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HAVANT BOROUGH LOCAL PLAN
Site 43 Land at Manor Road, Hayling Island, Hampshire

Agricultural Land Classification
ALC Map and Summary Report

October 1997

Resource Planning Team
Eastern Region
FRCA Reading

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AGRICULTURAL LAND CLASSIFICATION SUMMARY REPORT

HAVANT BOROUGH LOCAL PLAN
SITE 43 LAND AT MANOR ROAD, HAYLING ISLAND, HAMPSHIRE

INTRODUCTION

1 This summary report presents the findings of a detailed Agricultural Land Classification (ALC) survey of 8 4 ha of land north and south of Manor Road Hayling Island in Hampshire The survey was carried out during September 1997

2 The survey was undertaken by the Farming and Rural Conservation Agency (FRCA)[1] on behalf of the Ministry of Agriculture Fisheries and Food (MAFF) in connection with MAFF s statutory input to the Havant Borough Local Plan This survey supersedes any previous ALC information for this land

3 The work was conducted by members of the Resource Planning Team in the Eastern Region of FRCA 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 land use on the site was a mixture of permanent grassland grazed by dairy cattle and land in oilseed rape The areas mapped as Other land include thick wooded field boundaries one of which has a substantial ditch running parallel to it

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

Table 1 Area of grades and other land

Grade/Other land	Area (hectares)	% surveyed area	% site area
2	6 2	77 5	73 8
3a	1 8	22 5	21 4
Other land	0 4		4 8
Total surveyed area	8 0	100	95 2
Total site area	8 4		100

7 The fieldwork was conducted at an average density of 1 boring per hectare of agricultural land A total of 11 borings and 1 soil pit was described

[1] FRCA is an executive agency of MAFF and the Welsh Office

8 The area surveyed represents relatively low lying flat land on the coastal plain of Hampshire with the soils developed from brickearth deposits Agricultural land at this site has been classified as Grade 2 (very good quality) and Subgrade 3a (good quality)

9 All of the land classified as Grade 2 is subject to a slight soil droughtiness limitation Non calcareous medium silty clay loam topsoils and upper subsoils overlie heavier lower subsoils Although these soils are deep well drained and silty the warm and dry local climate imparts a minor restriction on the available water for crops The ensuing slight soil droughtiness limitation may cause plants to suffer from minor drought stress for all or part of the growing season

10 In addition parts of this land are also equally limited by minor soil wetness Fluctuating water levels cause these profiles to be moderately well drained Soil wetness may slightly limit the flexibility of cropping stocking and cultivation

11 The remainder of the land has been classified as Subgrade 3a because of a soil wetness limitation Soil profiles are similar to the Grade 2 land but are imperfectly drained because of poorly structured clays in the lower subsoil This land is subject to slightly more pronounced soil wetness limitations than the land assigned to Grade 2

FACTORS INFLUENCING ALC GRADE

Climate

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

13 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	SU 722 009	SU 724 007
Altitude	m AOD	5	3
Accumulated Temperature	day C (Jan June)	1549	1551
Average Annual Rainfall	mm	702	700
Field Capacity Days	days	144	143
Moisture Deficit Wheat	mm	122	122
Moisture Deficit Potatoes	mm	119	120
Overall climatic grade	N/A	Grade 1	Grade 1

14 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

15 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

16 The combination of rainfall and temperature at this site mean that there is no overall climatic limitation Although the site is very close to the sea exposure and frost risk do not have a significant adverse affect on land quality at this location The site is climatically Grade 1 However climatic factors do interact with soil properties to influence soil wetness and soil droughtiness At this locality the climate is about average for Southeast England

Site

17 The topography of the site is relatively flat lying at an altitude of approximately 5m AOD The survey area is not adversely affected by any site restrictions (i e steep gradient uneven micro relief or flooding)

Geology and soils

18 The most detailed published geological information for the site (BGS 1964) shows the entire site to be underlain by brickearth drift deposits over London Clay

19 The most detailed published soils information covering the area (SSEW 1983) maps the soils of the Park Gate association These soils are described as deep stoneless silty soils variably affected by groundwater (SSEW 1984) Soils consistent with this description were observed across the entire site with an area along the south and south eastern boundary more waterlogged than elsewhere

AGRICULTURAL LAND CLASSIFICATION

20 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

21 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 II

Grade 2

22 Land of very good quality covers most of the site and is subject to a minor soil droughtiness limitation In places soil wetness is an equally limiting factor

23 Soils comprise non calcareous medium silty clay loam topsoils which may contain up to 2 % flints by volume Topsoils overlie similarly textured and stony upper subsoils and pass into heavy silty clay loam lower subsoils Soil Pit 1 (see Appendix II) is typical of these soils which exhibit moderate subsoil structural conditions Moisture balance calculations for these soils which take into account texture depth stone content subsoil structure and the local climate indicate that these soils are slightly droughty The effect of this on a growing

crop is that available water is not sufficient at critical times of the growing season and may result in a reduction in yield and yield consistency

24 Where soil wetness is equally limiting the presence of gleying within 40 cm of the soil profile is evidence of a fluctuating water level resulting in soils being assigned to Wetness Class II This combination of moderately well drained soils topsoil texture and climatic factors gives rise to an agricultural land classification of Grade 2

Subgrade 3a

25 Land of good quality is located in the south west of the survey area

26 All of this land is affected by soil wetness restrictions Soils comprise non calcareous medium silty clay loam topsoils which may contain up to 2% flints Topsoils overlie similarly textured and stony upper subsoils which pass to poorly structured clayey lower subsoils It is the depth to these slowly permeable layers which determines the ALC grade The depth to these imperfectly drained clayey subsoils (between approximately 43 and 67 cm) results in these soils being assigned to Wetness Class III This factor in combination with topsoil texture and the local climate results in an agricultural land classification of Subgrade 3a

27 The effect of prolonged soil wetness is to impede drainage which in turn adversely affects seed germination and survival partly by a reduction in soil temperature and partly because of anaerobism This also inhibits the development of a good root system and can affect crop growth In addition the heavy topsoils restrict the number of days when the soil is in a suitable condition for cultivation trafficking by machinery or grazing by livestock

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SOURCES OF REFERENCE

British Geological Survey (1964) *Sheet No 331 Portsmouth* 1 50 000 Solid and Drift Edition
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
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 DATA

Contents

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	**OTH**	Other
DCW	Deciduous woodland	**BOG**	Bog or marsh	**SAS**	Set Aside
HTH	Heathland	**HRT**	Horticultural crops	**PLO**	Ploughed

3 **GRDNT** Gradient as estimated or measured by a hand held optical clinometer

4 **GLEY/SPL** 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	**ST**	Topsoil Stoniness
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
EX	Exposure				

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	**FSST**	soft fine grained sandstone
ZR	soft argillaceous or silty rocks	**CH**	chalk
MSST	soft medium grained sandstone	**GS**	gravel with porous (soft) stones
SI	soft weathered igneous/metamorphic rock	**GH**	gravel with non porous (hard) stones

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		
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	**FM** firm	**EH** extremely hard
VF very friable	**VM** very firm	
FR friable	**EM** extremely firm	

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