AGRICULTURAL LAND CLASSIFICATION AND STATEMENT OF PHYSICAL CHARACTERISTICS

LAND AT CHEAPSIDE FARM, SANDRIDGEBURY LANE, ST ALBANS, HERTFORDSHIRE

1.0 BACKGROUND

1.1 The site, covering a total area of 52.2 hectares is the subject of three separate planning applications:- Current application (Planing reference 5/94/0335), St Albans School (5/93/0075) and Old Albanian (5/93/0076). In this report the areas will be known as Sites A, B and C respectively. Details are known for the site A application; these consist of the proposed development of sports facilities including the erection of two pavilions, an internal road with car parks and the construction of a new access onto the Harpenden Road.

1.2 In March/April 1994, ADAS Statutory Resource Planning Team undertook a detailed Agricultural Land Classification (ALC) survey of the three sites at an auger boring density of approximately one boring per hectare. These borings were supplemented by two soil inspection pits to provide more detailed information on subsoil conditions. Furthermore topsoil riddling was carried out extensively throughout the site to assess topsoil stone contents.

1.3 At the time of the survey the majority of the land was under arable production; cereals and peas being the two crops grown. Along the southern edge of site C a thin strip of woodland was identified.

1.4 On the published ALC map, sheet 160 (Provisional, 1:63,360 MAFF 1970) all three sites are shown as grade 3.

2.0 PHYSICAL FACTORS AFFECTING LAND QUALITY

Climate

2.1 Climate data for the sites was interpolated from data contained in the published agricultural climatic dataset (Met Office, 1989). This indicates that for an average altitude of 115 m AOD, the average annual rainfall is 677 mm (26.7"). It also indicates that field capacity days are 139 and that moisture deficits for wheat and

potatoes are 105 mm and 96 mm respectively. These climatic characteristics do not impose any climatic limitation on the ALC grade of the sites.

Altitude and Relief

2.2 As a whole land within the sites rises steadily from a minimum altitude of 103 m AOD adjacent to the railway to a maximum altitude of 126 m AOD on the plateau in the north west corner near Tompkins Spring. The main valley feature runs in a west to easterly direction south of Sandridgebury Lane and mainly accords with site C. A secondary, shallow valley feature runs in a north west to south easterly direction and joins the main valley feature to the west of the railway line (mainly coinciding with site A). Neither altitude nor gradient on any of the 3 sites constitutes a limitation to the ALC grade.

Geology and Soils

2.3 The published 1:50,000 scale drift edition geology map (sheet 239, Geological Survey of Great Britain (England and Wales) 1978) shows the 3 sites as a whole to comprise mainly clay with flints underlain by Cretaceous Upper Chalk which outcrops in the dry valleys. A small area between the dry valleys and along the southern boundary of site C is mapped as glacial gravel, with a smaller area of pebbly clay with sand mapped north of Sandridgebury Lane at the western edge of sites A and B.

2.4 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, i.e. the Batcombe Association(*1).

2.5 During the current, more detailed survey work two soil types were identified which correspond with the drift geology recorded for the 3 sites.

(*1) Batcombe Association: Fine silty over clayey and fine loamy over clayey soils with slowly permeable subsoils and slight seasonal waterlogging. Some well drained clayey soils over chalk. Variably flinty.

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

2.5.1 Soil type 1 covers most of the 3 sites, except for a small area in the south. These soils typically comprise slightly to moderately stony, non calcareous medium or heavy clay loam (occasionally medium or heavy silty clay loam) topsoils over similar or heavier upper subsoils with virtually the same stone content. Lower subsoils consist of non calcareous clays which are typically less stony than the upper horizons. Topsoil stone content within this area is variable with the stone content ranging between 7 and 20% soil volume with 5-14% of the stones exceeding 2 cm in size. Stone content tends to be highest on the brows of the dry valleys and lowest in the field adjacent to Faircroft Lodge (sites A and B).

Soil Type 1*: Profile as for type 1 with topsoil stone in the range 20-25% soil volume and 16-20% of the stones exceeding 2 cm.

Soil Type 2 (described in more detail in Appendix 1)

2.5.2 Soil type 2 is found along the southern boundary of site C and broadly correlates with the glacial gravel drift deposits mapped in this area. Soils typically comprise slightly stony, non calcareous medium sandy loam topsoils over similar or lighter textured upper subsoils. Lower subsoils comprise medium sand or loamy medium sands, occasionally interspersed with clay lenses. Stone content in the subsoils is variable ranging from slightly to moderately stony. Topsoil stone content increases eastwards and is in the range 7 to 20%** soil volume with 5-17% of the stones exceeding 2 cm in size.

3.0 AGRICULTURAL LAND CLASSIFICATION

3.1 The definition of the ALC grades (MAFF, 1988) are included in Appendix 2.

3.2 The three sites as a whole comprise mainly subgrade 3a land, with three small areas of subgrade 3b land in the west, south and north eastern parts of the survey area. The table overleaf shows the breakdown of ALC grades for each application site (A-C) in hectares and % terms.

