

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

**GAYTON ROAD, MILTON
MALSOR, NORTHANTS**

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1.0 BACKGROUND

- 1.1 The site is the subject of an application for the extraction of sand and gravel by Galliford Roadstone Limited. ADAS Statutory Unit surveyed the 4.4 hectare site in January 1993 to assess the agricultural land quality at an auger boring density of approximately 2 borings per hectare. These borings were supplemented by a soil inspection pit in order to assess subsoil conditions.
- 1.2 At the time of the survey the land was covered by permanent pasture on which sheep were grazing.
- 1.3 On the published Provisional 1:63 360 scale Agricultural Land Classification Map, sheet 133 (MAFF 1968) the area is mapped as grade 3. Since this map is of a reconnaissance nature designed primarily for strategic planning purposes, the current survey was undertaken to provide more detailed information on land quality.

2.0 PHYSICAL FACTORS AFFECTING LAND QUALITY

Climate

- 2.1 Site specific climate information was obtained for the site by interpolating information contained in the 5 km grid dataset produced by the Meteorological Office (1989). This indicates that the average annual rainfall for the site is 635 mm (25.4"). This data also indicates that the field capacity days are 137 and moisture deficits are 107 mm for wheat and 99 mm for potatoes. These characteristics do not impose any climatic limitation on the ALC grade of the survey site.

Altitude and Relief

- 2.2 The survey area comprises gently undulating land with a maximum altitude of 82 m AOD and a minimum altitude of 77 m AOD. Neither gradient nor altitude impose a limitation to the ALC grade.

Geology and Soils

- 2.3 The published 1:63 360 scale solid and drift edition geology map, sheet 202 (Geological Survey of Great Britain 1966) shows the site to comprise drift deposits of fluvio-glacial gravel which are underlain by Upper Lias mainly Clay, which outcrops in a small area in the southeast of the site.
- 2.4 No detailed soil map exists for this area. However, the Soil Survey of England and Wales have mapped this area at a reconnaissance scale of 1:250 000 (SSEW, 1983) and this map indicates the occurrence of soils of the Wick 1 Association* which are derived from the underlying drift deposits. The current more detailed survey identified two main soil types.
- 2.5 Firstly, the majority of the site typically comprises heavy clay loam topsoils over clay subsoils which become slowly permeable at depth of 50/60 cm (wetness class II). Profiles are very slightly stony throughout and may be calcareous in the subsoil.
- 2.6 The second, smaller soil type is found in the north of the site. These soils are lighter in texture, typically comprising sandy clay loam topsoils over variable upper subsoils of sandy clay loam, sandy loam or loamy sand. Below 70/90 cm lower subsoils are typically loamy sand or medium sand textures. These soils are free draining (wetness class I) and very slightly stony throughout.

* Wick 1 Association - deep well drained coarse loamy and sandy soils, locally over gravel. Some similar soils affected by groundwater.

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 shows the distribution of ALC grades for this site.

AGRICULTURAL LAND CLASSIFICATION

Grade	hectares	%
3a	4.4	100
TOTAL	<hr/> 4.4	<hr/> 100

Subgrade 3a

3.3 Land graded 3a is mainly associated with the clayey soils described in paragraph 2.5. These profiles have heavy clay loam topsoils and show evidence of wetness in the lower subsoils (wetness class II). These factors combine to impose a moderate wetness and workability limitation on the land, restricting it to subgrade 3a (good quality agricultural land).

3.4 The remainder of the site, in the north, is also graded 3a and is associated with the freely drained sandier soils described in paragraph 2.6. These light textured profiles impose a moderate limitation on the available water for crop growth and therefore the land is graded 3a due to moderate droughtiness imperfections.

February 1993

R TARRANT
Resource Planning Team
Cambridge
ADAS Statutory Unit

REFERENCES

GEOLOGICAL SURVEY OF GREAT BRITAIN (ENGLAND AND WALES), 1969. Solid and drift edition geology map, sheet number 202, Towcester, scale 1:63 360.

MAFF, 1968. Agricultural Land Classification Map, sheet number 133 (Provisional), 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. Data extracted from the published agroclimatic dataset.

SOIL SURVEY OF ENGLAND AND WALES, 1983. Sheet number 4, Soils of Eastern 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 (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.

Appendix 2

STATEMENT OF SOIL PHYSICAL CHARACTERISTICS

GAYTON ROAD, MILTON MALSOR, NORTHANTS

SOIL TYPE 1 (2.5 hectares)

Topsoil	Texture	: heavy clay loam, very occasionally medium clay loam or sandy clay loam
	Colour	: 10YR4/3 dark brown
	Stone	: typically very slightly stony (2-5%) comprising small flints
	Depth	: 25-30 cm
	Structure	: cultivation zone, not applicable
	Boundary	: abrupt smooth
	Roots	: common fine and very fine
	Upper Subsoil	Texture
Colour		: 10YR5/3 brown and 10YR5/4 yellowish brown
Stone		: typically very slightly stony (2-5%) comprising small flints
Depth		: 50-60 cm, typically 50 cm
Structure		: weakly developed coarse subangular blocky
Consistence		: firm
Porosity		: <0.5% biopores
Boundary		: clear wavy
Roots		: common fine and very fine
Lower Subsoil	Texture	: clay
	Colour	: 10YR6/4 light yellowish brown and 10YR5/4 yellowish brown
	Stone	: typically very slightly stony (2-5%) comprising small flints
	Depth	: 120 cm plus
	Structure	: weakly developed medium and coarse angular blocky
	Consistence	: firm
	Porosity	: <0.5% biopores
	Roots	: common fine and very fine

SOIL TYPE 2 (1.9 hectares)

Topsoil	Texture	: sandy clay loam
	Colour	: 10YR4/3 dark brown
	Stone	: typically very slightly stony (2-5%) comprising small flints
	Depth	: 25-35 cm
	Structure	: cultivation zone, not applicable
	Roots	: common fine and very fine
	Upper Subsoil*	Texture
Colour		: 10YR4/4 dark yellowish brown and 7.5YR4/6 strong brown
Stone		: typically very slightly stony (2-5%) comprising small flints
Depth		: 70-90 cm
Structural condition		: moderate
Roots		: common fine and very fine
Lower Subsoil*		Texture
	Colour	: 7.5YR4/6 and 7.5YR5/6 strong brown, and 7.5YR6/6 reddish yellow
	Stone	: typically very slightly stony (2-5%) comprising small flints
	Depth	: 120 cm plus
	Structural condition	: moderate
	Roots	: common fine and very fine

* may contain more than one discrete horizon.