LAND FOR PROPOSED DEVELOPMENT
AT
FIELD FARM, STAPLEFORD,
NOTTINGHAM

AGRICULTURAL LAND CLASSIFICATION

October 2012

SAC 10/12

Authorised By ……

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1 INTRODUCTION

1.1 This report sets out the findings of an agricultural land classification on approximately 27.6 hectares (68 acres) on the edge of Nottingham and assesses the findings against national, regional and local planning policy.

1.2 The site occurs to the west of Nottingham, and is bounded in the south by the A6007 Ilkeston Road, in the west by the Trowell Road, and the main Nottingham to Sheffield railway line in the north.

1.3 The land surveyed is dominantly arable and was examined using two inspection pits and 29 auger bores spaced at a maximum of 100m intervals on Ordnance Survey grid intersects. Location of each point was carried out using a GPS. At some sites access to the grid intersect was not possible as they were on hedge lines or just outside the site boundary so the soil was inspected at the nearest suitable position.

1.4 The land was surveyed and sampled on the 13th and 14th of October 2011 and has been graded according to the current MAFF guidelines and criteria for England and Wales (MAFF 1988).

1.5 Due to the excessively dry nature of the soil material at the time of survey, the presence of stones and the dense nature of the subsoil in places it was not always possible to auger to the maximum rooting depth for assessment of ALC. Where augering was curtailed information of stoniness and mottling from depth in adjoining profiles was used to calculate potential wetness. To enable an assessment of soil structure, mottling and plant rooting depth in more detail two profile pits were excavated and described.

1.6 Historically it is understood that the site has been affected by mining. Anecdotal evidence suggests coal excavation was carried out in the 1940s and 1950s. In the 1990s a large area to the north-west was used for local spoil storage when the deep mine to the north was being converted to a country park. The quality of the early restoration was poor, and soils at the site are thus variable, consisting of a mixture of slowly permeable medium and heavy loams and clays. This variability is evident in the photograph at Plate 1 below.

Plate 1: Restoration of opencast workings showing the variable nature of the reclamation in the valley bottom

2 FACTORS AFFECTING ALC GRADE

Climate

2.1 Climate affects the grading of land through its influence on the potential for agricultural uses and the cost and level of production. It determines the energy available for photosynthesis and water supply to plant roots and its effect on plant growth occurs partly through interactions with soil and site properties.

2.2 The key climatic variables are provided by the Meteorological Office (1989) based on a 5 km grid. The climatic figures for a site at the centre of the area are given in Table 1 from nearby 5 km grid points using interpolating algorithms.

Table 1: Site climatic data

Grid reference	SK49403880
Altitude	55 m
Average annual rainfall	646 mm
Accumulated temperature >0^{o}C (Jan-June)	1392
Moisture deficit, wheat	105 mm
Moisture deficit, potatoes	96 mm
Field capacity period	142 days

2.3 Climate limits land quality in this area in two ways. Firstly rainfall, which interacts with soil properties, influences the number of days the soil is at field capacity and therefore unworkable. Secondly the available water/moisture deficit balance on light loamy and shallow soils has a drought effect on plant growth and yield.

Geology

2.4 The published geology (BGS 1972) shows the area to be underlain by rocks of the Lower Coal Measures formation which are pale grey mudstone and shale with interbedded pale grey sandstone.

3 AGRICULTURAL LAND CLASSIFICATION

Introduction

3.1 Agricultural Land Classification provides a national framework for classifying land according to the extent to which its physical and/or chemical characteristics impose long-term limitations on its agricultural use (MAFF 1988). There are five grades in the classification with Grade 1 being of excellent agricultural quality capable of producing good yields of a wide range of agricultural and horticultural crops and Grade 5 of low agricultural value. Within Grade 3 there are two Subgrades, 3a and 3b. A more detailed explanation of the grading system is given in **Appendix KCC1**.

Limitations

3.2 **Texture and wetness** is the most common limiting factor affecting soil workability on this site. It occurs mainly on the soils that comprise subgrade 3a and 3b. The soils are formed in reclaimed open cast coal excavations and have dense mottled subsoils. Much of the mottling is thought to be associated with weathering siltstones and shale but some grey and rusty mottles indicate restricted water movement. On the natural, undisturbed soils, where restrictions to water movement at depth are not serious and soil working is only slightly restricted some soils are given a grade 2 designation.

3.3 **Droughtiness** imposes a yield restriction on much of the site where rock is at shallow depth (Plate 2), Subgrade 3b. It is not generally known as to what extent the rock is vertically or horizontally fissured but the profile dug to assess rooting depth, although exposing relatively soft sandstone, generally has a platey rock structure which limits downward root growth and development.

