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Shepway District Local Plan
Site 7: Dennes Lane, Lydd, Kent
Agricultural Land Classification
ALC Map And Report
August 1993

**SHEPWAY DISTRICT LOCAL PLAN
SITE 7 : LAND AT DENNES LANE, LYDD**

AGRICULTURAL LAND CLASSIFICATION REPORT

1. Introduction

1.1 In June 1993, a detailed Agricultural Land Classification, (ALC), survey was carried out on 3.7 hectares of land to the north-west of Lydd in Kent.

1.2 The survey work was undertaken by members of the Resource Planning Team in the Guildford Statutory Group of ADAS at an observation density of approximately one boring per hectare. A total of 4 borings and 2 soil inspection pits were described in accordance with 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.

At the time of survey, the site was in permanent grassland.

1.3 *The distribution of the grades and subgrades is shown on the attached ALC map and the area and extent of each are given in the table below. The map has been drawn at a scale of 1:5000. It is accurate at this scale, but any enlargement may be misleading.*

Table 1 : Distribution of Grades and Subgrades

<u>Grade</u>	<u>Area (ha)</u>	<u>% of Agricultural Area</u>
3a	1.3	43.3
3b	0.6	20.0
4	1.1	36.7
Total agricultural area	3.0	<u>100</u>
Non-Agricultural	0.3	
Urban	0.1	
Agricultural Buildings	0.8	
Total site area	<u>3.7</u> ha	

1.4 A general description of the grades and land-use categories identified in this survey is provided as an appendix. The grades are described in terms of the type of limitation that can occur, the typical cropping range and the expected level and consistency of yield.

- 1.5 The site has been graded good quality Subgrade 3a land to poor quality grade 4, the principal limitations being those of soil wetness and/or soil droughtiness. Subgrades 3a and 3b have been mapped where soils have developed in marine alluvium and as such comprise imperfectly drained, relatively heavy profiles which are limited in their agricultural use by soil wetness. The extent of the limitation is dependent upon the depth to poorly structured clay horizons. Where they are evident at shallow depth, Subgrade 3b is assigned whilst Subgrade 3a is appropriate where profiles are slightly better drained. Grade 4 land equates to extremely stony soils developed in storm gravel deposits. These soils suffer a severe droughtiness limitation as a result of high stone contents and sandy textures.

2. Physical Factors Affecting Land Quality

Relief

- 2.1 The site lies at an altitude of approximately 3-5 m AOD and is generally flat or very gently undulating. Nowhere on the site is gradient or altitude a significant limitation to agricultural land quality.

Climate

- 2.2 Estimates of climatic parameters relevant to the assessment of agricultural land quality were obtained by interpolation from a 5 km gridpoint dataset (Met. Office, 1989) for a representative location in the survey area.

Climatic Interpolation

Grid Reference	TR 040 210
Altitude (m, AOD)	5
Accumulated Temperature (°days)	1510
Average Annual Rainfall (mm)	667
Field Capacity Days	137
Moisture deficit, wheat (mm)	128
Moisture deficit, potatoes (mm)	127

- 2.3 The important parameters in assessing an 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. There is no overall climatic limitation affecting the land quality of this site, although it should be noted that the climate is a relatively dry one, in a regional and national context. Field capacity days are moderately low, whilst crop adjusted moisture deficits are high probably partly as a result of the coastal locality. The risk of a soil droughtiness limitation may therefore be increased.

Geology and Soils

- 2.4 *British Geological Survey (1978) Sheet 320/321, Hastings and Dungeness* shows the site to be underlain by alternating bands of Recent Alluvium and Storm Gravel deposits. Field observation supports this banding of geological deposits which is

reflected in the topography of the site, the Storm Gravel deposits being of slightly higher elevation than the adjacent Alluvium.

- 2.5 Soil Survey of England and Wales (1968) Soils of Romney Marsh shows the site to comprise several soil series, including the Snargate-Finn complex, the Beach Bank series, the Dymchurch-Brenzett complex and the Lydd series. The Dymchurch-Brenzett complex is most extensive. These clay loam soils have variable drainage status and have developed in marine alluvium.
- 2.6 Detailed field examination of the site indicates the presence of two main soil types. Poorly drained heavy clay soils are associated with the Alluvial deposits whilst very stony and gravelly profiles are coincident with the Storm Gravel deposits. At the time of survey, differences in the health of vegetation provided evidence of the nature of the underlying material, with short, brown grass occurring where gravelly land was present and lush, greener grass occurring where poorly drained clayey soils were observed.

3. Agricultural Land Classification

- 3.1 The ALC grading of the survey area is primarily determined by soil wetness/workability limitations or soil droughtiness arising from the interaction of soil and climatic factors. In addition, small parts of the site may be affected by a topsoil stone limitation.

Subgrade 3a

- 3.2 This good quality agricultural land is limited by slight soil wetness and is associated with Alluvial deposits. Profiles comprise medium clay loam topsoils overlying gleyed heavy clay loam upper subsoils and passing to gleyed and slowly permeable clay below about 50 cm depth. Soils are non-calcareous and stone free throughout. These drainage characteristics represent a Wetness Class of III which equates with Subgrade 3a given the prevailing climatic regime. Although there may be some restrictions on cultivations or grazing by livestock on this land and the soil water regime may adversely affect plant growth, this land is still capable of consistently producing moderate yields of a wide range of crops.

