

CHAPTER 9

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DRAWING 1

2528CC 23 MIDRAND : HYDROGEOLOGICAL UNITS

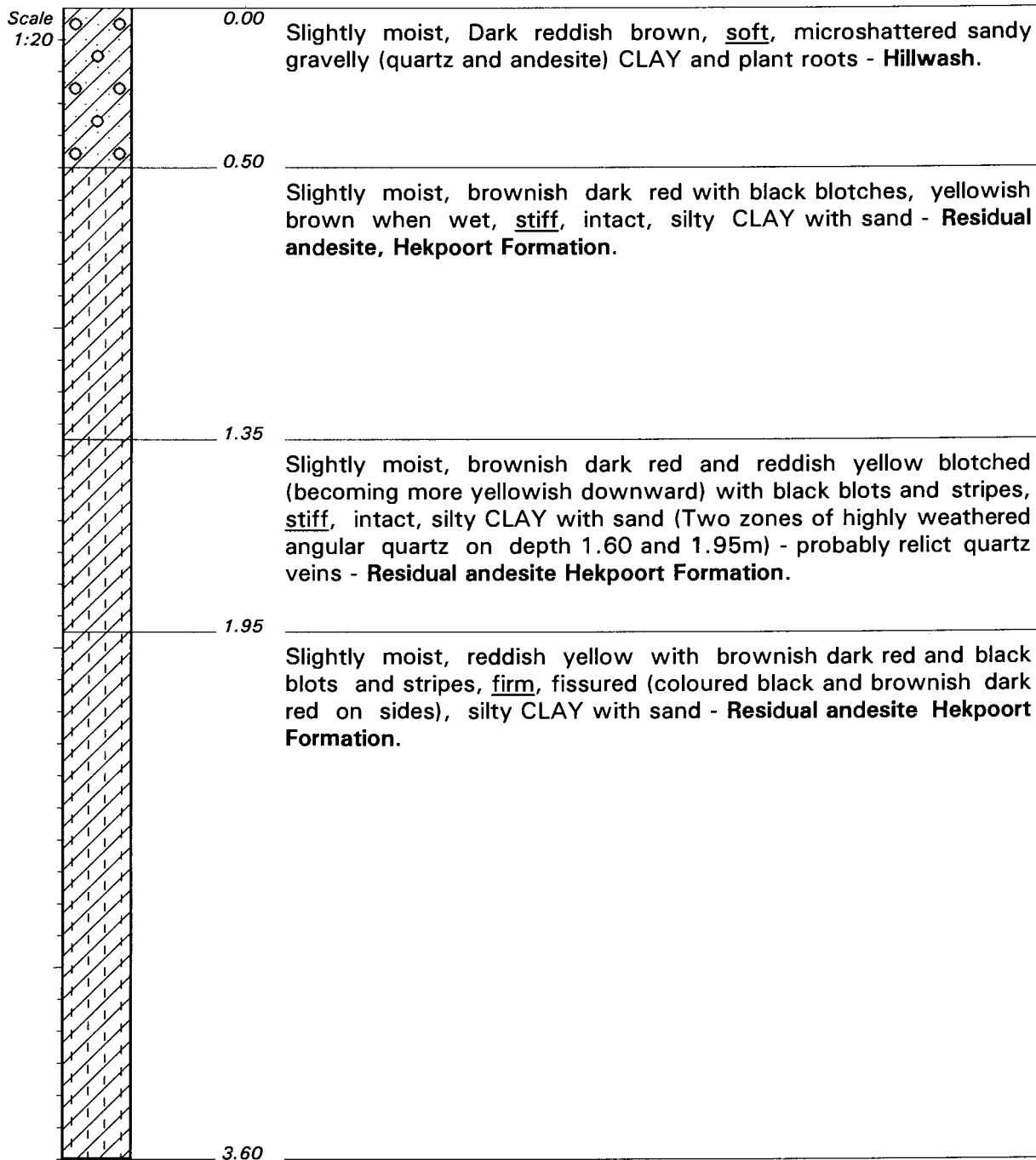
APPENDIX A

Soil profile descriptions

VADOSE ZONE CHARACTERISATION
UP EXPERIMENTAL FARM

HOLE No: TP1
Sheet 1 of 1

JOB NUMBER: 4222



NOTES

- 1) No water seepage.
- 2) No refusal.

