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Winchester District Local Plan
Site 22 New Alresford
Agricultural Land Classification
ALC Map and Report
August 1994

AGRICULTURAL LAND CLASSIFICATION REPORT

WINCHESTER DISTRICT LOCAL PLAN
SITE 22 NEW ALRESFORD

1 Summary

1 1 ADAS was commissioned by MAFF s Land Use Planning Unit to provide information on land quality for a number of sites in the Winchester District of Hampshire The work forms part of MAFF s statutory input to the preparation of the Winchester District Local Plan

1 2 Site 22 comprises 69 8 hectares of land bounded to the north by the Mid Hampshire railway to the west by Sun Lane and to the south by the A31 in New Alresford Hampshire An Agricultural Land Classification (ALC) survey was carried out during June 1994 The survey was undertaken at a detailed level of approximately one boring per hectare of agricultural land surveyed A total of 69 borings and three soil inspection pits were described in accordance with MAFF s revised guidelines and criteria for grading the quality of agricultural land (MAFF 1988) These guidelines provide a framework for classifying land according to the extent to which its physical or chemical characteristics impose a long term limitation on its use for agriculture

1 3 At the time of the survey the land use was a mixture of field beans wheat oilseed rape and grassland The Urban shown comprises houses The Agricultural Building mapped consists of a storage shed The Woodland mapped comprises mature deciduous trees

1 4 The distribution of grades and subgrades is shown on the attached ALC map and the areas are given in the table below The map has been drawn at a scale of 1 10 000 It is accurate at this scale but any enlargement would be misleading

Table 1 Distribution of Grades and Subgrades

Grade	Area (ha)	% of Site	% of Agricultural Land
2	5 1	7 3	7 5
3a	37 5	53 7	55 3
3b	21 9	31 4	32 3
4	3 3	4 7	100 0 (67 8 ha)
Urban	0 5	0 7	
Woodland	1 4	2 0	
Farm buildings	0 1	0 2	
Total area of site	69 8	100 0	

1 5 Appendix I gives a general description of the grades subgrades and land use categories identified in the survey The main classes are described in terms of the

type of limitation that can occur the typical cropping range and the expected level and consistency of yield

1 6 The majority of agricultural land surveyed has been classified as Subgrade 3a Areas of Grades 2 4 and Subgrade 3b are also present Grade 2 land, very good quality occurs on the lower lying flatter land in the south of the site The key limitation is soil workability caused by the interaction between medium silty clay loam topsoils and regionally wet climatic conditions Subgrade 3a land, good quality occurs on the mid slopes of the site The key limitation is soil droughtiness Medium silty clay loam and occasionally heavy silty clay loam topsoils overlie chalk at shallow depths This restricts crop rooting and moisture availability which affects crop growth and yields Subgrade 3b land moderate quality occurs on the flatter higher land The key limitation is soil workability caused by clay and silty clay topsoils Such topsoils are occasionally directly underlain by chalk This land is also subject to a significant risk of drought stress Grade 4 land, poor quality also occurs on the higher flatter land Clay topsoils overlie clay subsoils The clay subsoils are slowly permeable and act to significantly impede drainage resulting in severe soil wetness and workability limitations

2 Climate

2 1 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

2 2 The main parameters used in the assessment of an overall climatic limitation are average annual rainfall as a measure of overall wetness and accumulated temperature (degree days Jan June) as a measure of the relative warmth of a locality

2 3 A detailed assessment of the prevailing climate was made by interpolation from a 5km gridpoint dataset (Met Office 1989) The details are given in the table below and these show that there is no overall climatic limitation affecting the site In a regional context the crop adjusted soil moisture deficits are relatively low and the field capacity days are relatively high at this locality These climatic factors respectively decrease the likelihood of soil droughtiness limitations and increase the likelihood of soil wetness and workability limitations

2 4 No local climatic factors such as exposure or frost risk are believed to affect the site

Table 2 Climatic Interpolations

Grid Reference	SU595320	SU592316
Altitude (m)	110	85
Accumulated Temperature (degree days Jan June)	1419	1447
Average Annual Rainfall (mm)	875	859
Field Capacity (days)	191	189
Moisture Deficit Wheat (mm)	95	98
Moisture Deficit Potatoes (mm)	84	90
Overall Climatic Grade	1	1

3 Relief

3 1 The highest land on the site lies at approximately 110m AOD occupying a broad ridge which runs in an east west direction across the centre of the site The land falls moderately steeply from this ridge through gradients of 2 6° to the southern and northern site boundaries to lie at approximately 85m AOD The land then flattens out in the south of the site to lie at approximately 80m AOD adjacent to the southern site boundary None of this land is agriculturally restricted by gradient or relief limitations However in the north-east of the site gradients of 7 5 8 5° were measured along part of the sides of a dry valley feature Consequently gradient is a limiting factor to agricultural use All gradient measurements were taken using optical reading clinometers

4 Geology and Soil

4 1 The relevant geological sheet (BGS 1975) shows the entire site to be underlain by Upper Chalk (soft white chalk with many flint nodules)

