SOUTH TYNESIDE UDP
(AREAS 1, 2A, 2B AND 3)
TYNE AND WEAR

Agricultural Land Classification
February 1997

Resource Planning Team
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AGRICULTURAL LAND CLASSIFICATION REPORT

SOUTH TYNESIDE UDP, AREAS 1, 2A, 2B AND 3

Introduction

1. This report presents the findings of three detailed Agricultural Land Classification (ALC) surveys of adjoining areas of land south of Hebburn in Tyne and Wear. Area 3 was surveyed in February 1992, Area 2A in August 1996 and Areas 1 and 2B in February 1997.

2. This report was commissioned by the Ministry of Agriculture, Fisheries and Food (MAFF) Land Use Planning Unit, Northallerton in connection with the South Tyneside UDP, and it supersedes any previous ALC reports relating to these areas.

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 the different surveys the land was mainly in either arable use or under ley or permanent grass. Non-agricultural land on the sites consisted of farm buildings, roads, a soil mound, two small areas of scrub, and the site of a recently demolished garden centre.

Summary

5. The findings of the surveys are shown on the enclosed ALC map. The map has been drawn at a scale of 1:5,000. It is 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	1.5	2.1	2.3
Subgrade 3b	65.1	89.8	97.7
Other land	5.9	8.1	-
Total surveyed area	66.6	-	100
Total site area	72.5	100	-

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

8. Subgrade 3a, good quality agricultural land, covers a small area in the east of the site. The soils are imperfectly drained and consist of medium clay loam topsoils, heavy clay loam upper subsoils, and gleyed and slowly permeable clay lower subsoils. The ALC grade of the land is limited by soil wetness.

9. Subgrade 3b, moderate quality agricultural land, covers most of the site. The soils are poorly drained, with medium clay loam or heavy clay loam topsoils overlying gleyed and slowly permeable clay subsoils. More severe soil wetness and topsoil workability limitations further restrict the ALC grade of this land to Subgrade 3b.

10. Other land on this site consists of roads, farm buildings, a soil mound, the site of a recently demolished garden centre, and two small areas of scrub.

Factors Influencing ALC Grade

Climate

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

12. 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 317 619
Altitude	m, AOD	40
Accumulated Temperature	day°C (Jan-June)	1316
Average Annual Rainfall	mm	642
Field Capacity Days	days	157
Moisture Deficit, Wheat	mm	95
Moisture Deficit, Potatoes	mm	82

13. 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.

14. 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.

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

Site

16. The land on this site is level to gently sloping (0-2°) with variable aspect. As such gradient does not limit ALC grade at any point. Neither flood risk nor microrelief are of any significance on this site although the presence of some former military buildings south-east of Red Barns Farm significantly restricts the use of some types of agricultural machinery in this area and the land is thus limited to Subgrade 3b.

Geology and soils

17. The area is underlain by Middle Carboniferous Coal Measures over which lie deep deposits of Pelaw Clay (BGS, Sheet 21, Sunderland).

18. The soils have been mapped as Foggathorpe 1 association by the Soil Survey of England and Wales (Soils of England and Wales, Sheet 1, Northern England).

Agricultural Land Classification

19. 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

20. A small area of Subgrade 3a, good quality agricultural land, occurs south of West Fellgate Farm. The soils in this area are imperfectly drained, falling in Wetness Class III (see Appendix II). Typically they consist of medium clay loam topsoils, heavy clay loam upper subsoils (which are permeable but sometimes gleyed), and clay lower subsoils (which are both gleyed and slowly permeable). The lower subsoils typically begin at around 45 cm depth and the ALC grade of the land is limited by soil wetness.

Subgrade 3b

21. Most of the area falls in Subgrade 3b, moderate quality agricultural land. The soils are poorly drained, falling in Wetness Class IV (see Appendix II), and generally consist of medium clay loam or heavy clay loam topsoils overlying gleyed and slowly permeable clay subsoils at between 20 cm and 40 cm depth. The ALC grade of this land is limited by soil wetness and topsoil workability restrictions. An additional limitation, also to Subgrade 3b, occurs in an area south-east of Red Barns Farm where the presence of former army buildings significantly restricts the use of agricultural machinery.

Other land

22. Other land on this site consists of farm buildings, the site of a demolished garden centre, a soil mound and access roads associated with Red Barns Quarry (all in the north-west), and two small areas of scrub east of the A194.

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SOURCES OF REFERENCE

British Geological Survey (1978) *Sheet No. 21, Sunderland (Solid and Drift)*. 1:50,000 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.

MAFF, Leeds Regional Office. Agricultural Land Classification, South Tyneside UDP. Site A, Land at Pikes Hole Farm, Hebburn, Tyne and Wear. Ref: 2 FCS 5769. February 1992.

Resource Planning Team, ADAS Leeds. Agricultural Land Classification, South Tyneside UDP. Land south of former Monkton Cokeworks. ADAS Reference: 72/96. August 1996.

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.