

AGRICULTURAL LAND CLASSIFICATION AND
STATEMENT OF PHYSICAL CHARACTERISTICS

SEGHILL, NORTHUMBERLAND
PROPOSED WASTE DISPOSAL SITE

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AGRICULTURAL LAND CLASSIFICATION REPORT ON THE PROPOSED WASTE DISPOSAL SITE AT SEGHILL, NORTHUMBERLAND

1.1 INTRODUCTION

The site is located at National Grid Reference NZ 300740 approximately $\frac{1}{2}$ km east of the village of Seghill. It covers an area of 51.2 hectares, 81% of which is in agricultural use.

Survey work was carried out in January 1989 when soils were examined by hand auger borings to a depth of one metre. Borings were made at points predetermined by the National Grid at a density of one boring per hectare. In addition three profile pits were dug to collect data on soil morphology and obtain samples for laboratory analysis. Land quality assessments were made using the revised guidelines published by MAFF in 1988.

1.2 CLIMATE AND RELIEF

Average annual rainfall is approximately 652 mm and the accumulated temperature above 0°C (January to June) is 1316°C. The site is at field capacity for 166 days a year. These factors impose an overall climatic limitation of grade 2.

Most of the site is gently sloping except for a narrow strip bordering the railway on the western boundary where there are slopes of up to 6°.

The average altitude is about 35 m aod.

1.3 GEOLOGY SOILS AND DRAINAGE

The underlying Coal Measures are covered by superficial deposits of boulder clay. Soils consist mainly of heavy clay loam topsoils over clayey subsoils. Lighter textured material is restricted to a few localised patches containing coarse loamy topsoils over fine loamy subsoils.

Two fields south of the existing waste disposal site have been restored recently. Here there is a cover of 30 cm of fine loamy topsoil and 40 cm of clayey subsoil (both compacted) over cinders and colliery waste. This waste material contains high, but not toxic levels of zinc.

Most soils are slowly permeable between 30 and 50 cm depth and so fall into wetness classes III and IV. There are no droughtiness limitations on any of the soils on the site.

1.4 LAND USE

All the agricultural land is in arable use except for the most northerly restored field which is under a clover grass ley. The existing waste disposal site and associated pulverising plant occupy 8.4 hectares to the north west. There are also two areas of marshy ground and open water in the centre of the site. The marshy ground is not in agricultural use.

1.5 AGRICULTURAL LAND CLASSIFICATION

Grade	Area (hectares)	Percentage of Total Agricultural Land
2	1.4	3.4
3a	7.4	17.8
3b	32.7	78.8
Non Agricultural	9.2	NA
Urban	<u>0.5</u>	<u>NA</u>
Total	51.2	100%
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1.5.1 Grade 2

This grade occurs only on the southern edge of the site where deep sandy loam soils are common. These soils are not affected by droughtiness or wetness but are restricted to Grade 2 by the overall climatic limitation which applies to the area.

1.5.2 Subgrade 3a

The two areas of this subgrade contain coarse or fine loamy topsoils and upper subsoils over slowly permeable lower subsoils. These soils fall within wetness Class III and are limited to subgrade 3a by wetness and workability problems.

1.5.3 Subgrade 3b

This subgrade dominates the site. Topsoils are typically medium or heavy clay loam over a clay or silty clay subsoil. These soils all fall within Wetness Class IV with wetness and workability problems being the main limitations. The area marked as "Provisionally 3b" contains recently restored soils. A definitive grading could not be applied here until soils have stabilised over time, both structurally and chemically. Top soil and upper subsoil textures are similar to those on the undisturbed 3b areas, but all horizons are compacted and overlie tipped material which occurs below about 75 cm depth.

1.5.4 Non Agricultural and Urban

This consists of the present refuse disposal site, pulvering plant and areas of waterlogged land within the agricultural area.

Reference

Agricultural Land Classification of England and Wales, revised guidelines and criteria for grading the quality of agricultural land MAFF (1988).

2.0 STATEMENT OF PHYSICAL CHARACTERISTICS

SEGHILL PROPOSED WASTE DISPOSAL SITE, NORTHUMBERLAND

2.1 SOIL PROPERTIES AND RESOURCES

Soils on the site are all derived from medium and heavy textured boulder clay including a tipped area which has been restored with this type of material. Potential soil resources were not examined in the area currently being used for waste disposal. Typical profile descriptions of each soil are given in the tables following this report. The topsoil and subsoil resources on the site are shown on the accompanying maps, along with soil depth and volume information.

2.1.1 BOULDER CLAY DERIVED SOILS

TOPSOILS

Except for the restores area these soils cover the whole site. Topsoils consist usually of medium or heavy clay loam. Sandy clay loam and sandy loam topsoils are restricted to a few places near the southern end of the site. The topsoil is normally an unmottled, dark greyish brown colour, with a coarse and medium subangular blocky structure and is only very slightly stony.

On the topsoil resource map these soils are subdivided into medium/heavy (Units T1A and T1B) and medium (Unit T2).

2.1.2 Upper subsoil

Only two areas contain a distinguishable upper subsoil unit. This consists of slightly stony sandy clay loam or sandy loam, with a yellowish brown matrix and medium subangular blocky structure. These upper subsoils correspond to units U1A and U1B on the accompanying upper subsoil resource map.

2.1.3 Lower subsoil

Although the lower subsoil varies in thickness because of variations in thickness of the overlying topsoil and upper subsoil it is structurally and texturally uniform. Throughout the area it consists of either clay or silty clay with a greyish brown matrix and very many grey and reddish yellow mottles. It is usually very slightly stony and has a weakly developed adherent, coarse angular blocky structure.

The subsoil is subdivided into units S1 (A and B) and S2 (A and B) on the lower subsoil resource map. These divisions are based on variations in total thickness of the units.

2.2 RESTORED SOILS

2.2.1 Topsoil

Topsoils are typically a compacted, very dark greyish brown heavy clay loam and the structure is weakly developed, coarse angular and subangular blocky. This unit corresponds to topsoil unit T3 on the accompanying resource map.

2.2.2 Subsoil

Subsoil consists usually of very compacted brown clay with a massive structure. It is slightly stony and contains a few medium distinct grey mottles. This subsoil corresponds to unit (S3) on the resource map. Below about 75 cm depth is tipped material consisting of cinders, colliery waste and shale. This tipped material contains high, but not toxic levels of zinc.

2.3.1 SEGHILL, SOIL PROFILE DESCRIPTION, PIT 1

Boulder Clay Soil (medium over heavy textured)

Land Use - Arable

Slope - Level

Horizon (cm)

depth

- 0-29 Dark greyish brown (10 YR 4/2) medium clay loam; unmottled; very slightly stony; with few small and medium subrounded sandstones; moist; moderately developed medium angular and subangular blocky structure; medium packing density; slightly porous; common fine pores and fissures; moderately firm soil strength; moderately sticky; moderately plastic; common fine fibrous roots; non calcareous; sharp smooth boundary.
- 26-68 Yellowish brown (10 YR 5/4) sandy clay loam; many medium clear yellowish brown (10 YR 5/6) mottles; slightly stony with common small subangular sandstones; moist; moderately developed subangular blocky structure; medium packing density; slightly porous; common fine pores and fissures; moderately weak soil strength; slightly sticky, slightly plastic; few fine fibrous roots; non calcareous; abrupt wavy boundary.
- 68-100 Greyish brown (2.5 Y 5/2) matrix with grey (N5) structure faces; silty clay; many medium dark grey (N4) mottles; stoneless; moist; weakly developed adherent coarse angular blocky structure; high packing density; very slightly porous; few fine pores and fissures; moderately firm soil strength; sticky; very plastic; no roots; non calcareous.

2.3.2 SEGHILL, SOIL PROFILE DESCRIPTION; PIT 2

Boulder Clay Soil. (Heavy textured)

Land Use - Arable

Slope - Level

Horizon (cm)

depth

- 0-25 Dark grey (10 YR 4/1) heavy clay loam; few faint brownish yellow (10 YR 6/8) fine, sharp, mottles; few small subrounded weathered sandstones; very moist; moderately developed medium subangular blocky structure medium packing density; slightly porous; few fine fissures; moderately weak soil strength; semi deformable; moderately sticky; moderately plastic; many medium and fine fleshy roots; non calcareous; sharp irregular boundary;
- 25-49 Greyish brown (10 YR 5/2) clay; very many light prominent grey (10 YR 6/1) and many prominent brownish yellow (10 YR 6/8) medium clear mottles; few medium subrounded soft rotting sandstones; moist; weakly developed adherent medium to coarse prismatic structure; high packing density; very slightly porous; few fine pores and fissures; moderately firm; semi deformable; very sticky very plastic; few very fine fibrous roots; non calcareous; abrupt smooth boundary.
- 49-100 Brown (7.5 YR 5/4) silty clay with light grey (7.5 YR 7/0) structure faces; very many prominent light grey (7.5 YR 7/0) and common distinct reddish yellow (7.5 YR 6/8) mottles; few medium and large subrounded soft weathering sand stones; very moist; weakly developed adherent coarse angular blocky structure; high packing density; very slightly porous; few very fine macropores and fissures; very sticky; very plastic; no roots; non calcareous; few soft ferrimanganiferous concretions.

2.3.3. SEGHILL, SOIL PROFILE DESCRIPTION, PIT 3

Restored soil

Land use - Arable

Slope - 3°E

Horizon (cm)

depth

- 0-31 Very dark greyish brown (10 YR 3/2) heavy clay loam; unmottled; slightly stony with a few small and medium subangular sandstones; very moist; weakly developed coarse angular and subangular blocky structure; high packing density; slightly porous; few fine pores and fissures; moderately firm soil strength; moderately sticky; moderately plastic; many very fine fibrous roots; non calcareous; abrupt smooth boundary.
- 31-75 Brown (7.5 YR 5/4) clay; few medium distinct grey (N5) mottles; slightly stony with a few medium subangular sandstones; moist; massive very compacted; high packing density; very slightly porous; no pores or fissures; moderately strong soil strength; very sticky; very plastic; no roots; non calcareous; very sharp smooth boundary to colliery waste, shale and cinders.