	No											
								45	120	75	5YR5/2	CD - C	5YR6/8			Yes	HCL - Cla	0	0	0	HR - All	0	0	0	HR - All	hard rocks or stones (i.e. thos			Poor	NON - N	Yes											
2	ST 63200 92000	363200	192000	11	<=7		CER	0	28	28	7.5YR4/2					No	MSL - Me	2	0	0	HR - All	0	0	0	HR - All	hard rocks or stones (i.e. thos			Not Applic	NON - N	No		26	9	2	WC III	3a	Wetness			3a	
								28	48	20	5YR5/3	CD - C	5YR6/8			Yes	SCL - San	0	0	0	HR - All	0	0	0	HR - All	hard rocks or stones (i.e. thos			Moderate	NON - N	No											
								48	120	72	5YR5/2	CD - C	5YR6/8			Yes	HCL - Cla	0	0	0	HR - All	0	0	0	HR - All	hard rocks or stones (i.e. thos			Poor	NON - N	Yes											
3	ST 63100 91900	363100	191900	10	<=7		CER	0	22	22	7.5YR4/3					No	MSL - Me	1	0	0	HR - All	0	0	0	HR - All	hard rocks or stones (i.e. thos			Not Applic	NON - N	No		24	7	2	WC III	3a	Wetness			3a	
								22	39	17	5YR5/3					No	MCL - Cla	0	0	0	HR - All	0	0	0	HR - All	hard rocks or stones (i.e. thos			Moderate	NON - N	No											
								39	120	81	5YR5/2	CD - C	5YR6/8	CD - G	2.5Y6/1	Yes	HCL - Cla	0	0	0	HR - All	0	0	0	HR - All	hard rocks or stones (i.e. thos			Poor	NON - N	Yes											
4	ST 63200 91900	363200	191900	11	<=7		CER	0	28	28	7.5YR4/2					No	MSL - Me	2	0	0	HR - All	0	0	0	HR - All	hard rocks or stones (i.e. thos			Not Applic	NON - N	No		25	8	2	WC III	3a	Wetness			3a	
								28	48	20	5YR5/3					No	SCL - San	2	0	0	HR - All	0	0	0	HR - All	hard rocks or stones (i.e. thos			Moderate	NON - N	No											
								48	120	72	5YR5/2	CD - C	5YR6/8	CD - G	2.5Y6/1	Yes	HCL - Cla	2	0	0	HR - All	0	0	0	HR - All	hard rocks or stones (i.e. thos			Poor	NON - N	Yes											
5	ST 63300 91900	363300	191900	11	<=7		CER	0	25	25	7.5YR4/3					No	MSL - Me	3	0	0	HR - All	0	0	0	HR - All	hard rocks or stones (i.e. thos			Not Applic	NON - N	No		24	7	2	WC III	3a	Wetness			3a	
								25	47	22	5YR5/3					No	SCL - San	2	0	0	HR - All	0	0	0	HR - All	hard rocks or stones (i.e. thos			Moderate	NON - N	No											
								47	120	73	5YR5/2	CD - C	5YR6/8	CD - G	2.5Y6/1	Yes	HCL - Cla	0	0	0	HR - All	0	0	0	HR - All	hard rocks or stones (i.e. thos			Poor	NON - N	Yes											
6	ST 63400 91900	363400	191900	13	<=7		CER	0	24	24	7.5YR4/2					No	MSL - Me	4	0	0	HR - All	0	0	0	HR - All	hard rocks or stones (i.e. thos			Not Applic	NON - N	No		23	6	2	WC III	3a	Wetness			3a	
								24	46	22	5YR5/3	CD - C	5YR6/8	CD - G	2.5Y6/1	Yes	SCL - San	2	0	0	HR - All	0	0	0	HR - All	hard rocks or stones (i.e. thos			Moderate	NON - N	No											
								46	120	74	5YR5/2	CD - C	5YR6/8	CD - G	2.5Y6/1	Yes	HCL - Cla	0	0	0	HR - All	0	0	0	HR - All	hard rocks or stones (i.e. thos			Poor	NON - N	Yes											
7	ST 63100 91800	363100	191800	10	<=7		CER	0	26	26	7.5YR4/3					No	MSL - Me	4	0	0	HR - All	0	0	0	HR - All	hard rocks or stones (i.e. thos			Not Applic	NON - N	No		23	6	2	WC III	3a	Wetness			3a	
