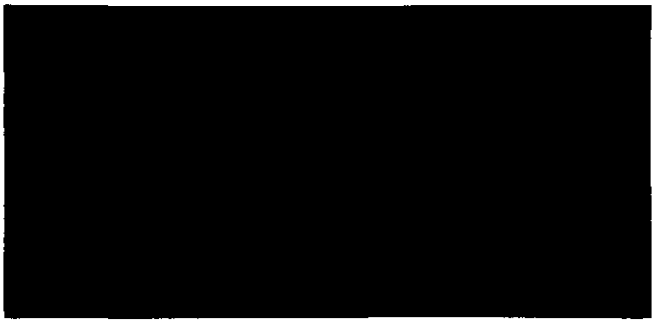

MAFF Ministry of Agriculture Fisheries and Food

STATEMENT OF PHYSICAL CHARACTERISTICS AND AGRICULTURAL LAND CLASSIFICATION CLEASBY QUARRY NORTH YORKSHIRE MARCH 1995

ADAS
Leeds Statutory Group

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SUMMARY

A detailed Agricultural Land Classification and Statement of Physical Characteristics survey of 9.3 ha of land at Cleasby was carried out in March 1995.

At the time of survey 8.7 ha was in agricultural use and the existing quarry covered 0.6 ha. All of the agricultural land has been mapped as Subgrade 3a. The soils have been restored following past extraction of gravel and the profiles are moderately well to imperfectly drained. In the centre and south medium textured topsoils overlie medium-textured subsoils which become slowly permeable in places at between 40cm and 70cm depth. Soil wetness and a pattern limitation restrict this land to Subgrade 3a.

In the north medium-textured topsoils overlie silt loam subsoils which contain lenses of sand. In these areas soil droughtiness is the factor limiting the ALC grade.

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STATEMENT OF PHYSICAL CHARACTERISTICS AND AGRICULTURAL LAND CLASSIFICATION REPORT ON THE PROPOSED SAND AND GRAVEL QUARRY AT CLEASBY, NORTH YORKSHIRE

1. INTRODUCTION AND STATEMENT OF PHYSICAL CHARACTERISTICS

1.1 Location and Survey Methods

This site lies 4km south-west of Darlington town centre, on the south bank of the River Tees. Survey work was carried out in March 1995 when the soils were examined by hand auger borings at 100m intervals predetermined by the National Grid. In addition, two soil pits were dug to allow more detailed 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 94% of the site was in agricultural use, having been sown to winter cereals. The remaining 6% consists of the existing quarry in the north.

The site lies at an altitude of 40m AOD and the land is generally level.

1.3 Climate

Grid Reference	: NZ 258 126
Altitude (m)	: 40
Accumulated Temperature above 0°C (January - June)	: 1339 day °C
Average Annual Rainfall (mm)	: 633
Climatic Grade	: 1
Field Capacity Days	: 158
Moisture Deficit (mm) Wheat	: 101
Moisture Deficit (mm) Potatoes	: 91

1.4 Geology, Soils and Drainage

The west of the site is underlain by Middle Magnesian Limestone and the east by Middle Permian Marl.

Although originally covered by terrace deposits, this site has already been subject to sand and gravel extraction and the soils subsequently restored. The soils are generally moderately well to imperfectly drained (Wetness Classes II to III) and consist of medium-textured topsoils over medium-textured subsoils (in the centre and south) or medium-textured topsoils over light-textured subsoils (in the north).

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:- Medium-textured soils to depth (Unit T1/S1)
(Full Profile Description, Table 1)

This soil formed on restored alluvium occurs in the centre and south of the site. It is characterised by a medium-textured subsoil with a moderately developed coarse angular and subangular blocky structure which becomes massive at depth in places.

(b) Soil Type 2:- Medium-textured topsoils over light-textured subsoils (Unit T1/S2)
(Full Profile Description, Table 2)

This soil, also formed on restored alluvium, occurs in the north of the site. It is characterised by a light-textured subsoil with a moderately to strongly developed platy structure.

1.6 Soil Resources

(i) Topsoils

Unit T1 occurs over the whole site. It is medium-textured (medium clay loam or medium silty clay loam) and it is very slightly to slightly stony, containing 3-8% very small to large subangular hard stones. This unit has a weakly to moderately

developed medium and coarse subangular blocky structure and a median depth of 30cm.

