A64 CORRIDOR - ASKHAM BRYAN, COPMANTHORPE AND BISHOPTHORPE AREAS

Reconnaissance Agricultural Land Classification (ALC) Survey
Report and Map

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Resource Planning Team
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FRCA, Leeds

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RECONNAISSANCE AGRICULTURAL LAND CLASSIFICATION REPORT

A64 CORRIDOR - ASKHAM BRYAN, COPMANTHORPE AND BISHOPTHORPE AREAS

INTRODUCTION

1. This report presents the findings of a reconnaissance Agricultural Land Classification (ALC) survey of 1,824 ha of land in the Askham Bryan, Bishopthorpe and Copmanthorpe areas to the south-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 Revised guidelines and criteria (MAFF, 1988). A description of the ALC grades and subgrades is given in Appendix I.

2. Part of the survey area had been subject to detailed ALC surveys carried out in 1988 and 1991 (RPT Job Numbers 2/88 and 63/91 respectively) using the current criteria contained in the Revised guidelines (MAFF, 1988). In addition, a number of small areas south of Woodthorpe and one area west of Copmanthorpe had been surveyed prior to the publication of the Revised guidelines and criteria. This land (RPT Job Numbers 27/82, 19/85, 6/86 and 22/86) had been graded in accordance with the criteria in use at that time, ie Technical Reports 11 and 11/1. Where such information is available the original maps have been incorporated in the maps produced at the end of this report.

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 70 and 71). Fieldwork was carried out on a free survey basis using a hand held auger. A total of 217 borings were recorded, giving an overall boring density of one per seven hectares on the land surveyed at reconnaissance level. In addition, three soil pits were dug and three 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 A64/York-Leeds Railway 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	124.3	8.4	6.8
2	418.3	28.1	22.9
3a	555.7	37.3	30.5
3b	388.5	26.1	21.3
4	2.0	0.1	0.1
Other land	335.1	N/A	18.4
Total agricultural area	1488.8	100	-
Total survey area	1823.9	-	100

5. Grade 1, excellent quality agricultural land, occurs west and north of Bishopthorpe. The soils in this area are well drained and typically consist of fine sandy loam or medium clay loam topsoils overlying fine sandy loam, sandy clay loam or loamy fine sand subsoils. This land has no or very minor limitations to agricultural use.

6. Grade 2, very good quality agricultural land, occurs in four separate areas. The soils are either well drained and light to medium-textured (in which case soil droughtiness is the grade-limiting factor), or moderately well to imperfectly drained with light to medium-textured topsoils and upper subsoils overlying medium to heavy-textured lower subsoils (in which case soil wetness limits the land to Grade 2).

7. Subgrade 3a, good quality agricultural land, is found in a number of areas. In most cases the soils are imperfectly drained, with medium clay loam or sandy clay loam topsoils and upper subsoils overlying gleyed and slowly permeable sandy clay loam, heavy clay loam or clay lower subsoils. Soil wetness is the grade-limiting factor in this case. In a small area west of Askham Bryan College of Agriculture the soils are well drained, light-textured, and slightly to moderately stony. This land is limited to Subgrade 3a by soil droughtiness.

8. Subgrade 3b, moderate quality agricultural land, also occurs in a number of separate areas. The soils are poorly drained, with medium clay loam or sandy clay loam topsoils overlying gleyed and slowly permeable sandy clay loam, heavy clay loam or clay subsoils. The soil wetness limitation is sufficiently severe to limit the ALC grade to Subgrade 3b.

9. Grade 4, poor quality agricultural land, occurs in a small area in the north-east. This land has been disturbed and is now mainly suited to the production of grass.

10. Other land within the survey area consists mainly of the settlements of Askham Bryan, Askham Richard and Copmanthorpe, Askham Bryan College of Agriculture, and a golf course and nature reserve north of Copmanthorpe.

CLIMATE

11. 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 survey area varies slightly, with the area around Askham Richard and Askham Bryan being somewhat cooler and wetter than the area around Copmanthorpe and Bishopthorpe. For this reason two points were used to obtain the climatic information 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, A64 Corridor

Factor	Units	Askham Bryan	Copmanthorpe
Grid reference	N/A	SE 543 473	SE 575 455
Altitude	m, AOD	40	9
Accumulated Temperature	day°C (Jan-June)	1361	1396
Average Annual Rainfall	mm	689	610
Field Capacity Days	days	151	136
Moisture Deficit, Wheat	mm	102	111
Moisture Deficit, Potatoes	mm	91	103
Overall climatic grade	N/A	Grade 1	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 south-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

12. All of the survey area is underlain by Bunter Sandstone but a variety of drift deposits overlie the sandstone. Around Askham Richard, Askham Bryan and Copmanthorpe till is widespread whilst sand and gravel of the Vale of York Drift occurs around Bishopthorpe and south and east of Copmanthorpe. Silt and clay, also of the Vale of York Drift, is found between Bishopthorpe and Copmanthorpe, east of Askham Bryan, and east of Copmanthorpe Grange. Lesser areas of morainic drift (between Bilbrough and Knavesmire) and glacial sand and gravel (which occurs in small pockets around Askham Richard and Askham Bryan) are also found within the survey area (BGS Sheets 70 and 71). The soils within the survey area have been mapped as belonging principally to the Bishampton 1 association (derived mainly from till and occurring around Askham Richard and Askham Bryan, between Bilbrough and Copmanthorpe, and around Copmanthorpe and Bishopthorpe), and the Wigton Moor association (derived from glacio-fluvial and river terrace deposits and occurring between Copmanthorpe and Bishopthorpe). In addition to these, smaller areas of Escrick 2 association (derived from glacio-fluvial drift, occurring between Bilbrough and Copmanthorpe) and Dunkeswick association (derived from till, occurring south and south-east of Copmanthorpe) are also mapped (Soils of Northern England, 1:250,000 scale).

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 an area of 125 ha west of Bishopthorpe and between Bishopthorpe and Dringhouses. The soils are well drained, falling in Wetness Class I, and are principally derived from sand of the Vale of York Drift. In most cases fine sandy loam or medium clay loam topsoils overlie fine sandy loam, sandy clay loam or loamy fine sand subsoils. The profiles in this area are generally stoneless and the soils have a high water storage capacity such that soil droughtiness is not a grade-limiting factor. In the far west of this area, around Bond Hill Ash Farm, a few profiles are very slightly droughty and are restricted to Grade 2. However, this area is less than the 10 ha minimum mapping unit size and it has therefore been included in the adjoining Grade 1 land. Although this land is level, with slopes of 1° or less, flooding from the River Ouse is very rare and flood risk is not considered to be 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 in four separate areas covering 418 ha. Two main soil types fall within this grade. The first consists of well drained (Wetness Class I) profiles where medium clay loam, sandy clay loam, medium sandy loam or fine sandy loam topsoils overlie similar or lighter-textured (loamy sand) subsoils. The ALC grade of these areas is limited by very slight soil droughtiness. The second main soil type consists of moderately well or imperfectly drained profiles which fall in Wetness Classes II and III. In this case fine sandy loam, medium clay loam or sandy clay loam topsoils and upper subsoils overlie, in most cases, gleyed and slowly permeable sandy clay loam or heavy clay loam lower subsoils. In this case the ALC grade of the land is limited by the combination of soil wetness and topsoil texture. A wide range of agricultural and horticultural crops can be grown on this land, although there may be reduced flexibility in the production of winter harvested vegetables and root crops where there is a soil wetness limitation. Yields are generally high but may be lower or more variable than those obtained from Grade 1 land.

Subgrade 3a

13.3 Land in this subgrade, defined as good quality agricultural land, occurs in a number of areas and covers 552 ha. In most cases the soils are imperfectly drained (Wetness Class III) and consist of medium clay loam topsoils and upper subsoils overlying gleyed and slowly permeable sandy clay loam, heavy clay loam or clay lower subsoils. This land is limited to Subgrade 3a by the combination of topsoil texture and soil wetness. In a small area lying west of Askham Bryan College of Agriculture the soils are well drained (Wetness Class I) and consist of slightly to moderately stony medium sandy loam topsoils and medium sandy loam or loamy medium sand subsoils. In this case soil droughtiness is the grade-limiting factor. The soil wetness and soil droughtiness restrictions on this land allow the production of moderate to high yields in a narrow range of arable crops or moderate yields of a wide range of crops,

including cereals, potatoes and sugar beet. Where there is a soil wetness limitation there is a reduction in the number of days in the year when the soils are in a suitable condition for agricultural operations or trafficking by machinery compared with land in Grades 1 and 2.

Subgrade 3b

13.4 Subgrade 3b, moderate quality agricultural land, also occurs in a number of separate areas. The soils are typically poorly drained (Wetness Class IV) and consist of medium clay loam or sandy clay loam topsoils overlying gleyed and slowly permeable sandy clay loam, heavy clay loam or clay subsoils at between 25 cm and 35 cm depth. Soil wetness and topsoil texture combine to limit this land to Subgrade 3b. The grade-limiting factors mean that this land is capable of producing only moderate yields of a narrow range of crops or lower yields of a wider range of crops and there is a significant reduction in the number of days in the year when the soil is in a suitable condition for agricultural operations or trafficking by machinery.

Grade 4

13.5 Poor quality (Grade 4) land occurs in a small area east of Askham Bogs. This land has been disturbed and is now mainly suited to grass with occasional arable crops, the yields of which are variable.

Other land

13.6 Land in this category includes the villages of Askham Bryan, Askham Richard and Copmanthorpe, Askham Bryan College of Agriculture, Copmanthorpe Wood, Askham Bogs Golf Course and Nature Reserve, and a college and playing fields south of Dringhouses.

RPT Files: 20,471
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SOURCES OF REFERENCE

British Geological Survey (1951) *Sheet No. 70, Leeds (Solid and Drift edition), 1:63,360 scale.*
BGS: London.

British Geological Survey (1973) *Sheet No. 71, Selby (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.

PREVIOUS AGRICULTURAL LAND CLASSIFICATION SURVEYS

Job Number	Site Name	RPT File Ref:
27/82	Moor Lane, York	2 RL 1809A
19/85	Back Lane, Copmanthorpe	No file number
6/86	Eastfield Farm, Askham Bryan	2 RL 2499
22/86	Mill Lane, Askham Bryan	2 RL 2542
2/88	Greater York Area, Site C (Moor Lane, Acomb)	2 FCS 4137
63/91	Home Farm, Askham Richard	2 FCS 5464

[ALC Map]

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.