



**Proposed British Academy of Sport
Land at Garendon Park,
Loughborough, Leics.**

**Agricultural Land Classification
November 1996**

**Resource Planning Team
Huntingdon Statutory Group
ADAS Cambridge**

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AGRICULTURAL LAND CLASSIFICATION REPORT

Proposed British Academy of Sport Land at Garendon Park, Loughborough, Leics.

Introduction

1. This report presents the findings of a detailed Agricultural Land Classification (ALC) survey of 82.6 ha of land to the west of Loughborough to the north of the A512 trunk road centred on grid reference SK 505 195. The survey was carried out during November 1996.
2. The survey was commissioned by the Ministry of Agriculture, Fisheries and Food (MAFF) Land Use Planning Unit, Cambridge in connection with the proposal to locate the British Academy of Sport associated infrastructure and housing. This survey supersedes previous ALC surveys on this land.
3. The work was conducted by members of the Resource Planning Team in the Huntingdon Statutory Group in ADAS. 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, land within the application area consisted of primarily cultivated land or post emergence winter cereal. A single large field of grassland grazed by sheep was located towards the north of the site.

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)	% Total site area
2	19.1	23.1
3a	27.6	33.4
3b	17.2	20.8
Other land	18.7	22.7
Total site area	82.6	100

7. The fieldwork was conducted at an average density of one borings per hectare of the agricultural land. A total of sixty seven auger borings and three soil pits were described.

8. Land of Grade 2 (very good quality agricultural land) has been mapped in the north with Subgrade 3a (good quality agricultural land) mapped in the centre and south east of the site. Areas of Subgrade 3b (moderate quality agricultural land) occur principally in the east of the site with small areas occurring in the west and north.

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	SK 505 195
Altitude	m, AOD	55
Accumulated Temperature	day°C (Jan-June)	1401
Average Annual Rainfall	mm	653
Field Capacity Days	days	147
Climatic grade	N/A	1
Moisture Deficit, Wheat	mm	101
Moisture Deficit, Potatoes	mm	92

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 no overall climatic limitation to land quality.

Site

14. The site lies at an altitude of approximately 45 mAOD in the north and rises gently to approximately 70 mAOD in the south. Slopes were generally gentle to moderate and only exceeded 7° close to the obelisk in the east of the site. However, gradient or relief do not impose any overall limitation to the agricultural quality of the site.

Geology and soils

15. The published 1 : 50 000 scale solid and drift edition geology map (Geol. Survey, 1976) shows the northern half of the site to comprise Alluvium with the southern half of the site mapped as Keuper (red) Marl.

16. No detailed soil map exists for the area but the reconnaissance (1 : 250 000 scale) soil map (Soil Survey, 1983) shows the site to comprise soils of the Dunnington Heath association. This association is formed in Drift over Permo-Triassic reddish mudstone and is briefly described as reddish coarse and fine loamy over clayey soils with slowly permeable subsoils and slight seasonal waterlogging. Two major soil types were found within the site during the present survey.

Soil Type I

17. This soil type is found in the north of the site and consists of a very slightly stony sandy clay loam or occasionally medium sandy loam textured topsoil overlying similar but increasingly stony subsoil horizons. The subsoil was found to be distinctly mottled but permeable hence profiles were assessed as Wetness Class I or II (Appendix II).

Soil Type II

18. This soil type consists of two distinct variants; most commonly a very slightly stony sandy clay loam, medium clay loam or occasionally heavy clay loam textured topsoil overlies a heavy clay loam upper subsoil which in turn overlies a clay textured lower subsoil. In the second variant the upper subsoil horizon is absent. The upper subsoil was assessed as gleyed and mottled but permeable while the clay textured lower subsoil horizon was found to constitute a slowly permeable layer. Hence the variant with an upper subsoil horizon was assessed as Wetness Class III and the variant with the topsoil directly overlying the slowly permeable clay was assessed as Wetness Class IV.

Agricultural Land Classification

19. 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.

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

Grade 2

21. Land of Grade 2 quality is limited to the north of the site and corresponds to Soil Type I (paragraph 17 above). The soils assessed as Grade 2 quality were well drained with the soil profiles providing only slightly limiting levels of available moisture for plant growth. However where topsoil texture was sandy clay loam and profiles were assessed as Wetness Class II then a slight wetness and workability limitation was found to be equally limiting as droughtiness and restricted such soil profiles to Grade 2 quality.

Subgrade 3a

22. Land of Subgrade 3a is found principally in the west with further small areas in the north and south east of the site and is associated with the better drained variant of Soil Type II (paragraph 18 above). The combination of sandy clay loam or medium clay loam textured topsoil and an assessment of Wetness Class III results in a moderate wetness and workability limitation restricting such land to Subgrade 3a.

Subgrade 3b

23. Land of Subgrade 3b quality was associated with profiles of Soil Type II (paragraph 18 above) in which either the topsoil was found to be heavy clay loam or clay and profiles were assessed as Wetness Class III or where profiles were assessed as Wetness Class IV. This results in a significant wetness and workability limitation restricting the land to Subgrade 3b.

Other Land

24. Woodland and scrub in the south, east and west of the site is mapped as other land. Additionally farm buildings and associated hard standing and the gardens of a house in the north east of the site are also mapped as other land.

Ray Leverton
Resource Planning Team
Huntingdon Statutory Group
ADAS Cambridge

SOURCES OF REFERENCE

British Geological Survey (1976) *Sheet No. 141, Loughborough, 1:50 000 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 3, Soils of Midland and Western 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

SOIL WETNESS CLASSIFICATION

Definitions of Soil Wetness Classes

Soil wetness is classified according to the depth and duration of waterlogging in the soil profile. Six soil wetness classes are identified and are defined in the table below.

Wetness Class	Duration of waterlogging ¹
I	The soil profile is not wet within 70 cm depth for more than 30 days in most years. ²
II	The soil profile is wet within 70 cm depth for 31-90 days in most years or, if there is no slowly permeable layer within 80 cm depth, it is wet within 70 cm for more than 90 days, but only wet within 40 cm depth for 30 days in most years.
III	The soil profile is wet within 70 cm depth for 91-180 days in most years or, if there is no slowly permeable layer present within 80 cm depth, it is wet within 70 cm for more than 180 days, but only wet within 40 cm depth for between 31-90 days in most years.
IV	The soil profile is wet within 70 cm depth for more than 180 days but not wet within 40 cm depth for more than 210 days in most years or, if there is no slowly permeable layer present within 80 cm depth, it is wet within 40 cm depth for 91-210 days in most years.
V	The soil profile is wet within 40 cm depth for 211-335 days in most years.
VI	The soil profile is wet within 40 cm depth for more than 335 days in most years.

Assessment of Wetness Class

Soils have been allocated to wetness classes by the interpretation of soil profile characteristics and climatic factors using the methodology described in *Agricultural Land Classification of England and Wales: Revised guidelines and criteria for grading the quality of agricultural land* (MAFF, 1988).

¹ The number of days is not necessarily a continuous period.

² 'In most years' is defined as more than 10 out of 20 years.