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COUNCIL NOTICES

COFFS HARBOUR CITY COUNCIL

Coastal Protection Act 1979, Section 55H

Gazettal and Commencement of a Coastal Zone Management Plan

COFFS HARBOUR CITY COUNCIL with the certification of the Minister for the Environment, have prepared and adopted the Boambee Newports Coastal Zone Management Plan in accordance with Section 55 of the *Coastal Protection Act 1979*.

The Plan is a strategic and long term plan developed to provide guidance for achieving a sustainable estuary in the future, giving balanced consideration to environmental, social and economic demands on the estuarine system and its catchment area.

The Plan will remain in force until such time as it is amended or repealed by a coastal management program that replaces it.

The Plan may be viewed on Coffs Harbour City Council's website at www.coffsharbour.nsw.gov.au For more information, call 02 6648 4000.

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Coffs Harbour City Council

Coastal Zone Management Plan for Boambee/Newports Estuary

August 2012



Office of
Environment
& Heritage



Coastal Zone Management Plan for Boambee/Newports Estuary

Final Report

August 2012

Amended for Certification February 2018



Acknowledgements and Disclaimers

Office of Environment and Heritage Acknowledgement and Disclaimer

Coffs Harbour City Council has prepared this document with financial assistance from the NSW Government through the Office of Environment and Heritage. This document does not necessarily represent the opinions of the NSW Government or the Office of Environment and Heritage.

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- 3. may only be used for the purpose of Coastal Zone Management Plan for Boambee/Newports Estuary (and must not be used for any other purpose).*

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Abbreviations

ANZECC	Australian and New Zealand Environment and Conservation Council
ARI	Average Recurrence Interval
CCSPT	Coffs Coast State Park Trust
CEMAC	Coastal Estuary Management Advisory Committee
CHCC	Coffs Harbour City Council
CSIRO	Commonwealth Scientific and Industrial Research Organisation
DECCW	NSW Department of Environment, Climate Change and Water (now Office of Environment and Heritage)
DIPNR	NSW Department of Infrastructure, Planning and Natural Resources (now Department of Planning and Infrastructure)
DNR	NSW Department of Natural Resources (now Office of Environment and Heritage)
Dol	NSW Department of Industry
DPI	NSW Department of Primary Industries
EPBC	Environment Protection and Biodiversity Conservation Act 1999
GIS	Geographic Information Systems
ICOLL	Intermittently Closed and Open Lake or Lagoon
LEP	Coffs Harbour Local Environmental Plan 2013
LLS	(North Coast) Local Land Services
NSWCHPT	NSW Crown Holiday Parks Trust
OEH	Office of Environment and Heritage
RVC	Regional Vegetation Communities
WDD	Wave Dominated Delta



Executive Summary

Estuaries form important ecosystems that have numerous environmental, social and economic values. Coffs Harbour City Council (CHCC) recognises the need to minimise human impacts on the Boambee/Newports Estuary to ensure that this natural resource is managed to meet both the present and future needs. To this end, the aim of the Coastal Zone Management Plan for Boambee/Newports Estuary is to identify the values, issues, management objectives and management options that will direct the future management of the estuary.

The Boambee/Newports Estuary is a small, relatively healthy estuary that has numerous values for the local community and environment. The values can broadly be grouped into ecological, scenic, heritage, recreational and socio-economic values. To further tailor the management options, a range of issues facing the estuary have been identified by a combination of Coastal Estuary Management Advisory Committee (CEMAC) input, the Processes Study and community consultation. The main issues identified relate to:

- ▶ Ecology - The impacts from development, fire, weed invasion and climate change.
- ▶ Water Quality - The impacts from development, chemical spills and climate change.
- ▶ Bank Erosion and Sedimentation – Bed and bank scour in the upper reaches of the catchment and climate change.
- ▶ Social – The management of Boambee Creek Reserve in respect to access fees, dredging and car parking. Dogs and dog waste. The quality of the facilities e.g. boat ramps.
- ▶ Heritage – Protection of aboriginal heritage sites.
- ▶ Scenic – Impacting the natural environment would impact the scenic value of the estuary. The appearance of the rail bridge was also a concern.
- ▶ Estuarine Management – The conflict and delays between the different stakeholders.

To protect the identified values and address the major issues of the estuary, a suite of eleven management objectives have been developed. The overarching aim of the objectives is to protect and conserve the environmental, social and economic values of the Boambee/Newports Estuary. The management objectives were ranked either high, medium-high or medium to assist with prioritising management strategies. The management objectives ranked high generally consisted of those in relation to the natural assets of the estuary but also to the protection of the water quality so that it is suitable for recreational use.

To address the identified estuary values, issues and management objectives, a series of 30 management strategies were developed with consideration of the feedback from the community survey and in consultation with members of CEMAC. The management strategies were assessed based on how they achieved the objectives, how practical they were to implement and if they would be acceptable to the community. The 20 strategies in the table below have been selected as the preferred management strategies for implementation within the period of this Plan. Each of the management strategies has been described in detail to provide a clear understanding of what the management strategy is aiming to achieve, why it is being implemented, the actions involved in its implementation, what objectives it addresses, the other relevant strategies, indicative costs, funding opportunities, responsibility, timing and indicators.



