STATEMENT OF PHYSICAL CHARACTERISTICS AND AGRICULTURAL LAND CLASSIFICATION

BIRKWOOD FARM, ALTOFTS
WEST YORKSHIRE

Proposed Opencast Extraction of
Clay and coal

ADAS
Leeds Regional Office

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Lds.AL1.Birkwood

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LAND AT BIRKWOOD FARM ALTOFTS

PROPOSED EXTRACTION OF CLAY AND COAL WITH RESTORATION TO AMENITY USE

SECTION 1. INTRODUCTION AND SITE CHARACTERISTICS

This site is located around grid reference SE 362 237, approximately 4 km north east of Wakefield City Centre. It covers 11 hectares, 87 percent of which is in agricultural use.

Survey work was carried out in January 1990 when soils were examined by hand auger borings at 100 metre intervals pre determined by the National Grid. Further borings were made, where necessary, to refine grade boundaries and confirm soil types. Detailed soil descriptions and sampling for laboratory analyses were carried out in inspection pits located at representative points in each of the two soil types occurring on the site.

All land quality assessments were made using the methods described in "Revised Guidelines and Criteria for Grading the Quality of Agricultural Land (MAFF 1988).

1.1 LAND USE

The site is in arable production with permanent pasture occurring on heavier land in the middle of the site. Cereals are the main arable crop with some market gardening occurring in the extreme north.

Non Agricultural Land consists of a disused quarry in the west and a small area of disturbed land in the centre.

1.2 CLIMATE

Average Annual Rainfall (AAR) is approximately 634 mm. Accumulated temperature above 0°C between January and June (ATO) is 1381 day °C and the land is at field capacity for 142 days a year. There is thus no overall climatic limitation on ALC grade. Summer moisture deficits of 105 mm for winter wheat and 96 mm for potatoes indicates a moderate drought limitation on the fine loamy over sandy profiles (T1/S1) found in the northern half of the site.

1.3 RELIEF

The site varies between 19 and 45 metres above Ordnance Datum. It is gently or moderately sloping in the south and virtually level in the north.

1.4 GEOLOGY

Drift deposits are largely absent and solid carboniferous coal measures are usually encountered within 1-1½ metres of the surface. In the south these consist of fine sandstones, occasionally interbedded with shales and coal. Thick deposits of fireclay occur north of the disused quarry. The soils described in section 2 closely reflect this pattern.

SECTION 2. STATEMENT OF PHYSICAL CHARACTERISTICS

Two main soil types occur on the site.

2.1 FINE LOAMY OVER SANDY TEXTURED SOILS

These occur in the southern half of the site and consist of medium to heavy clay loam topsoils over sandy clay loam and sandy loam subsoils. These usually become lighter and stonier with depth. (Full profiles description is given in table 1).

Topsoils

This topsoil (Unit T1) is common to both soil types on the site. It consists of medium to heavy textured material about 30 cm thick, with a moderately developed coarse angular blocky structure. Most of this unit is stoneless to very slightly stony, although moderately stony patches occasionally occur on slope crests in the south.

Subsoils

Subsoils (Unit S1) consist of slightly stony, medium textured material passing into moderately stony sandy textures at depth. Structure is generally moderately developed medium to fine subangular blocky becoming less well developed with depth. The profiles in this unit are occasionally impenetrable to soil auger at depth, giving a mean soil thickness in the unit of only 65 cm.

2.2 FINE LOAMY OVER CLAYEY TEXTURED SOILS

These soils occur in areas north of the disused quarry. They consist of medium to heavy clay loam topsoils over heavy clay loam and clay subsoils. All topsoils and subsoils are stoneless to very slightly stony (Full profile description is given in table 2).

Topsoils

These are common to both soil types and form part of Unit T1 described in the preceding section.

Subsoils

Subsoil Unit S2 consists of stoneless to very slightly stony heavy textured material with a mean thickness of 70 cm. Soil structure usually varies between moderately developed coarse angular blocky and strongly developed coarse prismatic.

