

**BROOMLEY ESTATE
NORTHUMBERLAND**

**Agricultural Land Classification (ALC)
Map and Report**

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Northern Region
FRCA, Leeds**

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AGRICULTURAL LAND CLASSIFICATION REPORT

BROOMLEY ESTATE, NORTHUMBERLAND

INTRODUCTION

1. This report presents the findings of a detailed Agricultural Land Classification (ALC) survey of 65 ha of land lying around and to the east of the village of Broomley, between Riding Mill and Stocksfield in Northumberland. The field work was carried out during February 1998.
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 the proposal to build a golf course on this land. This survey and report supersede any previous ALC information for this site.
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 land on the site was mainly sown to permanent grass although winter cereals were sown in two fields in the south. Other land consists of houses and gardens at Broomley, scrub in the south-west and south-east, woodland in the north, and a track and a road in the centre and north-west respectively.

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			
3a	21.6	36.3	33.2
3b	37.4	62.9	57.5
4	0.5	0.8	0.8
5			
Agricultural land not surveyed		N/A	
Other land	5.5	N/A	8.5
Total surveyed area	59.5	100	-
Total site area	65.0	-	100

7. The fieldwork was conducted at an average density of one boring per hectare. A total of sixty borings and two soil pits were described.

8. Subgrade 3a, good quality agricultural land, is found in a band running through the centre of the site. Two main soil types occur on this land. The first consists of moderately well to imperfectly drained profiles where medium-textured topsoils and upper subsoils overlie light, medium or heavy-textured lower subsoils. Soil wetness is the factor which limits this land to Subgrade 3a. The second soil type is well drained and consists of very light to medium-textured topsoils and upper subsoils overlying very light-textured lower subsoils. Topsoils are very slightly to moderately stony and subsoils are stoneless to moderately stony. The ALC grade of these areas is limited by soil droughtiness, in places by topsoil stoniness, and by a pattern limitation which prevents Grade 2 profiles being mapped together as a separate unit.

9. Subgrade 3b, moderate quality agricultural land, covers almost 63% of the agricultural land area. Again, two main soil types occur. The first is found in the west and north and consists of poorly drained soils where medium-textured topsoils and, in places, thin upper subsoils, overlie gleyed and slowly permeable heavy clay loam or clay. Soil wetness is the grade-limiting factor in this case. The second soil type occurs in the east and is well drained. Moderately stony sandy loam topsoils overlie moderately to very stony sandy loam or loamy sand subsoils. Soil droughtiness and/or topsoil stoniness limit this land to Subgrade 3b. Slopes of 7° to 11° are the grade-limiting factor for some Subgrade 3b land in the south of the site.

10. Grade 4, poor quality land, occurs in the far east where slopes of around 12° are the grade-limiting factor.

11. Other land on this site consists of the houses and gardens at Broomley, scrub in the south-west and south-east, woodland in the north, and a road and a track in the north-west and centre respectively.

FACTORS INFLUENCING ALC GRADE

Climate

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

13. 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	NZ 045 602
Altitude	m, AOD	90
Accumulated Temperature	day°C (Jan-June)	1266
Average Annual Rainfall	mm	702
Field Capacity Days	days	185
Moisture Deficit, Wheat	mm	87
Moisture Deficit, Potatoes	mm	72
Overall climatic grade	N/A	Grade 2

14. 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.

15. 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 (ATO, January to June), as a measure of the relative warmth of a locality.

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

Site

17. The land on this site is level to gently sloping (0-3°) in most areas although moderately sloping to moderately steeply sloping land (5-12°) occurs in parts of the south. One area in the far east is limited to Grade 4 by a slope of 12° while a number of areas in the south are limited to Subgrade 3b by slopes of between 7° and 11°. However, neither microrelief nor flood risk are grade-limiting factors on this site.

Geology and soils

18. The site is underlain by Lower Coal Measures or, close to Broomleyhope Wood in the north and east, Namurian sandstone. Drift deposits cover the whole site and consist of till in the north and west and glacial sand and gravel elsewhere (BGS, Sheet 20).

19. The soils on the site have been mapped as belonging to the Brickfield 3 association (Soils of England and Wales, Sheet 1). In general terms, the soils are imperfectly or poorly drained in the north and west (where medium-textured topsoils overlie medium to heavy-textured subsoils) and well drained in the east (where light-textured topsoils overlie light to very light-textured subsoils).

AGRICULTURAL LAND CLASSIFICATION

20. 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.

Subgrade 3a

21. Land in this subgrade runs in a band through the centre of the site. Two main soil types are found in this area. The first occurs in the centre and west and consists of moderately well or imperfectly drained profiles (Wetness Classes II and III). Typically medium clay loam topsoils overlie medium clay loam or sandy clay loam upper subsoils and either heavy clay loam/clay or sandy loam/loamy sand lower subsoils. These profiles become gleyed at between 20cm and 60cm depth and slowly permeable layers begin in places at between 45cm and 60cm depth. The ALC grade of these areas is limited by soil wetness. The second soil type in this subgrade occurs in the east and consists of well drained (Wetness Class I) profiles. Medium sandy loam, sandy clay loam or loamy medium sand topsoils and upper subsoils overlie loamy medium sand or medium sand. Topsoils are very slightly to moderately stony, containing 2-18% sandstones and hard stones (up to 12% >2cm in size). Subsoils are stoneless to moderately stony, containing up to 35% sandstones and hard stones. Some of these profiles meet the requirements for Grade 2 but cannot be accurately mapped together as a separate unit. Remaining areas are limited to Subgrade 3a by soil droughtiness and/or topsoil stoniness.

Subgrade 3b

22. Land in this subgrade covers 37.4 ha. Again, two main soil types occur. The first consists of poorly drained soils (Wetness Class IV) where medium clay loam topsoils and, in places, thin gleyed medium clay loam or sandy clay loam upper subsoils, overlie gleyed and slowly permeable heavy clay loam or clay. Gleying begins within 40cm depth and slowly permeable layers begin at between 20cm and 45cm depth. Soil wetness is the factor limiting this land to Subgrade 3b. The second soil type consists of well drained (Wetness Class I) profiles. Moderately stony (16-27% stones, 11-18% >2cm in size) sandy loam topsoils overlie moderately to very stony (30-40% stones) sandy loam or loamy sand subsoils. Soil droughtiness and/or topsoil stoniness are the grade-limiting factor in this case. In some areas in the south slopes of 7-11° provide an additional factor limiting the land to Subgrade 3b and in some cases this is the only factor limiting the land to this subgrade.

Grade 4

23. Grade 4 occurs in the far east of the site, where slopes of 12° are the grade-limiting factor.

Other land

24. Other, non-agricultural, land on this site consists of houses and gardens at Broomley, scrub in the south-west and south-east, part of a plantation in the north and a track and a road in the centre and north-west respectively.

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SOURCES OF REFERENCE

British Geological Survey (1989) *Sheet No. 20, Newcastle-upon-Tyne (Solid Geology)*
1:50,000 scale.
BGS: London.

British Geological Survey (1992) *Sheet No. 20, Newcastle-upon-Tyne (Drift Geology)*
1:50,000 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.

Soil Survey of England and Wales (1983) *Sheet 1, Soils of Northern England, 1:250,000 scale.*
SSEW: Harpenden.

Soil Survey of England and Wales (1984) *Soils and their Use in Northern England*
SSEW: Harpenden

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.