



Australian Government

Australia's National Programme of
Action for the Protection of the Marine
Environment from Land-Based Activities

October 2006



case study 1: the coastal catchments initiative

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background

The Coastal Catchments Initiative (CCI) is a \$34 million programme of the Australian Government's Natural Heritage Trust, implemented in partnership with state and local governments, and regional natural resource management organisations.

The CCI follows the 'hotspots' concept of the GPA programme, its planning and management frameworks mirror those of the GPA, and like the GPA, priority for implementation is directed at high conservation value coastal waters.

There are two components to the CCI. One component supports implementation of the Great Barrier Reef Water Quality Protection Plan, and is outlined in the *ReefPlan* case study (See Case Study 3: Reef Water Quality Protection Plan). The component described below applies to the balance of the Australian coastline. A specific example of CCI implementation on the Swan Coastal Plain is also provided.

programme design

The CCI seeks to achieve targeted reductions in land-based pollution to coastal water quality 'hotspots', pursued through the development and implementation of Water Quality Improvement Plans (WQIPs). WQIPs are prepared in accordance with the Australian Government's *Framework for Marine and Estuarine Water Quality Protection*.

The CCI supports development of a limited set of WQIPs for priority coastal waterways (see [Table 1](#)), where priority is based on conservation significance (e.g. a Ramsar wetland or World Heritage site) or the icon value of a coastal jurisdiction (e.g. has high recreational value), that are threatened by land based sources.

Key features of WQIPs include:

- identifying the environmental values or designated uses, water quality objectives and pollutant load targets for coastal waters;
- a catchment management based approach to controlling pollutant loads;
- estimating the cost, timing, accountability and effectiveness of interventions to achieve interim and long-term targets;
- addressing the key priority threats to water quality and environmental flows, and establishing adaptive management systems to continuously improve management knowledge and systems;
- establishing governance arrangements that ensure all relevant stakeholders are party to WQIP implementation; and
- a reasonable assurance statement that demonstrates, with a high degree of confidence, that if the WQIP is implemented the environmental quality targets set for that WQIP will be achieved.

Table 1: CCI Programmes in Priority Coastal Waterways (not including Great Barrier Reef Catchments)

Waterway	State	Pollutants	Agency preparing the WQIP	Related activities (interim projects or part of WQIP)					WQIP due	Total funding* (AUD)
				Water Sensitive Urban Design	Modelling/ decision support tools	Monitoring	Agricultural sources	Market-based instruments		
Port Phillip Bay and Western Port	Victoria	Nitrogen, suspended solids	Victorian EPA, Melbourne Water						May 08	4.0 million
Adelaide's Port Waterways	South Australia	Nitrogen, phosphorus	South Australian EPA						Dec 07	2.9 million
Peel-Harvey Estuary	Western Australia	Phosphorus	Western Australian EPA						Dec 07	2.3 million
Moreton Bay	Queensland	Nitrogen, phosphorus, suspended solids	Moreton Bay Waterways and Catchments Partnership						Dec 07	2.7 million
Myall and Wallis Lakes	New South Wales	Nitrogen, phosphorus	Great Lakes Council						May 08	2.4 million
Derwent Estuary	Tasmania	Heavy metals	Derwent Estuary Program						Nov 07	0.5 million
Swan-Canning Estuary	Western Australia	Nitrogen, phosphorus	Swan River Trust						May 09	2.2 million
Darwin Harbour	Northern Territory	Nitrogen, phosphorus, suspended solids	Northern Territory Department of Natural Resources and Environment						May 09	1.1 million
Geographe Bay and Vasse-Wonnerup Estuary	Western Australia	Nitrogen, phosphorus	Geographe Bay Catchment Council						May 09	2.0 million

* represents resource commitment by parties to the WQIP planning phase.

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In general, the preparation of WQIPs is supported by 'interim' projects that are designed to support development and implementation of the WQIP. For the more recent 'hotspots' the planning phase has comprised a two year research and development period to compile and enhance the knowledge and tools for science-based planning, followed by a twelve month planning and consultation phase. It is expected that WQIPs will be implemented over a 7-10 year period, followed by a formal review and renewal process.

Following the programmes objectives, interim projects often address:

- capacity of the jurisdiction to monitor pollutant loads;
- adaptive management needs, usually through enhancement of catchment and receiving water quality models and related decision-support tools;
- the potential impacts of economic growth, for example, ensuring the impacts of future urban development are mitigated through systematic and high quality implementation of water sensitive urban design measures; and
- rural and agricultural diffuse sources of pollution, currently the most intractable water quality issue, by seeking to characterise, prioritise and implement best practice agricultural controls to achieve receiving water quality objectives.

adelaide's port waterways

Adelaide's Port waterways comprise the Barker Inlet and the Port River Estuary. The Barker Inlet is a nationally significant wetland, and both waterways are important to Adelaide residents for recreational and scenic value. A Dolphin Sanctuary has been proclaimed in these waterways.

