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Test Valley Local Plan Review
Sites 92 93 Romsey
Agricultural Land Classification
Semi Detailed Survey
ALC Map and Report

January 1997

Resource Planning Team
Eastern Region
FRCA Reading

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AGRICULTURAL LAND CLASSIFICATION REPORT

TEST VALLEY LOCAL PLAN REVIEW
SITES 92 93
ROMSEY HAMPSHIRE

SEMI DETAILED SURVEY

INTRODUCTION

1 This report presents the findings of a semi detailed Agricultural Land Classification (ALC) survey of approximately 70 hectares of land to the north of North Baddesley Hampshire The survey was carried out during January 1997

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 Test Valley Local Plan Review The results of this survey supersede any previous ALC information for this land The land to the immediate south east of the current area of survey was surveyed in 1993 (ADAS Ref 1512/068/93) and so was not re visited on this occasion

3 Prior to 1st April 1997 the work was conducted by members of the Resource Planning Team in the Guildford Statutory Group of ADAS After this date the work was completed by the same team as part of the Farming and Rural Conservation Agency (FRCA) Reading 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 on this site was mostly in permanent grassland The western most half of the site comprised overgrown grassland with scattered trees and shrubs which was being used as common land and grazed by horses The areas of the site shown as Other Land consist of woodland and scrub a pond and a house and driveway

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 overleaf

Table 1 Area of grades and other land

Grade/Other land	Area (hectares)	% Total survey area	% Total site area
2	27 4	49 7	39 0
3a	13 4	24 3	19 1
3b	12 3	22 3	17 5
4	0 6	1 1	0 9
5	1 4	2 6	2 0
Other land	15 1		21 5
Total survey area	55 1	100 0	
Total site area	70 2		100

7 The fieldwork was conducted at an average density of 1 boring every 2 hectares A total of 30 borings and 3 soil pits were described

8 The land at this site has been classified as Grade 2 (very good quality) Subgrade 3a (good quality) Subgrade 3b (moderate quality) with small pockets of Grade 4 (poor quality) and Grade 5 (very poor quality) Soil wetness and soil droughtiness are the principal limitations throughout The soils on the site are derived from interbedded deposits of the Bracklesham Group and as such were found to be very variable both spatially and vertically through the profiles

9 Many of the soil profiles suffer from wetness problems to varying degrees The topsoils comprise fine or coarse loamy textures These often overlie similar upper subsoils which pass to poorly structured clay loams or clays The depth to these poorly structured horizons will determine the final ALC grade Where these poorly structured horizons are shallow the drainage will be severely restricted and land is classified as Subgrade 3b whereas when they occur deeper within the profile the resultant ALC grade will be Grade 2 or Subgrade 3a These clayey soils cause drainage to be impeded so that land utilisation is restricted

10 Localised parts of the site have severe drainage problems caused by seepage and spring lines Grades 4 and 5 are mapped where the presence of hydrophilous vegetation and an uneven surface form suggest permanent waterlogging The area assigned to Grade 5 is a degree worse than that mapped as Grade 4 and the land will only be suitable for seasonal grazing at best

11 On occasions when soil wetness is less significant the soil profiles are better drained and are often sandier and/or more stony at depth Soil droughtiness may be equally or more restricting in these cases The combination of soil properties and the prevailing climate results in soil droughtiness which will restrict the amount of profile available water for crops Crop growth and yields will therefore be adversely affected to different degrees depending on the severity of the droughtiness limitation Grades 2 3a and 3b have been mapped as a result

FACTORS INFLUENCING ALC GRADE

Climate

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

13 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	SU 388 206	SU 398 207
Altitude	m AOD	35	55
Accumulated Temperature	day C (Jan June)	1514	1491
Average Annual Rainfall	mm	819	820
Field Capacity Days	days	174	174
Moisture Deficit Wheat	mm	108	106
Moisture Deficit Potatoes	mm	102	99
Overall climatic grade	N/A	Grade 1	Grade 1

14 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

15 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 (AT0 January to June) as a measure of the relative warmth of a locality

