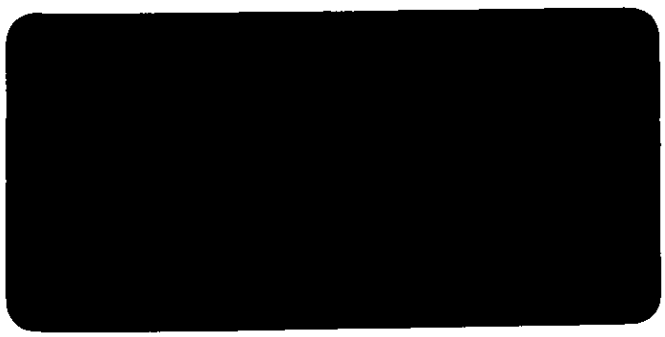

MAFF Ministry of Agriculture Fisheries and Food

TANCRED QUARRY EXTENSION
NORTH YORKSHIRE

Agricultural Land Classification
and Statement of Physical Characteristics
December 1996

Resource Planning Team
Leeds Statutory Group
ADAS Leeds

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TANCRED QUARRY EXTENSION
AGRICULTURAL LAND CLASSIFICATION
AND STATEMENT OF PHYSICAL CHARACTERISTICS REPORT

Introduction

1. This report presents the findings of a detailed Agricultural Land Classification (ALC) and Statement of Physical Characteristics survey of 8.1 ha of land north of the village of Scorton. The survey was carried out during November 1996.

2. The survey was commissioned by the Ministry of Agriculture, Fisheries and Food (MAFF) Land Use Planning Unit, Northallerton in connection with the proposal to extract sand and gravel from this site. This ALC survey supersedes any previous surveys.

3. The work was conducted by members of the Resource Planning Team in the Leeds Statutory Group in ADAS. The land has been graded in accordance with the published MAFF ALC guidelines and criteria (MAFF, 1988). A description of the ALC grades and subgrades is given in Appendix I.

4. At the time of survey the land on the site was all sown to winter cereals.

Summary

5. The findings of the survey are shown on the enclosed ALC, Topsoil Resource and Subsoil Resource maps. The maps have been drawn at a scale of 1:5,000. They are accurate at this scale but any enlargement would be misleading.

6. The area and proportions of the ALC grades and subgrades on the surveyed land are summarised in Table 1.

Table 1: Area of grades and other land

Grade/Other land	Area (hectares)	% Total site area	% Surveyed Area
Subgrade 3a	8.1	100.0	100.0
Total surveyed area	8.1	-	100
Total site area	8.1	100	-

7. The fieldwork was conducted at an average density of one boring per hectare. A total of six borings and one soil pit were described.

8. All of the site is Subgrade 3a, good quality agricultural land. The soils are well drained and consist of sandy loam topsoils overlying sandy loam or, occasionally, sandy clay loam subsoils. The topsoils are moderately stony whilst the subsoils are moderately to very stony. The ALC grade of the land is limited by soil droughtiness and, in places, topsoil stoniness.

9. In terms of the soil resources on the site there is only one main soil type. A sandy loam topsoil (median depth 30cm) overlies a sandy loam or sandy clay loam subsoil (mean depth 88cm). The topsoils are moderately stony, with 20-30 % very small to large stones of mixed lithology while the subsoils are moderately to very stony, with 30-60% very small to large stones of mixed lithology.

Factors Influencing ALC Grade

Climate

10. Climate affects the grading of land through the assessment of an overall climatic limitation and also through interactions with soil characteristics.

11. The key climatic variables used for grading this site are given in Table 2 and were obtained from the published 5km grid datasets using the standard interpolation procedures (Met. Office, 1989).

Table 2: Climatic and altitude data

Factor	Units	Values
Grid reference	N/A	NZ 248007
Altitude	m, AOD	58
Accumulated Temperature	day°C (Jan-June)	1324
Average Annual Rainfall	mm	694
Field Capacity Days	days	175
Moisture Deficit, Wheat	mm	97
Moisture Deficit, Potatoes	mm	85

12. The climatic criteria are considered first when classifying land as climate can be overriding in the sense that severe limitations will restrict land to low grades irrespective of favourable site or soil conditions.