As indicated in the Table below, a total of approximately \$504,000 is required for the implementation of the preferred management strategies over the next five years. In the first year, approximately \$38,000 has been estimated to be required with this increasing to a little over \$100,000 for each of the following four years. It is likely that funding will be required to implement all the strategies in the plan and a range of funding opportunities are outlined.

Monitoring the effectiveness of the implementation of the management objectives, strategies and actions detailed in this Plan is critical in order to provide quantifiable measures of progress against baseline conditions. Ultimately, the success of the Plan depends on the management objectives being achieved but these are long term objectives, so a range of short, medium and long term evaluation methods are discussed.



Twenty Highest Ranking Options

Priority	Code	Management Strategy	2011-12	2012-13	2013-14	2014-15	2015-16	Cost	Status
Very High	WQ1	Expand the Current Water Quality Monitoring Program to align to the parameters of the Ecohealth Program Consistent with the NSW State Government's Monitoring and Evaluation Reporting (MER) Guidelines for Estuaries	\$ 10,000	\$ 10,000	\$ 10,000	\$ 10,000	\$ 10,000	\$ 50,000	Ongoing
	WQ2	Remove the Rubbish	\$ 2,000	\$ 2,000	\$ 1,000	\$ 1,000	\$ 1,000	\$ 7,000	Ongoing
	S1	Ambassadors Program	-	\$ 1,000	-	-	-	\$ 1,000	Not Started
	S2	Establish a Creek Walk	-	\$ 50,000	\$ 50,000	\$ 50,000	-	\$150,000	Not Started
High	WQ3	WSUD Policy	NC	NC	NC	NC	NC	\$ -	Ongoing
	WQ4	Regular Inspection of On-site Wastewater Systems	NC	NC	NC	NC	NC	\$ -	Ongoing
	E1	Monitor Biological Indicators (Merged into WQ1)	-	-	\$ 10,000	-	-	\$ 10,000	Ongoing
	S3	Formalise Access Tracks and Areas of Recreation	-	\$ 10,000	\$ 10,000	\$ 10,000	-	\$ 30,000	Ongoing
	E2	Initiate and Continue Bush Regeneration Programs	-	\$ 10,000	\$ 5,000	\$ 5,000	\$ 5,000	\$ 25,000	Ongoing
	WQ5	Upgrade Stormwater Controls in Existing Urban Areas	-	\$ 10,000	\$ 10,000	\$ 10,000	\$ 10,000	\$ 40,000	Ongoing
Medium-high	H1	Educate the Community on the Heritage Value of the Estuary	-	-	\$ 10,000	-	-	\$ 10,000	Ongoing
	E3	Establish a Vegetation Buffer	\$ 2,000	\$ 2,000	\$ 2,000	\$ 2,000	\$ 2,000	\$ 10,000	Ongoing
	S4	Educate and Enforce Dog Hygiene	\$ 2,000	-	-	\$ 2,000	-	\$ 4,000	In Progress
	S5	Provide Recycling Bins in Boambee Creek Reserve and Boat Ramps	\$ 2,000	NC	NC	NC	NC	\$ 2,000	Complete
	E4	Educate the Community about Estuarine Communities	-	\$ 10,000	-	-	-	\$ 10,000	Ongoing
	ER1	Monitor Erosion	\$ 10,000	\$ 10,000	\$ 10,000	\$ 10,000	\$ 10,000	\$ 50,000	Ongoing
	MGT1	Review the Management of Boambee Creek Reserve	-	-	NC	NC	\$ 75,000	\$ 75,000	Ongoing
	WQ6	Undertake an Environmental Audit	-	-	-	\$ 10,000	-	\$ 10,000	Not Started
Medium	S6	Upgrade and Maintain Hogbin Drive Boat Ramp	\$ 10,000	-	-	-	-	\$ 10,000	Ongoing
	WQ7	Educate the Community about Pesticide and Nutrient Use	-	-	-	\$ 10,000	-	\$ 10,000	Ongoing
Cost			\$ 38,000	\$ 15,000	\$ 8,000	\$120,000	\$113,000	\$504,000	

NC = Strategy being implemented but there is no significant cost e.g. no Council staff time costs

The costs are a preliminary estimate only. Actual prices, costs and other variables may be different to those used to prepare the cost estimate.



1. Introduction

1.1 Background

Estuaries form important ecosystems that have numerous environmental, social and economic values. The essential characteristics of an estuary are the influence of tidal processes on water levels and discharges, this influence being transmitted through a permanent or intermittent connection with the ocean, together with a variable salinity caused by the mixing of ocean water with freshwater runoff from the land (DNR, 2009, now Office of Environment and Heritage).

Estuaries support a diverse array of habitats including mangroves, salt marsh, seagrass and mud flats. They are known as the ‘nurseries of the sea’ and support a diversity of wildlife, including shore birds, fish, prawns, crabs, oysters and other shellfish, marine worms, marine mammals and reptiles. Much of the natural resources fostered by estuaries support valuable commercial enterprises including fishing, building and tourism. Estuaries also improve water quality and provide protection from storm and flood damage. It is therefore important we protect and sustainably manage our estuaries.

The Boambee/Newports Estuary is located on the Mid North Coast of New South Wales (NSW), in between the city of Coffs Harbour (to the north) and the town of Sawtell (to the south), as shown in Figure 1-1. This is approximately 428 km north of Sydney.

