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HAVANT BOROUGH LOCAL PLAN
Land around Manor Farm Hayling Island Hampshire

Agricultural Land Classification
ALC Map and Report

May 1999

Resource Planning Team
Eastern Region
FRCA Reading

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AGRICULTURAL LAND CLASSIFICATION REPORT

LAND AROUND MANOR FARM HAYLING ISLAND HAMPSHIRE SEMI DETAILED

INTRODUCTION

1 This report presents the findings of a semi detailed Agricultural Land Classification (ALC) survey of approximately 53 hectares of land around Manor Farm on Hayling Island in Hampshire The survey was carried out during May 1999

2 The survey was undertaken by the Farming and Rural Conservation Agency (FRCA)[1] on behalf of the Ministry of Agriculture Fisheries and Food (MAFF) The survey was carried out in connection with MAFF s statutory input to the Havant Borough Local Plan This survey supersedes any previous ALC information for this land

3 The work was conducted by members of the Resource Planning Team in the Eastern Region of FRCA 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 the site was mostly in wheat with smaller areas of oats soya bean onions grassland and salt marsh making up the remainder The areas mapped as Other land include residential dwellings school buildings land raising of former salt marsh a soil bund and a bridle path

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)	% surveyed area	% site area
2	32 4	63 9	61 2
3a	11 5	22 7	21 7
3b	3 8	7 5	7 2
4	2 3	4 5	4 4
5	0 7	1 4	1 3
Other land	2 2	N/A	4 2
Total surveyed area	50 7	100	95 8
Total site area	52 9		100

[1] FRCA is an executive agency of MAFF and the Welsh Office

7 The fieldwork was conducted at an average density of 1 boring per 1 2 hectares of agricultural land but comprises some areas surveyed in semi detail and other areas at a detailed scale The density of the borings was increased to provide more accurate land quality information on the more variable soils in the east and west and to provide consistency with boundary matching around more detailed previous surveys In total 44 borings and 4 soil pits are described

8 The agricultural land on the site has been classified Grade 2 (very good quality) Subgrade 3a (good quality) Subgrade 3b (moderate quality) Grade 4 (poor quality) and Grade 5 (very poor quality) The principal limitations to land quality are soil wetness and soil droughtiness

9 Most of the site has been classified Grade 2 and is associated with deep soils derived from Brickearth deposits It is restricted by both minor soil wetness and minor soil droughtiness limitations Soils are typically non calcareous with fine silty textures which become heavier with depth and are affected by fluctuating groundwater This combination of soil properties interacting with the exposed nature of the area and high crop moisture requirements also results in a minor soil droughtiness limitation These limitations may influence the choice of crops grown and the level and consistency of yields

10 Subgrade 3a land suffers from a greater soil droughtiness limitation and represents a stony variant of the Grade 2 soils previously described At moderate depth stony subsoils cause a reduction in the amount of available water to a growing crop The effect of this results in a increased risk of soil droughtiness which may manifest itself in a reduction in crop yield and reduce the flexibility of the land particularly in drier years The coastal locations particularly to the extreme west are exposed to strong salt laden winds whose effects can be damaging to crops

11 Subgrade 3b land is confined to three areas which may suffer from a significant soil wetness limitation associated with poorly structured clayey subsoil close to the surface which act to restrict drainage The two smaller mapping units are associated with areas where Brickearth drift is shallower or absent over the underlying alluvium The larger area to the east around Pound Marsh has soils which are variable in composition and are believed to have been imported in order to raise land levels The mixing soil types combined with clayey subsoils with impeded drainage close to the surface results in a significant soil wetness limitation This may effect the range of crops which can be grown and the level of yield and the ease with which mechanised operations can be carried out or the advisability of grazing by livestock

12 Grade 4 land suffers from a severe soil wetness limitation The soils comprise organic clayey topsoils overlying clayey subsoils The presence of *Juncus* vegetation is suggestive of semi permanent waterlogging and the low lying nature of the ground suggests that the land is not easily drained Land use is severely restricted with a short grazing period predicted

13 Grade 5 land suffers from a very severe soil wetness limitation The land is a salt marsh which is contained between two sea walls and subject to tidal conditions The marine vegetation is suggestive of near permanent waterlogging with plants able to tolerate saline

surface and anaerobic subsoil conditions The land is suitable for occasional low intensity grazing use only

