Project Name: **Improving Soil Survey Field Measurement and Interpretation. LWRRDC Project No. 90/R16**
Project Code: **Morphology** **Site ID:** **CP333** **Observation ID:** **1**
Agency Name: **CSIRO Division of Soils (ACT)**

Site Information

Desc. By:	N.J. McKenzie	**Locality:**	
Date Desc.:	03/12/93	**Elevation:**	No Data
Map Ref.:	Sheet No. : 9435-1-N 1:25000	**Rainfall:**	No Data
Northing/Long.:	6563600 AMG zone: 56	**Runoff:**	Slow
Easting/Lat.:	486300 Datum: AGD66	**Drainage:**	Rapidly drained

Geology

ExposureType:	Soil pit	**Conf. Sub. is Parent. Mat.:**	No Data
Geol. Ref.:	AL	**Substrate Material:**	Soil pit, Slightly porous, Silt

Land Form

Rel/Slope Class:	Gently undulating plains <9m 1-3%	**Pattern Type:**	Flood plain
Morph. Type:	Flat	**Relief:**	5 metres
Elem. Type:	Terrace plain	**Slope Category:**	Level
Slope:	0 %	**Aspect:**	No Data

Surface Soil Condition (dry): Firm

Erosion:

Soil Classification

Australian Soil Classification:
Stratic Rudosol
ASC Confidence:
Confidence level not specified

Mapping Unit: N/A
Principal Profile Form: Um1.2
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

Surface Coarse Fragments: No surface coarse fragments

Profile Morphology

A11	0 - 0.08 m	Very dark greyish brown (10YR3/2-Moist); Pale brown (10YR6/3-Dry); ; Silty loam; Weak grade of structure, 10-20 mm, Subangular blocky; Earthy fabric; Dry; Firm consistence; Field pH 6 (Raupach); Common, medium (2-5mm) roots; Gradual, Smooth change to -
A12	0.08 - 0.19 m	Very dark greyish brown (10YR3/2-Moist); ; Silty loam; Weak grade of structure, 10-20 mm, Subangular blocky; Earthy fabric; Dry; Firm consistence; Field pH 7 (Raupach); Few, medium (2-5mm) roots; Clear, Wavy change to -
C1	0.19 - 0.36 m	Dark greyish brown (10YR4/2-Moist); Mottles, 5YR46, 0-2% , 5-15mm, Distinct; Fine sandy loam; Massive grade of structure; Earthy fabric; Dry; Firm consistence; Field pH 7 (Raupach); Few, medium (2-5mm) roots; Abrupt, Smooth change to -
C2	0.36 - 0.55 m	Brown (10YR4/3-Moist); ; Fine sandy loam; Massive grade of structure; Earthy fabric; Dry; Firm consistence; Field pH 6.5 (Raupach); Few, medium (2-5mm) roots; Abrupt, Smooth change to -
2A1	0.55 - 0.6 m	Very dark greyish brown (10YR3/2-Moist); ; Loam; Massive grade of structure; Earthy fabric; Dry; Very firm consistence; Field pH 6.5 (Raupach); Few, medium (2-5mm) roots; Abrupt, Smooth change to -
2C1	0.6 - 0.95 m	Dark greyish brown (10YR4/2-Moist); ; Loam; Massive grade of structure; Earthy fabric; Dry; Firm consistence; Field pH 6.5 (Raupach); Few, medium (2-5mm) roots; Diffuse, Smooth change
2C2	0.95 - 1.35 m	Dark greyish brown (10YR4/2-Moist); ; Silty loam; Massive grade of structure; Earthy fabric; Dry; Firm consistence; Field pH 6.5 (Raupach); Few, fine (1-2mm) roots;

Morphological Notes

A11	Clear A1 with abundant worm activity
C1	Mottles surround old root channels - now infilled
C2	Laminations clear in C horizons.

Observation Notes

Lucerne Pasture. Buried soils present. A11 very young - unit is 2000 years BP and the first soil (I) may only be post 1949.

