

Goorganga Plain

Lagoon

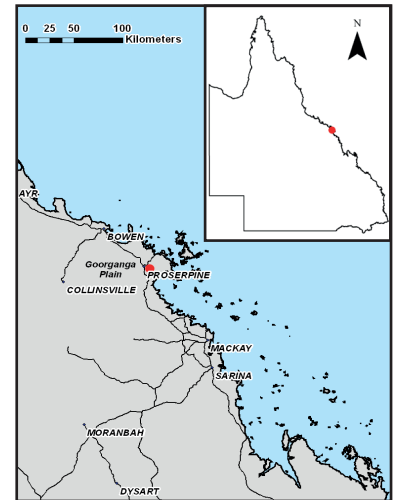


Study Area

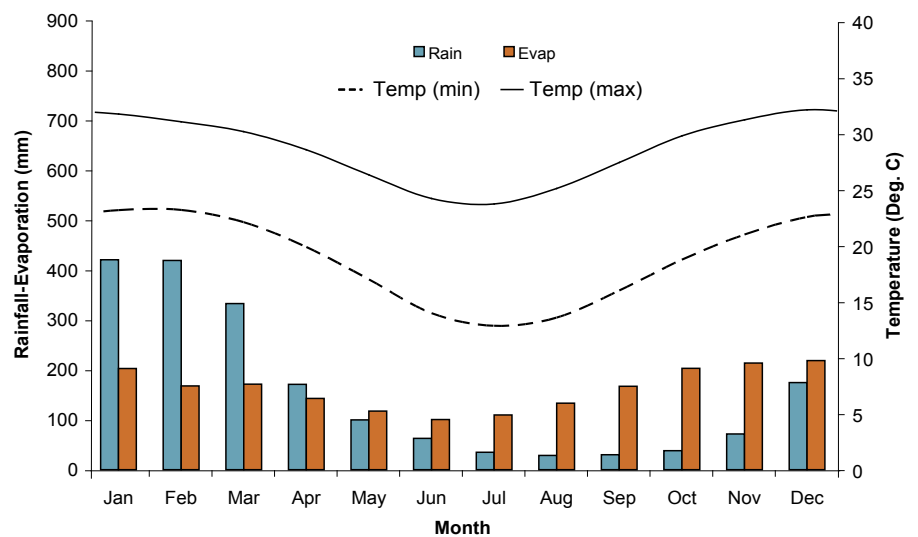
Goorganga plain is situated approximately 6 km south-east of Proserpine, Central Queensland.

Goorganga plain is the largest floodplain in the Central Queensland Bioregion and has extensive areas of seasonally inundated grasslands¹.

This study area is an example of a coastal and sub-coastal floodplain grass, sedge, herb swamp within the Central Queensland Bioregion.



Climate²



The study area is situated within a subtropical climatic region with a wet and dry season. Evaporation exceeds rainfall in the majority of months. The average annual rainfall for the area is 1886 mm.

Landform and Inundation	Level alluvial plains merging to tidal mudflats Freshwater to slightly saline permanently inundated lagoon from overland flow
Soils³	Hydrosols
Vegetation⁴	<i>Paspalum</i> spp. and <i>Fimbristylis ferruginea</i> sedgeland/grassland (estuarine wetland). Includes areas of deep open water with clumps of <i>Schoenoplectus littoralis</i> with or without <i>Eleocharis dulcis</i> (RE 8.1.4) <i>Melaleuca viridiflora</i> closed forest to woodland in broad drainage areas (wetlands) (RE 8.3.11)
Geology⁵	Coastal mud, silt and minor evaporites
Disturbance	Little to no disturbance except grazing by hoofed animals