4 2 The published Soil Survey map (SSEW 1983) shows three soil types across the site The predominant soil type shown is the Andover 1 association These soils are described as shallow well drained calcareous silty soils over chalk on slopes and crests Deep calcareous and non calcareous fine silty soils in valley bottoms Striped soil patterns locally (SSEW 1983) Along the eastern boundary the soil type shown is the Carstens association soils described as well drained fine silty over clayey clayey and fine silty soils often very flinty (SSEW 1983) The remaining area a wide band adjacent to the northern boundary is mapped as the Upton 1 association These soils are described as shallow well drained calcareous silty soils over chalk mainly on moderately steep sometimes very steep land Deeper fine silty calcareous soils in coombes and dry valleys (SSEW 1983)

4 3 Detailed field examination found three broad soil types moderately well drained to poorly drained heavy textured soils on the higher flatter land well drained calcareous flinty soils on the flatter lower lying land in the south of the site well drained calcareous soils over chalk on the slopes of the site

5 Agricultural Land Classification

5 1 Table 1 provides the details of the area measurements for each grade and the distribution of each grade is shown on the attached ALC map

5 2 The location of the soil observation points are shown on the attached sample point map

Grade 2

5 3 The flatter lower lying land in the south of the site has been classed as very good quality because of slight soil droughtiness and workability limitations The topsoils which typically comprise calcareous medium silty clay loams interact with the regionally wet climatic conditions at this site to impose slight soil workability limitations These include restricted flexibility of grazing by livestock and timing of cultivations Soil droughtiness problems arise because of flinty profiles on the flatter land and moderately deep profiles over chalk on the lower slopes

5 4 On the flatter land the topsoils are very slightly to slightly stony containing approximately 0-4% flints >2cm and 1 15% total flints by volume These are underlain by similarly textured upper subsoils containing approximately 4 15% total flints by volume Due to the very dry conditions at the time of survey all of the profiles on this flatter land proved impenetrable to an auger between 28 50cm Consequently a soil inspection pit (2P) was dug to assess subsoil conditions at depth From 2P it could be seen that the lower subsoils comprise medium silty clay loams which change from being moderately stony containing 20 30% total flints by volume to very stony containing approximately 37% total flints by volume at approximately 70 cm depth The dry and stony subsoil conditions meant that the pit could only be described to a depth of 80 cm If the profile available water calculation is cut off at 80 cm depth then the resultant soil droughtiness classification is Grade 2 This slight soil droughtiness arises because of restricted profile available water for uptake by crop roots This results from the interaction between the soil textures and profile stone contents and the local climatic regime Stone contents in the profile are likely to increase with depth and even if crop roots could extract water to a depth of 120 cm it is unlikely that this land could be classed any higher than Grade 2 on the basis of soil droughtiness

5 5 Soil profiles on the lower slopes in the south of the site are also classed as Grade 2 because of slight soil droughtiness and workability limitations Calcareous medium silty clay loam topsoils overlie similar textured upper subsoils At approximately 55 cm depth there is hard and compact chalk into which rooting by crops is limited to approximately 22 cm (see Pit 1) The interaction of this restricted rooting soil textures and profile stone contents with the climatic conditions at this site means that this land can be graded no higher than 2 because of slightly restricted profile available water

Subgrade 3a

5 6 Land classed as good agricultural quality is principally restricted by moderate soil droughtiness limitations with some of the land also having soil workability limitations Across the sloping areas of the site topsoils typically comprise calcareous medium silty clay loams These topsoils are very slightly to slightly stony containing approximately 0 3% flints >2 cm by volume and 0 15% total flints and chalk fragments by volume These either directly overlie chalk or overlie similar textured upper subsoils containing between 10 50% total chalk by volume In comparison to the land classified as Grade 2 the chalk occurs at a slightly shallower depth but generally within 50 cm As seen from Pit 1 the rooting by crops into the hard and compact chalk is limited to approximately 22 cm The interaction of this restricted rooting soil textures and profile stone contents with the climatic conditions at this site means that this land can be classified no higher than Subgrade 3a because of moderately restricted profile available water

5 7 On the higher flatter land the profiles tend to be heavier textured over chalk Topsoils typically comprise calcareous heavy silty clay loams over similar textured or clay upper subsoils These subsoils also contain between approximately 10 50% total chalk fragments by volume resulting from the underlying chalk which is present from approximately 35 50 cm depth As before this land suffers from soil droughtiness limitations but due to the heavier topsoils is equally restricted by soil workability restrictions

Subgrade 3b

5 8 Land classed as moderate quality is principally affected by soil workability and wetness limitations though occasionally land is also restricted by soil droughtiness Gradient restrictions occur in the north of the mapping unit The land restricted by soil wetness and workability occurs on the higher flatter land on the site Topsoils typically comprise calcareous clays and silty clays which are very slightly stony Due to the dry subsoil conditions at the time of survey many of the auger borings proved impenetrable to an auger below the topsoil However Pit 3 dug in the middle of this area plus occasional auger borings where subsoil information was collected show that upper and lower subsoils comprise stoneless or very slightly stony clays From Pit 3 it could be seen that the clays become slowly permeable at approximately 70 cm depth This slight impedance to drainage results in gleyed lower subsoils and slightly gleyed upper subsoil placing these profiles into Wetness Class II The interaction between the topsoils and drainage status with the regionally wet climatic conditions at this site means that this land can be classified as no better than Subgrade 3b because of significantly restricted flexibility of cropping stocking and cultivations

