AGRICULTURAL LAND CLASSIFICATION

LAND SOUTH OF SALISBURY ROAD,

TOTTON, HANTS

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1. BACKGROUND

1.1 Land within this 52.0 ha block was inspected during September and October 1991 in connection with two separate planning applications for residential development. The land is bounded to the north and east by Salisbury Road and to the south by Cooks Lane. To the south west and west the boundary is partly determined by the line of the proposed Totton Western by-pass.

1.2 54 auger boring examinations were made using 1.2m Dutch soil augers with samples being taken at approximately 100m intervals across the site. Additional information was obtained by the examination of 5 soil inspection pits.

Land Use

1.3 At the time of survey most of the site was under permanent pasture being grazed by horses and cattle. Areas of land surrounding Calmoor Croft Farm and at Sharves Hill were in an overgrown state.

PHYSICAL FACTORS AFFECTING LAND QUALITY

Relief

2.1 The site lies at approximately 10-30m A.O.D with the highest land occurring to the north west at Brookshill. The lowest land is to the east with overall falls in an easterly direction. Gradient is not a limitation in terms of agricultural land quality on the site.

Climate

2.2 Estimates of climatic variables were obtained by interpolation from a 5km grid database (Met. Office, 1989).

Grid Ref.	SU 343152	SU 339152	SU 335156
Altitude	10m	15m	30m
Accumulated Temperature (°days)	1546	1540	1523
Average Annual Rainfall (mm)	832	839	856
Field Capacity Days	174	175	179
Moisture Deficit, Wheat (mm)	109	108	105
Moisture Deficit, Potatoes (mm)	104	102	99

2.3 The important parameter in assessing an overall climatic limitation are average annual rainfall (a measure of overall wetness) and accumulated temperature (a measure of the relative warmth of a locality). There is no overall climatic limitation affecting land quality on the site. However, climatic factors do affect interactive limitations between soil and climate, namely soil wetness and droughtiness.

2.4 In terms of soil wetness assessment the site has a field capacity day range of 174-179 days making it borderline between two field capacity day groupings (ie 151-175 FCD and 176-225 FCD) used to allocate ALC grades on the basis of wetness class. For the purposes of this ALC survey it is therefore recognised that a small number of sampling locations at lowest elevations ie below about 15, A.O.D. are borderline between two grades. The majority of the site however, has field capacity day values of 176 or greater.

Geology and Soils

2.5 British Geological Survey Sheet 315, Southampton (1978) shows the majority of the land to be underlain by Bracklesham Beds (interbedded sands and clays). The extreme south eastern corner of the area has been mapped as valley gravel.

2.6 The published Soil Survey of England and Wales Soil Map of South East England (SSEW, 1983) at a scale of 1:250,000 shows the site predominantly mapped as the Wickham 3 association. These soils are described as being "slowly permeable seasonally waterlogged fine loamy over clayey and coarse loamy over clayey, and similar more permeable soils with slight waterlogging. Some deep loamy, more permeable soils with slight waterlogging. Some deep loamy soils affected by groundwater" (SSEW, 1983).

2.7 A small area of the Hurst association (SSEW, 1983) is also mapped, corresponding to the valley gravels identified on the published geological survey sheet. The Hurst association is described as coarse and fine loamy soils mainly over gravel variably affected by groundwater (SSEW, 1983).

2.8 A semi-detailed soil map at a scale of 1:25,000 scale is also available for the Southampton District (SSLRC, 1989). This indicates the presence of 11 soil mapping units on the site.

2.9 Detailed field examination of soils on the site indicates that soils are predominantly non-calcareous medium sandy loams and sandy silt loam topsoils and upper subsoils, which may remain coarse loamy or sandy to depth or pass to sandy clay loams, clays and sandy clays with depth. The lower clayey horizons are typically slowly permeable. Where clayey lower horizons are absent groundwater may rise into the soil profile causing ochreous mottling and grey pale colouration indicative of seasonal waterlogging.

2.10 Stone content across the area is variable both vertically and laterally. The loamy upper soil hoizons vary from very slightly to moderately stony. The clayey lower horizons are typically less stony, although gravel lenses and gravel derived soils also occur.

