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NEPICAR FARM
WROTHAM HEATH KENT
STATEMENT OF PHYSICAL
CHARACTERISTICS
JANUARY 1994

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1 Summary

1 1 ADAS was commissioned by MAFF s Land Use Planning Unit to prepare a statement of physical characteristics for land at Nepicar Farm Wrotham Heath in Kent which is currently subject to proposals for sand extraction The work forms part of MAFF s statutory input to mineral extraction proposals

1 2 24 hectares of land was surveyed in January 1994 part of which utilised information gained from a previous survey carried out in March 1991 (ADAS 1991) The survey was undertaken at a detailed level of approximately one boring per hectare A total of 30 soil auger borings and 5 soil inspection pits were assessed 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 long term limitations on its use for agriculture

1 3 The work was conducted by members of the Resource Planning Team in the Guildford Statutory Group of ADAS

1 4 At the time of the survey the land use on the site was permanent grassland

1 5 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 5 000 It is accurate at this scale but any enlargement would be misleading This map includes previous survey information from the 1991 survey for part of this site

Table 1 - Distribution of Grades and Subgrades

Grade	Area (ha)	% of Site	% of Agricultural Area
1	1 2	5 0	5 6
2	7 9	32 9	36 6
3a	5 9	24 6	27 3
3b	5 9	24 6	27 3
4	0 7	2 9	3 2
Woodland	0 4	1 7	100% (21 6 ha)
Urban	1 1	4 6	
Agricultural buildings	0 9	3 7	
Total area of site	24 0	100%	

1 6 Appendix 1 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 7 The site has been classified mainly as grade 2 with grades 1 3a 3b and 4 also mapped Grade 2 land suffers from a slight droughtiness limitation due to free draining sandy textured soils In addition land of this quality is limited by an exposure risk due to the elevated position of the site which stands above much of the surrounding countryside Land of lower quality has wetness or more severe droughtiness limitations Subgrade 3a land comprises clayey soils affected by a moderate wetness limitation due to slowly permeable layers in the lower subsoil An area of land to the south west is also assessed as this grade This experiences a moderate droughtiness limitation due to coarse loamy soils overlying sand Land classified as grade 1 comprises sandy loam soils with no significant limitations Poorer

quality land classified as grade 3b and 4 is limited mainly by slope having gradients in excess of 7 and 11 degrees respectively However a small area of land to the north is limited by a significant wetness limitation and classified as subgrade 3b due to the presence of slowly permeable clay below the topsoil

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 annual average rainfall as a measure of overall wetness and accumulated temperature 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 However local climatic factors restrict part of the site to Grade 2

2 4 The climate for the site area is comparitively dry in a regional context with low rainfall and low field capacity days Consequently the risk of droughtiness is increased particularly for coarse textured soil types Local climatic factors such as exposure do affect the quality of agricultural land on the site particularly on higher land to the south west of Nepicar Farm and to the south and south east also Its position is such that land is limited to grade 2 due to topography and climatic factors which can cause increased windspeeds and an increased risk of strong or cold winds which can be damaging to crops especially in wet weather The implications for cropping is discussed in paragraph 5 4

Table 2 _ Climatic Interpolations

Grid Reference	TQ 628 581	TQ 626 580	TQ 624 579
Altitude (m)	75	85	100
Accumulated Temperature (days)	1424	1412	1395
Average Annual Rainfall (mm)	713	718	724
Field Capacity (days)	146	147	148
Moisture Deficit Wheat (mm)	108	107	105
Moisture Deficit Potatoes (mm)	101	99	96
Overall Climatic Grade	1	1	1

3 Relief

3 1 The site lies at an altitude of approximately 75-100 metres Land falls north south and east from the highest point which was to the west of the site In places these slopes are the main limitation in terms of agricultural land quality and measure 7 5-10 degrees and are classified as subgrade 3b due to a significant gradient limitation In two locations to the west of the site slope gradients of 12 degrees result in a severe limitation and land is appropriately classified as grade 4 Gradients were measured using a hand held optical reading clinometer

4 Geology and Soil

4 1 The published geological map for the site Sheet 287 (BGS 1971) shows the underlying geology over the majority of the site to be Folkestone Beds with Gault Clay mapped to the north

