Project Name: **Improving Soil Survey Field Measurement and Interpretation. LWRRDC Project No. 90/R16**
Project Code: **Morphology** **Site ID:** **CP336** **Observation ID:** **1**
Agency Name: **CSIRO Division of Soils (ACT)**

Site Information

Desc. By:	N.J. McKenzie	**Locality:**	
Date Desc.:	10/02/94	**Elevation:**	800 metres
Map Ref.:	Sheet No. : 8723-IV-S 1:25000	**Rainfall:**	No Data
Northing/Long.:	5885800 AMG zone: 55	**Runoff:**	Slow
Easting/Lat.:	690700 Datum: AGD66	**Drainage:**	Moderately well drained

Geology

ExposureType:	Soil pit	**Conf. Sub. is Parent. Mat.:**	No Data
Geol. Ref.:	No Data	**Substrate Material:**	No Data

Land Form

Rel/Slope Class:	Undulating low hills 30-90m 3-10%	**Pattern Type:**	Low hills
Morph. Type:	Lower-slope	**Relief:**	45 metres
Elem. Type:	Hillslope	**Slope Category:**	Gently inclined
Slope:	5 %	**Aspect:**	45 degrees

Surface Soil Condition (dry): Firm

Erosion:

Soil Classification

Australian Soil Classification:
Mellic Red Kandosol
ASC Confidence:
Confidence level not specified

Mapping Unit: N/A
Principal Profile Form: Gn4.11
Great Soil Group: N/A

Site Disturbance: Complete clearing. Pasture, native or improved, cultivated at some stage

Vegetation: Low Strata - Tussock grass, <0.25m, Mid-dense. *Species includes - None recorded
Mid Strata - Sedge, 1.01-3m, Isolated plants. *Species includes - None recorded
Tall Strata - Tree, 20.01-35m, Sparse. *Species includes - Pinus radiata

Surface Coarse Fragments: No surface coarse fragments

Profile Morphology

A11	0 - 0.1 m	Dark reddish brown (5YR3/2-Moist); ; Sandy clay loam; Moderate grade of structure, 5-10 mm, Granular; Rough-ped fabric; Moderately moist; Weak consistence; 0-2%, fine gravelly, 2-6mm, angular, dispersed, Quartz, coarse fragments; Field pH 6 (Raupach); Common, medium (2-5mm) roots; Clear, Smooth change to -
A12	0.1 - 0.18 m	Dark reddish brown (5YR3/2-Moist); Biological mixing, 5YR33, 20-50% , 0-5mm, Distinct; Sandy clay loam; Moderate grade of structure, 5-10 mm, Granular; Rough-ped fabric; Moderately moist; Weak consistence; 0-2%, fine gravelly, 2-6mm, angular, dispersed, Quartz, coarse fragments; Field pH 5.5 (Raupach); Common, medium (2-5mm) roots; Clear, Smooth change to -
B1	0.18 - 0.25 m	Reddish brown (5YR4/4-Moist); Biological mixing, 5YR32, 10-20% , 0-5mm, Distinct; Silty clay loam; Weak grade of structure, 10-20 mm, Polyhedral; Rough-ped fabric; Moderately moist; Firm consistence; 2-10%, medium gravelly, 6-20mm, angular, dispersed, Quartz, coarse fragments; Field pH 5.5 (Raupach); Common, medium (2-5mm) roots; Gradual, Smooth change to -
B21	0.25 - 0.5 m	Yellowish red (5YR4/6-Moist); ; Light clay; Weak grade of structure, 10-20 mm, Polyhedral; Rough-ped fabric; Moderately moist; Firm consistence; 2-10%, medium gravelly, 6-20mm, angular, dispersed, Quartz, coarse fragments; Field pH 5 (Raupach); Common, very fine (0-1mm) roots; Diffuse, Smooth change to -
B22	0.5 - 0.75 m	Reddish brown (2.5YR4/4-Moist); ; Light clay; Weak grade of structure, 10-20 mm, Polyhedral; Rough-ped fabric; Moderately moist; Firm consistence; 2-10%, medium gravelly, 6-20mm, angular, dispersed, Quartz, coarse fragments; Field pH 4.5 (Raupach); Few, very fine (0-1mm) roots; Diffuse, Smooth change to -
B23	0.75 - 1 m	Red (2.5YR4/6-Moist); ; Light clay; Weak grade of structure, 10-20 mm, Polyhedral; Rough-ped fabric; Moderately moist; Firm consistence; 10-20%, medium gravelly, 6-20mm, angular, stratified, Quartz, coarse fragments; Field pH 5 (Raupach); Few, very fine (0-1mm) roots; Diffuse, Smooth change to -
B3	1 - 1.3 m	Dark red (2.5YR3/6-Moist); ; Light clay; Weak grade of structure, 10-20 mm, Polyhedral; Rough-ped fabric; Moderately moist; Firm consistence; 20-50%, coarse gravelly, 20-60mm, angular, stratified, Quartz, coarse fragments; Field pH 4.5 (Raupach); Few, very fine (0-1mm) roots;

Morphological Notes

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B1	B Horizon tends to keep breaking down. Difficult to define ped size. Slight jerky rod. Not really primary, second pedal due to weak structure. Minor metasediments coarse fragments.
B21	Metasediments coarse fragments.
B22	Metasediments coarse fragments.
B23	Metasediments coarse fragments.
B3	Metasediments coarse fragments.

