Botany Bay Coastal Catchments Initiative Environmental Values – Background Paper

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Sydney Metropolitan
CATCHMENT MANAGEMENT AUTHORITY

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List of Abbreviations

BBCCI	Botany Bay Coastal Catchments Initiative
CCI	Coastal Catchments Initiative
DECC	NSW Department of Environment and Climate Change
HCV	High Conservation/ecological value systems
HD	Highly disturbed systems
SMCMA	Sydney Metropolitan Catchment Management Authority
SMD	Slightly to moderately disturbed systems
WQOs	Water Quality Objectives

1. Introduction

The Sydney Metropolitan Catchment Management Authority (SMCMA) is in the process of consulting with local councils, the wider community and waterway users within the areas of the Georges River and Cooks River catchments on environmental values currently set by Federal and State Government. Current water quality objectives for the Cooks River and Georges River catchments have been used as the basis of water quality criteria and environmental values for uses within waterways in the catchments.

This environmental values initiative will be managed by the SMCMA and will involve the participation and review of a Reference Committee already established as part of the Botany Bay Coastal Catchments Initiate (BBCCI). The Coastal Catchments Initiative (CCI) seeks to achieve better water quality and an overall reduction in pollutants flowing into the estuaries of Botany Bay and the Bay itself.

1.1 Purpose of the background paper

This document explains the current water quality objectives, criteria and environmental values and provides an overview of the State and Commonwealth water quality objectives and environmental values. This background paper will be provided to stakeholders and the community to raise awareness and understanding of water quality objectives and environmental values to facilitate meaningful feedback during the consultations undertaken by the SMCMA.

This background paper comprises of the following sections:

What are environmental values?

- explanation of environmental values and how these were derived and adopted

Government framework

- what is the coastal catchments initiative
- details of Commonwealth and State developed water quality objectives and environmental values
- how the values were determined

Botany Bay catchment and environmental values

- outlines current environmental values for the Botany Bay catchment area
- how these values were determined

1.2 Documents reviewed for this background paper

The documents reviewed for this background paper include:

- Environment Australia - The Framework for Marine and Estuarine Water Quality Protection.
- Queensland Environmental Protection Agency – Guidelines: establishing draft environmental values and water quality objectives.

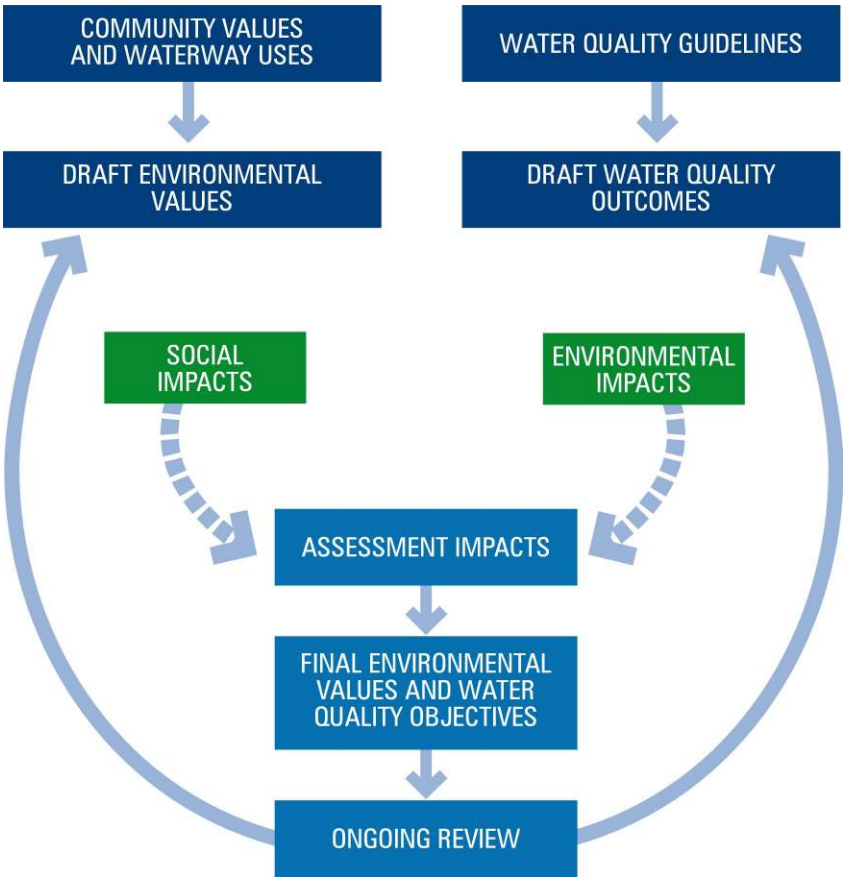
- Queensland Environmental Protection Agency – Information Report: Environmental Values Projects.
- Great Lakes Council – Background Report: reviewing Environmental Values.
- Great Lakes Council – Coastal Catchments Initiatives – workshopping community values.
- Healthy Rivers Commission – Independent Inquiry into the Georges River – Botany Bay System (final report September 2001).
- Water Quality and River Flow Interim Environmental Objectives: Guidelines for River, Groundwater and Water Management Committees - Cooks River Catchment.
- Water Quality and River Flow Interim Environmental Objectives: Guidelines for River, Groundwater and Water Management Committees - Georges River Catchment.
- Department of Environmental And Conservation - Using the ANZECC Guidelines and Water Quality Objectives, June 2006.
- Queensland Environmental Protection Agency – Report on Initial Workshop.
- Considering Environmental Values of Water when Issuing Prevention Notices: Guidelines issued by the Environment Protection Authority to appropriate regulatory authorities under s 96(3A) of the Protection of the Environment Operations Act 1997.
- Australian and New Zealand Environment and Conservation Council - National Water Quality Management Strategy: Implementation Guidelines (1998).
- Department of Environment and Water Resources – Techniques to Value Environmental Resources: and Introductory Handbook.
- Department of Environment and Conservation – Local Planning for healthy waterways using NSW Water Quality Objectives.

