AGRICULTURAL LAND CLASSIFICATION

LAND AT LOWER NEWTON FARM, TEAN, STOKE ON TRENT

February 2014

SAC 03/2014
Authorised By ……..

Greenacres Barn, Stoke Common Lane, Purton Stoke, Swindon, Wiltshire 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 Surveyors– **Verity Drewett** BSc(Hons), MRICS, MBIAC, **Sara Compton** BA (Hons), MSc, MRICS, MBIAC*

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APPENDICES

1 INTRODUCTION

Background

1.1 This report sets out the results of a detailed survey to determine the quality of 25.7 hectares (ha) (approximately 64 acres) of agricultural land at Lower Newton Farm, Tean, near Stoke-on-Trent, Staffordshire ('the Site').

The Site

1.2 The Site is located to the south-west of the village of Tean, to the south of the A50, and comprises two whole fields and part of a third field. The Site is bounded by hedges to the north and west, with a tributary of the River Blythe forming the eastern boundary. Along the south-west of the site, the boundary bisects a long, narrow field that abuts the Stoke-upon-Trent to Uttoxeter railway. The south-western boundary of the Site is marked by a row of electricity pylons.

Methodology

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 'Excellent' to Grade 5 'Very Poor), with Grade 3 subdivided into Subgrade 3a 'Good' and Subgrade 3b 'Moderate'. Agricultural land classified as Grade 1, 2 and Subgrade 3a falls within the 'best and most versatile' (BMV) category as defined in national planning policy (the National Planning Policy Framework Annex 2 (2012)).

1.4 Further details of the ALC system are set out by Natural England in its Technical Information Note 049, revised in December 2012, given as **Appendix KCC1**.

1.5 In order to determine land quality across the site, a detailed ALC survey was undertaken on the 2nd of February 2014 in accordance with the current Agricultural Land Classification guidelines and criteria for England and Wales[1] (MAFF 1988) ('the ALC Guidelines').

1.6 The soil resources were determined from 26 inspection sites. These sites followed the Ordnance Survey grid at 100 m intervals, to avoid bias in selection. However, where the grid point was close to the Site boundary it was relocated slightly to avoid possible hedge effects and headlands.

[1] Agricultural Land Classification for England and Wales: Revised Guidelines and Criteria for Grading the Quality of Agricultural Land (MAFF, 1988). The Ministry of Agriculture, Fisheries and Food (MAFF) was incorporated within the Department for Environment, Food and Rural Affairs (Defra) in June 2001.

1.7 One field at the Site was extremely wet in the topsoil, possible due to underlying compaction from cultivations. This made assessment of the topsoil difficult. Consequently a sample, considered representative, was collected for analysis of particle size to confirm hand texture of the topsoil. A further sample was also collected from another field to confirm hand texture. The analysis results are presented below.

Structure of this Report

1.8 The remainder of this report is structured as follows:

- Section 2 – Agricultural Land Classification:
  - Background;
  - Climate;
  - Soil (Geology, Soil Properties);
  - Other factors affecting ALC
  - Interactive Limitations (Soil Droughtiness, Soil Wetness);
  - ALC Grading at the Site.

- Section 3 – Summary

2 AGRICULTURAL LAND CLASSIFICATION

Background – Published Data

2.1 Provisional ALC maps were published by MAFF at a scale of 1:250,000 in the late 1970s and early 1980s, on a regional basis. The proposed Site is shown on the provisional map for the Midlands and Western region (1983), which indicates that it comprises land of undifferentiated Grade 3 quality. An extract from the provisional ALC map is reproduced at **Appendix KCC2**.

2.2 Provisional ALC maps are not sufficiently accurate to allow a full assessment of an individual field or development site and, as advised by Defra and as set out at **Appendix KCC1**, should not be used other than for general guidance at a strategic level. Further, the provisional maps were created before the guidelines were most recently revised (the ALC Guidelines, MAFF 1988) and before Grade 3 was divided into Subgrades 3a ('good' quality) and 3b ('moderate' quality).