(iii) Subsoils

Unit S1 occurs in the centre and south of the site. It is light to medium-textured, consisting of medium clay loam, medium silty clay loam, sandy clay loam or, in places, medium sandy loam. This soil unit is very slightly to slightly stony, containing 4-8% small to large, rounded to subangular hard stones and sandstones. It has a moderately developed coarse subangular to angular blocky structure which becomes massive at depth in places. Mean depth is 93cm.

Unit S2 occurs in the north of the site. It is light-textured, consisting of silt loam with lenses of medium sand. It is stoneless and has a moderately to strongly developed medium platy structure which becomes coarse platy at depth. Mean depth is 85cm.

2. SOIL PROFILE DESCRIPTION

Table 1 Medium-textured soils to depth (T1/S1)

Profile Pit 1 (Near auger boring 5)

Slope:- 0°
Land Use:- Winter Cereals
Weather:- Bright, cold

Depth cm	Horizon	Description
0-26		Dark brown (10YR 3/3) medium clay loam; no mottles; slightly stony, containing approximately 6% small to large rounded to subangular hard stones; moist; moderately developed medium and coarse subangular blocky structure; firm; moderately porous; many fine and very fine fibrous roots; moderately sticky; moderately plastic; non-calcareous; clear smooth boundary.
26-61		Dark grey (10YR 4/1) medium clay loam; common distinct dark yellowish brown (10YR 4/4) mottles; slightly stony, with around 6% small to large rounded to subangular hard stones; slightly moist; moderately developed coarse subangular and angular blocky structure; very firm; slightly porous but common worm holes up to 3mm across; common fine and very fine fibrous roots; moderately sticky; moderately plastic; non-calcareous; gradual smooth boundary.
61-120		Dark brown (10YR 4/1) medium clay loam; common distinct dark yellowish brown (10YR 4/4)mottles; slightly stony, containing around 8% small to large rounded to subangular hard stones; slightly moist; massive; very firm; very slightly porous (<0.5% pores >0.5mm); few very fine fibrous roots; moderately sticky; moderately plastic; non-calcareous.

Table 2 Medium-textured topsoils over light-textured subsoils (T1/S2)

Profile Pit 1 (Near Auger boring 2)

Slope:- 0°
Land Use:- Winter Cereals
Weather:- Bright, cold

Depth cm	**Horizon**	**Description**
0-35		Very dark greyish brown (10YR 3/2) medium clay loam; no mottles; slightly stony, containing approximately 6% very small to large rounded to subangular hard stones; moist; weakly developed medium and coarse subangular blocky structure; firm; moderately porous; many fine and very fine fibrous roots; moderately sticky; moderately plastic; non-calcareous; abrupt, smooth boundary
35-120		Olive brown (2.5Y 4/4) silt loam with lenses of medium sand; no mottles; stoneless; moist; moderately to strongly developed medium platy structure, becoming coarse platy below about 70cm; firm to very firm; slightly porous (<0.5% pores >0.5mm); common very fine fibrous roots to 70cm, none below; slightly sticky; slightly plastic; non-calcareous

3. AGRICULTURAL LAND CLASSIFICATION

The ALC grades occurring on this site are as follows:

Grade/Subgrade	Hectares	Percentage of Total Area
1		
2		
3a	8.7	93.5
3b		
4		
5		
(Sub total)	(8.7)	(93.5)
Urban	0.6	6.5
Non Agricultural		
Woodland - Farm		
- Commercial		
Agricultural Buildings		
Open Water		
Land not surveyed		
(Sub total)	(0.6)	(6.5)
TOTAL	9.3	100

3.1 Subgrade 3a

All of the agricultural land on this site has been mapped as Subgrade 3a. The soils have been restored following previous quarrying operations and the profiles are moderately well to imperfectly drained, falling in Wetness Classes II and III. Over most of the site medium clay loam or medium silty clay loam topsoils overlie medium clay loam, medium silty clay loam, sandy clay loam or, in places, medium sandy loam subsoils. Where they occur slowly permeable layers begin at between 40cm and 70cm depth. Soil wetness and a pattern limitation restrict this land to Subgrade 3a.

In the north of the site medium clay loam or medium silty clay loam topsoils overlie silt loam subsoils containing lenses of sand. A soil profile pit showed rooting to be absent below about 70cm depth and, combined with the poor subsoil structure, this means that soil droughtiness will limit this land to Subgrade 3a.

3.2 Urban

This includes the existing quarry in the north.

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MAPS