5 9 Occasionally the land is restricted by soil droughtiness Shallow heavy silty clay loam and clay topsoils directly overlie hard and compact chalk As seen from Pit 1 the rooting by crops into the chalk is limited to approximately 22 cm The interaction of this restricted rooting and shallow topsoils means that this land can

be classified no higher than Subgrade 3b because of significantly restricted profile available water

5 10 Along part of the sides of a dry valley feature in the north-east of the site gradients of 7 5 8 5 were measured Such slopes significantly restrict the range of farm machinery that may be safely and efficiently operated

Grade 4

5 11 Poor quality agricultural land occurs on the higher flatter land on the site This land is restricted by severe soil wetness and workability limitations Profiles typically comprise clay topsoils which are underlain by poorly structured clay subsoils These subsoils are slowly permeable and act to severely impair drainage as evidenced by gleying below the topsoil Consequently these profiles are placed into Wetness Class IV The interaction between these topsoils and the poor drainage status with the regionally wet climatic conditions at this site means that this land can be graded no better than Grade 4 because of significantly restricted flexibility of cropping stocking and cultivations

ADAS Ref 1513/111/94
MAFF Ref EL15/00594

Resource Planning Team
Guildford Statutory Group
ADAS Reading

SOURCES OF REFERENCE

British Geological Survey (1975) Sheet No 300 Alresford 1 50 000 (drift edition)

MAFF (1988) Agricultural Land Classification of England and Wales Revised guidelines and criteria for grading the quality of agricultural land

Meteorological Office (1989) Climatological Data for Agricultural Land Classification

Soil Survey of England and Wales (1983) Sheet 6 Soils of South East England 1 250 000 and accompanying legend

APPENDIX I

DESCRIPTION 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 (eg 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

Urban

Built up or hard uses with relatively little potential for a return to agriculture including housing industry commerce education transport religous buildings cemetries Also hard surfaced sports facilities permanent caravan sites and vacant land all types of derelict land including mineral workings which are only likely to be reclaimed using derelict land grants

Non agricultural

Soft uses where most of the land could be returned relatively easily to agriculture including private parkland public open spaces sports fields allotments and soft surfaced areas on airports Also active mineral workings and refuse tips where restoration conditions to soft after uses may apply

Woodland

Includes commercial and non commercial woodland A distinction may be made as necessary between farm and non farm woodland

Agricultural Buildings

Includes the normal range of agricultural buildings as well as other relatively permanent structures such as glasshouses Temporary structures (eg polythene tunnels erected for lambing) may be ignored

Open Water

Includes lakes ponds and rivers as map scale permits

Land Not Surveyed

Agricultural land which has not been surveyed

Where the land use includes more than one of the above eg buildings in large grounds and where map scale permits the cover types may be shown separately Otherwise the most extensive cover type will be shown

APPENDIX II

FIELD ASSESSMENT OF SOIL WETNESS CLASS

SOIL WETNESS CLASSIFICATION

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

Definition of Soil Wetness Classes

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

Soils can be allocated to a wetness class on the basis of quantitative data recorded over a period of many years or by the interpretation of soil profile characteristics site and climatic factors Adequate quantitative data will rarely be available for ALC surveys and therefore the interpretative method of field assessment is used to identify soil wetness class in the field The method adopted here is common to ADAS and the SSLRC

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

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

APPENDIX III

SOIL PIT AND SOIL BORING DESCRIPTIONS

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

S te Name WINCHESTER LP SITE 22 P t N mbe 1P

G id Ref re ce SU59703195 A e ge A l R i f ll 859 mm
Accumulated Tempe at 1447 deg ee days
F eld C p c ty L el 190 days
La d Use Ley
Slope nd A pect 03 deg ees N

HORIZON	TEXTURE	COLOUR	STONES 2	TOT STONE	LITH	MOTTLES	STRUCTURE	CONSIST	SUBSTRUCTURE	CALC
0 23	C	10YR42 00	3	5	HR					Y
23 45	CH	10YR81 54	0	0					P	Y

Wet ess G ade 3B Wet ess Class I
Gley ng cm
SPL N SPL

D o ght G de 3B APW 59 mm MBW 38 mm
APP 59 mm MBP 30 mm

FINAL ALC GRADE 3B
MAIN LIMITATION So l W t s/D ght e s

SOIL PIT DESCRIPTION

S te Name WINCHESTER LP SITE 22 Pit N mbe 2P

G id Refe ence SU59153155 A e ge A n al R fall 859 mm
Acc m l ted Tempe at e 1447 deg e days
F eld Cap c ty L el 190 days
Land Use F eld Bea s
Slope and Aspect deg ee

HORIZON	TEXTURE	COLOUR	STONES 2	TOT STONE	LITH	MOTTLES	STRUCTURE	CONSIST	SUBSTRUCTURE	CALC
0 15	MZCL	10YR44 00	2	4	HR					Y
15- 42	MZCL	10YR54 00	0	4	HR				M	Y
42 58	MZCL	10YR44 00	0	20	HR				M	Y
58 68	MZCL	10YR44 00	0	30	HR				M	Y
68 80	MZCL	10YR44 00	0	37	HR				M	Y