								26	44	18	5YR5/3					No	SCL - San	2	0	0	HR - All	0	0	0	HR - All	hard rocks or stones (i.e. thos			Moderate	NON - N	No											
								44	120	76	5YR5/2	CD - C	5YR6/8	CD - G	2.5Y6/1	Yes	HCL - Cla	0	0	0	HR - All	0	0	0	HR - All	hard rocks or stones (i.e. thos			Poor	NON - N	Yes											
8	ST 63200 91800	363200	191800	11	<=7		CER	0	28	28	7.5YR4/2					No	MSL - Me	2	0	0	HR - All	0	0	0	HR - All	hard rocks or stones (i.e. thos			Not Applic	NON - N	No		26	9	2	WC III	3a	Wetness			3a	
								28	48	20	5YR5/3	CD - C	5YR6/8	CD - G	2.5Y6/1	Yes	SCL - San	0	0	0	HR - All	0	0	0	HR - All	hard rocks or stones (i.e. thos			Moderate	NON - N	No											
								48	120	72	5YR5/2	CD - C	5YR6/8	CD - G	2.5Y6/1	Yes	HCL - Cla	0	0	0	HR - All	0	0	0	HR - All	hard rocks or stones (i.e. thos			Poor	NON - N	Yes											
9	ST 63300 91800	363300	191800	11	<=7		CER	0	26	26	7.5YR4/2					No	MSL - Me	1	0	0	HR - All	0	0	0	HR - All	hard rocks or stones (i.e. thos			Not Applic	NON - N	No		26	9	2	WC III	3a	Wetness			3a	
								26	42	16	5YR5/3					No	MCL - Cla	0	0	0	HR - All	0	0	0	HR - All	hard rocks or stones (i.e. thos			Moderate	NON - N	No											
								42	120	78	5YR5/2	CD - C	5YR6/8	CD - G	2.5Y6/1	Yes	HCL - Cla	0	0	0	HR - All	0	0	0	HR - All	hard rocks or stones (i.e. thos			Poor	NON - N	Yes											
10	ST 63550 91800	363550	191800	14	<=7		LEY	0	25	25	7.5YR4/2					No	MSL - Me	4	0	0	HR - All	0	0	0	HR - All	hard rocks or stones (i.e. thos			Not Applic	NON - N	No		48	15	1	WC II	2	Wetness			2	
								25	65	40	5YR5/3					No	MSL - Me	0	0	0	HR - All	0	0	0	HR - All	hard rocks or stones (i.e. thos			Moderate	NON - N	No											
								65	120	55	5YR5/2	CD - C	5YR6/8	CD - G	2.5Y6/1	Yes	MCL - Cla	0	0	0	HR - All	0	0	0	HR - All	hard rocks or stones (i.e. thos			Moderate	NON - N	Yes											
11	ST 63700 91800	363700	191800	12	<=7		LEY	0	25	25	7.5YR4/2					No	SCL - San	2	0	0	HR - All	0	0	0	HR - All	hard rocks or stones (i.e. thos			Not Applic	NON - N	No		48	18	1	WC I	2	Wetness			2	
								25	45	20	5YR5/3					No	SCL - San	0	0	0	HR - All	0	0	0	HR - All	hard rocks or stones (i.e. thos			Moderate	NON - N	No											
								45	120	75	5YR5/2					No	MCL - Cla	0	0	0	HR - All	0	0	0	HR - All	hard rocks or stones (i.e. thos			Moderate	NON - N	No											
12	ST 63800 91750	363800	191750	12	<=7		LEY	0	24	24	7.5YR4/3					No	SCL - San	1	0	0	HR - All	0	0	0	HR - All	hard rocks or stones (i.e. thos			Not Applic	NON - N	No		50	20	1	WC I	2	Wetness			2	
								24	47	23	5YR5/3					No	MCL - Cla	0	0	0	HR - All	0	0	0	HR - All	hard rocks or stones (i.e. thos			Moderate	NON - N	No											
								47	120	73	5YR5/2					No	MCL - Cla	0	0	0	HR - All	0	0	0	HR - All	hard rocks or stones (i.e. thos			Moderate	NON - N	No											

