AGRICULTURAL LAND CLASSIFICATION
and Statement of Physical Characteristics

Pockerley Buildings, Kibblesworth
Tyne and Wear

Proposed Opencast Coal Extraction Site

MAFF
Leeds Regional Office

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Lds.AL5.Kibls.wth

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AGRICULTURAL LAND CLASSIFICATION REPORT

1.0 Introduction and Site Characteristics

1.1 Location

National Grid Reference:-	NZ 231 548
Location Details:-	Southwest of Kibblesworth, 10km south of Newcastle upon Tyne, Tyne and Wear.
Site Size:-	23 hectares

1.2 Survey Methods

Date Surveyed:-	27th February 1992
Boring Density and Spacing Basis Basis:-	1 boring per hectare at 100m intervals on a grid basis, predetermined by the National Grid.
Sampling Method:-	Hand auger borings
Number of Borings:-	25
Number of Soil Pits (used for):-	Three, to examine soil structure 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 "1" to one mile" survey of the area.

1.3 Land Use:- Across much of the site land is in arable use (winter cereals). One plantation of commercial woodland occurs in the centre of the site. There is also a small area of farm woodland land in the southeast.

1.4 Climate and Relief

Average Annual Rainfall (AAR):-	716	mm
Accumulated Temperature above 0°C (January-June):-	1218	day °C
Field Capacity Days:-	177	days
Altitude average:-	130	m a.o.d
maximum:-	140	m a.o.d
minimum:-	110	m a.o.d
Climatic limitation (based on interaction of rainfall and temperature values:-	ALC grade 2	

Relief:- The site is bisected by a north-south running valley which has gently to moderately sloping sides. In the southeast there are steep slopes with a westerly aspect.

Slopes (°):- 0-15°

Gradient Limitations:- Yes

Limiting gradient (s):- 7-16°

Grade(s)/subgrade(s):- 7-11° = 3b 11°-18° = 4

Occurrence on site:- In the east and southeast of the site.

1.5 Geology and Soil

Solid Strata:	Coal Measures
Depth of solid rock from surface:-	Greater than one metre over almost all of the site.
Drift types:-	Boulder clay and Glacial sand
Thickness of drift and distribution:-	Greater than one metre over much of the area. Small areas of weathering silt stone occur at a depth of less than 1 metre in a few places in the west.
Soil Types and Distribution:-	Medium and heavy soils over the northern part of the site. Lighter textured soils occur in the south eastern corner.
Soil Textures (topsoils and subsoils):-	Medium/heavy soils - medium clay loam topsoils over medium clay loam, heavy clay loam and clay subsoils Medium/light soils - medium sandy loam and sandy clay loam topsoils over loamy medium sand and medium sand subsoils.
Soil Series/Associations:-	
On 1/250000 map:-	Brickfield
Identified on site:-	Yes
Soil Limitations and type:-	Soil droughtiness on lighter textured soils.

1.6 Drainage

Soil type and Wetness Class:-	Light/medium textured soils: Wetness Class I (well drained) Medium/Heavy textured soils: Wetness Class II (Imperfectly drained), to Wetness Class IV (poorly drained).
Drainage Limitations:-	ALC grade 3a: Slowly permeable layers within 48-75cm. ALC grade 3b: Slowly permeable layers at depths of less than 48 cm.

2.0 Agricultural Land Classification Grades

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

Grade/Subgrade	Hectares	Percentage of Agricultural Area	Percentage of Total Area
1			
2	1.3	6.1	5.6
3a	4.7	22.0	20.2
3b	14.9	70.0	64.0
4	0.4	1.9	1.7
5			
Non Agricultural			
Farm woodland	0.6		2.5
Commercial woodland	1.4		6.0
Urban			
Other			
Total	23.3	100	100

Grade 2

Distribution on site:-	One small area in the south eastern corner of the site
Soil Type(s) and Texture(s):-	Medium and light textured soils, typically medium sandy loam and sandy clay loam over sandy clay loam and loamy medium sand subsoils.
Depth to Slowly Permeable Layers:-	Greater than 1 metre
Wetness and Drainage Class:-	Wetness Class I
Stone Percentage and Type:-	0°-5° small and medium angular and sub rounded sandstones .
Grade Limiting Factors:-	Overall climate and soil droughtiness

Subgrade 3a

Distribution on site:- One area in the centre of the site and a further area in the southeast and east.

