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BASINGSTOKE & DEANE BOROUGH
LOCAL PLAN
SITE 18 : NORTH POPLEY

AGRICULTURAL LAND CLASSIFICATION
ALC MAP & REPORT
JUNE 1993

AGRICULTURAL LAND CLASSIFICATION

BASINGSTOKE AND DEANE BOROUGH LOCAL PLAN

SITE 18: NORTH POPLEY, BASINGSTOKE

1. SUMMARY

- 1.1 ADAS was commissioned by MAFF's Land Use Planning Unit to provide information on land quality on 22 sites around Basingstoke in Hampshire. The work forms part of MAFF's input to the Basingstoke and Deane Borough Local Plan.
- 1.2 Site 18 comprises 57.2 hectares of land to the north-west of Basingstoke, Hampshire and was surveyed during April 1993. The survey was undertaken at a detailed level of approximately one boring per hectare. A total of 52 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 long term limitations on its agricultural use. Part of the site has been surveyed previously in 1987 using guidelines contained in Technical Report 11/1 (MAFF, 1976). The present survey using MAFF's revised guidelines supersedes this information.

At the time of survey, the land was in cereals and permanent grassland.

- 1.3 The distribution of the grades and sub-grades 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 1:5000. It is accurate at this scale, but any enlargement may be misleading.

Distribution of Grades and Sub-grades

	Area(ha)	% total <u>agricultural land</u>
Grade 2	2.6	5.0
3a	12.4	23.7
3b	37.2	<u>71.3</u>
Total agricultural area	<u>52.2</u>	100.0
Non-agricultural	0.3	
Woodland	1.0	
Urban	<u>3.7</u>	
Total area of site	<u>57.2 ha</u>	

- 1.4 Appendix 1 gives a general description of the grades and land use categories identified in this survey.
- 1.5 Very good to moderate quality land has been mapped at this site. Land assigned to grades 2, 3a and 3b is limited by soil droughtiness arising from variable soil depth over chalk. The shallower the profile, the more severe the limitation. As a result very shallow profiles were assigned to subgrade 3b whilst deeper soils are less droughty and subgrade 3a is appropriate. This also includes some shallow profiles with chalk in a more weathered state which was found to be deeper rooting than elsewhere. Finally, small areas of grade 2 have been mapped where chalk occurs deeper still.

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 the 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 The detailed assessment of prevailing climate was made by interpolation from a 5 km 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.
- 2.4 No local climatic factors such as exposure or frost risk affect the site.

Climatic Interpolation

Grid Reference	SU 635 544	SU 630 543	SU 624 542
Altitude (m, AOD)	85	100	115
Accumulated Temperature (°days Jan-June)	1436	1419	1402
Average Annual Rainfall (mm)	755	771	786
Field Capacity Days	162	165	168
Moisture Deficit, wheat (mm)	104	101	98
Moisture Deficit, potatoes (mm)	96	92	88
Overall Climatic Grade	1	1	1

3. RELIEF

- 3.1 The site lies at an altitude 85-115 m AOD. Land falls in altitude gently from west to east. Neither slope gradient or micro relief affect the site.

4. GEOLOGY AND SOILS

- 4.1 British Geological Survey, Sheet 284, Basingstoke, (1981) shows the site to be mapped as Cretaceous Upper Chalk.
- 4.2 Soil Survey of England and Wales, Sheet 6, (1983) shows the site to be mapped as Andover 1 Association - "shallow well drained calcareous silty soils over chalk on slopes and crests. Deep calcareous and non-calcareous fine silty soils in valley bottoms". (SSEW, 1983).
- 4.3 Detailed field examination of the soils on the site reveals the presence of well drained fine loamy soils over chalk at varying depths.

5. AGRICULTURAL LAND CLASSIFICATION

- 5.1 Paragraph 1.3 and the table below provides the details of the area measurements for each grade. The distribution of each grade is shown on the attached ALC map.

- 5.2 The location of the soil observation points is shown on the attached Auger Sample Point map.