Subgrade 3b

- 3.3 Moderate quality land is also mapped in association with Alluvial deposits and the soils observed are similar to those described in Section 3.2 above. Non-calcareous and stoneless medium clay loam or silty clay loam topsoils rest directly over gleyed and slowly permeable clay or silty clay. These poorly drained soils are assigned to Wetness Class IV. Given the prevailing climatic conditions, such poorly drained soils are consistent with Subgrade 3b. The land is limited by significant soil wetness/workability restrictions and is capable of producing moderate yields of only a narrow range of crops such as cereals and grass.

Grade 4

- 3.4 Poor quality agricultural land has been mapped in association with the deposits of Storm Gravel on the site. Typically a shallow medium clay loam topsoil which contains about 5% rounded pebbles by volume overlies an extremely stony/gravelly subsoil of clay loam, containing approximately 70% rounded pebbles by volume. The high profile stone contents have the effect of severely reducing the water holding capacity of the soils which when combined with the relatively dry climate which prevails (ie., high crop adjusted moisture deficits), will result in a severe drought stress being imposed upon crops or grass.

ADAS Ref: 2010/77/93
MAFF Ref: EL 20/00109

Resource Planning Team
Guildford Statutory Group
ADAS Reading

Sources of Reference

- British Geological Survey (1978) Sheet 320/321, Hastings and Dungeness.
- 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 (1968) Soils of Romney Marsh, map and accompanying bulletin.

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 Abbreviations : Explanatory Note
 - * Soil Pit Descriptions
 - * Database Printout : Boring Level Information
 - * Database Printout : Horizon Level Information

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

FSSST : 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 appropriate 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 7 SHEPWAY L P Pit Number : 1P

Grid Reference: TR04082107 Average Annual Rainfall : 0 mm
 Accumulated Temperature : 0 degree days
 Field Capacity Level : 137 days
 Land Use :
 Slope and Aspect : degrees

HORIZON	TEXTURE	COLOUR	STONES >2	TOT.STONE	MOTTLES	STRUCTURE
0- 16	MCL	10YR31 00	0	5		
16-120	MCL	10YR32 00	20	70		LOOSE

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

Drought Grade : 4 APW : 059mm MBW : -69 mm
 APP : 051mm MBP : -76 mm

FINAL ALC GRADE : 4
 MAIN LIMITATION : Droughtiness

SOIL PIT DESCRIPTION

Site Name : SITE 7 SHEPWAY L P Pit Number : 2P

Grid Reference: TR04102110 Average Annual Rainfall : 0 mm
 Accumulated Temperature : 0 degree days
 Field Capacity Level : 137 days
 Land Use :
 Slope and Aspect : degrees

HORIZON	TEXTURE	COLOUR	STONES >2	TOT.STONE	MOTTLES	STRUCTURE
0- 27	MZCL	10YR42 00	0	0		
27- 60	C	25 Y60 00	0	0	M	STVCAB

Wetness Grade : 3B Wetness Class : IV
 Gleying : 027 cm
 SPL : 027 cm

Drought Grade : APW : 000mm MBW : 0 mm
 APP : 000mm MBP : 0 mm

FINAL ALC GRADE : 3B
 MAIN LIMITATION : Wetness

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					DRT
1	TR04102110	PAS	030	030	4	3B	103	-25	119	-8	3B			WE	3B
1P	TR04082107	PAS			1	1	059	-69	051	-76	4			DR	4
2	TR04032103	PGR			1	1	057	-71	057	-70	4			DR	4
2P	TR04102110	PAS	027	027	4	3B	000	0	000	0				WE	3B
3	TR04002100	PGR			1	1	049	-79	049	-78	4			DR	4
4	TR04132101	PGR	035	050	3	3A	115	-13	113	-14	3A			WE	3A

SAMPLE	DEPTH	TEXTURE	COLOUR	----MOTTLES-----			PED COL.	----STONES----			STRUCT/ CONSIST	SUBS			SPL CALC	COMMENTS	
				COL	ABUN	CONT		GLEY	>2	>6		LITH	TOT	STR			POR
1	0-30	mzc1	10YR42 00						0	0	0						
	30-50	zc	10YR53 00	75YR56 00	C		10YR61 00	Y	0	0	0		M		Y		
	50-70	c	25 Y60 00	75YR58 00	M			Y	0	0	0		M		Y	Imp 70+ stony	
1P	0-16	mc1	10YR31 00						0	0	HR	5					
	16-120	mc1	10YR32 00						20	0	HR	70	LOOSE	P			
2	0-30	mzc1	10YR42 00						0	0	0					Imp 30+ stony	
2P	0-27	mzc1	10YR42 00						0	0	0						
	27-60	c	25 Y60 00	75YR58 00	M			Y	0	0	0	STVCAB	VF	P	Y	Y	Tends to prism.
3	0-28	lfs	10YR21 00						0	0	HR	2				Imp 28+ stony	
4	0-35	mc1	10YR43 00						0	0	0						
	35-50	hc1	10YR52 00	10YR62 58	C			Y	0	0	0		M				
	50-90	c	10YR52 53	10YR61 58	C			Y	0	0	0		P		Y		