# AGRICULTURAL LAND CLASSIFICATION
# AND
# STATEMENT OF PHYSICAL CHARACTERISTICS

## WHITEHOUSE COLLIERY
## ROTHBURY

MAFF
Leeds Regional Office

December 1991
File Ref: 2FCS
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lds.AL5.White.Hse

CONTENTS



MAP(S)

AGRICULTURAL LAND CLASSIFICATION REPORT,

## 1.0 Introduction and Site Characteristics

### 1.1 Location

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| **National Grid Reference:-** | NZ 059953 |
| **Location Details:-** | Immediately west of the B6342, 6½km south of Rothbury |
| **Site Size:-** | 91.5ha |

### 1.2 Survey Methods

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| **Date Surveyed:-** | 20th November 1991 |
| **Boring Density and Spacing Basis:-** | 1 boring per 2 hectares at intervals predetermined by the National Grid |
| **Sampling Method:-** | By hand auger to a depth of 1m |
| **Number of Borings:-** | 45 |
| **Number of Soil Pits (used for):-** | 2 to collect samples for analysis |

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)".

This detailed survey supersedes the previous "1" to one mile" survey of the area.

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| 1.3 | **Land Use:-** | Rough grazing except for approx 4 hectares of coniferous woodland in the centre of the site |
| 1.4 | **Climate and Relief** | |
| | **Average Annual Rainfall (AAR):-** | 858 mm |
| | **Accumulated Temperature above 0°C (January-June):-** | 1125 day °C |
| | **Field Capacity Days:-** | 211 days |
| | **Moisture Deficit:** | |
| | **wheat:-** | 62 mm |
| | **potatoes:-** | 40 mm |
| | **Altitude average:-** | 200 m a.o.d. |
| | **maximum:-** | 200 m a.o.d. |
| | **minimum:-** | 165 m a.o.d. |
| | **Climatic limitation (based on interaction of rainfall and temperature values:-** | Best grade 3b |
| | **Relief:-** | Mainly moderately undulating with an overall slope from south to north. Some local steep slopes |
| | **Slopes (° ):-** | Mainly 2°-7°, locally 15°-25° |
| | **Gradient Limitations:-** | Yes |
| | **Limiting gradient(s):-** | 18°-25° |
| | **Grade(s)/subgrade(s):-** | Grades 4 and 5 |

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| **Occurrence on site:-** | On the disturbed land along the southern boundary and in the clough adjoining the old railway in the north |

1.5 **Geology and Soil**

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| **Solid Strata:-** | Carboniferous Middle Limestone group consisting of shales, sandstones, limestones and coal seams |
| **Depth of solid rock from surface:-** | More than 1m over most of the site. Less than 1m along the southern boundary where sandstone is exposed in places in old workings |
| **Drift types:-** | Boulder clay |
| **Thickness of drift and distribution:-** | More than 1m over most of the site |
| **Soil Types and Distribution:-** | Mainly poorly drained boulder clay soils subdivided as follows:- 1) Northern edge of site: medium clay loam topsoils over heavy clay subsoils |

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| | 2) Central part of site: light topsoils (fine sandy loam) over medium upper subsoils passing to heavy clay loam subsoils<br>3) Southern edge of site: mixed light and medium soils sometimes over rock |
| **Soil Series/Associations:-** | |
| **On 1/250000 map:-** | Dunkeswick |
| **Identified on site:-** | Except for the northern edge of the site, most soils are too light especially in the topsoil to be classified as Dunkeswick |
| **Soil Limitations and type:-** | Topsoils are thin especially in the central part of the site where the mean thickness is only 20cm |

**1.6 Drainage**

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| **Soil type and Wetness Class:-** | Almost all soils are poorly or very poorly drained and fall within Wetness Classes IV and V. Somewhat better drained land occurs in places near the southern boundary |
| **Drainage Limitations:-** | Slowly permeable subsoils |

## 2.0 Agricultural Land Classification Grades

The ALC grades occurring on the site are as follows:-

| *Grade/Subgrade* | *Hectares* | Percentage of Total Area |
|---|---|---|
| 1 | - | |
| 2 | - | |
| 3a | - | |
| 3b | 68.1 | 74.4% |
| 4 | 15.5 | 16.9% |
| 5 | 3.8 | 4.2% |
| Non Agricultural (woodland) | 4.1 | 4.5% |
| Agricultural Buildings | - | |
| Urban | - | |
| Other | - | |
| Total | 91.5 | 100 |

Subgrade 3b

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|---|---|
| **Distribution on site:-** | The whole site except for the southern and northern edges |
| **Soil Type(s) and Texture(s):-** | Poorly drained boulder clay soils consisting of fine sandy loam topsoils over medium and heavy clay loam subsoils |
| **Depth to Slowly Permeable Layers:-** | 15-30 cm |
| **Wetness and Drainage Class:-** | Wetness Class IV - poorly drained |
| **Stoniness:-** | Slightly stony |
| **Grade Limiting Factors:-** | Soil wetness and workability along with climate |

