

Lake Kaponyee

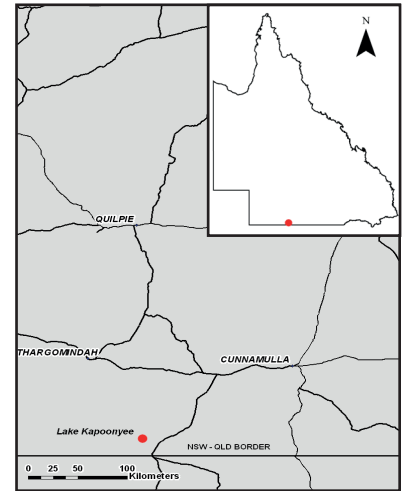


Study Area

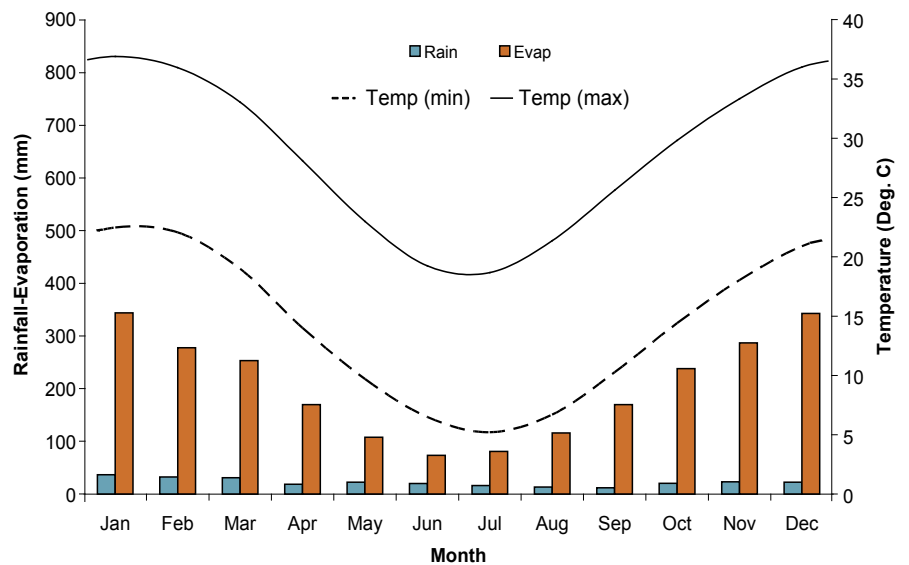
Lake Kaponyee is located in Currawinya National Park, approximately 120 km south-west of Eulo, South-West Queensland.

The area is an aggregation of large and small ephemeral lakes, claypans and drainage depressions¹.

Lake Kaponyee is an example of a semi-arid floodplain lake in the Mulga Lands Bioregion.



Climate²



The study area is situated within a semi-arid climatic region with no distinct wet or dry season. Evaporation exceeds rainfall in every month. The average annual rainfall for the area is 271 mm.

Landform and Inundation	Shallow ephemeral lake on gently undulating sand plains Freshwater periodically inundated lake from overland flow
Soils³	Hydrosols and Rudosols
Vegetation⁴	<i>Eleocharis pallens</i> with or without short grasses with or without <i>Eragrostis australasica</i> open herbland on clays, associated with ephemeral lakes, billabongs and permanent waterholes (RE 6.3.11)
Geology⁵	Quaternary alluvium
Disturbance	No effective disturbance except grazing by hoofed animals