Grade 2

- 5.3 Very good quality agricultural land was found to the north and south of the site. Profiles typically comprise topsoils of medium clay loam and silty clay loam containing 1-4% flints by volume. Upper subsoils consist of heavy clay loam, occasionally medium clay loam and silty clay loam containing 3-40% chalk stones and to a lesser extent flints. This passes to chalk at a depth of 50-58 cm in the south, into which roots were found to penetrate effectively 45 cm. This chalk was found to be soft, weathered and easily rootable upon inspection (see pit 1). To the north chalk was encountered at a depth of 85 cm and rooting found to penetrate 20 cm into the chalk. This chalk was found to be harder, less weathered and less easily rootable. (see pits 2 and 3). Profiles are well drained, wetness class I but suffer from slight droughtiness arising from by a combination of shallow soil depth over chalk and the different characteristics of the chalk described above.

Subgrade 3A

- 5.4 Good quality agricultural land was found to the east and west of the site area. Profiles typically comprise topsoils of medium clay loam, occasionally medium silty clay loam containing 1-5% flints by volume. Upper subsoils comprise heavy clay loam or heavy silty clay loam with 2-60% chalk stones and weathered chalk. This passes to chalk at a depth of between 25-40 cm in the south of the site where the soft more rootable chalk is found (described above). A smaller area of land to the north passes to chalk at a depth of between 40-52 cm. Here chalk was found to be of the harder less weathered and less easily rootable type described previously. Profiles are calcareous throughout and well drained, wetness class I. However soils suffer from a moderate droughtiness limitation resulting from the occurrence of chalk higher up in the profile than those described for land graded 2.

Subgrade 3B

- 5.5 Moderate quality agricultural land is found over the majority of the site. Profiles typically comprise topsoils of calcareous medium clay loam, occasionally medium silty clay loam containing 1-5% flints and chalk stones by volume. This passes to chalk at a depth of 25-40 cm or, occasionally, a thin horizon of calcareous heavy clay loam containing 3-70% chalk lying above. Soil pit information revealed the presence of harder, less weathered, less easily rootable chalk, as described previously. Effective rooting depth in the chalk was found to be up to 20 cm (see pit 3). Profiles are well drained but due to the close proximity of chalk to the surface and shallow rooting depth soils suffer from significant droughtiness imperfections and are classified as subgrade 3B. Included in this map unit are some better quality profiles. These were not mapped separately due to the limited number and distribution.
- 5.6 The areas marked as urban, include houses and gardens with built-up or 'hard' uses and metalled roads.

5.7 The areas mapped as non-agricultural include a small area of municipal park associated with the cycle track and private gardens.

ADAS Ref: 1501/33/93
MAFF Ref: EL 15/144

Resource Planning Team
Guildford Statutory Group
ADAS Reading

Sources of Reference

BRITISH GEOLOGICAL SURVEY, 1981. 1:50,000 scale Solid and Drift Edition Geological Map Sheet 284 (Basingstoke).

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

METEOROLOGICAL OFFICE, 1989. Climatological datasets for agricultural land classification.

SOIL SURVEY OF ENGLAND AND WALES, 1983. 1:250,000 scale Soils Map Sheet 6, Soils of South East England and accompanying legend.

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.

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.

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 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/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

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 III

SOIL PIT AND SOIL BORING DESCRIPTIONS

- Contents :**
- * Soil Abbreviations : Explanatory Note
 - * Soil Pit Descriptions
 - * Database Printout : Boring Level Information
 - * Database Printout : Horizon Level Information

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 LITH** : 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 dolimitic 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 pedes 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 : BASINGSTOKE SITE 18 Pit Number : 1P

Grid Reference: SU63465439 Average Annual Rainfall : 771 mm
 Accumulated Temperature : 1419 degree days
 Field Capacity Level : 165 days
 Land Use : Cereals
 Slope and Aspect : 03 degrees SE

HORIZON	TEXTURE	COLOUR	STONES >2	TOT.STONE	MOTTLES	STRUCTURE
0- 25	MCL	10YR53 00	0	5		
25- 73	CH	00CH00 00	0	1		

Wetness Grade : 1 Wetness Class : I
 Gleying : 000 cm
 SPL : No SPL

Drought Grade : 3A APW : 85 mm MBW : -16 mm
 APP : 89 mm MBP : -3 mm

FINAL ALC GRADE : 3A
 MAIN LIMITATION : Droughtiness

SOIL PIT DESCRIPTION

Site Name : BASINGSTOKE SITE 18 Pit Number : 2P

Grid Reference: SU62805440 Average Annual Rainfall : 771 mm
 Accumulated Temperature : 1419 degree days
 Field Capacity Level : 165 days
 Land Use : Permanent Grass
 Slope and Aspect : 02 degrees SE