Observation Notes

Colluvium from Ordovician Metasediments. Ordovician Metasediments confirmed in nearby (100m) road cuts. Not observed in pit.

Site Notes

Mt Tennyson 1:25000: Bondi State Forest. Clear patch in radiata plantation. 2nd rotation. At the head of an open depression. (Morph 35)

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Laboratory Test Results:

Depth	pH	1:5 EC	Exchangeable Cations				Exchangeable	CEC	ECEC	ESP
			Ca	Mg	K	Na	Acidity			
m		dS/m	Cmol (+)/kg							%
0 - 0.1	5.45A	0.03A	3.3B	1	0.55	0.11		12.2A		0.90
0 - 0.2										
0 - 0.2										
0.1 - 0.18	5.49A	0.03A	1.4B	0.67	0.38	0.02		8.9A		0.22
0.18 - 0.25	5.38A	0.02A	0.79B	0.56	0.44	1.6		7.8A		20.51
0.25 - 0.5	5.44A	0.01A	0.44B	0.72	0.31	0.06		6.9A		0.87
0.25 - 0.45										
0.25 - 0.45										
0.5 - 0.75	5.06A	0.04A	0.15B	1.5	0.36	0.09		8.1A		1.11
0.55 - 0.75										
0.55 - 0.75										
0.75 - 1	5.45A	0.01A	0.08B	0.98	0.28	0.1		8.5A		1.18
1 - 1.3	5.29A	0.01A	0.06B	0.86	0.22	0.06		8.7A		0.69

Depth	CaCO3	Organic C	Avail. P	Total P	Total N	Total K	Bulk Density	Particle Size Analysis				
								GV	CS	FS	Silt	Clay
m	%	%	mg/kg	%	%	%	Mg/m3			%		
0 - 0.1		6.07B					1.21	2				
0 - 0.2							1.08					
							1.07					
							1.00					
							1.20					
0 - 0.2							1.08					
							1.07					
							1.00					
							1.20					
0.1 - 0.18		2.79B						3				
0.18 - 0.25		1.62B						4				
0.25 - 0.5		0.8B					1.50	3				
0.25 - 0.45							1.39					
							1.31					
							1.33					
							1.39					
0.25 - 0.45							1.39					
							1.31					
							1.33					
							1.39					
0.5 - 0.75		0.31B					1.58	5				
0.55 - 0.75							1.45					
							1.46					
							1.44					
							1.45					
0.55 - 0.75							1.45					
							1.46					
							1.44					
							1.45					
0.75 - 1		0.18B						4				
1 - 1.3		0.15B						20				

Depth	COLE	Gravimetric/Volumetric Water Contents							K sat	K unsat
		Sat.	0.05 Bar	0.1 Bar	0.5 Bar	1 Bar	5 Bar	15 Bar		
m		g/g - m3/m3							mm/h	mm/h

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0 - 0.1	0.004B								
0 - 0.2		0.37E	0.33E	0.3E	0.26D	0.18F	0.13F	677D	158.4A
		0.4E	0.34E	0.32E	0.27D	0.16F	0.13F		
		0.46E	0.41E	0.39E	0.32D				
		0.46E	0.42E	0.4E	0.35D				
0 - 0.2		0.37E	0.33E	0.3E	0.26D	0.18F	0.13F	677D	158.4A
		0.4E	0.34E	0.32E	0.27D	0.16F	0.13F		
		0.46E	0.41E	0.39E	0.32D				
		0.46E	0.42E	0.4E	0.35D				
0.1 - 0.18									
0.18 - 0.25									
0.25 - 0.5	0.025B								
0.25 - 0.45		0.42E	0.38E	0.35E	0.31D	0.19F	0.15F	49.5D	14.8A
		0.41E	0.35E	0.32E	0.28D	0.19F	0.14F		
		0.41E	0.35E	0.32E	0.28D				
		0.39E	0.34E	0.33E	0.29D				
0.25 - 0.45		0.42E	0.38E	0.35E	0.31D	0.19F	0.15F	49.5D	14.8A
		0.41E	0.35E	0.32E	0.28D	0.19F	0.14F		
		0.41E	0.35E	0.32E	0.28D				
		0.39E	0.34E	0.33E	0.29D				
0.5 - 0.75	0.029B								
0.55 - 0.75		0.41E	0.39E	0.37E	0.34D	0.24F	0.22F	18.6D	2A
		0.42E	0.38E	0.36E	0.33D	0.24F	0.21F		
		0.42E	0.4E	0.38E	0.35D				
		0.43E	0.41E	0.39E	0.36D				
0.55 - 0.75		0.41E	0.39E	0.37E	0.34D	0.24F	0.22F	18.6D	2A
		0.42E	0.38E	0.36E	0.33D	0.24F	0.21F		
		0.42E	0.4E	0.38E	0.35D				
		0.43E	0.41E	0.39E	0.36D				
0.75 - 1									
1 - 1.3									

