

Marina Plains

Lakefield National Park



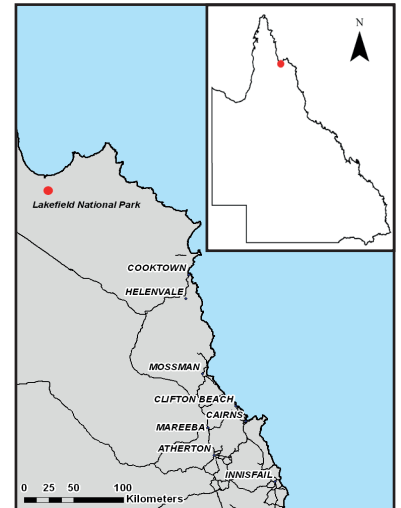
Queensland
Wetlands Program

Study Area

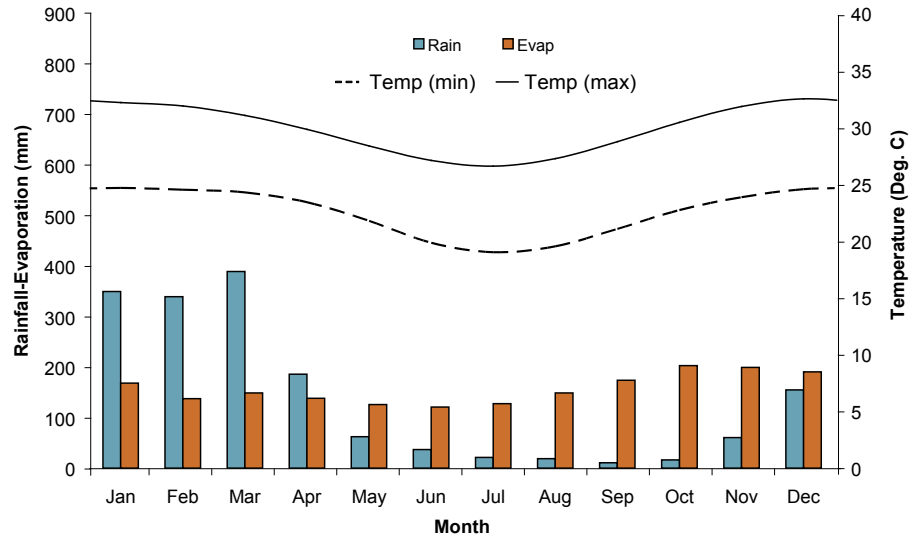
Lakefield National Park is the second largest national park in Queensland. Its centre is approximately 160 km north-west of Cooktown, Northern Queensland.

The area is predominantly alluvial plains, old stream channels, infilled prior stream channels and shallow lagoons which are seasonally inundated¹.

This wetland is part of an incised stream channel. This study area is an example of a coastal and sub-coastal floodplain grass, sedge, herb swamp on old marine sediments within the Cape York Peninsula Bioregion.



Climate²



The study area is situated within a tropical/equatorial climatic region with a distinct wet and dry season. Evaporation exceeds rainfall in the majority of months. The average annual rainfall is 1643 mm.

Landform and Inundation	Incised channel within a drainage depression on an old marine plain Freshwater inundation from overland flow
Soils³	Hydrosols and Vertosols
Vegetation⁴	<i>Melaleuca saligna</i> with or without <i>Melaleuca viridiflora</i> low open woodland in drainage depressions (RE 3.3.48)
Geology⁵	Coastal sediments and older beach ridge deposits
Disturbance	No effective disturbance except grazing by hoofed animals



Australian Government



Queensland Government

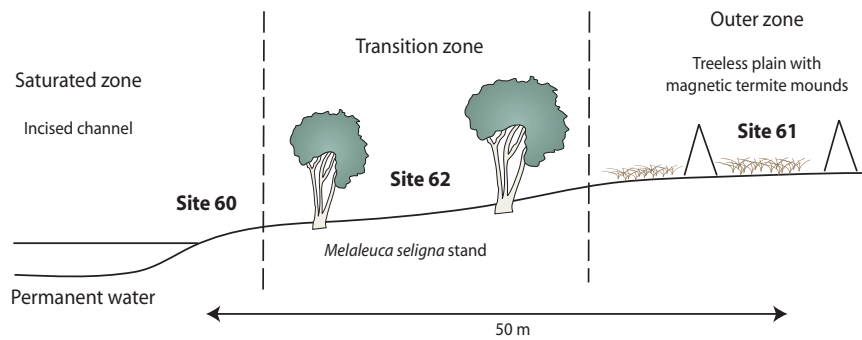
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Location

