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116/94

Capps Lane, Westbury, Wilts

AGRICULTURAL LAND CLASSIFICATION

Prepared for MAFF by
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MAFF

CAPPS LANE, WESTBURY, WILTS

AGRICULTURAL LAND CLASSIFICATION

CONTENTS

CAPPS LANE, WESTBURY, WILTSHIRE

AGRICULTURAL LAND CLASSIFICATION SURVEY

SUMMARY

The survey was carried out by ADAS on behalf of MAFF as part of its statutory role in the preparation of the Wiltshire Minerals Local Plan. The fieldwork at Capps Lane, Westbury, was completed in October 1994 at a scale of 1:10,000. Data on climate, soils, geology and from previous Agricultural Land Classification (ALC) Surveys was used and is presented in the report. The distribution of grades is shown on the accompanying ALC map and summarised below. Information is correct at this scale but could be misleading if enlarged.

Distribution of ALC grades: Capps Lane, Westbury

Grade	Area (ha)	% of Survey Area	% of Agricultural Land (37.4 ha)
3b	37.4	92.8	100.0
Urban	1.2	3.0	0.0
Non Agricultural	1.7	4.2	0.0
TOTAL	40.3	100.0	100.0

All of the site was found to be Subgrade 3b. The soils at the site are poorly drained clays.

1. INTRODUCTION

An Agricultural Land Classification (ALC) Survey was carried out in October 1994 at Capps Lane, Westbury, on behalf of MAFF as part of its statutory role in the preparation of the Wiltshire Minerals Local Plan. The fieldwork covering 40.3 ha of land was conducted by ADAS at a scale of 1:10,000 with approximately one boring per hectare of agricultural land. A total of 39 auger borings were examined and one soil profile pit used to assess subsoil conditions.

The published provisional one inch to the mile ALC map of this area (MAFF 1972) shows the grade of the site at a reconnaissance scale to be all Grade 4.

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). 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: Capps Lane, Westbury

Grid Reference		ST 896 537
Altitude (m)		65
Accumulated Temperature (day °)		1476
Average Annual Rainfall (mm)		779
Overall Climatic Grade		1
Field Capacity Days		172
Moisture deficit (mm):	Wheat	105
	Potatoes	97

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 is between 60 and 70 m AOD and is relatively flat. At the time of survey the land north of Capps Lane was being used for arable production and set aside, whilst to the south the landcover was grass.

4. GEOLOGY AND SOILS

The geology of the site is shown on the published 1:63,360 scale (solid and drift) geology map, sheet 281, Institute of Geological Sciences 1965, as being all Kimmeridge clays.

The soils were mapped by the Soil Survey of England and Wales in 1983 at a reconnaissance scale of 1:250,000 This showed that the whole site consists of soils from the Denchworth

Association which are described as being slowly permeable, seasonally waterlogged clayey soils with similar fine loamy over fine clayey soils.

The soils found during the recent survey were typical of the Denchworth Association with slowly permeable layers found below the topsoil. The profiles were clay throughout.

5. AGRICULTURAL LAND CLASSIFICATION

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

Table 2: Distribution of ALC grades: Capps Lane, Westbury

Grade	Area (ha)	% of Survey Area	% of Agricultural Land (37.4 ha)
3b	37.4	92.8	100.0
Urban	1.2	3.0	0.0
Non Agricultural	1.7	4.2	0.0
TOTAL	40.3	100.0	100.0

Subgrade 3b

All of the agricultural land is mapped as Subgrade 3b. The clay profiles are mottled from the surface. This wetness is caused by slowly permeable subsoils which are also gleyed. The soils are Wetness Class IV (see Appendix 3). The extent of duration of wetness means that these soils have a moderate wetness limitation and are less versatile.

Other Land

There are small areas of non-agricultural land and a road through the site.

Resource Planning Team
Taunton Statutory Unit
October 1994

APPENDIX 1

REFERENCES

INSTITUTE OF GEOLOGICAL SCIENCES (1965) Solid and Drift Edition, Sheet 281, Frome, 1:63,360.

MAFF (1972) Agricultural Land Classification Map, Sheet 166, 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).

SITE NAME	PROFILE NO.	SLOPE AND ASPECT	LAND USE		PARENT MATERIAL
Capps Lane, Westbury	Pit 1	0°	Fallow	Av Rainfall: 779 mm ATO: 1476 day °C	Kimmeridge Clay
JOB NO.	DATE	GRID REFERENCE	DESCRIBED BY	FC Days: 172 Climatic Grade: 1 Exposure Grade: 1	SOIL SAMPLE REFERENCES
116/94	25/10/94	(ASP 28) ST 895 535	G M Shaw/H Lloyd-Jones		RPT/HLJ/82

