

East Devon Local Plan

**AGRICULTURAL LAND CLASSIFICATION
REPORT OF SURVEY**

Resource Planning Team
Taunton Statutory Unit

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EAST DEVON LOCAL PLAN
AGRICULTURAL LAND CLASSIFICATION

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EAST DEVON LOCAL PLAN

AGRICULTURAL LAND CLASSIFICATION SURVEY

SUMMARY

Semi-detailed and reconnaissance surveys were carried out by ADAS on behalf of MAFF as part of its statutory role in the preparation of the East Devon Local Plan. The fieldwork covered sites at Feniton, Rockbeare and Honiton and was completed in July and August 1994 at a scale of 1:10,000. Data on climate, soils, geology and previous ALC Surveys was used and is presented in this report. The distribution of grades is detailed below and illustrated on the accompanying ALC maps. Information is correct at this scale but could be misleading if enlarged.

Distribution of ALC grades: Feniton

Grade	Area (ha)	% of Survey Area	% of Agricultural Land	
2	56.9	42.2	47.8	
3a	50.5	37.5	42.4	
3b	11.7	8.7	9.8	
Urban	11.5	8.5	0.0	
Non Agricultural	2.7	2.0	0.0	
Agricultural Buildings	<u>1.5</u>	<u>1.1</u>	<u>0.0</u>	
TOTAL	134.8	100.0	100.0	(119.1 ha)

The majority of the site has been mapped as best and most versatile land. To the east the soils are well drained light textured and stony with slight droughtiness limitations. To the west the soils are heavier and stony and are limited by workability. A small area of very stony droughty land is mapped as Subgrade 3b in the north and two areas of steeper land are identified with slope limitations.

Distribution of ALC grades: Rockbeare

Grade	Area (ha)	% of Survey Area	% of Agricultural Land	
2	66.1	23.4	24.7	
3a	112.0	39.6	41.8	
3b	89.7	31.7	33.5	
Urban	11.4	4.0	0.0	
Non Agricultural	0.8	0.3	0.0	
Agricultural Buildings	<u>2.9</u>	<u>1.0</u>	<u>0.0</u>	
TOTAL	282.9	100.0	100.0	(267.8 ha)

The Grade 2 land was found on light textured, well drained soils derived from sandstone beds and river gravels. These are slightly droughty soils. Much of the land graded 3a is of similar soil with evidence of impeded drainage in the lower parts of the soil profile. The areas of 3b land are derived from deep slowly permeable clayey soils and experience a moderately severe wetness limitation.

Distribution of ALC grades: Honiton

Grade	Area (ha)	% of Survey Area	% of Agricultural Land	
2	31.0	25.3	28.1	
3a	31.2	25.4	28.3	
3b	43.4	35.4	39.4	
4	3.8	3.1	3.5	
5	0.8	0.7	0.7	
Urban	6.8	5.5	0.0	
Non Agricultural	4.2	3.4	0.0	
Agricultural Buildings	<u>1.5</u>	<u>1.2</u>	<u>0.0</u>	
TOTAL	122.7	100.0	100.0	(110.2 ha)

The reconnaissance survey of Honiton indicates half the site is best and most versatile. The well drained stony profiles derived from river gravels give rise to Grade 2 land. Where similar soils but with drainage impediment at depth, they are graded 3a. Clayey poorly drained soils and steep sloping land are graded 3b with some of the scarp slope being Grades 4 and 5.

1. INTRODUCTION

Agricultural Land Classification (ALC) Surveys were carried out in July and August 1994 at Feniton, Rockbeare and Honiton. Surveys were completed on behalf of MAFF as part of its statutory role in the preparation of the East Devon Local Plan. The fieldwork covered 135 ha of land at Feniton, 283 ha at Rockbeare and 122 ha at Honiton. Surveys for the first two sites were conducted by ADAS at a scale of 1:10,000 of semi detailed land. (Approximately one boring per 2 hectares of agricultural land). Due to difficulties in gaining permission for access limited boring information was collected at Honiton and this information is presented at reconnaissance scale. A total of 229 auger borings were examined across the 3 sites and 12 soil profile pits were used to assess subsoil conditions.

The areas have previously been mapped on the published provisional one inch to the mile ALC maps. Some of the areas have also been surveyed at a more detailed level but using the original guidelines for grading agricultural land. These surveys are described in the relevant sections.

The recent surveys supersede these maps 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). This data is shown in the sections for each survey area.

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.

Higher Colesworthy and south of Long Park. Recent sedimentary deposits are found on the western edge of the site, River alluvium, and also an area of valley gravel extends in a lobe from south of Long Park to the southern boundary of the site.

