AGRICULTURAL LAND CLASSIFICATION REPORT

SWALE BOROUGH LOCAL PLAN

FAVERSHAM, SITE 8

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Summary

1 1 ADAS was commissioned by MAFF's Land Use Planning Unit to provide information on land quality on land at Faversham, Site 8 This work was in connection with Swale Borough Local Plan

1 2 Approximately 12 hectares of land relating to this area was surveyed in August 1994 The survey was undertaken at a detailed level of approximately one boring per hectare A total of 10 borings 1 soil inspection pit and 2 riddle locations were assessed 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

1 3 The work was carried out by members of the Resource Planning Team in the Huntingdon Statutory Group of ADAS

1 4 At the time of the survey the agricultural land use was oilseed rape stubble Woodland was present in the north of the site

1 5 The distribution of the grades and subgrades is shown on the attached ALC map and the areas are given in the table below The map has been drawn at a scale of 1 10 000 It is accurate at this scale but any enlargement would be misleading This map supersedes any previous survey information for this site

Table 1 Distribution of Grades and Subgrades

Grade	Area (ha)	% of Site	% of Agricultural Area
1	7 1	60 7	63 4
Subgrade 3b	4 1	35 0	36 6
Woodland	0 5	4 3	
Total	**11 7 ha**	**100%**	**100% (11 2 ha)**

1 6 A general description of the grades subgrades and land use categories is provided in Appendix 1 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

1 7 The land quality on the site has been classified as a mix of grades 1 and 3b (excellent to moderate quality land) Grade 1 land has no or very minor limitations to agricultural use Land graded 3b occurs where the quantity of topsoil stone significantly reduces the flexibility of the agricultural use of the land A small area in the west is limited to 3b by gradient

2 0 **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 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 The combination of rainfall and temperature at this site mean an overall climatic grade 1

Table 2 Climatic Interpolation

Grid Reference	TQ 998 615
Altitude (m, AOD)	20
Accumulated Temperature (° C days Jan-June)	1476
Average Annual Rainfall (mm)	652
Field Capacity Days	132
Moisture Deficit wheat (mm)	120
Moisture Deficit potatoes (mm)	117
Overall Climatic Grade	1

3 0 **Relief**

3 1 The site lies on a spur falling gently from a maximum height of 25 m AOD in the south to 20 m in the north At the west of the site land falls sharply due to previous gravel extraction, and a small area on the western boundary is limited to subgrade 3b by gradient

4 0 **Geology and Soils**

4 1 The published geology map for the site area, (BGS 1974 Sheet 273) shows the entire site to be underlain by Head gravel This is underlain predominantly by Thanet Beds with small areas of Cretaceous Middle Chalk in the south and west of the site

4 2 The published soils information for the area (SSEW 1983 Sheet 6 1 250 000) shows the site as unsurveyed/urban

4 3 The site is shown as being previously worked for gravel extraction Fly tipping is thought to have been carried out in the northern part of the site

5 0 **Agricultural land Classification**

5 1 The ALC classification of the site is shown on the attached ALC map

5 2 The location of the soil observation points is shown on the attached sample point map

Grade 1

5 3 Grade 1 land covers the majority of the site Soils typically comprise very slightly stony calcareous silt loam topsoils occasionally medium silty clay loams These overlie very slightly or slightly stony silt loams to depth, occasionally medium or heavy silty clay loams are encountered These soils have more than adequate reserves of available water for crop growth, and are assessed as wetness class I (excellent quality agricultural land) with no or very minor limitations to land quality

5 4 In the north of the area of grade 1 profiles were locally found to be disturbed, comprising medium silty clay loam topsoils over gleyed sandy clay loams These however form too small an area to delineate separately

Subgrade 3b

5 5 Subgrade 3b land occurs in two situations Firstly in the west of the site a small area of land has slopes in excess of 7° measured using a hand held clinometer These steep gradients hamper the safe and efficient use of most types of farm machinery thus the land is excluded from a higher grade

5 6 Secondly land graded 3b occurs in the north of the site and is associated with soils which have topsoil stone contents of typically 16-20% flints by volume >2 cms In some cases they comprise >10% flints >6 cms and the area overall is impenetrable to auger High topsoil stone contents can significantly hinder the successful establishment of seedlings and increase the war and tear on farm machinery Thus this area of land is restricted to subgrade 3b (moderate quality agricultural land) by topsoil stone content It is likely that the area has been used as some time in the past for fly tipping as glass, bricks rusting nails and iron were found throughout this area