16 The combination of rainfall and temperature at this site mean that there is no overall climatic limitation Local climatic factors such as exposure and frost risk do not adversely affect land quality at this location The site is climatically Grade 1 However climatic factors do interact with soil properties to influence soil wetness and soil droughtiness At this locality the climate is relatively warm and moist in regional terms The likelihood of soil wetness problems may therefore be enhanced

Site

17 The site lies at altitudes in the range 35 57 m AOD The highest land occurs along the eastern site boundary with land falling through slight to moderate gradients towards the north west and west Most of the site is not affected by site restrictions (i e gradient micro relief or flooding) However along the field boundary which marks the eastern edge of land classified as Grade 5 the land falls very sharply The extent of this steep slope is not sufficient to map separately at this scale of mapping but the land affected is included within the Grade 5 mapping unit These slopes will severely restrict the safe and efficient use of farm machinery

Geology and soils

18 The most detailed published geological information for the site (BGS 1987) shows the majority of it to be underlain by solid deposits of the Bracklesham Group Much of the northern and western parts of the site are mapped as the Wittering Formation whilst the south and east are shown as Earnley Sand In addition to these solid deposits there are isolated patches of drift deposits notably a band of alluvium towards the west of the site and undifferentiated river terrace deposits towards the south and east

19 The most detailed published soils information covering the area (SSEW 1983) shows it to comprise entirely soils of the Wickham 3 association These soils are described as slowly permeable seasonally waterlogged fine loamy over clayey and coarse loamy over clayey similar more permeable soils with slight waterlogging (SSEW 1983) Soils broadly consistent with this description were observed across parts of the site fine and coarse loamy soils overlie clay in the subsoil at variable depth Occasional more sandy and/or gravelly soils were found

AGRICULTURAL LAND CLASSIFICATION

20 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

21 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 II

Grade 2

22 Very good quality agricultural land has been mapped across approximately half of the area surveyed Soils within the Grade 2 mapping units are very variable having developed from the inter mixed sands and clays of the Bracklesham Beds Soil textures and drainage status vary considerably over short distances and within profiles

23 The Grade 2 land on this site is influenced by minor soil wetness and soil droughtiness limitations either acting singly or in combination Profiles comprise non calcareous fine or medium sandy loam occasionally medium clay loam or sandy clay loam topsoils These were recorded as having relatively high organic matter contents and were frequently defined as organic mineral topsoils Generally stones were found to be absent or only very few flints Subsoil textures vary considerably although typically they become heavier with depth sometimes passing to lighter textures once more in the lower subsoil Horizons of sandy loam sandy clay loam heavy clay loam clay and loamy sand were all observed Stone contents were estimated to be at a maximum of 5% flints throughout these subsoils Soil pit 1 (see Appendix II) is representative of the range of soil profiles seen

24 Soils within the Grade 2 mapping units experience seasonal waterlogging as evidenced by gleying to varying extents This is sometimes caused by impeded drainage through slowly permeable clay loam or clay horizons or by a fluctuating watertable The drainage characteristics of these soils places them into a range of wetness classes from I to III Taking

into account topsoil textures (many of which are light and easily workable) and the prevailing climate land is classified as Grade 2 on the basis of minor soil wetness

25 Where soil wetness is not the overriding limitation to agricultural use soil droughtiness is an important factor The combination of the soil properties as described in paragraph 23 above and climatic factors shows there to be a potential shortfall in the availability of soil moisture to crops during the year This is especially apparent where the soils contain more sandy horizons Land which is droughty may cause the level and consistency of crop yields to be depressed

Subgrade 3a

26 Much of the land classified as Subgrade 3a good quality is affected by soil wetness restrictions Soils comprise non calcareous medium sandy loam medium clay loam or fine sandy silt loam topsoils These may contain up to 6 % total flints by volume (1 4% > 2 cm in size) Topsoils overlie similar upper subsoils which pass to heavier textures of sandy clay loam heavy clay loam and clay with depth Soil pit 2 (see Appendix II) is typical of these soils It proved the existence of poorly structured sandy clay loam and clay horizons which are slowly permeable and which thereby impede drainage and cause seasonal waterlogging Many of the profiles were gleyed at shallow depth evidence of the seasonal waterlogging The depth to these slowly permeable clay subsoils (between 30 and 55 cm) results in soils being assigned to wetness class III or IV The combination of imperfect soil drainage topsoil textures (many of which are light and/or organic and thereby easily workable) and climatic factors gives rise to a land classification of 3a Excessive soil wetness may adversely affect crop growth and development as well as limiting the flexibility of the land due to the reduction in the number of days when the soil is in a suitable condition for cultivation trafficking by machinery or grazing by livestock

