THE TEMPLE, GRANGE MOOR, HUDDERSFIELD WEST YORKSHIRE

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

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Resource Planning Team
Northern Region
FRCA, Leeds

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AGRICULTURAL LAND CLASSIFICATION AND STATEMENT OF PHYSICAL CHARACTERISTICS REPORT

THE TEMPLE, GRANGE MOOR, HUDDERSFIELD

INTRODUCTION

1. This report presents the findings of a detailed Statement of Physical Characteristics and Agricultural Land Classification (ALC) survey of 17.2 ha of land lying 6½ km east of Huddersfield town centre and about 1 km north-west of the village of Grange Moor. The field survey was carried out in August 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 an appeal against the non-inclusion of this site in the first list of Mineral Review sites.

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 under ley grass. In addition, a recently planted belt of deciduous woodland occupied the eastern edge of the site, adjoining the B6118 road.

SUMMARY

5. The findings of the survey are shown on the enclosed ALC and Topsoil and Subsoil Resource maps. The map has been drawn at a scale of 1:5,000. They are 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	2.1	14.2	12.2
3b	12.7	85.8	73.8
4			
5			
Agricultural land not surveyed		N/A	
Other land	2.4	N/A	14.0
Total surveyed area	14.8	100	-
Total site area	17.2	-	100

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

8. Subgrade 3a, good quality agricultural land, occurs in the south-western corner of the site. The soils here are well drained and typically consist of sandy loam topsoils and subsoils overlying weathering sandstone at between 40 cm and 80 cm depth. The ALC grade is limited by the overall climate of the area, and, in places, by slight soil droughtiness.

9. Subgrade 3b, moderate quality agricultural land, makes up the remainder of the agricultural area. Two main soil types are found within this area. The first occurs along the western edge of the site and in the north-east where the soils are well drained, with sandy loam topsoils overlying weathering sandstone at around 25 cm depth. Soil droughtiness and soil depth are the grade-limiting factors for this area. The second soil type consists of medium to heavy-textured restored soils which become slowly permeable at between 20 cm and 45 cm depth. In this case soil wetness is the grade-limiting factor.

10. Other, non-agricultural, land on this site consists of a belt of recently planted deciduous woodland in the east.

11. In terms of soil resources, two main soil types were identified on the site. The first consists of well drained soils in the west and north of the site. In this area very slightly to slightly stony sandy loam topsoils (mean thickness 20 cm) overlie slightly to moderately stony sandy loam subsoils (mean thickness 15 cm). This soil type is underlain by weathering sandstone at depths of between 20 cm and 80 cm. The second soil type consists of medium to heavy-textured restored soils in the centre and south-east. In this area very slightly to slightly stony medium clay loam topsoils (mean thickness 25 cm) overlie very slightly to slightly stony medium clay loam, heavy clay loam or heavy silty clay loam subsoils (mean thickness 25 cm). This soil type is underlain by either overburden or very compacted soil which is impenetrable by spade or auger.

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	SE 210 167
Altitude	m, AOD	220
Accumulated Temperature	day°C (Jan-June)	1177
Average Annual Rainfall	mm	834
Field Capacity Days	days	204
Moisture Deficit, Wheat	mm	72
Moisture Deficit, Potatoes	mm	52
Overall climatic grade	N/A	Subgrade 3a

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 Subgrade 3a.

Site

17. The land on the site is level to strongly sloping (0-8°). At no point is the gradient sufficient to limit ALC grade as the slopes greater than 7° are restricted to a small area within the deciduous woodland. Equally, neither microrelief nor flood risk are grade-limiting factors on this site.

Geology and soils

18. The site is underlain by Carboniferous Middle Coal Measures consisting of interbedded sandstones and shales (BGS Sheet 77). The centre and east of the site has been subject to opencasting in the past, during the 1960s according to the landowners, but the higher land in the west appears to have been undisturbed.

19. The soils on the site have been mapped as belonging to the Rivington 1 association in the west and the Dale association in the east. However, the field survey confirms that whilst Rivington 1 association soils occur in the west, the soils in the centre and east have been restored following opencasting.

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. A small area of Subgrade 3a land occurs in the south-west of the site. The soils are well drained (Wetness Class I) and consist of medium sandy loam topsoils and subsoils overlying weathering sandstone at between 40 cm and 80 cm depth. The topsoils are very slightly stony, containing between 2% and 5% small and medium sandstones while the subsoils are slightly to moderately stony, with between 7% and 20% sandstones. The ALC grade of this land is limited by the overall climate of the area and, in places, by slight soil droughtiness.

