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Proposed Motorway Service Area
Crowhurst Lane, West Kingsdown, Kent
Agricultural Land Classification
Report
February 1996

Resource Planning Team
Guildford Statutory Group
ADAS Reading

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AGRICULTURAL LAND CLASSIFICATION REPORT

PROPOSED MOTORWAY SERVICE AREA, CROWHURST LANE, WEST KINGSDOWN, KENT

Introduction

1. This report presents the findings of a detailed Agricultural Land Classification (ALC) survey of 51.4 ha of land at West Kingsdown, Kent. The survey was carried out in February 1996.

2. The survey was commissioned by the Ministry of Agriculture, Fisheries and Food (MAFF) from its Land Use Planning Unit (Reading) in connection with proposals to construct a motorway service area. The site was previously surveyed, as part of a larger area, in March and April 1981 (ADAS Ref 2009/028/81). Since the 1981 survey, MAFF has updated the ALC system (MAFF,1988) and consequently a new survey was undertaken using the revised 1988 guidelines. This 1996 survey therefore supersedes the previous ALC survey on this land.

3. The work was conducted by the Resource Planning Team in the Guildford Statutory Group in ADAS. 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 1.

4. At the time of survey the land on the site was mainly rough grass and scrub. The scrub areas are most extensive and dense to the south west of the motorway, coinciding with the site of a former orchard which is understood to have been cleared in the late 1970's. Although scrub encroachment is evident over the rough grazing elsewhere on the site, this typically comprises small bushes which are very sporadically scattered. Exceptions occur to the immediate northwest of the site of Kingsdown House where a few blocks of dense scrub were noted in otherwise open grassland. Small areas of woodland also occur, principally to the north of the site.

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)	% Total site area	% Surveyed Area
3a	3.4	6.6	11.0
3b	27.4	53.3	89.0
Other land	20.6	40.1	-
Total surveyed area	30.8	59.9	100
Total site area	51.4	100	-

7. The fieldwork was conducted at an average density of one auger boring per hectare in the surveyed area. A total of 34 borings and 2 soil pits were described.

8. The majority of the surveyed land on the site is graded subgrade 3b (moderate quality land). Typical soil profiles are mainly imperfectly drained (wetness class III) and comprise soils having moderately stony (flinty) topsoils The principal limitation is due to high topsoil stone content which acts as an impediment to cultivation, harvesting and crop growth, as well as increasing soil droughtiness. Some heavier soil variants are also limited by wetness and workability constraints. Where the topsoil stone content is lower, similar imperfectly drained soils which lie to the south west of the site, are graded subgrade 3a (good quality land).

Factors Influencing ALC Grade

Climate

10. Climate affects the grading of land through the assessment of an overall climatic limitation and also through interactions with soil characteristics.

11. 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).

Table 2: Climatic and altitude data

Factor	Units	Values
Grid reference	N/A	TQ583 639
Altitude	m, AOD	150
Accumulated Temperature	day°C	1336
Average Annual Rainfall	mm	707
Field Capacity Days	days	145
Moisture Deficit, Wheat	mm	100
Moisture Deficit, Potatoes	mm	90

12. 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.

13. 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 (ATO, January to June), as a measure of the relative warmth of a locality.

14. The combination of rainfall and temperature at this site result in a climatic grade of 1. This means that climatic factors *per se* constitute no limitation to agricultural use. However, when climatic factors are considered together with soil factors an interactive limitation can occur. At this site the interaction of the climatic variable field capacity days with the soil variables wetness class and topsoil texture, results in a wetness/workability limitation which is more full described in paragraph 23.

Site

15. The site occupies a gently sloping north-south orientated ridge of land which straddles the M20 immediately east of Brands Hatch. From a high point of 160 m AOD at the southern tip of the site, the land falls very gently in a north and northeasterly direction, to a minimum altitude of 130 metres AOD in the extreme northeast. Over much of the site gradients are gentle (1-2°) with the steepest slopes (3-4°) being recorded south of The Kennels, as land falls eastwards towards Crowhurst Lane.

16. In the southern half of the site some minor surface disturbance was evident at the time of survey. This is believed to be a result of the orchard clearance and does not constitute a significant limitation to land use.

