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AGRICULTURAL LAND CLASSIFICATION
GREAT BROMLEY, ESSEX

1.0 BACKGROUND

1.1 A proposed 58ha Business Park near Great Bromley was surveyed by ADAS, on behalf of MAFF, in January 1995. Using the Agricultural Land Classification (ALC) system (MAFF 1988 - Revised Guidelines and Criteria for Grading the Quality of Agricultural Land) the quality of the agricultural land was assessed.

1.2 The survey was undertaken using a hand held dutch auger and soils were sampled at 100 m grid intersections to at least 120 cm depth or to an impenetrable layer if this occurred closer to the surface. This information was supplemented by data collected from 3 soil profile pits and some additional auger borings. Topsoil stone contents were assessed by riddling, with subsoil contents analysed in the laboratory.

1.3 On the provisional 1:63 360 scale ALC map, sheet 149, the site has been mapped as grade 1 in the north west part, grade 2 in the central area and grade 3 to the south. The current survey was undertaken to provide more detailed site specific information on land quality.

1.4 The northern part of the site was cultivated, with winter cereals beginning to emerge. The remainder of the site was under grass apart from two areas of woodland and an area of scrub encroached non-agricultural land. The grass areas around Boudge Hill Wood overlie an area of reinstated soils which are believed to result from the infilling of a borrow pit. To the west of the wood the pasture overlies undisturbed soils.

2.0 PHYSICAL FACTORS AFFECTING LAND QUALITY

Climate

2.1 Climate data for the site was extrapolated from data published in the Agricultural Climatic Dataset (Meteorological Office 1989). This indicates that for an average site altitude of 30 m AOD the annual average rainfall is 571 mm (22.5"). The field capacity days are 99, while the moisture deficits for wheat and potatoes are 127 mm and 124 mm respectively. These climatic characteristics do not impose any limitation on the ALC grade for the site.

Altitude and Relief

2.2 The site is gently undulating and falls in two directions to form two valley features towards the southeast and west. From Hall Road, which constitutes the northern boundary, at a height of 33 m AOD, the land very gently rises towards Boudge Hill Wood at a height of 35 m AOD. The land falls through the wood towards the Tenpenny Brook at a height of approximately 20 m AOD. Westwards the land rises from the brook to meet the A120 road embankment at an altitude of 25 m AOD. At the eastern/southeastern edge of the site land slopes from 30 m to 22 m AOD towards another brook. Neither gradient nor altitude impose any limitations on ALC grading.

Geology and Soils

2.3 The reconnaissance scale solid and drift edition geology maps for the area show the site to comprise glacial drift (sands and gravels) over London Clay deposits.

2.4 The reconnaissance 1:250 000 scale soils map (Sheet 4 Soil Survey, 1983)

shows the majority of the site to comprise soils of the Wix Association (*1), with a small area in the north west comprising soils of the Tendring Association (*2). The current detailed survey identified four main soil types.

2.5 Soils over the northern half of the site typically comprise very slightly stony, non calcareous sandy (silt) loam (or occasionally sandy clay loam) topsoils over slightly stony sandy (silt) loam or sandy clay loam upper subsoils. Below this moderately stony loamy sands and sands were encountered at varying depths (60/100 cm max.). The soils are free draining and were assessed as wetness class I. Sporadically, instead of stony soils clayey horizons are encountered at depth, at these locations a wetness class assessment of II is more common.

2.6 Restored soils occur around Boudge Hill Wood and relate to an area of an infilled borrow pit. Soils typically comprise very slightly stony non calcareous sandy clay loam (or occasionally heavy clay loam) topsoils over a thin slightly stony, sandy clay loam upper subsoil. The lower subsoil comprises compacted, moderately stony sandy clays with clinker, tarmac and pieces of wood giving the horizon a mixed appearance. The compacted layer has negligible rooting and constitutes a very slowly permeable horizon which results in a wetness class assessment of IV.

2.7 South west of Boudge Hill Wood heavier textured soils occur which typically comprise very slightly stony, non calcareous heavy clay loam topsoils. Upper subsoils are similar and overlie very slightly stony sandy clay loams or clays. Subsoil horizons are slowly permeable directly below the topsoils and profile wetness has been assessed as III.