4 2 The published soils information for the area Sheet 6 (SSEW 1983) shows the soils on the site to comprise the Denchworth association which relates to the Gault Clay geology These are described as Slowly permeable seasonally waterlogged clayey soils with similar fine loamy over clayey soils Some fine loamy over clayey soils with only slight seasonal waterlogging and some slowly permeable calcareous clayey soils (SSEW 1983) To the south coinciding with the Folkestone Beds geology is mapped soils of the Fyfield 2 association described as "Well drained coarse loamy and sandy soils over sands and sandstones Some very acid soils with bleached subsurface horizons on heaths and in woodlands" (SSEW 1983) A detailed inspection of soils on the site revealed the presence of clayey and fine loamy soils affected by various degrees of wetness imperfections and coarse loamy soils affected by droughtiness

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 1

5 3 Excellent quality agricultural land is mapped to the west of Nepicar Farm Soil profiles are stoneless and typically comprise topsoils of medium sandy loam or sandy clay loam over upper and lower subsoils of the same textures Profiles are well drained (wetness class I) with adequate amounts of available water in the soils for crop growth Soil Pit 3 is typical of this land Consequently this land has no or very minor limitations and is graded 1 It is capable of growing a very wide range of agricultural and horticultural crops producing high and consistent yields

Grade 2

5 4 Land of this quality covers the majority of the site comprising clayey and sandy soils affected by soil droughtiness and exposure Typically soil profiles in this mapping unit comprise topsoils of medium clay loam over upper subsoils of medium or heavy clay loam Lower subsoils are variable in texture consisting of heavy clay loam or becoming lighter with sandy clay loam medium sandy loam or loamy medium sand Soil Pits 1 and 2 are typical of these soils However due to the position of land to the south of the site standing above much of the surrounding countryside the likelihood of persistent strong or cold winds could be damaging to the sensitive top fruit or soft fruit crops which could be grown on these soils (see paragraph 2 4) As a result land quality is assessed as grade 2 very good quality agricultural land Many soils are very similar to those described for grade 1 being well drained and with good reserves of available water and would qualify for a grade 1 classification were it not for their exposed location

5 5 Some sandy soils within this mapping unit are limited to grade 2 due to slight soil droughtiness Typical profiles comprise medium sandy loam topsoils over medium sandy loam or loamy medium sand subsoils often passing to medium sand at depth These soils display no wetness imperfections and are assigned to wetness class I However the interaction of free draining sandy textures and climatic factors results in a slight restriction of available water in the profile for crop growth such that grade 2 is appropriate

Subgrade 3a

5 6 Good quality agricultural land is mapped to the north of the site and comprises topsoils of medium clay loam over upper and lower subsoils of heavy clay loam Soil Pit 1 is generally typical of these soils Profiles are assigned to wetness class III due to the presence of gleying or slight gleying above 40cm depth caused by slowly permeable subsoil layers This combined with a medium topsoil texture and climatic factors limits land to subgrade 3a due a moderate wetness limitation Some better drained profiles included in this map unit are not mapped separately due to their limited number and extent It should be noted that land is sensitive to structural damage from trafficking by machinery or grazing by livestock during periods when soils are not in a workable condition after wetting

Subgrade 3b

5 7 Land of this quality comprises heavy clayey soils typically comprising heavy clay loam topsoils over slightly stony (0 15% total stones) heavy clay loam and clay upper subsoils These rest over lower subsoils of slowly permeable clay commonly containing 2% total stones Pit 2 is typical of these soils Soils are typically assigned to wetness class III or IV being gleyed from the topsoil and slowly permeable from 30 60 cm depth This combined with a heavy topsoil texture limits land to subgrade 3b on this site due to a significant wetness limitation Some better quality profiles were encountered but included in this map unit due to limited number and distribution As described in paragraph 3 1 some land to the east and west of the site is limited to this grade due to gradients of 7 5-11 degrees Slopes of this nature have a detrimental affect on the safe and efficient use of farm machinery

