

**A1**  
**MEDWAY TOWNS LOCAL PLAN**  
**Site B, Lower Rainham, Gillingham,**  
**Kent**

**Agricultural Land Classification**  
**May 1996**

**Resource Planning Team**  
**Guildford Statutory Group**  
**ADAS Reading**

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# AGRICULTURAL LAND CLASSIFICATION REPORT

## MEDWAY TOWNS LOCAL PLAN SITE B, LOWER RAINHAM ROAD, GILLINGHAM

### Introduction

1. This report presents the findings of a detailed Agricultural Land Classification (ALC) survey of 0.4 ha of land at Site B, which is located on the southern side of Lower Rainham Road, Lower Rainham to the north east of Gillingham. The survey was carried out in May 1996.
2. The survey was commissioned by the Ministry of Agriculture, Fisheries and Food (MAFF) from its Land Use Planning Unit in Reading in connection with the Medway Towns Local Plan. This survey supersedes previous ALC surveys on this land. It is understood that the whole area has been worked for brickearth in the past.
3. The work was carried out under sub-contracting arrangements by NA Duncan & Associates and was supervised by members of the Resource Planning Team in the Guildford Statutory Group of 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 survey the whole site was in permanent grass, being grazed by a single bullock.

### Summary

5. The findings of the survey are shown on the enclosed ALC map. The map has been drawn at a scale of 1:10,000. It is accurate at this scale but any enlargement would be misleading.
6. The fieldwork was conducted at an average density of one auger boring per hectare. A total of 2 borings were described. A soil inspection pit from an adjacent survey (ADAS REF: 2005/059/96) was also used in the grading of this site.
7. The whole site (0.4 ha) has been classified as Subgrade 3a, good quality agricultural land and comprises shallow silty soils overlying chalk. The soils on the site typically have a silt loam or medium silty clay loam topsoil overlying a thin medium silty clay loam subsoil. The underlying weathered chalk is generally encountered within 45 cm depth. Moisture balance calculations indicate that in this low rainfall area such soils will be moderately droughty restricting the land quality to Subgrade 3a.

## FACTORS INFLUENCING ALC GRADE

### Climate

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

9. 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	TQ 824 672
Altitude	m, AOD	5
Accumulated Temperature	day°C	1495
Average Annual Rainfall	mm	609
Field Capacity Days	days	122
Moisture Deficit, Wheat	mm	124
Moisture Deficit, Potatoes	mm	121

10. 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.

11. 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 (AT0, January to June), as a measure of the relative warmth of a locality.

12. The combination of rainfall and temperature at this site mean that the area is relatively dry and warm. The site is not considered to be exposed or subject to any particular frost risk and as such no climatic limitation exists on this site; the site is climatically Grade 1.

### Site

13. The site lies at an altitude of approximately 5 m AOD and is flat. It is enclosed on two sides by the houses on Lower Rainham Road and Station Road whilst the southern boundary comprises a 2 m high bank, the legacy of the former brickearth workings. There are however not considered to be any site limitations that will affect the grading of the site.

### Geology and soils

14. The published geological information (BGS, 1977), shows the site to be underlain by Upper Cretaceous chalk with flints

15. The reconnaissance soil survey map (SSEW, 1983) for the area shows the site to comprise soils of the Hamble 1 association, which are described as "deep, well drained often stoneless fine silty soils, together with similar soils often affected by groundwater. The association includes some shallower soils over chalk." The more detailed published soil survey map for the area (SSEW, 1976) has mapped the area as restored excavated land.

### **AGRICULTURAL LAND CLASSIFICATION**

16. 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, page 1

17. The location of the auger borings and pits is shown on the attached sample location map and the details of the soils data are presented in Appendix III.

#### **Subgrade 3a**

18. The whole site has been classified as Subgrade 3a, good quality agricultural land and comprises shallow silty soils overlying chalk. The soils on the site typically have a very slightly stony silt loam topsoil overlying a brown, well structured medium silty clay loam subsoil. The underlying chalk is generally encountered within 45 cm depth, being highly weathered and soft in the upper 20 cm but becoming harder and less weathered below. The soils are free draining, Wetness Class I (see Appendix II). Moisture balance calculations indicate that in this low rainfall area such soils are moderately droughty, which would result in drought stress affecting most crops during the drier periods of the year, restricting the land quality to Subgrade 3a.

NA Duncan  
for Resource Planning Team  
ADAS Reading

## SOURCES OF REFERENCE

British Geological Survey (1977) *Sheet No. 272*. 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 (1976) *Soils in Kent III (Sheet TQ86, Rainham)*

Soil Survey of England and Wales (1983) *Sheet 6, South East England*.  
SSEW: Harpenden.

