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MAFF Ministry of Agriculture Fisheries and Food

STATEMENT OF PHYSICAL CHARACTERISTICS AND AGRICULTURAL LAND CLASSIFICATION *BOTHAL BARNS FARM, BOTHAL,* ASHINGTON, NORTHUMBERLAND MAY 1994

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SUMMARY

A Statement of Physical Characteristics and Agricultural Land Classification Survey of 13.7 ha of land at Bothal Barns Farm, Bothal, was carried out in April 1994.

A total of 13 ha of this land was in agricultural use of which 1.3 ha falls in Subgrade 3a. Profiles are imperfectly drained with sandy clay loam topsoils overlying similar textured upper subsoils. Lower subsoils are clayey and slowly permeable. Soil wetness is the factor limiting ALC grade.

The remaining agricultural land on the site (11.7ha) falls in Subgrade 3b. Profiles are poorly drained with a medium clay loam or sandy clay loam topsoil over a clayey, slowly permeable subsoil. Again soil wetness is the most limiting factor.

In addition to the agricultural land there is 0.7 ha of open water on the site.

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1. INTRODUCTION AND STATEMENT OF PHYSICAL CHARACTERISTICS

1.1 Location and Survey Methods

The site lies approximately ½km north east of the village of Bothal which is situated between the towns of Morpeth and Ashington in Northumberland. The site has a centroid Grid Reference of NZ 245869. Survey work was carried out in late April 1994 when soils were examined at a density of one auger boring per hectare at points predetermined by the National Grid, with additional borings used to check and refine grade boundaries. Three soil inspection pits were also dug to examine the soils in greater detail. Land quality assessments were made using the methods described in "Agricultural Land Classification of England and Wales: Revised guidelines and criteria for grading the quality of agricultural land" (MAFF, 1988).

1.2 Land Use and Relief

At the time of survey the land was being used for both grassland (with rigg and furrow) and arable cropping. An area towards the middle of the site is under water and has been partly filled with inert waste. Altitude varies from 41m AOD in the north west of the site to 35m AOD in the south east. Most of the land is gently sloping with a south easterly aspect on the west of the site and a south westerly aspect to the east.

1.3 Climate

Grid Reference	: NZ 245 869
Altitude (m)	: 35
Accumulated Temperature above 0°C (January-June)	: 1312 day°C
Average Annual Rainfall (mm)	: 681
Climatic Grade	: 2
Field Capacity Days	: 174
Moisture Deficit (mm) Wheat	: 95
Moisture Deficit (mm) Potatoes	: 82

1.4 Geology, Soils and Drainage

The site is underlain with Middle Carboniferous Coal Measures above which is a deposit of Boulder Clay drift in excess of 1m in thickness. Sand and Gravel deposits are found in the extreme north east of the site.

Soils are generally poorly drained (Wetness Class IV) with a medium textured topsoil overlying a heavy textured subsoil at between 20 and 35cm depth.

These soils correspond to the Dunkeswick Association as mapped by the Soil Survey and Land Research Centre.

1.5 Soil Properties

One soil resource unit was identified on the site. A description of the unit is given below and topsoil and subsoil resources are shown on the accompanying maps along with soil thickness and volume information.

Soil Unit T1/S1:- Medium textured topsoil overlying heavy textured subsoil.

This unit is formed from Boulder Clay and covers all of the site with the exception of the areas of open water. An area of lighter textured soils in the north east of the site was not mapped out separately as it was too small to form a distinct unit and soil textures were variable.

1.6 Soil Resources

i. Topsoil

Unit T1 occurs over the whole site with the exception of the open water areas. It is dark greyish brown, medium textured, usually sandy clay loam or medium clay loam, and very slightly stony (2%). The structure is moderately developed medium subangular blocky. Median unit thickness is 30cm.

ii. Subsoil

Unit S1 again is found throughout the site except where open water occurs. It is a pale brown and heavy textured, usually a heavy clay loam or clay,

sometimes with sandy lenses. It contains a few stones (2%) and has a moderately developed coarse angular blocky structure. Below about 60cm the subsoil is pinkish grey. Median thickness of this unit is 90cm.

2. SOIL PROFILE DESCRIPTION

Medium textured topsoil overlying heavy textured subsoil T1/S1.

Slope 3° SE
Land Use: Cereals
Recent Weather: Mild and dry.

Depth cm

0-29 Dark greyish brown (10YR 4/2); unmottled; medium clay loam; very slightly stony with 2% small subangular stones; moist; moderately developed medium subangular blocky; moderately porous; many fine pores and fissures; moderately firm; many fine fibrous roots; non calcareous; sharp smooth boundary.

29-69 Pale brown (10YR 6/3) with many brownish yellow (10YR 6/8) mottles; heavy clay loam; very slightly stony with 2% small and medium stones; moist; moderately developed coarse angular blocky; few fine pores and fissures, slightly porous; firm; common fine fibrous roots; non calcareous; clear wavy boundary.

60-85 Pinkish grey (7.5YR 6/2) with many brownish yellow (10YR 6/8) mottles; clay; very slightly stony with 2% small and medium stones; moist; moderately developed coarse angular blocky; few fine pores and fissures; very slightly porous; firm; few fine fibrous roots; non calcareous; clear wavy boundary.

85-120 Light brownish grey (10YR 6/2) with common reddish yellow (7.5YR 6/8) mottles; medium sandy loam; stoneless; moist; weakly developed coarse angular blocky; few fine pores and fissures; extremely porous; moderately firm; few fine fibrous roots; non calcareous.

3.0 AGRICULTURAL LAND CLASSIFICATION

The ALC grades occurring on this site are as follows:

Grade/Subgrade	Hectares	Percentage of Total Area
1		
2		
3a	1.3	9.5
3b	11.7	85.4
4		
5		
(Sub total)	(13.0)	(94.9)
Urban		
Non Agricultural		
Woodland - Farm		
- Commercial		
Agricultural Buildings		
Open Water	0.7	5.1
Land not surveyed		
(Sub total)	(0.7)	(5.1)
TOTAL	13.7	100

3.1 Subgrade 3a

This small area of land contains soil developed from lighter textured drift. Topsoils are sandy clay loam or medium clay loam over similar textured upper subsoils. Lower subsoils vary from sandy loam to heavy clay loam. Profiles are well to imperfectly drained (Wetness Class I to III) and soil wetness and workability are limiting.

3.2 Subgrade 3b

All the remaining agricultural land is graded 3b. Topsoils are usually sandy or medium clay loam over a gleyed, slowly permeable subsoil. Profiles are poorly drained (Wetness Class IV) and have a more severe wetness and workability limitation than on the 3a land.

3.3 Open Water

This includes two areas which were under water at the time of survey and are likely to be flooded most of the year.

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MAPS