3. AGRICULTURAL LAND CLASSIFICATION

3.1 The ALC grading of the survey area is primarily determined by interactions between climate and soil factors, namely soil wetness and droughtiness. ALC grades 2, 3a, 3b and 4 are mapped. A breakdown of these grades for the two planning application areas are as follows:

Application Ref:	47557		47789	
	Ha	% Agricultural Area	Ha	% Agricultural Area
Grade 2	7.3	16.6	5.6	17.7
3a	15.9	36.0	8.5	26.8
3b	18.8	42.6	15.5	48.9
4	2.1	4.8	2.1	6.6
Non-Agricultural	0.3		1.0	
Woodland	1.6		0.9	
Urban	4.3		4.9	
Agricultural Bldgs	1.7		———	
Total	52.0		38.5	

3.2 Appendix 1 gives a general description of the grades and sub-grades identified in this survey.

Grade 2

3.3 Land of this quality occurs on gently sloping land to the western half of the site. Topsoils typically comprise non-calcareous, slightly stony (<5% V/V flints > 2cm) medium sandy loams or occasionally sandy silt loams overlying similar textured subsoils to depths of 80-120 cm. Some profiles pass to sandy clay loam or clay below 80-90 cm, or become increasingly gravelly below these depths. Gleying is usually apparent with 40 cm but soils are not generally slowly permeable within 80 cm and are therefore allocated to wetness I. The main limitation to the agricultural use of such soils is slight droughtiness particularly where stonier subsoil horizons are found.

Grade 3a

3.4 Land graded 3a represents two main types of soils. Firstly, are permeable variably gleyed soils, similar to these graded 2, having slightly stony medium sandy loam topsoils overlying similar loamy (medium sandy loam or loamy medium sand) upper subsoils which may pass to medium sand or gravelly horizons with depth. Such soils are typically freely draining (wetness Class I) but are limited by droughtiness caused by the coarse textured and/or gravelly subsoils.

3.5 The second soil type includes those with slowly permeable horizons in the subsoil, usually at 50-65 cm depth. They typically comprise medium sandy loam topsoils overlying similar textured upper subsoils which pass to slowly permeable sandy clay loam and sandy clays with depth. These are appropriately allocated to wetness Class III and in combination with their coarse loamy textured topsoil which aid workability are graded 3a.

Grade 3b

3.6 Areas grades 3b occur extensively on the site, particularly east of Paulets Lane. Land of this quality is typically associated with either shallow coarse loamy textures over gravel or very stony horizons, or poorly drained soils with slowly permeable subsoils. With the exception of a patch of gravelly land east of Shorn Hill, these two soil types occur sporadically and in close proximity within the grade 3b mapping unit. This gives rise to a pattern of droughty and wet areas. On Sharves Hill a coarse textured soil varient was noted, comprising a shallow loamy medium sand topsoil overlying a medium sand subsoil.

3.7 The shallow gravelly soil varients included in this grade typically possess slightly or occasionally moderately stony (c<5-20% v/v flints), medium sandy loam or sandy silt loam topsoils and upper subsoils resting over gravelly layers at 35-55 cm. Such soils show variable gleying and some contain slowly permeable layers at depth. Drainage class varies from I to III. Droughtiness, however, forms the main limitation to agricultural land quality.

3.8 The wetter soils typically comprise medium sandy loam, sandy silt loam, medium clay loam or sandy clay loam topsoils, either resting directly above a sandy clay loam subsoil or passing to sandy clay loam within 46 cm. The lower subsoil is typically sandy clay or clay. These soils are assigned to wetness class IV due to the occurrence of slowly permeable horizons in the uppermost 46 cm and presence of gleying within 40 cm.

3.9 As noted in para. 2.4 the site has a field capacity day (FCD) range of 174-179 FCD making it borderline between two FCD groupings (MAFF, 1988). The lower land on the site, below about 15m A.O.D. has around 174-175 FCD and soils with medium sandy loam or sandy silt loam topsoils are borderline between grades 3a and 3b. However, due to their sporadic distribution they are included within the grade 3b mapping unit.

