A59 CORRIDOR - HESSAY, POPPLETON AND KNAPTON AREAS

Reconnaissance Agricultural Land Classification (ALC) Survey Report and Map

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Resource Planning Team
Northern Region
FRCA, Leeds

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RECONNAISSANCE AGRICULTURAL LAND CLASSIFICATION REPORT

A59 CORRIDOR - HESSAY, POPPLETON AND KNAPTON AREAS

INTRODUCTION

1. This report presents the findings of a reconnaissance Agricultural Land Classification (ALC) survey of 1,600 ha of land in the Hessay, Poppleton and Knapton areas to the north-west of York. The survey was carried out by the Farming and Rural Conservation Agency (FRCA) for the Ministry of Agriculture, Fisheries and Food (MAFF), in connection with York City Council's need to identify potential areas for development. The field work was carried out in November 1998, January 1999 and February 1999 by members of the Resource Planning Team in the Northern Region of FRCA, and the land has been graded in accordance with the published MAFF ALC guidelines and criteria (MAFF, 1988). A description of the ALC grades and subgrades is given in Appendix I.

2. Part of the survey area (south of the A59 and east of the A1237, north of Knapton) had been subject to a detailed ALC survey in 1988 (RPT Job No: 2/88). The original map produced following that survey has been incorporated in the map produced at the end of this report. In addition, a small area (approximately 4.5 ha) between Nether Poppleton and Knapton had been surveyed in 1985 using the criteria in use at that time (Technical Reports 11 and 11/1) which showed the land falling mainly in Subgrade 3c with small areas of Subgrade 3a. For the purposes of this report that area has now been mapped as Subgrade 3b as it is likely to contain restored soils following the existence of a borrow pit during the construction of the A1237.

METHODOLOGY

3. Published information was used to assess likely ALC grades prior to field survey and was used to help determine grade boundaries where necessary. These sources include the 1:250,000 scale map Soils of Northern England, the 1:63,360 scale provisional Agricultural Land Classification map for the York area (Sheet 97), and geological information (BGS Sheets 62 and 63). Fieldwork was carried out on a free survey basis using a hand held auger. A total of 164 borings were recorded, giving an overall boring density of one per eight hectares on the land surveyed at reconnaissance level. In addition, one soil pit was dug and five soil samples sent to the laboratories for confirmation of their texture. Permission to carry out field survey work was given for most of the previously unsurveyed area but for those small areas where access was refused or the owner/occupier could not be identified or contacted, the grade of the land was assessed using published information and local knowledge. The attached maps at the end of this report have been produced at 1:25,000 scale. They are accurate at this scale but any enlargement would be misleading. The minimum mapping unit size for the agricultural land surveyed at reconnaissance level is 10 ha. Due to the scale of mapping, all units may contain land of higher or lower grades than that given. These areas are, however, less than the 10 ha minimum mapping unit and have therefore been included with land in the dominant grade/subgrade in an area.

SUMMARY

4. The details of the classification of those agricultural areas within the A59 corridor are shown on the attached ALC map and the area statistics of each grade are given in Table 1.

Table 1: Area of grades and other land

Grade/Other land	Area (hectares)	% agricultural area	% survey area
1	351.7	24.8	21.8
2	57.3	4.0	3.5
3a	94.3	6.6	5.8
3b	917.3	64.6	56.8
Other land	195.6	N/A	12.1
Total agricultural area	1420.6	100	-
Total survey area	1616.2	-	100

5. Grade 1, excellent quality agricultural land, occurs around the settlements of Poppleton, Hessay and Knapton. The soils are well drained and generally stoneless. In most cases fine sandy loam topsoils overlie fine sandy loam or loamy fine sand upper and lower subsoils. In a few places slowly permeable layers of sandy clay loam or clay, or freely drained loamy medium sands occur below 55 cm depth. This land has no or very minor limitations to agricultural use.

6. Grade 2, very good quality agricultural land, occurs between Knapton and the York-Harrogate railway line, in the east of the survey area. These soils are also stoneless and well drained but in these areas loamy fine sand topsoils overlie similar subsoils. The factor which restricts this land to Grade 2 is topsoil texture, and slight soil droughtiness for crops such as potatoes.

