

AGRICULTURAL LAND CLASSIFICATION

MALDON DISTRICT LOCAL PLAN

1.0 BACKGROUND

- 1.1 The three sites surveyed, covering 27.1 hectares form part of the Maldon District Local Plan. ADAS Statutory Group surveyed the sites on behalf of MAFF, in April 1994 to assess agricultural land quality. The sites are located on the immediate outskirts of the towns of Tolleshunt Knights, Burnham-on-Crouch and Southminster.
- 1.2 On the published Provisional 1:63,360 scale Agricultural Land Classification Map, sheet number 162 (MAFF, 1974) the areas are shown as grade 3. Since this map is of a reconnaissance nature designed primarily for strategic planning purposes, the current survey was undertaken to provide more detailed information on land quality for the survey areas.
- 1.3 All sites were surveyed at a density of 1 auger boring per hectare with soil pit information collected to obtain profile stone and structure.

2.0 PHYSICAL FACTORS AFFECTING LAND QUALITY

Climate

- 2.1 Site specific climate information for the three sites has been obtained by interpolating information contained in the 5 km grid dataset produced by the Meteorological Office (1989). This information is shown in a summary below:

	Tolleshunt Knights	Burnham-on-Crouch	Southminster
Annual Average			
Rainfall (mm)	554	549	547
Altitude (m)	40	20	25
Field Capacity Days	97	94	93
MD Wheat (mm)	125	127	125
MD Potatoes (mm)	122	125	123
Accumulated			
Temperature (°C)	1432	1462	1455

- 2.2 These climatic characteristics do not impose a limitation to the land quality at any of the sites.

Altitude and Relief

- 2.3 Neither altitude or gradient impose a limitation to the ALC grade at any of the sites. In general, they are gently undulating with gradients less than 4° in all cases. Maximum altitude is approximately 44 m, at the southern tip of the Tolleshunt Knights site.

Geology and Soils

- 2.4 Published 1:50,000 scale Solid and Drift edition geology map sheet 241, Chelmsford (Geological Survey of England and Wales, 1975), covers the Tolleshunt Knights and Southminster sites. Tolleshunt Knights is underlain by Eocene London Clay, while the Southminster site is mapped as London Clay with a small area of terrace gravels overlying the eastern one-third of the site.
- 2.5 The Burnham-on-Crouch site has been mapped on the 1:50,000 scale Solid and Drift Edition geology map sheets 258/259 (Southend and Foulness; Geology Survey of England and Wales, 1976). Most of the site comprises London Clay deposits, with smaller areas of terrace loam (river brickearth) to the east and sand and gravel along the western edge.
- 2.6 The Soil Survey of England and Wales have mapped the survey areas at a reconnaissance scale of 1:250,000 and map No. 4 indicates the occurrence of four soil associations within the survey areas (SSEW 1983). Tolleshunt Knights has been mapped as the Windsor Association (*1), and Burnham-on-Crouch as the Ratsborough Association (*2), with possibly a small area of Hamble 2

(*1) Windsor Association: Slowly permeable seasonally waterlogged clayey soils mostly with brown subsoils. Some fine loamy over clayey and fine silty over clayey soils.

Association (*3) on the eastern edge of the site. The soils at Southminster are shown to comprise mainly the Windsor Association over the western part of the site (*1), with smaller areas of the Hurst Association (*4) to the east and the Ratsborough Association (*2) to the northwest and southwest. During the current ADAS survey a more detailed inspection of the soils was carried out. Three main soil types were identified.

- 2.6.1 At Tolleshunt Knights and over the western two-thirds of the Southminster site soils are derived from the London Clay deposits and correspond to where the Windsor Association has been mapped. The soils typically have wetness imperfections, are non-calcareous, and comprise heavy clay loam, or, less frequently, clay topsoils over slowly permeable clay subsoils. Slowly permeable layers are encountered immediately below the topsoil and the wetness class has been assessed as III.
- 2.6.2 Siltier soils which are sometimes better drained occur at Burnham-on-Crouch; they have developed from the London Clay and terrace loam deposits (river brickearth), and have been mapped as the Ratsborough Association (SSEW, 1983). The current more detailed survey indicates that topsoils generally comprise heavy silty clay loam (or less frequently heavy clay loams) over heavy silty clay loam or heavy clay loam upper subsoils which are gleyed but not slowly permeable. Lower subsoils comprise slowly permeable silty clay, (or less frequently clays) from a depth of 45/60 cm. It should be noted that the site contains sporadic patches of disturbed ground where a water main was laid beneath the site two/three years ago. The site also contains pits filled with household rubbish. The last of these was infilled in the 1920's and material such as broken pottery is still visible on the topsoil surface. Thus there are occasional profiles which are impenetrable below 30/40 cm. These have been classified as subgrade 3b on the basis of the limitations caused by the disturbance.