13. The main parameters used in the assessment of an overall climatic limitation are average annual rainfall (AAR), as a measure of overall wetness, and accumulated temperature (ATO, January to June), as a measure of the relative warmth of a locality.

14. The combination of rainfall and temperature at this site means that there is no climatic limitation on ALC grade.

Site

15. The land on this site is level to gently sloping (0-2°) and as such gradient does not limit the ALC grade at any point. Equally, neither microrelief nor flood risk are of significance on this site.

Geology and soils

16. The area is underlain by Bunter Sandstone over which lie undifferentiated river terrace deposits (BGS Sheet 41, Richmond).

17. The soils on the site have been mapped as Wick 1 association by the Soil Survey of England and Wales (Soils of England and Wales, Sheet 1, Northern England). The field survey work confirmed that the soils belong to this association.

Agricultural Land Classification

18. The details of the classification of the site are shown on the attached ALC map and the area statistics of each grade are given in Table 1.

Subgrade 3a.

19. All of the site falls in this subgrade. The soils are well drained, falling in Wetness Class I (see Appendix II) and consist of medium sandy loam topsoils overlying medium sandy loam, coarse sandy loam or sandy clay loam subsoils. The topsoils are moderately stony, containing 20-30% very small to large stones of mixed lithology (5-13% > 2cm in size) while the subsoils are moderately to very stony, with 30-60% stones of mixed lithology. The ALC grade of the land is limited by soil droughtiness restrictions and, in places, by topsoil stoniness. Although bricks and concrete were observed very occasionally on the soil surface they are very scattered and could be relatively easily removed by hand. At present they provide no extra limitation to land quality.

Statement of Physical Characteristics

One main soil type was identified on the site, a description of which is given below. Topsoil and subsoil resources are shown on the accompanying maps along with soil thickness and volume information. A representative pit description is given in Appendix III.

(a) Soil Type 1 (T1/S1)

This soil type occurs over the whole site. It is characterised by being moderately to very stony and light to medium-textured.

Soil Resources

Topsoil

Topsoil T1 occurs over the whole site. It is light-textured (medium sandy loam) and it has a moderately developed medium subangular blocky structure. Unit T1 is moderately stony, containing 20-30% very small to large stones of mixed lithology, and it has a median unit thickness of 30cm.

Subsoil

Subsoil S1 underlies topsoil T1. It is light or occasionally medium-textured, consisting of medium sandy loam, coarse sandy loam or sandy clay loam. It has a weakly or moderately developed medium subangular blocky structure and is moderately to very stony, containing 30-60% very small to large stones of mixed lithology. The mean thickness of Unit S1 is 88cm.

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SOURCES OF REFERENCE

British Geological Survey (1970) *Sheet No.* 41, *Richmond. 1:63, 360 Scale*
BGS: London.

Ministry of Agriculture, Fisheries and Food (1988) *Agricultural Land Classification of England and Wales: Revised guidelines and criteria for grading the quality of agricultural land.* MAFF: London.

Met. Office (1989) *Climatological Data for Agricultural Land Classification.*
Met. Office: Bracknell.

Soil Survey of England and Wales (1983) *Sheet 1, Soils of Northern England, 1:250,000 scale.*
SSEW: Harpenden.

Soil Survey of England and Wales (1984) *Soils and their Use in Northern England*
SSEW: Harpenden

APPENDIX I

DESCRIPTIONS OF THE GRADES AND SUBGRADES

Grade 1: Excellent Quality Agricultural Land

Land with no or very minor limitations to agricultural use. A very wide range of agricultural and horticultural crops can be grown and commonly includes top fruit, soft fruit, salad crops and winter harvested vegetables. Yields are high and less variable than on land of lower quality.

Grade 2: Very Good Quality Agricultural Land

Land with minor limitations which affect crop yield, cultivations or harvesting. A wide range of agricultural or horticultural crops can usually be grown but on some land of this grade there may be reduced flexibility due to difficulties with the production of the more demanding crops such as winter harvested vegetables and arable root crops. The level of yield is generally high but may be lower or more variable than Grade 1 land.