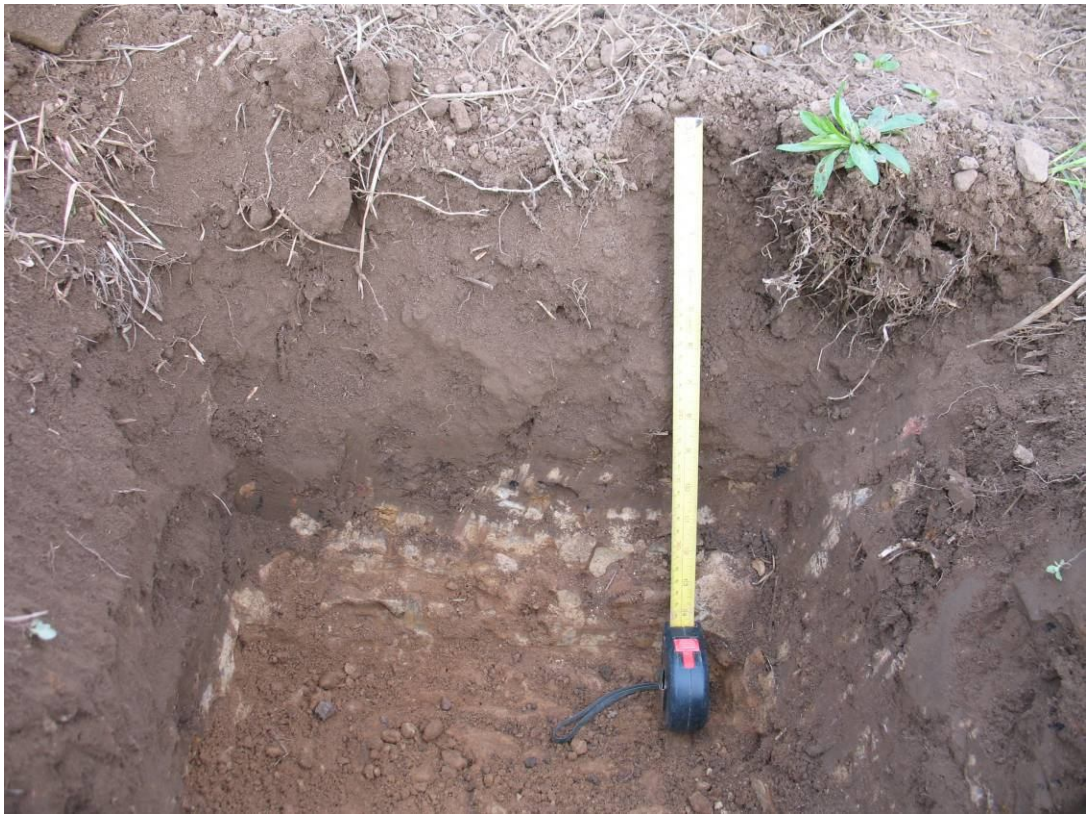

Plate 2: Permeable sandy loam soil on stone rock at shallow depth (25cm). Drought restricts grade to 3b.

Grades

3.4 The survey identifies agricultural land of Grade 2 and Subgrades 3a and 3b. Areas of non-agricultural land, including farm buildings and woodland, are designated "non-agricultural". An approximate percentage of each is given in Table 2. The distribution is shown on **Plan KCC1** is appended to this report.

Table 2: approximate extent of the ALC Grades

ALC Grade	Area (hectares)	Percentage
2	1.7	6
3a	9.1	33
3b	13.2	48
Non-Ag	3.6	13
Total	**27.6**	**100**

3.5 **Grade 2** was recognised on loamy soils mainly in the north of the site where coal extraction has not taken place and consequently the soils are natural. They are slightly or moderately stony with a drought restriction, or are affected by slow water movement at

depth (usually below 70cm) that gives a slight workability restriction. In the south against the Ilkeston Road an auger bore graded 2 has been included with subgrade 3a as the area of such quality was very limited and it is not possible to separate accurately. Another, associated with shallow sandstone soils, has been included with subgrade 3b on the high ground above the farm buildings as the soil pattern is too complex to allow separation.

3.6 **Subgrade 3a** occurs mainly on medium loamy soils with slight restriction to downward water movement but also on some permeable light loamy soils where limitation is due to drought. Much of this subgrade occurs on ground restored from opencast mining so is likely to include small patches of heavier wetter soils graded 3b, but insufficiently large in area to warrant separate identification under the ALC system.

3.7 Accordingly whilst there is a reasonably extensive area of subgrade 3a, its overall quality is moderated, in practical terms, by the patchy nature of heavier, wetter soils following restoration in the past.

3.8 **Subgrade 3b** occurs mainly where wetness and texture are the main limitations but also where there is a drought restriction due to the presence of sandstone at shallow depth.

