

STATEMENT OF PHYSICAL CHARACTERISTICS
AND
AGRICULTURAL LAND CLASSIFICATION
NOSTERFIELD QUARRY, WEST TANFIELD
NORTH YORKSHIRE
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NOSTERFIELD QUARRY, WEST TANFIELD

SUMMARY

Land to the north of Nosterfield covering a total of 109 ha was surveyed in August 1992. 71.7 ha of the agricultural land on the site falls in Subgrade 3b and typically consists of slightly stony medium clay loam or medium sandy loam topsoils overlying very stony loamy sand subsoils. Soil droughtiness is the main limiting factor in this case.

A small area (6.2 ha) of Grade 2 land occurs in the north-east of the site. Profiles consist of a very slightly to slightly stony peaty loam topsoil overlying a sand, sandy silt loam or medium silty clay loam subsoil. Topsoil stoniness is the factor limiting this area to Grade 2.

9.4 ha of Subgrade 3a land occurs in the south-west of the site. Topsoils consisting of medium clay loam overlie medium clay loam or heavy clay loam upper subsoils with gravel at depth. Soil droughtiness is the main factor which limits the ALC grade of this area.

The remainder of the site consists of Urban land (the existing quarry and access roads, covering 21.2 ha) and Non Agricultural land (0.6 ha of scrub in the south).

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STATEMENT OF PHYSICAL CHARACTERISTICS AND AGRICULTURAL LAND CLASSIFICATION REPORT ON THE PROPOSED QUARRY EXTENSION AT NOSTERFIELD QUARRY, NORTH YORKSHIRE

1. INTRODUCTION AND STATEMENT OF PHYSICAL CHARACTERISTICS

1.1

The site is located around Grid Reference SE 280810 and lies 10 km north of the city of Ripon in North Yorkshire. It covers a total of 109 ha, 80% of which was in agricultural use at the time of survey. Survey work was carried out in August 1992 when soils were examined by hand auger borings at 100m intervals predetermined by the National Grid. Extra borings were made, where necessary, to refine grade boundaries and three soil pits were dug to allow full profile descriptions to be made.

All assessments of agricultural land quality were made using the methods described in "Agricultural Lands Classification of England and Wales, Revised guidelines and criteria for grading the quality of agricultural land" (MAFF, 1988).

1.2 Climate

Site name	:	Nosterfield Quarry
Grid reference	:	SE 280810
Altitude (m)	:	45
Accumulated Temperature above 0°C (January - June)	:	1346 day°C
Average Annual Rainfall (mm)	:	661
Climatic Grade	:	1
Field Capacity Days	:	166
Moisture Deficit (mm) Wheat	:	103
Moisture Deficit (mm) Potatoes	:	92

1.3 Land use and Relief

At the time of survey 80% of the site was in agricultural production. The western half of the site was principally under arable crops (wheat, potatoes, sugar beet and linseed) and the eastern side under permanent grass. The remainder of the site consists of the existing quarry and its access roads.

The site is flat to very gently sloping and varies between 44m AOD in the south-east and 50m AOD in the south-west.

1.4 Geology and Soils

The site is underlain by Magnesian limestone in the west and Middle Permian Marl in the east, and overlain by deep deposits of glacial sand and gravel. A small area of peat occurs in the north of the site, and there is an area of heavier textured drift in the south-west.

Over most of the site the soils are light to medium-textured (typically consisting of a medium sandy loam or medium clay loam topsoil overlying a sandy loam or loamy sand subsoil) and well drained, falling in Wetness Class I. These soils are slightly to moderately stony with 8-40% small and medium rounded hard stones and sandstones.

In the north-east of the site there is a small low-lying area where a peaty loam topsoil generally overlies sand or sandy silt loam. These soils are also well drained (Wetness Class I), but stoneless to slightly stony. The soils formed in the heavier-textured drift are typically well drained (Wetness class I) and very slightly stony, with medium clay loam topsoils overlying medium to heavy clay loam subsoils

1.5 Soil Properties

Three 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:- Organic soil (Unit T1/S1)
(Full Profile Description, Table 1)

This soil, formed on low-lying deposits of alluvium, occurs in the north-east of the site. It is characterised by a deep peaty topsoil overlying a stoneless light-textured subsoil.