Soil Survey of England and Wales (1984) *Soils and their Use in South East England*  
SSEW: Harpenden

## 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.

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Wetness Class	Duration of waterlogging <sup>1</sup>
I	The soil profile is not wet within 70 cm depth for more than 30 days in most years. <sup>2</sup>
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.

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#### 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).

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<sup>1</sup> The number of days is not necessarily a continuous period.

<sup>2</sup> 'In most years' is defined as more than 10 out of 20 years.

**APPENDIX III**

**SOIL DATA**

**Contents:**

**Sample location map**

**Soil abbreviations - Explanatory Note**

**Soil Pit Descriptions**

**Soil boring descriptions (boring and horizon levels)**

**Database Printout - Horizon Level Information**

## SOIL PROFILE DESCRIPTIONS: EXPLANATORY NOTE

Soil pit and auger boring information collected during ALC fieldwork is held on a computer database. This uses notations and abbreviations as set out below.

### Boring Header Information

- GRID REF:** national 100 km grid square and 8 figure grid reference.
- USE:** Land use at the time of survey. The following abbreviations are used:

<b>ARA:</b> Arable	<b>WHT:</b> Wheat	<b>BAR:</b> Barley
<b>CER:</b> Cereals	<b>OAT:</b> Oats	<b>MZE:</b> Maize
<b>OSR:</b> Oilseed rape	<b>BEN:</b> Field Beans	<b>BRA:</b> Brassicae
<b>POT:</b> Potatoes	<b>SBT:</b> Sugar Beet	<b>FCD:</b> Fodder Crops
<b>LIN:</b> Linseed	<b>FRT:</b> Soft and Top Fruit	<b>FLW:</b> Fallow
<b>PGR:</b> Permanent Pasture	<b>LEY:</b> Ley Grass	<b>RGR:</b> Rough Grazing
<b>SCR:</b> Scrub	<b>CFW:</b> Coniferous Woodland	<b>DCW:</b> Deciduous Wood
<b>HTH:</b> Heathland	<b>BOG:</b> Bog or Marsh	<b>FLW:</b> Fallow
<b>PLO:</b> Ploughed	<b>SAS:</b> Set aside	<b>OTH:</b> Other
<b>HRT:</b> Horticultural Crops		
- GRDNT:** Gradient as estimated or measured by a hand-held optical clinometer.
- GLEYS/SPL:** Depth in centimetres (cm) to gleying and/or slowly permeable layers.
- AP (WHEAT/POTS):** Crop-adjusted available water capacity.
- MB (WHEAT/POTS):** Moisture Balance. (Crop adjusted AP - crop adjusted MD)
- DRT:** Best grade according to soil droughtiness.
- If any of the following factors are considered significant, 'Y' will be entered in the relevant column.

<b>MREL:</b> Microrelief limitation	<b>FLOOD:</b> Flood risk	<b>EROSN:</b> Soil erosion risk
<b>EXP:</b> Exposure limitation	<b>FROST:</b> Frost prone	<b>DIST:</b> Disturbed land
<b>CHEM:</b> Chemical limitation		
- LIMIT:** The main limitation to land quality. The following abbreviations are used:

<b>OC:</b> Overall Climate	<b>AE:</b> Aspect	<b>EX:</b> Exposure
<b>FR:</b> Frost Risk	<b>GR:</b> Gradient	<b>MR:</b> Microrelief
<b>FL:</b> Flood Risk	<b>TX:</b> Topsoil Texture	<b>DP:</b> Soil Depth
<b>CH:</b> Chemical	<b>WE:</b> Wetness	<b>WK:</b> Workability
<b>DR:</b> Drought	<b>ER:</b> Erosion Risk	<b>WD:</b> Soil Wetness/Droughtiness
<b>ST:</b> Topsoil Stoniness		

### Soil Pits and Auger Borings

- TEXTURE:** soil texture classes are denoted by the following abbreviations:

<b>S:</b> Sand	<b>LS:</b> Loamy Sand	<b>SL:</b> Sandy Loam
<b>SZL:</b> Sandy Silt Loam	<b>CL:</b> Clay Loam	<b>ZCL:</b> Silty Clay Loam
<b>ZL:</b> Silt Loam	<b>SCL:</b> Sandy Clay Loam	<b>C:</b> Clay
<b>SC:</b> Sandy Clay	<b>ZC:</b> Silty Clay	<b>OL:</b> Organic Loam
<b>P:</b> Peat	<b>SP:</b> Sandy Peat	<b>LP:</b> Loamy Peat
<b>PL:</b> Peaty Loam	<b>PS:</b> Peaty Sand	<b>MZ:</b> Marine Light Silts

For the sand, loamy sand, sandy loam and sandy silt loam classes, the predominant size of sand fraction will be indicated by the use of the following prefixes:

- F:** Fine (more than 66% of the sand less than 0.2mm)  
**M:** Medium (less than 66% fine sand and less than 33% coarse sand)  
**C:** Coarse (more than 33% of the sand larger than 0.6mm)

The clay loam and silty clay loam classes will be sub-divided according to the clay content:

- M:** Medium (<27% clay)    **H:** Heavy (27-35% clay)

2. **MOTTLE COL:** Mottle colour using Munsell notation.
3. **MOTTLE ABUN:** Mottle abundance, expressed as a percentage of the matrix or surface described.  
F: few <2% C: common 2-20% M: many 20-40% VM: very many 40% +
4. **MOTTLE CONT:** Mottle contrast.  
F: faint - indistinct mottles, evident only on close inspection  
D: distinct - mottles are readily seen  
P: prominent - mottling is conspicuous and one of the outstanding features of the horizon
5. **PED. COL:** Ped face colour using Munsell notation.
6. **GLEYS:** If the soil horizon is gleyed a 'Y' will appear in this column. If slightly gleyed, an 'S' will appear.
7. **STONE LITH:** Stone Lithology. One of the following is used:  
  

<b>HR:</b> all hard rocks and stones	<b>SLST:</b> soft oolitic or dolimitic limestone
<b>CH:</b> chalk	<b>FSST:</b> soft, fine grained sandstone
<b>ZR:</b> soft, argillaceous, or silty rocks	<b>GH:</b> gravel with non-porous (hard) stones
<b>MSST:</b> soft, medium grained sandston	<b>GS:</b> gravel with porous (soft) stones
<b>SI:</b> soft weathered igneous/metamorphic rock	

Stone contents (>2cm, >6cm and total) are given in percentages (by volume).
8. **STRUCT:** the degree of development, size and shape of soil peds are described using the following notation:  

<u>degree of development</u>	<b>WK:</b> weakly developed	<b>MD:</b> moderately developed
	<b>ST:</b> strongly developed	
<u>ped size</u>	<b>F:</b> fine	<b>M:</b> medium
	<b>C:</b> coarse	<b>VC:</b> very coarse
<u>ped shape</u>	<b>S :</b> single grain	<b>M:</b> massive
	<b>GR:</b> granular	<b>AB:</b> angular blocky
	<b>SAB:</b> sub-angular blocky	<b>PR:</b> prismatic
	<b>PL:</b> platy	
9. **CONSIST:** Soil consistence is described using the following notation:  

<b>L:</b> loose	<b>VF:</b> very friable	<b>FR:</b> friable	<b>FM:</b> firm	<b>VM:</b> very firm
<b>EM:</b> extremely firm		<b>EH:</b> extremely hard		
10. **SUBS STR:** Subsoil structural condition recorded for the purpose of calculating profile droughtiness:  
G: good M: moderate P: poor
11. **POR:** Soil porosity. If a soil horizon has less than 0.5% biopores >0.5 mm, a 'Y' will appear in this column.
12. **IMP:** If the profile is impenetrable to rooting a 'Y' will appear in this column at the appropriate horizon.
13. **SPL:** Slowly permeable layer. If the soil horizon is slowly permeable a 'Y' will appear in this column.
14. **CALC:** If the soil horizon is calcareous, a 'Y' will appear in this column.
15. Other notations:  

<b>APW:</b>	available water capacity (in mm) adjusted for wheat
<b>APP:</b>	available water capacity (in mm) adjusted for potatoes
<b>MBW:</b>	moisture balance, wheat
<b>MBP:</b>	moisture balance, potatoes.

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SAMPLE NO.	GRID REF	USE	ASPECT		--WETNESS--		-WHEAT-		-POTS-		M.REL		EROSN	FROST	CHEM	ALC	COMMENTS
			GRDNT	GLEY SPL	CLASS	GRADE	AP	MB	AP	MB	DRT	FLOOD	EXP	OIST	LIMIT		
1	TQ82336705	PGR		000	1	1	119	-5	125	4	3A			Y	DR	3A	
2	TQ82306705	PGR		000	1	1	110	-14	116	-5	3A				DR	3A	

SAMPLE	DEPTH	TEXTURE	COLOUR	----MOTTLES----			PEO	----STONES----			STRUCT/ CONSIST	SUBS						
				COL	ABUN	CONT	COL.	GLEY	>2	>6		LITH	TOT	STR	POR	IMP	SPL	CALC
1	0-27	z1	10YR33 00					0	0	HR	2							Y
	27-45	z1	10YR54 00					0	0		0		M					Y
	45-70	ch	10YR81 00					0	0	HR	3		P					
2	0-30	z1	10YR43 00					0	0	HR	2							Y
	30-45	mzc1	75YR55 00					0	0	HR	5		M					Y
	45-70	ch	10YR81 00					0	0	HR	5		P					