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Ministry of
Agriculture
Fisheries
and Food

STATEMENT OF PHYSICAL CHARACTERISTICS AND AGRICULTURAL LAND CLASSIFICATION NEW STUBBIN COLLIERY SOUTH YORKSHIRE MARCH 1995

ADAS
Leeds Statutory Group

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SUMMARY

A detailed Agricultural Land Classification and Statement of Physical Characteristics survey of 40.3 ha of land at New Stubbin Colliery was carried out in March 1995. At the time of survey 27.8 ha was in agricultural use and 12.5 ha was either Urban or Non Agricultural land. 9.8 ha of the agricultural land falls in Subgrade 3a. The soils are well drained and light to medium-textured, overlying weathering sandstone at around 75cm depth. Soil droughtiness limits this land to Subgrade 3a. The remaining agricultural land on the site (18.0 ha) falls in Subgrade 3b. Two main soil types are found on this land. The first consists of poorly drained soils where medium to heavy-textured topsoils overlie gleyed and slowly permeable heavy-textured subsoils at around 30cm depth. Weathering shale occurs below about 60cm depth but it is soil wetness which limits the land to Subgrade 3b. The second soil type consists of well drained light to medium-textured topsoils and, in places, thin upper subsoils, overlying weathering sandstone at around 40cm depth. Severe soil droughtiness limits this land to Subgrade 3b.

There are two main soil types on the site. The first consists of medium to heavy-textured topsoils (median depth 30cm) over heavy-textured subsoils (mean depth 29cm) over weathering shale.

The second consists of light to medium-textured topsoils (median depth 30cm) overlying either a light to medium-textured subsoil (mean depth 45cm) or weathering sandstone.

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STATEMENT OF PHYSICAL CHARACTERISTICS AND AGRICULTURAL LAND CLASSIFICATION REPORT ON THE PROPOSED OPENCAST COAL SITE AT NEW STUBBIN COLLIERY, SOUTH YORKSHIRE

1. INTRODUCTION AND SITE CHARACTERISTICS

1.1 Location and Survey Methods

This site lies approximately 3½km north of Rotherham town centre, on the east side of the village of Nether Haugh. Survey work was carried out in March 1995 in order to validate the land quality and soil resource information provided by the applicants, Coal Contractors. The soils were examined by hand auger borings at 100m intervals pre-determined by the National Grid. Two soil pits were dug to allow full profile descriptions to be made and to allow samples to be taken for laboratory analysis. 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 27.8 ha of the site was in agricultural use being recently ploughed or sown to winter cereals or oilseed rape. The remainder of the site consists of Urban land (the disused colliery and a minor road) and Non Agricultural land (playing fields).

Site altitude varies from 59m AOD in the east to 82m AOD in the west and the land is level to moderately sloping (1-6°) with variable aspect.

1.3 Climate

Grid Reference	: SK 425 965
Altitude (m)	: 75
Accumulated Temperature above 0°C (January - June)	: 1346 day °C
Average Annual Rainfall (mm)	: 651
Climatic Grade	: 1
Field Capacity Days	: 141
Moisture Deficit (mm) Wheat	: 103
Moisture Deficit (mm) Potatoes	: 93

1.4 Geology, Soils and Drainage

The area is underlain by Carboniferous Coal Measures consisting of interbedded sandstones and shales. With the exception of locally derived Head deposits there is no drift cover and the soils are formed over weathering shale in the south-west and weathering sandstone elsewhere.

The soils formed over sandstone are well drained (Wetness Class I) and consist of medium sandy loam, medium clay loam or medium silty clay loam topsoils and subsoils overlying weathering sandstone at between 30cm and 110 cm depth. Those soils formed over shale are generally poorly drained (Wetness Class IV) with medium or heavy clay loam topsoils overlying heavy silty clay loam subsoils. Weathering shale typically begins at around 60cm depth.

The soils on this site correspond to the Bardsey Association as mapped by the Soil Survey and Land Research Centre.

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:- Medium to heavy-textured soils (Unit T1/S1/Shale)
(Full Profile Description, Table 1)

This soil, formed on weathering shale, occurs in the south-west of the site. It is characterised by its medium to heavy texture and a massive structure in the subsoil.

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

This soil, formed on weathering sandstone, occurs over most of the site. It is characterised by being light to medium-textured, with a moderately developed subangular blocky subsoil structure.

1.6 Soil Resources

(i) Topsoils

Unit T1 occurs in the south-west of the site. It is medium to heavy-textured, consisting of medium clay loam or heavy clay loam and is typically slightly stony, with around 10% very small to medium subangular and angular sandstones and shales. Unit T1 has a weakly developed medium and coarse subangular blocky structure and a median depth of 30cm.

Unit T2 occurs over the whole site with the exception of the Urban areas and the south-western corner. It is light to medium-textured, consisting of medium clay loam or medium sandy loam, and is very slightly to slightly stony, with between 4% and 12% very small to large subangular and angular sandstones. Unit T2 has a moderately developed medium subangular blocky structure and a median depth of 30cm.

(ii) Subsoils

Unit S1 underlies Unit T1 in the south-west of the site. It is heavy-textured, usually being a heavy silty clay loam, and it is very slightly to slightly stony with between 4% and 10% very small to medium angular and subangular sandstones and argillaceous stones. Unit S1 has a massive structure and a mean thickness of 29cm. Unit S1 is underlain by weathering shale.