Australian Government



Queensland Government

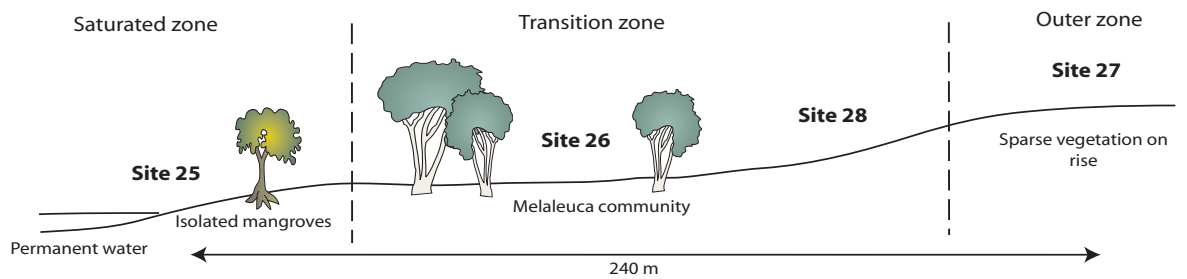
Queensland Wetlands Program

Location

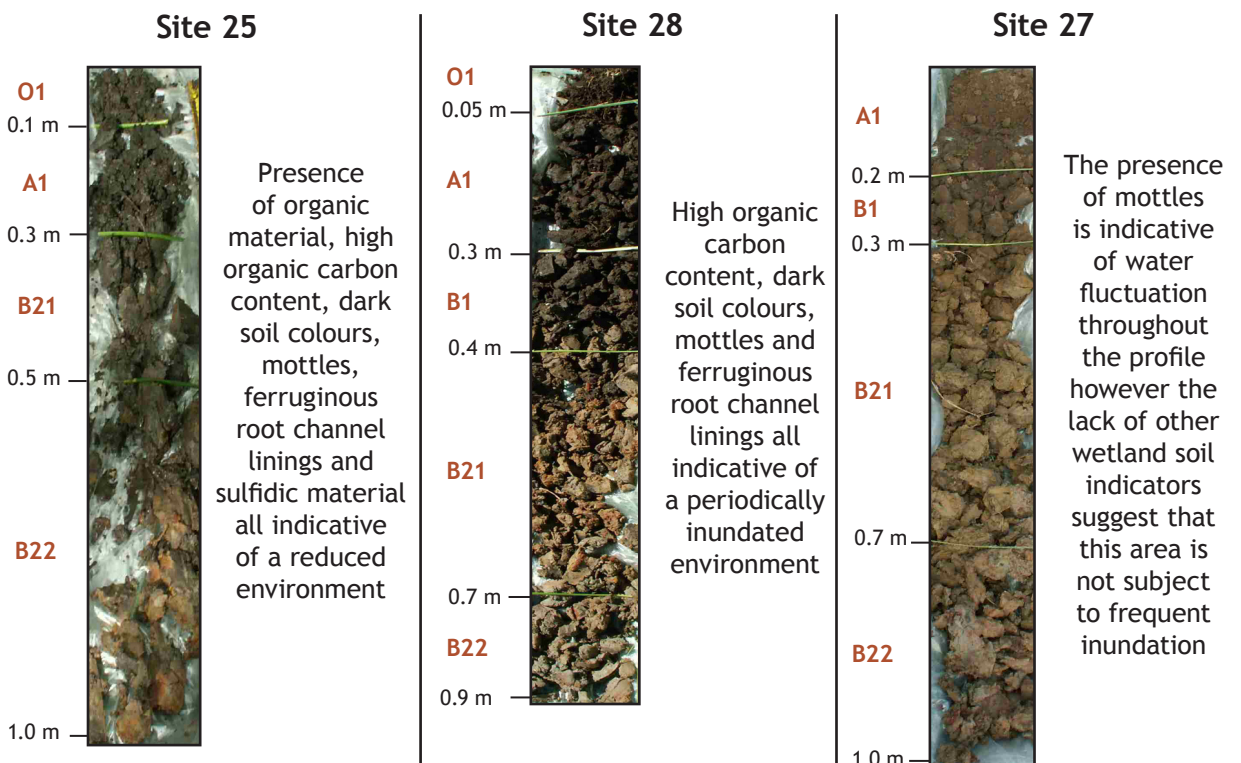
GDA94 • MGA Coordinates : 671374 E, 7741337 N, Zone 55 • Lat/Long : -20.41861 S, 148.64250 E



Landscape Diagram



Soil Profiles



Soil Indicators Present (within 0.3 m of surface)

Indicator ⁶	Site 25	Site 26
Organic materials and organic carbon (OC)*	Organic materials layer 0.2 m thick starting within 0.3 m OC: 8.36%	No organic materials OC: 4.37%
Matrix colour	Dark grey to black	Dark grey
Chroma (thickness of layer)**	Present (0.3 m)	Present (0.3 m)
Mottles and Segregations	Not present	Very few <5 mm faint red mottles Few distinct orange mottles
Depth to groundwater	0.05 m	Not present
Ferruginous root channel and pore linings	Present	Present
pH ^{*7}	Moderately acid	Strongly acid
Texture	Clay loam to light clay	Light medium clay to medium clay
Acid sulfate material	Not present	Not present
Electrical Conductivity (EC) ⁷	Slightly saline	Non saline
Indicator ⁶	Site 27	Site 28
Organic materials and organic carbon (OC)*	No organic materials OC: 2.85%	No organic materials OC: 12.4%
Matrix colour	Dark grey to brown	Black
Chroma (thickness of layer)**	Present (0.2 m)	Present (0.3 m)
Mottles and Segregations	Very few <5 mm faint orange mottles	Very few <5 mm faint red mottles
Depth to groundwater	Not present	Not present
Ferruginous root channel and pore linings	Not present	Present
pH ^{*7}	Strongly acid	Strongly acid
Texture	Light medium clay to heavy medium clay	Medium clay to medium heavy clay
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

Summary of Field Observations

- Considerable faint, distinct and prominent mottling indicative of water fluctuation throughout all soil profiles (Figure 1)
- Dark surface soil colours and low chroma values are a positive indicator of reducing conditions
- High organic carbon levels are indicative of a saturated environment
- Ferruginous root channel linings in the saturated and transition zone suggest a waterlogged environment
- Presence of sulfidic material in the saturated zone is indicative of permanently inundated area

Figure 1. Distinct and prominent mottling.

Soil mottling or the presence of more than one soil colour is usually an indication of poor drainage or water fluctuation throughout a soil profile.



