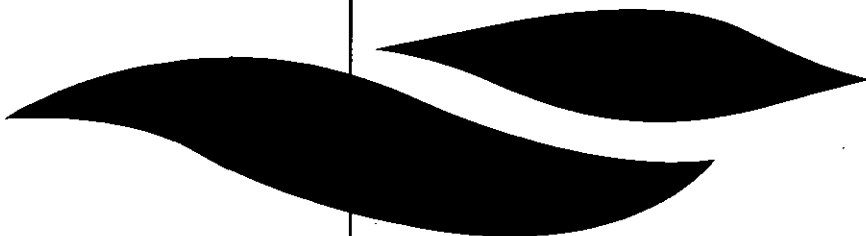
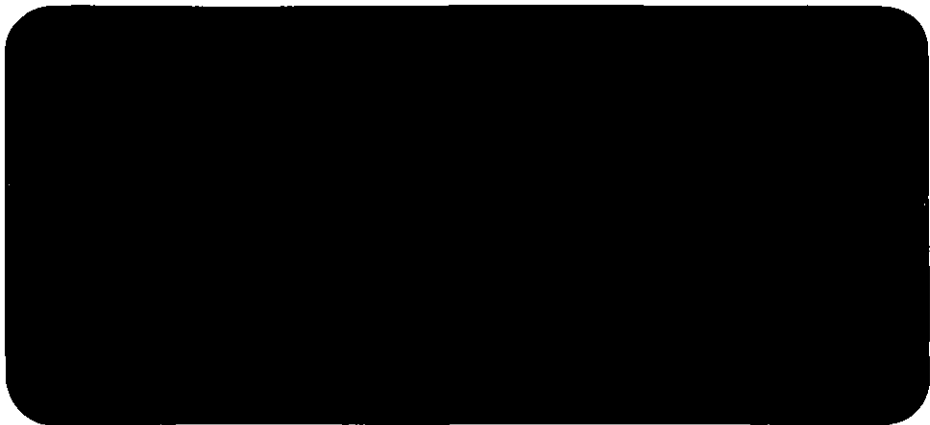


FRCA



FARMING AND RURAL CONSERVATION AGENCY
An Executive Agency of the Ministry of Agriculture, Fisheries and Food and the Welsh Office

**HUSBANDS BOSWORTH,
LEICESTERSHIRE**

**SEMI-DETAILED VALIDATION
SURVEY**

**Agricultural Land Classification &
Statement of Site Physical
Characteristics**

July 1998

**Resource Planning Team
Eastern Region
FRCA Cambridge**

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**AGRICULTURAL LAND CLASSIFICATION &
STATEMENT OF SITE PHYSICAL CHARACTERISTICS**

HUSBANDS BOSWORTH, LEICESTERSHIRE

SEMI-DETAILED VALIDATION SURVEY

INTRODUCTION

1. This report presents the findings of a semi-detailed Agricultural Land Classification (ALC) validation survey and assessment of site physical characteristics of ??? ha of land at *Husbands Bosworth in Leicestershire*. The survey was carried out during June 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 an application to extract sand and gravel from the site. This survey supersedes previous ALC information for this land and is a validation survey of ALC information provided by S G MsRae on behalf of the applicant.
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 mainly growing barley and small areas of wheat and oats, with an area of grassland in the northeast. The areas mapped as 'Other land' include two 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 | 28.1 | 89 | 88 |
| 3a | 1.1 | 3 | 3 |
| 3b | 2.4 | 8 | 8 |
| Other land | 0.2 | N/A | 1 |
| Total surveyed area | 31.6 | 100 | 99 |
| Total site area | 31.8 | - | 100 |

7. The fieldwork was conducted at an average density of one boring per two hectares. A total of 19 borings and 3 soil pits was described.

8. The vast majority of the land at the site has been graded 2 (very good quality agricultural land) due to mainly minor droughtiness imperfections. Two small areas of land have been graded 3a (good quality agricultural land) and are restricted by moderate wetness and workability limitations. Two other areas of land have been graded 3b (moderate quality agricultural land) due to either significant wetness and workability imperfections or steep gradients.

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 | SP 636823 |
| Altitude | m, AOD | 140 |
| Accumulated Temperature | day°C (Jan-June) | 1317 |
| Average Annual Rainfall | mm | 693 |
| Field Capacity Days | days | 156 |
| Moisture Deficit, Wheat | mm | 95 |
| Moisture Deficit, Potatoes | mm | 83 |
| 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 (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 it is relatively warm and dry and therefore has a climate grade of 1.

