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**A39 Walton Bypass, Somerset  
Agricultural Land Classification**

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**A39 WALTON BYPASS, SOMERSET**  
**AGRICULTURAL LAND CLASSIFICATION**

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## A39 WALTON BYPASS, SOMERSET

### AGRICULTURAL LAND CLASSIFICATION SURVEY

#### SUMMARY

The survey was carried out by ADAS on behalf of MAFF as part of its statutory role in response to a consultation by Somerset County Council for a road improvement on the A39. The fieldwork at Walton, Somerset was completed in December 1994 at a scale of 1:10,000. Data on climate, soils, geology and from previous Agricultural Land Classification (ALC) Surveys was used and is presented in the report. The distribution of grades is shown on the accompanying ALC map and summarised below. Information is correct at this scale but could be misleading if enlarged.

#### Distribution of ALC grades: A39, Walton Bypass

Grade	Area (ha)	% of Survey Area	% of Agricultural Land	
3a	13.1	7.4	8.2	
3b	147.3	83.4	91.8	
Urban	14.5	8.2		
Non Agricultural	1.8	1.0		
TOTAL	176.7	100.0	100.0	(160.4 ha)

Much of the land surveyed comprises deep slowly permeable clays which gives rise to 3b land. The slightly higher parts of the site have stonier subsoils which improves drainage and are graded 3a.

## 1. INTRODUCTION

An Agricultural Land Classification (ALC) Survey was carried out in December 1994 on alternative routes of the proposed A39 Walton Bypass. This work was carried out on behalf of MAFF as part of its statutory role in response to a consultation from Somerset County Council. The fieldwork covering 176.7 ha of land was conducted by ADAS at a scale of 1:10,000 with approximately one boring per hectare of agricultural land. This density was relaxed where soils of a consistent nature were found, particularly at the western end of the site. A total of 135 auger borings were examined and 4 soil profile pits used to assess subsoil conditions.

The published provisional one inch to the mile ALC map of this area (MAFF 1971) shows the grades of the site at a reconnaissance scale. This map shows most of the site to be Grade 3 with a small area of low-lying land in the north as Grade 4.

The eastern half of the site area was also surveyed in 1990 at a scale of 1:10,000 using the original guidelines. This map shows the site to be Subgrades 3a, 3b, 3c and a small area of Grade 4 in the north.

The recent survey supersedes these maps having been carried out at a more detailed level and using the Revised Guidelines and Criteria for grading the quality of agricultural land (MAFF 1988). These guidelines provide a framework for classifying land according to the extent to which its physical or chemical characteristics impose long-term limitations on agricultural use. The grading takes account of the top 120 cm of the soil profile. A description of the grades used in the AL system can be found in Appendix 2.

## 2. CLIMATE

The grade of the land is determined by the most limiting factor present. The overall climate is considered first because it can have an overriding influence on restricting land to a lower grade despite other favourable conditions.

Estimates of climatic variables were interpolated from the published agricultural climate dataset (Meteorological Office 1989). The parameters used for assessing overall climate are accumulated temperature, a measure of the relative warmth of a locality, and average annual rainfall, a measure of overall wetness. The results shown in Table 1 indicate there is no overall climatic limitation.

**Table 1: Climatic Interpolations: A39 Walton Bypass**

Grid Reference	ST 449 361
Altitude (m)	25
Accumulated Temperature (day °)	1541
Average Annual Rainfall (mm)	751
Overall Climatic Grade	1
Field Capacity Days	161
Moisture deficit (mm):	
Wheat	110
Potatoes	104

Climatic data on Field Capacity Days (FCD) and Moisture Deficits for wheat and potatoes are also shown. These data are used in assessing the soil wetness and droughtiness limitations referred to in later sections.

## 3. RELIEF AND LANDCOVER

The land surveyed occupies a gently undulating area, the highest point on Bramble Hill being 48 m AOD and the lowest on Small Moor being 8 m AOD. Most of the land was used for either grass leys or permanent pasture, with only a few fields in the south in arable cultivations at the time of survey.

#### 4. GEOLOGY AND SOILS

The geology of the site is shown on the published 1:50,000 scale solid and drift geology map, sheet 296, Institute of Geological Sciences 1973. This map shows the entire area to comprise lower lias clay with some limestone.

The soils were mapped by the Soil Survey of England and Wales in 1983 at a reconnaissance scale of 1:250,000 and in 1955 at a scale of 1:63,360.

