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Arun District Local Plan
Site 18B : Morrells Farm,
North Bersted
Agricultural Land Classification,
ALC Map and Report
March 1994

AGRICULTURAL LAND CLASSIFICATION REPORT

ARUN DISTRICT LOCAL PLAN SITE 18B : MORRELLS FARM, NORTH BERSTED

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 Arun District of West Sussex. The work forms part of MAFF's statutory input to the preparation of the Arun District Local Plan.
- 1.2 Site 18B comprises 34 hectares of land at Morrells Farm, North Bersted, West Sussex. An Agricultural Land Classification, (ALC), survey was carried out during March 1994. The survey was undertaken at a detailed level of approximately one boring per hectare. A total of 41 borings and 2 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 on the site was cereal cropping with a very small area of permanent grazing in the north east. Land mapped as urban comprises roads and residential property.
- 1.4 The distribution of grades and subgrades is shown on the attached ALC map and the areas and extent 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.

Table 1 : Distribution of Grades and Subgrades

Grade	Area (ha)	% of Agricultural Land
3a	24.8	78.5
3b	6.8	<u>21.5</u>
Urban	<u>2.0</u>	100% (31.6 ha)
Total area of site	33.6	

- 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 the site was classified as good quality, Subgrade 3a, agricultural land with some moderate quality, Subgrade 3b, around the margins. The soil profiles chiefly comprise non-calcareous, slightly stony, medium silty clay loam topsoils over less stony, gleyed, heavy silty clay loam and clay subsoils. In most profiles the heavy silty clay loam and/or clay lower subsoils were found to be

slowly permeable causing a moderate soil wetness limitation consistent with Subgrade 3a. In places, however, the slowly permeable layer occurs at shallower depths thus increasing drainage impedance and causing a more significant wetness limitation. The land in these areas are therefore restricted to Subgrade 3b.

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. However, climatic factors do interact with soil properties to influence soil wetness and droughtiness limitations.
- 2.4 No local climatic factors such as exposure or frost risk affect the site.

Table 2 : Climatic Interpolation

Grid Reference	SU914004	SZ911998
Altitude (m)	5	5
Accumulated Temperature (days)	1545	1546
Average Annual Rainfall (mm)	744	739
Field Capacity (days)	151	150
Moisture Deficit, Wheat (mm)	120	121
Moisture Deficit, Potatoes (mm)	117	118
Overall Climatic Grade	1	1

- 2.5 The boundary between 150 and 151 field capacity days crosses the southern part of the area surveyed. This is important in terms of the assessment of soil wetness particularly where topsoils are calcareous. At this locality topsoils were generally non-calcareous, so the boundary is less significant, but it was considered in the ALC grading of the site.

3. Relief

- 3.1 The site is flat and low-lying at 5m AOD.

4. Geology and Soil

- 4.1 British Geological Survey (1975), Sheet 332, Bognor shows the site to be underlain by brickearth overlying Reading Beds in the north-east and brickearth over London Clay in the south-west.
- 4.2 The Soil Survey map of this area (SSEW, 1967, 1:25,000, Sheet SU90, Bognor Regis) shows that the soils on this site comprise the Park Gate series, described as 'Deep stoneless silty soils variably affected by groundwater', (SSEW, 1983).

Detailed field examination confirmed that similar soils, affected by imperfect drainage are found on this site.

5. Agricultural Land Classification

- 5.1 Table 1 provided 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.
- 5.3 **Subgrade 3a**

The majority of the site has been classified as good quality, Subgrade 3a, land with a moderate soil wetness limitation. Most of the profiles show evidence of wetness. Topsoils comprise non-calcareous, slightly stony, medium silty clay loams. The upper subsoil generally comprises a gleyed heavy silty clay loam occasionally medium silty clay loam. Between 41-67 cm depth the lower subsoil becomes a heavy silty clay loam or clay with abundant mottles and manganese nodules in a pale grey matrix. Soil inspection pit 1 indicated this horizon to be slowly permeable. Drainage impedance caused by this slowly permeable layer results in a moderate wetness limitation consistent with Wetness Class III. This area has therefore been classified as Subgrade 3a due to potential restrictions in the flexibility for cropping, stocking and cultivations.