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				Profile notes
	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	
13	ST 63000 91700	363000	191700	10	<=7		LEY	0	27	27	10YR3/2					No	MCL - Cla	0	0	0	HR - All	0	0	0	HR - All				Not Applic	NON - N	No	No	30	13	1	WC IV	3b	Wetness			3b	
								27	45	18	10YR5/2	CD - C	5YR4/6	CD - C	2.5Y6/1	Yes	HCL - Cla	0	0	0	HR - All	0	0	0	HR - All hard rocks or stones (i.e. thos				Moderate			No	No										
								45	120	75	10YR6/2	MD - P	5YR4/6	CD - C	2.5Y6/1	Yes	HCL - Cla	0	0	0	HR - All	0	0	0	HR - All hard rocks or stones (i.e. thos				Poor			No	Yes										
14	ST 63100 91700	363100	191700	9	<=7		LEY	0	24	24	10YR4/2					No	MCL - Cla	0	0	0	HR - All	0	0	0	HR - All hard rocks or stones (i.e. thos				Not Applic	NON - N	No	No	29	12	2	WC IV	3b	Wetness	Microrelief		3b	Localised micro-relief limitation. Hedge removal?
								24	44	20	10YR5/2	CD - C	5YR4/6	CD - C	2.5Y6/1	Yes	HCL - Cla	0	0	0	HR - All	0	0	0	HR - All hard rocks or stones (i.e. thos				Moderate			No	No										
								44	120	76	10YR6/2	MD - P	5YR4/6	CD - C	2.5Y6/1	Yes	HCL - Cla	0	0	0	HR - All	0	0	0	HR - All hard rocks or stones (i.e. thos				Poor			No	Yes										
15	ST 63200 91700	363200	191700	12	<=7		LEY	0	24	24	7.5YR4/3					No	SCL - San	1	0	0	HR - All	0	0	0	HR - All hard rocks or stones (i.e. thos				Not Applic	NON - N	No		50	20	1	WC I	2	Wetness			2	
								24	47	23	5YR5/3					No	MCL - Cla	0	0	0	HR - All	0	0	0	HR - All hard rocks or stones (i.e. thos				Moderate	NON - N	No												
								47	120	73	5YR5/2					No	MCL - Cla	0	0	0	HR - All	0	0	0	HR - All hard rocks or stones (i.e. thos				Moderate	NON - N	No												
16	ST 63300 91700	363300	191700	12	<=7		LEY	0	25	25	7.5YR4/2					No	MCL - Cla	2	0	0	HR - All	0	0	0	HR - All hard rocks or stones (i.e. thos				Not Applic	NON - N	No		52	22	1	WC I	2	Wetness			2	
								25	45	20	5YR5/3					No	MCL - Cla	0	0	0	HR - All	0	0	0	HR - All hard rocks or stones (i.e. thos				Moderate	NON - N	No												
								45	120	75	5YR5/2					No	MCL - Cla	0	0	0	HR - All	0	0	0	HR - All hard rocks or stones (i.e. thos				Moderate	NON - N	No												
17	ST 63400 91700	363400	191700	13	<=7		LEY	0	24	24	7.5YR3/2					No	MSL - Mo	4	0	0	HR - All	0	0	0	HR - All hard rocks or stones (i.e. thos				Not Applic	NON - N	No		47	15	1	WC II	2	Wetness			2	
								24	60	36	5YR5/3					No	MSL - Mo	0	0	0	HR - All	0	0	0	HR - All hard rocks or stones (i.e. thos				Moderate	NON - N	No												
								60	120	60	5YR5/2	CD - C	5YR6/8	CD - C	2.5Y6/1	Yes	MCL - Cla	0	0	0	HR - All	0	0	0	HR - All hard rocks or stones (i.e. thos				Moderate	NON - N	Yes												
18	ST 63500 91700	363500	191700	14	<=7		LEY	0	23	23	7.5YR4/3					No	SCL - San	1	0	0	HR - All	0	0	0	HR - All hard rocks or stones (i.e. thos				Not Applic	NON - N	No		50	20	1	WC I	2	Wetness			2	