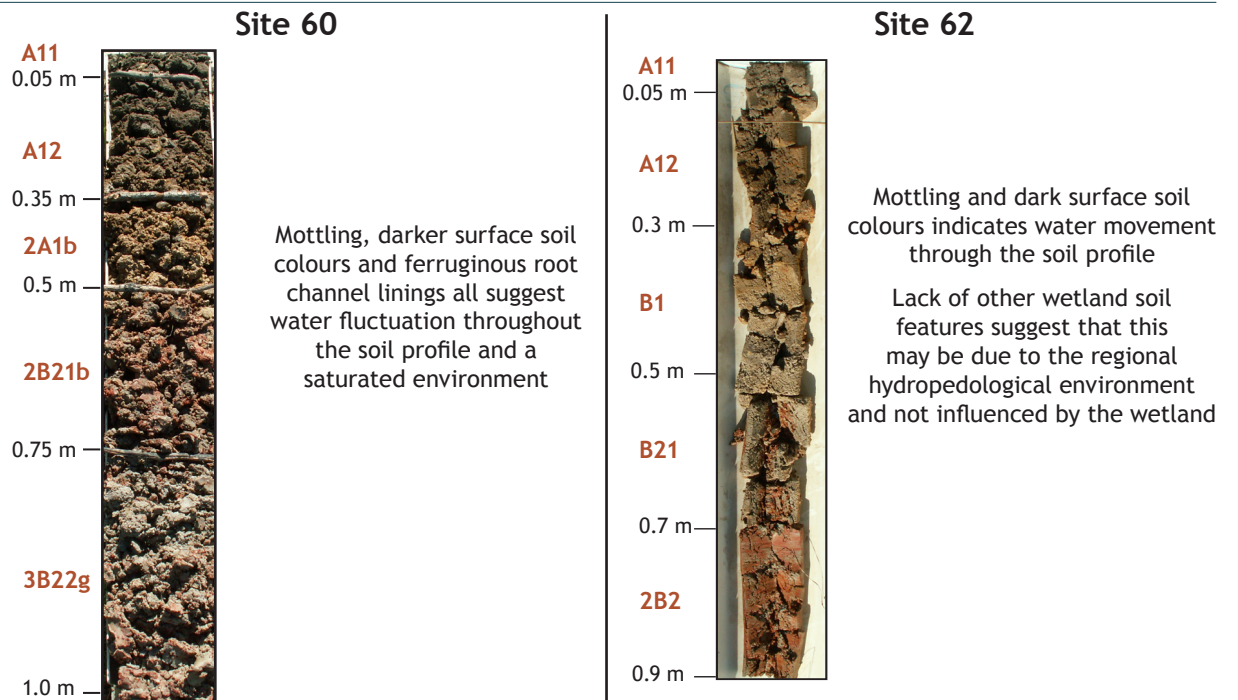
GDA94 • MGA Coordinates : 820486 E, 8379916 N, Zone 54 • Lat/Long : -14.63522 S, 143.97489 E



Landscape Diagram



Soil Profiles



Soil Indicators Present (within 0.3 m of surface)

Indicator ⁶	Site 60	Site 61	Site 62
Organic materials and organic carbon (OC)*	No organic materials OC: 1.73%	No organic materials OC: 1.38%	No organic materials OC: 1.8%
Matrix colour	Greyish brown	Greyish to yellowish brown	Dark grey
Chroma (thickness of layer)**	Present (0.3 m)	Present (0.1 m)	Present (0.3 m)
Mottles and Segregations	Few <5 mm faint orange mottles Common <5 mm distinct orange mottles	Few <5 mm faint orange mottles	Common <5 mm faint orange mottles
Depth to groundwater	Not present	Not present	Not present
Ferruginous root channel and pore linings	Present	Not present	Not present
pH ⁷	Very strongly acid	Strongly acid	Very strongly acid
Texture	Silty light clay to light medium clay	Sandy light clay	Silty light clay to fine sandy light medium clay
Acid sulfate material	Not present	Not present	Not present
Electrical Conductivity (EC) ⁷	Non saline	Non 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

