

ESTUARY ASSESSMENT FRAMEWORK FOR NON-PRISTINE ESTUARIES

Estuary 554 (PORT SORELL)

Estuary ID 554
Name PORT SORELL
Location SE
Latitude / Longitude -41.1 146.6 **Datum** GDA94

Condition Assessment This estuary is in modified condition under moderate to high pressure
Initial Classification In the first stage of this condition assessment this estuary was classified as being modified.
Basis of Initial Classification This was based on the changes to the land use: agriculture.

Processed-Based Classification



The way Port Sorell functions is primarily a result of wave energy. It is a wave dominated estuary. This means that the estuary would have high sediment trapping efficiency; naturally low turbidity, salt wedge/partially mixed circulation and there is high risk of sedimentation.

Issues:

General Comments / Notes: Edgar et al. classified this estuary as a Group II estuary (open estuary)

Notes, Data and Supporting Qualitative Text	Rating (1-4)	Data Confidence	References
STATE COMPONENT (OVERALL)	3	C	
ECOSYSTEM INTEGRITY INDEX		D	
Eutrophication			
Chlorophyll a (µg/L) [median(80th)] HEAD			

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Chlorophyll a (µg/L) [median(80th)] MIDDLE			
Chlorophyll a (µg/L) [median(80th)] MOUTH			
Chlorophyll a (µg/L) [median(80th)] AVERAGE	0.8 (1.4)		1
Harmful algal blooms			
Turbidity [median(80th)]			
Turbidity (NTU or secchi depth) HEAD			
Turbidity (NTU or secchi depth) MIDDLE			
Turbidity (NTU or secchi depth) MOUTH			
Turbidity (NTU or secchi depth) AVERAGE	5.4 (9.8)		1
Shellfish closures	Port Sorell was closed for 11 weeks in 2000 and 3 weeks in '97, 8 weeks in '98 and 8 weeks in '99. The main species affected: oysters.		
Fish/bird kills			
Pathogens			
Faecal coliforms (no/100mL) [median(80th)] HEAD	14 (70)		1
Faecal coliforms (no/100mL) [median(80th)] MIDDLE	3 (41)		1
Faecal coliforms (no/100mL) [median(80th)] MOUTH	10 (60)		1
Faecal coliforms (no/100mL) [median(80th)] AVERAGE			
Critical habitat loss	no data		1
Anoxic and hypoxic events	no data		1
Invasive species	Crassostrea gigas, Spartina anglica		1

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HABITAT CONDITION INDEX	Port Sorell was mapped in 2000 and the following facies areas were calculated: Barrier/back Barrier 5.0 sq.km; Flood and ebb tidal delta 2.2 sq.km; Intertidal flats 9.5 sq.km; Saltmarsh/Saltflats 0.7 sq.km; Tidal sand banks 0.8 sq.km; Total facies area 18.2 sq.km. The following habitat deviations from expected were identified -3 / +1; no central basin/no fluvial-bayhead delta/no mangrove/contains tidal sand banks.		D	
Seagrass species present	Heterozostera tasmanica			1
Seagrass coverage				
Mangrove species present				
Mangrove coverage				
Saltmarsh coverage	0.039			
Wetland coverage				
	Notes, Data and Supporting Qualitative Text	Rating (1-4)	Data Confidence	References
FISH CONDITION INDEX	The taking of school and gummy shark is prohibited in this estuary.		D	
Diversity				
Abundance				
Health				
Recruitment				
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WATER QUALITY INDEX			D	