The Boambee/Newports Estuary has a roughly rectangular shape catchment with an area of approximately 49 km². It extends about 8 km from the coast with a coastal floodplain that is approximately 3 km wide. It consists of three main tributaries, the largest being Newports Creek in the north, Boambee Creek is next largest and drains the middle portion of the catchment, and Cordwells Creek the smaller of the catchments drains the south. The Boambee/Newports Estuary is permanently open to the ocean and has no artificial entrance training works, as it is naturally trained by Boambee Headland on the southern side. The Pacific Highway marks the approximate inland extent of the estuary.

CHCC recognises the need to minimise human impacts on the estuarine environment of Boambee/Newports Estuary and to ensure that the natural resources of the estuary are managed to meet both the present and future needs. To achieve this, and to be consistent with the *Coastal Protection Act 1979*, and the *NSW Coastal Policy 1997*, CHCC are committed to addressing the coastal zone management principles.

1.2 Coastal Zone Management Process and Framework

The *Coastal Protection and Other Legislation Amendment Act 2010* was passed by the NSW Parliament on 21 October 2010 and largely commenced on 1 January 2011. This Act amended the *Coastal Protection Act 1979*, the *Local Government Act 1993* and the *Environmental Planning and Assessment Act 1979*, and the three accompanying regulations.

The primary objective of the Act is to improve the arrangements for managing coastal erosion risks. It provides additional tools and options for councils and landowners, as well as reinforcing coastal zone management planning as the way to develop local solutions for local erosion problems.



Job Number 22-14223
 Revision A
 Date 29 JUN 2009

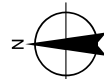
Coffs Harbour City Council
 Boambee / Newport Estuary



CLIENTS | PEOPLE | PERFORMANCE

LEGEND

- Catchments
- Estuary
- Approx. Tidal Extent



1:45,000 (at A4)
 0 180 360 720 1,080 1,440
 Metres

Map Projection: Transverse Mercator
 Horizontal Datum: Geocentric Datum of Australia (GDA)
 Grid: Map Grid of Australia 1994, Zone 56

Boambee / Newport Estuary
 Catchment

Figure 1.1

G:\2214223\GIS\Maps\Estuary Management Plan\2214223_EMP_FIG1-1_Catchments_20090623_A.mxd
 © 2009. While GHD has taken care to ensure the accuracy of this product, GHD and COFFS HARBOUR CITY COUNCIL make no representations or warranties about its accuracy, completeness or suitability for any particular purpose. GHD and COFFS HARBOUR CITY COUNCIL cannot accept liability of any kind (whether in contract, tort or otherwise) for any expenses, losses, damages and/or costs (including indirect or consequential damage) which are or may be incurred as a result of the product being inaccurate, incomplete or unsuitable in any way and for any reason.
 Data Source: Coffs Harbour City Council: Aerial - 2006; Coffs Harbour City Council: Catchment Data - 2008. Created by: fmackey, Gismodelling



To support the changes to the Act, the *Guidelines for Preparing Coastal Zone Management Plans* (DECCW, 2010, now Office of Environment and Heritage) (the Guidelines) have been prepared. The Guidelines outline the requirements for councils preparing coastal zone management plans (CZMP) under the *Coastal Protection Act 1979* and replace the 1990 *Coastline Management Manual* and the 1992 *Draft Estuary Management Manual*. The primary purpose of a CZMP is to describe proposed actions to be implemented by a council, other public authorities and potentially by the private sector to address priority management issues in the coastal zone over a defined implementation period. These issues include:

- ▶ managing risks to public safety and built assets
- ▶ pressures on coastal ecosystems, and
- ▶ community uses of the coastal zone.

A suite of ten coastal management principles (see Appendix A) have been provided in the Guidelines to inform strategic considerations in coastal management, including the preparation of CZMPs.

This CZMP is primarily focused on the Boambee/Newports Creek estuary and biodiversity related coastal management principles. Other plans e.g. *Floodplain Risk Management Study* (Bewsher Consulting Pty Ltd, 2005) and *Coffs Harbour Coastal Processes and Hazards Definition Study* (BMT WBM Pty Ltd, 2011), address the other coastal management principles.

Councils are to submit draft CZMP to the Minister administering the *Coastal Protection Act 1979* for certification under the Act.

CHCC established the CEMAC to advise CHCC on coastal and estuarine matters. CEMAC consists of a representative from:

- ▶ OEH
- ▶ NSW Maritime
- ▶ DoI – Crown Lands & Water
- ▶ State Emergency Service
- ▶ North Coast Indigenous Services
- ▶ Community representatives
- ▶ National Parks & Wildlife Service
- ▶ Marine Park Authority
- ▶ Coffs Harbour Regional Landcare
- ▶ North Coast Local Land Services (LLS)
- ▶ National Marine Science Centre.

The committee determined that the Boambee/Newports Estuary was a high priority and funding was sought for preparation of a CZMP.

The primary issues of the CZMP for the Boambee/Newports Estuary were identified by CEMAC to be:

- ▶ Navigation restriction due to sedimentation of the lower reaches
- ▶ Bank erosion and bank protection
- ▶ Water quality and pollution
- ▶ Biodiversity
- ▶ Improvements to aquatic and terrestrial habitats



- ▶ Environmental restoration of degraded areas
- ▶ Community education
- ▶ Recreational use.

