Project Name:
Project Code: **BILLABONG** **Site ID:** **CP408** **Observation ID:** **1**
Agency Name: **CSIRO Land and Water (ACT)**

Site Information

Desc. By:	N.J. McKenzie	**Locality:**	"Water Vale" Ken Thomas. Approx 400m west of front gate. 15m north of laneway fence.
Date Desc.:	30/03/04	**Elevation:**	195 metres
Map Ref.:	Sheet No. : 8226-N 1:50000	**Rainfall:**	550
Northing/Long.:	6047421 AMG zone: 55	**Runoff:**	Moderately rapid
Easting/Lat.:	485250 Datum: WGS84	**Drainage:**	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:	Level plain <9m <1%	**Pattern Type:**	Alluvial plain
Morph. Type:	Flat	**Relief:**	1 metres
Elem. Type:	Plain	**Slope Category:**	Level
Slope:	1 %	**Aspect:**	0 degrees

Surface Soil Condition (dry): Hardsetting

Erosion:

Soil Classification

Australian Soil Classification:
Haplic Eutrophic Red Chromosol
ASC Confidence:
Confidence level not specified

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

Site Disturbance: Cultivation. Rainfed

Vegetation:

Surface Coarse Fragments: No surface coarse fragments

Profile Morphology

AP	0 - 0.15 m	Brown (7.5YR4/4-Moist); ; Silty loam; Massive grade of structure; Earthy fabric; Dry; Very firm consistence; Field pH 7 (Raupach); Few, fine (1-2mm) roots; Sharp, Broken change to -
A2	0.15 - 0.26 m	Yellowish red (5YR5/6-Moist); Reddish yellow (7.5YR7/6-Moist); ; Silty loam; Massive grade of structure; Earthy fabric; Dry; Very firm consistence; Field pH 6.5 (Raupach); Few, fine (1-2mm) roots; Abrupt, Smooth change to -
B21	0.26 - 0.65 m	Red (2.5YR4/6-Moist); ; Light medium clay; Strong grade of structure, 20-50 mm, Polyhedral; Rough-ped fabric; Fine, (0 - 5) mm crack; Dry; Strong consistence; Field pH 7 (Raupach); Few, fine (1-2mm) roots; Diffuse, Smooth change to -
B22	0.65 - 0.9 m	Yellowish red (5YR4/6-Moist); Mottles, 10YR64, 0-2% , 0-5mm, Faint; Light medium clay; Moderate grade of structure, 20-50 mm, Polyhedral; Rough-ped fabric; Fine, (0 - 5) mm crack; Dry; Strong consistence; Few (2 - 10 %), Manganiferous, Coarse (6 - 20 mm), Veins; Field pH 7 (Raupach); Few, fine (1-2mm) roots; Gradual, Smooth change to -
B3	0.9 - 1.2 m	Yellowish red (5YR5/6-Moist); Mottles, 10YR64, 20-50% , 5-15mm, Distinct; Light clay; Moderate grade of structure, 10-20 mm, Polyhedral; Rough-ped fabric; Very firm consistence; Common (10 - 20 %), Calcareous, Coarse (6 - 20 mm), Concretions; Common (10 - 20 %), Calcareous, Medium (2 -6 mm), Soft segregations; Field pH 7.5 (Raupach); Few, fine (1-2mm) roots;

Morphological Notes

AP	Hard setting Ap.
A2	Hard setting A2.
B21	Strong red B21.
B22	Mn mottles and vein segregations.
B3	Nodules and segregations of CaCO but patchy distribution. CO profile is unusual in the B3 - CO concretions are infilled channels in places. Mottled CO concretions and adjacent soft segregations.

Observation Notes

B3 has infilled root channels and macropores- limited (?) shrink swell preserves features (similar to Trangie Cowal Alluvium but stronger development of the B21/B22).Profile may be wetter than under woodland and CO is still equilibrating.

Site Notes

GPS position using UTM and WGS84. Heavy Triticale stubble. Very hardsetting Ap & A2

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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 - 0.15	4.69C	0.03A	4.6D	0.3	0.4	0.2		5.6L		3.57
	5.63A									
0 - 0.2										
0.15 - 0.26	4.72C	0.01A	3.1D	0.4	0.1	0.2		3.9L		5.13
	5.81A									
0.26 - 0.65	5.74C	0.02A	12.7D	3.8	0.4	0.3		14.6L		2.05
	7.02A		8.9E	2.4	0.4	0.1		15.5B		1.94
										0.68
										0.65
0.3 - 0.5										
0.65 - 0.9	6.17C	0.02A	12.8D	3.9	0.4	0.2		13.8L		1.45
	7.37A		8.5E	2.5	0.4	<0.1		13.5B		1.48
0.9 - 1.2	7.45C	0.11A	8.1E	2.4	0.4	<0.1		11.6B		
	8.14A									
1 - 1.2										

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 - 0.15	<2A	0.73B			0.05D							
0 - 0.2							1.47					
							1.57					
							1.52					
							1.51					
							1.56					
							1.54					
0.15 - 0.26	<2A	0.25B			0.02D							
0.26 - 0.65	<2A	0.33B			0.03D							
0.3 - 0.5							1.57					
							1.55					
							1.62					
							1.59					
							1.52					
							1.55					
0.65 - 0.9	<2A	0.15B			0.02D							
0.9 - 1.2	<2A	0.14B			0.02D							
1 - 1.2							1.72					
							1.66					
							1.66					
							1.67					
							1.71					
							1.68					

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
0 - 0.15										

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0 - 0.2	0.39E	0.28E	0.07E	58.3D	26D
	0.39E	0.32E	0.06E	45.8D	22.9B
	0.37E	0.3E	0.07E	124.3D	12D
	0.39E	0.29E			9.9B
	0.39E	0.31E			37.8D
	0.36E	0.3E			27.1B
0.15 - 0.26					
0.26 - 0.65					
0.3 - 0.5	0.37E	0.31E	0.19E	38.4D	19.8D
	0.37E	0.32E	0.21E	80.2D	13.5B
	0.38E	0.34E	0.24E	122.3D	9.4D
	0.36E	0.32E			7.1B
	0.38E	0.32E			13.7D
	0.39E	0.35E			11.1B
0.65 - 0.9					
0.9 - 1.2					
1 - 1.2	0.33E	0.29E	0.14E	26.9D	3.5D
	0.34E	0.29E	0.14E	24.2D	2.8B
	0.33E	0.29E	0.13E	17.8D	21.2D
	0.34E	0.29E			14.2B
	0.33E	0.29E			5.7D
	0.32E	0.29E			4.2B

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Project Code: **BILLABONG** **Site ID:** **CP408** **Observation ID:** **1**
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Laboratory Analyses Completed for this profile

15B2_CA	Exchangeable bases (Ca2+,Mg2+,Na+,K+) - 1M ammonium chloride at pH 7.0, pretreatment for soluble salts
15B2_CEC	CEC - 1M ammonium chloride at pH 7.0, pretreatment for soluble salts
15B2_K	Exchangeable bases and CEC - 1M ammonium chloride at pH 7.0, pretreatment for soluble salts
15B2_MG	Exchangeable bases and CEC - 1M ammonium chloride at pH 7.0, pretreatment for soluble salts
15B2_NA	Exchangeable bases and CEC - 1M ammonium chloride at pH 7.0, pretreatment for soluble salts
15C1_CA	Exchangeable bases (Ca2+,Mg2+,Na+,K+) - alcoholic 1M ammonium chloride at pH 8.5, pretreatment for soluble salts
15C1_CEC	CEC - alcoholic 1M ammonium chloride at pH 8.5, pretreatment for soluble salts
15C1_K	Exchangeable bases and CEC - alcoholic 1M ammonium chloride at pH 8.5, pretreatment for soluble salts
15C1_MG	Exchangeable bases and CEC - alcoholic 1M ammonium chloride at pH 8.5, pretreatment for soluble salts
15C1_NA	Exchangeable bases and CEC - alcoholic 1M ammonium chloride at pH 8.5, pretreatment for soluble salts
19A1	Carbonates - rapid titration
3A1	EC of 1:5 soil/water extract
4A1	pH of 1:5 soil/water suspension
4B2	pH of 1:5 soil/0.01M calcium chloride extract - following Method 4A1
5A2	Chloride - 1:5 soil/water extract, automated colour
6B2	Total organic carbon - high frequency induction furnace, volumetric
7A5	Total nitrogen - high frequency induction furnace, thermal conductivity
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
P3A2_McK	Macro Porosity (%) as determined from McKenzie pore charts
P3A2_McKMP	Maximum pore diameter (mm) as determined from McKenzie pore charts
P3B1VL_15	15 BAR Moisture m3/m3 - Volumetric using <2mm 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)
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)
P3B3VLb03	0.33 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_100DMcK	Unsaturated Hydraulic Conductivity - 100mm potential - Using disk permeameter with method CSIRO Div of Soil, DR 125, McKenzie and Jacquier, 1996
P4_30DMcK	Unsaturated Hydraulic Conductivity - 30mm potential - Using disk permeameter with method CSIRO Div of Soil, DR 125, McKenzie and Jacquier, 1996
P4_50DMcK	Unsaturated Hydraulic Conductivity - 50mm potential - Using disk permeameter with method CSIRO Div of Soil, DR 125, McKenzie and Jacquier, 1996

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P4_sat_McK Saturated Hydraulic Conductivity (CSIRO Div of Soil, DR 125, McKenzie and Jacquier, 1996)