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**Swale Borough Local Plan (Iwade)**  
**Site 3: Coleshall Farm, Iwade**  
**Agricultural Land Classification**  
**ALC Map & Report**  
**September 1993**

**SWALE BOROUGH LOCAL PLAN (IWADE)  
SITE 3 : COLESHALL FARM, IWADE  
AGRICULTURAL LAND CLASSIFICATION REPORT**

**1. Summary**

- 1.1 In June 1993, a detailed Agricultural Land Classification (ALC) survey was made on approximately 4 hectares of land at Coleshall Farm, to the south of Iwade 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 under consideration for inclusion in the Swale Borough 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 one per hectare. A total of 3 borings and one soil pit 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 of good quality. The key limitation is wetness.

Table 1 : Distribution of Grades and Subgrades

<u>Grade</u>	<u>Area (ha)</u>	<u>% of Site</u>	<u>% of Agricultural Area</u>
3a	3.3	89.5	94.2
3b	0.2	5.5	<u>5.8</u>
Non-Agricultural	<u>0.2</u>	<u>5.0</u>	100% (3.5 ha)
Total	3.7 ha	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 of this site.
- 1.7 At the time of survey the land use on the site was orchard for the most part, with a small area of wheat.
- 1.8 A general description of the grades and subgrades is provided as appendix I. 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 annual average 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	TQ899674
Altitude (m)	15
Accumulated Temperature (days)	1482
Average Annual Rainfall (mm)	584
Field Capacity (days)	114
Moisture Deficit, Wheat (mm)	125
Moisture Deficit, Potatoes (mm)	123
Overall Climatic Grade	1

## 3. Relief

- 3.1 The site is approximately 15m AOD, sloping gently from south to north. At no point does gradient affect the land quality.

## 4. Geology and Soil

- 4.1 The relevant published geological sheet (British Geological Survey, Sheet 272, Chatham) shows the site to be entirely underlain by Recent Period Head Brickearth deposits largely derived from a loamy parent rock such as the Thanet or Sandgate Beds.
- 4.2 The main soil types according to the Soil Survey of England and Wales published documents, Soils in Kent III, TQ86 (Record No 37, 1976) and Soils of Kent (Bulletin 9, 1980) show the site to be underlain by either Windsor, Park Gate or Hook series. The Windsor series is described as "Clayey and loamy or silty over clayey Soils in Tertiary Clays and Associated Head, with impeded drainage causing seasonal surface wetness. Park Gate and Hook series are described collectively as, "Silty soils in Brickearth, slightly or moderately affected by fluctuating ground water". Soils at the site broadly agree with the description of soils from the Windsor Series.

## 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 this quality covers the majority of the site and is primarily limited by soil wetness. This is evidenced by gleying in the stoneless heavy clay loam or clay upper subsoil under a very slightly stony (up to 2% total flints by volume) medium clay loam topsoil. These overlie a stoneless clay horizon found from pit observation (see Appendix II) to be slowly permeable. The depth at which the clay horizon appears, given the local climatic regime is such that Wetness Class III and Subgrade 3a is appropriate. Occasionally borings of a higher grade were encountered, but these were of insufficient quantity or distribution to justify a separate mapping unit.

### 5.4 Subgrade 3b

Land of this quality occupies a small area to the west of the site close to the stream forming the western boundary. Soils here are similar to those described in para 5.3 but, due to the proximity of the stream, the ground water level was very high at the time of the survey and considered unlikely to fall to any great extent. On this basis Wetness Class IV (see Appendix II) was considered appropriate restricting the land to no better than Subgrade 3b.

The wetness limitation found here places a restriction on cultivations and/or grazing by livestock by influencing the sensitivity of soil structure to damage. It is also likely to adversely affect plant growth by affecting seed germination and survival partly by a reduction in soil temperature and partly anaerobism. It can also inhibit the development of a good root system and can in extreme cases lead to plant death.

