

# AGRICULTURAL LAND CLASSIFICATION FOR THE PROPOSED SUTHERLAND OPENCAST COAL SITE NEAR WALSALL

## 1 BACKGROUND INFORMATION

### Introduction

The land was visited by members of the Resource Planning Group between July and October 1989, to undertake a detailed Agricultural Land Classification Survey using the 'Revised' guidelines. Ninety six auger borings were made and 14 soil pits dug, providing information in sufficient detail to present the maps at a scale of 1:10,000.

### Climate

This site falls within Agro-Climatic Area 20. The site has an average annual rainfall between 730 and 740 mm. Monthly rainfall is fairly evenly distributed throughout the year, although wettest in August and November, and driest between February and April. The length of the growing season is from the end of March to the end of November, and the mean last frost is in early May.

### Altitude and Relief

Altitude varies between 130 metres and 150 metres. The relief is gently undulating, with the highest ground around Oakenhayes Farm in the west, gently sloping towards Hobble End Lane to the south, and Cadman Lane to the east. Gradient does not represent a limiting factor in achieving the final grading for this site.

### Geology and Soils

The solid geology of the area is Carboniferous Coal Measures, with grey and black clay and silty shales, and occasional thin sandstones, and seams of coal and ironstone. These are overlain by Pleistocene drift deposits, principally Boulder Clay, but with a limited expanse of Alluvium, and areas of thin Sand and Gravel deposits.

In the west of the site, the land has been previously opencasted and subsequently restored. The soils are typically sandy clay loams and clay loams overlying clay.

Elsewhere, the soils reflect the complex drift geology, with sandy loams overlying sandy clay loams with clay at depth, or sandy loams overlying stony loamy sands, with inclusions of sand and clay.

### Agricultural Land Use

At the time of survey, the majority of the site was under permanent pasture with some winter cereals, potatoes and cabbages grown in the south and south-west of the site.

## 2 AGRICULTURAL LAND CLASSIFICATION

### General Introduction

This survey was carried out during a period of adverse ground conditions.

Following the dry winter of 1988 and spring of 1989, and the subsequent

summer drought, the soils were found to be very hard and compacted. The problem was aggravated by the naturally stony nature of these soils, which made augering difficult. Many borings were only to a depth of 55 cms, with some as shallow as 35 cms. Following a period of rainfall in October, a subsequent visit was made to the site, but the subsoils were still too dry and compacted to auger.

As a result, a large reliance has been placed on 14 soil pits; along with information from a previous ALC survey carried out in the eastern part of the site. A limited amount of data was also available in the Soil Survey Record No 89, 'Soils in Staffordshire IV'.

Sub-grade 3a land occurs in two limited areas: to the west of Hobble End Farm; and in the east of the site, adjoining Cadman Lane. It accounts for 16.5 hectares, and 17% of the site. These soils are typically slightly stony sandy loams overlying sandy clay loams, with moderately stony loamy sands or sandy loams at depth, often with clay inclusions. Droughtiness is the main limitation to the agricultural use of this land.

Sub-grade 3b land occurs on the remainder of the site. It accounts for 76.6 hectares and 80% of the site. These soils are naturally variable. Typically, the topsoils are moderately stony sandy loams or sandy clay loams overlying clay loams with clay at depth. However, the subsoils often include sandier bands. Stoniness is the main limitation to the agricultural use of this land, with surface stone content in excess of 15% in most places. Elsewhere, it is a combination of the heavier topsoil textures coupled with the depth to the slowly permeable layer, which places these soils into wetness class IV.

Non agricultural land occurs at Silver Wedding Wood, and accounts for 2.8 hectares and 3% of the site.

#### SUMMARY

| <u>Grade</u>             | <u>Hectares</u> | <u>% of total</u> | <u>% of agricultural area</u> |
|--------------------------|-----------------|-------------------|-------------------------------|
| 3a                       | 16.5            | 17                | 18                            |
| 3b                       | 76.6            | 80                | 82                            |
| N Agric/ <i>Woodland</i> | <u>2.8</u>      | <u>3</u>          | <u>-</u>                      |
| Total                    | 95.8            | 100               | 100                           |

### 3. SOIL UNITS

Three soil units have been identified, which have been separated according to their textures, which reflect their different handling characteristics and separate storage needs.

