



Australian Government



Queensland Government

Queensland
Wetlands Program

Bribie Island

Middle Swamp Crossing



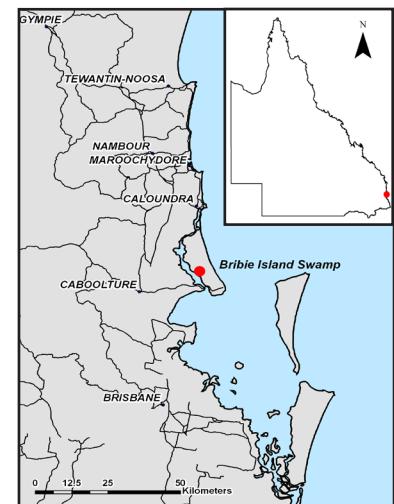
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Study Area

Bribie Island is located approximately 60 km north of Brisbane, South-East Queensland.

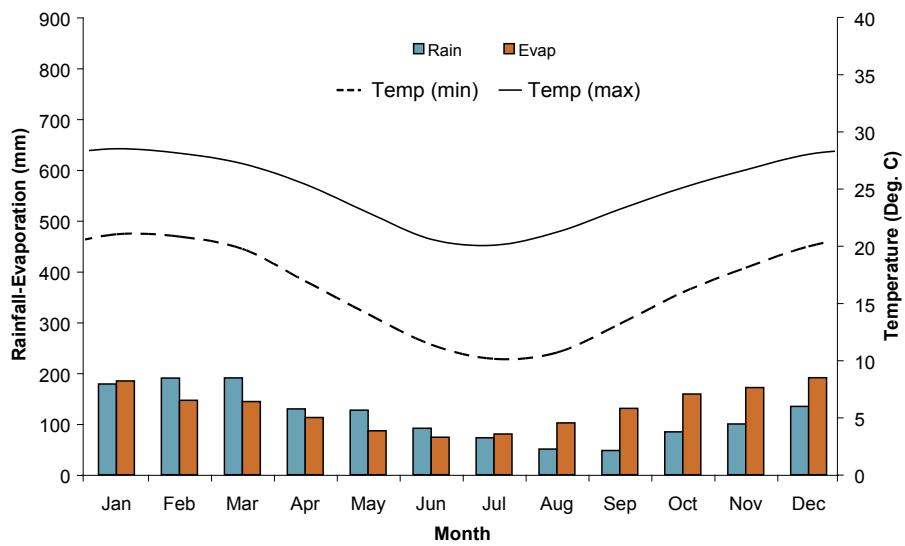
The majority of Bribie Island is national park, forest reserve and private plantations. It is a low sand island with a wide variety of wetland aggregations such as creeks, lagoons, swamps and tidal flats¹.

The study area is situated midway along the central swamp, which spans approximately 15km in a north-south direction in the middle of the island.



It is an example of a coastal and sub-coastal non-floodplain grass, sedge, herb swamp with organic soils within the South-East 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 1397 mm.

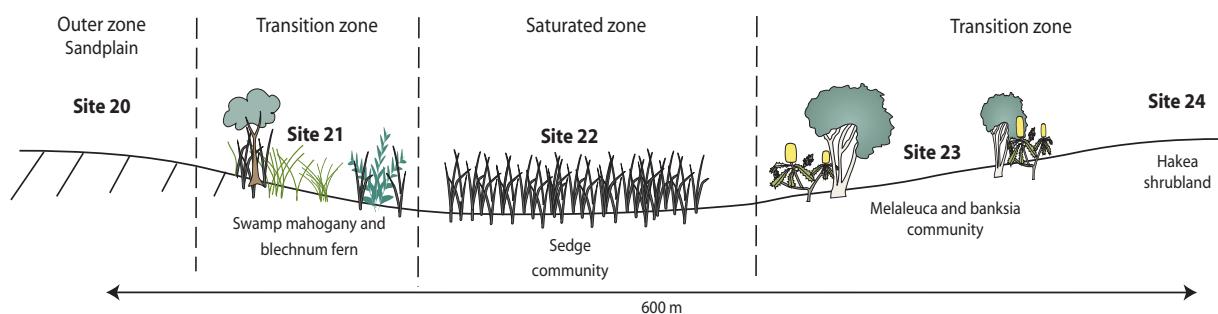
Landform and Inundation	Low lying coastal plain consisting of swampland. Freshwater permanent and seasonally inundated areas from both overland flow and groundwater influence
Soils ³	Hydrosols, Organosols, Tenosols. Podosols
Vegetation ⁴	Palustrine wetland (vegetated swamp) (RE 12.3.5)
Geology ⁵	Quaternary estuarine, floodplain and tidal delta deposits
Disturbance	Disturbed by an old pine plantation at edge of swamp. Depositional material present on fringes of the wetland