FACTORS INFLUENCING ALC GRADE

Climate

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

15 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 725 010	SU 713 005
Altitude	m AOD	3	3
Accumulated Temperature	day C (Jan June)	1551	1552
Average Annual Rainfall	mm	703	690
Field Capacity Days	days	144	141
Moisture Deficit Wheat	mm	122	122
Moisture Deficit Potatoes	mm	119	120
Overall climatic grade	N/A	Grade 1	Grade 1

16 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

17 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

18 The combination of rainfall and temperature at this site means that there is no overall climatic limitation Local climatic factors such as frost risk do not affect land quality on this site However the site is slightly exposed to strong winds particularly in the west and as a result cannot be classified higher than Grade 2 on the basis of climatic factors The climate is relatively warm in regional terms and will interact with soil properties to influence soil wetness and soil droughtiness

Site

19 The site is rather flat lying in the range 3–5 m AOD The survey area is not affected by any site restrictions such as gradient or microrelief however flooding is a problem in a small area in the east as a result of its tidal location

Geology and soils

20 The most detailed published geological information (BGS 1964) covering the survey area maps it mostly as drift deposits of Brickearth which are of variable thickness over gravels The remainder is shown as alluvium which follows the course of relict channels draining from the Brickearth

21 The most detailed published soils information (SSEW 1967) covering the site shows it to comprise mostly soils of the Park Gate series Two phases are recognised the deep phase and shallow phase over loamy pebbly drift The Park Gate association is described as deep stoneless silty soils variably affected by groundwater (SSEW 1983) The remaining soil series include the Arundel Complex this is described as clayey marine alluvium (SSEW 1984) the Calcetto this is described as fine loamy over clayey drift with siliceous stones (SSEW 1984) the Hook (deep phase) this is described as stoneless silty drift (SSEW 1984) Saltings this is described as clayey or fine silty marine alluvium (SSEW 1967) or unripend gley (SSEW 1983) the Titchfield Complex this is described as fine loamy or fine silty drift over clayey material passing to clay or soft mud (SSEW 1984)

AGRICULTURAL LAND CLASSIFICATION

22 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

23 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

24 Most of the site is classified as very good quality land and is associated with soils of the deep phase of the Park Gate Series

25 This land suffers from a combined soil droughtiness and soil wetness limitation as well as a slight exposure risk The soils are virtually stoneless (0–2% total hard rock by volume) and non calcareous comprising medium silty clay loam or occasional fine sandy silt loam topsoils These overlie gleyed medium or heavy silty clay loam upper subsoils with little stone (0–2% total hard rock) Typically these heavy silty clay loams continue to depth *Occasionally lower subsoils with a sandier and or stonier influence are encountered* Pit 1 and 3 (see Appendix II) are characteristic of these deeper Brickearth soils which are gleyed within 40cm of the surface This places these soils in Wetness Class II This combination of moderately well drained soil topsoil texture and the prevailing field capacity level (144 days) gives rise to a land classification of Grade 2 Similarly moisture balance calculations which take account of soil texture structure stone content and depth interact with the warm climate to cause a minor soil droughtiness restriction in this area Given the location of much of this land in a relatively open area on the west of the island a slight exposure risk prevails related to the effect of strong winds from the south west Top fruit and soft fruit would be most affected in this limitation The combined impact of wetness droughtiness and exposure will cause the level and consistency of yields to be depressed and reduce the flexibility of the land

Subgrade 3a

26 Good quality land is associated with the shallow phase of the Park Gate Series

27 These soils suffer from a slight soil droughtiness limitation due in part to stonier subsoils and the effect of the regionally warm climate Soils are similarly textured to those described above but are impenetrable to the soil auger from 48–77cm Pit 2 (see Appendix II) is typical of these soils and confirmed the stony nature of the subsoils In the pit from 55 cm the heavy silty clay loam lower subsoil contained 34% total hard rock This passed to a medium sandy loam at 63 cm which contained 40% total hard rock Rooting was observed to 90cm the resulting moisture balance calculations indicate an increase in the shortfall of the profile available water which results in a slight soil droughtiness limitation Subgrade 3a is appropriate for theses soils The resulting drought stress may cause the level and consistency of yields to be depressed

