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LAND AT CHARLCOT FARM,WHITCHURCH
BASINGSTOKE & DEANE LOCAL PLAN
AGRICULTURAL LAND CLASSIFICATION
ALC MAP & MAIN REPORT
MARCH, 1993

MAFF REFERENCE : EL 15/144
ADAS REFERENCE : 1501/20/93

RESOURCE PLANNING TEAM
GUILDFORD STATUTORY GROUP

**LAND AT CHARLCOT FARM, WHITCHURCH
BASINGSTOKE & DEANE LOCAL PLAN
AGRICULTURAL LAND CLASSIFICATION SUMMARY REPORT**

1.0 Summary

1.1 In March, 1993, an Agricultural Land Classification (ALC) was made on approximately 20 hectares of land on the southern fringe of Whitchurch in Hampshire.

1.2 The work was conducted by members of the Resource Planning Team in the Guildford Statutory Group of ADAS in response to a commission by MAFF's Land Use Planning Unit to provide information on the quality of agricultural land affected by the possible inclusion of this site in the Basingstoke and Deane Local Plan. This site was one of 22 surveyed as part of MAFF's statutory input to the preparation of the Plan.

1.3 The classification has been made using MAFF's revised guidelines and criteria for grading the quality of agricultural land. These guidelines provide a framework for classifying land according to the extent to which its physical or chemical characteristics impose long-term limitations on its use for agriculture.

1.4 A total of 18 borings and 1 soil pit were described on the site and the agricultural land has been classified as a mixture of Grade 2 and Sub-grade 3B.

1.5 The results of the survey are shown on the attached ALC map at a scale of 1:5,000. The information is accurate at this scale but any enlargement may be misleading. Table 1 below provides details of the areas involved in each grade.

Table 1 : Distribution of Grades and Sub-grades

Grade	Area (ha)	% of Survey Area	% of Agricultural Area
2	10.9	55.3	55.9
3B	8.6	43.7	44.1
Urban	0.1	0.5	100% (19.5 ha)
Non-agric	0.1	0.5	
TOTAL	19.7 ha	100%	

1.6 Soil droughtiness is the limiting factor on the soils in the east on the higher land. Shallow soils over Chalk with limited root penetration restrict the available water in the profile for extraction by crops. On the lower land to the west, deeper profiles occur which have higher reserves of moisture but which still experience a slight droughtiness limitation. Occasionally, the heaviness of the topsoil textures and the stone content of the topsoil also create a Grade 2 workability and stoniness limitation.

1.7 A general description of the grades and sub-grades is provided as an appendix. The main classes are described in terms of the type of limitation that can occur, the typical cropping range and the expected level and consistency of yield.

2.0 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 the overall climatic limitation are annual average 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 gridpoint dataset. The details are given in the table below and these show that there is no overall climatic limitation affecting the site.

Table 2 : Climatic Interpolations

Grid Reference :	SU466472
Altitude (m) :	75
Accumulated Temperature (days) :	1455
Average Annual Rainfall (mm) :	786
Field Capacity (days) :	171
Moisture Deficit, Wheat (mm) :	104
Moisture Deficit, Potatoes (mm) :	97
Overall Climatic Grade :	1

3.0 Relief and Geology

3.1 The site occupies gentle west and south-west facing slopes at 95 metres in the east where the land overlies Upper Chalk with flatter land in the west at 70-75 metres developed on Chalk or River and Valley Gravel.

4.0 Agricultural Land Classification

4.1 Grade 2 : this map unit relates to the flatter land to the west and extends eastwards into the lower slopes. Topsoil stone measurements in this area revealed that stone contents are typically in the range 5-10%, with flints washed down from the higher land to the east. Stone contents throughout the profiles are variable with high percentages (20-30%) of Chalk in the lower subsoil on the land adjacent to the Sub-grade 3B and with lower percentages of hard rock in the subsoils of the flatter land. Generally, profiles in the west are impenetrable to the auger at 70-80 cm. A pit was not located in this map unit as the profiles qualify at least for Grade 2 on the basis of soil droughtiness but may be graded no higher as a result of the topsoil stone limitation. In addition, topsoil textures are bordering on Heavy Clay Loam which may create a slight workability limitation. Subsoil horizons may include Heavy Clay Loam and Clay layers but there are no signs of impeded drainage. Subsoils exhibit moderate structural conditions and the soils have been placed in Wetness Class I.

4.2 Sub-grade 3B : this map unit relates to the higher land in the west where shallow soils over Chalk experience a significant droughtiness limitation. Pit 1 is typical of these soils which possess Medium Clay Loam topsoils which overlie Chalk from approximately 25cm. Root penetration of the Chalk in the pit was observed for approximately another 37cm. The limited soil depth and root penetration combine to restrict the amount of available water in these profiles for extraction by roots.

4.3 The area marked as Urban relates to a house and garden and the area of Non-agricultural land relates to a farm track.

APPENDIX I

DESCRIPTION OF THE GRADES AND SUB-GRADES

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 on 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. When more demanding crops are grown yields are generally lower or more variable than on land in grades 1 and 2.

Sub-grade 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.

Sub-grade 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 very 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 : 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/airfields. Also active mineral workings and refuse tips where restoration conditions to 'soft' after-uses may apply.

Woodland

Includes commercial and non-commercial 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

REFERENCES

- * MAFF (1988), Agricultural Land Classification of England And Wales : revised guidelines and criteria for grading the quality of agricultural land.
- * Meteorological Office (1989), Climatological Data for Agricultural Land Classification.
- * British Geological Survey (1978), Sheet No.283, Andover, 1:50,000

APPENDIX III

DEFINITION OF SOIL WETNESS CLASSES

Wetness Class I

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

Wetness Class II

The soil profile is wet within 70cm depth for 31-90 days in most years or, if there is no slowly permeable layer within 80cm depth, it is wet within 70cm for more than 90 days, but not wet within 40cm depth for more than 30 days in most years.

Wetness Class III

The soil profile is wet within 70cm depth for 91-180 days in most years or, if there is no slowly permeable layer within 80cm depth, it is wet within 70cm for more than 180 days, but only wet within 40cm depth for 31-90 days in most years.

Wetness Class IV

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

Wetness Class V

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

Wetness Class VI

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

(The number of days is not necessarily a continuous period. 'In most years' is defined as more than 10 out of 20 years.)

APPENDIX IV

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 profile and pit information obtained during ALC surveys is held on a database. This has commonly used notations and abbreviations as set out below.

DORING HEADERS

1. GRID REF : National grid square followed by 8 figure grid reference.

2. USE : Land-use at the time of survey.
The following abbreviations are used.

- | | |
|-------------------------------|-----------------------------|
| ARA - arable | PAS/PGR - permanent pasture |
| WHT - wheat | RGR - rough grazing |
| BAR - barley | LEY - ley grassland |
| CER - cereals | CFW - coniferous woodland |
| OAT - Oats | DCW - deciduous woodland |
| MZE - maize | SCR - scrub |
| OSR - Oilseed rape | HTH - heathland |
| BEN - field beans | BOG - bog or marsh |
| BRA - brassicae | FLW - fallow |
| POT - potatoes | PLO - ploughed |
| SBT - sugarbeet | SAS - set-aside |
| FCD - fodder crops | OTH - other |
| FRT - soft and top fruit | LIN - linseed |
| HOR/HRT - horticultural crops | |

3. GRDNT : Gradient as measured by optical reading clinometer.

4. GLEY/SPL : Depth in centimetres (cm) to gleyed and/or slowly permeable horizons.

5. AP (WHEAT/POTS) : Crop-adjusted available water capacity. The amount of soil water (in millimetres) held in the soil profile that is available to a growing crop (wheat and potatoes are used as reference crops).

6. MB (WHEAT/POTS) : The moisture balance for wheat and potatoes obtained by subtracting the soil moisture deficit from the crop-adjusted available water capacity.

7. DRT: Grade according to soil droughtiness assessed against soil moisture balances.

8. M REL : Micro-relief)
FLOOD : Flood risk) If any of these factors are considered
EROSN : Soil erosion) significant in terms of the assessment
EXP : Exposure) of agricultural land quality, a y will
FROST : Frost prone) be entered in the relevant column.
DIST : Disturbed land)
CHEM : Chemical limitation)

9. LIMIT : Principal limitation to agricultural land quality.
The following abbreviations are used:

OC - overall climate	CH - chemical limitations
AE - aspect	WE - wetness
EX - exposure	WK - workability
FR - frost	DR - drought
GR - gradient	ER - erosion
MR - micro-relief	WD - combined soil wetness/soil droughtiness
FL - flooding	ST - topsoil stoniness
TX - soil texture	
DP - soil depth	

PROFILES & PITS

1. TEXTURE : Soil texture classes are denoted by the following abbreviations:

S - sand
LS - loamy sand
SL - sandy loam
SZL - sandy silt loam
ZL - silt loam
MZCL - medium silty clay loam
MCL - medium clay loam
SCL - sandy clay loam
HZCL - heavy silty clay loam
SC - sandy clay
ZC - silty clay
C - clay

For the sand, loamy sand, sandy loam and sandy silt loam classes, the predominant size of sand fraction may be indicated by the use of prefixes.

F - fine (more than $\frac{2}{3}$ of the sand less than 0.2 mm)
C - coarse (more than $\frac{1}{3}$ of sand greater than 0.6 mm)
M - medium (less than $\frac{2}{3}$ fine sand and less than $\frac{1}{3}$ coarse sand)

The sub-divisions of clay loam and silty clay loam classes according to clay content are indicated as follows:

M - medium (less than 27% clay)
H - heavy (27-35% clay)

Other possible texture classes include:

OL - organic loam
P - peat
SP - sandy peat
LP - loamy peat
PL - peaty loam.
PS - peaty sand
MZ - marine light silts

2. MOTTLE COL : Mottle colour

3. MOTTLE ABUN : Mottle abundance

- F - few - less than 2% of matrix or surface described
- C - common - 2-2% of the matrix
- M - many - 20-40% of the matrix
- VM - very many - 40% + of the matrix

4. MOTTLE CONT : Mottle continuity

- F - faint - indistinct mottles, evident only on close examination
- 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

6. STONE LITH : Stone lithology. One of the following is used.

- HR - all hard rocks or stones
- MSST - soft, medium or coarse grained sandstone
- SI - soft weathered igneous or metamorphic
- SLST - soft oolitic or dolomitic limestone
- FSST - soft, fine grained sandstone
- ZR - soft, argillaceous, or silty rocks
- CH - chalk
- GH - gravel with non-porous (hard) stones
- GS - gravel with porous (soft) stones

Stone contents (>2cm, >6cm and total) are given in percentages (by volume).

7. 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 well developed
- ped size F - fine
M - medium
C - coarse
VC - very coarse
- ped shape S - single grain
M - massive
GR - granular
SB/SAB - sub-angular blocky
AB - angular blocky
PR - prismatic
PL - platy

8. 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

9. SUBS STR : Subsoil structural condition recorded for the purpose of calculating profile droughtiness.

G - good
M - moderate
P - poor

10. POR : Soil porosity. If a soil horizon has less than 0.5% biopores >0.5 mm, a 'y' will appear in this column.

11. IMP : If the profile is impenetrable a 'y' will appear in this column at the appropriate horizon.

12. SPL : Slowly permeable layer. If the soil horizon is slowly permeable a y will appear in this column.

13. CALC : If the soil horizon is calcareous, a 'y' will appear in this column.

14. 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