STATEMENT OF PHYSICAL CHARACTERISTICS AND AGRICULTURAL LAND CLASSIFICATION BRIDGE FARM, CATTERICK, N YORKS PROPOSED EXTENSION TO SAND AND GRAVEL QUARRY APRIL 1993

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SUMMARY

A Statement of Physical Characteristics and Agricultural Land Classification Survey of 53.5 ha of land at Catterick was carried out in March 1993.

At the time of survey almost 50 ha of this total was in agricultural use of which 12.7 ha falls within Subgrade 3a. Typically medium sandy loam topsoils overlie medium sandy loam or loamy medium sand subsoils, with river gravel deposits occurring at around 70cm depth. Both topsoils and subsoils are very slightly to slightly stony and soil droughtiness is the factor limiting the land to Subgrade 3a.

The remainder of the agricultural land on the site (37.2 ha) falls within Subgrade 3b. Topsoils and subsoils are similar to those described above but are slightly to moderately stony, with river gravel occurring at around 50cm depth. Soil droughtiness is the factor restricting most of this land to Subgrade 3b. Close to the river flood deposited heavy metal contamination is also a factor limiting some land to Subgrade 3b.

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STATEMENT OF PHYSICAL CHARACTERISTICS AND AGRICULTURAL LAND CLASSIFICATION REPORT ON THE PROPOSED EXTENSION TO THE SAND AND GRAVEL QUARRY AT BRIDGE FARM, CATTERICK, NORTH YORKSHIRE

1. INTRODUCTION AND STATEMENT OF PHYSICAL CHARACTERISTICS

1.1 Location and Survey Methods

The site lies approximately 1½ Km north west of the village of Catterick, between the River Swale and the A6136 road. Survey work was carried out in March 1993 when soils were examined by hand auger borings to a depth of 1.00m (less where stones prevented deeper penetration of the auger) at 100m intervals predetermined by the National Grid. Two soil inspection pits were dug to allow detailed soil profile descriptions to be made. Areas close to the river which are subject to flooding were sampled and analysed for toxic heavy metals brought into the area from old mine workings in Swaledale and Arkengarthdale. 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 approximately 93% of the site was in agricultural use (principally under oilseed rape and bean crops) while the remainder consisted of shelter belts. The site lies at an altitude of 55m AOD and is flat to very slightly sloping (0-1°) with undulating topography.

1.3 Climate

Grid Reference	: SE 235991
Altitude (m)	: 55
Accumulated Temperature above 0°C (January-June)	: 1328 day°C
Average Annual Rainfall (mm)	: 697
Climatic Grade	: 1
Field Capacity Days	: 177
Moisture Deficit (mm) Wheat	: 98

Moisture Deficit (mm) Potatoes : 86

1.4 Geology, Soils and Drainage

The site is underlain by Millstone Grit over which lies a thick covering of undifferentiated river terrace deposits. Profiles are well drained (all falling in Wetness Class I) and typically consist of medium sandy loam topsoils overlying medium sandy loam or loamy medium sand subsoils. Both topsoils and subsoils are very slightly to moderately stony (containing 5-20% subrounded and rounded hard stones in most cases) and deposits of river gravel occur at varying depths over the site.

1.5 Soil Profiles

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

(a) Soil Type 1:- Stony light to very light-textured soils (Unit T1/S1)
(Full Profile Description, Table 1)

This soil, formed on river terrace deposits, occurs over the whole of the site. It is characterised by being very slightly to slightly stony in the upper horizons and well drained, with river gravel at variable depth.

1.6 Soil Resources

(i) Topsoils

Unit T1 occurs over the whole site. Generally it is light-textured, consisting of medium sandy loam in most cases, and very slightly to slightly stony (typically containing 5-12% small to large subrounded and rounded hard stones). It has a moderately developed medium to coarse angular blocky structure and median depth of 30cm.

(ii) Subsoils

Unit S1 occurs over the whole site. This soil unit is light to very light-textured, typically consisting of medium sandy loam or loamy medium sand. It is very slightly to moderately stony, containing 6-20% small to large subrounded and rounded hard stones, and has a weakly developed medium subangular blocky structure. Mean unit thickness is 20cm.

2. SOIL PROFILE DESCRIPTIONS

Table 1 Stony light to very light textured soil T1/S1

Profile Pit 1 (Near auger boring 45)

Slope:-	0°
Land Use:-	Set Aside
Weather:-	Bright and warm

Depth cm	Horizon Description
0-30	Very dark greyish brown (10YR3/2) medium sandy loam; no mottles; slightly stony (approximately 10% small, medium and large subrounded and rounded hard stones); slightly moist; moderately developed medium to coarse angular blocky structure; firm soil strength; very porous; common fine fibrous roots; non sticky; slightly plastic; non-calcareous; smooth diffuse boundary.
30-80	Dark brown (10YR3/3) medium sandy loam; no mottles; slightly stony (approximately 12% small to very large subrounded and rounded hard stones); slightly moist; weakly developed medium subangular blocky structure; friable; very porous; common fine fibrous roots; slightly sticky; slightly plastic; non-calcareous.
80-100	As horizon above but moderately stony, containing approximately 30% small to very large subrounded and rounded hard stones.

3. AGRICULTURAL LAND CLASSIFICATION

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

Grade/Subgrade	Hectares	Percentage of Total Area
1		
2		
3a	12.7	23.7
3b	37.2	69.5
4		
5		
(Sub total)	(49.9)	(93.2)
Urban		
Non Agricultural		
Woodland - Farm	3.6	6.8
- Commercial		
Agricultural Buildings		
Open Water		
Land not surveyed		
(Sub total)	(3.6)	(6.8)
TOTAL	53.5	100

3.1 Subgrade 3a

Land in this subgrade occurs in the central western part of the site. Topsoils are light-textured (usually medium sandy loam) and overlie light or very light textured subsoils. Profiles are well drained (falling in Wetness Class I) and typically very slightly to slightly stony, containing 5-15% small to large rounded and subrounded hard stones. Deposits of river gravel occur at around 70cm depth. The water holding capacity of these soils is relatively low and this combined with the climate of the area, means that soil droughtiness limits the land to Subgrade 3a.

3.2 Subgrade 3b

Subgrade 3b land covers most of the site. Topsoils are light textured (usually medium sandy loam) and overlie light to very light textured subsoils (typically medium sandy loam or loamy medium sand). Profiles are well drained and vary from slightly to moderately stony (containing 8-30% small to very large rounded and subrounded hard stones). Deposits of river gravel occur at between 30cm and 50cm depth and soil droughtiness is, again, the factor limiting the ALC grade of this land.

Close to the river where the land is subject to occasional floods some Subgrade 3b land satisfies the physical requirements of Subgrade 3a, but is downgraded to Subgrade 3b because of high levels of toxic heavy metals. Analyses show that lead and, to a lesser extent,cadmium and zinc levels exceed DOE toxic threshold levels by an appreciable margin. Land contaminated in this way should not,be used for growing crops for direct human consumption. Its flexibility of use is thus very much reduced and it is limited to Subgrade 3b for this reason.

3.3 Farm Woodland

This category includes a number of recently planted shelter belts around the edge of the site.

MAPS