Subgrade 3b

28 Moderate quality land is found in three areas and is either disturbed or associated with alluvium

29 These soils suffer from a significant soil wetness problem associated with slowly permeable clayey subsoils The two smaller areas one in the north and one in the south west are developed over alluvium and comprise heavy silty clay loam or heavy clay loam topsoils which may contain up to 3% total rock These pass to stoneless calcareous clays from 32–37cm which are slowly permeable and which continue to depth Such land is typically assessed as Wetness Class IV and given the heavy topsoil textures and the prevailing field capacity level (144 FC days) the land is classified as Subgrade 3b Excessive soil wetness adversely affects seed germination and survival partly by a reduction in soil temperature and partly because of anaerobism It also inhibits the development of a good root system all of which can affect the range of crops that can be grown and the level of yield Soil wetness also 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

30 The larger area of Subgrade 3b in the east of the site shows signs of disturbance and quite varied soils Soils are calcareous and comprise medium silty clay loam or medium clay loam or fine sandy silt loam topsoils which may contain up to 10% hard rock some of which includes inert material such as bricks concrete and tarmac This overlies a slowly permeable clay or passes through a heavy silty clay loam upper subsoil to the less permeable clay beneath Pit 4 (see Appendix II) confirmed the clay subsoils to be poorly structured and showed soil mixing of topsoils Where these slowly permeable layers begin within 40cm of the surface they are assigned to Wetness Class IV otherwise these soils are assessed as Wetness Class III or II Given the variability this land is classified as Subgrade 3b

Grade 4

31 Poor quality land is located along the south eastern boundary These soils comprise non calcareous organic clayey topsoils passing to slowly permeable clayey subsoils The presence

of *Juncus* vegetation is suggestive of semi permanent waterlogging and the low lying nature of the ground makes it very difficult to effectively drain this area and as such it is felt that this land cannot be classified any better than Grade 4 Land use is severely restricted with a short grazing period predicted

Grade 5

32 Very poor quality land is found along the eastern boundary The soils are developed from marine alluvium and subject to tidal conditions These soils comprise a heavy clay loam topsoil overlying a thin clay upper subsoil This passes to a very friable fine sandy silt loam and then back to a clay from 37cm At 62cm a sandy clay loam is encountered which is impenetrable to the soil auger at 90cm Although technically Wetness Class IV the effect of the tide would subject these soils to almost permanent waterlogging and Wetness Class VI would be appropriate in these circumstances In addition the marine vegetation is also suggestive of near permanent waterlogging with plants adapted to tolerate saline surface and anaerobic subsoil conditions The land is only suitable for occasional low intensity grazing use only

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SOURCES OF REFERENCE

British Geological Survey (1964) *Sheet No* 331 *Portsmouth*
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 (1967) *Soils of the West Sussex Coastal Plain*
SSEW Harpenden

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 pasture	**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
EX	Exposure				

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 developed		
Ped size	**F**	fine	**M**	medium
	C	coarse		
Ped shape	**S**	single grain	**M**	massive
	GR	granular	**AB**	angular blocky
	SAB	sub angular blocky	**PR**	prismatic
	PL	platy		

9 **CONSIST** Soil consistence is described 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 water capacity (in mm) adjusted for wheat
APP	available water capacity (in mm) adjusted for potatoes
MBW	moisture balance wheat
MBP	moisture balance potatoes