Location

GDA94 • MGA Coordinates : 512520 E, 7017727 N, Zone 56 • Lat/Long : -26.96236 S, 153.12614 E

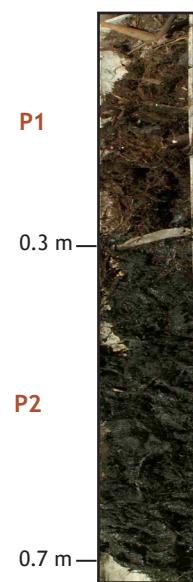


Landscape Diagram

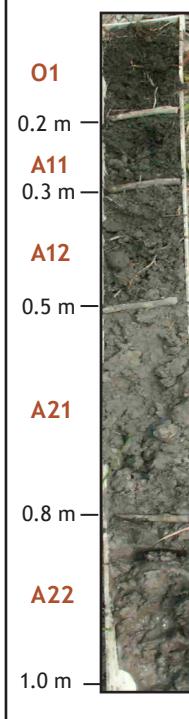


Soil Profiles

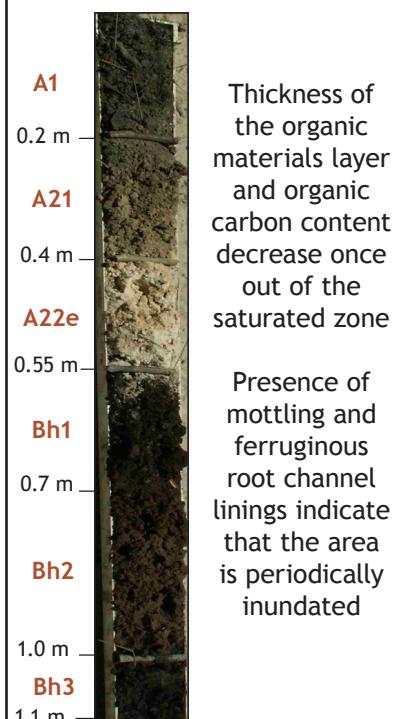
Site 22



Site 23



Site 24



Soil Indicators Present (within 0.3 m of surface)

Indicator ⁶	Site 20	Site 21	Site 22
Organic materials and organic carbon (OC)*	No organic materials OC: 5.49% (sample taken at 0.3 m)	Organic materials to 0.3 m OC: 12%	Organic materials to 0.3 m OC: 30.6%
Matrix colour	Dark brown	Black	Dark brown
Chroma (thickness of layer)**	Present (0.3 m)	Present (0.3 m)	Present (0.3 m)
Mottles and Segregations	Not present	Not present	Not present
Depth to groundwater	0.9 m	0.6 m	0.3 m
Ferruginous root channel and pore linings	Not present	Not present	Not present
pH ⁷	Very strongly acid	Very strongly acid	Very strongly acid
Texture	Loamy sand	Loam	Loam
Acid sulfate material	Not present	Not present	Not present
Electrical Conductivity (EC) ⁷	Non saline	Non saline	Non saline
Indicator ⁶	Site 23	Site 24	
Organic materials and organic carbon (OC)*	Organic materials to 0.3 m OC: 7.4%	Organic materials layer 0.2 m thick starting within 0.3 m OC: 3.64%	
Matrix colour	Dark grey	Dark brown	
Chroma (thickness of layer)**	Present (0.3 m)	Not present	
Mottles and Segregations	Very few <5 mm distinct orange mottles Few <5 mm faint orange mottles	Few <5 mm distinct orange mottles Few <5 mm faint orange mottles	
Depth to groundwater	0.8 m	1.0 m	
Ferruginous root channel and pore linings	Present	Present	
pH ⁷	Very strongly acid	Very strongly acid	
Texture	Loam to clay loam	Loamy sand to sandy loam	
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