Site 27		Classification			Australian Soil Classification				Redoxic Hydrosol		
		Landform Element			Rise				Flat		
		Morphological Type			Structure				Consistence		
Horizon	Depth (m)	Boundary	Texture	Colour	Mottles	Coarse Fragments	Structure	Segregations	Consistence		
A1	0 to .2	-	light medium clay	very dark grey (10YR31)	none	none	massive	none	-		
B1	.2 to .3	-	heavy medium clay	brown (10YR43)	very few (<2%) fine faint orange mottles	none	massive	none	-		
B21	.3 to .7	-	heavy medium clay	greyish brown (2.5Y52)	few (2-10%) fine distinct orange mottles	none	weak 2-5 mm angular blocky	very few (<2%) medium (2-6 mm) manganese soft segregations	-		
B22	.7 to 1	-	medium heavy clay	greyish brown (2.5Y52)	very few (<2%) fine distinct orange mottles, very few (<2%) fine distinct red mottles	none	weak 2-5 mm angular blocky	none	-		

Site 28		Classification			Australian Soil Classification				Redoxic Hydrosol		
		Landform Element			Swamp				Flat		
		Morphological Type			Structure				Consistence		
Horizon	Depth (m)	Boundary	Texture	Colour	Mottles	Coarse Fragments	Structure	Segregations	Consistence		
O1	0 to .05	-	-	black (10YR21)	none	none	-	none	-		
A1	.05 to .3	-	medium clay	black (10YR21)	very few (<2%) fine (<5 mm) faint red mottles	none	massive	none	-		
B1	.3 to .4	-	medium heavy clay	very dark grey (2.5Y31)	few (2-10%) fine (<5 mm) faint brown mottles	none	weak 2-5 mm angular blocky	none	-		
B21	.4 to .7	-	medium heavy clay	grey (2.5Y51)	very few (<2%) fine (<5 mm) prominent orange mottles, very few (<2%) fine (<5 mm) prominent red mottles	none	weak 2-5 mm angular blocky	none	-		
B22	.7 to .9	-	heavy medium clay	greyish brown (2.5Y52)	few (2-10%) fine (<5 mm) prominent orange mottles, few (2-10%) fine (<5 mm) prominent red mottles	very few (<2%) subangular pumice medium pebbles (6-20 mm)	weak 2-5 mm angular blocky	none	-		

Soil Chemistry

Site	Depth (m)	pH*	EC dS/m	Cl mg/kg	NO ₃ -N mg/kg	P mg/kg	S mg/kg	Ca meq/100g	Mg meq/100g	Na meq/100g	K meq/100g	Na corr meq/100g	Cu mg/kg	Zn mg/kg	Mn mg/kg	Fe mg/kg	TC** %	TN** %
25	0.00-0.10	5.6	0.84	620	10	100	988	9.49	16.5	7.73	1.48	5.98	2.9	7.6	5.8	377	8.36	0.51
	0.20-0.30	5.6	1.22	1630	2	57	643	-	-	-	-	-	0.9	2.3	3.9	162	3.53	0.21
	0.40-0.50	5.4	1.42	1930	1	24	427	4.36	11.7	10.7	1.47	5.22	1.7	1.4	9.2	174	1.44	0.08
26	0.00-0.10	5.4	0.16	45	10	23	129	8.25	13.5	2.6	0.399	2.48	2.1	3.1	27.9	351	4.37	0.25
	0.20-0.30	4.6	0.27	83	<1	10	356	2.94	7.25	2.28	0.355	2.05	0.2	0.3	8.6	121	1.91	0.1
	0.40-0.50	4.4	0.51	269	<1	3	713	2	6.53	3.32	0.475	2.56	0.1	0.1	8.2	22	0.62	<0.03
27	0.00-0.10	5.4	0.08	<20	23	9	30	8.54	6.5	0.514	0.44	0.514	2	2.4	117	176	2.85	0.23
	0.20-0.30	5.5	0.05	21	3	<1	44	5.62	8.62	0.793	0.353	0.734	0.8	0.3	27.5	63.9	0.97	0.07
	0.40-0.50	5.2	0.09	89	2	<1	64	5.85	12	1.54	0.539	1.28	0.5	0.5	35.7	34	0.45	<0.03
28	0.00-0.10	5.1	0.3	318	66	27	105	-	-	-	-	-	-	-	-	-	12.4	0.77
	0.20-0.30	5.1	0.32	261	5	11	219	6.43	8.7	2.7	0.761	1.97	0.8	1.2	19.6	187	2.71	0.15
	0.40-0.50	4.6	0.47	413	1	7	602	4.31	7.59	3.36	0.849	2.19	0.1	0.2	5.7	36.4	1.02	0.04

*Aqueous 1:5

**Total carbon and total nitrogen

References

1. DEWHA (2008). Australian Wetlands Database. [online]. Available at <http://www.environment.gov.au/water/publications/environmental/wetlands/database/> [accessed 21/08/08]
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3. Isbell RF (2002). The Australian Soil Classification. CSIRO Publishing, Collingwood, Victoria, revised edition.
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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.