1.3 Aims and Objectives

The aim of the Coastal Zone Management Plan for Boambee/Newports Estuary (the Plan) is to define the management objectives and management options in the catchment. This is to be used for informing other strategic documents that aim to manage human activities and development in the catchment. Other estuaries, coastal risks and flood risks are addressed in separate Estuary Management Plans, Flood Risk Management Plans and Coastal Zone Management Plans.

To achieve the aim of the Plan, the objectives are to:

- ▶ Summarise the estuary characteristics
- ▶ Review the planning framework
- ▶ Identify the values and issues of the estuary
- ▶ Identify the management objectives
- ▶ Identify potential management strategies
- ▶ Provide details on the preferred management strategies, including budget, timeframe and responsibility.

1.4 CZMP Structure

The CZMP provides a summary of the estuary and the legislative and policy background. The values of the estuary are then identified, the issues threatening these values are also described. To protect the identified values and address the identified issues of the estuary, a suite of management objectives have been developed. The eleven management objectives have been divided into the seven broad issues. To address the identified estuary values, issues and management objectives, a series of 30 management strategies were developed and these have been ranked with the 20 highest ranking options being selected as the preferred management strategies for implementation within the period of this plan. The CZMP structure is illustrated in Figure 1-2.

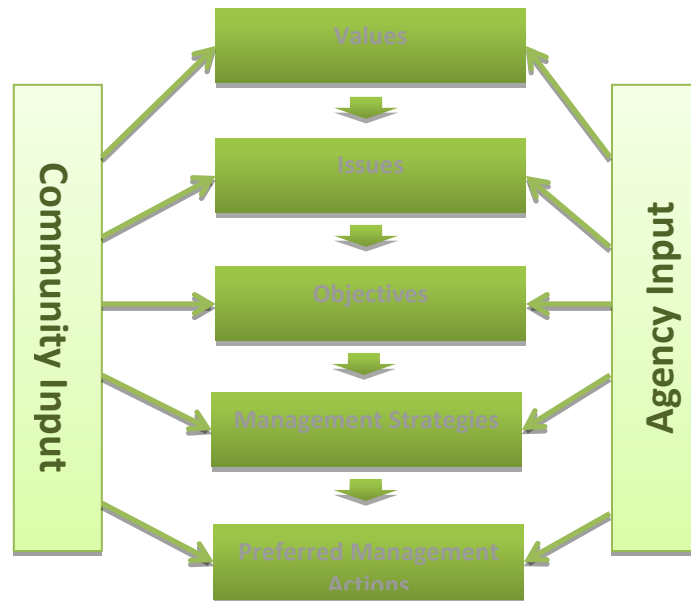


Figure 1-2 CZMP Structure

Each of the management strategies has been described in detail to provide a clear understanding of what the management strategy is aiming to achieve, why it is being implemented, the actions involved in its implementation, what objectives it addresses, its priority, the other relevant strategies, indicative costs, funding opportunities, responsibility, timing and indicators.

1.5 Consultation

The Boambee/Newports Estuary is important to a large and diverse population. It is also managed by various Government Authorities. To prepare the Plan, it was therefore vital to consult the local community and relevant authorities. Consultation was undertaken by:

- ▶ Undertaking a survey of estuary users
- ▶ Presenting the Draft Processes Study and Draft Coastal Zone Management Plan to CEMAC
- ▶ Publicly exhibiting the Draft Coastal Zone Management Plan between 21 April 2011 and 19 May 2011.

The survey involved 144 estuary users who were asked questions on what they value the estuary for, how often they use the estuary and what improvements to the estuary would they like to see. A summary of the results from the survey is provided in Sections 4 and 6 below. This provided valuable information in guiding the direction of the Plan.

During the exhibition of the Plan, eight submissions were received from a range of local community members and government authorities. All relevant comments have been incorporated into the final Plan.



2. Policy and Legislation

The Boambee/Newports Estuary is subject to various Commonwealth, State and Local legislation and policies. Essentially the legislation and policies are intended to protect and enhance the estuary and should therefore assist the implementation of the Plan. However, it is necessary to review each of the related legislation and policies to ensure the Plan is consistent with the various requirements and processes involved with them.

The following provides a list of the related legislation and policies. A brief description of how they are relevant to the Boambee/Newports Estuary is provided in Appendix B.

2.1 Commonwealth Legislation and Policies

- ▶ *Environmental Protection and Biodiversity Conservation Act 1999*
- ▶ *Native Title Act 1993*

2.2 State Legislation and Policies

- ▶ *Catchment Management Act 2003*
- ▶ *Coastal Protection Act 1979*
- ▶ *Crown Lands Act 1989*
- ▶ *Environmental Planning & Assessment Act 1979*
- ▶ *Fisheries Management Act 1994*
- ▶ *Local Government Act 1993*
- ▶ *Noxious Weeds Act 1993*
- ▶ *NSW Coastal Policy 1997*
- ▶ *Coastal Protection Act 1979*
- ▶ *Protection of the Environment Operations Act 1997*
- ▶ *State Environmental Planning Policy (SEPP) 14 - Coastal Wetlands*
- ▶ *State Environmental Planning Policy (SEPP) 26 - Littoral Rainforest*
- ▶ *State Environmental Planning Policy (SEPP) 71 - Coastal Protection*
- ▶ *National Parks and Wildlife Act 1974*
- ▶ *NSW Heritage Act 1977*
- ▶ *Threatened Species Conservation Act 1995*
- ▶ *Water Management Act 2000*
- ▶ *Wetlands Management Policy 1996*