Soil Type(s) and Texture(s):- In the centre and east, medium to heavy textured soils predominate; typically medium clay loam topsoils, over medium clay loam and/or heavy clay loam subsoils. In the southeast soils are lighter and consist of medium sandy loam topsoils over medium sand subsoils.

Depth to Slowly Permeable Layers:- 48 - 75 cm where present

Wetness and Drainage Class:- Light textures: Wetness Class I - well drained.
Medium/heavy textures: Wetness Class III - imperfectly drained.

Stone Percentage and Type:- 0-10% small, medium and large angular and sub angular sandstones.

Grade Limiting Factors:- Light textures: slight to moderate drought risk in summer.
Medium/heavy: soil wetness and workability problems.

Subgrade 3b

Distribution on site:- This subgrade occurs in the north, west and central parts of the site.

Soil Type(s) and Texture(s):- Medium textured topsoils, typically medium clay loam or sandy clay loam, over heavy clay loam and clay subsoils.

Depth to Slowly Permeable Layers:- Less than 48 cm

Wetness and Drainage Class:- Wetness Class IV, poorly drained

Stone Percentage and Type:- 0-15% small, medium and large angular and sub angular sandstones

Grade Limiting Factors:- Soil Wetness and workability problems over much of the site.

(ii) Gradients of 7-11° in the east

(iii) Soil stoniness where siltstones occur close to the surface along the western boundary of the site.

Grade 4

Distribution on site:-	One small area in the southeast.
Soil Type(s) and Texture(s):-	Texturally similar to the lighter soils in subgrade 3a.
Depth to Slowly Permeable Layers:-	Greater than 1 metre.
Wetness and Drainage Class:-	Wetness Class I - freely drained.
Stone Percentage and Type:-	0 - 10% small and medium angular and sub angular sandstones.
Grade Limiting Factors:-	Gradients ranging from 12°-18°.

Non Agricultural

Type and location of land included:-	Commercial woodland, consisting of an area of Sitka spruce in the northwest and an area of farm woodland in the valley bottom.

3.0 STATEMENT OF PHYSICAL CHARACTERISTICS (SOIL PROPERTIES AND RESOURCES)

3.1 Soil Properties

Two soil types occur on the site. Their distribution along with soil depth and quantity information are shown on the accompanying maps.

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

Occurrence:- Over almost all of the site except for the southeast corner.

Textures:- Sandy clay loam and medium clay loam topsoils over medium clay loam, heavy clay loam and clay subsoils.

Stone content:- 0-15% small, medium and large angular and sub angular sandstones.

Horizon thicknesses:- Topsoil 25 - 45 cm
Subsoil 55 - 75 cm

Profile pit features:- Topsoils have a moderately developed medium sub angular blocky structure over heavier subsoils with a well developed coarse angular blocky structure.

Soil Type 2:- Light textured glacial drift soil

Occurrence:- The southeast corner and in small isolated patches elsewhere.

Textures:- Sandy clay loam and medium sandy loam topsoils, over medium sandy loam, loamy medium sand and medium sand subsoils.

Stone content:- 0-10% small and medium angular and sub rounded sandstones.

Horizon thicknesses:- Topsoil 30 - 45 cm
Subsoil 55 - 70 cm

Profile pit features:- Weak to moderately developed fine sub angular blocky topsoil structure overlying weakly developed or structureless sandy subsoil.

