

STATEMENT OF PHYSICAL CHARACTERISTICS
AND
AGRICULTURAL LAND CLASSIFICATION
MOOTLAW QUARRY, INGOE,
NORTHUMBERLAND
PROPOSED QUARRY EXTENSION
MAY 1993

ADAS
Leeds Statutory Group

Job No: 97/93
MAFF Ref: EL10024

2 FCS 5704

mootlawq.doc.nmc

SUMMARY

A soil survey and Agricultural Land Classification of land on the eastern side of Mootlaw Quarry, Ingoe was carried out in January 1992 when an area of approximately 71 hectares was surveyed. This information was amended in May 1993 to cover the smaller revised application totalling 29.5 hectares. This is split into two parts, both of which fall within the original application area.

27.2 ha of the revised area falls within Subgrade 3b. Soils are mainly poorly drained (Wetness Class IV) and consist of medium clay loam topsoils over heavy clay loam or clay subsoils. Stoneless alluvial clay occurs locally in the flat lying northern application area. Soils of this type are restricted to Subgrade 3b by wetness and workability problems as well as an overall climatic limitation. Well drained soils overlying sandstone occur in a few places in the northern area, but are also limited to Subgrade 3b by climate.

Grade 4 land covers 1.7 ha. Soils in the northern area vary from heavy to light textured. Both soil types in the northern area are limited to Grade 4 by steep slopes of 12° - 18°. Elsewhere wetness is the main limitation.

CONTENTS

1. INTRODUCTION AND STATEMENT OF PHYSICAL CHARACTERISTICS
2. SOIL PROFILE DESCRIPTIONS
3. AGRICULTURAL LAND CLASSIFICATION

MAPS

1. TOPSOIL RESOURCES
2. SUBSOIL RESOURCES
3. AGRICULTURAL LAND CLASSIFICATION

STATEMENT OF PHYSICAL CHARACTERISTICS AND AGRICULTURAL LAND CLASSIFICATION REPORT ON THE PROPOSED QUARRY EXTENSION AT MOOTLAW QUARRY, INGOE, NORTHUMBERLAND

1. INTRODUCTION AND STATEMENT OF PHYSICAL CHARACTERISTICS

1.1 Location and Survey Methods

The proposed extension which consists of two separate areas is located 14 km north east of Hexham to the north east and east of the existing quarry workings. The northern area is centred around National Grid Reference NZ 022 768 and the eastern area around National Grid Reference NZ 023 755. Together they cover a total area of 29.5 ha. Survey work was carried out in January 1992 on the original larger application area when soils were examined by hand auger borings at points predetermined by the National Grid. This information was amended in May 1993 to cover the revised smaller application area. 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

Mixed arable and grassland (January 1992) with some rough grazing on steep slopes. Site altitude varies from 195m to 240m AOD. The land is mainly level or gently sloping except along the southern edge of the northern application area where there are north facing gradients of 12°-18°.

1.3 Climate

Grid Reference	: NZ 023 755
Altitude	: 220
Accumulated Temperature above 0°C (January-June)	: 1111 day °C
Average Annual Rainfall (mm)	: 756
Climatic Grade	: 3b
Field Capacity Days	: 196
Moisture Deficit (mm) Wheat	: 67
Moisture Deficit (mm) Potatoes	: 45

1.4 Geology, Soils and Drainage

The area is underlain by the Carboniferous Upper and middle Limestone Group consisting of interbedded sandstones and limestones. Over most of the site this is covered by boulder clay plus, in the flat lying northern area, stoneless alluvial clay. Sandstone and shaly clay occur close to the surface in a few places on the steeply sloping land on the southern edge of the northern application area. Sandstone also occurs within 50m of the surface along the western edge of this area.

Soils over most of the area consist of medium clay loam topsoils over gleyed heavy clay loam, clay or silty clay subsoils. Profiles are poorly drained and slowly permeable within 35cm of the surface and thus fall within Wetness Class IV. The small areas over sandstone contain well drained (Wetness Class I) light or medium topsoils and upper subsoils which pass into weathering sandstone bedrock at 50-60 cm depth.

1.5 Soil Properties

Two main soil types including the alluvial variant 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 over heavy textured boulder clay and alluvial soils (Unit T1/S1)
(Full Profile Description, Table 1)

This soil formed on boulder clay and alluvium occurs over most of the northern application area and all of the eastern area. It is characterised by distinctly mottled and gleyed often grey coloured subsoil horizons which vary from stoneless to slightly stony.