Historically, a range of pollutants has been discharged to the waterways, although nutrients (nitrogen and phosphorus) are of most concern, being associated with the loss of seagrass and mangroves. Elevated nutrient levels are causing seasonal growths of macroalgae (sea lettuce) and toxic algal blooms such as 'red tides' (dinoflagellate blooms).

There have been considerable efforts to reduce pollutant discharges to the waterways over the past ten years, including the closure and upgrade of polluting industries. These include the relocation of a treated sewage discharge from the inner Port River - part of the Port waterways - to the upgraded Bolivar Wastewater Treatment Plant (WWTP).

current efforts

With support through the CCI, the South Australian Environment Protection Authority (SAEPA) is developing a WQIP to reduce nutrient discharges to these waterways. An assessment of all inputs to the waterways has confirmed that two point sources, Penrice Soda Products and the Bolivar WWTP, account for most of the nutrient load (see [Table 2](#)).

Comprehensive water quality modelling has quantified the load reductions needed to prevent the impacts of these *point source* discharges, and has identified reductions in the order of 80 per cent are required from these sources. At this time reductions from other sources, such as diffuse land-based or marine sources, are considered cost-ineffective or impractical.

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Table 2: Current and Proposed Sources and Loads of Nutrients to Adelaide's Port Waterways.

Pollutant Source	Current load (t/yr)		Proposed load for 2015 (t/yr)		Required load reduction	
	N	P	N	P	N	P
Industrial point sources						
Penrice Soda Products	820	0.7	200	0.7	-76%	0%
Bolivar WWTP (SA Water)	596	248	100	40	-83%	-84%
Total point Source	1416	249	300	41	-79%	-84%
Land based diffuse sources						
Groundwater	10	0.25	10	0.25	0%	0%
Atmospheric deposition	32	2	32	2	0%	0%
Local stormwater discharges	2	0.2	2	0.2	0%	0%
Catchment Discharges:						
– Dry Creek	34	8.5	34	8.5	0%	0%
– Barker Wetlands	7	3	7	3	0%	0%
– Little Para	6.1	1.4	6.1	1.4	0%	0%
– Range & Magazine Wetlands	2.5	1	2.5	1	0%	0%
– Helps Road Drain	nd	nd	nd	nd	0%	0%
Marine sources						
West Lakes outfall	52	11	52	11	0%	0%
Internal loading (sediments)	100	10	100	10	0%	0%
Total current and proposed nutrient loads	1662	286	546	78	-67%	-73%

Note: N = nitrogen, P = phosphorus, nd = not detectable

improvement projects

The SAEPA is negotiating with Penrice Soda Products and SA Water to develop plans to reduce nutrient discharges from their plants. The complexity of this process and the time needed to develop and implement reductions from these sources is considerable, however at this time:

- SA Water is developing improvement projects for its Bolivar WWTP as part of an overall strategy for all Adelaide metropolitan WWTPs. They are committed to exploring interim actions to reduce their environmental impacts while the capital works program is being developed. Wastewater re-use is an option that has a number of other benefits for the Adelaide community and the potential for this is being explored with relevant Natural Resource Management Boards; and
- Penrice Soda Products has committed to reduce its nitrogen discharge to 575 tonnes by 2010. They have agreed that this target should be enforced through their discharge licence with the SAEPA. They have also agreed to aim for a reduction in nitrogen discharge to 200 tonnes by 2015, although cost-effective technology to allow this is not yet available. In the meantime they will maintain an active role in seeking to adapt emerging nitrogen reduction technologies to their process and pursuing incremental reductions of nitrogen discharge from the site.

These commitments ensure that at least an 18 per cent reduction in nitrogen discharges will be achieved during the period of the WQIP. Though unquantified at this stage, greater reductions will be achieved by implementing the capital works program being developed for the Bolivar WWTP in the future.

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meeting australia's international obligations

The CCI is closely linked to implementing the GPA. It emphasises cross-jurisdictional collaboration and harmonisation of policies and programmes, is aligned with GPA frameworks and the use of exemplar 'hotspots', and targets priority pollutants.

The CCI provides a catchment management approach to protecting coastal Ramsar wetlands from land-based pollution. As a signatory to the Ramsar Convention the Australian Government is obliged to identify and protect the ecological character of its Ramsar wetlands. For WQIPs that protect coastal Ramsar wetlands, a direct link is created between ecological attributes and functions of the Ramsar wetland and water quality and pollutant load targets to protect those attributes and functions.