CONTRACTOR :
MACHINE : TLB
DRILLED BY :
PROFILED BY : Jan Vermaak
TYPE SET BY : YJvV
SETUP FILE : STANDARD.SET

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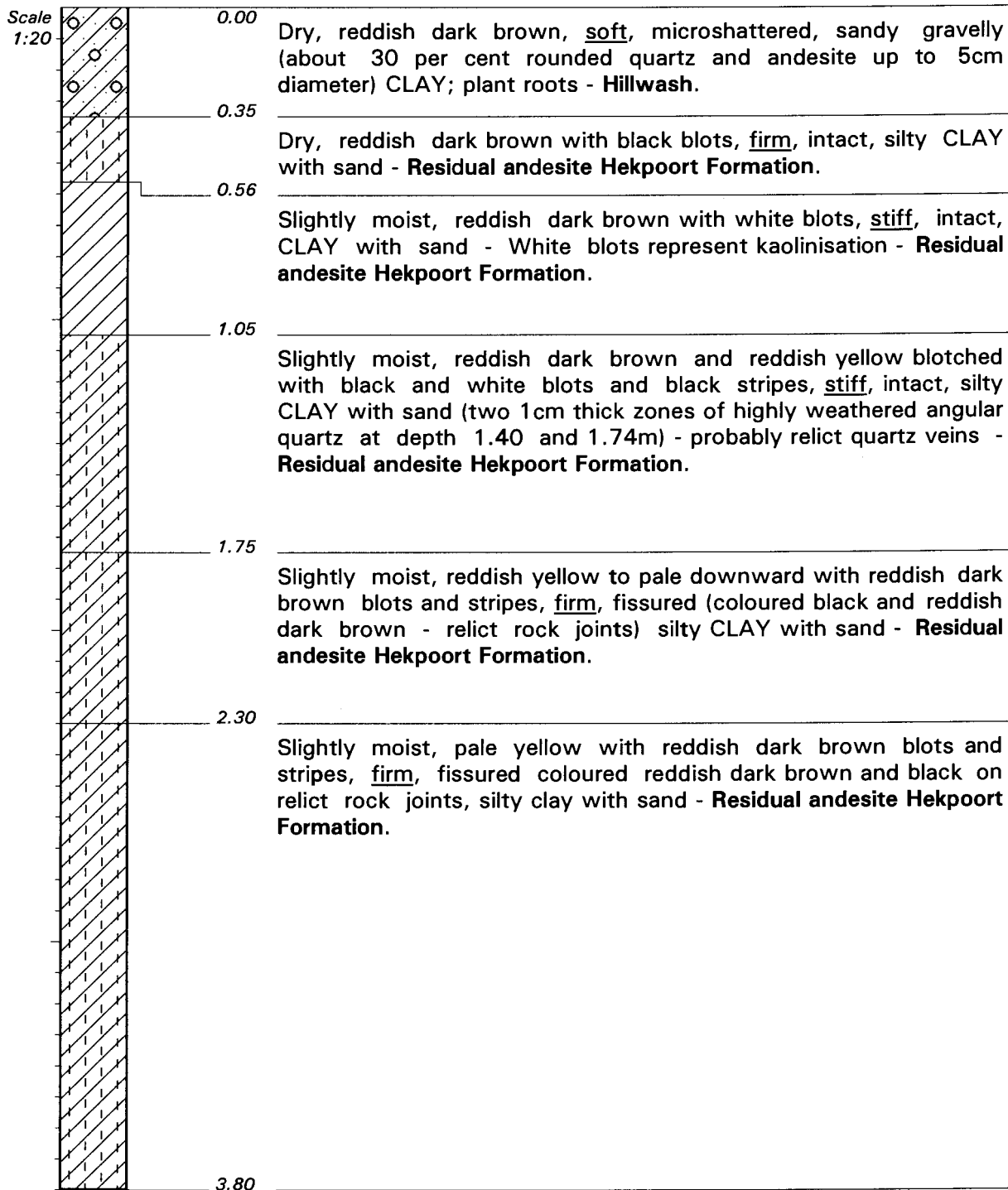
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X-COORD :
Y-COORD :