** a stony varient of soil type 2 has not been delineated because it covers too small an area to be treated as a seperate mapping unit at this survey scale.

AGRICULTURAL LAND CLASSIFICATION

SITE A	ha	%
Subgrade 3a	27.2	78.6
Subgrade 3b	7.4	21.4
TOTAL	34.6	100.00

SITE B	ha	%
Subgrade 3a	15.6	76.6
Subgrade 3b	4.8	23.4
TOTAL	20.4	100.00

SITE C	ha	%
Subgrade 3a	9.4	53.4
Subgrade 3b	6.6	37.7
Non agricultural	1.6	8.9
TOTAL	17.6	100.00

3.3 Since sites A and B overlap the ALC grading for these two applications are dealt with together in paragraphs 3.4-3.7.

SITES A & B

Subgrade 3a

The majority of the land is graded 3a and is associated with soil type 1, described in paragraph 2.5.1.

3.4 In the two fields immediately north of Sandridgebury Lane topsoil stone greater than 2 cm in size comprises typically 11-13% flints. The presence of these stones affect to a moderate degree, the success of crop drilling and establishment, the availability of soil water and nutrients, and the wear and tear on farm machinery. Thus this land is limited to 3a by the topsoil stone imperfections. Occassionally where upper subsoils have a high stone content (30-40% of total soil volume) land is also limited to 3a by moderate droughtiness imperfections because the stones reduce the available profile water for crop growth. Where topsoil textures are

heavier (i.e. heavy clay loam) and soil wetness is assessed as wetness class II the land is also restricted by moderate wetness and workability limitations.

3.5 In the field adjacent to Faircroft Lodge topsoil stone is not the over-riding limitation because the topsoils typically comprise only 5-9% stones greater than 2 cm. Soil wetness has been assessed as wetness class II or III depending upon the depth to the slowly permeable clay horizon (i.e. 40/60 cm). The combination of topsoil textures, typically medium or heavy clay loam (occasionally medium or heavy silty clay loam) and a wetness class of II or III impose a moderate wetness and workability limitation which excludes the land from a higher grade.

Subgrade 3b

Subgrade 3b land occurs in two main situations.

3.6 Firstly it is mapped in an area north of Sandridgebury Lane. The land is associated with the stonier (i.e. soil type 1*) soils described as in paragraph 2.5.1 where topsoil stone typically contains 16-20% flints greater than 2 cm in size. Thus land is restricted to subgrade 3b as a result of significant topsoil stone limitations.

3.7 Secondly an area (associated with soil type 1) to the south of Faircroft Lodge has been mapped as subgrade 3b. The soil wetness class has been assessed as III or IV depending upon the depth to the slowly permeable clay horizon (typically 30/45 cm). The combination of poorly drained soils and medium/heavy clay loam (occasionally medium/heavy silty clay loam) topsoils act to impose significant wetness and workability imperfections which restrict the land to subgrade 3b (moderate quality agricultural land).

SITE C

3.8 This area is predominantly mapped as subgrade 3a with two smaller areas of subgrade 3b land occurring on the brows of the valleys in the north and south (described in paragraphs 3.9-3.12).

Subgrade 3a

Land mapped as subgrade 3a occurs in two situations.

3.9 Most of the land graded 3a is associated with the soils described in paragraph 2.5.1. Topsoil stone content is typically 10-12% greater than 2 cm thus excluding this land from a higher grade (see paragraph 3.4 for reasons).

3.10 Along the southern edge of the subgrade 3a land, the associated lighter textured soils as described in paragraph 2.5.2 occur. The combination of coarse loamy topsoils and profile stone content reduce the profile available water for crop growth. Consequently the land is limited by moderate droughtiness imperfections to subgrade 3a (good quality agricultural land).

Subgrade 3b

3.11 Two areas of subgrade 3b have been mapped. Both areas coincide with soil type 1* (see paragraph 2.5.1) and the stonier variant of the soils described in paragraph and 2.5.2. Topsoil stone content typically comprises 17-18% flints greater than 2 cm in size. The presence of many stones, especially in the topsoil, imposes a significant limitation on cultivations which excludes the land from a higher grade.

Non Agricultural

3.12 A thin strip of woodland has been mapped along the southern boundary of the site.

R ORPIN
Resource Planning Team
Eastern Statutory Centre

REFERENCES

GEOLOGICAL SURVEY OF ENGLAND AND WALES, 1978. Drift Edition, Sheet 239 1:50,000 scale.

MAFF 1970. *Agricultural Land Classification Map No. 160. Provisional. 1:63,360* scale.

MAFF 1988. Agricultural Land Classification of England and Wales (Revised Guidelines and Criteria for Grading the Quality of Agricultural Land). Alnwick.

