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KENT MINERALS LOCAL PLAN REVIEW
Land north of Tile Lodge Farm, Charing, Kent.

Agricultural Land Classification
ALC Map and Report

October 1998

Resource Planning Team
Eastern Region
FRCA Reading

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AGRICULTURAL LAND CLASSIFICATION REPORT
KENT MINERALS LOCAL PLAN REVIEW
LAND NORTH OF TILE LODGE FARM, CHARING, KENT.

INTRODUCTION

1. This report presents the findings of a detailed Agricultural Land Classification (ALC) survey of 12.7 ha of land to the north of Tile Lodge Farm at Charing in Kent. The land to the east of Charing Heath Road was surveyed during March 1989 (FRCA Ref. 2001/059/87), whilst the land to the west of Charing Heath Road was surveyed during October 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 Kent Minerals Local Plan Review. 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 the 1989 survey the agricultural land use to the east of Charing Heath Road was cereals. During the 1998 survey the agricultural land to the west of Charing Heath Road was in permanent grassland. The area mapped as 'Other land' comprises a plantation of conifers.

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
3b	11.8	100.0	92.9
Other Land	0.9	-	7.1
Total surveyed area	11.8	100.0	92.9
Total site area	12.7	-	100.0

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

7. The fieldwork was conducted at an average density of 1 boring per hectare. In total 13 borings and 1 soil pit were described, comprising 11 borings and 1 soil pit described during the 1989 survey, and 2 borings described during the 1998 survey.
8. The agricultural land at this site has been classified as Subgrade 3b (moderate quality). The principal limitation is soil wetness.
9. The soils within the land classified as Subgrade 3b comprise heavy loam or clay textured topsoils and clay subsoils. These exhibit indications of soil wetness to the extent that in the local climate Subgrade 3b is appropriate.
10. Soil wetness reduces the range of crops which can be grown and 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

11. Climate affects the grading of land through the assessment of an overall climatic limitation and also through interactions with soil characteristics.
12. 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).
13. 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	TQ 936 496	TQ 933 498
Altitude	m, AOD	95	105
Accumulated Temperature	day°C (Jan-June)	1397	1386
Average Annual Rainfall	mm	749	752
Field Capacity Days	days	155	156
Moisture Deficit, Wheat	mm	111	110
Moisture Deficit, Potatoes	mm	105	103
Overall climatic grade	N/A	Grade 1	Grade 1

14. 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.

15. The combination of rainfall and temperature at this site means that there is no overall climatic limitation. The site is not believed to be either frost-prone or to suffer from exposure. 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. At this locality the high moisture deficits present as a result of the local climate may enhance the likelihood of soil droughtiness problems.

Site

16. The survey area lies between approximately 95m and 105m AOD. The highest land is located towards the north west of the site and slopes gently towards the south centre. Nowhere on the site does flooding, gradient or microrelief adversely affect agricultural land quality.

Geology and soils

17. The most detailed published geological information for this area (BGS, 1978) maps the area to comprise Cretaceous Gault Clay. To the south of the site, Folkestone Beds are mapped.
18. The most recent published soils information covering the area (SSEW, 1983) shows the site to consist of soils from the Denchworth Association. These soils are described as 'Slowly permeable seasonally waterlogged clayey soils with similar fine loamy over clayey soils. Some fine loamy over clayey soils with slight seasonal waterlogging and some slowly permeable calcareous clayey soils. Landslips and associated irregular terrain locally' (SSEW, 1983). These soils are similarly described in Soils of Kent (SSEW, 1980) and are represented throughout the site.

AGRICULTURAL LAND CLASSIFICATION

19. 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.
20. The location of the auger borings carried out in the 1998 survey is shown on the attached sample location map and the details of the 1998 soils data are presented in Appendix II.

Subgrade 3b

21. Land of moderate quality has been mapped across the whole of the site. The principal limitation is soil wetness and the profiles are typified by soil pit 1 (from the 1989 survey).
22. Soil profiles in this area typically comprise a calcareous heavy clay loam or clay topsoil overlying clay subsoils. Stone contents are typically slight throughout the profile, to a maximum of 2% flints by volume. The upper subsoils exhibit signs of wetness in the form of ochreous mottles in a pale coloured matrix and evidence from the soil pit confirms that the clay horizons are slowly permeable. In the local climate this places these profiles in Wetness Class IV, and when combined with the heavy clay loam or clay topsoils, leads to Subgrade 3b being appropriate.

23. The drainage impedance is sufficient to give some restriction on access to the land for cultivations and/or grazing if soil damage is to be avoided. The imperfect drainage is also likely to cause crop yields to be less consistent than on land of higher quality.

Vaughan Redfern
Resource Planning Team
Eastern Region
FRCA Reading

SOURCES OF REFERENCE

British Geological Survey (1978) *Sheet No. 288, Maidstone 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:

Sample location map

Soil abbreviations - explanatory note

Soil pit and 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	GLEY SPL	CLASS	GRADE	AP	MB	AP	MB				
1	TQ93344980	PGR	29	29	4	3B	139	29	115	12	2		WE	3B
2	TQ93504970	PGR	30	30	4	3B	139	29	115	12	2		WE	3B

SAMPLE	DEPTH	TEXTURE	COLOUR	----MOTTLES----			PED COL.	----STONES----			STRUCT/ CONSIST	SUBS			
				COL	ABUN	CONT		GLEY >2	>6 LITH	TOT		STR	POR	IMP	SPL
1	0-29	C	25Y53					0	0	0					Y
	29-60	C	25Y52	10YR56	C	D		Y	0	0	0	M			Y
	60-120	C	25Y61						0	0	0	M			Y
2	0-30	C	25Y42					0	0	0					Y
	30-75	C	25Y52	10YR56	C	D		Y	0	0	0	M			Y
	75-120	C	05Y62	10YR66	C	D		Y	0	0	0	M			Y