The more recent map shows the majority of the site consists of soils from the Evesham 1 Association which are described as being slowly permeable calcareous clayey soils associated with shallow well drained brashy calcareous soils over limestone. The land south and east of Small Moor Lane consists of soils from the Sherborne Association which are described as being shallow well drained brashy calcareous clayey soils over limestone and are associated with slowly permeable calcareous clayey soils.

The soils found during the recent survey are very similar to the described associations. All of the site except the higher land south of Small Moor Lane comprises deep calcareous clayey profiles with clay topsoils. There are localised areas of slightly stony subsoils around Bramble Hill and Riggiston Farm. A relatively small area of clayey soils with approximately 50% soft limestone in the upper subsoil was found north of Walton. The lower subsoil stone content is approximately 5%.

#### 5. AGRICULTURAL LAND CLASSIFICATION

The distribution of ALC grades is shown in Table 2 and on the accompanying ALC map. This information could be misleading if shown at a larger scale.

**Table 2: Distribution of ALC grades: A39 Walton Bypass**

Grade	Area (ha)	% of Survey Area	% of Agricultural Land	
3a	13.1	7.4	8.2	
3b	147.3	83.4	91.8	
Urban	14.5	8.2		
Non Agricultural	1.8	1.0		
TOTAL	176.7	100.00	100.00	(160.4 ha)

##### Subgrade 3a

An area of good quality land north of Walton is mapped. This relates to an area of shallow stony soils which are well drained and assessed as Wetness Class I (see Appendix 3). The clay topsoil texture imposes a moderate workability limitation. These soils also experience a slight drought limitation.

##### Subgrade 3b

Most of the land surveyed is of moderate quality. The soils are generally poorly drained (Wetness Classes III and IV) which combined with a clay topsoil imposes a moderately severe workability limitation. Within the land mapped as this grade there are small areas of slightly better drained soils generally associated with stony patches and disturbed ground. Insufficient areas were found to warrant a 3a map unit. Some of the land of this mapping unit also experiences a slope limitation, particularly along the line of the A39 West of Walton, where slopes of 8-10° were measured.

**Urban**

Roads, residential areas and isolated buildings are shown on the accompanying map as urban.

Resource Planning Team  
Taunton Statutory Unit  
December 1994

## **APPENDIX 1**

### **REFERENCES**

**INSTITUTE OF GEOLOGICAL SCIENCES (1973)** Solid and Drift Edition, Sheet 296, Glastonbury, 1:50,000.

**MAFF (1971)** Agricultural Land Classification Map, Sheet 165, Provisional 1:63,360 scale.

**MAFF (1988)** Agricultural Land Classification of England and Wales (Revised Guidelines and Criteria for grading the quality of agricultural land), Alnwick.

**METEOROLOGICAL OFFICE (1989)** Climatological Data for Agricultural Land Classification.

**SOIL SURVEY OF ENGLAND AND WALES (1983)** Sheet 5, Soils of South West England, 1:250,000 scale.

**SOIL SURVEY OF ENGLAND AND WALES (1955)** Sheet 296, Glastonbury, 1:63,360 scale.

## **APPENDIX 2**

### **DESCRIPTION OF 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 include 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 most 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: private park land, 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.

**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 landcover types, eg buildings in large grounds, and where may be shown separately. Otherwise, the most extensive cover type will usually be shown.

**Source:** MAFF (1988) Agricultural Land Classification of England and Wales (Revised Guidelines and Criteria for Grading the Quality of Agricultural Land), Alnwick.

## **APPENDIX 3**

### **DEFINITION OF SOIL WETNESS CLASSES**

#### **Wetness Class I**

The soil profile is not wet within 70 cm depth for more than 30 days in most years.

#### **Wetness Class 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 not wet within 40 cm depth for more than 30 days in most years.

#### **Wetness Class 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 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 and 90 days in most years.

#### **Wetness Class IV**

The soil profile is wet within 70 cm depth for more than 180 days but not within 40 cm depth for more than 210 days in most years or, if there is no slowly permeable layer within 80 cm depth, it is wet within 40 cm depth for 91-210 days in most years.

#### **Wetness Class V**

The soil profile is wet within 40 cm depth for 211-335 days in most years.

#### **Wetness Class VI**

The soil profile is wet within 40 cm depth for more than 335 days in most years.

**Notes:** The number of days specified is not necessarily a continuous period. 'In most years' is defined as more than 10 out of 20 years.

**Source:** Hodgson, J M (in preparation), Soil Survey Field Handbook (revised edition).