The soils were mapped by the Soil Survey of England and Wales in 1983 at a reconnaissance scale of 1:250,000. The western half of the site is overlain by a V shaped area of the Whimple 3 Association which extends from Clapperentale Cottages widening to the north. These soils 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 and slowly permeable clayey soils may be found on lower slopes. These soils are bounded on the west by a band of Conway Association following the course of the River Tale. These soils are described as deep stoneless fine silty and clayey soils variably affected by ground water. To the east of Whites Cottages and Lower Colesworthy lies an area of Bromsgrove Association whilst south of this an area of Newnham Association is mapped. Both these soils are described as well drained reddish coarse loamy soils, but Bromsgrove are mainly over sandstone and Newnham over gravel. Both may be affected by waterlogging.

During the recent survey the soils in the east and south of the site were found to be well drained, light textured with variable stone contents. To the north of Higher Colesworthy very stony light textured soils were found derived from the Pebble Beds. In the far west running along the River Tale alluvial derived soils were found which were variable in texture. These soils also showed slight evidence of waterlogging. The remaining soils in the west were mostly reddish stony clayey soils, typical of Whimple Soils in the area. These soils are slowly permeable at depth.

3.5 Agricultural Land Classification

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

Table 2: Distribution of ALC grades: Feniton

Grade	Area (ha)	% of Survey Area	% of Agricultural Land	
2	56.9	42.2	47.8	
3a	50.5	37.5	42.4	
3b	11.7	8.7	9.8	
Urban	11.5	8.5	0.0	
Non Agricultural	2.7	2.0	0.0	
Agricultural Buildings	1.5	1.1	0.0	
TOTAL	134.8	100.0	100.0	(119.1 ha)

Grade 2

The Grade 2 soils are well drained and are Wetness Class I (See Appendix 3). The soils are light textured, medium sandy loams in the upper horizons with loamy mediums sands sometimes occurring at depth. Part of the area covered by these soils has Valley Gravel underlying and part sandstone, so the stone contents of the profile vary slightly. The majority of the stones are less than 2 cm in size, for example at a soil profile pit 1% were found greater than 2 cm and 14% less than 2 cm, in the topsoil. The combination of light textured soils and stone contents impose a slight droughtiness limitation on these soils. There are some profiles within this unit which are less stony and qualify for Grade 1, but their distribution include them in the Grade 2 unit when mapped at semi-detailed level.

Subgrade 3a

The western part of the site has three types of soils mapped as Subgrade 3a. Along the River Tale variable alluvial derived soils show slight evidence of wetness. However the wetness is insufficient to downgrade the soil and these soils are Wetness Class I. The topsoil texture is heavy clay loam which imposes a workability limitation on the soils. On the higher land between north of Clapperentale Cottages and south and east of the copses, slightly stonier soils with loamy medium sand topsoils are found. These soils have a greater droughtiness limitation than the Grade 2 soils. The remaining Subgrade 3a soils are the clay loam, and clayey, stony soils which have slowly permeable layers deep in the profile with evidence of wetness above in the form of gleying. These soils are Wetness Class II and with this wetness limitation are Subgrade 3a. The stone content was measured at a soil profile pit and found to be 5% by volume in the topsoil increasing to 47% in the lower subsoil before decreasing in the slowly permeable layer below.

Subgrade 3b

Two small areas with slope gradients over 7 degrees were mapped, one near Clapperentale Cottages, the other north of Higher Colesworthy. Also around Higher Colesworthy a moderate droughtiness limitation exists limiting the soils to Subgrade 3b. These light textured soils are very stony and a total stone content (>2mm) of 37% was measured in the topsoil. Subsoil stone content was measured as 64%. Unlike the Grade 2 area the size of stones was bigger, for example in the topsoil 18% were bigger than 2 cm which also imposes a moderate limitation since this can increase production costs caused by wear and tear on implements and tyres on agricultural machinery. The soils are Wetness Class I.

4.4 Geology and Soils

The geology of the site is shown on the published 1:50,000 scale Drift Edition Geology Map, sheet 325 (Institute of Geological Sciences 1986). This map shows most of the site to be underlain by Lower Triassic/ Permian Marls and Sandstone with narrow bands of alluvium following the course of the natural drainage channels. The very western edge of the site is mapped as Lower Sandstones.