HOLE No: TP1
Pretoria

**VADOSE ZONE CHARACTERISATION
UP EXPERIMENTAL FARM**

HOLE No: TP 2
Sheet 1 of 1

JOB NUMBER: 4222



NOTES

- 1) No water seepage.
- 2) No refusal.

CONTRACTOR :
MACHINE : TLB
DRILLED BY :
PROFILED BY : Jan Vermaak
TYPE SET BY : YJvV
SETUP FILE : STANDARD.SET

CLIENT : WRC
INCLINATION :
DIAM :
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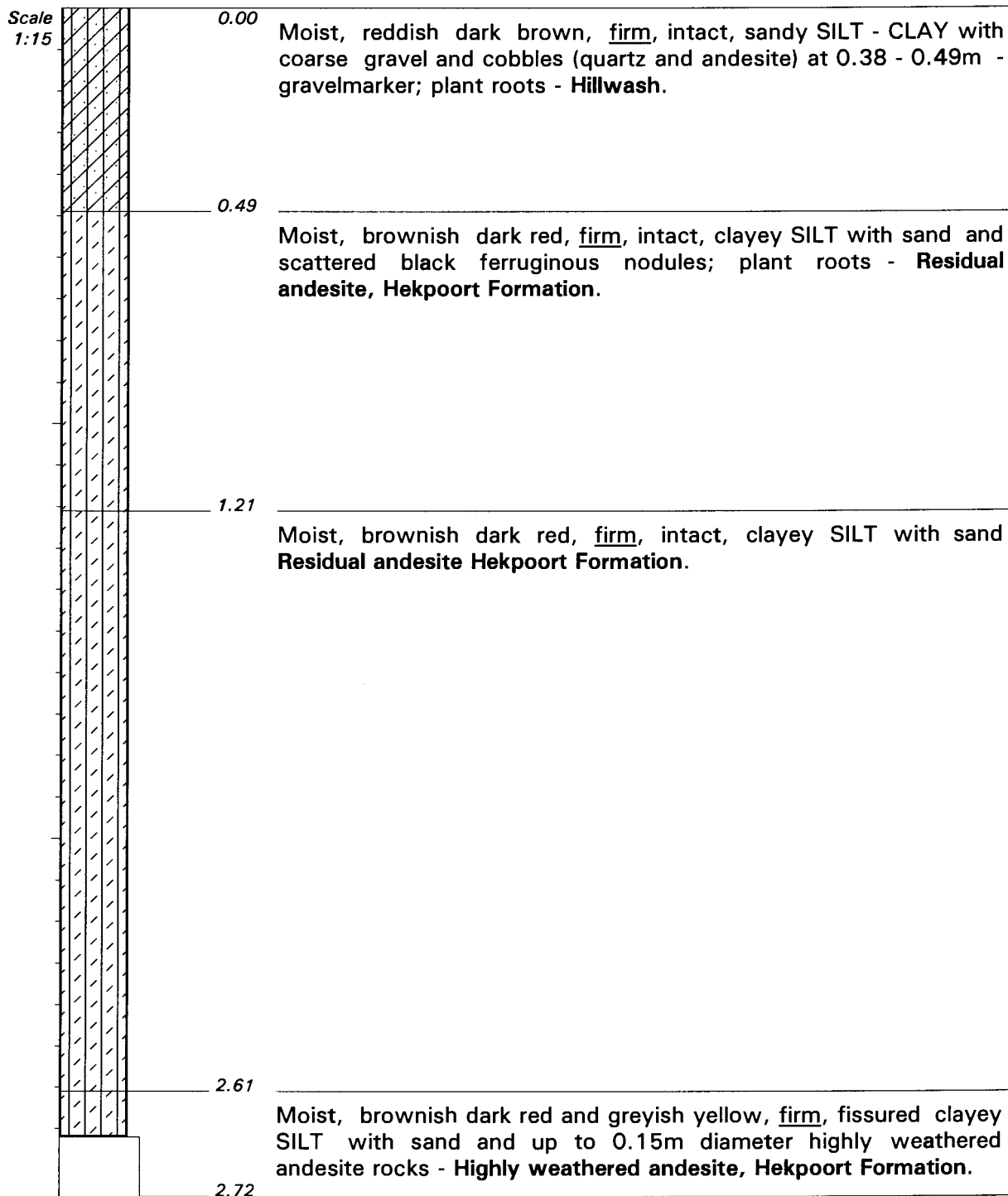
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X-COORD :
Y-COORD :

