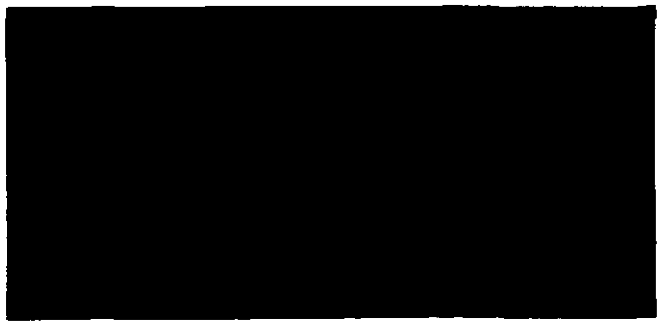

MAFF Ministry of Agriculture Fisheries and Food

STATEMENT OF PHYSICAL CHARACTERISTICS AND AGRICULTURAL LAND CLASSIFICATION WINTERTON GRANGE HUMBERSIDE PROPOSED LANDFILL SITE AUGUST 1993

ADAS
Leeds Statutory Group

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SUMMARY

A Statement of Physical Characteristics and Agricultural Land Classification survey of 21.2ha of land at Winterton was carried out in August 1993.

At the time of survey 6.1ha was or had recently been in agricultural use, of which 2.9ha falls in Grade 2. Profiles are well or moderately well drained (falling in Wetness Classes I or II) and typically consist of stoneless or very slightly stony often calcareous heavy clay loam or sandy clay loam topsoils overlying similarly textured upper subsoils and clay or silty clay lower subsoils. Where they occur slowly permeable layers begin at around 50cm depth and slight soil wetness is the factor limiting this land to Grade 2.

The remainder of the agricultural land on the site (3.2ha) falls in Subgrade 3b. Profiles are well drained (falling in Wetness Class I) and consist of slightly stony medium clay loam topsoils directly overlying weathering limestone bedrock at around 35cm depth. Soil droughtiness limits this land to Subgrade 3b.

A total of 8.2ha or Urban land occurs on the site (consisting of the existing landfill operation, additional areas where the soil has been removed, and a soil mound). Non-Agricultural land (consisting of scrubland) covers a further 6.9ha.

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STATEMENT OF PHYSICAL CHARACTERISTICS AND AGRICULTURAL LAND CLASSIFICATION REPORT ON THE PROPOSED LANDFILL SITE AT WINTERTON GRANGE, HUMBERSIDE.

1. INTRODUCTION AND STATEMENT OF PHYSICAL CHARACTERISTICS

1.1 Location and Survey Methods

The site lies 1½km north west of the village of Winterton, around Grid Reference SE 915194, and covers a total area of 21.2ha. Survey work was carried out in August 1993 when soils were examined by hand auger borings at 100m intervals predetermined by the National Grid. Three soil inspection pits were dug to allow detailed soil profile descriptions to be made. The 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 survey most of the site consisted of Urban land (the existing landfill site and additional areas where the soil has already been removed), or Non-Agricultural land (scrubland in the north, north east and south). The small area of agricultural land in the centre of the site was either in wheat stubble or appeared to be set-aside.

Site altitude varies between 20m AOD in the south west and 45m AOD in the centre. The east of the site is generally level to gently sloping but in the west and south the land is moderately to strongly sloping (typically 4-10°).

1.3 Climate

Grid Reference	: SE 915 194
Altitude (m)	: 35
Accumulated Temperature above 0°C (January-June)	: 1371 day°C
Average Annual Rainfall (mm)	: 618
Climatic Grade	: 1
Field Capacity Days	: 133
Moisture Deficit (mm) Wheat	: 108
Moisture Deficit (mm) Potatoes	: 100

1.4 Geology, Soils and Drainage

The site is underlain by deposits of Lincolnshire Limestone in the east, and by Lower Lias ironstones and mudstones in the west.

The soils at the northern and southern ends of the site have been restored and consist of shallow medium or heavy textured topsoils (which are absent in the south) overlying compacted heavy textured subsoils. Profiles are poorly drained, falling in Wetness Class IV.

The remainder of the soils on the site consist of either slightly stony medium textured topsoils directly overlying weathering limestone bedrock, or stoneless to very slightly stony calcareous medium or heavy textured topsoils overlying similarly textured subsoils. These soils are either well or moderately well drained, falling in Wetness Classes I or II.

1.5 Soil Properties

Three main soil types occur on this site, descriptions of which are given below. Topsoils and subsoil resources are also shown on the accompanying maps along with soil thickness and volume information.

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

This restored soil occurs at the northern and southern ends of the site. It is characterised by a thin or absent topsoil and heavy texture.

(b) Soil Type 2:- Deep medium to heavy textured soils (Unit T2/S2)
(Full Profile Description, Table 2)

This deep soil, formed over limestone occurs in the north east and south of the site. It is characterised by a deep well or moderately well drained profile which is stoneless to very slightly stony.,

(c) Soil Type 3:- Shallow medium textured soils (Unit T3/Limestone Bedrock)
(Full Profile Description, Table 3)

This shallow soil, which is also formed on limestone occurs in the centre of the site. It is characterised by a thin stony topsoil.

1.6 Soil Resources

(i) Topsoils

Unit T1 occurs in the north west of the site. It is restored, medium to heavy textured (consisting of medium or heavy clay loam), and very slightly stony (containing 1-4% small and medium sized subangular limestones). This topsoil has a medium to very coarse platy structure and a median unit thickness of 15cm.

Unit T2 occurs in the north eastern and southern parts of the site. It is medium to heavy textured (generally consisting of medium or heavy clay loam) and typically very slightly stony (containing 1-4% small and medium sized subangular limestones). This topsoil has a moderately developed coarse subangular blocky to medium prismatic structure and a median unit thickness of 30cm.

Unit T3 occurs in the centre of the site. It is medium textured and consists of medium clay loam which is slightly stony (typically containing 8-12% small, medium and large subangular limestones). This topsoil has a moderately developed medium subangular blocky structure and directly overlies weathering limestone bedrock. Median thickness is 35cm.

A small area of Unit T3 is covered by a soil mound (classified as Urban land on the ALC map), but it has been assumed that the soil beneath the mound is undisturbed.

(ii) Subsoils

Unit S1 occurs at the northern and southern ends of the site. It is restored, heavy textured (generally consisting of clay) and stoneless. This subsoil has a well developed medium to coarse platy structure and a mean thickness of 90cm.

Unit S2 occurs in the north east and south of the site. It is medium to heavy textured (typically consisting of medium or heavy clay loam although clay occurs at depth in places) and very slightly to slightly stony (containing 2-8% small, medium and large subangular limestones). This soil unit has a moderately developed coarse angular to medium prismatic structure and a mean thickness of 70cm.

2. SOIL PROFILE DESCRIPTIONS

Table 1 Restored soil, S1

Profile Pit 1 (Near auger boring 20)

Slope:- 9° SW
Land Use:- Non Agricultural
Weather:- Cloudy and warm

NB:- No Topsoil

Depth cm	Horizon Description
0-100	Light yellowish brown (2.5Y 6/4) clay; many distinct yellowish brown (10YR 6/8) mottles; stoneless; moist; well developed medium to very coarse platy structure; extremely firm soil strength; very slightly porous (<0.5% pores >0.5mm); common fine fibrous roots; very sticky; very plastic; non-calcareous

Table 2 Deep medium to heavy textured soil, T2/S2

Profile Pit 2 (Near auger boring 19)

Slope:- 2° WSW
Land Use:- Arable
Weather:- Cloudy and warm

Depth cm	Horizon Description
0-35	Dark brown (10YR 4/3) sandy clay loam; no mottles; stoneless, slightly moist; moderately developed coarse subangular blocky to medium prismatic structure; friable; very slightly porous (approximately 2% fine and medium pores); many fine and very fine fibrous roots; moderately sticky; moderately plastic; calcareous; smooth abrupt boundary.
35-55	Yellowish brown (10YR 5/4) sandy clay loam; common indistinct strong brown (7.5YR 5/6) mottles; stoneless; slightly moist; moderately developed coarse angular blocky to medium prismatic structure; friable to firm; very slightly porous (approximately 1% very fine pores); common fine and very fine fibrous roots; moderately sticky; moderately plastic; non-calcareous; abrupt wavy boundary.
55-100	Light grey 5Y 7/1) silty clay; common indistinct olive yellow (2.5Y 6/8) mottles; stoneless; slightly moist; moderately developed medium prismatic structure; very firm; very slightly porous (<0.5% pores >0.5mm); few very fine fibrous roots; moderately sticky; moderately plastic; non-calcareous; clear irregular boundary.
100+	Weathering limestone bedrock.

Table 3 Shallow medium textured soil, T3/Limestone Bedrock

Profile Pit 3 (Near auger boring 14)

Slope:- 2°W
Land Use:- Arable (wheat stubble)
Weather:- Cloudy and warm

Depth cm	Horizon Description
0-35	Dark greyish brown (10YR 4/2) medium clay loam; no mottles; slightly stony (approximately 10% small, medium and large subangular soft limestones); moist; moderately developed medium subangular blocky structure; friable; very slightly porous; common fine and very fine fibrous roots; moderately sticky; moderately plastic; calcareous; clear smooth boundary
35+	Weathering limestone bedrock

3. AGRICULTURAL LAND CLASSIFICATION

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

Grade/Subgrade	Hectares	Percentage of Total Area
1		
2	2.9	13.7
3a		
3b	3.2	15.1
4		
5		
(Subtotal)	(6.1)	(28.8)
Urban	8.2	38.7
Non Agricultural	6.9	32.5
Woodland - Farm		
- Commercial		
Agricultural Buildings		
Open Water		
Land not surveyed		
(Subtotal)	(15.1)	(71.2)
TOTAL	21.2	100

3.1 Grade 2

A small area of Grade 2 land occurs in the south of the site. Profiles are well or moderately well drained (falling in Wetness Classes I or II) and typically consist of stoneless or very slightly stony calcareous heavy clay loam topsoils (sandy clay loam in places) overlying similarly textured upper subsoils and clay or silty clay lower subsoils. Where they occur, slowly permeable layers begin at around 50cm depth. Slight soil wetness is the factor which limits this land to Grade 2.

3.2 Subgrade 3b

Two separate areas of Subgrade 3b land occur in the centre and south of the site. Profiles are well drained, falling in Wetness Class I, and consist of slightly stony medium clay loam topsoils (containing 8-12% small to large subangular limestones) directly overlying weathering limestone bedrock at around 35cm depth. Severe soil droughtiness is the factor limiting this land to Subgrade 3b.

3.3 Urban

Urban land occurs principally in the centre and west of the site and consists of the existing landfill site, additional areas where the soil has been removed, and a soil mound.

3.4 Non Agricultural

This category includes scrubland in the north, north west and south of the site.

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MAPS