SAMPLE NO	GRID REF	USE	ASPECT	GRDNT	GLEY	SPL	WETNESS CLASS	WETNESS GRADE	WHEAT AP	WHEAT MB	POTS AP	POTS MB	M REL	FLOOD	EROSN	FROST DIST	CHEM LIMIT	ALC	COMMENTS
3	SU72100160	PGR			0		2	2	162	40	126	7	2		Y		WD	2	SEE 3P
5	SU72000150	SOY			32		2	2	83	39	86	33	3B		Y		DR	3A	IMP55/2P
6	SU72100150	SOY			37	37	4	3B	128	6	104	15	2		Y		WE	3B	QSPL37CM
6A	SU72120152	RGR			35	35	4	3B	97	25	106	13	3B		Y		WE	3B	QSPL35CM
9	SU72100140	WHT			33		2	2	161	39	125	6	2		Y		WD	2	SEE 3P
11	SU72000130	OSR			36		2	2	147	25	126	7	2		Y		WD	2	IMP105/3P
13	SU72200130	HRT			28		2	2	136	14	124	5	2		Y		WD	2	IMP96/3P
16	SU72100120	WHT			30		2	2	161	39	125	6	2		Y		WD	2	VFSLENSES45+
18	SU72300120	HOR	E	1	32		2	2	119	3	117	2	3A		Y		WD	2	SEE 3P
20	SU72000110	LEY			33		2	2	155	33	116	3	2		Y		WD	2	SEE 3P
22	SU72200110	LEY			32		2	2	141	19	118	1	2		Y		WD	2	SEE 3P
24	SU72400110	PGR			32		2	2	112	10	121	2	3A		Y		DR	3A	BORDER GR2
27	SU72100100	LEY			55		1	1	137	15	126	7	2		Y		DR	2	SEE 3P
28	SU72200100	LEY			30		2	2	161	39	125	6	2		Y		WD	2	SEE 3P
29	SU72300100	HOR			30		2	2	154	32	114	5	2		Y		WD	2	SEE 3P
30	SU72400100	HOR	E	1	30		2	2	121	1	112	7	3A		Y		WD	2	IMP80/3P
31	SU72500100	PGR			25		2	2	85	37	89	30	3B		Y		DR	3A	IMP57 AT2P
32	SU72600100	WHT	NE	1	30		2	2	95	27	103	16	3B		Y		DR	3A	SEE 2P
33	SU72700100	BOG			37	37	6	5	115	7	111	-8	3A		Y		WE	5	SALTMARSH
34	SU72500090	WHT			33		2	2	140	18	117	2	2		Y		WD	2	SEE 3P
35	SU72600090	WHT			30		2	2	78	-44	78	41	3B		Y		DR	3A	IMP45/2P
36	SU72700090	WHT			45		2	1	100	22	103	16	3B		Y		DR	3A	IMP55/2P
37	SU71700080	CER			30		2	2	151	29	124	5	2		Y		WD	2	SEE 1P
38	SU72000075	CER			30		2	2	160	38	124	5	2		Y		WD	2	SEE 1P
39	SU72500080	WHT			50		2	2	147	25	121	2	2		Y		WD	2	SEE 3P
40	SU72600080	WHT			75		2	1	142	20	125	6	2		Y		DR	2	IMP100CM
41	SU72700080	WHT			29		2	2	155	33	110	9	2		Y		DR	2	
42	SU72800080	WHT			18	50	3	3B	94	28	104	15	3A		Y		TX	3B	MIXED TS/USUB
43	SU72900080	WHT			33	73	2	2	137	15	112	7	2		Y	Y	TX	3B	MIXED TS/USUB
44	SU71200070	OSR			55		1	1	126	4	121	2	3A		Y	Y	DR	2	V EXPOSED 3A?
45	SU71600070	CER			42		2	2	149	27	123	4	2		Y		WD	2	SEE 1P
47	SU71800070	CER			29		2	2	134	12	109	10	2		Y		WD	2	SEE 1P
50	SU72800070	WHT			15	15	4	3B		0		0		Y	Y	Y	WE	3B	IMPORTED SOIL
51	SU71200060	ARA			33		2	2	85	37	85	34	3B		Y		DR	3A	V EXPOSED3A/2P
52	SU71300060	WHT			31		2	2	88	34	90	29	3B		Y		DR	3A	IMP52/2P
54	SU71400060	WHT			0		2	2	155	33	121	2	2		Y		WD	2	SEE 1P
56	SU71700060	CER			30		2	2	151	29	124	5	2		Y		WD	2	SEE 1P
58	SU71900060	CER			30		2	2	100	22	107	12	3B		Y		WD	2	SEE 2P
59	SU72600060	PGR	N	1	15	15	5	4	78	44	83	36	3B		Y		WE	4	DRAINABLE?
60	SU72800060	PGR	S	2	25	60	3	3A	71	51	82	37	4		Y		WE	3A	QSPL60CM
61	SU72700065	PGR			10	10	5	4	72	50	77	-42	3B	Y	Y		WE	4	MARSH
62	SU71300050	OAT	S	2	33	33	4	3B	81	41	86	33	3B		Y		WE	3B	IMP60/2P

