

Drainage Depression

Lakefield National Park

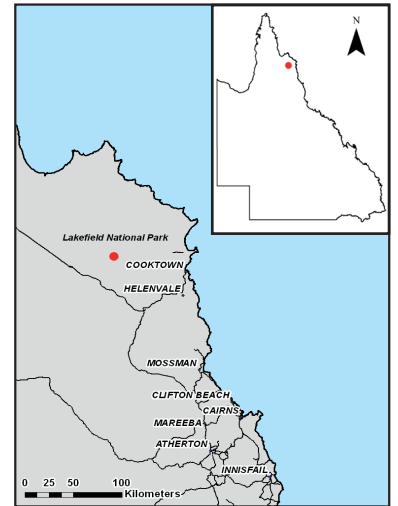


Study Area

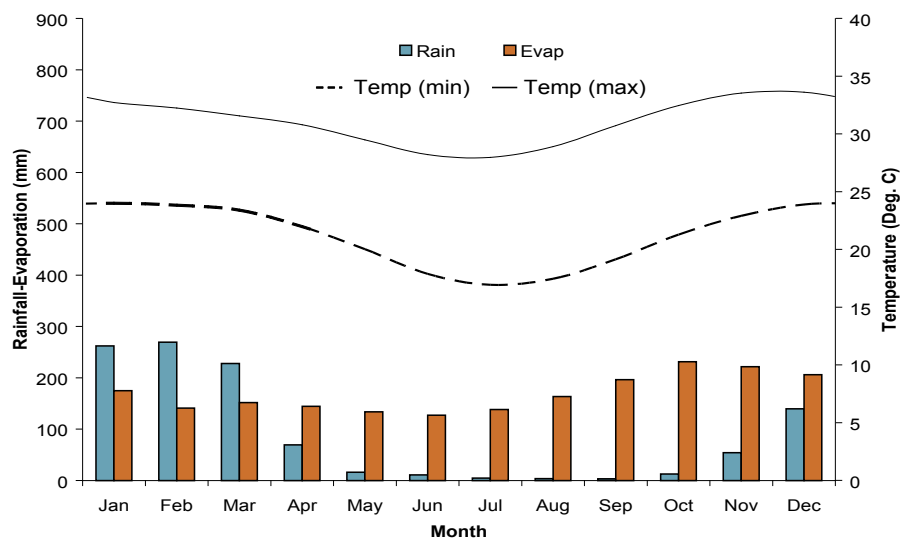
Lakefield National Park is the second largest national park in Queensland. Its centre is approximately 160 km north-west of Cooktown, Northern Queensland.

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

This site is located on Battle Camp Road and is an example of a coastal and sub-coastal floodplain tree swamp (*melaleuca* and *eucalyptus* spp.) within the Cape York Peninsula Bioregion.



Climate²



The study area is located 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 for the area is 1077 mm.

Landform and Inundation	Inland drainage depression Freshwater seasonally inundated areas from overland flow
Soils ³	Hydrosols and Chromosols
Vegetation ⁴	<i>Melaleuca viridiflora</i> with or without <i>Petalostigma pubescens</i> low open woodland on low plains (RE 3.3.50)
Geology ⁵	Alluvium grey silty clay, sand and gravel Interfluvial sand: loose orange and white sand Mottled clayey sand, gritty and pebbly
Disturbance	No effective disturbance