27 Localised areas of the land classified as Subgrade 3a most notably on the higher land south of Body Farm are graded on the basis of a soil droughtiness limitation Non calcareous sandy loam or medium clay loam topsoils containing up to 18% total flints by volume (8% of which are > 2 cm in size) rest on similar upper subsoils Profiles were found to be impenetrable to the soil auger within 40 cm As a result soil pit 3 was examined to establish the nature of the subsoils Upper subsoils were found to contain up to about 40 45% flints These pass to heavier and less stony lower subsoils The overriding limitation is one of droughtiness The stony subsoils restrict the moisture content of the profiles and moisture balance calculations indicate that the amount of water available to a growing crop may not be sufficient to meet its needs throughout the growing season The resulting drought stress may cause the level and consistency of yields to be depressed Subgrade 3a is therefore appropriate

Subgrade 3b

28 Moderate quality land is found in conjunction with parts of the site affected by significant soil wetness Soils typically comprise non calcareous medium clay loam or sandy clay loam topsoils which may contain 2 10% total flints by volume These pass to heavier subsoils typically heavy clay loam and clay These profiles are all gleyed within 40 cm evidence of severely impeded drainage arising from the presence of slowly permeable horizons between 28 and 42 cm Such drainage characteristics equate to a wetness class of IV which

when considered alongside topsoil textures and the prevailing climatic conditions results in a land classification of Subgrade 3b

29 A small unit of Subgrade 3b land to the immediate north of the industrial works is also classified as such on the basis of soil wetness but as a result of high ground water levels which may be difficult to control This mapping unit in coincident with a patch of river terrace gravels Soils are thereby stony and gravelly and impenetrable to the soil auger at shallow depth At the time of survey the watertable was observed at 35 40 cm resting at the junction of the soil and the gravelly substrata beneath The drainage status was assessed as being consistent with wetness class IV leading to a land classification of Subgrade 3b

Grade 4

30 A small unit of poor quality land has been delineated towards the west of the site in association with an area of seepage The presence of hydrophilous vegetation e g Juncus sp is suggestive of permanent waterlogging Such conditions give rise to land which is severely restricted in its agricultural use and suitable for seasonal grazing only

Grade 5

31 Very poor quality agricultural land has been mapped where seepage as described in paragraph 30 above is so severe as to cause permanent waterlogging to the surface which probably persists throughout the year and an uneven micro relief The extent of seepage is assessed as being a degree worse than for land assigned to Grade 4 and therefore Grade 5 is appropriate The land is only suitable for low intensity rough grazing

Michelle Leek
Resource Planning Team
FRCA Reading

SOURCES OF REFERENCE

British Geological Survey (1987) *Sheet No 315 Southampton* 1 50 000 Solid & Drift Edition, 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* 1 250 000 SSEW Harpenden.

Soil Survey of England and Wales (1984) *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 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 grass	**LEY**	Ley grass	**RGR**	Rough grazing
SCR	Scrub	**CFW**	Coniferous woodland	**OTH**	Other
DCW	Deciduous woodland	**BOG**	Bog or marsh	**SAS**	Set Aside
HTH	Heathland	**HRT**	Horticultural crops	**PLO**	Ploughed

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	**ST**	Topsoil Stoniness
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

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	**FSST**	soft fine grained sandstone
ZR	soft argillaceous or silty rocks	**CH**	chalk
MSST	soft medium grained sandstone	**GS**	gravel with porous (soft) stones
SI	soft weathered igneous/metamorphic rock	**GH**	gravel with non porous (hard) stones