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
63	SU71400050	WHT			32		2	2	92	30	97	22	3B		Y		DR	3A	IMP58/2P
65	SU71800050	CER			28		2	2	149	27	123	4	2		Y		WD	2	SEE 1P
1P	SU71800070	CER			31		2	2	161	39	125	6	2		Y		WD	2	PIT TO 85CM
2P	SU71500100	PGR			30		2	2	109	13	105	14	3A		Y		DR	3A	DR TO 90CM
3P	SU72300100	ONI			31		2	2	127	5	122	3	2		Y		WD	2	
4P	SU72800070	WHT			18	18	4	3B	88	34	92	27	3B				WE	3B	IMPORTED SOIL

SAMPLE	DEPTH	TEXTURE	COLOUR	-MOTTLES- COL	ABUN	CONT	PED COL	GLEY	STONES- 2	6	LITH	TOT	- STRUCT/ CONSIST	SUBS STR	POR	IMP	SPL	CALC
3	0-35	MZCL	10YR53	10YR56	C	D		Y	0	0		0						
	35-47	MZCL	25Y 5362	10YR56	C	D		Y	0	0	HR	2		M				
	47 77	MZCL	25Y 7164	10YR56	M	D		Y	0	0		0		M				
	77 120	HZCL	25Y 7162	10YR58	M	D		Y	0	0		0		M				
5	0-32	MCL	10YR43						0	0	HR	4						
	32-45	C	25Y 6462	10YR68	M	D		Y	0	0	HR	10		M				
	45-55	C	25Y 6263	10YR68	C	D		Y	0	0	HR	30		M				
6	0 37	HCL	10YR42						0	0	HR	3						
	37 64	C	25Y 6462	10YR56	C	D		Y	0	0	HR	10		P			Y	
	64 95	C	25Y 6462	10YR56	C	D		Y	0	0		0		P			Y	
	95-120	C	05Y 71	10YR66	C	D		Y	0	0		0		P			Y	
6A	0 35	HZCL	10YR52	75YR44	M	D		Y	0	0		0						
	35-65	C	25Y 41	10YR56	M	D		Y	0	0		0		P			Y	
9	0 33	MZCL	25Y 53						0	0	HR	1						
	33-64	HZCL	25Y 6472	10YR56	C	D		Y	0	0		0		M				
	64-120	HZCL	25Y 6362	10YR58	M	D		Y	0	0		0		M				
11	0 36	MZCL	25Y 53						0	0	HR	1						
	36 77	HZCL	25Y 6463	10YR68	M	D		Y	0	0		0		M				
	77 105	HZCL	25Y 7253	10YR68	M	D		Y	0	0		0		M				
13	0 28	MZCL	25Y 53	10YR46	C	D		Y	0	0	HR	2						
	28-55	HZCL	25Y 63	10YR68	M	D		Y	0	0		0		M				
	55-96	HZCL	25Y 62	10YR68	M	D		Y	0	0		0		M				
16	0 30	MZCL	10YR52						0	0		0						
	30-45	MZCL	25Y 62	10YR66	C	D		Y	0	0		0		M				
	45-120	HZCL	10YR52	10YR56	C	D		Y	0	0		0		M				
18	0 32	MZCL	10YR52						2	1	HR	2						
	32 57	HZCL	10YR53	10YR66	C	F		Y	0	0	HR	2		M				
	57 90	HZCL	10YR52	10YR56	M	D		Y	0	0	HR	2		M			Y	
20	0 33	MZCL	10YR52						0	0		0						
	33-45	HZCL	25Y 62	10YR56	C	D		Y	0	0		0		M				
	45-65	HZCL	25Y 62	10YR56	M	D		Y	0	0		0		M			Y	
	65-120	HZCL	25Y 53	10YR66	M	D		Y	0	0		0		M				
22	0 32	MZCL	10YR52						0	0	HR	2						
	32 45	MZCL	25Y 63	10YR53	C	D		Y	0	0	HR	2		M				
	45-60	HZCL	25Y 63	10YR66	C	D		Y	0	0	HR	2		M				
	60 120	HZCL	25Y 63	10YR56	M	D		Y	0	0	HR	2		M			Y	
24	0 32	MZCL	10YR43						0	0		0						
	32-46	HZCL	25Y 64	10YR56	C	D		Y	0	0		0		M				
	46 77	HZCL	25Y 6261	10YR58	M	D		Y	0	0		0		M				

