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**DOVER DISTRICT LOCAL PLAN-OBJECTOR SITES
LAND AT ELVINGTON, DOVER, KENT.
(INCLUDING OBJECTOR SITE 15)**

**Agricultural Land Classification
ALC Map and Report**

June 1998

**Resource Planning Team
Eastern Region
FRCA Reading**

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AGRICULTURAL LAND CLASSIFICATION REPORT
DOVER DISTRICT LOCAL PLAN - OBJECTOR SITES

LAND AT ELVINGTON, DOVER, KENT,
INCLUDING OBJECTOR SITE 15

INTRODUCTION

1. This report presents the findings of a detailed Agricultural Land Classification (ALC) survey of 5.1 hectares of land to the north-east of Elvington, north of Dover, in Kent. The survey was carried out during June 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 Dover District Local Plan. The survey covers objector site 15 at Elvington, as detailed on the accompanying map. In order to provide a context for appraising the current objector sites further, adjacent land was also surveyed. 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 on this site was in oilseed rape.

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 objector site and all of the surveyed land are summarised in Tables 1 and 2.

Table 1: Area of grades - Objector Site 15

Grade/Other land	Area (hectares)	% site area
3a	1.6	99.5
3b	<0.1	0.5
Total site area	1.6	100

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

Table 2: Area of grades - Land at Elvington

Grade/Other land	Area (hectares)	% site area
3a	3.6	70.6
3b	1.5	29.4
Total site area	5.1	100

6. The fieldwork was conducted at an average density of approximately 1 boring per hectare of agricultural land. In total, 6 borings and 1 soil pit were described.

7. The site has been classified as being of Subgrade 3a (good quality) and Subgrade 3b (moderate quality). The principal limitation is soil droughtiness.

8. Across the majority of the site, the soils comprise medium silty topsoils either directly overlying soft rootable weathered chalk, or passing to medium silty subsoils which become progressively more chalky and pass to chalk at moderate depths. The principal limitation in these circumstances is soil droughtiness due to the restricted availability of water to plants caused by the moisture holding capacity of, and the restricted rooting into, the chalk substrate. Towards the east of the site, the soil resource was greater, but was impenetrable at a moderate depth, due to flints. Soil droughtiness may cause the level and consistency of yields to be affected, especially in drier years.

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 3 and were obtained from the published 5km grid datasets using the standard interpolation procedures (Met. Office, 1989).

Table 3: Climatic and altitude data

Factor	Units	Values
Grid reference	N/A	TR 280 507
Altitude	m, AOD	75
Accumulated Temperature	day°C (Jan-June)	1411
Average Annual Rainfall	mm	788
Field Capacity Days	days	162
Moisture Deficit, Wheat	mm	109
Moisture Deficit, Potatoes	mm	102
Overall climatic grade	N/A	Grade 1

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 temperature at this site mean that there is no overall climatic limitation. Other local climatic factors such as exposure and frost risk are also believed not to affect the site. The site is climatically Grade 1.

Site

14. The site lies at altitudes between approximately 65 and 80m AOD. Towards the west the surveyed area is relatively flat, at around 80m AOD. Towards the south east the land falls sharply (approximately 6°) to around 65m AOD into a dry valley, the base of which is to the east of the site boundary. Gradients within the survey area are not sufficient to adversely affect agricultural land quality.

Geology and soils

15. The published geological information for the site (BGS, 1977) shows the majority of the site to be underlain by Cretaceous Upper Chalk. Towards the south east this is overlain by head drift deposits lying in the dry valley.

16. The most recent published soils information for the site (SSEW, 1983 and 1984) shows the whole area to comprise soils from the Coombe 1 association. These are described as, 'Well drained calcareous fine silty soils, deep in valley bottoms, shallow to chalk on valley sides in places. Slight risk of water erosion' (SSEW, 1983). Soils of this general description were found across the site, ie, shallow soils over chalk were encountered on the flat land to the west of the site and on the sloping land in the centre with deeper soils on the lower land to the east.

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 II.

Subgrade 3a

19. Land of good quality has been mapped across the majority of this site. The principal limitation is soil droughtiness. The majority of the soils are characterised by the soil pit 1P. (see Appendix II).

