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Shepway District Local Plan
Site 1: Etchinghill, Kent
Agricultural Land Classification
ALC Map and Report
October 1993

SHEPWAY DISTRICT LOCAL PLAN
SITE 1: ETCHINGHILL, KENT

AGRICULTURAL LAND CLASSIFICATION, REPORT

1. Summary

1.1. In June 1993, a detailed Agricultural Land Classification (ALC) survey was made on approximately 1.6 hectares of land close to Etchinghill in Kent.

1.2. The work was conducted by members of the Resource Planning Team in the Guildford Statutory Group of ADAS in response to a commission by MAFF's Land Use Planning Unit to provide information on the quality of agricultural land affected by proposals for development in the Shepway District Local Plan.

1.3. The classification has been made using MAFF's revised guidelines and criteria for grading the quality of agricultural land (MAFF, 1988). These guidelines provide a framework for classifying land according to the extent to which its physical or chemical characteristics impose long-term limitations on its use for agriculture.

1.4. The fieldwork was carried out with an observation density of approximately two per hectare. A total of 3 borings and 2 soil pits were examined.

1.5. The table below provides the details of the grades found across the site. The majority of the land is classified as moderate (Subgrade 3b) quality. The key limitation is droughtiness caused by a shallow soil depth over hard Cretaceous Lower Chalk restricting available water. The land of good quality (Subgrade 3a) is similarly limited, although to a lesser degree due to the depth of the soil profile being greater.

Table 1 : Distribution of Grades and Subgrades

Grade	Area (ha)	% of Site
3a	0.60	37
3b	1.02	63
Total Area of Site	1.62	100

1.6. The distribution of the ALC grades is shown on the attached map. The information is presented at a scale of 1:5,000; it is accurate at this level but any enlargement would be misleading. This map supersedes any previous ALC information for this site.

1.7. At the time of survey the site was in set-aside.

1.8. A general description of the grades and subgrades is provided as an appendix. The main classes are described in terms of the type of limitation that can occur, the typical cropping range and the expected level and consistency of yield.

2. Climate

2.1 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.

2.2 The main parameters used in the assessment of the overall climatic limitation are average annual rainfall, as a measure of overall wetness, and accumulated temperature, as a measure of the relative warmth of a locality.

2.3 A detailed assessment of the prevailing climate was made by interpolation from a 5km gridpoint dataset (Met. Office 1989). The details are given in the table below and these show that there is no overall climatic limitation affecting the site.

2.4 No local climatic factors such as exposure or frost risk affect the site.

Table 2 : Climatic Interpolations

Grid Reference	TR170396
Altitude (m)	125
Accumulated Temperature (days)	1362
Average Annual Rainfall (mm)	802
Field Capacity (days)	169
Moisture Deficit, Wheat (mm)	104
Moisture Deficit, Potatoes (mm)	96
Overall Climatic Grade	1

3. Relief

3.1 The site slopes from a high of approximately 130m AOD in the north-east to 115m in the south-west. At no point does gradient or microrelief affect the grading of the site.

4. Geology and Soil

4.1 The relevant published geological map, Sheet 305/306, Folkestone and Dover (BGS, 1978) shows the site to be underlain with Cretaceous Lower Chalk described as a marly chalk, dark grey at the base and becoming progressively lighter to greyish white near the top.

4.2 The Soil Survey of England and Wales published Bulletin 9, Soils of Kent (SSEW 1989) shows the site to be underlain by Rendzina type soils from either the Andover, Upton or Coombe series. It describes them as "Chalky silty soils", predominantly shallow over chalk or chalky head having free drainage. Soils similar to this description were found at the site.

5. Agricultural Land Classification

5.1 Table 1 provides the details of the area measurements for each grade and the distribution of each grade is shown on the attached ALC map.

5.2 The location of the soil observation points is shown on the attached sample point map.

5.3 Subgrade 3a

Land of good quality has been mapped for approximately one-third of the site on the less sloping land. In this area the soil profiles were deeper (c.50cm over hard pure chalk) than elsewhere, and as such water availability is less limited. From the observation at Pit 1 (1P, Appendix III), roots were seen to penetrate 20 cm into the hard chalk beneath the medium silty clay loam topsoil and the heavy silty clay loam subsoil. Both of these soil horizons are calcareous and very slightly stony with c.5% chalk fragments in the matrix. Subgrade 3a land is 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, or oilseed rape.

5.4 Subgrade 3b

Land of moderate quality has been mapped for the remaining two-thirds of the site, towards the north-east. The soil profiles encountered were shallow (c.30cm over pure hard chalk), and consisted of a calcareous slightly stony (c.7% chalk fragments by volume) medium silty clay loam topsoil directly over the chalk, into which roots were found in the pit observation (2p, Appendix III) to extend 20 cm. As such, water availability was limiting, to an extent whereby Subgrade 3b is appropriate. Land of this quality is capable of producing moderate yields of a narrow range of crops principally cereals and grass.

ADAS Reference 2010/74/93
MAFF Reference EL 20/109

Resource Planning Team
Guildford Statutory Group
ADAS Reading

SOURCES OF REFERENCE

- British Geological Survey (1969) Geology of the country around Canterbury and Folkestone.

- British Geological Survey (1978) Sheet 305/306 Folkestone and Dover. Solid and Drift Edition 1:50000.

- MAFF (1988) Agricultural Land Classification of England and Wales: Revised guidelines and criteria for grading the quality of agricultural land.

- Meteorological Office (1989) Climatic datasets for Agricultural Land Classification.

- Soil Survey of England and Wales (1980) Soils of Kent, 1:250,000 map and accompanying legend.

APPENDIX I

DESCRIPTION OF THE GRADES AND SUB-GRADES

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 on the 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.

Grade 3 : Good To Moderate Quality Agricultural Land

Land with moderate limitations which affect the choice of crops, 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.

Sub-grade 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 (eg. 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 very severe limitations which restrict use to permanent pasture or rough grazing, except for occasional pioneer forage crops.

Urban

Built-up or 'hard' uses with relatively little potential for a return to agriculture : housing, industry, commerce, education, transport, religious buildings, cemeteries. Also, hard-surfaced sports facilities, permanent caravan sites and vacant land; all types of derelict land, including mineral workings which are only likely to be reclaimed using derelict land grants.

Non-agricultural

'Soft' uses where most of the land could be returned relatively easily to agriculture, including : private parkland, public open spaces, sports fields, allotments and soft-surfaced areas on airports/airfields. Also active mineral workings and refuse tips where restoration conditions to 'soft' after-uses may apply.

Woodland

Includes commercial and non-commercial woodland.

Agricultural Buildings

Includes the normal range of agricultural buildings as well as other relatively permanent structures such as glasshouses. Temporary structures (eg. polythene tunnels erected for lambing) may be ignored.

Open Water

Includes lakes, ponds and rivers as map scale permits.

Land Not Surveyed

Agricultural land which has not been surveyed.

Where the land use includes more than one of the above, eg. buildings in large grounds, and where map scale permits, the cover types may be shown separately. Otherwise, the most extensive cover type will be shown.

APPENDIX II

DEFINITION OF SOIL WETNESS CLASSES

Wetness Class I

The soil profile is not wet within 70cm depth for more than 30 days in most years.

Wetness Class II

The soil profile is wet within 70cm depth for 31-90 days in most years **or**, if there is no slowly permeable layer within 80cm depth, it is wet within 70cm for more than 90 days, but not wet within 40cm depth for more than 30 days in most years.

Wetness Class III

The soil profile is wet within 70cm depth for 91-180 days in most years **or**, if there is no slowly permeable layer within 80cm depth, it is wet within 70cm for more than 180 days, but only wet within 40cm depth for 31-90 days in most years.

Wetness Class IV

The soil profile is wet within 70cm depth for more than 180 days but not wet within 40cm depth for more than 210 days in most years **or**, if there is no slowly permeable layer within 80cm depth, it is wet within 40cm depth for 91-210 days in most years.

Wetness Class V

The soil profile is wet within 40cm depth for 211-335 days in most years.

Wetness Class VI

The soil profile is wet within 40cm depth for more than 335 days in most years.

(The number of days is not necessarily a continuous period. 'In most years' is defined as more than 10 out of 20 years.)

APPENDIX III

SOIL PIT AND SOIL BORING DESCRIPTIONS

Contents :

SOIL PROFILE DESCRIPTIONS : EXPLANATORY NOTE

Soil pit and auger boring information collected during ALC fieldwork is held on a database. This has commonly used notations and abbreviations as set out below.

Boring Header Information

1. GRID REF : national 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 HRT : Horticultural Crops PGR : Permanent Pasture LEY : Ley Grass RGR : Rough Grazing
SCR : Scrub CFW : Coniferous Woodland DCW : Deciduous Woodland HTH : Heathland BOG : Bog or Marsh
FLW : Fallow PLO : Ploughed SAS : Set aside OTH : Other

3. GRDNT : Gradient as measured by a hand-held optical clinometer.

4. GLEY/SPL : Depth in cm to gleying or slowly permeable layers.

5. AP (WHEAT/POTS) : Crop-adjusted available water capacity.

6. MB (WHEAT/POTS) : Moisture Balance.

7. DRT : Best grade according to soil droughtiness.

8. If any of the following factors are considered significant, an entry of 'Y' will be entered in the relevant column.

MREL : Microrelief limitation FLOOD : Flood risk EROSN : Soil erosion risk EXP : Exposure limitation FROST : Frost
DIST : Disturbed land CHEM : Chemical limitation

9. LIMIT : The main limitation to land quality. The following abbreviations are used.

OC : Overall Climate AE : Aspect EX : Exposure 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 : Soil Erosion Risk WD : Combined Soil Wetness/Droughtiness ST : Topsoil Stoniness

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
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 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

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

6. STONE LITH : One of the following is used.

HR : all hard rocks and stones MSST : soft, medium or coarse grained sandstone
SI : soft weathered igneous or metamorphic SLST : soft oolitic or dolimitic limestone
FSST : soft, fine grained sandstone ZR : soft, argillaceous, or silty rocks CH : chalk
GH : gravel with non-porous (hard) stones GS :gravel with porous (soft) stones

Stone contents (> 2cm, > 6cm and total) are given in percentages (by volume).

