LAND TO THE NORTH AND EAST OF ST NEOTS, CAMBRIDGESHIRE

Agricultural Land Classification
ALC Map and Report

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AGRICULTURAL LAND CLASSIFICATION REPORT

LAND TO THE NORTH AND EAST OF ST NEOTS, CAMBRIDGESHIRE.

INTRODUCTION

1. This report presents the findings of a detailed Agricultural Land Classification (ALC) survey of 124.4 ha of land to the north and east of St Neots in Cambridgeshire. The survey was carried out during January and February 1999.

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 a planning application for housing and mixed use development by Gallagher Estates Ltd. This survey supersedes previous ALC information for this land.

3. The work was conducted by members of the Resource Planning Team in the Eastern 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 land on the site comprised winter wheat, ploughed land, grassland, cereal stubble and a small area of rough weedy ground in the south-west. The areas mapped as 'Other land' include the grounds of St Neots Football Club, Love's Farm, Cambridge Road, Priory Hill Road, the B1043, a farm road/track which dissects the site and several small areas of woodland.

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
2	52.5	46.7	42.2
3a	59.4	52.9	47.8
3b	0.4	0.4	0.3
Other land	12.1	N/A	9.7
Total surveyed area	112.3	100.0	90.3
Total site area	124.4	-	100.0

7. The fieldwork was conducted at an average density of 1 auger boring per hectare. A total of 123 auger borings and 9 soil pits was described.

8. Just under half the site has been graded 2 (very good quality agricultural land), and is restricted by a minor droughtiness constraint and typically equally limited by a slight wetness and workability imperfection. Most of the remainder of the site has been graded 3a (good quality agricultural land). The majority of this land is limited by moderate wetness and workability constraints and occasionally equally limited by droughtiness. A narrow band of land in the north-west of the site is restricted to subgrade 3a solely by moderate droughtiness, and adjacent to this, to the south of Brook Farm is a small area of land subject to a moderate flood risk. Land graded 3b (moderate quality agricultural land) is confined to a small area south of the covered reservoir in the north-western part of the site. In this area the land has been disturbed. Heavy textured topsoils and slowly permeable compacted subsoils impose a significant wetness and workability constraint.

FACTORS INFLUENCING ALC GRADE

Climate

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

10. 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	TL 201 606	TL 196 617
Altitude	m, AOD	25	20
Accumulated Temperature	day°C (Jan-June)	1445	1450
Average Annual Rainfall	mm	540	549
Field Capacity Days	days	97	100
Moisture Deficit, Wheat	mm	123	123
Moisture Deficit, Potatoes	mm	120	119
Overall climatic grade	N/A	Grade 1	Grade 1

11. 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.

12. 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.

13. The combination of rainfall and temperature at this site impose no limitation to the agricultural quality of the land. The site is therefore of climatic grade 1.

Site

14. The site comprises two parts. The north-western part is located to the immediate west of the railway. Priory Hill Road forms its southern boundary and the B1043 its north-western boundary. To the north the site stops at Gallow Brook, beyond which is Brook Farm and open fields. The high point of this area occurs in the south-east adjacent to the covered reservoir and pumping station, where the altitude is 34 m AOD. From here the land slopes gently to the north and west to approximately 20 m AOD on the valley floor of the River Great Ouse and its tributary, Gallow Brook.

15. The south-eastern part of the site is situated to the immediate east of the railway. Cambridge Road forms the southern boundary, whilst to the north and east the site adjoins open fields. Fox Brook dissects the southern half of the site. The lowest altitude of 23 m AOD occurs in the south-west, and is associated with the Fox Brook valley bottom. From here the land rises gently to the east and north, to reach maximum altitudes of 30 m and 40 m AOD in the east and north-east respectively. Nowhere on site do gradient or altitude impose an overriding limitation to the agricultural land quality.

Geology and soils

16. The published 1:50 000 scale geology map (British Geological Survey, 1975) maps all of the south-eastern part and most of the north-western part of the site as boulder clay. In the north-west adjacent to the B1046 a band of 1st and 2nd terrace river gravels is shown, and in the north, adjacent to Gallow Brook, a narrow band of Oxford Clay is depicted.

17. The 1:250 000 scale reconnaissance soil map (Soil Survey of England and Wales, 1983) shows soils of the Hanslope Association to dominate. The Hanslope soils occur over almost all the site except in a narrow band adjacent to the B1046 where the Efford 1 Association is mapped. These soil associations are briefly described as follows:

- Hanslope: Slowly permeable calcareous clayey soils. Some slowly permeable non-calcareous clayey soils. Slight risk of water erosion.
- Efford 1: Well drained fine loamy soils often over gravel, associated with similar permeable soils variably affected by groundwater.