HOLE No: TP 2

VADOSE ZONE CHARACTERISATION
UP EXPERIMENTAL FARM

HOLE No: TP 3
Sheet 1 of 1

JOB NUMBER: 4222



NOTES

- 1) No water seepage.
- 2) No refusal.

CONTRACTOR :
MACHINE : TLB
DRILLED BY :
PROFILED BY : Jan Vermaak
TYPE SET BY : YJvV
SETUP FILE : STANDARD.SET

CLIENT : WRC
INCLINATION :
DIAM :
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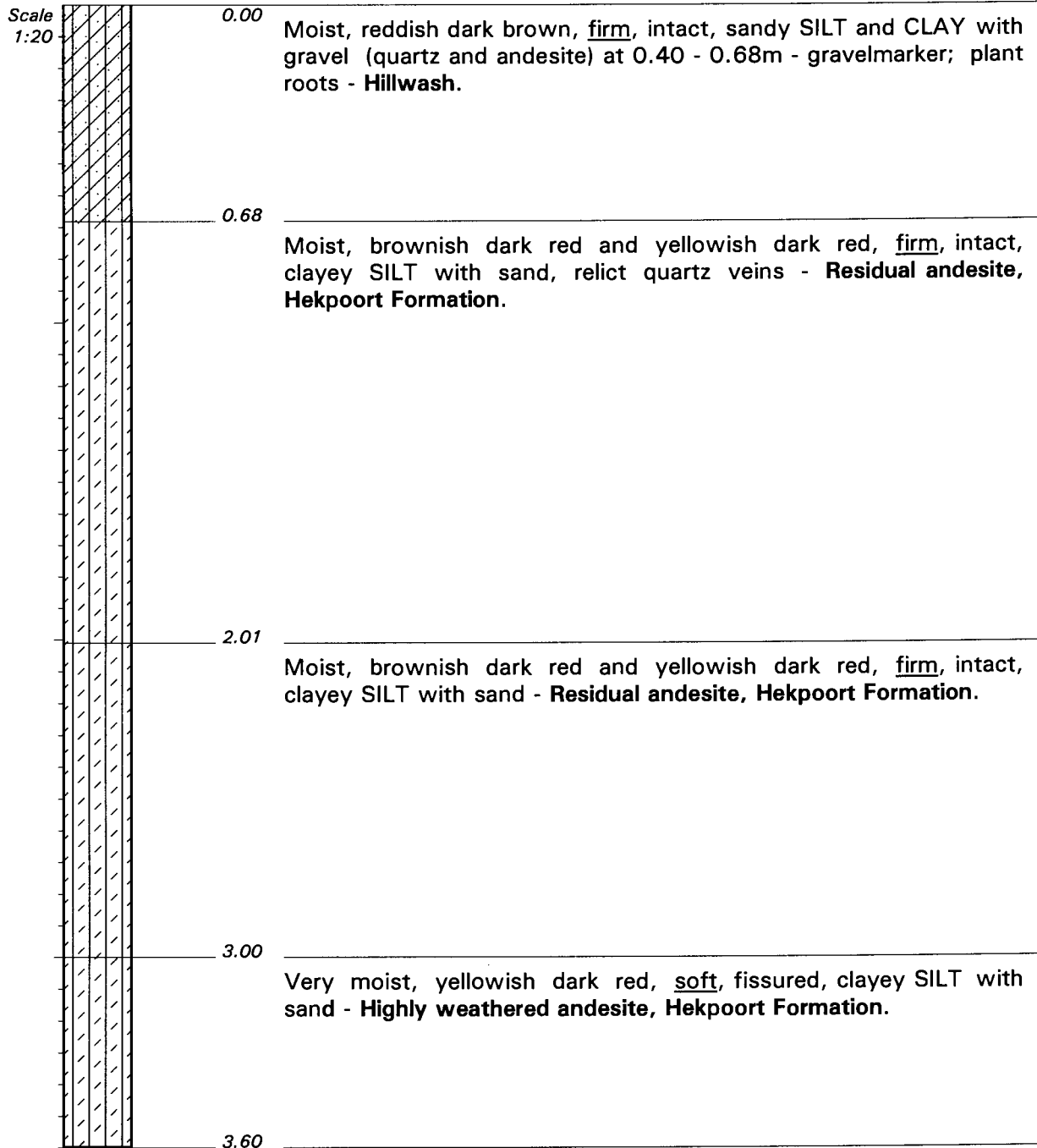
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X-COORD :
Y-COORD :