Wet e s G d 2 Wet ess Class I
Gley g cm
SPL N SPL

D o ght G de 2 APW 104mm MBW 7 mm
APP 108mm MBP 19 mm

FINAL ALC GRADE 2
MAIN LIMITATION So l Wet ess/D o ght es

SOIL PIT DESCRIPTION

S te Name WINCHESTER LP SITE 22 P t N mbe 3P

Gr d Refe ence SU59403185 A e ag A l Ra fall 859 mm
Acc mul ted Temperat e 1447 deg ee d y
F eld Capac ty Le el 190 day
L d U Wheat
Slope d A pect 03 deg ee N

HORIZON	TEXTURE	COLOUR	STONES 2	TOT STONE	LITH	MOTTLES	STRUCTURE	CONSIST	SUBSTRUCTURE	CALC
0 25	ZC	75YR43 00	4	6	HR	C				
25 70	C	75YR43 42	0	6	HR	M	MDCSAB	FM	M	
70 120	C	75YR42 00	0	0		M		FM	P	

Wet ess Grade 3B Wet ess Cl s II
Gley ng 070 cm
SPL 070 m

Dr ght G ade 1 APW 128mm MBW 31 mm
APP 108mm MBP 19 mm

FINAL ALC GRADE 3B
MAIN LIMITATION Wo k b l ty

SAMPLE NO	GRID REF	USE	ASPECT	GRDNT	GLEY	SPL	WETNESS CLASS	WHEAT GRADE	POTS AP	POTS MB	M REL AP	M REL MB	DRT	FLOOD	EROSN EXP	FROST DIST	CHEM LIMIT	ALC	COMMENTS
1	SU59603240	WHT	E	04			1	2	93	4	98	9	3A				DR	3A	Ch lk at 45
1P	SU59703195	LEY	N	03			1	3B	59	38	59	30	3B				WD	3B	Root 45
2	SU59103230	BEN	W	02			1	2	97	0	104	15	3A				DR	3A	Imp 60 ch lk
2P	SU59153155	BEN					1	2	104	7	108	19	2				WD	2	P t d g to 80
3	SU59203230	BEN	W	03			1	2	87	10	91	2	3A				DR	3A	Chalk t 40
3P	SU59403185	WHT	N	03	070	070	2	3B	128	31	108	19	1				WK	3B	Sl gleyed t 0
4	SU59303230	BEN	N	01			1	2	80	17	81	8	3A				DR	3A	Ch lk at 32
5	SU59403230	WHT	SE	02			1	2	76	21	76	13	3B				DR	3B	Chalk at 30
6	SU59503230	WHT	NE	04			1	2	86	11	87	2	3A				DR	3A	Chalk at 32
7	SU59603230	WHT	E	05			1	2	108	11	110	21	2				DR	2	Ch lk at 55
8	SU59703230	WHT	W	03			1	2	93	4	98	9	3A				DR	3A	Chalk t 45
9	SU59803230	WHT	N	01			1	2	80	17	82	7	3A				DR	3A	Ch lk at 32
10	SU59903230	WHT					1	2	54	43	54	35	3B				DR	3B	Impe 30
11	SU59003220	BEN	N	02			1	2	74	23	74	15	3B				DR	3B	Chalk at 30
12	SU59103220	BEN	N	02			1	3A	107	10	105	16	2				WK	3A	Chalk at 65
13	SU59203220	BEN	N	02			1	2	101	4	115	26	3A				DR	3A	Impe 70
14	SU59303220	LEY	S	02	035	035	4	4		0		0					WE	4	Spl at 35
15	SU59403220	LEY	S	02			1	3A	70	27	70	19	3B				DR	3B	Chalk at 28
17	SU59603220	WHT	E	03			1	2	108	11	119	30	2				DR	2	Impe 72
18	SU59703220	WHT	W	06			1	2	79	18	80	9	3A				DR	3A	Ch lk at 30
19	SU59803220	WHT	N	06			1	2	77	20	78	11	3A				DR	3A	Chalk at 32
20	SU59903220	WHT	N	02			1	2	86	11	91	2	3A				DR	3A	Chalk at 45
21	SU59003210	BEN	N	01			1	2	72	25	72	17	3B				DR	3A	Imp40 Q dr
22	SU59103210	BEN	N	02	0	026	4	4		0		0					WE	4	Spl at 26
23	SU59203210	BEN	N	03	050	050	3	4		0		0					WE	4	Spl at 50
24	SU59303210	BEN			020	020	4	4		0		0					WE	4	Spl at 20
25	SU59403210	LEY			035	035	4	4		0		0					WE	4	Spl t 35
28	SU59703210	LEY	N	02			1	3A	86	11	89	0	3A				WD	3A	Chalk at 38
29	SU59803210	LEY	N	07			1	3A	82	15	83	6	3A				WD	3A	Chalk at 32
30	SU59003200	BEN	N	01			1	3A	81	16	83	6	3A				DR	3A	Chalk at 35
31	SU59103200	BEN	N	02			1	3A	100	3	104	15	3A				WD	3A	Ch lk t 50
32	SU59203200	BEN	N	02	045	045	3	3B	134	37	111	22	1				WE	3B	Chalk at 100
33	SU59303200	BEN					1	3B	64	33	64	25	3B				WK	3B	Imp40 Q dr
34	SU59403198	WHT					1	3A	125	28	117	28	2				WK	3A	Impe 100
35	SU59503200	WHT					1	3B	41	56	41	48	4				WK	3B	Imp25 Q d
36	SU59603200	WHT					1	3B	40	57	40	49	4				WK	3B	Imp25 Q d
37	SU59703200	LEY	N	01			1	3B	29	68	29	60	4				WK	3B	Imp18 Q d
38	SU59803190	BEN					1	3A	72	25	72	17	3B				WD	3A	Imp43 Q d
39	SU59103190	BEN					1	3A	96	1	97	8	3A				WD	3A	Chalk 35
40	SU59203190	BEN					1	3A	106	9	106	17	2				WK	3A	Ch lk 60
41	SU59303190	BEN			042	042	3	4		0		0					WE	4	Spl at 42
42	SU59403190	WHT					1	3A	86	11	86	3	3A				WK	3A	Imp50 Q d

