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ABBOT'S ROAD, HANHAM, BRISTOL

AGRICULTURAL LAND CLASSIFICATION
REPORT OF SURVEY

Resource Planning Team
Taunton Statutory Unit

July 1994

ADAS

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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 response to an ad-hoc planning application. The fieldwork at Abbot's Road, Hanham, was completed in June 1994 at a scale of 1:10,000. Data on climate, soils, geology and previous ALC Surveys was used and is presented in the report. The distribution of grades is detailed below and illustrated on the accompanying ALC map. Information is correct at this scale but could be misleading if enlarged.

Distribution of ALC grades: Abbot's Road, Hanham

Grade	Area (ha)	% of Survey Area	% of Agricultural Land
2	6.3	41	43
3a	4.7	31	32
3b	3.6	23	25 (14.6 ha)
Urban	0.7	5	
TOTAL	15.3		

The soils are mainly deep, well drained, stony clay loams. They are Grade 2 or 3a and have slight workability and droughtiness limitations. The field immediately east of the bypass has been disturbed. To the east of the site the soils are slowly permeable, generally stone free, fine loamy over clay. These soils are generally Subgrade 3b. 11 ha (96% of the site) is best and most versatile land.

1. INTRODUCTION

An Agricultural Land Classification (ALC) Survey was carried out in June 1994 at Abbots Road, Hanham, Bristol on behalf of MAFF as part of its statutory role in response to an ad-hoc planning application. The fieldwork covering 15.3 ha of land was conducted by ADAS at a scale of 1:10,000 (approximately one boring per hectare of agricultural land). A total of 15 auger borings were examined and 1 soil profile pit used to assess subsoil conditions.

The published provisional one inch to the mile ALC map of this area (MAFF 1971) shows almost the entire site as Grade 2 land, except the north eastern corner which was mapped as Grade 3.

The area was also surveyed in 1980 at a scale of 1:2,500. The 1980 survey shows the bulk of the site to be a mixture of Grades 2 and 3a, with the western and eastern parts mapped as 3b.

The recent survey supersedes this map having been carried out 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: Abbots Road, Hanham

Grid Reference		ST 648 706
Altitude (m)		45
Accumulated Temperature (day °)		1498
Average Annual Rainfall (mm)		792
Overall Climatic Grade		1
Field Capacity Days		177
Moisture deficit (mm):	Wheat	97
	Potatoes	87

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

The site rises from south to north from 40 m AOD to 55 m AOD. At the time of the survey the entire site was under grass. The field adjacent to the new bypass has been disturbed during the bypass construction.

4. GEOLOGY AND SOILS

The geology of the site is shown on the published 1:50,000 scale solid and drift geology map, sheet 264 (British Geological Survey 1974).

Most of the site is underlain by carboniferous coal measures. Small areas of Keuper Marl are found on the eastern edge of the site.

The soils were mapped by the Soil Survey of England and Wales in 1983 at a reconnaissance scale of 1:250,000.

The site is overlain by Neath Soils in the western half, whilst to the east the soils belong to the Worcester Association. The Neath Association predominantly consists of well drained, fine loamy soils over rock. The Worcester Association consists of slowly permeable clayey soils over mudstone.

The soils found during the recent survey accorded with this distribution, with slowly permeable soils in the eastern half, and well drained shallow soils over rock in the west.

5. AGRICULTURAL LAND CLASSIFICATION

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

Table 2: Distribution of ALC grades: Abbots Road, Hanham

Grade	Area (ha)	% of Survey Area	% of Agricultural Land
2	6.3	41	43
3a	4.7	31	32
3b	3.6	23	25 (14.6 ha)
Urban	0.7	5	
TOTAL	15.3		

Grade 2

The Grade 2 land consists of medium clay loam over heavy clay loam soils. The topsoil, extending to a depth of 30 cm, contains 5% small stones. The stone content rises sharply to 25% below 30 cm, and to more than 35% below a depth of 60 cm. Roots are able to penetrate the stoney subsoil, and on the basis of the climatic moisture deficits for the site droughtiness is limiting to Grade 2. There is no wetness limitation, but the combination of a medium clay loam topsoil and 177 field capacity days leads to a grade of 2 because of workability.

Subgrade 3a

The Subgrade 3a land adjacent to the new bypass in the west of the site is the same as the Grade 2 land, but with a heavy clay loam topsoil. This field has been disturbed during the building of the bypass, and some mixing of the topsoil and subsoil has occurred. The heavier topsoil texture in conjunction with 177 field capacity days leads to a grade of 3a because of workability.

The Subgrade 3a land to the east of the site is deep, with a medium clay loam topsoil over clay. There is a slowly permeable layer below 50 cm, leading to Wetness Class III. This, in conjunction with the medium clay loam topsoil and 177 field capacity days leads to a grade of 3a because of wetness.

Subgrade 3b

The Subgrade 3b land all lies to the east of the site. It has a topsoil texture of heavy clay loam over clay. A slowly permeable layer occurs below 50 cm leading to Wetness Class III. With the heavier topsoil this leads to a grade of 3b because of wetness.

Resource Planning Team
Taunton Statutory Unit
15 July 1994

APPENDIX 1

REFERENCES

BRITISH GEOLOGICAL SURVEY (1974) Solid and Drift Edition, Sheet 264, Bristol 1:50,000

MAFF (1971) Agricultural Land Classification Map, Sheet 155, 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) 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).

[fNL592]

SITE NAME	PROFILE NO.	SLOPE AND ASPECT	LAND USE		PARENT MATERIAL
Abbots Road, Hanham	1	0°	Permanent Grass	Av Rainfall: 792 mm ATO: 1498 day °C	Coal Measures
JOB NO.	DATE	GRID REFERENCE	DESCRIBED BY	FC Days: 177 Climatic Grade: 1 Exposure Grade: 1	SOIL SAMPLE REFERENCES
80/94	21/6/94	ST 647 707 ASP 5	PRW		PRW/113 Batch 021 5633

Horizon No.	Lowest Av. Depth (cm)	Texture	Matrix (Ped Face) Colours	Stoniness: Size,Type, and Field Method	Mottling Abundance, Contrast, Size and Colour	Mangan Concs	Structure: Ped Development Size and Shape	Consistence	Structural Condition	Pores (Fissures)	Roots: Abundance and Size	Calcium Carbonate Content	Horizon Boundary: Distinctness and form
1	30	MCL	5YR4/3	5% <2cm hard rock estimated	-	-	N/A	Friable	Moderate	Many	Many fine	No	Abrupt Smooth
2	60	HCL	5YR4/3	25% hard rock sieved	-	-	Not possible to assess - probably moderate to medium subangular	Friable	Moderate	Many	Common fine	No	Clear Smooth
3	60+	HCL	5YR3/4	>35% hard rock estimated	-	-	Blocky	-	-	-	-	No	-

Profile Gleyed From: Not gleyed

Depth to Slowly Permeable Horizon: No SPL

Wetness Class: 1

Wetness Grade: 2

NL336h

Available Water Wheat: 104 mm

Potatoes: 99 mm

Moisture Deficit Wheat: 97 mm

Potatoes: 87 mm

Moisture Balance Wheat: +7 mm

Potatoes: +12 mm

Droughtiness Grade: 2 (Calculated to 90 cm)

Final ALC Grade: 2

Main Limiting Factor(s): Workability

Remarks:

Representative of asp 2, 5, 6, 10, 14 and 15. ASP 1, 4, 9 similar but HCL top following disturbance during bypass building.