- Mottling indicates water fluctuation throughout the profiles in transition zone
- Dark soil surface colours suggest reducing conditions and organic accumulation
- Organic materials and high organic carbon levels indicate a dominantly inundated environment
- Presence of swamp hummock microrelief denotes a saturated environment
- Ferruginous root channel linings indicate a periodically inundated environment in the transition zone
- High water tables with no external drainage features imply that the site is permanently inundated for most of the year.



Soil Morphology

Classification			Australian Soil Classification				Sub-Humose, Regolithic, Black-Orthic Tenosol		
			Landform Element				Plain		
			Morphological Type				Simple Slope		
Horizon	Depth (m)	Boundary	Texture	Colour	Mottles	Coarse Fragments	Structure	Segregations	Consistence
A	0 to .3	clear to	loamy sand	very dark brown (10YR22)	none	none	single grain	none	very weak moist
2A11	.3 to .4	clear to	loamy sand	black (10YR21)	none	none	massive	none	very weak moist
2A12	.4 to .6	diffuse to	loamy sand	very dark grey (10YR31)	none	none	massive	none	very weak wet
2A2	.6 to 1	-	sand	dark grey (10YR41)	none	none	single grain	none	very weak wet

Classification			Australian Soil Classification				Humose-Acidic, Kandosolic, Oxyaquo Hydrosol		
			Landform Element				Swamp		
			Morphological Type				Flat		
Horizon	Depth (m)	Boundary	Texture	Colour	Mottles	Coarse Fragments	Structure	Segregations	Consistence
P1	0 to .1	-	-	black (10YR21)	none	none	-	none	very weak moist
A	.1 to .5	-	sapric loam	black (10YR21)	none	none	massive	none	very weak wet
B2	.5 to .8	-	sapric silty clay loam	dark grey (10YR41)	none	none	massive	none	very weak wet
D	.8 to 1	-	sapric sandy loam	dark grey (10YR41)	none	none	massive	none	very weak wet

Classification			Australian Soil Classification				Acidic, Fibric Organosol		
			Landform Element				Swamp		
			Morphological Type				Flat		
Horizon	Depth (m)	Boundary	Texture	Colour	Mottles	Coarse Fragments	Structure	Segregations	Consistence
P1	0 to .3	gradual to	fibric	dark brown (7.5YR32)	none	none	-	none	-
P2	.3 to .7	-	fibric loam	black (10YR21)	none	none	massive	none	very weak wet

Site 23		Classification			Australian Soil Classification				Humose-Acidic, Tenosolic, Oxyaquaic Hydrosol	
		Landform Element		Morphological Type		Structure		Segregations		Consistence
Horizon	Depth (m)	Boundary	Texture	Colour	Mottles	Coarse Fragments				
O1	0 to .2	clear to	sapric loam	very dark grey (10YR31)	none	none	massive	none	none	very weak moist
A11	.2 to .3	gradual to	sapric sandy clay loam	very dark grey (10YR31)	very few (<2%) fine (<5 mm) distinct orange mottles	none	massive	none	none	very weak moist
A12	.3 to .5	diffuse to	sandy loam	dark grey (10YR41)	few (2-10%) medium (5-15 mm) distinct orange mottles	none	massive	none	none	very weak wet
A21	.5 to .8	diffuse to	loamy sand	greyish brown (10YR52)	none	none	single grain	none	none	very weak wet
A22	.8 to 1	-	sand	dark greyish brown (2.5Y42)	none	none	single grain	none	none	very weak wet