2.3 Local Legislation and Policies

- ▶ *Mid North Coast Regional Strategy 2009*
- ▶ *Coffs Harbour Coastal Reserves Plan of Management 2000*
- ▶ *Coffs Harbour City Local Environmental Plan 2013 (LEP)*
- ▶ *Development Control Plans (DCPs)*



- ▶ Koala Plan of Management
- ▶ Northern Rivers Catchment Action Plan
- ▶ Urban Stormwater Management Plan
- ▶ Vertebrate Pest Management Strategy
- ▶ CHCC Water Sensitive Urban Design Policy
- ▶ Coffs Harbour Coastal Processes and Hazard Definition Study
- ▶ Coffs Harbour 2030 Plan
- ▶ Natural Areas Plan of Management



3. Boambee/Newports Estuary Description

The following provides a brief description of the Boambee/Newports Estuary and its catchment, a more detail description is provided in the Processes Study (GHD, 2010).

3.1 Catchment Description

The Boambee/Newports Estuary is located on the Mid North Coast of NSW, in between the city of Coffs Harbour (to the north) and the town of Sawtell (to the south). This is approximately 428 km north of Sydney.

The Boambee/Newports Estuary has a roughly rectangular shape catchment with an area of approximately 49 km². It extends about 8 km from the coast with a coastal floodplain that is approximately 3 km wide. It consists of three main tributaries, the largest being Newports Creek in the north, Boambee Creek is next largest and drains the middle portion of the catchment, and Cordwells Creek the smaller of the catchments drains the south. The Boambee/Newports Estuary is permanently open to the ocean and has no artificial entrance training works, as it is naturally trained by Boambee Headland on the southern side.

The Boambee/Newports Estuary is classified as a Wave Dominated Delta (WDD). WDDs consist of a river/creek that is directly connected to the ocean by a channel that is typically flanked by floodplain vegetation and swamps. WDDs are distinguished by a moderately high wave influence (compared to tidal influence) at the mouth. The estuary mouths of WDDs are typically narrow due to a barrier (sandbar) and are rarely closed off because of the relatively high river influence within the system.

3.2 Climate

The climate of the Boambee/Newports Estuary catchment is subtropical with warm to very warm wet summers and cool to mild, relatively dry winters. Average maximum daily temperatures range from 18.7 °C in winter to 26.9 °C in summer, while average minimum daily temperatures range from 7 °C in winter to 19 °C in summer. Annual mean rainfall is 1,676 mm, with the wettest month (i.e. March) having an average of 239 mm and the driest month (i.e. September) receiving an average of 63 mm.

It is increasingly clear that the climate is changing at a faster rate than previously experienced (CSIRO, 2007; DECC, 2008). The predicted changes in climate have the potential to impact the Boambee/Newports Estuary and Table 3-1 below provides a summary of the data as predicted for 2030 (CSIRO, 2007), 2050 (DECC, 2008) and 2070 (CSIRO, 2007).



Table 3-1 Summary of Climate Variables

Climate Variable		Predicted Change		
		CSIRO (2007) 2030	DECC (2008) 2050	CSIRO (2007) 2070
Temperature	Annual Average	+0.2 - +1.8°C ¹	+1 to +3°C	+0.7 - +5.6°C ¹
Summer Rainfall	Average	-13 to +13 % ²	-5 to +5 %	-40 to +40 % ²
Autumn Rainfall	Average	-13 to +13 % ²	-5 to +5 %	-40 to +40 % ²
Winter Rainfall	Average	-13 to +7 % ²	-10 to +5 %	-40 to +20 % ²
Spring Rainfall	Average	-20 to +7 % ²	-10 to +5 %	-60 to +20 % ²
Extreme Rainfall	(1 in 40 year 1-day rainfall)	-10-+5% ¹	Data not available	+5 - +10% ¹
Number of Fire days		Coffs harbour: 5 - 6 ¹	10 to 15	Coffs Harbour: 5 - 8 ¹
Sea Level Rise	Above 1990 base line		+40cm	+90cm (by 2100, UNSW data and level adopted by NSW Govt)

¹ CSIRO Northern Rivers projections

² CSIRO NSW projections

3.3 Land Use

Following European settlement, land use was dominated by timber cutting, which flourished after the completion of the Coffs Harbour jetty in 1892. Banana growing then became a popular activity with Coffs Harbour being considered the major banana producing area in Australia in the 1920's. Banana growing was most predominant in the 1960's and 1970's and has been in a steady decline ever since.

The land use within the catchment can now be divided into two separate areas to the west and east of the Pacific Highway.

To the east of the Pacific Highway the land has been largely developed with a mixture of land uses including residential, industrial, public and private recreation, environmental protection area and special uses such as schools, the university and the aerodrome. Only a small proportion of vegetation remains surrounding the Estuary. Land uses in the southern catchment are mostly residential. The mid catchment of Newports Estuary flows through an industrial area before entering a low-lying floodplain with adjacent land uses including a golf course, airport and residential. Some large industrial enterprises are also established in the mid-section of Boambee Estuary before entering an area dominated by residential land use.



