



Ministry of
Agriculture
Fisheries
and Food

STATEMENT OF PHYSICAL CHARACTERISTICS
AND
AGRICULTURAL LAND CLASSIFICATION
SHILBOTTLE COLLIERY
RECLAMATION SCHEME
NORTHUMBERLAND
DECEMBER 1994

ADAS
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SUMMARY

A detailed Statement of Physical Characteristics and Agricultural Land Classification survey of 42.2 ha of land at Shilbottle was carried out in December 1994.

Of the total site area 2.9 ha falls within Grade 2. The soils are well drained, with very slightly stony medium clay loam topsoils overlying very slightly to slightly stony medium clay loam or sandy clay loam subsoils. The ALC grade of this land is limited by the overall climate of the area and by a slight topsoil workability problem.

20.9 ha of the site falls in Subgrade 3b. These soils are generally poorly drained, with medium or heavy clay loam topsoils overlying gleyed and slowly permeable heavy clay loam or clay subsoils at between 25 cm and 40 cm depth. Although those profiles with heavy clay loam topsoils meet the requirements for Grade 4 these cannot be accurately mapped as a separate unit and soil wetness is the principal factor limiting the ALC grade of this land.

The remainder of the site, 18.4 ha, consists of spoil heaps in the north and west.

CONTENTS

1. INTRODUCTION AND STATEMENT OF PHYSICAL CHARACTERISTICS
2. SOIL PROFILE DESCRIPTIONS
3. AGRICULTURAL LAND CLASSIFICATION

MAPS

1. TOPSOIL RESOURCES
2. SUBSOIL RESOURCES
3. AGRICULTURAL LAND CLASSIFICATION

STATEMENT OF PHYSICAL CHARACTERISTICS AND AGRICULTURAL LAND CLASSIFICATION REPORT ON THE PROPOSED RECLAMATION SCHEME AT SHILBOTTLE COLLIERY, NORTHUMBERLAND

1. INTRODUCTION AND STATEMENT OF PHYSICAL CHARACTERISTICS

1.1 Location and Survey Methods

The site lies approximately 6 km south-east of Alnwick town centre and covers a total area of 42.2 ha. Survey work was carried out in December 1994 when the soils were examined by hand auger borings at 100 m intervals predetermined by the National Grid. In addition, two soil pits were dug to allow full profile descriptions to be made. The land quality was assessed 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 23.8 ha of the site was in agricultural use (being sown to winter cereals in the north and centre, and oilseed rape in the south). The remaining 18.4 ha consists of spoil heaps in the north and west which have been classified as Urban land.

Site altitude varies from 75 m AOD in the north to 55 m AOD in the south-west and the land is typically gently sloping (1 - 3°) with a southerly aspect.

1.3 Climate

Grid Reference	: NU220 082
Altitude (m)	: 70
Accumulated Temperature above 0°C (January - June)	: 1263 day °C
Average Annual Rainfall (mm)	: 710
Climatic Grade	: 2
Field Capacity Days	: 183
Moisture Deficit (mm) Wheat	: 88
Moisture Deficit (mm) Potatoes	: 73

1.4 Geology, Soils and Drainage

The area is underlain by Upper Limestone deposits over which lies a thick layer of boulder clay. In the south-western corner of this site there is also a small area of lighter textured drift.

Generally the soils on this site are poorly drained (Wetness Class IV) with medium or heavy clay loam topsoils overlying gleyed and slowly permeable heavy clay loam or clay subsoils. In the south-west the soils are typically well drained (Wetness Class I) with medium clay loam topsoils overlying medium clay loam or sandy clay loam subsoils.

1.5 Soil Properties

Two main soil types occur on this site, descriptions of which are given below. Topsoil and subsoil resources are also shown on the accompanying maps along with soil thickness and volume information.

- (a) Soil Type 1:- Deep medium textured soils (Unit T1/S1)
(Full Profile Description, Table 1)

This soil, formed on light-textured drift, occurs in the south-west of the site. It is characterised by being very slightly to slightly stony, with a moderately to strongly developed subangular blocky subsoil structure.

- (b) Soil Type 2:- Medium to heavy textured soils (Unit T2/S2)
(Full Profile Description, Table 2)

This soil formed on boulder clay occurs over most of the site. It is characterised by a medium to heavy-textured topsoil over a slowly permeable heavy-textured subsoil with a well developed coarse to very coarse prismatic structure.

1.6 Soil Resources

- (i) Topsoils

Unit T1 occurs in the south-west of the site. It typically consists of medium clay loam and is very slightly stony, containing between 2% and 5% medium and small

subangular sandstones and hard stones. Unit T1 has a moderately developed medium subangular blocky structure and a median unit depth of 35 cm.

Unit T2 occurs over the remainder of the site, with the exception of the spoil heaps. It is medium to heavy textured (consisting of medium or heavy clay loam) and very slightly stony, with 1 - 2% small and medium subangular sandstones and hard stones. Unit T2 has a moderately developed coarse angular blocky structure and a median unit depth of 30 cm.