								23	46	23	5YR5/3					No	MCL - Cla	0	0	0	HR - All	0	0	0	HR - All hard rocks or stones (i.e. thos				Moderate	NON - N	No												
								46	120	74	5YR5/2					No	MCL - Cla	0	0	0	HR - All	0	0	0	HR - All hard rocks or stones (i.e. thos				Moderate	NON - N	No												
19	ST 63600 91700	363600	191700	14	<=7		LEY	0	22	22	7.5YR4/3					No	SCL - San	2	0	0	HR - All	0	0	0	HR - All hard rocks or stones (i.e. thos				Not Applic	NON - N	No		49	19	1	WC I	2	Wetness			2	
								22	42	20	5YR5/3					No	MCL - Cla	1	0	0	HR - All	0	0	0	HR - All hard rocks or stones (i.e. thos				Moderate	NON - N	No												
								42	120	78	5YR5/2					No	MCL - Cla	0	0	0	HR - All	0	0	0	HR - All hard rocks or stones (i.e. thos				Moderate	NON - N	No												
20	ST 63100 91600	363100	191600	9	<=7		LEY	0	26	26	10YR4/2					No	C - Clay	0	0	0	HR - All	0	0	0	HR - All hard rocks or stones (i.e. thos				Not Applic	NON - N	No	No	22	7	2	WC IV	4	Wetness			4	
								26	70	44	10YR5/2	MD - P	5YR4/6	CD - C	2.5Y6/1	Yes	C - Clay	0	0	0	HR - All	0	0	0	HR - All hard rocks or stones (i.e. thos				Poor			No	Yes										
								70	120	50	10YR6/2	MD - P	5YR4/6	CD - C	2.5Y6/1	Yes	ZC - Silty	0	0	0	HR - All	0	0	0	HR - All hard rocks or stones (i.e. thos				Poor			No	Yes										
21	ST 63200 91600	363200	191600	12	<=7		LEY	0	24	24	10YR4/2					No	SCL - San	0	0	0	HR - All	0	0	0	HR - All hard rocks or stones (i.e. thos				Not Applic	NON - N	No	No	21	6	2	WC IV	3b	Wetness			3b	
								24	34	10	7.5YR5/3					No	MCL - Cla	0	0	0	HR - All	0	0	0	HR - All hard rocks or stones (i.e. thos				Poor			No	Yes										
								34	120	86	7.5YR6/3	MD - P	5YR4/6	CD - C	2.5Y6/1	Yes	C - Clay	0	0	0	HR - All	0	0	0	HR - All hard rocks or stones (i.e. thos				Poor			Yes	Yes										
22	ST 63300 91600	363300	191600	12	<=7		LEY	0	24	24	7.5YR4/2					No	SCL - San	3	1	0	HR - All	0	0	0	HR - All hard rocks or stones (i.e. thos				Not Applic	NON - N	No		49	19	1	WC I	2	Wetness			3b	
								24	41	17	5YR5/3					No	MCL - Cla	0	0	0	HR - All	0	0	0	HR - All hard rocks or stones (i.e. thos				Moderate	NON - N	No												
								41	120	79	5YR5/2					No	MCL - Cla	0	0	0	HR - All	0	0	0	HR - All hard rocks or stones (i.e. thos				Moderate	NON - N	No												
23	ST 63400 91600	363400	191600	13	<=7		LEY	0	23	23	7.5YR4/2					No	SCL - San	3	0	0	HR - All	0	0	0	HR - All hard rocks or stones (i.e. thos				Not Applic	NON - N	No		49	19	1	WC I	2	Wetness			2	
								23	42	19	5YR5/3					No	MCL - Cla	0	0	0	HR - All	0	0	0	HR - All hard rocks or stones (i.e. thos				Moderate	NON - N	No												
								42	120	78	5YR5/2					No	MCL - Cla	0	0	0	HR - All	0	0	0	HR - All hard rocks or stones (i.e. thos				Moderate	NON - N	No												

