

AGRICULTURAL LAND CLASSIFICATION

LAND OFF LOWER ROAD, STOKE MANDEVILLE, AYLESBURY

1.0 BACKGROUND

- 1.1 The site, an area of 45.7 hectares is the subject of an application for retail and residential development. In December 1993, ADAS Resource Planning Team undertook an Agricultural Land Classification (ALC) survey, carrying out a total of 42 auger borings. In addition, three soil pits were dug to provide more detailed information on subsoil conditions.
- 1.2 At the time of the survey, the site was partially in arable production and partially under grass.
- 1.3 On the published 1:63,360 scale ALC map, sheet 146 (MAFF 1968) the site is mapped as grade 3. This map is of a reconnaissance nature designed for strategic planning purposes. The current survey was undertaken to provide more detailed information on land quality for the site.

2.0 PHYSICAL FACTORS AFFECTING LAND QUALITY

Climate

- 2.1 Climate data was obtained from the published agricultural climatic dataset (Met Office, 1989). This indicates that at an average altitude of 92 m AOD the site has an annual average rainfall of 654 mm. It also indicates that field capacity days are 142 and the moisture deficits for wheat and potatoes are 108 mm and 101 mm respectively. These characteristics do not impose any climatic limitation on the ALC grade of the site.

Altitude and Relief

- 2.2 The site is dissected by a railway line running in a northwest to southeast direction. To the east of the railway line, the land rises gently from a minimum of 92 m AOD to 98 m AOD at the eastern boundary. Immediately to the west of the railway line, the land falls to form a hollow with a minimum altitude of 87 m AOD, before rising in a southwesterly direction to a maximum altitude of 96 m AOD in the

southwest corner of the site. Neither gradient nor altitude constitute limitations to the ALC grade.

Geology and Soils

- 2.3 The published 1:50,000 scale drift edition geology map sheet 238 (Geological Survey of Great Britain, 1946) shows the entire site to be underlain by Cretaceous Upper Greensand and Gault Clay (Selbornian).
- 2.4 The published 1:63,360 scale soils map 238 (Soil Survey of England and Wales, 1961) shows the presence of three soil series. The centre of the site is occupied predominantly by the Wicken Series (*1), with small areas of Challow Complex (*2) and Weston Turville Series (now renamed Grove Association) (*3). The Weston Turville Series/Grove Association soils also lie to the east and to the west of the site. The current more detailed survey identified two soil types which partially correspond with those of the SSEW (1961) survey.
- 2.5 Heavy textured imperfectly/poorly drained soils have been mapped throughout most of the site. The soils typically comprise heavy clay loam topsoils over mottled and gleyed clay subsoils. A slowly permeable layer starts directly below the topsoil thus the wetness class has been assessed as III or IV. Topsoils are typically very slightly stony, occasionally slightly stony, and subsoils are typically slightly stony. Topsoils are generally non-calcareous, with subsoils occasionally calcareous below 50 cm depth.

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- (*1) Wicken Series: Clayey topsoils overlying olive, very stiff finely mottled clay with occasional sandy or gravelly layers, passing to light grey calcareous clay. Imperfect drainage.
- (*2) Challow Complex: Clayey topsoils overlying olive to grey, very stiff or plastic clay with yellow mottling, and occasional sandy or gravelly layers. Poor drainage.
- (*3) Grove Association: Moderately permeable fine loamy calcareous soils over chalky gravel affected by groundwater. Some fine loamy over clayey soils with slowly permeable subsoil and slight seasonal waterlogging. Some slowly permeable seasonally waterlogged clayey soils.

2.6 To the east of the site, and in an area close to the northwestern corner, better drained soils have been mapped. Topsoils are heavy clay loams over an upper subsoil of sandy clay or clay to a depth of 50/60 cm. The upper subsoils are sandier and better structured than those described in paragraph 2.5. Although often slightly gleyed, they are not slowly permeable. Lower subsoils comprise slowly permeable clay from a depth of 50/60 cm, giving rise to a wetness class of II. Topsoils are typically non-calcareous and very slightly stony, and subsoils are generally slightly stony and calcareous.

3.0 **AGRICULTURAL LAND CLASSIFICATION**

3.1 The definitions of the ALC grades are included in Appendix 1.

3.2 The site has been mapped as predominantly subgrade 3b, with two smaller areas of subgrade 3a. The table below shows the breakdown of the grades in hectares and in percentage terms for the survey area.

AGRICULTURAL LAND CLASSIFICATION

Grade	ha	%
3a	7.3	16
3b	35.0	77
Non-Agricultural	0.9	2
Urban	2.5	5
TOTAL	45.7	100

Grade 3a

3.3 The grade 3a land lies at the eastern edge of the site and in the northwest. Profiles areas describes in paragraph 2.6, and it is the combination of a moderate drainage limitation (wetness class II) and relatively heavy textured topsoils which restricts the land to subgrade 3a (good quality agricultural land).

Grade 3b

- 3.4 The majority of the land is assessed as subgrade 3b and is associated with the clayey soils described in paragraph 2.5. The combination of slow permeability at a relatively shallow depth (i.e. wetness class III and IV) and relatively heavy textured topsoils imposes a significant wetness and workability limitation which restricts the land to subgrade 3b (moderate quality agricultural land).

Non-Agricultural and Urban

- 3.5 There are two areas of scrub close to the railway line, and a pond close to the southern site boundary which have been classified as Non-Agricultural Land. There are also two roads, a railway line, and a house, all classified as Urban.

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JOHN PRINCE
ADAS Resource Planning Team
Cambridge

REFERENCES

GEOLOGICAL SURVEY OF GREAT BRITAIN, (1946). Drift Edition, Geology Sheet 238, 1:50,000 scale.

MAFF (1972). Agricultural Land Classification Map No 146. 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. Alnwick.

METEOROLOGICAL OFFICE (1989). Data extracted from the published agroclimatic dataset.

SOIL SURVEY OF ENGLAND AND WALES (1984). Soils and their use in Eastern England by C A Hodges, R G O Burton, W M Corbett, R Evans and R S Searle, Harpenden.

SOIL SURVEY OF ENGLAND AND WALES (Aylesbury), Sheet 238, 1961, 1:63,360 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.