3.9 As stated earlier much of the area was excavated, on more than one occasion, for coal. Restoration is of variable quality and this gives a complex pattern of soils with corresponding pattern of grades 3a and 3b. As it was not possible to separate these in some instances the land was given the designation of the poorer grade.

3.10 **Non-Agricultural** is located on ground covered by buildings and woodland. The location is in the centre and east of the site.

4 POLICY FRAMEWORK

National Policy

4.1 National planning policy guidance is set out in the National Planning Policy Framework, published in March 2012 (the Framework). Paragraph 112 states:

"**Local planning authorities 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 a higher quality**."

4.2 Annex 2 of the Framework defines "**best and most versatile agricultural land**" as "**land in grades 1, 2 and 3a of the Agricultural Land Classification**".

4.3 Accordingly, the loss of "**best and most versatile agricultural land**" is a measure of the effect of proposed development.

Regional and Local Policy

4.4 The East Midlands Regional Plan (March 2009) Policy 26: Protecting and Enhancing the Region's Natural and Cultural Heritage sets out a number of principles regarding sustainable development, including "**the Region's best and most versatile agricultural land should be protected from permanent loss or damage**".

4.5 The Broxtowe Local Plan (2004) no longer contains a policy regarding the protection of best and most versatile agricultural land. Policy E20 was not saved past September 2007.

5 ASSESSMENT

5.1 There are no defined thresholds for assessing the effects of non-agricultural development on the national resource of agricultural land. Thresholds adopted in consultation with agricultural departmental offices within the Department for Environment, Food and Rural Affairs and other consultants for Environmental Impact Assessment (EIA) procedures provide a useful framework for assessing the impact of the loss of agricultural land. Table 3 sets out definitions for use within EIA for the magnitude of impact of the loss of best and most versatile agricultural land.

Table 3: Magnitude of Impacts - Definitions

Magnitude of Impact	**Definitions – Effects on Soils**
High	The proposed development would directly lead to the loss of over 50 hectares of **"best and most versatile agricultural land"** (Grades 1 / 2 / 3a).
Medium	The proposed development would directly lead to the loss of between 20 and 50 hectares of **"best and most versatile agricultural land"** (Grades 1 / 2 / 3a).
Low	The proposed development would directly lead to the loss of less than 20 hectares of **"best and most versatile agricultural land"** (Grades 1 / 2 / 3a) or the loss of any quantity of non best and most versatile land (Grades 3b, 4 or 5).
Negligible	No direct effect upon agricultural land.

5.2 The site contains approximately 10.8 ha of best and most versatile agricultural land, comprising 39% of the total area. Accordingly, the quantum of best and most versatile land leads to a low magnitude of impact on the national resource, as it falls beneath the generally accepted threshold of 20 ha.

REFERENCES

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Munsell Color Company Inc., Baltimore, Maryland 21218, USA.

APPENDIX KCC1

Definitions of Agricultural Land Classification Grades

Definitions of Agricultural Land Classification Grades

These gradings are based on certain assumptions, which include an appropriate underdrainage system and satisfactory outfalls where necessary.

Grade 1 – excellent quality agricultural land

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

Grade 2 – very good quality agricultural land

Land with minor limitations which affect crop yield, cultivations or harvesting. A wide range of agricultural and horticultural crops can usually be grown but on some land in the grade there may be reduced flexibility due to difficulties with the production of the more demanding crops such as winter harvested vegetables and arable root crops. The level of yield is generally high but may be lower or more variable than Grade 1.

Grade 3 – good to moderate quality agricultural land

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

Subgrade 3a – good quality agricultural land

Land capable of consistently producing moderate to high yields of a narrow range of arable crops, especially cereals, or moderate yields of a wide range of crops including cereals, grass, oilseed rape, potatoes, sugar beet and the less demanding horticultural crops.

Subgrade 3b – moderate quality agricultural land

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

Grade 4 – poor quality agricultural land

Land with severe limitations which significantly restrict the range of crops and/or level of yields. It is mainly suited to grass with occasional arable crops, the yields of which are variable. The grade includes very droughty arable land.

Grade 5 – very poor quality agricultural land

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

Descriptions of Other Land Categories Used on ALC maps

Urban

Built-up or 'hard' uses with relatively little potential for a return to agriculture including: housing, industry, commerce, education, transport, religious buildings and cemeteries. Also, hard-surfaced sports facilities, permanent caravan sites and vacant land; all types of derelict land, including mineral workings which are only likely to be reclaimed using derelict land grants.

Non-agricultural

'Soft' uses where most of the land could be returned relatively easily to agriculture, including: golf courses, private parkland, public open spaces, sports fields, allotments and soft surfaced areas on airports/airfields. Also active mineral workings and refuse tips where restoration conditions to 'soft' after-uses may apply.