#### Unit 1

This unit comprises disturbed soils, which have been previously opencast. They include: the 'Eight Foot' opencast to the east of Keeper's cottage; the 'Brooch + Charles F' opencast, which extends from Oakenhayes Farm in the west, towards Sutherland Farm in the north; and 'Bench's opencast to the north-east of South Cannock Farm.

Soils are typically slightly to moderately stony sandy loams or sandy clay loams to 30 cms, overlying moderately stony sandy clay loams or clay loams to 50 cms, overlying clay to depth. Below 50 cms these soils are compacted clay and shale, often containing coal fragments, weathered sandstone and occasional brick fragments.

Soil pits 7 and 11 are representative of this unit.

#### Unit 2

This unit comprises the lighter soils on the site. They include most of the land to the south of Hobble End Lane; the land to the north of Hobble End Farm, as far as Cadman Lane; and smaller blocks of land near South Cannock Farm.

Soils are typically slightly to moderately stony sandy loams overlying loamy sands, sandy loams or sandy clay loams, with loamy sands or sands at depth. Bands of weathered sandstone occur within many profiles. This soil unit is naturally variable.

Soil pits 2, 3, 5, 6 and 9 are representative of this unit.

#### Unit 3

This unit occurs within the remainder of the site.

Soils are typically slightly to moderately stony sandy loams overlying sandy loams, medium clay loams or heavy clay loams. Below 50 cms heavy clay loams or clay occur. Many profiles contain sandier pockets, usually comprised of weathered sandstone. This soil unit is naturally variable.

Soil pits 4, 6, 8, 10 and 12 are representative of the unit.

Resource Planning Group  
Wolverhampton Regional Office  
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SOIL NOTES FOR SUTHERLAND OPENCAST COAL SITE, GREAT WYRLEY ON 6 DECEMBER 1985

1. 30 cm of very dark brown fine sandy loam over 10 cm of paler brown fine sandy loam over 15 cm of greyish brown fine sandy clay loam over at least 25 cm of grey clay loam. No further penetration possible due to stony waterlogged layer. Occasional pale grey mottles below 30 cm becoming worse with depth. Site at foot of very gently sloping north east facing slope. Recently lined pasture. 3a/b.
2. 30 cm of dark brown sandy loam over 10 cm of paler brown sandy loam over 10 cm of moist reddish brown sandy clay loam over at least 50 cm of reddish brown clay. Occasional faint ochreous mottles below 30 cm with more distinct grey mottles below 40 cm becoming much more numerous and prominent with depth. Site at top of gentle north facing slope, recently limed pasture. 3a/b.
3. 30 cm of dark brown sandy loam over 15 cm of reddish brown sandy clay loam over at least 55 cm of greyish brown clay loam with occasional sandy lenses. Numerous grey and ochreous mottles below 30 cm. Soil moist below 30 cm becoming wet below 48 cm. Level, grass. 3a/b.
4. 28 cm of dark brown humose sandy loam over 12 cm of greyish brown sandy clay loam becoming heavier with depth over 40 cm of grey wet gritty coarse sandy loam with coarse sand lenses over at least 20 cm of greyish brown clay. Numerous grey mottles below 28 cm. Soil waterlogged below 40 cm. Gently undulating field, grass. 3b.
5. 28 cm of dark brown humose sandy loam over 7 cm of grey humose silty loam over 20 cm of dark red brown fine sandy loam over at least 20 cm of wet stony loamy coarse sand. No further penetration possible due to stones. Distinct grey mottles below 28 cm. Level site in shallow depression which is locally waterlogged. 3b/c.
6. 35 cm of dark brown gritty sandy loam over at least 65 cm of reddish brown sandy clay loam/sandy clay. Occasional small shale and clinker fragments throughout the topsoil. Numerous ochreous mottles below 35 cm becoming worse with depth. Level, grass. 3a/b.
7. 35 cm of dark brown sandy loam over at least 65 cm of bright reddish brown sand/loamy sand becoming slightly heavier in texture with depth. No mottles or stones seen throughout. Gently undulating field across which a pipe has recently been laid. 3a/b.
8. 38 cm of brown fine sandy loam over 10 cm of reddish brown moist well bodied sandy loam over 17 cm of reddish brown sandy clay loam becoming heavier with depth over at least 35 cm of reddish brown clay. Occasional ochreous mottles below 38 cm. Soil slightly stony throughout. Gently undulating field, recently limed pasture. 3a.
9. 2 borings located at this site. Both revealed the following sequence. 35 cm of dark brown fine sandy loam over at least 5 cm of dark brown gritty sandy loam with numerous small manganese concretions and abundant iron staining. No further penetration below this depth due to hard compacted layer? Iron pan. Level, recently limed pasture. 3a.
10. 33 cm of dark brown fine sandy loam over 47 cm of yellowish brown wet loamy sand over at least 20 cm of wet greyish brown fine sandy loam. Soil waterlogged below 33 cm with prominent grey colours and iron concretions. Soil moderately stony below 33 cm mainly small rounded quartzite pebbles. Level, grass. 3a/b.