7. Subgrade 3a, good quality agricultural land, occurs in the Knapton area, north-west and south-west of Upper Poppleton and west of Hessay. Two main soil types fall within this grade - well or moderately well drained soils with sandy clay loam, medium clay loam or heavy clay loam topsoils and, in places, thin upper subsoils, overlying loamy medium sand (in which soil droughtiness is the grade-limiting factor), and imperfectly drained soils with sandy clay loam or medium clay loam topsoils and upper subsoils overlying slowly permeable heavy clay loam or clay (in which case soil wetness limits the land to Subgrade 3a).

8. Subgrade 3b, moderate quality agricultural land, covers 57% of the survey area. Generally this land consists of poorly drained soils with medium clay loam, heavy clay loam or clay topsoils directly overlying gleyed and slowly permeable clay subsoils. Soil wetness and topsoil texture combine to limit this land to Subgrade 3b.

9. Other land consists of the settlements of Knapton, Nether Poppleton and Upper Poppleton, playing fields, a garden centre, a business park, a landfill east of Rufforth and industrial units north of Hessay.

CLIMATE

10. Climate affects the grading of land through the assessment of an overall climatic limitation and also through interactions with soil characteristics. The climate in the Hessay/Poppleton/Knapton area is relatively uniform and so the climatic information for one central point was used in the grading of the land. The key climatic variables used are given in Table 2 and were obtained from the published 5 km datasets using the standard interpolation procedures (Met Office, 1989).

Table 2: Climatic and altitude data

Factor	Units	Values
Grid reference	N/A	SE 542 536
Altitude	m, AOD	14
Accumulated Temperature	day°C (Jan-June)	1388
Average Annual Rainfall	mm	633
Field Capacity Days	days	143
Moisture Deficit, Wheat	mm	106
Moisture Deficit, Potatoes	mm	98
Overall climatic grade	N/A	Grade 1

The combination of rainfall and temperature in the survey area means that there is no overall climatic limitation at any point. The area north-west of York has a climate which is relatively warm and dry by the standards of northern England. This means that light-textured (sandy) soils with a low water-holding capacity are somewhat more prone to drought stress during the growing season whilst heavy-textured (clayey) soils are somewhat more easily worked at critical times of year when compared with areas with a slightly cooler and wetter climate.

GEOLOGY AND SOILS

11. The area is underlain by Bunter and Keuper Sandstones which are overlain by drift deposits of glacial sand and gravel (around Knapton and Poppleton), till (west of Knapton and west of Upper Poppleton), sand and gravel of the Vale of York Drift (south and west of Hessay), and silt and clay of the Vale of York Drift (over most of the centre and west of the survey area).

12. The soils reflect the drift deposits in which they have formed. Soils developed in silt and clay are typically poorly drained and clayey, whilst soils derived from glacial sand and gravel and sand of the Vale of York Drift are generally well drained and sandy. The soils within the survey area have been mapped principally as belonging to the Foggathorpe 2, Blackwood and Escrick 2 associations, with smaller areas in the east mapped as Dunkeswick and Wigton Moor associations (Soils of England and Wales, Sheet 1).

AGRICULTURAL LAND CLASSIFICATION

13. The details of the classification of the site are shown on the attached ALC map and the area statistics of each grade are given in Table 1, page 2.

Grade 1

13.1 Grade 1, excellent quality agricultural land, occurs in the Knapton and Poppleton areas and around Hessay. The soils are derived from sand and gravel deposits and are generally stoneless and well drained, falling in Wetness Class I. In most cases fine sandy loam topsoils overlie fine sandy loam or, more commonly, loamy fine sand upper and lower subsoils. In a few places slowly permeable layers of sandy clay loam or clay occur below 55 cm depth, as do horizons of loamy medium sand occasionally. These soils have a high water storage capacity such that soil droughtiness is not a grade-limiting factor. This land, therefore, has no or very minor limitations to agricultural use. It can grow a very wide range of agricultural and horticultural crops and gives high yields.

Grade 2

13.2 Grade 2, very good quality agricultural land, occurs between Knapton and the York-Harrogate railway line, east of the York Ring Road. The soils in this area are generally well drained (Wetness Class I) and consist of loamy fine sand topsoils and subsoils. The clay content of the topsoils is sufficient to prevent significant wind erosion and profiles are typically stoneless. The ALC grade of this land is limited by topsoil texture and by a slight soil droughtiness restriction for shallow-rooting crops such as potatoes.