The soils were mapped by the Soil Survey of England and Wales in 1983 at a reconnaissance scale of 1:250,000. The mapped Soil Associations follow a broadly similar pattern to the geology with Whimple 3 Association comprising most of the area mapped as Marl and Sandstone. (Soils described in Section 3.4). The low lying areas of the site are mapped as Compton Association which is described as stoneless mostly reddish clayey soils affected by ground water. The western edge of the site is mapped as Bridgnorth Association soils, which are described as well drained sandy and coarse loamy soils over soft sandstone with occasionally deeper soils.

The soils found during the recent survey can be described as three types. Firstly, those derived from the Marl and Alluvium in the central and eastern parts of the site comprise reddish clayey often stoneless profiles with clay and heavy clay loam topsoils. Towards the north and west of the site similar soils with lighter topsoil textures (medium clay loam and occasionally medium sandy loam) with slightly stony upper horizons were present. Soil pits confirmed some of these soils to have undeveloped red marl parent material at approximately 60 cm.

Secondly, areas of stony clay profiles in the north east and eastern parts of the site where subsoil stone contents vary between 15% and 42% hard rock. The third soil type is limited to a small area on the western edge of the site and relates to the sandstone geology described above. These profiles comprise deep slightly stony medium sandy loams and loamy sands at depth.

4.5 Agricultural Land Classification

The distribution of ALC grades is shown in Table 4 and on the accompanying ALC map. The information could be misleading if shown at a larger scale.

Table 4: Distribution of ALC grades: Rockbeare

Grade	Area (ha)	% of Survey Area	% of Agricultural Land	
2	66.1	23.4	24.7	
3a	112.0	39.6	41.8	
3b	89.7	31.7	33.5	
Urban	11.4	4.0	0.0	
Non Agricultural	0.8	0.3	0.0	
Agricultural Buildings	<u>2.9</u>	<u>1.0</u>	<u>0.0</u>	
TOTAL	282.9	100.0	100.0	(267.8 ha)

Grade 2

The Grade 2 soils relate to the lighter textured and slightly stony profiles described above. The areas of this grade around Tillhouse Farm, Bluehayes Lane and Treasbeare Farm which show some evidence of wetness as indicated by gleying and occasionally a slowly permeable layer at depth. These soils are assessed as Wetness Class II which imposes a slight wetness limitation where soils have medium clay loam and sandy clay loam topsoils. The stony profiles also experience a slight drought limitation. The most westerly block of Grade 2 relates to the slightly droughty deep sandy loam profiles derived from sandstone.

Subgrade 3a

The main central block of this grade comprises moderately drained Wetness Class III clayey profiles. These red soils have a very slightly stony (4-5% hard rock) medium clay loam topsoils. The upper clay subsoil is poorly structured and slowly permeable. However, this overlies a horizon of undeveloped reddish Marl parent material which indicate a slightly better drainage status. The isolated block of this grade around Parsons Bridge comprises slightly better drained profiles (Wetness Class I and II) but clay and heavy clay loam topsoils imposing a moderate workability limitation.

Subgrade 3b

The land of moderate quality comprises deep clayey profiles which are slowly permeable to depth often with plastic clay subsoils. These soils are assessed as Wetness Class III which imposes a moderately severe wetness limitation when found with the clay loam topsoils.

5.4 Geology and Soils

The geology of the site is shown on the published 1:50,000 scale Drift Edition sheet 326/340 (Institute of Geological Sciences 1986). This map shows clay with Flints and Chert on the plateau area, Upper Greensand along the steep scarp slope. The lower slopes comprise Keuper Marl with some valley gravels.

The soils were mapped by the Soil Survey of England and Wales in 1983 at a reconnaissance scale of 1:250,000. The mapped Soil Associations follow a broadly similar pattern to the geology with Dunkeswell Association on the clay with flints, which is described as slowly permeable seasonally waterlogged fine silty over clayey soils, some with a humose surface horizon. Some deep fine silty over clayey soils with slowly permeable subsoils and slight seasonal waterlogging. The Greensand gives rise to Bearsted 2 Association soils which are described as deep well drained coarse loamy soils mainly on steep scarps which are locally very stony. These soils may be peaty topped and affected by groundwater, and associated with landslips and irregular terrain. Below the scarp edge Newnham soils are mapped. These are described as well drained reddish coarse and fine loamy soils over gravel with some similar soils affected by groundwater.

During the recent survey similar soils to the mapped associations were found. The plateau area at Tower Cross comprised medium clay loam topsoils over stony clay loam upper subsoils which are slowly permeable at depth. The lower slopes comprise mainly very stony upper horizons over heavy clay loam and clay. A typical profile comprising medium sandy silty loam topsoils with 20% hard rock over clay loam upper subsoils with 40% hard rock. These are less stony areas around Field House and on the western side of the site where subsoils are clayey.