HOLE No: TP 3

VADOSE ZONE CHARACTERISATION
UP EXPERIMENTAL FARM

HOLE No: TP 4
Sheet 1 of 1

JOB NUMBER: 4222



NOTES

- 1) Water seepage due to close by point of infiltration.
- 2) No refusal.

CONTRACTOR :
MACHINE : TLB
DRILLED BY :
PROFILED BY : Jan Vermaak
TYPE SET BY : YJvV
SETUP FILE : STANDARD.SET

CLIENT : WRC
INCLINATION :
DIAM :
DATE PROFILED : 17 March 1997
DATE : 14/02/00 14:35
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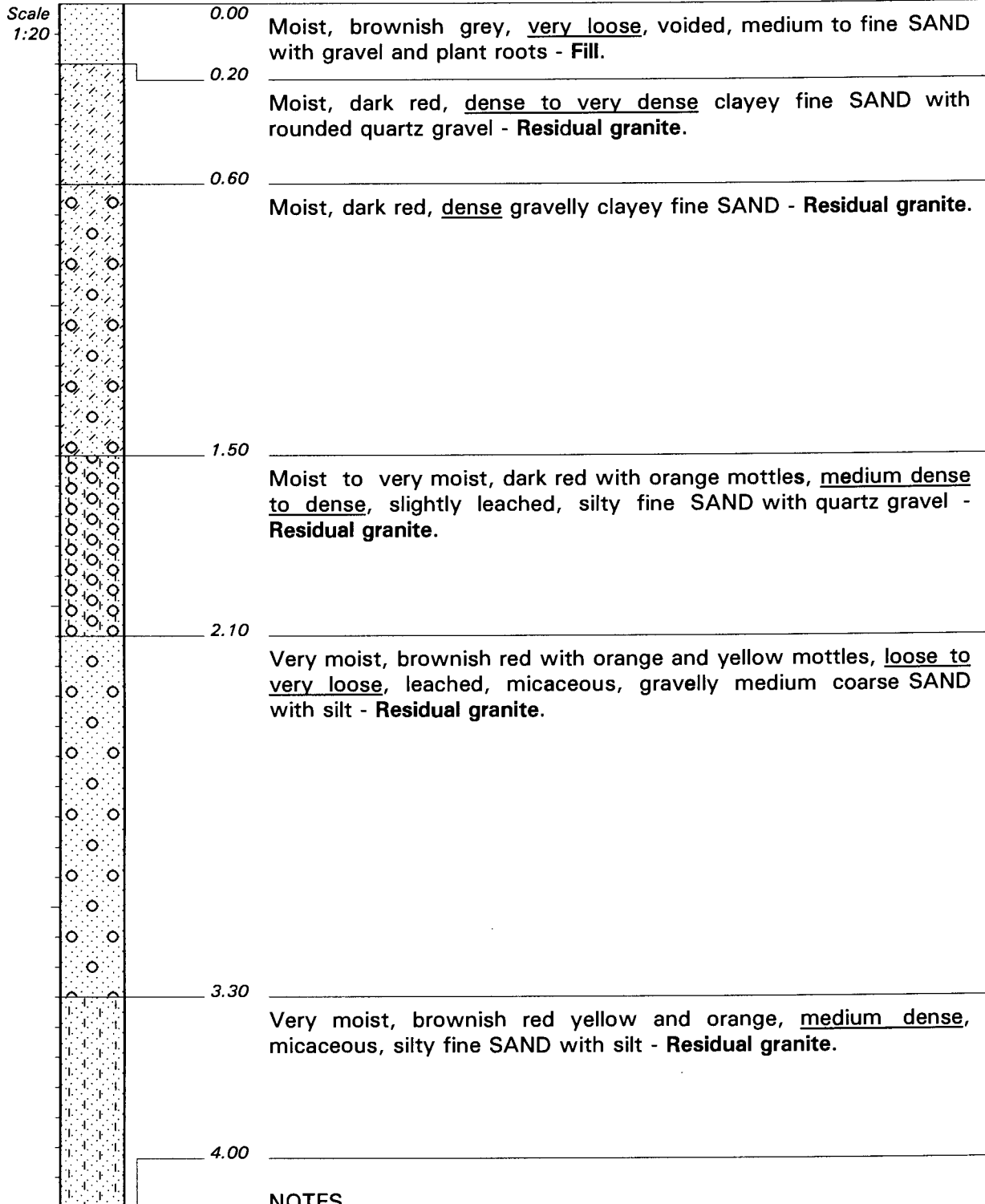
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X-COORD :
Y-COORD :

HOLE No: TP 4

VADOSE ZONE CHARACTERISATION
NEW ROAD BRIDGE

HOLE No: TP 1a
Sheet 1 of 1

JOB NUMBER: 4222



NOTES

- 1) No seepage.
- 2) No refusal.

