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Tintinhull Forts, Yeovil
Proposed Landfill and Golf Course

Agricultural Land Classification
and Site Physical Characteristics

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TINTINHULL FORTS, LANDFILL AND GOLF COURSE SITE

AGRICULTURAL LAND CLASSIFICATION

AND

SITE PHYSICAL CHARACTERISTICS

CONTENTS **Page**

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AGRICULTURAL LAND CLASSIFICATION SURVEY

SUMMARY

The survey was carried out by ADAS on behalf of MAFF as part of its statutory role in connection with a planning application to the Minerals Planning Authority under the Town and Country Planning Act 1990, for a proposed landfill site and possible future golf course at Tintinhull Forts, Yeovil. The fieldwork at Tintinhull Forts was completed in October 1995 at a scale of 1:10,000. Data on climate, soils, geology and from previous Agricultural Land Classification (ALC) Surveys was used and is presented in the report. The distribution of grades is shown on the accompanying ALC map and summarised below. Information is correct at this scale but could be misleading if enlarged.

Distribution of ALC grades: Tintinhull Forts

Grade	Area (ha)	% of Survey Area	% of Agricultural Land (51.0 Ha)
3a	2.4	4.7	4.7
3b	48.6	95.3	95.3
TOTAL	51.0		

Most of the site was found to be Subgrade 3b, with more serious moderate limitation due to wetness. Only a small pocket, amounting to 4.7% of the survey area, was found to be best and most versatile Subgrade 3a, with less serious moderate limitation due to wetness.

Soil resource information is provided for the landfill site as the background to any restoration conditions which may be recommended.

1. INTRODUCTION

An Agricultural Land Classification (ALC) Survey was carried out in October 1995 at Tintinhull Forts, Yeovil on behalf of MAFF as part of its statutory role in connection with a planning application to the Minerals Planning Authority under the Town and Country Planning Act, 1990. The fieldwork covering 51.0 ha of land was conducted by ADAS at a scale of 1:10,000 with approximately one boring per hectare of agricultural land. A total of 52 auger borings were examined and 4 soil profile pits used to assess subsoil conditions.

The published provisional one inch to the mile ALC map of this area (MAFF 1970) shows the grades of the site at a reconnaissance scale to be Grade 3.

The recent survey supersedes this map having been carried out at a more detailed level and using the Revised Guidelines and Criteria for grading the quality of agricultural land (MAFF 1988). These guidelines provide a framework for classifying land according to the extent to which its physical or chemical characteristics impose long-term limitations on agricultural use. The grading takes account of the top 120 cm of the soil profile. A description of the grades used in the ALC system can be found in Appendix 2.

2. CLIMATE

The grade of the land is determined by the most limiting factor present. The overall climate is considered first because it can have an overriding influence on restricting land to a lower grade despite other favourable conditions.

Estimates of climatic variables were interpolated from the published agricultural climate dataset (Meteorological Office 1989). The parameters used for assessing overall climate are accumulated temperature, a measure of the relative warmth of a locality, and average annual rainfall, a measure of overall wetness. The results shown in Table 1 indicate there is no overall climatic limitation.

Table 1: Climatic Interpolations: Tintinhull Forts

Grid Reference		ST 486 194	ST 486 194
Altitude (m)		25	25
Accumulated Temperature (day °)		1547	1547
Average Annual Rainfall (mm)		730	730
Overall Climatic Grade		1	1
Field Capacity Days		159	159
Moisture deficit (mm):	Wheat	112	112
	Potatoes	107	107

Climatic data on Field Capacity Days (FCD) and Moisture Deficits for wheat and potatoes are also shown. These data are used in assessing the soil wetness and droughtiness limitations referred to in later sections.

3. RELIEF AND LANDCOVER

Altitude ranges from 25 to 35m AOD with gentle and moderate slopes which are not limiting. Landcover at the time of survey was mainly grass with some cereals. Approximately half the area was also affected by the partial construction of golf course greens. These had been started by the tipping of hardcore, waste and scalpings in discrete areas. Although these would constitute a serious hindrance to arable cultivation, they had, as far as could be seen, been built by tipping onto the native soil profile. In this case their removal would restore the land to its previous condition and their presence has been ignored in this survey.

4. GEOLOGY AND SOILS

The geology of the site is shown on the published 1:50,000 scale solid and drift geology map, sheet 312 British Geological Survey 1973 as silts and marls of the Pennard Sands.

The soils were mapped by the Soil Survey of England and Wales in 1983 at a reconnaissance scale of 1:250,000 as Curtisden Association - silty soils over siltstone with slowly permeable subsoils and slight seasonal waterlogging.

