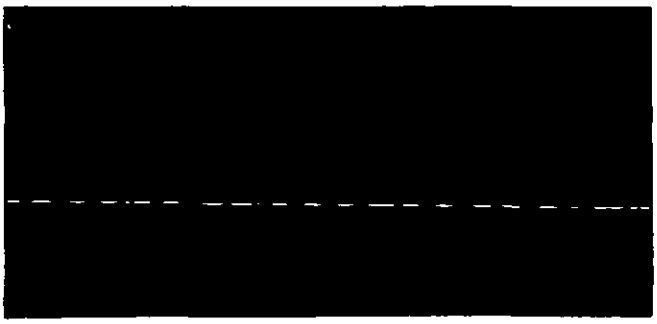

MAFF Ministry of Agriculture Fisheries and Food

Proposed British Academy of Sport
Land at Holme Pierrepont, Nottingham

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 Holme Pierrepont, Nottingham

Introduction

1. This report presents the findings of a detailed Agricultural Land Classification (ALC) survey of 172.7 ha of land to the south east of Nottingham to the north of the A52 trunk road centred on grid reference SK 610 381. The survey was carried out during October/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 and associated infrastructure. 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 main application area consisted of a large lake with associated grassland grazed by sheep and either cultivated land or stubble following cereals. Land to the west of Regatta Way consisted of various agricultural uses including winter cereals, sugar beet and grassland grazed by horses.

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	9.0	5.2
3a	22.6	13.1
3b	50.3	29.1
4	16.4	9.5
Other land	19.0	11.0
Open water	55.4	32.1
Total site area	172.7	100

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

8. The land within the site has been assessed in the west as a mix of Grade 2 (very good quality agricultural land), Subgrade 3a (good quality agricultural land) and Subgrade 3b (moderate quality agricultural land). The eastern part of the site largely consists of previous sand and gravel workings with a large area of open water and surrounding restored grassland assessed as Subgrade 3b (moderate quality agricultural land) and Grade 4 (poor quality agricultural land). A further small area of open water is located in the extreme south east of the site and areas of woodland and scrub are mapped as other land. Also mapped as other land is a caravan and camping site in the north of the site. The main limiting factor for the agricultural quality of land in the west of the site and for the restored land is a droughtiness constraint. However much of the undisturbed land to the east of Regatta Way is limited by a 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 5km grid datasets using the standard interpolation procedures (Met. Office, 1989).

Table 2: Climatic and altitude data

Factor	Units	Values
Grid reference	N/A	SK 610 381
Altitude	m, AOD	20
Accumulated Temperature	day°C (Jan-June)	1430
Average Annual Rainfall	mm	574
Field Capacity Days	days	120
Climatic grade	N/A	1
Moisture Deficit, Wheat	mm	115
Moisture Deficit, Potatoes	mm	109

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 20 mAOD and is generally level. Therefore neither gradient or relief impose any limitation to the agricultural quality of the site.

Geology and soils

15. The published 1 : 63 360 scale solid and drift edition geology map (Geol. Survey, 1972) shows the northern half of the site to comprise River Gravel deposits with Alluvium mapped predominantly in the south of the site.

16. No detailed soil map exists for the area but the reconnaissance (1 : 250 000 scale) soil map (Soil Survey, 1983) shows the middle of the site to comprise soils of the Wick 1 association which is formed on Glaciofluvial or River Terrace Drift. The majority of the south of the site is mapped as soils of the Fladbury 2 association while the north west of the site is mapped as Wharfe association. These two soil associations are formed on River Alluvium. The Wick 1 association is briefly described as deep well drained coarse loamy and sandy soils, locally over gravel. The Fladbury 2 association is described as stoneless clayey soils variably affected by groundwater, some with sandy subsoils and some similar fine loamy soils and the Wharfe association are deep stoneless permeable fine loamy soils. Four soil types were identified within the site during the present survey and are described briefly below.