17. Fly tipping had also occurred on the site. This was most evident to the northeast of the motorway where several quite large mounds of soil and building debris were located, together with piles of gardening waste and household paraphernalia. Some minor fly tipping of household waste was also noted to the south west of the motorway, where occasional lumps of concrete and brick were also evident sporadically on the surface. At neither location was the fly tipping sufficiently extensive or severe to constitute an overriding limitation to land use.

Geology and Soils

18. The geology of this area is mapped in the 1:50,000 drift edition geology map sheet 271 (Dartford). This shows the majority of the site to comprise of clay with flints overlying Upper Chalk. A small area of Upper Chalk is shown as being exposed in the northwest corner of the site (BGS, 1977).

19. No detailed soil map is available for this area. The generalised 1:250 000 scale soil map of South East England shows the Batcombe Association occurring over the majority of the site with a small area of Andover Association mapped in the northwest corner (SSEW, 1983).

20. Field survey observations largely confirm these findings identifying Batcombe Association soils, developed from clay with flints over most of the site. In some locations, the clay is overlain by thin deposits of a brickearth-like drift.

Agricultural Land Classification

21. The details of the classification of the site are shown on the attached ALC map and the area statistics of each grade are given in Table 1.

22. The location of the auger borings and pits is shown on the attached sample location map and the details of the soils data are presented in Appendix III.

Subgrade 3a

23. This occurs in the south of the site. Typical profiles comprise slightly stony medium silty clay loam topsoils over slightly or moderately stony silty clay loam subsoils, which in turn overlie variably stony slowly permeable clay below 40/45 cm depth. Occasionally the clay subsoil is encountered immediately beneath the topsoil. These profiles are usually either ungleyed or only slightly gleyed in upper horizons, and are consequently mainly assessed as wetness class III, or occasionally, wetness class II where the clay occurs at greater depth (Definitions of soil wetness class are contained in Appendix II). Soil pit 2 is typical of land mapped as subgrade 3a.

24. Land of this type is mainly limited by stoniness and/or wetness constraints. The main effect of stones are to act as an impediment to cultivation, harvesting and crop growth and to cause a reduction in the available water capacity of the soil. (It should be noted that particularly stony soil variants may also be excluded from a higher grade by droughtiness constraints). Soil wetness influences the sensitivity of the soil to structural damage and is therefore a major factor in determining the number of days when the soil is in a suitable condition for cultivation, trafficking by machinery or grazing by livestock.

Subgrade 3b

25. This occurs extensively elsewhere on site. Typical profiles comprise moderately stony medium or occasionally heavy silty clay loam topsoils which usually directly overlie variably stony slowly permeable clay between 25-30 cm depth. Occasionally a shallow upper subsoil of silty clay loam texture is also present. Soil pit observations confirm that these soils are typically only slightly gleyed in upper horizons and are therefore mainly assessed as wetness class III. Due to the higher topsoil stone content, the majority of this land is limited by moderately severe stoniness constraints. Occasional auger borings with heavy clay loam topsoils are also limited by wetness/workability imperfections. Soil pit 1 is typical of land graded subgrade 3b.

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SOURCE OF REFERENCE

British Geological Survey (1977) *Sheet No.* 271, (*Dartford*). 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 (1983) *Soils and their Use in South East England* 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 WETNESS CLASSIFICATION

Definitions of Soil Wetness Classes

Soil wetness is classified according to the depth and duration of waterlogging in the soil profile. Six soil wetness classes are identified and are defined in the table below.

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 only wet within 40 cm depth for 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 present within 80 cm depth, it is wet within 70 cm for more than 180 days, but only wet within 40 cm depth for between 31-90 days in most years.
IV	The soil profile is wet within 70 cm depth for more than 180 days but not wet within 40 cm depth for more than 210 days in most years **or**, if there is no slowly permeable layer present 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.

Assessment of Wetness Class

Soils have been allocated to wetness classes by the interpretation of soil profile characteristics and climatic factors using the methodology described in *Agricultural Land Classification of England and Wales: Revised guidelines and criteria for grading the quality of agricultural land* (MAFF, 1988).