SAMPLE	DEPTH	TEXTURE	COLOUR	--MOTTLES- COL	ABUN	CONT	PED COL	GLEY	STONES- 2	6	LITH	TOT	STRUCT/ CONSIST	SUBS STR	POR	IMP	SPL	CALC	
27	0 33	MZCL	10YR43						0	0		0							
	33-55	MZCL	10YR43						0	0		0		M					
	55-95	HZCL	10YR53	10YR56	M	D		Y	0	0		0		M					
28	0-30	MZCL	10YR52						0	0		0							
	30-55	HZCL	10YR63	10YR56	C	D		Y	0	0		0		M					
	55-120	HZCL	10YR62	10YR56	M	D		Y	0	0		0		M					
29	0-30	MZCL	10YR52						0	0	HR	2							
	30-40	MZCL	25Y 63	10YR56	C	D		Y	0	0	HR	2		M					
	40-50	HZCL	25Y 63	10YR56	C	D		Y	0	0		0		M					
	50 70	HZCL	25Y 62	10YR62	M	D		Y	0	0		0		M			Y		
	70 120	HZCL	25Y 63	10YR66	M	D		Y	0	0		0		M					
30	0-30	MZCL	10YR52						2	0	HR	2							
	30-40	MZCL	25Y 53	10YR56	C	F		Y	0	0	HR	2		M					
	40-50	HZCL	25Y 53	10YR56	C	F		Y	0	0	HR	5		M					
	50 70	HZCL	25Y 62	10YR56	M	D		Y	0	0	HR	5		M			Y		
	70-90	MZCL	25Y 63	10YR56	C	D		Y	0	0	HR	5		M					
31	0-25	MZCL	10YR53						0	0	HR	4							
	25-57	HZCL	25Y 6264	10YR58	M	D		Y	0	0	HR	10		M					
32	0 30	MZCL	25Y 52						0	0	HR	2							
	30-40	HZCL	25Y 62	10YR66	C	D		Y	0	0	HR	2		M					
	40-55	C	10YR71	10YR58	M	D		Y	0	0	HR	2		M			Y		Q SPL
	55-60	C	10YR71	10YR58	M	D		Y	0	0	HR	20		M			Y		
33	0 18	HCL	05Y 41						0	0		0							
	18-25	C	05GY41						0	0	HR	10		M					ANAEROBIC
	25-37	FSZL	05PB51						0	0		0		M					
	37 62	C	05Y 61	10YR68	M	D		Y	0	0		0		P			Y		
	62 90	SCL	05Y 61	10YR68	M	D		Y	0	0		0		P			Y		
34	0 33	MZCL	25Y 54						0	0	HR	1							
	33-60	HZCL	25Y 6472	10YR68	M	D		Y	0	0		0		M					
	60-80	HZCL	10YR6372	10YR68	M	D		Y	0	0	HR	5		M					
	80 120	HZCL	10YR7263	10YR68	M	D		Y	0	0	HR	10		M					
35	0 30	MZCL	25Y 53						0	0	HR	4							
	30-45	HZCL	25Y 64	10YR58	M	D		Y	0	0	HR	10		M					IMP 45CM
36	0 30	FSZL	10YR43						0	0	HR	5							
	30-45	MZCL	10YR4454	10YR56	C	F		S	0	0	HR	5		M					
	45-55	HZCL	25Y 64	10YR46	C	D		Y	0	0	HR	5		M					
37	0 30	MZCL	10YR42						0	0	HR	1							
	30-43	MZCL	10YR5362	10YR56	M	D		Y	0	0	HR	1		M					
	43-90	HZCL	25Y 5362	10YR5658	M	D		Y	0	0	HR	1		M					
	90-120	HZCL	25Y 5362	10YR58	M	D		Y	0	0		0		M				Y	

