STATEMENT OF PHYSICAL CHARACTERISTICS AND AGRICULTURAL LAND CLASSIFICATION CARLING HOWE FARM, GUISBOROUGH CLEVELAND PROPOSED LANDFILL SITE JANUARY 1993

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SUMMARY

A statement of Physical Characteristics and Agricultural Land Classification survey of 20.7ha of land at Carling Howe Farm, Guisborough was carried out in January 1993.

At the time of the survey, 20.1ha of this was in agricultural use all of which falls within Grade 4. Soils in the west of the site are restored, consisting of heavy clay loam topsoils over shale overburden at 30cm depth. Occasional profiles heavy clay loam topsoils over slowly permeable heavy clay loam subsoils also occur. Microrelief over this area is undulating thus restricting machinery use and limiting the area to Grade 4. The eastern part of the site consists of medium or heavy clay loam topsoils over poorly drained gleyed and mottled slowly permeable heavy clay loam and clay subsoils. Microrelief also causes problems in this area, with the land undulating strongly. Ponding was also present in the hollows. The combination of these factors restricts land and machinery use, thus limiting this area to ALC Grade 4 also.

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STATEMENT OF PHYSICAL CHARACTERISTICS AND AGRICULTURAL LAND CLASSIFICATION REPORT ON THE PROPOSED LAND FILL SITE AT CARLING HOWE FARM, GUISBOROUGH, CLEVELAND

1. INTRODUCTION AND STATEMENT OF PHYSICAL CHARACTERISTICS

1.1 Location and Survey Methods

The site lies 3km north of Guisborough off the B1269. It is centred on Grid Reference NZ 608178 and covers a total of 20.7ha. Survey work was carried out in January 1993 when soils were examined by hand auger borings at intervals predetermined by the National Grid. Overall boring density was one per hectare. Two soil inspection pits were dug to allow detailed descriptions of soil structure to be made. Land quality was assessed 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).

1.2 Land Use and Relief

At the time of the survey the majority of the site was under grass. The remainder consisted of a farm track running north to south. Site altitude varies from 90m in the south east to nearly 110m in the north east. The land varies from level to moderately sloping (0-4°). Microrelief is limiting as most of the site is covered by hummocks and waterfilled hollows.

1.3 Climate

Grid Reference	:	NZ 608178
Altitude (m)	:	100
Accumulated Temperature above 0°C (January-June)	:	1260 day°C
Average Annual Rainfall (mm)	:	721
Climatic Grade	:	2
Field Capacity Days	:	178
Moisture Deficit (mm) Wheat	:	90
Moisture Deficit (mm) Potatoes	:	76

1.4 Geology, Soils and Drainage

The site is underlain by lower Jurassic Ironstones over which lies boulder clay. Soils are generally medium to heavy textured (medium and heavy clay loams). The western part of the site beyond the field boundary consists of restored land, with heavy clay loam overlying shale overburden at or above 40cm. The eastern part of the site consists of medium clay loams over heavy clay loams and clay. Soils are poorly drained (Wetness Class IV) and there is a strong hummocky microrelief. A small stream runs west to east through the site. Considerable ponding was occurring at the surface over most of the eastern half of the site.

1.5 Soil Properties

One main soil type occurs on this site, descriptions of which are given below. Topsoil and subsoil resources are also shown on the accompanying maps along with soil thickness and volume information.

(a) Soil Type 1:- Medium/heavy textured soils (Unit T1/S1)
(Full Profile Description, Table 1)

This soil formed on boulder clay occurs in the centre and east of the site. It is characterised by a medium to coarse angular blocky structure which becomes massive at depth.

(The western half of the site consists of the same topsoil (T1) overlying restored overburden)

1.6 Soil Resources

(i) Topsoils

Unit T1 occurs over the whole of the site. It is medium to heavy textured and typically consists of medium or heavy clay loam which is stoneless to very slightly stony and contains 0-2% small rounded hard stones. This topsoil has a medium angular structure in the restored area and a medium granular structure elsewhere. Median thickness is 20cm.

(ii) Subsoils

Unit S1 occurs in the centre and east of the site. It is heavy textured and consists of heavy clay loam passing to clay at depth. It is stoneless and has a medium to coarse angular blocky structure which becomes massive at depth. Mean thickness is 80cm.

2. SOIL PROFILE DESCRIPTIONS

Table 1 Medium to heavy textured soil, T1

Profile Pit 1 (Near auger boring 12)

Slope:- 0°
Land Use:- Permanent Pasture
Weather:- Light rain

Depth cm	Horizon	Description
0-15		Dark grey (10YR24/1) peaty medium clay loam; no mottles; stoneless; wet; weakly developed medium angular blocky structure; friable; moderately porous; many fine and medium porous roots; slightly sticky, slightly plastic; non calcareous; smooth abrupt boundary.
15-50		Grey (10YR5/1) heavy clay loam; many fine to medium brownish yellow (10YR6/8) mottles; moderately developed medium to coarse angular blocky structure; firm soil strength; moist; very slightly porous; common fine fibrous roots; moderately sticky; moderately plastic; non calcareous; abrupt smooth boundary.
50-100		Grey (10YR5/1) clay; many fine to medium brownish yellow (10YR6/8) mottles; stoneless; moist; massive structure; extremely firm soil strength; very slightly porous; no roots; very sticky very plastic; non calcareous

2.1 SOIL PROFILE DESCRIPTION

Table 2 Heavy textured soil. T1 over overburden, NB no subsoil resources.

Profile Pit 2 (near auger boring 9)

Slope:- 2°
Land Use:- Permanent pasture
Weather:- Light rain

Depth cm	Horizon Description
0-30	Dark brown (75YR3/4) heavy clay loam; no mottles; very slightly stony (2% small and medium subrounded hard stones); moist; moderately developed medium angular blocky structure; firm soil strength; slightly porous; common fine fibrous roots; moderately sticky moderately plastic; abrupt smooth boundary
30 +	Shale overburden

3. AGRICULTURAL LAND CLASSIFICATION

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

Grade/Subgrade	Hectares	Percentage of Total Area
1		
2		
3a		
3b		
4	20.1	97.1
5		
(Subtotal)	(20.1)	(97.1)
Urban	0.5	2.4
Non Agricultural		
Woodland - Farm		
- Commercial		
Agricultural Buildings	0.1	0.5
Open Water		
Land not surveyed		
(Subtotal)	(0.6)	(2.9)
TOTAL	20.7	100

3.1 Grade 4

Grade 4 land occurs over the whole of the site. Land in the west is restored from former ironstone workings. Soils in this area consist of heavy clay loam topsoils typically of 30cm thickness, with occasional profiles to 60cm. Shale overburden underlies this. Where profiles extend to 60cm soils consist of heavy clay loam topsoils over gleyed mottled heavy clay loam or clay subsoils (Wetness Class IV) and soils are limited to ALC Grade 4 on wetness and workability problems. Elsewhere within this area soils consist of heavy clay loam topsoils over shale overburden at 30cm. Profiles of this type are also limited to Grade 4 by wetness and workability problems.

Land in the east consists of medium or heavy clay loam topsoils and stoneless or very slightly stony mottled and gleyed slowly permeable heavy clay loam and clay subsoils. Profiles are poorly drained (Wetness Class IV). There are severe microrelief problems, much of the land consisting of hummocks and hollows. At the time of the survey many hollows, were suffering from ponding and waterlogging. A stream also runs from west to east across this area. The combination of wetness and microrelief problems limits this area to ALC Grade 4 also.

3.2 Urban

Urban land consists of a farm track running from north to south across the site.

3.3 Agricultural Buildings

This consists of a small area of hard standing for vehicles in front of the farm.

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MAPS