

PHYSICAL CHARACTERISTICS REPORT INCORPORATING AGRICULTURAL LAND CLASSIFICATION
LAND AT RYE MEADS, HERTS

1.0 INTRODUCTION

- 1.1 The site, an area of approximately 13.5 hectares, is the subject of an application for the extraction of sand and gravel. ADAS surveyed the site in February 1992 at an auger boring density of approximately 1 boring per hectare. These borings were supplemented by 2 soil inspection pits in order to assess subsoil conditions.
- 1.2 On the published Agricultural Land Classification Map Sheet No 148 (provisional, scale 1:63,360, MAFF 1973). The entire site is mapped as Grade 3. The current survey was undertaken in order to provide a more detailed representation of the agricultural land quality as well as a physical characteristics report of the soil resource.

2.0 SITE PHYSICAL CHARACTERISTICS

2.1 Climate

Climate data for the site was obtained from the published agricultural climatic dataset (Met. Office 1989). This indicates that for the site's modal altitude of 30 m AOD the annual average rainfall is 589 mm (23.2"). This data also indicated that the field capacity days are 114 and moisture deficits are 118 mm for wheat and 114 mm for potatoes. These climatic characteristics do not impose any climatic limitation on the ALC grading of the survey site.

2.2 Relief

The majority of the site has a floodplain location and very gently slopes to the south and has an average altitude of 30 m AOD. The northern edge of the site represents the flood plain boundary and the land gently rises from here. Gradient and altitude does not constitute any limitation to the ALC grade of the site.

2.3 Flooding

Information gained from the farmers and the NRA indicated that the site is subject to flooding. The frequency, duration and timing of the flood events as reported by the NRA would indicate that this site could not be graded higher than subgrade 3a.

3.0 AGRICULTURAL LAND CLASSIFICATION

3.1 The definitions of the Agricultural Land Classification grades are included in Appendix 2.

3.2 Subgrade 3b

The entire site has been graded subgrade 3b and is associated with the soils described in paragraph 4.2. The combination of clay topsoils with slowly permeable subsoil profiles, results in wetness and workability being the overriding limitation to the grade on this site.

4.0 SOIL PHYSICAL CHARACTERISTICS

4.1 Geology

The published 1:50,000 scale, solid and drift geology map, sheet 240, Epping (Geol. Survey of Great Britain, 1981) shows the majority of the site to comprise alluvium with some glacial head deposits along the northern edge. The more detailed 1:25,000 scale, Sand and Gravel Resources, Sheet TL41 (Inst. Geol. Sci, 1979) broadly agrees with this map.

4.2 Soils

The Soil Survey of England and Wales have mapped the soils in the area on two occasions firstly in 1954, at a scale of 1:63,360, Sheet 148 'Saffron Walden' and secondly in 1983, at a reconnaissance scale of 1:250,000. These maps broadly agree and the latter map indicates the site comprises Fladbury 1 Association*.

*Fladbury 1 Association. Stoneless, clayey soils, in places calcareous, variably affected by groundwater. Flatland. Risk of flooding.

The soils observed during the ADAS survey were consistent with the published maps and a single soil mapping unit has been identified.

Soil Mapping Unit 1 (refer to Appendix 1)

Profiles typically comprise very slightly stony or stone free clay over similar subsoils. These soils are gleyed from 30 cms and slowly permeable from within 55 cms and have therefore been assessed as wetness class III.

APPENDIX 1

SOIL MAPPING UNIT 1 (13.5 hectares)

Topsoil	Texture	:	heavy clay	
	CaCO ₃	:	typically very slightly calcareous	
	Colour	:	2.5Y 4/4	
	Stone	:	stone free	
	Structure	:	cultivation zone - not applicable	
	Boundary	:	clear and wavy	
	Roots	:	abundant medium, fine and very fine roots.	
	Depth	:	in the range of 25-30 cm typically 30 cm.	
	Upper Subsoil	Texture	:	clay
		CaCO ₃	:	non calcareous to calcareous
Colour		:	2.5Y 5/4 with 2.5Y 5/2 ped faces	
Mottles		:	common distinct ochreous mottles 10YR 5/6.	
Stone		:	negligible	
Structure		:	moderately developed coarse subangular blocky.	
Consistence		:	Firm	
Boundary		:	clear and wavy	
Porosity		:	less than 0.5% biopores	
Roots		:	common fine and very fine	
Depth	:	45 cm		
Lower Subsoil	Texture	:	clay or silty clay	
	CaCO ₃	:	typically calcareous	
	Colour	:	10YR 5/1	
	Mottles	:	common distinct ochreous mottles	
	Stone	:	negligible	
	Structure	:	moderately developed medium prismatic	
	Consistence	:	very firm	
	Biopores	:	less than 0.5% biopores	
	Roots	:	common fine/very fine to 65 cm. Few 65 cm +.	
	Depth	:	120 cm	

Additional Data

Depth to gleyed horizon = 30 cm

Depth to slowly permeable layer = 55 cm

Wetness assessment = wetness class III

REFERENCES

GEOLOGICAL SURVEY OF GREAT BRITAIN (1981). Drift and Solid Geology, Sheet No. 240 'Epping', 1:50,000 scale.

INSTITUTE OF GEOLOGICAL SCIENCES (1979). Mineral Assessment Report No. 46.

MAFF (1973). Agricultural Land Classification Sheet 148, 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).

METEOROLOGICAL OFFICE (1989). Climate data extracted from the published Agricultural Climatic Dataset.

SOIL SURVEY OF ENGLAND AND WALES (1954). Sheet No. 148 'Saffron Walden', 1:63,360.

SOIL SURVEY OF ENGLAND AND WALES (1983). Reconnaissance Survey, Sheet No. 4, 1:250,000.

Appendix 2

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 yields 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 winter 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 level of yields. It is mainly suited to grass with occasional arable crops (eg cereal and forage crops) the yields of which are variable. In moist 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.