2. What are environmental values?

Environmental values are defined as beneficial uses of waterways for the community. Specifically environmental values take into account individual uses of the waterways by the community.

An environmental value is a quality, characteristic or attribute that is conducive to ecological health or any benefit to the community which requires protection from the effects of pollution, waste discharges and deposits. Two types of environmental values are considered – these being ecological and social.

Figure 2-1 below, based on the National Water Quality Management Strategy, describes the process by which the environmental values and water quality objectives for waterways are developed. The process involves much consultation with the community with respect to what uses are found to be valuable and how best to retain those values for future generations.



Source: Australian and New Zealand Environment and Conservation Council - National Water Quality Management Strategy: Implementation Guidelines (1998)

Figure 2-1 National Water Quality Management Framework - process for developing environmental values and water quality objectives

Within the NSW context, the State government has endorsed environmental values for water – these are known as the water quality objectives. Water quality objectives are based on providing the right water quality for the catchment and the different uses of the waterway by the community. The objectives form the foundation of measurable environmental values for protecting the catchment.

Environmental values are not regulatory. These are used to assist with the assessment of the current condition of catchments, identify risks and threats to the water quality objectives and help create management actions plans to maintain or improve current water quality in coastal catchments.

3. Government Framework

Water quality objectives and environmental values are based on information provided in the Australian and New Zealand Guidelines for Fresh and Marine Water Quality, produced by the Australian and New Zealand Environment Conservation Council (ANZECC) in 2000.

These guidelines form the background to the National Water Quality Management System – which has been adopted by the federal and state governments for managing water quality, see Figure 3-1 below.