(*1) Wix Association - deep permeable coarse loamy soils affected by groundwater. Associated with well drained sandy and coarse loamy soils and some slowly permeable seasonally waterlogged fine loamy over clayey soils giving patterned ground locally.

(*2) Tendring Association - deep, often stoneless coarse loamy soils. Some slowly permeable seasonally waterlogged coarse and fine loamy over clayey soils. Patterned ground locally.

2.8 West of Boudge Hill Wood gravelly soils occur which typically comprise slightly stony, non calcareous medium sandy loam topsoils over slightly stony, loamy medium sand upper subsoils. At shallow depths gravelly horizons in a matrix of medium sand occur.

3.0 AGRICULTURAL LAND CLASSIFICATION

3.1 The distribution of Agricultural Land Classification (ALC) grades is shown below in hectares and percentage terms.

Grade	ha	%
3a	28.6	49.3
3b	5.0	8.6
3b (disturbed land)	13.2	22.8
4	3.4	5.9
Urban	2.5	4.3
Non Agricultural	0.9	1.5
Woodland	4.3	7.4
Agric. Buildings	0.1	0.2
TOTAL	58.0	100.0

The definitions of the ALC grades are shown in Appendix 1.

Subgrade 3a

3.2 Land graded 3a occurs over the northern half of the site and comprises well or moderately well drained (wetness class I or II) coarse or fine loamy soils which become stonier or heavier with depth (see paragraph 2.5). The presence of heavy textures or stony, light textured horizons at depth limits the available water for crop growth. Consequently the land is restricted to subgrade 3a due to moderate droughtiness limitations. Sporadically, where profiles are less stony or where clay is not encountered better quality profiles graded 2 occur. However, they cover too small an area to be delineated separately at this survey scale.

Subgrade 3b

3.2 Land graded 3b occurs to the south west of Boudge Hill Wood and comprises poorly drained (i.e. wetness class III) fine loamy over clayey soils which are described in detail in paragraph 2.7. The relatively heavy textured topsoils combine with the wetness class of III to impose significant winter wetness and workability imperfections which limit the land to subgrade 3b (moderate quality agricultural land).

Subgrade 3b (disturbed land)

3.3 Reinstated land graded 3b (disturbed) occurs around Boudge Hill Wood where a borrow pit has been infilled. Profiles are very poorly drained (i.e. wetness class IV), compacted and stony with evidence of road rubble and lenses of other soils in the subsoils (see paragraph 2.6). The presence of very slowly permeable layers near to the surface results in waterlogging, particularly of the top horizons, during the winter months. This combines with the fine loamy topsoils to impose significant wetness and workability imperfections which restrict the land to subgrade 3b (disturbed).

Grade 4

3.4 West of Boudge Hill Wood land graded 4 occurs and comprises sandy soils which overlie sand and gravel at a shallow depth (see paragraph 2.8). The quantity of available water for crop growth is severely limited by the presence of gravel horizons at shallow depths in the profile. Consequently severe droughtiness restricts the land to grade 4 (poor quality agricultural land).

Urban

3.5 Embankments associated with the A120 road have been mapped as urban.

Woodland

3.6 Boudge Hill Wood and a strip of woodland along the A120 road have been mapped as woodland.

Non Agricultural

3.7 A small area of scrub on the banks of the Tenpenny Brook has been mapped as non-agricultural.

Agricultural Buildings

3.8 Agricultural buildings consisting of grain silos on a concrete apron and a two-storey brick store-house have been mapped.

January 1995

Resource Planning Team
ADAS Cambridge

REFERENCES

GEOLOGICAL SURVEY OF ENGLAND AND WALES. Sheet 16 Solid edition scale 1:253 440 1909. Drift edition scale 1:253 440 1907.

MAFF 1970. Agricultural Land Classification map, Sheet 149, Provisional scale 1:63 360.

MAFF 1988. Agricultural Land Classification of England and Wales (Revised Guidelines and Criteria for grading the quality of land). Alnwick.

METEOROLOGICAL OFFICE 1989. Published climatic data extracted from the agricultural data set, compiled by the Meteorological Office.

SOIL SURVEY OF ENGLAND AND WALES 1983. Sheet 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 (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.