Site 24		Classification			Australian Soil Classification				Humose, Humic, Aquic Podosol	
		Landform Element		Morphological Type		Structure		Segregations		Consistence
Horizon	Depth (m)	Boundary	Texture	Colour	Mottles	Coarse Fragments				
A1	0 to .2	clear to	sapric sandy loam	dark brown (10YR33)	few (2-10%) fine (<5 mm) distinct orange mottles	none	massive	none	none	weak moist
A21	.2 to .4	clear to	loamy sand	brown (10YR53)	few (2-10%) fine (<5 mm) faint orange mottles	none	single grain	none	none	very weak moist
A22e	.4 to .55	abrupt to	sand	very pale brown (10YR73)	common (10-20%) fine (<5 mm) faint orange mottles	none	single grain	none	none	weak moist
Bh1	.55 to .7	clear to	sapric loamy sand	very dark grey (10YR31)	common (10-20%) fine (<5 mm) faint brown mottles	none	massive	none	none	weak wet
Bh2	.7 to 1	abrupt to	sapric sand	dark greyish brown (10YR42)	none	none	massive	none	none	very weak wet
Bh3	1 to 1.1	-	sapric sand	black (10YR21)	none	none	massive	none	none	very weak wet

Soil Chemistry

Site	Depth (m)	pH*	EC dS/m	Cl mg/kg	NO3-N mg/kg	P mg/kg	S mg/kg	TC** %	TN** %	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
20	0.30-0.40	3.5	0.09	40	<1	10	5	5.49	0.12	<0.026	0.928	0.329	0.035	0.216	<0.1	0.2	<0.1	46.7
	0.50-0.60	3.7	0.03	<20	<1	2	2	0.94	<0.03	<0.026	0.248	0.096	<0.018	0.096	<0.1	0.2	<0.1	14.3
0.70-0.80	4	0.02	<20	1	<1	1	0.27	<0.03	<0.026	0.126	0.033	<0.018	0.033	<0.1	0.2	<0.1		
21	0.00-0.10	4	0.35	283	<1	26	81	12	0.54	0.964	3.7	1.76	0.676	0.967	0.3	0.5	<0.1	125
0.20-0.30	4.2	0.29	274	<1	6	99	7.4	0.31	0.435	1.97	1.57	0.405	0.802	0.2	0.2	<0.1	50.8	
0.40-0.50	4.3	0.18	149	<1	4	55	4.86	0.24	0.223	1.3	0.867	0.23	0.446	0.3	0.1	<0.1	44.9	
22	0.00-0.10	-	-	-	41	205	30.6	1.18	-	-	-	-	-	-	-	-	-	
0.20-0.30	4.2	0.43	443	<1	66	233	25.4	1.17	0.799	3.21	1.37	0.086	0.116	-	-	-	-	
0.40-0.50	4.3	0.39	198	<1	38	248	15.9	0.71	0.58	2.2	0.873	0.325	0.315	<0.1	0.1	<0.1	203	
23	0.00-0.10	5	0.12	69	<1	8	52	7.4	0.32	0.557	2.14	0.873	0.332	0.679	0.1	0.3	0.1	188
0.20-0.30	5	0.07	32	<1	3	62	2.6	0.13	0.178	0.738	0.352	0.139	0.262	<0.1	0.1	0.1	108	
0.40-0.50	5.3	0.06	41	<1	2	28	0.31	<0.03	<0.026	<0.010	0.018	<0.018	<0.012	<0.1	<0.1	<0.1	27.4	
24	0.00-0.10	4.7	0.21	252	<1	6	14	3.64	0.15	0.216	0.738	0.876	0.062	0.165	<0.1	0.3	<0.1	167
0.20-0.30	5.6	0.07	74	<1	3	15	1.02	0.04	0.045	0.806	1.07	0.056	0.86	<0.1	0.2	<0.1	36.3	
0.40-0.50	5.7	0.03	30	<1	2	7	0.12	<0.03	0.092	0.411	0.224	0.027	0.139	<0.1	<0.1	<0.1	6.4	

*Aqueous 1:5

**Total carbon and total nitrogen

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