Australian Government

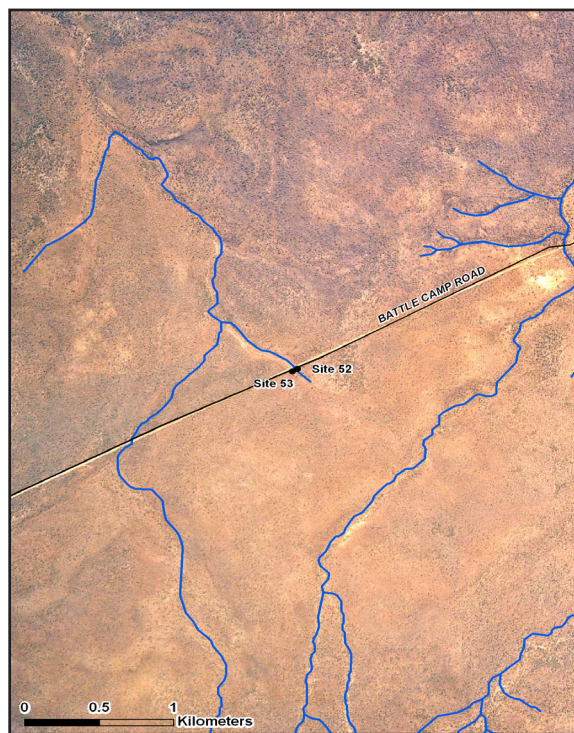


Queensland Government

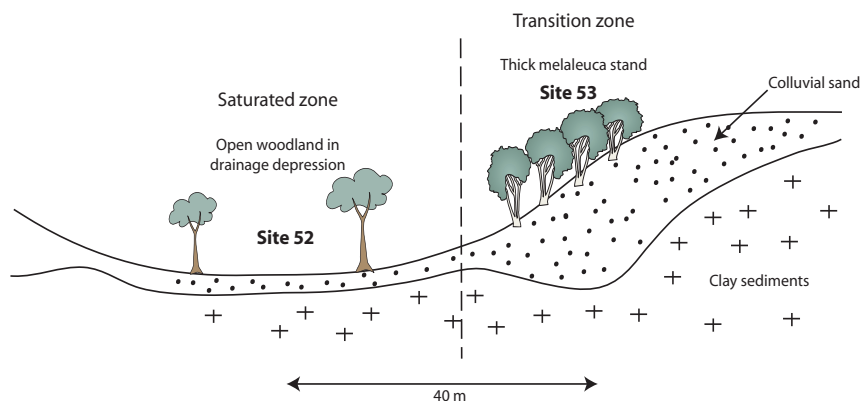
Queensland
Wetlands Program

Location

GDA94 • MGA Coordinates : 240302 E, 8305267 N, Zone 55 • Lat/Long : -15.31606 S, 144.58140 E



Landscape Diagram



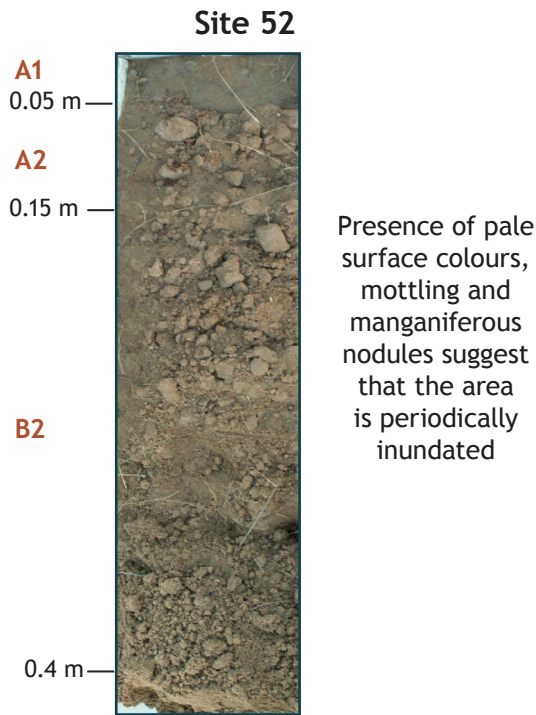
Soil Indicators present (within 0.3m of surface)

Indicator ⁶	Site 52	Site 53
Organic materials and organic carbon (OC)*	No organic materials OC: 0.5%	No organic materials OC: 0.39%
Matrix colour	Dark grey to pale red	Brown
Chroma (thickness of layer)**	Present (0.05 m)	Not present
Mottles and Segregations	Many <5 mm faint orange mottles Few <5 mm faint grey mottles Few 2-6 mm manganiferous nodules Few 6-20 mm manganiferous nodules	Not present
Depth to groundwater	Not present	Not present
Ferruginous root channel and pore linings	Not present	Not present
pH* ⁷	Very strongly acid	Very strongly acid
Texture	Loamy sand to sandy light medium clay	Sand
Acid sulfate material	Not present	Not present
Electrical Conductivity (EC) ⁷	Non saline	Non saline

