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**Maidstone Borough Local Plan  
Site 91 Mayfield Nursery,  
Harrietsham, Kent  
Agricultural Land Classification  
March 1996**

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

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# AGRICULTURAL LAND CLASSIFICATION REPORT

## MAIDSTONE BOROUGH LOCAL PLAN SITE 91 MAYFIELD NURSERY, HARRIETSHAM, KENT

### Introduction

1 This report presents the findings of a detailed Agricultural Land Classification (ALC) survey of 1.6 hectares of land at Mayfield Nursery to the south of Ashford Road (A20T) Harrietsham in Kent. The survey was carried out during March 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 Maidstone Borough Local Plan. The results of this survey supersede any previous ALC information for this land.

3 The work was conducted 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 agricultural land was in pasture. The area shown as Other Land comprises a house and garden together with a farm shop.

### 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 area and proportions of the ALC grades and subgrades on the surveyed land are summarised in Table 1 below.

**Table 1 Area of grades and other land**

Grade/Other Land	Area (hectares)	% Total Site Area	% Surveyed Area
2	1.2	75.0	100.0
Other Land	0.4	25.0	
Total Surveyed Area	1.2		100.0
Total Site Area	1.6	100.0	

7 The fieldwork was conducted at an average density of approximately two borings per hectare of agricultural land. A total of 2 borings and one soil pit were described.

8 The agricultural land at this site has been classified as Grade 2 (very good quality) on the basis of minor soil droughtiness and workability limitations. Although well drained the high topsoil clay content will cause a slight restriction in soil workability. This land comprises relatively deep silty and clayey soils which are derived from chalky marl. The highly calcareous nature of such soils may also act to impose minor restrictions on the agricultural versatility by inhibiting the uptake of certain essential elements thereby causing a slight chemical limitation. Where the site is gently sloping the soils are similar but overlie compact chalk at depth within the soil profile. Land such as this is flexible and capable of growing a range of crops with generally high yields.

### Factors Influencing ALC Grade

#### Climate

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

10 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 876 526
Altitude	m, AOD	100
Accumulated Temperature	day°C	1392
Average Annual Rainfall	mm	738
Field Capacity Days	days	154
Moisture Deficit Wheat	mm	107
Moisture Deficit Potatoes	mm	99

11 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.

12 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.

13 The combination of rainfall and accumulated temperature at this site mean that there is no overall climatic limitation. However climatic factors do interact with soil properties to influence soil wetness and droughtiness limitations. The climatic factors at this locality are around the average for the south-east of England. No local climatic factors such as exposure and frost risk, are believed to adversely affect the land quality on the site. This site is climatically Grade 1.

## **Site**

14 The northern half of the site falls very gently southwards falling from 103 m AOD to 100 m AOD. The southern half of the site is flat lying at approximately 100 m AOD.

## **Geology and soils**

15 The published geological information (BGS 1974) shows the entire site to be underlain by Lower Chalk.

16 The published soils information (SSEW 1983) shows the site to comprise soils of the Coombe 2 Association. The legend accompanying the map describes these soils as Well drained calcareous fine silty soils over chalk or chalk rubble. Shallow soils in places especially on brows and steeper slopes (SSEW 1983).

## **Agricultural Land Classification**

17 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.

18 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.

## *Grade 2*

19 All of the agricultural land on this site has been mapped as Grade 2 very good quality. This land is subject to minor soil droughtiness and workability limitations. Topsoils comprise calcareous medium and heavy silty clay loams. Upper subsoils comprise calcareous permeable heavy silty clay loam upper subsoils which overlie similar lower subsoils where the land is flat. Where the land gently slopes the lower subsoils comprise permeable and very calcareous silty clays which overlie compact chalk at approximately 85 cm depth. All of the profiles on this site are well drained (Wetness Class I) see Appendix II. Pit 1 which is representative of the soils on the gently sloping land indicated that the crop roots did not penetrate into the chalk. The interaction between these soil characteristics and the prevailing climate slightly reduces the amount of profile available water for plants. This is likely to have the effect of restricting the level and consistency of crop yields to the extent that Grade 2 is appropriate.