11. 28 cm of dark brown sandy loam over 22 cm of greyish brown wet sandy loam over at least 30 cm of wet reddish brown sandy loam over at least 20 cm of wet reddish brown loamy sand. Numerous pale grey and ochreous mottles below 28 cm. Site on gentle slope adjoining low lying streamside land. Slightly stony throughout. Grass. 3b/a.
12. 25 cm of dark brown sandy loam over 12 cm of reddish brown sandy loam becoming slightly heavier with depth over at least 40 cm of reddish brown pebbly sandy clay loam. Numerous large manganese concretions with occasional rusty and ochreous mottles below 35 cm. Subsoil slightly stony, mainly small rounded quartzite pebbles which prevented penetration below 77 cm. Very gentle slope, grass. 3a.
14. 28 cm of dark brown humose sandy loam over 30 cm of pale yellowish brown fairly coarse sandy loam over 7 cm of greyish brown clay over at least 45 cm of grey fairly coarse wet sandy loam. Distinct grey and ochreous mottles below 28 cm. Signs of local waterlogging. Site on gentle slope, grass. 3b.
15. 32 cm of dark brown sandy loam over 8 cm of greyish brown loamy sand over 22 cm of pale orange brown fine sandy loam becoming slightly heavier with depth over 13 cm of greyish brown sandy loam and coarse sandy loam over at least 25 cm of wet purplish brown loamy sand. Distinct grey mottles below 32 cm. Soil wet below 70 cm. Site on very gentle south facing slope, pasture. 3a.
- 15A. 35 cm of dark brown sandy loam over 12 cm of reddish brown sandy loam over at least 15 cm of reddish brown loamy sand. No mottles or stones encountered throughout. Level, grass. 2.
16. At least 32 cm of dark brown sandy loam. No further penetration possible due to compacted ground. Very gentle slope, grass. 3a.
17. 52 cm of dark brown well bodied sandy loam over 16 cm of orange brown fairly coarse sandy loam over at least 32 cm of orange brown very wet loamy coarse sand. No mottles seen. Site on gentle south facing slope. 2.
- 17A. 28 cm of dark brown sandy loam over at least 17 cm of greyish brown fairly coarse sandy loam. Distinct grey colours below 28 cm. Site on gentle south facing slope, pasture. 3b/a.
18. 30 cm of dark brown fine sandy loam/silty loam over 18 cm of pale brown fine sandy loam over at least 12 cm of greyish brown gritty coarse sandy loam. No further penetration possible due to gravelly layer. Occasional faint ochreous mottles below 38 cm. Site at foot of gentle slope, grass. 3a/2.
19. 40 cm of dark brown sandy loam over at least 5 cm of dark reddish brown sandy loam/loamy sand. No further penetration possible due to stones. Topsoil slightly stony throughout becoming more stony below 35 cm. Site on gentle north west facing slope, grass. 3a.
- 19A. 30 cm of dark brown humose sandy loam over at least 15 cm of greyish brown sandy loam/loamy sand. Numerous grey mottles below 30 cm. Soil moist below 30 cm and pasture locally poached. Level pasture adjacent. 3a/b.