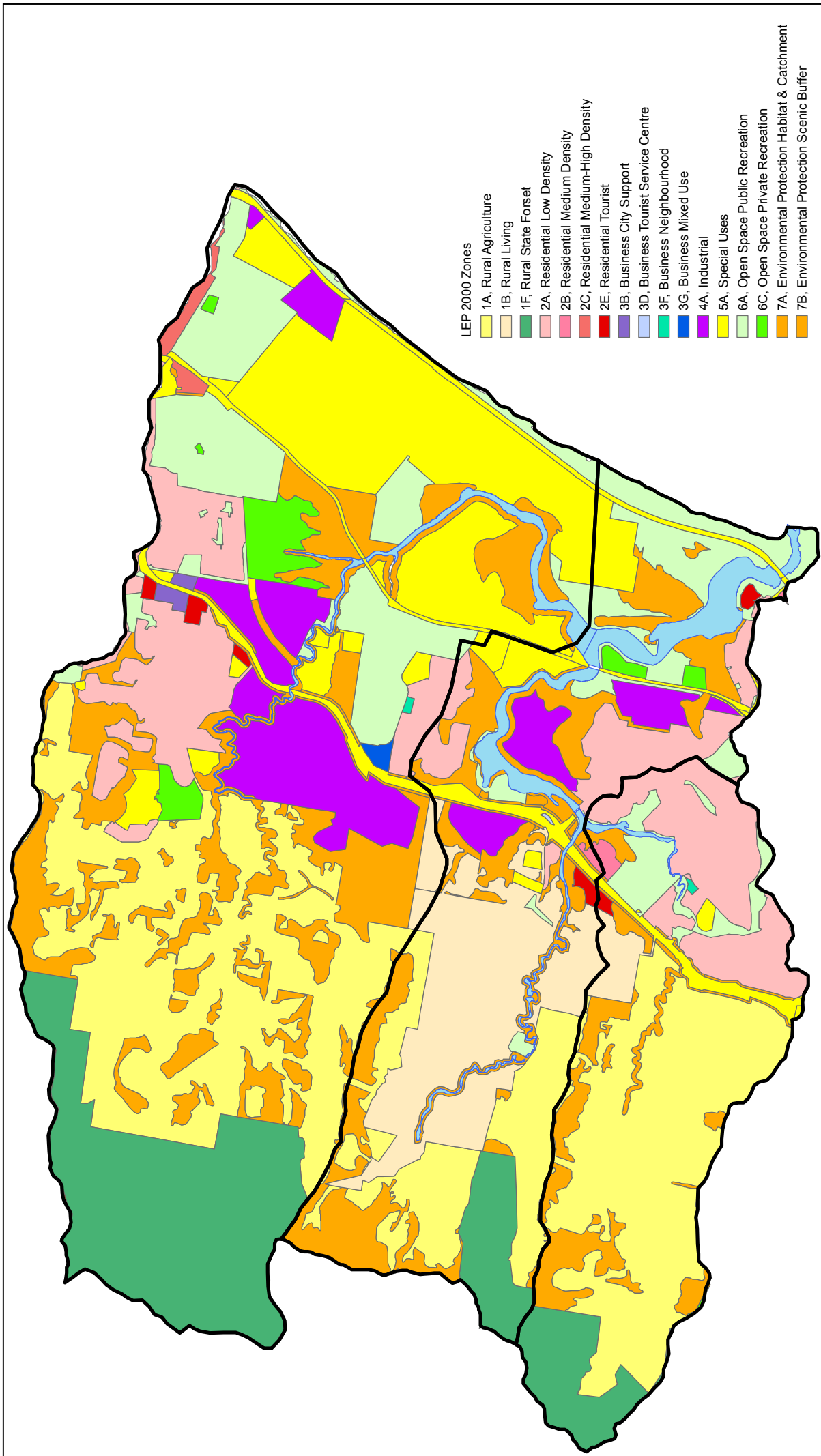
To the west of the Pacific Highway the majority of the area is currently used for agriculture, rural residential and habitat protection. A proportion of land in this area is used for residential, industrial and private recreation purposes. This area is characterised by large areas cleared for agricultural production (mainly bananas and grazing land), and a mosaic of remnant and regenerating vegetation predominantly along drainage lines and on steep areas.

To provide an indication of the extent of each land use in the catchment, each zone (under the *Coffs Harbour Local Environmental Plan 2000*) and proportions of land use are shown in Figure 3-1 and Table 3-2. Although Table 3-2 is based on zoned land and not actual use, it is considered a reasonable indication of use because most zoned land within the Coffs Harbour area is fully developed.

Table 3-2 Land Use Proportions with the catchment

Zone	Ha	Proportion of total Catchment Area (%)
1A Rural Agriculture	1170	23.7%
1B Living Zone	320	6.5%
1F State Forest Zone	506	10.2%
2A Residential Low Density Zone	485	9.8%
2B Residential Medium Density	8	0.2%
2C Residential Medium-High Density	15	0.3%
2E Residential Tourist	16	0.3%
3B Business City Support	7	0.1%
3F Business Neighbourhood	2	0.0%
3G Business Mixed Use	4	0.1%
4A Industrial Zone	265	5.4%
5A Special Uses Zone	622	12.6%
6A Public Recreation Zone	485	9.8%
6C Private Recreation Zone	64	1.3%
7A Environmental Protection – Habitat and Catchment Zone	855	17.3%
7B Environmental Protection - Scenic Buffer	23	0.5%

Significant land use changes are expected within the catchment in the future with over 130 hectares identified for possible residential development, 73.5 hectares for possible industrial development and 46 hectares for possible rural residential development. A four-lane dual carriageway Pacific Highway Bypass is also proposed to be constructed within the catchment in the future. The future land use is shown in Figure 3-2.



