

# **AGRICULTURAL LAND CLASSIFICATION AND STATEMENT OF SOIL PHYSICAL CHARACTERISTICS**

## **LAND SOUTH-EAST OF BURGESS FARM, MIDDLETON CHENEY, NORTHANTS**

### **1. BACKGROUND**

1.1 A site of approximately 6.3 ha in extent to the south east of the village of Middleton Cheney in Northamptonshire, centred in grid reference SP 514 404, is the subject of a planning application to extend the existing landfill site.

1.2 At the time of the survey the agricultural land consisted of two grassland fields and a part of one further field which had been cultivated from a previous grass cover. The central part of the site consisted of the existing landfill operation.

1.3 On the published 1:63 360 scale Agricultural Land Classification (ALC) map (MAFF, 1974) the site is mapped as Grade 3. This map is only of a reconnaissance nature and hence the current detailed survey was carried out to provide site specific ALC and soils information.

1.4 The agricultural areas within the site were surveyed on a 100 m grid basis using a dutch auger to a depth of 1.2 m wherever possible. In addition two soil pits were dug to assess subsoil structure in more detail.

### **2.0 PHYSICAL FACTORS AFFECTING LAND**

#### Climate

2.1 Climatic criteria are considered when classifying land as these may have an overriding limiting 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 interpolation from the 5 km grid dataset produced by the Meteorological Office (Met. Office, 1989). The details are given in Table 1 and these show that there is no overall climatic limitation affecting the site.

**Table 1. Climatic data**

Grid Reference	SP513404	SP515405
Altitude (m, AOD)	100	118
Accumulated Temperature Day °C, Jan-June	1384	1364
Average Annual Rainfall (mm)	689	691
Moisture Deficit, Wheat (mm)	102	100
Moisture Deficit, Potatoes (mm)	92	90
Field Capacity Days	158	158
Overall Climatic Grade	1	1

#### Altitude and Relief

- 2.3 The site lies at a maximum altitude of approximately 118 m AOD in the north east and falls to approximately 95 m AOD in the south west of the site. Slopes are generally gentle for the agricultural areas of the site with ridge and furrow undulations within the small south westerly field. Altitude and relief do not therefore constitute a limitation for the agricultural quality of the site.

#### Geology and Soils

- 2.4 The published 1:50 000 scale geology map (Geol. Survey, 1982) shows the majority of the site to comprise Lower Lias Clay with Middle Lias Clay near to the north east boundary of the site.
- 2.5 The reconnaissance scale (1:250 000) soil survey map for the area (Soil Survey, 1983) shows the site to comprise soils of the Wickham 2 association\*.

- 2.6 The present detailed survey of the agricultural areas shows the presence of a single soil type across the site. The physical characteristics of this soil type are given in Appendix 1.
- 2.7 This soil type consists of a very slightly stony clay textured, or occasionally medium clay loam textured, topsoil which overlay very slightly stony clay textured subsoil horizons. This subsoil was increasingly mottled with depth and contained few/common ferrimanganiferous concretions. Structure of the subsoil consisted of moderately developed coarse angular blocky peds and hence profiles were assessed as wetness class IV.

### 3.0 AGRICULTURAL LAND CLASSIFICATION

- 3.1 The breakdown of the various Agricultural Land Classification (ALC) grades within the site are shown in Table 2. The definition of the ALC grades is given in Appendix 2.

**Table 2. Distribution of grades and subgrades**

AGRICULTURAL LAND CLASSIFICATION		
Grade	Area (ha)	% of site
3b	4.2	66.7
Other land	2.1	33.3
<b>TOTAL</b>	<b>6.3</b>	<b>100.0</b>

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- \* Wickham 2 association: Slowly permeable seasonally waterlogged fine loamy over clayey, fine silty over clayey and clayey soils. Small areas of slowly permeable calcareous soils on steeper slopes. Formed in Drift over Jurassic and Cretaceous clay or mudstone.

### Subgrade 3b

- 3.2 All the agricultural land within the proposed site was assessed as Subgrade 3b quality. The land was restricted by a moderate wetness and workability limitation with the soil profiles assessed as wetness class IV.

### Other Land

- 3.3 The area in the south east of the site mapped as other land consisted of the present landfill operations.

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## REFERENCES

- GEOLOGICAL SURVEY OF GREAT BRITAIN (ENGLAND AND WALES),  
1982. Sheet 201, Banbury, 1 50 000 scale.
- MAFF, 1974. Agricultural Land Classification Map. Provisional. Scale 1 63 360  
Sheet 145.
- 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 Data for Agricultural Land  
Classification. Bracknell.
- SOIL SURVEY OF ENGLAND AND WALES, 1983. Sheet 3, "Soils of Midland  
and Western England". 1 250 000 scale.

## Appendix 1

### STATEMENT OF SOIL PHYSICAL CHARACTERISTICS

Topsoil	Texture	:	clay (occasionally medium clay loam)
	Colour	:	dark yellowish brown (10YR4/4), dark brown (10YR4/3).
	Stone	:	very slightly stony (2%)
	Boundary	:	abrupt, smooth
	Roots	:	many, fine
	Depth	:	28 cm
	Upper Subsoil	Texture	:
Matrix colour		:	brown (10YR5/3)
Mottles		:	common/many distinct ochreous
Stone		:	very slightly stony (2%)
Structure		:	moderately developed coarse angular blocky.
Consistence		:	friable
Porosity		:	<0.5% biopores
Boundary		:	abrupt, smooth
Roots		:	many, fine
Depth		:	55 cm
Lower Subsoil	Texture	:	clay
	Matrix colour	:	brown (10YR5/3)
	Mottles	:	many/very many ochreous
	Stone	:	very slightly stony (2%)
	Structure	:	moderately developed coarse angular blocky.
	Porosity	:	<0.5% biopores
	Roots	:	many, fine
	Depth	:	120 cm+

## Appendix 2

### DEFINITIONS OF ALC GRADES

#### **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.