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				Profile notes
	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	
24	ST 63500 91600	363500	191600	14	<=7		LEY	0	22	22	7.5YR4/2					No	SCL - San	0	0	0	HR - All	0	0	0	HR - All hard rocks or stones (i.e. thos				Not Applic	NON - A	No		48	18	1	WC I	2	Wetness			2	
								22	42	20	5YR5/3					No	SCL - San	0	0	0	HR - All	0	0	0	HR - All hard rocks or stones (i.e. thos				Moderate	NON - A	No										
								42	120	78	5YR5/2					No	MCL - Cla	0	0	0	HR - All	0	0	0	HR - All hard rocks or stones (i.e. thos				Moderate	NON - A	No										
25	ST 63200 91500	363200	191500	12	<=7		LEY	0	21	21	7.5YR4/2					No	SCL - San	4	2	0	HR - All	0	0	0	HR - All hard rocks or stones (i.e. thos				Not Applic	NON - A	No		48	18	1	WC I	2	Wetness			2	
								21	41	20	5YR5/3					No	MCL - Cla	1	0	0	HR - All	0	0	0	HR - All hard rocks or stones (i.e. thos				Moderate	NON - A	No										
								41	120	79	5YR5/2					No	MCL - Cla	0	0	0	HR - All	0	0	0	HR - All hard rocks or stones (i.e. thos				Moderate	NON - A	No										
26	ST 63300 91500	363300	191500	12	<=7		LEY	0	25	25	7.5YR4/2					No	SCL - San	2	0	0	HR - All	0	0	0	HR - All hard rocks or stones (i.e. thos				Not Applic	NON - A	No		48	18	1	WC I	2	Wetness			2	
								25	39	14	5YR5/3					No	SCL - San	0	0	0	HR - All	0	0	0	HR - All hard rocks or stones (i.e. thos				Moderate	NON - A	No										
								39	120	81	5YR5/2					No	MCL - Cla	0	0	0	HR - All	0	0	0	HR - All hard rocks or stones (i.e. thos				Moderate	NON - A	No										
27	ST 63200 91400	363200	191400	12	<=7		LEY	0	26	26	10YR4/2					No	C - Clay	0	0	0	HR - All	0	0	0	HR - All hard rocks or stones (i.e. thos				Not Applic	NON - A	No	No	22	6	2	WC IV	4	Wetness			4	
								26	56	30	10YR5/2	MD - P	5YR4/6	CD - C	2.5Y6/1	Yes	C - Clay	0	0	0	HR - All	0	0	0	HR - All hard rocks or stones (i.e. thos				Poor		No	Yes									
								56	120	64	10YR6/2	MD - P	5YR4/6	CD - C	2.5Y6/1	Yes	ZC - Silty	0	0	0	HR - All	0	0	0	HR - All hard rocks or stones (i.e. thos				Poor		No	Yes									
28	ST 63300 91400	363300	191400	12	<=7		LEY	0	28	28	10YR3/2					No	C - Clay	0	0	0	HR - All	0	0	0	HR - All hard rocks or stones (i.e. thos				Not Applic	NON - A	No	No	23	8	2	WC IV	4	Wetness			4	
								28	90	62	10YR5/2	MD - P	5YR4/6	CD - C	2.5Y6/1	Yes	C - Clay	0	0	0	HR - All	0	0	0	HR - All hard rocks or stones (i.e. thos				Poor		No	Yes									
								90	120	30	10YR6/2	MD - P	5YR4/6	CD - C	2.5Y6/1	Yes	ZC - Silty	0	0	0	HR - All	0	0	0	HR - All hard rocks or stones (i.e. thos				Poor		No	Yes									
29	ST 63400 91400	363400	191400	13	<=7		LEY	0	28	28	10YR3/2					No	MCL - Cla	0	0	0	HR - All	0	0	0	HR - All hard rocks or stones (i.e. thos				Not Applic	NON - A	No	No	32	15	1	WC IV	3b	Wetness			3b	
								28	48	20	10YR5/2	CD - C	5YR4/6	CD - C	2.5Y6/1	Yes	MCL - Cla	0	0	0	HR - All	0	0	0	HR - All hard rocks or stones (i.e. thos				Moderate		No	No									
								48	120	72	10YR6/2	MD - P	5YR4/6	CD - C	2.5Y6/1	Yes	HCL - Cla	0	0	0	HR - All	0	0	0	HR - All hard rocks or stones (i.e. thos				Poor		No	Yes									
30	ST 63300 91300	363300	191300	12	<=7		LEY	0	30	30	10YR4/2					No	C - Clay	0	0	0	HR - All	0	0	0	HR - All hard rocks or stones (i.e. thos				Not Applic	NON - A	No	No	24	9	2	WC IV	4	Wetness			4	
								30	84	54	10YR5/2	CD - C	5YR4/6	CD - C	2.5Y6/1	Yes	C - Clay	0	0	0	HR - All	0	0	0	HR - All hard rocks or stones (i.e. thos				Poor		No	Yes									
								84	120	36	10YR6/2	MD - P	5YR4/6	CD - C	2.5Y6/1	Yes	ZC - Silty	0	0	0	HR - All	0	0	0	HR - All hard rocks or stones (i.e. thos				Poor		No	Yes									
31	ST 63400 91300	363400	191300	13	<=7		LEY	0	28	28	10YR4/2					No	MCL - Cla	0	0	0	HR - All	0	0	0	HR - All hard rocks or stones (i.e. thos				Not Applic	NON - A	No	No	32	15	1	WC IV	3b	Wetness			3b	
								28	48	20	10YR5/2	CD - C	5YR4/6	CD - C	2.5Y6/1	Yes	HCL - Cla	0	0	0	HR - All	0	0	0	HR - All hard rocks or stones (i.e. thos				Moderate		No	No									
								48	120	72	10YR6/2	MD - P	5YR4/6	CD - C	2.5Y6/1	Yes	HCL - Cla	0	0	0	HR - All	0	0	0	HR - All hard rocks or stones (i.e. thos				Poor		No	Yes									
	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