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

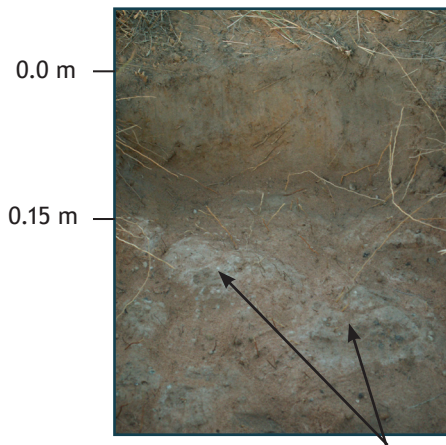
**Chroma value is less than or equal to 2

Soil Profiles

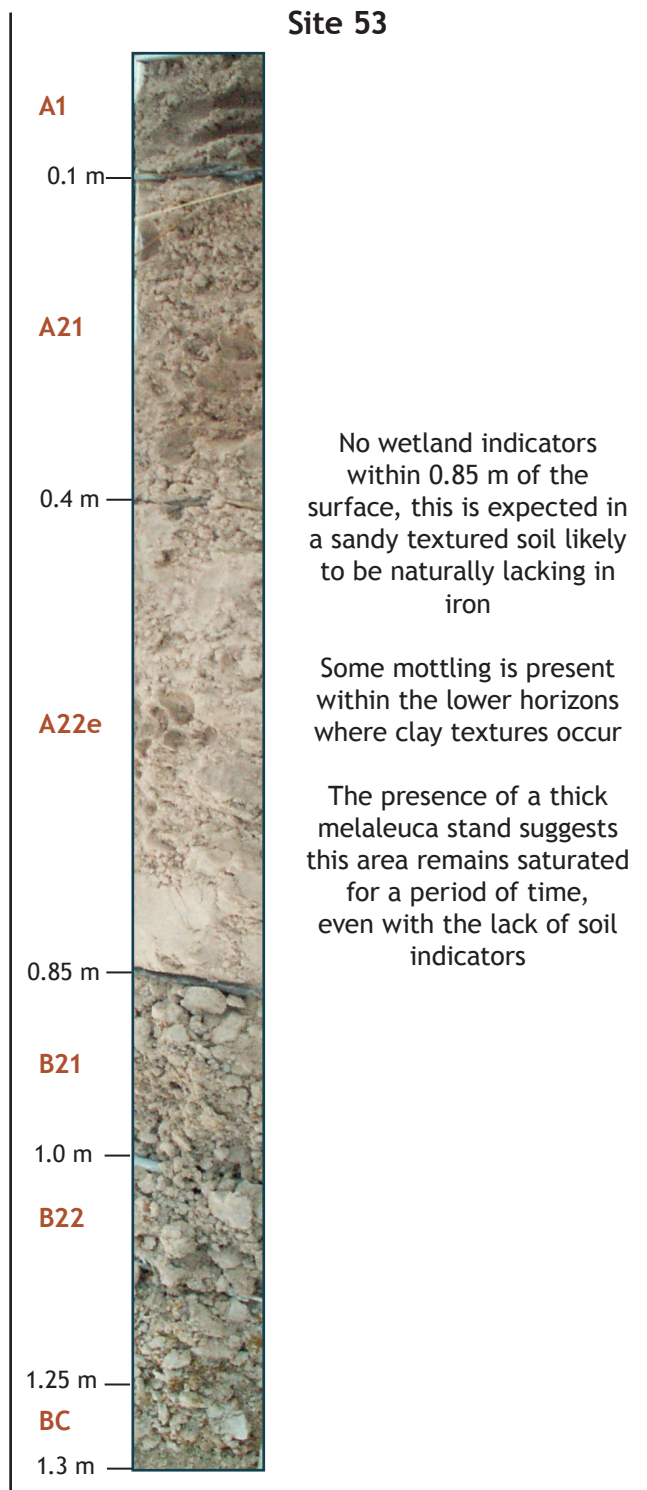


Site 52

Columnar structured B horizon



Columnar structured horizons impede drainage and promote waterlogging



Summary of field observations

- Faint orange and grey mottles and manganiferous nodules within 0.3 m are indicative of intermittent waterlogging within the saturated zone
- Grey surface colours and low chroma values within the saturated zone suggest reducing conditions and a seasonally saturated environment
- No soil features to indicate a wetland soil within the transition zone with mottling features only present at depth
- The presence of *melaleuca* vegetation in the transition zone suggests waterlogging but sandy colluvial materials in the surface may inhibit the formation of redox features
- Columnar structure in the B horizon of the saturated zone impedes drainage and can cause prolonged waterlogging
- Landscape and vegetation indicate seepage and waterlogging occurring at the contact between alluvium and sandy colluvial deposits, but there is insufficient development to call a wetland feature

