Cambs 45/92

AGRICULTURAL LAND CLASSIFICATION
NEWARK AND SHERWOOD DISTRICT PLAN - BILSTHORPE AND NEW CLIPSTONE

1.0 INTRODUCTION

1.1 The two sites at Clipstone (site A) and at Bilsthorpe (site B) are being considered for inclusion in the Newark and Sherwood District plan. The Cambridge based Resource Planning Team carried out a detailed Agricultural Land Classification survey of the sites in August 1992 at an auger boring density of approximately 1 boring per hectare. These borings were supplemented by soil inspection pits in order to assess subsoil conditions.

1.2. On the published Agricultural Land Classification Map sheet No 112 (MAFF 1970) sites A and B are both mapped as grade 3 land. The current survey was undertaken to provide a more detailed representation of the agricultural land quality.

2.0 PHYSICAL FACTORS AFFECTING LAND QUALITY FOR SITE A

Climate

2.1 Climate data for the site was extrapolated from data in the published Agricultural Climatic Dataset (Meteorological Office 1989). This indicates that the site average annual rainfall for site A is 681 mm (26.8"). This data also indicates that the field capacity days are 145 and moisture deficits are 99 mm for wheat and 88 mm for potatoes. These climatic characteristics do not impose any climatic limitation on the ALC grade of the survey site.

Altitude and Relief

2.2 The survey area is a gentle east facing slope with a maximum altitude of 95 m AOD and a minimum altitude of 80 m AOD. Neither gradient nor altitude impose a limitation to the ALC grade.

Geology and Soil

2.3 The published 1:63,630 scale Solid and Drift edition Geology map, sheet 113 (Geological Survey of England and Wales 1966) shows the whole of the site to comprise Permo-Triassic Bunter Pebble Beds.

2.4 The Soil Survey of England and Wales mapped the soils of the area in 1983, at a reconnaissance scale of 1:250,000. This map indicates that soils comprise Cuckney 1 Association* which are derived from the pebble beds. During the recent field survey a single sandy soil type was identified.

2.5 The soils comprise non-calcareous very slightly stony sandy loam topsoils over sandy loam and loamy sand subsoils. Subsoils over most of the site are moderately stony (approximately 30% pebbles) below 50 cm depth. However, subsoil on the eastern and south western edges of the site are slightly stony (10-15% pebbles).

3.0 AGRICULTURAL LAND CLASSIFICATION

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

AGRICULTURAL LAND CLASSIFICATION

Grade	ha	%
2	7.5	30
3a	17.3	70
TOTAL	24.8	100

Grade 2

3.2 There are two areas of grade 2 land which correspond to the deep sandy loam profiles. Soils are slightly stony in the lower subsoils, this has a minor limiting

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*Cuckney 1 Association. Well drained sandy and coarse loamy soils often over soft sandstone.

effect on the water holding capacity. As a result there is a slight droughtiness limitation to the ALC grade.

Subgrade 3a

3.3 Land graded 3a corresponds to the coarse textured and moderately stony soils. These profiles impose a moderate limitation on the potential for water retention in this soil. As a result droughtiness restricts this land to subgrade 3a (good quality agricultural land).

4.0 PHYSICAL FACTORS AFFECTING LAND QUALITY FOR SITE B

Climate

4.1 Climate data for the site was extrapolated from data in the published Agricultural Climatic Dataset (Meteorological Office 1989). This indicates that average annual rainfall for site B is 657 mm (25.8"). This data also indicates that the field capacity days are 139 and moisture deficits are 103 mm for wheat and 94 mm for potatoes. These climatic characteristics do not impose any climatic limitation on the ALC grade of the survey site.

Altitude and Relief

4.2 The site is a gently undulating area and lies approximately 65 m AOD. Neither gradient nor altitude impose a limitation to the ALC grade.

Geology and Soil

4.3 The published 1:63,630 scale Solid and Drift edition Geology map, sheet 113 (Geological Survey of England and Wales 1966) shows the whole of the site to comprise Permo-Triassic Bunter Pebble Beds.