Grade 4

5 8 Land classified as grade 4 poor quality agricultural land encompasses steeply sloping land to the west and south of the site Slope angles of 12 degrees have a more severe affect on the operation of farm machinery in terms of safety and efficiency than that of subgrade 3b above 11 degrees regular cultivation may be problematical

6 STATEMENT OF PHYSICAL CHARACTERISTICS

6 1 Topsoil

6 1 1 Two topsoil unuits were identified over the site providing a total resource of cubic metres

Unit 1

6 1 2 This unit is mapped to the south of the site area and comprises an average of 33 cm depth of a dark greyish brown (10YR 4/2) stoneless topsoil typically of medium sandy loam texture which is non calcareous This provides a resource of cubic metres

Unit 2

6 1 3 Unit 2 covers the majority of the site and comprises an average of 30 cm depth of a dark greyish brown and brown (10YR 4/2 and 10YR 4/3) non calcareous stoneless topsoil typically of medium clay loam texture with few to common ochreous mottles (10YR 5/6 and 10YR 5/8)

6 2 **Subsoil**

6 2 1 Two subsoil units were identified providing a total subsoil resource of 211 890 cubic metres

Unit 1

6 2 2 This covers the majority of the site area extending from the southern boundary It typically comprises an average of 34 cm of stoneless medium sandy loam occasionally medium clay loam over 53 cm of stoneless loamy medium sand sometimes passing to medium sand at depth The upper subsoil is dark yellowish brown or yellowish brown in colour (10YR 5/4 and 4/4) while the lower subsoil is commonly dark yellowish brown (10YR 5/4) occasionally with few ochreous mottles (10YR 5/6)

6 2 3 Inference from Soil Pit 4 suggests that the upper and lower subsoils (medium sandy loam and loamy medium sand textures) have a good subsoil structural condition comprising weakly developed coarse subangular blocky peds of friable consistence The occasional horizons of medium clay loam were found to be of moderate structural condition with moderately developed coarse subangular blocky peds of firm consistence Although thse soils are slightly heavier in nature they are included in this mapping unit due to their limited number and distribution

6 2 4 There is an upper subsoil resource of 46 580 cubic metres and a lower subsoil resource of 72 610 cubic metres

Unit 2

6 2 5 This unit consists of an average of 27 cm of heavy clay loam or clay over 63 cm of the same textures in the lower subsoil The upper subsoil is typically brown in colour (10YR 5/3) often with common ochreous mottles (10YR 5/6) in colour and contains 0-15 % total stones though this is commonly 0 3% The lower subsoil is greyish brown to brown in colour (10YR 5/2 and 5/3)

6 2 6 This subsoil unit provides an upper subsoil resource of 27 810 cubic metres and a lower subsoil resource 64 890 cubic metres

APPENDIX I

DESCRIPTION OF THE GRADES AND SUB GRADES

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 on the 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

Grade 3 Good To Moderate Quality Agricultural Land

Land with moderate limitations which affect the choice of crops 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

Sub grade 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

Sub grade 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 very 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 housing industry commerce education transport religious buildings cemeteries 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 re-claimed 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/airfields Also active mineral workings and refuse tips where restoration conditions to 'soft after-uses may apply

Woodland

Includes commercial and non commercial 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

REFERENCES

* ADAS (1991) Kent Minerals Local Plan Site H Nepicar Farm Wrotham Heath Kent

* BRITISH GEOLOGICAL SURVEY (1971) Sheet No 287 Sevenoaks 1 63 360 scale

* 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 No 6 Soils os South East England 1 250 000 scale and accompanying legend

APPENDIX III

DEFINITION OF SOIL WETNESS CLASSES

Wetness Class I

The soil profile is not wet within 70cm depth for more than 30 days in most years

Wetness Class II

The soil profile is wet within 70cm depth for 31 90 days in most years **or** if there is no slowly permeable layer within 80cm depth it is wet within 70cm for more than 90 days but not wet within 40cm depth for more than 30 days in most years

Wetness Class III

The soil profile is wet within 70cm depth for 91-180 days in most years **or** if there is no slowly permeable layer within 80cm depth it is wet within 70cm for more than 180 days but only wet within 40cm depth for 31-90 days in most years

