AGRICULTURAL LAND CLASSIFICATION
AND STATEMENT OF PHYSICAL CHARACTERISTICS

DEWLEY HILL, TYNE AND WEAR

Proposed Opencast Coal Site

ADAS
Leeds Regional Office

March 1992
File Ref: 2FCS 5651
Job No: 123/91

Lds.AL5.Dewly.Hil

CONTENTS

Dewley Hill, Tyne & Wear
Proposed Opencast Extraction of Coal

1.0 INTRODUCTION

1.1 Introduction and Site Characteristics

The site is situated around National Grid Reference NZ165683, covering 273 hectares of land approximately 10km northwest of Newcastle upon Tyne city centre, Tyne & Wear. Eastern parts of the site had been previously surveyed in September 1991 as part of the Newcastle Western Development area. The remainder of the site was surveyed in February and March 1992. Soil auger borings were made at 100m intervals on a grid basis, at points predetermined by the National Grid to a depth of 1 metre. Where appropriate, soil pits were dug to assess soil characteristics and take samples for further analysis.

All 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)"

This detailed survey supersedes the previous "1in to 1 mile" survey of the area.

1.2 Land Use

Much of the land on this site is devoted to arable cropping, particularly winter cereals. In the north and southwest however there are large areas of permanent grazing. Other land uses include an existing quarry site, farm buildings, farm tracks and patches of ley grassland.

1.3 Climate and Relief

Average Annual Rainfall is approximately 691mm. Accumulated temperatures above 0°C (January-June) (ATO) are 1265 day °C and the land is at field capacity for 176 days in an average year. The above combination of rainfall and temperature data impose an overall climatic limitation of grade 2 on land in this area.

The site varies between 75m and 115m above Ordnance Datum and is generally flat to moderately sloping. Gradients vary between 0° and 5° and tend to be greater in the north of the site, but do not limit ALC grade.

1.4 Geology, Soils and Drainage

The entire site is underlain by Carboniferous Coal Measures formed of interbedded shales and sandstones. There is a superficial covering of drift, consisting of boulder clay, along with isolated patches of glacial sand and gravel, over almost all of the site. The exception is an outcrop of sandstone in the southeast corner.

Soils formed on the boulder clay are medium to heavy in texture (frequently medium clay loam topsoil overlying heavy clay loam or clay subsoil) and generally imperfectly or poorly drained. (Wetness classes III and IV). In the southwest there is an area of restored land consisting of medium clay loam or heavy clay loam topsoils overlying a compacted heavy clay loam or clay subsoil. These soils are poorly or very poorly drained and fall within Wetness Classes IV and V.

Two other soil types occur on the site. The first consists of light to medium textured material which is generally well drained and falls within Wetness Class I. These soils which are common around the tumulus at Dewley Hill and in the north of the site between Lough House and Crescent Farm consist of medium textured topsoils (medium clay loam or sandy clay loam) over light to medium subsoils (usually sandy loam or sandy clay loam. The second occurs in a wet shallow depression in the east. Here thin peaty and organic topsoils have formed over the heavy boulder clay subsoil. These soils are poorly drained and fall within Wetness Class IV.

2.0 AGRICULTURAL LAND CLASSIFICATION GRADES

The ALC grades occurring on this site are as follows:-

Grade/Subgrade	Area(Ha)	Percentage of Total Site Area
2	10.2	3.7
3a	45.9	16.8
3b	168.7	61.9
4	33.4	12.2
5	0.2	0.1
Non Agricultural	5.6	2.1
Agricultural Buildings	1.32	0.5
Urban	7.2	2.7
TOTAL	272.7	100

Grade 2

Land in this grade covers 10.2 ha of the site in two separate areas; around the Dewley Hill tumulus and between Crescent Farm and Lough House. Soils are well drained (Wetness Class I) and consist of medium textured topsoils (typically medium clay loam or sandy clay loam) overlying similar or slightly sandier subsoils. Profiles are very slightly to slightly stony with between 5% and 10% sandstones in most cases. The overall climatic limitation restricts this land to grade 2 along with, in places, stoniness and droughtiness.

