

FOR DIVISIONAL USE ONLY

AGRICULTURAL LAND CLASSIFICATION

LAND AT RACKHEATH (SITE 3)

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 16.1 ha of land at Rackheath (site 3).

1.2 The 1983 survey identifies the majority of the land at this site as subgrade 3b, with an area of subgrade 3a around the primary school.

1.3 At the time of survey the land was in arable production with potatoes being harvested and winter cereals subsequently sown.

1.4 13 soil inspections were made 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.

2. PHYSICAL FACTORS AFFECTING LAND QUALITY

2.1 Rackheath lies in an area of relatively low rainfall by national standards, with an estimated average annual rainfall for the site of 648 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 soil variants at this site being susceptible to drought.

Altitude and Relief

- 2.5 The site is gently sloping and lies at an altitude of approximately 28m AOD in the north, rising to approximately 33m in the centre, and falling again to approximately 30m in the south.
- 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.

- 3.3 The 1:250,000 soils map "Soils of Eastern England" shows the Newport 4 Association* to be present over the whole site.
- 3.4 The current survey confirmed the presence of well-drained sandy soils and identified two main soil types.
- 3.4.1 Firstly, in the central part of the site are soils which typically comprise slightly stony sandy loam (occasionally loamy sand) topsoils with loamy sand (occasionally medium sand) upper subsoils over medium sand at an average depth of 50 cms.
- 3.4.2 Secondly, in the lower lying areas are soils with slightly stony sandy loam topsoils overlying similarly textured upper subsoils with loamy sand and sand below 50-80 cms.
- 3.5 The drainage status of both soil types is wetness class I which is not limiting to agricultural land quality.
- 3.6 The available water holding capacity of the coarse loamy and sandy textures found is low, and this, together with the low average annual rainfall of the Rackheath area results in a susceptibility to drought.

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 Definitions of the Agricultural Land Classification grades are set out in Appendix 1.

* Newport 4 Association: Deep well-drained sandy soils. Some very acid soils with bleached subsurface horizons especially under heath or in woodland.

4.3 The table below shows the breakdown of ALC grades for the land at Rackheath site 3.

Grade	ha	%
3a	5.3	32.9
3b	6.6	40.8
Non agricultural	1.4	8.6
Urban	2.8	17.7
Total	16.1	100

5. SUBGRADE 3a

Land of this quality is found in the north and south of the site associated with the lower lying ground.

5.1 Grade 3a land is associated with the soils described in paragraph 3.4.2. These soils hold only moderate amounts of plant available water so that droughtiness is the chief limitation to agricultural land quality, and the degree of this constraint limits the land to subgrade 3a. Soils of the type described in paragraphs 3.4.1 have also been graded 3a where greater depths of sandy loam topsoils and loamy sand upper subsoils occur before sand is encountered.

6. SUBGRADE 3b

Land of this quality is found in the central part of the site where a ridge of slightly higher land runs across the area in an east-west direction.

6.1 This land is associated with the soils described in paragraph 3.4.1. These soils hold lower reserves of plant available water than the soils described in paragraph 3.4.2. Drought risk is consequently increased, imposing a significant limitation to the agricultural potential of this land. The land is thus graded 3b.

7 NON-AGRICULTURAL

Shelterbelts in the east and south of the site have been mapped as non-agricultural.

A school in the west and recent industrial development in the south have been mapped as urban.

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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 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 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.