

AGRICULTURAL LAND CLASSIFICATION

RUSHCLIFFE LOCAL PLAN, SITES AT EAST LEAKE AND BINGHAM

SEMI-DETAILED SURVEY

1.0. BACKGROUND

- 1.1 The two sites are being considered for development in the context of the Rushcliffe Local Plan. The Cambridge based Resource Planning Team carried out a semi-detailed Agricultural Land Classification survey of the sites in September and October 1992 at an auger density of approximately one per two hectares. These borings were supplemented by 3 (three) soil inspection pits to assess subsoil conditions. The semi-detailed nature of this survey means that grade boundaries may be subject to slight revision following a detailed survey.
- 1.2 The published Agricultural Land Classification Map, sheet No. 121 (MAFF, 1971) shows the northern half of the site at **East Leake** to be grade 2 and the southern half to be grade 4.
- 1.3 Sheet No. 122 (MAFF, 1972) maps the north western half of the site at **Bingham** as grade 2 and the south eastern half as grade 3. The current survey was undertaken to provide a more detailed representation of the agricultural land quality.

2.0 PHYSICAL FACTORS AFFECTING LAND QUALITY

Climate

- 2.1 Climate data for both sites was extrapolated from data in the published Agricultural Climatic Dataset (Meteorological Office 1989). This indicates that the **East Leake** site has an average annual rainfall of 599 mm (23.6"). This data also indicates that the field capacity days are 125 and moisture deficits are 110 mm for wheat and 102 mm for potatoes.
- 2.2 Similarly the data indicates the average annual rainfall for the site at **Bingham** is 569 mm (22.4"), the field capacity days are 115 and the moisture deficits are 119 mm for wheat and 114 mm for potatoes. These climatic characteristics do not impose any climatic limitation on the ALC grade of the survey sites.

Altitude and Relief

- 2.3 The site at **East Leake**, an area of 32.9 ha is gently undulating and lies at approximately 47 m AOD.
- 2.4 The site at **Bingham**, an area of 55 ha is a very gentle south east facing slope with a maximum altitude of 27 m AOD and minimum of 22 m AOD. Neither gradient nor altitude impose a limitation to the ALC grades on these sites.

Geology and Soils

- 2.5 The published 1:50,000 scale geology map sheet 142, (Geological Survey of Great Britain, 1976) shows the extreme south of the **East Leake** site to be Pleistocene and Recent river gravels and clay. Immediately to the north of this is a band of alluvium which follows the stream. The northern half of the site is mapped as Triassic Keuper Marl with a small outcrop of glacial sand and gravel in the north west corner.
- 2.6 The site at **Bingham** is mapped on the published 1:63,360 scale geology map (sheet 126, Geological Survey of Great Britain 1959). This map indicates that the north western half of the site is Triassic Keuper Marl and the south eastern half is alluvium.
- 2.7 The Soil Survey of England and Wales mapped the soils of both sites in 1983 at a reconnaissance scale of 1:250,000. This map indicates that the site at **East Leake** comprises Dunnington Heath Association* in the northern half and Fladbury 2 Association** in the south.

* Dunnington Heath Association - Reddish coarse and fine loamy over clayey soils with slowly permeable subsoils and slight seasonal waterlogging.

** Fladbury 2 Association - Stoneless clayey soils variably affected by groundwater, some with sandy subsoils, some similar fine loamy soils.

- 2.8 The same map indicates that the site at **Bingham** comprises Fladbury 1 Association+ soils with a small area of Wimble 3 Association++ soils in the northern corner. During the recent field survey a single variable soil type was identified.
- 2.9 The soils at **East Leake** comprise non calcareous very slightly stony heavy clay loam and heavy silty clay loam (occasionally clay) topsoils over sandy clay and clay subsoils which are moderately stony (about 12% rounded flints) below 50 cm.
- 2.10 Field survey indicates that soils at **Bingham** are variable. Over the majority of the site non-calcareous heavy clay loam or clay topsoils predominate. Exceptions occur firstly in the northern corner where topsoils comprise lighter textured non-calcareous sandy clay loams and secondly in a small area in the east and south eastern parts of the site where calcareous clay and clay loam topsoils occur. In the latter areas subsoils may comprise very calcareous silty loam or clay textures. Elsewhere subsoils comprise non-calcareous clay or sandy clay with a variably thin organic loam horizon between 70-80 cm.

3.0 AGRICULTURAL LAND CLASSIFICATION

- 3.1 The proportion of ALC grades are shown in the table overleaf. The definition of the Agricultural Land Classification grades are included in Appendix 1.

+ Fladbury 1 Association - Stoneless clayey soils, in places calcareous variably affected by groundwater. Flat land risk of flooding.

++ Wimble 3 Association - Reddish fine loamy or fine silty over clayey soils with slowly permeable subsoils and slightly seasonal waterlogging. Some similar clayey soils on brows. Slowly permeable seasonally waterlogged fine loamy and fine silty over clayey soils on lower slopes.

Agricultural Land Classification

Site at East Leake Site at Bingham

Grade	ha	%	ha	%
3a	9.6	34.2	5.5	10
3b	23.3	65.8	48.3	87.8
Urban/Non Ag.	-	-	1.2	2.2
Total	<u>32.9</u>	<u>100</u>	<u>55.0</u>	<u>100</u>

Subgrade 3a

- 3.3 The subgrade 3a land at **East Leake** corresponds to the slightly better drained non-calcareous soils. Subsoils are gleyed and slowly permeable from 50 cm, consequently soil drainage is assessed at wetness class II, grade 3a.
- 3.4 The subgrade 3a land at **Bingham** corresponds to the lighter textured non-calcareous sandy clay loam soils in the northern part of the site. Subsoils are gleyed and slowly permeable from within 40 cm consequently these soils are assessed as wetness class III, which combined with the topsoil textures imposes a moderate limitation on the workability of the land (grade 3a).

Subgrade 3b

- 3.5 This occurs over a large proportion of the land at **Bingham** and **East Leake** where heavy non-calcareous clayey soils predominate. These soils are slowly permeable immediately below the topsoil (wetness class III) and this, combined with the heavy topsoil texture imposes a moderately severe limitation on workability which restricts the land to 3b.

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REFERENCES

GEOLOGICAL SURVEY OF ENGLAND AND WALES (1959). Solid and Drift edition. Sheet 126 Nottingham 1:63,360 scale.

GEOLOGICAL SURVEY OF ENGLAND AND WALES (1976). Drift edition. Sheet 142 Melton Mowbray 1:50,000 scale.

MAFF (1971). Agricultural Land Classification Map sheet 121 Provisional 1:63,360.

MAFF (1972). Agricultural Land Classification Map sheet 122 Provisional 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 agroclimatic dataset, compiled by the Meteorological Office.

SOIL SURVEY OF ENGLAND AND WALES (1983). Sheet 4 Soils of Eastern England 1:250,000 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 yields 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 winter 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.