

PLYMOUTH LOCAL PLAN
WOODFORD

AGRICULTURAL LAND CLASSIFICATION
REPORT OF SURVEY

Resource Planning Team
Taunton Statutory Unit

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ADAS 

PLYMOUTH LOCAL PLAN: SITE AT WOODFORD

AGRICULTURAL LAND CLASSIFICATION

Report of Survey

1. SUMMARY

Sixty four hectares of land north of Woodford, Plymouth were graded using the Agricultural Land Classification (ALC) System in May 1993. The survey was carried out on behalf of MAFF as part of its statutory role in the preparation of the Plymouth Local Plan.

The fieldwork was carried out by ADAS (Resource Planning Team, Taunton Statutory Unit) at a scale of 1:10,000. The information is correct at this scale but any enlargement would be misleading. A total of 56 auger borings and 3 soil profile pits were examined.

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

Distribution of ALC grades: Woodford, Plymouth

Grade	Area (ha)	% of Survey Area	% of Agricultural Land
3A	0.7	1.1	1.1
3B	60.7	94.7	96.8
4	1.3	2.0	<u>2.1</u>
Non Agric	0.7	1.1	100% (62.7 ha)
Urban	<u>0.7</u>	<u>1.1</u>	
TOTAL	64.1	100%	

There are no climatic ^{limitations} for the survey area. The main limitation in the survey area is workability down grading land to Subgrade 3b. A small part of the survey area also is downgraded to Grade 4 on limiting gradients.

2. INTRODUCTION

Sixty four hectares of land north of Woodford, Plymouth were graded using the Agricultural Land Classification (ALC) System in May 1993. The survey was carried out on behalf of MAFF as part of its statutory role in the preparation of the Plymouth Local Plan.

The fieldwork was carried out by ADAS (Resource Planning Team, Taunton Statutory Unit) at a scale of 1:10,000 (approximately one sample point every hectare). The information is correct at this scale but any enlargement would be misleading. A total of 56 auger borings and 3 soil profile pits were examined.

The published Provisional 1" to the mile ALC map of this area (MAFF 1973) shows the site to be Grade 3. The recent survey supersedes this map and the previous survey of this area at 1:50,000, 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).

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 Appendix 2.

At the time of survey most of the site was growing oil seed rape except for the northern and eastern fields which had crops of barley.

3. 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.

Estimates of climatic variables were obtained for the site by interpolation from the 5km grid Meteorological Office Database (Meteorological Office 1989) and are shown in Table 1.

The parameters used for assessing overall climatic limitation are accumulated temperature, (a measure of the relative warmth of a locality) and average annual rainfall, (a measure of overall wetness). The values shown in Table 1 reveal that there is an overall climatic limitation for part of the site. Above 55m the land can be no better than Grade 2. In addition there is an important boundary in terms of Field Capacity Days (FCD). Below 43m a heavy clay loam, if

Wetness Class I could be Subgrade 3a, but above this it would be 3b, because the FCD value rises to over 225.

Slight exposure was noted in the survey area, but this was not more limiting than other factors. Climatic data on Field Capacity Days (FCD) and Moisture Deficits for wheat (MDW) and potatoes (MDP) are also shown. These data are used in assessing the soil wetness and droughtiness limitations referred to in Section 6.

Table 1 Climatic Interpolations: Woodford, Plymouth

Grid Reference	SX 523572	SX 534577
Height (m)	30	105
Accumulated Temperature (day deg)	1591	1505
Average Annual Rainfall (mm)	1111	1262
Overall Climatic Grade	1	2
Field Capacity (Days)	222	245
Moisture Deficit, Wheat (mm)	95	77
Potatoes(mm)	85	63

4. RELIEF

The survey area has a ridge running east to west and has much sloping land. In places this is a limiting factor. Parts of the site are limited to Subgrade 3b and Grade 4 on gradient. The altitude range of the site is from 30m AOD to 105m AOD.

5. GEOLOGY AND SOILS

The published 1:50,000 solid and drift geology map, sheet 349 (Geological Survey of England and Wales 1974) shows the majority of the site to be underlain by slate with a strip of Schalsteins Tuffs in the south west corner of the site.

The Soil Survey of England and Wales mapped the soils of the area in 1983, at a reconnaissance scale of 1:250,000. This map shows the soils at the site to be of two associations. The majority of the site is of the Denbigh 1 Association. This soil is a free draining fine loamy soil typically with shattered rock. There is a small area of the Manod Association in the north. This is a free draining loamy soil over shattered rock.

The soils found in the recent survey are all similar in their nature. The only variable is the depth at which the shattered rock is found. The majority of the soils have heavy clay loam topsoils. There are a few clay topsoils in the northern part of the site.

6. AGRICULTURAL LAND CLASSIFICATION

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

Table 2 Distribution of ALC grades: Woodford, Plymouth

Grade	Area (ha)	% of Survey Area	% of Agricultural Land
3A	0.7	1.1	1.1
3B	60.7	94.7	96.8
4	1.3	2.0	2.1
Non Agric	0.7	1.1	100% (62.7 ha)
Urban	0.7	1.1	
TOTAL	64.1	100%	

Subgrade 3a

A small area in the south of the site has been mapped as Subgrade 3a. This area is below 43m and the FCD are below 225 in value. The topsoils are heavy clay loam and the soils are free draining Wetness Class I. These soils are therefore Subgrade 3a.

Subgrade 3b

The majority of the site is Subgrade 3b. Parts of the site have limiting gradients over 7 degrees and must be downgraded because the versatility of the land is reduced.

The majority of the area mapped as Subgrade 3b is limited by the workability of the land. The topsoil texture across most of the site is heavy clay loam with some clays in the northern area, as confirmed by particle size distribution. The soils show no evidence of impeded drainage and are Wetness Class I. The stone content of the soils are quite high but this does not impose a greater droughtiness limitation on the soil than already exists from the workability. Stone contents were measured in three soil profile pits by sieving and displacement in water. Topsoil stone contents ranged 14-25%, whilst subsoil stone contents were measured up to 55% in the lower subsoils. The workability limitation means that the number of days when access can be made onto the land without causing structural damage to the soil is limited.

Grade 4

A small area in the south has gradients over 11 degrees which further limits the versatility of the land. Only a

limited range of machinery can be used safely on land with these gradients.

APPENDIX 1

REFERENCES

GEOLOGICAL SURVEY OF ENGLAND AND WALES (1974) Solid and drift edition. Sheet 349 Ivybridge, 1:50,000 scale

MAFF (1973) Agricultural Land Classification Map sheet 187 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 (1983) Sheet 5 Soils of South West England 1:250,000

APPENDIX 2

DESCRIPTION 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 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 effect 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 2 - 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 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.

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).