The soils examined during the recent survey were largely found to fit this description.

5. AGRICULTURAL LAND CLASSIFICATION

The distribution of ALC grades is shown in Table 2 and on the accompanying ALC map. This information could be misleading if shown at a larger scale.

Table 2: Distribution of ALC grades: Tintinhull Forts : landfill site only

Grade	Area (ha)	% of Survey Area	% of Agricultural Land (19.2 Ha)
3a	2.0	10.4	10.4
3b	17.2	89.6	89.6
TOTAL	19.2		

Table 3: Distribution of ALC Grades: Tintinhull Forts

Grade	Area (ha)	% of Survey Area	% of Agricultural Land (51.0 Ha)
3a	2.4	4.7	4.7
3b	48.6	95.3	95.3
TOTAL	51.0		

Subgrade 3a

A small area of Subgrade 3a was indicated by three auger borings where generally lighter topsoil textures were found, typically medium silty clay loam. This gives Subgrade 3a with Wetness Class III (see Appendix 3) or even Wetness Class II as at one boring.

Subgrade 3b

Although frequently marginal to medium silty clay loam, the majority of auger borings, and all laboratory analyses from pit samples, were found to be heavy silty clay loam. This gives Subgrade 3b whether Wetness Class III or IV. Over much of the survey area the depth to slowly permeable layer consistently indicates Wetness Class III, but in the proposed waste disposal area the depth to SPL hovers around the borderline between the two Wetness Classes.

6. SOIL RESOURCES

The soil resources on the proposed waste disposal site can be divided into two units as shown on the accompanying soil resources map, distinguished on the basis of Wetness Class and depth of upper subsoil.

Topsoil

Topsoil is defined as the surface horizon which is relatively rich in organic matter.

At this site, topsoils in both units are mainly stoneless heavy silty clay loam around 20cm deep, typically 10YR54 in colour. Structural development tends to be slightly better in Unit 1, weakly to moderately developed medium and fine subangular blocky, while in Unit 2 weakly developed coarse subangular blocky was found.

Table 4: Topsoil Resources

Map Unit	Depth, cm	Area, Ha	Texture	Stones %	Volume m³
I, II	20	19.2	HZCL	0	18 400
				Total Topsoil	18 400 m³

Subsoil

Subsoil is defined as the lower horizons which are less rich in organic matter. Subsoils in both units are mainly heavy silty clay loam, typically 2.5Y63 and weakly or moderately developed course sub-angular structure. However, the depth of upper subsoil in unit 1 (Subgrade 3a) was found to be around 45cm while that in unit 2 (Subgrade 3b) was found to be more like 35cm.

Lower subsoils in both units are stoniness clay, typically 2.5Y62 and moderately developed course prismatic structure. This is normally, but not enviably a slowly permeable layer and clay which was not a slowly permeable layer was not found in any of the four pits examined.

Table 5: Subsoil Resources

Map Unit	Depth, cm	Area, Ha	Texture	Stones %	Volume m³
I	25	8.9	HZCL	0	22 250
II	15	10.3	HZCL	0	15 450
I	75	8.9	C	0	66 750
II	85	10.3	C	0	87 550
				Total Subsoil	192 000 m³

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APPENDIX 1

REFERENCES

BRITISH GEOLOGICAL SURVEY (1973) Solid and Drift Edition, Sheet 312, Yeovil 1:50,000

MAFF (1970) Agricultural Land Classification Map, Sheet 177, 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, MAFF Publications, Alnwick.

METEOROLOGICAL OFFICE (1989) Climatological Data for Agricultural Land Classification.

SOIL SURVEY OF ENGLAND AND WALES (1983) Sheet 5, Soils of South West England, 1:250,000 scale.

APPENDIX 2

DESCRIPTION OF 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 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 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 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.

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: private park land, 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.

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 landcover types, eg buildings in large grounds, and where may be shown separately. Otherwise, the most extensive cover type will usually be shown.

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

APPENDIX 3

DEFINITION OF SOIL WETNESS CLASSES

Wetness Class I

The soil profile is not wet within 70 cm depth for more than 30 days in most years.

Wetness Class 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.

Wetness Class 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.

Wetness Class 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.

Wetness Class V

The soil profile is wet within 40 cm depth for 211-335 days in most years.

Wetness Class VI

The soil profile is wet within 40 cm depth for more than 335 days in most years.

Notes: The number of days specified is not necessarily a continuous period. 'In most years' is defined as more than 10 out of 20 years.

Source: Hodgson, J M (in preparation), Soil Survey Field Handbook (revised edition).