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**PROPOSED SPORTS FACILITIES  
CHEAPSIDE FARM, ST ALBANS, HERTS  
(St Albans School)**

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

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

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**AGRICULTURAL LAND CLASSIFICATION REPORT  
INCLUDING STATEMENT OF PHYSICAL CHARACTERISTICS**

**LAND AT CHEAPSIDE FARM, ST ALBANS, HERTFORDSHIRE  
(St Albans School)**

**Introduction**

1. This report presents the findings of a detailed Agricultural Land Classification (ALC) survey of 16.9 ha of land at Cheapside Farm, St Albans, Hertfordshire. The survey was carried out on 22 November 1996 and includes information gathered from a previous survey carried out during March 1994.
2. The survey was commissioned by the Ministry of Agriculture, Fisheries and Food (MAFF) Land Use Planning Unit, Cambridge in connection with a planning application for proposed sports facilities, made by St Albans School. This survey supersedes previous ALC surveys on this land (ADAS 024/94)
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 all the land was growing winter cereals.

**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	1.6	9.5
3a	11.1	65.7
3b	4.2	24.8
Total site area	16.9	100

7. The fieldwork was conducted at an average density of 1 boring per hectare. A total of 20 borings and 1 soil pit was described, which was further backed up by the findings from an additional soil pit on similar soils on the neighbouring land.

8. The main limitation associated with this land is due principally to wetness and workability. A small area of Grade 2, very good quality agricultural land has been mapped on the eastern side of the site, where there is only minor evidence of waterlogging in the soils. Over the larger part of the site Subgrade 3a, good quality agricultural land has been identified, where slowly permeable clays were found at moderate depths giving rise to a moderate wetness limitation. At the north eastern corner and again at the south western end of the site moderate quality agricultural land, Subgrade 3b has been mapped. In these areas slowly permeable clay is found generally immediately below the topsoil resulting in a moderately severe wetness and workability restriction.

### 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 148 104
Altitude	m, AOD	127
Accumulated Temperature	day°C (Jan-June)	1352
Average Annual Rainfall	mm	685
Field Capacity Days	days	140
Moisture Deficit, Wheat	mm	103
Moisture Deficit, Potatoes	mm	94

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 the soils will require a moderately high available water capacity to avoid drought stress to plants during the drier periods of the year. Conversely, the relatively moist conditions that prevail during the winter months will result in an increased wetness limitation on heavy textured soils. The land is not particularly exposed or subject to increased frost risk and therefore there is no overall limitation to the agricultural quality of the land due to climate.

#### Site

14. The land falls very gently toward the south east, with the altitude ranging from approximately 125 m over the majority of the northern end of the site to 120 m AOD in the south east. Relief therefore does not impose any limitation to the agricultural quality of the area.

#### Geology and soils

15. The published 1:50,000 scale drift edition geology map (Sheet 239, Geol Surv. 1978) shows the northern part of the site to comprise pebbly clay and sand over Cretaceous Upper Chalk, with the southern end mapped as Clay with Flints over chalk.

16. The Soil Survey of England and Wales have mapped the soils on two occasions. Firstly in 1968 at a scale of 1:63,360 (Sheet 147, Bedford and Luton) and more recently in 1983 at a reconnaissance scale of 1:250,000. Both maps indicate the presence of one soil association, the Batcombe association. The soils of this association are described as variably stony, fine silty over clayey and fine loamy over clayey with slowly permeable subsoils and slight seasonal waterlogging.

17. During the current, more detailed survey work two soil types have been identified, differing principally in the depth to the underlying slowly permeable clay.

#### Soil Type 1 (described in more detail in Appendix III)

18. This soil type occupies the majority of the site and comprises fine loamy soils overlying clay at depth. The soils typically have a slightly to moderately stony, medium clay loam topsoil, overlying a gleyed or slightly gleyed, heavy clay loam upper subsoil. The lower subsoil is typically clay which is variably stony and slowly permeable. The soils have been assessed as mainly Wetness Class III (see Appendix II) although some better drained profiles Wetness Class II occur on the eastern side of the site. Topsoils are typically stonier (10-15%) along the western side of the site, becoming less stony to the east.

#### Soil Type 2 (described in more detail in Appendix III)

19. Soil Type 2 has been mapped at the south western end of the site. These soils differ from those described above by generally having no upper subsoil over the clay. A typical profile has a slightly to moderately stony heavy clay loam or occasionally medium clay loam topsoil overlying a greyish brown or pale brown strongly mottled slowly permeable clay. The subsoil is variably stony. These soils have been assessed as Wetness Class III or IV.

## **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 and pits is shown on the attached sample location map and the details of the soils data are presented in Appendix III..