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	**MD**	moderately developed
	ST	strongly de eloped		
Ped size	**F**	fine	**M**	medium
	C	coarse		
Ped shape	**S**	single grain	**M**	massi e
	GR	granular	**AB**	angular blocky
	SAB	sub-angular blocky	**PR**	prismatic
	PL	platy		

9 **CONSIST** Soil consist nce is d scribed using the following notation

L loose	**FM** firm	**EH** extremely hard
VF very friable	**VM** very firm	
FR friable	**EM** extremely firm	

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 ater capacity (in mm) adjusted for wheat
APP	avail ble water capacity (in mm) adjusted for potatoes
MBW	moisture balance wheat
MBP	moisture balance potatoes

SOIL PIT DESCRIPTION

Site Name TEST VALLEYLP SITE 92 93 Pit Numbe 1P

G id Ref rence SU39302090 Ave ge A nual Ra fall 819 mm
Accumulated Tempe ture 1514 degree days
F eld Capacity Level 174 d ys
Land U e Rough Grazing
Slope and Aspect 01 degrees W

HORIZON	TEXTURE	COLOUR	STONES 2	TOT STONE	LITH	MOTTLES	STRUCTURE	CONSIST	SUBSTRUCTURE	CALC
0 22	MSL	10YR32 00	1	2	HR					
22 45	MSL	10YR54 00	0	2	HR		WDCSAB	VF	G	
45- 60	HCL	10YR62 00	0	0		M	MDCSAB	FR	M	
60 90	C	25Y 62 00	0	0		M	MDCAB	FM	P	
90 120	SCL	25Y 52 62	0	0		M			M	

Wetne s Grade 2 Wetness Clas III
Gley ng 045 cm
SPL 060 cm

Drought G ade 1 APW 144mm MBW 36 mm
APP 112mm MBP 10 mm

FINAL ALC GRADE 2
MAIN LIMITATION Wetness

SOIL PIT DESCRIPTION

Site Name TEST VALLEYLP SITE 92 93 Pit N mbe 2P

Gr d Reference SU39702070

Ave age Ann al Rai f 11 819 mm
Accumulated Temper t re 1514 degree d y
Field Capac ty Level 174 days
L nd Use Permane t Grass
Slope and Aspect 02 degrees W

HORIZON	TEXTURE	COLOUR	STONES 2	TOT STONE	LITH	MOTTLES	STRUCTURE	CONSIST	SUBSTRUCTURE	CALC
0 35	MCL	10YR42 00	4	6	HR	C				
35- 52	C	05 Y53 00	0	0		M	WDCAB	FM	P	
52 120	SCL	05 Y54 00	0	0		M	MDCPL	FR	P	

Wetnes G de 3A

Wetne Class IV
Gleying 0 cm
SPL 035 cm

Drought G de 2

APW 135mm MBW 27 mm
APP 105mm MBP 3 mm

FINAL ALC GRADE 3A
MAIN LIMITATION Wetness

SOIL PIT DESCRIPTION

Site Name TEST VALLEYLP SITE 92 93 Pit Numbe 3P

G id R ference SU39902070 Ave age Annual Rainfall 819 mm
Accumulated Tempe ature 1514 degree days
Field Capacity Level 174 d ys
Land Use Permane t G ss
Slope and Aspect degrees

HORIZON	TEXTURE	COLOUR	STONES 2	TOT STONE	LITH	MOTTLES	STRUCTURE	CONSIST	SUBSTRUCTURE	CALC
0 24	MSL	10YR32 00	8	18	HR					
24 60	MSL	10YR33 00	15	43	HR				M	
60 100	C	25 Y53 00	0	5	HR	M	WKCSAB	FM	P	
100 120	SCL	25 Y53 00	0	0		M			M	

