

ESTUARY ASSESSMENT FRAMEWORK FOR NON-PRISTINE ESTUARIES

Estuary 516 (BRISBANE RIVER)

Estuary ID 516

Name BRISBANE RIVER

Location

Latitude / Longitude -27.373 153.166 **Datum** GDA94

Condition Assessment This estuary is in extensively modified condition under high to very high pressure

Initial Classification In the first stage of this condition assessment this estuary was classified as being severely modified.

Basis of Initial Classification This was based on the changes to land use: urban.

Processed-Based Classification



The way Brisbane River functions is primarily a result of river energy. It is a tide-dominated delta. This means that the estuary would have low sediment trapping efficiency; naturally high turbidity, well mixed circulation and there is a low risk of habitat loss due to sedimentation.

Issues:



Critical habitat loss

General Comments / Notes:

Notes, Data and Supporting Qualitative Text	Rating (1-4)	Data Confidence	References
STATE COMPONENT (OVERALL)			
ECOSYSTEM INTEGRITY INDEX	4	A	
Eutrophication			
Chlorophyll a (µg/L) [median(80th)] HEAD			

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Chlorophyll a (µg/L) [median(80th)] MIDDLE	1.6 (2.6)	1	A	1
Chlorophyll a (µg/L) [median(80th)] MOUTH	2.8 (6.4)			
Chlorophyll a (µg/L) [median(80th)] AVERAGE				
Harmful algal blooms				
Turbidity [median(80th)]				
Turbidity (NTU or secchi depth) HEAD	35 (83)			
Turbidity (NTU or secchi depth) MIDDLE	21 (49)	3	A	1
Turbidity (NTU or secchi depth) MOUTH	4 (8)			
Turbidity (NTU or secchi depth) AVERAGE				
Shellfish closures				
Fish/bird kills				
Pathogens				
Faecal coliforms (no/100mL) [median(80th)] HEAD	185 (405)	3	A	1
Faecal coliforms (no/100mL) [median(80th)] MIDDLE	68 (315)	2	A	1
Faecal coliforms (no/100mL) [median(80th)] MOUTH	170 (300)	3	A	1
Faecal coliforms (no/100mL) [median(80th)] AVERAGE				
Critical habitat loss	Extensive clearance of riparian vegetation associated with urban and industrial development	4	B	6
Anoxic and hypoxic events				
Invasive species				

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	Notes, Data and Supporting Qualitative Text	Rating (1-4)	Data Confidence	References
HABITAT CONDITION INDEX	Brisbane River was mapped in 2000 and the following facies areas were calculated: Flood and ebb tidal delta 23.5 sq.km; Intertidal flats 9.4 sq.km; Mangroves 6.5 sq.km; Saltmarsh/Saltflats 1.5 sq.km; Total facies area 40.9 sq.km. The following habitat deviations from expected were identified -1; no tidal sand banks.		D	2
Seagrass species present				
Seagrass coverage				
Mangrove species present				
Mangrove coverage	0.159			2
Saltmarsh coverage	0.036			2
Wetland coverage				

	Notes, Data and Supporting Qualitative Text	Rating (1-4)	Data Confidence	References
FISH CONDITION INDEX	In the 1997 RFISH diary program (not a comprehensive geographical survey), ranked recreational catch for Brisbane River + Brisbane Airport Floodway/Kedron Brook + Tingalpa Creek included Whiting, Winter Whiting, Bream, Sand Crab, Diver Whiting, Mud Crab, Flathead, Snapper (Squire), Tailor, Mullet (73 species total)		D	1
Diversity				
Abundance				
Health				
Recruitment				