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

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

APPENDIX III

SOIL DATA

Contents:

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 Pastur	**LEY**:	Ley Grass	**RGR**:	Rough Grazing
SCR:		Scrub	**CFW**:		Coniferous Woodland
DCW:	Deciduous Wood				
HTH:	Heathland	**BOG**:	Bog or Marsh	**FLW**:	Fallow
PLO:	Ploughed	**SAS**:	Set aside	**OTH**:	Other
HRT:	Horticultural Crops				

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

4. **GLEY/SPL**: 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	**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**:	Erosion Risk	**WD**:	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
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. **GLEY:** 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	**SLST**:	soft oolitic or dolimitic limestone
CH:	chalk	**FSST**:	soft, fine grained sandstone
ZR:	soft, argillaceous, or silty rocks	**GH**:	gravel with non-porous (hard) stones
MSST:	soft, medium grained sandston	**GS**:	gravel with porous (soft) stones
SI:	soft weathered igneous/metamorphic rock		

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 **ST**: strongly developed	**MD**: moderately developed
ped size	**F**: fine **C**: coarse	**M**: medium **VC**: very coarse
ped shape	**S** : single grain **GR**: granular **SAB**: sub-angular blocky **PL**: platy	**M**: massive **AB**: angular blocky **PR**: prismatic

9. **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

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

SOIL PIT DESCRIPTION

Site Name : CROWHURST LA MSA, KENT Pit Number : 1P

Grid Reference: TQ58206410 Average Annual Rainfall : 707 mm
Accumulated Temperature : 1336 degree days
Field Capacity Level : 145 days
Land Use : Rough Grazing
Slope and Aspect : 02 degrees W

HORIZON	TEXTURE	COLOUR	STONES >2	TOT.STONE	LITH	MOTTLES	STRUCTURE	CONSIST	SUBSTRUCTURE	CALC
0- 20	MZCL	75YR42 00	25	26	HR					
20- 35	C	75YR54 00	0	27	HR	C	WKMAB	FM	P	
35- 60	C	05YR54 00	0	27	HR	M	WKCAB	VF	P	

Wetness Grade : 3A Wetness Class : III
Gleying : cm
SPL :020 cm

Drought Grade : 3B APW : 63 mm MBW : -37 mm
APP : 68 mm MBP : -22 mm

FINAL ALC GRADE : 3B
MAIN LIMITATION : Topsoil Stoniness

SOIL PIT DESCRIPTION

Site Name : CROWHURST LA MSA, KENT Pit Number : 2P

Grid Reference: TQ58106370 Average Annual Rainfall : 707 mm
Accumulated Temperature : 1336 degree days
Field Capacity Level : 145 days
Land Use : Rough Grazing
Slope and Aspect : 01 degrees W

HORIZON	TEXTURE	COLOUR	STONES >2	TOT.STONE	LITH	MOTTLES	STRUCTURE	CONSIST	SUBSTRUCTURE	CALC
0- 20	MZCL	10YR42 00	8	10	HR					
20- 35	HZCL	10YR54 00	0	25	HR		WKMSAB	FR	G	
35- 50	C	10YR56 00	0	15	HR	C	WKCAB	FM	P	
50- 75	C	75YR43 00	0	12	HR	M	MDCAB	FM	P	

