A1

DOVER DISTRICT LOCAL PLAN-OBJECTOR SITES
LAND AT ALKHAM, KENT
(OBJECTOR SITE 10).

Agricultural Land Classification
ALC Map and Report

June 1998

Resource Planning Team
Eastern Region
FRCA Reading

RPT Job Number: 2004/033/98
MAFF Reference: EL 20/0856

AGRICULTURAL LAND CLASSIFICATION REPORT

DOVER DISTRICT LOCAL PLAN - OBJECTOR SITES LAND AT ALKHAM VALLEY ROAD, ALKHAM, KENT, OBJECTOR SITE 10.

INTRODUCTION

1. This report presents the findings of a detailed Agricultural Land Classification (ALC) survey of 5.6 ha of land to the north of the B2060, to the south-west of Alkham village, 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 10. 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, all of the land was in set-aside.

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 Objector Site 10 are summarised in Table 1.

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

Table 1: Area of grades - Objector Site 10, Alkham Valley Road, Alkham

Grade/Other land	*Area (hectares)*	*% site area*
2	4.7	83.9
3b	0.9	16.1
Total site area	5.6	100.0

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

8. The majority of the land surveyed has been classified as Grade 2 (very good quality). The soils, which are derived from deep drift deposits over Middle Chalk, comprise calcareous medium silty topsoils and subsoils. Topsoils and upper subsoils tend to be slightly stony, passing into moderately and very stony (predominantly chalk fragments) lower subsoils. At this locality, the interaction between these soil characteristics and the prevailing climate results in a slight soil droughtiness limitation, which may act to slightly lower the level and consistency of crop yields.

9. In the north-west of the site, a small area of land has been classified as Subgrade 3b (moderate quality) on the basis of a slope restriction. Here, slopes in the range of 7.5-8° may limit the range of agricultural machinery which can be safely and efficiently used.

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).

Table 2: Climatic and altitude data

Factor	Units	Values	
Grid reference	N/A	TR 253 423	TR 253 421
Altitude	m, AOD	75	62
Accumulated Temperature	day°C (Jan-June)	1416	1431
Average Annual Rainfall	mm	817	812
Field Capacity Days	days	174	173
Moisture Deficit, Wheat	mm	107	109
Moisture Deficit, Potatoes	mm	99	102
Overall climatic grade	N/A	Grade 1	Grade 1

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.

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 (ATO, January to June), as a measure of the relative warmth of a locality.

14. The combination of rainfall and temperature within this survey area means that there is no overall climatic limitation. However, climatic factors do interact with soil properties to influence soil wetness and soil droughtiness. At this locality, the climate is relatively moist in regional terms. As a result the likelihood of soil wetness problems may be increased. No

local climatic factors, such as exposure or frost risk, are believed to adversely affect the land quality on the site. This site is climatically Grade 1.

Site

15. The site lies on the lower slopes of a dry chalk valley. The site falls from 80 m AOD, along the northern site boundary, to 65 m AOD, in the south of the site. Most of the site falls in a south-easterly direction through moderate slopes of 3-6°. However, in the north-west of the site steeper slopes of 7.5-8° occur. Here, the land has been classified as Subgrade 3b because of a gradient limitation. Nowhere on the site does microrelief adversely affect agricultural land quality.

Geology and soils

16. The most detailed published geological information for this area (BGS, 1982) shows the entire site to be underlain by Middle Chalk, with drift deposits of head overlying the southern two-thirds of the site.

17. The most recent published soils information covering the area (SSEW, 1983) shows the site to comprise soils of the Andover 1 Association. These soils are described as 'Shallow well drained calcareous silty soils over chalk on slopes and crests. Deep calcareous and non-calcareous fine silty soils in valley bottoms' (SSEW, 1983). These soils are similarly described in Soils of Kent, (SSEW, 1980).

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 across most of the site and has minor soil droughtiness limitations. Profiles typically comprise medium silty clay loam topsoils. These pass into similarly textured and, occasionally heavy silty clay loam, subsoils. The topsoils and upper subsoils are (very) slightly stony, containing 0-3% flints larger than 2 cm and 2-6% total flints, together with 2-5% total chalk, by volume. Lower subsoils are moderately to very stony, containing 25-50% total chalk, in addition to 0-10% total flints, by volume. The permeable nature of these soils and the underlying chalk means that these profiles are well drained (Wetness Class I). From Pit 1, which is representative of these profiles, the subsoils were assessed as permeable and moderately structured. The interaction between the soil characteristics with the prevailing climate means that there is insufficient available moisture to fully meet crop needs. Consequently, this land may be subject to lower and less consistent crop yields and Grade 2 is appropriate.