HORIZON	TEXTURE	COLOUR	STONES >2	TOT.STONE	MOTTLES	STRUCTURE
0- 25	MCL	10YR43 00	0	3		
25- 33	HCL	10YR54 66	0	70		
33- 50	CH	00CH00 00	0	3		

Wetness Grade : 1 Wetness Class : I
 Gleying : 000 cm
 SPL : No SPL

Drought Grade : 3B APW : 70 mm MBW : -31 mm
 APP : 70 mm MBP : -22 mm

FINAL ALC GRADE : 3B
 MAIN LIMITATION : Droughtiness

SOIL PIT DESCRIPTION

Site Name : BASINGSTOKE SITE 18 Pit Number : 3P

Grid Reference: SU62605440 Average Annual Rainfall : 771 mm
Accumulated Temperature : 1419 degree days
Field Capacity Level : 165 days
Land Use : Cereals
Slope and Aspect : degrees

HORIZON	TEXTURE	COLOUR	STONES >2	TOT.STONE	MOTTLES	STRUCTURE
0- 28	MCL	10YR53 00	0	3		
28- 48	CH	00CH00 00	0	5		

Wetness Grade : 1 Wetness Class : I
Gleying : 000 cm
SPL : No SPL

Drought Grade : 3B APW : 68 mm MBW : -33 mm
APP : 68 mm MBP : -24 mm

FINAL ALC GRADE : 3B
MAIN LIMITATION : Droughtiness

SAMPLE NO.	GRID REF	ASPECT USE	--WETNESS--				-WHEAT-		-POTS-		M.REL		EROSN	FROST		CHEM	ALC	COMMENTS
			GRDNT	GLEY	SPL	CLASS	GRADE	AP	MB	AP	MB	DRT	FLOOD	EXP	DIST	LIMIT		
1	SU62805470	PGR NE	01	000	1	1	129	28	112	20	2				DR	2	ROOT 105	
1P	SU63465439	CER SE	03	000	1	1	85	-16	89	-3	3A				DR	3A	ROOT 73 SFT CH	
2	SU62905470	PGR SE	01	000	1	1	65	-36	65	-27	3B				DR	3B	ROOTS 46	
2P	SU62805440	PGR SE	02	000	1	1	70	-31	70	-22	3B				DR	3B	ROOT 50	
3	SU62705460	PGR SE	01	000	1	1	78	-23	79	-13	3B				DR	3B	ROOTS 55	
3P	SU62605440	CER		000	1	1	68	-33	68	-24	3B				DR	3B	ROOT 48	
4	SU62805460	PGR NE		000	1	1	97	-4	103	11	3A				DR	3A	ROOTS 70	
5	SU62905460	PGR E	04	000	1	1	69	-32	69	-23	3B				DR	3B	ROOT 48	
9	SU62705450	PGR SE		000	1	1	80	-21	83	-9	3B				DR	3B	ROOTS 60	
10	SU62805450	PGR E	02	000	1	1	83	-18	85	-7	3A				DR	3A	ROOTS 59	
11	SU62905450	PGR E		000	1	1	65	-36	65	-27	3B				DR	3B	ROOTS 46	
12	SU63005450	PGR E	01	000	1	1	82	-19	85	-7	3A				DR	3A	ROOTS 60	
13	SU63105450	PGR E	01	000	1	1	67	-34	67	-25	3B				DR	3B	ROOTS 47	
14	SU63205450	PGR SE		000	1	1	68	-33	68	-24	3B				DR	3B	ROOT 48	
15	SU62505440	CER		000	1	1	85	-16	90	-2	3A				DR	3A	ROOT 65	
16	SU62605440	CER SE	02	000	1	1	68	-33	68	-24	3B				DR	3B	ROOT 48	
17	SU62705440	PGR SE	02	000	1	1	98	-3	101	9	3A				DR	3A	ROOT 75	
18	SU62805440	PGR SE	02	000	1	1	76	-25	77	-15	3B				DR	3B	ROOT 55	
19	SU62905440	PGR SE	02	000	1	1	83	-18	85	-7	3A				DR	3A	ROOT 60	
20	SU63005440	PGR E	01	000	1	1	80	-21	83	-9	3B				DR	3B	ROOTS 60	
21	SU63105440	PGR SE	01	000	1	1	83	-18	86	-6	3A				DR	3A	ROOTS 60	
