



Statement Of Physical Characteristics
And
Agricultural Land Classification
Validation Report
Conisborough OCCS & Landfill Site
South Yorkshire
December 1994

ADAS
Leeds Statutory Group
2FCS 10358

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SUMMARY

A Statement of Physical Characteristics and Agricultural Land Classification Validation Survey of 145 ha of land at Conisborough was carried out in December 1994.

Two separate soils were identified on the site. Unit T1/S1 covers most of the site and has a medium to heavy textured topsoil over a heavy textured subsoil extending to 120cm depth. Unit T2/S2 has a medium textured top and subsoil and is shallow, with bedrock encountered at about 70cm depth. This unit only occurs in the north of the site.

The ALC Validation Survey agreed that most of the site is subgrade 3b and limited by soil wetness. However 9.8 ha of grade 2 land limited by soil droughtiness was identified by ADAS in the north of the site. Two further areas of Subgrade 3a land (5.9 ha) were also identified. The 3a land was limited by soil wetness and droughtiness.

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 REPORT ON LAND AT
CONISBOROUGH PROPOSED OPEN CAST COAL AND LANDFILL SITE

1. INTRODUCTION AND SITE CHARACTERISTICS

1.1 Location and Survey Methods

The site lies 1km south of Conisborough and immediately south of the A630(T) Rotherham, Doncaster road. It covers 145 ha. Survey work was carried out in December 1994 when soils were examined by hand auger borings at 100m intervals predetermined by the National Grid. In addition 3 profile pits were dug to allow the soils to be described in more detail.

1.2 Land Use and Relief

100% of the site is in agricultural use growing winter cereals and oilseed rape. Slopes are level to gentle and do not limit the use of agricultural machinery. Aspect is variable. Altitude ranges from 90m AOD in the south, to 60m AOD near Firsby Hall Farm.

1.3 Climate

Grid Reference	: SK 499 965
Altitude (m)	: 80
Accumulated Temperature above 0°C (January - June)	: 1339 day °C
Average Annual Rainfall (mm)	: 648
Climatic Grade	: 1
Field Capacity Days	: 134
Moisture Deficit (mm) Wheat	: 102
Moisture Deficit (mm) Potatoes	: 91

1.4 Geology, Soils and Drainage

Drift cover is thin or absent across most of the site and soils are derived from weathering bedrock. Carboniferous shales and occasionally sandstones underlie most of the site except for the extreme north, adjacent to the A630(T), where Magnesian Limestone is exposed.

Carboniferous deposits have weathered to generally produce medium or heavy clay loam or silty clay loam topsoils over clayey, slowly permeable subsoils. These soils are poorly drained (Wetness Class IV). Bedrock is generally not exposed within 120cm depth. Occasionally lighter textured soils have developed from sandstone. Here topsoils are medium clay loam or silty clay loam over a medium sandy loam subsoil and bedrock is encountered at between 45 and 80cm depth. These lighter textured soils are well to moderately drained (Wetness Class I to III) but droughty.

In the north of the site limestone derived soils have sandy clay loam top and subsoils over bedrock at between 70 and 100 cm depth. Again these soils are well drained (Wetness Class I) but droughty.

1.5 Soil Properties

Two main soil types occur 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.

- a) Soil Type 1. Medium to heavy textured shale derived soils
(Unit T1 and S1)
Full profile description table 1
- b) Soil Type 2. Medium textured shallow limestone derived soils
(Unit T2 and S2)
Full profile description table 2

1.6 Soil Resources

1.6.1 Topsoils

- a) Unit T1 (split into sub units a and b on the difference in thickness).

Occurs over all except the extreme north of the site. It typically consists of a dark greyish brown, medium or heavy silty clay loam. It is stoneless to very slightly stony. It has a mean thickness of 25cm for T1a and 30cm for T1b.

- b) Unit T2

This unit is found in the north of the site. It is medium textured, typically a very slightly stony, dark greyish brown, sandy clay loam.

1.6.2 Subsoils

- a) Unit S1 (split into sub units S1a and S1b on the difference in thickness only).

Unit S1 underlies unit T1. It is heavy textured. It typically consists of a light yellowish brown, stoneless silty clay. It has a poorly developed, coarse structure. S1a is 95cm thick and S1b 90cm in thickness. Weathering shale bedrock is occasionally encountered within 120cm of the surface but in the majority of cases this subsoil extends to 120cm depth.

- b) Unit S2

This unit is found beneath Unit T2. It is medium to light textured and slightly stony. The unit has a well developed, medium subangular blocky structure.

Weathering bedrock is encountered at between 70 and 120 cm.

2.0 SOIL PROFILE DESCRIPTION

2.1 Table 1 Medium to heavy textured soil
(Unit T1a/b over S1a/b)

Location	Near boring 90
Slope	0°
Land Use	Cereals
Weather	Raining

Depth cm	Horizon description
0-26	Dark greyish brown (2.5Y 4/2) heavy clay loam; unmottled; stoneless; wet; moderately developed medium subangular blocky; firm; moderately porous; common fine fibrous roots; non calcareous; abrupt smooth boundary.
26-120	Light yellowish brown (2.5Y 6/4) matrix with light grey (N7) ped face; silty clay; many distinct 7.5YR 5/8 strong brown mottles; stoneless; wet; weakly developed coarse angular blocky becoming coarse prismatic below 65 cm depth; very firm; slightly porous, few fine fibrous roots; non calcareous.

2.2 Table 2 Medium textured soil
(T2 over S2)

Location Near boring 6
 Slope 1°
 Aspect NW
 Land Use Cereals
 Weather Mild, windy

Depth cm	Horizon description
0-28	Dark greyish brown (10YR 4/2) sandy clay loam; unmottled; very slightly stony (3% total) with few small to medium limestones; moist; strongly developed fine subangular blocky, very friable; moderately porous; many fine fibrous roots; non calcareous; clear smooth boundary.
28-69	Brown (7.5YR 4/4) sandy clay loam; unmottled; slightly stony (9% total) with common medium to large limestones; moist; strongly developed medium subangular blocky; friable; moderately porous; common fine fibrous roots; calcareous; gradual irregular boundary.
69+	Weathering limestone

3. AGRICULTURAL LAND CLASSIFICATION VALIDATION REPORT

The applicants, Banks, have carried out a detailed soil survey of the site in April 1994. They state that "the entire site falls within Subgrade 3b" and is limited by soil wetness.

Whilst carrying out the Statement of Physical Characteristics survey these findings were validated by ADAS.

The survey methods, climatic parameters and general soils description provided by the applicant agree with those used by ADAS. However the ADAS Validation Survey identified two areas of Subgrade 3a land (5.9 ha in total) and one area of Grade 2 (9.8 ha). Remaining land was all classed Subgrade 3b (129.2 ha). An agricultural land classification map is enclosed at the back of this report.

The Grade 2 area coincides with ADAS soil units T2 and S2. Soils are well drained but slightly droughty. The two Subgrade 3a areas are found within ADAS soil units T1 and S1. Soils are moderately drained (Wetness Class III) and limited by soil wetness and workability. The remaining Subgrade 3b land is poorly drained (Wetness Class IV) and limited by soil wetness. Again this subgrade is found within ADAS soil units T1 and S1. The applicants Schedule of Auger Borings (appendix 21) did identify different lighter textured soils, compared with the rest of the site, on the area graded 2 by ADAS. They also map this area as a separate soil unit on their Soil Unit map (HJB/240/08/sheet 3). However the two areas graded 3a by ADAS are not identified separately on either the applicant's Soil Units or Schedule of Auger Borings.

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MAPS