- Mottled profiles to depth across all three sites suggest water fluctuation from a seasonally saturated environment
- Ferruginous root channel linings and depth of dark grey topsoil colours appear to be the only indicators of the wetland boundary
- Channel is steeply incised suggesting that inundation across the plain is uncommon
- Soil features are consistent at all sites along the transect therefore interpretation with landform features necessary for wetland identification
- No water table observed at site 60 despite being located at the waters edge, this implies that there is very little lateral movement of water at this wetland location

References

1. DEWHA (2008). *Australian Wetlands Database*. [online]. Available at <http://www.environment.gov.au/water/publications/environmental/wetlands/database/> [accessed 21/08/08]
2. Queensland Department of Natural Resources and Water (2008). *SIL0* [online]. Available at <http://www.longpaddock.qld.gov.au/silo/> [accessed 5/11/2007].
3. Isbell RF (2002). *The Australian Soil Classification*. CSIRO Publishing, Collingwood, Victoria, revised edition.
4. EPA (2008) *Regional Ecosystems*. [online]. Available at http://www.epa.qld.gov.au/nature_conservation/biodiversity/regional_ecosystems/ [accessed 28/06/08].
5. Bureau of Mineral Resources (1966). *Cape Melville: Australia 1:250,000 Geological Series*, Bureau of Mineral Resources, Canberra.
6. Bryant KB, Wilson PR, Biggs AJW, Brough DM and Burgess JW (2008). *Soil Indicators of Queensland Wetlands: State-wide assessment and methodology*. Queensland Department of Natural Resources and Water. Brisbane.
7. Hazelton P and Murphy B (2007). *Interpreting Soil Test Results: What do all the numbers mean?*. [2nd ed]. CSIRO publishing. Collingwood Victoria



Soil Morphology

Site 60		Classification			Australian Soil Classification				Melacic, Dermosolic, Redoxic Hydrosol		
		Landform Element			Landform Element				Drainage depression		
		Morphological Type			Morphological Type				Simple slope		
Horizon	Depth (m)	Boundary	Texture	Colour	Mottles	Coarse Fragments	Structure	Segregations	Consistence		
A11	0 to .05	clear to	silty light medium clay	very dark greyish brown (10YR32)	few (2-10%) fine (<5 mm) faint orange mottles	none	moderate 10-20 mm angular blocky	none	strong dry		
A12	.05 to .35	clear to	light medium clay	very dark greyish brown (10YR32)	common (10-20%) fine (<5 mm) distinct orange mottles	very few (<2%) angular quartz small pebbles (2-6 mm)	moderate 5-10 mm angular blocky	none	very firm moist		
2A1b	.35 to .5	clear to	coarse sandy light clay	grey (10YR51)	many (20-50%) fine (<5 mm) distinct orange mottles	many (20-50%) subrounded quartz very strong small pebbles (2-6 mm)	weak 5-10 mm angular blocky	none	firm moist		
2B21b	.5 to .75	gradual to	medium heavy clay	grey (10YR51)	many (20-50%) medium (5-15 mm) prominent red mottles, common (10-20%) medium (5-15 mm) distinct grey mottles	none	moderate 5-10 mm angular blocky	none	very firm moist		
3B22g	.75 to 1		sandy light medium clay	grey (10YR61)	common (10-20%) medium (5-15 mm) prominent red mottles, common (10-20%) coarse (15-30 mm) distinct grey mottles	none	weak 20-50 mm lenticular	none	very firm moist		

