[redacted]

STATEMENT OF PHYSICAL CHARACTERISTICS
AND
AGRICULTURAL LAND CLASSIFICATION
BISHOP MIDDLEHAM QUARRY, COUNTY DURHAM

PROPOSED QUARRY EXTENSION

NOVEMBER 1992

ADAS
Leeds Statutory Group

Job No:- 118/92
MAFF Ref:-

bishopmd.alc.mp

SUMMARY

A statement of physical characteristics and Agricultural Land Classification survey of approximately 15ha of land at Bishop Middleham Quarry was carried out in November 1992.

14ha of this was in agricultural use of which 8.0ha fall within Grade 2, 5.5ha within Subgrade 3a and 0.3ha within Subgrade 3b.

Soils across the whole site are well drained (Wetness Class I) and overlie weathering limestone at varying depths. The Grade 2 land consists of stoneless to slightly stony medium silty clay loam topsoils and subsoils which pass into limestone at between 55-120cm depth. Profiles of this type are limited to Grade 2 by either slight droughtiness, or the overall climatic limitation. The Subgrade 3a land is similar except that limestone occurs at about 40cm depth, thus increasing the drought risk. The small area of Subgrade 3b land is similar to the Grade 2 and Subgrade 3a areas except for strong slopes of 11° which restrict the use of agricultural machinery and thus impose a gradient limitation.

CONTENTS

MAPS

STATEMENT OF PHYSICAL CHARACTERISTICS AND AGRICULTURAL LAND CLASSIFICATION REPORT ON THE PROPOSED QUARRY EXTENSION AT BISHOP MIDDLEHAM QUARRY, COUNTY DURHAM

1. INTRODUCTION AND STATEMENT OF PHYSICAL CHARACTERISTICS

1.1 Location and Survey Methods

The site lies 4½ km north west of Sedgefield and is centred on Grid Reference NZ 329326. Survey work was carried out in November 1992 when soils were examined by hand auger borings at the rate of 2 borings per hectare at intervals predetermined by the National Grid. Two soil pits were dug to allow the assessment of subsoil structure and to allow samples to be taken for laboratory analysis. 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, 94% of the site was in arable use. The remainder consists of a road and a small area of scrub along the eastern side of the road.

Site altitude ranges from 115m AOD to 135m AOD and the land varies from level through gently and moderately sloping to a small strongly sloping area along part of the eastern edge.

1.3 Climate

Grid Reference	:	NZ 329326
Altitude (m)	:	130
Accumulated Temperature above 0°C (January-June)	:	1225
Average Annual Rainfall (mm)	:	686
Climatic Grade	:	2
Field Capacity Days	:	175
Moisture Deficit (mm) Wheat	:	86
Moisture Deficit (mm) Potatoes	:	70

1.4 Geology, Soils and Drainage

The area is underlain by the Permian Magnesian Limestone which occurs within 1m of the surface over much of the site. Soils are formed in loamy or silty material derived from weathering of the limestone. Profiles are well drained, falling into Wetness Class I.

Topsoils and subsoils are generally medium textured, typically consisting of medium clay loams and medium silty clay loams with a variable stone content.

1.5 Soil Properties

The three soil resource units separated on this site are depth variants of a well drained medium textured soil overlying limestone, 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) Variant 1:- Shallow medium textured soils (Unit T1/S1A)
(Full Profile Description, Table 1)

This soil formed on limestone occurs mainly in the western part of the site. It is characterised by shallow well drained topsoils and subsoils formed in medium textured material (medium silty clay loam) derived from limestone. Weathering limestone is present within 40cm of the surface.

(b) Variant 2:- Medium depth medium textured soil (Unit T1/S1B)

This soil formed on limestone, occurs in the centre and southern parts of the site. It is characterised by well drained topsoils and subsoils formed in medium silty clay loam or medium clay loam derived from limestone. Weathering limestone occurs at a mean depth of 55cm from the surface.

(c) Soil Type 3:- Deep medium textured soils (Unit T1/S1C)
(Full Profile Description, Table 2)

This soil occurs along the eastern edge of the site. It is characterised by Deep (>1m) well drained profiles formed in medium

textured material derived from limestone. Limestone is not present within 1.00m of the surface.

