42/95

South Somerset Local Plan
Castle Cary

Agricultural Land Classification

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MAFF

SOUTH SOMERSET LOCAL PLAN

CASTLE CARY

AGRICULTURAL LAND CLASSIFICATION

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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 the preparation of the South Somerset Local Plan. The fieldwork at Castle Cary was completed in July 1995 at a scale of 1:10,000 and is added to results of the 1992 survey on the accompanying map. 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: Castle Cary

Grade	Area (ha)	% of Survey Area	% of Agricultural Land (183.4ha)
1	64.9	30.5	35.4
2	29.1	13.7	15.9
3a	25.0	11.7	13.6
3b	42.7	20.0	23.3
4	14.4	6.8	7.9
5	7.3	3.4	4.0
Urban	22.8	10.7	0.0
Non Agricultural	6.2	2.9	0.0
Agricultural Buildings	0.6	0.3	0.0
TOTAL	213.0	100.00	100.00

Soils found at Castle Cary range from well drained sandy Grade 1 soils to poorly drained loams. Restricted drainage varies from minor limitations in the Grade 2 soils to moderate in the Subgrade 3a and 3b soils. Limiting gradients are also found in the east which in the case of Grades 4 and 5 severely limit the versatility of the land. Much of the flatter land is mapped as best and most versatile.

1. INTRODUCTION

An Agricultural Land Classification (ALC) Survey was carried out in July 1995 at Castle Cary on behalf of MAFF as part of its statutory role in the preparation of the South Somerset Local Plan. The 1995 fieldwork covering 68.6 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 42 auger borings were examined and 3 soil profile pits used to assess subsoil conditions.

The published provisional one inch to the mile ALC map of this area (MAFF 1972) shows the grades of the site at a reconnaissance scale. The steepest land is mapped as Grades 4 and 5 with the other land mapped as Grade 3.

Much of the area around Castle Cary was surveyed in 1983. This was resurveyed in 1992 using the Revised Guidelines. The current survey now completes the survey work surrounding Castle Cary. The results of the 1992 survey are presented elsewhere (MAFF 1992) and this report details the findings of the most recent work.

The 1992 & 1995 surveys supersede previous surveys 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. However there is an important Field Capacity Day boundary at 60 m. Below 60m the FCD Value is < 176 and above 60m it is >176.

Table 1: Climatic Interpolations: Castle Cary

Grid Reference		ST64D 336	ST643 317
Altitude (m)		45	155
Accumulated Temperature (day °)		1514	1390
Average Annual Rainfall (mm)		802	911
Overall Climatic Grade		1	1
Field Capacity Days		173	189
Moisture deficit (mm):	Wheat	104	88
	Potatoes	96	76

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

All of the land surveyed in 1995 is sloping. The slopes vary from gentle to over 18°. The southern site has deeply dissected slopes whilst the northern site is more even. The southern site ranges in altitude from 85m AOD to 155m AOD. The northern site ranges form 45m AOD to 100m AOD.

At the time of survey the land was used for both arable and grazing.

4. GEOLOGY AND SOILS

The geology of the site is shown on the published 1:50,000 scale solid and drift geology map. Institute of Geological Sciences 1973. The southern site is mapped as mainly sand with a small area of limestone on the highest land. The northern site is mapped as clay with limestone on the lower land and silt and clay on the higher land.

The soils were mapped by the Soil Survey of England and Wales in 1983 at a reconnaissance scale of 1:250,000 The higher land of the southern site is mapped as the Elmton 2 Association described as shallow well drained brashy calcareous fine loamy soils over limestone. The rest of this site and the higher part of the northern site is mapped as South Petherton Association (deep well drained silty soils). A small area of the Badsey 1 Association is mapped along the railway. These soils are described as deep well drained calcareous fine loamy soils over limestone gravel. The rest of the northern site is mapped as the Flint Association, described as reddish fine loamy over clayey soils with slowly permeable subsoils and slight seasonal water logging. The soils found during the recent survey on the higher land are well drained light textured soils. The soils on the northern site experience restricted drainage in varying degrees. The better drained soils are in the west of this site and towards the east the slowly permeable layers are higher in the clay loam profiles. At depth clays are found.

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: Castle Cary

Grade	Area (ha)	% of Survey Area	% of Agricultural Land (183.4ha)
1	64.9	30.5	35.4
2	29.1	13.7	15.9
3a	25.0	11.7	13.6
3b	42.7	20.0	23.3
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5	7.3	3.4	4.0
Urban	22.8	10.7	0.0
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TOTAL	213.0	100.0	100.0

Grade 1

Several areas of Grade 1 soils are mapped. These soils are deep sandy loams and fine sandy silt loams. The soils are well drained and are Wetness Class I (See Appendix 3). The soils do not experience any limitations and are of excellent quality.

Grade 2

A small area of Grade 2 is mapped in the south where well drained soils are found. Here the topsoil is heavier in texture than described above and a minor workability limitation exists. In the north a block of Grade 2 is mapped. Here a minor wetness limitation is found. Medium silty clay loam topsoils lie over heavier textures. There is evidence of restricted drainage in the profile. These soils are assessed as Wetness Class II. In this area the field capacity days are less than 175 days so these soils are Grade 2.

Subgrade 3a

These soils experience a moderate wetness limitation with gleying above 40cm. These soils are assessed as Wetness Class III and are Subgrade 3a.