SAMPLE	DEPTH	TEXTURE	COLOUR	-MOTTLES- COL	ABUN	CONT	PED COL	GLEY	STONES- 2	6	LITH	TOT	STRUCT/ CONSIST	SUBS STR	POR	IMP	SPL	CALC	
38	0-30	MZCL	10YR42						0	0	HR	2							
	30-42	MZCL	10YR5362	10YR5658	C	D		Y	0	0		0		M					
	42 120	HZCL	25Y 5262	10YR5658	M	D		Y	0	0		0		M					
39	0 31	MZCL	25Y 53						0	0	HR	2							
	31 50	MZCL	10YR54	10YR56	C	D		S	0	0	HR	5		M					
	50 60	HZCL	10YR53	10YR56	M	D		Y	0	0		0		M					
	60 90	HZCL	10YR63	10YR68	M	D		Y	0	0		0		M					
	90-105	HZCL	10YR63	10YR68	M	D		Y	0	0	HR	10		M					
	105-120	SCL	25Y 63	10YR68	M	D		Y	0	0	HR	10		M					
40	0 30	FSZL	10YR43						0	0	HR	2							
	30 75	SCL	10YR54						0	0		0		M					
	75-100	HCL	10YR53	10YR56	M	D		Y	0	0	HR	10		M					
41	0 29	MCL	10YR43						0	0	HR	2							
	29 65	HZCL	10YR5363	10YR58	M	D		Y	0	0	HR	5		M					
	65-85	SCL	10YR7253	10YR58	M	D		Y	0	0	HR	5		M					
	85-120	FSL	10YR64	10YR56	C	F		Y	0	0	HR	5		M					
42	0 18	MZCL	10YR42						0	0	HR	10							
	18-50	HZCL	25Y 52	10YR46	M	D		Y	0	0	HR	10		M				Y	
	50 70	C	25Y 5251	10YR58	M	D		Y	0	0		0		P			Y		
43	0 33	MCL	10YR4243						3	0	HR	7							
	33-55	HCL	25Y 53	10YR66	C	D		Y	0	0		0		M				Y	
	55-73	HCL	25Y 53	10YR56	C	D		Y	0	0	HR	10		M				Y	
	73-120	C	25Y 42	10YR58	M	D		Y	0	0		0		P			Y	Y	
44	0 30	MZCL	25Y 53						0	0	HR	4						Y	
	30 55	HZCL	25Y 54						0	0		0		M				Y	
	55-80	HZCL	25Y 6372	10YR58	M	D		Y	0	0		0		M				Y	
	80 98	HZCL	25Y 6372	10YR58	M	D		Y	0	0	HR	15		M				Y	
45	0 35	MZCL	10YR42						0	0	HR	1							
	35-42	MZCL	10YR5352	10YR56	C	D			0	0	HR	1		M					
	42 58	HZCL	25Y 5362	10YR5658	M	D		Y	0	0	HR	1		M					
	58-120	HZCL	25Y 5263	10YR58	M	D		Y	0	0		0		M					
47	0 29	MZCL	10YR42						0	0	HR	1							
	29-40	HZCL	25Y 5362	10YR56	C	D		Y	0	0	HR	1		M					
	40 120	HZCL	25Y 5362	10YR58	M	D		Y	0	0		0		M					
50	0 15	FSZL	10YR42						5	1	HR	5						Y	
	15-80	C	10YR53	10YR56	M	D		Y	0	0	HR	5					Y	Y	
51	0 33	MZCL	25Y 52						3	0	HR	3							
	33-48	HZCL	25Y 63	10YR56	M	D		Y	0	0	HR	5		M					IMP 48CM