Wetness Class IV

The soil profile is wet within 70cm depth for more than 180 days but not wet within 40cm depth for more than 210 days in most years **or** if there is no slowly permeable layer within 80cm depth it is wet within 40cm depth for 91-210 days in most years

Wetness Class V

The soil profile is wet within 40cm depth for 211 335 days in most years

Wetness Class VI

The soil profile is wet within 40cm depth for more than 335 days in most years

(The number of days is not necessarily a continuous period In most years' is defined as more than 10 out of 20 years)

APPENDIX IV

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 database This has commonly used notations and abbreviations as set out below

Boring Header Information

1 GRID REF national 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 HRT Horticultural Crops PGR Permanent Pasture LEY Ley Grass RGR Rough Grazing
SCR Scrub CFW Coniferous Woodland DCW Deciduous Woodland HTH Heathland BOG Bog or Marsh
FLW Fallow PLO Ploughed SAS Set aside OTH Other

3 GRDNT Gradient as measured by a hand held optical clinometer

4 GLEY/SPL Depth in cm to gleying or slowly permeable layers

5 AP (WHEAT/POTS) Crop-adjusted available water capacity

6 MB (WHEAT/POTS) Moisture Balance

7 DRT Best grade according to soil droughtiness

8 If any of the following factors are considered significant an entry of Y will be entered in the relevant column

MREL Microrelief limitation FLOOD Flood risk EROSN Soil erosion risk EXP Exposure limitation FROST Frost
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 Soil Erosion Risk WD Combined 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
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 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

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

6 STONE TYPE One of the following is used

HR all hard rocks and stones MSST soft medium or coarse grained sandstone
SI soft weathered igneous or metamorphic SLST soft oolitic or dolomitic limestone
FSST soft fine grained sandstone ZR soft argillaceous or silty rocks CH chalk
GH gravel with non porous (hard) stones GS gravel with porous (soft) stones

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

7 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

8 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

9 SUBS STR Subsoil structural condition recorded for the purpose of calculating profile droughtiness

G good M moderate P poor

10 POR Soil porosity If a soil horizon has less than 0 5% biopores > 0 5 mm a Y will appear in this column

11 IMP If the profile is impenetrable a Y will appear in this column at the appropriate horizon

12 SPL Slowly permeable layer If the soil horizon is slowly permeable a Y will appear in this column

13 CALC If the soil horizon is calcareous a Y will appear in this column

14 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 NEPICAR FARM WROTHAM Pit Number 1P

Grid Reference TQ62755830

Average Annual Rainfall	718 mm
Accumulated Temperature	1412 degree days
Field Capacity Level	147 days
Land Use	Permanent Grass
Slope and Aspect	02 degrees SW

HORIZON	TEXTURE	COLOUR	STONES >2	TOT STONE	MOTTLES	STRUCTURE
0- 30	MSZL	10YR43 00	0	0	F	
30- 75	HCL	75YR54 00	0	0	M	MDCAB
75-120	HCL	75YR54 00	0	10		

Wetness Grade 2

Wetness Class	III
Gleying	cm
SPL	030 cm

Drought Grade

APW	mm	MBW	0 mm
APP	mm	MBP	0 mm

FINAL ALC GRADE 2
MAIN LIMITATION Wetness

SOIL PIT DESCRIPTION

Site Name NEPICAR FARM WROTHAM Pit Number 2P

Grid Reference TQ62355815

Average Annual Rainfall	718 mm
Accumulated Temperature	1412 degree days
Field Capacity Level	147 days
Land Use	Permanent Grass
Slope and Aspect	04 degrees E

HORIZON	TEXTURE	COLOUR	STONES >2	TOT STONE	MOTTLES	STRUCTURE
0 25	HCL	10YR53 00	0	0	C	
25- 53	C	10YR62 00	0	15	C	STCSAB
53-120	C	10YR51 00	0	2	M	WKCSAB