5.4 Subgrade 3b

Small discrete areas in the north and west of the site were assessed as moderate quality, Subgrade 3b, agricultural land. The non-calcareous, slightly stony medium or heavy silty clay loam topsoils contained few or common ochreous mottles in the topsoil becoming highly gleyed within the upper subsoils. These heavy silty clay loam or clay upper subsoils were assessed as having structures (Pit 2) which indicate slow permeability. As they occur between 28-40 cm depth they impose a more severe drainage impedance (Wetness Class IV) than elsewhere on the site.

The potential of such land is reduced and there may be particular difficulties with the timing of cultivations or stocking. This area is therefore limited to Subgrade 3b. Occasional borings in this mapping unit were found to be more stony in the subsoil and thus better drained. However, these were not numerous enough to map separately.

ADAS Ref: 4202/54/94
MAFF Ref: EL42/460

Resource Planning Team
Guildford Statutory Group
ADAS Reading

SOURCES OF REFERENCE

British Geological Survey (1975), Sheet No. 332, Bognor, 1:50,000

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 (1967), Soil Maps of the West Sussex Coastal Plain, Sheet SU90, 1:25,000.

Soil Survey of Great Britain (1967) Bulletin 3, Soils of the West Sussex Coastal Plain.

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.

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.

¹The 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 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 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. **GLEYSPL** : 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 appropriate horizon.

13. **SPL** : Slowly permeable layer. If the soil horizon is slowly permeable a 'Y' will appear in this column.

14. **CALC** : If the soil horizon is calcareous, a 'Y' will appear in this column.

15. Other notations

APW : available water capacity (in mm) adjusted for wheat

APP : available water capacity (in mm) adjusted for potatoes

MBW : moisture balance, wheat

MBP : moisture balance, potatoes

SAMPLE NO.	GRID REF	ASPECT USE	--WETNESS--		-WHEAT-		-POTS-		M.REL		EROSN	FROST	CHEM	ALC	COMMENTS