20 Where topsoils comprise heavy silty clay loams the land is also subject to minor soil workability limitations. This may result in slightly restricted flexibility of cropping, stocking and cultivations. In addition this land may also suffer from a minor chemical limitation. These soils having developed from calcareous chalky marl have extremely high levels of calcium carbonate. High levels of calcium carbonate will act to restrict micro nutrient

availability to plants It is therefore judged that these soils may have a sufficiently high carbonate level to impose a slight chemical limitation on plant growth thereby restricting the agricultural land quality The range of crops which can be grown may therefore be limited to some degree

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## **SOURCES OF REFERENCE**

British Geological Survey (1974) *Sheet No 288 Maidstone 1 50 000*  
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 6 Soils of South East England 1 250 000 and accompanying legend*  
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

- 1 **GRID REF** national 100 km grid square and 8 figure grid reference
- 2 **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		
- 3 **GRDNT** Gradient as estimated or measured by a hand-held optical clinometer
- 4 **GLEYSPL** Depth in centimetres (cm) to gleying and/or slowly permeable layers
- 5 **AP (WHEAT/POTS)** Crop-adjusted available water capacity
- 6 **MB (WHEAT/POTS)** Moisture Balance (Crop adjusted AP - crop adjusted MD)
- 7 **DRT** Best grade according to soil droughtiness
- 8 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		
- 9 **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

1 **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

<b>F</b>	Fine (more than 66% of the sand less than 0.2mm)
<b>M</b>	Medium (less than 66% fine sand and less than 33% coarse sand)
<b>C</b>	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 sandstone	<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

degree of development    **WK** weakly developed                    **MD** moderately developed  
   **ST** strongly developed

ped size                            **F** fine    **M** medium  
   **C** coarse                                        **VC** very coarse

ped shape                        **S** single grain                                **M** massive  
   **GR** granular                                 **AB** angular blocky  
   **SAB** sub-angular blocky                **PR** prismatic  
   **PL** platy

9 **CONSIST** Soil consistence is described using the following notation

**L** loose    **VF** very friable    **FR** friable    **FM** firm    **VM** very firm  
**EM** extremely firm                    **EH** 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

**APW** available water capacity (in mm) adjusted for wheat  
**APP** available water capacity (in mm) adjusted for potatoes  
**MBW** moisture balance wheat  
**MBP** moisture balance potatoes

SOIL PIT DESCRIPTION

Site Name MAIDSTONE BLP SITE 91 Pit Number 1P

Grid Reference TQ87625261 Average Annual Rainfall 738 mm  
 Accumulated Temperature 1392 degree days  
 Field Capacity Level 154 days  
 Land Use Permanent Grass  
 Slope and Aspect 02 degrees S

HORIZON	TEXTURE	COLOUR	STONES	2	TOT STONE	LITH	MOTTLES	STRUCTURE	CONSIST	SUBSTRUCTURE	CALC
0- 24	HZCL	25Y 52 00	0		2	HR					Y
24- 36	HZCL	25Y 63 00	0		1	CH		MDCSAB	FR	M	Y
36- 85	ZC	25Y 72 00	0		1	CH		MDCSAB	FM	M	Y

Wetness Grade 2 Wetness Class I  
 Gleying cm  
 SPL No SPL

Drought Grade 2 APW 114mm MBW 7 mm  
 APP 116mm MBP 17 mm

FINAL ALC GRADE 2  
 MAIN LIMITATION Soil Wetness/Droughtiness

SAMPLE NO	GRID REF	ASPECT USE	GRDNT	SPL	--WETNESS--		-WHEAT-		-POTS-		M REL DRT	EROSN EXP	FROST DIST	CHEM LIMIT	ALC	COMMENTS
					CLASS	GRADE	AP	MB	AP	MB						
1	TQ87645256	PGR			1	1	159	52	123	24	1			CH	2	Calcareous
1P	TQ87625261	PGR S	02		1	2	114	7	116	17	2			WD	2	Wk Dr + Ch
2	TQ87625261	PGR S	02		1	2	115	8	117	18	2			WD	2	Wk Dr + Ch

SAMPLE	DEPTH	TEXTURE	COLOUR	----MOTTLES-----			PED COL	----STONES----				STRUCT/ CONSIST	SUBS				CALC
				COL	ABUN	CONT		GLEY	>2	>6	LITH		TOT	STR	POR	IMP	
1	0-25	mzc1	25Y 42 00					0	0	HR	2						Y
	25-50	hzc1	25Y 53 00					0	0	CH	1		M				Y
	50-120	hzc1	25Y 63 00					0	0	CH	1		M				Y
1P	0-24	hzc1	25Y 52 00					0	0	HR	2						Y
	24-36	hzc1	25Y 63 00					0	0	CH	1	MDCSAB	FR	M			Y
	36-85	zc	25Y 72 00					0	0	CH	1	MDCSAB	FM	M			Y v calc roots85
2	0-25	hzc1	25Y 52 00					0	0	HR	2						Y
	25-40	hzc1	25Y 63 00					0	0	CH	1		M				Y
	40-85	zc	25Y 72 00					0	0	CH	1		M				Y v calc compact85