22	SU63205440	PGR SE	01	000	1	2	63	-38	63	-29	3B				DR	3B	ROOTS 45	
23	SU63305440	CER S	01	000	1	1	65	-36	65	-27	3B				DR	3B	ROOTS 46	
24	SU63405440	CER S	02	000	1	1	98	-3	94	2	3A				DR	3A	ROOT 85 SFT CH	
25	SU62405430	PGR		000	1	1	97	-4	102	10	3A				DR	3A	ROOTS 72	
26	SU62505430	CER		000	1	1	107	6	106	14	2				DR	2	ROOTS 85	
27	SU62605430	CER		000	1	1	69	-32	69	-23	3B				DR	3B	ROOTS 48	
28	SU62705430	CER		000	1	1	71	-30	71	-21	3B				DR	3B	ROOTS 49	
29	SU62805430	PGR E	01	000	1	1	64	-37	64	-28	3B				DR	3B	ROOTS 45	
30	SU62905430	PGR S	01	000	1	1	75	-26	77	-15	3B				DR	3B	ROOTS 58	
31	SU63005430	CER SE	02	000	1	1	75	-26	75	-17	3B				DR	3B	ROOT 50	
32	SU63105430	CER S	02	000	1	1	76	-25	76	-16	3B				DR	3B	ROOT 50	
33	SU63205430	CER SE	02	000	1	1	121	20	107	15	2				DR	2	ROOT103 SFT CH	
34	SU63305430	CER SE	04	000	1	1	108	7	97	5	2				DR	2	ROOT 95 SFT CH	
35	SU63405430	CER SE		000	1	1	102	1	113	21	3A				DR	3A	IMP Q2DR	
36	SU62305420	CER SE	01	000	1	1	106	5	110	18	2				DR	2	ROOT 75	
37	SU62405420	CER SE	02	000	1	1	75	-26	77	-15	3B				DR	3B	ROOT 55	
38	SU62505420	CER SE	03	000	1	1	75	-26	76	-16	3B				DR	3B	ROOT 55	
39	SU62605420	CER SE	03	000	1	1	78	-23	79	-13	3B				DR	3B	ROOT 52	
40	SU62705420	CER SE	03	000	1	1	70	-31	70	-22	3B				DR	3B	ROOT 48	
41	SU62805420	CER SE	02	000	1	1	71	-30	71	-21	3B				DR	3B	ROOT 48	
42	SU62905420	CER SE	03	000	1	1	85	-16	89	-3	3A				DR	3A	ROOT 63	

SAMPLE NO.	GRID REF	ASPECT		GRDNT	GLEYS	--WETNESS--		-WHEAT-		-POTS-		M.REL		EROSN.	FROST	CHEM.	ALC.	COMMENTS
		USE				CLASS	GRADE	AP	MB	AP	MB	DRT	FLOOD	EXP	DIST	LIMIT		
43	SU63005420	CER	SE	03	000	1	1	86	-15	89	-3	3A				DR	3A	ROOT 60
44	SU63105420	CER	SE	05	000	1	1	96	-5	95	3	3A				DR	3A	ROOT 80 SFT
45	SU63205420	CER	SE		000	1	1	106	5	120	28	2				DR	2	IMP 70
46	SU62405410	CER	SE	02	000	1	1	74	-27	74	-18	3B				DR	3A	IMP 45CM
47	SU62505410	CER	SE	02	000	1	1	76	-25	77	-15	3B				DR	3B	ROOTS 55
48	SU62605410	CER	SE	02	000	1	1	64	-37	64	-28	3B				DR	3B	ROOTS 45
49	SU62705410	CER	SE	05	000	1	1	90	-11	95	3	3A				DR	3A	ROOT 66
50	SU62805410	CER	SE	03	000	1	1	75	-26	76	-16	3B				DR	3B	ROOT 55
51	SU62905410	CER	SE	05	000	1	1	93	-8	92	0	3A				DR	3A	ROOT 80 SFT CH
52	SU63005410	CER	SE		000	1	1	99	-2	112	20	3A				DR	3A	IMP Q2DR
53	SU62405400	CER	SE	02	000	1	1	69	-32	69	-23	3B				DR	3B	ROOTS 48
54	SU62505400	CER	SE	02	000	1	1	64	-37	64	-28	3B				DR	3B	ROOTS 45
56	SU62705400	CER	SE	05	000	1	1	75	-26	76	-16	3B				DR	3B	ROOT 55