SAMPLE NO	GRID REF	USE	ASPECT	GRDNT	GLEY	SPL	WETNESS CLASS	WHEAT GRADE	POTS AP	POTS MB	M REL AP	M REL MB	DRT	FLOOD	EROSN EXP	FROST DIST	CHEM LIMIT	ALC	COMMENTS
43	SU59503190	WHT					1	3B	41	56	41	48	4				WK	3B	Imp25 Q d
44	SU59603190	WHT					1	3A	71	26	71	18	3B				WK	3B	I40Qdr Re PSD
45	SU59703190	WHT	N	01			1	3A	45	52	45	44	4				WK	3B	I25Qd Re PSD
46	SU59003180	BEN	S	02			1	3A	82	15	84	5	3A				WD	3A	Ch lk t 35
47	SU59103180	BEN	S	02			1	2	87	10	91	2	3A				DR	3A	Chalk at 40
48	SU59203180	BEN	S	03			1	2	80	17	83	6	3A				DR	3A	Chalk at 40
49	SU59303180	BEN	SW	02			1	3B	49	48	49	40	3B				WK	3B	I30Q d Re PSD
50	SU59403180	WHT					1	3A	94	3	101	12	3A				WK	3B	Re PSD
51	SU59503180	WHT					1	3B	49	48	49	40	3B				WK	3B	Imp30 Q d
52	SU59603180	WHT			025	025	4	4		0		0					WE	4	Spl t 25
53	SU59703180	WHT					1	3A	31	66	31	58	4				WK	3B	I18Qdr Re PSD
54	SU59103170	BEN	S	05			1	2	85	12	89	0	3A				DR	3A	Chalk at 40
55	SU59203170	BEN	S	06			1	2	68	29	68	21	3B				DR	3B	Impen 40
56	SU59303170	BEN	SW	06			1	3A	77	20	79	10	3A				WD	3A	Ch lk t 32
57	SU59403170	OSR	S	05			1	2	80	17	81	8	3A				DR	3A	Ch lk t 32
58	SU59503170	OSR	S	03			1	2	80	17	82	7	3A				DR	3A	Chalk t 32
59	SU59603170	OSR	S	04			1	2	77	20	78	11	3A				DR	3A	Chalk at 30
60	SU59703170	WHT	S	02			1	3A	36	61	36	53	4				WK	3B	I20Q d Re PSD
61	SU59003160	BEN	S	05			1	1	50	47	50	39	3B				DR	2	Imp28 Re 2P
62	SU59103160	BEN	S	04			1	2	104	7	106	17	2				WD	2	Chalk t 55
63	SU59203160	BEN	S	04			1	2	105	8	107	18	2				WD	2	Chalk at 55
64	SU59303160	BEN	SW	04			1	2	77	20	78	11	3A				DR	3A	Ch lk at 32
65	SU59363160	OSR	S	05			1	2	46	51	46	43	4				DR	3A	Imp25 Q d
66	SU59503160	OSR	S	05			1	2	81	16	83	6	3A				DR	3A	Ch lk at 32
67	SU59603160	OSR	S	02			1	1	80	17	82	7	3A				DR	3A	Ch lk t 32
68	SU59703160	OSR	SW	05			1	2	51	46	51	38	3B				DR	3A	Imp30 Q d
69	SU59103150	BEN					1	2	85	12	85	4	3A				WD	2	Imp50 Re 2P
70	SU59203150	BEN					1	2	43	54	43	46	4				WD	2	Imp28 Re 2P
71	SU59003153	BEN					1	2	56	41	56	33	3B				WD	2	Imp31 Re 2P
72	SU59353153	OSR	S	02			1	2	58	39	58	31	3B				WD	2	Imp33 Re 2P