1.6 Soil Resources

(i) Topsoils

Unit T1 occurs over the whole site. It is medium textured consisting of medium silty clay loam or medium clay loam. It is stoneless to slightly stony and has a weakly developed medium to coarse angular or sub angular blocky structure. Median unit thickness is 30cm.

Subsoils

Unit S1A occurs mainly in the westerly part of the site. It is medium textured consisting of medium silty clay loam or medium clay loam. This unit is stoneless or very slightly stony and has a weakly developed medium sub angular blocky structure. Mean thickness is 10cm.

Unit S1B occurs in the centre of the site in a band running from north to south. It is very similar to Unit S1A, but has a mean thickness of 25cm.

Unit S1C occurs along the eastern edge of the site. It is very slightly stony (small medium subrounded platy limestones) and medium textured consisting of medium silty clay loam. It has a moderately developed coarse angular blocky structure. Mean thickness is 70cm

2. SOIL PROFILE DESCRIPTIONS

Table 1

Soil Type 1 (T/S1A) Land Use: Arable Slope 1°

Depth cm	Description
0-25cm	Dark brown (10YR 3/3) medium silty clay loam; no mottles; stoneless; moist; weakly developed medium sub angular blocky structure; friable; very slightly porous; common fine and medium fibrous roots; slightly sticky; slightly plastic; non calcareous; abrupt smooth boundary.
25-40cm	Strong brown (75YR 4/6) medium silty clay loam; no mottles; stoneless; moist; weakly developed medium sub angular blocky structure; friable; very slightly porous; common fine and medium fibrous roots; slightly sticky; slightly plastic; non calcareous; sharp smooth boundary.
40 + cm	Soft weathering limestone bedrock; few fine fibrous roots.

SOIL PROFILE DESCRIPTION

TABLE 2

SOIL TYPE 3 (T1/S1C) Land Use: Arable Slope 1°

Depth (cm)	Description
0-25	Very dark greyish brown (10YR 3/2) medium silty clay loam; no mottles; very slightly stony (small platy subrounded limestones); moist; firm; moderately developed angular blocky structure; very slightly porous; common fine and medium fibrous roots; slightly sticky; slightly plastic; non calcareous; abrupt smooth boundary.
25-100	Strong brown (75YR 4/6) medium silty clay loam; no mottles; very slightly stony (small-medium platy subrounded limestones) moist; firm; very slightly porous; moderately developed medium to coarse angular blocky structure; few medium and fine fibrous roots; 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	8.08	54.3
3a	5.55	37.3
3b	0.37	2.5
4		
5		
(Subtotal)	(14.00)	(94.1)
Urban	0.79	5.3
Non Agricultural	0.09	0.6
Woodland - Farm		
- Commercial		
Agricultural Buildings		
Open Water		
Land not surveyed		
(Subtotal)		
TOTAL	14.88	100

3.1 Grade 2

Grade 2 land occurs mainly in the eastern half of the site. Topsoils consist of medium silty clay loam or medium clay loam and overlie medium silty clay loam or medium clay loam subsoils. Profiles are well drained (Wetness Class I) and stoneless to very slightly stony with soft weathering limestone bedrock occurring at or below 55cm. Slight soil droughtiness along with the overall climatic limitation are the main factors restricting this land to Grade 2).

3.2 Sub Grade 3a

Land in this subgrade occurs in two separate areas in the west and in a small area in the south. Profiles are well drained (wetness Class I) and typically consist of medium silty clay loam or medium clay loam topsoils overlying medium silty clay loam or medium clay loam subsoils. Most profiles are stoneless to very slightly stony (medium/small subrounded limestones). Soft weathering limestone bedrock occurs at or below 40cm from the surface. Soil depth and droughtiness are therefore the factors limiting this land to subgrade 3a.

3.3 Sub Grade 3b

Land in this subgrade occurs in a small area on the south eastern edge of the site. Soil physical properties correspond to Grade 2 but the area is limited to Subgrade 3b by slopes of 11°.

3.4 Urban

Urban land consists of a road turning along the eastern edge of the site.

3.5 Non-Ag

This consists of a small shrub covered area east of the road.

RPT File 2 FCS 6244
Leeds Statutory Group

MAPS