3.2 Soil Resources

Topsoils

Unit T1	Medium textured topsoils
Texture/stone content:-	Medium clay loam containing 0-15% small, medium and large angular and sub angular sandstones.
Structure:-	Moderately developed medium sub angular blocky
Occurrence:-	Over almost all of the area, except for the southeast corner and occasional isolated patches dispersed around the site.
Thickness:-	25 - 45 cm (mean 30 cm)
Unit T2	Light textured topsoils
Texture/stone content:-	Medium sandy loam or sandy clay loam containing 0-10% small and medium angular and sub rounded sandstones.
Structure:-	Weakly to moderately developed fine sub angular blocky.
Occurrence:-	The southeast corner of the site and in small isolated patches elsewhere.
Thickness:-	(mean 65 cm) 30-45 cm (mean 35 cm)

Subsoils

Unit S1

Texture group/stone content:-	Medium/heavy (Medium clay loam, heavy clay loam or clay) containing 0 - 5% small and medium angular and sub angular sandstones.
Structure:-	Over almost all of the site, except for the southeast corner.
Thickness:-	Mean:- 70cm

Unit S2

Texture group/stone content:-	Light (Medium sandy loam, loamy medium sand or medium sand).
Structure:-	Structureless to very weakly developed sub angular blocky.
Occurrence:-	In the southeast of the site, only small isolated patches elsewhere.
Thickness:-	Mean:- 65 cm

4.0 SOIL PROFILE DESCRIPTIONS

Pit 1 Near Auger Boring 15: Medium textured boulder clay soil.
Gradient: 2°N
Land Use: Arable
Date: 27 02 92

Depth (cm)	Horizon Description
0 - 30	Dark brown (10YR3/3) medium clay loam; unmottled; slightly stony with common small and medium angular and sub angular sandstones; moist; moderately developed medium sub angular blocky structure; medium packing density; slightly porous; moderately weak soil strength; moderately sticky and moderately plastic; many very fine fibrous and few medium fleshy roots; non calcareous; abrupt smooth boundary.
30 - 100	Brown (10YR5/4) medium clay loam with light grey (10YR7/1) ped faces; slightly stony with common small and medium angular and sub angular sandstones; moist; well developed coarse angular blocky structure; high packing density, slightly porous with a few fine pores and fissures; moderately firm soil strength; moderately sticky and moderately plastic; few fine fibrous roots; non-calcareous.

Pit 2. 100 metres south of Auger Boring 1:- Thin heavy silty clay loam topsoil over weathering siltstone. (Western boundary of site localised occurrence only, not separated as a soil unit)

Gradient: 5° E

Land Use: Arable

Date: 27 02 92

Depth (cm)	Horizon Description
0 - 25	Dark greyish brown (10YR4/2) heavy silty clay loam; moderately stony with many small and medium tubular siltstones; moist, moderately developed medium sub angular blocky structure; medium packing density; slightly porous; moderately firm soil strength; moderately sticky and moderately plastic; many very fine fibrous roots; non-calcareous; abrupt irregular boundary.
25 - 50	Thinly bedded (shaly) weathering siltstone with a matrix of brown (10YR5/3) silty clay.

Pit 3. Near to Auger boring 22:- Light textured glacial drift soil.

Gradient: 1° SE

Land Use: Set Aside

Date: 27 02 92

Depth (cm)	Horizon Description
0 - 40	Very dark brown (10YR2/2) medium sandy loam; unmottled; very slightly stony with few medium and large angular and sub rounded sandstones; moist; moderately developed fine sub angular blocky structure; low packing density; moderately porous; weak soil strength; non sticky; non plastic; common fine fibrous and a few medium fleshy roots; non calcareous; smooth wavy boundary.
40 - 100	Yellowish brown (10YR5/8) medium sand; unmottled; stoneless; structureless; low packing density; porous; very few fine fibrous roots; non sticky; non plastic; non-calcareous.

MAP(S)