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- (*2) Ratsborough Association: Fine silty and fine loamy over clayey soils with slowly permeable subsoils and slight seasonal waterlogging.
- (*3) Hamble 2 Association: Deep stoneless well drained silty soils and similar soils affected by groundwater; over gravel locally.
- (*4) Hurst Association: Coarse and fine loamy permeable soils mainly over gravel variably affected by groundwater.

2.6.3 Stony soils are found to the east of the Southminster site and correspond to where the Hurst Association (SSEW, 1983) has been mapped. Topsoils typically comprise slightly stony medium clay loams, or occasionally sandy clay loams over upper subsoils of medium clay loams or sandy clay loams which often contain lenses of medium sand. Upper subsoil flint content is variable, ranging from slightly stony to very stony. Lower subsoils generally comprise sandy clay loam 'hoggin' starting from 45/75 cm which have a flint content of approximately 50%.

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 below shows the ALC grades for each of the survey sites.

	Total Area (ha)	Grades	ha	%
Tolleshunt Knights	1.8	3b	1.8	100
Burnham-on-Crouch	7.6	3b	7.6	100
Southminster	17.7	3b	16.2	91.5
		Non-Agricultural	1.5	8.5

3.3 Tolleshunt Knights (1.8 hectares)

3.3 The site has been mapped as 3b and comprises fine loamy/clayey soils derived from London Clay, which are fully described in paragraph 2.6.1. Profiles are slowly permeable from a shallow depth (wetness class III) and it is this factor in combination with the relatively heavy topsoil textures which imposes a significant wetness and workability limitation. In consequence land quality is restricted to subgrade 3b (moderate quality agricultural land).

Burnham-on-Crouch (7.6 hectares)

3.4 The whole site comprises the silty soils described in paragraph 2.6.2 and has been assessed as 3b. Relatively heavy textured topsoils and the presence of slowly permeable horizons in the lower subsoils combine to impose a significant limitation on the wetness and workability of the land, thus restricting the land to subgrade

3b. Wetness class has been assessed as predominantly III, and although occasional profiles with a wetness class of II occur they are not of sufficient extent to permit a separate delineation of better quality land. In addition, occasional profiles are classified as subgrade 3b on the basis of the limitations caused by the disturbance.

Southminster (17.7 hectares)

- 3.5 The majority of the site is graded 3b* (16.2 hectares). The western two-thirds of the site comprises fine loamy/clay soils derived from London Clay, which are fully described in paragraph 2.6.1. Profiles are slowly permeable from a shallow depth (i.e. wetness class III) and it is this factor in combination with the relatively heavy topsoil textures which imposes a significant wetness and workability limitation, thus restricting the ALC grade to subgrade 3b.
- 3.6 The eastern third of the site comprises the stony soils which are fully described in paragraph 2.6.3. Profiles are graded 3b, with the relatively coarse textures and high stone content imposing a significant limitation on the potential for water retention in the soil. As a result droughtiness restricts this land to subgrade 3b (moderate quality agricultural land). Although occasional profiles are relatively less stony and are assessed as subgrade 3a on the basis of droughtiness, they cover too small an area to warrant separate delineation.

* Some of this land has been abandoned and comprises rough grassland. However it was felt appropriate to assign a ALC grade to the area.

3.7 Non-Agricultural (1.5 hectares). There is an area of scrub/woodland to the east of the site and an area of abandoned allotments (?) just south of the West House Estate. Both these areas have been classified as non-agricultural land.

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REFERENCES

GEOLOGICAL SURVEY OF GREAT BRITAIN (ENGLAND AND WALES) 1975.
Chelmsford, Solid and Drift Edition, scale 1:50,000.

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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. Data extracted from the published agroclimatic
dataset.

SOIL SURVEY OF ENGLAND AND WALES 1983. Soils of Eastern England, Sheet 4,
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 (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.