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A1
Oxfordshire Structure Plan
Wantage Road Didcot
Agricultural Land Classification
Reconnaissance Survey
ALC Map & Report
December 1996

Resource Planning Team
Guildford Statutory Group
ADAS Reading

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AGRICULTURAL LAND CLASSIFICATION REPORT

OXFORDSHIRE STRUCTURE PLAN
WANTAGE ROAD DIDCOT

INTRODUCTION

1 This report presents the findings of a reconnaissance Agricultural Land Classification (ALC) survey on approximately 163 hectares of land to the south west of Didcot between the dismantled railway the A34 and Wantage/Didcot Road in Oxfordshire The survey was carried out during December 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 Oxfordshire Structure Plan The results of this survey supersede any previous ALC information for this land Land to the north of the site was the subject of a reconnaissance ALC survey (ADAS Ref 3304/001/96) carried out earlier in 1996 Information from this survey and three smaller detailed surveys (ADAS Refs 3303/169/93 3303/149/94 & 3303/221/94) has been used in the grading of the current site

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 on this site was either under permanent grassland or in arable use (winter wheat oil seed rape and maize) The area mapped as Other Land comprises farm and residential buildings a park a road and a track

SUMMARY

5 The findings of the survey are shown on the enclosed ALC map The map has been drawn at a scale of 1 15 000 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)	/ Total Site Area	/o Surveyed Area
2	77 1	47 4	49 3
3a	79 3	48 7	50 7
Other Land	6 3	3 9	
Total Surveyed Area	156 4	96 1	100 0
Total Site Area	162 7	100 0	

7 The current fieldwork was conducted at an average density of less than 1 boring every 3 hectares A total of 50 boring and 4 soil pits were described

8 All of the agricultural land on this site has been classified as best and most versatile quality Subgrade 3a (good quality) and Grade 2 (very good quality) The key limitations are soil droughtiness and/or soil wetness

9 The majority of soils comprise well drained very slightly stony to very stony medium and heavy clay loams or occasionally clays over weathered sandstone bedrock at variable depths The sandstone was shown to be medium grained and soft thus allowing roots to penetrate it Despite the rooting depth however the amount of moisture held in sandstone is markedly less than in a soil medium In this locally dry climatic regime the combination of stony upper subsoils over sandstone bedrock acts to reduce the amount of profile available water for crops As a result this land is limited to either Subgrade 3a or Grade 2 due to soil droughtiness

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)

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

Table 2 Climatic and altitude data

Factor	Units	Values	Values
Grid reference	N/A	SU 514 887	SU 506 896
Altitude	m AOD	70	80
Accumulated Temperature	day°C (Jan June)	1441	1429
Average Annual Rainfall	mm	590	587
Field Capacity Days	days	125	124
Moisture Deficit Wheat	mm	114	114
Moisture Deficit Potatoes	mm	109	108

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 mean that there is no overall climatic limitation However climatic factors can interact with soil properties to influence soil

wetness and droughtiness At this locality the crop adjusted soil moisture deficits are relatively high thus increasing the likelihood of soil droughtiness restrictions Conversely the field capacity day values are relatively low thus decreasing the likelihood of soil wetness

15 Local climatic factors such as frost risk and exposure are unlikely to adversely affect agricultural land use on this site The site is climatically Grade 1

Site

16 The land on this site slopes very gently from approximately 80m AOD in the north west to just under 65m AOD in the south east

17 Gradient microrelief and flooding do not affect land quality in this area

Geology and soils

18 The relevant geological sheet (BGS 1971) maps the entire site as Upper Green Sand over Gault Clay

19 The most recently published soils information for this area (SSEW 1983) maps the Harwell soil association across all of the site These soils are described as Well drained loamy soils over sandstone and some similar soils with slight seasonal waterlogging Shallow stony soils locally Some slowly permeable seasonally waterlogged fine loamy or fine silty over clayey soils mainly on scarp slopes Risk of water erosion (SSEW 1983)

20 Detailed field examination broadly confirmed the existence of soils similar to those described above as the Harwell soil association

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 Approximately half of the agricultural land on this site has been classified as Grade 2 due to either a minor soil droughtiness or soil wetness and droughtiness limitation The soil profiles typically comprise stoneless to slightly stony (0 15% medium grained soft sandstone by v/v) medium clay loam topsoils over similarly stony medium or heavy clay loam upper subsoils At between 50 70cm depth slightly to moderately stony (10 30% MSST) heavy clay loam and clay lower subsoils occur In general the profiles become impenetrable to the soil auger between 70 95cm depth However information from soil inspection Pit 3 shows that the soil resource does continue to depth The lower subsoils are generally comparable in texture and stone content to those horizons above but they tend to be poorly structured and occasionally slowly permeable at depth (the soils still fall into Wetness Class II see Appendix