Wetness G ade 2 Wetness Class III
Gleying 060 cm
SPL 060 cm

Drought G de 3A APW 112mm MBW 4 mm
APP 080mm MBP 22 mm

FINAL ALC GRADE 3A
MAIN LIMITATION Droughtiness

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 27	omcl	10YR31 00						0	0	HR	5							
	27 40	mcl	10YR52 00	75YR58 00	M			Y	0	0	HR	10		M					Imp gravelly
1P	0 22	msl	10YR32 00						1	0	HR	2							PSD FSL
	22 45	msl	10YR54 00						0	0	HR	2	WDCSAB	VF G					PSD FSL
	45-60	hcl	10YR62 00	75YR58 00	M			Y	0	0		0	MDCSAB	FR M					Borde SCL
	60 90	c	25Y 62 00	75YR56 00	M		25 Y71 00	Y	0	0		0	MDCAB	FM P	Y		Y		
	90 120	scl	25Y 52 62	75YR56 00	M			Y	0	0		0		M			Y		+ fine and
2	0 28	f zl	10YR33 00						0	0		0							
	28-35	fs l	10YR33 00						0	0		0		M					
	35-45	mcl	10YR53 00	10YR56 00	C			Y	0	0		0		M					
	45 80	c	10YR53 00	10YR68 00	M			Y	0	0		0		P			Y		
2P	0 35	mcl	10YR42 00	10YR46 00	C			Y	4	2	HR	6							PSD FSL
	35-52	c	05 Y53 00	75YR58 00	M			Y	0	0		0	WDCAB	FM P	Y		Y		PSD SCL
	52 120	scl	05 Y54 00	75YR68 56	M			Y	0	0		0	MDCPL	FR P	Y		Y		PSD FSL/SCL
3	0 30	mcl	10YR32 00	10YR34 00	F				0	0		0							po organic
	30 45	hcl	10YR52 53	10YR58 00	M			Y	0	0	HR	0		M					sand
	45 65	c	25 Y52 62	75YR58 00	M			Y	0	0		0		P			Y		nd
3P	0 24	msl	10YR32 00						8	0	HR	18							
	24 60	msl	10YR33 00						15	0	HR	43		M					
	60 100	c	25 Y53 00	75YR68 00	M			Y	0	0	HR	5	WKCSAB	FM P	Y		Y		Borde SC
	100 120	scl	25 Y53 00	75YR68 00	M			Y	0	0		0		M					
4	0 40	mcl	10YR42 00	10YR46 00	F				0	0	HR	3							
	40 50	hcl	10YR54 56						0	0	HR	4		M					
	50 80	c	05Y 53 64	75YR58 00	M			Y	0	0	HR	1		P			Y		
5	0 20	ofsl	10YR31 00						0	0	HR	3							PSD FSL
	20 35	f l	10YR53 66						0	0	HR	3		M					(not organ c)
	35 50	scl	10YR56 64						0	0	HR	2		M					
	50 60	scl	25Y 63 00	75YR58 00	M		00MN00 00	Y	0	0	HR	3		M					
	60 80	lfs	05Y 63 00	10YR58 00	M		00MN00 00	Y	0	0		0		M					
	80 120	scl	25Y 63 00	75YR58 00	M			Y	0	0		0		M					
6	0 30	f zl	10YR31 00						0	0	HR	3							
	30 40	hcl	25Y 52 63	10YR58 00	M			Y	0	0	HR	2		M					
	40 65	c	25Y 52 62	75YR58 00	M			Y	0	0		0		P			Y		
7	0 28	mcl	10YR41 42	10YR36 00	C			Y	0	0	HR	2							f ne nd
	28 80	mcl	10YR64 53					Y	0	0	HR	1		M					
	80 120	hcl	05Y 53 64	10YR58 00	M		00MN00 00	Y	0	0		0		P			Y		
8	0 30	mcl	10YR51 42	10YR34 00	C			Y	0	0	HR	2							f ne nd
	30 40	mcl	10YR42 53				00MN00 00	Y	0	0	HR	5		M					
	40 55	hcl	10YR52 62	10YR58 00	C		00MN00 00	Y	0	0	HR	3		M					
	55 65	hcl	05Y 52 62	75YR58 00	M			Y	0	0		0		P			Y		
	65 100		05Y 52 62	05YR58 00	M			Y	0	0		0		P			Y		

