

**Project Name:**  
**Project Code:** BILLABONG **Site ID:** CP406 **Observation ID:** 1  
**Agency Name:** CSIRO Land and Water (ACT)

**Site Information**

**Desc. By:** N.J. McKenzie **Locality:** Property "Teripta" home of Holbrook Seeds-Stephen Finlay ~ 5 km SSW of Holbrook. On the Hume H'way. Pit site adjacent to Northern boundary fence ~400m E from SE corner of Heartlands Eucalypt plantation of Northern neighbour.

**Date Desc.:** 15/07/03 **Elevation:** 296 metres  
**Map Ref.:** Sheet No. : 8326 1:100000 **Rainfall:** No Data  
**Northing/Long.:** 6041849 AMG zone: 55 **Runoff:** Moderately rapid  
**Easting/Lat.:** 526125 Datum: WGS84 **Drainage:** Imperfectly drained

**Geology**

**ExposureType:** No Data **Conf. Sub. is Parent. Mat.:** No Data  
**Geol. Ref.:** No Data **Substrate Material:** Soil pit, 2 m deep, No Data

**Land Form**

**Rel/Slope Class:** Undulating rises 9-30m 3-10% **Pattern Type:** Rises  
**Morph. Type:** Upper-slope **Relief:** No Data  
**Elem. Type:** Hillslope **Slope Category:** Very gently sloped  
**Slope:** 2 % **Aspect:** 90 degrees

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

**Erosion:**

**Soil Classification**

**Australian Soil Classification:** **Mapping Unit:** N/A  
Vertic Subnatric Brown Sodosol **Principal Profile Form:** N/A  
**ASC Confidence:** **Great Soil Group:** N/A  
Confidence level not specified

**Site Disturbance:** Cultivation. Rainfed

**Vegetation:**

**Surface Coarse Fragments:** 0-2%, fine gravelly, 2-6mm, rounded, Ferricrete

**Profile Morphology**

A1	0 - 0.05 m	Brown (7.5YR4/3-Moist); ; Silty clay loam; Weak grade of structure, 10-20 mm, Subangular blocky; Rough-ped fabric; Moist; Weak consistence; Field pH 7.5 (Raupach); Many, very fine (0-1mm) roots; Abrupt change to -
A2e	0.05 - 0.15 m	Dark yellowish brown (10YR4/4-Moist); Mottles, 5YR46, 10-20% , 5-15mm, Distinct; Loam; Massive grade of structure; Rough-ped fabric; Moist; Firm consistence; Field pH 5.5 (Raupach); Common, very fine (0-1mm) roots; Abrupt change to -
B21	0.15 - 0.35 m	Yellowish brown (10YR5/6-Moist); ; Light medium clay; Moderate grade of structure, 10-20 mm, Subangular blocky; Earthy fabric; Moist; Firm consistence; Few cutans, <10% of ped faces or walls coated, faint; Field pH 6 (Raupach); Common, very fine (0-1mm) roots; Gradual change to -
B21	0.15 - 0.35 m	Yellowish brown (10YR5/6-Moist); ; Light medium clay; Moderate grade of structure, 10-20 mm, Subangular blocky; Earthy fabric; Moist; Few cutans, <10% of ped faces or walls coated, faint; Field pH 6 (Raupach); Common, very fine (0-1mm) roots; Gradual change to -
B22	0.35 - 0.65 m	Yellowish brown (10YR5/6-Moist); ; Medium clay; Moderate grade of structure, 10-20 mm, Polyhedral; Smooth-ped fabric; Fine, (0 - 5) mm crack; Fine, (0 - 5) mm crack; Fine, (0 - 5) mm crack; Moist; Firm consistence; Many cutans, >50% of ped faces or walls coated, distinct; Field pH 6.5 (Raupach); Common, very fine (0-1mm) roots; Gradual change to -
B23	0.65 - 1 m	Greyish brown (2.5Y5/3-Moist); Mottles, 10YR66, 10-20% , 15-30mm, Faint; Medium heavy clay; Moderate grade of structure, 200-500 mm, Prismatic; Smooth-ped fabric; Fine, (0 - 5) mm crack; Dry; Very strong consistence; Few cutans, <10% of ped faces or walls coated, distinct; Field pH 7 (Raupach); Few, very fine (0-1mm) roots; Diffuse change to -
B24	1 - 1.3 m	Greyish brown (2.5Y5/3-Moist); ; Medium heavy clay; Moderate grade of structure, 200-500 mm, Prismatic; Smooth-ped fabric; Fine, (0 - 5) mm crack; Dry; Very strong consistence; Few cutans, <10% of ped faces or walls coated, distinct; Field pH 7.5 (Raupach); Few, very fine (0-1mm) roots;

**Morphological Notes**

A1 Minor (~1%) buckshot gravel up to 10mm on soil surface brought to surface by

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A2e	Conspicuous bleach. Rusty root linings and blobs. Not much Fe/Mn in A2 (odd). Striking short range variation from local ponding and redistribution.
B22	Very fine crumbly parna.
B23	Difficult structure to describe. Possible peds <100mm but hard to distinguish at this water content. Site has weak gilgai presumably due to vertic B23/B24.
B24	Difficult structure to describe. Possible peds <100mm but hard to distinguish at this water content. Site has weak gilgai presumably due to vertic B23/B24.

**Observation Notes**

Site has weak gilgai perhaps from vertic B23/B24. Local ponding and redistribution producing the striking short range variation in the A2. Parna site; strong mineralogical change down profile- lithological discontinuity not suspected.

**Site Notes**

GPS position using UTM WGS84. Site was levelled ~ 6-7 years ago but gilgai's have reformed, ponding water for extended periods (>3 months). Sedges and ducks were once present. Currently perennial ryegrass to be harvested for seed.

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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 - 0.05					
0 - 0.15	0.43E	0.35E	0.1E	464.7D	176.8D
	0.38E	0.32E	0.06E	143.9D	58.8B
	0.48E	0.37E	0.1E	105.9D	43D
	0.44E	0.37E			36.3B
	0.34E	0.3E			36.6D
	0.38E	0.32E			30.7B
0.05 - 0.15					
0.15 - 0.35					
0.35 - 0.65					
0.4 - 0.6	0.46E	0.42E	0.32E	5D	5D
	0.43E	0.4E	0.29E	36.1D	4B
	0.44E	0.39E	0.3E	7.6D	12D
	0.46E	0.42E			10.1B
	0.45E	0.41E			6.6D
	0.44E	0.4E			5.9B
0.65 - 1					
1 - 1.3					
1 - 1.2	0.43E	0.43E	0.32E	0.4F	2.4D
	0.42E	0.41E	0.33E	0.1F	2.7B
	0.46E	0.45E	0.33E	0.8F	6.4D
	0.45E	0.45E			2.4B
	0.42E	0.41E			1.7D
	0.46E	0.46E			0.3B

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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)