18. The current survey identified the presence of four main soil types.

19. The first soil type predominates in the south-eastern part of the site and occurs sporadically in the north-western part. Topsoils comprise heavy clay loams or clays, they are very slightly to slightly stony (containing flints and chalk pieces), and contain more than 1% $CaCO_3$. The average topsoil depth is 30 cm. A slowly permeable, gleyed clay subsoil is typically encountered immediately beneath the topsoil and continues to depth. The subsoil is typically calcareous or very calcareous and very slightly stony; most of the stones are small chalk fragments with the occasional flint. These profiles have been assessed as imperfectly drained.

20. The second soil type occurs sporadically in the south-eastern part of the site and on the higher ground in the north-western part. Topsoils mostly comprise heavy clay loams (occasionally medium clays), they are very slightly stony, 30/35 cm deep and contain more than 1% $CaCO_3$. Subsoils typically comprise clay to depth, but very occasionally heavy clay

loam occurs immediately beneath the topsoil, or sandy clay lenses occur within the profile. Gleying is only evident below 40 cm depth, and profiles typically become slowly permeable at moderate depth. The subsoil is typically very slightly stony (occasionally slightly stony) and slightly to very calcareous. Profiles have been assessed as moderately well drained.

21. The third soil type occurs sporadically on the lower ground in the south-east, and on the lower slopes in the north-west. Topsoils typically comprise heavy clay loams (occasionally medium clays or medium clay loams), they are very slightly stony, variably calcareous (ranging from non-calcareous to calcareous) and 30/35 cm deep. The upper subsoils are mostly clay (occasionally heavy clay loam) and similarly stony and calcareous to the topsoil. They typically extend to 50/80 cm, but occasionally continue to depth or become impenetrable to auger at 70/80 cm. Lower subsoils range in texture from heavy clay loam to medium sandy loam, they are very slightly stony (very occasionally moderately stony) and variably calcareous. The subsoil horizons typically exhibit no signs of gleying and are permeable throughout. Profiles have therefore been assessed as well drained.

22. The fourth soil type occurs in the north-west on low lying ground adjacent to the B1046. Topsoil textures range from heavy clay loam to sandy clay loam. The topsoil is very slightly stony (occasionally slightly stony) and typically non-calcareous to very slightly calcareous, it is 30/35 cm deep. Upper subsoils typically comprise very slightly stony variably calcareous clays or heavy clay loams which extend to 50/80 cm depth. Lower subsoils typically comprise variably calcareous moderately to very stony sandy clay loams or heavy clay loams which typically become impenetrable to auger at 80/85 cm. These profiles have been assessed as well drained, but may be affected by moderately high ground water levels.

AGRICULTURAL LAND CLASSIFICATION

23. 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.

24. The location of the auger borings and pits is shown on the attached sample location map.

Grade 2

25. The grade 2 land on site corresponds to the soils described in paragraphs 20 and 21. In both cases the soil textures, stone contents and subsoil structures combine to produce a profile which has a slightly limited ability to retain water for crop growth. All profiles therefore suffer from a minor droughtiness imperfection.

26. Most of the grade 2 land is equally limited by a wetness and workability constraint. Within the area corresponding with the soils described in paragraph 20 the presence of a slowly permeable layer at moderate depth means the profiles have been assessed as Wetness Class II. This factor combines with the calcareous fine loamy or clayey topsoils to impose a minor wetness and workability constraint. On the well drained land corresponding with the soils described in paragraph 21, profiles have been assessed as Wetness Class I. However, due to the heavy textured topsoils present, a workability constraint precludes this land from a higher grade.

Subgrade 3a

27. Land graded 3a corresponds with the soils described in paragraphs 19 and 22, and also to a small area close to Gallow Brook where there is a moderate risk of flooding. The soils described in paragraph 19 have been assessed as Wetness Class III due to the presence of gleying and slowly permeable clay at shallow depth. This factor, in combination with the calcareous fine loamy or clayey topsoils imposes a moderate wetness and workability limitation to the land, thus restricting it to subgrade 3a.

28. The soils described in paragraph 22 have a moderately limited ability to retain water for crop growth due to the combination of profile soil textures and the presence of a very stony lower subsoil. This land is therefore limited by a moderate droughtiness constraint which precludes it from a higher grade.

29. In the low lying area adjacent to Gallow Brook floods have occurred historically. This risk, especially if the floods occur in the early summer, is considered to represent a moderate limitation, thus restricting the land to subgrade 3a.

Subgrade 3b

30. The 3b land on site corresponds with an area of disturbed land to the immediate south of the covered reservoir, which also corresponds with the soils described in paragraph 19. Profiles have been assessed as Wetness Class III, and topsoils have heavy textures. These factors, combined with subsoil compaction caused during the restoration of this area, impose a significant wetness and workability constraint which precludes the land from a higher grade.

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SOURCES OF REFERENCE

Geological Survey of Great Britain (England and Wales) 1975, *Sheet No. 187, Huntingdon.* 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 4, Soils of Eastern England.* SSEW: Harpenden.

Soil Survey of England and Wales (1984) *Soils and their Use in Eastern England* 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.