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Rhode Lane, Bridgwater

AGRICULTURAL LAND CLASSIFICATION
REPORT OF SURVEY

Resource Planning Team
Taunton Statutory Unit

May 1994

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RHODE LANE FARM, BRIDGWATER

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Report of Survey

CONTENTS

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1. SUMMARY

36.5 ha of land south west of Bridgwater was surveyed in May 1994 using the MAFF Agricultural Land Classification (ALC). The surveys were carried out on behalf of MAFF as part of its statutory role in connection with the preparation of Bridgwater Local Plan.

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. The findings of the survey and the distribution of grades are detailed below.

Distribution of ALC grades: Rhode Lane Farm

Grade	Area (ha)	% of Survey Area	% of Agricultural Land (35.1 ha)
Grade 2	7.0	19.2	19.9
3a	24.1	66.0	68.7
3b	4.0	10.9	11.4
Urban	1.0	2.7	
Ag buildings	0.4	1.1	
TOTAL	36.5		

89% of the agricultural land surveyed was found to be best and most versatile, with the main limitations being workability and wetness, with some minor limitations due to droughtiness.

2. INTRODUCTION

36.5 ha of land to the south west of Bridgwater, was surveyed using the MAFF Agricultural Land Classification system in May 1994. The surveys were carried out on behalf of MAFF as part of its statutory role in connection with the preparation of Bridgwater Local Plan.

The fieldwork was carried out by ADAS Resource Planning Team, Taunton Statutory Unit, at a scale of 1:10,000. A total of 36 auger sample points and 2 soil profile pits were examined and soil samples were taken for particle size distribution analysis. The findings of the surveys and the distribution of the grades are detailed below. The information is correct at the published scale but any enlargement would be misleading.

The published provisional 1" to the mile ALC map (MAFF, 1971) shows the grades of the site at a reconnaissance scale, but this is considered inadequate for current purposes and in the absence of adequate detailed information, the current survey was undertaken to provide a more detailed representation of the agricultural land quality. It supersedes any previous survey. This survey also uses the Revised Guidelines and Criteria for Grading the Quality of Agricultural Land (MAFF, 1988).

The Agricultural Land Classification system 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 grade despite other favourable conditions.

Estimates of climatic variables were obtained for the site by interpolation from the 5-km grid Agricultural Climate Dataset (Meteorological Office, 1989) and are shown in the table below. These show that there is no overall climatic limitation.

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. 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 later sections. A description of the Soil Wetness Classes used can be found in Appendix 3.

Table 1 Climatic interpolations: Rhode Lane Farm

Grid Reference	ST 288 352
Altitude (m)	12
Accumulated Temperature (day °)	1559
Average Annual Rainfall (mm)	764
Overall Climatic Grade	1
Field Capacity (days)	165
Moisture deficit: Wheat (mm)	110
Potatoes (mm)	104

4. RELIEF AND LANDCOVER

Altitude ranges from 5 to 15 m AOD.

Slopes are gentle to very gentle and are not limiting.

At the time of survey, landcover was mainly grass with some winter cereals.

5. GEOLOGY AND SOILS

The published 1:50,000 scale solid and drift geology map, sheet 295 (Geological Survey of England and Wales, 1984), indicates that the site is underlain by Marl of the Mercia Mudstone Group.

Soils mapped by the Soil Survey of England and Wales (1983) indicates soils of the Whimple 3 Association. These are described as reddish fine loamy or fine silty over clayey soils with slowly permeable subsoils and slight seasonal waterlogging. Some similar clayey soils on brows of hills. Slowly permeable seasonally waterlogged fine loamy and fine silty over clayey soils on lower slopes.

6. AGRICULTURAL LAND CLASSIFICATION

The distribution of ALC grades identified in the survey area is detailed in Table 2 and shown on the accompanying ALC map. The information is correct at the scale shown but any enlargement would be misleading.

Distribution of ALC grades: Rhode Lane Farm

Grade	Area (ha)	% of Survey Area	% of Agricultural Land (35.1 ha)
Grade 2	7.0	19.2	19.9
3a	24.1	66.0	68.7
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TOTAL	36.5		

Grade 2

Areas mapped as Grade 2 suffer a minor limitation most frequently due to wetness as indicated by gleyed subsoils. In this case a medium clay loam topsoil is typically found over a Wetness Class II subsoil. This was also the case in the soil profile pit dug in this mapping unit. In a small area a minor limitation due to droughtiness is also found.

