Report of the MAFF Agricultural Land Classification Survey - Symon Opencast Coal Site (GR SJ672079)

1. **Summary:**

The land has been classified following the Agricultural Land Classification of England and Wales - revised guidelines and criteria for grading the quality of agricultural land (MAFF, 1988). Of the land surveyed 15% is classified as sub-grade 3a and 80% as sub-grade 3b. A further 4% is classified as Grade 4, and the remainder as woodland, non-agricultural or urban land.

2. **Climatic Limitations:**

The main parameters used in the assessment of the climatic limitations are average annual rainfall (AAR), as a measure of overall wetness and accumulated temperature (ATO), as a measure of the relative warmth of the locality. The figures of AAR and ATO indicate that there are no climatic limitations on this site, restricting the highest possible grade to Grade 2.

3. **Site Limitations:**

The assessment of site factors is primarily concerned at the way in which topography influences the use of agricultural machinery and hence the cropping potential of the land. There is a site limitation affecting the use of land north of Spring Village where the ground is uneven.

4. **Soil Limitations:**

The main soil properties which affect the cropping potential and management requirements of land are texture, structure, depth, stoniness and chemical fertility. These may act as limitations separately, in combination or through interactions with climate or site factors. The physical limitations which result from interactions between climate, site and soil wetness, droughtiness and erosion. Soil wetness, which expresses the extent to which excess water imposes restrictions on crop growth, is the main interacting limitation affecting the grading on this site. Soil wetness is assessed in the field by identifying the depth to any slowly permeable soil horizon, which is defined in terms of soil texture, structure and gleying and relating this to the texture of the top 25cms. Combining the soil wetness class and the field capacity days (FCD) a land classification grade is arrived at. Reference will be made to this limitation in Section 6.

5. **Background Information:**

The underlying geology is mapped as Middle Coal Measure deposits with bands of shales, clays and sandstones. Much of the site has been disturbed by past coal mining activity. In places the topsoil is shallow and there is much coal dust mixed in the soil.

6. **Agricultural Land Use:**

At the time of the survey, May 1989, land was either under winter cereal, grass or fallow.

7. **Agricultural Land Quality (Appendix 1):**

Sub-grade 3a: The topsoil typically has either a sandy loam or sandy silt loam texture with further depths of sandy loam and sandy clay loam and clay present at depths of between 33 and 50 cms. Observations of gleying and depth to the slowly permeable layer combined with a field capacity day of 176 indicated wetness class III and subgrade 3a.

The main limitation to the agricultural use of this land is soil wetness.

Sub-grade 3b: The soil typically has a clay loam texture overlying clay by 25 cms. Much of the land in this grade has been disturbed by coal mining activity. Observations of gleying and depths to the slowly permeable layer combined with a field capacity range from 171 to 176 over the site indicate wetness class IV and sub-grade 3b.

The main limitations to the agricultural use of this land is soil wetness.

Grade 4: One field, to the north of Spring Village, as been classified as grade 4, where several disused shafts are present and the surface is very irregular and uneven and posing limitations on the agricultural use of the land. The topsoil depth varies over the field from less than 10 cms to 15 cms, overlying clay with brick and coal fragments below this depth.

The main limitations to the agricultural use of this land include the variable topsoil depth and the uneven surface.

Other land: Includes woodland and an area of spoil and gorse.

Resource Planning Group
Wolverhampton
May 1989

Agricultural Land Classification Summary

Grade sub/grade	ha	as % of Total	as % of Agricultural Land
3a	10.55	15	15
3b	57.2	80	81
4	3.18 (70.93)	4	4
Other land - Woodland/Scrub Spoil heap	0.96	1	
TOTAL	71.89	(100)	(100)

mp

NOTE TO ACCOMPANY THE SOIL UNITS MAP FOR SYMON OPENCAST COAL SITE

An Agricultural Land Classification survey of the site was carried out on a 100 m grid and augered to 100 cm where possible. Following this soils of a similar texture have been grouped into soil units which reflect their handling characteristics and separate storage requirements.

Soil pits for each unit were dug, where appropriate, so that physical characteristics, such as structure could be observed.

Five units are identified on the site with a small area of spoil, with little or no topsoil in the north western corner and is shown on the map.

Unit 1

This occurs in 2 blocks to the west of the Wellington Road, one being at the northernmost part of the site and the second block in the western part. The soil typically has a clay loam or clay texture, varying depths from 23 to 33 cm, occasionally overlying a heavy clay loam and then clay to depth. Much of this unit has been disturbed by previous coal mining activity.

From the soil pit observation, the clay topsoil has a moderately developed coarse sub angular blocky structure with about 0.5% biopores and numerous distinct grey colours. Below 25 cm a heavier clay texture was noted with numerous grey colours present and a weakly developed very coarse subangular blocky structure with less than 0.5% biopores. At this depth coal fragments were present within the soil. Below 40 cm the soil has a clay texture with very mixed colours. The soil has a weakly developed coarse, subangular blocky structure with fewer than 0.5% biopores. Coal fragments are present at this depth and the occasional small sandstone fragments was noted.