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	C	10YR32	0% (Vis)	FFFO (10YR56)	None	WCSAB	Friable	M	Good	CF+VF	-	Gradual smooth
2	65	C	2.5Y52	0% (Vis)	ADFO (10YR66)	None	WCSAB	Friable	M	Poor	FVF	-	Gradual smooth
3	90+	C	05Y61	0% (Vis)	MDFO (10YR68)	None	WCAB	Friable	M	Poor	FVF	-	-

Profile Gleyed From: 30 cm

Depth to Slowly Permeable Horizon: 30 cm

Wetness Class: IV

Wetness Grade: 3b

Available Water Wheat: 139 mm

Potatoes: 115 mm

Moisture Deficit Wheat: 105 mm

Potatoes: 97 mm

Moisture Balance Wheat: 34 mm

Potatoes: 18 mm

Droughtiness Grade: 1 (Calculated to 120 cm)

Final ALC Grade: 3b

Main Limiting Factor(s): Wetness

Remarks:

Augered to 120 cm.

SOIL PLASTICITY RECORDING SHEET

ANNEX 2

SITE DATA

Grid Ref	ST 895 535		Site Name	Capps Lane, Westbury			LPA	West Wiltshire	
AAR	779	ATO	1476	FCD	172	MD (wheat)	105	MD (potatoes)	97

SOIL PIT DATA

	PIT ONE SOIL SERIES Denchworth			PIT TWO SOIL SERIES			PIT THREE SOIL SERIES		
DEPTH	TEXTURE	PLASTIC Y/N	COMMENTS	TEXTURE	PLASTIC Y/N	COMMENTS	TEXTURE	PLASTIC Y/N	COMMENTS
10 cm	C	N							
20 cm	C	N							
30 cm	C	Y							
40 cm	C	Y							
50 cm	C	Y							
60 cm	C	Y							

SITE NAME	PROFILE NO.	SLOPE AND ASPECT	LAND USE		PARENT MATERIAL
Wool	Pit 1 (ASP 20)	1° North	Ploughed	Av Rainfall: 910 mm ATO: 1564 day °C	Reading Beds
JOB NO.	DATE	GRID REFERENCE	DESCRIBED BY	FC Days: 186 Climatic Grade: 1	SOIL SAMPLE REFERENCES
60/95	20/9/95	SY834 863	HLJ	Exposure Grade: -	None

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	34	MSL	10YR43	1%HR TOTAL (VIS)	None	None	-	-	-	Good	CF+VF	-	Clear Smooth
2	68	MSL	10YR44	1%HR TOTAL (VIS)	None	Few	WCAB (and WCSAB)	Friable	Good	Good	CF+VF (decreasing to none)	-	Gradual Smooth
3	100	MS	7.5YR56	1%HR TOTAL (VIS)	None	None	WCAB	Very Friable	Good	Good	None	-	-

Profile Gleyed From: Not Gleyed

Depth to Slowly Permeable Horizon: No SPL

Wetness Class: I

Wetness Grade: 1

Available Water Wheat: 128 mm

Potatoes: 116 mm

Moisture Deficit Wheat: 109 mm

Potatoes: 102 mm

Moisture Balance Wheat: 19 mm

Potatoes: 14 mm

Droughtiness Grade: 2 (Calculated to 120 cm)

Final ALC Grade: 2

Main Limiting Factor(s): Drought

Remarks:

SITE NAME	PROFILE NO.	SLOPE AND ASPECT	LAND USE		PARENT MATERIAL
Wool	Pit 1 (ASP 17)	1° North	Permanent Grass	Av Rainfall: 910 mm ATO: 1564 day °C FC Days: 186 Climatic Grade: 1 Exposure Grade: -	Reading Beds
JOB NO.	DATE	GRID REFERENCE	DESCRIBED BY		SOIL SAMPLE REFERENCES
60/95	21/9/95	SY834 864	HLJ		None

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	LMS	10YR43	1%HR TOTAL (S&D)	None	None	-	-	-	Good	CF+VF	-	Clear Smooth
2	60	LMS	10YR44/46	5%HR > 2cm(s) 1% HR < 2cm (S&D) 6% HR TOTAL	None	None	WCAB	Very Friable	Good	Good	CF+VF	-	Gradual Smooth
3	90	MS	10YR66	12%HR > 2cm(s) 4% HR < 2cm (S&D) 16%HR TOTAL	None	None	WCAB	Very Friable	Good	Good	FVF	-	Gradual Smooth
4	120	MS	10YR74	5% HR TOTAL (VIS)	None	Few	WCAB	Very Friable	Good	Good	None	-	-

Profile Gleyed From: Not Gleyed

Depth to Slowly Permeable Horizon: No SPL

Wetness Class: I

Wetness Grade: 1

Available Water Wheat: 78 mm

Potatoes: 63 mm

Moisture Deficit Wheat: 109 mm

Potatoes: 102 mm

Moisture Balance Wheat: - 31 mm

Potatoes: - 39 mm

Droughtiness Grade: 3b (Calculated to 120 cm)

Final ALC Grade: 3b

Main Limiting Factor(s): Drought

Remarks: