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ISLE OF WIGHT UNITARY DEVELOPMENT PLAN
OBJECTOR SITES
Land off Camp Road, Freshwater

Agricultural Land Classification
ALC Map and Report

September 1998

Resource Planning Team
Eastern Region
FRCA Reading

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AGRICULTURAL LAND CLASSIFICATION REPORT

ISLE OF WIGHT UNITARY DEVELOPMENT PLAN - OBJECTOR SITES
LAND OFF CAMP ROAD, FRESHWATER.

INTRODUCTION

1. This summary report presents the findings of a detailed Agricultural Land Classification (ALC) survey of 6 hectares of land at Freshwater on the Isle of Wight. The survey was carried out during September 1998.

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 its statutory input to the Isle of Wight Unitary Development 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 was in cereal stubble.

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 Tables 1 below.

Table 1: Area of grades and other land

Grade/Other land	Area (hectares)	% site area
2	6	100
Total site area	6	100

7. The fieldwork was conducted at an average density of 1 boring per hectare of agricultural land. In total, 7 borings and one soil pit were described.

8. The land at this site has been classified Grade 2, very good quality agricultural land. The principal limitation is minor soil droughtiness, with minor soil wetness being equally restricting in places.

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

9. The soils on the site comprise deep moderately well drained, clay loams and sandy clay loams resting over clays in the lower subsoils. Profiles were found to be very slightly to slightly stony throughout. The interaction between these soil properties and the prevailing soil moisture deficits, which are relatively high due to the proximity of the site to the coast, results in a minor soil droughtiness problem. Soil moisture reserves will not be quite sufficient to meet crop demands such that crop yields and consistency will be slightly restricted. In addition, certain parts of the site are affected by very minor soil wetness caused by impeded soil drainage arising from the clayey subsoils. Soil wetness reduces the versatility of the land in terms of access by machinery (e.g. for cultivations or harvesting) and grazing by livestock if damage to the soil is to be avoided. Soil wetness will also adversely affect seed germination and root growth and will therefore reduce the level and consistency of yields.

FACTORS INFLUENCING ALC GRADE

Climate

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

11. 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).

12. 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.

Table 2: Climatic and altitude data

Factor	Units	Values	
Grid reference	N/A	SZ 340 868	SZ 341 865
Altitude	m, AOD	10	20
Accumulated Temperature	day°C (Jan-June)	1558	1547
Average Annual Rainfall	mm	775	781
Field Capacity Days	days	160	161
Moisture Deficit, Wheat	mm	119	117
Moisture Deficit, Potatoes	mm	115	114
Overall climatic grade	N/A	Grade 1	Grade 1

13. 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.

14. The combination of rainfall and temperature at this site mean that there is no overall climatic limitation. The site is not believed to be frost-prone but it does lie in an area which is

indicated as being 'Exposed' (Unpublished Met. Office data, 1968). Field examination indicates that exposure. is not likely to be a significant limitation in the grading of the site. As such, the site may be considered as being climatically Grade 1. However, climatic factors do interact with soil properties to influence soil wetness and soil droughtiness. The close proximity of the site to the coast and associated high evapo-transpiration enhances the likelihood of soil droughtiness problems.

Site

15. The survey area lies between approximately 10m and 20m AOD and is level or very gently sloping. The site is not affected by any site restrictions, such as gradient, microrelief or flood risk.

Geology and soils

16. The most detailed published geological information for this area (BGS, 1976) shows the whole survey area to be underlain by Bagshot Beds.

17. The most recent published soils information covering the area (SSEW, 1983) shows the survey area to comprise soils from the Bursledon Association. These soils are described as 'Deep fine loamy soils with slowly permeable subsoils and slight seasonal waterlogging associated with deep coarse loamy soils variably affected by groundwater. Some slowly permeable seasonally waterlogged loamy over clayey soils.' (SSEW, 1983). The soils encountered across the area surveyed are predominately deep fine loamy soils overlying slowly permeable clayey subsoils.

AGRICULTURAL LAND CLASSIFICATION

18. The details of the classification of the survey area are shown on the attached ALC map and the area statistics of each grade are given in Table 1.

19. 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

20. Grade 2, very good quality, land occurs throughout the area surveyed. The land was found to have a minor soil droughtiness limitation, with minor soil wetness being equally restricting in places. Profiles comprise a very slightly to slightly stony (1-2% total flints by volume) medium clay loam, medium sandy loam or fine sandy silt loam topsoil passing into predominately medium clay loam upper subsoils. Lower subsoils are variable in composition. These include medium clay loam, heavy clay loam, medium sandy loam, sandy clay loams and clay lower subsoils. The combination of soil textures and stone contents, together with the local climatic regime, means that profiles often have restricted reserves of water. This leads to a slight risk of drought stress to plants in most years and means that this land can be classified no better than Grade 2.

21. In places soils are equally restricted by soil wetness. Topsoils are similar to those described previously. These overlie gleyed medium or heavy clay loams upper subsoils. These directly overlie slowly permeable clay, or pass through medium sandy loam or sandy clay loam to the poorly structured clay in the lower subsoils. The depth to the poorly structured clay subsoils determines the overall ALC grading. Where these occur at shallow depths (50-52 cm) soils are assigned to Wetness Class III, where deeper (below 78 cm) Wetness Class II. When the relatively wet local climate is taken into consideration, this is sufficient to assign this land in Grade 2 on the basis of a minor soil wetness limitation. This is likely to affect crop growth and development. It is also likely to limit the flexibility of the land by reducing 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

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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

SAMPLE NO.	GRID REF	USE	ASPECT	GRDNT	GLEY	SPL	--WETNESS-- CLASS	GRADE	-WHEAT- AP	MB	-POTS- AP	MB	M.REL DRT	FLOOD	EROSN EXP	FROST DIST	CHEM LIMIT		ALC	COMMENTS
1	SZ34008680	STB	N	1	70		1	1	153	35	116	2	2				DR		2	
2	SZ34008670	STB	N	1	28	78	2	2	139	21	112	-2	2				WD		2	
3	SZ34008660	STB	N	1	32	52	3	2	127	9	125	11	2				WD		2	ROOT MOTTLES
4	SZ34108660	STB	N	1	90		1	1	147	29	103	-11	3A				DR		3A	ALMOST 2
5	SZ34008650	STB	N	1	42	50	3	3A	113	-5	111	-3	3A				WD		3A	
6	SZ34108650	STB	N	1	60		1	1	108	-10	114	0	3A				DR		2	IMP75 Q2 DR
7	SZ34008640	STB	N	1			1	1	92	-26	98	-16	3B				DR		3A	IMP60 Q3A/2 DR
1P	SZ34008670	STB	N	1	42	79	2	2	130	12	105	-9	2				WD		2	HCL POROUS

SAMPLE	DEPTH	TEXTURE	COLOUR	MOTTLES COL	MOTTLES ABUN	MOTTLES CONT	PED COL.	GLEY	STONES >2	STONES >6	STONES LITH	STONES TOT	STRUCT/ CONSIST	SUBS STR	SUBS POR	SUBS IMP	SUBS SPL	SUBS CALC	
1	0-30	MCL	10YR32						0	0	HR	2							
	30-70	MCL	10YR54						0	0	HR	2		M				Y	
	70-90	MCL	10YR62	10YR58	C			Y	0	0	HR	2		M				Y	
	90-120	MCL	10YR71	75YR58	C			Y	0	0	HR	2		M				Y	
2	0-28	MCL	10YR42	75YR46	F				0	0	HR	2							
	28-55	MCL	10YR64	10YR58	C			Y	0	0	HR	5		M					
	55-65	MSL	10YR64	10YR58	C			Y	0	0	HR	5		M					
	65-78	SCL	10YR64	10YR58	C			Y	0	0	HR	10		M					
	78-120	C	05Y 62	10YR68	M			Y	0	0		0		P			Y		
3	0-32	FSZL	10YR42	75YR58	F				0	0	HR	1							
	32-52	MCL	10YR63	10YR58	C	D		Y	0	0	HR	1		M					
	52-90	C	25Y 71	10YR58	C	D		Y	0	0		0		P			Y		
4	0-28	MSL	10YR42	75YR46	F				0	0	HR	1		M					
	28-90	MSL	10YR44						0	0	HR	2		M					
	90-120	MSL	10YR63	75YR58	C			Y	0	0	HR	10		M					
5	0-30	MCL	10YR42	75YR56	F				0	0	HR	2							
	30-42	HCL	10YR54	75YR56	F				0	0	HR	2		M					
	42-50	HCL	10YR53	75YR58	M			Y	0	0		0		M					
	50-90	C	25Y 64	75YR58	M			Y	0	0		0		P			Y		
6	0-30	MCL	10YR33	10YR58	F				0	0	HR	1							
	30-45	MCL	10YR43	75YR58	F				0	0	HR	5		M					
	45-60	SCL	10YR43	75YR58	F				0	0	HR	5		M					
	60-75	HCL	10YR53	75YR58	C			Y	0	0	HR	2		M					IMP FLINTS
7	0-25	MCL	10YR43						0	0	HR	2							
	25-60	MCL	10YR44 54						0	0	HR	5		M					IMP FLINTS
1P	0-30	MCL	10YR42						0	0	HR	2							
	30-42	MCL	25Y 53						0	0	HR	5	MVCSAB	FR	M				
	42-52	SCL	10YR64	75YR58	C			Y	0	0	HR	10	MVCSAB	FR	M				
	52-79	HCL	10YR63	75YR68	M			Y	0	0	HR	10	MVCOAB	FM	P				POROUS
	79-120	C	05Y 52	10YR58	C			Y	0	0		0	WKVCPR	VM	P	Y		Y	