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MAFF Ministry of Agriculture Fisheries and Food

STATEMENT OF PHYSICAL CHARACTERISTICS AND AGRICULTURAL LAND CLASSIFICATION SPAUNTON QUARRY KIRKBYMOORSIDE NORTH YORKSHIRE MAY 1995

ADAS
Leeds Statutory Group

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SUMMARY

An Agricultural Land Classification and Statement of Physical Characteristics survey was carried out on 68.6 ha of land at Spaunton Quarry, Kirkbymoorside, North Yorkshire in May 1995.

At the time of the survey 64.8 ha of the site was in agricultural use, of which 17.3 ha falls in Grade 2. These soils are well-drained with medium silty clay loam and medium sandy loam topsoils, over similar subsoils. Droughtiness, due to a limited depth of soil over weathering sandstone, limits this land to Grade 2. A small area of Grade 2 land to the south consists of deeper soil, where climatic and soil wetness restrictions limit the land to Grade 2. 16.2 ha falls into Subgrade 3a. Soils are well drained but overlie weathering sandstone at around 40cm depth and soil droughtiness limits the ALC grade. Remaining Subgrade 3a soils in the south west are limited by topsoil stone content.

The remaining agricultural land (31.3 ha) falls into Subgrade 3b. Soils are shallow but well drained, consisting of moderately stony medium silty clay loam topsoils over similar subsoils. This land is limited to Subgrade 3b by topsoil stone content and severe soil droughtiness limitations. Occasional slowly permeable heavier soils limited by wetness and workability occur in the south of the site.

The remaining land consists of Non-Agricultural land and Agricultural Buildings covering a total of 3.8 ha.

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1. INTRODUCTION AND STATEMENT OF PHYSICAL CHARACTERISTICS

1.1 Location and Survey Methods

The site lies approximately 3 km east of Kirkbymoorside, and is centred on National Grid Reference SE 720 880. Survey work was carried out in May 1995 when the soils were examined by hand auger borings at 100m intervals predetermined by the National Grid. In addition four soil inspection pits were dug to allow full profile descriptions to be made. The land quality was assessed using the guidelines published in "Agricultural Land Classification of England and Wales. Revised guidelines and criteria for grading the quality of agricultural of agricultural land, " (MAFF, 1988).

1.2 Land Use

At the time of the survey the majority of the land was in set aside, permanent grass, ploughed and, to the north, oil seed rape. The remainder of the land consists of a felled plantation in the south west corner, tracks and a derelict barn in the north west.

1.3 Climate

Grid Reference	: SE 720 880
Altitude (m)	: 120
Accumulated Temperature above 0°C (January - June)	: 1248 day°C
Average Annual Rainfall (mm)	: 808
Climatic Grade	: 2
Field Capacity Days	: 200
Moisture Deficit (mm) Wheat	: 82
Moisture Deficit (mm) Potatoes	: 66

1.4 Geology, Soils and Drainage

The site is underlain by middle calcareous grit (sandstone) to the north and south of the site and upper limestone running east to west centrally. Soils to the north and south of the site are developed over sandstone and are freely drained (Wetness Class I) medium sandy loams and medium silty clay loams over similar subsoils. Droughtiness restrictions due to varying depth to bedrock cause the limitation to this land. Centrally located soils formed over limestone consist of moderately stony, freely drained (Wetness Class I) medium silty clay loam topsoils over similar shallow subsoils over limestone bedrock. These soils are limited by severe soil droughtiness and topsoil stone content.

1.5 Soil Properties

Two main soil types 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 : - Light to medium textured soils (Unit T1/S1)
(Full Profile Description, Table 1)

This soil, formed on sandstone, occurs in the north and south of the site. It is characterised by a light to medium textured topsoil overlying a similar textured subsoil with a moderately developed medium subangular blocky structure.

(b) Soil Type 2 :- Medium textured soils (Unit T2/S2)
(Full Profile Description, Table 2)

This soil, formed on limestone, occurs across the centre of the site. It is characterised by medium textured topsoils overlying a similarly textured moderately developed coarse subangular blocky subsoil.

1.6 Soil Resources

(i) Topsoils

Unit T1 occurs over the north and south of the site. It is light to medium textured (medium sandy loam and medium silty clay loam) and very slightly to slightly stony (2-12% small and medium hard subangular sandstones). This topsoil has a moderately developed medium subangular blocky structure, with a mean depth of 25cm.

Unit T2 occurs centrally running east to west across the site. It is medium textured (medium silty clay loam) and moderately stony, containing 15-20% small, medium and large hard limestones. This topsoil has a moderately developed medium subangular blocky structure, with a mean depth of 22cm.

(ii) Subsoils

Unit S1 underlies topsoil T1 to the north and south of the site. It is typically light to medium textured (medium sandy loam and medium silty clay loams) and slightly stony, containing up to 7% subangular hard sandstones. This subsoil has a moderately developed medium subangular blocky structure and a mean depth of 40cm.

