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Maidstone Borough Local Plan
Site 41 Land South of Marden Road,
Staplehurst
Agricultural Land Classification
ALC Map and Report
August 1994

AGRICULTURAL LAND CLASSIFICATION REPORT

MAIDSTONE BOROUGH LOCAL PLAN

SITE 41 LAND SOUTH OF MARDEN ROAD, STAPLEHURST

1 Summary

- 1.1 ADAS was commissioned by MAFF's Land Use Planning Unit to provide information on land quality for a number of sites in the Maidstone district of Kent. This work forms part of MAFF's statutory input to the Maidstone Borough Local Plan.
- 1.2 Site 41 comprises approximately 4 hectares of land to the south west of Staplehurst in Kent. An Agricultural Land Classification (ALC) survey was carried out in August 1994. The survey was undertaken at a detailed level of approximately one boring per hectare of agricultural land. A total of 2 borings and one soil inspection pit were assessed in accordance with MAFF's 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 a long term limitation on its use for agriculture.
- 1.3 The work was carried out by members of the Resource Planning Team in the Guildford Statutory Group of ADAS.
- 1.4 At the time of the survey all of the agricultural land on the site was unmanaged permanent grass with some scrub encroachment. The northern most part of the site was assessed as being woodland comprising a derelict orchard overgrown with mature trees and shrubs.
- 1.5 The distribution of grades and subgrades is shown on the attached ALC map and the areas are given in the table below. The map has been drawn at a scale of 1:10,000. It is accurate at this scale but any enlargement would be misleading. This map supersedes any previous survey information for this site.

Table 1 Distribution of Grades and Subgrades

| Grade | Area (ha) | % of Site | % of Agricultural Land |
|--------------------|------------|-------------|------------------------|
| 3b | 2.1 | 51.2 | <u>100%</u> (2.1 ha) |
| Woodland | <u>2.0</u> | <u>48.8</u> | |
| Total area of site | 4.1 | 100% | |

- 1.6 Appendix 1 gives a general description of the grades and land use categories identified in this survey. The main classes are described in terms of limitation that can occur, the typical cropping range and expected level and consistency of yield.

1 7 The site has been graded as Subgrade 3b moderate quality land Poorly drained clayey soils derived from Weald Clay cause the land to experience significant soil wetness and workability restrictions

2 Climate

2 1 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

2 2 The main parameters used in the assessment of an overall climatic limitation are average annual rainfall as a measure of overall wetness and accumulated temperature as a measure of the relative warmth of a locality

2 3 A detailed assessment of the prevailing climate was made by interpolation from a 5km grid point dataset (Met Office 1989) The details are given in the table below and these show that there is no overall climatic limitation affecting the site However climatic factors do interact with soil factors to influence soil wetness and droughtiness limitations The climate is relatively warm and dry at this locality in national terms

2 4 No local climatic factors such as exposure or frost risk are believed to affect the site

Table 2 Climatic Interpolation

| | |
|---|----------|
| Grid Reference | TQ780433 |
| Altitude (m AOD) | 35 |
| Accumulated Temperature (degree days Jan June) | 1472 |
| Average Annual Rainfall (mm) | 668 |
| Field Capacity (days) | 139 |
| Moisture Deficit Wheat (mm) | 122 |
| Moisture Deficit Potatoes (mm) | 119 |
| Overall Climatic Grade | 1 |

3 Relief

3 1 The site lies at 30-35 m AOD falling from north to south Nowhere on the site do gradient or relief affect agricultural land quality

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4 **Geology and Soil**

4 1 British Geological Survey (1976) shows the geology to comprise bands of Weald Clay and Paludina limestone running east to west across the site

4 2 Soil Survey of England and Wales (1983) shows the site to comprise soils of the Wickham 1 association these being described as slowly permeable seasonally waterlogged fine silty over clayey fine loamy over clayey and clayey soils (SSEW 1983)

4 3 Detailed field examination of the soils on the site confirmed the presence of poorly drained clayey soils with slowly permeable subsoils

5 **Agricultural Land Classification**

5 1 Table 1 provides the details of the area measurements for each grade and the distribution of each grade is shown on the attached ALC map

