NORTHAMPTONSHIRE STRUCTURE PLAN REVIEW

Desk Study of Land to the south of Northampton

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Resource Planning Team
Eastern Region
FRCA Cambridge

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AGRICULTURAL LAND CLASSIFICATION DESK STUDY REPORT

Northamptonshire Structure Plan Review
Land south of Northampton

INTRODUCTION

1. This report presents the findings of a desk study of two areas of land to the south of Northampton.

2. The report has been undertaken as part of the Northamptonshire Structure Plan Review and has been carried out by the Farming and Rural Conservation Agency (FRCA) for the Ministry of Agriculture, Fisheries and Food (MAFF).

3. These comments are based upon published (small scale) geological, soils information and local unpublished ALC information. These sources of information are limited by the scale at which they are presented and the methods of survey involved in their compilation. Due to these limitations; it has been necessary to make assumptions in order to assess the likely land quality. The results of the desk appraisal should be used cautiously and viewed as giving only an indication of the likely land quality. Only fieldwork can give a definitive grade for the land under consideration.

4. The extent of the area of study is shown on a map at the end of the report which also shows the findings of detailed ALC survey work carried out within the report area.

5. The area of the desk study has been divided into two, the division runs along the A43(T) road. This area is being promoted as a Strategic Development Area.

LAND TO THE WEST OF THE A43(T)

6. The first area is triangular and is bounded by the M1 to the north, A5(T) to the south west and A43(T) to the east. The River Nene cuts through the northern part of the area and several tributaries run in a north easterly direction to join the Nene to the north of the M1. The Grand Union Canal is 2 km to the south of the M1 and its course is almost parallel. The Rugby to London railway runs in close proximity to the canal.

7. Within the study area there are no major roads or urban areas but several villages. Bugbrooke and Nether Heyford are the largest with Flore, Rothersthorpe, Gayton, Pattishall, Eastcote and Tiffield being the other main settlements.

8. The topography can be split into two main areas. To the north of the canal the land is generally lower lying with low rolling hills. The land rises from about 70 m AOD in the Nene Valley to about 96 m AOD to the north of Bugbrooke and to the west of Rothersthorpe.

9. To the south of the canal, the land rises, and is dissected by several tributaries of the Nene, to form a more pronounced rolling landscape. The maximum altitude of nearly 150 m AOD occurs around Eastcote.

Climate

10. Climate affects the grading of land through the assessment of an overall climatic limitation and also through interactions with soil characteristics.

11. The key climatic variables used for grading this site are given in Table 1 and were obtained from the published 5 km grid datasets using the standard interpolation procedures (Met. Office, 1989).

Table 1: Climatic and altitude data

Factor	Units	Values	
Grid reference	N/A	SP 650 595	SP 683 532
Altitude	m, AOD	75	147
Accumulated Temperature	day°C (Jan-June)	1401	1321
Average Annual Rainfall	mm	632	675
Field Capacity Days	days	143	150
Moisture Deficit, Wheat	mm	109	95
Moisture Deficit, Potatoes	mm	100	84
Overall climatic grade	N/A	Grade 1	Grade 1

12. The climatic criteria are considered first when classifying land as climate can be overriding in the sense that severe limitations will restrict land to low grades irrespective of favourable site or soil conditions.

13. The main parameters used in the assessment of an overall climatic limitation are average annual rainfall (AAR), as a measure of overall wetness, and accumulated temperature (ATO, January to June), as a measure of the relative warmth of a locality.

14. The combination of rainfall and temperature in this area mean there is no climatic limitation, hence a climatic grade 1 has been assigned.

Geology

15. The geology of the area is quite complex with a range of geological deposits being exposed.

16. Along the Nene Valley the solid geology has been overlain by recent deposits. On the valley floor alluvium is mapped. In turn this is flanked by glacial sand and gravel deposits on the lower valley sides. To the east of Nether Heyford and to the north of Rothersthorpe boulder clay is shown.

17. As the land rises the solid geology is exposed. Jurassic Clays and Silts are typically mapped along the lower slopes of tributaries. Above this there are large area of Jurassic Clays mapped. These are extensive especially around Bugbrooke and along the course of the Grand Union Canal. The other main type of solid geology is the Northampton Sand. The villages of Gayton, Pattishall and Eastcote are all located on this type of geology. In small areas at

Astcote, south of Gayton and at Tiffield various Jurassic Limestone's outcrop. To the south of Gayton and Astcote much of the land is covered by boulder clay drift deposits.

Soils & Likely ALC

18 No detailed soils map exists for this area and these comments are based upon the 1:250 000 scale 'Soils of Eastern England' map. This map is of a very general nature and does not reflect the complexity of the more detailed geological description given above.

19. About half of the land within the study area is likely to be graded predominantly 3b with smaller areas of 3a. These are associated with soils derived from Upper Lias Clays, Clays and Silts and some of the boulder clay. These soils are likely to be heavy textured and poorly drained. These occur along a wide corridor of the Grand Union Canal, to the east of Bugbrooke extending to the M1 and in a broad band running from Bugbrooke to the west of Tiffield.

20. Along the valley bottom of the River Nene soils are likely to be derived from alluvium. These are likely to be poorly drained and possibly prone to flooding , thus land grade is not likely to be any higher than 3b.

21. Land which is likely to be a mix of subgrades 3a and 3b occurs sporadically throughout the area and is largely associated with boulder clay and areas of drift over Upper Lias Clays. These soils are likely to be slightly better drained, possibly calcareous and with the potential of a lighter topsoil texture.

22. The main areas of these soils are between Flore and the M1, junction 16, around and to the south of Astcote, north east of Bugbrooke and to the west of Rothersthorpe.

23. Land which is likely to contain the best quality grades occurs in conjunction with the Northampton Sands, Blisworth Limestone and Estuarine Series, and glacial sands and gravels. This land is likely to comprise grades 2 and 3a with smaller areas of 3b. This land occurs around Gayton, to the south of Rothersthorpe and around Pattishall which extends to the higher ground around Eastcote. These soils are likely to be freely draining and contain lighter textured soils. Where ironstone has been extracted by opencast methods, (to the south east of Gayton), the ALC grade will be determined by the quality of restoration. The ironstone has generally been extracted some time ago and experience elsewhere in Northamptonshire suggests that the land is likely to be best and most versatile.

LAND TO THE EAST OF THE A43(T)

24. This area is bounded by the A43(T) to the west, M1 to the north east and 50 northing grid line to the south.

25. Main transport routes cross this area. The A508 dissects the area on a north/south line and the railway branches near Blisworth to the Northampton loop. The Grand Union Canal runs through the western part of the area with much of its course being underground.

26. The main settlements within the area include Roade, Blisworth, Milton Malsor and Hartwell.

27. The topography of the area is gently undulating with the land incised by tributaries of the Rivers Nene and Tove. A watershed runs between Blisworth and Roade. Land rises from about 70 m AOD in the north to 133m AOD at Blisworth Hill, where the land begins to fall away southward.

Climate

28. The climate is fairly similar to that of the above and the figures are given below in table 2.

Table 2: Climatic and altitude data

Factor	Units	Values	
Grid reference	N/A	SP 732 552	SP 773 508
Altitude	m, AOD	87	109
Accumulated Temperature	day°C (Jan-June)	1387	1363
Average Annual Rainfall	mm	637	654
Field Capacity Days	days	136	141
Moisture Deficit, Wheat	mm	106	102
Moisture Deficit, Potatoes	mm	98	93
Overall climatic grade	N/A	Grade 1	Grade 1

29. There is no climatic limitation to the agricultural use of the land and the overall climate grade is 1.

Geology

30. About half the area is covered by boulder clay. This occurs on the higher land and extends from Hartwell in the east westwards to near Tiffield. Boulder clay deposits also run along the M1 corridor.

31. Where tributaries occur these have cut down to expose the underlying geological sequence. This is particularly evident along the southern boundary of the area of study, to the south of Roade and around Blisworth and Courteenhall. The geology exposed tends to occur in narrow bands along the contour lines. The youngest rock exposed which is also the most extensive is the Blisworth Limestone. Below this is the Upper and Lower Estuarine Series over Northampton Sand. The later covers a reasonable sized area around Blisworth and towards Gayton. Much of this land has been subjected to ironstone workings.

32. South of Milton Malsor through to Courteenhall Upper Lias Clay is the predominant geology. Around Milton Malsor and sporadically near Collingtree fluvio-glacial gravel is shown.

Soils and likely ALC

33. Land quality in broad terms is likely to be slightly better in this area compared to the land to the west of the A43(T) road.

34. The main area of lower quality land i.e. predominantly 3b, is likely to be found to the north of the railway at Blisworth extending towards Courteenhall. Two areas have been surveyed in detail within this area and both show land of largely 3b quality. Another potential area of lower quality land is around Plain Wood in-between Blisworth and Roade and in areas along the southern boundary of the study area.

35. About half the area has soils derived from boulder clay. This land is likely to comprise a mix of 3a and 3b land. This will be very much dependant on topsoil texture and whether soils are naturally calcareous. The latter improves the workability of the land and hence where soils are calcareous they are likely to be best and most versatile.

36. The better quality land is likely to occur in the vicinity of Roade, around Milton Malsor, the west, south and a narrow band to the east of Blisworth, and between Tiffield and Shutland. Land here is likely to be off variable quality, but largely a mix of grade 2 and 3a with the latter likely to predominate. Small areas of 3b land are also likely to be present.

37. The better quality land is associated with soils derived from Northampton Sand, Blisworth Limestone and the Estuarine Series and the glacial sands and gravels around Milton Malsor. Extensive opencast ironstone workings have occurred around Blisworth, but as mentioned in paragraph 23 above, this land is likely to contain a large proportion of best and most versatile land.

SUMMARY

38. In general terms land to the west of the A43(T) is likely to contain less best and most versatile land.

39. Potential lower quality land around existing settlements is rather limited in extent and suggests that the settlement pattern has generally avoided the heaviest land. The three villages that have the most likelihood of lower quality land are Blisworth, Bugbrooke and Flore although the latter appears to be fairly localised. Existing detailed survey work to the north of Blisworth confirms the predominance of 3b land and this is likely to extend eastwards to the north of the railway towards Courteenhall.

40. Some survey work has been carried out to the east of Bugbrooke, which suggests a mix of grades ranging from 2, 3a to 3b. These surveys have been confined to sand and gravel extraction which appears to be localised. Lower quality land is likely especially in the southern vicinity of the village.

41. Other areas around villages which may have some 3b land are near Rotherthorpe, to the west of Tiffield and to the east of Astcote.

Roger Orpin,
Eastern Region,
FRCA,
Cambridge.

APPENDIX I

DESCRIPTION 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, cultivation's 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 that 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 that restricts use to permanent pasture or rough grazing, except for occasional pioneer forage crops.