- 5.5 The two areas marked as Non-Agricultural are, in the west, some allotment gardens that have been fenced off, and in the east an extension to a domestic garden.

ADAS Reference: 2011/092/93  
MAFF Reference: EL20/245

Resource Planning Team  
Guildford Statutory Centre  
ADAS Reading

## SOURCES OF REFERENCE

- \* British Geological Survey (1977), Sheet No 272, Chatham. 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), Climatological Data for Agricultural Land Classification.
- \* Soil Survey of England and Wales (1976), Record No 37, Soils in Kent III, Sheet TQ86 (Rainham), 1:25000.
- \* Soil Survey of England and Wales (1980), Bulletin No.15, Soils of Kent, 1:250000.

## 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 re-claimed 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. **GLEYSPL** : 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 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 : SHALE LP (IWADE) SITE 3 Pit Number : 1P

Grid Reference: TQ90016745 Average Annual Rainfall : 584 mm  
 Accumulated Temperature : 1482 degree days  
 Field Capacity Level : 114 days  
 Land Use :  
 Slope and Aspect : 01 degrees N

HORIZON	TEXTURE	COLOUR	STONES >2	TOT.STONE	MOTTLES	STRUCTURE
0- 30	MCL	10YR42 00	0	2		
30- 47	HCL	10YR53 52	0	0	M	MDCSAB
47- 80	C	25Y 52 00	0	0	M	MDCAB

Wetness Grade : 3A Wetness Class : III  
 Gleying : 030 cm  
 SPL : 047 cm

Drought Grade : 3A APW : mm MBW : 0 mm  
 APP : mm MBP : 0 mm

FINAL ALC GRADE : 3A  
 MAIN LIMITATION : Wetness

SAMPLE NO.	GRID REF	ASPECT USE	--WETNESS--		-WHEAT-		-POTS-		M.REL		EROSN	FROST	CHEM	ALC	COMMENTS
			GRDNT	GLEY SPL	CLASS	GRADE	AP	MB	AP	MB	DRT	FLOOD	EXP	DIST	
1	TQ89906740	ORC N	01	035 035	3	3A		0	0					WE 3A	SPL 35
1P	TQ90016745	ORC N	01	030 047	3	3A		0	0					WE 3A	SPL 47
2	TQ90006740	ORC N	01	035 052	3	3A		0	0					WE 3A	SPL 52
3	TQ90006730	WHT N	01	055 055	2	2	138	13	115	-8	2			WE 2	SPL 55 WEDR

SAMPLE	DEPTH	TEXTURE	COLOUR	----MOTTLES-----			PED	----STONES-----			STRUCT/	SUBS	SPL	CALC			
				COL	ABUN	CONT	COL.	GLEY	>2	>6	LITH	TOT				CONSIST	STR
1	0-35	mc1	10YR42 00							0	0	HR	2				
	35-70	c	10YR53 52	10YR56	00	M	00M00	00	Y	0	0		0		P	Y	
1P	0-30	mc1	10YR42 00							0	0	HR	2				
	30-47	hc1	10YR53 52	10YR46	00	M	00M00	00	Y	0	0		0	MDCSAB	FR	M	Y
	47-80	c	25Y 52 00	10YR56	66	M	25Y 53	00	Y	0	0		0	MDCAB	FM	P	Y
2	0-20	mc1	10YR42 00							0	0		0				
	20-35	hc1	10YR42 00							0	0		0		M		
	35-52	hc1	10YR53 52	10YR56	00	C	00M00	00	Y	0	0		0		M		
	52-90	c	10YR52 51	10YR56	00	M	00M00	00	Y	0	0		0		P	Y	
3	0-35	mc1	10YR42 00							0	0		0				
	35-55	hc1	10YR54 62	10YR56	00	F				0	0		0		M		
	55-120	c	10YR52 62	10YR56	00	M	00M00	00	Y	0	0		0		P	Y	