II) In this locally dry climatic regime the combination of soil textures structures and stone contents slightly depletes the amount of profile available water for crops leading to a minor soil droughtiness limitation As a result the level and consistency of crop yields will be slightly reduced

24 Some profiles within the Grade 2 mapping unit were found to be deeper and less stony than those described above These are also limited by soil droughtiness but here the mottled poorly structured slowly permeable subsoils occur at slightly shallower depths (e g from 45 75cm depth) This results in a slight drainage impedance consistent with Wetness Class II (Appendix II) as wet soils such as these will slightly inhibit seed germination and growth This degree of soil wetness in combination with the medium textured topsoils may also lead to slight structural damage through over trafficking by agricultural machinery and grazing livestock As a result the timing and flexibility of cultivations is slightly restricted This land is therefore equally limited by soil wetness and soil droughtiness restrictions to Grade 2

25 Occasional borings of either slightly higher or lower quality were also included in this mapping unit where they were too limited in number and extent to map separately

Subgrade 3a

26 The remaining agricultural land has been classified as Subgrade 3a mostly due to soil droughtiness These profiles tend to be similar to the Grade 2 soils described in paragraph 23 above but they are generally more stony (15 25% medium grained soft sandstone by v/v) from 27 60cm depth and subsequently become impenetrable at 40 65cm depth Soil inspection Pits 1 and 2 showed that the stone content increases to 50% for approximately 10cm before the underlying sandstone bedrock begins The pits also showed that crop roots are able to penetrate this soft sandstone substrate and extract water for an additional 35 55cm depth However the amount of available water for crops is distinctly less in sandstone than in a soil medium so these profiles are more drought prone

27 Some of the Subgrade 3a profiles also include poorly structured slowly permeable subsoils from between 38 55cm depth In this local climatic regime the resultant drainage impedance leads to a soil wetness limitation consistent with Wetness Class III Subgrade 3a (Appendix III) These profiles are therefore equally limited by soil wetness and soil droughtiness restrictions However where the sandstone is not encountered until lower in the profile soil wetness is the most limiting factor

28 Occasional profiles also contained between 10 15% large sandstone fragments in the topsoil These large fragments increase the likelihood of damage to farm machinery and crops as well as disrupting the consistency of crop growth This land is therefore also limited to Subgrade 3a by a topsoil stoniness limitation

29 Again some of the profiles within this mapping unit are of either slightly better or worse quality but they have not been mapped separately as they are too limited in number and extent

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SOURCES OF REFERENCE

British Geological Survey (1971) *Sheet No 253 Abingdon* 1 63360 Series 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*
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

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	**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 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)

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	**VC** very 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 **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 appropiate 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 OXON SP WANTAGE RD DIDCT Pit N mbe 1P

Grid Reference SU51008920 Average Ann al Rainfall 588 mm
Accumulated Temperature 1446 degree days
Field Capacity Level 125 days
Land Use
Slope and Aspect degrees

HORIZON	TEXTURE	COLOUR	STONES 2	TOT STONE	LITH	MOTTLES	STRUCTURE	CONSIST	SUBSTRUCTURE	CALC
0 25	MCL	10YR42 00	0	1	MSST				M	
25 52	MZCL	10YR54 00	0	2	MSST		MCSAB	FR	M	
52 65	MZCL	10YR54 00	0	50	MSST				M	
65-120	MSST	25Y 72 00	0	0					M	

Wetness Grade 1 Wetness Class I
Gleying cm
SPL No SPL

Drought G de 3A APW 107mm MBW 8 mm
APP 104mm MBP 5 mm

FINAL ALC GRADE 3A
MAIN LIMITATION Droughtiness

SOIL PIT DESCRIPTION

Site Name OXON SP WANTAGE RD DIDCT P t Number 2P

G id Reference SU51008880 Ave age Ann al Rainfall 588 mm
Accumulated Tempe ature 1446 degree days
Field Capacity Level 125 days
Land Use Permanent Grass
Slope and Aspect degrees