Subgrade 3a

13.3 Subgrade 3a, good quality agricultural land, occurs in the Knapton area, north-west and south-west of Poppleton, and west of Hessay. In the Knapton area and in a small area north-west of Poppleton, the main limitation is soil wetness. Soils in this area are imperfectly drained, falling in Wetness Class III, and consist of medium clay loam or sandy clay loam topsoils and upper subsoils overlying slowly permeable heavy clay loam or clay lower subsoils. In a few small areas, notably north-west of Poppleton and west of Red Lion Bridge, loamy fine sand topsoils overlie similar subsoils. Although well drained (Wetness Class I), these soils are prone to wind erosion, particularly in early spring, when the combination of poor crop cover, dry weather, and strong easterly winds can result in the loss of a crop and the need to re-drill. It is this wind erosion risk which limits the land to Subgrade 3a. The third soil type falling within this subgrade occurs west of Burlands Farm and west of Hessay. Soils in these areas are well or moderately well drained (Wetness Classes I and II) and consist of medium sandy loam or sandy clay loam topsoils overlying loamy medium sand subsoils. Thin upper subsoil horizons of heavy clay loam or clay occur in places but these are at too shallow a depth to form slowly permeable layers, and the land is limited to Subgrade 3a by soil droughtiness.

Subgrade 3b

13.4 Land in this subgrade, defined as moderate quality agricultural land, covers most of the centre and west of the survey area, and has also been mapped in two small areas east of Poppleton. The soils in these areas are derived from silt and clay of the Vale of York Drift and, to a lesser degree, till. The profiles are poorly drained (Wetness Class IV), and generally stoneless. Medium clay loam or, more commonly, heavy clay loam or clay topsoils overlie gleyed and slowly permeable clay subsoils at between 15 cm and 35 cm depth. The ALC grade of this land is restricted by the combination of soil wetness and topsoil texture. A small area of land south-west of Millfield Farm, Upper Poppleton, was mapped as Subgrade 3c with smaller areas of Subgrade 3a in 1985. This was the site of a proposed borrow pit needed during the construction of the A1237 and it now presumably consists of restored soils. For the purpose of this reconnaissance survey, all of this site has now been placed in Subgrade 3b.

Other land

13.5 Other land within the survey area consists principally of the settlements at Upper Poppleton, Nether Poppleton and Knapton, and adjoining playing fields, allotments and, at Upper Poppleton, a garden centre. In addition to these, areas of Other land have been mapped north of Hessay (industrial units), east of Rufforth (a landfill site), and south of Upper Poppleton (a business park and derelict horticulture site).

RPT Files: 20,472
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SOURCES OF REFERENCE

British Geological Survey (1987) *Sheet No. 62, Harrogate (Solid Geology), 1:50,000 scale.* BGS: London.

British Geological Survey (1983) *Sheet No. 63, York (Solid and Drift edition), 1:50,000 scale.*
BGS: London.

Ministry of Agriculture, Fisheries and Food (1969) *Agricultural Land Classification of England and Wales (Provisional): Sheet 97, 1:63,360.* MAFF: London.

Ministry of Agriculture, Fisheries and Food (1988) *Agricultural Land Classification of England and Wales: Revised guidelines and criteria for grading the quality of agricultural land.* MAFF: London.

Met. Office (1989) *Climatological Data for Agricultural Land Classification.*
Met. Office: Bracknell.

Soil Survey of England and Wales (1983) *Sheet 1, Soils of Northern England, 1:250,000 scale.*
SSEW: Harpenden.

Soil Survey of England and Wales (1984) *Soils and their Use in Northern England*
SSEW: Harpenden.

Resource Planning Team, ADAS, Leeds
Greater York Area, Site A (Knapton), Job Number 2/88
RPT File No: 2 FCS 4135

Resource Planning Team, ADAS, Leeds
Millfield Lane, Poppleton, Job Number 69/85
No File Number

APPENDIX I

DESCRIPTIONS OF THE GRADES AND SUBGRADES

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 or horticultural crops can usually be grown but on some land of this 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 land.

Grade 3: Good to Moderate Quality Land

Land with moderate limitations which affect the choice of crops, the 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 the level of yields. It is mainly suited to grass with occasional arable crops (e.g. cereals and forage crops) the yields of which are variable. In moist 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 severe limitations which restrict use to permanent pasture or rough grazing, except for occasional pioneer forage crops.