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Carkeel Golf Course, Saltash
Agricultural Land Classification

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CARKEEL GOLF COURSE, SALTASH

AGRICULTURAL LAND CLASSIFICATION

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CARKEEL GOLF COURSE, SALTASH

AGRICULTURAL LAND CLASSIFICATION SURVEY

SUMMARY

The survey was carried out by ADAS on behalf of MAFF as part of its statutory role in response to a planning application for a proposed Golf Course. The fieldwork at Carkeel was completed in January 1995 at a scale of 1:10,000. Data on climate, soils and geology was used and is presented in the report. The distribution of grades is shown on the accompanying ALC map and summarised below. Information is correct at this scale but could be misleading if enlarged.

Distribution of ALC grades: Carkeel Golf Course

Grade	Area (ha)	% of Survey Area	% of Agricultural Land (26.6 ha)
3b	22.4	71	84
4	2.4	8	9
5	1.8	6	7
Urban	0.6	2	
Non Agricultural	4.2	13	
TOTAL	31.4	100	100

The soils are shallow, well drained over weathering slate, with a heavy clay loam topsoil. Most of the site is downgraded to 3b, 4 and 5 due to steep slopes imposing a gradient limitation. The central part of the site has slopes of 6-7° which are not limiting. This area is downgraded to 3b due to the topsoil texture imposing a workability limitation.

1. INTRODUCTION

An Agricultural Land Classification (ALC) Survey was carried out in January 1995 at Carkeel, Saltash on behalf of MAFF as part of its statutory role in response to a planning application for a proposed golf course. The fieldwork covering 31.4 ha of land was conducted by ADAS at a scale of 1:10,000 (approximately one boring per hectare of agricultural land except where slope was limiting). A total of 13 auger borings were examined. No soil profile pits were dug.

The published provisional one inch to the mile ALC map of this area (MAFF 1973) shows the grades of the site at a reconnaissance scale. Most of the site was mapped as Grade 3, with the northern and eastern fringes mapped as Grade 4. A small area in the east was shown as Grade 2.

The recent survey supersedes this map having been carried out at a more detailed level and using the Revised Guidelines and Criteria for grading the quality of agricultural land (MAFF 1988). These guidelines provide a framework for classifying land according to the extent to which its physical or chemical characteristics impose long-term limitations on agricultural use. The grading takes account of the top 120 cm of the soil profile. A description of the grades used in the ALC system can be found in Appendix 2.

2. CLIMATE

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

Estimates of climatic variables were interpolated from the published agricultural climate dataset (Meteorological Office 1989). The parameters used for assessing overall climate are accumulated temperature (a measure of the relative warmth of a locality) and average annual rainfall (a measure of overall wetness). The results shown in Table 1 indicate there is an overall climatic limitation which restricts the land to Grade 2 for the western parts of the site lying above 40 m AOD. There is no overall climatic limitation over the rest of the site.

Table 1: Climatic Interpolations: Carkeel Golf Course

Grid Reference		SX 417 604	SX 419 604	SX 421 609
Altitude (m)		70	40	20
Accumulated Temperature (day °)		1546	1580	1602
Average Annual Rainfall (mm)		1212	1170	1143
Overall Climatic Grade		2	1	1
Field Capacity Days		236	230	226
Moisture deficit (mm):	Wheat	81	87	91
	Potatoes	68	76	82

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. The northern and eastern edges of the site lying below 20 m AOD have a FCD value of less than 226, whereas the rest of the site is above this value.

3. RELIEF AND LANDCOVER

The site slopes steeply from the west to the north and east. Most of the site has gradients of 8-10°. Locally slopes exceed 11°, especially around the northern and eastern edges. Some slopes of up to 22° were recorded. The altitude is 75 m AOD in the west falling to sea level in the north east. The entire site was under permanent grass at the time of the survey, with the exception of the wooded fringes adjacent to the estuary.

4. GEOLOGY AND SOILS

The geology of the site is shown on the published 1:50,000 scale drift geology map, sheet 348, Institute of Geological Sciences 1977. The entire site is shown to be underlain by upper Devonian Slates. The soils were mapped by the Soil Survey of England and Wales in 1983 at a reconnaissance scale of 1:250,000. The entire site was mapped as Denbigh 1, which is described as well drained fine loamy and fine silty soils over rock. The soils found during the recent survey conformed to this description. Most of the site had 30 cm of topsoil over weathering slate.

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: Carkeel Golf Course

Grade	Area (ha)	% of Survey Area	% of Agricultural Land (26.6 ha)
3b	22.4	71	84
4	2.4	8	9
5	1.8	6	7
Urban	0.6	2	
Non Agricultural	4.2	13	
TOTAL	31.4	100	100

Subgrade 3b

Most of the 3b land has gradients of 8-10° and is downgraded to 3b due to slope. The centre of the site has gradients of 6-7°, which are not limiting. The topsoil textures are heavy clay loam, which in conjunction with a field capacity day value greater than 225 FCD leads to a grade of 3b due to a workability limitation.

Grade 4

The Grade 4 land is downgraded due to slope, having gradients up to 18°.

Grade 5

The Grade 5 land is also downgraded due to slope, having gradients up to 22°.

Urban

The land mapped as urban consists of the access road and site offices.

Non-Agricultural

The non-agricultural land consits of woodland and scrub on steep slopes.

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January 1995

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APPENDIX 1

REFERENCES

INSTITUTE OF GEOLOGICAL SCIENCES (1977) Drift Edition, Sheet 348, 1:50,000

MAFF (1973) Agricultural Land Classification Map, Sheet 187, 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).