Site Notes

Pola Creek, Kempsey (Morph 32)

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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 - 0.08	6.37A	0.12A	9.8B	1.7	0.64			12.2A		
0 - 0.2										
0 - 0.2										
0.08 - 0.19	6.55A	0.1A	9.7B	2.2	0.48	0.01		12.4A		0.08
0.19 - 0.36	6.48A	0.03A	7.3B	2.1	0.37	0.03		10.3A		0.29
0.2 - 0.4										
0.2 - 0.4										
0.36 - 0.55	6.4A	0.03A	5.9B	1.3	0.35	0.3		8.4A		3.57
0.55 - 0.6	6.28A	0.03A	7B	1.2	0.39	0.1		9.2A		1.09
0.6 - 0.95	6.44A	0.02A	5.7B	1.3	0.27	0.04		8.2A		0.49
0.65 - 0.85										
0.65 - 0.85										
0.95 - 1.35	6.49A	0.03A	6.5B	2.2	0.18	0.08		9.4A		0.85

Depth	CaCO3	Organic	Avail.	Total	Total	Total	Bulk	Particle	Size	Analysis		
		C	P	P	N	K	Density	GV	CS	FS	Silt	Clay
m	%	%	mg/kg	%	%	%	Mg/m3			%		
0 - 0.08		1.97B					1.32	0				
0 - 0.2							1.25					
							1.32					
							1.29					
							1.34					
0 - 0.2							1.25					
							1.32					
							1.29					
							1.34					
0.08 - 0.19		1.72B						0				
0.19 - 0.36		0.99B					1.36	0				
0.2 - 0.4							1.15					
							1.16					
							1.25					
							1.25					
0.2 - 0.4							1.15					
							1.16					
							1.25					
							1.25					
0.36 - 0.55		1B						0				
0.55 - 0.6		1.08B						0				
0.6 - 0.95		0.81B					1.55	0				
0.65 - 0.85							1.37					
							1.41					
							1.37					
							1.36					
0.65 - 0.85							1.37					
							1.41					
							1.37					
							1.36					
0.95 - 1.35		0.88B						0				

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 - 0.08	0.013B								
0 - 0.2		0.48E	0.44E	0.42E	0.34D	0.14F	0.1F	111.4D	43.1A
		0.44E	0.41E	0.39E	0.31D	0.12F	0.09F		
		0.46E	0.43E	0.4E	0.31D				
		0.42E	0.39E	0.35E	0.27D				
0 - 0.2		0.48E	0.44E	0.42E	0.34D	0.14F	0.1F	111.4D	43.1A
		0.44E	0.41E	0.39E	0.31D	0.12F	0.09F		
		0.46E	0.43E	0.4E	0.31D				
		0.42E	0.39E	0.35E	0.27D				
0.08 - 0.19									
0.19 - 0.36	0.013B								
0.2 - 0.4		0.43E	0.37E	0.3E	0.17D	0.1F	0.08F	600.7D	58.1A
		0.44E	0.38E	0.31E	0.17D	0.11F	0.09F		
		0.43E	0.41E	0.36E	0.33D				
		0.43E	0.41E	0.37E	0.34D				
0.2 - 0.4		0.43E	0.37E	0.3E	0.17D	0.1F	0.08F	600.7D	58.1A
		0.44E	0.38E	0.31E	0.17D	0.11F	0.09F		
		0.43E	0.41E	0.36E	0.33D				
		0.43E	0.41E	0.37E	0.34D				
0.36 - 0.55									
0.55 - 0.6									
0.6 - 0.95	0.017B								
0.65 - 0.85		0.39E	0.34E	0.31E	0.23D	0.14F	0.1F	1823D	23.8A
		0.4E	0.35E	0.31E	0.23D	0.13F	0.09F		
		0.39E	0.34E	0.3E	0.23D				
		0.4E	0.35E	0.3E	0.23D				
0.65 - 0.85		0.39E	0.34E	0.31E	0.23D	0.14F	0.1F	1823D	23.8A
		0.4E	0.35E	0.31E	0.23D	0.13F	0.09F		
		0.39E	0.34E	0.3E	0.23D				
		0.4E	0.35E	0.3E	0.23D				
0.95 - 1.35									

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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)