Woodland

Includes commercial and non-commercial woodland. A distinction may be made as necessary between farm and non-farm woodland.

Agricultural Buildings

Includes the normal range of agricultural buildings and hard tracks as well as other relatively permanent structures such as glasshouses. Temporary structures (e.g. polythene tunnels erected for lambing) may be ignored.

Open Water

Includes lakes, ponds and rivers as map scale permits.

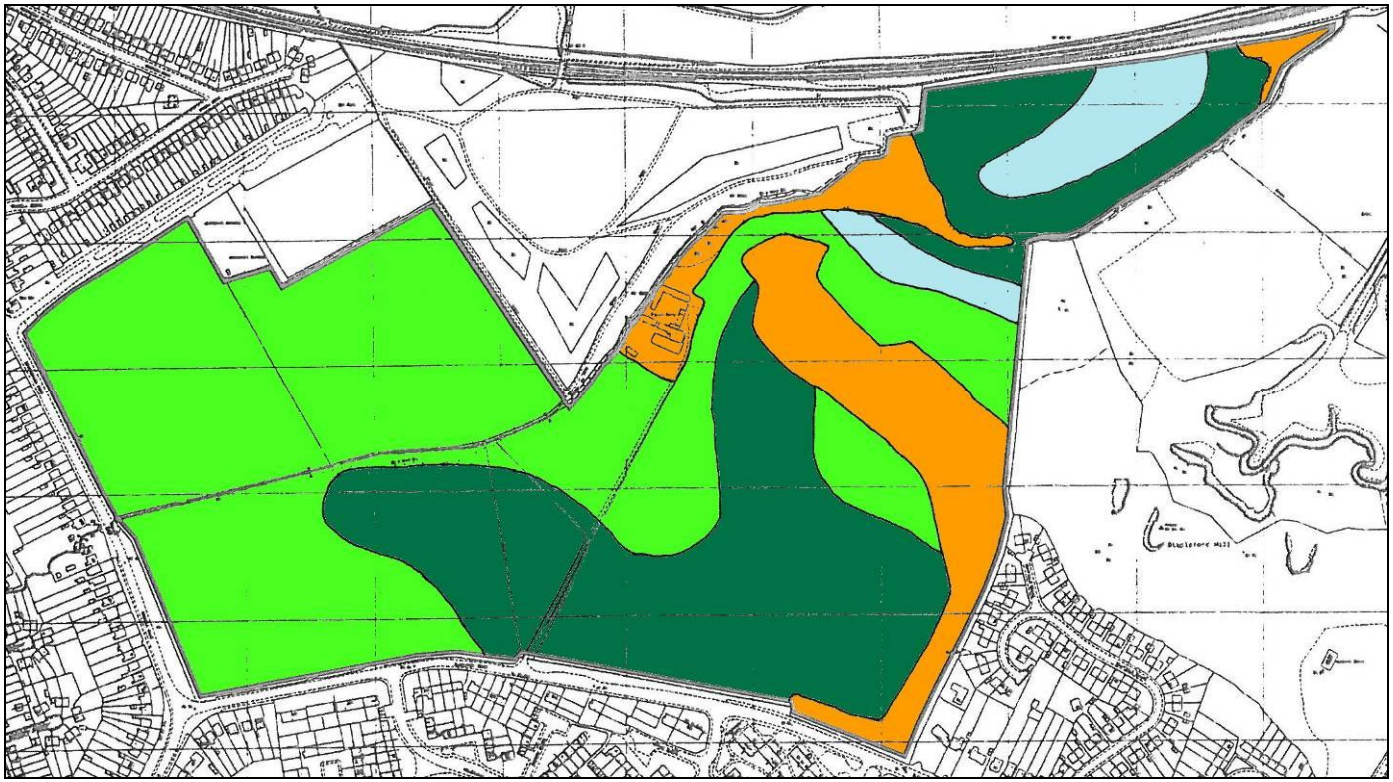
Land Not Surveyed

Agricultural land which has not been surveyed.

Where the land use includes more than one of the above land cover types, e.g. buildings in large grounds, and where the map scale permits, the cover types may be shown separately. Otherwise, the most extensive cover type will usually be shown.

PLAN KCC1

Agricultural Land Classification



KEY		Ha	%	PLAN	KCC1		
	Grade 1			TITLE	Agricultural Land Classification		
	Grade 2	1.7	6	SITE	Land at Stapleford		
	Grade 3a	9.1	33	CLIENT	Westerman Homes Ltd		
	Grade 3b	13.2	48	NUMBER	KCC1237/01 10/11 sc		
	Grade 4			DATE	October 2011	SCALE	Not to scale
	Grade 5						
	Non-agricultural inc farm buildings	3.6	13				
	Urban						
	Not surveyed						

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