Wetness Grade : 3A Wetness Class : III
Gleying :050 cm
SPL :035 cm

Drought Grade : 3A APW : 91 mm MBW : -9 mm
APP : 98 mm MBP : 8 mm

FINAL ALC GRADE : 3A
MAIN LIMITATION : Wetness

SAMPLE NO.	GRID REF	USE	ASPECT	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	TQ58306450	RGR	W	01			2	2	76	-24	76	-14	3B				ST	3B	SEE 1P
1P	TQ58206410	RGR	W	02		020	3	3A	63	-37	68	-22	3B				ST	3B	
2P	TQ58106370	RGR	W	01	050	035	3	3A	91	-9	98	8	3A				WE	3A	SL GLEYED 35CM
6	TQ58406440	RGR	W	01		030	3	3A	73	-27	81	-9	3B				ST	3B	SL GLEYED 30CM
7	TQ58506440	RGR	W	01		055	2	2	90	-10	96	6	3A				ST	3A	SL GLEYED 55CM
10	TQ58806440	PGR	E	02		027	3	3B	75	-25	80	-10	3B				ST	3B	SL GLEYED 27CM
12	TQ58406430	RGR	W	01		030	3	3A	43	-57	43	-47	4				ST	3B	SL GLEYED 30CM
13	TQ58506430	RGR	W	01		025	3	3B	57	-43	57	-33	3B				ST	3B	WE/SLGLEY 25CM
14	TQ58606430	RGR	E	01	040	025	3	3A	77	-23	84	-6	3B				ST	3B	
15	TQ58706430	RGR	E	01	045	030	3	3A	81	-19	90	0	3A				ST	3B	
16	TQ58806430	PGR	E	02		027	3	3B	75	-25	80	-10	3B				ST	3B	WE/SLGLEY 27CM
18	TQ58406420	RGR	W		025	025	3	3B	68	-32	68	-22	3B				ST	3B	AND WETNESS
19	TQ58506420	RGR	W	01	000		2	3A	80	-20	80	-10	3A				ST	3B	TSST AS AB 20
20	TQ58606420	RGR	E	01	000		2	2	66	-34	66	-24	3B				ST	3B	
21	TQ58706420	RGR	E	02	000		2	2	73	-27	73	-17	3B				ST	3B	
22	TQ58806420	RGR	E	03	000		3	3A	51	-49	51	-39	3B				ST	3B	
23	TQ58206410	RGR	W	02		020	3	3A	59	-41	59	-31	3B				ST	3B	SL GLEYED 20CM
25	TQ58506410	RGR	W				3	3B	40	-60	40	-50	4				ST	3B	TSSTAS26
26	TQ58606410	RGR	E	01		025	3	3B	66	-34	69	-21	3B				ST	3B	WE/SLGLEY 50CM
27	TQ58706410	RGR	E	02		030	3	3B	58	-42	58	-32	3B				ST	3B	WE/SLGLEY 30CM
28	TQ58206400	RGR	W	02		023	3	3A	43	-57	43	-47	4				ST	3B	SL GLEY 23+
29	TQ58306400	RGR	W			025	3	3B	56	-44	56	-34	3B				ST	3B	SL GLEY 25+
30	TQ58506400	RGR	E	01		040	3	3B	79	-21	86	-4	3B				ST	3B	WE/SLGLEY 40CM
31	TQ58606400	RGR	E	02		025	3	3A	90	-10	96	6	3A				ST	3B	MN25+SLGLEY 70
32	TQ58106390	RGR	W	02			3	3A	61	-39	61	-29	3B				ST	3B	SL GLEYED 30CM
33	TQ58206390	RGR	W	01	045	045		3A	74	-26	74	-16	3B				ST	3B	
34	TQ58306390	RGR	W		023	023		3B	36	-64	36	-54	4				ST	3B	TSSTAS33/WE
35	TQ58406390	RGR	W				3	3B	44	-56	44	-46	4				ST	3B	TSSTAS41
37	TQ58606390	RGR	N	02	000		3	3B	47	-53	47	-43	4				ST	3B	TSSTAS31
39	TQ58206380	RGR	W	01		030	3	3A	68	-32	68	-22	3B				ST	3B	SL GLEYED 30CM
41	TQ58406380	RGR	W			025	3	3A	50	-50	50	-40	3B				ST	3B	SL GLEYED 25CM
42	TQ58606380	RGR	S	01	060	060	2	2	103	3	115	25	3A				ST	2	WE/TS AS 2P
43	TQ58106370	RGR	W	02		040	3	3A	71	-29	71	-19	3B				ST	3A	WE/SLGLEY 40CM
47	TQ58106360	RGR	W			025	3	3A	63	-37	63	-27	3B				ST	3A	WE/SLGLEY 25CM
48	TQ58206360	RGR	W			028	3	3A	66	-34	66	-24	3B				ST	3A	SL GLEY 28+
51	TQ58106350	RGR	W			040		3A	78	-22	78	-12	3B				ST	3A	WE/SLGLEY 40CM
52	TQ58206350	RGR	W		030	030	3	3A	57	-43	57	-33	3B				ST	3A	WE/SL GLEY 30+

