DRAFT

REGIONAL NRM STRATEGY DEVELOPMENT

MARINE AND ESTUARINE WATER QUALITY

NORTH WEST REGION

1. Overview of the asset within the Region

The coastal waters of the North West Region occur mainly within the Boags, Otway and Franklin bio-regions. The coastal waters of Bass Strait are relatively shallow with low wave energy but large tidal movement, whereas the west coast is exposed to the Southern Ocean which generates some of the largest swell in Australia. Water quality is largely influenced from the Southern Ocean, including the Zeehan current which runs year round in a south-east direction along the western Bass Strait and western Tasmania.

A number of different estuary types are found within the Region, due largely to differences in wave energy, tidal range and catchment size. Large tidal estuaries occur on the north-west coast, with open or small barred estuaries predominantly occurring on the west coast and King Island. Water within estuaries in the north-west is often quite murky, while dark, tannin-stained (tea coloured) waters are characteristic of west coast estuaries.

Of the 111 estuaries recognised in Tasmania, 38 occur within the North West Region. Most of the major population centres, such as Devonport (Mersey), Ulverstone (Leven), Burnie (Emu), Wynyard (Inglis), Smithton (Duck Bay) and Strahan (Macquarie Harbour), are centred around an estuary. In most cases, the estuary provides port facilities and is a scenic focus of the town.

A study of Tasmanian estuaries (Edgar *et al.* 1999*)* determined the conservation significance of each estuary, with the highest conservation significance for each type of estuary generally based on the least human disturbance and the greatest proportion of catchment under statutory protection. Two estuaries in this Region, the Black River and Wanderer River, were determined to be of critical conservation significance. A further 13 estuaries are considered to be of high conservation significance, in particular Mosquito Inlet and the Sea Elephant River. Not surprisingly, most of the estuaries of high conservation significance within the North West Region are situated on the rugged west coast.

Poor water quality within coastal waters and estuaries can cause a number of problems. Faecal waste can cause a number of human health issues such as infection through direct contact or by eating shellfish. Excess nutrients can cause algal blooms that may adversely affect the ecosystem, cause toxic shellfish poisoning or simply turn waterways into an unattractive green mess. Increased siltation from land clearing can result in dirty, turbid (murky) water that is unsightly and may turn sandy beaches into mudflats. Low oxygen levels can affect biological productivity, including adversely affecting fisheries and marine farming.

2. Current asset condition

There has been no assessment of the condition of coastal waters with the North West Region.

The National Land and Water Resources Audit determined that of the estuaries within the North West Region 14 were near pristine, 3 were largely unmodified, 15 were modified and 6 were severely degraded. As for high conservation significance estuaries, most of the pristine estuaries are located on the west coast.

Due to the very low population and limited agricultural development on the west coast, water quality within most estuaries there is likely to be very good. However, Macquarie Harbour water quality remains impacted by heavy metal pollution and increased marine farming development may see elevated nutrient levels. In contrast, some estuaries on the north west coast show signs of reduced water quality, such as being very turbid and having high to very high nutrient levels.

3. Issues associated with, or threats to the asset

A number of major threats to estuarine water quality occur within the Region, including:

- Increased siltation from use of cleared land and urban and rural runoff;
- Increased nutrient loads from sewage and agricultural fertilisers;
- Urban effluent;
- Modification of water flow through dams and weirs;
- Marine farms.

In respect to water quality, these threats may manifest as increases in turbidity, algal blooms associated with increasing nutrients, high faecal coliforms from sewage or reduced oxygen levels which affect the overall productivity of the estuary.

Run off from cleared land which is loaded with sediment and nutrients is probably the greatest threat to estuarine water quality within the North West Region. Dairy effluent is likely to effect water quality in a number of estuaries, particularly in the far north-west area. Heavy metal pollution continues to threaten water quality within Macquarie Harbour.

It is very important to recognise that many threats to estuarine water quality originate from activities that occur further up in the catchment (*eg.* land clearing and agricultural fertilisers), away from the actual estuary. These types of influences on water quality are known as non-point sources of pollution. Sewage outfalls or storm water drains discharging directly into coastal or estuarine waters are known as point sources of pollution. Pollutants from marinas and slipway facilities can have a direct localised impact on water quality.

4. Current responses to issues and threats

The *State Coastal Policy* (1996) not only references other relevant legislation and policies, but also provides a framework for considering natural resource management issues on the coast in an integrated way. It thus provides a significant support to good water quality management in the State's estuaries.

The *Environmental Management and Pollution Control Act 1994,* the powers of which must be undertaken in order to further the objectives of the Resource Management and Planning System of Tasmania, is the principal State legislation that addresses threats to water quality in relation to point sources of pollution.

The *Water Management Act 1999* provides for the preparation of water management plans which must include an assessment of likely detrimental effects of the plan on water quality, taking into account the needs or persons or ecosystems using the water.

The *State Policy on Water Quality Management* seeks to protect or enhance the qualities of most of Tasmania's surface waters, including coastal waters. The policy aims to reduce diffuse and point source pollution to waterways, to ensure water quality monitoring is carried out and to promote integrated catchment management. The policy provides for the determination of Protected Environmental Values (PEVs) and the setting of Water Quality Objectives (WQOs) for individual bodies of water.

The community of the North West Region has had involvement in setting PEVs for most of the estuaries in the Region and will also be involved in setting PEVs for the remainder of coastal waters within the Region. The community will have involvement in setting resource condition and management action targets for the Region's coastal waters.