SAMPLE	DEPTH	TEXTURE	COLOUR	-----MOTTLES-----		PED		-----STONES-----			STRUCT/ CONSIST	SUBS			CALC	
				COL	ABUN	CONT	COL.	GLE	>2	>6		LITH	TOT	STR		POR
1	0-24	mc1	10YR42 00					0	0	HR	1					Y
	24-55	hc1	10YR54 00					0	0	CH	3	M				Y
	55-85	hc1	10YR54 00					0	0	CH	40	M				Y
	85-105	ch	00CH00 00					0	0	HR	5	P				Y
1P	0-25	mc1	10YR53 00					0	0	CH	5					Y
	25-73	ch	00CH00 00					0	0	HR	1	P				Y
2	0-26	mc1	10YR42 00					0	0	HR	1					Y
	26-46	ch	00CH00 00					0	0	HR	5	P				Y
2P	0-25	mc1	10YR43 00					0	0	CH	3					Y
	25-33	hc1	10YR54 66					0	0	CH	70	M				Y
	33-50	ch	00CH00 00					0	0	HR	3	P				Y
3	0-24	mc1	10YR42 00					0	0	HR	1					Y
	24-35	hc1	10YR54 00					0	0	CH	3	M				Y
	35-55	ch	00CH00 00					0	0	HR	5	P				Y
3P	0-28	mc1	10YR53 00					0	0	HR	3					Y
	28-48	ch	00CH00 00					0	0	HR	5	P				Y
4	0-22	mc1	10YR42 00					0	0	HR	1					Y
	22-50	c	75YR54 00					0	0	CH	3	M				Y
	50-70	ch	00CH00 00					0	0	HR	5	P				Y
5	0-28	mc1	10YR43 00					0	0	CH	3					Y
	28-48	ch	00CH00 00					0	0	HR	5	P				Y
9	0-24	mc1	10YR42 00					0	0	HR	1					Y
	24-40	hc1	10YR66 00					0	0	CH	55	M				Y
	40-60	ch	00CH00 00					0	0		0	P				Y
10	0-25	mc1	10YR42 00					0	0	HR	1					Y
	25-39	c	75YR54 00					0	0	CH	10	M				Y
	39-59	ch	00CH00 00					0	0	HR	5	P				Y
11	0-26	mc1	10YR42 43					0	0	HR	2					Y
	26-46	ch	00CH00 00					0	0	HR	5	P				Y
12	0-18	mc1	10YR42 00					0	0	HR	1					Y
	18-40	hc1	75YR54 00					0	0	CH	10	M				Y
	40-60	ch	00CH00 00					0	0	HR	5	P				Y
13	0-27	mc1	10YR42 00					0	0	HR	2					Y
	27-47	ch	00CH00 00					0	0	HR	5	P				Y
14	0-28	mc1	10YR43 00					0	0	CH	5					Y
	28-48	ch	00CH00 00					0	0	HR	5	P				Y