Subgrade 3a

Land in this subgrade covers much of the northwest and western parts of the site. Generally soils are imperfectly drained (Wetness Class III) with medium textured topsoil and upper subsoil (medium clay loam or sandy clay loam) overlying heavy textured lower subsoils (heavy clay loam or clay). These soils are very slightly stony, with up to 5% hardstones and sandstones, and have slowly permeable layers below about 55cm depth. Soil wetness and workability are the main limiting factors on most land in this grade. Also included within this subgrade is an area in the north containing variable soils, some of which have an appreciable stone content (10 - 20%). Although this area contains much Grade 2 land it has been restricted to subgrade 3a by the soil pattern limitations imposed by rapid and very localised variations in stone content.

Subgrade 3b

This land covers almost all of the northern and eastern parts of the site. Soils are poorly drained (Wetness Class IV) and generally consist of medium clay loam topsoils over heavy clay loam or clay subsoils. Profiles are very slightly stony with 0 - 5% hardstone and sandstones, and slowly permeable layers generally begin at around 30 cm. Soil wetness and workability problems are the overriding limitation on land within this subgrade.

Grade 4

Four distinct areas of Grade 4 land occur on the site. The largest, in the southwest, is an area of restored land which is poorly to very poorly drained (Wetness Class IV and V). Here, medium to heavy-textured topsoils (medium clay loam or heavy clay loam) overlie compacted heavy-textured subsoils (heavy clay loam or clay). The subsoil compaction severely restricts drainage leading to waterlogging of the topsoil for much of the year. Severe soil wetness and workability are thus the main factors limiting this land to grade 4.

The area of Grade 4 land to the south of Dewley Farm is limited to this grade by irregular topography which appears to be the result of very old disturbance. Of the two small areas of Grade 4 land in the centre and north east of the site, one (around borings 141 and 163) is limited by microtopography and appears to have been the site of coal extraction. The other, between borings 65 and 85 is limited to Grade 4 by long periods of waterlogging.

Grade 5

The small area of Grade 5 land to the east of Dewley Burn in the south is limited to Grade 5 by gradients of more than 18°.

Non Agricultural

This includes several small areas of scrubland and the tumulus at Dewley Hill.

Agricultural Buildings

The farmhouse and outbuildings at Dewley Farm fall within this category.

Urban

This includes the existing opencast coal site to the east of Dewley Hill tumulus and the farm track running from the A69 to Fell House Farm.

3. SOIL TYPES DESCRIPTION

3.1 Soil Type 1: Medium to heavy-textured boulder clay soils.

Boulder clay covers most of the site and consist usually of medium-textured topsoils (usually medium clay loam) overlying heavy-textured subsoils (heavy dry loam or clay). The soils are very slightly stony with around 5% hardstones and sandstones. Topsoils have a mean depth of 30cm and slowly permeable layers generally start at between 30cm and 50cm depth.

3.2 Soil Type 2: Medium to light-textured soils.

These soils occur in the south around Dewley and in the north between Crescent Farm and Lough House. Hill tumulus typical profiles consist of medium-textured topsoil (medium clay loam or sandy clay loam) with a mean depth of 35cm overlying light to medium-textured subsoil (loamy sand, sandy loam or sandy clay loam). Slowly permeable layers are usually absent and the soils are very slightly to slightly stony (5-10% small and medium sand stones).

3.3 Soil Type 3: Restored Soils

Restored soils occur in a block in the southwest. Medium to heavy-textured topsoils (medium clay loam or heavy clay loam) overlie compacted heavy-textured subsoils (heavy clay loam or clay). Topsoils have a mean depth of 30cm and both topsoil and subsoil are very slightly to slightly stony, with 4-8% small rounded hardstones and sandstones.

3.4 Soil Type 4: Organic and Peaty over heavy soils.

This soil type occurs in the depression in the centre of the site to the south of Lough House. Here stoneless organic medium clay loam (organic heavy clay loam or peat also occur in places) with a mean depth of 30 cm overlies stoneless clay subsoils, containing, in places, lenses of sand.

4.0 Soil Profile Descriptions

Soil Type 1 (Unit T1): Medium to heavy-textured boulder clay soils
Land Use: Permanent grassland
Slope: 0°
Location: Near to auger boring 59.

