BEDFORD BOROUGH LOCAL PLAN
SHORTSTOWN, CARDINGTON (H9)

Agricultural Land Classification
ALC Map and Report

OCTOBER 1997

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Eastern Region
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AGRICULTURAL LAND CLASSIFICATION REPORT

BEDFORD BOROUGH LOCAL PLAN, SHORTSTOWN, CARDINGTON (H9)

INTRODUCTION

1. This report presents the findings of a detailed, Agricultural Land Classification (ALC) survey of 20.1ha of land at Shortstown, near Cardington in Bedfordshire. The survey was carried out during October 1997.

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 Bedford Borough Local Plan. 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 majority of the site was sown to winter wheat. In the east of the site is an area of rough grass, within which there are mature trees, areas of concrete hard standing and piles of dumped rubbish. This has been designated 'other land'.

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	4.4	29.9	21.9
3a	4.6	31.3	22.9
3b	5.7	38.8	28.3
Other land	5.4	N/A	26.9
Total surveyed area	14.7	100	---
Total site area	20.1	---	100

7. The fieldwork was conducted at an average density of 1 auger boring per hectare. A total of 19 borings and 3 soil pits was described.

8. The northern part of the site has been assigned to subgrade 3b (moderate quality agricultural land) and is limited to this grade by significant wetness and workability constraints. The remainder of the agricultural land has been assigned in approximately equal proportions to subgrade 3a (good quality agricultural land) and grade 2 (very good quality agricultural land). The former suffers from moderate wetness and workability constraints and from moderate droughtiness, both restricting the land to subgrade 3a. The latter is also equally limited by wetness and workability constraints and by droughtiness, but in this area the limitation is only minor, therefore restricting this land to grade 2.

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 5km grid datasets using the standard interpolation procedures (Met. Office, 1989).

Table 2: Climatic and altitude data

Factor	Units	Values
Grid reference	N/A	TL 073 466
Altitude	m, AOD	35
Accumulated Temperature	day°C (Jan-June)	1443
Average Annual Rainfall	mm	574
Field Capacity Days	days	97
Moisture Deficit, Wheat	mm	118
Moisture Deficit, Potatoes	mm	114
Overall climatic grade	N/A	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 (AT0, January to June), as a measure of the relative warmth of a locality.

13. The combination of rainfall and temperature at this site mean it is relatively warm and dry and therefore has no climatic limitation. Accordingly, it has a climatic grade of 1.

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Site

14. The site is situated to the immediate south of Shortstown, adjoining residential housing to the north, the A600 to the east and agricultural land to the south and west. From a maximum altitude of just over 35m AOD in the north, the site slopes very gently in a southerly direction, becoming level at just over 30m AOD in the south. Neither gradient or altitude therefore impose any limitation to the land quality.

Geology and soils

15. There is no detailed geological map of the area. The published 1:250 000 scale solid edition geology map sheet 52° N - 02° W, East Midlands, (Institute of Geological Sciences, 1983) maps the entire site as Oxford Clay.

16. The Soil Survey of England and Wales have mapped the area on two occasions, at the reconnaissance scale of 1:250 000 (Sheet 4, Soils of Eastern England) in 1983, and at 1:63 360 scale (Sheet 147, Bedford and Luton) in 1968.

17. The former maps the whole site as the Evesham 3 Association, which is briefly described as: Slowly permeable calcareous clayey, and fine loamy over clayey soils. Some slowly permeable seasonally waterlogged non-calcareous clayey soils. The latter maps the whole area as the Milton Association. These are very broadly described as gleyed brown earths which are formed over gravely and loamy drift.

18. The present survey identified the presence of three main soil types and confirms the presence of a gravely drift, of variable thickness, over the southern part of the site.

19. The first soil type, found in the north of the site, typically comprises a topsoil of very slightly stony heavy clay loam or clay. This is generally very slightly calcareous and extends to 35cm depth. Immediately below this a clay subsoil is encountered which is typically gleyed and slowly permeable. This clay is typically stoneless, and often becomes calcareous below 35/65cm.

20. The second soil type, principally found in the south of the site, comprises a non calcareous, very slightly stony, medium clay loam topsoil to 35cm depth. This either directly overlies a variably stony (0-20% stones) non calcareous, gleyed and slowly permeable clay subsoil, or is separated from it by a thin layer of slightly stony, non calcareous heavy clay loam.

21. The third soil type is found in the west of the site. It is comprised of a non calcareous or very slightly calcareous, very slightly to slightly stony medium clay loam topsoil extending to 30/35cm. This overlies a non calcareous, slightly to moderately stony sandy clay loam subsoil which becomes heavier (heavy silty clay loam or heavy clay loam) with depth. This subsoil is not slowly permeable, but does exhibit signs of gleying, probably due to high ground water levels.

AGRICULTURAL LAND CLASSIFICATION

22. 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.

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

Grade 2

24. Land of grade 2 corresponds to the soils described in paragraph 21, found in the west of the site. Profiles were typically assessed as Wetness Class II, which in combination with the medium clay loam topsoils represents a minor wetness and workability imperfection. These soils are also subject to a minor droughtiness constraint due to their slightly limited ability to retain water for crop growth and the relatively high expected soil moisture deficits in this area. These minor limitations preclude this land from a higher grade.

Subgrade 3a

25. Land of this subgrade corresponds to the soils described in paragraph 20, which occur in the south of the site. The presence of slowly permeable clay either directly below the topsoil or at shallow depth results in these profiles being assessed as Wetness Class III. Combined with the medium clay loam topsoil this represents a moderate wetness and workability constraint. The soils are also moderately droughty, their ability to provide water for crop growth being moderately restricted due to their poorly structured and typically slightly stony subsoils. These imperfections are equally limiting, restricting this land to subgrade 3a.

Subgrade 3b

26. Land of subgrade 3b occurs in the north of the site and coincides with the soils described in paragraph 19. Profiles have been assessed as Wetness Class III, due to the presence of slowly permeable clay immediately beneath the topsoil. In combination with the heavy topsoil, this represents a significant wetness and workability constraint, which restricts the land to subgrade 3b.

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SOURCES OF REFERENCE

Institute of Geological Sciences, (1983) *Sheet No. 52° N - 02° W, East Midlands.* 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.*
Soil Survey of England and Wales (1968) *Sheet 147, Bedford and Luton.*
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.