5. Productive use and other opportunities in relation to the asset

The clean coastal waters of this Region are very important for wild fisheries, particularly rock lobster and abalone fishing on the west coast and around King Island. The coastal waters are enjoyed for recreation by locals and provide magnificent scenery for tourists to the Cradle Coast area.

However, it is important to recognise that in many cases coastal or estuarine waters near population centres provide a waste disposal service, as outfalls for sewage and stormwater. The disposal of waste in this manner may severely compromise water quality in these waters.

The estuaries are a significant source of recreation for locals and tourists alike, providing activities such as fishing, boating and swimming. Many of the estuaries contain port facilities for commercial and recreational vessels. Macquarie Harbour is an important marine farming centre for Ocean trout and Atlantic salmon while Port Sorell and Duck Bay support the farming of Pacific oysters. The natural beauty of Macquarie Harbour and the Arthur and Pieman River estuaries is a major tourism asset and supports a number of scenic boat cruises.

6. Available data and its usefulness

The Tasmanian Aquaculture and Fisheries Institute (TAFI) conducted a baseline study of physical and chemical water quality indicators in 9 estuaries within the North West Region (Murphy *et al.* 2003). The study drafted Tasmania specific indicator levels for some key water quality parameters. Results of the study are being made available in the 2003 Tasmanian State of the Environment report.

The Environment Division of DPIWE has historically undertaken some water quality sampling within estuaries in the North West Region. Most notable is work published on Macquarie Harbour (Koehnken 1997). Data is available on DPIWE databases.

The Tasmanian Shellfish Quality Assurance Program (TASQAP) monitors water quality in shellfish growing areas in relation to toxic algal blooms and faecal coliforms. Current monitoring occurs in Robbins Passage, Duck Bay and Port Sorell. Data is available through TASQAP.

It is likely that a significant amount of water quality data has been recorded by individual shellfish farmers in these areas but the quality and availability of this data is unknown.

Water quality data is also likely to have been collected by salmonid farmers in Macquarie Harbour but the quality and availability of this data is unknown.

It is likely that any community based monitoring of coastal and estuarine water quality within the Region has been minimal

There is no ongoing broad-scale monitoring of water quality within coastal and estuarine waters in the North West Region.

7. Information gaps and actions required to fill these gaps

In most cases, management of water quality in coastal and estuarine waters is compromised due to a lack of information regarding the relative contribution of catchment activities to potential declines in water quality.

Long term trends in water quality are poorly understood due to a lack of broad scale monitoring and ongoing data collection.

Notwithstanding this lack of information, logic dictates that management strategies that aim to reduce or minimise man made inputs of particulate matter and nutrients into estuaries and the coastal zone will significantly address potential source of water quality decline within the North West Region. Preparation of water quality improvement plans (Coastal Catchment Initiative) should address these management strategies.

8. Current Aspirational, Resource Condition, and Management Action targets for the asset (at the national, state and/or regional level) and any data on progress towards targets

National aspirational targets for coastal and estuarine water quality are contained in the *National Water Quality Management Strategy* and the *National Principles for the Provision of Water for Ecosystems.*

The National NRM Standards and Targets Framework includes "matters for target", for which regional targets must be set. Those that apply to coastal and estuarine water quality include; Estuarine, coastal and marine habitat integrity, Nutrients in aquatic environments, and Turbidity/suspended particulate matter in aquatic environments.

Several natural resource management priorities for Tasmania (published in the *Tasmanian Natural Resource Management Framework* (2002), at pp. 16–18) are directly relevant to coastal and estuarine water quality; Water management, Soil management and Management of coastal/marine environment.

Tasmania Together Environmental Goal 23, "*Ensure there is a balance between environmental protection and economic and social development*", and Goal 24, "*Ensure our natural resources are managed in a sustainable way now and for future generations*", are particularly relevant to coastal and estuarine water quality.

9. Proposed Management Action targets for the asset (at the national, state and/or regional level)

Suggested achievable actions to achieve these targets:

- Preparation of water quality improvement plans (WQIPs) consistent with *Framework for Marine and Estuarine Water Quality Protection.* Ideally, WQIPs should be integrated into NRM plans.
- Set and maintain coastal and estuarine waters Protected Environmental Values.
- Define Water Quality Objectives for coastal and estuarine waters.
- Recognise PEVs and WQOs in adoption of DPIWE's integrated property planning initiative and ensure that property plans effectively manage run-off water quality.

10. Relevant scientific publications

ANZECC State of the Environment Reporting Task Force (2000). *Core environmental indicators for reporting on the state of the environment.* Environment Australia, Canberra. 92 pp.

Australian Estuaries and Coastal Waterways: A Guide to the Biogeochemisty of Sediment and Water, CD-ROM available at http://www.agso.gov.au/sales/

Edgar, G.J., Barrett, N.S. and Graddon, D.J. (1999). A classification of Tasmanian estuaries and assessment of their conservation significance using ecological and physical attributes, population and land use. *Tasmanian Aquaculture and Fisheries Institute Technical Series Report* 2,. 205 pp.

Koehnken, L (1997). Macquarie Harbour-King River study. *Department of Environment and Land Management Technical Report*.

Murphy, R.J, Crawford, C.M and Barmuta, L (2003) Estuarine Health in Tasmania, status and indicators: water quality. *Tasmanian Aquaculture and Fisheries Institute Technical Report Series No. 16.* 114pp.

OzEstuaries Database at http://www.ozestuaries.org/

Ward, T., Butler, E. and Hill, B. (1998). *Environmental indicators for National State of the Environment reporting – Estuaries and the Sea.* Australia: State of the Environment (Environmental Indicator Reports), Department of Environment, Canberra. 80 pp.

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