

**Project Name:**  
**Project Code:** BILLABONG    **Site ID:** CP409    **Observation ID:** 1  
**Agency Name:** CSIRO Land and Water (ACT)

#### Site Information

<b>Desc. By:</b>	N.J. McKenzie	<b>Locality:</b>	"Clare" ~ 100m E of back paddock gate. Gate near northern extent of tree guard. Site 10m north of old disused road now owned by Bernie Coyle.
<b>Date Desc.:</b>	01/04/04	<b>Elevation:</b>	190 metres
<b>Map Ref.:</b>	Sheet No. : 8226-N 1:50000	<b>Rainfall:</b>	550
<b>Northing/Long.:</b>	6050871 AMG zone: 55	<b>Runoff:</b>	Moderately rapid
<b>Easting/Lat.:</b>	481158 Datum: WGS84	<b>Drainage:</b>	Imperfectly drained

#### Geology

<b>Exposure Type:</b>	Soil pit	<b>Conf. Sub. is Parent. Mat.:</b>	Almost certain or certain
<b>Geol. Ref.:</b>	No Data	<b>Substrate Material:</b>	Soil pit, 1.3 m deep, No Data

#### Land Form

<b>Rel/Slope Class:</b>	Level plain <9m <1%	<b>Pattern Type:</b>	Plain
<b>Morph. Type:</b>	Flat	<b>Relief:</b>	1 metres
<b>Elem. Type:</b>	Plain	<b>Slope Category:</b>	Level
<b>Slope:</b>	1 %	<b>Aspect:</b>	0 degrees

**Surface Soil Condition (dry):** Hardsetting

#### Erosion:

#### Soil Classification

<b>Australian Soil Classification:</b>		<b>Mapping Unit:</b>	N/A
Hypocalcic Mottled-Subnatric Brown Sodosol		<b>Principal Profile Form:</b>	N/A
<b>ASC Confidence:</b>		<b>Great Soil Group:</b>	N/A
Confidence level not specified			

**Site Disturbance:** Cultivation. Rainfed

#### Vegetation:

**Surface Coarse Fragments:** No surface coarse fragments

#### Profile Morphology

A1	0 - 0.1 m	Brown (10YR4/3-Moist); ; Silty loam; Massive grade of structure; ; Earthy fabric; crack; Dry; Strong consistence; Field pH 5.5 (Raupach); Few, fine (1-2mm) roots; Abrupt, Irregular change to -
A2e	0.1 - 0.21 m	Pale brown (10YR6/3-Moist); Light grey (10YR7/2-Dry); Mottles, 7.5YR56, 20-50% , 5-15mm, Distinct; Mottles, 10YR42, 20-50% , 5-15mm, Distinct; Silty loam; Massive grade of structure; ; Earthy fabric; Dry; Very strong consistence; Field pH 5 (Raupach); Few, fine (1-2mm) roots; Abrupt, Wavy change to -
B21	0.21 - 0.55 m	Strong brown (7.5YR5/6-Moist); Mottles, 10YR52, 20-50% , 30-mm, Distinct; Mottles, 10YR63, 20-50% , 30-mm, Distinct; Light medium clay; Strong grade of structure, 200-500 mm, Prismatic; Moderate grade of structure, 20-50 mm, Polyhedral; Rough-ped fabric; Fine, (0 - 5) mm crack; Dry; Rigid consistence; Field pH 7 (Raupach); Few, fine (1-2mm) roots; Diffuse, Smooth change to -
B22	0.55 - 0.95 m	Strong brown (7.5YR5/5-Moist); Mottles, 7.5YR44, 20-50% , 30-mm, Distinct; Light clay; Moderate grade of structure, 20-50 mm, Polyhedral; Moderate grade of structure, 10-20 mm, Polyhedral; Rough-ped fabric; Fine, (0 - 5) mm crack; Dry; Strong consistence; Very few (0 - 2 %), Manganiferous, Medium (2 -6 mm), Concretions; Very few (0 - 2 %), Manganiferous, Medium (2 -6 mm), Veins; Few (2 - 10 %), Calcareous, Medium (2 -6 mm), Nodules; Field pH 9.5 (Raupach); Few, very fine (0-1mm) roots; Gradual, Smooth change to -
B3	0.95 - 1.3 m	Light yellowish brown (2.5Y6/4-Moist); Mottles, 5YR56, 20-50% , 5-15mm, Distinct; Light clay; Moderate grade of structure, 10-20 mm, Polyhedral; Strong grade of structure, 5-10 mm, Polyhedral; Smooth-ped fabric; Moderately moist; Very firm consistence; Few (2 - 10 %), Manganiferous, Medium (2 -6 mm), Concretions; Few (2 - 10 %), Manganiferous, Medium (2 -6 mm), Veins; Very few (0 - 2 %), Calcareous, Medium (2 -6 mm), Nodules; Field pH 9.5 (Raupach);

#### Morphological Notes

A2e	Conspicuously bleached A2e.
B21	Coatings of A2e on large prisms. Suspect silicification at top of B21. Very tough horizon when dry. Very sticky texture - sodic.
B22	Peds with red exteriors - wetting from above.
B3	Peds with red exterior - wetting from above. Very high pH - NaCO?

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Resample of SC021. Area of most heavily textured Sodosols on "Clare" - extensive soil on the parna mottled lowlands of Simmons Creek. Parna is approximately 4-5 m thick (from dam digging).

**Site Notes**

GPS position using UTM and WGS84. Thick Titicale stubble. 3 years ago received 1ton/arce gypsum (probably limed in past). Drab Sodosol with strong prismatic structure. A2e tongues into the B2- very silty pale coatings. Regular H2O Logging.

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0 - 0.2	0.38E	0.32E	0.11E	55.9D	11.8D
	0.4E	0.32E	0.12E	44.6D	9.4B
	0.4E	0.31E	0.11E	48.3D	13.5D
	0.39E	0.33E			10.1B
	0.38E	0.31E			27.1D
	0.42E	0.33E			23.6B
0.1 - 0.21					
0.21 - 0.55					
0.21 - 0.41	0.36E	0.32E	0.25E	2.3F	1.7D
	0.36E	0.31E	0.2E	15.7D	1.7B
	0.35E	0.31E	0.21E	5.6D	2.5D
	0.34E	0.31E			2.3B
	0.33E	0.29E			1.2D
	0.37E	0.33E			1.1B
0.55 - 0.95					
0.95 - 1.3					
1 - 1.2	0.38E	0.35E	0.25E	66.3D	1.2D
	0.4E	0.37E	0.26E	1.4F	1.1B
	0.38E	0.33E	0.24E	1.2F	1.6D
	0.39E	0.35E			0.9B
	0.36E	0.33E			1.9D
	0.37E	0.33E			1.7B

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**Laboratory Analyses Completed for this profile**

15B2_CA	Exchangeable bases (Ca <sup>2+</sup> ,Mg <sup>2+</sup> ,Na <sup>+</sup> ,K <sup>+</sup> ) - 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 (Ca <sup>2+</sup> ,Mg <sup>2+</sup> ,Na <sup>+</sup> ,K <sup>+</sup> ) - 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 (cumulative %) - 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/cm <sup>3</sup>
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 m <sup>3</sup> /m <sup>3</sup> - Volumetric using <2mm sample on pressure plate
P3B3VLb001	0.01 BAR Moisture m <sup>3</sup> /m <sup>3</sup> - 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 m <sup>3</sup> /m <sup>3</sup> - 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 m <sup>3</sup> /m <sup>3</sup> - 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 m <sup>3</sup> /m <sup>3</sup> - 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 m <sup>3</sup> /m <sup>3</sup> - 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\_FH      Modified Saturated Hydraulic Conductivity - falling head (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)