HORIZON	TEXTURE	COLOUR	STONES 2	TOT STONE	LITH	MOTTLES	STRUCTURE	CONSIST	SUBSTRUCTURE	CALC
0 27	MCL	10YR42 00	0	1	MSST					
27 40	HCL	25Y 53 00	0	2	MSST		MCSAB	FR	M	
40 52	C	25Y 52 00	0	2	MSST		MCSAB	FM	M	
52 66	C	25Y 52 00	0	50	MSST				M	
66 100	MSST	25Y 72 00	0	0					M	

Wetness Grade 1 Wetness Class I
Gleying cm
SPL No SPL

Drought Grade 3A APW 100mm MBW 15 mm
APP 102mm MBP 7 mm

FINAL ALC GRADE 3A
MAIN LIMITATION Droughtiness

SOIL PIT DESCRIPTION

Site Name OXON SP WANTAGE RD DIDCT Pit N mbe 3P

Grid Reference SU51008840 Ave ge A nual Rai f 11 588 mm
Accumulated Tempe ature 1446 degree days
Field Capacity Level 125 days
Land Use Permanent Grass
Slope and Aspect degrees

HORIZON	TEXTURE	COLOUR	STONES 2	TOT STONE	LITH	MOTTLES	STRUCTURE	CONSIST	SUBSTRUCTURE	CALC
0 28	MCL	10YR42 00	0	0						
28- 58	MZCL	05Y 63 00	0	0			MCSAB	FR	M	
58- 63	MCL	05Y 53 00	0	2	MSST		MCSAB	FR	M	
63- 82	MCL	05Y 53 00	0	10	MSST		MCSAB	VM	M	
82 100	MCL	05Y 63 00	0	10	MSST		MVCPL	VM	P	
100 120	HCL	05Y 63 00	0	10	MSST	C			P	

Wetnes G ade 1 Wetness Cl I
Gleying 100 cm
SPL 100 cm

Drought Grade 2 APW 143mm MBW 28 mm
APP 120mm MBP 11 mm

FINAL ALC GRADE 2
MAIN LIMITATION Droughtiness

SOIL PIT DESCRIPTION

Site Name OXON SP WANTAGE RD DIDCT Pit Number 4P

Grid Reference SU50808900 Average Annual Rainfall 588 mm
Accumulated Temperature 1446 degree days
Field Capacity Level 125 days
Land Use Permanent G ass
Slope nd Aspect degrees

HORIZON	TEXTURE	COLOUR	STONES	2	TOT STONE	LITH	MOTTLES	STRUCTURE	CONSIST	SUBSTRUCTURE	CALC
0 22	MCL	10YR42 00	11		15	MSST					
22 37	MCL	10YR53 00	0		45	MSST				M	
37 43	HCL	25 Y52 00	0		45	MSST	C			M	
43- 55	C	25 Y52 00	0		10	MSST	C	STCOAB	FM	P	
55-100	C	25 Y62 00	0		10	MSST	C	STCOAB	FM	P	
100-110	HCL	25 Y62 00	0		10	MSST	C			P	