METEOROLOGICAL OFFICE 1989. Published climatic data extracted from the agroclimatic dataset compiled by the Meteorological Office.

SOIL SURVEY OF ENGLAND AND WALES 1968. Sheet 147, Luton and Bedford, 1:63,360 scale.

SOIL SURVEY OF ENGLAND AND WALES 1983. Soils of Eastern England, Sheet 4, 1:250,000.

SOIL SURVEY OF ENGLAND AND WALES 1984. Soils and their use in Eastern England by C A Hodge *et al.* Harpenden.

APPENDIX 1

STATEMENT OF PHYSICAL CHARACTERISTICS

SOIL TYPE 1:

Topsoil	Texture	:	medium or heavy clay loam (occasionally medium or heavy silty clay loam).
	Colour	:	typically 10YR4/2 and 10YR4/3 (dark greyish brown/brown).
	Stone	:	variable typically in the range 7-20% total of soil volume. Small, medium and large subrounded and subangular flints (5-14% >2 cm in size).
	Boundary	:	abrupt, smooth
	Roots	:	few fine and very fine
	Depth	:	30 cms (average)
Upper Subsoil*	Texture	:	heavy clay loam (occasionally medium clay loam or clay).
	Matrix Colour	:	typically 10YR5/4, 10YR4/4 and 7.5YR5/4 (yellowish brown, dark yellowish brown and brown). Where clay 7.5YR5/6 (strong brown).
	Stone	:	variable, typically in the range 10-40% subrounded pebbles and subangular flints (where clay typically less stony 5-10% flints).
	Structure	:	moderately developed coarse subangular/ angular blocky.
	Consistence	:	friable/firm
	Porosity	:	<0.5% biopores
	Boundary	:	clear and broken
	Roots	:	few fine and very fine
	Depth	:	typically 40/60 cm

* rarely exists in 3b profiles.

Lower Subsoil	Texture	:	clay
	Matrix Colour	:	7.5YR5/3, 10YR5/3, 10YR6/3 and 7.5YR5/2 (brown, pale brown and brown respectively).
	Stone	:	variable ranging from stoneless to bands with 35% flints.
	Structure	:	typically weakly developed, coarse angular blocky.
	Consistence	:	firm
	Porosity	:	<0.1% biopores
	Roots	:	few very fine and fine roots
	Depth	:	120 cm+

Additional Information	:	assessed as wetness class II or III (occasionally IV)
	:	non calcareous throughout
	:	common ochreous/grey mottles noted typically in the lower subsoil (occasionally from 30 cm+).

SOIL TYPE 1*

Profile as for soil type 1 with topsoil stone in the range 20-25% soil volume and 16-20% of stones exceeding 2 cm.

SOIL TYPE 2:

Topsoil	Texture	:	medium sandy loam (occasionally sandy clay loam).
	Colour	:	10YR4/2 and 10YR4/3 (dark greyish brown and brown).
	Stone	:	typically 7-20% round small and medium flints with 5-17% stones >2 cm in size.
	Boundary	:	abrupt, smooth
	Roots	:	few fine and very fine
	Depth	:	typically 30 cm
Upper Subsoil	Texture	:	medium sandy loam (occasionally loamy medium sand and sandy clay loam).
	Colour	:	10YR6/4 and 5/4 (yellowish brown)
	Stone	:	typically in the range 15-35% small and medium flints.
	Structure	:	weakly developed medium and coarse subangular blocky.
	Consistence	:	friable/very friable
	Porosity	:	>0.5% biopores
	Boundary	:	clear and smooth
	Roots	:	few fine and very fine
	Depth	:	typically 50/70 cm
Lower Subsoil	Texture	:	loamy medium sand and medium sand (occasionally narrow bands of clay encountered below 70 cms).
	Colour	:	7.5YR5/6, 7.5YR6/6 and 10YR5/4 (strong brown, reddish yellow and yellowish brown.
	Stone	:	variable ranging between 5 and 40% small and medium flints.
	Structure	:	structureless, single grain
	Consistence	:	very friable
	Porosity	:	>0.5% biopores
	Roots	:	few fine and very fine
	Depth	:	120 cm+

Additional Information	:	non calcareous throughout. typically assessed as wetness class I.

APPENDIX 2

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 include 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 and horticultural crops can usually be grown but on some land in the grade there may be reduced flexibility due to difficulties with the production of the more demanding crops such as winter harvested vegetables and arable crops. The level of yield is generally high but may be lower or more variable than Grade 1.

Grade 3 - good to moderate quality agricultural land

Land with moderate limitations which affect the choice of crops, timing and type of cultivation, harvesting or the level of yield. Where 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 levels of yields. It is mainly suited to grass with occasional arable crops (eg. cereals and forage crops) the yield of which are variable. In most 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 very severe limitations which restrict use to permanent pasture or rough grazing, except for occasional pioneer forage crops.