Gley

None
Gley
N/A

Appendix KCC 3

Profile Pit Description

Project	Location	Date	Surveyor(s)	Company
KCC2570	Thornbury, South Gloucestershire	26th April 2018	RWA	Askew Land and Soil

Pit	WC	Grade	Limitation(s)	Notes
1	I	2	Soil wetness / workability	Near archaeology trial trench

Grid Ref.			Altitude	Nearest point	Topography				Flora		Weather and conditions			
Square	East	North			Gradient	Aspect	Slope form	Surface	Culivation type	Vegetation types	Temp	Sky	Wind	Precipitation
ST	638	191	12	12	1°	S	Linear	Level	Ploughed	Ley grassland	Warm	Cloudy	Slight	Dry

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	>0.5mm	
Ap	0	24	Sandy Clay Loam	Brown	7.5YR4/3	None						0					Non c	None	Moderate	Fine	SAB	Firm	Abrupt	Smooth	>0.5%	No
B	24	47	Medium Clay Loam	Reddish Brown	5YR5/3	None						0					Non c	None	Moderate	Medium	AB	Firm	Abrupt	Smooth	>0.5%	No
BC	47	120	Medium Clay Loam	Reddish Gray	5YR5/3	None						0					Non c	None	N/A	N/A	Massive	Firm	Abrupt	Smooth	>0.5%	No

Pit	WC	Grade	Limitation(s)	Notes
2	IV	4	Wetness	Pit in floodplain

Grid Ref.			Altitude	Nearest point	Topography				Flora		Weather and conditions			
Square	East	North			Gradient	Aspect	Slope form	Surface	Culivation type	Vegetation types	Temp	Sky	Wind	Precipitation
ST	633	191	12	28	1°	S	Linear	Level	Ploughed	Ley grassland	Warm	Cloudy	Slight	Dry

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		
Ap	0	28	Clay	Very dark greyish brown	10YR3/2	Yes	Very dark greyish brown	10YR3/2				0					Non c	None	Moderate	Fine	SAB	Firm	Abrupt	Smooth	>0.5%	No
B	28	90	Clay	Greyish brown	10YR5/2	Yes	Greyish brown	10YR5/2	MD	Yellowish red	5YR4/6	0					Non c	None	Poor	Coarse	Prismatic	Firm	Abrupt	Smooth	<0.5%	Yes
C	90	120	Clay	Pinkish grey	10YR6/2	Yes	Pinkish grey	10YR6/2	MD	Yellowish red	5YR4/6	0					Non c	None	Poor	Coarse	Angular blocky	Firm	Abrupt	Smooth	<0.5%	Yes

Appendix KCC 4

Certificate of Laboratory Analysis

ANALYTICAL REPORT

Report Number	**11372-18**	**P248**	**SARAH KERNON**
Date Received	**02-MAY-2018**		**KERNON COUNTRYSIDE**
Date Reported	**09-MAY-2018**		**CONSULTANTS LTD**
Project	**SOIL**		**GREENACRES BARN**
Reference	**KCC2570 THORNBURY**		**PURTON STOKE**
Order Number	**KCC2570**		**WILTSHIRE SN5 4LL**

Laboratory Reference		**SOIL384744**
Sample Reference		28
Determinand	**Unit**	**SOIL**
Sand 2.00-0.063mm	% w/w	24
Silt 0.063-0.002mm	% w/w	34
Clay <0.002mm	% w/w	42
Textural Class **		O-C

Notes

Analysis Notes

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

Document Control

** Please see the attached document for the definition of textural classes.

Reported by

J Doyle

Natural Resource Management, a trading division of Cawood Scientific Ltd.
Coopers Bridge, Braziers Lane, Bracknell, Berkshire, RG42 6NS
Tel: 01344 886338
Fax: 01344 890972
email: enquiries@nrm.uk.com

ANALYTICAL REPORT

Report Number	**11373-18**	**P248**	**SARAH KERNON**
Date Received	**02-MAY-2018**		**KERNON COUNTRYSIDE**
Date Reported	**09-MAY-2018**		**CONSULTANTS LTD**
Project	**SOIL**		**GREENACRES BARN**
Reference	**KCC2570 THORNBURY**		**PURTON STOKE**
Order Number	**KCC2570**		**WILTSHIRE SN5 4LL**

Laboratory Reference		**SOIL384745**	**SOIL384746**	**SOIL384747**							
Sample Reference		4	11	21							
Determinand	**Unit**	**SOIL**	**SOIL**	**SOIL**							
Coarse Sand 2.00-0.63mm	% w/w	5	10	4							
Medium Sand 0.63-0.212mm	% w/w	39	38	36							
Fine Sand 0.212-0.063mm	% w/w	19	17	17							
Silt 0.063-0.002mm	% w/w	20	17	21							
Clay <0.002mm	% w/w	17	18	22							
Textural Class **		mSL	SCL/mSL	SCL							