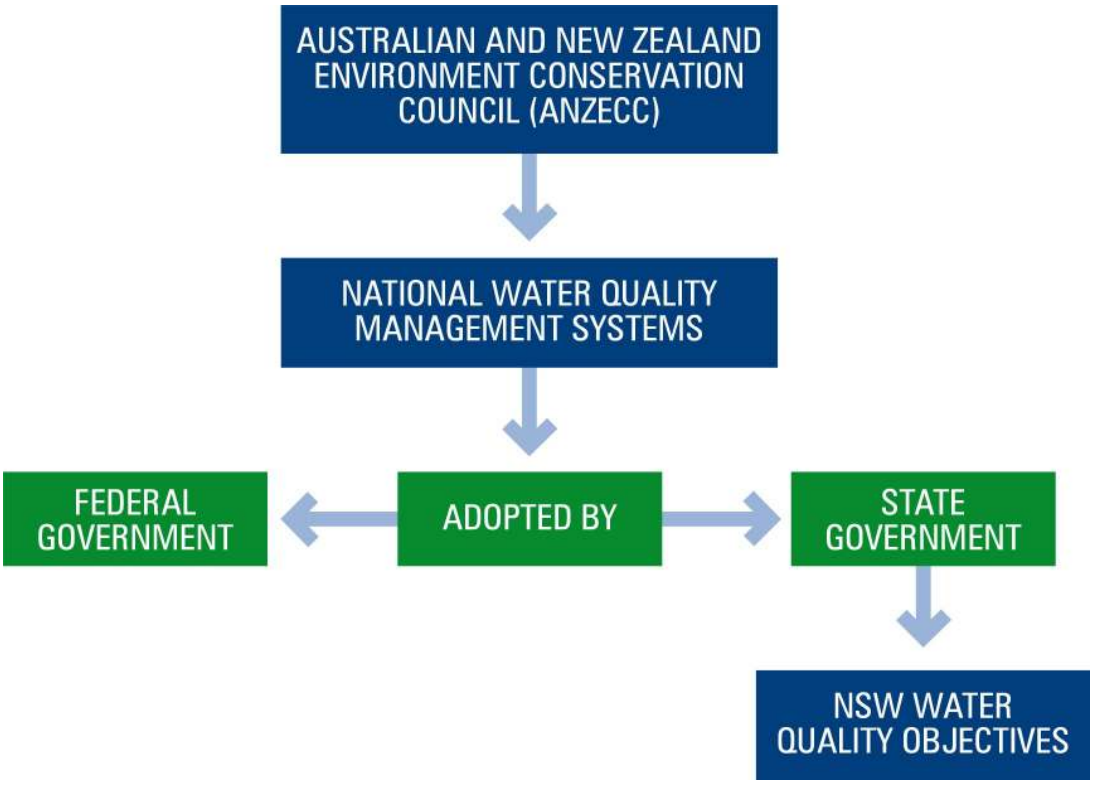


Figure 3-1 Development of Federal and State water quality objectives and environmental values

3.1 Commonwealth initiatives and guidelines

The ANZECC National Water Quality Management System outlines five environmental values, see Table 3-1 below. These values ensure the protection of aquatic ecosystems, recreational use of waterways as well as drinking water supplies and agriculture and industrial water use.

These national guidelines were developed to provide a suite of techniques for assessing the biological, physical and chemical condition of waterways. The ANZECC guidelines and the NSW water quality objectives apply to ambient water bodies. They should not be used directly to specify numerical conditions, limits or standards for a development or at the boundary of an individual site.

Table 3-1 ANZECC Environmental Values

Environmental Values		Supporting Details	Detailed description	Example
Aquatic ecosystems		Supporting pristine or modified aquatic ecosystems *High conservation/ecological value systems (HCV)* *Slightly to moderately disturbed systems (SMD)* *Highly disturbed systems (HD)*	Natural and healthy functioning of aquatic environments maintenance of water quality appropriate for the level of protection and for the local aquatic ecosystem.	▪ maintenance of aquatic ecosystems ▪ fish breeding and spawning ▪ biodiversity and conservation ▪ eco-tourism ▪ aquaculture ▪ maintenance of water quality for eco-tourism. ▪ protection of aquatic ecosystems for future environmental values
Primary industries		Irrigation of crops.	Irrigation for crops and agriculture	▪ pasture
		Farm use	Water used for general purposes on farming properties	▪ machinery cleaning ▪ yard wash down ▪ effluent disposal ▪ fruit packing ▪ milking sheds
		Stock watering	Water for drinking by stock, chickens	▪ stock watering
		Aquaculture	Waterways used for fish and crustacean farming	▪ fish farming ▪ crustacean farming
		Human consumption – fish/crustaceans for direct consumption.	Human consumption of wild or stocked fish or crustaceans	▪ commercial fishing ▪ safe consumption of fish and yabbies
Recreation and aesthetics		Primary recreation	Primary recreation involving direct contact with water	▪ swimming ▪ snorkelling ▪ wading ▪ waterskiing

Environmental Values		Supporting Details	Detailed description	Example
		Secondary recreation	Secondary recreation involving indirect contact with water	▪ boating ▪ canoeing ▪ sailing
		Visual appreciation	Surface waters used for visual recreational activity / visual amenity	▪ visual appreciation ▪ picnicking ▪ bushwalking ▪ sightseeing ▪ aesthetically valuable flora and fauna
Drinking water		Raw drinking water supplies	These values also apply to sub catchments or ground waters used for town water supplies	▪ drinking water
Industrial water		Water for industrial uses – eg power generation and manufacturing plants	Water for industrial use such as power generation, manufacturing plants	▪ washing ▪ cooling ▪ processing
Cultural and spiritual values		Cultural and spiritual values	Areas of significance for Indigenous and non-indigenous communities	▪ Sacred sites ▪ Spiritual use ▪ presence of certain plant and animal communities ▪ traditional use
Source: ANZECC National Water Quality Management System, Implementation Guidelines, 1998.				

3.2 NSW initiatives and guidelines

The NSW water quality objectives are based on the National water quality objectives and were adopted to be a guide for each catchment in NSW.

These environmental values provide goals to aid in the selection of management options for the waterway. The DECC document – using the ANZECC guidelines discusses the guiding principles as:

- where environmental values are being achieved in a waterway, these should be maintained
- where the environmental values are not being achieved the focus of activities should be towards achieving these values over time.

Figure 3-2 below illustrates the environmental values adopted by the NSW Government to assist in the achievement of the water quality objectives within each catchment.