Information from science-based planning and management activity also contributes to administering some regulatory responsibilities. Through the *Environment Protection & Biodiversity Conservation Act 1999*, the Australian Government is responsible for development approval relating to actions that may impact on 'matters of national environmental significance', which includes World Heritage Areas (e.g. the Great Barrier Reef) and Ramsar wetlands. The CCI is providing predictive modelling and threat abatement strategies that directly contribute to Australian Government assessment of likely impacts of activities, and to approval conditions that might be placed on a development for that activity to be consistent with the objectives of the Act.

The CCI also provides a clear vehicle for addressing land-based sources of pollution to protect regional priority coastal waters, which are set through the Australia Government's regional marine planning programme. For example, the South East Regional Marine Plan, the first of the regional marine plans to be prepared for Australia, notes as an action "*With support from the Coastal Catchments Initiative (CCI), apply the Australian Government's Framework for Marine and Estuarine Water Quality Protection, in particular for Port Phillip Bay, Western Port, the Derwent estuary and Gippsland Lakes. The resultant Water Quality Improvement Plans are to be incorporated into regional NRM plans*".

meeting australia's national objectives

The CCI provides detailed hotspot information for the purpose of State of the Environment (SoE) Reporting within all relevant jurisdictions. For example, the Port Waterways and Peel-Harvey case study information will be included in the National SoE Report as well as be available for the respective states, local governments and - where the pollutant load is point source dominated - by industry.

The CCI is a priority action to meet coastal water quality objectives in the *National Cooperative Approach to Integrated Coastal Zone Management*. Under the National Approach, land-based sources of pollution, especially diffuse source pollution, is a key issue facing the coastal zone.

Traditionally water quality and environmental water allocation in Australia have been administered by separate state government portfolios and Ministers, creating an artificial barrier to the integrated implementation of the *National Water Quality Management Strategy* and *National Principles for Provision of Water for Ecosystems*. The CCI seeks to overcome this barrier by linking, through a common planning framework, management actions for both issues to protect the values of coastal waters.

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There is a need Australia-wide to continue to enhance the adaptive management capacity of resource management agencies. This generally requires the incorporation of best available science into computer based predictive models, and to undertake targeted science programmes (including monitoring) to improve these models through better ecosystem knowledge and understanding of the effectiveness of management interventions. Through the CCI the Australian Government has consistently supported all jurisdictions to improve their adaptive management capacity, as part of the development of WQIPs.

Many of the hotspots, for example Port Phillip Bay and Moreton Bay, are associated with capital cities. Increasing concerns for integrated water cycle management (IWCM) of Australia's major cities – addressing both the natural hydrological cycle and the provision of water supply and wastewater services – requires an emphasis on protection of coastal receiving waters. The CCI provides an ecosystem based approach to IWCM in Australia's urban centres.

Management of IWCM has been further supported by the CCI through funding projects in most states to institutionalise water sensitive urban design practice in state and local government planning and decision-making processes.

Rural diffuse sources are a significant source of pollution to coastal waters, and information on the efficacy and the scale of interventions required is generally lacking. The CCI addresses this gap in water quality management by funding efforts to better identify, characterise and implement agricultural diffuse source controls, and ensures systems are in place to incorporate this information into adaptive management systems.

governance arrangements

Each WQIP has a steering or advisory committee established to oversee plan development and implementation. The committees are comprised of representatives from all levels of government, key environment, conservation and resource management agencies, NRM groups and community representatives.

The broad scope of the committees' responsibility includes:

- facilitating the smooth progress of project elements critical to timely WQIP preparation;
- integrating existing or non-CCI water quality related projects into the programme;
- ensuring timely engagement of community stakeholders and agencies on critical science and policy issues as they arise during WQIP development; and
- guiding approaches to community consultation and engagement.

implementing water quality improvement plans

Under the Australian Constitution, responsibility for WQIP implementation rests with states and territories. However, all levels of government will have important roles in implementing WQIPs, where for example:

- local governments are able to implement water sensitive urban design through local town planning schemes and planning policies;

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- state governments establish and support governance and institutional arrangements, introduce appropriate land use controls and establish incentives frameworks and offsets programmes to achieve water quality outcomes; and
- the Australian Government may provide financial support, principally through the regional NRM programme to, for example, help maintain adaptive management capacity and implement incentives. To this end the Australian Government expects WQIPs to be incorporated into regional NRM plans and investment strategies.

For further information see: <http://www.deh.gov.au/coasts/pollution/ci/index.html>