

**CAVIL HEAD OCCS
ACKLINGTON**

**Agricultural Land Classification (ALC)
and Statement of Physical
Characteristics Report**

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**Resource Planning Team
Northern Region
FRCA, Leeds**

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AGRICULTURAL LAND CLASSIFICATION AND STATEMENT OF PHYSICAL CHARACTERISTICS REPORT

CAVIL HEAD OCCS, ACKLINGTON

INTRODUCTION

1. This report presents the findings of a detailed Statement of Physical Characteristics and Agricultural Land Classification (ALC) survey of 44.5 ha of land at Cavil Head.
2. The survey was carried out by the Farming and Rural Conservation Agency (FRCA) for the Ministry of Agriculture, Fisheries and Food (MAFF), in connection with a proposal to extract coal from the site by opencast methods.
3. The work was conducted by members of the Resource Planning Team in the Northern Region of FRCA. The land has been graded in accordance with the published MAFF ALC guidelines and criteria (MAFF, 1988). A description of the ALC grades and subgrades is given in Appendix I.
4. At the time of survey the agricultural land on the site was all in arable use, mostly comprising winter cereals. Other land comprised a track and farm cottages.

SUMMARY

5. The findings of the survey are shown on the enclosed ALC map. The map has been drawn at a scale of 1:5,000. It is accurate at this scale but any enlargement would be misleading.
6. The area and proportions of the ALC grades and subgrades on the surveyed land are summarised in Table 1.

Table 1: Area of grades and other land

Grade/Other land	Area (hectares)	% surveyed area	% site area
1			
2	7.2	16.4	16.2
3a	6.8	15.4	15.3
3b	30.0	68.2	67.4
4			
5			
Agricultural land not surveyed		N/A	
Other land	0.5	N/A	1.1
Total surveyed area	44.0	100	-
Total site area	44.5	-	100

7. The fieldwork was conducted at an average density of one boring per hectare. A total of 45 borings and 4 profile pits were described.

FACTORS INFLUENCING ALC GRADE

Climate

8. Climate affects the grading of land through the assessment of an overall climatic limitation and also through interactions with soil characteristics.

9. The key climatic variables used for grading this site are given in Table 2 and were obtained from the published 5 km grid datasets using the standard interpolation procedures (Met. Office, 1989).

Table 2: Climatic and altitude data

Factor	Units	Values
Grid reference	N/A	NU 230 025
Altitude	m, AOD	40
Accumulated Temperature	day°C (Jan-June)	1300
Average Annual Rainfall	mm	680
Field Capacity Days	days	177
Moisture Deficit, Wheat	mm	94
Moisture Deficit, Potatoes	mm	81
Overall climatic grade	N/A	Grade 2

10. The climatic criteria are considered first when classifying land as climate can be overriding in the sense that severe limitations will restrict land to low grades irrespective of favourable site or soil conditions.

11. The main parameters used in the assessment of an overall climatic limitation are average annual rainfall (AAR), as a measure of overall wetness, and accumulated temperature (AT0, January to June), as a measure of the relative warmth of a locality.

12. The combination of rainfall and temperature at this site means there is an overall climatic limitation of Grade 2.

Site

13. The land on the site rises up towards Cavil Head Farm with mostly gentle slopes of up to 3°. Aspect is variable.

Geology

14. The site is underlain by Carboniferous Coal Measures which are mostly covered with thick deposits of boulder clay (till), BGS Sheet 9 and applicants information. However, around Cavil Head Farm drift is thin and sandstone outcrops within a metre of the surface. Drift is light and sandy in the west of the site.

AGRICULTURAL LAND CLASSIFICATION

15. The details of the classification of the site are shown on the attached ALC map and the area statistics of each grade are given in Table 1, page 1.

Grade 2

16. Soils in the west are derived from sandy deposits. Topsoils are typically medium or fine sandy loam over a fine sand subsoil. Profiles are freely drained and suffer from no soil wetness or workability limitation. Overall climate limits the ALC grade of this land.

Subgrade 3a

17. Several areas of land on the site contain medium textured topsoils over gleyed upper subsoils which occasionally become slowly permeable at depth. However, they only comprise uniform mappable units in 2 small blocks in the south and east of the site.

Subgrade 3b

18. Remaining land is Subgrade 3b. Topsoils are medium textured. Medium textured upper subsoils are occasionally present and all profiles are gleyed within 40 cm and slowly permeable at about 35 to 45 cm depth (Wetness Class IV). This land is limited to Subgrade 3b by a significant soil wetness and workability limitation.

STATEMENT OF PHYSICAL CHARACTERISTICS

Three main soil types were identified on the site, a description of them is given below. Topsoil and subsoil resources are shown on the accompanying maps along with soil thickness and volume information. Representative pit descriptions are given in Appendix II.

a. Soil Type 1 (T1/L1) Medium over heavy textured boulder clay soil

This soil type occurs widely across the site. Topsoils are medium textured over heavy textured clayey subsoils.

b. Soil Type 2 (T1/U1/L1) Medium textured soil

This soil type occurs in mappable small areas towards the south and east of the site and in smaller unmappable patches elsewhere on the site within soil type 1 (see above). Topsoils and upper subsoils are medium (T1, U1) textured over clayey slowly permeable lower subsoils (L3). Sometimes lower subsoils are also medium textured.

c. Soil Type 3 (T2, L2) Light textured soil

This comprises light textured soils found only in the west of the site. Topsoils are light (T2) over very light textured lower subsoils (L2).