Wetness Grade 3A Wetness Class III
Gleying 037 cm
SPL 043 cm

Drought Grade 3A APW 103mm MBW 12 mm
APP 88 mm MBP 21 mm

FINAL ALC GRADE 3A
MAIN LIMITATION Soil Wetness/Droughtiness

SAMPLE NO	GRID REF	USE	ASPECT	GRDNT	GLEY	SPL	WETNESS CLASS	WETNESS GRADE	WHEAT AP	WHEAT MB	POTS AP	POTS MB	M REL DRT	FLOOD	EROSN EXP	FROST DIST	CHEM LIMIT	ALC	COMMENTS
1	SU51008970	SAS			025	038	3	3A	115	0	106	3	3A				WD	3A	
1P	SU51008920	ORC					1	1	107	8	104	5	3A				DR	3A	Pit88 Roots120
2	SU50608960	ARA			028	028	3	3A	110	5	102	7	3A				WD	3A	
2P	SU51008880	PGR					1	1	100	15	102	7	3A				DR	3A	Pit66 Roots100
3	SU50808960	ARA			060		1	1	171	56	143	34	1					1	
3P	SU51008840	PGR			100	100	1	1	143	28	120	11	2				DR	2	At Boring 42
4	SU51008960	PGR			075	075	2	2	134	19	114	5	2				WD	2	
4P	SU50808900	PGR			037	043	3	3A	103	12	88	21	3A				WD	3A	T/S ST 3A also
5	SU51208960	PGR					1	1	87	28	90	19	3B				DR	3A	I55 See 1P
6	SU50458955	ARA					1	1	102	13	106	3	3A				DR	2	I80 See 3P
7	SU51308952	PGR					1	1	102	13	108	1	3A				DR	2	I75 See 3P
8	SU50608940	ARA			060		1	1	107	-8	114	5	3A				DR	2	I75 See 3P
9	SU50808940	STB			040	040	3	3A	89	26	99	10	3B				WD	3A	I70 MSST
10	SU51008940	PGR			055	080	1	1	137	22	116	7	2				DR	2	
11	SU51208940	PGR			048		1	1	122	7	115	6	2				DR	2	I90 See 3P
12	SU50628920	STB					1	1	105	10	110	1	3A				DR	2	I80 See 3P
13	SU50808920	STB					1	1	108	7	106	3	3A				DR	2	I90 See 3P
14	SU51008920	ORC			040		1	1	91	24	96	13	3B				DR	3A	I60 See 1P
15	SU51208920	STB			040	040	3	3A	128	13	105	4	2				WE	3A	See 4P
16	SU51308923	STB					1	1	80	35	80	29	3B				DR	3A	I50 See 1P
17	SU50608900	ARA			060		1	1	110	5	112	3	3A				DR	2	I85 See 3P
18	SU50808900	PGR			045	045	2	2	141	26	110	1	2				WD	3A	See 4P
19	SU51008900	STB			050	050	2	2	117	2	108	1	3A				WD	2	I95 See 3P
20	SU51208900	ARA			028	055	3	3A	130	15	106	3	2				WE	3A	
21	SU50438880	ARA					1	1	122	7	114	5	2				DR	2	I95 MSST
22	SU50608880	ARA			055		1	1	100	15	112	3	3A				DR	2	I70 See 3P
23	SU50808880	PGR			045	045	2	2	106	9	107	2	3A				WD	2	I85 See 3P
24	SU51208882	PGR			090	090	1	1	137	22	115	6	2				DR	3A	
25	SU51208880	PGR					1	1	90	25	95	14	3B				DR	3A	I60 See 2P
26	SU51408880	CER	S	01			1	1	62	53	62	47	4				DR	3B	I40 POSS 3A
27	SU51608880	PGR					1	1	77	38	77	32	3B				DR	3A	I45 QSee 2P
28	SU51808880	PGR	S	01			1	1	151	36	115	6	2				DR	2	
29	SU52008880	OSR					1	1	94	21	99	10	3B				DR	3A	I60 See 2P
30	SU52208875	OSR			048	048	2	2	111	4	109	0	3A				WD	2	I90 See 3P
31	SU50658863	PGR					1	1	107	-8	114	5	3A				DR	2	I75 See 3P
32	SU50808860	PGR					1	1	110	5	115	6	3A				DR	2	I80 See 3P
33	SU51008860	PGR			050		1	1	115	0	112	3	3A				DR	2	I85 See 3P
34	SU51208860	PGR			035		2	2	72	43	72	37	3B				DR	3A	I45 QSee 2P
35	SU51408860	CER	S	01	047	047	2	2	150	35	113	4	2				WD	2	
36	SU51608860	PGR					1	1	137	22	114	5	2				DR	2	
37	SU51808860	PGR	S	01			1	1	86	29	88	21	3B				DR	3A	I55 See 1P
38	SU51508870	OSR					1	1	110	5	113	4	3A				DR	2	I80 See 3P

SAMPLE NO	GRID REF	USE	ASPECT	GRDNT	GLEY	SPL	WETNESS CLASS	WHEAT GRADE	WHEAT AP	WHEAT MB	POTS AP	POTS MB	M REL DRT	EROSN FLOOD	FROST EXP	CHEM DIST	ALC LIMIT		COMMENTS
39	SU52208860	OSR					1	1	105	10	114	5	3A				DR	2	I75 See 3P
40	SU52388862	OSR			050	050	2	2	114	1	107	2	3A				WD	2	I90 See 3P
41	SU50828840	PGR			045	045	2	2	103	12	107	2	3A				WD	2	I80 See 3P
42	SU51008840	PGR					1	1	112	3	114	5	3A				DR	2	I80 See 3P
43	SU51208840	PGR					1	1	147	32	116	7	2				DR	2	
44	SU51408840	CER	S	01			1	1	72	43	72	37	3B				DR	3A	I45 QSee 2P
45	SU51608840	PGR					1	1	99	16	108	1	3A				DR	3A	I65 See 2P
46	SU51808840	PGR	S	01			1	1	80	35	80	29	3B				DR	3A	I50 See 2P
47	SU52008840	OSR			030	030	3	3A	88	27	97	12	3B				WD	3A	I68 See 2P
48	SU52208840	OSR					1	1	99	16	108	1	3A				DR	3A	I65 See 2P
49	SU50858828	PGR					1	1	99	16	107	2	3A				DR	3A	I65 See 2P
50	SU51218828	CER	S	01	030	030	3	3A	119	4	117	8	3A				WD	3A	Imp 90 MSST