			GRDNT	GLEYSPL	CLASS	GRADE	AP	MB	AP	MB	DRT	FLOOD	EXP	DIST	
1	SU91300040	CER	0	038	4	3B	000	0	000	0			WE	3B	
1P	SU91400020	CER	0	065	3	3A	118	-2	120	3	3A		WE	3A	
1S	SU91370032	CER	0		2	2	000	0	000	0			TS	2	
2	SU91400040	CER	0	035	4	3B	000	0	000	0			WE	3B	
2P	SZ91109990	CER	0	040	4	3B	000	0	000	0			WE	3B	
2S	SU90970017	CER	0		2	2	000	0	000	0			TS	2	
3	SU91500040	CER	0	058	3	3A	000	0	000	0			WE	3A	
3S	SU91470095	CER	0		2	2	000	0	000	0			TS	2	
4	SU91600040	PGR	0	045	3	3A	000	0	000	0			WE	3A	
5	SU91100030	CER	0	055	3	3A	000	0	000	0			WE	3A	
6	SU91200030	CER	0	055	3	3A	000	0	000	0			WE	3A	
7	SU91300030	CER	0	045	3	3A	000	0	000	0			WE	3A	
8	SU91400030	CER	0	046	3	3A	000	0	000	0			WE	3A	
9	SU91500030	CER	0	095	1	1	148	28	113	-4	2		DR	2	
10	SU91600030	STB	0	055	3	3A	145	25	125	8	2		WE	3A	
11	SU90800020	CER	035	035	4	3B	080	-41	080	-38	3B		WE	3B	
12	SU90900020	CER	034	034	4	3B	068	-53	068	-50	4		WE	3B	IMP 40
13	SU91000020	CER	0	035	4	3B	123	3	107	-10	3A		WE	3B	
14	SU91100020	CER	045	058	3	3A	131	11	113	-4	2		WE	3A	
15	SU91200020	CER	0	058	3	3A	134	14	110	-7	2		WE	3A	
16	SU91300020	CER	0	048	3	3A	128	8	109	-8	2		WE	3A	
17	SU91400020	CER	0	055	3	3A	133	13	110	-7	2		WE	3A	
18	SU91500020	CER	0	046	3	3A	137	17	108	-9	2		WE	3A	
19	SU90900010	CER	029	029	4	3B	128	7	102	-16	3A		WE	3B	
20	SU91000010	CER	0	046	3	3A	000	0	000	0			WE	3A	
21	SU91100010	CER	0	058	3	3A	135	15	117	0	2		WE	3A	
22	SU91200010	CER	0	058	3	3A	134	14	116	-1	2		WE	3A	
23	SU91300010	CER	0	028	4	3B	140	20	115	-2	2		WE	3B	
24	SU91400010	CER	0	067	3	3A	137	17	117	0	2		WE	3A	
25	SU91000000	CER	035		2	2	125	4	119	1	3A		WE	2	DISTURB
26	SU91100000	CER	030	040	3	3A	000	0	000	0			WE	3A	
27	SU91200000	CER	030	050	3	3A	000	0	000	0			WE	3A	
28	SU91300000	CER	025	025	4	3B	000	0	000	0			WE	3B	
29	SZ91109990	CER	0	028	4	3B	000	0	000	0			WE	3B	
30	SZ91209990	CER	0	043	3	3A	000	0	000	0			WE	3A	
31	SZ91309990	CER	0	038	4	3B	000	0	000	0			WE	3B	
32	SZ91109980	CER	0	035	4	3B	000	0	000	0			WE	3B	
33	SZ91209980	CER	0	045	3	3A	000	0	000	0			WE	3A	
34	SU91320040	CER	038	058	3	3A	000	0	000	0			WE	3A	
35	SU91420047	CER	030	043	3	3A	000	0	000	0			WE	3A	
36	SZ91179995	CER	030	045	3	3A	000	0	000	0			WE	3A	
37	SU91200002	CER	030	048	3	3A	000	0	000	0			WE	3A	