Topsoils

- T1 This unit is widespread at Cavil Head. It is medium textured, typically medium-clay loam or medium silty clay loam. Stone content is typically less than 5%. It has a mean thickness of 30 cm.
- T2 These light textured soils are found in the west of the site. Textures are typically fine sandy loam and stone content is very low, generally less than 1%. The unit has a mean thickness of 30 cm.

Subsoils

Upper Subsoils

- U1 This upper subsoil was identified in two distinct mappable areas at Cavil Head. In both cases it is light to medium textured, either a sandy loam or sandy clay loam with less than 5% volume of stones. It has a moderately developed structure and a mean thickness of 40 cm although this depth is variable ranging from 15 cm to 90 cm.

Lower Subsoils

- L1 This subsoil is widespread. It is heavy textured, often a clay or heavy clay loam, and has a poor structure. The unit is 90 cm thick.
- L2 Light subsoils in the west are included in this unit. They are generally a fine sand with occasional lenses of sandy loam or sandy silt loam and a moderately developed structure. Again, the unit on average is 90 cm thick.
- L3 This unit is found below U1. It is almost identical in texture and structure to L3 but is less thick - 50 cm on average.

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SOURCES OF REFERENCE

British Geological Survey (1965) *Sheet No. 9, Rothbury. 1:63,360 scale.*
BGS: London.

Ministry of Agriculture, Fisheries and Food (1988) *Agricultural Land Classification of England and Wales: Revised guidelines and criteria for grading the quality of agricultural land.* MAFF: London.

Met. Office (1989) *Climatological Data for Agricultural Land Classification.*
Met. Office: Bracknell.

APPENDIX I

DESCRIPTIONS 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 includes 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 or horticultural crops can usually be grown but on some land of this 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 land.

Grade 3: Good to Moderate Quality Land

Land with moderate limitations which affect the choice of crops, the timing and type of cultivation, harvesting or the level of yield. When 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 the level of yields. It is mainly suited to grass with occasional arable crops (e.g. cereals and forage crops) the yields of which are variable. In moist 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 severe limitations which restrict use to permanent pasture or rough grazing, except for occasional pioneer forage crops.

APPENDIX II

SOIL PROFILE DESCRIPTIONS

Pit 1

Location: At boring 38a
Soil Type 1: Medium over heavy textured soil
Slope and Aspect: 2° S
Land Use: Winter cereals
Weather: Cool and bright (31 October 1997)

Depth (cm)	Horizon description
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0-30	Very dark greyish brown (10YR3/2) unmottled; medium silty clay loam; stoneless; moist; strongly developed medium and coarse subangular blocky; friable; >0.5% biopores; common fine fibrous roots; non calcareous; abrupt smooth boundary.
30-120	Grey (7.5YR5/1) with many distinct reddish yellow (7.5YR6/8) mottles; clay; stoneless; moist to 70 cm; slightly moist 70-120 cm; weakly developed coarse prismatic; firm; <0.5% biopores; few fine fibrous roots; non calcareous.

Pit 2

Location: At boring 44
Soil Type 2: Medium textured soil
Slope and Aspect: 1° S
Land Use: Winter cereals
Weather: Cool and bright (31 October 1997)

Depth (cm) Horizon description

0-28 Very dark greyish brown (10YR3/2) unmottled; medium silty clay loam; stoneless; moist; strongly developed medium subangular blocky; friable; >0.5% biopores; common fine fibrous roots; non calcareous; gradual smooth boundary.

28-120 Greyish brown (10YR5/2) with few distinct strong brown (7.5YR5/6) mottles to 50 cm and many strong brown (7.5YR5/6) mottles to 120 cm; sandy clay loam; stoneless; moist; moderately developed medium angular blocky; friable; <0.5% biopores; few fine fibrous roots; non calcareous.

Pit 3

Location: At boring 23
Soil Type 1: Light textured soil
Slope and Aspect: 0°
Land Use: Winter cereals
Weather: Cool and bright (31 October 1997)

Depth (cm) Horizon description

0-29 Very dark greyish brown (10YR3/2) unmottled; fine sandy loam; stoneless; moist; strongly developed medium subangular blocky; very friable; >0.5% biopores; common fine fibrous roots; non calcareous; diffuse wavy boundary.

29-43 Dark greyish brown (10YR4/2) unmottled; fine sandy loam; stoneless; moist; strongly developed medium subangular blocky; very friable; common fine fibrous roots; non calcareous; abrupt smooth boundary.

43-120 Pale brown (10YR6/3) with many distinct yellow (10YR7/8) mottles; fine sand with fine sandy silt loam lenses; stoneless; moist; moderately developed medium angular blocky and subangular blocky; friable; <0.5% biopores; few fine fibrous roots; non calcareous.