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

This soil, formed over boulder clay, occurs in the south-west of the site. It is characterised by a very slightly stony medium-textured topsoil overlying a very slightly stony medium or heavy-textured subsoil.

- (c) Soil Type 3:- Light to medium textured soil (Unit T3/S3)
(Full Profile Description, Table 3)

This soil, formed on deposits of glacial sand and gravel occurs over most of the site. It is characterised by a slightly stony light to medium-textured topsoil overlying a moderately to very stony light-textured subsoil.

1.6 Soil Resources

(i) Topsoils

Unit T1 occurs in the north east of the site. It consists of a very slightly to slightly stony peaty loam and has a weakly developed very coarse platy structure. Median unit thickness is 50 cm.

Unit T2 occurs in the south-west of the site. It consist of medium clay loam and is generally very slightly stony, with around 5% small to large subrounded hard stones. This topsoil has a moderately developed medium subangular blocky structure and a median depth of 30cm.

Unit T3 occurs over most of the site. It is light to medium textured and usually consists of *medium sandy loam or medium clay loam*. It is very slightly to slightly stony with between 2% and 10% small to large subrounded hard stones in most cases. It has a well developed coarse granular to fine subangular blocky structure and a median depth of 30 cm.

(ii) Subsoils

Unit S1 occurs in the north-east of the site. It is typically light-textured, consisting of sand or sandy silt loam, although medium-textured (silty clay loam or silt loam) horizons occur in places. It has a weakly to well developed medium angular blocky structure and a mean depth of 58 cm.

Unit S2 occurs in the south-west of the site. It is medium to heavy-textured (consisting of medium or heavy clay loam) and is typically very slightly stony, containing around 5% small to large subrounded hard stones. Unit S2 has a moderately developed coarse angular blocky structure. Mean unit depth is 67cm but in places Unit S2 is underlain by Unit S3 at around 70cm depth.

Unit S3 occurs over most of the site. It is light-textured (sandy loam) in most cases although very light-textured (loamy sand) and medium-textured (medium clay loam) horizons are not uncommon. It is typically moderately stony, with around 30% very small to large sub-rounded hard stones. Unit S3 is typically structureless and has a mean depth of 72cm.

2. SOIL PROFILE DESCRIPTIONS

PIT 1, near Boring 45. Land Use: Rough Grazing. Slope: 0°

Profile typical of Soil Units T1/S1

<u>Depth (cm)</u>	<u>Description</u>
0-55	Very dusky red (2.5YR 2.5/0) fibrous peat; no mottles; stoneless; weakly developed very coarse platy structure; moderately porous; abundant fine and medium fibrous roots; non-sticky; non plastic; non calcareous; abrupt smooth boundary
55-95	Light brownish grey (2.5Y 6/2) silt loam; common fine and medium brownish yellow (10YR 6/8) mottles; stoneless; weakly developed medium angular blocky structure; friable; moderately porous; few fine fibrous roots; non sticky, non plastic; non-calcareous; abrupt smooth boundary.

95-110

Dark grey (7.5 YR 4.0) fine sandy silt loam; common fine distinct yellowish brown (10YR 5/6) mottles; stoneless; well developed medium angular blocky structure; friable; slightly porous (few fine pores and root channels); few fine fibrous roots; slightly sticky; slightly plastic; non-calcareous