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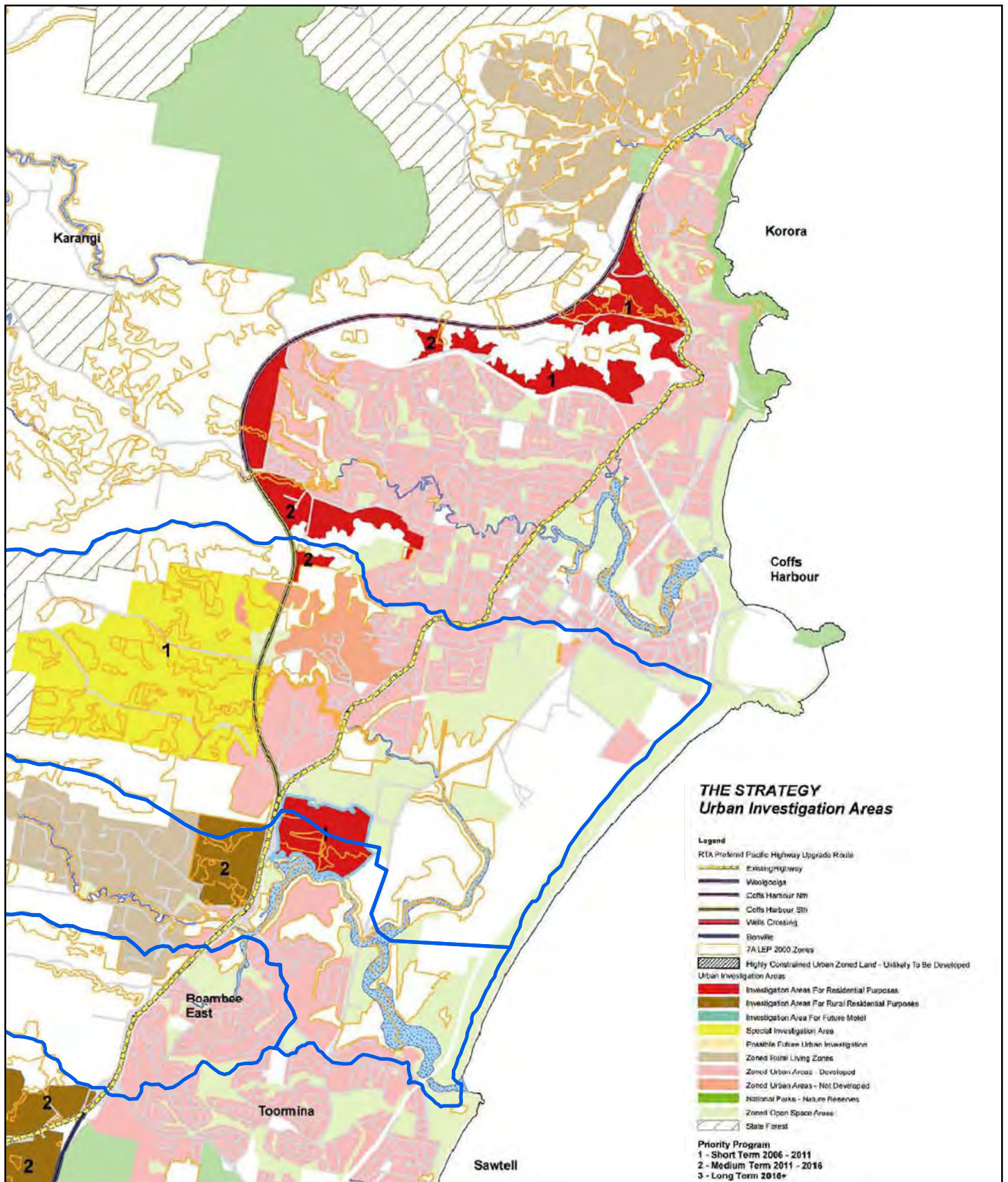
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Date 26 JUN 2009



Coffs Harbour LEP 2000 Land Use Zones

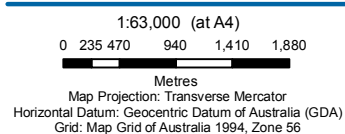
Figure 3.1

2/115 West High Street Coffs Harbour NSW 2450 T 61 2 6650 5600 F 61 2 6652 8021 E W www.ghd.com.au
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Data Source: Coffs Harbour City Council: LEP200 Zone & Catchment Data - 2007. Created by: fmacckay, Imotion



LEGEND

Catchments



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Boambee / Newport's Estuary

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Future Land Use and
Pacific Highway Bypass Route

Figure 3.2



3.4 Geomorphology

It appears that the estuary mouth has been permanently open to the ocean for many decades due to a high fluvial influence. The entrance area is likely to be significantly changed in response to ongoing recession at the southern end of the beach due to sea level rise. It is uncertain if this may result in entrance closure in the future, although this is considered unlikely. The climate change projections for future annual rainfall and rainfall intensity are at present inconclusive. Thus, it is not yet possible to determine potential changes to the entrance condition in response to climate change induced changes to rainfall BMT WBM (2011).