Subgrade 3b

21. Land classified as Subgrade 3b, moderate quality, occurs on the higher land in the north-west of the site. This land is subject to a gradient restriction. Here, slopes in the range of 7.5°-8° may act to limit the range of agricultural machinery which can be safely and efficiently used.

Gillian Iles
Resource Planning Team
Eastern Region
FRCA Reading

SOURCES OF REFERENCE

British Geological Survey (1982) *Sheet No.* 289, Canterbury, *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 (1980) *Soils of Kent, Soil Survey Bulletin No. 9.*
SSEW: Harpenden

Soil Survey of England and Wales (1983) *Sheet 6, Soils of South East England, 1:250,000.*
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	TR25304230	SAS	SE	4			1	1	109	7	112	13	2				DR	2	Imp75dry Q CH
2	TR25234223	SAS	SE	5			1	1	151	49	115	16	1					1	Aud'd 100 dry
3	TR25304220	SAS	SE	6			1	1	109	7	116	17	2				DR	2	I75flnty see1P
4	TR25404220	SAS	SE	3			1	1	96	-6	102	3	3A				DR	2	I60flnty see1P
5	TR25204210	SAS	SE	6			1	1	96	-6	105	6	3A				DR	2	I65flnty see1P
6	TR25304210	SAS	SE	4			1	1	131	29	113	14	2					1	I105 prob. Gr1
1P	TR25304220	SAS	SE	6			1	1	136	34	108	9	2				DR	2	Pit 90:G2 pots

SAMPLE	DEPTH	TEXTURE	COLOUR	MOTTLES COL	MOTTLES ABUN	MOTTLES CONT	PED COL.	STONES GLEY	STONES >2	STONES >6	STONES LITH	STONES TOT	STRUCT/ CONSIST	SUBS STR	SUBS POR	SUBS IMP	SUBS SPL	SUBS CALC	
1	0-30	MZCL	10YR53						0	0	CH	5					Y		+3% flints
	30-55	MZCL	10YR64						0	0	CH	30			M		Y		
	55-75	MZCL	10YR73						0	0	CH	50			M		Y		Imp75 Q chalk
2	0-25	MZCL	10YR53						0	0	HR	3					Y		+5% chalk
	25-35	MZCL	10YR54						0	0	CH	10			M		Y		
	35-55	HZCL	10YR54						0	0	CH	35			M		Y		
	55-120	MZCL	10YR74						0	0	CH	10			M		Y		
3	0-30	MZCL	10YR53						0	0	CH	2					Y		+2% flints
	30-40	MZCL	10YR53 56						0	0	HR	5			M		Y		
	40-60	MZCL	10YR64						0	0	CH	25			M		Y		
	60-75	MZCL	10YR74						0	0	CH	40			M		Y		Imp 75 flinty
4	0-28	MZCL	10YR43						0	0	HR	3					Y		+3% chalk
	28-50	MZCL	10YR43						0	0	HR	8			M		Y		+1% ch
	50-60	MCL	10YR43						0	0	HR	12			M		Y		Imp 60 flinty
5	0-25	MZCL	10YR43						0	0	HR	5					Y		
	25-30	MZCL	10YR44						0	0	HR	12			M		Y		
	30-50	HZCL	10YR4458						0	0	HR	12			M		Y		+5% chalk
	50-65	HZCL	10YR58						0	0	HR	12			M		Y		Imp 65 flinty
6	0-20	MZCL	10YR43						3	0	HR	5					Y		
	20-45	MZCL	10YR44						0	0	HR	10			M		Y		
	45-75	MZCL	10YR44						0	0	HR	10			M		Y		+5% chalk
	75-105	MCL	10YR44						0	0	HR	10			M		Y		+10% ch;I105 dry
1P	0-32	MZCL	10YR53						3	0	HR	6					Y		+4% chalk
	32-45	MZCL	10YR44						0	0	HR	10	MDCSAB	FR	M		Y		+2% chalk
	45-57	MZCL	10YR64						0	0	CH	30	MDCSAB	FR	M		Y		+8% flint
	57-90	MZCL	10YR74						0	0	CH	50	MDCSAB	FR	M		Y		+10% flint