				-MOTTLES			PED			STONES-			STRUCT/	SUBS				
SAMPLE	DEPTH	TEXTURE	COLOUR	COL	ABUN	CONT	COL	GLEY	2	6	LITH	TOT	CONSIST	STR	POR	IMP	SPL	CALC
1	0 25	mcl	10YR42 00						0	0	MSST	1						
	25-38	mcl	10YR58 00	10YR58 00	C			Y	0	0	MSST	5		M				Soft
	38-110	c	25Y 62 61	10YR66 00	C			Y	0	0	MSST	1		P			Y	Imp MSST
1P	0 25	mcl	10YR42 00						0	0	MSST	1						At Bo ing 14
	25-52	mzcl	10YR54 00						0	0	MSST	2	MCSAB	FR	M			Colouration from
	52 65	mzcl	10YR54 00						0	0	MSST	50			M			weathered S t
	65-120	msst	25Y 72 00						0	0		0			M			75% MSST Sieved
2	0 28	mzcl	10YR41 00						1	0	MSST	3						Firm
	28 75	hzcl	25Y 53 00	10YR66 00	C			Y	0	0	MSST	2		P			Y	FR/Imp MSST
	75-100	c	25Y 62 72						0	0	MSST	15		M				
2P	0 27	mcl	10YR42 00						0	0	MSST	1						Near Boring 24
	27-40	hcl	25Y 53 00						0	0	MSST	2	MCSAB	FR	M			Colouratio in
	40 52	c	25Y 52 00						0	0	MSST	2	MCSAB	FM	M			H4 is from the
	52 66	c	25Y 52 00						0	0	MSST	50			M			weathered Sst
	66 100	msst	25Y 72 00						0	0		0			M			
3	0 28	fszl	10YR42 00						0	0	MSST	2						
	28 60	fszl	10YR52 62						0	0	MSST	1		M				
	60 110	mcl	25Y 72 00	10YR68 00	C			Y	0	0	MSST	1		M				Soft/Imp Stony
3P	0 28	mcl	10YR42 00						0	0		0						At Boring 42
	28 58	mzcl	05Y 63 00						0	0		0	MCSAB	FR	M			Colou tion i
	58-63	mcl	05Y 53 00						0	0	MSST	2	MCSAB	FR	M			H2 5 is from the
	63-82	mcl	05Y 53 00						0	0	MSST	10	MCSAB	VM	M			weathered Sst
	82 100	mcl	05Y 63 00						0	0	MSST	10	MVCPL	VM	P			V Dry/Hard
	100 120	hcl	05Y 63 00	10YR58 00	C			Y	0	0	MSST	10			P		Y	
4	0 25	mcl	10YR43 00						0	0	MSST	2						
	25-48	hcl	10YR53 00						0	0	MSST	5		M				
	48 75	c	25Y 63 00						0	0	MSST	2		M				Friable
	75-120	c	25Y 62 00	10YR66 00	C			Y	0	0	MSST	1		P			Y	Firm
4P	0 22	mcl	10YR42 00						11	0	MSST	15						At Bo ing 18
	22 37	mcl	10YR53 00						0	0	MSST	45		M				Colou at on in
	37 43	hcl	25 Y52 00	10YR68 00	C			Y	0	0	MSST	45		M				H2 3 i from the
	43 55	c	25 Y52 00	10YR66 00	C			Y	0	0	MSST	10	STCOAB	FM	P	Y	Y	weathered Sst
	55-100	c	25 Y62 00	10YR66 00	C		25 Y61 00	Y	0	0	MSST	10	STCOAB	FM	P	Y	Y	
	100 110	hcl	25 Y62 00	10YR66 00	C			Y	0	0	MSST	10			P		Y	Imp MSST 110
5	0 25	mcl	10YR43 00						0	0	MSST	2						
	25-50	mcl	10YR53 00						0	0	MSST	5		M				
	50 55	mcl	25Y 52 00						0	0	MSST	15		M				Imp MSST
6	0 30	mcl	10YR41 00						8	0	MSST	10						
	30 70	hcl	25Y 53 00						0	0	MSST	15		M				F iable
	70-80	c	25Y 62 72						0	0	MSST	20		M				Imp MSST