### *Grade 2*

22. A small area of Grade 2 land has been mapped on the eastern side of the site comprising the better drained variants of Soil Type 1. These soils, which are assessed as Wetness Class II have slightly stony, medium clay loam topsoil textures and consequently under the prevailing climatic conditions will have a slight wetness and workability restriction limiting the land quality to Grade 2.

### *Subgrade 3a*

23. The land mapped as Subgrade 3a comprises the less well drained variants of Soil Type 1. These soils which typically have medium clay loam topsoil textures have been assessed as Wetness Class III and as such under the prevailing climatic conditions will have a moderate wetness and workability restriction limiting the number of days when the soils will be in a suitable condition for cultivation. Several profiles along the western side of the site also have moderately stony topsoil horizons with 10-12% flints >2cm in diameter. The presence of these stones affect to a moderate degree, the success of crop drilling and establishment and increase the wear and tear on farm machinery and this therefore also limits the land quality to Subgrade 3a.

### *Subgrade 3b*

24. Moderate quality agricultural land has been mapped at the northeast and southwest of the site. These areas correlate with the heavier textured soils of Soil Type 2, which typically have non calcareous, heavy clay loam topsoils overlying slowly permeable clays which have been assessed as Wetness Class III or IV. This moderately severe wetness limitation associated with the heavy clay loam topsoil textures, will restrict the number of days when the soils will be in a suitable condition for cultivations, limiting the land quality to Subgrade 3b.

### *Soil Resources*

25. A statement of soil physical characteristics is given in Appendix III. The thicknesses and the volumes given in Table 3 below should be treated with some caution due to the variability of the soils.

Table 3: Soil Resources

	Area (ha)	Thickness (cm)	Volume (m <sup>3</sup> )
<b>Soil Type 1</b>			
Topsoil	12.7	30	38100
Upper Subsoil	12.7	20	25400
Lower Subsoil	12.7	70	88900
<b>Soil Type 2</b>			
Topsoil	4.2	30	12600
Subsoil	4.2	90	37800

Resource Planning Team  
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## SOURCES OF REFERENCE

British Geological Survey (1978) *Sheet No. 239, Hertford (Drift Edition) 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 (1968) *Sheet 147, Bedford and Luton 1:63,360 scale*  
SSEW: Harpenden

Soil Survey of England and Wales (1983) *Sheet 4, Eastern England. 1:250,000 scale*  
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

### 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.

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Wetness Class	Duration of waterlogging <sup>1</sup>
I	The soil profile is not wet within 70 cm depth for more than 30 days in most years. <sup>2</sup>
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.

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#### 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).

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<sup>1</sup> The number of days is not necessarily a continuous period.

<sup>2</sup> 'In most years' is defined as more than 10 out of 20 years.

## APPENDIX III

### STATEMENT OF SOIL PHYSICAL CHARACTERISTICS

#### SOIL TYPE 1

Topsoil	Texture	medium clay loam
	Colour	10YR4/3 & 4/4
	Stone	5-15% small & medium subangular flints
	Roots	many fine and very fine
	CaCO <sub>3</sub>	non calcareous
	Depth	25/30 cm
	Boundary	abrupt smooth
Upper Subsoil	Texture	heavy clay loam
	Colour	10YR5/3, 5/4 and 6/4
	Mottles	few 10YR6/6, but none in several profiles
	Concretions	few manganese
	Stone	3-10% small & medium subangular flints
	Structure	moderate coarse subangular blocky
	Consistence	friable/firm
	Structural condition	moderate
	Pores	>0.5%
	Roots	common fine and very fine
	CaCO <sub>3</sub>	non calcareous
	Depth	45/70 cm
	Boundary	abrupt smooth
Lower subsoil	Texture	clay
	Colour	10YR5/2, and 6/4
	Mottles	common 10YR5/6, 7.5YR5/8 and 5YR5/8
	Concretions	none
	Stone	0-5% small & medium subangular flints
	Structure	moderate coarse angular blocky
	Consistence	firm
	Structural condition	poor
	Pores	<0.5%
	Roots	few fine and very fine
	CaCO <sub>3</sub>	non calcareous
Depth	120 cm	

## SOIL TYPE 2

Topsoil	Texture	heavy clay loam occasionally medium
	Colour	10YR4/3 & 4/4
	Stone	10-15% small & medium subangular flints
	Roots	many fine and very fine
	CaCO <sub>3</sub>	non calcareous
	Depth	25/30 cm
	Boundary	abrupt smooth
Subsoil	Texture	clay
	Colour	10YR5/2, 5/3 and 6/4 becoming greyer and paler with depth
	Mottles	many 10YR5/6, 7.5YR5/8 and 5YR5/8
	Concretions	none
	Stone	1-2% small & medium subangular flints
	Structure	moderate coarse angular blocky
	Consistence	firm
	Structural condition	poor
	Pores	<0.5%
	Roots	common fine and very fine
	CaCO <sub>3</sub>	non calcareous
	Depth	120 cm
		Boundary