SAMPLE	DEPTH	TEXTURE	COLOUR	----MOTTLES----			PED	----STONES----			STRUCT/	SUBS	SPL	CALC
				COL	ABUN	CONT	COL.	GLE	>2	>6	LITH	TOT		
15	0-28	mc1	10YR43 00					0	0	HR	2			Y
	28-45	hc1	10YR44 00					0	0	CH	60	M		Y
	45-65	ch	00CH00 00					0	0	HR	5	P		Y
16	0-28	mc1	10YR43 00					0	0	HR	3			Y
	28-48	ch	00CH00 00					0	0	HR	5	P		Y
17	0-28	mc1	10YR43 00					0	0	HR	1			Y
	28-38	hc1	10YR44 00					0	0	CH	2	M		Y
	38-55	hc1	10YR44 00					0	0	CH	60	M		Y
	55-75	ch	00CH00 00					0	0	HR	5	P		Y
18	0-28	mc1	10YR43 00					0	0	HR	1			Y
	28-35	hc1	10YR44 00					0	0	CH	70	M		Y
	35-55	ch	00CH00 00					0	0	HR	5	P		Y
19	0-28	mzc1	10YR43 00					0	0	HR	2			Y
	28-40	hc1	10YR54 56					0	0	CH	70	M		Y
	40-60	ch	00CH00 00					0	0	HR	5	P		Y
20	0-25	mc1	10YR43 00					0	0	HR	2			Y
	25-40	hc1	10YR54 00					0	0	HR	20	M		
	40-60	ch	00CH00 00					0	0	HR	5	P		Y
21	0-25	mc1	10YR43 00					0	0	HR	2			Y
	25-40	hc1	10YR54 00					0	0	CH	10	M		Y
	40-60	ch	00CH00 00					0	0	HR	5	P		Y
22	0-25	hc1	10YR43 00					0	0	HR	2			Y
	25-45	ch	00CH00 00					0	0	HR	5	P		Y
23	0-26	mc1	10YR42 43					0	0	HR	2			Y
	26-46	ch	00CH00 00					0	0	HR	5	P		Y
24	0-26	mc1	10YR42 00					0	0	CH	1			Y
	26-40	hc1	10YR54 00					0	0	CH	60	M		Y
	40-85	ch	00CH00 00					0	0	HR	1	P		Y
25	0-19	mc1	10YR42 00					0	0	HR	1			
	19-38	c	75YR54 00					0	0	HR	2	M		
	38-52	hc1	10YR64 00					0	0	CH	20	M		Y
	52-72	ch	00CH00 00					0	0	HR	5	P		Y
26	0-28	mc1	10YR42 00					0	0	CH	2			Y
	28-65	hc1	10YR54 00					0	0	CH	35	M		Y
	65-85	ch	00CH00 00					0	0	HR	5	P		Y
27	0-28	mc1	10YR42 00					0	0	CH	3			Y
	28-48	ch	00CH00 00					0	0	HR	5	P		Y

SAMPLE	DEPTH	TEXTURE	COLOUR	---MOTTLES---			PED	---STONES---			STRUCT/	SUBS	SPL	CALC
				COL	ABUN	CONT	COL.	GLEY	>2	>6	LITH	TOT		
28	0-29	mc1	10YR42 00					0	0	CH	3			Y
	29-49	ch	00CH00 00					0	0	HR	5	P		Y
29	0-25	mc1	10YR42 00					0	0	CH	2			Y
	25-45	ch	00CH00 00					0	0	HR	5	P		Y
30	0-23	mc1	10YR42 00					0	0	CH	2			Y
	23-38	hc1	10YR66 00					0	0	CH	75	M		Y
	38-58	ch	00CH00 00					0	0	HR	5	P		Y
31	0-30	mzc1	10YR43 00					0	0	HR	2			Y
	30-50	ch	00CH00 00					0	0	HR	5	P		Y
32	0-30	mzc1	10YR43 00					0	0	CH	2			Y
	30-50	ch	00CH00 00					0	0	HR	5	P		Y
33	0-28	mzc1	10YR43 00					0	0	HR	4			Y
	28-58	hc1	10YR44 00					0	0	CH	20	M		Y
	58-103	ch	00CH00 00					0	0	HR	5	P		Y
34	0-28	mc1	10YR43 00					0	0	HR	3			Y
	28-35	mc1	10YR54 00					0	0	CH	20	M		Y
	35-50	mzc1	10YR66 00					0	0	CH	70	M		Y
	50-95	ch	00CH00 00					0	0	HR	5	P		Y
35	0-28	mc1	10YR43 00					0	0	HR	2			Y
	28-70	hc1	10YR44 00					0	0	HR	5	M		
36	0-26	mzc1	10YR43 00					0	0	HR	2			
	26-35	hc1	10YR44 00					0	0		0	M		Y
	35-55	hzc1	10YR44 00					0	0	CH	5	M		Y
	55-75	ch	00CH00 00					0	0	HR	5	P		Y
37	0-28	mc1	10YR43 00					0	0	HR	3			Y
	28-35	hc1	10YR44 00					0	0	CH	60	M		Y
	35-55	ch	00CH00 00					0	0	HR	5	P		Y
38	0-25	mzc1	10YR53 00					0	0	HR	3			Y
	25-35	hc1	10YR44 00					0	0	CH	80	M		Y
	35-55	ch	00CH00 00					0	0	HR	5	P		Y
39	0-32	mzc1	10YR43 00					0	0	HR	2			Y
	32-52	ch	00CH00 00					0	0	HR	5	P		Y
40	0-28	mzc1	10YR43 00					0	0	HR	5			Y
	28-48	ch	10YR73 00					0	0	HR	5	P		Y
41	0-28	mzc1	10YR53 00					0	0	CH	5			Y
	28-48	ch	00CH00 00					0	0	HR	5	P		Y

