AGRICULTURAL LAND CLASSIFICATION
AND STATEMENT OF PHYSICAL CHARACTERISTICS

LEY LANE, CRIDLING STUBBS
DARRINGTON, WEST YORKSHIRE

PROPOSED QUARRY EXTENSION

January 1991

2FCS 5217

Lds.AL3.Qry.Ext

CONTENTS

MAPS

1. AGRICULTURAL LAND CLASSIFICATION

1.1 Introduction and Location

The site which is situated around NGR SE 502214, 1½ km south east of the A1-M62 junction 33 at Pontefract, consists of 23 hectares of land in agricultural production. The area was surveyed in January 1991 when soils were examined by hand auger borings at a density of a little over one boring per hectare at points predetermined by the National Grid. Detailed soil descriptions to provide information on soil structure were carried out at inspection pits located at representative points on the site.

1.2 Land Use

The entire site was in arable use at the time of survey.

1.3 Climate and Relief

Mean annual rainfall is approximately 600 mm and the accumulated temperature above 0°C (January to June) is 1373 day °C. The field capacity period is 125 days a year. The above temperature and rainfall figures indicate that there is no overall climatic limitation on agricultural land grade. The moisture deficits of 105 mm for winter wheat and 96 mm for potatoes will, however, result in a moderate drought risk on the thin soils over limestone, which are common on parts of the site.

Altitude is approximately 40 m above Ordnance Datum with a gentle slope of 1-2° from north west to south east.

1.4 Geology and Soils

Soils are formed on fine loamy drift which forms a cover of variable thickness over the underlying Magnesian Limestone. Depths vary from about 25 cm in the south eastern part of the site to more than 1 metre in places in the west. Typical profiles in the areas of deeper drift consist of medium or heavy clay loam topsoils about 30 cm in thickness over similar subsoils which pass into fragmented limestone at depths of between 40 cm and 100 cm from the surface.

On the shallow soils which are most widespread in the south east, topsoils rest directly on weathering limestone. Stoniness is variable. On the deeper drift stone content is low, usually less than 10% and topsoils fall into the slightly stony category. Where the drift is very thin, however, stone content can be more than 35% and include large blocks of limestone. In these areas stoniness is often the overriding limitation on ALC grade.

1.5 Agricultural Land Classification Grades

The ALC grades on this site are as follows

Grade	Hectares	Percentage of Total Area
2	2.8	11.4
3a	12.4	50.6
3b	6.9	28.2
4	2.4	9.8
Total	24.5	100

Grade 2

Land in this grade occurs along Leys Lane in the southern half of the site. These soils are deep and relatively stone free and consist of medium or heavy sometimes calcareous clay loam topsoils over heavy clay loam or clay subsoils. The subsoils are often mottled and slowly permeable at depth and most profiles fall with Wetness Class II. Slight winter wetness and/or heavy topsoil texture are the only limitations restricting this area to Grade 2.

Subgrade 3a

This subgrade is widespread over much of the site. Soils consist of medium or heavy clay loam topsoils over clay, heavy clay loam or sandy clay loam subsoils to a depth of around 50-85 cm. Most profiles are well or moderately well drained and fall within Wetness Classes I or II. The main limiting factor on soils of this type is droughtiness caused by the combination of relatively shallow soil depth and a stone content of 5-10%. Slight wetness is also limiting in places where heavy clay subsoil occurs close to the surface.

Subgrade 3b

The main area of subgrade 3b land is at the northern end of the site with two smaller areas on the eastern side. Soils consist of slightly stony heavy or medium calcareous clay loam topsoils over clay subsoils which pass into fragmented limestone bedrock at 30-40 cm from the surface. The principal limiting factor on these soils, even after allowing for root penetration and water uptake from the fragmented bedrock, is droughtiness.

Grade 4

Land in this subgrade occurs in two patches on the southern half of the site. Here, topsoils are similar in texture to those placed in subgrade 3b but have a much higher stone content (>35%) and often lie directly on fragmented bedrock at a depth of only 25 cm. Topsoil stoniness and droughtiness are the overriding limitations on ALC grade in these areas.

2. STATEMENT OF PHYSICAL CHARACTERISTICS
(Soil Properties and Resources)

There is only one soil type on the site. This consists of medium or heavy clay topsoil over a variable thickness of fine loamy or clayey subsoil. In many places, particularly in the north and east there is very little subsoil and topsoil rests almost directly on fragmented bedrock.

The topsoil and subsoil resources are shown on the accompanying maps, along with soil depth and volume information.

2.1 Topsoils

One topsoil unit covers the whole site. This consists of slightly stony to very stony medium or heavy often calcareous clay loam with a moderately developed medium angular blocky structure. Very stony areas are generally too small and irregular to show as a separate soil resource. This unit has a mean depth of 30 cm and corresponds with unit T1 on the topsoil resource map.

2.2 Subsoils

There is an appreciable depth of subsoil only in the western and southern parts of the site. Elsewhere it is very thin or patchy and topsoil often rests directly on bedrock. Where subsoil exists it is usually a slightly stony heavy clay loam or clay with a moderately developed medium angular blocky structure. This unit has a mean thickness of 55 cm and corresponds with unit S1 on the subsoil resource map.

3. SOIL PROFILE DESCRIPTIONS

PIT 1 Shallow Clay loam over Magnesian Limestone

Land Use: Arable (cereals)
Slope : 1-2° SE
Weather : Cloudy, windy, heavy rain

Horizon Depth (cm)

0-25	Dark brown (10YR33) medium clay loam; slightly stony (10-12%) with common small medium and large limestones; wet; unmottled; moderately developed medium angular blocky structure; few fine pores; moderately weak soil strength; moderately sticky and very plastic; many fine fibrous roots; calcareous; irregular sharp boundary to weathered bed rock.
25+	Weathering fragmented limestone bedrock with a matrix of yellowish brown (10YR5/6) sandy clay loam

PIT 2 Deep Clay Loam Over Magnesian Limestone

Crop : Cereal
Slope : 1-2° SE
Weather: Cloudy, windy, heavy rain

Horizon Depth (cm)	
0-30	Dark brown (10YR33) medium clay loam; very slightly stony (1-2%); wet; unmottled; moderately developed medium angular blocky structure; moderately firm soil strength; moderately sticky and very plastic; many fine fibrous roots; calcareous; abrupt smooth boundary.
30-80	Yellowish brown (10YR56) heavy clay loam; unmottled; very slightly stony (4%); wet; moderately developed medium angular blocky structure; very firm soil strength; moderately sticky and very plastic; common fine fibrous roots; irregular boundary to fragmented magnesian limestone.
80+	Fragmented limestone