AGRICULTURAL LAND CLASSIFICATION

CROMWELL QUARRY - LAND TO THE EAST OF A1 NR NEWARK, NOTTS

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1. BACKGROUND

1.1 The site covers an area of approximately 27 ha, and is the subject of an application by Butterley Aggregates Ltd for the extraction of sand and gravel.

1.2 ADAS Statutory Resource Planning Team undertook a detailed Agricultural Land Classification (ALC) survey of the site during October 1994. Soil inspections using a hand held dutch auger were made on a 100 metre grid basis and two soil pits were dug to assess subsoil conditions.

1.3 On the published provisional 1:63 360 scale ALC map, sheet 113 (MAFF, 1974) the whole site is shown as grade 3, with the boundary with grade 2 land running along the A1.

1.4 At the time of the survey the whole area was under winter cereals except for the grass river embankment running along the eastern boundary adjacent to the River Trent.

2.0 PHYSICAL FACTORS AFFECTING LAND QUALITY

Climate

2.1 Climate data for the site was interpolated from data contained in the published agricultural climatic dataset (Met Office, 1989). This indicates that for an average site altitude of 7 m AOD the annual average rainfall is 571 mm (22.5"). This data also indicates that the field capacity days are approximately 112 and moisture deficits are 117 mm for wheat and 111 mm for potatoes respectively.

The climate characteristics do not impose any climatic limitation on the ALC grading of the site.

Altitude and Relief

2.2 The survey area comprises a fairly level area of 7-8 m AOD in altitude adjacent to the River Trent. The river embankment has slopes of 15° limiting the land to grade 4, but elsewhere gradient and altitude do not constitute limitations to the ALC grade.

Flooding

2.3 The extreme eastern edge of the site between the embankment and river is likely to be prone to flooding with the land being of limited agricultural use. This land has been graded 4 due to flood risk.

Geology and Soils

2.4 The published 1:63 360 scale solid and drift edition geology map, sheet 113 (Geological Survey of England and Wales, 1966) shows the whole area to be covered by alluvium.

2.5 No detailed soil map exists of the area but the reconnaissance 1:250 000 scale soil map 'Soils of Eastern England' (Soil Survey of England and Wales 1983), shows the whole area to be covered by Fladbury 2 Association (*1) soils with an area of Arrow Association (*2) soils immediately west of the boundary.

(*1) Fladbury 2 Association Stoneless clayey soils variably affected by groundwater, some with sandy subsoils. Some similar fine loamy soils, flat land. Risk of flooding.

(*2) Arrow Association Deep permeable coarse loamy soils affected by groundwater.

2.6 Detailed field survey work identified two soil types which correspond well with Fladbury and Trent series soils which are variants of the Fladbury 2 Association soils given below.

2.7 The north western two thirds of the site typically comprise stoneless heavy clay loam or clay topsoils over clay subsoils which are typically slowly permeable from 25-30 cm. These profiles have been assessed as wetness class III. Occasionally at depth (60-90 cm+) sandier horizons are found which comprise stoneless sandy clay loam. These sandier horizons become lighter with depth often merging to loamy sands or sand.

2.8 The second soil type is mapped in the south eastern third of the site. These profiles typically comprise deep stoneless heavy clay loam to a depth of 60-100 cm. Lower subsoils comprise stoneless sandy clay loam which becomes lighter with depth. These profiles show evidence of wetness but are not slowly permeable. At the time of the survey there was no clear evidence of high groundwater levels but these are likely to occur in the winter months. Wetness class has thus been assessed as II.

3.0 AGRICULTURAL LAND CLASSIFICATION

3.1 The definitions of the Agricultural Land Classification (ALC) grades are included in Appendix 1.

3.2 The survey area has largely been graded 3b with the south eastern fifth graded 3a. A narrow band of grade 4 land has been mapped along the river embankment and on the land immediately adjacent to the River Trent. The table overleaf shows the precise breakdown on ALC grades in hectares and percentage terms.

AGRICULTURAL LAND CLASSIFICATION

Grade	ha	%
Subgrade 3a	5.5	20.6
Subgrade 3b	19.4	72.7
4	1.5	5.6
Urban	0.3	1.1
TOTAL	26.7	100

Subgrade 3a

3.3 Land graded 3a is associated with soils described in paragraph 2.8.. The combination of heavy textured topsoils and wetness class II result in the land being excluded from a higher grade because of wetness and workability imperfections. Where lighter sandy textured horizons occur within 65 cm of the surface moderate droughtiness also restricts the land to subgrade 3a.

Subgrade 3b

3.4 Land assigned to subgrade 3b covers the majority of the site and is associated with the heaviest textured soils as detailed in paragraph 2.7. The combination of heavy textured topsoils with the shallow depth to the slowly permeable layer (wetness class III), result in the land being excluded from a higher grade by wetness and workability imperfections.

Grade 4

3.5 Grade 4 land is mapped immediately adjacent to the River Trent and comprises the river embankment and narrow strip of land next to the river. The land next to the river is prone to flooding and the embankment is unsuitable for arable cropping.

Urban

3.6 The track and embankment in the south west corner of the site are mapped as urban.

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REFERENCES

GEOLOGICAL SURVEY OF GREAT BRITAIN. (England & Wales) 1966. Solid and Drift Edition Sheet 113 1:63 360 scale.

MAFF, 1974. Agricultural Land Classification map Sheet 113 Provisional 1:63 360 scale.

MAFF, 1988. Agricultural Land Classification of England and Wales (Revised Guidelines and Criteria for grading the quality of Agricultural Land). Alnwick.

METEOROLOGICAL OFFICE 1989. Published climatalogical data for Agricultural Land Classification.

SOIL SURVEY OF ENGLAND AND WALES 1983. Soils of Eastern England Sheet 4, 1:250 000 scale.

SOIL SURVEY OF ENGLAND AND WALES 1984. Soils and their uses in Eastern England by C A H Hodges *et al.*

Appendix 1

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 include 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 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 levels of yields. It is mainly suited to grass with occasional arable crops (eg. cereals and forage crops) the yield of which are variable. In most climates, yields of grass may be moderate to high but there may be difficulties in utilisation. The grade also 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.