Australian Government

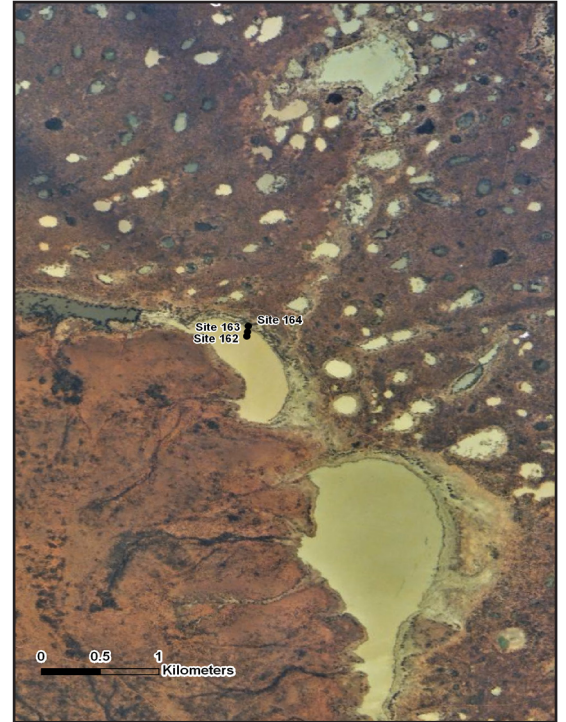


Queensland Government

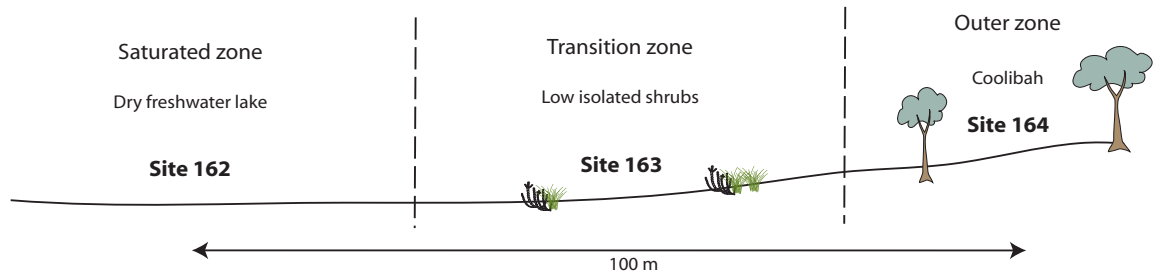
Queensland
Wetlands Program

Location

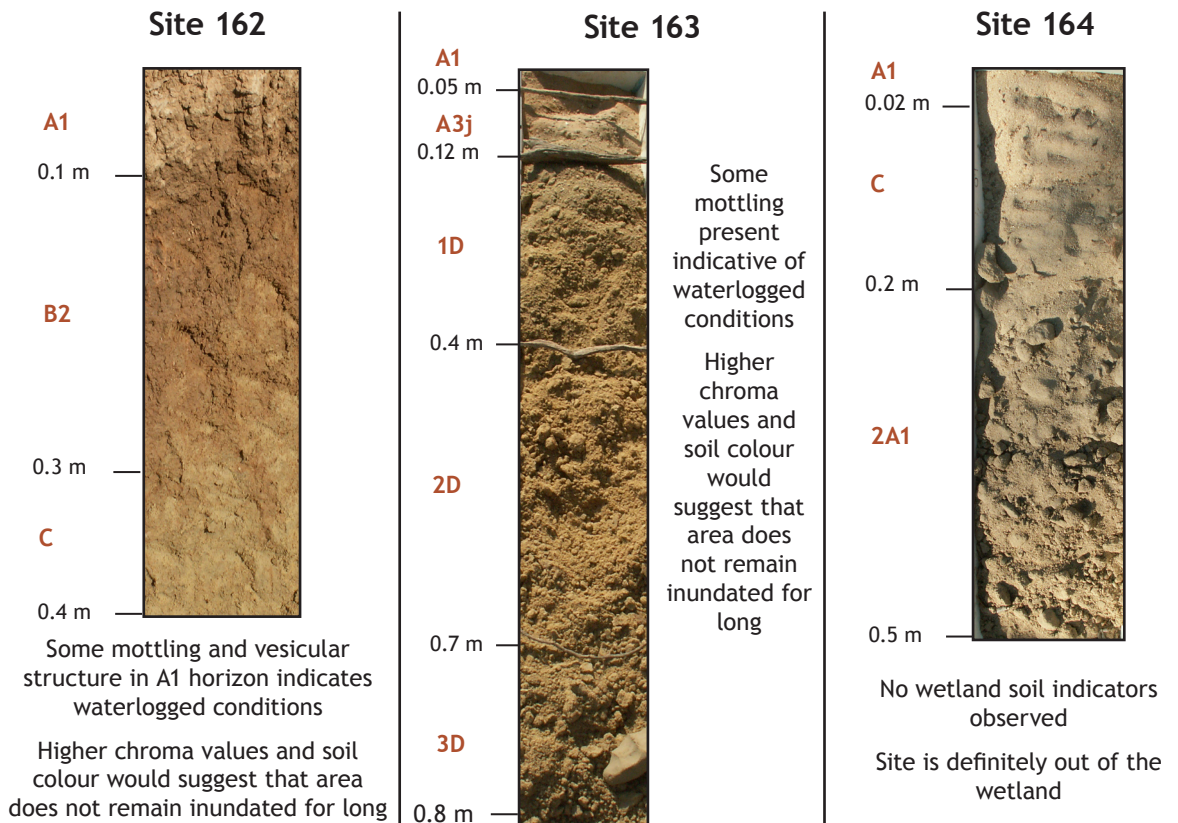
GDA94 • MGA Coordinates : 238642 E, 6809242 N, Zone 55 • Lat/Long : -28.81791 S, 144.32185 E