Unit S2 underlies Unit T2 in the north and east and is light to medium-textured, consisting of medium sandy loam, medium clay loam or medium silty clay loam in most cases. It is very slightly to moderately stony, with between 4% and 18% very small to medium subangular and angular sandstones. This unit has a moderately developed medium and coarse subangular blocky structure and a mean thickness of 45cm. Unit S2 is underlain by weathering sandstone.

In general terms the ADAS Statutory survey agrees with the applicants soil resource information with the exception that in the east of the site ADAS Statutory found a greater area with a significant subsoil resource (Unit S2), and that in the south-west of the site the subsoils are of a heavier texture than elsewhere and should be mapped as a separate unit.

2. SOIL PROFILE DESCRIPTIONS

Table 1 Medium to heavy textured soil, T1/S1/Shale

Profile Pit 1 (Near auger boring 9)

Slope:- 3° SW
Land Use:- Recently ploughed
Weather:- Mild, bright

Depth cm	Horizon Description
0-31	Very dark greyish brown (10YR 3/2) medium clay loam; no mottles; slightly stony, with around 10% very small to medium angular and subangular sandstones; moist; weakly developed medium and coarse subangular blocky structure; firm; moderately sticky; moderately plastic; non-calcareous; abrupt smooth boundary.
31-58	Brown (10YR 5/3) turning greyish brown (10YR 5/2) heavy silty clay loam; common brownish yellow (10YR 6/8) and light grey (N7/) mottles; slightly stony, with around 10% very small to medium subangular and angular sandstones and argillaceous stones; moist; massive; very firm; slightly porous (<0.5% pores >0.5mm); common very fine fibrous roots; moderately sticky; very plastic; non-calcareous; abrupt smooth boundary.
58+	Grey (10YR 5/1) weathering shale; common brownish yellow (10YR 6/8) mottles; massive; few very fine fibrous roots.

Table 2 Light to medium-textured soil, T2/S2/Sandstone

Profile Pit 2 (Near auger boring 31)

Slope:- 6° ENE
Land Use:- Winter Cereals
Weather:- Mild, sunny

Depth *cm*	Horizon Description
0-32	Very dark greyish brown (10YR 3/2) medium sandy loam; no mottles; very slightly stony, with around 10% very small to medium angular and subangular sandstones; moist; moderately developed medium subangular blocky structure; firm; very porous; many fine and very fine fibrous roots; moderately sticky; moderately plastic; non-calcareous; clear, smooth boundary.
32-71	Light yellowish brown (2.5Y 6/3) medium silty clay loam; few brownish yellow (10YR 6/8) mottles; slightly stony, with around 15% very small to medium angular and subangular sandstones; slightly moist; moderately developed medium and coarse subangular blocky structure; firm; moderately porous; common fine and very fine fibrous roots; moderately sticky; moderately plastic; non-calcareous; clear smooth boundary.
71+	Fragmented weathering sandstone.

3. AGRICULTURAL LAND CLASSIFICATION

The ALC grades occurring on this site are as follows:

Grade/Subgrade	Hectares	Percentage of Total Area
1		
2		
3a	9.8	24.3
3b	18.0	44.7
4		
5		
(Sub total)	(27.8)	(69.0)
Urban	10.6	26.3
Non Agricultural	1.9	4.7
Woodland		
Agricultural Buildings		
Open Water		
Land not surveyed		
(Sub total)	(12.5)	(31.0)
TOTAL	40.3	100

3.1 Subgrade 3a

9.8 ha of Subgrade 3a land is found in the north and east of the site. The soils are well drained, falling in Wetness Class I, and consist of medium sandy loam or medium clay loam topsoils overlying medium sandy loam, medium clay loam or medium silty clay loam subsoils. The topsoils are very slightly to slightly stony, containing 4-12% very small to medium sandstones, while the subsoils contain up to 18% sandstones. Weathering sandstone bedrock occurs at around 75cm depth and it is soil droughtiness which restricts this land to Subgrade 3a. The principal difference between the applicants ALC survey and the ADAS Statutory survey is in the east of the site where the ADAS survey found significantly more Subgrade 3a, rather than Subgrade 3b land.

3.2 Subgrade 3b

The remainder of the agricultural land surveyed falls in Subgrade 3b. Two main soil types occur. The first is poorly drained (Wetness Class IV) and found in the south-west of the site, where medium or heavy-textured topsoils overlie gleyed and slowly permeable heavy-textured subsoils at around 30cm depth. Weathering shale occurs below around 60cm but it is soil wetness which limits the ALC grade of this land.

The remaining Subgrade 3b land is well drained (Wetness Class I) and consists of very slightly to slightly stony medium sandy loam or medium clay loam topsoils and, in places, thin subsoils, overlying weathering sandstone at between 30m and 50cm depth in most cases. In this case soil droughtiness is the factor which limits the land to Subgrade 3b.

3.3 Urban

A large area of Urban land is found in the north of the site, where the colliery previously stood, and in the centre of the site, where a minor road runs.

3.4 Non Agricultural

This category includes playing fields in the centre of the site.

MAPS