SAMPLE NO.	GRID REF	USE	ASPECT		--WETNESS--		-WHEAT-		-POTS-		M.REL		EROSN	FROST	CHEM	ALC	COMMENTS
			GRDNT	GLEYSPL	CLASS	GRADE	AP	MB	AP	MB	DRT	FLOOD	EXP	DIST	LIMIT		
3	SU90920001	CER	028	043	3	3A	000	0	000	0					WE	3A	
39	SU90970005	CER	038	049	3	3A	000	0	000	0					WE	3A	
40	SZ91059995	CER	025	045	3	3A	000	0	000	0					WE	3A	
1	SZ91179987	CER	0	043	3	3A	000	0	000	0					WE	3A	

SAMPLE	DEPTH	TEXTURE	COLOUR	----MOTTLES-----			PED		----STONES----			STRUCT/ CONSIST	SUBS			SPL	CALC
				COL	ABUN	CONT	COL.	GLE	>2	>6	LITH		TOT	STR	POR		
1	0-38	mzc1	10YR53 00 10YR68 00 C					Y	1	0	HR	3					
	38-60	c	10YR63 00 75YR46 00 M				00MN00	00	Y	0	0	0		P	Y		Y
1P	0-26	mzc1	10YR53 00 10YR68 00 C					Y	1	0	HR	3					
	26-49	mzc1	10YR63 00 10YR58 72 M				00MN00	00	Y	0	0	HR	1	MCSAB	FR	M	
	49-65	mzc1	10YR62 00 10YR68 72 M				00MN00	00	Y	0	0	HR	1	MCSAB	FR	M	
	65-90	hzc1	10YR53 00 75YR68 00 M				00MN00	00	Y	0	0	HR	1	WKMA	B	FM	P
1S	0-25	mzc1	10YR52 00 10YR58 00 C					Y	8	0	HR	15					
2	0-35	mzc1	10YR53 00 10YR68 00 C					Y	1	0	HR	2					
	35-60	c	10YR63 71 75YR68 00 M				00MN00	00	Y	0	0	HR	1		P	Y	Y
2P	0-28	hzc1	25Y 53 00 10YR68 51 C					Y	1	0	HR	3					
	28-40	hzc1	25Y 53 00 10YR68 00 M					Y	0	0	HR	1	MCSAB	FR	M		
	40-70	hzc1	25Y 61 00 75YR46 00 M				00MN00	00	Y	0	0	HR	1	WKCSAB	FR	M	Y
2S	0-25	mzc1	10YR52 00 10YR58 00 C					Y	9	0	HR	17					
3	0-45	mzc1	10YR53 00 10YR68 00 C					Y	1	0	HR	3					
	45-58	hzc1	10YR71 00 10YR68 00 M					Y	0	0	HR	1		M			
	58-80	c	10YR71 63 75YR46 00 M				00MN00	00	Y	0	0	HR	1		P	Y	Y
3S	0-25	mzc1	10YR52 00 10YR58 00 C					Y	9	0	HR	17					
4	0-25	mzc1	10YR52 00 10YR68 00 C					Y	0	0	HR	1					
	25-38	mzc1	10YR53 00 10YR68 00 C					Y	0	0	HR	1		M			
	38-45	hzc1	10YR53 00 75YR58 00 M				00MN00	00	Y	0	0	HR	1		M		
	45-80	c	10YR63 71 75YR46 00 M				00MN00	00	Y	0	0	HR	1		P	Y	Y
5	0-35	mzc1	10YR53 00 10YR68 00 C					Y	2	0	HR	5					
	35-55	hzc1	10YR62 00 10YR68 00 M					Y	0	0		0		M			
	55-70	c	10YR63 00 75YR46 00 M				00MN00	00	Y	0	0	0		P	Y		Y
6	0-35	mzc1	10YR53 00 10YR68 00 C					Y	1	0	HR	3					
	35-55	hzc1	10YR62 00 75YR68 00 M					Y	0	0		0		M			
	55-85	c	10YR63 00 75YR46 00 M				00MN00	00	Y	0	0	0		P	Y		Y
7	0-32	mzc1	10YR53 00 10YR68 00 C					Y	1	0	HR	3					
	32-45	hzc1	10YR62 00 75YR68 00 M					Y	0	0		0		M			
	45-80	c	10YR63 00 75YR46 00 M				00MN00	00	Y	0	0	0		P	Y		Y
8	0-36	mzc1	10YR53 00 10YR68 00 C					Y	3	0	HR	6					
	36-46	hzc1	10YR62 00 75YR46 00 M				00MN00	00	Y	0	0	HR	1		M		
	46-70	c	75YR63 00 75YR46 00 M				00MN00	00	Y	0	0	HR	1		P	Y	Y
9	0-35	mc1	10YR53 00 10YR53 00 C					Y	1	0	HR	3					
	35-55	ms1	10YR63 00 75YR58 00 C					Y	0	0	HR	1		M			
	55-95	ms1	10YR72 00 75YR46 00 M					Y	0	0		0		M			
	95-110	sc	10YR71 00 75YR46 00 M				00MN00	00	Y	0	0	0		M			Y