Numerous plant roots were observed in the top 25 cm, with fewer below this depth. No soil fauna activity was observed.

Unit 2

This occurs to the west of the Wellington Road, where little or no topsoil is present. When topsoil is found it typically has a heavy clay loam texture usually varying in depth from 13 to 25 cm.

From the soil pit observation clay extended from the surface to at least 60 cm. The soil has a weakly developed very coarse sub angular blocky structure in the top 20 cm becoming slightly better below this depth and being a weakly developed coarse sub angular blocky structure, breaking down more easily by 40 cm. Porosity throughout the profile is low, being less than 0.5%. Coal dust is present below 20 cm. Much root matter and plant debris was present in the top 20 cm, resulting in a high organic matter content. Fewer plant roots were observed with depth.

Unit 3

This is found to the east of the Wellington Road, close to Spring Village where disused shafts are shown on the map. Over about two thirds of the field there is little or no topsoil. From auger boring information much coal dust is present in the top 20 cm, overlying clay to at least 45 cm. Where topsoil is found the soil has a silty loam texture overlying grey silty clay loam.

Unit 4

Found to the east of the Wellington Road, much of this unit has been disturbed in the past by coal mining activity and includes disused shafts. The soil textures are varied and often coal dust and brick fragments are present within the soil. Typically, the soil has a clay loam texture of depths ranging from 24 to 33 cm, overlying clay. There are occasional top soils of heavier textures eg clay and heavy clay loam, but these are scattered and cover too small an area to justify identification into separate units.

From the soil pit observation, the clay loam topsoil, to 25 cm, has a weakly developed coarse sub angular blocky structure with less than 0.5% pores. Below 25 cm clay extended to depth, with similar structural characteristics to the topsoil. Throughout the profile there is much evidence of soil compaction. Roots are common in the top 20 cm, fewer by 35 cm.

Unit 5

Found on the southern part of the site, where the land has been undisturbed by coal mining activity, the soils are generally of a lighter texture. The soil textures typically include sandy loam and sandy silt loam extending to about 30 cm, overlying further depths of sandy loam and sandy clay loam to 50 cm.

From the soil pit observation the topsoil has a sandy loam texture with a moderately developed coarse and medium sub angular blocky structure with about 2% biopores. Occasional small sandstone fragments are present, as are plant roots and earth worms. Below 25 cm the soil has a sandy clay loam texture with a moderately developed coarse sub angular blocky structure with more than 0.5% biopores. Below 50 cm the soil has a clay content with a weakly developed very coarse sub angular blocky structure and more than 0.5% biopores. In parts of the pit roots had penetrated earthworm channels.

RESOURCE PLANNING GROUP
Wolverhampton
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DESCRIPTION OF THE GRADES AND SUBGRADES

The ALC grades and subgrades are described below in terms of the types of limitation which can occur, typical cropping range and the expected level of consistency of yield. In practice, the grades are defined by reference to physical characteristics and the grading guidance and cut-offs for limitation factors in Section 3 enable land to be ranked in accordance with these general descriptions. The most productive and flexible land falls into Grades 1 and 2 and Subgrade 3a and collectively comprises about one-third of the agricultural land in England and Wales. About half the land is of moderate quality in Subgrade 3b or poor quality in Grade 4. Although less significant on a national scale such land can be locally valuable to agriculture and the rural economy where poorer farmland predominates. The remainder is very poor quality land in Grade 5, which mostly occurs in the uplands.

Descriptions are also given of other land categories which may be used on ALC maps.

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 and horticultural crops can usually be grown but on some land in the 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.

Grade 3 - good to moderate quality agricultural land

Land with moderate limitations which affect the choice of crops, timing and type of cultivation, harvesting or the level of yield. Where 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 level of yields. It is mainly suited to grass with occasional arable crops (eg 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 very severe limitations which restrict use to permanent pasture or rough grazing, except for occasional pioneer forage crops.

Descriptions of other land categories used on ALC maps

Urban

Built-up or 'hard' uses with relatively little potential for a return to agriculture including: housing, industry, commerce, education, transport, religious buildings, cemeteries. Also, hard-surfaced sports facilities, permanent caravan sites and vacant land; all types of derelict land, including mineral workings which are only likely to be reclaimed using derelict land grants.

Non-agricultural

'Soft' uses where most of the land could be returned relatively easily to agriculture, including: golf courses, private parkland, public open spaces, sports fields, allotments and soft-surfaced areas on airports/airfields. Also active mineral workings and refuse tips where restoration conditions to 'soft' after-uses may apply.

Woodland

Includes commercial and non-commercial woodland. A distinction may be made as necessary between farm and non-farm woodland.

Agricultural buildings

Includes the normal range of agricultural buildings as well as other relatively permanent structures such as glasshouses. Temporary structures (eg polythene tunnels erected for lambing) may be ignored.

Open water

Includes lakes, ponds and rivers as map scale permits.

Land not surveyed

Agricultural land which has not been surveyed.

Where the land use includes more than one of the above land cover types, eg buildings in large grounds, and where map scale permits, the cover types may be shown separately. Otherwise, the most extensive cover type will usually be shown.