

**NORTH LINCOLNSHIRE LOCAL PLAN
(PROPOSED SAND AND GRAVEL
ALLOCATION AT COVE FARM, HAXEY)**

**Agricultural Land Classification (ALC)
Report and Map**

NOVEMBER 1998

**Resource Planning Team
Northern Region
FRCA, Leeds**

**RPT Job Number: 86/98
MAFF Reference: EL
LURET Job Number: ME1ATXA**

RPT 20, 418

AGRICULTURAL LAND CLASSIFICATION REPORT

NORTH LINCOLNSHIRE LOCAL PLAN (PROPOSED SAND AND GRAVEL ALLOCATION AT COVE FARM, HAXEY)

INTRODUCTION

1. This report presents the findings of a detailed Agricultural Land Classification (ALC) survey of 126.5 ha of land lying approximately 2 km north-west of the village of Westwoodside in North Lincolnshire. The survey was carried out during October 1998.
2. 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 the proposal to allocate this land for sand and gravel extraction in the North Lincolnshire Local Plan. This ALC report and map supersede any previous ALC information on this site.
3. The work was conducted by members of the Resource Planning Team in the Northern Region of FRCA. 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.
4. At the time of survey the agricultural land on the site was under ley and permanent grass in the west, and in arable use (fallow, cereals and beetroot) in the east. An area in the south consisting of some agricultural land and an existing sand and gravel quarry was not surveyed due to difficulties in obtaining access.

SUMMARY

5. The findings of the survey are shown on the enclosed ALC map. The map has been drawn at a scale of 1:10,000. It is accurate at this scale but any enlargement would be misleading.
6. The area and proportions of the ALC grades and subgrades on the surveyed land are summarised in Table 1.

Table 1: Area of grades and other land

Grade/Other land	Area (hectares)	% surveyed area	% site area
1			
2	22.1	29.7	17.5
3a	50.1	67.2	39.6
3b	2.3	3.1	1.8
4			
5			
Agricultural land not surveyed	49.6	N/A	39.2
Other land	2.4	N/A	1.9
Total surveyed area	74.5	100	-
Total site area	126.5	-	100

7. The fieldwork was conducted at an average density of one boring per hectare. A total of 78 borings and three soil pits were dug. In addition, a number of soil samples were taken for laboratory analysis of their particle size distribution, pH, organic matter content and calcium carbonate content.

8. Grade 2, very good quality agricultural land, occurs in the north-east and south-east. Organic or peaty topsoils overlie medium sand subsoils at between 25cm and 70cm depth. It has been assumed that groundwater levels would place this land in Wetness Class III, leading to the land being limited to Grade 2 by the combination of soil wetness and topsoil texture. The low bearing strength of these soils may result in tractors becoming bogged down during wet periods and this factor also limits the land to Grade 2.

9. Subgrade 3a, good quality agricultural land, covers most (67%) of the area surveyed. The soils are assumed to be imperfectly drained (Wetness Class III) and consist of either organic clay topsoils overlying clay subsoils (in which case soil wetness is the grade-limiting factor) or organic medium sand or organic loamy medium sand topsoils overlying medium sand subsoils (in which case soil droughtiness limits the land to Subgrade 3a).

10. Subgrade 3b, moderate quality agricultural land, occurs in two small areas in the south-east of the site. Loamy medium sand or medium sand topsoils overlie medium sand subsoils. Soil droughtiness and, where medium sand topsoils occur, soil texture limit this land to Subgrade 3b.

11. Land not surveyed covers 49.6 ha and consists of the existing Cove Farm Quarry and adjoining agricultural land.

12. Other land occurs in the south-west and consists of the buildings at Cove Farm and two blocks of recently planted woodland.

FACTORS INFLUENCING ALC GRADE

Climate

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

14. The key climatic variables used for grading this site are given in Table 2 and were obtained from the published 5 km grid datasets using the standard interpolation procedures (Met. Office, 1989).

Table 2: Climatic and altitude data

Factor	Units	Values
Grid reference	N/A	SE 737 011
Altitude	m, AOD	1
Accumulated Temperature	day°C (Jan-June)	1422
Average Annual Rainfall	mm	568
Field Capacity Days	days	114
Moisture Deficit, Wheat	mm	114
Moisture Deficit, Potatoes	mm	108
Overall climatic grade	N/A	Grade 1

15. 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.

16. 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 (AT0, January to June), as a measure of the relative warmth of a locality.

17. The combination of rainfall and temperature at this site means that there is no overall climatic limitation.

Site

18. The land on this site is level (0-1°) and as such gradient does not restrict ALC grade at any point. Equally, neither flood risk nor microrelief are grade-limiting factors on this site.

Geology and soils

19. The site is underlain by Keuper Marl over which lie deep deposits of heavy-textured alluvium (in the west) and fluvio-glacial sand (in the east). In the south and east of the site, overlying the fluvio-glacial sand, are deposits of peat and wind blown (aeolian) sand (BGS, Sheet No. 88).

20. The soils on the site have been mapped as belonging to the Isleham 2 association over most of the site, with Conway association soils in the south-west (Soils of England and Wales, Sheet 1, Northern England). A detailed soil survey of land to the west of this site (Soils in Yorkshire II) suggests that the light-textured soils in the east correspond to the Gilberdyke series and the clayey soils in the west correspond to the Highwater series.

AGRICULTURAL LAND CLASSIFICATION

21. 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 1. The groundwater level in this area is crucial to the grading of the land. No details on groundwater levels are available from the Environment Agency, the West Axholme Drainage Board or Cove Farm Quarry. Given the water levels in the field drains at the time of survey (which took place after a period of unusually heavy rain) and that the groundwater levels are controlled by pumping, it is likely that the entire site falls in either Wetness Class II or Wetness Class III. For the purposes of grading the land it has been decided to assume that all the soil profiles fall in Wetness Class III.

Grade 2

22. Land in this grade (defined as very good quality agricultural land) occurs in the north-east and south-east. The soil profiles consist of organic sandy loam, sandy peat or peaty sand topsoils overlying stoneless medium sand subsoils at between 25cm and 70cm depth. This area has a relatively high water table and for the purposes of grading it has been assumed that the soil profile is imperfectly drained, falling in Wetness Class III. The groundwater level is controlled by pumping but water levels would need to be monitored over a period of time before a definitive wetness class could be given. Given this assumption the land is limited to Grade 2 by the combination of soil wetness and topsoil texture, and also by the relatively low

bearing strength of the soil, which may result in tractors becoming bogged down when the soil is soft during the winter months.

Subgrade 3a

23. Most of the land surveyed falls in Subgrade 3a, good quality agricultural land. In most of the west the soils consist of organic clay topsoils overlying clay subsoils. Although the profiles contain no slowly permeable layers, this area is also affected by relatively high groundwater levels. As with the Grade 2 land it has been assumed that these profiles are imperfectly drained, falling in Wetness Class III. Given this assumption this land is limited to Subgrade 3a by soil wetness and topsoil workability restrictions. In the north-east of the site and in a small area east of Cove Farm the soils are lighter-textured, typically consisting of organic loamy medium sand or organic medium sand topsoils overlying medium sand subsoils at between 20cm and 35cm depth. In this case soil droughtiness is the grade-limiting factor.

Subgrade 3b

24. Two small areas of Subgrade 3b land were mapped in the south-eastern corner of the site. The soils are well drained (Wetness Class I) but moderately droughty for both wheat and potatoes. The profiles are stoneless and consist of loamy medium sand or medium sand topsoils overlying medium sand subsoils. The ALC grade of this land is limited by soil droughtiness and, where medium sand topsoils occur, topsoil texture.

Land Not Surveyed

25. A large block of land in the centre and south-east of the site, which consists of the existing sand and gravel quarry and adjoining farmland, was not surveyed. The agricultural land in this area either already has planning permission for the extraction of sand and gravel or, in the case of an area north of Dump Drain, permission to carry out the survey was withheld.

Other Land

26. This category includes the buildings at Cove Farm and two blocks of woodland all in the south-west of the site.

RPT File: 20,418
Resource Planning Team
Northern Region
FRCA, Leeds

SOURCES OF REFERENCE

British Geological Survey (1969) *Sheet No. 88 (Doncaster), Drift Edition. 1:63,360 scale.*
BGS: 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

Soil Survey of England and Wales (1973) *Soils in Yorkshire II, Sheet SE 60 (Armthorpe).*
SSEW: Harpenden

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.