AGRICULTURAL LAND CLASSIFICATION

A38 ALFRETON ROAD AND PINXTON LANE, SUTTON IN ASHFIELD, NOTTINGHAMSHIRE

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1.0 BACKGROUND

1.1 ADAS Statutory Group were requested, on behalf of MAFF, to assess the Agricultural Land Classification (ALC) of the site at Sutton in Ashfield in connection with an application for building development.

1.2 The ALC survey was undertaken in December 1995 using a hand held dutch auger. Soils were sampled at 100 m grid intersections to 120 cm depth or to an impenetrable layer if this occurred closer to the surface. This information was supplemented by data collected from 2 soil profile pits.

1.3 On the published Provisional 1:63 360 scale Agricultural Land Classification Map, sheet 112 (MAFF, 1970) the majority of the site is shown as grade 3 with a small area of grade 4 in the northwest. Since this map is of a reconnaissance nature designed primarily for strategic planning purposes, the current survey was undertaken to provide more detailed site specific information on land quality.

1.4 At the time of the survey the agricultural land at the site was either under winter cereals or grass.

2.0 PHYSICAL FACTORS AFFECTING LAND QUALITY

Climate

2.1 Climatic criteria are considered when classifying land as they may have an overriding limitation in terms of the agricultural use of the land. The main parameters used in the assessment of the overall climatic limitation are

average annual rainfall, as a measure of overall wetness, and accumulated temperature (day °C Jan-June) as a measure of the relative warmth of an area.

2.2 A detailed assessment of the prevailing climate for the site has been made by interpolating from data contained within the 5 km grid climatological datasets for ALC produced by the Meteorological Office (1989). The details are given in tabular form below.

Grid Reference	SK 486 572
Altitude (m, AOD)	150
Accumulated Temperature (Day °C), Jan-June	1277
Average Annual Rainfall (mm)	740
Moisture Deficit, Wheat (mm)	88
Moisture Deficit, Potatoes (mm)	73
Field Capacity Days	173
Overall Climatic Grade	2

2.3 These characteristics impose a slight climatic limitation to land quality and therefore land at this site cannot be graded higher than grade 2. Climatic factors also interact with soil properties to influence soil wetness and droughtiness.

Altitude and Relief

2.4 The site lies on land which slopes downwards towards a tributary of the River Erewash and ranges in height from 162 m AOD in the east of the site adjacent to Grange Farm, to 128 m AOD in the west of the site. Typically slopes are gentle, however in the west of the site gradients are in excess of 7° or occasionally in excess of 11°. These steep gradients restrict the type and range of machinery that can be effectively and safely used and therefore limit land quality to subgrade 3b and grade 4 respectively. Elsewhere, where slopes are less than 7° neither gradient nor altitude constitute limitations to agricultural land quality.

Geology and Soils

2.5 The published 1:63 360 scale solid and drift edition geology map, sheet 112, Chesterfield (Geological Survey of Great Britain, 1971) shows the site to comprise entirely middle coal measures with sandstone outcrops.

2.6 On the published 1:250 000 reconnaissance scale soils map, sheet 3 (Soil Survey of England and Wales, 1983) the whole site is shown as comprising Bardsey Association (*1) soils. The current detailed survey identified two main soil types.

2.7 The majority of the site, in the east and west, comprises heavy soils. Profiles typically comprise clay or occasionally heavy clay loam topsoils over similar upper subsoils which merge into clay at depth. These soils are poorly drained and generally slowly permeable immediately below the topsoil resulting in a wetness class assessment of IV.

2.8 A band of lighter textured soils runs through the centre of the site from north to south. These soils typically comprise medium clay loam or occasionally heavy clay loam topsoils over similar textured or occasionally sandy clay loam upper subsoils. Lower subsoils typically consist of medium sandy loam or medium clay loam. These soils are well drained (wetness class I) and typically very slightly stony throughout.

(*1) Bardsey Association - Slowly permeable seasonally waterlogged loamy over clayey and fine silty soils over soft rock. Some well drained coarse loamy soils over harder rock.

3.0 AGRICULTURAL LAND CLASSIFICATION

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

3.2 The table below provides a breakdown of the ALC grades in hectares and percentage terms.

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Grade	ha	%
2	7.0	29
3b	11.6	49
4	2.2	9
Other land	3.2	3
TOTAL	24.0	100

Grade 2

3.3 Land graded 2 is associated with the fine loamy soils described in paragraph 2.8 and is mapped in a band running through the centre of the site from north to south. Although these soils are free draining and moisture balance calculations indicate they are not droughty the land is restricted to grade 2 (very good quality agricultural land) due to climatic and occasionally topsoil textures where heavy clay loams occur.

Subgrade 3b

3.4 Subgrade 3b land occurs at two locations at the site, to the east and west, and is associated with the heavy textured clayey soils described in paragraph 2.7. These profiles are poorly drained (wetness class IV) and this factor in combination with the heavy topsoil textures imposes significant wetness and workability limitations. Therefore the land is graded 3b (moderate quality agricultural land).

3.5 In addition, in the west of the site gradients are occasionally in excess of 7° and these steep gradients restrict the type and range of machinery that can be effectively and safely used and also limit land quality to subgrade 3b.

Grade 4

3.6 Land assigned to grade 4 occurs in a small area on the western edge of the site, where gradients are in excess of 11°. These steep gradients restrict the type and range of machinery that can be effectively and safely used and therefore the land is limited to grade 4 (poor quality agricultural land).

Other land

3.7 Alfreton Road and Pinxton Lane in the north and east of the site respectively are mapped as other land. In addition a small areas of disturbed land related to an abandoned land-fill area has also been mapped as other land.

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REFERENCES

GEOLOGICAL SURVEY OF GREAT BRITAIN (ENGLAND AND WALES), 1971. Sheet 112, Chesterfield, solid and drift edition, scale 1:50 000.

MAFF, 1973. Agricultural Land Classification Map (Provisional), sheet 112, scale 1:63 360.

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

METEOROLOGICAL OFFICE, 1989. Climatological Datasets for Agricultural Land Classification. Meteorological Office, Bracknell.

SOIL SURVEY OF ENGLAND AND WALES, 1983. Sheet 3, Midlands and Western England, scale 1:250 000.

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 (e.g. 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.