Subgrade 3b

22. The remainder of the agricultural land on the site has been mapped as Subgrade 3b. In the far west and in the north-eastern corner the soils are well drained, falling in Wetness Class I. In these areas very slightly to slightly stony (2-10% sandstones) medium sandy loam topsoils and thin slightly to moderately stony (8-20% sandstones) sandy loam subsoils overlie weathering sandstone at between 20 cm and 30 cm depth. This land is restricted to Subgrade 3b both by soil depth and soil droughtiness limitations. In the centre and south-east medium clay loam topsoils overlie poorly structured medium clay loam, heavy clay loam or heavy silty clay loam subsoils. Most of the soils in this area appear to have been restored following opencasting during the 1960s and the poorly structured, high density subsoils form slowly permeable layers. The ALC grade of this land is, therefore, limited by soil wetness restrictions.

Other land

22. Other, non-agricultural, land on this site consists of a belt of recently planted deciduous trees in the east.

STATEMENT OF PHYSICAL CHARACTERISTICS

Two main soil types were identified on the site, descriptions of which are 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/S1), Light textured soil overlying sandstone

This soil type occurs in the west and north of the site. It consists of medium sandy loam topsoils and, in most places, medium sandy loam subsoils overlying weathering sandstone at between 20 cm and 80 cm depth.

b. Soil Type 2 (T2/S2), Restored medium to heavy-textured soil

This soil type occurs in the centre and south-east and consists of medium clay loam topsoils overlying medium clay loam, heavy clay loam or heavy silty clay loam subsoils. These soils have been restored following opencasting operations in the 1960s

and many profiles consist of very compacted soil or overburden below 30 cm to 40 cm depth. These compacted horizons proved to be impenetrable to both spade and auger.

Topsoils

Topsoil T1 occurs in the west and north and typically consists of medium sandy loam. It is very slightly to slightly stony, containing 2-10% very small to medium angular and subangular sandstones. Topsoil T1 has a moderately developed medium subangular blocky structure and a mean thickness of 20 cm.

Topsoil T2 consists of restored topsoil in the centre and south-east. It is typically medium-textured (medium clay loam) and very slightly to slightly stony, containing 2-6% very small to medium angular and subangular sandstones. It has a moderately developed medium subangular blocky structure and a mean thickness of 25 cm.

Subsoils

Subsoil S1 underlies topsoil T1 in the west and north. It is light-textured (medium sandy loam) and has a moderately developed medium and coarse subangular blocky structure. It is slightly to moderately stony, containing 7-20% very small to large angular and subangular sandstones and it has a mean thickness of 15 cm. Subsoil S1 is underlain by weathering sandstone bedrock.

Subsoil S2 underlies topsoil T2 and has also been restored. It varies in texture from medium clay loam to heavy clay loam and heavy silty clay loam, and in structure from very weakly developed coarse angular/subangular blocky and medium prismatic to massive. It is very slightly to slightly stony, with between 4% and 12% very small to large angular and subangular sandstones. Subsoil Unit S2 has a mean thickness of 25 cm and is underlain by either compacted restored soil or overburden which is impenetrable by spade or auger.

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SOURCES OF REFERENCE

British Geological Survey (1978) *Sheet No. 77 (Huddersfield). Solid and Drift. 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.

APPENDIX II

SOIL PROFILE DESCRIPTION

Soil Type 1:	Light-textured soil overlying sandstone (T1/S1/Sandstone)
Location:	Grid Reference SE 2092 2690
Land Use:	Ley grassland
Slope:	2°E
Recent Weather:	Dry and overcast

Depth (cm)	**Horizon Description**
0-20	Dark brown (10YR3/3) medium sandy loam; no mottles; very slightly stony, containing approximately 2% very small and medium angular sandstones; moist; moderately developed medium subangular blocky structure; firm; very porous; many fine and very fine fibrous roots; non-calcareous; clear, smooth boundary.
20-43	Yellowish brown (10YR5/4) medium sandy loam; no mottles; moderately stony, containing approximately 15-20% very small to large sandstones; moist; moderately developed medium and coarse subangular block structure; firm; very porous; many very fine fibrous roots; non-calcareous; clear, smooth boundary.
43+	Weathering Coal Measure Sandstone.

Soil Type 2:	Restored medium to heavy-textured soil (T2/S2)
Location:	Grid Reference SE 2096 1668
Land Use:	Ley grassland
Slope:	2°E
Recent Weather:	Dry and overcast

Depth (cm)	**Horizon Description**
0-22	Dark brown (10YR3/3) medium clay loam; no mottles; very slightly stony, containing approximately 5% very small to medium angular and subangular sandstones (3%> 2 cm in size); moist; moderately developed medium subangular blocky structure; firm; moderately porous; abundant fine and very fine fibrous roots; non-calcareous; clear, smooth boundary.
22-43	Yellowish brown (10YR5/6) medium/heavy clay loam matrix containing clay lenses; no mottles; slightly stony, containing around 10% total very small to large angular and subangular sandstones; moist; very weakly developed coarse angular/subangular blocky and medium prismatic structure; very firm; very slightly porous; common fine and very fine fibrous roots; non-calcareous.
43+	Compacted soil, impenetrable by spade or auger.