20. 40 cm of dark brown sandy loam over at least 60 cm of reddish brown clay. Occasional ochreous mottles below 40 cm becoming much worse and with grey colours with depth. Site on very gentle south facing slope, grass. 3a.
21. 28 cm of brown fine sandy loam over 22 cm of reddish brown sandy clay loam over at least 50 cm of reddish brown clay becoming wet below 75 cm. Occasional ochreous and grey mottles below 28 cm becoming more numerous with depth. Site on gentle slope, grass. 3b/a.
22. 38 cm of dark brown humose silty loam over 17 cm of greyish brown clay over at least 45 cm of wet coarse sandy loam becoming sandier and slightly less wet with depth. Occasional distinct ochreous mottles below 28 cm becoming much worse and more prominent below 38 cm. Soil waterlogged below 55 cm. Locally waterlogged at the surface probably due to run-off from adjoining farm buildings. Level, grass. 3b/a.

## MINERAL SITE RECORD

## SOIL PIT DETAILS

Site Name: Sutherland OCC

Pit Number: 1

Slope: Level

Land use: Potatoes

Aspect: -

| Depth | Texture   | Munsell Colour                               | Mottles<br>Abundance/<br>Colour   | Structure<br>Grade/Class/Type                            | Porosity | Stone<br>Abundance/Type   | Plant<br>Roots                     | Comments                 |
|-------|-----------|--|---|--|----------|---|------------------------------------|--------------------------|
| 0-33  | SL        | 10 YR 3/2<br><br>Very dark<br>greyish brown. | None  | Moderately<br>developed Medium<br>sub angular<br>blocky. | 0.5-2%   | > 2 cm 15%<br>< 2 cm 5%<br>+<br>Coal fragments                            | abundant<br>fine<br>fibrous        |                          |
| 33-50 | SL        | 10 YR 5/6<br>Yellowish brown                 | Common<br>distinct<br>rusty<br>mottles                                  | Too stony to<br>assess structure                         | 0.5-2%   | > 2 cm 40%<br>< 2 cm 22%<br>Lg sandstone<br>fragment & coal<br>fragments. | few<br>fine<br>fibrous<br>tp 40 cm | Manganese<br>concretions |
| 50-65 | gritty SL | 10 YR 4/4<br><br>Dk yellowish<br>brown       | Common feint<br>ochreous<br>mottles + a<br>few manganese<br>concretions | Too stony to<br>assess structure                         | 0.5-2%   | > 2 cm 45%<br>< 2 cm 25%  | None                               |                          |

Profile Details: Main limitation - stoniness = sub-grade 3b

Plant roots:

Soil Fauna: None.

General Comments: Impenetrable below 65+ Formerly cereals

## MINERAL SITE RECORD

## SOIL PIT DETAILS

Site Name: Sutherland OCC

Pit Number: 2

Slope: Almost level

Land use: Ploughed field

Aspect: Easterly

| Depth | Texture                   | Munsell Colour             | Mottles Abundance/ Colour | Structure Grade/Class/Type                     | Porosity | Stone Abundance/Type                              | Plant Roots            | Comments                    |
|-------|---------------------------|----------------------------|---------------------------|--|----------|---|------------------------|-----------------------------|
| 0-42  | SCL                       | 10YR 3/1<br>V dark grey    | None                      | Moderately developed medium Sub-angular blocky | 0.5-2%   | > 2 cm 18%<br>< 2 cm 7%<br>Up to 12 cm<br>Rounded | Few fibrous (ploughed) | Cereal stubble Incorporated |
| 42-63 | SCL<br>+ inclusions of LS | 7.5 YR 4/6<br>Strong brown | None                      | Well developed coarse Angular blocky           | 0.5-2%   | > 2 cm 15%<br>< 2 cm 5%<br>Up to 10 cm<br>Rounded | None                   |                             |
| 63-75 | SL                        | 2.5 YR 4/6                 |                           | Too compacted to accurately assess structure.  | < 0.5%   | -   | -                      | -                           |
| 75+   | Impenetrable              | Red                        | -                         |  |          |   |                        |                             |

Profile Details: Possible SPL at 63 cm Main limitation - stoniness = sub-grade 3b

Plant roots:

Soil Fauna: None

General Comments: Due to the dry, compact and stony state of the lower subsoil it was almost impossible to accurately assess the lower subsoil.

## MINERAL SITE RECORD

## SOIL PIT DETAILS

Site Name: Sutherland OCC

Pit Number: 3

Slope: Level, valley bottom

Land use: Permanent Pasture

Aspect: -

| Depth | Texture | Munsell Colour                          | Mottles<br>Abundance/<br>Colour  | Structure<br>Grade/Class/Type  | Porosity | Stone<br>Abundance/Type  | Plant<br>Roots                     | Comments |
|-------|---------|---|----------------------------------|--|----------|--------------------------|------------------------------------|----------|
| 0-30  | SL      | 10 YR 3/2<br>Very dark<br>Greyish brown | None                             | Weakly developed<br>medium<br>sub-angular blocky                           | 0.5-2%   |                          | Abundant<br>fine<br>fibrous        |          |
| 30-42 | LS      | 10 YR 4/3<br>Dark brown                 | None                             | Weakly developed<br>medium breaking<br>down to fine sub-<br>angular blocky | < 2%     | > 2 cm 20%<br>< 2 cm 22% | Common<br>fine<br>fibrous          |          |
| 42-75 | SCL/CL  | 10 YR 5/4<br>Yellowish brown            | few feint<br>ochreous<br>mottles | Too stony to<br>assess structure   | 0.5-2%   | > 2 cm 60%<br>< 2 cm 10% | Few<br>fine<br>fibrous<br>to 70 cm |          |

Profile Details: Main limitation - wetness = sub-grade 3a

Plant roots: 75 cm + impenetrable.

Soil Fauna:

General Comments:

## MINERAL SITE RECORD

## SOIL PIT DETAILS

Site Name: Sutherland OCC

Pit Number: 4

Slope: Almost level

Land use: Grass ley

Aspect: North Westerly

| Depth  | Texture | Munsell Colour                       | Mottles Abundance/ Colour                                | Structure Grade/Class/Type                     | Porosity | Stone Abundance/Type          | Plant Roots                                  | Comments                        |
|--------|---------|--------------------------------------|--|--|----------|-------------------------------|--|---------------------------------|
| 0-33   | SL      | 10 YR 3/2<br>Very dark greyish brown | None   | Moderately developed medium sub-angular blocky | 0.5-2%   | > 2 cm 15%<br>< 2 cm 7%       | Many fine fibrous                            | High proportion of couch grass. |
| 33-58  | S       | 7.5 YR 5/6 strong Brown              | None   | Coarse angular                                 | > 2%     | Weathered sandstone fragments | Occasional fine fibrous in top-soil channels |                                 |
| 58-75+ | HCL/C   | 5 YR 4/2<br>Dark reddish grey.       | Common distinct ochreous mottles + manganese concretions | Unable to assess structure                     | < 0.5%   | Small rounded (not sieved)    |  |                                 |

Profile Details: Main limitation - stoniness = sub grade 3b

Plant roots: Unable to penetrate due to hard sandstone band.

Soil Fauna: None

General Comments: SPL at 58

## MINERAL SITE RECORD

## SOIL PIT DETAILS

Site Name: Sutherland OCC

Pit Number: 5

Slope: Almost level

Land use: Grass ley

Aspect: Southerly

| Depth | Texture                             | Munsell Colour             | Mottles<br>Abundance/<br>Colour      | Structure<br>Grade/Class/Type                                   | Porosity | Stone<br>Abundance/Type  | Plant<br>Roots    | Comments |
|-------|-------------------------------------|----------------------------|--------------------------------------|---|----------|--------------------------|-------------------|----------|
| 0-28  | SL                                  | 10 YR 4/1<br>Dark grey     | None                                 | Moderately<br>developed fine to<br>medium sub-angular<br>blocky | 0.5-2%   | > 2 cm 15%<br>< 2 cm 4%  | Common<br>fibrous |          |
| 28-45 | HCL                                 | 7.5 YR 4/4<br>Brown        | Common feint<br>ochreous<br>mottles. | Well developed<br>medium to coarse<br>angular blocky            | 0.5-2%   | > 2 cm 10%<br>< 2 cm 5½% | few<br>fibrous    |          |
| 45-55 | LS<br>+<br>weathered sand-<br>stone | 7.5 YR 4/6<br>strong brown | None                                 | Angular blocky  | -        |                          | None              |          |

Profile Details: Main limitation - stoniness = sub grade 3b

Plant roots:

Soil Fauna: None

General Comments:

MINERAL SITE RECORD Sutherland OCC

SOIL PIT DETAILS

Site Name:

Pit Number: 6

Slope: Level

Land use: Grass ley

Aspect: -

| Depth  | Texture                            | Munsell Colour  | Mottles<br>Abundance/<br>Colour                               | Structure<br>Grade/Class/Type                  | Porosity                                    | Stone<br>Abundance/Type | Plant<br>Roots                            | Comments                |
|--------|------------------------------------|---|---|--|---|-------------------------|---|-------------------------|
| 0-38   | SL                                 | 10 YR 3/1<br>Very dark grey                                       | None  | Well developed<br>Medium sub-angular<br>blocky | 2-0.5%                                      | 12% > 2 cm<br>3% < 2 cm | Many<br>medium<br>fibrous                 | Very dry &<br>compacted |
| 38-60  | SL                                 | 10 YR 4/2<br>Dark greyish<br>brown                                | Common<br>distinct<br>ochreous<br>mottles &<br>rusty staining | Too compacted to<br>assess structure           | Too com-<br>pacted to<br>assess<br>porosity | "                       | Few fine<br>medium<br>fibrous<br>to 55 cm | "                       |
| 60-80+ | SCL + LS<br>pockets<br>(no sample) | 10 YR 7/3<br>Very pale brown<br>&<br>10 YR 5/4<br>Yellowish brown | Few distinct<br>ochreous<br>mottles                           | "  | "   | "                       |   | "                       |

Profile Details: Main limitation - wetness = sub-grade 3a (possible downgrading in compaction)

Plant roots:

Soil Fauna:

General Comments:

## MINERAL SITE RECORD

## SOIL PIT DETAILS

Site Name: Sutherland OCC

Pit Number: 7

Slope: Level

Land use: Grass ley

Aspect: -

| Depth  | Texture | Munsell Colour                   | Mottles Abundance/ Colour                             | Structure Grade/Class/Type               | Porosity | Stone Abundance/Type           | Plant Roots  | Comments                               |
|--------|---------|----------------------------------|---|--|----------|--------------------------------|--------------|--|
| 0-31   | SL      | 10 YR 5/2<br>Greyish Brown       | Common distinct rusty mottles & manganese concretions | Weakly developed fine sub-angular blocky | 2 - 0.5% | > 2 cm 16%<br>< 2 cm 8%        | Many fibrous | 1 large 25 cm boulder                  |
| 31-48  | SL/SCL  | 2.5 YR 3/4<br>Dark Reddish Brown | Common feint ochreous mottles                         | Moderately developed coarse prismatic    | < 0.5%   | "                              | Few fibrous  | Coal fragments<br>Dry & compacted      |
| 48-100 | C       | 7.5 YR<br>N4                     | Common distinct ochreous mottles                      | Too compacted to assess structure        | < 0.5%   | Unable to assess stone content | None         | Disturbed Dry & powdery coal fragments |

Profile Details: Main limitation - stoniness = sub-grade 3b

Plant roots:

Soil Fauna:

General Comments:

## MINERAL SITE RECORD

## SOIL PIT DETAILS

Site Name: Sutherland OCC

Pit Number: 8

Slope: level

Land use: Grass ley

Aspect:

| Depth                               | Texture | Munsell Colour                 | Mottles<br>Abundance/<br>Colour         | Structure<br>Grade/Class/Type                    | Porosity | Stone<br>Abundance/Type  | Plant<br>Roots                     | Comments |
|-------------------------------------|---------|--------------------------------|---|--|----------|--------------------------|------------------------------------|----------|
| 0-30                                | SL      | 10 YR 3/1<br>Very dark grey    | Common<br>prominent<br>rusty<br>mottles | Coarse sub-angular<br>blocky<br>weakly developed | 0.5-2%   | > 2 cm 20%<br>< 2 cm 12% | Few<br>fine<br>fibrous<br>to 60 cm |          |
| 30-70                               | HCL     | 2-5 YR 3/4<br>Dk reddish brown | Many distinct<br>rusty<br>mottles       | Too compacted to<br>assess structure             | < 0.5%   | > 2 cm 11%<br>< 2 cm 8%  |                                    |          |
| Impene-<br>trable<br>below<br>70 cm |         |                                |   |  |          |                          |                                    |          |

Profile Details: Main limitations - stoniness &amp; wetness = sub-grade 3b

Plant roots: Very dry &amp; compacted, possibly disturbed.

Soil Fauna:

General Comments: 

## MINERAL SITE RECORD

## SOIL PIT DETAILS

Site Name: Sutherland OCC

Pit Number: 9

Slope: Level with micro undulations

Land use: Permanent pasture

Aspect: Easterly

| Depth  | Texture | Munsell Colour                           | Mottles<br>Abundance/<br>Colour            | Structure<br>Grade/Class/Type                        | Porosity | Stone<br>Abundance/Type | Plant<br>Roots    | Comments                                   |
|--------|---------|--|--|--|----------|-------------------------|-------------------|--|
| 0-30   | SL      | 10 YR 3/1<br>Dk gr brown                 | Occasional<br>feint<br>ochreous<br>mottles | Moderately<br>developed medium<br>Sub-angular blocky | 0.5-2%   | >2 cm 7%<br><2 cm 7%    | Common<br>fibrous |  |
| 30-53  | SCL     | 10 YR 5/4<br>Yellowish brown<br>(rubbed) | Common<br>distinct<br>ochreous<br>mottles  | Too compacted to<br>assess structure                 | >2%      | >2 cm 17%<br><2 cm 16%  | Few<br>fibrous    | loamy sand<br>inclusions,<br>worm channels |
| 53-110 | LS      | 7.5 YR 4/6<br>Strong brown               | None                                       | Platy breaking<br>down to single<br>grain            | >2%      | >2 cm 23%<br><2 cm 25%  | None              | Bands of<br>weathered<br>sandstone         |

Profile Details: main limitations: pattern &amp; Micro irregularities (poss. disturbed) sub-grade 3a/b

Plant roots:

