

AGRICULTURAL LAND CLASSIFICATION INCORPORATING SOIL PHYSICAL CHARACTERISTICS,
WARREN VILLAS QUARRY, NEAR BIGGLESWADE, BEDS

1. BACKGROUND

1.1 The site, an area of 10.7 hectares, is the subject of an application, by Ready Mix Concrete, for the extraction of sand and gravel at Manor Farm, Biggleswade, Beds. Rural Planning Services surveyed the site in September 1989 when soil conditions were extremely dry. MAFF surveyed the site in December 1990 when soil working conditions were ideal. As a result the depths of soil over gravel estimated by RPS were shallower than the actual depths measured by MAFF. Consequently the MAFF grading of the site is better than that of RPS, however the consultant accepts that soils may be deeper than his estimates.

1.2 The following report details the Agricultural Land Classification and Soil Physical Characteristics of the site. The survey was based on information collected from 13 auger borings and one soil pit.

2. SITE PHYSICAL CHARACTERISTICS

2.1 Climate

Climate data for the site was obtained from the published agricultural climatic dataset (Met Office, 1989). This indicates that for the site's mid range altitude of 25m AOD the annual average rainfall is 546mm (21.5"). This data also indicates that the field capacity days are 93 and moisture deficits are 121mm for wheat and 117mm for potatoes. The climatic characteristics do not impose any climatic limitation on the ALC grading of the survey site.

2.2 Altitude and Relief

The survey area lies on gently sloping land between the A1 road and the river Ivel. The land falls gently north eastwards from 26m AOD adjacent to the A1 road to 24m AOD at the edge of the River Ivel

floodplain. Gradient and altitude do not constitute limitations to the ALC grade.

3. AGRICULTURAL LAND CLASSIFICATION

3.1 The definitions of the Agricultural Land Classification (ALC) grades are included in Appendix 2.

3.2 The table below shows the breakdown of the ALC grades for the survey area.

AGRICULTURAL LAND CLASSIFICATION

Grade	ha	%
2	6	56
3a	4.7	44
TOTAL	<u>10.7</u>	<u>100</u>

3.3 Irrigation

The site is regularly irrigated which significantly enhances the potential of the gravelly soils which characterise the site. The ALC grade assigned to the survey area takes into account the reduction in drought risk afforded by irrigation.

3.4 Grade 2

The majority of the site has been graded 2. The soils comprise freely draining coarse loams of moderate depth over gravelly material at 60/65cms⁺. The light textures and the presence of profile stone impose a moderate limitation on the potential for these soils to retain water in this low rainfall area. With the reduction in drought risk afforded by irrigation these soils are slightly droughty. This minor droughtiness limitation combines with slight topsoil stone to restrict the land to grade 2 (very good quality agricultural land).

3.5 Subgrade 3a

Through the centre and adjacent to the western edge of the site total topsoil stone ranges from 15-18% (of this stones greater than 2cm in size range from 11-13%). These stony topsoils have the potential to damage the cultivation and harvesting machinery. Consequently the costs of production are likely to be increased and the flexibility in the use of the land slightly reduced. Profiles are moderately droughty and although irrigation could alleviate this droughtiness imperfection slight topsoil stone (greater than 2cm in size) restricts this land to Subgrade 3a (good quality agricultural land).

4. SOIL PHYSICAL CHARACTERISTICS

4.1 Geology

The published 1:50,000 Drift edition geology map sheet 204 (Geological Survey of England and Wales 1976) shows the survey area to comprise first and second terrace river gravel deposits.

4.2 Soils (Refer to Appendix 1)

During this survey one main soil type was identified.

- 4.2.1 The soils on site typically comprise slightly stony medium sandy loam topsoils over similar upper subsoils. Below 45cm profiles tend to become more stony variably 15-18% total stone before merging into gravelly material 60/65cms⁺. The gravelly material comprises 50% small and very small flints in a medium sandy loam matrix.

DESCRIPTION OF SOIL PHYSICAL CHARACTERISTICS

Topsoil texture : medium sandy loam
stone : 7 - 18% small and medium flints
depth : 35cm

Upper
Subsoil texture : medium sandy loam
stone : 7 - 8% small and medium flints
structure : moderately developed coarse subangular
blocky
consistence : friable
depth : 45cm

Lower
Subsoil texture : medium sandy loam
stone : 15 - 18% small and medium flints
structure : weakly developed medium subangular blocky
consistence : friable
depth : 60/65cm

Gravelly Material : small and very small flints in a medium
sandy loam matrix

Additional Information

Calcium Carbonate : profiles are non calcareous
Rooting : rooting is evident throughout the profiles
Drainage Status : freely draining

Appendix 2

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 more 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 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.

References

GEOLOGICAL SURVEY OF ENGLAND AND WALES 1976. Solid and Drift edition
geology map sheet 204. Scale 1:50,000.

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

METEOROLOGICAL OFFICE 1989. Climate data extracted from the published
Agricultural Climatic Dataset.