Woodland

5 7 A small area of woodland exists in the north of the site

REFERENCES

BRITISH GEOLOGICAL SURVEY 1974 Sheet 273 Chatham, 1 63 360 scale

MAFF 1968 Agricultural Land Classification Map No 172 1 63 360 scale

MAFF 1988 Agricultural Land Classification of England and Wales (Revised Guidelines and Criteria for Grading the Quality of Agricultural Land) Alnwick

METEOROLOGICAL OFFICE 1989 Published climatic data extracted from the agroclimatic dataset compiled by the Meteorological Office

SOIL SURVEY OF ENGLAND AND WALES 1983 Soils of South East England Sheet 6 1 250 000 scale

Appendix 1

DESCRIPTION OF THE GRADES AND SUBGRADES

The ALC grades and subgrades are described below in terms of the types of limitation which can occur typical cropping range and the expected level of consistency of yield In practice the grades are defined by reference to physical characteristics and the grading guidance and cut-offs for limitation factors in Section 3 enable land to be ranked in accordance with these general descriptions The most productive and flexible land falls in Grades 1 and 2 and Subgrade 3a and collectively comprises about one-third of the agricultural land in England and Wales About half the land is of moderate quality in Subgrade 3b or poor quality in Grade 4 Although less significant on a national scale such land can be locally valuable to agriculture and the rural economy where farmland predominates The remainder is very poor quality land in Grade 5, which most occurs in the uplands

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 include 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 and horticultural crops can usually be grown but on some land in 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 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 Where 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 levels of yields It is mainly suited to grass with occasional arable crops (eg cereals and forage crops) the yield of which are variable In most 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

Descriptions of other land categories used on ALC maps

Urban

Built-up or hard uses with relatively little potential for a return to agriculture including 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 A distinction may be made as necessary between farm and non farm woodland

Agricultural buildings

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

Open water

Includes lakes ponds and rivers as map scale permits

Land not surveyed

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

Appendix 2

FIELD ASSESSMENT OF SOIL WETNESS CLASS

Definition of Soil Wetness Classes

Wetness Class	Duration of Waterlogging[1]
I	The soil profile is not wet within 70 cm depth for more than 30 days in most years[2]
II	The soil profile is wet within 70 cm depth for 31-90 days in most years *or*, if there is no slowly permeable layer within 80 cm depth, it is wet within 70 cm for more than 90 days but not wet within 40 cm depth for more than 30 days in most years
III	The soil profile is wet within 70 cm depth for 91-180 days in most years *or*, if there is no slowly permeable layer within 80 cm depth, it is wet within 70 cm for more than 180 days but only wet within 40 cm depth for between 31 and 90 days in most years
IV	The soil profile is wet within 70 cm depth for more than 180 days but not within 40 cm depth for more than 210 days in most years *or*, if there is no slowly permeable layer within 80 cm depth, it is wet within 40 cm depth for 91-210 days in most years
V	The soil profile is wet within 40 cm depth for 211-335 days in most years
VI	The soil profile is wet within 40 cm depth for more than 335 days in most years

[1] The number of days specified is not necessarily a continuous period

[2] 'In most years' is defined as more than 10 out of 20 years

Appendix 3

SOIL BORING AND SOIL PIT DESCRIPTIONS

Contents

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	TR00006180	OSR	NW	04	000		1	1	136	16	108	-9	2				DR	2	VARBTST
2	TQ99806170	OSR	W	02	000		1	1	204	84	150	33	1					1	
5	TQ99806160	OSR	NW	04	000		1	1	205	85	152	35	1					1	
5P	TQ99806160	OSR	NW	03	000		1	1	204	84	154	37	1					1	
6	TQ99906160	OSR	NW	01	025		3	3A	159	39	120	3	2				W	3A	DISTURB
7	TQ99706150	OSR	W	07	000		1	1	208	88	155	38	1					1	
8	TQ99806150	OSR	N	04	000		1	1	203	83	151	34	1					1	
9	TQ99606140	OSR	W	05	000		1	1	199	79	149	32	1					1	
10	TQ99706140	OSR	W	02	050		1	1	178	58	144	27	1					1	
11	TQ99806140	OSR	N	01	000		1	1	155	35	121	4	2				DR	2	
12	TQ99706130	OSR	N	01	000		1	1	192	72	153	36	1					1	