Soil Morphology

Site 52		Classification			Australian Soil Classification			Eutrophic, Kurosollic, Oxyaquic Hydrosol		
		Landform Element			Landform Element			Drainage Depression		
		Morphological Type			Morphological Type			Flat		
Horizon	Depth (m)	Boundary	Texture	Colour	Mottles	Coarse Fragments	Structure	Segregations	Consistence	
A1	0 to .05	clear to	loamy sand	very dark grey (2.5Y31)	none	none	massive	none	weak dry	
A2	.05 to .15	abrupt to	clayey sand	yellowish red (5YR46)	many (20-50%) fine (<5 mm) faint orange mottles, few (2-10%) fine (<5 mm) faint grey mottles	none	massive	few (2-10%) medium (2-6 mm) mangiferous nodules, few (2-10%) coarse (6-20 mm) mangiferous nodules	weak dry	
B2	.15 to .4	-	sandy light medium clay	pale red (2.5YR62)	few (2-10%) fine (<5 mm) faint orange mottles, few (2-10%) fine (<5 mm) faint grey mottles	none	strong 20-50 mm columnar	few (2-10%) medium (2-6mm) mangiferous nodules	very firm dry	

Site 53		Classification			Australian Soil Classification			Bleached-mottled, Dystrophic, Grey Chromosol		
		Landform Element			Landform Element			Plain		
		Morphological Type			Morphological Type			Flat		
Horizon	Depth (m)	Boundary	Texture	Colour	Mottles	Coarse Fragments	Structure	Segregations	Consistence	
A1	0 to .1	clear to	sand	dark yellowish brown (10YR44)	none	none	single grain	none	very weak moderately moist	
A21	.1 to .4	gradual to	sand	brown (7.5YR54)	none	none	single grain	none	very weak moderately moist	
A22e	.4 to .85	abrupt to	sand	light brown (7.5YR64)	none	none	single grain	none	very weak moderately moist	
B21	.85 to 1	clear to	sandy clay loam	light grey (10YR72)	common (10-20%) medium (5-15 mm) distinct orange mottles	none	weak 10-20 mm angular blocky	none	very firm moderately moist	
B22	1 to 1.25	clear to	sandy clay loam	light grey (10YR72)	many (20-50%) medium (5-15 mm) distinct orange mottles, common (10-20%) fine (<5 mm) distinct yellow mottles	none	weak 10-20 mm angular blocky	none	very firm moderately moist	
BC	1.25 to 1.3	-	sandy clay loam	light grey (10YR72)	many (20-50%) medium (5-15 mm) distinct orange mottles, common (10-20%) fine (<5 mm) distinct yellow mottles	abundant (50-90%) angular platy siltstone strong medium pebbles (6-20 mm)	-	none	-	

Soil Chemistry

Site	Depth (m)	pH*	EC (dS/m)	Cl (mg/kg)	NO ₃ -N (mg/kg)	TC%**	TN%**
52	0.00-0.10	4.9	0.01	26	3	0.5	0.04
	0.15-0.25	7	0.08	54	1	0.2	<0.03
53	0.00-0.10	4.3	0.02	<20	6	0.39	<0.03
	0.20-0.30	4.5	0.01	<20	3	0.09	<0.03
	0.40-0.50	4.9	0.01	<20	2	0.08	<0.03

*Aqueous 1:5

**Total carbon and total nitrogen

References

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4. EPA (2008) *Regional Ecosystems*. [online]. Available at http://www.epa.qld.gov.au/nature_conservation/biodiversity/regional_ecosystems/ [accessed 28/06/08].
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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