SAMPLE	DEPTH	TEXTURE	COLOUR	---MOTTLES---			PED COL.	---STONES---			STRUCT/ CONSIST	SUBS					
				COL	ABUN	CONT		GLE	>2	>6		LITH	TOT	STR	POR	IMP	SPL
42	0-28	mzc1	10YR43 00					0	0	HR	5						Y
	28-43	hzc1	10YR44 66					0	0	CH	60		M				Y
	43-63	ch	00CH00 00					0	0	HR	5		P				Y
43	0-28	mzc1	10YR42 53					0	0	HR	2						Y
	28-40	hc1	10YR44 00					0	0	CH	25		M				Y
	40-60	ch	00CH00 00					0	0	HR	5		P				Y
44	0-28	mzc1	10YR43 00					0	0	HR	3						Y
	28-35	hc1	10YR44 00					0	0	CH	25		M				Y
	35-80	ch	00CH00 00					0	0	HR	5		P				Y
45	0-28	mzc1	10YR43 00					0	0	HR	3						Y
	28-70	hzc1	10YR44 00					0	0	HR	5		M				Y
46	0-25	mc1	10YR42 43					0	0	HR	1						Y
	25-45	mc1	75YR54 00					0	0	HR	7		M				Y
47	0-27	mc1	10YR42 00					0	0	CH	2						Y
	27-35	hc1	10YR66 00					0	0	CH	60		M				Y
	35-55	ch	00CH00 00					0	0	HR	5		P				Y
48	0-25	mc1	10YR42 00					0	0	HR	1						Y
	25-45	ch	00CH00 00					0	0	HR	5		P				Y
49	0-27	mc1	10YR43 00					0	0	HR	5						Y
	27-46	hc1	10YR44 00					0	0	CH	10		M				Y
	46-66	ch	00CH00 00					0	0	HR	5		P				Y
50	0-28	mc1	10YR43 00					0	0	HR	3						Y
	28-35	hc1	10YR54 66					0	0	CH	70		M				Y
	35-55	ch	00CH00 00					0	0	HR	5		P				Y
51	0-28	mc1	10YR53 00					0	0	HR	5						Y
	28-35	hzc1	10YR74 00					0	0	CH	30		M				Y
	35-80	ch	00CH00 00					0	0	HR	5		P				Y
52	0-28	mc1	10YR53 00					0	0	HR	2						Y
	28-45	hc1	10YR54 00					0	0		0		M				Y
	45-70	zc	10YR54 00					0	0	HR	5		M				Y
53	0-28	mc1	10YR42 00					0	0	HR	1						Y
	28-48	ch	00CH00 00					0	0	HR	5		P				Y
54	0-25	mc1	10YR42 00					0	0	HR	1						Y
	25-45	ch	00CH00 00					0	0	HR	5		P				Y
56	0-28	mc1	10YR43 00					0	0	HR	5						Y
	28-35	hc1	10YR44 00					0	0	CH	50		M				Y
	35-55	ch	00CH00 00					0	0	HR	5		P				Y