Landscape Diagram



Soil Profiles





October 2007



April 2008

Soil Indicators Present (within 0.3 m of surface)

Indicator ⁶	Site 162	Site 163	Site 164
Organic materials and organic carbon (OC)*	No organic materials OC: 0.23%	No organic materials OC: 0.11%	No organic materials OC: 0.1%
Matrix colour	Brown	Brown	Brown
Chroma (thickness of layer)**	Not present	Not present	Present (0.1 m)
Mottles and Segregations	Common <5 mm distinct grey mottles	Few <5 mm faint brown mottles	Not present
Depth to groundwater	Not present	Not present	Not present
Ferruginous root channel and pore linings	Not present	Not present	Not present
pH* ⁷	Very strongly alkaline	Mildly alkaline	Neutral
Texture	Light medium clay to heavy clay	Clay loam to light clay	Sand to sandy clay loam
Acid sulfate material	Not present	Not present	Not present
Electrical Conductivity (EC) ⁷	Non saline	Slightly saline	Non saline

*Organic carbon % (Dumas method) and pH taken from surface (0-0.1 m)

**Chroma value is less than or equal to 2

Summary of Field Observations

- Vesicular structure in the A1 horizon of the saturated zone indicates waterlogged conditions, high surface temperatures effectively boil the water inside the soil pores which evaporates at a fast rate leaving voids throughout the horizon (Figure 1)
- High chroma values suggest the area does not remain inundated for long and may not become reduced
- Some faint mottling is indicative of water fluctuation through the soil profile in the saturated and transition zone
- Evaporative concentration of salt at the edge of the wetland is indicated by higher EC and presence of *Atriplex vesicaria*
- Leached profile in the saturated zone with salt accumulated at depth

Figure 1. Vesicular structure
Very high surface temperatures boil the water inside the soil pores, which evaporate quickly leaving small voids



Soil Morphology

Site 162		Classification			Australian Soil Classification				Calcareous, Dermosolic, Redoxic Hydrosol		
					Landform Element				Playa		
					Morphological Type				Flat		
Horizon	Depth (m)	Boundary	Texture	Colour	Mottles	Coarse Fragments	Structure	Segregations	Consistence		
A1	0 to .1	clear to	medium heavy clay	strong brown (7.5YR46)	none	none	strong 5-10 mm subangular blocky	none	-		
B2	.1 to .3	gradual to	light medium clay	brown (7.5YR44)	common (<5 mm) distinct grey mottles	none	moderate 2-5 mm subangular blocky	none	-		
C	.3 to .65	clear to	light clay	yellowish brown (10YR56)	none	none	weak 2-5 mm subangular blocky	few (2-10%) medium (2-6 mm) calcareous nodules, very few (<2%) medium (2-6 mm) calcareous soft segregations	-		
1D	.65 to .8	clear to	light medium clay	yellowish brown (10YR56)	common (10-20%) fine (<5 mm) faint grey mottles	none	-	none	-		
2D	.8 to .9	-	medium clay	light yellowish brown (10YR64)	none	none	-	very few (<2%) medium (2-6 mm) calcareous soft segregations	-		
Site 163		Classification			Australian Soil Classification				Stratic Rudosol		
					Landform Element				Playa		
					Morphological Type				Upper slope		
Horizon	Depth (m)	Boundary	Texture	Colour	Mottles	Coarse Fragments	Structure	Segregations	Consistence		
A1	0 to .05	-	clay loam, sandy	yellowish brown (10YR54)	none	none	massive	none	-		
A3j	.05 to .12	-	sandy light clay	brown (10YR53)	few (2-10%) fine (<5 mm) faint brown mottles	few (2-10%) subrounded quartz small pebbles (2-6 mm)	massive	none	-		
1D	.12 to .4	-	light clay	brown (10YR53)	none	none	massive	none	-		
2D	.4 to .7	-	light medium clay	yellowish brown (10YR54)	common (10-20%) fine (<5 mm) faint orange mottles	none	massive	none	-		
3D	.7 to .8	-	light clay	yellowish brown (10YR54)	none	none	massive	none	-		