Grade 3: Good to Moderate Quality Land

Land with moderate limitations which affect the choice of crops, the timing and type of cultivation, harvesting or the level of yield. When more demanding crops are grown, yields are generally lower or more variable than on land in Grades 1 and 2.

Subgrade 3a: Good Quality Agricultural Land

Land capable of consistently producing moderate to high yields of a narrow range of arable crops, especially cereals, or moderate yields of a wide range of crops including cereals, grass, oilseed rape, potatoes, sugar beet and the less demanding horticultural crops.

Subgrade 3b: Moderate Quality Agricultural Land

Land capable of producing moderate yields of a narrow range of crops, principally cereals and grass, or lower yields of a wider range of crops or high yields of grass which can be grazed or harvested over most of the year.

Grade 4: Poor Quality Agricultural Land

Land with severe limitations which significantly restrict the range of crops and/or the level of yields. It is mainly suited to grass with occasional arable crops (e.g. cereals and forage crops) the yields of which are variable. In moist climates, yields of grass may be moderate to high but there may be difficulties in utilisation. The grade also includes very droughty arable land.

Grade 5: Very Poor Quality Agricultural Land

Land with severe limitations which restrict use to permanent pasture or rough grazing, except for occasional pioneer forage crops.

APPENDIX II

SOIL WETNESS CLASSIFICATION

Definitions of Soil Wetness Classes

Soil wetness is classified according to the depth and duration of waterlogging in the soil profile. Six soil wetness classes are identified and are defined in the table below.

Wetness Class	Duration of waterlogging[1]
I	The soil profile is not wet within 70 cm depth for more than 30 days in most years.[2]
II	The soil profile is wet within 70 cm depth for 31-90 days in most years **or**, if there is no slowly permeable layer within 80 cm depth, it is wet within 70 cm for more than 90 days, but only wet within 40 cm depth for 30 days in most years.
III	The soil profile is wet within 70 cm depth for 91-180 days in most years **or**, if there is no slowly permeable layer present within 80 cm depth, it is wet within 70 cm for more than 180 days, but only wet within 40 cm depth for between 31-90 days in most years.
IV	The soil profile is wet within 70 cm depth for more than 180 days but not wet within 40 cm depth for more than 210 days in most years **or**, if there is no slowly permeable layer present within 80 cm depth, it is wet within 40 cm depth for 91-210 days in most years.
V	The soil profile is wet within 40 cm depth for 211-335 days in most years.
VI	The soil profile is wet within 40 cm depth for more than 335 days in most years.

Assessment of Wetness Class

Soils have been allocated to wetness classes by the interpretation of soil profile characteristics and climatic factors using the methodology described in *Agricultural Land Classification of England and Wales: Revised guidelines and criteria for grading the quality of agricultural land* (MAFF, 1988).

[1] The number of days is not necessarily a continuous period.
[2] 'In most years' is defined as more than 10 out of 20 years.

APPENDIX III

REPRESENTATIVE PIT DESCRIPTION

Soil Type 1 (T1/S1) : Moderately to very stony light to medium-textured soil.

Location:	Grid Reference NZ 246 006
Land Use:	Winter Cereals
Slope:	0°
Recent Weather:	Bright and cold after overnight frost

Depth (cm)	Horizon Description
0-34	Dark brown (10YR3/3) medium sandy loam; no mottles; moderately stony, containing approximately 23 % very small to large rounded and subrounded stones of mixed lithology (7% > 2cm); moist; moderately developed medium subangular blocky structure; friable; very porous; common very fine fibrous roots; slightly sticky; moderately plastic; non-calcareous; clear smooth boundary.
34-50	Dark yellowish brown (10YR4/4) medium sandy loam; no mottles; moderately stony, containing approximately 35% very small to large rounded and subrounded stones of mixed lithology; moist; weakly to moderately developed medium subangular blocky structure; friable; very porous; common very fine fibrous roots; slightly sticky; moderately plastic; non-calcareous; gradual smooth boundary.
50-120	Brown/dark brown (10YR4/3) coarse sandy loam; no mottles; very stony, containing approximately 60% very small to large rounded and subrounded stones of mixed lithology; moist; weakly to moderately developed medium subangular blocky structure; firm; very porous; few very fine fibrous roots; slightly sticky; moderately plastic; non-calcareous.