Subgrade 3a

Soils shown as Subgrade 3a at this site are more consistent, typically with medium clay loam topsoil and a slowly permeable layer appearing in the lower subsoil, Wetness Class III, giving rise to a moderate limitation of workability.

This mapping unit includes a small area to the east of Rhode Lane Farmhouse which is at a lower level than land to the west, reportedly due to the extraction of brick clay within living memory. However, this area only extends to around 1 ha and would be graded 3a or 3b.

Subgrade 3b

The small areas mapped as 3b suffer a more serious limitation, mainly due to wetness with a slowly permeable layer appearing in the middle subsoil with associated signs of wetness, Wetness Class IV. At one auger survey point at the eastern edge of the survey area peaty loam horizons were found below a clay topsoil.

Other Land

Urban land at this site includes two houses and associated grounds and a length of road.

There are also two sets of agricultural buildings, one of which is now redundant and disused.

APPENDIX 1

REFERENCES

GEOLOGICAL SURVEY OF ENGLAND AND WALES, 1984, Solid and Drift edition, sheet 295, Taunton, 1:50,000 scale

MAFF (1971), Agricultural Land Classification Map, Provisional 1:63,360 scale sheet 165

MAFF (1988), *Agricultural Land Classification of England and Wales Revised* Guidelines and Criteria for Grading the Quality of Agricultural Land, MAFF Publications, 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

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APPENDIX 2

DESCRIPTION OF ALC 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).

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SITE NAME	PROFILE NO.	SLOPE AND ASPECT	LAND USE		PARENT MATERIAL
Rhode Lane Farm Bridgwater	Pit 1 (ASP 28)	0°	Ley	Av Rainfall: 764 mm ATO: 1559 day °C FC Days: 165 Climatic Grade: 1 Exposure Grade: N/A	Mercia Mudstone
JOB NO.	DATE	GRID REFERENCE	DESCRIBED BY		SOIL SAMPLE REFERENCES
54/94	19/5/94	ST 291 351	N A Done		RPT/NAD/136

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	7.5YR43	0% Total (Vis)	None	None	-	-	-	Good	M, F + VF	None	Gradual smooth
2	50	HCL	7.5YR54	0% Total (Vis)	FFOM 7.5YR58	F	MDCSAB	FR	M	Good	MF	N	-
3	120	C	05YR54	0% Total (Vis)	CDOM 7.5YR58	C	WDCSAB	FR	M	P	MF (to 90 cm)	N	-

Profile Gleyed From: 50 cm

Depth to Slowly Permeable Horizon: 50 cm

Wetness Class: III

Wetness Grade: 3a

Available Water Wheat: 142 mm

Potatoes: 118 mm

Moisture Deficit Wheat: 110 mm

Potatoes: 104 mm

Moisture Balance Wheat: 32 mm

Potatoes: 14 mm

Droughtiness Grade: 1 (Calculated to 120 cm)

Final ALC Grade: 3a

Main Limiting Factor(s): Wetness

Remarks:

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SITE NAME	PROFILE NO.	SLOPE AND ASPECT	LAND USE		PARENT MATERIAL
Rhode Lane Farm Bridgwater	Pit 2 (ASP 18)	3° SE	Ley	Av Rainfall: 764 mm ATO: 1559 day °C	Mercia Mudstone
JOB NO.	DATE	GRID REFERENCE	DESCRIBED BY	FC Days: 165 Climatic Grade: 1	SOIL SAMPLE REFERENCES
54/94	17/5/94	ST 288 352	H Lloyd Jones + N Done	Exposure Grade: N/A	RPT/HLJ/42

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	26	MCL	7.5YR44	1% HR Total (Vis)	N	N	-	-	-	G	MF + VF	N	Clear wavy
2	120	C	7.5YR46/44	0% Total (Vis)	CDOM 7.5YR58	F	MDCSAB	FR	M	G	CF	N	-

Profile Gleyed From: 26

Depth to Slowly Permeable Horizon: None

Wetness Class: II

Wetness Grade: 2

Available Water Wheat: 141 mm

Potatoes: 117 mm

Moisture Deficit Wheat: 110 mm

Potatoes: 104 mm

Moisture Balance Wheat: 31 mm

Potatoes: 13 mm

Droughtiness Grade: 1 (Calculated to 120 cm)

Final ALC Grade: 2

Main Limiting Factor(s): Wetness

Remarks:

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