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**Newquay proposed Eastern
Development Area**

**AGRICULTURAL LAND CLASSIFICATION
REPORT OF SURVEY**

**Resource Planning Team
Taunton Statutory Unit**

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ADAS 

NEWQUAY PROPOSED EASTERN DEVELOPMENT AREA

AGRICULTURAL LAND CLASSIFICATION

Report of Survey

1. SUMMARY

Three hundred and sixty four hectares of land east of Newquay were graded using the Agricultural Land Classification (ALC) System in September 1993 and May 1994. The survey was carried out for MAFF as part of its statutory role in connection with the Newquay proposed Eastern Development Area for the Restormel Borough Council Local Plan.

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 this scale but any enlargement would be misleading. A total of 304 auger borings and 10 soil profile pits were examined.

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

Distribution of ALC grades: Newquay East

Grade	Area (ha)	% of Survey Area	% of Agricultural Land
2	165.9	45.5	50.5
3a	107.0	29.4	32.6
3b	55.6	15.3	<u>16.9</u>
Urban	23.6	6.5	
Non-Agric	<u>12.2</u>	<u>3.4</u>	
TOTAL	364.3	100%	100% (328.5 ha)

There is no overall climatic limitation for the survey area. Most of the area is moderately exposed, leading to grades of 2 or 3a depending on location. The main limitations are workability, exposure and wetness. The wetness limitation is due to poorly drained soils, and leads to a large block of land in the west of the area being graded as 3b.

2. INTRODUCTION

Three hundred and sixty four hectares of land east of Newquay were graded using the Agricultural Land Classification (ALC) System in September 1993 and May 1994. The survey was carried out for MAFF as part of its statutory role in connection with the Newquay proposed Eastern Development Area for the Restormel Borough Council Local Plan.

The fieldwork was carried out by ADAS (Resource Planning Team, Taunton Statutory Unit) at a scale of 1:10,000 (approximately one sample point every hectare). The information is correct at this scale but any enlargement would be misleading. A total of 304 auger borings and 10 soil profile pits were examined.

The published Provisional 1" to the mile ALC map of this area (MAFF 1961) shows the site to be Grade 3 except for a small area of grade 4 in the north east of site. The North Restormel Local Plan survey (MAFF 1986) shows the site to be predominantly Grade 3a, with areas of 3b and 3c. The recent survey supersedes 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).

The Agricultural Land Classification provides a framework for classifying land according to the extent to which its physical or chemical characteristics impose long-term limitations on agricultural use. The grading takes account of the top 120 cm of the soil profile. A description of the grades used in the ALC System can be found in Appendix 2.

3. CLIMATE

The grade of the land is determined by the most limiting factor present. The overall climate is considered first because it can have an overriding influence on restricting land to lower grades despite other favourable conditions.

Estimates of climatic variables were obtained for the site by interpolation from the 5 km grid Database (Meteorological Office 1989) and are shown in Table 1.

The parameters used for assessing overall climatic limitation are accumulated temperature, (a measure of the relative warmth of a locality) and average annual rainfall, (a measure of overall wetness). The values shown in Table 1 reveal that there is no overall climatic limitation.

Exposure was found to be a limiting factor over much of the survey area. Where the land faces the prevailing winds, and on the crests, exposure downgrades the land to 3a. Over much of the rest of the area exposure leads to a grade of 2. 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 Section 6.

Table 1 Climatic Interpolations: Newquay East

Grid Reference	SW842618	SW851609
Height (m)	71	69
Accumulated Temperature (day deg)	1557	1560
Average Annual Rainfall (mm)	1005	1015
Overall Climatic Grade	1	1
Field Capacity (Days)	198	201
Moisture Deficit, Wheat (mm)	93	91
Potatoes (mm)	83	82

4. RELIEF AND LAND COVER

The site is undulating, and falls away from the Quintrell Road on either side. To the west is a broad valley bottom. There are relatively steep slopes in the south, but these slopes are not limiting. The lowest part of the site in the west is just below 20 m AOD and the highest in the south is at 76 m AOD.

At the time of the survey most of the site was under permanent grassland. Arable land was recently ploughed or drilled.