Grade 4

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|---|---|
| **Distribution on site:-** | Along the northern and southern edges |
| **Soil Type(s) and Texture(s):-** | Poorly drained boulder clay soils in the north consisting of thin medium clay loam topsoils over clay subsoils. Poorly and imperfectly drained mixed sandy loam and clay loam soils in the south |
| **Depth to Slowly Permeable Layers:-** | 10-30 cm in the north<br>30-35 cm in the south |
| **Wetness and Drainage Class:-** | Variable in both areas: Wetness Classes IV and V (poorly/very poorly drained) in the north. Wetness Class III and IV (imperfectly /poorly drained) in the south |
| **Stoniness:-** | Slightly stony |
| **Grade Limiting Factors:-** | Northern area: Severe soil wetness and workability problems<br>Southern area: Gradients of 12-18° along with disturbance & irregular topography |

Grade 5

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|---|---|
| **Distribution on site:-** | Small patches near the northern and southern edges of the site |
| **Soil Type(s) and Texture(s):-** | Poorly drained boulder clay soils in the north. Disturbed old quarry areas in the south containing variable light and medium textured soils |
| **Depth to Slowly Permeable Layers:-** | 15-30 cm |
| **Wetness and Drainage Class:-** | Wetness Classes III and IV poorly to imperfectly drained |
| **Stoniness:-** | Slightly to very stony |
| **Grade Limiting Factors:-** | Gradients of >18° |

**Non Agricultural**

| | |
|---|---|
| **Type and location of land included:-** | Coniferous plantation in the centre of the site |

## 3.0 STATEMENT OF PHYSICAL CHARACTERISTICS (SOIL PROPERTIES AND RESOURCES)

### 3.1 Soil Properties

3 soil types occur on the site. Their distribution along with soil depth and quantity information are also shown on the accompanying maps.

**Soil Type 1:-** Very poorly drained heavy boulder clay soil (unit T1/S1 on the accompanying maps)

**Occurrence:-** Along the northern edge of the site

**Textures:-** Medium clay loam topsoils over clay or silty clay subsoils

**Stone content:-** 0 - 10%

**Horizon thicknesses:-** Topsoils:- Mean thickness 25 cm over 75 cm of clay subsoil

**Other features:-** Occurs in a very poorly drained part of site

**Soil Type 2:-** Poorly drained heavy boulder clay with light surface horizons (Unit T2/U1/S2 on the resource maps)

**Occurrence:-** A large area through the centre of the site

**Textures:-** Fine sandy loam topsoils over sandy clay loam upper subsoils passing to heavy clay loam lower subsoils

**Stone content:-** Variable 5-15%

**Horizon thicknesses:-**

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|---|---|
| Topsoil mean thickness: | 20 cm |
| Upper Subsoil mean thickness: | 15 cm |
| Lower Subsoil mean thickness: | 65 cm |

| | |
|---|---|
| **Soil Type 3:-** | Mixed light and medium drift soils with variable drainage, sometimes with solid rock at <1 m depth |
| **Occurrence:-** | Southern edge of the site (Unit T3/S3 on the accompanying maps) |
| **Textures:-** | Fine sandy loam topsoils over medium clay loam, sandy loam or sandy clay loam subsoils |
| **Stone content:-** | Very variable: 5-20 % |
| **Horizon thicknesses:-** | Topsoil mean thickness: 30 cm<br>Subsoil thickness: 50-70 cm |
| **Other features:-** | Old quarry areas show 60 cm soil profile overlying massively bedded sandstone |

## 3.2 Soil Resources

**Topsoils**

**Unit T1**

**Texture/stone content:-** Medium (slightly stony)

**Structure:-** Moderately developed coarse sub-angular blocky

**Occurrence:-** Northern edge of the site

**Thickness:-** 10-30 cm. Mean thickness 25 cm

**Unit T2**

**Texture/stone content:-** Light (slightly stony)

**Structure:-** Weakly developed medium sub-angular blocky

**Occurrence:-** Central part of the site

**Thickness:-** 10-25 cm. Mean thickness 20 cm

**Unit T3**

**Texture/stone content:-** Light (slightly to moderately stony)

**Structure:-** Weakly developed sub-angular blocky

**Occurrence:-** Southern edge of site

**Thickness:-** 10-40 cm. Mean thickness 30 cm

**Subsoils**

**Upper Subsoils**

**Unit U1**

| | |
|---|---|
| **Texture group/stone content:-** | Medium (slightly stony) |
| **Structure:-** | Moderately developed coarse sub-angular or angular blocky |
| **Occurrence:-** | Central part of the site |
| **Thickness:-** | Mean: 15 cm |

**Subsoils**

**Lower Subsoils**

**Unit S1**

| | |
|---|---|
| **Texture group/stone content:-** | (very) heavy (slightly stony |
| **Structure:-** | Moderately developed coarse prismatic |
| **Occurrence:-** | Northern edge of the site |
| **Thickness:-** | 75 cm |

**Unit S2**

| | |
|---|---|
| **Texture group/stone content:-** | Heavy (slightly stony) |
| **Structure:-** | Moderately developed angular blocky to prismatic |
| **Occurrence:-** | Central part of the site |
| **Thickness:-** | Mean: 65 cm |

**Unit S3**

| | |
|---|---|
| **Texture group/stone content:-** | Medium and light (stony in places) |
| **Structure:-** | Variable weak sub-angular blocky to moderately developed angular blocky |
| **Occurrence:-** | Southern edge of the site |
| **Thickness:-** | Mean: 60 cm |
| **Other Materials-** | Hard sandstone occurs at ‹1 m depth in places |

MAP(S)