SAMPLE	DEPTH	TEXTURE	COLOUR	-MOTTLES- COL	ABUN	CONT	PED COL	GLEY	STONES- 2	6	LITH	TOT	STRUCT/ CONSIST	STR	SUBS POR	IMP	SPL	CALC	
52	0-31	MZCL	25Y 53						0	0	HR	3							
	31 52	HZCL	25Y 73	10YR68	M	D		Y	0	0	HR	10			M				IMP 52CM
54	0-28	MZCL	25Y 53	10YR56	C	F		Y	0	0	HR	3							
	28-58	HZCL	25Y 7381	10YR58	M	D		Y	0	0		0			M				
	58-80	HZCL	25Y 6372	10YR68	M	D		Y	0	0		0			M				
	80 120	HZCL	10YR53	10YR56	C	D		Y	0	0		0			M				
56	0-30	MZCL	10YR42						0	0	HR	1							
	30-50	HZCL	25Y 5362	10YR5658	C	D		Y	0	0		0			M				
	50-90	HZCL	25Y 5362	10YR58	M	D		Y	0	0		0			M				
	90-120	HZCL	25Y 5262	10YR58	M	D		Y	0	0	HR	2			M			Y	
58	0-30	MZCL	10YR42						0	0	HR	2							
	30-40	MZCL	10YR53	10YR56	C	D		Y	0	0		0			M				
	40 60	HZCL	25Y 5362	10YR5658	M	D		Y	0	0	HR	1			M				IMP HARD DRY
59	0 15	HZCL	10YR31						0	0		0							
	15-60	ZC	05GY61	75YR56	M	D		Y	0	0		0			P		Y		
60	0 25	MZCL	10YR32		C	F		Y	0	0		0							
	25-60	MZCL	25Y 53	10YR56	M	D		Y	0	0		0			M				
	60-80	C	10YR53	10YR56	M	D		Y	0	0	HR	10			P		Y		
61	0 10	ZC	N3						0	0		0							
	10 60	ZC	05BG51	75YR56	M	D		Y	0	0		0			P		Y		
62	0 33	MCL	10YR42						5	1	HR	10							
	33-60	SC	25Y 53	75YR56	C	D		Y	0	0	HR	10			P		Y		IMP 60CM
63	0 32	MZCL	25Y 53						0	0	HR	3							
	32 52	HZCL	25Y 6373	10YR58	M	D		Y	0	0		0			M				
	52 58	HZCL	25Y 6373	10YR58	M	D		Y	0	0	HR	15			M				IMP 54CM
65	0 28	MZCL	10YR42						0	0		0							
	28-42	MZCL	10YR5362	10YR56	C	D		Y	0	0	HR	1			M				
	42 85	HZCL	25Y 5362	10YR5658	M	D		Y	0	0	HR	2			M				
	85-120	ZC	25Y 5363	10YR58	M	D		Y	0	0		0			M			Y	
1P	0 31	MZCL	10YR4253						0	0		0							
	31-45	HZCL	10YR5363	10YR5658	C	D		Y	0	0		0	MDCPR	FR	M				POROUS
	45-95	HZCL	25Y 5262	10YR5658	M	D		Y	0	0		0	MDCPR	FR	M				POROUS
	95-120	HZCL	25Y 5262	10YR5658	M	D		Y	0	0	HR	2	MDCPR	FR	M			Y	POROUS
2P	0 30	MZCL	25Y 52						1	0	HR	6							
	30 55	HZCL	25Y 62	10YR58	M	D		Y	0	0	HR	5	MDCAB	FR	M				POROUS
	55-63	HZCL	25Y 53	10YR58	M	D		Y	0	0	HR	34	WKMSAB	FM	M				POROUS
	63-90	MSL	25Y 72						0	0	HR	40		FR	M				

SAMPLE	DEPTH	TEXTURE	COLOUR	-- MOTTLES- COL	ABUN	CONT	PED COL	GLEY	STONES- 2	6	LITH	TOT	STRUCT/ CONSIST	SUBS STR	POR	IMP	SPL	CALC
3P	0-31	MZCL	10YR51						0	0	HR	2						
	31 52	HZCL	25Y 61	10YR58	M	D		Y	0	0		0	MDCSAB	FR M				
	52 75	HZCL	25Y 71	10YR56	M	D		Y	0	0		0	MDCSAB	FR M				
	75-95	HZCL	25Y 71	10YR56	M	D		Y	0	0		0	WKCSAB	FM P	Y		Y	
4P	0-18	MZCL	10YR42						0	0	HR	10						Y
	18-81	C	25Y6463	10YR58	M	D		Y	0	0	HR	10	MASS	FM P	Y		Y	Y