2.3 In order to determine land quality at the Site, a detailed ALC survey has been carried out.

Factors Affecting ALC Grade

2.4 Agricultural land quality is affected by a number of factors including climatic, topographic and soil characteristics including stoniness and depth to rock, and the interaction between these factors. At this Site stone content, depth to rock and slope are not limiting factors.

Climate

2.5 Climate affects the grading of land through the assessment of an overall climatic limitation and also through the interaction with soils.

2.6 The key climatic variables for this site are provided by the Met Office[2], based on a 5 km grid. The climatic figures for a site at the centre of the study area are given in Table 1, from nearby 5 km grid points using interpolating algorithms.

[2] Meteorological Office (1989) Climatological data for Agricultural Land Classification

Table 1: Climate and altitude data

Grid reference	SJ 9930 3840
Altitude	155 m AOD
Average annual rainfall	856 mm
Accumulated temperature >0°C (Jan-June)	1290 degree days
Moisture deficit, wheat	74 mm
Moisture deficit, potatoes	56 mm
Field capacity period	209 days

2.7 Climate limits land quality in this area by interacting with soil properties such as texture and wetness. This influences the workability of the soil and the time available for field operations under reasonably good conditions. The moisture deficit for wheat is 74 mm and for potatoes is 56 mm, which impacts negatively on the water balance between rainfall and that which can be held by the soil. The field capacity period, that period at which the ground has a zero moisture deficit, is 209 days and is mainly during the winter period. However, climate in itself is not a limiting factor on this site (see below regarding soil texture and wetness).

Geology and Soils

2.8 The British Geological Society (BGS) website shows the area to be underlain by rocks of the Mercia Mudstone Group that comprise clayey mudstones with thin local subordinate bands of sandstone. On lower slopes towards the railway these rocks are overlain by clays and sandy loam drift from river terrace deposits.

2.9 The National Soil Map by the Soil Survey of England and Wales[3] shows that the soils in the vicinity of the site are loamy over clayey soils of the Brockhurst series with local inclusions of similar Salop soils with topsoils having up to 35% clay.

Other Limitations

2.10 There are no limitations to agricultural land quality associated with slope, droughtiness or stoniness.

[3] Ragg *et al* (1984) Soils and Their Use in Midland and Western England. Soil Surv. Bull. No12

Interactive Limitations

Soil texture

2.11 Soil texturing across the Site has shown that topsoils comprise medium clay loams, medium silty clay loams, and heavy clay loams and heavy silty clay loams. To confirm field hand texture, two samples were taken as representative of the site, one at a sample point in the north-western field and the second at a sample point at the south of the Site. The texture of the samples has been verified through particle size distribution laboratory analysis, the results of which are set out in Table 2 below.

Table 2: Laboratory analysis results

Determinand	Bore In NW Field	Bore at South of Site
Sand 2 mm-0.063 mm	22	32
Silt 0.063-0.002 mm	51	35
Clay <0.002 mm	27	33
Textural Class	Heavy Clay Loam	Heavy Clay Loam

2.12 Further information regarding sample auger points is available on request.

Soil Wetness

2.13 Evidence of grey and rusty mottling within the subsoil was found across the Site, indicating seasonally waterlogged soils (Wetness Class III). Locally some profiles contain a high ground water table in the region of 40 to 50 cm depth. This may however be subsurface seepage rather than true water table as unprecedented heavy rains throughout January have made the ground very wet.

Agricultural Land Classification

2.14 The survey identifies Subgrades 3a and 3b agricultural land across the Site. The survey has shown that the difference between the grades is with topsoil texture which ranges from medium clay loam to heavy clay loam.

2.15 The interaction between soil texture and soil wetness is the main limiting factor across this Site. With reference to Table 6 of the ALC Guidelines, agricultural land with topsoils of a medium clay loam or medium silty clay loam texture in Wetness Class III, in an area of 209 field capacity days, is graded as Subgrade 3a quality. Where topsoils of heavy clay loam texture or heavy silty clay loam in Wetness Class III, are in an area of 209 field capacity days, agricultural land is graded as Subgrade 3b.