SAMPLE	DEPTH	TEXTURE	COLOUR	MOTTLES COL	ABUN	CONT	PED COL	GLEY	STONES 2	6	LITH	TOT	STRUCT/ CONSIST	SUBS STR	POR	IMP	SPL	CALC	
1	0 30	mzcl	10YR42 52						0	0	HR	3						Y	+5% chalk
	30 45	mzcl	10YR64 81						0	0	CH	50		M				Y	
	45-67	h	10YR81 00						0	0		0		P				Y	
1P	0 23		10YR42 00						3	0	HR	5						Y	
	23-45	ch	10YR81 54						0	0		0		P				Y	
2	0 29	mzcl	10YR42 00						0	0	HR	2						Y	
	29 40	mz l	10YR44 00						0	0	CH	10		M				Y	
	40 60	h cl	10YR54 00						0	0	CH	15		M				Y	
2P	0 15	mzcl	10YR44 00						2	0	HR	4						Y	
	15 42	m cl	10YR54 00						0	0	HR	4		M				Y	
	42 58	mzcl	10YR44 00						0	0	HR	20		M				Y	
	58 68	mz l	10YR44 00						0	0	HR	30		M				Y	
	68 80	m l	10YR44 00						0	0	HR	37		M				Y	
3	0 30	mz l	10YR42 00						0	0	HR	3						Y	+5% ch lk
	30 40	mz l	10YR52 81						0	0	CH	50		M				Y	
	40 62	ch	10YR81 00						0	0		0		P				Y	
3P	0 25	c	75YR43 00	10YR56 00	C		00MN00 00	S	4	0	HR	6							
	25 70	c	75YR43 42	75YR58 00	M		75YR42 00	S	0	0	HR	6	MDCSAB	FM	M				
	70 120	c	75YR42 00	75YR58 62	M			Y	0	0		0		FM	P		Y		
4	0 32	mzcl	10YR42 52						0	0	HR	3						Y	+10% h lk
	32 54	h	10YR81 00						0	0		0		P				Y	
5	0 30	mzcl	10YR43 00						3	0	HR	5						Y	
	30 52	ch	10YR81 00						0	0		0		P				Y	
6	0 32	mzcl	10YR43 00						0	0	CH	15						Y	
	32 54	ch	10YR81 00						0	0		0		P				Y	
7	0 30	m cl	10YR52 00						0	0	HR	3						Y	+8% ch lk
	30 50	m cl	10YR53 00						0	0	CH	5		M				Y	
	50 55	mzcl	10YR54 81						0	0	CH	50		M				Y	
	55 77	ch	10YR81 00						0	0		0		P				Y	
8	0 35	mz l	10YR53 00						0	0	CH	5						Y	2% h rd rock
	35 45	mzcl	10YR64 81						0	0	CH	60		P				Y	
	45 67	h	10YR81 00						0	0		0		P				Y	
9	0 32	cl	10YR43 00						0	0	HR	2						Y	5% ch lk
	32 54	ch	10YR81 00						0	0		0		P				Y	
10	0 30	mzcl	10YR52 00						0	0	HR	5						Y	Impe 30 flints

