POCKET'S DELL, BOVINGDON, HERTFORDSHIRE

Agricultural Land Classification & Soil Physical Characteristics Map & Report

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AGRICULTURAL LAND CLASSIFICATION AND SOIL PHYSICAL CHARACTERISTICS REPORT

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INTRODUCTION

1. This report presents the findings of an Agricultural Land Classification (ALC) survey of 18.1 ha of land at Bovingdon. The survey was carried out during April 1999 to verify the findings of Chamley Associates report and to assist in the restoration proposals for this site.

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 proposed extension of the adjacent Bovingdon Brickworks. 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 use on the site was oil seed rape. The application site forms part of a much larger field.

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)	% site area
3a	10.0	55
3b	8.1	45
Total site area	18.1	100

7. The fieldwork was conducted at an average density of just under one boring per hectare. A total of 13 borings and 2 soil pits was described.

8. The eastern part of the site is graded subgrade 3a (good quality agricultural land) and is excluded from a higher grade by a moderate wetness and workability limitation. The

western part of the site is graded subgrade 3b (moderate quality agricultural land) due to a more severe wetness and workability limitation.

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 004 033
Altitude	m, AOD	160
Accumulated Temperature	day°C (Jan-June)	1321
Average Annual Rainfall	mm	740
Field Capacity Days	days	161
Moisture Deficit, Wheat	mm	91
Moisture Deficit, Potatoes	mm	78
Overall climatic grade	N/A	Grade 2

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 mean there is a slight climatic limitation to the agricultural land quality. The climatic grade is 2.

Site

14. The site is situated to the south west of Bovingdon village. To the north east and south east the site is bounded by roads. To the south west a tree belt has been planted. To the north west open agricultural fields occur. The site is on a plateau at about 160 m AOD and nowhere on the site do slopes exceed 2°. Near the eastern boundary there is a shallow hollow in the field. Gradient or microrelief do not impose any limitation to the agricultural use of the land.

Geology and soils

15. The 1:50 000 drift geology map (GSEW, 1990) of the area shows the whole site to be covered with a drift deposit of clay with flints. This overlays the solid geology of Cretaceous Upper Chalk

16. The soils have been mapped on two occasions by the Soil Survey of England and Wales. Firstly in 1961 the soils were mapped as the Batcombe Series which is briefly described as a gleyed brown earth.

17. In 1983 the soils were mapped at a reconnaissance scale of 1:250 000 as the Batcombe Association. This is described as fine silty over clayey and fine loamy over clayey with slowly permeable subsoils and slight seasonal waterlogging. Some soils may be well drained over chalk and they are variably flinty.

18. During the recent survey work two main soil types have been identified.

Soil type I

19. The first soil type is mapped over the north eastern part of the site. Profiles typically comprise very slightly stony medium silty clay loam topsoils to 30 cm. Below this, the upper subsoil comprises medium or heavy silty clay loam which has a similar or occasionally higher stone content to 50/60 cm. This horizon is typically gleyed but is porous. The lower subsoil is typically clay which has been assessed as slowly permeable. The stone content is typically very slightly stony. Topsoils and upper subsoils are variably calcareous whilst the lower subsoil is non calcareous.

Soil type II

20. The second soil type is located along the western and southern boundaries of the site. Topsoils typically comprise very slightly stony heavy silty clay loam, occasionally medium silty clay loam. This typically overlies at 30 cm depth slowly permeable clay which contains 1-3% flints. Occasionally there is a shallow upper subsoil horizon which is similar to the topsoil but only extends to a maximum thickness of 10 cm. These profiles are non calcareous throughout.

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.

22. The location of the auger borings and pits is shown on the attached sample location map and the details of the soils data are presented in Appendix II.

Subgrade 3a

23. Land graded 3a is associated with the soils described in paragraph 19 above. Profiles have typically been assessed as Wetness Class III and this in combination with the fine silty topsoil textures results in the land being limited by a moderate wetness and workability limitation. This excludes the land from a higher grade.

Subgrade 3b

24. The soils which have described in paragraph 20 above have been graded 3b. Profiles are typically slowly permeable directly beneath the topsoil, resulting in a Wetness Class assessment of IV. This in combination with topsoil textures limits the number of days when soils are in a suitable condition for cultivation or trafficking. Wetness and workability limit the agricultural use of the land to subgrade 3b.

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SOURCES OF REFERENCE

British Geological Survey (1990) *Sheet No. 238, Aylesbury, Drift edition,* 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 (1961) *Sheet 238, Aylesbury.* SSEW: Harpenden.

Soil Survey of England and Wales (1983) *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, 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 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.

APPENDIX II

SOIL PHYSICAL CHARACTERISTICS REPORT

Soil type I (10.0 ha)

Topsoil

Texture:	medium silty clay loam
Colour:	10YR4/3 and 10YR4/2
Stone:	slightly stony (range 2-5% subangular flints)
Rooting:	many fine and very fine
Calcium Carbonate:	variable
Depth:	30 cm (range 25/30 cm)
Boundary form:	abrupt, smooth

Upper subsoil

Texture:	medium or heavy silty clay loam
Colour:	10YR5/4, with 10YR6/3, 6/4, 5/2 and 6/2
Stone:	typically 5% flints (occasionally 10/20%)
Structure:	moderately developed coarse subangular blocky
Porosity:	>0.5%
Consistence:	firm
Structural condition:	moderate
Rooting:	common fine and very fine
Calcium Carbonate:	variable
Depth:	50/60 cm
Horizon Boundary:	clear/wavy

Lower subsoil

Texture:	clay
Colour:	10YR5/4 and 6/3 with 10YR 5/3 and 6/2
Stone:	typically 2% flint (range 0-10%)
Structure:	moderately developed coarse angular blocky
Porosity:	<0.5%
Consistence:	firm
Structural condition:	poor
Rooting:	common fine and very fine
Calcium Carbonate:	non calcareous
Depth:	120 cm

Comments: assessed as Wetness Class III
upper subsoil gleyed
lower subsoil assessed as a slowly permeable layer

Soil type II (8.1 ha)

Topsoil

Texture:	heavy silty clay loam (occasionally medium silty clay loam)
Colour:	10YR4/2 and 10YR4/3
Stone:	slightly stony (range 2-5% subangular flints)
Rooting:	many fine and very fine
Calcium Carbonate:	variable
Depth:	30 cm
Boundary form:	abrupt, smooth

Subsoil

Texture:	clay
Colour:	10YR & 7.5YR5/4, with 10YR6/3,5/3 and 6/2
Stone:	typically 5% flints (range 2-5%)
Structure:	weakly developed adherent coarse subangular blocky
Porosity:	<0.5%
Consistence:	firm
Structural condition:	poor
Rooting:	common fine and very fine
Calcium Carbonate:	non calcareous
Depth:	120 cm

Comments: assessed as Wetness Class IV
subsoil mottled and slowly permeable
occasionally thin upper subsoil 30/40 cm