2.16 **Subgrade 3b** is found across a large majority of the Site (24.7 ha / 96 %) where topsoils are shown to be heavy clay loam or heavy silty clay loam, confirmed by analysis.

2.17 **Subgrade 3a** is found across a small area at the south-west of the site (1 ha / 4%), where topsoils are of a medium clay loam or medium silty clay texture.

2.18 The distribution of Subgrades 3a and 3b is shown as an approximate percentage in Table 3. The spatial distribution is shown at **Appendix KCC3**.

Table 3: Agricultural Land Classification – Lower Newton Farm, Staffordshire

ALC Grade	Area (Ha)	Area (% of Total Site)
Grade 1 (Excellent)	0	0
Grade 2 (Very Good)	0	0
Subgrade 3a (Good)	1.0	4
Subgrade 3b (Moderate)	24.7	96
Grade 4 (Poor)	0	0
Grade 5 (Very Poor)	0	0
Other / Non-agricultural	0	0
Not surveyed (temporary access)	0	0
Total	**25.7**	**100**

3 SUMMARY

3.1 This report sets out the results of a survey to determine the quality of approximately 25.7 ha of agricultural land at Lower Newton Farm, Tean, near Stoke-on-Trent ('the Site') in accordance with the Agricultural Land Classification (ALC) system for England and Wales, October 1988 ('the ALC Guidelines').

3.2 A detailed soil investigation was carried out on the 2nd February 2014.

3.3 The survey has determined that soils over the large majority of the Site (24.7 ha / 96%) are limited to Subgrade 3b (moderate) quality agricultural land due to soil wetness. A small proportion of land has been identified as Subgrade 3a (1 ha / 4 %).

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

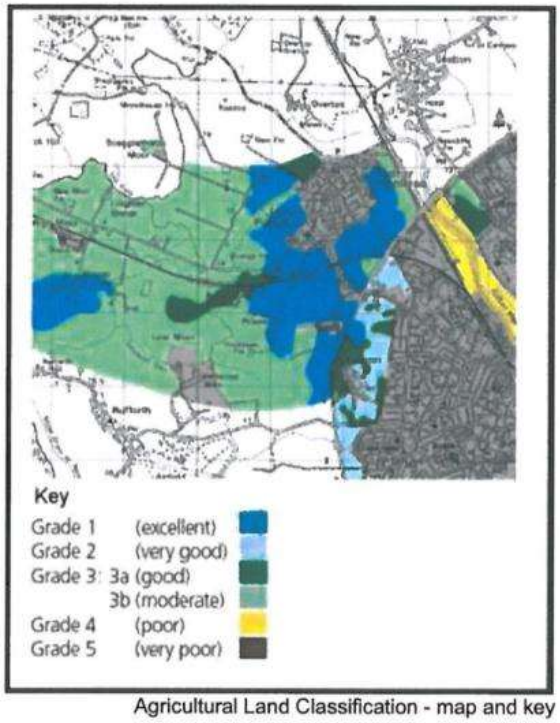
Most of our land area is in agricultural use. How this important natural resource is used is vital to sustainable development. This includes taking the right decisions about protecting it from inappropriate development.

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
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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**.

