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Torbay Borough Local Plan
AGRICULTURAL LAND CLASSIFICATION
REPORT OF SURVEY

Resource Planning Team
Taunton Statutory Unit

March 1994



TORBAY BOROUGH LOCAL PLAN

AGRICULTURAL LAND CLASSIFICATION

Report of Surveys

1 SUMMARY

Land at seven sites within the Torbay Borough was surveyed using the Agricultural Land Classification (ALC) system in March 1994. The surveys were carried out on behalf of MAFF as part of its statutory role in the preparation of the Torbay Borough Local Plan. The sites were at Churston Ferrers, Collaton St Mary, Edginswell, Gillard Road, Brixham, Long Road, Goodrington, Maidencombe and White Rock, Goodrington.

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 the scale shown but any enlargement would be misleading.

The distribution of ALC grades and categories identified in the survey area is detailed below and illustrated on the accompanying ALC maps.

Distribution of ALC grades - Churston Ferrers

Grade	Area (ha)	% of Survey Area	% of Agricultural Land
2	103.4	59.7	71.8
3a	27.3	15.8	19.0
3b	8.4	4.9	5.8
4	4.9	2.9	3.4
Urban	17.9	10.3	0.0
Non-Agricultural	10.8	6.2	0.0
Agricultural Buildings	<u>0.4</u>	<u>0.2</u>	<u>0.0</u>
TOTAL	173.1	100	100 (144ha)

The majority of the agricultural land that was surveyed was found to be best and most versatile, with only 10% being Subgrade 3b or worse. The Grade 2 land tended to be a fairly uniform medium clay loam topsoils with a varying depth to the bedrock. In the area to the south of the A3022, however, the Grade 2 land was borderline Subgrade 3a on wetness and droughtiness. Where the bedrock was closer to the surface the land was mapped as Subgrade 3a on droughtiness. The land mapped as

Subgrade 3b tended to be the steep slopes although there was also a small area of droughty 3b. In the southern part of the site the steep slopes were mapped as Grade 4.

Distribution of ALC grades Collaton St Mary

Grade	Area (ha)	% of Survey Area	% of Agricultural Land
2	21.2	52.1	68.8
3a	2.9	7.1	9.5
3b	5.6	13.7	18.2
4	1.1	2.7	3.5
Urban	8.1	19.8	0.0
Non-Agricultural	1.0	2.6	0.0
Woodland	0.3	0.6	0.0
Agricultural Buildings	<u>0.6</u>	<u>1.4</u>	<u>0.0</u>
TOTAL	40.8	100	100 (30.8 ha)

Almost 80% of the agricultural land that was surveyed was graded as best and most versatile. There were mainly minor or occasionally moderate limitations due to restrictions in workability, droughtiness and a small area of wetness. The Grade 4 area was downgraded due to a gradient limitation.

Distribution of ALC grades Edginswell

Grade	Area (ha)	% of Survey Area	% of Agricultural Land
2	11.3	14.2	21.7
3a	1.4	1.8	2.7
3b	20.0	25.1	38.4
4	17.3	21.7	33.2
5	2.1	2.6	4.0
Urban	21.7	27.3	0.0
Non-Agricultural	<u>5.8</u>	<u>7.3</u>	<u>0.0</u>
TOTAL	79.6	100	100 (52.1 ha)

The land at Edginswell has mainly been downgraded on gradient. All the Subgrade 3b, Grade 4 and Grade 5 land are on slopes of varying degrees of slope. The flatter areas were found to be well drained medium clay loam topsoils with a negligible stone content and were downgraded to

Grade 2 on workability There was a small area of Subgrade 3a which was poorly drained were both Wetness Class II and Wetness Class III profiles were found

Distribution of ALC grades Gillard Road, Brixham

The survey of the site was not carried out because permission for access to the site was not granted by the landowner The last detailed survey was carried out in 1985 as part of the Torbay Borough Plan and this showed that the site consisted of Grade 2 soils in the south of the site and a small area in the middle of the site some Grade 4 slope near the beacon and approximately half the site to be non-agricultural land

It should be noted that this survey was carried out under the Original Guidelines at a relatively small scale In order to make an accurate assessment of the site a new survey would have to be undertaken using the Revised Guidelines which would then supersede all previous surveys

Distribution of ALC grades Long Road, Goodrington

Grade	Area (ha)	% of Survey Area	% of Agricultural Land
2	32.0	16.9	23.6
3a	57.7	30.6	42.6
3b	39.7	21.0	29.3
4	6.1	3.2	4.5
Urban	13.6	7.2	0.0
Non-Agricultural	39.0	20.6	0.0
Agricultural Buildings	<u>0.8</u>	<u>0.4</u>	<u>0.0</u>
TOTAL	188.9	100	100 (135.5 ha)

Two thirds of the agricultural land was found to be best and most versatile and only 4.5% was found to be Grade 4 or worse The majority of the Grade 2 land suffers a slight workability limitation although there area a few small areas which are slightly droughty The Subgrade 3a land was very similar but the moderate limitations were enough to downgrade the areas below the Grade 2 land

The areas which are mapped as Subgrade 3b are where there is a moderate limitation due to gradient or in some areas a limitatin due to droughtiness These droughty areas occurred where the depth to the

bedrock is very shallow. The land mapped as Grade 4 has similar limitations to the Subgrade 3b land but of greater severity.