				-MOTTLES			PED		STONES				STRUCT/	SUBS				
SAMPLE	DEPTH	TEXTURE	COLOUR	COL	ABUN	CONT	COL	GLEY	2	6	LITH	TOT	CONSIST	STR	POR	IMP	SPL	CALC
7	0 28	mcl	10YR53 00						0	0	MSST	5						
	28 55	hcl	25Y 62 00						0	0	MSST	12		M				V Fri ble
	55-75	hcl	25Y 72 00						0	0	MSST	15		M				VF/Imp MSST
8	0 30	mcl	10YR42 00						1	0	MSST	3						
	30 60	hcl	25Y 52 00						0	0	MSST	2		M				Soft
	60 75	hcl	25Y 62 72	10YR68 00	C			Y	0	0	MSST	15		M				FR/Imp MSST
9	0 28	mcl	10YR42 00						1	0	MSST	3						
	28-40	hcl	25Y 52 00						0	0	MSST	20		M				Friable
	40 70	zc	25Y 62 00	10YR68 00	C			Y	0	0	MSST	10		P		Y		Imp MSST
10	0 28	mcl	10YR42 00						0	0	MSST	2						
	28-55	hcl	25Y 52 72						0	0	MSST	2		M				
	55-80	c	25Y 52 72	10YR68 00	C			Y	0	0		0		M				Friable
	80 90	c	25Y 62 72	10YR68 00	C			Y	0	0		0		P		Y		Firm
	90 120	c	25Y 73 00	10YR68 00	C			Y	0	0		0		P		Y		Firm
11	0 30	mcl	10YR43 00	10YR56 00	F				0	0	MSST	2						
	30-48	mcl	10YR54 00	10YR56 00	F				0	0	MSST	2		M				
	48 78	hcl	10YR52 00	10YR58 00	C			Y	0	0	MSST	5		M				FR Not SPL
	78 90	mcl	25Y 62 00						0	0	MSST	15		M				Imp MSST
12	0 30	mcl	10YR42 00						0	0	MSST	2						
	30 50	hcl	10YR53 00						0	0	MSST	2		M				Soft
	50 80	c	25Y 62 00						0	0	MSST	2		P		Y		Imp MSST
13	0 28	mcl	10YR42 00						0	0	MSST	2						
	28 70	hcl	10YR53 00						0	0	MSST	20		M				
	70 90	c	25Y 62 72						0	0	MSST	30		M				FR/Imp MSST
14	0 30	mcl	10YR41 00						0	0	MSST	1						
	30-40	mcl	10YR53 00						0	0	MSST	10		M				
	40-60	mcl	10YR63 00	10YR58 00	C			Y	0	0	MSST	15		M				Imp MSST
15	0 28	mcl	10YR42 00						0	0	MSST	2						
	28 40	mcl	25Y 63 00						0	0	MSST	15		M				Friable
	40 85	c	25Y 63 00	10YR68 00	C			Y	0	0	MSST	1		P		Y		Firm
	85-120	c	25Y 73 00	10YR68 00	C			Y	0	0	MSST	10		P		Y		
16	0 30	mcl	10YR52 00						0	0	MSST	5						
	30-40	mcl	10YR52 62						0	0	MSST	10		M				
	40 50	mcl	10YR62 00						0	0	MSST	15		M				Imp MSST
17	0 30	mcl	10YR42 00						0	0	MSST	2						
	30 60	hcl	25Y 53 00						0	0	MSST	5		M				Soft
	60 70	c	25Y 62 00	10YR66 00	C			Y	0	0	MSST	5		P				
	70 85	c	25Y 62 72					Y	0	0	MSST	20		M				VF/Imp MSST

SAMPLE	DEPTH	TEXTURE	COLOUR	MOTTLES COL	ABUN	CONT	PED COL	GLEY	STONES 2	6	LITH	TOT	STRUCT/ CONSIST	SUBS STR	POR	IMP	SPL	CALC
18	0 25	mcl	10YR42 00						0	0	MSST	5						
	25-45	mcl	10YR53 00						0	0	MSST	20		M				
	45-75	c	25Y 52 00	10YR66 00	C			Y	0	0	MSST	1		P			Y	Firm
	75-95	c	25Y 62 00	10YR66 00	C			Y	0	0	MSST	1		P			Y	V Firm
	95-120	hcl	25Y 62 72					Y	0	0	MSST	5		P			Y	Soft
19	0 30	mcl	10YR42 00						0	0	MSST	2						
	30 50	mcl	25Y 62 00						0	0	MSST	2		M				
	50 90	c	25Y 72 00	10YR66 00	C			Y	0	0	MSST	2		P			Y	Firm
	90 95	hcl	25Y 72 00	10YR66 00	C			Y	0	0	MSST	15		M				FR/Imp MSST
20	0 28	mcl	10YR42 00						2	0	MSST	5						
	28 55	hcl	25Y 62 00	10YR58 00	C			Y	0	0	MSST	15		M				Friable
	55 105	c	25Y 62 00	10YR58 00	C			Y	0	0	MSST	1		P			Y	Firm
	105 120	c	25Y 72 00					Y	0	0	MSST	1		M				F iable
21	0 35	mcl	10YR42 00						0	0	MSST	2						
	35 58	hcl	25Y 53 00						0	0	MSST	5		M				Soft
	58 80	hcl	25Y 52 00						0	0	MSST	15		M				Friable
	80 95	c	25Y 62 72						0	0	MSST	25		M				VF/Imp MSST
22	0 30	mcl	10YR42 00						0	0	HR	2						
	30 55	hcl	25Y 52 00						0	0	MSST	2		M				Soft
	55 70	c	25Y 62 72	10YR68 00	C			Y	0	0	MSST	20		M				FR/Imp MSST
23	0 30	mcl	10YR42 00						0	0	MSST	2						
	30 45	mcl	10YR53 00						0	0	MSST	2		M				V Soft
	45-60	hcl	25Y 62 00	10YR68 00	C			Y	0	0	MSST	5		P			Y	Firm
	60 85	c	25Y 62 72	10YR66 00	C			Y	0	0	MSST	20		M				FR/Imp MSST
24	0 30	mcl	10YR42 00						0	0	MSST	1						
	30 50	mcl	25Y 52 00						0	0	MSST	1		M				
	50 60	hcl	25Y 52 00						0	0	MSST	5		M				Soft
	60 90	c	25Y 62 00						0	0	MSST	10		M				Friable
	90 120	c	25Y 62 00	10YR66 00	C			Y	0	0	MSST	5		P			Y	Firm
25	0 32	mcl	10YR42 00						0	0	MSST	5						
	32 55	hcl	25Y 62 00						0	0	MSST	5		M				
	55-60	hcl	25Y 62 00						0	0	MSST	35		P				FR/Imp MSST
26	0 27	mcl	10YR43 00						3	0	MSST	8						
	27 40	mcl	25 Y63 00						0	0	MSST	25		M				Imp MSST
27	0 35	mcl	10YR42 00						0	0	MSST	2						
	35 45	hcl	25Y 53 00						0	0	MSST	5		M				Imp MSST
28	0 30	mcl	10YR42 00						0	0	MSST	2						
	30 45	mcl	25 Y52 00						0	0	MSST	5		M				
	45-120	hcl	25 Y53 00						0	0	MSST	5		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 25	mcl	10YR42 00						0	0	MSST	1						
	25-55	mcl	10YR53 00						0	0	MSST	1		M				V Soft
	55 60	hcl	25Y 62 00						0	0	MSST	15		M				Imp MSST
30	0 30	mcl	10YR43 00						0	0	MSST	2						
	30-48	hcl	25Y 53 00						0	0	MSST	2		M				V Soft
	48-65	c	25Y 62 00	10YR58 00	C		00MN00 00	Y	0	0	MSST	5		P		Y		Firm
	65-90	c	25Y 62 72					Y	0	0	MSST	20		M		Y		FR/Imp MSST
31	0 30	mcl	10YR42 00						0	0	MSST	2						
	30 65	hcl	25Y 53 00						0	0	MSST	5		M				Soft
	65-75	hcl	25Y 62 72						0	0	MSST	20		M				FR/Imp MSST
32	0 30	mcl	10YR41 00						0	0	MSST	2						
	30 70	hcl	25Y 62 00						0	0	MSST	5		M				Friable
	70 80	c	25Y 62 72						0	0	MSST	20		M				VF/Imp MSST
33	0 28	mcl	10YR42 00						0	0	MSST	2						
	28-50	mcl	25Y 52 00						0	0	MSST	2		M				Soft
	50-85	hcl	25Y 62 72	10YR66 00	C			Y	0	0	MSST	15		M				Friable
34	0 35	mcl	10YR42 00						0	0	MSST	5						
	35-45	hcl	25Y 62 00	10YR58 00	C			Y	0	0	MSST	35		M				FR/Imp MSST
35	0 27	mcl	25 Y42 00						0	0	MSST	1						
	27-47	mcl	25 Y52 00	10YR66 00	F				0	0	MSST	1		M				
	47 120	hcl	25 Y52 00	10YR66 00	C		25 Y72 00	Y	0	0	MSST	1		P		Y		
36	0 30	mcl	10YR42 00						0	0	MSST	2						
	30 55	hcl	25Y 52 00						0	0	MSST	5		M				
	55-105	c	25Y 63 00						0	0	MSST	10		M				
	105-120	c	05 Y72 00						0	0	MSST	2		M				
37	0 30	mcl	10YR52 00						0	0	MSST	5						
	30 55	mcl	25 Y52 00						0	0	MSST	10		M				Imp MSST
38	0 30	mcl	10YR42 00						0	0	MSST	2						
	30 60	hcl	25Y 52 00						0	0	MSST	5		M				
	60-80	hcl	25Y 62 72						0	0	MSST	20		M				Imp MSST
39	0 30	mcl	10YR42 00						0	0	MSST	2						
	30 60	hcl	10YR54 00						0	0	MSST	2		M				Gla co itic
	60 75	c	25Y 62 72						0	0	MSST	20		M				FR/Imp MSST
40	0 30	mcl	10YR42 00						0	0	MSST	2						
	30 50	hcl	25Y 53 00						0	0	MSST	2		M				Soft
	50 75	hcl	25Y 52 00	75YR58 00	C			Y	0	0	MSST	10		P		Y		Firm
	75 90	hcl	25Y 62 00	75YR58 00	C			Y	0	0	MSST	15		M		Y		V Soft/ImpMSST