SAMPLE	DEPTH	TEXTURE	COLOUR	-----MOTTLES-----			PED		-----STONES-----			STRUCT/ CONSIST	SUBS				
				COL	ABUN	CONT	COL.	GLE	>2	>6	LITH		TOT	STR	POR	IMP	SPL
10	0-35	mzc1	10YR53 00 10YR68 00 C					Y	0	0	HR	1					
	35-55	mzc1	10YR63 00 10YR68 00 C					Y	0	0		0	M			Y	
	55-90	hzc1	10YR61 00 75YR46 00 M					00MN00	00	Y	0	0	0	P	Y		Y
	90-110	c	10YR61 00 75YR46 00 M					00MN00	00	Y	0	0	0	P	Y		Y
11	0-35	mzc1	10YR43 00 10YR68 00 F							3	0	HR	8				
	35-50	c	10YR53 00 75YR58 00 M					00MN00	00	Y	0	0	HR	3	P	Y	Y
12	0-34	mzc1	10YR43 00 10YR68 00 F							3	0	HR	8				
	34-40	c	10YR53 00 75YR58 00 C					Y	0	0	HR	15	M				Y
13	0-35	hzc1	25Y 53 00 10YR68 00 C					00MN00	00	Y	1	0	HR	2			
	35-45	c	25Y 62 00 75YR58 00 M					00MN00	00	Y	0	0	0	P	Y		Y
	45-110	c	25Y 62 00 75YR58 00 M					00MN00	00	Y	0	0	0	P	Y		Y
14	0-45	mzc1	10YR53 00 10YR68 00 F							1	0	HR	3				
	45-58	hzc1	10YR63 71 75YR58 00 C					00MN00	00	Y	0	0	HR	1	M		
	58-110	c	10YR71 00 75YR46 00 M					00MN00	00	Y	0	0	HR	1	P	Y	Y
15	0-32	mzc1	10YR53 00 10YR68 00 C						Y	2	0	HR	5				
	32-48	mzc1	10YR68 00 10YR68 00 C						Y	0	0	0	M				
	48-58	hzc1	10YR63 00 75YR58 00 M					00MN00	00	Y	0	0	HR	1	M		
	58-80	c	10YR71 00 75YR46 00 M					00MN00	00	Y	0	0	HR	1	P	Y	Y
	80-110	hzc1	10YR63 71 75YR58 00 M					00MN00	00	Y	0	0	0	P	Y		Y
16	0-31	mzc1	10YR53 00 10YR68 00 C						Y	2	0	HR	5				
	31-48	mzc1	10YR63 71 10YR68 00 C						Y	0	0	HR	2	M			
	48-58	hzc1	10YR63 71 75YR58 00 M					00MN00	00	Y	0	0	HR	1	P	Y	Y
	58-110	c	10YR71 00 75YR46 00 M					00MN00	00	Y	0	0	HR	1	P	Y	Y
17	0-35	mzc1	25Y 53 00 10YR38 00 C						Y	2	0	HR	3				
	35-55	hzc1	10YR53 00 10YR68 00 C					00MN00	00	Y	0	0	HR	1	M		
	55-75	hzc1	10YR66 00 75YR58 00 M					00MN00	00	Y	0	0	HR	1	P	Y	Y
	75-110	c	10YR71 00 75YR46 00 M					00MN00	00	Y	0	0	HR	1	P	Y	Y
18	0-28	mzc1	25Y 53 00 10YR68 00 C						Y	1	0	HR	5				
	28-38	mzc1	10YR53 00 10YR68 00 C						Y	0	0	HR	2	M			
	38-46	mzc1	10YR63 00 10YR68 00 C						Y	0	0	HR	2	M			
	46-67	hzc1	10YR63 71 75YR58 00 M						Y	0	0	HR	1	M			Y
	67-88	c	10YR63 71 75YR58 00 M					00MN00	00	Y	0	0	HR	1	P	Y	Y
	88-120	c	10YR71 00 75YR46 00 M					00MN00	00	Y	0	0	HR	1	P	Y	Y
19	0-29	mzc1	10YR42 00 10YR68 00 F							2	0	HR	5				
	29-75	hzc1	10YR63 00 75YR58 00 M						Y	0	0	0	P	Y		Y	
	75-110	hzc1	10YR63 00 75YR58 00 C						Y	0	0	0	M				Y
20	0-36	mc1	25Y 53 00 10YR58 00 C						Y	1	0	HR	2				
	36-46	hc1	10YR53 00 10YR68 62 M						Y	0	0	0	M				
	46-70	c	10YR62 00 75YR46 00 M					00MN00	00	Y	0	0	0	P	Y		Y