7. 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 VC : very coarse

- ped shape S : single grain M : massive GR : granular AB : angular blocky SAB : sub-angular blocky PR : prismatic
PL : platy

8. CONSIST : Soil consistence is described using the following notation:

L : loose VF : very friable FR : friable FM : firm VM : very firm EM : extremely firm EH : extremely hard

9. SUBS STR : Subsoil structural condition recorded for the purpose of calculating profile droughtiness.

G : good M : moderate P : poor

10. POR : Soil porosity. If a soil horizon has less than 0.5% biopores > 0.5 mm, a 'Y' will appear in this column.

11. IMP : If the profile is impenetrable a 'Y' will appear in this column at the appropiate horizon.

12. SPL : Slowly permeable layer. If the soil horizon is slowly permeable a 'Y' will appear in this column.

13. CALC : If the soil horizon is calcareous, a 'Y' will appear in this column.

14. 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

SOIL PIT DESCRIPTION

Site Name : SITE 1 SHEPWAY L P Pit Number : 1P

Grid Reference: TR16943962
Average Annual Rainfall : 802 mm
Accumulated Temperature : 1362 degree days
Field Capacity Level : 169 days
Land Use : Permanent Grass
Slope and Aspect : 01 degrees SW

HORIZON	TEXTURE	COLOUR	STONES >2	TOT.STONE	MOTTLES	STRUCTURE
0- 28	MZCL	10YR51 00	0	2		
28- 50	HZCL	10YR63 00	0	5		MDCSAB
50- 70	CH	10YR62 00	0	0		

Wetness Grade : 1
Wetness Class : I
Gleying :000 cm
SPL : No SPL

Drought Grade : 3A
APW : 103mm MBW : -1 mm
APP : 109mm MBP : 13 mm

FINAL ALC GRADE : 3A
MAIN LIMITATION : Droughtiness

SOIL PIT DESCRIPTION

Site Name : SITE 1 SHEPWAY L P Pit Number : 2P

Grid Reference: TR17033969
Average Annual Rainfall : 802 mm
Accumulated Temperature : 1362 degree days
Field Capacity Level : 169 days
Land Use : Permanent Grass
Slope and Aspect : 05 degrees SW

HORIZON	TEXTURE	COLOUR	STONES >2	TOT.STONE	MOTTLES	STRUCTURE
0- 30	MZCL	10YR52 00	0	7		
30- 50	CH	10YR62 00	0	0		

Wetness Grade : 1
Wetness Class : I
Gleying :000 cm
SPL : No SPL

Drought Grade : 3B
APW : 75 mm MBW : -29 mm
APP : 75 mm MBP : -21 mm

FINAL ALC GRADE : 3B
MAIN LIMITATION : Droughtiness

SAMPLE NO.	GRID REF	ASPECT USE		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	TR17023968	PGR	SW	06	000		1	1	82	-22	83	-13	3B				DR	3B	ROOT 58
1P	TR16943962	PGR	SW	01	000		1	1	103	-1	109	13	3A				DR	3A	ROOT 70
2	TR16883958	PGR	SW	01	000		1	1	148	44	122	26	1					1	
2P	TR17033969	PGR	SW	05	000		1	1	75	-29	75	-21	3B				DR	3B	ROOT 50
3	TR16963964	PGR	SW	06	000		1	1	72	-32	72	-24	3B				DR	3B	ROOT 48

SAMPLE	DEPTH	TEXTURE	COLOUR	----MOTTLES----- COL	ABUN	CONT	PED COL.	GLEY	----STONES---- >2	>6	LITH	TOT	STRUCT/ CONSIST	SUBS STR	POR	IMP	SPL	CALC
1	0-34	mzcl	10YR53 00						0	0	CH	5						Y
	34-54	ch	00ZZ00 00						0	0		0		P				Y
1P	0-28	mzcl	10YR51 00						0	0	CH	2						Y
	28-50	hzcl	10YR63 00						0	0	CH	5	MDCSAB FR	M				Y
	50-70	ch	10YR62 00						0	0		0		P				
2	0-30	mzcl	10YR53 00						0	0	CH	3						Y
	30-65	hzcl	10YR54 00						0	0	CH	5		M				Y
	65-120	zc	10YR54 00	00MN00	00	F			0	0	CH	7		M				Y
2P	0-30	mzcl	10YR52 00						0	0	CH	7						Y
	30-50	ch	10YR62 00						0	0		0		P				Y
3	0-28	mzcl	10YR52 62						0	0	CH	3						Y
	28-48	ch	00ZZ00 00						0	0		0		P				Y