Subgrade 3b

In the southern area the areas mapped as Subgrade 3b have a gradient limitation. In the north the soils experience a wetness limitation more severe than in the soils described above. These soils have slowly permeable layers high in the profile accompanied by gleying and are assessed Wetness Class IV.

Grades 4 and 5

These areas are limited by steep slopes over 11° and 18° respectively. This severely restricts the agricultural use of the land because of the limited range of machinery that can be used safely.

Other land

Areas of scrub and housing are marked as non agricultural and urban.

Resource Planning Team
Taunton Statutory Unit
October 1995

APPENDIX 1

REFERENCES

INSTITUTE OF GEOLOGICAL SCIENCES (1973) Solid and Drift Edition, Sheet 296

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.

MAFF (1992) Agricultural Land Classification: South Somerset District Plan: Castle Cary.

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
Castle Cary	Pit 1	1° N	Maize	Av Rainfall: 802 mm ATO: 1514 day °C	Clay with some limestone.
JOB NO.	DATE	GRID REFERENCE	DESCRIBED BY	FC Days: 173 Climatic Grade: 1 Exposure Grade: 1	SOIL SAMPLE REFERENCES
42/95	5/7/95	ASP 8 ST 638 336	NAD/GMS		GMS505

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	28	M2CL	10YR42	None	fdom 75YR46	None	-	-	-	-	Common F+VF	-	abrupt/ smooth
2	42	MCL	10YR54	None	fdom 10YR46	None	MCSAB	Friable	M	P	few V F	-	clear/smooth
3	58	C	10YR53	None	cdom 10YR56	few	MDCSAB	Friable	M	P	Few VF	-	clear/smooth
4	70	C	10YR62	None	cdom 10YR68	none	MDCSAB	Firm	P	P	Few VF	-	clear/smooth
5	120	C	10YR62	None	Mdom 10YR58	none	WDCSAB	Firm	P	P	Few VF	-	-

Profile Gleyed From: 42

Depth to Slowly Permeable Horizon: 70

Wetness Class: II

Wetness Grade: 2

Available water Wheat: 138 mm
Potatoes: 117 mm
Moisture Deficit Wheat: 99 mm
Potatoes: 91 mm
Moisture Balance: Wheat: 39 mm
Potatoes: 26 mm
Droughtiness Grade: 1 (Calculated to 120 cm)

Final ALC Grade: 2

Main Limiting Factor(s): Wetness

Remarks: Pit dug to 90, augered to 120 cm.

SITE NAME	PROFILE NO.	SLOPE AND ASPECT	LAND USE		PARENT MATERIAL
Castle Cary	Pit 2	2° S	Maize	Av Rainfall: 802 mm ATO: 1514 day °C FC Days: 173 Climatic Grade: 1 Exposure Grade: 1	Silt and clay
JOB NO.	DATE	GRID REFERENCE	DESCRIBED BY		SOIL SAMPLE REFERENCES
42/95	5/7/95	ST 645 335	NAD/GMS		NAD 240

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	25	MCL	10YR42	None	cdfo 10YR58	none	-	-	-	-	FM+F	-	clear irregular
2	35	MCL	10YR52	None	cdfo 10YR58	none	MCSAB	Friable	M	Poor, some bio-channels	C F	-	clear/smooth
3	45	HCL	25Y64	None	cdfo 10YR58	none	MCSAB	Friable	M	Poor	FF	-	clear/smooth
4	120	C	10YR62	None	mdmo 10YR58	none	MCPr	Friable	P	Poor	FF	-	-

Profile Gleyed From: Surface

Depth to Slowly Permeable Horizon: 45cm

Wetness Class: IV

Wetness Grade: 3b

Available water Wheat: 133 mm
Potatoes: 110 mm

Moisture Deficit Wheat: 99 mm
Potatoes: 91 mm

Moisture Balance: Wheat: 34 mm
Potatoes: 19 mm

Droughtiness Grade: 1 (Calculated to 120 cm)

Final ALC Grade: 3b

Main Limiting Factor(s): Wetness

Remarks: Pit dug to 85cm, augered 120 cm.

SITE NAME	PROFILE NO.	SLOPE AND ASPECT	LAND USE		PARENT MATERIAL
Castle Cary	Pit 3	4° N	Ley	Av Rainfall: 851 mm ATO: 1452 day °C	Sand
JOB NO.	DATE	GRID REFERENCE	DESCRIBED BY	FC Days: 180 Climatic Grade: 1	SOIL SAMPLE REFERENCES
42/95	5/7/95	NRASP ~~66~~ 66 ST640318	NAD/GMS	Exposure Grade: 1	NAD 241

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	22	FSZL	10YR44	None	None	None	-	-	-	-	MF+VF	-	clear/ smooth
2	40	FSL	10YR54	None	None	None	WCSAB	Friable	Good	Good	M V F	-	gradual /smooth
3	120	FSL	10YR56	None	None	None	WCSAB	Friable	Good	Good	C VF	-	

Profile Gleyed From: Not gleyed

Depth to Slowly Permeable Horizon: No SPL

Wetness Class: I

Wetness Grade: 1

Available water Wheat: 229 mm
Potatoes: 154 mm

Moisture Deficit Wheat: 99 mm
Potatoes: 91 mm

Moisture Balance: Wheat: 130 mm
Potatoes: 63 mm

Droughtiness Grade: 1 (Calculated to 120 cm)

Final ALC Grade: 1

Main Limiting Factor(s):

Remarks: Pit dug to 90cm, augered to 120 cm.