4.4 The soil survey of England and Wales mapped the soils of the area in 1983, at a reconnaissance scale of 1:250,000. This map indicates that most of the site comprises Cuckney 1 Association* which are derived from the pebble beds. There is a small area on the eastern edge of the site where soils comprise Blackwood Association**. During the recent field survey a single variable sandy soil type was identified.

4.5 The soils comprise non-calcareous slightly stony sandy loam topsoils over loamy sand and sandy loam subsoils. The subsoils are moderately stony (15-30% pebbles) over most of the site. There are two small areas (one in the north east corner and a second in the south west corner) where subsoils are very stony (40 - 60% pebbles).

5.0 AGRICULTURAL LAND CLASSIFICATION

5.1 The proportion of ALC grades are shown in the table below. The definition of the Agricultural Land Classification grades are included in Appendix 1.

AGRICULTURAL LAND CLASSIFICATION

Grade	ha	%
3a	11.0	44
3b	5.7	23
Urban/Non Agricultural/ Agricultural Buildings	8.2	33
TOTAL	24.9	100

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* Cuckney 1 Association. Well drained sandy and coarse loamy soils often over soft sandstone.

** Blackwood Association. Deep permeable sandy and coarse loamy soils with groundwater controlled by ditches.

Subgrade 3a

5.2 The 3a land corresponds to the deep sandy loam profiles. These soils are slightly to moderately stony in the subsoils, this has a limiting effect on the water holding capacity. As a result there is a moderate droughtiness limitation to the ALC grade.

Subgrade 3b

5.3 Land graded 3b corresponds to the coarse textured and very stony soils. These profiles have a moderately severe limitation of the potential for water retention in this soil. As a result droughtiness restricts this land to subgrade 3b (moderate quality agricultural land).

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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.

REFERENCES

GEOLOGICAL SURVEY OF ENGLAND AND WALES (1966). Solid and Drift edition. Sheet 113 Ollerton 1:63,360.

MAFF (1970). Agricultural Land Classification Map sheet 112, Provisional, 1:63,360 scale.

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.

NEWARK AND SHERWOOD DISTRICT PLAN

MAP 1: CLIPSTONE (SITE A)

MAP 2: BILSTHORPE (SITE B)

SITE NAME	PROFILE NUMBER	SLOPE AND ASPECT	LAND USE	Av Rainfall :-	PARENT MATERIAL
Clipstone	1	2° S	cereals (stubble)	AIO :- FC Days :- 146 Climatic Grade:- 1	

Horizon Number	Lowest Av Depth	Matrix and Ped Face Colours	Texture	Stoniness: Size, Shape and Type	Mottling Abundance, Contrast Size and Colour	Structure: Development Size and Shape	Pores and Fissures	Structural Condition	Consistence	Roots Abundance, Size and Nature	Calcium Carbonate Content	Mangan. Concs. etc	Horizon Boundary Distinctn and Form
1	30	10YR33	MSL	2% HR	—	—	>2% biopores (earthworm root)	-	Friable	Many fine + V. fine roots	—	—	Clear smooth
2	50	7.5YR56	MSL	~~Abdy~~ 2% HR	—	weakly Dev C AB	>2% biopores (earthworm	Good	V. friable	~~Abdy~~ Common fine + V fine	—	—	Clear smooth
3	120 Pit dug to 90 cm	10YR56	LMS/MSL	Riddled 10%>2cm 20%<2cm 30% HR rounded pebbles	— (Peds formed around stones)	weakly Dev MSAB	>2% biopores	Mod.	V. friable	few fine roots	—	—	—

Depth to Slowly Permeable Horizon:-

Wetness Class :- 1

Wetness Grade :- 1

Available Water: Wheat :- 108
Potatoes:- 94

Moisture Deficit Wheat :- 99
Potatoes:- 88

Moisture Balance Wheat :- +9 +5
Potatoes:- +6 +1

Droughtiness Grade:- (2) 3a

Final ALC Grade :-

Main Limiting Factor(s) :-

Remarks;-