Notes

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

** Please see the attached document for the definition of textural classes.

Reported by: *J Doyle*

Natural Resource Management, a trading division of Cawood Scientific Ltd.
Coopers Bridge, Braziers Lane, Bracknell, Berkshire, RG42 6NS
Tel: 01344 886338
Fax: 01344 890972
email: enquiries@nrm.uk.com

Technical Information

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 loam	ZL
Sandy clay loam	SCL
Clay loam	CL
Silt clay loam	ZCL
Clay	C
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:

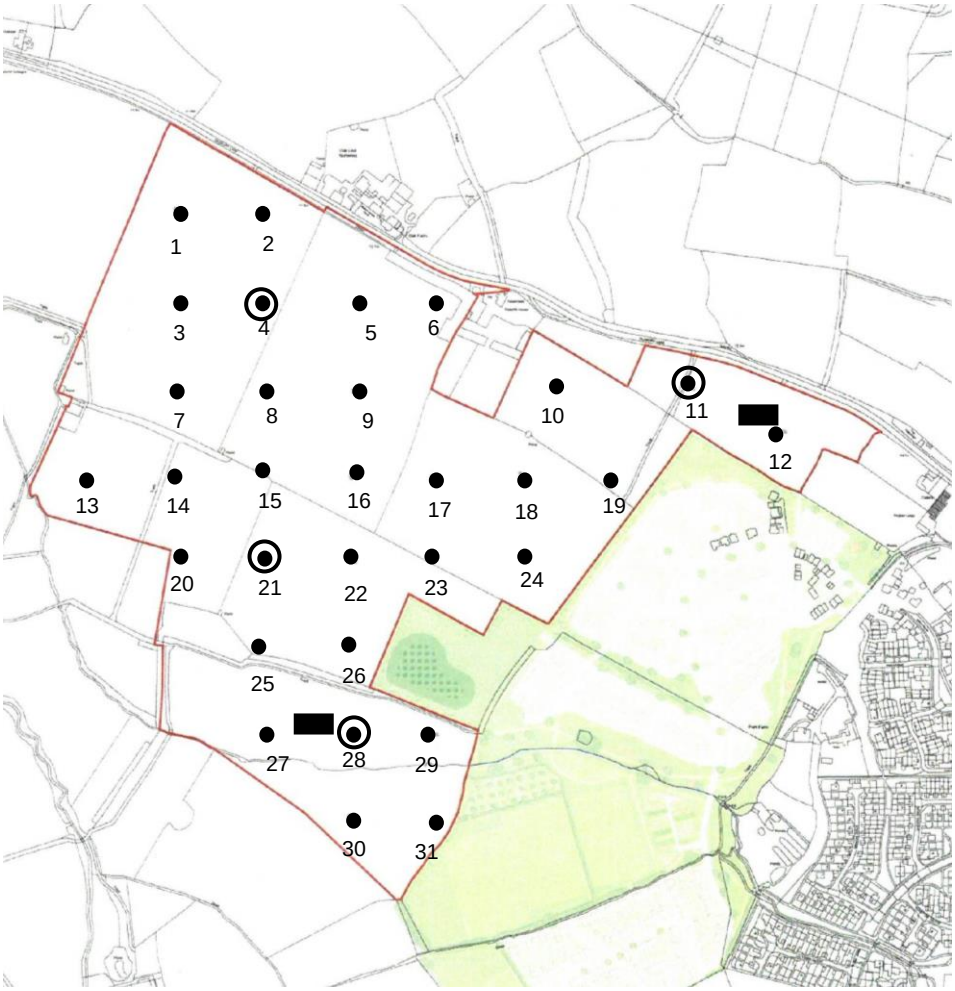
- M medium (less than 27% clay)
- H heavy (27-35% clay)

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 P.