5 2 The location of the soil observation points are shown on the attached sample point map

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Subgrade 3b

5 3 Moderate quality Subgrade 3b land has been mapped across the agricultural part of the site

Profiles typically comprise non-calcareous heavy silty clay loam topsoils which are commonly gleyed These directly overlie gleyed and slowly permeable silty clay subsoils which severely impede drainage Given these drainage characteristics, Wetness Class IV is appropriate and Subgrade 3b assigned under prevailing climatic conditions

The utilisation of this land will be restricted as a result of soil wetness and workability The opportunities for cultivations and/or grazing will be limited to the drier parts of the year and crop growth and development may be adversely affected by excessive waterlogging of the soil

ADAS Ref 2007/154/94
MAFF Ref EL20/328

Resource Planning Team
Guildford Statutory Group
ADAS Reading

SOURCES OF REFERENCE

British Geological Survey (1976) Sheet No 288 Maidstone 1 50,000 Solid & Drift Edition

MAFF (1988) Agricultural Land Classification of England and Wales Revised guidelines and criteria for grading the quality of agricultural land

Meteorological Office (1989) Climatic datasets for Agricultural Land Classification

Soil Survey of England and Wales (1983) Sheet 6 Soils of South East England 1 250,000 and accompanying legend

APPENDIX I

DESCRIPTION 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 (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 severe limitations which restrict use to permanent pasture or rough grazing, except for occasional pioneer forage crops.

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 parkland public open spaces sports fields allotments and soft surfaced areas on airports 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 eg buildings in large grounds and where map scale permits the cover types may be shown separately Otherwise the most extensive cover type will be shown

APPENDIX II

FIELD ASSESSMENT OF SOIL WETNESS CLASS

SOIL WETNESS CLASSIFICATION

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.

Definition of Soil Wetness Classes

| 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 |

Soils can be allocated to a wetness class on the basis of quantitative data recorded over a period of many years or by the interpretation of soil profile characteristics, site and climatic factors. Adequate quantitative data will rarely be available for ALC surveys and therefore the interpretative method of field assessment is used to identify soil wetness class in the field. The method adopted here is common to ADAS and the SSLRC.

¹The number of days specified is not necessarily a continuous period

²In most years is defined as more than 10 out of 20 years

APPENDIX III

SOIL PIT AND SOIL BORING DESCRIPTIONS

Contents

Soil Abbreviations - Explanatory Note

Soil Pit Descriptions

Database Printout - Boring Level Information

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:

| | | |
|--------------------------------|--------------------------------|---------------------------|
| ARA Arable | WHT Wheat | BAR Barley |
| CER Cereals | OAT Oats | MZE Maize |
| OSR Oilseed rape | BEN Field Beans | BRA Brassicae |
| POT Potatoes | SBT Sugar Beet | FCD Fodder Crops |
| LIN Linseed | FRT Soft and Top Fruit | FLW Fallow |
| PGR Permanent Pasture | LEY Ley Grass | RGR Rough Grazing |
| SCR Scrub | CFW Coniferous Woodland | DCW Deciduous Wood |
| HTH Heathland | BOG Bog or Marsh | FLW Fallow |
| PLO Ploughed | SAS Set aside | OTH Other |
| HRT 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

| | | |
|------------------------------------|--------------------------|--------------------------------|
| MREL Microrelief limitation | FLOOD Flood risk | EROSN Soil erosion risk |
| EXP Exposure limitation | FROST Frost prone | DIST Disturbed land |
| CHEM Chemical limitation | | |

- 9 **LIMIT** The main limitation to land quality. The following abbreviations are used

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

Soil Pits and Auger Borings

1 **TEXTURE** soil texture classes are denoted by the following abbreviations

| | | | | | |
|------------|-----------------|------------|-----------------|------------|--------------------|
| S | Sand | LS | Loamy Sand | SL | Sandy Loam |
| SZL | Sandy Silt Loam | CL | Clay Loam | ZCL | Silty Clay Loam |
| ZL | Silt Loam | SCL | Sandy Clay Loam | C | Clay |
| SC | Sandy Clay | ZC | Silty Clay | OL | Organic Loam |
| P | Peat | SP | Sandy Peat | LP | Loamy Peat |
| PL | Peaty Loam | PS | Peaty Sand | MZ | 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 **GLEY** 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

| | | | |
|-------------|---|-------------|--------------------------------------|
| HR | all hard rocks and stones | SLST | soft oolitic or dolimitic limestone |
| CH | chalk | FSST | soft fine grained sandstone |
| ZR | soft argillaceous or silty rocks | GH | gravel with non porous (hard) stones |
| MSST | soft medium grained sandstone | GS | gravel with porous (soft) stones |
| SI | 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 LP SITE 41 Pit Number 1P

Grid Reference TQ78004328
 Average Annual Rainfall 668 mm
 Accumulated Temperature 1472 degree days
 Field Capacity Level 139 days
 Land Use Rough Grazing
 Slope and Aspect 02 degrees S

| HORIZON | TEXTURE | COLOUR | STONES | 2 | TOT STONE | LITH | MOTTLES | STRUCTURE | CONSIST | SUBSTRUCTURE | CALC |
|---------|---------|-----------|--------|---|-----------|------|---------|-----------|---------|--------------|------|
| 0- 30 | HZCL | 10YR53 00 | 0 | | 0 | | | | | | |
| 30- 60 | ZC | 25 Y62 00 | 0 | | 0 | | M | STCOPR | VF | P | |

Wetness Grade 3B
 Wetness Class IV
 Gleying 030 cm
 SPL 030 cm

Drought Grade 3B
 APW 088mm MBW -34 mm
 APP 093mm MBP -26 mm

FINAL ALC GRADE 3B
 MAIN LIMITATION Wetness

f

| SAMPLE NO | GRID REF | ASPECT | | WETNESS | | WHEAT | | -POTS | | M REL | | EROSN | FROST | CHEM | ALC | COMMENTS | |
|-----------|------------|--------|-------|---------|-----|-------|-------|-------|-----|-------|-----|-------|-------|------|------|----------|------------|
| | | USE | GRDNT | GLEYS | SPL | CLASS | GRADE | AP | MB | AP | MB | DRT | FLOOD | EXP | DIST | | LIMIT |
| 1 | TQ78004328 | RGR | S | 02 | 030 | 030 | 4 | 3B | 088 | 34 | 093 | -26 | 3B | | WE | 3B | |
| 1P | TQ78004328 | RGR | S | 02 | 030 | 030 | 4 | 3B | 088 | 34 | 093 | -26 | 3B | | WE | 3B | WEALD CLAY |
| 2 | TQ77904320 | RGR | S | 02 | 0 | 032 | 4 | 3B | 089 | 33 | 094 | 25 | 3B | | WE | 3B | |

| SAMPLE | DEPTH | TEXTURE | COLOUR | MOTTLES- | | PED | ----STONES | | | STRUCT/ | SUBS | | | | | | |
|--------|-------|---------|-----------|----------|------|------|------------|------|----|---------|------|--------|---------|-----|-----|-----|-----|
| | | | | COL | ABUN | CONT | COL | GLEY | >2 | >6 | LITH | TOT | CONSIST | STR | POR | IMP | SPL |
| 1 | 0-30 | hzc1 | 10YR53 00 | | | | | 0 | 0 | 0 | | | | | | | |
| | 30-60 | zc | 25Y 62 00 | 75YR68 | 00 | M | | Y | 0 | 0 | 0 | | P | | | | Y |
| 1P | 0-30 | hzc1 | 10YR53 00 | | | | | 0 | 0 | 0 | | | | | | | |
| | 30-60 | zc | 25 Y62 00 | 75YR68 | 00 | M | | Y | 0 | 0 | 0 | STCOPR | VF | P | Y | | Y |
| 2 | 0 32 | hzc1 | 10YR53 00 | 75YR58 | 00 | C | | Y | 0 | 0 | 0 | | | | | | |
| | 32 60 | zc | 25 Y62 00 | 75YR68 | 00 | M | | Y | 0 | 0 | 0 | | P | | | | Y |