

AGRICULTURAL LAND CLASSIFICATION LAND AT MANTON, WORKSOP, NOTTINGHAMSHIRE

1.0 INTRODUCTION

- 1.1 An Agricultural Land Classification (ALC) survey was carried out over approximately 41 ha of land at Manton, Worksop, Nottinghamshire in connection with a planning application for a proposed office development.
- 1.2 The site is located approximately 2 km to the east of Worksop on the northern side of the A57 road and is bounded to the east by a strip of woodland beyond which is agricultural land. To the north is a railway line, whilst to the east is a small wood and further agricultural land.
- 1.3 The site comprises a single block of land which is farmed as two fields although there is no fence. At the time of survey the northern end of the site was under winter wheat and the southern under maincrop potatoes.
- 1.4 The whole farm is supplied by an irrigation ring main and the application site is supplied by 2 hydrants, one in the middle of each field. The irrigation mains are supplied by 4 boreholes and there is currently a licence to extract 110 million gallons. The total farm area is 950 acres and the whole area is in command. There is therefore sufficient water to supply the entire farm with 130 mm of water.
- 1.5 The cropping of the farm is under a six year rotation of potatoes, cereals, roots etc and the following crops are grown:

- potatoes
- sugar beet
- carrots
- cereals
- linseed

Irrigation is supplied to all crops with cereals being irrigated early in the season before the potatoes receive water. Irrigation has therefore been taken into consideration when grading the land in accordance with the guidelines contained in the Agricultural Land Classification of England and Wales (MAFF, 1988).

- 1.6 A total of 42 observations were made using a spade and Dutch auger to a depth of 1.2 m unless prevented by impenetrable layers. In addition a soil pit was dug to help assess subsoils conditions in greater detail.
- 1.7 The whole area is shown as grade 3 on the 1:63,360 scale provisional ALC map (MAFF 1969).

2.0 PHYSICAL FACTORS AFFECTING LAND QUALITY

Climate

- 2.1 Climatic information for the site has been interpolated from the 5 km grid dataset produced by the Meteorological Office (Met Office, 1989). The average annual rainfall for the site is 627 mm and the number of days that the soils are likely to be at field capacity in this area is 127 days.
- 2.2 The accumulated temperature for the site is approximately 1378 degrees Celsius. This parameter indicates the cumulative build up of warmth available for crop growth and in conjunction with rainfall has an influence on the development of soil moisture deficits and susceptibility to drought. The moisture deficits for wheat and potatoes are 107 mm and 98 mm respectively.
- 2.3 Although there is no climatic limitation *per se* to the agricultural use of the site, there may be restrictions caused by the interaction between climate and soils, giving rise to droughtiness during the drier periods of the year.

Relief

- 2.4 The site is gently undulating with the southern end of the site being more hummocky than the north. The maximum gradient on the site is approximately 5° on the mounds at the southern end. A shallow valley runs from the centre of the site to the north.
- 2.5 The altitude of the site ranges from approximately 56 m in the south to approximately 40 m in the valley bottom at the northern end of the site.

Geology and Soils

- 2.5 The geology of the area has been mapped by the Geological Survey (Geol. Surv, 1967) and is shown to comprise Permo-Triassic Bunter Pebble Beds.
- 2.6 The whole site comprises similar soils, which are mapped by the Soil Survey of England and Wales (Soil Surv, 1984) as Cuckney 1 Association, which are described as sandy, well drained soils over Triassic sandstone.
- 2.7 The current survey revealed that the majority of the site comprises light textured sandy soils. A typical profile has a loamy medium sand topsoil over a strong brown loamy medium sand or medium sand upper subsoil which becomes a reddish brown medium sand below 50-60 cm depth. In many profiles, especially towards the southern end, very soft red sandstone was encountered below about 90 cm depth.
- 2.8 In the shallow valley on the northern half of the site, colluvial soils were found which have a medium sandy loam topsoil and upper subsoil to approximately 50 cm depth, over medium sand. At the extreme southern end of the site on the highest land, a small area of very stony soils have been mapped. The topsoil stone content was measured using a 2 cm riddle and stone contents ranging from 20 to 40% of small and medium rounded, quartzite Bunter pebbles were found.

3.0 AGRICULTURAL LAND CLASSIFICATION

- 3.1 The site has been classified using the guidelines contained in the Agricultural Land Classification of England and Wales (MAFF, 1988). The major limitation associated with this site is droughtiness, due to the combination of the sandy soils and relatively low rainfall of the area. The presence of an adequate irrigation supply has been taken into consideration when grading the site. A breakdown of the grades found is given below:

Grade	Area	%
2	3.9	9
3a	36.4	89
4	0.7	2
TOTAL	<u>41.1</u>	<u>100</u>

Grade 2

- 3.2 The colluvial soils found in the shallow valley referred to in para 2.8 above have been mapped as this grade. This land is slightly to moderately droughty but, because the adequate irrigation supplies referred to above, it has been graded 2.

Grade 3a

- 3.3 The very sandy soils that occupy the majority of the site, which are described in detail in para 2.7 above, have been restricted to this grade. This land is moderately droughty, but with the presence of irrigation is graded 3a.

Grade 4

- 3.4 The small area of very stony soils referred to in para 2.8 above has been mapped as grade 4. The topsoil stone content in these soils ranges from 20% up to 40% with the majority being in the 2-6 cm size range. This factor constitutes the chief limitation to land quality.

REFERENCES

- GEOLOGICAL SURVEY OF GREAT BRITAIN (1975). Solid and Drift Edition
Geology Map Sheet No. 101, 1:50,000 scale.
- MAFF (1969). Agricultural Land Classification Map (provisional) Sheet No. 103,
1:63,360 scale.
- MAFF (1988). Agricultural Land Classification of England and Wales - Revised
Guidelines and Criteria for grading the quality of agricultural land.
- METEOROLOGICAL OFFICE (1989). Climatological Data for Agricultural Land
Classification.
- SOIL SURVEY OF ENGLAND AND WALES (1984). Soils and their Use in Eastern
England.