STATEMENT OF PHYSICAL CHARACTERISTICS

AND AGRICULTURAL LAND CLASSIFICATION

BARNSDALE BAR QUARRY
KIRK SMEATON

ADAS
Leeds Regional Office

September 1989
File Ref: 2FCS 4556
Map Ref: 60/89

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REPORT ON THE PROPOSED LIMESTONE QUARRY AT BARNSDALE BAR, LONG LANE, KIRK SMEATON

A. GENERAL SITE INFORMATION

This 3.3 hectare site (grid reference SE512148) lies approximately 13 km north west of Doncaster near the village of Kirk Smeaton, North Yorkshire.

The site was surveyed in August 1989 when soils were examined by hand auger borings at a density of 4 borings per hectare, at points pre-determined by the National Grid. Detailed soil descriptions and sampling for laboratory analysis were carried out in an inspection pit which was dug at a representative point on the site.

All land quality assessments were made 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).

LAND USE

The site is entirely in arable use except for a strip of urban land along the southern edge where soils have been removed.

CLIMATE

Average Annual Rainfall is approximately 593 mm per year. Accumulated temperature above 0°C (January-June) is 1365 day°C and the land is at field capacity for about 125 days a year. These factors indicate that there is no overall climatic restriction on ALC grade. Summer moisture deficits of 104 mm for winter wheat and 95 mm for potatoes, however, means that soil droughtiness will be moderately limiting on the shallower limestone soils prevalent in the area.

RELIEF

The site varies from gently to moderately sloping (2-7°) at a mean altitude of 50 metres above ordnance datum. Such gradients rarely limit the use of agricultural machinery and thus do not affect ALC grading.

GEOLOGY

Lower Magnesian Limestone underlies the site. There is very little superficial drift except for thin surface layers of sandy loam, sandy clay loam, or, occasionally, reddish clay.

B. SOIL PROPERTIES

One variable soil type occurs on the site;

1. Fine loamy to sandy soils over fractured limestone (full description table 1).

These consist mainly of sandy loam or sandy clay loam topsoils over a variable thickness of similar, or slightly lighter, subsoil material. This passes into fractured limestone within a metre of the surface.

Soil Resources. (See accompanying soil Resource Maps).

Topsoil Unit T1

Unit T1 consists of very slightly stony medium or light textured material with an optimum thickness of 30 cm. Structure is moderately developed coarse and medium sub angular blocky.

Subsoil Unit S1

Unit S1 has a median thickness of 45 cm and consists of light to very light material, although sporadic patches of thin reddish clay can occur towards the base of the unit. It is moderately stony and has a moderately to weakly developed medium sub angular blocky structure.

Subsoil Unit S1A

Unit S1A consists of moderately stony, light to very light textured material with a median thickness of 15 cm and structural characteristics similar to Unit S1. Deeper profiles occur near the north eastern corner but are too small in extent to separate.

C. AGRICULTURAL LAND CLASSIFICATION GRADES

The ALC grades occurring on the site are as follows:

Sub Grade 3b (2.6 hectares)

Subgrade 3b is the only agricultural grade on the site. Although soils are mainly light and easily worked they are restricted by soil droughtiness which is moderately limiting for both winter wheat and potatoes.

Urban (0.7 hectares)

This consists of a narrow strip along the southern boundary where soils have been removed.

TABLE 1 FINE LOAMY AND SANDY SOIL OVER FRACTURED LIMESTONE

BARNSDALE BAR

KIRK SMEATON

CROP: WHEAT
SLOPE: 1°N
RECENT WEATHER: PROLONGED DRY PERIODS WITH A FEW SHOWERS DURING THE PRECEDING WEEK

HORIZON	DEPTH	DESCRIPTION
1.	0-27	Dark brown (7.5 YR 3/4) medium sandy loam; unmottled; very slightly stony; few medium angular limestones; slightly moist; moderately developed coarse and medium sub angular blocky structure; medium packing density; moderately porous; common fine and medium macropores; moderately weak soil strength; slightly sticky; moderately plastic; many fine fibrous roots above 12 cm, few fine fibrous below this depth; sharp smooth boundary.
2.	27-42	Dark brown (7.5 YR 4/4) medium sandy loam; unmottled; moderately stony; many large angular limestones; moist; moderately developed medium sub angular blocky structure; medium packing density; very porous; few fine macropores; moderately weak soil strength; slightly sticky; slightly plastic; few very fine fibrous roots; abrupt smooth boundary.

3. 42-78 Yellowish brown (10 YR 5/4) medium loamy sand; unmottled; moderately stony; many large angular limestones; slightly moist; loose to weakly developed medium sub angular blocky structure; low packing density; extremely porous; no recognisable fissures or macropores; very weak soil strength; non sticky; non-plastic; few very fine fibrous roots.

4. 78^{+} Fractured Limestone.

MAPS