Wetness Grade 3B

Wetness Class	III
Gleying	0 cm
SPL	053 cm

Drought Grade

APW	mm	MBW	0 mm
APP	mm	MBP	0 mm

FINAL ALC GRADE 3B
MAIN LIMITATION Wetness

SOIL PIT DESCRIPTION

Site Name NEPICAR FARM WROTHAM Pit Number 3P

Grid Reference TQ62455808

Average Annual Rainfall	718 mm
Accumulated Temperature	1412 degree days
Field Capacity Level	147 days
Land Use	Permanent Grass
Slope and Aspect	degrees

HORIZON	TEXTURE	COLOUR	STONES >2	TOT STONE	MOTTLES	STRUCTURE
0- 29	MSL	10YR43 00	0	0		
29- 80	MSL	10YR44 00	0	0		STCAB
80-120	MSL	10YR54 00	0	0	C	MDCSAB

Wetness Grade 1

Wetness Class	I
Gleying	cm
SPL	No SPL

Drought Grade 1

APW	158mm	MBW	51 mm
APP	111mm	MBP	13 mm

FINAL ALC GRADE 1

MAIN LIMITATION

SOIL PIT DESCRIPTION

Site Name NEPICAR FARM WROTHAM Pit Number 4P

Grid Reference TQ62605790 Average Annual Rainfall 718 mm
Accumulated Temperature 1412 degree days
Field Capacity Level 147 days
Land Use Permanent Grass
Slope and Aspect 04 degrees E

HORIZON	TEXTURE	COLOUR	STONES >2	TOT STONE	MOTTLES	STRUCTURE
0- 34	MSL	10YR42 00	0	0		WKCSAB
34- 65	LMS	10YR54 00	0	0		WKCSAB
65- 85	MSL	10YR54 00	0	0		WKCSAB
85-120	MCL	10YR53 00	0	0	C	MDCSAB

Wetness Grade 1 Wetness Class I
Gleying 085 cm
SPL No SPL

Drought Grade 2 APW 145mm MBW 38 mm
APP 96 mm MBP -3 mm

FINAL ALC GRADE 2
MAIN LIMITATION Droughtiness

SOIL PIT DESCRIPTION

Site Name NEPICAR FARM WROTHAM Pit Number 5P

Grid Reference TQ62305780

Average Annual Rainfall	718 mm
Accumulated Temperature	1412 degree days
Field Capacity Level	147 days
Land Use	Permanent Grass
Slope and Aspect	04 degrees E

HORIZON	TEXTURE	COLOUR	STONES >2	TOT STONE	MOTTLES	STRUCTURE
0- 30	MCL	10YR43 00	0	3		MCSAB
30- 95	HCL	10YR44 00	0	2		MCSAB
95-120	C	10YR53 00	0	0	C	WKCSAB