CONTRACTOR :
MACHINE : TLB
DRILLED BY :
PROFILED BY : Jan Vermaak
TYPE SET BY : YJvV
SETUP FILE : STANDARD.SET

CLIENT : WRC
INCLINATION :
DIAM :
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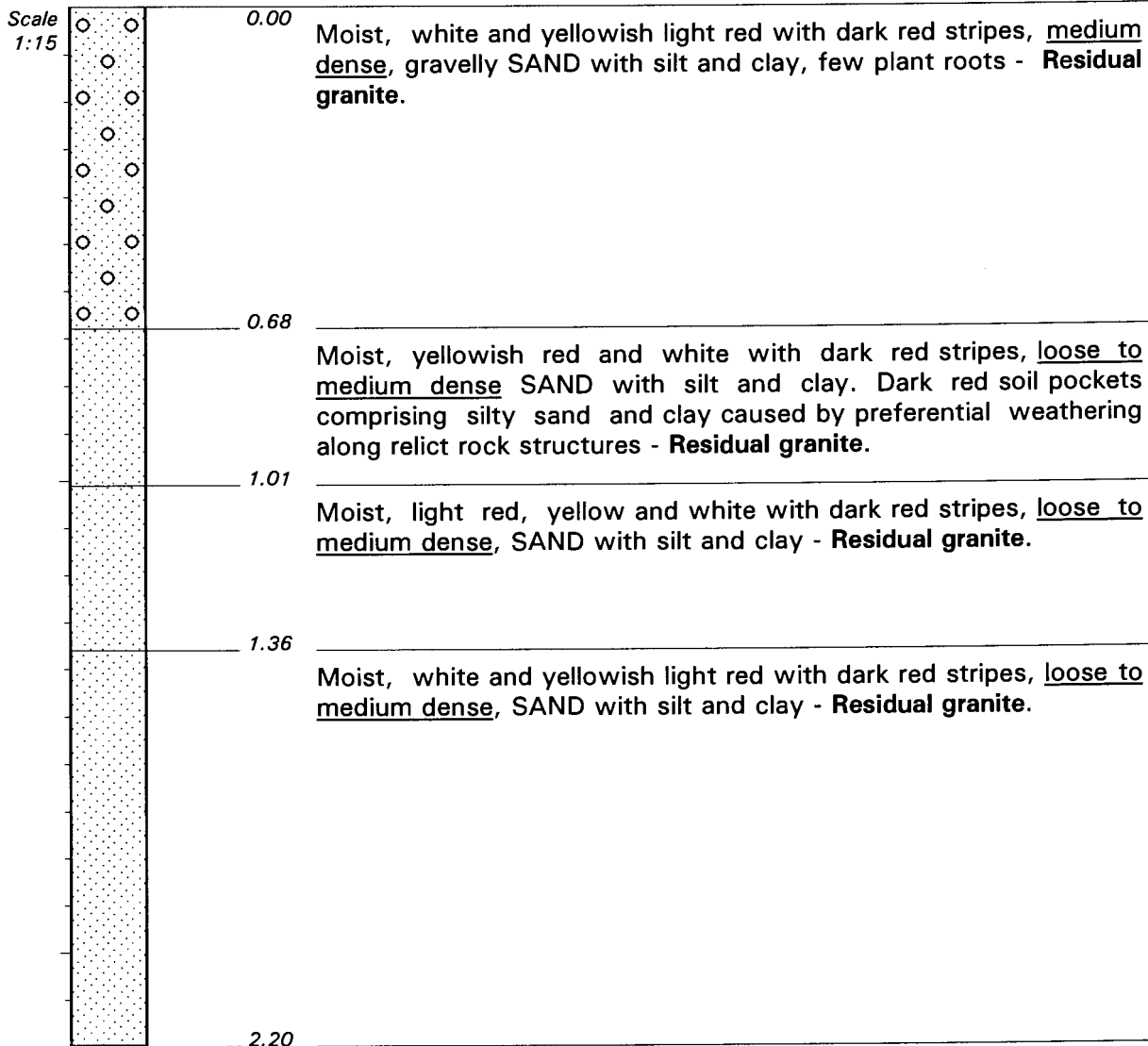
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X-COORD :
Y-COORD :

HOLE No: TP 1a
Midrand

VADOSE ZONE CHARACTERISATION
INJAKA DAM SITE

HOLE No: TP 1b
Sheet 1 of 1

JOB NUMBER: 4222



NOTES

- 1) No seepage.
- 2) No refusal.
- 3) No distinct layering.