5. GEOLOGY AND SOILS

The published 1:50,000 scale solid and drift geology map, sheet 346 (Geological Survey of England and Wales 1981), shows the site almost entirely (95%) underlain by Lower Devonian Meadfoot beds which comprise grey calcareous slates with thin limestones. There is a small strip of river alluvium in the north east of the site.

The Soil Survey of England and Wales mapped the soils of the area in 1983, at a reconnaissance scale of 1:250,000. This map shows the soils to be of three associations within the survey area. The majority of the site is mapped as the Denbigh 2 Association. This is described as well drained fine loamy soils over slate or slate rubble.

The soils in the central and eastern parts of the site are mapped as the Manod Association. These are described as well drained fine loamy or fine silty soils over rock with shallow soils in places and bare rock locally. A small area of Powys association was mapped in the extreme north east of the site. These are well drained loamy soils over rock.

During the recent survey most of the site was found to relate to the Denbigh 2 Association.

6. AGRICULTURAL LAND CLASSIFICATION

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

Table 2 Distribution of ALC grades: Newquay East

Grade	Area (ha)	% of Survey Area	% of Agricultural Land
2	165.9	45.5	50.5
3a	107.0	29.4	32.6
3b	55.6	15.3	<u>16.9</u>
Urban	23.6	6.5	
Non-Agric	<u>12.2</u>	<u>3.4</u>	
TOTAL	364.3	100%	100% (328.5 ha)

Most of the area has a slight (Grade 2) or no droughtiness limitation. Droughtiness, caused locally by the presence of fine slaty gravel at varying depths in the subsoil, was not considered to be a most limiting factor in the survey area.

Grade 2

All the Grade 2 land is graded on the basis of workability. The soils are well drained and are Wetness Class I. The topsoil texture are medium clay loam which, in combination with the high Field Capacity Days (198-201), lead to a Grade 2 workability limitation. Much of the Grade 2 land is also limited to Grade 2 due to exposure. Soil pits 1, 4, 7 and 8 are representative of the Grade 2 land.

Subgrade 3a

Most of the Subgrade 3a land is the same as the Grade 2 land, but with a more severe exposure limitation. Severe wind pruning is evident in vegetation surrounding the fields. There are three blocks of land limited to 3a by exposure, the area either side of Quintrell Road in the north, the area immediately south of the railway line, and the area adjacent to Quintrell Downs. Soil pits 2, 6 and 9 are representative of the 3a land downgraded due to exposure.

Some scattered blocks of land are downgraded to 3a due to wetness. These are associated with the large block of low lying 3b land described below. These 3a soils have gleying and a slowly permeable layer occurring at depths varying from 45 cm to 65 cm. Generally, gleying occurs below 40 cm, leading to a Wetness Class III. In conjunction with the field capacity days of 198 this leads to a wetness grade of 3a. Soil pit 10 is representative of the 3a land downgraded on wetness.

One area of land north east of Chapel is downgraded on the basis of droughtiness. Soils here are impenetrable to the auger at about 35 cm and very stony, restricting them to subgrade 3A.

Subgrade 3b

A large block of 3b land extends along the valley from Chapel to the north west corner of the site. These soils have a medium clay loam topsoil. They are generally gleyed from 30 cm depth, and in some cases from the surface. The subsoil is clay, and a slowly permeable layer extends from 35 cm to below 80 cm. This leads to a Wetness Class of IV, which in conjunction with the Field Capacity Days of 198 gives a grade of 3b. Soil pits 3 and 5 are representative of the subgrade 3b land downgraded on wetness. An area of land east of Trewollack cottages is downgraded due to gradient. Here, slopes are between 8 and 10 degrees which limits the land to subgrade 3B.

APPENDIX 1

REFERENCES

GEOLOGICAL SURVEY OF ENGLAND AND WALES (1981) Solid and drift edition, Sheet 346 Newquay, 1:50,000 scale

MAFF (1961) Agricultural Land Classification Map sheet 185 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) 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

MAFF (1986) North Restormel Local Plan, Newquay. Agricultural Land Classification map 1:10,000.

APPENDIX 2

DESCRIPTION OF THE 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 land cover types, eg buildings in large grounds, and where map scale permits, the cover types 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).