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Maidstone Borough Local Plan
Site 57 Fant Farm, Gatland Lane
Maidstone, Kent
Agricultural Land Classification Report
March 1996

Resource Planning Team
Guildford Statutory Group
ADAS Reading

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AGRICULTURAL LAND CLASSIFICATION REPORT

MAIDSTONE BOROUGH LOCAL PLAN SITE 57 FANT FARM, GATLAND LANE

INTRODUCTION

1 This report presents the findings of a detailed Agricultural Land Classification (ALC) survey on approximately 9 hectares of land at Fant Farm, to the south of Gatland Lane Maidstone in Kent. The survey was carried out during March 1996.

2 The survey was commissioned by the Ministry of Agriculture Fisheries and Food (MAFF) from its Land Use Planning Unit in Reading in connection with the Maidstone Borough Local Plan. The results of this survey supersede any previous ALC information for this land.

3 The work was conducted by members of the Resource Planning Team in the Guildford Statutory Group of 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 I.

4 At the time of survey the agricultural land use on this site was orchard. The areas shown as Other Land comprised a trackway and electricity sub-station.

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 below.

Table 1 Area of grades and other land

Grade/Other land	Area (hectares)	% Agricultural area	% Surveyed Land
2	3.4	37.8	37.0
3a	3.4	37.8	37.0
3b	2.2	24.4	23.9
Other Land	0.2	N/A	2.1
<hr/>			
Total agricultural land	9.0	100.0	N/A
Total site area	9.2	N/A	100.0

7 The fieldwork was conducted at an average density of approximately 1 boring per hectare. A total of 12 borings, 3 stone measurements and two soil pits were described.

8 The majority of the agricultural land on this site has been classified as Grade 2 very good quality and Subgrade 3a good quality on the basis of soil droughtiness and topsoil stone restrictions. A narrow strip of Subgrade 3b moderate quality land has also been mapped through the centre of the site where soil droughtiness is more limiting.

9 The majority of soil profiles are deep and free draining comprising slightly to moderately stony medium and heavy clay loams. In this locally dry climatic regime the combination of textures and stone contents acts to reduce the amount of profile available water for crops. Minor drought risk therefore limits this land to Grade 2. However, to the north west of the site the large flagstones present in the topsoil will reduce the level and consistency of crop growth as well as damage agricultural machinery. Land quality is therefore limited to Subgrade 3a in this area on the basis of topsoil stoniness.

10 The soil profiles in the Subgrade 3b map unit are similar in texture to those elsewhere on the site though markedly more stony and overlie sandstone bedrock. In this climatic regime the combination of stone content, soil textures and depth of soil acts to reduce profile available moisture further. This land has therefore been classified as Subgrade 3b on the basis of a significant soil droughtiness limitation.

FACTORS INFLUENCING ALC GRADE

Climate

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

12 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	Values
Grid reference	N/A	TQ 736 544	TQ 736 544
Altitude	m AOD	50	55
Accumulated Temperature	day°C (Jan June)	1451	1445
Average Annual Rainfall	mm	687	689
Field Capacity Days	days	140	140
Moisture Deficit Wheat	mm	116	116
Moisture Deficit Potatoes	mm	112	111

13 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.

14 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

15 The combination of rainfall and temperature at this site mean that there is no overall climatic limitation the site is climatically Grade 1 However climatic factors can interact with soil properties to influence soil wetness and droughtiness At this location the crop adjusted soil moisture deficits are relatively high thus increasing the likelihood of soil droughtiness Correspondingly the field capacity day values are comparatively low thus decreasing the effects of soil wetness

16 Local climatic factors such as frost risk and exposure are not thought likely to adversely affect agricultural land use on this site

Site

17 The land slopes gently from 60m AOD in the north west to 50m AOD in the south east Gradient or microrelief do not affect agricultural land quality