Grade 4

3.10 Land of this quality is associated with an area of wet flushes around Bog Plantation. Here the soils have organic or peaty layers and are affected by high groundwater causing areas of water seepage, giving rise to permanently wet conditions which are difficult to control by normal drainage measures. The agricultural potential of such land is limited to low intensity grazing.

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J HOLLOWAY
Resource Planning Group
ADAS Reading
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SOURCES OF REFERENCE

BRITISH GEOLOGICAL SURVEY (1976) Sheet 315, Southampton.

MAFF (1988) Agricultural Land Classification of England and Wales: Revised guidelines and criteria for grading the quality of agricultural land.

METEOROLOGICAL OFFICE (1989) Climatological datasets for agricultural land classification.

SOIL SURVEY AND LAND RESEARCH CENTRE (1989) Soils of the Southampton District.

SOIL SURVEY OF ENGLAND AND WALES (1983) Sheet 6 - Soils of South East England.

APPENDIX 1

DESCRIPTION OF THE GRADES AND SUBGRADES

The ALC grades and subgrades are described below in terms of the types of limitation which can occur, typical cropping range and the expected level and consistency of yield. In practice, the grades are defined by reference to physical characteristics and the grading guidance and cut-offs for limitation factors in Section 3 enable land to be ranked in accordance with these general descriptions. The most productive and flexible land falls into Grades 1 and 2 and Subgrade 3a and collectively comprises about one-third of the agricultural land in England and Wales. About half the land is of moderate quality in Subgrade 3b or poor quality in Grade 4. Although less significant on a national scale such land can be locally valuable to agriculture and the rural economy where poorer farmland predominates. The remainder is very poor quality land in Grade 5, which mostly occurs in the uplands.

Descriptions are also given of other land categories which may be used on ALC maps.

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 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 root 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 level of yields. It is mainly suited to grass with occasional arable crops (eg 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 very severe limitations which restrict use to permanent pasture or rough grazing, except for occasional pioneer forage crops.

Descriptions of other land categories used on ALC maps

Urban

Built-up or 'hard' uses with relatively little potential for a return to agriculture including: housing, industry, commerce, education, transport, religious buildings, cemeteries. Also, hard-surfaced sports facilities, permanent caravan sites and vacant land; all types of derelict land, including mineral workings which are only likely to be reclaimed using derelict land grants.

Non-agricultural

'Soft' uses where most of the land could be returned relatively easily to agriculture, including: golf courses, private parkland, public open spaces, sports fields, allotments and soft-surfaced areas on airports/airfields. Also active mineral workings and refuse tips where restoration conditions to 'soft' after-uses may apply.

Woodland

Includes commercial and non-commercial woodland. A distinction may be made as necessary between farm and non-farm woodland.

Agricultural buildings

Includes the normal range of agricultural buildings as well as other relatively permanent structures such as glasshouses. Temporary structures (eg polythene tunnels erected for lambing) may be ignored.

Open water

Includes lakes, ponds and rivers as map scale permits.

Land not surveyed

Agricultural land which has not been surveyed.

Where the land use includes more than one of the above land cover types, eg buildings in large grounds, and where map scale permits, the cover types may be shown separately. Otherwise, the most extensive cover type will usually be shown.

APPENDIX II

FIELD ASSESSMENT OF SOIL WETNESS CLASS

SOIL WETNESS CLASSIFICATION

Soil wetness is classified according to the depth and duration of waterlogging in the soil profile. Six revised soil wetness classes (Hodgson, in preparation) are identified and are defined in Table 11.

Table 11 Definition of Soil Wetness Classes

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 not wet within 40 cm depth for more than 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 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 and 90 days in most years.
IV	The soil profile is wet within 70 cm depth for more than 180 days but not within 40 cm depth for more than 210 days in most years *or*, if there is no slowly permeable layer 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.

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

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

Soils can be allocated to a wetness class on the basis of quantitative data recorded over a period of many years or by the interpretation of soil profile characteristics, site and climatic factors. Adequate quantitative data will rarely be available for ALC surveys and therefore the interpretative method of field assessment is used to identify soil wetness class in the field. The method adopted here is common to ADAS and the SSLRC.