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Laboratory Analyses Completed for this profile

15A2_CA	Exchangeable bases (Ca2+,Mg2+,Na+,K+) - 1M ammonium chloride at pH 7.0, pretreatment for soluble salts
15A2_CEC	Exchangeable bases- 1M ammonium chloride at pH 7.0, pretreatment for soluble salts
15A2_K	Exchangeable bases- 1M ammonium chloride at pH 7.0, pretreatment for soluble salts
15A2_MG	Exchangeable bases- 1M ammonium chloride at pH 7.0, pretreatment for soluble salts
15A2_NA	Exchangeable bases- 1M ammonium chloride at pH 7.0, pretreatment for soluble salts
3A1	EC of 1:5 soil/water extract
4A1	pH of 1:5 soil/water suspension
6B2	Total organic carbon - high frequency induction furnace, volumetric
P10_GRAV	Gravel (%)
P10_S_0.20	0.20 micron (cumulative %) - Sedigraph
P10_S_0.48	0.48 micron (cumulative %) - Sedigraph
P10_S_1	1 micron (cumulative %) - Sedigraph
P10_S_1000	1000 micron (cumulative %) - Sedigraph
P10_S_125	125 micron (cumulative %) - Sedigraph
P10_S_15.6	15.6 micron (cumulative %) - Sedigraph
P10_S_2	2 micron (cumulative %) - Sedigraph
P10_S_20	20 micron (cumulative %) - Sedigraph
P10_S_2000	2000 micron (cumulative %) - Sedigraph
P10_S_250	250 micron (cumlative %) - Sedigraph
P10_S_3.9	3.9 micron (cumulative %) - Sedigraph
P10_S_31.2	31.2 micron (cumulative %) - Sedigraph
P10_S_500	500 micron (cumulative %) - Sedigraph
P10_S_53	53 micron (cumulative %) - Sedigraph
P10_S_63	63 micron (cumulative %) - Sedigraph
P10_S_7.8	7.8 micron (cumulative %) - Sedigraph
P3A1	Bulk density - g/cm3
P3B2VL_15	15 BAR Moisture m3/m3 - Volumetric using disturbed sample on pressure plate
P3B2VL_5	5 BAR Moisture m3/m3 - Volumetric using disturbed sample on pressure plate
P3B3VLb001	0.01 BAR Moisture m3/m3 - Volumetric using undisturbed 73mm diameter and 75mm height core on suction plate taken from center of large core (CSIRO Div of Soil, DR 125, McKenzie and Jacquier, 1996)
P3B3VLb003	0.03 BAR Moisture m3/m3 - Volumetric using undisturbed 73mm diameter and 75mm height core on suction plate taken from center of large core (CSIRO Div of Soil, DR 125, McKenzie and Jacquier, 1996)
P3B3VLb005	0.05 BAR Moisture m3/m3 - Volumetric using undisturbed 73mm diameter and 75mm height core on suction plate taken from center of large core (CSIRO Div of Soil, DR 125, McKenzie and Jacquier, 1996)
P3B3VLb01	0.1 BAR Moisture m3/m3 - Volumetric using undisturbed 73mm diameter and 75mm height core on suction plate taken from center of large core (CSIRO Div of Soil, DR 125, McKenzie and Jacquier, 1996)
P3B3VLb05	0.5 BAR Moisture m3/m3 - Volumetric using undisturbed 73mm diameter and 75mm height core on suction plate taken from center of large core (CSIRO Div of Soil, DR 125, McKenzie and Jacquier, 1996)
P3B3VLbSAT	Saturated Moisture m3/m3 - Volumetric using undisturbed 73mm diameter and 75mm height core on suction plate taken from center of large core (CSIRO Div of Soil, DR 125, McKenzie and Jacquier, 1996)
P4_50_McK	Unsaturated Hydraulic Conductivity - 50mm potential (CSIRO Div of Soil, DR 125, McKenzie and Jacquier, 1996)
P4_sat_McK	Saturated Hydraulic Conductivity (CSIRO Div of Soil, DR 125, McKenzie and Jacquier, 1996)
P5_LS_MOD	Modified linear shrinkage (McKenzie, Jacquier and Ringrose-Voase, AJSR, 1994, 32, 931-8)