- (b) Soil Type 2:- Light or medium textured soils over sandstone (Unit T1/S2)
(Full Profile Description, Table 2)

This soil formed on sandstone occurs on the western edge of the northern application area. It is characterised by variable light or medium textured topsoil and upper subsoil horizons which pass into weathering sandstone at about 50 cm depth.

1.6 Soil Resources

(i) Topsoils

Unit T1 occurs over the whole site. It is medium textured and consists of stoneless or slightly stony medium clay loam. It has a moderately developed medium subangular blocky structure and a mean thickness of 30 cm.

(ii) Subsoils

Unit S1 occurs over the whole site except for the western edge of the northern application area. It is heavy textured and consists of stoneless to slightly stony heavy clay loam, silty clay or clay. It has a moderately developed coarse angular blocky to prismatic structure. Mean thickness is 90 cm (Sandstone may occur in a few places below about 80 cm depth).

Unit S2 is restricted to a small area along the western edge of the northern application area. It is generally light textured and consists of slightly stony medium sandy loam which passes into sandstone at depth. It has a weakly developed angular blocky or granular structure. Mean thickness is 20 cm.

NB Small pockets of this subsoil type may occur on the steeply sloping land on the southern edge of the northern area, but are generally too small to separate from the surrounding heavy soils.

2. SOIL PROFILE DESCRIPTIONS

Table 1 Medium over heavy textured boulder clay soil, T1/S1

Profile Pit 1 (Near auger boring 46)

Slope: 0°
Land Use: Cereals
Weather: Clear, Cold, Dry (Jan 1992)

Depth cm	Horizon Description
0-25	Very dark greyish brown (10 YR 3/2) medium clay loam; few faint dark reddish brown (5 YR 3/3) medium mottles; stoneless; moist; moderately developed medium sub-angular blocky structure; medium packing density; moderately porous with common fine pores and fissures; firm soil strength; moderately sticky; moderately plastic; many fine fibrous and few medium fleshy roots; non calcareous; abrupt irregular boundary.
25-45 soil	Mixed brownish yellow (7.5 YR 6/8) and grey (5 YR 6/1) heavy clay loam; very slightly stony with a few small and medium and rare large sub-angular sandstones; moderately developed coarse angular blocky structure; high packing density; slightly porous with few fine pores and fissures; very firm strength; moderately sticky; moderately plastic; many fine fibrous roots; non calcareous; gradual wavy boundary.
45-120	Dark grey (5 Y 4/1) silty clay; many distinct medium yellowish brown (10 YR 5/6) and grey (N5) mottles; slightly stony with common small and medium sub-angular sandstones and a few large sub-angular sandstones; moist; moderately developed coarse prismatic structure; high packing density; slightly porous; few fine pores and fissures; very firm; very sticky; very plastic; common very fine fibrous roots; non calcareous.

3. AGRICULTURAL LAND CLASSIFICATION

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

<u>Grade / Subgrade</u>	<u>Hectares</u>	<u>Percentage of Total Area</u>
1		
2		
3a		
3b	27.2	92.2
4	1.7	5.8
5		
(Subtotal)	(28.9)	(98.0)
Urban	0.1	0.3
Non Agricultural		
Woodland - Farm	0.5	1.7
- Commercial		
Agricultural Buildings		
Open Water		
Land not surveyed		
(Subtotal)	(0.6)	(2.0)
TOTAL	29.5	100

3.1 Subgrade 3b

This subgrade covers almost all of both areas. Soils consist mainly of stoneless to slightly stony medium clay loam topsoils overlying strongly gleyed slowly permeable subsoils of heavy clay loam, clay or silty clay. Profiles are poorly drained (Wetness Class IV) and limited to subgrade 3b by wetness as well as the over-riding subgrade 3b climatic limitation.

3.2 Grade 4

Grade 4 land occurs mainly along the southern edge of the northern area where steep slopes of 12°-18° impose an overriding gradient limitation on ALC grade. A small area of Grade 4 land on the northern edge of the eastern area contains very poorly drained heavy clay soils limited to Grade 4 by wetness.

*RPT File 2FCS 5704
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