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	
41	0 30	mcl	10YR42 00						0	0	MSST	2							
	30-45	hcl	25Y 52 00						0	0	MSST	2		M					Soft
	45-65	hcl	25Y 62 00	10YR68 00	C			Y	0	0	MSST	2		P		Y			Firm
	65-80	c	25Y 62 72					Y	0	0	MSST	20		M					Imp MSST
42	0 28	mcl	10YR42 00						0	0	MSST	2							
	28 60	mcl	25Y 52 00						0	0	MSST	2		M					Soft
	60 80	hcl	25Y 62 72						0	0	MSST	15		M					FR/Imp MSST
43	0 28	mcl	10YR42 00						0	0	MSST	2							
	28-48	hcl	25Y 62 00						0	0	MSST	1		M					
	48-85	hcl	25Y 62 00						0	0	MSST	1		M					Soft
	85 120	c	25Y 72 00						0	0	MSST	1		M					Friable
44	0 28	mcl	25 Y42 00						0	0	MSST	2							
	28 45	hcl	25 Y52 00						0	0	MSST	20		M					Imp MSST
45	0 28	mcl	10YR42 00						0	0	MSST	2							
	28-47	hcl	25Y 52 00						0	0	MSST	2		M					
	47 65	hcl	25Y 64 00						0	0	MSST	1		M					Imp MSST
46	0 30	fszl	10YR42 00						0	0	MSST	5							PSD
	30 45	mcl	25 Y52 00						0	0	MSST	10		M					
	45-50	hcl	25 Y52 42						0	0	MSST	20		M					Imp MSST
47	0 30	mcl	10YR42 00						2	0	MSST	5							
	30 60	hcl	25Y 52 00	10YR58 00	C			Y	0	0	MSST	5		P		Y			Firm
	60 68	hcl	25Y 62 72					Y	0	0	MSST	20		M		Y			Imp MSST
48	0 35	mcl	10YR42 00						0	0	MSST	2							
	35-50	hcl	25Y 53 00						0	0	MSST	2		M					
	50 60	hcl	25Y 62 00						0	0	MSST	5		M					
	60 65	hcl	25Y 62 72						0	0	MSST	20		M					V FR/Imp MSST
49	0 30	mcl	10YR42 00						0	0	MSST	2							
	30 60	hcl	25Y 52 00						0	0	MSST	2		M					Soft
	60 65	hcl	25Y 62 72						0	0	MSST	15		M					Imp MSST
50	0 30	mcl	10YR42 00						0	0	MSST	1							
	30 70	c	25 Y53 00	10YR66 00	C			Y	0	0	MSST	1		P		Y			Firm
	70-80	mcl	25 Y63 00	10YR66 00	C			Y	0	0	MSST	1		M					Q Weathered SST
	80 90	c	25 Y54 00	10YR66 00	C			Y	0	0	MSST	5		P		Y			Imp MSST