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	
9	0 30	ocl	10YR21 00	10YR44 00	F				0	0	HR	1							Border (O)FSZL
	30 40	mcl	25Y 61 62	10YR58 00	C			Y	0	0	HR	3		M					
	40 70	c	25Y 51 61	75YR58 00	M			Y	0	0	HR	5		P			Y		Wate logged
10	0 20	ocl	10YR31 00						0	0	HR	2							PSD (O)FSZL
	20 60	c	25Y 61 62	75YR58 00	M			Y	0	0		0		P			Y		
11	0 27	fsl	10YR33 00						0	0	HR	2							
	27 55	msl	10YR46 00						0	0	HR	2		M					
	55-60	scl	25 Y64 00	10YR58 00	C			Y	0	0		0		M					
	60 80	c	25 Y64 00	10YR58 00	C			Y	0	0		0		P			Y		
12	0 27	mzcl	10YR43 00						0	0		0							
	27 48	mcl	25 Y62 00	75YR58 00	C			Y	0	0		0		M					
	48 80	c	25 Y63 00	75YR68 00	M			Y	0	0		0		P			Y		+ and l e
13	0 27	mcl	10YR41 00	10YR56 00	C			Y	0	0	HR	2							fine sand
	27 42	hcl	10YR53 00	10YR58 00	C		00MN00 00	Y	0	0	HR	10		M					
	42 60		25 Y62 00	75YR58 68	M			Y	0	0	HR	5		P			Y		
	60 80	c	25 Y62 00	75YR58 68	M		25YR46 00	Y	0	0		0		P			Y		
14	0 30	scl	10YR43 00						0	0	HR	5							
	30 70	cl	10YR53 00						0	0	HR	5		M					
	70 110	msl	25 Y63 53						0	0	HR	2		M					
	110 120	hcl	25 Y53 00						0	0		0		M					
15	0 30	f l	10YR31 32						0	0		0							
	30 40	scl	10YR54 56	75YR58 00	F				0	0		0		M					Border HCL
	40 60	cl	25Y 62 52	75YR58 00	M			Y	0	0		0		M					Bord HCL
	60 85	c	25Y 51 61	75YR58 00	M			Y	0	0		0		P			Y		and
16	0 35	of l	10YR31 00						0	0	HR	2							
	35 50	f l	10YR54 00				10YR31 00		0	0		0		M					
	50 60	fsl	25Y 54 56						0	0		0		M					
	60 80	scl	25Y 54 56	10YR56 00	F				0	0		0		M					I tbedded S+C
	80 100	msl	25Y 52 53	10YR56 00	C			Y	0	0		0		M					
	100 120	cl	25Y 52 53	10YR56 00	C			Y	0	0		0		M					
17	0 27	omsl	10YR31 00						0	0	HR	1							
	27 55	lms	75YR32 00						0	0		0		M					Fe/OM pod ol
	55 65	hcl	25 Y53 00	75YR68 00	C			Y	0	0		0		M					
	65 90	c	25 Y53 00	75YR68 00	M			Y	0	0		0		P	Y		Y		
18	0 30	ofsl	10YR22 00						0	0	HR	5							
	30 40	omcl	10YR52 00	10YR56 00	C			Y	0	0	HR	2		M					Fe e ched
	40 60	hcl	10YR53 00	10YR68 00	M			Y	0	0		0		M					
	60 90		25 Y64 00	10YR68 00	M			Y	0	0		0		P			Y		Sandy le e