Site

14. The site is located approximately 2 km south of Husbands Bosworth, west of and adjacent to the A 50. The land is generally gently undulating and ranges in height from 153 m

AOD in the northeast to 125 m AOD in the southwest. Over the majority of the site therefore, neither gradient nor altitude constitute a limitation to the ALC grade. However, a small area in the north of the site has gradients in excess of 7°. The steep slope restricts the type of machinery which can be safely and efficiently used and therefore this land is limited to subgrade 3b.

Geology and soils

15. The published 1:63 360 scale geology map, sheet 170, Market Harborough, (Geological Survey of Great Britain, 1969) maps the site as predominantly comprising boulder clay drift. In the southwest of the site a small area is depicted as comprising glacial sand and gravel, first terrace river deposits and Middle Lias Clays and Silts.

16. On the 1:250 000 reconnaissance scale published soils map, sheet 4, Soils of Eastern England (Soil Survey of England and Wales, 1983) the whole site is shown as consisting of the Beccles 3 Association, which is briefly described as slowly permeable seasonally waterlogged fine loamy over clayey soils and similar soils with only slight seasonal waterlogging. Some calcareous clayey soils especially on steeper slopes.

17. During this semi-detailed validation survey an inspection of the soils was carried out and two main soil types were identified. The accompanying soil resources map which details this information is not necessarily a soil stripping map but illustrative of the soil resources available for restoration at the site.

Soil Type I (28.2 hectares)

18. The site predominantly comprises Soil Type I. Profiles typically comprise very slightly to slightly stony sandy clay loam or medium sandy loam topsoils which overlie similar textured slightly to moderately stony upper subsoils. Stoniness increases with depth and the similar textured lower subsoils are typically moderately stony. Hand augering of these soils was difficult due to their dry condition and often the borings became impenetrable at 50/60 cm. These soils are well drained and non-calcareous throughout.

Soil Type II (3.4 hectares)

19. Soil Type II occurs in two small areas in the northeast and southwest of the site. Profiles typically comprise very slightly to slightly stony medium or very occasionally heavy clay loam topsoils which overlie similarly stony heavy clay loam or medium clay loam upper subsoils. Lower subsoils comprise very slightly stony slowly permeable clay which is encountered at depths of 40/60 cm. Profiles are typically imperfectly or poorly drained and non-calcareous throughout.

AGRICULTURAL LAND CLASSIFICATION

20. 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.

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

Grade 2

22. The land at the site has been graded predominantly grade 2 and corresponds with the soils described in paragraph 18. Profile textures and stoniness result in the soils having moderate reserves of water available for plant growth and as a result there is a minor droughtiness limitation to land quality and the land is graded 2.

Subgrade 3a

23. Two areas of land in the northeast and southwest of the site have been graded 3a and this land corresponds with the imperfectly drained, medium clay loam topsoil textured variants of the soils described in paragraph 19. These soils have typically been assessed as Wetness Class III and this factor in combination with the topsoil texture restricts the land to subgrade 3a due to moderate wetness and workability imperfections.

Subgrade 3b

24. In the southwest of the site an area of land has been graded 3b and corresponds with either the poorly drained or heavy clay loam topsoil textured soils described in paragraph 19. These soils have been assessed as Wetness Class IV or III. This factor in combination with either the medium clay loam or heavy clay loam topsoils respectively, limits land quality to subgrade 3b due to significant wetness and workability constraints.

25. In addition, in the north of the site a small area of subgrade 3b land occurs in association with slopes of greater than 7°. The steep slopes restrict the type of machinery which can be safely and efficiently used and therefore this land is limited to subgrade 3b.

Soil resources

26. Two Soil Types have been identified within the site and their distribution is shown on the accompanying soil resources map which is illustrative of the soil resources within the site for restoration purposes but is not a soil stripping map for the site. A statement of the physical characteristics of these two Soil Types is given in Appendix II. The thickness and the volume of the Soil Types is given below.

Table 3: Soil Resources

| | | Area (ha) | Thickness (cm) | Volume (m ³) |
|--------------|---------------|-----------|----------------|--------------------------|
| Soil Type I | Topsoil | 28.2 | 28 | 78 960 |
| | Upper Subsoil | 28.2 | 32 | 90 240 |
| | Lower Subsoil | 28.2 | 60 | 169 200 |
| Soil Type II | Topsoil | 3.4 | 25 | 8 500 |
| | Lower subsoil | 3.4 | 20 | 6 800 |
| | Upper subsoil | 3.4 | 75 | 25 500 |

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SOURCES OF REFERENCE

Geological Survey of Great Britain (England and Wales)(1969) *Sheet No. 170, Market Harborough, solid and drift edition*. BGS: London.