Wetness Grade 1

Wetness Class	I
Gleying	095 cm
SPL	095 cm

Drought Grade 1

APW	146mm	MBW	39 mm
APP	115mm	MBP	16 mm

FINAL ALC GRADE 2

MAIN LIMITATION Ex

SAMPLE NO	GRID REF	USE	ASPECT	GRDNT	GLEY	SPL	--WETNESS- CLASS	GRADE	WHEAT- AP	MB	-POTS- AP	MB	M REL DRT	FLOOD	EROSN EXP	FROST DIST	CHEM LIMIT	ALC	COMMENTS
1	TQ62505810	PGR					1	1	152	45	112	14	1					1	
1P	TQ62755830	PGR	SW	02		030	3	2		0		0					WE	2	SLI GLEY 30
2	TQ62405810	PGR			0	030	4	3B		0		0					WE	3B	
2P	TQ62355815	PGR	E	04	0	053	3	3B		0		0					WE	3B	
3	TQ62405820	PGR			010	030	4	3B		0		0					WE	3B	
3P	TQ62455808	PGR					1	1	158	51	111	13	1					1	SLI GLEY 80
4	TQ62305820	PGR			020	020	4	3B		0		0					WE	3B	
4P	TQ62605790	PGR	E	04	085		1	1	145	38	96	-3	2		Y		DR	2	EXPOSURE 2
5	TQ62405800	PGR					1	1	154	47	113	15	1					1	
5P	TQ62305780	PGR	E	04	095	095	1	1	146	39	115	16	1		Y		EX	2	EXPOSURE 2
6	TQ62255790	PGR	NE	08	040	040	3	3B		0		0					WE	3B	3B SLOPE
7	TQ62355803	PGR					1	1	108	1	120	22	3A				DR	3A	IMP 70
8	TQ62455815	PGR					1	1	158	51	120	22	1					1	
9	TQ62605820	PGR			0	050	3	3A	135	28	112	14	2				WE	3A	
10	TQ62655830	PGR					1	1	158	51	120	22	1					1	SLI GLEY 40
11	TQ62705820	PGR			0	070	2	2	158	51	120	22	1				WE	3A	
12	TQ62805820	PGR	E	02	0	060	3	3A		0		0					WE	3A	
13	TQ62705810	PGR					1	1	124	17	104	5	2				DR	2	
14	TQ62805810	PGR	E	04			1	1	156	49	118	19	1		Y			1	EXPOSURE ?
15	TQ62505800	PGR	NW	02	035	055	3	3A		0		0					WE	3A	
16	TQ62605798	PGR	E	02			1	1	165	58	115	16	1		Y		EX	2	EXPOSURE 2 ?
17	TQ62705800	PGR					1	1	139	32	109	10	1				EX	2	EXPOSURE 2 ?
18	TQ62405790	PGR	E	04			1	2	165	58	113	14	1		Y		WK	2	EXPOSURE 2
19	TQ62505790	PGR	E	04			1	1	129	22	104	5	2		Y		DR	2	EXPOSURE 2
20	TQ62605790	PGR	E	04			1	1	115	8	93	-6	2		Y		DR	2	EXPOSURE 2
21	TQ62705790	PGR					1	1	158	51	120	21	1		Y		EX	2	EXPOSURE 2
22	TQ62305780	PGR			055	075	2	2	140	33	116	17	1		Y		WE	2	EXPOSURE 2
23	TQ62405780	PGR					1	1	156	49	118	19	1		Y		EX	2	EXPOSURE 2
24	TQ62505780	PGR					1	1	150	43	119	20	1		Y		EX	2	EXPOSURE 2
25	TQ62605780	PGR					1	1	174	67	119	20	1		Y		EX	2	EXPOSURE 2
26	TQ62405770	PGR					1	1	90	-17	73	-26	3A		Y		DR	3A	
27	TQ62505770	PGR					1	1	140	33	115	16	1		Y		EX	2	EXPOSURE 2
28	TQ62805815	PGR	E	03			1	1	157	50	119	20	1		Y		EX	2	EXPOSURE 2
29	TQ62605805	PGR					1	1	133	26	111	12	2		Y		DR	2	EXPOSURE 2
30	TQ62355792	PGR	NW	02	035	047	3	3B		0		0					WE	3B	

