

STATEMENT OF PHYSICAL
CHARACTERISTICS AND AGRICULTURAL
LAND CLASSIFICATION

LAWRENCE HOUSE FARM,
SCOTTON

Proposed Sand and Gravel Extraction Site

ADAS
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1. STATEMENT OF PHYSICAL CHARACTERISTICS:

LAND AT LAWRENCE HOUSE FARM, SCOTTON

1.1 LOCATION AND SURVEY METHOD

The site is located at grid reference SE 329602 approximately 3½ Km north west of Knaresborough. It covers 36 hectares nearly all of which is in agricultural use.

Field work first carried out in February 1987 was supplemented by a survey of additional areas north and west of Lawrence House Farm during September 1989. This was in response to a change in the original application area.

On both occasions 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.

Detailed soil descriptions and sampling for laboratory analyses were carried out in inspection pits located and representative points in each of the two soil types occurring on the site.

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

CLIMATE AND RELIEF

Average Annual Rainfall in the area is approximately 702 mm. Accumulated temperature above 0°C between January and June is 1349 day degrees C and the land is at field capacity for 174 days per year. There are thus no overall climatic limitations on ALC grade.

Altitude varies between 45 and 69 metres above OD. Relief is gentle except for two areas along the eastern boundary where localised slopes in excess of 14° occur.

GEOLOGY

Soils have developed on mixed deposits of glaciofluvial sand and gravel, boulder clay and alluvium which form a thick cover over the underlying Carboniferous Millstone Grit.

LAND USE

The site is mainly in arable use (chiefly cereals with some sugar beet). There is grassland around Dovecote Carr and Lawrence House Farm.

SOIL RESOURCES

Two main soil types occur on the site.

1. FINE TO COARSE LOAMY TEXTURED SOILS.

These occur over much of all the area north of Lawrence House Farm.

They consist of sandy clay loam, sandy loam or sandy silt loam topsoils over slightly stony sandy loam, sandy clay loam or, occasionally, loamy sand subsoils.

Topsoils

This topsoil (Unit T1) is common to both soil types on the site. It consists of slightly stony medium to light textured material with an optimum thickness of 25 cm. Soil structure is usually moderately developed medium and coarse subangular blocky with few to abundant fine pores and fissures. On arable land a moderate degree of compaction is often observed towards the base of this unit.

Subsoils

Subsoils are divided into two units as follows:

Unit S1

Soils in this unit consist of slightly stony medium textured material with a mean thickness of 75 cm. Structure is generally fine to very coarse angular blocky. Peds are weakly to moderately developed. (Full subsoil description is given in tables 1 and 2)

Unit S1A

These occur in the southern part of the site. Soils are predominantly light textured and have a mean thickness of 75 cm. Soil structure is

weakly to moderately developed, medium sub angular blocky with few fine pores and fissures. (Full subsoil description is given in table 2)

2. FINE LOAMY AND CLAYEY TEXTURED SOILS

These soils occur adjacent to Jumbwell Beck and in areas west of Lawrence House Farm. They consist of medium clay loam or sandy clay loam topsoils over heavy clay loam, heavy silty clay loam or clay subsoils. All topsoils and upper subsoils are non calcareous and usually vary from stoneless to very slightly stony.

Topsoils

These form part of unit T1 described in the preceding section.

Subsoils

Only one subsoil is separated (unit S2) and consists of stoneless heavy textured material with a mean thickness of 75 cm. Soil structure usually varies between weakly developed coarse angular blocky and massive (full subsoil description is given in table 3).

2. AGRICULTURAL LAND CLASSIFICATION GRADES

The ALC grades occurring on this site are as follows:

Grade	Hectares	Per cent of Total site area
2	19.7	55%
3a	9.5	26%
3b	4.7	13%
4	1.8	5%
Non Agricultural	0.3	1%
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Total	36.00	100%

Grade 2

Land in this grade covers much of the southern and central parts of the site. Soils usually fall within wetness classes I or II and are limited to grade 2 by topsoil stone contents of between 5 and 10%.

Subgrade 3a

Subgrade 3a land occurs in the north and west. Profiles usually fall within wetness class III and are limited by a combination of soil wetness and workability problems.

Subgrade 3b

Land in this subgrade occurs in 3 distinct areas: near the centre of the site in the east and adjacent to Jumbwell Beck.

Soils usually consist of medium clay loam or medium silty clay loam topsoils over gleyed and slowly permeable heavy clay loam or clay. All

profiles fall within wetness class IV and similarly are limited by a combination of soil wetness and workability problems.

Grade 4

Grade 4 quality land occurs in two distinct areas in the east where slopes of 14° to 16° are the main grading limitations.

Non Agricultural

This consists of scrub woodland and open water at Dovecote Carr.

TABLE 2 FINE TO COARSE LOAMY TEXTURED SOIL. (LIGHT PHASE)

HORIZON	DEPTH (cm)	DESCRIPTION
1.	0 - 18	Dark greyish brown (10 yr 4/2) sandy loam; no mottles; slightly stony; medium sub rounded stones; weakly developed fine to medium subangular blocky structure breaking to granular; few to many fine pores and fissures; abundant fine fibrous roots; clear smooth boundary.
2.	18 - 72	Brown/dark brown 7.5 yr 4/4) sandy loam; no mottles slightly stony; medium and large rounded and subrounded stones; weakly to moderately developed medium subangular blocky structure breaking to granular; few fine pores and fissures, few fine fibrous roots; smooth boundary.
3.	72 - 92	Brown/dark brown (7.5 yr 4/4) loamy sand/sandy loam; slightly stony; medium rounded and subrounded stones; weakly developed medium subangular blocky structure breaking to granular; few fine pores and fissures; few fine fibrous roots; clear smooth boundary.
4.	92 - 100+	Yellowish red (5 yr 4/6) sand; no mottles; almost stoneless; single grain; few fine fibrous roots.

TABLE 3 FINE LOAMY AND CLAYEY TEXTURED SOILS

HORIZON	DEPTH (cm)	DESCRIPTION
1.	0 - 17	Dark greyish brown (10 yr 4/4) organic clay; many distinct fine and very fine clear strong brown (7.5 yr 5/4) mottles; almost stoneless; moderately developed medium subangular blocky breaking to granular; few to many very fine and fine pores, abundant fine and medium fissures; many fine fibrous roots; clear smooth boundary.
2.	17 - 27	Mottled horizon, composite colours, brown to dark brown (7.5 yr 4/4) and grey (10 yr 5/1); organic clay; very many coarse prominent sharp mottles; no stones; very coarse angular blocky structure; few fine pores and fissures; many fine fibrous roots; clear smooth boundary.
3.	27 - 56	Grey (10 yr 5/1) clay loam; common fine distinct clear yellowish red (5 yr 5/6) mottles; no stones; weakly developed very coarse subangular blocky structure; few fine pores and fissures; few fine fibrous roots; clear smooth boundary.
4.	56 - 70	Grey (10 yr 5/1) silty clay; very many medium and coarse distinct clear strong brown (7.5 yr 5/6) mottles; no stones; slightly calcareous; massive; few fine pores and fissures; few to many fine fibrous roots; clear smooth boundary.

5. 70 - 90 Grey (10 yr 5/1) fine sandy silt loam; no mottles; very slightly stony, small and medium subrounded stones; calcareous; moderately well developed medium subangular blocky structure; very few fine pores and fissures; very few fine fibrous roots; profile filling with water.

MAPS