SAMPLE	DEPTH	TEXTURE	COLOUR	MOTTLES COL	ABUN	CONT	PED COL	GLEY	STONES 2	6	LITH	TOT	STRUCT/ CONSIST	SUBS STR	POR	IMP	SPL	CALC	
11	0 15	mzcl	10YR42 00						0	0	CH	5						Y	
	15 30	mzcl	10YR42 00						0	0	CH	10		M				Y	
	30 52	ch	10YR81 00						0	0		0		P				Y	
12	0 19	h cl	10YR43 00						2	0	HR	5						Y	
	19 30	c	10YR54 00						0	0	CH	5		M				Y	
	30 50	c	10YR54 00						0	0	CH	25		M				Y	
	50 65	c	10YR54 00						0	0	CH	50		M				Y	
	65 87	ch	10YR81 00						0	0		0		P				Y	
13	0 25	mzcl	10YR42 00						0	0	HR	3						Y	+3% h lk
	25 45	hzcl	10YR53 00	10YR56 00	F				0	0	HR	5		M				Y	+5% chalk
	45 70	z	10YR54 00	10YR58 00	F				0	0	HR	3		M					Impe 70 fl ts
14	0 15	c	10YR42 00						0	0	CH	1							
	15 35	c	25Y 54 00	10YR56 00	F		00MN00 00		0	0		0		M					
	35 90	c	25Y 53 54	10YR56 00	M		00MN00 00	Y	0	0		0		P			Y		
15	0 28	h l	10YR43 00						0	0	HR	10						Y	
	28 50	ch	10YR81 00						0	0		0		P				Y	
17	0 25	mzcl	10YR43 53						0	0	HR	5						Y	2% h lk
	25 45	h cl	10YR54 00						0	0	HR	3		M					2% ch lk
	45 72	mz l	10YR54 64						0	0	CH	10		M					
18	0 32	m l	10YS53 63						0	0	CH	10						Y	3% h rd ock
	32 54	ch	10YR81 00						0	0		0		P				Y	
19	0 32	mz l	10YR43 53						0	0	CH	15						Y	
	32 54	ch	10YR81 00						0	0		0		P				Y	
20	0 30	m cl	10YR53 43						0	0	CH	15						Y	
	30 45	mz l	10YR54 81						0	0	CH	60		P				Y	
	45 67	ch	10YR81 00						0	0		0		P				Y	
21	0 28	mzcl	10YR42 00						0	0	CH	1						Y	
	28 38	h cl	10YR43 44						0	0	CH	15		M				Y	
	38 40	h l	10YR54 00						0	0	CH	15		M				Y	Impen 40
22	0 26	h cl	10YR42 00	10YR58 00	C			Y	0	0		0						Y	
	26 85	c	10YR63 64	10YR66 00	M		00MN00 00	Y	0	0	CH	10		P				Y	
	85 90	hzcl	10YR43 00	10YR68 00	M		00MN00 00	S	0	0	HR	20		M			Y		
23	0 25	c	10YR43 53						0	0	HR	3							
	25-50	c	10YR54 00						0	0	HR	5		M					
	50 100	c	10YR53 52	10YR56 00	C		00MN00 00	Y	0	0	HR	5		P			Y		
	100 120	c	25Y 52 00	10YR58 00	M		00MN00 00	Y	0	0	HR	3		P			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	
24	0 20	c	10YR53 00						0	0	HR	5							
	20 52	c	10YR53 00	10YR56 00	C		10YR64 00	Y	0	0	HR	1		P			Y		
25	0 15	c	10YR42 00	10YR56 00	F				0	0	HR	2							
	15 35	c	25Y 64 00	10YR56 00	F				0	0		0		M					
	35 60	c	25Y 53 00	10YR56 00	M		00MN00 00	Y	0	0		0		P			Y		
28	0 28	hzcl	10YR44 00						0	0	CH	5						Y	
	28 33	hzcl	25Y 44 00						0	0	CH	10		M				Y	
	33 38	mzcl	25Y 44 00						0	0	CH	50		M				Y	
	38 60	ch	10YR81 00						0	0		0		P				Y	
29	0 20	h cl	10YR43 00						1	0	CH	10						Y	
	20 32	h cl	10YR44 00						0	0	CH	15		M				Y	
	32 54	mzcl	10YR44 00						0	0	CH	50		M				Y	
	54 52	ch	10YR81 00						0	0		0		P				Y	
30	0 20	h cl	10YR43 00						0	0	CH	5						Y	
	20 35	hz l	10YR43 00	10YR58 00	F				0	0	CH	15		M				Y	
	35-57	ch	10YR81 00						0	0		0		P				Y	
31	0 25	h cl	10YR42 00						2	0	HR	2						Y	
	25 50	c	10YR44 00	10YR58 00	C			S	0	0	CH	15		M				Y	
	50 72	ch	05Y 81 00						0	0		0		P				Y	
32	0 30	h cl	10YR43 00						0	0	HR	3						Y	+2% chalk
	30 45		10YR56 00						0	0	HR	5		M					
	45 80		10YR53 00	10YR56 00	C		00MN00 00	Y	0	0		0		P			Y		
	80 100	c	10YR82 00	10YR68 00	C			Y	0	0	CH	50		P			Y	Y	
	100 120	h	10YR81 00					Y	0	0		0		P			Y	Y	
33	0 20	c	10YR53 00						0	0	HR	5							
	20 40	c	10YR54 00						0	0	HR	2		M					
34	0 25	hzcl	10YR43 00						0	0	HR	1							
	25 65	c	75YR54 00	75YR56 00	M		00MN00 00	S	0	0	HR	1		M				Y	
	65 100	c	75YR54 00	75YR56 00	M			S	0	0	CH	50		M				Y	
35	0 25	c	10YR43 00						0	0	HR	4							
36	0 25	c	10YR43 00						1	0	HR	6							
37	0 18	c	10YR44 00						2	0	HR	5						Y	Impen 18 X3
38	0 20	h cl	10YR43 00						0	0	CH	5						Y	
	20 38		75YR44 00	75YR58 00	C			S	0	0	CH	10		M				Y	
	38 43	c	75YR44 00	75YR58 00	C			S	0	0	CH	30		M				Y	Impe 43