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	0-35	scl	10YR43 00						0	0		0						
	35-80	scl	10YR54 00						0	0		0		M				
	80-120	scl	75YR54 00						0	0		0		M				
1P	0-30	mszl	10YR43 00	10YR56 00	F				0	0		0						
	30-75	hcl	75YR54 00	75YR46 00	M			S	0	0		0	MDCAB FR	M	Y		Y	SLI GLEY
	75-120	hcl	75YR54 00						0	0	HR	10		M				
2	0-10	mcl	10YR42 00	10YR58 00	C			Y	0	0		0						
	10-30	hcl	10YR53 00	10YR52 58	C			Y	0	0		0		M				
	30-70	c	10YR62 00	10YR58 66	C			Y	0	0		0		P		Y		
	70-120	c	10YR52 00	10YR58 00	M			Y	0	0		0		P		Y		
2P	0-25	hcl	10YR53 00	10YR56 00	C			Y	0	0		0						
	25-53	c	10YR62 00	10YR56 00	C			Y	0	0	HR	15	STCSAB FR	M				
	53-120	c	10YR51 00	75YR58 00	M		10YR61 00	Y	0	0	HR	2	WKCSAB FM	P	Y		Y	
3	0-10	mcl	10YR42 00	10YR58 00	F				0	0		0						
	10-30	hcl	10YR53 00	10YR56 00	C			Y	0	0		0		M				
	30-58	c	10YR52 00	10YR56 00	C			Y	0	0		0		P		Y		
	58-120	c	10YR53 00	10YR56 00	C			Y	0	0	HR	2		P		Y		
3P	0-29	msl	10YR43 00						0	0		0						
	29 80	msl	10YR44 00						0	0		0	STCAB FM	M				
	80-120	msl	10YR54 00	10YR46 00	C			S	0	0		0	MDCSAB FR	M				SLI GLEY
4	0-10	hcl	10YR41 00						0	0		0						
	10-20	c	25Y 52 00	10YR56 00	F				0	0		0		M				
	20-50	c	25Y 64 00	10YR56 00	C			Y	0	0	HR	2		P		Y		
	50-120	c	05Y 51 00	10YR56 00	M			Y	0	0	HR	2		P		Y		
4P	0-34	msl	10YR42 00						0	0		0	WKCSAB FR					
	34 65	lms	10YR54 00						0	0		0	WKCSAB FR	G				
	65-85	msl	10YR54 00						0	0		0	WKCSAB FR	G				
	85-120	mcl	10YR53 00	75YR56 00	C			Y	0	0		0	MDCSAB FM	M				
5	0-40	msl	10YR44 00						0	0		0						
	40-60	msl	10YR56 00						0	0		0		M				
	60-120	scl	10YR56 00						0	0		0		M				
5P	0-30	mcl	10YR43 00						0	0	HR	3	MDCSAB FR					
	30-95	hcl	10YR44 00						0	0	HR	2	MDCSAB FR	M				
	95-120	c	10YR53 00	10YR58 00	C			Y	0	0		0	WKCSAB FM	P		Y		
6	0-30	mcl	10YR42 00	10YR56 00	F				0	0		0						
	30-40	hcl	10YR54 00						0	0		0		M				
	40-120	c	10YR53 00	75YR58 00	M		05Y 52 00	Y	0	0		0		P		Y		

SAMPLE	DEPTH	TEXTURE	COLOUR	MOTTLES COL	MOTTLES ABUN	MOTTLES CONT	PED COL	GLEY	STONES >2	STONES >6	STONES LITH	STONES TOT	STRUCT/ CONSIST	SUBS STR	SUBS POR	SUBS IMP	SUBS SPL	CALC
7	0 40	mcl	10YR53 00	10YR56 00	C			Y	0	0		0						
	40 70	hcl	10YR54 00						0	0		0		M				
8	0-40	mcl	10YR42 00						0	0		0						
	40-60	hcl	10YR54 00						0	0		0		M				
	60-120	hcl	10YR54 00				10YR53 00	S	0	0		0		M				SLI GLEY
9	0-35	mcl	10YR42 00	10YR58 00	C			Y	0	0		0						
	35-50	msl	10YR53 00	10YR58 00	C			Y	0	0		0		M				
	50-120	c	10YR52 00	10YR56 68	C			Y	0	0		0		P		Y		
10	0-40	mcl	10YR42 00	10YR56 00	F				0	0		0						
	40-120	hcl	10YR54 00	10YR56 00	C			S	0	0		0		M				SLI GLEY
11	0-38	mcl	10YR42 00	10YR56 00	C			Y	0	0		0						
	38-70	hcl	10YR54 00	10YR56 00	C			S	0	0		0		M				SLI GLEY NOT SPL
	70-120	hcl	10YR56 00	75YR58 00	M			S	0	0		0		M				SLI GLEY SPL
12	0-29	mcl	10YR42 00	10YR56 00	C			Y	0	0		0						
	29-50	hcl	10YR53 00	10YR56 00	F				0	0		0		M				
	50 60	hcl	10YR53 00	10YR56 00	C		00MN00 00	Y	0	0		0		M				PROB NOT SPL
	60-120	hcl	10YR53 00	75YR56 58	M		00MN00 00	Y	0	0		0		M		Y		SPL
13	0-30	mcl	10YR44 00						0	0		0						
	30 45	msl	10YR43 00						0	0		0		G				
	45 85	lms	10YR53 73						0	0		0		G				
	85-120	ms	10YR73 00						0	0		0		M				
14	0 28	mcl	10YR42 00						0	0		0						
	28 60	mcl	10YR43 00						0	0		0		M				
	60-120	hcl	10YR44 00				00MN00 00		0	0		0		M				
15	0-35	mcl	10YR43 00						0	0		0						
	35-55	hcl	10YR53 00	10YR56 00	C			Y	0	0		0		M				PROB NOT SPL
	55-120	hcl	10YR53 00	75YR56 00	M			Y	0	0		0		M		Y		SPL
16	0-30	mcl	10YR42 00						0	0		0						
	30-65	scl	10YR43 00						0	0		0		M				
	65-110	msl	10YR43 00	10YR56 00	F				0	0		0		G				
	110-120	lms	25Y 66 00						0	0		0		G				
17	0-35	mcl	10YR42 00						0	0		0						
	35-55	hcl	10YR56 00						0	0		0		M				
	55-75	lms	10YR66 00						0	0		0		G				
	75-120	lms	10YR73 00						0	0		0		G				
18	0 25	hcl	10YR43 00						0	0		0						
	25-80	scl	10YR44 00						0	0		0		M				
	80-120	msl	10YR54 00						0	0		0		G				

