

## **AGRICULTURAL LAND CLASSIFICATION**

### **TOTON SIDINGS, STAPLEFORD, NOTTINGHAMSHIRE**

#### **1.0 BACKGROUND**

1.1 The site covers an area of approximately 39 ha and is the subject of a planning application for a road, warehousing and distribution depot.

1.2 ADAS Statutory Resource Planning Team undertook a detailed Agricultural Land Classification (ALC) survey of the site during December 1994. Soil inspections using a hand held dutch auger were made on a 100 m grid basis and three soil inspection pits were dug to assess structural development within the soil profile.

1.3 On the published provisional 1:63 360 scale ALC map, sheet 112 (MAFF, 1970) the site is shown as urban in the west, consisting of the railway sidings and embankment, a small area of grade 3 in the south west and the remainder of the site is shown as grade 2.

1.4 At the time of the survey the area in the north of the site was under grass while the remainder of the area had been prepared for a seed bed or recently drilled with a cereal.

#### **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 (Meteorological Office, 1989). This indicates that for an average site altitude of 55 m AOD the annual average rainfall is 642 mm. This data also indicates that the field capacity days are approximately 135 and moisture deficits are 106 mm and 97 mm for wheat and potatoes respectively.

Accumulated temperature for the site is estimated at 1394 day °C. These climatic characteristics do not impose any climatic limitation on the ALC grading of the site.

### Altitude and Relief

- 2.2 The survey area consisted of gentle to moderately sloping land between 35 and 60 m AOD. There were no gradients within the site sufficient to limit the ALC grading of the site.

### Geology and Soils

- 2.3 The published 1:50 000 scale solid and drift edition geology maps, sheets 125 and 141 (Geological Survey of England and Wales, 1972 and 1976) show the site to be covered predominantly by sandstone with bands of marl. A small area in the north west of the site is shown as Red Marl with beds of sandstone and a very small area in the west of the site is shown as covered with alluvium.
- 2.4 No detailed soil map exists of the area but the reconnaissance 1:250 000 scale soil map 'Soils of Midland and Western England' (Soil Survey of England and Wales, 1983) shows the whole agricultural area to be covered by the Hodnet Association\*.
- 2.5 Three soil types were identified within the site with the central portion of the site consisting of relatively stone free sandy silt loam topsoil overlying a sandy silt loam upper subsoil. The upper subsoil was generally overlying a heavier textured silty clay loam or clay lower subsoil horizon which constituted a slowly permeable layer. Occasionally the lower subsoil consisted of fine

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\* Hodnet Association. Reddish fine and coarse loamy soils with slowly permeable subsoils and slight seasonal waterlogging. Some similar well drained fine loamy soils. Slight risk of water erosion.

Sandy loam textured material. These profiles usually showed evidence of gleying and mottling and were thus assessed as wetness class II or III.

2.6 The second soil type occurred predominantly in the north of the site. This consisted of a stone free medium/heavy clay loam topsoil which was generally found to overlie a medium/heavy clay loam upper subsoil. A lower subsoil consisting of a reddish clay/heavy silty clay loam textured material was found to constitute a slowly permeable layer. The thickness of the upper subsoil determined the depth to the slowly permeable clayey horizon and hence these soils were assessed as wetness class II or III.

2.7 The third soil type covered the south western area of the site and consisted of generally a reddish coloured stone free clay topsoil overlying a reddish heavy clay/heavy silty clay loam subsoil. These profiles showed evidence of wetness and were generally slowly permeable immediately below the topsoil, hence they were assessed as wetness class III.

### 3.0 **AGRICULTURAL LAND CLASSIFICATION**

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

3.2 The agricultural land within the survey area consists of areas of grade 2, 3a and 3b quality land. A small area within the site boundary is classed as non-agricultural with a larger area, predominantly the railway sidings is classed as urban. The table overleaf shows the precise breakdown on ALC grades in hectares and percentage terms.

### AGRICULTURAL LAND CLASSIFICATION

Grade	Area (ha)	% of site
2	8.9	22.8
3a	5.7	14.6
3b	4.4	11.2
Urban	18.3	46.8
Non-agricultural	1.8	4.6
TOTAL	<u>39.1</u>	<u>100.0</u>

#### Grade 2

- 3.3 Land of grade 2 quality is associated with soils described in paragraph 2.5. The combination of wetness class III and a sandy silt loam topsoil result in the land being excluded from a higher grade because of slight wetness and workability imperfections. Where wetness class II soil profiles occurred the topsoil was found to be slightly heavier textured medium clay loam and so is assessed as grade 2. At a single sample point no slowly permeable layer occurred but the profile was limited by its low moisture availability and hence was assessed as grade 2 on droughtiness.

#### Subgrade 3a

- 3.4 Land of subgrade 3a quality is associated with soils described in paragraph 2.6. These soils were assessed as wetness class II or III depending on the depth to the slowly permeable layer. Where soils of wetness class II occurred they were associated with a heavy clay loam topsoil and hence were assessed as subgrade 3a quality. Soils assigned to wetness class III within this subgrade were associated with medium clay loam topsoils. The land is thus excluded from a higher grade because of wetness and workability imperfections.

### Subgrade 3b

- 3.5 Land of subgrade 3b quality is associated with soils described in paragraph 2.7. These soils were assessed as wetness class III with the slowly permeable layer occurring immediately below the clay textured topsoil. This combination results in the land being excluded from a higher grade by wetness and workability imperfections.

### Urban

- 3.6 A large area of the land within the site was classed as urban. This consisted predominantly of the railway sidings in the west of the site but included buildings, hard standing and concrete and tarmac roads within the site.

### Non-agricultural

- 3.7 A small area of land in the east of the site adjoining Toton Lane was described as non-agricultural. This land consists of mown grass roadside verge and ornamental shrub plantings.

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## **REFERENCES**

Geological Survey of England and Wales, 1972. Solid and Drift Edition. Sheet 125  
Derby 1:50 000 scale.

Geological Survey of England and Wales, 1976. Solid and Drift Edition. Sheet 141  
Loughborough 1:50 000 scale.

MAFF, 1970. Agricultural Land Classification Map Sheet 112 Provisional 1:63 360  
scale.

Meteorological Office, 1989. Published climatic data extracted from the agroclimatic  
dataset compiled by the Meteorological Office.

Soil Survey of England and Wales, 1983. Sheet 3, Soils of Midland and Western  
England. 1:250 000 scale.

## 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.