FOR DIVISIONAL USE ONLY

AGRICULTURAL LAND CLASSIFICATION

LAND AT RACKHEATH (SITE 2)

1. BACKGROUND

1.1 An "Agricultural Land Classification (ALC) of the Norwich Area" was carried out by MAFF in 1983 to provide a general guide to land quality for local planning purposes. The current survey was undertaken in October 1989 to provide more detailed ALC information for 18.0 ha of land at Rackheath (site 2).

1.2 The 1983 survey identifies grade 3a land in the western half of the site and grade 2 land in the eastern half. An area of non-agricultural land identified as a "Gravel Hole" is mapped in the centre of the site.

1.3 19 soil inspections were made over the site on a 100m grid basis giving an intensity of inspection of approximately 1 per ha. Soils were sampled to a depth of 120 cms using a hand held Dutch soil auger, and data obtained were supplemented by information from a soil profile pit.

1.4 At the time of survey the land was under horticultural use with crops of raspberries and strawberries.

2. PHYSICAL FACTORS AFFECTING LAND QUALITY

Climate

2.1 Rackheath lies in an area of relatively low rainfall by national standards, with an estimated average annual rainfall for the site of 644 mm (Met Office, 1989). This is relatively evenly distributed throughout the year with a slight spring minimum in the months of February to May (MAFF, 1984). This drier period aids spring cultivations, but may also lead to drought stress due to the

relatively low available water capacity of the coarse loamy soils in this area.

2.2 The Rackheath area has an estimated growing season of 248 days from late March to late November (MAFF 1984). Meteorological Office data interpolated for the site, indicate that soils are at field capacity for approximately 125 days and soil moisture deficits are estimated as 116 mm for wheat and 111 mm for potatoes.

2.3 The site is neither particularly exposed nor frost prone.

2.4 Climate itself is not limiting to agricultural land quality. However, the interaction of climate with soil texture in this relatively dry area results in the soils at this site being susceptible to drought.

Altitude and Relief

2.5 The site is gently sloping and lies at an altitude of approximately 30m AOD in the north west, falling to approximately 28m in the south east.

2.6 Altitude and gradient are not limiting to agricultural land quality.

3. GEOLOGY AND SOILS

3.1 No detailed geology map is available for this area. However, the published 1:250,000 solid geology map "East Anglia" - sheet 52°N-00°W (British Geol. Surv., 1985) shows the whole area to be underlain by Upper Chalk (Cretaceous).

3.2 The site lies immediately to the east of the 1:50,000 series solid and drift edition geology map, Sheet 161 (Geol. Surv. of Great Britain, 1975). This map shows the drift geology of the adjoining area to be glacial sands and gravels (Pleistocene and Recent). The current survey confirmed the continuation of these deposits which are overlain by aeolian drift.

3.3 The 1:250,000 soils map "Soils of Eastern England" shows the Wick 2 Association* to be present over the whole site.

3.4 The current survey confirmed the presence of freely-drained coarse loamy soils and identified one main soil type.

3.4.1 The majority of profiles comprise very slightly stony sandy silt loam (occasionally sandy loam) topsoils overlying very slightly stony sandy silt loam or more commonly sandy loam upper and lower subsoils extending to between 45 cms and 120 cms (typically 70/80 cms depth). In the extreme north of the site (south west of Cherry Tree Farm), these sandy loam upper and lower subsoils are moderately stony. Below 70/80 cms, lower subsoils typically comprise loamy sand and occasionally sand horizons before moderately stony sandy clay, sandy clay loam or sandy loam is encountered at 90/100 cms. One profile immediately to the south of the area of non-agricultural land appears to have been disturbed. At this point and in the immediate vicinity, topsoil stone is assessed as 6-10% (slightly stony). The sandy loam topsoil overlies loamy sand with sand below 80 cms.

3.5 The soils found are freely-drained and the drainage status of the site is assessed as Wetness Class I. This is not limiting to agricultural land quality.

3.6 The available water holding capacity of the soil type found is low due to the coarse loamy textures identified. This is further reduced by the presence of stones in the subsoil. Low available water capacity coupled with the low annual average rainfall of the Rackheath area, results in the soils being susceptible to drought. This droughtiness limitation constitutes the chief limitation to agricultural land quality and ALC grade is determined by the magnitude of this limitation.

* Wick 2 Association: Deep well-drained coarse loamy soils, often stoneless. Some similar soils with slowly permeable subsoils and slight seasonal waterlogging.

4. AGRICULTURAL LAND CLASSIFICATION

4.1 The site has been graded using the Revised Guidelines and criteria for grading the quality of agricultural land (MAFF, 1988). Under this system, land is graded according to the degree to which physical or chemical characteristics impose long term limitations to agricultural use.

4.2 The availability of irrigation water has been taken into account in the grading of this site. Although a supply of water is available for irrigation, it is not deemed sufficient to merit an upgrading of the land.

4.3 Definitions of the Agricultural Land Classification grades are included in Appendix 1.

4.4 The table below shows the breakdown of ALC grades for the land at Rackheath (Site 2).

Grade	ha	%
2	14.8	82.4
3a	2.5	13.9
3b	0.5	2.7
Non agricultural	0.2	1.0
Total	18.0	100

5. GRADE 2

The majority of the site has been graded 2.

5.1 Land of this quality is associated with the siltier or less stony variants of the soils described in paragraph 3.4.1. The chief constraint to agricultural land quality is a minor droughtiness limitation, which results in lower or more variable yields and reduced flexibility of cropping than land graded 1, hence the land is limited to grade 2.

6. SUBGRADE 3a

An area of land graded subgrade 3a occurs in the west of the site, south east of Hall Farm.

6.1 Land of this quality is associated with coarser textured variants of the soils described in paragraph 3.4.1 where topsoils are less water retentive and the moderately stony sandy clay/sandy clay loam horizon occurs at a shallower depth within the profile (60-80 cms) or where sandy horizons occur at shallower depths within the profile (45 cms). These factors combine to produce a moderate droughtiness limitation, limiting the land to subgrade 3a.

7. SUBGRADE 3b

A small area of land graded 3b is identified immediately to the south of the non-agricultural area.

7.1 Land graded 3b is associated with the slightly disturbed, sandy profile found in the vicinity of the "Gravel Hole" identified in MAFF's 1983 survey. The sandy horizons beneath the topsoil have a limited available water holding capacity causing a significant droughtiness limitation which limits the land to subgrade 3b.

8. NON-AGRICULTURAL

A small area of scrub/thicket has been mapped as non-agricultural.

Resource Planning Group November 1989
Cambridge RO

REFERENCES

MAFF, 1972 : Agricultural Land Classification Map No 126, Scale 1: 63 360.

METEOROLOGICAL OFFICE, 1989: Climatological Data for Agricultural Classification.

MAFF, 1984 : The Agricultural Climate of England and Wales, Reference Book 435, HMSO, London.

GEOLOGICAL SURVEY OF ENGLAND AND WALES, 1975 : Solid and Drift Edition Geology Map No 161 "Norwich" Scale 1: 50 000.

SOIL SURVEY OF ENGLAND AND WALES, 1984 : Soils of Eastern England - Sheet No 4, Scale 1:250 000.

MAFF, 1988 : Agricultural Land Classification of England and Wales. (Revised guidelines and criteria for grading the quality of agricultural land.) Alnwick.

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 includes 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 root 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 will affect the choice of crops, timing and type of cultivation, harvesting or the level of yield. When more demanding crops and 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 level of yields. It is mainly suited to grass with occasional arable crops (eg cereals and forage crops) the yields 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 crop.

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.