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	
19	0-30	msl	10YR42 00						0	0		0							
	30-50	msl	10YR44 00						0	0		0		G					
	50-100	lms	10YR66 00						0	0		0		G					
	100-120	ms	10YR66 00						0	0		0		M					
20	0-35	msl	10YR43 00						0	0		0							
	35-50	lms	10YR44 00						0	0		0		G					
	50-90	lms	10YR64 00						0	0		0		G					
	90-120	ms	10YR74 00						0	0		0		M					
21	0-40	mcl	10YR43 00						0	0		0							
	40-80	hcl	10YR44 00						0	0		0		M					
	80-120	scl	10YR54 00						0	0		0		M					
22	0-35	scl	10YR43 00						0	0		0							
	35-55	hcl	10YR44 00						0	0		0		M					
	55-75	hcl	10YR53 54	75YR56 00	C		00MN00 00	Y	0	0		0		M					NO SPL SEE 5P
	75-120	c	10YR53 00	75YR56 58	M			Y	0	0		0		P		Y			SPL
23	0-28	mcl	10YR43 00						0	0		0							
	28-35	mcl	10YR44 00						0	0		0		M					
	35-120	hcl	10YR44 00				00MN00 00		0	0		0		M					
24	0-40	msl	10YR42 00						0	0		0							
	40-75	msl	10YR44 00						0	0		0		G					
	75-120	lms	10YR54 00						0	0		0		G					
25	0-30	mcl	10YR43 00						0	0		0							
	30-60	hcl	10YR44 00						0	0		0		M					
	60 120	msl	10YR54 00						0	0		0		G					
26	0-30	msl	10YR42 00						0	0		0							
	30 95	ms	10YR53 00						0	0		0		M					
	95-120	ms	10YR76 00						0	0		0		M					
27	0 30	msl	10YR42 00						0	0		0							
	30 50	mcl	10YR43 00						0	0		0		M					
	50-75	mcl	10YR34 56						0	0		0		M					
	75 120	lms	10YR74 00						0	0		0		G					
28	0-35	mcl	10YR42 00						0	0		0							
	35 65	mcl	10YR43 00						0	0		0		M					
	65 120	hcl	10YR43 00				00MN00 00		0	0		0		M					
29	0-25	mcl	10YR42 00						0	0		0							
	25-45	mcl	10YR43 00						0	0		0		M					
	45 59	msl	10YR44 00						0	0		0		G					
	59 95	lms	10YR56 00						0	0		0		G					
	95-120	ms	10YR73 00						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
30	0-28	hcl	10YR42 00						0	0	0						
	28-35	c	10YR43 00						0	0	0		M				
	35-47	c	10YR53 54	10YR56 00	C			Y	0	0	0		M				PROB NOT SPL
	47-75	c	10YR53 00	75YR46 00	M			Y	0	0	0		P		Y		SPL
	75-120	sc	10YR53 00	75YR46 00	C			Y	0	0	0		P		Y		SPL