SAMPLE	DEPTH	TEXTURE	COLOUR	MOTTLES COL	MOTTLES ABUN	MOTTLES CONT	PED COL.	PED GLEY	STONES >2	STONES >6	STONES LITH	STONES TOT	STRUCT/ CONSIST	SUBS STR	SUBS POR	SUBS IMP	SUBS SPL	SUBS CALC	
1	0-30	mzcl	10YR42 00						25	10	HR	26							RIDDLED TS
	30-50	hzcl	75YR43 00						0	0	HR	22		G					IMP 50CM
1P	0-20	mzcl	75YR42 00						25	6	HR	26							
	20-35	c	75YR54 00	10YR56 00	C			S	0	0	HR	27	WKMAB	FM	P	Y		Y	
	35-60	c	05YR54 00	05YR56 00	M			S	0	0	HR	27	WKCAB	VF	P	Y		Y	
2P	0-20	mzcl	10YR42 00						8	3	HR	10							
	20-35	hzcl	10YR54 00						0	0	HR	25	WKMSAB	FR	G				
	35-50	c	10YR56 00	75YR46 00	C		10YR65 00	S	0	0	HR	15	WKCAB	FM	P			Y	
	50-75	c	75YR43 00	25YR58 00	M		75YR64 00	Y	0	0	HR	12	MDCAB	FM	P			Y	
6	0-30	mcl	75YR42 00						23	9	HR	24							RIDDLED TS
	30-65	c	10YR46 00	10YR56 00	C			S	0	0	HR	15		P		Y			IMP 65CM
7	0-30	mzcl	10YR42 00						13	4	HR	14							RIDDLED TS
	30-55	mzcl	10YR54 00						0	0	HR	23		G					
	55-60	c	75YR66 00	10YR46 00	C			S	0	0	HR	20		P		Y			IMP 60CM
10	0-27	hzcl	75YR42 00						22	0	HR	23							
	27-60	c	75YR54 00		C			S	0	0	HR	7		P		Y			COMMON MN CONCS
12	0-30	mzcl	10YR42 00						27	11	HR	28							IMP 31CM
	30-31	c	75YR44 00					S	0	0		0		P		Y			
13	0-25	hzcl	10YR42 00						25	6	HR	25							
	25-45	c	75YR56 00	10YR56 00	C			S	0	0	HR	20		P		Y			IMP 45CM
14	0-25	mzcl	75YR42 00						24	10	HR	25							RIDDLED TS
	25-40	c	75YR54 00	05YR46-	F				0	0	HR	23		P		Y			
	40-75	c	10YR56 00	05YR46 00	M		10YR56 00	Y	0	0	HR	17		P		Y			
15	0-25	mzcl	75YR42 00						17	0	HR	18							
	25-30	hzcl	75YR54 00						0	0	HR	20		G					
	30-45	c	75YR56 00	05YR56 00	C			S	0	0	HR	20		P		Y			
	45-70	c	75YR56 00	05YR56 00	M		10YR64 00	Y	0	0	HR	20		P		Y			
16	0-27	hzcl	75YR42 00						22	0	HR	23							
	27-60	c	75YR54 00				10YR54 00	S	0	0	HR	7		P		Y			IMP 60CM
18	0-25	hzcl	75YR42 00						0	0		0							
	25-45	c	75YR56 00					S	0	0	HR	23		P		Y			IMP 45CM - FLIMTS
19	0-25	hzcl	75YR42 00						27	11	HR	28							
	25-50	hzcl	75YR54 00						0	0	HR	15		G					IMP 50CM
20	0-30	mzcl	75YR42 00						27	11	HR	28							RIDDLED TS
	30-45	hzcl	75YR43 00						0	0	HR	23		G					