20. The soils encountered comprise a calcareous, medium silty clay loam topsoil passing to similar or heavy silty clay loam subsoils which overlie chalk at shallow depths. No evidence of soil wetness was observed within the profiles and as such they are all assigned to Wetness Class I. Stone contents within the profile were assessed as moderate overall. In the topsoil a 20% total was typical comprising 10% chalk fragments and 10% flints (including up to 3% >2cm diameter). The upper subsoils contained up to 35% chalk fragments and passed to pure chalk at around 35cm. In the pit observation, 1P, rooting was observed to penetrate approximately 60cm into the blocky weathered chalk. The combination of the stone content and the rooting restriction into the chalk causes the moisture available to be inadequate to fully meet crop needs. In the moist local climate moisture balance calculations indicate that Subgrade 3a is appropriate. Soil droughtiness may cause the level and consistency of yields to be reduced as water demand by plants cannot be matched by the supply available. Towards the north and east of the site isolated observations were made of different soil types. To the north, a non-calcareous clay upper subsoil was observed which passed to chalk at 70cm. To the east, a medium silty clay loam topsoil and upper subsoil were impenetrable to the soil auger due to flints from approximately 60cm. These observations have the potential to be a slightly higher classification however their scattered location prohibits separate mapping.

Subgrade 3b

21. This small area within the site principally lies on the moderately steep slope towards the east of the site. The principal limitation is soil droughtiness.

22. The soils are essentially similar to those found elsewhere on the site except that the depth to pure chalk is less (approximately 24 - 28cm), the volume of stones in the topsoil is greater (up to 8% flints and 25% chalk) and no upper subsoil is present. The combination of a shallow topsoil, a moderate stone content and a relatively steep slope could potentially result in reduced yields in this area, particularly if the chalk substrate is within plough depth. A Subgrade 3b classification is therefore considered appropriate.

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SOURCES OF REFERENCE

British Geological Survey (1977) *Sheet No.290. Dover. Solid & Drift Edition. 1:50 000 scale*
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) *Soils of South East England. 1:250 000 Scale.*
SSEW: Harpenden.

Soil Survey of England and Wales (1984) *Soils of South East England. Bulletin No. 15.*
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:

Sample location map

Soil abbreviations - explanatory note

Soil pit descriptions

Soil boring descriptions (boring and horizon levels)

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. **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	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. **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:

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	ASPECT USE	--WETNESS--		-WHEAT-		-POTS-		M.REL		EROSN EXP	FROST DIST	CHEM LIMIT	ALC	COMMENTS	
			GRDNT	GLEYSPL	CLASS	GRADE	AP	MB	AP	MB						DRT
1	TR28202079	OSR			1	2	106	-3	94	-8	3A			DR	3A	IMP 80
2	TR29005075	OSR		30	2	3A	118	9	116	14	2			WD	2	SLGL30 SP303A
3	TR27795067	OSR			1	2	103	-6	92	-10	3A			DR	3A	1P LOC IMP 70
4	TR27905070	OSR			1	2	99	-10	87	-15	3A			TS	3B	CH IN TOPSOIL
5	TR28005064	OSR	SE	6	1	2	99	-10	87	-15	3A			TS	3B	CH IN TOPSOIL
6	TR28105060	OSR			1	1	93	-16	99	-3	3A			DR	3A	IMP FLINT 60
1P	TR27795067	OSR			1	2	103	-6	92	-10	3A			DR	3A	PIT95 ROOTS95

SAMPLE	DEPTH	TEXTURE	COLOUR	----MOTTLES----			PED COL.	----STONES----			STRUCT/ CONSIST	SUBS STR	POR	IMP	SPL	CALC	
				COL	ABUN	CONT		GLEYS	>2	>6							LITH
1	0-32	HZCL	10YR33 43					0	0	HR	5					Y	+5% CHALK
	32-95	CH	10YR81 44					0	0		0		P			Y	ROOTS 95
2	0-30	HZCL	10YR43					0	0	CH	3						+5% FLINTS
	30-70	C	10YR44	10YR46	58	M	D	S	0	0	CH	2		M			+2% FLINTS SPL?
	70-95	CH	10YR81					0	0		0		P		Y	ROOTS 95	
3	0-33	HZCL	10YR43					2	0	HR	8					Y	+10% CH 1P LOC
	33-95	CH	10YR81					0	0		0		P		Y	ROOTS 95	
4	0-24	HZCL	10YR44					1	0	HR	5					Y	+10% CHALK
	24-95	CH	10YR81					0	0		0		P		Y	ROOTS 95	
5	0-28	HZCL	10YR44					0	0	CH	25					Y	+3% FLINTS
	28-95	CH	10YR81					0	0		0		P		Y	ROOTS 95	
6	0-28	MZCL	10YR42					1	0	HR	5					Y	
	28-60	MZCL	10YR54					0	0	HR	10		M		Y	+5%CH IMPFLINT60	
1P	0-27	HZCL	10YR43					3	0	HR	10					Y	+5% CHALK
	27-35	HZCL	10YR43 44					0	0	CH	35		M		Y	+2% FLINTS	
	35-95	CH	10YR81					0	0		0		P		Y	COMROOTS60 FEW95	