Unit S2 underlies topsoil T2 and runs east to west across the middle of the site. It is medium textured (medium silty clay loam) and moderately to very stony, containing between 30 and 45% small, medium, and large hard limestones. This subsoil has a moderately developed coarse subangular blocky structure and a mean depth of 6cm.

2. SOIL PROFILE DESCRIPTIONS

Table 1 Light to Medium Textured Soil, T1/S1

Profile Pit 1 (Near auger boring 5)

Slope :- 2°S
Land Use :- Oil seed rape
Weather :- Overcast

Depth cm	Horizon Description
0-20	Very dark greyish brown (10YR3/2) medium sandy loam; no mottles; very slightly stony (5% medium subangular hard sandstones); slightly moist; moderately developed medium subangular blocky structure; firm; slightly moist; very porous; many very fine fibrous roots; slightly sticky; slightly plastic; non-calcareous; smooth gradual boundary.
20-44	Brown (10YR4/3) medium sandy loam; no mottles; slightly stony (7% total subangular hard sandstones); slightly moist; moderately developed medium subangular blocky structure; firm; very porous; common very fine fibrous roots; slightly sticky; slightly plastic; non-calcareous; clear smooth boundary onto weathering sandstone.
44+	Weathering sandstone.

Table 2 Medium Textured Soil, T2/S2

Profile Pit 2 (Near auger boring 43)

Slope :- O°
Land Use :- Set Aside
Weather :- Overcast

Depth cm	Horizon Description
0-22	Brown (10YR5/3) medium silty clay loam; no mottles; moderately stony (20% small, medium and large angular limestones; 16% > 2cm); slightly moist; moderately developed medium subangular blocky structure; firm; moderately porous; few fine fibrous roots; slightly sticky; slightly plastic; non calcareous; smooth clear boundary.
22-50	Brown (10YR5/3) medium silty clay loam; no mottles; moderately stony, with around 30% hard limestones; moderately developed coarse subangular blocky structure; firm; moderately porous; few fine fibrous roots; slightly sticky; slightly plastic; non calcareous; wavy gradual boundary onto hard limestone.
50+	Hard Limestone.

3. AGRICULTURAL LAND CLASSIFICATION

The ALC grades occurring on this site are as follows:

Grade/Subgrade	Hectares	Percentage of Total Area
1		
2	17.3	25.2
3a	16.2	23.6
3b	31.3	45.6
4		
5		
(Sub total)	(64.8)	(94.4)
Urban		
Non Agricultural	3.7	5.4
Woodland - Farm		
- Commercial		
Agricultural Buildings	0.1	0.2
Open Water		
Land not surveyed		
(Sub total)	(3.8)	(5.6)
TOTAL	68.6	100

3.1 Grade 2

Three areas of Grade 2 land occur, one small area located centrally, and two larger areas to the north and south. The soils on the two larger areas are well drained (Wetness Class I), with very slightly stony medium sandy loam or medium silty clay loam topsoils over similar slightly stony unmottled subsoils. Weathering sandstone bedrock occurs at between 50 and 60 cm depth. This land is limited to Grade 2 by slight soil droughtiness, and occasional soil wetness restrictions.

The small central area of Grade 2 land consists of very slightly stony medium silty clay loam topsoils over well drained (Wetness Class I) medium silty clay loam subsoils, with occasional silty clay subsoils at depth. Slight soil wetness and an overall climatic Grade of 2 limits this land to Grade 2.

3.2 Subgrade 3a

Subgrade 3a land occurs over the north of the site, with two smaller areas to the south west and south east. Soils to the north and south east consist of very slightly stony medium sandy loam and medium silty clay loam topsoils, over similar slightly stony subsoils. Soils are well drained (Wetness Class I) and the land is limited by moderate soil droughtiness restrictions, with weathering sandstone bedrock occurring at between 40cm and 45cm depth.

The remaining area of Subgrade 3a to the south west consists of slightly stony (15% hard sandstones > 2cm) medium silty clay loam topsoils overlying well drained (Wetness Class I) slightly stony medium sandy loam and medium silty clay loam subsoils. Weathering sandstone bedrock is found at between 40 and 70cm depth. These soils are limited to Subgrade 3a by topsoil stone content and moderate soil droughtiness restrictions.

3.3 Subgrade 3b

The remaining agricultural land falls into this subgrade. Soils generally consist of moderately stony (16-20% hard limestones >2cm) medium silty clay loam topsoils overlying shallow moderately stony medium silty clay loam subsoils. These soils are well drained (Wetness Class I) and the land is limited to Subgrade 3b by severe soil droughtiness and topsoil stone content. Occasional borings in the south consist of

medium silty clay loam topsoils, overlying gleyed, mottled, slowly permeable heavy silty clay loam subsoils. Slowly permeable layers occur within 40cm and this land is limited to Subgrade 3b by severe soil wetness and workability restrictions.

3.4 Non Agricultural

This category consists of an area of felled plantation to the south west corner and farm tracks.

3.5 Farm Buildings

This category consists of a derelict barn in the north west of the site.

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MAPS