Site 62		Classification			Australian Soil Classification				Epiacidic-Mottled, Epipedal, Grey Vertosol		
		Landform Element			Landform Element				Plain		
		Morphological Type			Morphological Type				Lower slope		
Horizon	Depth (m)	Texture	Boundary	Colour	Mottles	Coarse Fragments	Structure	Segregations	Consistence		
A11	0 to .05	silty light clay	-	very dark grey (10YR31)	none	none	subangular blocky weak 2-5 mm	none	-		
A12	.05 to .3	fine sandy light medium clay	-	dark grey (10YR41)	common (10-20%) fine (<5 mm) faint orange mottles	none	moderate 10-20 mm prismatic, moderate 5-10 mm angular blocky	none	-		
B1	.3 to .5	sandy light medium clay	-	greyish brown (10YR52)	few (2-10%) fine (<5 mm) faint orange mottles, very few (<2%) medium (5-15 mm) distinct red mottles	none	weak 10-20 mm prismatic	none	-		
B21	.5 to .7	coarse sandy light medium clay	-	grey (10YR51)	common (10-20%) fine (<5 mm) prominent red mottles	none	weak 10-20 mm prismatic	none	-		
2B2	.7 to 1.3	medium heavy clay	-	grey (10YR61)	many (20-50%) fine (<5 mm) prominent red mottles	none	strong 2-5 mm lenticular, strong <2 mm lenticular	none	-		
3B2	1.3 to 1.5	silty light medium clay	-	grey (10YR61)	few (2-10%) fine (<5 mm) prominent orange mottles	none	strong 2-5 mm lenticular	none	-		

Site 61		Classification			Australian Soil Classification					Epihypersodic, Epipedal, Brown Vertosol	
		Landform Element			Morphological Type					Plain	
		Morphological Type								Flat	
Horizon	Depth (m)	Boundary	Texture	Colour	Mottles	Coarse Fragments	Structure	Segregations	Consistence		
A1	0 to .1	-	sandy light clay	very dark greyish brown (10YR32)	very few (<2%) fine (<5 mm) faint orange mottles	none	moderate 2-5 mm angular blocky	none	-		
B1	.1 to .35	-	sandy light clay	dark yellowish brown (10YR44)	few (2-10%) fine (<5 mm) faint orange mottles	very few (<2%) angular quartz small pebbles (2-6 mm)	weak 20-50 mm prismatic, moderate 2-5 mm angular blocky	none	-		
B21	.35 to .6	-	medium clay	yellowish brown (10YR54)	many (20-50%) medium (5-15 mm) distinct brown mottles	none	strong 20-50 mm prismatic, moderate 10-20 mm lenticular	none	-		
B22	.6 to .8	-	heavy clay	light olive brown(2.5Y54)	many (20-50%) medium (5-15 mm) distinct grey mottles	none	strong 5-10 mm lenticular	none	-		
B23	.8 to 1.1	-	sandy medium clay	light grey (2.5Y72)	many (20-50%) medium (5-15 mm) prominent orange mottles	none	strong 5-10 mm lenticular	few (2-10%) fine (<2 mm) ferruginous nodules	-		
B24	1.1 to 1.4	-	medium heavy clay	light yellowish brown (2.5Y64)	few (2-10%) medium (5-15 mm) prominent grey mottles, few (2-10%) fine (<5 mm) faint grey mottles	none	strong 2-5 mm lenticular	few (2-10%) coarse (6-20 mm) calcareous soft segregations, few (2-10%) coarse (6-20 mm) calcareous concretions	-		

Soil Chemistry

Site	Depth (m)	pH*	EC (dS/m)	Cl (mg/kg)	NO3-N (mg/kg)	TC%**	TN%**
60	0.00-0.10	4.5	0.03	22	5	1.73	0.12
	0.20-0.30	4.7	0.03	24	1	0.92	0.07
	0.40-0.50	4.8	0.07	46	2	0.39	0.03
61	0.00-0.10	5.1	0.04	34	3	1.38	0.11
	0.25-0.35	7.1	0.2	208	<1	0.38	0.04
	0.40-0.50	8.1	0.79	1140	<1	0.3	0.04
62	0.00-0.10	4.6	0.12	90	1	1.8	0.14
	0.20-0.30	4.7	0.13	81	<1	0.38	0.03
	0.40-0.50	4.9	0.27	254	<1	0.27	<0.03

*Aqueous 1:5

**Total carbon and total nitrogen



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