				-MOTTLES			PED			STONES				STRUCT/	SUBS				
SAMPLE	DEPTH	TEXTURE	COLOUR	COL	ABUN	CONT	COL	GLEY	2	6	LITH	TOT	CONSIST	STR	POR	IMP	SPL	CALC	
19	0 28	scl	10YR43 00						0	0	HR	10							
	28-35	scl	10YR53 00	10YR58 00	C			Y	0	0	HR	2		M					
	35-85	c	25 Y62 00	10YR68 00	M		05YR56 00	Y	0	0		0		P			Y		+ sand
20	0 30	fszl	10YR33 00						0	0		0							
	30-45	mcl	10YR46 00	10YR68 00	C			S	0	0		0		M					
	45-50	hcl	10YR46 00	10YR58 00	C		10YR64 00	S	0	0		0		M					
	50 85	c	10YR63 00	75YR56 00	C			Y	0	0		0		P			Y		
21	0 25	omsl	10YR21 00						0	0		0							
	25-45	msl	25Y 61 62	75YR58 00	M			Y	0	0	HR	2		M					
	45 60	scl	25Y 51 62	75YR58 00	C			Y	0	0		0		M					
	60 80	scl	25Y 51 62	75YR58 00	M			Y	0	0		0		P			Y		Borde C
22	0 25	omcl	10YR31 00						0	0	HR	5							
	25-58	mcl	25 Y62 00	10YR78 00	C			Y	0	0	HR	10		M					Wtable 35-40
	58 65	lms	25 Y62 00	10YR58 00	C			Y	0	0	HR	10		M					
	65-80	c	25 Y62 00	10YR78 00	C			Y	0	0	HR	20		M					Imp gravelly
23	0 30	ofsl	10YR31 00						0	0		0							
	30 50	lms	10YR22 00	000M00 00	C		00FE00 00		0	0		0		M					Fe/OM pod ol
	50 75	lms	10YR62 00	75YR58 00	C			Y	0	0		0		M					
	75-85	scl	05 Y62 00	75YR68 00	M			Y	0	0		0		M					
	85-95	sc	05 Y62 00	75YR68 00	M			Y	0	0		0		M					
	95 120	scl	05 Y62 00	75YR68 00	M			Y	0	0		0		M					
24	0 27	msl	10YR42 00	10YR46 00	C			Y	0	0	HR	2							
	27 40	scl	25 Y53 00	10YR58 00	C			Y	0	0	HR	5		M					
	40 70	c	25 Y53 63	75YR68 00	M			Y	0	0		0		P			Y		
	70 80	scl	25 Y63 00	75YR68 00	M			Y	0	0		0		M					
	80 90	msl	25 Y63 00	75YR68 00	M			Y	0	0		0		M					
	90 110	scl	25 Y63 00	75YR68 00	M			Y	0	0		0		M					
	110 120	msl	25 Y63 00	75YR68 00	M			Y	0	0		0		M					
25	0 28	msl	10YR42 00						0	0	HR	15							
	28 40	scl	10YR43 00						0	0	HR	20		M					Imp g elly
26	0 28	fs l	10YR32 00						2	0	HR	2							
	28 40	scl	25 Y54 00	10YR56 00	F				0	0	HR	2		M					
	40 50	c	25 Y53 00	10YR68 00	C			Y	0	0	HR	5		M					+ MS
	50 55	scl	25 Y53 00	10YR68 00	C			Y	0	0		0		M					
	55 120	msl	25 Y53 00	10YR68 00	M			Y	0	0		0		M					
27	0 28	of l	10YR22 00						0	0	HR	2							
	28 40	mcl	10YR52 00	10YR56 00	C			Y	0	0	HR	15		M					Imp g avelly
28	0 30	fsl	10YR42 00	10YR46 00	F				0	0	HR	2							
	30 43	msl	10YR43 00						0	0	HR	2		M					
	43 65	hcl	10YR53 00	10YR58 00	C			Y	0	0		0		M					
	65 85	scl	25 Y62 00	75YR68 00	M			Y	0	0		0		M					
	85 120	msl	25 Y62 00	75YR68 00	M			Y	0	0		0		M					

				MOTTLES			PED		STONES				STRUCT/	SUBS				
SAMPLE	DEPTH	TEXTURE	COLOUR	COL	ABUN	CONT	COL	GLEY	2	6	LITH	TOT	CONSIST	STR	POR	IMP	SPL	CALC
29	0 28	fsl	10YR42 00						0	0	HR	5						
	28-40	msl	10YR52 00	10YR58 00	C			Y	0	0	HR	5		M				
	40 50	hcl	25 Y53 00	75YR68 00	C			Y	0	0		0		M				
	50-80	c	25 Y53 00	75YR68 00	M		05YR56 00	Y	0	0		0		P			Y	
30	0 28	f l	10YR42 00	10YR46 00	C			Y	0	0	HR	2						
	28-53	msl	10YR43 00						0	0	HR	5		M				
	53-65	msl	10YR53 00	10YR58 00	C			Y	0	0		0		M				
	65-85	c	25 Y62 00	75YR68 00	M			Y	0	0		0		P			Y	
	85-120	scl	25 Y62 00	75YR68 00	M			Y	0	0		0		M				

SAMPLE NO	GRID REF	USE	ASPECT	GRDNT	GLEY	SPL	WETNESS CLASS	WETNESS GRADE	-WHEAT AP	-WHEAT MB	POTS AP	POTS MB	M REL DRT	EROSN FLOOD	FROST EXP	CHEM DIST	LIMIT	ALC	COMMENTS
1	SU39502130	PGR	NW	01	027		2	1	091	17	091	11	3A				DR	3A	
1P	SU39302090	RGR	W	01	045	060	3	2	144	36	112	10	1				WE	2	
2	SU39402120	PGR	NW	01	035	045	4	3A	000	0	000	0					WE	3A	
2P	SU39702070	PGR	W	02	0	035	4	3A	135	27	105	3	2				WE	3A	FSL TOPSOIL
3	SU39602120	PGR	NW	02	030	045	4	3B	000	0	000	0					WE	3B	BORDER 3A
3P	SU39902070	PGR			060	060	3	2	112	4	080	22	3A				DR	3A	
4	SU39802120	PGR			050	050	3	3A	106	2	111	9	3A				WE	3A	
5	SU39102110	RGR			050		1	1	178	70	132	30	1					1	
6	SU39502110	PGR	SW	01	030	040	4	3A	103	5	112	10	3A				WE	3A	
7	SU39902110	PGR	NW	02	0	080	2	2	142	34	116	14	1				WE	2	
8	SU39802100	PGR	NW	02	0	055	3	3A	000	0	000	0					WE	3A	
9	SU38902090	RGR			030	040	4	3B	000	0	000	0					WE	3B	VERY WET
10	SU39102090	RGR			020	020	4	3A	000	0	000	0					WE	3A	ORGANIC TOP
11	SU39302090	PGR	W	02	055	060	3	2	000	0	000	0					WE	2	
12	SU39502090	PGR	N	01	027	048	3	3A	000	0	000	0					WE	3A	
13	SU39702090	PGR			0	042	4	3B	000	0	000	0					WE	3B	
14	SU39902090	PGR	W	03			1	1	149	41	106	4	2				DR	2	
15	SU38802080	RGR			040	060	3	2	113	5	113	11	3A				WD	2	
16	SU39002080	RGR	W	04	080		1	1	198	90	156	54	1					1	SANDY
17	SU39202080	RGR	N	01	055	065	2	1	121	13	118	16	2					1	
18	SU39402080	RGR			030	060	3	2	000	0	000	0					WE	2	
19	SU39802080	PGR	W	02	028	035	4	3B	000	0	000	0					WE	3B	
20	SU38902070	RGR	W	01	050	050	3	2	000	0	000	0					WE	2	SL GLEY 30
21	SU39102070	RGR			025	060	3	2	133	25	135	33	2				WE	2	
22	SU39302070	RGR	N	01	025		4	3B	000	0	000	0					WE	3B	WTABLE 40
23	SU39502070	PGR	N	01	050		1	1	155	47	113	11	1					1	ALMOST 2
24	SU39702070	PGR	W	04	0	040	4	3A	143	35	103	1	2				WE	3A	
25	SU39902070	PGR	S	02			1	1	056	52	056	46	4				DR	3A	IMP 40 SEE 3P
26	SU39102060	RGR	W	01	040		1	1	170	62	123	21	1					1	
27	SU39202060	RGR	W	01	028		2	1	093	15	093	9	3A				DR	3A	IMP 40 SEE 3P
28	SU39602060	PGR	S		043		1	1	157	49	115	13	1					1	
29	SU39802060	PGR	S	02	028	050	3	2	000	0	000	0					WE	2	
30	SU39702050	PGR	S	01	0	065	2	1	146	38	110	8	2				DR	2	