SAMPLE	DEPTH	TEXTURE	COLOUR	----MOTTLES-----			PED		----STONES----			STRUCT/ CONSIST	SUBS					
				COL	ABUN	CONT	COL.	GLE	>2	>6	LITH		TOT	STR	POR	IMP	SPL	CALC
21	0-35	mc1	25Y 53 00	10YR58	00	C			Y	1	0	HR	2					
	35-58	hzc1	10YR53	00	10YR68	71	C	00MNO0	00	Y	0	0	HR	1		M		
	58-110	c	10YR63	00	10YR68	00	C	00MNO0	00	Y	0	0		0		P	Y	Y
22	0-35	mzc1	10YR53	00	10YR68	00	C			Y	2	0	HR	4				
	35-58	hzc1	10YR63	00	10YR68	00	C			Y	0	0	HR	1		M		
	58-110	c	10YR71	00	75YR58	00	M	00MNO0	00	Y	0	0	HR	1		P	Y	Y
23	0-28	mzc1	10YR53	00	10YR68	00	C			Y	2	0	HR	4				
	28-65	c	10YR63	00	10YR68	00	M	00MNO0	00	Y	0	0	HR	1		P	Y	Y
	65-110	hzc1	75YR62	00	10YR68	00	M	00MNO0	00	Y	0	0		0		M		
24	0-35	mzc1	10YR53	00	10YR68	00	C			Y	2	0	HR	4				
	35-67	hzc1	10YR63	00	10YR68	00	C			Y	0	0		0		M		
	67-110	c	10YR61	00	75YR58	00	M	00MNO0	00	Y	0	0		0		P	Y	Y
25	0-35	mzc1	10YR52	00							0	0	HR	5				
	35-65	hzc1	10YR62	00	10YR58	00	C			Y	0	0	FSST	12		M		
	65-90	hzc1	10YR42	00	75YR58	00	M			Y	0	0		0		M		
26	0-30	mzc1	10YR52	00							0	0		0				
	30-40	mzc1	10YR62	00	10YR58	00	C			Y	0	0		0		M		
	40-80	hzc1	10YR63	00	10YR58	72	M	00MNO0	00	Y	0	0		0		P	Y	Y
27	0-30	mzc1	10YR52	00							0	0		0				
	30-50	mzc1	10YR63	00	10YR58	71	C			Y	0	0		0		M		
	50-80	hzc1	10YR62	00	10YR58	72	M	00MNO0	00	Y	0	0		0		P	Y	Y
28	0-25	mc1	10YR52	00							8	0	HR	12				
	25-70	hc1	10YR62	00	75YR58	61	M	00MNO0	00	Y	0	0		0		P	Y	Y
29	0-28	hzc1	10YR53	00	10YR53	00	C			Y	1	0	HR	3				
	28-43	c	25Y 62 00	75YR58	00	M	00MNO0	00	Y	0	0		0		P	Y	Y	
	43-60	c	10YR71	00	75YR46	00	M	00MNO0	00	Y	0	0		0		P	Y	Y
30	0-33	mzc1	10YR53	00	10YR68	00	C			Y	1	0	HR	2				
	33-43	hzc1	10YR63	00	75YR58	00	M			Y	0	0		0		M		
	43-60	c	10YR63	71	75YR46	00	M	00MNO0	00	Y	0	0		0		P	Y	Y
31	0-28	mzc1	10YR53	00	10YR68	00	C			Y	1	0	HR	2				
	28-38	hzc1	25Y 72 00	75YR58	00	M				Y	0	0		0		M		
	38-65	c	10YR71	00	75YR46	00	M	00MNO0	00	Y	0	0		0		P	Y	Y
32	0-35	mzc1	25Y 53 00	10YR63	00	C				Y	1	0	HR	2				
	35-60	c	10YR63	00	75YR46	00	M	00MNO0	00	Y	0	0		0		P	Y	Y
33	0-34	mzc1	10YR53	00	10YR68	00	C			Y	1	0	HR	2				
	34-45	hzc1	25Y 62 00	75YR58	00	M				Y	0	0		0		M		
	45-70	c	25Y 62 00	75YR46	00	M	00MNO0	00	Y	0	0		0		P	Y	Y	

