

PROPOSED LANDFILL SITE, NEWTON'S MARGATE FARM, BODMIN
 AGRICULTURAL LAND CLASSIFICATION
 Report of survey

1. INTRODUCTION

Nearly ten hectares of land adjacent to the A30 at Newton's Margate farm were graded under the Agricultural Land Classification (ALC) System in June 1992. The survey was carried out for MAFF as part of its statutory obligation under the Planning and Compensation Act 1991 in response to a planning application made to Cornwall County Council for a landfill site.

The fieldwork was carried out by ADAS's Resource Planning Team (Wessex Region) at a scale of 1:10,000 (approximately one sample point every hectare). The information is correct at the scale shown but any enlargement would be misleading. This survey supercedes the previous survey of this area at 1" being at a more detailed level and carried out under the Revised Guidelines and Criteria for grading the quality of agricultural land (MAFF 1989). A total of 10 borings and 1 soil pit were examined.

The ALC provides 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 120cm of the soil profile. A description of the grades used in the ALC System can be found in the appendix.

The distribution of ALC grades identified in the survey area is detailed below and illustrated on the accompanying map.

Table 1 Distribution of ALC grades: Newton's Margate Farm

Grade	Area (ha)	% of Survey Area	% of Agricultural Land
3A	0.9	9.2	9.2
3B	<u>8.9</u>	<u>90.8</u>	<u>90.8</u>
TOTAL	<u>9.8</u>	<u>100%</u>	<u>100%</u>

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 lower grades despite other favourable conditions.

To assess any overall climatic limitation, estimates of important climatic variables were obtained for the site by interpolation from the 5km grid Met Office/Maff Database (Met Office/MAFF/SSLRC 1989). The parameters used for assessing 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 2 reveal that there is a climatic limitation across the survey area. The land can be graded no better than Sub-grade 3a.

No local climatic factors such as exposure were noted in the survey area. Climatic data on Field Capacity Days (FCD) and Moisture Deficits for wheat (MDW) and potatoes (MDP) are also shown. This data is used in assessing the soil wetness and droughtiness limitations referred to in Section 5.

Table 2 Climatic Interpolations: Newton's Margate

Grid Reference	SX 088 668
Height (m)	160
Accumulated Temperature (days)	1448
Average Annual Rainfall (mm)	1296
Overall Climatic Grade	3A
Field Capacity (Days)	249
Moisture Deficit, Wheat (mm)	66
Potatoes (mm)	49

3. RELIEF

The survey area gently slopes away from the A30, with steeper land around the fringes. These slopes are not limiting.

4. GEOLOGY AND SOILS

The survey area is underlain by slates as shown on BGS sheet 347.

The majority of the soils in the area are heavy clay loams becoming heavier with depth. There is a small area where the topsoils are lighter and this ties in with the soils found on the other side of the A30 in a previous ALC survey. The soils are stoney.

5 Agricultural Land Classification

The distribution of ALC grades identified in the survey area is detailed in Section 1 and shown on the accompanying ALC map. The information is accurate at the scale shown but any enlargement would be misleading.

Sub-Grade 3a

A small area of Sub-grade 3a was found in the west of the site. Here the topsoils were medium clay loams. These soils are similar to the area of 3a found across the A30 surveyed as part of the Bodmin Planning Guidelines. The soils can be graded no higher because of the interaction between the local FCD level of 249, the topsoil texture and the wetness class which is Class I. The limitation imposed by these factors is known as a workability limitation. This affects the timings of cultivations and grazing. Poor timing will result in damage to soil structure. The versatility of the land is therefore reduced.

Sub-Grade 3b

The majority of the survey area has been classified as 3b. The topsoils here are heavy clay loams. The soils become heavier with depth. The stone content of the soil also increases with depth. A soil pit was dug in the area and the stone content of the soil was assessed by sieving and displacement. The topsoil had only 2% hard stones whilst the upper subsoil, a HCL had 10% stones. The lower subsoil, a clay had a total stone content of 52% of which 22% were >2cm and 30% <2cm. These stones were slatey. The soils showed no evidence of wetness and so can be assigned to Wetness Class I. These soils experience a greater workability limitation than the 3a soils, because the topsoil texture is heavier and so more restrictive in terms of accessibility. Although the stone content of these soils becomes quite high this does not impose a greater restriction on the soils, in terms of restricting the water available to growing crops.

6. SOIL RESOURCES

6.1 TOPSOIL

The areas referred to can be found on the accompanying Soil Resources map.

"Topsoil" is defined as the organic rich surface horizon. A broad distinction can be made between the medium and heavy topsoil textures which mirror the ALC map units 3a (Unit I) and 3b (Unit II). These distinct topsoils should be handled separately as they are significantly different in terms of workability. Over the whole site the topsoil varies slightly in depth but is typically 30cm deep. These soils have around 2% hard stone content.

A total topsoil resource of 29,400 cubic metres is available, distributed as shown in Table 3.

Table 3 Topsoil Resources

Map Unit	Depth	Area	Soils	Volume
I	0-30cm	0.9ha	MCL	2,700cu m
II	0-30cm	8.9ha	HCL	<u>26,700cu m</u>
				29,400cu m

6.2 SUBSOIL

"Subsoil" is defined as the less organic rich lower horizons.

For the subsoils the whole survey area is taken as one. Two subsoils have been identified. The upper subsoil is a heavy clay loam with 10% hard stones. The lower subsoil extending to 120cm has a higher stone content, 52% slatey stone in a clay matrix.

A total subsoil resource of 88,200 cubic metres is available, the distribution of which is shown in Table 4.

Table 4 Subsoil Resources

Map Unit	Depth	Area	Soils	Volume
I,II	30-50cm	9.8ha	HCL	19,600cu m
I,II	50-120cm	9.8ha	C,HCL	<u>68,600cu m</u>
				88,200cu m

DESCRIPTION OF THE GRADES AND SUB-GRADES

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 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: 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.

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.

PROPOSED LANDFILL SITE, NEWTON'S MARGATE FARM, BODMIN

SOIL RESOURCES

TOPSOIL

The areas referred to can be found on the accompanying Soil Resources map.

"Topsoil" is defined as the organic rich surface horizon. A broad distinction can be made between the medium and heavy topsoil textures which mirror the ALC map units 3a (Unit I) and 3b (Unit II). These distinct topsoils should be handled separately as they are significantly different in terms of workability. Over the whole site the topsoil varies slightly in depth but is typically 30cm deep. These soils have around 2% hard stone content.

A total topsoil resource of 29,400 cubic metres is available, distributed as shown in Table 1.

Table 1 Topsoil Resources

Map Unit	Depth	Area	Soils	Volume
I	0-30cm	0.9ha	MCL	2,700cu m
II	0-30cm	8.9ha	HCL	<u>26,700cu m</u>
				29,400cu m

SUBSOIL

"Subsoil" is defined as the less organic rich lower horizons.

For the subsoils the whole survey area is taken as one. Two subsoils have been identified. The upper subsoil is a heavy clay loam with 10% hard stones. The lower subsoil extending to 120cm has a higher stone content, 52% slatey stone in a clay matrix.

A total subsoil resource of 88,200 cubic metres is available, the distribution of which is shown in Table 2.

Table 2 Subsoil Resources

Map Unit	Depth	Area	Soils	Volume
I,II	30-50cm	9.8ha	HCL	19,600cu m
I,II	50-120cm	9.8ha	C,HCL	<u>68,600cu m</u>
				88,200cu m