STATEMENT OF PHYSICAL CHARACTERISTICS AND AGRICULTURAL LAND CLASSIFICATION

CARNABY AIRFIELD, BRIDLINGTON,

HUMBERSIDE

Proposed Landfill Site

ADAS

Leeds Regional Office

June 1991

File Ref: 2FCS 5362

Project Number: 46/91

lds.AL4.Crnby.Afd

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LAND AT CARNABY AIRFIELD, BRIDLINGTON
PROPOSED LANDFILL SITE

1. INTRODUCTION AND SITE CHARACTERISTICS

The site is located around grid reference TA 157648 approximately 3 kms south east of Bridlington town centre. It covers 37 ha, all of which is in agricultural use.

Survey work was carried out in May 1991 when soils were examined by hand auger borings at 100 metre intervals predetermined 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 4 soil types occurring on the site.

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

1.1 LAND USE

The site is in arable production; cereals are the main crop but some market gardening occurs on the lighter soils in the south eastern corner of the site.

1.2 CLIMATE

Average Annual Rainfall (AAR) is approximately 696 mm. Accumulated temperature above 0°C between January and June (ATO) is 1373 day°C and the land is at field capacity for 170 days a year. There is thus no overall climatic limitation on ALC grade. Summer moisture deficits of 109 mm for winter wheat and 96 mm for potatoes indicate a moderate drought limitation on the sandier soils in the south east of the site.

1.3 RELIEF

The site lies between 10 m and 20 m above Ordnance Datum but is virtually level throughout.

1.4 GEOLOGY

Drift deposits of boulder clay cover most of the western part of the site. In the east there is a band of alluvium and an area of glacial sand and gravel with laminated silt and clay. These deposits all overlie the chalk which occurs at a depth of several metres below the surface.

2. STATEMENT OF PHYSICAL CHARACTERISTICS

The topsoil and subsoil resources are shown on the accompanying maps along with soil depth information.

Four main soil types occur on the site.

2.1 ORGANIC HEAVY OR HEAVY SOILS OVER ORGANIC OR PEATY MATERIAL

These occur in the north eastern corner of the site, a full profile description is given in Table 1.

Topsoil

In this soil type the topsoil (Unit T1) is heavier than the other topsoil types occurring on the site, and consists of heavy clay loam or silty clay loam, both of which are usually organic. It is about 30 cm thick with a moderately developed medium angular blocky structure; it is very slightly stony.

Subsoil

The subsoil (Unit S1) consists of organic or peaty soils ranging in texture from peaty loam to organic clay. Structure is generally weakly or moderately developed medium angular blocky.

2.2 LIGHT OR MEDIUM OVER HEAVY TEXTURED SOILS

These also occur in the north eastern corner of the site and a full profile description is given in Table 2.

Topsoil

The topsoil (Unit T2) varies in texture from medium sandy loam to medium clay loam or organic medium clay loam, and has a moderately develop medium angular blocky structure. It is very slightly stony and approximately 30 cm thick.

Subsoil

The subsoil (Unit S2) generally consists of clay or organic clay with a moderately developed medium prismatic structure, and has a depth of about 70 cm.

2.3 LIGHT OR MEDIUM OVER MEDIUM PASSING TO HEAVY TEXTURED SOILS

This soil type is found in the west of the site, a profile description is given in Table 3.

Topsoil

The topsoil (Unit T2) is the same as that already described in Section 2.2.

Subsoil

The subsoil (Unit S3) generally consists of medium clay loam or sandy clay loam passing to heavy clay loam or clay at depth. The medium textured soils have a moderately well developed coarse sub-angular blocky structure and are very slightly stony, while the heavy textured material at depth has a massive structure and no stones.

2.4 LIGHT OR MEDIUM TEXTURED SOILS OVER LIGHT OR MEDIUM TEXTURED SUBSOILS

This soil is found in the south eastern part of the site, a profile is described in detail in Table 4.

Topsoil

The topsoil (Unit T2) is the same as that already described in Section 2.2.

Subsoil

The subsoil (Unit S4) generally consists of medium or coarse sandy loam, loamy medium sand or medium sand which is slightly stony, and has a weakly developed medium sub-angular blocky or medium angular blocky structure.

3. AGRICULTURAL LAND CLASSIFICATION GRADES

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

GRADE/SUBGRADE	HECTARES	PERCENTAGE OF TOTAL SITE AREA
2	18.8	52.7
3a	6.9	19.3
3b	10.0	28.0
TOTAL	35.7	100

3.1 GRADE 2

Land in this grade is found in the west and east of the site. Soils fall within Wetness Classes II and III and consist of very slightly stony medium clay loam, sandy clay loam or medium sandy loam topsoils over heavy clay loam, medium clay loam or sandy clay loam subsoils.

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

3.2 SUBGRADE 3A

Land in subgrade 3a occurs in the south east of the site where soils generally fall within Wetness Class I. Topsoil consist generally of medium sandy loam or medium clay loam, and this overlies an upper subsoil which is very variable in texture from heavy clay loam to medium sand. The lower subsoil is light textured and generally of loamy sand or sandy loam.

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

3.3 SUBGRADE 3B

Land in this subgrade is found in 2 separate areas in the north east of the site. The main restriction on ALC grade is wetness and the soils fall within Wetness Class IV. They are stoneless or very slightly stony and consist of a medium clay loam or heavy clay loam topsoil over a slowly permeable layer of medium clay loam, heavy clay loam or clay. Both topsoils and subsoils have a high organic matter content, and in some places loamy peat is found at depth.

RESOURCE PLANNING GROUP
LEEDS RO
JUNE 1991

TABLE 1

SOIL PROFILE DESCRIPTIONS - CARNABY AIRFIELD, BRIDLINGTON

Soil 1 (T1/S1): Medium clay loam topsoil over medium or heavy clay loam subsoil.

Moisture Deficit: 109 mm (wheat), 102 mm (potatoes).

Wetness Class: II Land Use: Arable Slope: 0°

Horizon	Depth (cm)	Description
1	0-30	Dark greyish brown (10YR 4/2) medium clay loam; no mottles; few rounded medium chalk stones; slightly moist; well developed fine sub-angular blocky structure; moderately weak soil strength; slightly sticky; slightly plastic; abundant fine fibrous roots; clear smooth boundary.
2	30-50	Dark greyish brown (2.5Y 4/2) sandy clay loam; common distinct strong brown mottles (7.5YR 5/8); very slightly stony; moist; common fine pores and fissures; well developed coarse sub-angular blocky structure; moderately weak soil strength; slightly sticky; slightly plastic; common fine fibrous roots; clear wavy boundary.
3	50-90	Yellowish brown (10YR 5/4) sandy clay loam; with lenses of sandy loam; clear distinct brownish yellow mottles (10YR 6/6); very slightly stony; moist; moderately developed coarse sub-angular blocky structure; common fine pores and fissures; slightly plastic; slightly sticky; few fine fibrous roots; clear wavy boundary.

Horizon	Depth (cm)	Description
4	90-100	Grey (10YR 5/1) sandy clay loam; clear distinct brownish-yellow mottles (10YR 6/6); stoneless; moist; massive structure; slightly sticky; slightly plastic; no roots.

TABLE 2

Soil 2 (T2/S2): Medium clay loam over silty clay or clay.

Moisture Deficit: 109 mm (wheat), 102 mm (potatoes).

Wetness Class: IV Land Use: Arable Slope: 0°

Horizon	Depth (cm)	Description
1	0-30	Dark brown (10YR 3/3) medium clay loam; no mottles; very slightly stony; moist; moderately developed medium angular blocky structure; moderately firm soil strength; slightly sticky; slightly plastic; few fine fibrous roots; clear smooth boundary.
2	30-45	Dark grey (10YR 4/1) medium clay loam; common distinct brownish-yellow mottles (10YR 6/8); very slightly stony; moist; moderately developed medium angular blocky structure; moderately firm soil strength; slightly sticky; slightly plastic; few fine fibrous roots; gradual smooth boundary.
3	40-75	Light grey (10YR 6/1) silty clay; many prominent brownish-yellow mottles (10YR 6/8); stoneless; moist; moderately developed medium prismatic structure; moderately firm soil strength; moderately sticky; very plastic; no roots; clear smooth boundary.
4	75-100	Greyish-brown (10YR 5/2) medium sandy loam; common distinct brownish-yellow mottles (10YR 6/8); slightly stony; wet; moderately developed medium angular blocky structure; moderately firm soil strength; very slightly sticky; slightly plastic; no roots.

TABLE 3

Soil 3 (T2/S3): Light or medium textured topsoil overlying peat or peaty loam.

Moisture Deficit: 109 mm (wheat), 102 mm (potatoes).

Wetness Class: I Land Use: Arable Slope: 0°

Horizon	Depth (cm)	Description
1	0-30	Very dark grey (10YR 3/2) silty loam; no mottles; very slightly stony; moderately developed medium angular blocky structure; very firm soil strength; slightly sticky; slightly plastic; common fine fibrous roots; abrupt smooth boundary.
2	30-45	Light grey (10YR 7/2) silt loam; few distinct brownish-yellow mottles; stoneless; dry; weakly developed medium angular blocky structure; moderately firm soil strength; non-sticky; slightly plastic; few fine fibrous roots; gradual irregular boundary.
3	45-80	Black (10YR 2/1) peat; no mottles; stoneless; moist; moderately developed medium angular blocky structure; moderately firm soil structure; slightly sticky; moderately plastic; common fine fibrous roots; clear smooth boundary.
4	80-100	Brown (10YR 5/3) loamy coarse sand; many distinct brownish-yellow (10YR 6/8) and grey (10YR 5/1) mottles; moderately stony; wet; weakly developed medium angular blocky structure; moderately weak soil strength; slightly sticky; non-plastic; few fine fibrous roots.

TABLE 4

Soil 4 (T2/S4): Light or medium textured topsoil overlying sandy .

Moisture Deficit: 109 mm (wheat), 102 mm (potatoes).

Wetness Class: I Land Use: Arable Slope: 0°

Horizon	Depth (cm)	Description
1	0-25	Dark greyish (10YR 4/2) medium clay loam; no mottles; slightly stony; dry; moderately developed medium angular blocky structure; moderately firm soil structure; slightly sticky; slightly plastic; common fine fibrous roots; clear smooth boundary.
2	25-65	Pink (5YR 7/4) loamy medium sand; no mottles; very slightly stony; dry; weakly developed medium angular blocky structure; moderately firm soil strength; non-sticky; non-plastic; few fine fibrous roots; gradual irregular boundary.
3	65-100	Pinkish grey (10YR 7/2) loamy coarse sand; unmottled; moderately stony (chalk); dry; weakly developed medium sub-angular blocky structure; moderately weak soil strength; non-sticky; non-plastic; no roots.

MAPS