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	SUBS CALC	
21	0-25	mzcl	75YR42 00						17	0	HR	18							
	25-45	mzcl	75YR43 00						0	0	HR	20		G					
22	0-30	mzcl	75YR42 00						33	0	HR	35							
	30-40	hzcl	75YR54 00						0	0	HR	23		M					
23	0-20	mzcl	75YR42 00						25	5	HR	26							RIDDLED TS
	20-50	c	75YR66 00	10YR56 00			C	S	0	0	HR	23		P		Y			IMP 50CM
25	0-28	hzcl	75YR42 00						25	0	HR	26							IMP 28CM - FLINTS
26	0-25	hzcl	75YR42 00						25	0	HR	26							
	25-50	c	75YR54 00	10YR56 00			F		0	0	HR	17		P		Y			
	50-55	c	75YR55 00	05YR46 00			C	S	0	0	HR	17		P		Y			IMP 55CM
27	0-30	hzcl	10YR42 00						17	0	HR	18							
	30-40	c	75YR54 00	05YR54 00			C	S	0	0	HR	20		P		Y			IMP 40CM
28	0-23	mzcl	75YR42 00						25	0	HR	26							
	23-33	c	75YR54 00	75YR56 00			C	S	0	0	HR	23		P		Y			IMP 33CM
29	0-25	hzcl	75YR42 00						25	5	HR	26							
	25-45	c	75YR54 00	10YR56 00			C	S	0	0	HR	23		P		Y			IMP 45CM
30	0-25	hzcl	75YR42 00						18	5	HR	18							RIDDLED TS
	25-40	hzcl	75YR54 00						0	0	HR	23		M					
	40-65	c	75YR56 00	75YR55 56			C	S	0	0	HR	20		P		Y			IMP 65CM
31	0-25	mzcl	75YR42 00						17	0	HR	18							
	25-50	c	75YR54 00						0	0	HR	17		P		Y			
	50-70	mzcl	75YR53 00						0	0	HR	15		M					Q SPL
	70-80	c	75YR54 00	10YR56-			C	S	0	0	HR	10		P		Y			SL GLEYED 70CM+
32	0-30	mzcl	75YR42 00						17	0	HR	23						Y	RIDDLED TS
	30-40	mzcl	75YR54 00	75YR46 00			C	S	0	0	HR	23		G				Y	IMP 40CM
33	0-25	mzcl	75YR42 00						23	10	HR	24							
	25-30	mzcl	10YR54 00						0	0	HR	23		G					
	30-45	hzcl	75YR54 00						0	0	HR	25		G					
	45-50	c	75YR54 00	10YR56 00			C	S	0	0	HR	20		P		Y			IMP 50CM
34	0-23	hzcl	75YR42 00						23	10	HR	24							
	23-25	c	75YR56 00					S	0	0	HR	23		P		Y			IMP 25CM FLINTS
35	0-30	hzcl	10YR42 00	75YR46 00			C		25	12	HR	25							IMP 30CM FLINTS
37	0-30	hzcl	10YR42 00						17	0	HR	18							IMP 30CM - FLINTS

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	SUBS CALC	
39	0-25	mzcl	75YR42 00						24	12	HR	25							RIDDLED TS
	25-30	hzcl	75YR54 00	10YR56 00	F				0	0	HR	23		G					
	30-40	c	75YR54 00	10YR56 00	M			S	0	0	HR	12		P		Y			
	40-50	c	75YR66 00	05YR56 00	M			S	0	0	HR	12		P		Y			IMP 45CM
41	0-25	mzcl	75YR42 00						25	12	HR	25							RIDDLED TS
	25-38	c	10YR56 00	10YR58 00	C			S	0	0	HR	23		P		Y			IMP 38CM - FLINTS
42	0-20	mzcl	75YR42 00						8	8	HR	10							
	20-30	hzcl	75YR43 00						0	0	HR	17		G					
	30-60	hzcl	75YR44 00						0	0	HR	17		G					
	60-70	zc	75YR54 00	75YR56 00	C			S	0	0	HR	17		P		Y			
43	0-20	mzcl	10YR42 00						15	6	HR	15							RIDDLED TS
	20-40	hzcl	10YR54 00						0	0	HR	23		G					
	40-45	c	75YR54 00	10YR56 00	C			S	0	0	HR	23		P		Y			IMP 45CM
47	0-20	mzcl	75YR42 00						14	5	HR	14							
	20-25	hzcl	75YR43 00						0	0	HR	17		G					
	25-45	c	75YR54 00	10YR56 00	C			S	0	0	HR	20		P		Y			IMP 45CM - FLINTS
48	0-20	mzcl	10YR43 00						15	6	HR	15							
	20-28	hzcl	10YR44 00						0	0	HR	17		M					
	28-47	c	75YR54 00	75YR56 00	C			S	0	0	HR	10		P		Y			IMP 47CM
51	0-15	mzcl	10YR42 00						15	0	HR	15							RIDDLED TS
	15-40	mzcl	10YR43 00						0	0	HR	20		G					
	40-50	c	75YR54 00	75YR56 00	M			S	0	0	HR	20		P		Y			IMP 50CM
52	0-20	mzcl	10YR42 00						15	0	HR	15							
	20-30	hzcl	10YR54 00						0	0	HR	20		M					
	30-40	c	75YR54 00	10YR56 00	C			S	0	0	HR	17		P		Y			IMP 40CM - FLINTS