SAMPLE	DEPTH	TEXTURE	COLOUR	MOTTLES COL	MOTTLES ABUN	MOTTLES CONT	PED COL	GLEY	STONES >2	STONES >6	STONES LITH	STONES TOT	STRUCT/ CONSIST	SUBS STR	SUBS POR	SUBS IMP	SUBS SPL	CALC	
1	0-20	zl	10YR54 43						5	1	HR	6						Y	
	20-120	zl	10YR43 00						0	0	HR	15		P				Y	
2	0-25	zl	10YR43 00						0	0		0						Y	
	25-35	zl	10YR54 43						0	0	HR	7		M				Y	
	35-60	zl	10YR55 54						0	0	HR	5		M				Y	
	60-70	zl	10YR54 00						0	0	HR	10		M				Y	
	70-120	zl	10YR54 00						0	0	HR	2		M				Y	
5	0-35	zl	10YR43 00						4	2	HR	4						Y	
	35 60	zl	10YR55 63						0	0	HR	2		M				Y	
	60-90	zl	10YR54 00						0	0	HR	5		M				Y	
	90-120	zl	10YR54 43						0	0	HR	2		M				Y	
5P	0-30	zl	10YR54-00					N	2	0	HR	2			N	N	N	Y	STRAW INCORP
	30-50	zl	10YR55-65					N	0	0	HR	2	MDCAB FM	M	N	N	N	Y	
	50-95	zl	10YR55 66	10YR68-		F		N	0	0	HR	3	MDVCAB FR	M	N	N	N	Y	
	95-105	zl	10YR55-66					N	0	0	HR	15	MDCAB FR	M	N	N	N	Y	
	105-120	zl	10YR55-66	10YR55-		F		N	0	0	HR	3	MDVCAB FR	M	N	N	N	Y	
6	0-25	zl	10YR44 00						4	0	HR	4						Y	
	25-120	scl	10YR68 00	10YR58 00		C		Y	0	0	HR	4		M				Y	
7	0-40	zl	10YR54 00						2	0	HR	2						Y	
	40-120	zl	10YR66 56						0	0	HR	2		M				Y	
8	0-30	zl	25YR54-00					N	2	0	HR	2			N	N	N	N	
	30-120	zl	25YR54-00	10YR68-		F		N	0	0	HR	5		M	N	N	N	N	
9	0-30	zl	10YR54 00						3	0	HR	3						Y	
	30-120	zl	10YR56 54						0	0	HR	7		M				Y	
10	0-30	zl	10YR54 00						2	0	HR	2							
	30-50	zl	10YR54 64	10YR68 00		F			0	0	HR	2		M				Y	
	50-120	mzcl	10YR54 53	10YR66 00		C		Y	0	0	HR	4		M				Y	
11	0-35	mzcl	10YR54 44						1	0	HR	1						Y	
	35-120	hzcl	10YR54 56			F			0	0	HR	7		M				Y	
12	0-35	zl	10YR54 00						2	0	HR	2						Y	
	35-65	zl	10YR54 64						0	0	HR	4		M				Y	
	65-85	zl	10YR54 64	10YR68 00		F			0	0	HR	4		M				Y	
	85-120	mzcl	10YR54 64	10YR68 00		F			0	0	HR	3		M				Y	

SOIL PIT DESCRIPTION

SITE 8 FAVERSHAM (nr AB5)

G R	TQ 997 061	AAR	652 mm
		ATO	1476° C days
		FCD	132
		Land Use	Oilseed rape stubble
		Slope & Aspect	3° north west

Horizon	Texture	Colour	Stones >2	Tot Stone	Mottles	Structure
0-30	ZL	10YR5/4	2	2	-	-
30-50	ZL	10YR5/5 & 10YR6/5	1	1	-	MDCAB
50-95	ZL	10YR5/5 & 10YR6/6	3	3	-	MDVCAB
95-105	ZL	10YR5/5 & 10YR6/6	15	15	-	MDCAB
105-120	ZL	10YR5/5 & 10YR6/6	3	3	-	MDVCAB