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WATER QUALITY INDEX		4	A	
Nutrients [median(80th)]				
Dissolved oxygen [median(20th)]				
Dissolved oxygen [surface] (%sat or mg/L) HEAD	60 (55)			
Dissolved oxygen [surface] (%sat or mg/L) MIDDLE	75 (65)	3	A	1
Dissolved oxygen [surface] (%sat or mg/L) MOUTH	92 (86)			
Dissolved oxygen [surface] (%sat or mg/L) AVERAGE				
Dissolved oxygen [bottom] (%sat or mg/L) HEAD				
Dissolved oxygen [bottom] (%sat or mg/L) MIDDLE				
Dissolved oxygen [bottom] (%sat or mg/L) MOUTH				
Dissolved oxygen [bottom] (%sat or mg/L) AVERAGE				
pH				
Heavy metals				
Are heavy metals a problem in this estuary (Y/N)?				
Other toxicants (including pesticides)				
Salinity				
Temperature				
Depth				
Ammonia (µg/L) AVERAGE	30 (99)	3	A	1
Oxidised nitrogen (µg/L) AVERAGE	1060 (3150)	4	A	1
Phosphate (µg/L) AVERAGE	205 (685)	4	A	1

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SEDIMENT QUALITY INDEX			D	
Sediment toxicants				
Sediment load TN				
Sediment load TP				
Invertebrate diversity				
Invertebrate abundance				

	Notes, Data and Supporting Qualitative Text	Rating (1-4)	Data Confidence	References
PRESSURE COMPONENT (OVERALL)		4	A	3
UTILISATION INDEX	1995 BRS data: Crop/pasture & Plantations comprise 7.42164 % of the catchment. Native woody vegetation comprises 22.4192 % of the catchment.	4	A	3
Recreation Pressure				
Aesthetic & Amenity				
Yachting & Boating	Present			
Shellfish				
Swimming	Generally unsafe for swimming due to bacterial contamination			6
Recreational Fishing	Total estimated recreational catch (harvest & released) for Brisbane River + Brisbane Airport Floodway/Kedron Brook + Tingalpa Creek in 1997 was 2,866,105 fish (5.15% of Qld total) from 173,812 trips (1.61% of Qld total). Estimated catch (top 5 species by no.) Whiting 828,355, Winter Whiting 617,487, Bream 394,301, Sand Crab 310,202, Diver Whiting 131,948			1
Infrastructure Pressure				

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Sewage Treatment Plants	13 Present; TN load 2144 t/yr, TP load 1018 t/yr (1994-1997)	1
Urbanisation and urban runoff	Brisbane population - 1,520,600 (1996 Census)	
Dredging	Extractive dredging historically; Navigational dredging of the Brisbane River bar has extended the tidal limit to 90 km u/s	6
Commercial Pressure		
Industry	Various industry including fertiliser plant; BP refinery; boat building and repairing facilities; abattoir (u/s)	
Aquaculture		
Reclamation / Declamation	Reclamation at river mouth for Port of Brisbane	6
Commercial fishing	A maximum of 10 boats fished Brisbane River + Brisbane Airport Floodway/Kedron Brook + Tingalpa Creek in 1999, for a total catch of 42.64 tonnes. Commercial fishing effort (days fished) by method comprised line (0), net (1149), pot (303), trawl (2040), not stated (0).	1
Tourism		
Agriculture	Extensive grazing and cropping in catchment	
Habitat clearing	Most of floodplain and catchment cleared.	6
Ports & Port Works	Present: Port of Brisbane	1
Shipping Activity	Total GRT (gross registered tonnage): 45227649; Average GRT: 20595; Avg Length: 165; # of arrivals: 2196	1

Notes, Data and Supporting Qualitative Text

Rating (1-4) Data Confidence References

SUSCEPTIBILITY INDEX		D
Flow-modifying structures	Large dams in catchment for water supply and flood mitigation	
Catchment loads		
Flows and flushing	Residence time in lower Brisbane River 110-120 days	6

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Acid sulphate soils

RESPONSE COMPONENT (OVERALL)

Institutional Arrangements

Management Actions

Community Initiatives

Details of References

1. QLD state data, 2. AGSO, 3. Expert opinion through state workshop, 4. Beumer J et al. 1997. Declared Fish Habitat Areas in Queensland, 5. Derived from BRS landcover data, 6. Dennison & Abal, 1999

Key Contacts