Distribution of ALC grades Maidencombe

Grade	Area (ha)	% of Total Land	% of Agricultural Land
2	13.1	19.4	34.4
3b	16.3	24.2	42.8
4	7.2	10.7	18.9
5	1.5	2.2	3.9
Urban	17.7	26.3	0.0
Non-Agricultural	<u>11.6</u>	<u>17.2</u>	<u>0.0</u>
TOTAL	67.4	100	100 (38.1ha)

The site at Maidencombe is similar to the site at Edginswell in that where the land has not been downgraded on gradient, the soil was well drained with a negligible stone content and mapped as Grade 2. The areas of Subgrade 3b land were found in the western part of the site whereas the very steep Grade 4 and Grade 5 land was mainly in the eastern part of the site, in Sladnor Park.

Distribution of ALC grades White Rock, Goodrington

Grade	Area (ha)	% of Survey Area	% of Agricultural Land
2	38.3	61.8	68.5
3a	17.6	28.4	31.5
Urban	5.6	9.0	0.0
Non-Agricultural	0.3	0.5	0.0
Agricultural Buildings	<u>0.2</u>	<u>0.3</u>	<u>0.0</u>
TOTAL	62.0	100	100 (55.9ha)

All of the agricultural land that was surveyed at this site was found to be best and most versatile. Within the two grades though there was some variability. The northern half of the site was mapped as Grade 2 soils which were easily worked with a negligible stone content down the profile. In the southern half of the site the Grade 2 areas included some areas of wetness as well. The Subgrade 3a mapping units included areas of poorly drained heavy soils where wetness was a problem and shallow areas which were downgraded on droughtiness.

2 INTRODUCTION

Land at seven sites within the Torbay Borough was surveyed using the Agricultural Land Classification (ALC) system in March 1994. The surveys were carried out on behalf of MAFF as part of its statutory role in the preparation of the Torbay Borough Local Plan. The sites were at Churston Ferrers, Collaton St Mary, Edginswell, Gillard Road, Brixham Long Road, Goodrington, Maidencombe and White Rock, Goodrington.

The fieldwork was carried out by ADAS (Resource Planning Team, Taunton Statutory Unit) at a scale of 1:10,000 (approximately one auger sample point per hectare). The information is correct at the scale shown but any enlargement would be misleading. The findings of the surveys and distribution of grades are detailed within this report for each of the areas surveyed.

These recent surveys supersede any previous work and were undertaken to provide a more detailed representation of the agricultural land quality 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 its agricultural use. The grading takes account of the top 120cm 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 agricultural land is determined by the most limiting factor present. The overall climate is considered first as it can have an overriding influence on restricting land to a lower grade despite other favourable conditions.

Estimates of climatic variables were obtained for each site by interpolation from the Agricultural Climatic Dataset (Meteorological Office 1989). The data are shown in later sections.

The parameters used for assessing overall climatic conditions are accumulated temperature (a measure of the relative warmth of a locality) and the average annual rainfall (a measure of the 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 Wetness Classes used in quantifying the degree of wetness can be found in Appendix 3.

4 CHURSTON FERRERS

- 4.1 An area of one hundred and seventy three hectares around the village of Churston Ferrers to the south of Torbay was surveyed in March 1994. The published provisional 1' to a mile national ALC map series sheet 188 (MAFF 1973) shows the site as being a combination of Grades 2, 3 and 4. The Grade 2 land is found in the lower lying areas running through Churston Ferrers itself to Churston Court Farm and then along the dismantled railway towards Brixham. On the higher areas within the site the land has been mapped as Grade 3, while the Grade 4 land is the area which has been downgraded on slope on both sides of the A3022 in the southern part of the site.

The only previous detailed survey was carried out as part of the Torbay Borough Plan in 1985 under the Original Guidelines and at a scale of 1:25,000. The information that was gained from this survey is not adequate to make an accurate assessment of the land quality under the Revised Guidelines. This recent survey now supersedes all previous ALC surveys having been undertaken at a more detailed level and using the Revised Guidelines and Criteria for Assessing the Quality of Agricultural Land (MAFF 1988).

During the survey a total of 131 soil auger points and six soil inspection pits were examined.

4.2 Climate

Climatic data for the site were interpolated as described in Section 3. The results are shown in Table 1 and indicate that there is no overall climatic limitation for the site.

Table 1 Climatic Interpolation - Churston Ferrers

Grid Reference	SX 898 564	SX 910 567
Altitude (m)	60	35
Accumulated Temperature (day°)	1548	1576
Average Annual Rainfall	1018	965
Overall Climatic Limitation	1	1
Field Capacity Days	209	199
Moisture deficit		
Wheat (mm)	92	98
Potatoes (mm)	82	90

Table 1 cont

Grid Reference	SX 912 556	SX 910 568
Altitude (m)	75	40
Accumulated Temperature (day°)	1531	1570
Average Annual Rainfall	1021	973
Overall Climatic Limitation	1	1
Field Capacity Days	208	200
Moisture deficit		
Wheat (mm)	90	97
Potatoes (mm)	79	88

4 3 Relief and Landcover

The site has several obvious relief characteristics. There are two valleys cutting through the site: one small one below Churston Court Farm and the other large valley in the southern part of the site where the A3022 runs. There are several areas which are higher than the surrounding land including Brokenbury Quarry, Churston Cross, an area near The Grove, an area on the opposite side of the A3022 from Churston Mill Farm and a couple of areas near the course of the old railway. This gives the site a rise in height from 30m to 72m AOD.

At the time of the survey there were three clear areas of landcover. The fields to the north-east of Churston Court Farm were being used as pasture. The very steep area next to the A3022 in the southern part of the site and the fields to the south of the A3022 were under permanent pasture, while the rest of the land was under winter cereals.

4 4 Geology and Soils

The geology of the site is mapped on the published 1:50,000 drift geology map, sheet 350 (Geological Survey of England and Wales, 1976). This shows that the majority of the site is underlain by Middle Devonian limestone at varying depths. There is a small area of Upper Devonian slates and mudstones near to Churston Golf Course to the north of the site and there are two blocks of Middle Devonian slates and mudstones at Churston Cross and either side of the A3022 in the southern part of the site. There is also a narrow band of alluvium deposits in the bottom of the valley in the south of the site.

The Soil Survey of England and Wales mapped the area in 1983 at a reconnaissance scale of 1:250,000. This shows that the site consists of two soil types. The northern part of the site, down to the higher ground

above the A3022 consists of soils from the Crwbin Association which are described as being very shallow well drained loamy soils over limestone. The southern part of the site has soils from the Denbigh 1 Association which are well drained loamy and silty soils. They can also experience some slowly permeable horizons and seasonal waterlogging.

The soils that were found during the survey are fairly similar to these descriptions although the depth of soil varied across the site and the wetter profiles to the south of the main road were very spread out.

4.5 Agricultural Land Classification

The distribution of ALC grades identified in the survey areas 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.

Table 2 Distribution of ALC Grades - Churston Ferrers

Grade	Area (ha)	% of Survey Area	% of Agricultural Land
2	103.4	59.7	71.8
3a	27.3	15.8	19.0
3b	8.4	4.9	5.8
4	4.9	2.9	3.4
Urban	17.9	10.3	0.0
Non-Agricultural	10.8	6.2	0.0
Agricultural Buildings	<u>0.4</u>	<u>0.2</u>	<u>0.0</u>
TOTAL	173.1	100	100 (144ha)

Grade 2

The majority of the agricultural land in the site was mapped as Grade 2. That is that there are only minor limitations to the agricultural operations which can be undertaken. Most of the auger borings in the main part of the site had a medium clay loam topsoil and a low stone content down the profile. They were well drained and so did not experience any problems associated with wetness and are therefore Wetness Class I. These soils are slightly droughty using stone contents measured in soil inspection pits but this equals the workability limitation of Grade 2.

As one gets further south closer to the Middle Devonian slates and mudstones the topsoil clay content increased but Particle Size Analysis

(PSD) results showed that there was no significant change in the texture and this area was also mapped as Grade 2

The area of Grade 2 land to the south of the main road was not as uniform as the areas in the main part of the site. Within the mapping unit there were randomly distributed areas of wetness which are Subgrade 3a as well as droughty areas which are borderline Grade 2/Subgrade 3a. None of these Subgrade 3a profiles formed a large enough area to be mapped separately. The areas which are mapped as Grade 2 are also close to having a gradient limitation with gradients measured at 6° and 7°

Subgrade 3a

The areas which have been mapped as Subgrade 3a are those where the soil was much shallower, only 30cm deep in places. The topsoil texture did not vary much from the surrounding Grade 2 areas but it was the lack of rooting depth and increased stone contents which increased the droughtiness limitation. The profiles resembled those which are mapped as Subgrade 3b but the droughtiness calculation for the soil inspection pit gave a Subgrade 3a limitation. With the free draining profiles and the medium clay loam topsoils these mapping units are also Wetness Class I

Also mapped in this Subgrade are two slightly different areas. The two areas of Subgrade 3a at Churston Cross and on the higher ground above the steep slopes in the southern part of the site were underlain by weathered slaty rock rather than the limestone. Although the profiles were found to have higher stone contents this rock has a higher water holding capacity and there is therefore enough available water to be Subgrade 3a. A soil inspection pit was dug to confirm the stone contents

Subgrade 3b

There are two types of land that have been mapped as Subgrade 3b. The first is the area on the high ground by Brokenbury Quarry which has been downgraded on droughtiness. The soils were well drained and Wetness Class I. A soil inspection pit was dug there and solid limestone was found at only 30cm. The droughtiness calculation was borderline Subgrade 3b/Grade 4 and there was also a topsoil stoniness limitation of Subgrade 3b with 20% hard rocks greater than 2cm. As this was the extreme profile in the area it was mapped as Subgrade 3b

The other areas of Subgrade 3b are limited by the gradients which were measured as 9° and 10° where there is some restriction on the safe use of agricultural machinery. These mapping units include the small individual areas to the south of the main road

Grade 4

The two areas which have been mapped as Grade 4 have been downgraded on their gradients which are between 12° and 18°. This magnitude of gradient imposes a severe limitation on the versatility of the land due to the restrictions on the type of agricultural machinery which can be safely used.

Other Land

The residential areas of the village and the roads and hard-core tracks have been mapped as urban. The non-agricultural land includes woodland and a small golf course.

5 COLLATON ST MARY SITE

5.1 Approximately 40 hectares of land around Collaton St Mary were surveyed in February and March 1994 by examining a total of 32 auger borings and one soil profile pit. The area had previously been surveyed at 1:25,000 scale but this was considered inadequate for Local Plan purposes and the site has been resurveyed. This report supersedes any previous ALC information.

5.2 Climate

Climatic data for the site was interpolated as described in Section 3. The results are shown below and indicate that there is no overall climatic limitation. No local climatic limitations were noted.

Table 3 Climatic Interpolation - Collaton St Mary

Grid Reference	SX 857 600	SX 867 599
Altitude (m)	75	40
Accumulated Temperature (day °)	1531	1571
Average Annual Rainfall (mm)	1040	986
Overall Climatic Grade	1	1
Field Capacity (days)	216	207
Moisture deficit Wheat (mm)	88	96
Potatoes (mm)	76	87

5.3 Relief and Landcover

Altitude ranges from 41 to 75 m AOD.

Slopes range from the very gently sloping valley floor which extends through the site to gently sloping convex upper slopes and moderately steep short slopes on valley sides. Aspects are mixed.

At the time of survey, landcover was all grass, including one recently reseeded area.

5.4 Geology and Soils

The published 1:50,000 scale drift geology map, sheet 350 (Geological Survey of England and Wales, 1976) indicates that the site is underlain by Permian conglomerate, breccia and sandstone with alluvial deposits in the valley bottom. A small area of Devonian limestone is shown at the southern boundary of the site.

Soils mapped by the Soil Survey of England and Wales (1983) indicate that the Crediton Association is found over the whole site. These are described as well drained, gritty, reddish loamy soils over breccia, locally less stony. Steep slopes in places.

During the survey similar soils were found. There was also an area of heavier soils which were heavily mottled and had a negligible stone content.

5.5 Agricultural Land Classification

The distribution of ALC grades identified in the survey area is shown on the accompanying ALC map and areas are summarised in the table below. The information is correct at the scale shown but any enlargement would be misleading.

Table 4 Distribution of ALC Grades Collaton St Mary

Grade	Area (ha)	% of Survey Area	% of Agricultural Land	
2	21.2	52.1	68.8	
3a	2.9	7.1	9.5	
3b	5.6	13.7	18.2	
4	1.1	2.7	3.5	
Non-agricultural	1.3	3.2	0	
Urban	8.1	19.8	0	
Farm buildings	0.6	1.4	0	
TOTAL	40.8	100	100	(30.8 ha)

Grade 2

Areas of Grade 2 were found to be Wetness Class I but with over 200 Field Capacity Days there is still a slight limitation due to restricted workability with the predominant medium clay loam topsoil. With moderately high stone contents, particularly in the subsoil, many of the borings indicate soils with a droughtiness limitation and this was confirmed by sieving at the pit.

Subgrade 3a

An area of the valley floor south of the village was found to be Wetness Class II Subgrade 3a by virtue of a moderate wetness limitation.

Subgrade 3b

Areas of Subgrade 3b are found on the steeper valley sides where there is a moderate gradient limitation. One small area with a short steep slope has a serious Grade 4 slope limitation but this has been included in the Subgrade 3b mapping unit.

Other Land

The area of non agricultural land includes a playing field and a small area of scrub woodland

6 EDGINSWELL

- 6.1 A total of 79 hectares of land to the north-west of Torbay at Edginswell was surveyed in March 1994. The published provisional 1" to the mile national ALC map series sheet 188 (MAFF 1973) shows the site to consist of Grades 2, 3 and 4 where the slopes are a mixture of Grades 3 and 4 and the flat valley from Parson's Bridge to Scott's Bridge is Grade 2.

The site has been surveyed in the past under the Original Guidelines for grading land, but the information gained during these surveys was inadequate to make an accurate assessment of the land quality under the Revised Guidelines. Part of the site around Parson's Bridge and Kerswell Gardens was also surveyed in 1992 in context with the Kingskerswell Bypass. This recent survey now supersedes all the previous ALC 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).

A total of 14 auger boring points and 1 soil profile pit were examined.

6.2 Climate

Climatic data for the site was interpolated as described in Section 3. The results are shown in Table 5 and indicate that there is no overall climatic limitation for the site.

Table 5 Climatic Interpolation Edginswell

Grid Reference	SX 883 853	SX 886 865	SX 893 867
Altitude (m)	110	33	85
Accumulated Temperature (day °)	1478	1566	1506
Average Annual Rainfall (mm)	991	908	958
Overall Climatic Grade	1	1	1
Field Capacity (days)	200	188	195
Moisture Deficit			
Wheat (mm)	92	105	96
Potatoes (mm)	80	98	87

6.3 Relief and Landcover

The site occupies the land around the village of Edginswell consisting of south facing slopes in the northern part of the site rising to about 80m AOD and the lower ends of some spurs in the southern part of the site.

where the highest point is 100m AOD. In contrast the area between the village itself and the railway is quite flat with an average altitude of 35m AOD. There were slopes of between 7° and 11° and between 11° and 18° in both the north and the south of the site. There were also some small areas of slopes with a gradient of more than 18°. At the time of survey most of the agricultural land was under grass although there was some land under winter cereals in the southern part of the site.

6.4 Geology and Soils

The published 1:50,000 scale drift geology map, sheet 350 (Geological Survey of England and Wales, 1976) shows the site to be underlain by clays with sandstone and breccia in the north and conglomerate breccia and sandstone in the south. There is also some alluvium deposits in the valley bottoms along the railway and Kerswell Gardens.

The Soil Survey of England and Wales mapped the area in 1983 at a reconnaissance scale of 1:250,000. This showed that the whole site consisted of soils from the Credenon Association which are described as being well drained, gritty loamy soils over the breccia.

The majority of the soils identified during the survey were also well drained loamy soils, with a negligible stone content. There was an area of poorly draining heavier clay soils in the valley bottom next to Scott's Bridge.

6.5 Agricultural Land Classification

The distribution of ALC grades identified in the survey area is detailed in Table 6 and shown on the accompanying ALC map. The information is correct at the scale shown but any enlargement would be misleading.

Grade 2

A total of 11.3 ha of land was found to be Grade 2 which related to the areas which were not downgraded on gradient. These soils were well drained and are Wetness Class I with a negligible stone content down the profile. The main limitation was from the medium clay loam topsoils which together with the local climatic and soil moisture conditions cause a slight restriction on cultivation during the wetter winter months. A soil inspection pit was dug to confirm the grade.

The area immediately to the south of Parson's Bridge was mapped in 1992 as Subgrade 3b due to wetness limitations. The soil inspection pit which was dug there during this survey did not show any signs of

wetness and the Particle Size Distribution (PSD) results confirmed that the topsoil was a medium clay loam. This gives the area a new grading of Grade 2.

Table 6 Distribution of ALC grades - Edginswell

Grade	Area (ha)	% of Survey Area	% of Agricultural Land
2	11.3	14.2	21.7
3a	1.4	1.8	2.7
3b	20.0	25.1	38.4
4	17.3	21.7	33.2
5	2.1	2.6	4.0
Urban	21.7	27.3	0.0
Non-Agricultural	<u>5.8</u>	<u>7.3</u>	<u>0.0</u>
TOTAL	79.6	100	100 (52.1 ha)

Subgrade 3a

A small area of Subgrade 3a land has been mapped between Scott's Bridge and Edginswell. These soils had a slight drainage limitation and both Wetness Class II and III profiles were found. Gleying was found in the profiles from 15cm and in places a slowly permeable layer was found at 55cm. However, the area was still mapped as 'best and most versatile' because of the medium clay loam topsoils.

The 1992 survey covered a small area to the south of Scott's Bridge and this was mapped as Grade 3b. The current survey covered a larger area and both the degree and the extent of wetness was found to be less than that mapped in 1992. The current survey supercedes the 1992 results being more detailed.

Subgrade 3b

The areas which have been mapped as Subgrade 3b are those where the gradient was between 7° and 11° which imparts a moderate limitation on the safe use of some agricultural machinery. These areas tended to be the lower slopes of the spurs in the southern part of the site and the long gentle slopes to the north of Scott's Bridge.

Grade 4

The areas in this grade all have gradients between 11° and 18° and are downgraded to Grade 4 because of the restrictions they impose on the versatility of the land due to the few types of agricultural machinery which can operate safely on it

Grade 5

There are three small areas of this grade which all have gradients of over 18° and are only used for rough grazing due to the severe restrictions they place on the use of agricultural machinery

Other Land

The residential areas roads railway and buildings not associated with agriculture are shown on the map as urban There are several areas of scrub and woodland which have been shown as non-agricultural land

7 GILLARD ROAD, BRIXHAM

7.1 An area of twelve hectares adjacent to the holiday centre in Brixham to the south of Torbay was identified to be surveyed. The provisional 1" to the mile national ALC series map sheet 188 (MAFF 1973) shows the area to be predominantly Grade 3 land with about three hectares being mapped as having a predominantly urban uses. The only previous detailed survey was carried out in 1985 under the Original Guidelines at a scale of 1:25 000 and the information gained from it is inadequate to make an accurate assessment under the Revised Guidelines.

The proposed survey using the Revised Guidelines and Criteria for Grading the Quality of Agricultural Land (MAFF 1988) was not carried out because permission for access to the site was not granted by the landowner.

7.2 Climate

Climatic data for the site were interpolated as described in Section 3. The results are shown in Table 7 and indicate that there is no overall climatic limitation for the site.

Table 7 Climatic Interpolation - Gillard Road, Brixham

Grid Reference	SX 932 558	SX 936 564
Altitude (m)	52	55
Accumulated Temperature (day°)	1556	1553
Average Annual Rainfall (mm)	985	984
Overall Climatic Limitation	1	1
Field Capacity Days	199	199
Moisture Deficit		
Wheat (mm)	96	96
Potatoes (mm)	87	86

7.3 Relief and Landcover

The site occupies a flat area on Berry Head where the altitude increases from 45m to 55m AOD towards the northern end of the site. At the time of the survey approximately half of the site was used for permanent grazing and the rest consisted of non-agricultural land.

7 4 Geology and Soils

The published 1 50 000 drift geology map sheet 350 (Geological Survey of England and Wales 1976) shows that the whole site is underlain by Middle Devonian Limestone

The Soil Survey of England and Wales mapped the area in 1983 at a reconnaissance scale of 1 250 000 This showed that the whole site consisted of soils from the Crwbin Association which are described as being very shallow well drained loamy soils over limestone

7 5 Agricultural Land Classification

The survey of the site was not carried out because permission for access to the site was not granted by the landowner The last detailed survey was carried out in 1985 as part of the Torbay Borough Plan and this showed that the site consisted of Grade 2 soils in the south of the site and a small area in the middle of the site some Grade 4 slope near the beacon and approximately half the site to be non-agricultural land

It should be noted that this survey was carried out under the Original Guidelines at a relatively small scale In order to make an accurate assessment of the site a new survey would have to be undertaken using the Revised Guidelines which would then supersede all previous surveys

8 LONG ROAD, GOODRINGTON SITE

8.1 A total of 189 hectares of land around Yalberton to the West of Goodrington was surveyed in February 1994. The provisional 1 to the mile national ALC map series sheet 188 (MAFF 1973) shows the valley running north to south from Higher Yalberton is mapped as Grade 4. The areas of higher ground in the eastern half of the site to the north and south of Long Road are mapped as Grade 2. The rest of the site including Kemmings Hill is mapped as Grade 3. Along the eastern edge of the site there are areas mapped as predominantly urban.

The whole area has been surveyed in 1985 at a scale of 1:25,000 under the Original Guidelines*. The information gained is inadequate to make an accurate assessment under the Revised Guidelines and is considered at too small a scale for local plan purposes. This recent survey now supersedes all previous ALC 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). A total of 191 auger borings and 8 soil profile pits were examined.

8.2 Climate

Climatic data for the site was interpolated as described in Section 3. Extreme results are shown below but the climatic limitation to Grade 2 occurs only above 89 m. Therefore on this site it operates only in one small area where a more severe droughtiness limitation was found.

No local climatic limitations were noted.

Table 8 Climatic Interpolation

Grid Reference	SX 862581	SX 872587
Altitude (m)	25	95
Accumulated Temperature (day °)	1588	1508
Average Annual Rainfall (mm)	987	1116
Overall Climatic Grade	1	2
Field Capacity Days	208	225
Moisture Deficit (mm)		
Wheat	99	82
Potatoes	91	68

8.3 Relief and Landcover

Altitude ranges from 29 to 99 m AOD.

Slopes are mainly gently undulating with some short moderate slopes of 8-11° which limit the land to Grade 3b and two small patches of steeper slopes which limit those areas to Grade 4.

*A small area was also surveyed in 1986 south of Long Road.

At the time of survey landcover was mainly grass and winter cereals

8.4 Geology and Soils

The published 1:50,000 scale drift geology map, sheet 360 (Geological Survey of England and Wales 1976) indicates that most of the site is underlain by mid-Devonian limestones with Igneous Tuffs, Schalsteins etc on the higher ground in the north east and south east and a limited deposit of Alluvium along the valley of the main stream.

Soils mapped by the Soil Survey of England and Wales (1983) indicate soils of the Crwbin, Trusham and Milford Associations.

Soils of the Crwbin Association are found on the mid-Devonian limestone, very shallow and shallow well drained loamy soils over limestone, often on steep slopes. Limestone pavement and other rock exposures may be common.

Soils of the Trusham Association are found on the higher ground in the east of the area. These are described as well drained fine loamy soils over deeply weathered rock locally. Some shallow soils. Steep slopes in places. Bare rock locally.

A small area of the Milford Association is shown at the north of the site and these are described as well drained fine loamy reddish soils over rock with some steep slopes.

This distribution was largely borne out by the current survey, although by its nature this is more particularly concerned with various attributes of the soils which directly affect the grading of the land for agricultural purposes.

8.5 Agricultural Land Classification

The distribution of ALC grades identified in the survey is shown on the accompanying ALC map and areas are summarised in the table below. The information is correct at the scale shown but any enlargement would be misleading.

Table 9 Distribution of ALC Grades Long Road, Goodrington

Grade	Area (ha)	% of Survey Area	% of Agricultural Land	(135.5 ha)
2	32.0	16.9	23.6	
3a	57.7	30.6	42.6	
3b	39.7	21.0	29.3	
4	6.1	3.2	4.5	
Urban	13.6	7.2		
Non-agricultural	39.0	20.6		
Agric buildings	0.8	0.4		
TOTAL	188.9			

Grade 2

Areas mapped as Grade 2 suffer a minor limitation on this site mainly due to workability where the topsoil texture was found to be medium clay loam and this implies a minor limitation due to restricted workability where the field capacity days exceed 200 as they do on this site

Other profiles within this Grade may also be limited by droughtiness

Subgrade 3a

Soils classified as Subgrade 3a have a moderate limitation as described in Appendix 2. This may be due to workability when although on visible characteristics the profile is described as Wetness Class I a heavy clay loam or heavy silty clay loam topsoil restricts the grade to Subgrade 3a where field capacity days exceed 200. At this site particularly on the higher ground in the east droughtiness caused by a moderate stone content may be the principal limitation. This has been established by detailed examination of soil profile pits and the stone contents have been assessed by sieving of samples taken from the relevant horizons.

Subgrade 3b

Areas graded as 3b suffer a more serious moderate limitation. On this site the most commonly occurring limitation is where the slope exceeds 7° but several areas are limited by droughtiness where high stone contents or shallow depth to bedrock limits the water which is available to the crop. This has also been established by examination of several relevant soil profile pits.

Grade 4

Small areas of Grade 4 are limited either by slopes exceeding 11° or by very shallow soil profiles with high stone contents causing a serious droughtiness limitation.

Other Land

Areas of non agricultural land which were not surveyed include two large caravan sites and several areas of woodland.

9 MAIDENCOMBE

9.1 Sixty seven hectares of land to the north of Torbay near the village of Maidencombe were surveyed during March 1994. The published provisional 1 to the mile national ALC map series sheet 188 (MAFF 1973) shows the site to be predominantly Grade 2 except for the area of Sladnor Park which is shown as being Grades 3 and 4 due to the steep gradients found there. There is also another area of Grade 3 land in the western part of the site where the gradient is again relatively steep. The residential areas running along the A379 are mapped as being predominantly urban.

The only previous detailed survey was carried out under the Original Guidelines in 1985 at a scale of 1:25,000 and the information gained was inadequate to make an accurate assessment under the Revised Guidelines. This recent survey now superseded all the previous ALC 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). A total of 22 auger borings and 2 soil inspection pits were examined.

9.2 Climate

Climatic data for the site was interpolated as described in Section 3. The results are shown in Table 10 and indicate that for most of the site there is no overall climatic limitation. However they do show that there is a very minor climatic limitation for the higher land to the south of the site which has a Climatic Grade 2 above 150m AOD.

Table 10 Climatic Interpolation - Maidencombe

Grid Reference	SX 919 680	SX 918 687	SX 925 683
Altitude (m)	165	135	55
Accumulated Temperature (day °)	1423	1457	1548
Average Annual Rainfall (mm)	1046	1020	943
Overall Climatic Grade	2	1	1
Field Capacity (days)	208	204	192
Moisture Deficit			
Wheat (mm)	82	87	100
Potatoes (mm)	68	75	92

9 3 Relief and Landcover

The site includes two broad areas of differing relief. In the north and the west the land is gently sloping with gradients up to 11° but the south-east corner of the site contains the natural amphitheatre of Sladnor Park which has a large area of land with gradients between 11° and 18° as well as some smaller areas where the gradient is more than 18°. Here the altitude rises from 55m up to 166m AOD. The gently sloping land in the northern and western parts of the site were a mixture of winter cereals and grass at the time of the survey. Approximately half of Sladnor Park is permanent grazing while the rest is non agricultural scrub and woodland. There are also a lot of residential areas within the site.

9 4 Geology and Soils

The geology of the site is mapped on the published 1:50 000 scale solid and drift map Sheet 139 (Geological Survey of England and Wales 1976) which shows the whole site to be underlain by Teignmouth Breccia. The Soil Survey of England and Wales mapped the area in 1983 at a reconnaissance scale of 1:250 000. This showed that the whole site consisted of soils from the Crediton Association which are described as being well drained gritty loamy soils over breccia. During the survey the same type of soils were found.

9 5 Agricultural Land Classification

The distribution of ALC grades identified in the survey area is detailed in Table 11 and is shown on the accompanying ALC map. The information is correct at the scale shown but any enlargement would be misleading.

Table 11 Distribution of ALC Grades - Maidencombe

Grade	Area (ha)	% of	
		Total Land	Agricultural Land
2	13.1	19.4	34.4
3b	16.3	24.2	42.8
4	7.2	10.7	18.9
5	1.5	2.2	3.9
Urban	17.7	26.3	0.0
Non-Agricultural	<u>11.6</u>	<u>17.2</u>	<u>0.0</u>
TOTAL	67.4	100	100 (38.1ha)

Grade 2

Where the land is not downgraded on gradient it is mapped as Grade 2. The area of Grade 2 land contains relatively light loamy soils with a variable stone content. The topsoils were found to contain between 10% or 37% soft rocks less than 2cm with no regular pattern to their distribution. The areas with lower stone contents are graded as Grade 2 on workability due to their medium clay loam topsoils which only impart a slight limitation upon cultivation practises.

Where the stone content was found to be about 37%, which was relatively constant down the profiles, the land is downgraded on the slight droughtiness limitation which could be experienced during drier periods. Two soil inspection pits were dug to determine what the stone contents were and to confirm the grade.

Subgrade 3b

The areas which are downgraded to Subgrade 3b are those where the gradient of the land is between 7° and 11° which imparts a slight limitation on the type of agricultural machinery which can be used safely. These areas are found in the western part of the site on the north and west facing slopes. There are also some gently sloping areas in Sladnor Park which are graded Subgrade 3b.

Grade 4

In places the gradient was found to be between 12° and 18° which causes a severe limitation on the type of agricultural machinery which can be safely used and thus on the versatility of the land. The majority of this grade is found on the north and south facing slopes in Sladnor Park but there is also a small area in the western part of the site.

Grade 5

There are two small areas of steep land with gradients greater than 18° which are graded as Grade 5 because of the very severe limitation they impose on the safe use of agricultural machinery. They are found on the north facing slopes in Sladnor Park.

Other Land

Almost half of the area has been mapped as either urban or non-agricultural land. The urban land refers to all the roads and residential areas while the non-agricultural land is mainly scrub and woodland in Sladnor Park.

10 WHITE ROCK, GOODRINGTON

10.1 A total of sixty two hectares running along the western side of the A3022 in Goodrington Torbay was surveyed during March 1994. The provisional 1' to the mile national ALC map series sheet 188 (MAFF, 1973) shows the site to be Grades 2 and 3. The majority of the site is Grade 2 with Grade 3 land on the high ground at White Rock and along the southern edge of the site. In the northern part of the site is an area which is mapped as being predominantly urban.

The only previous detailed survey carried out in 1985 at a scale of 1:25,000 under the Original Guidelines and the information gained from it is inadequate to make an accurate assessment under the Revised Guidelines. This recent survey now supersedes all the previous ALC 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). A total of fifty six auger boring points and three soil inspection pits were examined.

10.2 Climate

Climatic data for the site was interpolated as described in Section 3. The results are shown below in Table 12 and indicate that there is no overall climatic limitation for the site.

Table 12 Climatic Interpolation - White Rock, Goodrington

Grid Reference	SX 887 569	SX 879 584	SX 880 579
Altitude (m)	65	65	82
Accumulated Temperature (day°)	1542	1542	1523
Average Annual Rainfall (mm)	1051	1059	1095
Overall Climatic Grade	1	1	1
Field Capacity Days	214	216	221
Moisture Deficit			
Wheat (mm)	90	89	85
Potatoes (mm)	79	77	72

10.3 Relief and Landcover

The site runs along the western side of the A3022 with a high point of 82m AOD at White Rock. To both the north and south of White Rock the land slopes gently downhill with the lowest point of 45m AOD being at the head of a small valley in the southern part of the site. All the slopes were of gradients less than 7°.

At the time of the survey the majority of the site was under winter cereals. The rest of the site around White Rock itself was being used

as grazing land. There were also some small areas of non-agricultural land around the farm at White Rock.

10.4 Geology and Soils

The geology of the site is shown on the published 1:50,000 drift geology map sheet 350 (Geological Survey of England and Wales 1976). It is mapped as being mainly underlain by Devonian Upper slates and mudstones although there are three small areas of Devonian Middle limestone at White Rock, Windy Corner and on the western side of the site.

The Soil Survey of England and Wales mapped the area in 1985 at a reconnaissance scale of 1:250,000. This shows that most of the site consists of soils from the Trusham Association which are described as being well drained loamy soils usually over deep weathered rock. There is also a narrow strip of soils from the Crwbin Association along the south-west edge of the site. In contrast to the rest of the site these soils tend to be very shallow well drained loamy soils over limestone.

The soils found during the survey fell in to three types. In the northern half of the site there were large areas of well drained loamy soils which were similar to the Trusham soils. The southern half of the site consisted of both wet poorly drained clayey soils and on the slightly higher ground areas of droughty shallow loamy soils.

10.5 Agricultural Land Classification

The distribution of ALC grades identified during the survey is detailed in Table 13 and is shown on the accompanying ALC map. The information is accurate at the scale shown but any enlargement would be misleading.

Table 13 Distribution of ALC Grades - White Rock, Goodrington

Grade	Area (ha)	% of Survey Area	% of Agricultural Land
2	38.3	61.8	68.5
3a	17.6	28.4	31.5
Urban	5.6	9.0	0.0
Non-Agricultural	0.3	0.5	0.0
Agricultural Buildings	<u>0.2</u>	<u>0.3</u>	<u>0.0</u>
TOTAL	62.0	100	100 (55.9ha)

Grade 2

The majority of the site 38.3ha was mapped as Grade 2 which only has a minor limitations for agricultural uses. In the northern half of the site these profiles tended to have medium clay loam topsoils which were confirmed by Particle Size Distribution (PSD) analysis and only a negligible stone content. The profiles were well drained and had no wetness problems so they were subsequently Wetness Class I. The subsoil stone content was shown by sieving and displacement to be as much as 50% silty rock in places but this still did not downgrade the land below Grade 2 on droughtiness. A soil inspection pit was dug to confirm this grade.

The Grade 2 land in the rest of the site was more varied and contained small areas where the stone content pushed the droughtiness limitation into the Subgrade 3a category but these were found to be anomalies within the mapping unit. There were also some small areas where gleying was found within the Grade 2 mapping unit but they were too small to map individually.

Subgrade 3a

The areas of Subgrade 3a land are also varied in the type of soil profile which was found. The small area of Subgrade 3a in the southern end of the site is where there are outcrops of limestone with patches of deep well drained soils in between. There were individual borings which were Subgrade 3b but the grade of the unit overall is Subgrade 3a because of the restrictions placed on cultivation practises and the patches of droughtiness.

Other areas relatively high stone contents also tend to follow the landforms. There is a very distinct area of soils with a high stone content around the high ground in the centre of the site. A soil inspection pit was dug in that area to measure the stone content which gave a droughtiness limitation of Subgrade 3a. The variability of the stone contents mean that there are some profiles which have a Subgrade 3b droughtiness limitation but these do not form an individual mapping unit. Another area of stony and shallow profiles follow the shoulder of the concave slope around the southern side of the central high ground where the stone content again gave a droughtiness limitation of Subgrade 3a although as before the stone content was very variable.

In the relatively flat areas of land to the north of the higher ground and at the head of the small valley in the southern part of the site the profiles were wet. They were poorly drained with higher clay contents than the rest of the site resulting in a lot of manganese concretions down the profiles. There were both Wetness Class II and III profiles in

the mapping unit and when this was combined with the medium clay loam topsoils the area was mapped as Subgrade 3a. In a couple of places there may also have been a slowly permeable layer which coincided with the cereal crop dying back but these profiles were rather dispersed and they were included in the Subgrade 3a unit. Soil inspection pits were dug in both the stony area and the wet area to confirm the grade.

Other Land

In the north of the site there is a small industrial site which is mapped as being urban. The farm and houses at White Rock are shown as urban, non-agricultural and agricultural buildings. There is a prominent outcrop of limestone near the farm which although it is not fenced off is mapped as non-agricultural.

APPENDIX 1

REFERENCES

GEOLOGICAL SURVEY OF ENGLAND AND WALES 1976 Solid and Drift edition sheet 139 Newton Abbott, 1 50 000 scale

GEOLOGICAL SURVEY OF ENGLAND AND WALES 1976 Drift edition sheet 350 Torbay 1 50 000 scale

MAFF (1973) Agricultural Land Classification Map sheet 168 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 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)