Wetness Grade	1	Wetness class	I
		Gleying	None
		SPL	None
Drought Grade	1	APW = 120 mm	MBW = 84 mm
		APP = 117 mm	MBP = 37 mm

Final ALC grade 1

Limitations None or very minor

Appendix 3 (Cont)

SOIL PROFILE DESCRIPTIONS EXPLANATORY NOTE

Soil profile and pit information obtained during ALC surveys is held on a database This has commonly used notations and abbreviations as set out below

BORING HEADERS

1 GRID REF National grid square followed by 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
FDC - fodder crops
FRT - soft and top fruit
HOR/HRT horticultural crops

PAS/PGR - permanent pasture
RGR - rough grazing
LEY - ley grassland
CFW - coniferous woodland
DCW - deciduous woodland
SCR - scrub
HTH - heathland
BOG - bog or marsh
FLW - fallow
PLO - ploughed
SAS - set aside
OTH - other
LIN - linseed

3 GRDNT Gradient as measured by optical reading clinometer

4 GLEY/SPL Depth in centimetres (cm) to gleyed and/or slowly permeable horizons

5 AP (WHEAT/POTS) Crop adjusted available water capacity The amount of soil water (in millimetres) held in the soil profile that is available to a growing crop (wheat and potatoes are used as reference crops)

6 MB (WHEAT/POTS) The moisture balance for wheat and potatoes obtained by subtracting the soil moisture deficit from the crop adjusted available water capacity

7 DRT Grade according to soil droughtiness assessed against soil moisture balances

8

M REL	Micro-relief	)
FLOOD	Flood risk	) If any of these factors are
EROSN	Soil erosion	) considered significant in terms of
EXP	Exposure	) the assessment of agricultural land
FROST	Frost prone	) quality a 'y' will be entered in the
DIST	Disturbed land	) relevant column
CHEM	Chemical limitation	)

9 LIMIT Principal limitation to agricultural land quality
The following abbreviations are used

OC - overall climate	CH - chemical limitations
AE - aspect	WE - wetness
EX - exposure	WK - workability
FR - frost	DR - drought
GR - gradient	ER - erosion
MR - micro-relief	WD - combined soil wetness/soil droughtiness
TX - soil texture	ST - topsoil stoniness
DP - soil depth	

PROFILES AND PITS

1 TEXTURE Soil texture classes are denoted by the following abbreviations

S	- sand
LS	- loamy sand
SL	- sandy loam
SZL	- sandy silt loam
ZL	- silt loam
MZCL	medium silty clay loam
MCL	- medium clay loam
SCL	- sandy clay loam
HZCL	- heavy silty clay loam
HCL	- heavy clay loam
SC	- sandy clay
ZC	- silty clay
C	clay

For the sand loamy sand sandy loam and sandy silt loam classes the predominant size of sand fraction may be indicated by the use of prefixes

F fine (more than ⅔ of the sand less than 0 2 mm)
C - coarse (more than ⅓ of sand greater than 0 6 mm)
M medium (less than ⅔ fine sand and less than ⅓ coarse sand)

The sub divisions of clay loam and silty clay loam classes according to clay content are indicated as follows

M medium (less than 27% clay)
H heavy (27 35% clay)

Other possible texture classes include

OL - organic loam
P - peat
SP - sandy peat
LP - loamy peat
PL - peaty loam
PS - peaty sand
MZ marine light silts

2 MOTTLE COL Mottle colour

3 MOTTLE ABUN Mottle abundance

F - few - less than 2% of matrix or surface described
C - common - 2-20% of the matrix
M - many - 20-40% of the matrix
VM - very many - 40% + of the matrix

4 MOTTLE CONT Mottle continuity

F - faint - indistinct mottles evident only on close examination
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 Stone lithology One of the following is used

HR - all hard rocks or stones
MSST - soft medium or coarse grained sandstone
SI - soft weathered igneous or metamorphic
SLST - soft oolitic or dolomitic 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 (>2 cm >6 cm 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 well developed

- ped size
  - F - fine
  - M - medium
  - C - coarse
  - VC - very coarse

- ped shape
  - S - single grain
  - M - massive
  - GR - granular
  - SB/SAB - sub angular blocky
  - AB - 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 in 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