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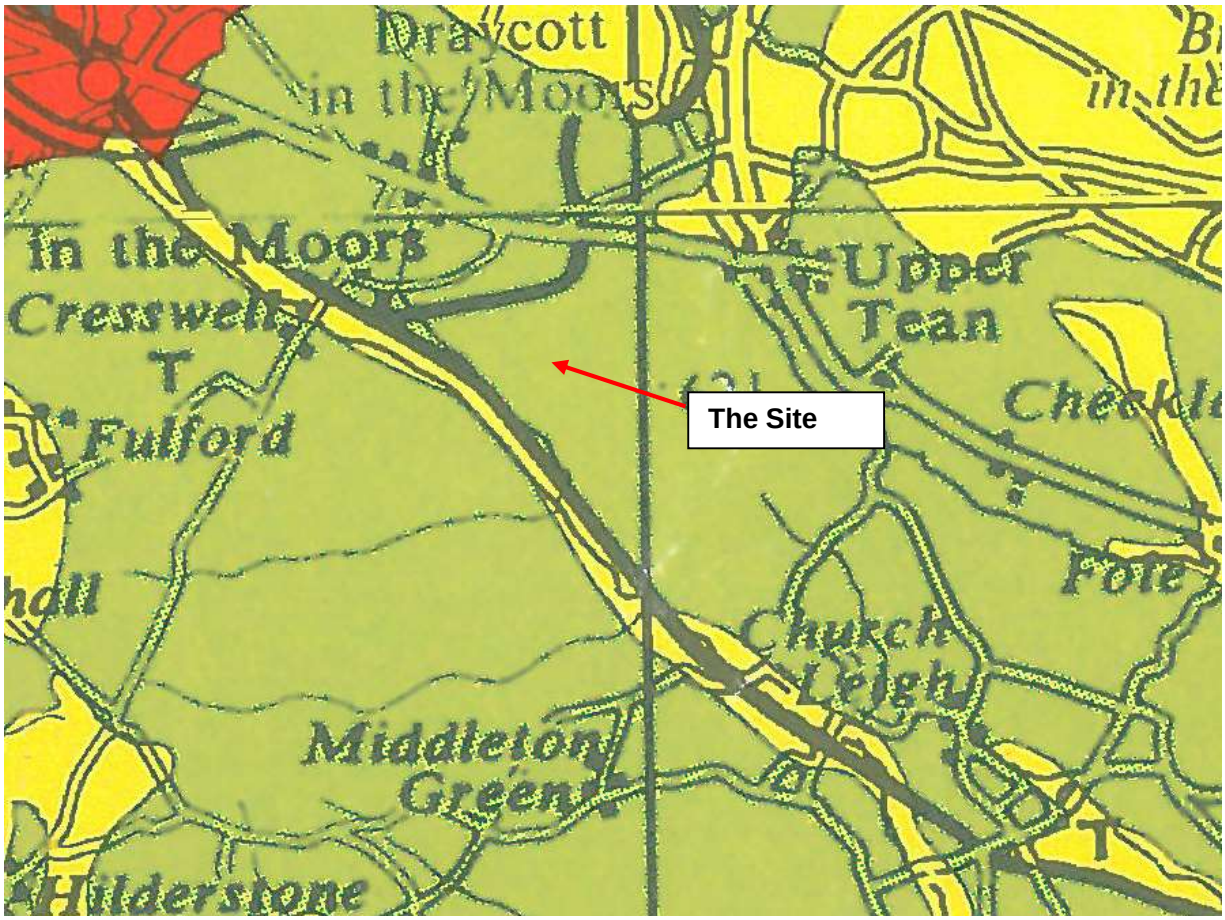
Appendix KCC2

Provisional Agricultural Land Classification Map (1977)



Agricultural Land

Grade 1 | Grade 2 | Grade 3 | Grade 4 | Grade 5

Non – Agricultural Land

Land predominantly in urban use

Other land primarily in non–agricultural use

NORTH

PLAN	**KCC1**		
TITLE	**Extract from the Provisional ALC Plan (1983)**		
SITE	Lower Newton Farm, Tean		
CLIENT	Novus Solar Developments Limited		
NUMBER	**KCC1673/01 02/14 sc**		
DATE	February 2014	SCALE	NTS

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

Appendix KCC3

Agricultural Land Classification

KEY		Ha	%	PLAN	KCC2		
	Grade 1			TITLE	**Agricultural Land Classification**		
	Grade 2			SITE	Lower Newton Farm, Tean		
	Grade 3a	1.0	4	CLIENT	Novus Solar Developments Limited		
	Grade 3b	24.7	96	NUMBER	**KCC1673/02 02/14 sc**		
	Grade 4			DATE	February 2014	**SCALE**	NTS
	Grade 5						
	Non-agricultural						
	Urban						
	Not surveyed						

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