				MOTTLES			PED		STONES				STRUCT/	SUBS				
SAMPLE	DEPTH	TEXTURE	COLOUR	COL	ABUN	CONT	COL	GLEY	2	6	LITH	TOT	CONSIST	STR	POR	IMP	SPL	CALC
39	0 22	h cl	10YR42 00						2	0	HR	2						
	22 35	hzcl	10YR44 00						0	0	CH	15		M			Y	
	35 77	ch	05Y 81 00						0	0		0		P			Y	
40	0 25	h cl	10YR43 00						0	0	HR	3						
	25 40	c	25Y 43 00	00MN00	00	F			0	0	HR	5		M				
	40 60	h cl	10YR56 81						0	0	CH	50		M			Y	
	60 82	ch	10YR81 00						0	0		0		P			Y	
41	0 32	c	10YR42 00						0	0	HR	2						
	32 42	c	75YR46 00						0	0	HR	1		M				
	42 60	c	10YR53 00	10YR56	00	C	10YR64	00 Y	0	0	HR	1		P		Y		
42	0 25	h cl	10YR43 00						0	0	HR	2						
	25 50	c	75YR54 00	75YR56	00	M		S	0	0	HR	1		M				Impe 50 fl t
43	0 25	c	10YR43 00						0	0	HR	4						
44	0 30	h cl	10YR44 00						0	0	HR	2						
	30 40	c	10YR54 64						0	0	HR	5		M				Impe 40 fl t
45	0 25	h cl	10YR43 00						2	0	HR	5						Impe 25 X2
46	0 20	h cl	10YR43 00						0	0	CH	2					Y	1% h d ock
	20 35	h cl	10YR43 53						0	0	CH	10		M			Y	
	35 57	h	10YR81 00						0	0		0		P			Y	
47	0 20	m cl	10YR43 00						0	0		0					Y	
	20 40	m cl	10YR54 00						0	0	CH	25		M			Y	
	40 62	ch	05Y 81 00						0	0		0		P			Y	
48	0 25	mzcl	10YR43 00						0	0	HR	5					Y	
	25 40	h cl	10YR66 81						0	0	CH	60		P			Y	
	40 62	h	10YR81 00						0	0		0		P			Y	
49	0 30	c	10YR42 00						0	0	HR	5						
50	0 28	h cl	10YR43 00						0	0	CH	1					Y	
	28 55	c	75YR54 00	75YR56	00	C		S	0	0	HR	5		M			Y	
	55 60		75YR54 00	75YR56	00	C		S	0	0	CH	50		M			Y	
51	0 30	c	10YR43 00						0	0	HR	4						
52	0 25	c	10YR44 00						0	0	HR	5						
	25 65	c	75YR53 54	75YR58	00	M	00MN00	00 Y	0	0	HR	10		P		Y		
53	0 18	h cl	10YR43 00						2	0	HR	10						Impen 18

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	
54	0 20	mzcl	10YR42 00						0	0	HR	2						Y	
	20 40	mzcl	10YR44 00						0	0	CH	25		M				Y	
	40 62	ch	05Y 81 00						0	0	HR	5		P				Y	
55	0 25	mzcl	10YR44 00						0	0	HR	5						Y	
	25 40	h cl	10YR54 00						0	0	CH	30		M				Y	
56	0 32	hcl	10YR43 00						0	0	CH	4						Y	
	32 54	ch	10YR81 00						0	0		0		P				Y	
57	0 32	cl	10YR43 00						1	0	CH	4						Y	
	32 54	ch	10YR81 00						0	0	HR	1		P				Y	
58	0 32	m cl	10YR53 00						0	0	CH	4						Y	
	32 54	ch	00ZZ00 00						0	0		0		P				Y	
59	0 30	m cl	10YR53 00						0	0	CH	4						Y	2% ha d ock
	30 52	h	10YR81 00						0	0		0		P				Y	
60	0 20	hzcl	10YR43 00						2	0	HR	5							
61	0 20	l	10YR43 53						0	0	CH	5						Y	
	20 28	m cl	10YR53 00						0	0	CH	5		M				Y	Impe 28
62	0 25	m cl	10YR42 00						0	0		0						Y	+3% hard rock
	25 40	mzcl	10YR44 00						0	0	CH	20		M				Y	
	40 55	cl	10YR54 00						0	0	CH	50		M				Y	
	55 77	ch	05Y 81 00						0	0		0		P				Y	
63	0 35	cl	10YR53 00						0	0	CH	4						Y	
	35 55	cl	10YR54 81						0	0	CH	50		M				Y	
	55 77	ch	10YR81 00						0	0		0		P				Y	
64	0 32	mcl	10YR53 00						0	0	CH	5						Y	
	32 54	ch	10YR81 00						0	0		0		P				Y	
65	0 25	mzcl	10YR43 00						0	0	CH	5						Y	
66	0 32	cl	10YR43 00						0	0	CH	4						Y	
	32 55	h	10YR81 00						0	0		0		P				Y	
67	0 32	mzcl	10YR43 53						0	0	CH	4						Y	+2% hard rock
	32 54	h	10YR81 00						0	0		0		P				Y	
68	0 25	mz l	10YR53 43						0	0	HR	10						Y	
	25 30	m l	10YR54 00						0	0	HR	10		M				Y	+5% chalk
69	0 25	mz l	10YR44 00						0	0	HR	2						Y	
	25 50	mzcl	10YR54 00						0	0	HR	10		M				Y	

				MOTTLES			PED		STONES			STRUCT/	SUBS				
SAMPLE	DEPTH	TEXTURE	COLOUR	COL	ABUN	CONT	COL	GLEY	2	6	LITH	TOT	CONSIST	STR	POR	IMP	SPL	CALC	
70	0 28	mcl	10YR43 00						5	0	HR	15					Y		
71	0 20	m cl	10YR43 00						0	0	HR	1					Y		
	20 29	h l	75YR44 00	75YR58 00	C			S	0	0	HR	1		M			Y		
	29 31	h cl	75YR44 00	75YR58 00	C			S	0	0	HR	15		M			Y	Impe	31
72	0 28	mzcl	10YR43 00						0	0	CH	10					Y		
	28 33	mzcl	10YR43 00						0	0	CH	35		M			Y		