AGRICULTURAL LAND CLASSIFICATION

THORPE HALL, THORPE-LE-SOKEN, ESSEX

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1.0 BACKGROUND

1.1 ADAS Statutory Group were requested, on behalf of MAFF, to assess the Agricultural Land Classification (ALC) of the site at Thorpe Hall in connection with an application for building development.

1.2 The ALC survey was undertaken in April 1996 using a hand held dutch auger. Soils were sampled at 100 m grid intersections to 120 cm depth or to an impenetrable layer if this occurred closer to the surface. This information was supplemented by data collected from 5 soil profile pits.

1.3 On the published Provisional 1:63 360 scale Agricultural Land Classification Map, sheet 150 (MAFF, 1972) the majority of the site is shown as grade 3 with areas of urban land around Thorpe Hall and the playing field in the north of the site. Since this map is of a reconnaissance nature designed primarily for strategic planning purposes, the current survey was undertaken to provide more detailed site specific information on land quality.

1.4 At the time of the survey the agricultural land at the site was not being cropped.

2.0 PHYSICAL FACTORS AFFECTING LAND QUALITY

Climate

2.1 Climatic criteria are considered when classifying land as they may have an overriding limitation in terms of the agricultural use of the land. The main parameters used in the assessment of the overall climatic limitation are average annual rainfall, as a measure of overall wetness, and accumulated temperature (day °C Jan-June) as a measure of the relative warmth of an area.

2.2 A detailed assessment of the prevailing climate for the site has been made by interpolating from data contained within the 5 km grid climatological datasets for ALC produced by the Meteorological Office (1989). The details are given in the table below.

Grid Reference	TM 183 216
Altitude (m, AOD)	20
Accumulated Temperature (Day °C), Jan-June	1445
Average Annual Rainfall (mm)	549
Moisture Deficit, Wheat (mm)	128
Moisture Deficit, Potatoes (mm)	126
Field Capacity Days	96
Overall Climatic Grade	1

2.3 These characteristics themselves impose no climatic limitation to land quality. However, climatic factors also interact with soil properties to influence soil wetness and droughtiness.

Altitude and Relief

2.4 The site lies on gently undulating land in a small valley feature formed by a tributary stream of Holland Brook. The land slopes downwards towards the stream in the south of the site and ranges in height from 25 m AOD in the northeast of the site adjacent to Abbey Street, to 5 m AOD in the southwest of the site. Neither gradient nor altitude constitute limitations to agricultural land quality.

Geology and Soils

2.5 The published 1:253 440 reconnaissance scale drift edition geology map, sheet 16 (Geological Survey of England and Wales, 1907) shows the majority of the site to comprise London Clay, with a small area of sand and gravel deposits in the centre of the site and a small area of glacial loam in the east.

2.6 On the published 1:25 000 scale soils map, sheet TM 12 (Soil Survey of England and Wales, 1980) the whole site is shown as comprising a complex

series of soils. Adjacent to the stream a thin strip of Thorpe Series soils is shown. In the south, on slightly higher ground, London Clay derived Windsor Series soils are mapped. Away from the valley bottom and above approximately 15 m AOD a mix of drift derived soils of the Bentley and Oakley Series are depicted. The current detailed survey identified two main soil types.

2.7 The majority of the site, in the north, west and south, comprises heavy textured soils. Profiles typically comprise medium clay loam, medium silty clay loam or heavy clay loam topsoils over heavy clay loam or occasionally clay upper subsoils which merge into clay at depth. These soils are imperfectly drained and generally slowly permeable immediately below the topsoil resulting in these profiles being assessed as wetness class III. Profiles are typically very slightly to slightly stony throughout.

2.8 An area of lighter textured soils occurs in the east and centre of the site, adjacent to Thorpe Hall. These soils typically comprise very slightly to slightly stony medium clay loam, sandy clay loam or occasionally medium sandy loam topsoils over similar textured or occasionally medium silty clay loam or loamy medium sand upper subsoils which are also very slightly to slightly stony. Lower subsoils are typically moderately stony and consist of either loamy medium sand or sandy clay loam, both of which become medium sand at depth. These soils are well to moderately well drained (wetness class I/II) and typically very slightly stony throughout.

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 overleaf provides a breakdown of the ALC grades in hectares and percentage terms.

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Grade	ha	%
3a	22.0	45
3b	18.4	38
Other land	8.6	17
TOTAL	49.0	100

Subgrade 3a

3.3 Land graded 3a occurs in the north, east and west of the site and comprises both soil types.

3.4 Firstly, in the north and west of the site, subgrade 3a land is associated with the fine loamy soils which have the lighter topsoil textures described in paragraph 2.7. These profiles are imperfectly drained (wetness class III) and this factor in combination with the medium clay loam and medium silty clay loam topsoils restricts the land to subgrade 3a (good quality agricultural land) due to wetness and workability limitations. In addition, this land is also restricted to subgrade 3a due to droughtiness limitations in this relatively low rainfall area.

3.5 Secondly, in the east of the site, land graded 3a occurs in conjunction with the less sandy variants of the soils described in paragraph 2.8. These soils are generally free draining (wetness class I/II), however, moisture balance calculations indicate that profiles suffer from moderate droughtiness limitations and this excludes the land from a higher grade.

Subgrade 3b

3.6 Subgrade 3b land occurs in the south and centre of the site, and also comprises both soil types.

3.7 In the south of the site land mapped as subgrade 3b is associated with the heavy textured soils described in paragraph 2.7. These soils are imperfectly drained (wetness class III) and this factor combines with the heavy clay loam

topsoil textures to limit land quality to subgrade 3b (moderate quality agricultural land) due to wetness and workability constraints.

3.8 In the centre of the site, north of Thorpe Hall, land graded 3b corresponds with the sandier variants of the soils described in paragraph 2.8. The light textures and slight to moderate stoniness of these profiles results in a reduced available water holding capacity of these soils. This causes a significant droughtiness limitation which excludes the land from a higher grade.

Other land

3.9 Thorpe Hall with its associated gardens and ponds in the centre of the site is mapped as other land. In addition in the north of the site areas of playing fields have also been mapped as other land.

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REFERENCES

GEOLOGICAL SURVEY OF ENGLAND AND WALES, 1907. Sheet 16, drift edition, scale 1:253 440.

MAFF, 1972. Agricultural Land Classification Map (Provisional), sheet 150, 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. Climatological Datasets for Agricultural Land Classification. Meteorological Office, Bracknell.

SOIL SURVEY OF ENGLAND AND WALES, 1980. Sheet TM 12, Soils in Essex IV, scale 1:25 000.

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.