Site 164		Classification			Australian Soil Classification				Stratic Rudosol					
		Boundary			Landform Element			Lunette						
		Texture			Morphological Type				Crest					
Horizon	Depth (m)	EC dS/m	pH*	Cl mg/kg	NO3-N mg/kg	TC** %	TN** %	Ca meq/100g	Mg meq/100g	Na meq/100g	K meq/100g	ESP %	CEC meq/100g	
A1	0 to .02	0.3	9.4	143	6	0.23	0.04	7.35	2.21	12.1	2.68	48.4	25	
C	.02 to .2	0.41	9.4	210	7	0.17	0.03	6.6	2.09	16.3	3.12	49.4	33	
2A1	.2 to .5	0.72	9.4	669	17	0.11	<0.03	6.64	3.87	16	4.23	48.9	33	
		0.98	9.8	728	8	0.32	<0.03	4.64	6.21	16.5	4.18	55	30	
		1.26	9.7	1150	20	0.61	<0.03	5.7	5.26	15.8	4.31	48.5	33	
		1.26	7.8	1200	10	0.11	<0.03	3.71	0.93	2.02	0.88	16.8	12	
		2.29	8.1	2080	6	0.05	<0.03	10.8	3.51	8.25	3.17	26.6	31	
		2.01	8.7	1840	3	0.12	<0.03	11.1	4.12	9.2	2.96	28.8	32	
		0.06	6.9	38	<1	0.1	<0.03	0.797	0.32	12.5	0.25	125	10	
		0.24	6.8	292	1	0.11	<0.03	0.939	<0.310	0.4	0.41	13.3	<3	
		0.61	7.7	826	<1	0.09	<0.03	2.46	0.7	1.11	0.49	12.6	9	

Soil Chemistry

Site	Depth (m)	EC dS/m	pH*	Cl mg/kg	NO3-N mg/kg	TC** %	TN** %	Ca meq/100g	Mg meq/100g	Na meq/100g	K meq/100g	ESP %	CEC meq/100g
162	0.00-0.10	0.3	9.4	143	6	0.23	0.04	7.35	2.21	12.1	2.68	48.4	25
	0.10-0.20	0.41	9.4	210	7	0.17	0.03	6.6	2.09	16.3	3.12	49.4	33
	0.20-0.30	0.72	9.4	669	17	0.11	<0.03	6.64	3.87	16	4.23	48.9	33
	0.30-0.40	0.98	9.8	728	8	0.32	<0.03	4.64	6.21	16.5	4.18	55	30
	0.40-0.50	1.26	9.7	1150	20	0.61	<0.03	5.7	5.26	15.8	4.31	48.5	33
163	0.00-0.10	1.26	7.8	1200	10	0.11	<0.03	3.71	0.93	2.02	0.88	16.8	12
	0.20-0.30	2.29	8.1	2080	6	0.05	<0.03	10.8	3.51	8.25	3.17	26.6	31
	0.40-0.50	2.01	8.7	1840	3	0.12	<0.03	11.1	4.12	9.2	2.96	28.8	32
164	0.00-0.10	0.06	6.9	38	<1	0.1	<0.03	0.797	0.32	12.5	0.25	125	10
	0.20-0.30	0.24	6.8	292	1	0.11	<0.03	0.939	<0.310	0.4	0.41	13.3	<3
	0.40-0.50	0.61	7.7	826	<1	0.09	<0.03	2.46	0.7	1.11	0.49	12.6	9

*Aqueous 1:5

**Total carbon and total nitrogen

References

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