Soil Type I

17. This soil type covered the majority of the undisturbed area of the site and consisted of a very slightly stony heavy clay loam, clay or occasionally sandy clay loam or medium clay loam textured topsoil overlying a stoneless, mottled clay textured subsoil. Very occasionally a sandy clay loam or heavy clay loam textured upper subsoil was evident which in turn overlay a clay textured lower subsoil horizon. Additionally, occasionally at depth sandy textured material was encountered. The subsoil was distinctly mottled immediately below the topsoil with the clay textured subsoil horizon constituting a slowly permeable layer, hence profiles of this soil type were assessed as Wetness Class III (Appendix II).

Soil Type II

18. This soil type was principally located in the north of the undisturbed land in the site and consisted of a very slightly or slightly stony sandy clay loam or occasionally medium sandy loam textured topsoil. This topsoil overlies a variably stony sandy clay loam or occasionally heavy clay loam textured upper subsoil which in turn overlies a sandy clay textured lower subsoil with variable quantities of gravel inclusions. The subsoils were occasionally mottled however no subsoil horizon was found to be slowly permeable and hence profiles of this soil type were assessed as Wetness Class I or II with droughtiness being the principal limiting factor.

Soil Type III

19. This soil type was limited in extent and was found principally to the west of Regatta Way and consisted of medium sandy clay loam textured topsoil overlying similar textured subsoil horizons. Occasionally the subsoil became increasingly sandy with depth. Topsoil was

generally only very slightly stony, however subsoil stone content increased with depth and was usually moderately or very stony in the lower subsoil. Profiles of this soil type were well drained and hence were assessed as Wetness Class I with droughtiness being the limiting factor for agricultural land quality.

Soil Type IV

20. This soil type consisted of the restored land around the large lake in the eastern part of the site. The soils found in this area were mixed in texture and generally very hard, compacted and stony. Droughtiness was assessed as the principal limitation within this soil type.

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.

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

Grade 2

23. Land of Grade 2 quality is limited to the north west of the site and corresponds to the less droughty areas of Soil Types II and III (paragraphs 18 and 19 above). The soils assessed as Grade 2 quality were well drained with the soil profiles providing good levels of available moisture for plant growth. Hence only a slight droughtiness limitation restricted such soil profiles to Grade 2 quality.

Subgrade 3a

24. Land of this subgrade is found in the west of the site on undisturbed land associated with the more droughty profiles of Soil Types II and III (paragraphs 18 and 19 above) and those profiles of Soil Type I with lighter textured topsoil horizons (paragraph 17 above). The combination of a sandy clay loam or medium clay loam textured topsoil with an assessment of Wetness Class III for Soil Type I profiles results in a moderate wetness and workability limitation restricting such land to Subgrade 3a. The high stone contents of a limited number of profiles of Soil Types II and III result in a moderate droughtiness limitation restricting such areas to Subgrade 3a.

Subgrade 3b

25. Land of this quality was associated with profiles of Soil Type I (paragraph 17 above) which were assessed as Wetness Class III and had a heavy clay loam or clay textured topsoil. Hence these profiles are restricted to Subgrade 3b through a significant wetness and workability limitation. Additionally small areas of restored land around the large lake are assessed as Subgrade 3b quality. These areas consist of soil profiles of Soil Type IV (paragraph 20 above) in which stone content and compaction restrict available moisture for plant growth hence droughtiness limits such profiles to Subgrade 3b.

Grade 4

26. Land of Grade 4 quality was associated with restored areas of Soil Type IV (paragraph 20 above) around the large lake. The soil profiles were found to be stony and compacted. This compaction limited root penetration and root mats above compacted subsoil were evident. Hence the volume of soil available to supply moisture for plant growth was very limited and hence a severe droughtiness restriction limited such land to Grade 4 quality.

Other Land

27. A caravan and camping site in the north of the site is mapped as other land as are areas of scrub and woodland, principally in the south east of the site. Additionally a house and associated garden and outbuildings and a metalled lane to the west of Regatta Way are mapped as other land.

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SOURCES OF REFERENCE

British Geological Survey (1972) *Sheet No.* 126, *Nottingham, 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.