PIT 2, near Boring 48. Land use: Arable Slope: 0°

Profile typical of Unit T2/S2

<u>Depth</u>	<u>description</u>
0-35	Brown (10YR 4/3) medium sandy loam; no mottles; slightly stony (6-8% small to large rounded hard stones); moist; moderately developed medium subangular blocky structure; friable; common fine fibrous roots; slightly sticky; moderately plastic; non calcareous; smooth gradual boundary.
35-75	Pale yellow (2.5YR 7/3) heavy clay loam; common fine indistinct reddish yellow (7.5 YR 5/6) mottles; very slightly stony (5% small to large subrounded hard stones); dry; moderately developed coarse angular blocky structure (verging on medium prismatic); very hard soil strength; few fine fibrous roots; moderately sticky; moderately plastic; smooth clear boundary.
75 +	Light brownish grey (10YR 6/2) loamy medium sand; no mottles; moderately to very stony (30-40% small to large rounded hard stones); dry; structureless; common fine fibrous roots; non sticky; non plastic; non-calcareous.

PIT 3 (Quarry Face, near Boring 102). Land Use: Permanent Grass

Slope : 0°

Profile typical of Soil Units T3/S3

<u>Depth (cm)</u>	<u>Description</u>
0-25	Dark brown (10YR 3/2) medium clay loam; no mottles; very slightly to slightly stony (5-10% small to large rounded hard stones); dry; well developed coarse granular to fine subangular blocky structure; slightly hard soil strength; many fine and medium fibrous roots; slightly sticky; slightly plastic; non-calcareous; abrupt smooth boundary.
25-40	Grey (10YR 5/1) fine sandy loam; common coarse distinct reddish yellow (7.5 YR 6/8) mottles; slightly to moderately stony (15-30% small to large subrounded hard stones); dry; structureless; common fine fibrous roots; slightly sticky; non-plastic; non-calcareous; gradual smooth boundary.
40-120	Light brownish grey (10YR 6/2) loamy medium sand; no mottles; moderately to very stony (30-40% small to large rounded hard stones); dry; structureless; common fine fibrous roots; non-sticky; non-plastic; non-calcareous.

3. AGRICULTURAL LAND CLASSIFICATION

The ALC grades occurring on this site are as follows:

<u>Grade/Subgrade</u>	<u>Hectares</u>	<u>Percentage of Total Area</u>
1		
2	6.2	5.7
3a	9.4	8.6
3b	71.7	65.7
4		
5		
(Sub total)	(87.3)	(80.0)
Urban	21.2	19.4
Non Agricultural	0.6	0.6
Woodland - Farm		:
- Commercial		:
Agricultural Buildings		
Open Water		
Land not surveyed		
(Sub total)	(21.8)	(20.0)
TOTAL	109.1	100

3.1 Grade 2

Land in this grade occurs in the north-east of the site. Peaty loam topsoils generally overlie a sandy silt loam subsoil, although fine sand and medium silty clay loam subsoils occur in places. Topsoils are stoneless to slightly stony (0-8% small to large, rounded hard stones) and typically around 50cm deep. These soils are generally well-drained (Wetness Class I) but are limited to Grade 2 by the stone content of the topsoil.

3.2 Subgrade 3a

Subgrade 3a land occurs in the south-west of the site. Typically a medium clay loam topsoil overlies a medium clay loam or heavy clay loam upper subsoil, with gravel occurring at depth in places. Topsoils and upper subsoils are very slightly to slightly stony (containing 5-15% small to large subrounded and subangular hard stones) and profiles are, in most cases, well drained (Wetness Class I). This land is limited to Subgrade 3a by moderate soil droughtiness and, in places, by topsoil stoniness.

3.3 Subgrade 3b

Land in this subgrade covers most of the agricultural land on the site. Typically, medium clay loam or medium sandy loam topsoils overlie sandy loam or loamy sand upper subsoils and loamy sand lower subsoils. Profiles are well-drained (Wetness Class I) but slightly stony to very stony with topsoils containing 2-16% small to large rounded hard stones and subsoils containing 20-45% small to very large rounded hard stones. This land is limited to Subgrade 3b by soil droughtiness and, in places, by topsoil stone content.

3.4 Urban

This occurs in the east and south of the site and consists of the existing quarry and access roads.

3.5 Non Agricultural

This occurs in a small area in the south of the site and consists of scrubland.