It should be noted that in the north-east of the site (on one of the spoil heaps) there are five mounds of topsoil material measuring approximately 30 m long x 5 m wide x 2 m high in each case.

(ii) Subsoils

Unit S1 occurs in the south-west of the site. It is medium-textured in most cases (medium clay loam or sandy clay loam) and very slightly to slightly stony, containing between 2% and 15% small, medium and large subrounded sandstones and hard stones. Unit S1 has a moderately to strongly developed medium and coarse subangular blocky structure and a mean depth of 85 cm.

Unit S2 occurs over the remainder of the site with the exception of the spoil heaps. It is generally heavy textured (heavy clay loam or clay) and very slightly stony, containing up to 3% medium subangular sandstones and hard stones. Unit S2 has a well developed coarse and very coarse prismatic structure and a mean depth of 90 cm.

2. SOIL PROFILE DESCRIPTIONS

Table 1 Deep medium textured soil, T1/S1.

Profile Pit 1 (Near auger boring 38).

Slope:- 3° SW
Land Use:- Oilseed rape
Weather:- Clear, Cold

Depth cm	Horizon Description
0 - 40	Dark brown (10 YR 3/3) medium clay loam, no mottles; very slightly stony, containing 4 - 5% small and medium subangular sandstones; moist; moderately developed medium subangular blocky structure; friable; moderately porous; many fine and very fine fibrous roots; moderately sticky; moderately plastic, non-calcareous; abrupt smooth boundary.
40 - 54	Brown (10 YR 4/4) medium sandy loam; no mottles; very slightly stony containing 4 - 5% small and medium subangular sandstones; moist; moderately to strongly developed coarse subangular blocky structure; friable; very porous; common fine fibrous roots; moderately sticky; moderately plastic; non-calcareous; clear smooth boundary.
54 - 120	Dark greyish brown (10 YR 4/2) medium clay loam; no mottles; slightly stony, containing around 15% medium and large subrounded sandstones; moist; moderately developed medium subangular blocky structure; firm; moderately porous; few fine and very fine fibrous roots; moderately sticky; moderately plastic; non-calcarous.

Table 2 Medium to heavy textured soil, T2/S2

Profile Pit 2 (Near auger boring 24)

Slope:- 1° S
 Land Use:- Winter cereals
 Weather:- Clear, Cold

Depth cm	Horizon Description
0 - 25	Dark greyish brown (2.5Y 4/2) medium clay loam; no mottles, except for some occasionally ochreous subsoil fragments; very slightly stony, containing around 1% medium angular hard stones and sandstones; moist; moderately developed coarse angular blocky structure, firm; moderately porous; many fine fibrous roots; moderately sticky; moderately plastic; non-calcareous; abrupt smooth boundary.
25 - 45	Brown (10 YR 5/3) medium clay loam; common distinct strong brown (7.5 YR 5/6) mottles; very slightly stony, containing around 2% subangular sandstones and hard stones; moist, strongly developed coarse prismatic structure; very firm; slightly porous (0.5% pores >0.5 mm); common fine fibrous roots; moderately sticky; moderately plastic; non-calcareous; clear wavy boundary.
45 - 120	Strong brown (7.5 YR 4/6) heavy clay loam; many distinct grey (N6) mottles and ped faces; very slightly stony, containing around 2% medium subangular sandstones; moist; strongly developed very coarse prismatic structure; very firm; slightly porous (<0.5% pores >0.5mm); few fine fibrous roots, especially along ped faces; moderately sticky; moderately plastic; non-calcareous.

3. AGRICULTURAL LAND CLASSIFICATION

The ALC grades occurring on this site are as follows:

<u>Grade/Subgrade</u>	<u>Hectares</u>	<u>Percentage of Total Area</u>
1		
2	2.9	6.9
3a		
3b	20.9	49.5
4		
5		
(Sub total)	(23.8)	(56.4)
Urban	18.4	43.6
Non Agricultural		
Woodland - Farm		
- Commercial		
Agricultural Buildings		
Open Water		
Land not surveyed		
(Sub total)	(18.4)	(43.6)
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TOTAL	42.2	100
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3.1 Grade 2

Grade 2 land occurs in the south-western corner of the site. Profiles are generally well drained, falling in Wetness Class I with very slightly stony medium clay loam topsoils overlying very slightly to slightly stony medium clay loam or sandy clay loam subsoils. The ALC grade of this land is limited by the overall climate of the area and by a slight topsoil workability limitation.

3.2 Subgrade 3b

The remainder of the agricultural land on this site falls in Subgrade 3b. Profiles are generally poorly drained, falling in Wetness Class IV, with medium clay loam or, in

places, heavy clay loam topsoils overlying gleyed and slowly permeable heavy clay loam or clay subsoils at between 25 cm and 40 cm depth in most cases. Although those profiles with heavy clay loam topsoils meet the requirements for Grade 4, they cannot be accurately mapped as a separate unit. Soil wetness is, therefore, the factor restricting this land to Subgrade 3b.

3.3 Urban

Spoil heaps in the north and west of this site have been mapped as Urban land.

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MAPS