5.5 Agricultural Land Classification

The distribution of ALC grades is shown in Table 6 and on the accompanying ALC map. The information could be misleading if shown at a larger scale.

Table 6: Distribution of ALC grades: Honiton

Grade	Area (ha)	% of Survey Area	% of Agricultural Land	
2	31.0	25.3	28.1	
3a	31.2	25.4	28.3	
3b	43.4	35.4	39.4	
4	3.8	3.1	3.5	
5	0.8	0.7	0.7	
Urban	6.8	5.5	0.0	
Non Agricultural	4.2	3.4	0.0	
Agricultural Buildings	<u>1.5</u>	<u>1.2</u>	<u>0.0</u>	
TOTAL	122.7	100.0	100.0	(110.2 ha)

Grade 2

A large block of stony well drained profiles has been identified in the centre of the site. These soils although stony experience only a slight drought limitation. The main limitation being the overall cool and wet climate as indicated by the climatic data. These soils are well drained and have light workable topsoils. The topsoil stone content was measured to be 8% stones greater than 2 cm and thus impose a slight limitation in places.

Subgrade 3a

Land of this grade relates to the clayey profiles which exhibit evidence of gleying and slowly permeable layers in the lower subsoils. These soils are assessed as Wetness Class III which with a medium clay loam texture topsoil impose a moderate workability limitation.

Subgrade 3b

Small areas of land on the lower slopes west of Northcote Hill Farm, comprise deep clayey slowly permeable soils which impose a moderately severe wetness limitation and have been assessed as Wetness Class IV. Much of the area mapped as 3b is limited to this grade due to steep slopes and irregular terrain associated with the Upper Greensand belt. Slopes of between 7 and 11° impose a moderately severe limitation on the safe use of some types of agricultural machinery.

Grades 4 and 5

The very steep areas of between 11° and 18° are Grade 4 whilst areas of greater than 18° are Grade 5. These slopes impose severe limitations on the safe use of a wide range of agricultural machinery.

Other Land

Roads and residences and gardens are shown as urban, farmsteads are shown as agricultural buildings and a caravan site and woodland shown as non-agricultural land.

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August 1994

APPENDIX 1

REFERENCES

INSTITUTE OF GEOLOGICAL SCIENCES (1986) Drift Edition, Sheet 325, Exeter 1:50,000

INSTITUTE OF GEOLOGICAL SCIENCES (1974) Drift Edition, Sheet 326/340, Sidmouth, 1:50,000

MAFF (1972) Agricultural Land Classification Map, Sheet 176, 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	Av Rainfall: 1088 mm	PARENT MATERIAL
Honiton		1	3° SE	PGR	ATO: 1396 day °C	
JOB NO.		DATE	GRID REFERENCE	DESCRIBED BY	FC Days: 214	SOIL SAMPLE REFERENCES
85/94		6/7/94	ASP 6-16 ST 174 ???	PRW	Climatic Grade: 2	
					Exposure Grade: 1	

Horizon No.	Lowest Av. Depth (cm)	Texture	Matrix (Ped Face) Colours	Stoniness: Size, Type, and Field Method	Mottling Abundance, Contrast, Size and Colour	Mangan Cones	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	MCL	10YR4/4	8% >2cm 13% <2cm 21% Total Sieved Hard Rock	None	None	-	Friable	Moderate	Many	Many Fine		Abrupt smooth
2	48	MCL	10YR5/4	40% Total Sieved Hard Rock	None	None	Moderate Medium Subangular Blockly	Friable	Moderate	Many	Many Fine		Clear smooth
3	75	HCL	10YR5/8	16% Total Sieved Hard Rock	None	None	Moderate Medium Subangular Blockly	Friable	Moderate	Many	Few Fine		Abrupt smooth
4	100+	C	10YR6/3	16% HR estimated	Common distinct 75YR5/8	Few	Moderate Coarse Subangular	Friable	Moderate	Few but <0.5% biopores	Few Fine		-

Profile Gleyed From: 75

Depth to Slowly Permeable Horizon: -

Wetness Class: 1

Wetness Grade: 2

NL336h

Available Water Wheat: 112 mm

Potatoes: 88 mm

Moisture Deficit Wheat: 84 mm

Potatoes: 65 mm

Moisture Balance Wheat: +33 mm

Potatoes: +24 mm

Droughtiness Grade: 1 (Calculated to 120 cm)

Final ALC Grade: 2

Main Limiting Factor(s): Climate

Remarks: