



Ministry of
Agriculture
Fisheries
and Food

STATEMENT OF PHYSICAL CHARACTERISTICS
AND
AGRICULTURAL LAND CLASSIFICATION
SEAMER CARR LANDFILL SITE
NORTH YORKSHIRE
APRIL 1996

ADAS
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SUMMARY

A detailed Agricultural Land Classification (ALC) and Statement of Physical Characteristics survey of 106.9ha of land at Seamer ("Seamer Carr Landfill Site") was carried out in April 1996. At the time of survey 57.3ha of this consisted of the existing landfill site and adjoining land, whilst 49.6ha west of Black Dyke was agricultural land of which 45.1 ha falls in Grade 2. Two soil types exist within this grade. The first consists of deep peat which has been assessed as imperfectly drained and therefore limited to Grade 2 by slight soil wetness. However, the land may be moderately well drained (and thus eligible for Grade 1) although wetness within the soil profile would have to be monitored over a period of years before a definitive grade could be given. The second soil type consists of well or moderately well drained predominantly mineral soils. These are somewhat variable but typically consist of medium sandy loam or sandy clay loam topsoils (which in places are organic) and upper subsoils overlying loamy medium sand lower subsoils. This land is limited to Grade 2 by slight soil droughtiness.

Subgrade 3a land covers 4.5ha. In the north-east medium sandy loam topsoils overlie loamy medium sand subsoils. These soils are well drained but soil droughtiness limits the ALC grade. In the south some profiles are poorly drained with peat loam topsoils overlying gleyed and slowly permeable clay subsoils. Although some profiles in this area are well drained, the combination of soil wetness and pattern restriction limits the land to Subgrade 3a.

The soils on the site can be divided into two types. The first consists of predominantly mineral soils, with light to medium-textured topsoils (median depth 29cm) and upper subsoils (mean depth 49cm) overlying very light to light-textured lower subsoils (mean depth 42cm). The second consists of deep peats where humified peat or loamy peat topsoils (median depth 30cm) overlie semi-fibrous peat subsoils (mean depth 86cm).

The report on the proposed extension area in the south which was prepared for the applicants by Humphries Rowell gives a full and fair reflection of the land quality and soil resources found within this area.

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STATEMENT OF PHYSICAL CHARACTERISTICS AND AGRICULTURAL LAND CLASSIFICATION REPORT ON THE PROPOSED EXTENSION TO SEAMER LANDFILL SITE AND ADJOINING AREAS, SCARBOROUGH, NORTH YORKSHIRE

1. INTRODUCTION AND SITE CHARACTERISTICS

1.1 Location and Survey Methods

The site lies 6Km south of Scarborough town centre, around grid reference TA030820. Survey work was carried out in April 1996 when the soils were examined at 100m intervals predetermined by the O.S. National Grid. In addition, two soil pits were dug to allow full profile descriptions to be made and to collect samples for laboratory analysis. The aims of the survey were to validate the soils and land quality information provided for the applicants by Humphries Rowell for the proposed extension area and to obtain further information on the soils and land quality within the application area. 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 the survey the east of the site was taken up by the existing landfill site, recently restored land and small undisturbed areas on the edge of the site which form buffer zones. None of this land was being actively farmed at the time of survey. In the west of the site much of the land was in set-aside or rough grazing, with smaller areas of winter cereals and recently ploughed land.

Site altitude of the undisturbed areas varies between approximately 30m AOD and 27m AOD. Most of these areas are level although where deposits of sand and gravel occur the land is gently undulating (2-3°) with variable aspect.

1.3 Climate

Grid Reference	: TA 030 820
Altitude (m)	: 30
Accumulated Temperature above 0°C (January - June)	: 1346 day °C
Average Annual Rainfall (mm)	: 677
Climatic Grade	: 1
Field Capacity Days	: 165
Moisture Deficit (mm) Wheat	: 105
Moisture Deficit (mm) Potatoes	: 96

1.4 Geology, Soils and Drainage

The site is underlain by Upper Jurassic Kimmeridge Clay over which lie deep superficial deposits of peat or post-glacial sand and gravel. The peat soils consist of humified peat or loamy peat overlying semi-fibrous peat and belong to the Altcar series as described by the Soil Survey and Land Research Centre (SSLRC). It has been assumed that these profiles fall in Wetness Class III (imperfectly drained) but they may actually be Wetness Class II (moderately well drained) and the wetness of the profiles would have to be assessed over a number of winters before they could be placed with certainty in either one or the other.

The soils formed in deposits of post-glacial sand and gravel are variable, but are generally well or moderately well drained, falling in Wetness Classes I and II. Sandy clay loam or medium sandy loam topsoils (some of which are organic) typically overlie similar upper subsoils and medium sandy loam or loamy medium sand lower subsoils. These soils correspond to the Wick 1 and Isleham 2 associations as described by SSLRC.

1.5 Soil Properties

Two main soil types occur 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: Very light to medium-textured mineral soils (Unit T1/U1/L1)
(Full Profile Description, Table 1)

This soil, formed on glacial drift, occurs in the far west of the site. It is somewhat variable but generally consists of very slightly to slightly stony medium sandy loam or sandy clay loam topsoils and upper subsoils overlying stoneless to moderately stony medium sandy loam or loamy medium sand lower subsoils.

- (b) Soil Type 2:- Peaty soils (Unit T2/U2)
(Full Profile Description, Table 2)

This soil, formed on deep deposits of peat, occurs immediately west of the existing landfill site. It is characterised by a humified peat or loamy peat topsoil overlying a semi-fibrous peat subsoil.

1.6 Soil Resources

- (i) Topsoils

Unit T1 occurs in the far west of the site. It is light to medium-textured, typically consisting of sandy clay loam or medium sandy loam and is very slightly to slightly stony, with between 3% and 6% very small to medium hard stones and sandstones. Topsoil T1 has a strongly or moderately developed medium subangular blocky structure and a median thickness of 29cm.

Unit T2 occurs immediately west of the existing landfill site. It is peaty, generally consisting of humified peat or loamy peat, and stoneless. Unit T2 has a strongly developed medium and coarse angular blocky structure and a median depth of 30cm.

(ii) Upper Subsoils

Two upper subsoils occur on the site. Upper subsoil U1 underlies topsoil T1 and also typically consists of sandy clay loam or medium sandy loam. It is very slightly to slightly stony, containing between 2% and 14% very small to medium hard stones and sandstones. Mean depth is 49cm.

Upper subsoil U2 underlies topsoil T2 and consists of semi-fibrous peat. It is stoneless, has a moderately developed coarse platy structure, and a mean depth of 86cm.

(iii) Lower Subsoils

One lower subsoil (L1) is found in the far west of the site, underlying topsoil T1 and upper subsoil U1. It is stoneless to moderately stony, with up to 20% very small to medium hard stones and sandstones, and typically has a moderately developed coarse subangular blocky structure. The mean depth of unit L1 is 42cm.

The soil types within the proposed extension area correspond to the two main soil types already described, and both are accurately described in Section 4 ("Soil Physical Characteristics") of the Humphries Rowell report. The distribution of the two soil types is shown in Map 2 ("Provisional Agricultural Land Classification and Distribution of Soil Types") although the ADAS Statutory survey found soil type 2 to be somewhat more extensive, and not split into two separate areas.

2. SOIL PROFILE DESCRIPTIONS

Table 1 Very light to medium-textured mineral soil, T1/U1/L1

Profile Pit 1 (Near auger boring 77)

Slope:- 0°
Land use:- Set aside
Weather:- Cool, overcast

Depth (cm)	Horizon	Description
0-29		Dark brown (10YR3/3) sandy clay loam; no mottles; very slightly stony, with around 3% total very small to medium hard stones (2% > 2cm); moist; strongly developed medium subangular blocky structure; friable; moderately porous; many fine and very fine fibrous roots; slightly sticky; slightly plastic; non-calcareous; abrupt wavy boundary
29-44		Light brownish grey (10YR6/2) sandy clay loam; many distinct brownish yellow (10YR6/8) mottles; slightly stony, with around 6% very small and small rounded hard stones; moist; moderately developed coarse subangular blocky structure; friable; moderately porous (>0.5% pores >0.5%mm); common very fine fibrous roots; very sticky; moderately plastic; non-calcareous; abrupt smooth boundary.
44-120		Grey (10YR5/1) loamy medium sand; common indistinct grey/light grey (10YR6/1) and many distinct brownish yellow (10YR6/8) mottles; stoneless; moist; moderately developed coarse subangular blocky structure; friable; very porous; common very fine fibrous roots; slightly sticky; slightly plastic; non-calcareous.

Table 2 Peaty soil (T2/U2)

Profile Pit 2 (Near auger boring 79)

Slope:- 0°
Land use:- Set aside
Weather:- Cool, overcast

Depth (cm)	Horizon	Description
0-35		Black (10YR2/1) humified peat; no mottles; stoneless; moist; strongly developed medium and coarse angular blocky structure; firm to very firm; very porous; many fine and very fine fibrous and common medium fleshy roots; non-sticky; non-plastic; non-calcareous; gradual smooth boundary.
35-120		Black (10YR2/1) semi-fibrous peat; no mottles; stoneless; moist to 70cm depth, saturated below 70cm; moderately developed coarse platy structure; firm; very porous; common fine fibrous and medium fleshy roots; non-sticky; non-plastic; non-calcareous.

N.B. Semi-fibrous peat extended to 130cm depth, below which fibrous peat extended to at least 150cm depth.

3. AGRICULTURAL LAND CLASSIFICATION

The ALC grades occurring over the application area are as follows:

<u>Grade/Subgrade</u>	<u>Hectares</u>	<u>% of Total Area</u>
1		
2	45.1	42.2
3a	4.5	4.2
3b		
4		
5		
(Sub total)	(49.6)	(46.4)
Other land	57.3	53.6
TOTAL	106.9	100

Within the proposed extension area (shown hatched on the attached ALC map), the following grades occur:-

<u>Grade/Subgrade</u>	<u>Area (ha)</u>	<u>% of Total Area</u>
1		
2	10.1	86.3
3a	1.6	13.7
3b		
4		
5		
(Sub total)	(11.7)	(100.0)
Other land		
TOTAL	11.7	100

3.1 Grade 2

Most of the area west of Black Dyke has been mapped as Grade 2. Where humified peat or loamy peat topsoils overlie semi-fibrous peat subsoils it has been assumed that the profiles fall in Wetness Class III (imperfectly drained) and the land is thus restricted to Grade 2 by a slight soil wetness limitation. However, as admitted by Humphries Rowell in relation to the application area, it is possible that the profiles may be Wetness Class II (moderately well drained) in which case the land would meet the requirements for Grade 1. The assessment of profile wetness over a number of winters would be required before this land could be definitively placed in either Grade 1 or Grade 2.

The remainder of the Grade 2 land consists of well or moderately well drained (Wetness Classes I and II) predominantly mineral soils. Typically very slightly to slightly stony sandy clay loam or medium sandy loam topsoils (some of which are organic) overlie similar upper subsoils and very slightly to moderately stony loamy medium sand or medium sandy loam lower subsoils. This land is limited to Grade 2 by slight soil droughtiness.

3.2 Subgrade 3a

Two small areas of Subgrade 3a land occur, one in the south and one in the north-west. In the north-west the soils are well drained (Wetness Class I), with medium sandy loam topsoils overlying loamy medium sand subsoils. Soil droughtiness limits this land to Subgrade 3a. In the south occasional peat loam topsoils overlie gleyed and slowly permeable clay subsoils. These soils are poorly drained (Wetness Class IV) and, although other profiles in the area are well drained (Wetness Class I), soil wetness and a pattern limitation restrict the land to Subgrade 3a.

3.3 Other Land

This covers the eastern half of the site and consists of the existing landfill, recently restored land, and small undisturbed areas of unfarmed land which appear to form buffer zones around the edge of the landfill site.

The Humphries Rowell report fairly describes the land quality of the proposed extension area in Section 5 of their report ("Agricultural Land Classification"). In this section, it is recommended that the wetness of the peat profile be checked during the winter 1995-1996 and the ALC grade of the peat soils reassessed accordingly. If this information has been collected it would be of use in clarifying whether the peat areas are Grade 2 or actually Grade 1 quality.

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MAPS