Figure 3-2 Environmental values and uses protected by water quality objectives

4. The Botany Bay catchment

The Botany Bay catchment comprises the Georges River and Cooks River catchments. The original consultation sessions for each of the catchments in relation to catchment management and current water quality, were held in 1998 and reported high level interest in maintaining healthy catchments and local water management practices.

The *Water Quality and River Flow Interim Environmental Objectives* were followed by the creation of the Healthy Rivers Commission's independent and Public Inquiry into the Georges River - Botany Bay system. The *Healthy Rivers Commission – Independent Inquiry into the Georges River – Botany Bay System* report concluded the river and bay ecosystems were modified due to the proximity of the waterways within the urbanised environment.

The ANZECC guidelines indicate the levels of protection for environmental values within aquatic ecosystems that can be assigned to different waterways based on the level of modification to the natural environment. The three levels of protection are outlined in Table 3-1 in section 3 above, include:

1. High conservation/ecological value systems (HCV)
2. Slightly to moderately disturbed systems (SMD)
3. Highly disturbed systems (HD)

Table 4-1 below describes specific catchments within the Botany Bay system, the current environmental conditions, desired outcomes and goals, the table also incorporates the ANZECC levels of protection (as outlined in Table 3-1).

Table 4-1 Management goals and ANZECC protections levels – Botany Bay

Catchments	Environment condition	Desired outcomes	Management goal	ANZECC Levels of Protection
O'Hares, Punchbowl, Williams, Deadmans & Harris Creeks and upper Woronora River.	Substantially unmodified	Preserve natural geomorphic, hydrologic and ecological processes and biodiversity.	Protect current condition	HCV
Upper Georges River. Towra wetlands & Woolooware Bay	Slightly modified	Restore natural processes and biodiversity as much as practicable.	Restore natural condition	SMD
Georges River estuary and southern Botany Bay.	Moderately modified	Retain or restore important natural processes/ biodiversity and protect desired public uses.	Maintain or restore healthy modified conditions	SMD
Most urban streams, Cooks River, Alexandra Canal, Chipping Norton Lake, Botany & Rockdale wetlands, Centennial Park ponds, northern Botany Bay.	Highly modified	Restore ability to sustain chosen values/uses.	Rehabilitate key elements	HD
Source: Healthy Rivers Commission – Independent Inquiry into the Georges River – Botany Bay System				

4.1 Water quality objectives

During the consultation the communities from each of the catchments focussed on a local approach to water quality management in the catchments. This enabled the adoption of specific environmental values and water quality objectives for the catchments.

Within the Botany Bay context - including both the Georges River and Cooks River catchments - the water quality objectives comprise three parts, each are explained in Table 4-2 below.

Table 4-2 Explanation of water quality objectives and its components

Water Quality Objective	Explanation
Environmental Values	Uses for the waterways the community has identified as important and want to maintain *e.g. secondary contact recreation*
Indicator	The object used to monitor the objective. *e.g. faecal coliforms*
Numerical criteria	The gauge used to monitor the *indicator. e.g. maintain levels below a certain number*

4.2 Environmental Values

The specific environmental values for the Cooks River and Georges River catchments are provided in Table 4-3 below. These have been divided into four catchment divisions for the Georges River and two for the Cooks River, reflecting the types of landuse surrounding the catchment waterways.

Table 4-3 Environmental Values for the Botany Bay catchment

Georges River Catchment		Cooks River Catchment	
Waterways affected by urban development			
	Aquatic ecosystems		Aquatic ecosystems
	Visual amenity		Visual amenity
	Secondary contact recreation		Secondary contact recreation
	Primary contact recreation		
Estuaries			
	Aquatic ecosystems		Aquatic ecosystems
	Visual amenity		Visual amenity
	Secondary contact recreation		Secondary contact recreation

Georges River Catchment		Cooks River Catchment	
	Primary contact recreation		Primary contact recreation
	Aquatic foods (cooked)		Aquatic foods (cooked)
Mainly forested areas			
	Aquatic ecosystems		
	Visual amenity		
	Secondary contact recreation		
	Primary contact recreation		
	Aquatic foods (cooked)		
Uncontrolled Streams			
	Aquatic ecosystems		
	Visual amenity		
	Secondary contact recreation		
	Primary contact recreation		
	Livestock water supply		
	Irrigation water supply		
	Homestead water supply		
	Drinking water		
	Aquatic foods (cooked)		

5. Conclusion

The water quality objectives for the Georges River and Cooks River catchments help to support the waterways and their environmental values. Through an understanding of the current and desired uses of local waterways, comes the mechanisms for implementation regarding management activities and resource planning.

This background paper explained the current environmental values and associated water quality objectives placed on the Georges River and Cooks River catchments, while the associated workshop will engage decision makers in the current status of the catchments and if the current environmental values are still relevant, but also to elicit ideas on how best to implement better water quality management practices.