Horizon	Depth	Description
1.	0-20	Dark grey (10YR4/1) medium silty clay loam; common coarse distinct yellowish brown (10YR5/6) mottles; rare small and medium hard sandstones; moist; moderately developed fine and medium sub angular blocky structure; medium packing density; moderately porous; moderately weak soil strength; abundant fine fibrous roots; non calcareous; clear wavy boundary.
2.	20-26	Dark greyish brown (10YR4/2) medium clay loam; common coarse distinct yellowish brown (10YR5/6) mottles; rare small and medium hard sandstones; moist; moderately developed medium sub angular blocky structure; medium packing density; moderately porous; moderately weak soil strength; common fine fibrous roots; non calcareous; abrupt wavy boundary.
3.	26-100	Grey (75YR6/1) and brownish yellow (10YR6/6) mottles; rare small and medium hard sandstone; moist; moderately developed coarse and very coarse prismatic structure; high packing density; slightly porous; moderately firm soil strength; few fine fibrous becoming rare with depth; non calcareous.

Soil Type 2 (T2) Medium to light textured soils
Land Use: Winter Cereals
Slope: 3°S
Location: Adjacent to Auger boring 24

Horizon	Depth(cm)	Description
1.	0-33	Very dark greyish brown (10YR3/2) medium clay loam; no mottle; few small medium rounded hard sandstone; moist; strongly developed fine sub angular blocky structure (breaking to granular); low packing density; very porous; moderately weak soil strength; common fine fibrous roots; non calcareous; abrupt wavy boundary.
2.	33-65	Dark greyish brown (10YR4/2) medium clay loam; no mottle; common small, medium and large rounded hardstone; moist; moderately developed fine and medium sub angular blocky structure; medium packing density; medium packing density; moderately porous; common fine pores and fissures; few fine fibrous roots; non calcareous; clear wavy boundary.
3.	65-100	Dark yellowish brown (10YR4.4) loamy medium sand; no mottle; rare, small rounded gravels; moist; very weekly developed fine and medium angular blocky structure; medium packing density; moderately to very porous; few fine fibrous roots; non calcareous.

Soil Type 3 (T3) Heavy
Land Use: Set Aside (uncropped permanent grazing)
Slope: 0°
Location: Auger boring 151

Horizon	Depth (cm)	Description
1.	0-24	Very dark grey (75YR3/1) medium clay loam with inclusions of heavy clay loam subsoil; common small and medium hard sandstone; very moist; weakly developed medium and coarse angular blocky structure; medium packing density; rare fine pores and few fine fissures; moderately weak soil strength; common fine fibrous roots; non calcareous; abrupt smooth boundary.
2.	24-100	Reddish yellow (75YR6/8) and grey (10YR6/1) heavy clay loam; common small and medium, and few large, hard sandstone; very moist; very weakly developed very coarse platy to angular blocky structure, high packing density; very slightly porous; few fine fibrous roots; non calcareous.

Soil Type 4 (Unit T4) Organic and peaty over heavy soils
Land Use: Uncropped rough pasture
Slope: 0°
Location: Auger boring 185

Horizon	Depth (cm)	Description
1	0-10	Very dark grey (75YR3/1) organic sandy clay loam; common fine, distinct yellowish red (5YR4/8) mottle; stoneless; moist; moderately developed fine sub angular blocky structure; low packing density; moderately porous; very weak soil strength; abundant fine fibrous and few medium fleshy roots; non calcareous abrupt wavy boundary.

Soil Type 4 contd.

Horizon	Depth (cm)	Description
2.	10-21	Dark grey (75YR 4/1) sandy clay loam; common fine, distinct yellowish red (5YR 4/8) mottle; few small, hard sandstone; very moist; weakly developed medium angular blocky structure; medium packing density; moderately porous; moderately weak soil strength; few fine fibrous roots; non calcareous; clear wavy boundary.
3.	21-100	Grey (10YR6/1) heavy clay loam; common, coarse distinct strong brown (75YR5/8) mottle; few small semi rounded hardstone; moist; weakly developed coarse angular blocky and prismatic structure; high packing density; slightly porous; moderately firm soil strength; few fine fibrous roots; non calcareous.