

STATEMENT OF PHYSICAL CHARACTERISTICS
AND
AGRICULTURAL LAND CLASSIFICATION

BLACK QUARRY, LEYBURN
PROPOSED EXTENSION OF QUARRY

ADAS
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BLACK QUARRY, LEYBURN

PROPOSED EXTENTION OF QUARRY FOR EXTRACTION OF LIMESTONE

1. PHYSICAL CHARACTERISTICS

A. Introduction

The site is located around National Grid Reference SE 09109150 and lies about 3 km north west of Leyburn, North Yorkshire. It covers a total of approximately 23 ha of which virtually all is permanent grassland. Survey work was carried out in August 1991 when soils were examined by hand auger borings to a depth of up to 100 cm (less where the presence of large stones or bedrock prevented the auger entering deeper) at 100 m intervals predetermined by the National Grid. Further borings were made, where necessary, to refine grade boundaries. Detailed soil descriptions and sampling for laboratory analysis were carried out in inspection pits at representative points in the 2 main soil types found on the site.

B. Land Use

All of the agricultural land is under permanent grass. There is a sheep fold in the north western corner of the site.

C. Climate and Relief

Average Annual Rainfall is approximately 950 mm. The accumulated temperature above 0°C (January to June) is 1,090 day°C and the site is at field capacity for 230 days a year. The temperature and rainfall figures indicate that there is an overall climatic limitation of subgrade 3b on the site.

Altitude varies from 260 m to 284 m, being greatest in the north. Slopes are gentle to moderate.

D. Geology

The northern part of the site is underlain by shaly limestone which, in the quarry face at the north eastern end of the site, occurs at a depth of approximately 1.50 m. The southern part of the site is underlain by bedded limestone which occurs immediately below the topsoil at depths of 10-20 cm and outcrops in places.

E. Drainage

In the deeper soils in the north slowly permeable layers occur at around 25 cm depth thus placing profiles in Wetness Class IV. In the south the medium textured soils which overlie bedrock at very shallow depths are freely drained, falling in Wetness Class I.

F. Soil Properties and Resources

Two major soil types were identified:-

1. Medium over Heavy Textured Soils

These occur in the northern half of the site and consist of medium silty clay loam or medium clay loam topsoils overlying heavy silty clay loam or silty clay subsoils. Profiles are moderately stony (sufficient to prevent full auger penetration) with 15-20% sandstone. Inspection of the existing quarry face in the north east of the site showed the topsoil to have a well developed medium subangular blocky structure and the subsoil to have a moderately developed coarse prismatic structure which tended to become massive at depth. Median topsoil depth (Unit T1A on the accompanying map) is 15 cm. The mean subsoil depth of 85 cm (Unit S1) is based on soil thicknesses in the quarry face as, elsewhere on the site, soils were too stony to determine depth accurately.

2. Medium Textured Soils over Limestone

These soils occur in the southern half of the site and consist of medium or heavy silty clay loam topsoils overlying hard bedded Carboniferous limestone. Profiles are moderately stony (with 16-20% medium and large limestones) and shallow (bedrock often occurs within 20 cm of the surface). The inspection pit showed the topsoil to have a well developed fine subangular blocky structure. Median topsoil depth (Unit T1B) is 15 cm.

2. AGRICULTURAL LAND CLASSIFICATION

Subgrade 3b (12.1 ha, 53% of the site area)

Land in this subgrade covers the northern part of the site.

Topsoils consist of medium clay loam over heavy silty clay loam or silty clay subsoils. Slowly permeable layers occur at about 25-30 cm depth thus placing profiles within Wetness Class IV. Soil wetness along with the overall climatic restriction are the main limitations on ALC grade.

Grade 4 (10.73 ha, or 47% of the site area)

Land in this grade is found in the south of the site. Topsoils consist of medium silty clay loam, which directly overlies limestone bedrock generally within 20 cm of the surface and which outcrops in places. Although these soils are droughty, shallow depth (only 15-20 cm) is the main limitation on ALC grade.

Urban

This consists of a very small area in the north western corner shows as a Sheep Fold on OS maps.

Resource Planing Group
Leeds Regional Office
August 1991

3. SOIL PROFILE DESCRIPTIONS

BLACK QUARRY, LEYBURN:- SHALLOW LIMESTONE SOIL

Pit 1:- Near Auger Boring 18

Land Use:- Permanent Pasture

Gradient:- 0°

Depth cm	Horizons
0-20	Very dark greyish brown (10YR 3/2) medium silty clay loam; unmottled; moderately stone (16-20%) with many medium and large angular and subangular limestones; almost dry; well developed fine subangular blocky and medium granular structure; medium packing density; moderately porous; many fine pores and fissures; moderately sticky and moderately plastic; abundant very fine fibrous roots calcareous; sharp smooth boundary.
20+	Hard flaggy bedded Carboniferous limestone.

BLACK QUARRY, LEYBURN:- DEEP MEDIUM OVER HEAVY SOIL

Pit 1 Near Auger Boring 11

Land Use:- Permanent Pasture

Gradient:- 1°

Depth cm	Horizons
0-25	Very dark greyish brown (10YR 3/2) medium clay loam; unmottled; slightly stony with common medium and large sandstones; almost dry well developed medium subangular blocky structure; medium packing density; moderately porous with common fine pores and fissures; moderately sticky and moderately plastic; abundant fine fibrous roots; non calcareous; clear wavy boundary.
25-65	Dark grey 5Y 5/1 heavy silty clay loam with many medium prominent strong brown(7.5YR 5/8) mottles slightly to moderately stony with common or many large and very large stones and a few boulders; slightly moist; moderately developed coarse prismatic structure; slightly porous with few fine pores and fissures very sticky and very plastic; common very fine fibrous roots on structure faces; non calcareous; gradual wavy boundary.
65-150	Dark grey (N3) heavy silty clay loam to silty clay with many prominent dark yellowish brown (10YR 4/4) mottles common large and very large stones and a few boulders; slightly moist; moderately developed very coarse prismatic to massive structure; slightly porous with few fine pores and very few fissures; moderately strong soil strength (note low moisture content) very sticky and very plastic; a few very fine fibrous roots non calcareous; sharp smooth boundary.
150+	Thinly bedded dark limestone.