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Nutrients [median(80th)]			
Dissolved oxygen [median(20th)]			
Dissolved oxygen [surface] (%sat or mg/L) HEAD			
Dissolved oxygen [surface] (%sat or mg/L) MIDDLE			
Dissolved oxygen [surface] (%sat or mg/L) MOUTH			
Dissolved oxygen [surface] (%sat or mg/L) AVERAGE	9 (7) mg/L	1	
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)?	no data		1
Other toxicants (including pesticides)			
Salinity	Surface salinity 33.9 (median), 28.5 (P20), 34.9 (P80); bottom salinity 33.9 (median), 29.1 (P20), 34.9 (P80)		1
Temperature	Annual surface temperature range 8.9 to 23.9 °C; 16.7 (median), 9.9 (P20), 18.5 (P80); Significant temperature stratification does not occur in this estuary		1
Depth	3-5 m		1
Oxidised nitrogen (µg/L) AVERAGE	4 (14)	1	
Phosphate (µg/L) AVERAGE	8 (9)	3	
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			References

SEDIMENT QUALITY INDEX

D

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Sediment toxicants		
Sediment load TN		
Sediment load TP		
Invertebrate diversity	Number of invertebrate species collected by Edgar et al. at Squeaky Pt 56; species restricted to the site 9; (Crustacea 25, Gastropoda 5, Bivalvia 8, Polychaeta 14, other 4)	4
Invertebrate abundance	Total no. of animals collected in 30 cores by Edgar et al. 478; mean estimated biomass 271.3 g/m ² ; productivity 1158.3 μg/m ² /d; P/B 1.6)	

	Notes, Data and Supporting Qualitative Text	Rating (1-4)	Data Confidence	References
PRESSURE COMPONENT (OVERALL)	The area draining directly into this estuary has been moderately impacted by human activities (Edgar NI 2.00-3.00); the catchment has a moderate level of impact from human activities (Edgar NI 2.00-3.00)	3	C	4
UTILISATION INDEX	1995 BRS data: Crop/pasture & Plantations comprise 35.2087 % of the catchment. Native woody vegetation comprises 55.4521 % of the catchment.		D	3
Recreation Pressure				
Aesthetic & Amenity	photography			1
Yachting & Boating	sailing, boating, water skiing, kayaking			1
Shellfish				
Swimming	yes			1
Recreational Fishing	Whitebait, brown trout, flathead, Australian salmon			1
Infrastructure Pressure	The population density of this estuarine drainage area is 18.86 km ⁻² ; the population density of the estuarine catchment area is 4.87 km ⁻²			4

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Sewage Treatment Plants	none	1
Urbanisation and urban runoff	The urban area of the estuarine drainage area is 1.2 km ² (1.5 % of EDA); the total urban area of the catchment is 2.1 km ² (0.33 % of ECA)	4
Dredging	No routine maintenance dredging	1
Commercial Pressure		
Industry	none	1
Aquaculture	Present 0.479 km ² : oysters (production confidential) [1999]	1
Reclamation / Declamation		
Commercial fishing	< 5 operators; total catch confidential	1
Tourism		
Agriculture		
Habitat clearing		
Ports & Port Works		
Shipping Activity		

Notes, Data and Supporting Qualitative Text

Rating (1-4) Data Confidence References

SUSCEPTIBILITY INDEX		D
Flow-modifying structures	absent	1
Catchment loads		
Flows and flushing		
Acid sulphate soils		

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RESPONSE COMPONENT (OVERALL)	Land tenure of estuarine catchment area: National Park 14 km ² ; Crown Reserve 24.9 km ² ; Crown Exploited 198.2 km ² ; Private 403.5 km ²
Institutional Arrangements	Living Marine Resources Management Act 1995; National Parks and Wildlife Act 1970; Inland Fisheries Act 1995, Marine Farming Planning Act 1995
Management Actions	Fishery Management Plans; No netting; Shark nursery area; Marine Farming Development Plan; Narawntapu National Park; Asbestos Range Conservation Area; Port Sorell Conservation Area; Hawley Nature Reserve
Community Initiatives	Five Rivers Waterwatch; Rubicon Coast and Landcare Inc.
Details of References	1. TAS state contact, 2. AGSO, 3. Derived from BRS landcover data, 4. Edgar G. et al.
Key Contacts	