Plan KCC 1

Location of Auger Points



KEY

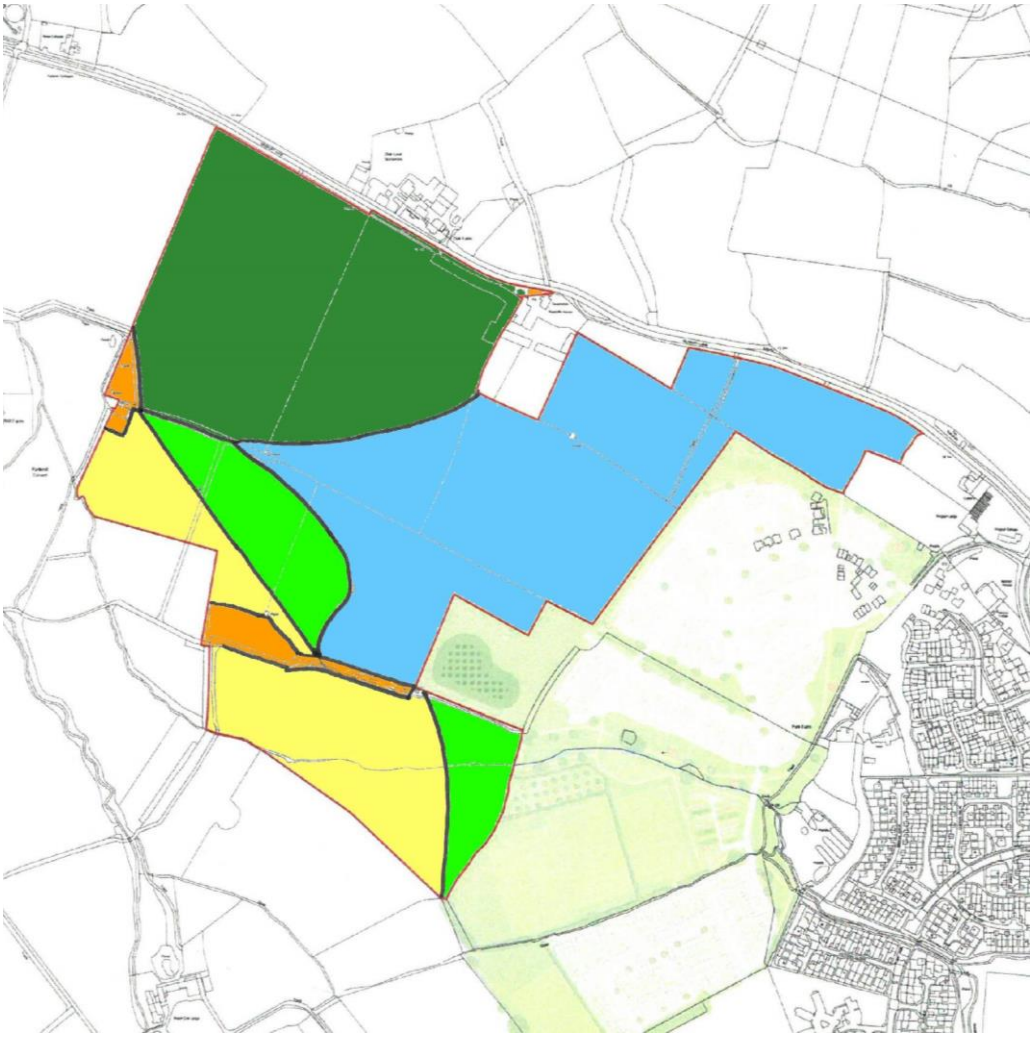
- Auger sample location
- Samples sent for analysis
- Pit

PLAN	**KCC1**		
TITLE	**Auger Points: Agricultural Land Classification**		
SITE	**Land West of Park Farm, Thornbury**		
CLIENT	**Barwood Development**		
NUMBER	**KCC2570/01 05/18vmd**		
DATE	May 2018	**SCALE**	NTS

KERNON COUNTRYSIDE CONSULTANTS LTD
GREENACRES BARN, PURTON STOKE, SWINDON,
WILTSHIRE SN5 4LL
Tel 01793 771 333 Email: info@kernon.co.uk

Plan KCC 2

Distribution of ALC Grades



KEY		Ha	%	PLAN	KCC 2		
	Grade 1			TITLE	ALC Plan		
	Grade 2	14.4	40	SITE	Land West of Park Farm, Thornbury		
	Grade 3a	10.3	29	CLIENT	Barwood Development		
	Grade 3b	3	8	NUMBER	KCC2570/02 05/18vmd		
	Grade 4	7.1	20	DATE	May 2018	SCALE	NTS
	Grade 5			KERNON COUNTRYSIDE CONSULTANTS LTD GREENACRES BARN, PURTON STOKE, SWINDON, WILTSHIRE, SN5 4LL Tel 01793 771 333 Email: info@kernon.co.uk This plan is reproduced from the Ordnance Survey under copyright license 100015226		
	Woodland	1	3				
	Urban						
	Not surveyed						

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