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Dorset Minerals and Waste Local Plan

BC13 Povington

AGRICULTURAL LAND CLASSIFICATION
REPORT OF SURVEY

Resource Planning Team
Taunton Statutory Unit

July 1993

ADAS

AGRICULTURAL LAND CLASSIFICATION

DORSET MINERALS AND WASTE LOCAL PLAN
BC13 WEST CREECH FARM, POVINGTON

REPORT OF SURVEY

1. SUMMARY

The site, an area of 31.1 hectares of land at West Creech Farm, Povington, was graded using the Agricultural Land Classification (ALC) system in July 1993. The survey was carried out on behalf of MAFF as part of its statutory role in the preparation of the Dorset Minerals and Waste 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 28 auger borings and one soil profile pit 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: West Creech Farm, Povington

Grade	Area (ha)	% of Survey Area	% of Agricultural Land
2	8.6	27.7	34.2
3a	4.3	3.8	17.1
3b	11.85	38.1	47.1
4	0.4	1.3	1.6
Non Agric	5.95	19.1	
TOTAL	31.1	100%	100% (25.15 ha)

The site occupies an undulating area of grass and woodland. In small areas the slopes are moderately steep, imposing Subgrade 3b and Grade 4 limitations. Similarly there are two small areas where the micro relief imposes a 3b limitation. Nearly a third of the site is best and most versatile land, soils are typically deep, well drained (wetness classes I and II) sandy loams. The southern part of the site experiences impeded drainage and has been assessed as wetness class IV and Grade 4.

2. INTRODUCTION

The site, an area of 31.1 hectares of land at West Creech Farm, Povington, was surveyed on behalf of MAFF, as part of its statutory role in the preparation of Dorset Minerals and Waste Local Plan. Povington (BC13) is a preferred area for Ball Clay extraction. The survey was carried out in July 1993 by ADAS (Resource Planning Team, Taunton Statutory Unit) using the Agricultural Land Classification (ALC) system and conducted at a scale of 1:10,000 (approximately one sample point for every hectare of agricultural land). The 28 borings were supplemented by a soil inspection pit used to assess subsoil conditions. The information is correct at the scale shown but any enlargement would be misleading.

The published Provisional 1" to the mile ALC map of this area (MAFF 1974) shows the entire site to be non-agricultural. The current survey supersedes any previous surveys and was undertaken to provide a more detailed representation of the agricultural land quality using the Revised Guidelines and Criteria (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.

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.

Climatic data for the site were interpolated from the Agricultural Climate Dataset (Meteorological Office 1989). 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 results shown in Table 1 indicate that there is no overall climatic limitation.

Table 1 Climatic interpolations: West Creech Farm, Povington

Grid Reference	SY 900 826
Height (m)	55
Accumulated Temperature (day deg)	1519
Average Annual Rainfall (mm)	916
Overall Climatic Grade	1
Field Capacity (Days)	186
Moisture Deficit, Wheat (mm)	103
Potatoes (mm)	96

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.

4. RELIEF AND LANDCOVER

The site occupies an udulating area of grass and woodland, the highest point being 55 m AOD and the lowest 35 m AOD in the north-west of the site. In localised areas the slopes are moderately steep, likewise there are small areas where the micro relief becomes a limiting factor on the ALC grade.

5. GEOLOGY AND SOILS

The published 1:50,000 scale solid and drift geology map, sheet 341/2 (Geological Survey of England and Wales 1976) shows the majority of the site to be underlain by Bagshot Beds. A small area of London Clay occupies the southern margin 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 comprise the Sollom 2 Association* in the northern half and Fyfield 4 Association** in the southern half of the site.

The recent survey indicates there are two soil types in the area. Soil type 1 corresponds to the Grade 2 and 3a land. These profiles are deep stone-free medium sandy loam and medium sandy silt loam profiles. The soils on the southern part of the site comprise medium sandy loam and medium sandy silt loam topsoils over clay and silty clay subsoils. The subsoils are gleyed and slowly permeable at varying depths.

* Sollom 2 Association

Deep often stoneless humose sandy soils, with bleached subsurface horizon, affected by groundwater. Well drained very acid sandy soils on slopes. Some sandy over fine loamy soils with slowly permeable subsoils and slight seasonal waterlogging.

** Fyfield 4 Association

Deep well drained often stoneless coarse loamy and sandy soils. Some fine loamy soils with slowly permeable subsoils and slight seasonal waterlogging. Some slowly permeable fine loamy over clayey soils.

6. AGRICULTURAL LAND CLASSIFICATION

The distribution of ALC grades identified in the survey area is detailed below and illustrated on the accompanying ALC map. This shows nearly half the agricultural land to be best and most versatile land.

Table 2 Distribution of ALC grades: Povington

Grade	Area (ha)	% of Survey Area	% of Agricultural Land
2	8.6	27.7	34.2
3a	4.3	3.8	17.1
3b	11.85	38.1	47.1
4	0.4	1.3	1.6
Non Agric	5.95	19.1	
TOTAL	31.1	100%	100% (25.15 ha)

Grade 2

These soils experience a minor drought limitation due to the coarse textured subsoils which reduce the water available for plant growth. They also experience a slight wetness limitation due to seasonal waterlogging which also limits the land to Grade 2.

Subgrade 3a

Two small areas of the site have been graded 3a due to a moderate wetness limitation experienced by these soils. Evidence of impeded drainage by a slowly permeable layer starting at 50-60 cm indicates these soils are to be assessed as Wetness Class III; Subgrade 3a.

Subgrade 3b

The land graded 3b relates to the clay profiles described in Section 5. Here the slowly permeable subsoils severely restrict water movement. This imposes a wetness limitation on the land and it is thus graded 3b. Small areas of land have been graded 3b due to the moderately steep slopes (7-11°) and micro-relief which limit the safe operation of some types of farm machinery.

Grade 4

A small area of steeply sloping land has been graded 4 due to the restrictive use of agricultural machinery such slopes impose.

Non-agricultural land

This land comprises woodlands and a small area of land associated with the farm yard.

APPENDIX 1

REFERENCES

GEOLOGICAL SURVEY OF ENGLAND AND WALES (1976) Solid and Drift edition. Sheet 341/2, Westfleet and Weymouth, 1:50,000 scale

MAFF (1973) Agricultural Land Classification Map Sheet 179 Provisional 1:63,360 scale

MAFF (1988) Agricultural Land Classification of England and Wales (revised guidelines and criteria for grading the quality of 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 scale

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 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 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).

SITE NAME	PROFILE NO.	SLOPE AND ASPECT	LAND USE		PARENT MATERIAL
Povington	Pit 1	2° West	Permanent Grassland	Av Rainfall: 906 mm ATO: 1536°C FC Days: 185 Climatic Grade: 1	Bagshot Beds
JOB NO.	DATE	GRID REFERENCE	DESCRIBED BY		SOIL SAMPLE REFERENCE
35/93	6/7/93	SY 899 826 (ASP 12)	N A Done		RPT/GC/18

Horizon Number	Lowest Av Depth (cm)	Matrix and Ped Face Colours	Texture	Stoniness: Size, Shape, Type, and Field Method	Mottling Abundance, Contrast, Size and Colour	Structure: Development Size and Shape	Pores and Fissures	Structural Condition	Consistence	Roots: Abundance, Size and Nature	Calcium Carbonate Content	Mangan Concs etc	Horizon Boundary: Distinctness and form
1	22	10YR33	MSL	Negligible	FFOM	WDCSAB	Many pores and fissures	-	Friable	Many fine and v fine	None	None	Smooth/ abrupt
2	40	10YR46	MSL	Negligible	CDOM 10YR46	MDCSAB	>0.5% (earthworms)	Moderate	Friable	Many	None	None	Smooth/ clear
3	60	2.5Y41	MSL	Negligible	CDOM 10YR58	MDCPR	>0.5%	Moderate	Friable	Many	None	None	Smooth/ clear
4	105	2.5Y30	MSL	2% HR	CDOM 7.5YR46	WDC/MSAB	>0.5% (earthworms)	Good	Friable	Common	None	None	Smooth/ abrupt
5	120	10YR62/ 72	MS	20% HR (Visual)	CDOM 10YR58	Waterlogged - Moderate (assumed)				-	None	None	-

Profile Gleyed From: 40

Depth to Slowly Permeable Horizon: -

Wetness Class: I

Wetness Grade: 1

Available Water	Wheat:	152 mm
	Potatoes:	110 mm
Moisture Deficit	Wheat:	104 mm
	Potatoes:	97 mm
Moisture Balance	Wheat:	48 mm
	Potatoes:	13 mm

Droughtiness Grade: 1 (Calculated to 120 cm)

Final ALC Grade: 1

Main Limiting Factor(s):

Remarks:

Grade 2 mapping unit.
Borderline Wetness Grade 2.

SITE NAME	PROFILE NO.	SLOPE AND ASPECT	LAND USE		PARENT MATERIAL
Povington	Pit 1	2° West	Permanent Grassland	Av Rainfall: 906 mm ATO: 1536°C FC Days: 185 Climatic Grade: 1	Bagshot Beds
JOB NO.	DATE	GRID REFERENCE	DESCRIBED BY		SOIL SAMPLE REFERENCE
35/93	6/7/93	SY 899 826 (ASP 12)	N A Done		RPT/GC/18

Horizon Number	Lowest Av Depth (cm)	Matrix and Ped Face Colours	Texture	Stoniness: Size, Shape, Type, and Field Method	Mottling Abundance, Contrast, Size and Colour	Structure: Development Size and Shape	Pores and Fissures	Structural Condition	Consistence	Roots: Abundance, Size and Nature	Calcium Carbonate Content	Mangan Concs etc	Horizon Boundary: Distinctness and form
1	22	10YR33	MSL	Negligible	FFOM	WDCSAB	Many pores and fissures	-	Friable	Many fine and v fine	None	None	Smooth/ abrupt
2	40	10YR46	MSL	Negligible	CDOM 10YR46	MDCSAB	>0.5% (earthworms)	Moderate	Friable	Many	None	None	Smooth/ clear
3	60	2.5Y41	MSL	Negligible	CDOM 10YR58	MDCPR	>0.5%	Moderate	Friable	Many	None	None	Smooth/ clear
4	105	2.5Y30	MSL	2% HR	CDOM 7.5YR46	WDC/MSAB	>0.5% (earthworms)	Good	Friable	Common	None	None	Smooth/ abrupt
5	120	10YR62/ 72	MS	20% HR (Visual)	CDOM 10YR58	Waterlogged - Moderate (assumed)				-	None	None	-

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Available Water Wheat: 152 mm

Potatoes: 110 mm

Moisture Deficit Wheat: 104 mm

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