18 Flooding does not appear to be limiting on this site

Geology and soils

19 The relevant geological sheet (BGS 1974) maps the entire site as the Hythe Beds

20 The most recently published soils information for this area (SSEW 1983) maps the Malling soil association across the entire site These soils are described as well drained non-calcareous soils over limestone at variable depths Some deep well drained coarse loamy soils and some similar fine loamy over clayey soils Some fine loamy soils with slowly permeable subsoils and slight seasonal waterlogging Occasional shallower calcareous soils over limestone Landslips associated with irregular terrain locally (SSEW 1983)

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 page 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

Grade 2

23 Two areas of Grade 2 (good quality agricultural land) have been mapped on this site one through the centre and the other to the south east The soil profiles typically comprise well drained slightly stony (5-8% total sandstone including 2-5% flagstones >2cm) medium clay loam topsoils over moderately structured medium clay loam or medium silty clay loam subsoils with 2-15% sandstone Occasionally moderately structured clay lower subsoils occur Some horizons may show evidence of slight gleying but in this locally dry climatic regime the profiles correspond to Wetness Class 1 and are potentially Grade 1 However the

combination of soil textures structures and stone contents acts to reduce the amount of profile available water for crops in these profiles resulting in a minor soil droughtiness limitation which places the land in Grade 2

Subgrade 3a

24 To the north of the site the soils are typified by soil inspection Pit 2 (Appendix III) and are very similar in composition to those classified as Grade 2 However there are generally between 6-9% large flagstones (>2cm in diameter) in the topsoil which can cause increased wear to tyres and damage farm machinery They can also disrupt crop establishment and growth This land has therefore been classified as Subgrade 3a due to topsoil stoniness

Subgrade 3b

25 A narrow strip of moderate quality land has been mapped through the centre of the site The soils here comprise well drained slightly stony (5-8% total sandstone of which 2-4% is larger than 2cm in diameter) medium clay loam topsoils over slightly to moderately stony (5-15% total sandstone) medium and heavy clay loam or clay subsoils Occasionally the subsoils are slightly gleyed but these profiles still qualify for Wetness Class 1 During the survey the soil profile generally became impenetrable to the soil auger at approximately 50cm depth However soil inspection Pit 1 (Appendix III) revealed that the soil resource continues as a very stony (40% total sandstone) heavy clay loam lower subsoil over sandstone bedrock at 70cm depth It has been assumed that there would be very limited penetration of crop roots below 70cm In this locally dry climatic regime the combination of soil textures structures stone content and depth of rooting acts to significantly reduce the amount of profile available water for crops This land has therefore been assigned to Subgrade 3b on the basis of a significant soil droughtiness limitation

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SOURCES OF REFERENCE

British Geological Survey (1974) *Sheet No 288 Maidstone* 1 50 000 Series Solid & Drift
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) *Sheet 6 Soils of South East England*
SSEW Harpenden

Soil Survey of England and Wales (1984) *Soils and their Use in South East England*
SSEW Harpenden

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

Sample location map

Soil abbreviations - Explanatory Note

Soil Pit Descriptions

Soil boring descriptions (boring and horizon levels)

Database Printout - Horizon Level Information

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	BR	Brassicae
POT	Potatoes	SBT	Sugar Beet	FCD	Fodder Crops
LIN	Linseed	FRT	Soft and Top Fruit	FLW	Fallow
PGR	Permanent Pasture	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 **GLEYSPL** 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 **GLEYS** 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 dolomitic 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 sandstone	GS	gravel with porous (soft) stones
SI	soft weathered igneous/metamorphic rock		

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

SOIL PIT DESCRIPTION

Site Name MAIDSTONE BLP SITE 57 Pit Number 1P

Grid Reference TQ73705440 Average Annual Rainfall 691 mm
 Accumulated Temperature 1439 degree days
 Field Capacity Level 140 days
 Land Use
 Slope and Aspect 01 degrees S

HORIZON	TEXTURE	COLOUR	STONES >2	TOT STONE	LITH	MOTTLES	STRUCTURE	CONSIST	SUBSTRUCTURE	CALC
0- 30	MCL	10YR42 00	3	8	HR					
30- 42	MCL	10YR54 00	0	15	HR		MDCSAB	FR	M	
42- 70	HCL	10YR54 00	0	40	HR	C	MDCSAB	FM	M	