Soil Fauna: Worm channels

General Comments: Micro irregularities

## MINERAL SITE RECORD

## SOIL PIT DETAILS

Site Name: Sutherland OCC

Pit Number: 10

Slope: Very Gentle

Land use: Grass Ley

Aspect: Easterly

| Depth                            | Texture                                     | Munsell Colour                     | Mottles<br>Abundance/<br>Colour           | Structure<br>Grade/Class/Type                            | Porosity | Stone<br>Abundance/Type | Plant<br>Roots             | Comments                      |
|----------------------------------|---|------------------------------------|---|--|----------|-------------------------|----------------------------|-------------------------------|
| 0-28                             | SL  | 10 YR 4/2<br>Dark greyish<br>brown | Few feint<br>ochreous<br>mottles          | Medium<br>Moderately<br>developed sub-<br>angular blocky | 2-0.5%   | >2 cm 8%<br><2 cm 12%   | Common<br>fibrous          |                               |
| 28-44/35<br>variable<br>boundary | SL  | 7.5 YR 4/6<br>Strong brown         | Common<br>distinct<br>ochreous<br>mottles | Too compacted to<br>assess structure                     | 2 - 0.5% | >2 cm 10%<br><2 cm 10%  | Few<br>Fibrous<br>to 40 cm | With Loamy<br>Sand inclusions |
| 44/35+                           | Clay with<br>sand inclusions<br>(no sample) | -                                  | -   | -  | -        | -                       | -                          | -                             |

Profile Details: Main limitations

Wetness

sub-grade 3a

Plant roots:

Soil Fauna:

General Comments: Not disturbed.

## MINERAL SITE RECORD

## SOIL PIT DETAILS

Site Name: Sutherland OCC

Pit Number: 11

Slope: Level

Land use: Roots following  
winter cereals

Aspect: -

| Depth | Texture | Munsell Colour                          | Mottles<br>Abundance/<br>Colour                                | Structure<br>Grade/Class/Type                       | Porosity | Stone<br>Abundance/Type                       | Plant<br>Roots                   | Comments   |
|-------|---------|---|--|---|----------|---|----------------------------------|--|
| 0-34  | SCL/CL  | 10 YR 3/2<br>Very dark<br>greyish brown | Few distinct<br>ochreous<br>mottles                            | Weakly developed<br>coarse<br>Sub-angular<br>blocky | 2-0.5%   | > 2 cm 8%<br>< 2 cm 3%                        | Only to<br>5 cm<br>(new<br>crop) | Straw<br>incorporated                                    |
| 34-50 | MCL     | 5 YR 4/2<br>dark reddish<br>grey        | Many prominent<br>ochreous<br>mottles &<br>gleyed ped<br>faces | Weakly developed<br>coarse massive<br>structure     | < 0.5%   | > 2 cm 5%<br>< 2 cm 3%                        | None                             | Coal fragments<br>+ lg rounded<br>pebbles up to<br>15 cm |
| 50-75 | C/ZC    | 7.5 YR 5/2<br>Brown                     | Common<br>distinct<br>ochreous<br>mottles                      | Too compacted to<br>assess structure                | < 0.5%   | Too compacted<br>& dry to assess<br>stoniness | None                             | Coal &<br>manganese<br><br>Dry compact<br>disturbed      |

Profile Details: Main limitation wetness = sub-grade 3b

Plant roots:

Soil Fauna:

General Comments: Impenetrable below 75 cm Disturbed

## MINERAL SITE RECORD

## SOIL PIT DETAILS

Site Name: Sutherland OCC

Pit Number: 12

Slope: Very gently undulating

Land use: Cabbage

Aspect:

| Depth                    | Texture | Munsell Colour              | Mottles<br>Abundance/<br>Colour     | Structure<br>Grade/Class/Type                            | Porosity | Stone<br>Abundance/Type | Plant<br>Roots                        | Comments |
|--------------------------|---------|-----------------------------|-------------------------------------|--|----------|-------------------------|---------------------------------------|----------|
| 0-35                     | SL      | 10YR 3/2<br>Dark grey brown | few feint<br>ochreous<br>mottles    | Fine to medium<br>weakly developed<br>sub-angular blocky | 0.5-2%   | > 2 cm 15%<br>< 2 cm 5% | Few<br>fine to<br>20 cm<br>(new crop) |          |
| 35-55                    | MCL/HCL | 5 YR 4/3<br>Reddish brown   | Common feint<br>ochreous<br>mottles | Too stony to<br>assess structure                         | 0.5-2%   | > 2 cm 25%<br>< 2 cm 8% | None                                  |          |
| 55+<br>impene-<br>trable |         |                             |                                     |  |          |                         |                                       |          |

Profile Details: Main limitation stoniness - sub grade 3b

Plant roots:

Soil Fauna:

General Comments: