Project Name: **Re-inventing Australian Agricultural Landscape Systems**
Project Code: **RAALS** **Site ID:** **CP404** **Observation ID:** **1**
Agency Name: **CSIRO Land and Water (ACT)**

Site Information

Desc. By:	N.J. McKenzie	**Locality:**	Hart's F4
Date Desc.:	05/05/00	**Elevation:**	No Data
Map Ref.:	GPS S.A. Off	**Rainfall:**	No Data
Northing/Long.:	6158854 AMG zone: 55	**Runoff:**	Slow
Easting/Lat.:	542590 Datum: AGD66	**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:	Gently undulating rises 9-30m 1-3%	**Pattern Type:**	Low hills
Morph. Type:	Lower-slope	**Relief:**	30 metres
Elem. Type:	Hillslope	**Slope Category:**	Very gently sloped
Slope:	2 %	**Aspect:**	300 degrees

Surface Soil Condition (dry): Hardsetting

Erosion:

Soil Classification

Australian Soil Classification:
Haplic Mesotrophic Red Kandosol Medium Non-gravelly Clay-loamy Clayey Deep

Mapping Unit: N/A
Principal Profile Form: N/A

ASC Confidence:
All necessary analytical data are available.

Great Soil Group: N/A

Site Disturbance: Cultivation. Rainfed

Vegetation: Low Strata - Forb, <0.25m, Very sparse. *Species includes - None recorded

Surface Coarse Fragments: No surface coarse fragments

Profile Morphology

Ap	0 - 0.11 m	Dark reddish brown (5YR3/4-Moist); , 0-0% ; Sandy clay loam, fine sandy; Weak grade of structure, 10-20 mm, Polyhedral; Earthy fabric; Moist; Firm consistence; Field pH 6 (Raupach); Common, medium (2-5mm) roots; Clear, Smooth change to -
A2	0.11 - 0.18 m	Reddish brown (2.5YR4/4-Moist); Yellowish red (5YR4/6-Dry); , 0-0% ; Clay loam, fine sandy; Weak grade of structure, 10-20 mm, Polyhedral; Earthy fabric; Moist; Firm consistence; Field pH 5 (Raupach); Common, medium (2-5mm) roots; Clear, Smooth change to -
B21	0.18 - 0.45 m	Red (10R4/6-Moist); , 0-0% ; Light medium clay; Massive grade of structure; Weak grade of structure, 10-20 mm, Polyhedral; Earthy fabric; Dry; Strong consistence; Few cutans, <10% of ped faces or walls coated, faint; Field pH 6 (Raupach); Common, medium (2-5mm) roots; Gradual, Smooth change to -
B22	0.45 - 0.7 m	Red (2.5YR4/6-Moist); , 0-0% ; Light medium clay; Massive grade of structure; Moderate grade of structure, 10-20 mm, Polyhedral; Rough-ped fabric; Dry; Strong consistence; Common cutans, 10-50% of ped faces or walls coated, distinct; Field pH 7 (Raupach); Few, medium (2-5mm) roots; Diffuse, Smooth change to -
B3	0.7 - 1.05 m	Brown (7.5YR4/4-Moist); Mottles, 5YR56, 20-50% , 15-30mm, Distinct; , 5YR31; Medium clay; Weak grade of structure, 10-20 mm, Polyhedral; Moderate grade of structure, 10-20 mm, Polyhedral; Rough-ped fabric; Dry; Very firm consistence; Many cutans, >50% of ped faces or walls coated, distinct; Few cutans, <10% of ped faces or walls coated, distinct; Common (10 - 20 %), Ferromanganiferous, , Nodules; , Ferromanganiferous, , Laminae; Field pH 6.5 (Raupach); Few, very fine (0-1mm) roots;

Morphological Notes

B21 No pedality evident in situ in B2 apparently because of compaction.

Observation Notes

Classify as a Kandosol despite secondary pedality in B2. Many abundant fine lucerne roots throughout A1/A2/B2; becoming less in B3. Another earthy/pedal B2/B3 with Yarabee parna morphology.

Site Notes

RAAL Site; midway between H3 & H4; 15m west of line of access tubes

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Depth	pH	1:5 EC	Exchangeable Cations				Exchangeable	CEC	ECEC	ESP
			Ca	Mg	K	Na	Acidity			
m		dS/m	Cmol (+)/kg							%
0 - 0.11	4.4C	0.06A	4.05D	0.54	0.79	0.08		7.2L	5.5D	1.11
0.02 - 0.09	5.2A									
0.11 - 0.18	4.1C	0.06A	3.05D	0.78	0.68	0.07		7.7L	4.6D	0.91
0.18 - 0.45	4.9A									
0.2 - 0.4	5.3C	0.01A	5.53D	3.67	0.9	0.12		11L	10.2D	1.09
0.45 - 0.7	6.4A									
0.7 - 1.05	5.6C	0.01A	7.53D	6.56	0.69	0.18		13.6L	15D	1.32
0.8 - 1	6.7A									
	5.1C	0.01A	5.83D	6.48	0.67	0.27		13.5L	13.3D	2.00
	6.4A									

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 - 0.11		1.1C			0.1D			0				
0.02 - 0.09							1.42					
							1.48					
							1.44					
							1.41					
							1.43					
0.11 - 0.18		0.45C			0.05D			12				
0.18 - 0.45		0.3C			0.04D			4				
0.2 - 0.4							1.64					
							1.63					
							1.68					
0.45 - 0.7		0.23C			0.03D			0				
0.7 - 1.05		0.09C			0.02D			0				
0.8 - 1							1.74					
							1.70					
							1.85					

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 - 0.11									
0.02 - 0.09			0.33F	0.29I		0.15E	0.12F	0.09F	47.7E	13.6C
			0.33F	0.28I		0.15E	0.12F	0.09F	23.6E	11.9C
			0.33F	0.29I		0.15E	0.12F	0.09F	23.1E	11.4C
			0.35F	0.32I		0.18E	0.12F	0.09F	96E	10.5C
			0.36F	0.32I		0.18E	0.13F	0.1F	49.9E	16.1C
0.11 - 0.18										
0.18 - 0.45										
0.2 - 0.4			0.27E	0.25E		0.19E	0.17F	0.15F	4054.8D	68B
			0.27E	0.25E		0.18E	0.17F	0.15F	79.2D	25B
			0.28E	0.26E		0.18E	0.17F	0.16F	260.4D	69B
0.45 - 0.7										
0.7 - 1.05										

Laboratory Test Results:

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0.8 - 1	0.3E	0.29E	0.25E	0.24F	0.22F	1.1D	7.9B
	0.3E	0.29E	0.23E	0.22F	0.22F	33D	3.3B
	0.25E	0.24E	0.2E	0.19F	0.19F	1.6D	5.3B

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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
15J_BASES	Sum of Bases
2A1	Air-dry moisture content
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
6B3	Total organic carbon - high frequency induction furnace, infrared
7A5	Total nitrogen - high frequency induction furnace, thermal conductivity
P10_GRAV	Gravel (%)
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_1	1 BAR Moisture m3/m3 - Volumetric using disturbed sample on pressure plate
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)
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)
P3B3VLb06	0.66 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)
P3B3VLc001	0.01 BAR Moisture m3/m3 - Volumetric using undisturbed 98mm diameter core on suction plate
P3B3VLc003	0.03 BAR Moisture m3/m3 - Volumetric using undisturbed 98mm diameter core on suction plate
P3B3VLc005	0.05 BAR Moisture m3/m3 - Volumetric using undisturbed 98mm diameter core on suction plate
P3B3VLc01	0.1 BAR Moisture m3/m3 - Volumetric using undisturbed 98mm diameter core on suction plate
P3B3VLc03	0.3 BAR Moisture m3/m3 - Volumetric using undisturbed 98mm diameter core on suction plate
P3B3VLc06	0.6 BAR Moisture m3/m3 - Volumetric using undisturbed 98mm diameter core on suction plate
P4_100DMcK	Unsaturated Hydraulic Conductivity - 100mm potential - Using disk permeameter with method CSIRO Div of Soil, DR 125, McKenzie and Jacquier, 1996
P4_10DMcK	Unsaturated Hydraulic Conductivity - 10mm potential - Using disk permeameter with method CSIRO Div of Soil, DR 125, McKenzie and Jacquier, 1996

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P4_30_LOV	Unsaturated Hydraulic Conductivity - 30mm potential Loveday falling head method using 98mm diameter cores
P4_50DMcK	Unsaturated Hydraulic Conductivity - 50mm potential - Using disk permeameter with method CSIRO Div of Soil, DR 125, McKenzie and Jacquier, 1996
P4_sat_LOV	Saturated Hydraulic Conductivity - Modified (no de-aired water) Loveday falling head method using 98mm diameter cores
P4_sat_McK	Saturated Hydraulic Conductivity (CSIRO Div of Soil, DR 125, McKenzie and Jacquier, 1996)