Wetness Grade 1 Wetness Class I
 Gleying S42 cm
 SPL No SPL

Drought Grade 3B APW 87 mm MBW -28 mm
 APP 94 mm MBP -16 mm

FINAL ALC GRADE 3B
 MAIN LIMITATION Droughtiness

SOIL PIT DESCRIPTION

Site Name MAIDSTONE BLP SITE 57 Pit Number 2P

Grid Reference TQ73605450 Average Annual Rainfall 691 mm
 Accumulated Temperature 1439 degree days
 Field Capacity Level 140 days
 Land Use
 Slope and Aspect 02 degrees N

HORIZON	TEXTURE	COLOUR	STONES >2	TOT STONE	LITH	MOTTLES	STRUCTURE	CONSIST	SUBSTRUCTURE	CALC
0- 28	MCL	10YR43 00	8	12	HR					
28- 56	MCL	10YR44 54	0	2	HR		MDCSAB	FR	M	
56- 85	MCL	10YR44 54	0	8	HR		MDCSAB	FR	M	
85-120	SCL	10YR54 00	0	5	HR		MDCSAB	FR	M	

Wetness Grade 1 Wetness Class I
 Gleying cm
 SPL No SPL

Drought Grade 2 APW 145mm MBW 30 mm
 APP 109mm MBP -1 mm

FINAL ALC GRADE 3A
 MAIN LIMITATION Topsoil Stoniness

SAMPLE NO	GRID REF	ASPECT USE	--WETNESS--		-WHEAT-		-POTS-		M REL		EROSN EXP	FROST DIST	CHEM LIMIT	ALC	COMMENTS
			GRDNT	GLEYSPL	CLASS	GRADE	AP	MB	AP	MB					
1	TQ73605450	ORC S	02	D85	1	1	136	21	108	-2	2		ST	3A	See 2P
1P	TQ73705440	ORC S	01	S42	1	1	87	-28	94	-16	3B		DR	3B	At Boring 5
1S	TQ73605445	ORC S	01		1	1		0		0			ST	3A	
2	TQ73405440	ORC S	01		1	1	145	30	108	-2	2		ST	3A	
2P	TQ73605450	ORC N	02		1	1	145	30	109	-1	2		ST	3A	At Boring 1
2S	TQ73555449	ORC S	01		1	1		0		0			ST	3A	
3	TQ73505440	ORC			1	1	73	42	73	-37	3B		ST	3A	150 Sst
3S	TQ73515446	ORC S	01		1	1		0		0			ST	3A	
4	TQ73605440	ORC S	03	S75	1	1	147	32	111	1	2		DR	2	Border 2ST
5	TQ73705440	ORC S	01		1	1	80	-35	80	-30	3B		DR	3B	150 See 1P
6	TQ73805440	ORC S	01		1	1	142	27	113	3	2		DR	2	See 2P
7	TQ73405430	ORC S	02		1	1	93	-22	100	-10	3B		DR	3A	170 Sst
8	TQ73505430	ORC SE	03	S28	1	1	149	34	112	2	2		DR	2	
9	TQ73605430	ORC N	02		1	1	84	-31	87	-23	3B		DR	3B	155 See 1P
10	TQ73775436	ORC S	01		1	1	101	14	113	3	3A		DR	2	170 Sst
11	TQ73455424	ORC SE	02	S25	1	1	76	-39	80	-30	3B		DR	3B	155 See 1P
12	TQ73475441	ORC			1	1	115	0	107	-3	3A		DR	3A	190 Sst

SAMPLE	DEPTH	TEXTURE	COLOUR	----MOTTLES-----			PED		----STONES----			STRUCT/	SUBS	SPL	CALC
				COL	ABUN	CONT	COL	GLE	>2	>6	LITH				
1	0-28	mc1	10YR43 00						8	6	HR	12			
	28-55	mc1	10YR55 44						0	0	HR	5		M	
	55-65	mc1	10YR54 44	10YR58 00 C					S	0	0	HR	10		M
	65-85	hc1	10YR44 54	10YR58 00 C					S	0	0	HR	10		M
	85-120	c	10YR64 00	10YR58 00 M				00MN00 00	Y	0	0	HR	10		M
1P	0-30	mc1	10YR42 00						3	1	HR	8			
	30-42	mc1	10YR54 00				10YR53 00		0	0	HR	15	MDCSAB FR	M	
	42-70	hc1	10YR54 00	75YR58 00 C				S	0	0	HR	40	MDCSAB FM	M	Imp Bedded Sst
1S	0-25	mc1	10YR42 00						9	6	HR	15			
2	0-25	mc1	10YR42 00						8	6	HR	12			
	25-45	mc1	10YR44 43						0	0	HR	8		M	
	45-100	mc1	10YR54 00						0	0	HR	3		M	
	100-120	sc1	10YR54 00						0	0	HR	5		M	
2P	0-28	mc1	10YR43 00						8	6	HR	12			
	28-56	mc1	10YR44 54						0	0	HR	2	MDCSAB FR	M	
	56-85	mc1	10YR44 54				00MN00 00		0	0	HR	8	MDCSAB FR	M	
	85-120	sc1	10YR54 00						0	0	HR	5	MDCSAB FR	M	
2S	0-25	mc1	10YR42 00						9	7	HR	15			
3	0-18	mc1	10YR42 00						6	7	HR	10			Y
	18-28	mc1	10YR43 00						0	0	HR	5		M	Y
	28-50	ms1	25Y 73 72						0	0	SLST	20		M	Y Imp Sst
3S	0-25	mc1	10YR42 00						9	6	HR	15			
4	0-28	mc1	10YR43 00						5	2	HR	8			
	28-75	mc1	10YR54 44						0	0	HR	5		M	
	75-120	mc1	10YR54 00	10YR58 00 C			00MN00 00	S	0	0	HR	5		M	
5	0-30	mc1	10YR42 00						2	0	HR	5			
	30-50	hc1	10YR44 54						0	0	HR	10		M	Imp Sst
6	0-30	mc1	10YR42 00						2	0	HR	5			
	30-50	mc1	10YR54 00						0	0	HR	2		M	
	50-75	mc1	10YR54 00						0	0	HR	5		M	
	75-105	c	10YR54 00				00MN00 00		0	0	HR	15		M	S1 Sandy
	105-120	mc1	10YR64 00						0	0	HR	1		M	S1 Sandy
7	0-20	mc1	10YR42 00						6	4	HR	8			Y
	20-35	mc1	10YR44 00						0	0	HR	10		M	Y
	35-70	ms1	25Y 72 73						0	0	SLST	20		M	Y Imp Sst
8	0-28	mc1	10YR43 00						3	2	HR	6			
	28-70	mc1	10YR54 44	10YR58 00 C			00MN00 00	S	0	0	HR	5		M	
	70-100	mc1	10YR54 00	10YR58 00 C				S	0	0	HR	5		M	
	100-120	mzc1	10YR54 00	10YR58 00 C				S	0	0		0		M	

SAMPLE	DEPTH	TEXTURE	COLOUR	-MOTTLES-----			PED		----STONES----			STRUCT/ CONSIST	SUBS					
				COL	ABUN	CONT	COL	GLEYS	2	>6	LITH		TOT	STR	POR	IMP	SPL	CALC
9	0-28	mc1	10YR42 00						3	1	HR	5						
	28-40	mc1	10YR54 00						0	0	HR	5		M				
	40-55	c	10YR54 00						0	0	HR	15		M				Imp Sst
10	0-30	mc1	10YR42 00						2	0	HR	5						
	30-40	mc1	10YR54 00						0	0	HR	2		M				
	40-70	mc1	10YR54 00						0	0	HR	5		M				Imp Sst
11	0-25	mc1	10YR42 00						4	2	HR	15						
	25-55	c	10YR54 56	10YR68 00	M			S	0	0	HR	15		M				Imp Sst
12	0-28	mc1	10YR43 00						4	2	HR	8						
	28-38	mc1	10YR44 00						0	0	HR	10		M				
	38-90	hc1	10YR54 00					00MN00 00	0	0	HR	10		M				Imp Sst