

AGRICULTURAL LAND CLASSIFICATION

LAND AT THE WELDING INSTITUTE, ABINGTON, CAMBS

1.0 INTRODUCTION

1.1 Land on this 64.5 hectare site was inspected during April 1991, in connection with proposals to extend the existing Welding Institute buildings. A total of 65 soil inspections were made on site at 100 metre intervals, supplemented by information from four soil profile pits. At the time of survey the land was under cereals, oil seed rape, grass and potatoes.

2.0 PHYSICAL FACTORS AFFECTING LAND QUALITY

2.1 Altitude and Relief

The site has an overall northerly aspect. From a maximum altitude of 38m AOD near Newhouse Farm, the land falls gently to a minimum altitude of approximately 30m AOD at the northern edge of the site. Neither altitude nor relief constitute limiting factors to the agricultural land quality.

2.2 Climate

Site specific climate data was obtained from the 5km grid agroclimatic dataset produced by the Meteorological Office (Met Office 1989). This shows average annual rainfall to be approximately 577mm (22.7") which is low by national standards. Soils are likely to be at field capacity for a relatively short period of approximately 104 days. Soil moisture deficits of 118mm and 113mm are recorded for wheat and potatoes respectively. These climatic characteristics do not impose any climatic limitations on the ALC grading of the survey area.

Geology and Soils

2.3 The geology of this area is shown on the published 1 inch to 1 mile drift edition geology map sheet 205 (Saffron Walden) (Geological Survey of GB 1952). This map shows the occurrence of four geological

deposits; mainly valley gravel terraces adjacent to the Welding Institute, Middle Chalk running northwest from Newhouse Farm, glacial gravel adjacent to Lagden's Grove and a small deposit of alluvium adjacent to the River Granta.

2.4 Published soil maps indicate the existence of four main soil series on site (SSEW, 1986 1:25,000 Scale). The Horseheath Series (*1) to the northeast, the Swaffham Prior Series (*2) to the west and southeast; the Moulton Series (*3) through the centre of the site and a small area of Thames/Uffington Series (*4) adjacent to the River Granta. Detailed field survey observations show the occurrence of three main soil types.

2.4.1 Approximately half of the agricultural land comprises freely draining soils derived from the gravel deposits. Soils typically comprise slightly stony medium sandy loams of variable depth over slightly stony* similar or lighter soils. At depth 90/110cm⁺ profiles may become chalky with approximately 5-10% chalk fragments.

(*1) Horseheath Series: Coarse loamy over calcareous gravelly soils developed in river terrace drift on narrow terraces of the Granta valley.

(*2) Swaffham Prior Series: Calcareous sandy loam or sandy silt loams over chalk or chalk rubble at variable depth.

(*3) Moulton Series: Coarse loamy soils developed in chalky drift.

(*4) Thames/Uffington Series: Alluvial gley soils developed in clayey calcareous river alluvium.

* Slightly Stony: To the eastern periphery of the site moderately stony subsoils are common.

- 2.4.2 Immediately south of the Welding Institute buildings moderately deep profiles derived from chalky drift outcrop. Soils typically comprise medium sandy loam topsoils over slightly stony medium sandy loam subsoils which overlie rubbly, chalky drift** from 55/70cm⁺ depth.
- 2.4.3 A small area of the site, adjacent to the north/south avenue comprises significantly droughty shallow chalky soils. Profiles generally comprise slightly stony medium sandy loams of shallow depth over rubbly, chalky drift** 40/45cm⁺ or weathered chalk rock. Profile stone above the chalky drift comprises small and medium flints and chalk stones.

3.0 AGRICULTURAL LAND CLASSIFICATION

- 3.1 The definition of the ALC grades are included in Appendix 1.
- 3.2 The table below shows the breakdown of ALC grades in hectares and % terms for the survey area.

AGRICULTURAL LAND CLASSIFICATION

Grades	Ha	%
3a	40.5	62.8
3b	8.4	13.0
Non Agricultural	5.3	8.2
Urban	10.3	16.0
TOTAL	64.5	100

- 3.3 The chief limitation to agricultural land quality is droughtiness. The relative severity of this limitation depends on the depth, texture and stone content of the soil profile and, where the chalky rubble occurs, the degree to which roots are able to penetrate this substrate.

** rubbly, chalky drift: comprising weathered chalk stones in a pale coarse loamy matrix, which may contain inclusions of overlying soil material.

3.4 Subgrade 3a

Two main situations occur.

3.4.1 The majority of the subgrade 3a land lies in association with the gravel derived soils described in paragraph 2.4.1. Coarse soil textures and profile stone (mainly flint but some chalk stones) combine to impose a moderate limitation (*5) on the water holding capacity of this land. Thus the land is restricted to subgrade 3a (good quality agricultural land). Sporadically throughout this area topsoil stone restrictions also exclude this land from grade 2.

3.4.2 The remainder of the subgrade 3a land occurs directly south of the Welding Institute. The land is moderately droughty and associated with the soils described in paragraph 2.4.2. Soil pit observations indicate that root penetration occurs to depth, in fissures, within the rubbly, chalk drift. Consequently moderate droughtiness imperfections exclude the land from a higher grade.

3.5 Subgrade 3b

A small part of the site is derived from the shallow chalky soils described in paragraph 2.4.3. Profile pit observations indicate that rooting in the rubbly chalky drift extends to a maximum depth of 70cm. Consequently these profiles yield relatively low reserves of available water for crop growth. Thus the land is restricted to subgrade 3b (moderate quality agricultural land).

3.6 Non Agricultural and Urban

The Welding Institute's buildings and associated recreational land have been mapped as urban and non agricultural land respectively.

(*5) Moderate Limitation: At sporadic intervals across this area less droughty profiles of grade 2 land occur, however they cover too small an area to delineate separately at this survey scale.

SOURCES OF REFERENCE

GEOLOGICAL SURVEY, (1952). 1:63,360 scale Drift edition geology map, sheet number 205. Saffron Walden

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.

SSEW, (1983) 1:250,000 scale Soil Map, Sheet No 4, Eastern England.

SSEW, (1986) 1:25,000 scale Soil Map Sheet TL54, Record No 94, Soils in Cambridgeshire III.

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 includes 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 root 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 will affect the choice of crops, timing and type of cultivation, harvesting or the level of yield. When 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.