Met. Office (1989) *Climatological Data for Agricultural Land Classification*. Met. Office: Bracknell.

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.

Soil Survey of England and Wales (1983) *Sheet 4, 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.

APPENDIX II

STATEMENT OF SOIL PHYSICAL CHARACTERISTICS

SOIL TYPE I (28.2 hectares)

| | | |
|----------------------|----------------------|--|
| Topsoil | Texture | : Sandy clay loam or medium sandy loam |
| | Colour | : Dark yellowish brown (10 YR 4/4) or occasionally yellowish brown (10 YR 5/5) |
| | Depth | : Typically 28 cm, range 25 to 35 cm |
| | Stoniness | : Very slightly to slightly stony (5-15% flint) |
| | Roots | : Many fine and very fine |
| | Calcium carbonate | : Non-calcareous |
| | Boundary form | : Clear, smooth or abrupt, wavy |
| | Upper subsoil | Texture |
| Colour | | : Strong brown (7.5 YR 5/6) or brown (7.5 YR 4/4) or dark yellowish brown (10 YR 4/6) |
| Depth | | : Typically to 60 cm, range 40 to 80 cm |
| Stoniness | | : Slightly to moderately stony (10-20%) |
| Roots | | : Common fine and very fine |
| Structure | | : Moderately developed coarse and very coarse angular blocky |
| Consistence | | : Friable |
| Structural condition | | : Moderate |
| Porosity | | : >0.5% |
| Calcium carbonate | | : Non-calcareous |
| Boundary form | | : Clear, wavy |
| Lower subsoil | Texture | : Medium sandy loam or sandy clay loam |
| | Colour | : Strong brown (10 YR 4/6) or brown (10 YR 4/4) |
| | Depth | : *120 cm + |
| | Stoniness | : Moderately stony (18-20%) |
| | Roots | : Common fine and very fine |
| | Structure | : Too stony to assess |
| | Consistence | : Too stony to assess |
| | Structural condition | : Too stony to assess |
| | Porosity | : >0.5% |
| | Calcium carbonate | : Non-calcareous |

Wetness Class: I

*Hand augering of these soils was difficult due to their dry condition and often the borings became impenetrable at 50/60 cm. Deepest pit depth was 90 cm, however it was assumed soil resources continued to 120 cm.

SOIL TYPE II (3.4 hectares)

| | | |
|-------------------|----------------------|--|
| Topsoil | Texture | : Medium or very occasionally heavy clay loam |
| | Colour | : Dark yellowish brown (10 YR 4/4) or brown (10 YR 4/3) |
| | Depth | : Typically 25 cm, range 25 to 35 cm |
| | Stoniness | : Very slightly to slightly stony (2-8% flint) |
| | Roots | : Many fine and very fine |
| | Calcium carbonate | : Non-calcareous |
| | Boundary form | : Abrupt, wavy |
| Upper subsoil | Texture | : Heavy clay loam or medium clay loam |
| | Colour | : Yellowish brown (10 YR 4/4) or dark yellowish brown (10 YR 4/6) or brown (10 YR 4/3) |
| | Depth | : Typically to 45 cm, range 40 to 60 cm |
| | Stoniness | : Very slightly to slightly stony (5-8%) |
| | Roots | : Common fine and very fine |
| | Structure | : Moderately developed moderate and coarse subangular blocky |
| | Consistence | : Friable |
| | Structural condition | : Good |
| | Porosity | : >0.5% |
| | Calcium carbonate | : Non-calcareous |
| | Boundary form | : Abrupt, wavy |
| Lower subsoil | Texture | : Clay |
| | Colour | : Brown (10 YR 5/3) |
| | Depth | : 120 cm + |
| | Stoniness | : Very slightly stony (2-5%) |
| | Roots | : Common fine and very fine |
| | Structure | : Weakly developed coarse and very coarse subangular blocky |
| | Consistence | : Firm |
| | Structural condition | : Poor |
| | Porosity | : <0.5% |
| Calcium carbonate | : Non-calcareous | |

Wetness Class: III or IV

Common distinct ochreous and grey mottles and common manganese concretions present in the lower subsoil.