SAMPLE	DEPTH	TEXTURE	COLOUR	----MOTTLES-----			PED		----STONES----			STRUCT/ CONSIST	SUBS					
				COL	ABUN	CONT	COL.	GLE	>2	>6	LITH		TOT	STR	POR	IMP	SPL	CALC
34	0-38	mzc1	10YR53 00 10YR68 00 F						0	0	HR	3						
	38-58	hzc1	10YR53 71 10YR58 00 C					Y	0	0		0	M					
	58-80	c	10YR71 63 75YR46 00 M				00M00	00	Y	0	0		0	P	Y		Y	
35	0-30	mzc1	10YR52 00 10YR68 00 F						1	0	HR	3						
	30-43	hzc1	10YR63 00 10YR68 71 C					Y	0	0		0	M					
	43-70	c	10YR63 00 75YR46 00 M				00M00	00	Y	0	0		0	P	Y		Y	
36	0-30	mzc1	10YR52 00						0	0	HR	5						
	30-45	mzc1	10YR63 00 10YR58 71 C					Y	0	0		0	M					
	45-70	hzc1	10YR63 00 10YR58 72 M				00M00	00	Y	0	0		0	P	Y		Y	
37	0-30	mzc1	10YR52 00						0	0	HR	5						
	30-48	mzc1	10YR63 00 10YR58 00 C					Y	0	0		0	M					
	48-70	hzc1	10YR62 00 10YR58 71 M				00M00	00	Y	0	0		0	P	Y		Y	
38	0-28	mzc1	10YR52 00 10YR58 00 F						1	0	HR	3						
	28-43	hzc1	10YR53 00 10YR58 71 C					Y	0	0	HR	1	M					
	43-70	hzc1	10YR53 00 10YR58 71 M				00M00	00	Y	0	0		0	P	Y		Y	
39	0-38	mzc1	10YR52 00						0	0	HR	3						
	38-49	mzc1	10YR63 00 10YR58 71 C					Y	0	0	HR	1	M					
	49-75	hzc1	10YR63 00 10YR58 71 M				00M00	00	Y	0	0		0	P	Y		Y	
40	0-25	mzc1	10YR52 00						0	0	HR	2						
	25-45	mzc1	10YR62 00 10YR58 71 C					Y	0	0		0	M					
	45-65	zc	10YR62 00 10YR58 71 M				00M00	00	Y	0	0		0	P	Y		Y	
41	0-42	mzc1	10YR52 00 10YR58 00 C						Y	1	0	HR	2					
	42-43	hcz1	10YR62 00 10YR58 71 C					Y	0	0		0	M					
	43-60	c	10YR63 00 10YR57 71 M				00M00	00	Y	0	0		0	P	Y		Y	

SOIL PIT DESCRIPTION

Site Name : ARUN LP SITE 18B

Pit Number : 1P

Grid Reference: SU91400020 Average Annual Rainfall : 744 mm
 Accumulated Temperature : 1515 degree days
 Field Capacity Level : 151 days
 Land Use : Cereals
 Slope and Aspect : degrees

HORIZON	TEXTURE	COLOUR	STONES >2	TOT.STONE	MOTTLES	STRUCTURE
0- 26	MZCL	10YR53 00	1	3	C	
26- 49	MZCL	10YR63 00	0	1	M	MCSAB
49- 65	MZCL	10YR62 00	0	1	M	MCSAB
65- 90	HZCL	10YR53 00	0	1	M	WKMA8

Wetness Grade : 3A Wetness Class : III
 Gleying : 0 cm
 SPL : 065 cm

Drought Grade : 3A APW : 118mm MBW : -2 mm
 APP : 120mm MBP : 3 mm

FINAL ALC GRADE : 3A
 MAIN LIMITATION : Wetness

SOIL PIT DESCRIPTION

Site Name : ARUN LP SITE 18B

Pit Number : 2P

Grid Reference: SZ91109990 Average Annual Rainfall : 744 mm
 Accumulated Temperature : 1515 degree days
 Field Capacity Level : 151 days
 Land Use : Cereals
 Slope and Aspect : degrees

HORIZON	TEXTURE	COLOUR	STONES >2	TOT.STONE	MOTTLES	STRUCTURE
0- 28	HZCL	25Y 53 00	1	3	C	
28- 40	HZCL	25Y 53 00	0	1	M	MCSAB
40- 70	HZCL	25Y 61 00	0	1	M	WKCSAB

Wetness Grade : 3B Wetness Class : IV
 Gleying : 0 cm
 SPL : 040 cm

Drought Grade : APW : 000mm MBW : 0 mm
 APP : 000mm MBP : 0 mm

FINAL ALC GRADE : 3B
 MAIN LIMITATION : Wetness