SECTION 3: AGRICULTURAL LAND CLASSIFICATION GRADES

The ALC grades occurring on this site are as follows:

GRADE/ SUBGRADE	HECTARES	PERCENTAGE OF TOTAL SITE AREA
3a	1.5	14
3b	8.1	73
Urban	1.3	12
Other Non Agricultural	0.1	1
TOTAL	11.0	100%

3.1 SUBGRADE 3a

Land in this subgrade occurs in the extreme south east. Soils fall within wetness classes I or II and consist of very slightly stony medium clay loam topsoils over slightly to moderately stony sandy clay loam and sandy loam subsoils.

Soil droughtiness is moderately limiting and the main restriction on ALC grade.

3.2 SUBGRADE 3b

In the south, this land consists of heavy clay loam topsoils over gleyed and slowly permeable sandy clay loam upper subsoils which became lighter with depth. All profiles fall within wetness class III and are limited to subgrade 3b by soil wetness and workability problems.

Soils in the northern half of the site consist of heavy clay loam topsoils over gleyed and slowly permeable clay to depth. These all fall within wetness classes III or IV and are similarly limited by wetness and workability problems.

3.3 URBAN

This consists of land around the disused quarry in the west.

3.4 OTHER NON AGRICULTURAL

This consists of an area of disturbed land in the centre of the site.

Resource Planning Group
Leeds RO
24 January 1990

4. SOIL PROFILE DESCRIPTIONS

TABLE 1

Soil 1 (T1/S1): Fine loamy over sandy textured soils.

LAND USE : Previously cereals
SLOPE : 0°
AVAILABLE
WATER : 100 mm (Wheat) 84 mm (Potatoes)

WETNESS CLASS: I

HORIZON	DEPTH (cm)	DESCRIPTION
1	0-33	Very dark greyish brown (10 YR 3/2) medium clay loam; no mottles; very slightly stony; few hard medium angular fine sand stones; wet; moderately developed coarse angular blocky structure; medium packing density; moderately porous; common fine pores and fissures; moderately weak soil strength; moderately sticky; moderately plastic; many fine fibrous roots; sharp wavy boundary.
2	33-49	Yellowish red (7.5 YR 4/6) fine sandy clay loam with fine sandy loam inclusions; no mottles; slightly stony; common large angular weathering fine sandstones; moist; moderately developed medium sub angular blocky structure; medium packing density;

		common fine pores and fissures; moderately porous; very weak soil strength; slightly sticky; moderately plastic; common very fine fibrous roots; abrupt smooth boundary.
3	49-70	Light yellowish brown (10 YR 6/4) loamy medium sand; very slightly stony; few medium sub angular weathering fine sandstones; wet; weakly developed fine sub angular blocky structure; very weak soil strength; non sticky; non plastic; no roots gradual wavy boundary.
4.	70-100	Light yellowish brown (10 YR 6/4) loamy medium sand; no mottles; moderately stony; many large angular weathering fine sandstones; wet; weakly developed medium sub angular blocky structure; very weak soil strength; non sticky; non plastic; no roots.

TABLE 2

Soil 2 (T1/S2): Fine loamy over clayey textured soils.

LAND USE : Pasture
SLOPE : 1° North
AVAILABLE
WATER : 136 mm (Wheat) 113 mm (Potatoes)

WETNESS CLASS:

HORIZON	DEPTH (cm)	DESCRIPTION
1	0-27 cm	Dark grey (10 YR 4/1) heavy clay loam; no mottles; stoneless; very moist; moderately developed coarse angular blocky structure; medium packing density; slightly porous. Common fine and medium fissures moderately firm soil strength; moderately sticky; moderately plastic; common fine fibrous roots; sharp smooth boundary.
2	27-56	Greyish brown (10 YR 5/2) heavy clay loam with light brownish grey (10 yr 6/2) structure faces; many distinct sharp strong brown (10 YR 5/8) mottles; few ferrimanganiferous concretions; stoneless; moderately developed coarse angular blocky to prismatic structure; moderately weak soil strength; medium packing density; moderately porous, common fine fissures; common fine fibrous roots; abrupt wavy boundary.

3	56-100	Light grey (10 YR 7/2) clay; many prominent sharp strong brown (10 YR 5/8) mottles stoneless; moist; strongly developed coarse prismatic structure; high packing density; slightly porous; common medium fissures; very firm soil strength; very sticky; very plastic; no roots.

MAPS