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37/93

Dorset Minerals and Waste Local Plan
BS15 Swanage

**AGRICULTURAL LAND CLASSIFICATION
REPORT OF SURVEY**

Resource Planning Team
Taunton Statutory Unit

July 1993

ADAS 

AGRICULTURAL LAND CLASSIFICATION

DORSET MINERALS AND WASTE LOCAL PLAN BS15 SWANAGE

REPORT OF SURVEY

1. SUMMARY

The site, an area of 7.85 ha of land south-west of Swanage, 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 7 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: Swanage

Grade	Area (ha)	% of Survey Area	% of Agricultural Land
3b	5.85	74.5	100%
Non Agric	1.9	24.2	
Agric bldgs	0.1	1.3	
	<hr/>	<hr/>	<hr/>
TOTAL	7.85	100%	100% (5.85 ha)

All the agricultural land has been assessed as moderate quality land (Subgrade 3b). Soils comprise clay topsoils over clay subsoils which contain approximately 40% limestone. At varying depths, typically 90 cm or more, the solid geology (Purbeck beds) is found. These soils experience both a workability limitation due to the clay topsoil and a droughtiness limitation due to shallow stony subsoils. The non-agricultural land comprises disturbed land surrounding active mineral workings.

2. INTRODUCTION

The site, an area of 7.85 hectares of land, south-west of Swanage were 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 field work 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 7 auger borings and a soil profile pit were examined.

The published Provisional 1" to the mile ALC map of this area (MAFF 1973) shows the entire site to be grade 3 land. 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).

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 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.

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: Acton

Grid Reference	SZ 015 774
Height (m)	115
Accumulated Temperature (day deg)	1450
Average Annual Rainfall (mm)	891
Overall Climatic Grade	1
Field Capacity (Days)	182
Moisture Deficit, Wheat (mm)	102
Potatoes (mm)	94

4. RELIEF AND LANDCOVER

The site slopes gently eastwards, the highest point being 115 m AOD the lowest 100 m AOD on the most south-easterly edge. All the agricultural land was under grass leys of the time of survey. West of the track was derelict ground associated with mineral extraction.

5. GEOLOGY AND SOILS

The published one inch scale solid and drift geology map, sheet 343 (Geological Survey of England and Wales 1976) shows the entire site to comprise Purbeck beds.

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 Sherbourne Association. This soil is described as brashy calcareous clayey soils over limestone, associated with slowly permeable calcareous clayey soils.

The soils found in the recent survey comprise clay topsoils over moderately stony (40% limestone) clay subsoils. These soils are gleyed within 40 cm indicative of a slight drainage impediment. Below a variable depth (approximately 90 cm) stone contents increase to approximately 90%.

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: Swanage

Grade	Area (ha)	% of Survey Area	% of Agricultural Land
3B	5.85	74.5	100%
Non Agric	1.9	24.2	
Agric bldgs	0.1	1.3	
TOTAL	7.85	100%	100% (5.85 ha)

Subgrade 3b

All the agricultural land has been graded 3b. These soils have been assessed as Wetness Classes I and II. The clay topsoil textures impose a limit to the times in a year when farming operations can be carried out without causing damage to the soil structure. Thus these soils have a moderately severe workability limitation and so are graded 3b. The high stone content also imposes a 3b drought restriction.

APPENDIX 1

REFERENCES

GEOLOGICAL SURVEY OF ENGLAND AND WALES (1976) Solid and Drift edition. Sheet 343 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 Swanage		PROFILE NO. Pit 1		SLOPE AND ASPECT 0°		LAND USE Ley (quarry face)		Av Rainfall: 891 mm ATO: 1450°C FC Days: 182 Climatic Grade: 1		PARENT MATERIAL Middle Purbeck (solid)			
JOB NO. 37/92		DATE 7/7/93		GRID REFERENCE SZ 015 774 (ASP 2)		DESCRIBED BY N A Done				SOIL SAMPLE REFERENCE RPT/GC/16			
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	20	10YR43	C	4% SLST (Sieved)	None	MDCSAB	>0.5% earthworms	-	V firm (dry)	Many	Sl. calc	None	Smooth/ abrupt
2	90	10YR53	C	40% ST >2cm (Sieved)	CDOM 10YR62 10YR68	MDCAM Platy	Well fissured	P	Friable	Few	V calc	None	Clear/wavy
3	120+		SLST	>70% SLST (Visual)									

Profile Gleyed From: 20

Depth to Slowly Permeable Horizon: Too stony

Wetness Class: II

Wetness Grade: 3b

Available Water Wheat: 102 mm

Potatoes: 94 mm

Moisture Deficit Wheat: 102 mm

Potatoes: 94 mm

Moisture Balance Wheat: -20 mm

Potatoes: -25 mm

Droughtiness Grade: 3b (Calculated to 120 cm)

Final ALC Grade: 3b

Main Limiting Factor(s): Drought and wetness

Remarks:

H3 is approximately 90% limestone.

SITE NAME		PROFILE NO.		SLOPE AND ASPECT		LAND USE		Av Rainfall: 891 mm			PARENT MATERIAL		
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37/92		7/7/93		SZ 015 774 (ASP 2)		N A Done		Climatic Grade: 1			RPT/GC/16		
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