CONTRACTOR :
MACHINE : TLB
DRILLED BY :
PROFILED BY : Jan Vermaak
TYPE SET BY : YJVV
SETUP FILE : STANDARD.SET

CLIENT : WRC
INCLINATION :
DIAM :
DATE PROFILED : 17 March 1997
DATE : 14/02/00 14:35
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ELEVATION :
X-COORD :
Y-COORD :

HOLE No: TP 1b
Injaka

APPENDIX B

Geotechnical and soil-water retention test results

**Department of Water Affairs and Forestry:
Soil materials laboratory**

Index tests (Per cent passing)

Sieve size (mm)	Experiments 1 & 2 18 April 1996				Experiment 3 & 4 7 August 1996				Experiments 5 11 April 1997				
	I01	I02	I03	I04	I01	I02	I03	I04	I01	I02	I03	I04	I05
4.750	100	100	100	100	94	98	99	97	94	98	99	97	98
2.000	96	100	100	100	69	75	81	72	69	75	81	72	77
0.425	72	95	97	97	45	48	46	35	45	48	46	35	38
0.150	57	89	90	86	39	36	31	23	39	36	31	23	25
0.075	51	84	84	75	34	28	24	17	34	28	24	17	19
0.050	44	74	67	63	31	26	22	15	31	26	22	15	19
0.005	26	48	42	32	18	10	7	5	18	10	7	5	7
0.002	22	42	36	26	16	8	5	4	16	8	5	4	4

Geotechnical tests

Test	Experiments 1 & 2 18 April 1996		Experiment 3 & 4 7 August 1996		Experiments 5 11 April 1997	
	Kald	D	Kald	D	Kald	D
Dry Density (kg/m ³)	001	1407	001	1640	001	1437
	002	1452	002	2165	002	1493
	003	1318	003	1632	003	1388
	004	1368	004	1732	004	1431
	005	1487			Cal 001	1475
Moisture content (kg/kg)	001	0.288	001	0.138	001	0.211
	002	0.215	002	0.000	002	0.165
	003	0.253	003	0.132	003	0.189
	004	0.268	004	0.138	004	0.179
	005	0.217			Cal 001	0.212
Specific gravity	001	2.60	001	2.65	001	2.64
	002	2.60	002	2.64	002	Not tested
	003	2.55	003	2.63	003	2.68
	004	2.60	004	2.63	004	2.66
	005	2.72			Cal 001	2.64
Void ratio	001	0.85	001	0.62	001	0.837
	002	0.79	002	0.22	002	Not tested
	003	0.94	003	0.61	003	0.931
	004	0.91	004	0.52	004	0.859
	005	0.83			Cal 001	0.790

Constant head and falling head permeability tests (cm/s)

Experiments 1 & 2 18 April 1996		Experiment 3 & 4 7 August 1996		Experiments 5 11 April 1997	
PB001	2.6×10^{-7}	PB001	4.9×10^{-8}	PB001	3.4×10^{-4}
PB002	3.2×10^{-7}	PB002	No test	PB002	3.4×10^{-5}
PB003	1.1×10^{-6}	PB003	3.3×10^{-6}	PB002	9.7×10^{-5}
		PB001a	2.7×10^{-5}	PB002	1.1×10^{-4}
		PB002a	2.0×10^{-7}	PB002	9.8×10^{-4}

Central Agricultural Laboratories

Soil-water retention tests (Per cent water content, kg/kg)

Soil suction (kPa)	Experiments 1 & 2 18 April 1996				Experiment 3 & 4 7 August 1996			Experiments 5 11 April 1997			
	WR 001	WR 002	WR 003	WR 004	WR 001	WR 002	WR 003	WR 001	WR 002	WR 003	WR 004
10	14.01	22.04	20.70	21.80	10.01	11.23	9.53	22.89	27.04	16.65	13.38
20	13.25	18.56	19.49	19.95	9.29	10.40	9.00	20.10	23.27	17.41	12.67
50	11.49	15.75	16.25	17.32	8.75	8.75	7.90	16.65	20.08	17.12	13.22
100	10.50	15.13	15.16	16.06	8.27	7.41	7.00	13.38	19.82	16.15	12.94