The Boambee/Newports Estuary has no artificial entrance training works as Boambee Headland naturally trains it on the southern side. To the north the estuary barrier exists due to the creek delivering sediment faster than the waves can disperse it resulting in a tendency for the coastline to build up and form a coastal protrusion. The rail bridge embankment adds to this natural constriction which has established a channel width of approximately 60 m. High wave energy results in the distribution of sediment along the coast forming the Boambee Barrier. Fluvial input is the variable factor in determining the final morphology and functioning of a wave dominated estuary.

At this stage acknowledging climate change impacts and assessment through photogrammetry, it has been determined that an Entrance Management Strategy is not a priority for this management plan.

Seasonal and climatic factors dictate the functions of estuaries due to periodic high-flow events causing flushing, sedimentation, and erosion of the main channel and floodplain.

Boambee/Newports Estuary exhibits periodical high-energy flows causing scouring and bank erosion and occurring frequently enough to maintain an open entrance. Sediment deposits at and just upstream of the entrance appears relatively stable where marine derived sands are constantly being reworked with little net movement in or out of the estuary.

The Boambee/Newports Estuary in respect to its geomorphic form is generally in good condition. Banks are largely stable to minimally active and the general form of the estuary has remained more or less unchanged over the period of record covered by historical aerial imagery. The shoaling patterns within the marine zone have also remained relatively stable over the last 65 years, with no significant net increase or decrease in bar extents.

Upper catchment processes have improved as areas of banana plantations have decreased however development has increased which may lead to an altered run-off regime. The effects of climate change are also likely to increase the rate of bank erosion.

3.5 Hydrology

The study area has experienced several rainfall events and floods in the last couple of decades that have reportedly exceeded the current estimate of the 100-year event magnitude. Hence, CHCC has responded to this by establishing an appropriate minimum floor level that considers this local flooding characteristic.

Surface runoff in the Coffs Harbour regional area is more than double the average for coastal NSW and almost nine times the average of NSW (CHCC USMP, 2000). High surface runoff



volumes in the Coffs Harbour region are attributed to the topography of the regional area, which is characterised by a narrow coastal plain bordered by coastal ranges. Slopes of the coastal range are often greater than 30% and therefore contribute to greater runoff volumes (CHCC USMP, 2000).

The flood discharges from the mouth of Boambee Creek for a number of Average Recurrence Intervals (ARI) predicted the critical duration 100 year ARI flow is approximately 5 times the magnitude of the 1 year ARI flow rate

The flood study for the area defined the existing flooding regime. Results available from that study indicate a flow attenuation through the estuarine area. It is expected this is due to the levelling out of the surrounding topography and the increase in the cross-sectional area, which provides additional storage in the floodplain.

Using a runoff analysis, it was found that the average annual water yield for the Boambee/Newports catchment was 46 GL/year for the current land use conditions from the entire catchment area. It is expected that the annual water yield from the catchment would have increased over the past decades as the area has been cleared and then developed. This may have resulted in an increase in the volume and velocity of water flowing through the estuary which may have impacted on the estuarine geomorphology and ecology.

The results of the predictions indicate that there will be an increase in the annual water yield with further planned development within the catchment without the implementation of specific measures to mitigate that change in yield.

Regional climate change projections produced by the Commonwealth Scientific and Industrial Research Organisation (CSIRO) and the Office of Environment and Heritage indicate that average annual runoff and stream flow is likely to slightly increase. Summer and autumn runoff depths are likely to increase by 2050, varying from current averages by +4 to +15% and -12 to +16% respectively. Short and intense rainfall events are also predicted to increase.

Increased runoff may have the impact of increasing catchment erosion and thereby increasing sediment loads into the estuary. More sediment in the estuary may lead to silting up of the entrance of the estuary and reduce flushing resulting in stagnant water.

3.6 Hydraulics

The hydraulic processes in the estuary are characterised by the semi-diurnal ocean tide in conjunction with hydrologic surface runoff contributed by the Boambee/Newports Creek catchment.

The tidal range in the estuary is largest at the mouth and reduces upstream to the tidal limits. The mean tidal range at the Coffs Harbour ocean monitoring site is 1.068m. This reduces to 0.659m 500m upstream of the mouth of the estuary and 0.453m approximately 8km upstream in Newports Creek. The tidal regime of the estuary is dependent upon the condition of the entrance. The more scoured the entrance, the lower the low tide levels within the estuary and the greater the tidal range. The more shoaled the entrance, the higher the low tide level and the smaller the tidal range.

Tidal water levels experienced throughout the estuary reduce in amplitude with distance from the estuary mouth, ceasing upstream at the tidal limit. The lag time between high or low tide in



the ocean and high or low tide inside the estuary also increases with distance upstream from the mouth of the estuary. Immediately upstream of the mouth of the estuary the average lag time of high and low water tides is 51 minutes while near the tidal limit the average lag time is 131 minutes. The lag times within the estuary are also dependant on entrance conditions.

The maximum tidal ebb and flood tidal velocities and volumes were also experienced at the entrance. Velocities and volumes would also be influenced by catchment inputs, with these expected to increase following rainfall events.

The typical peak flood velocities are greater than 2 m/s for much of Newports Creek downstream of the Pacific Highway crossing while at the mouth of Boambee Creek the peak velocity is between 1.6 m/s and 2 m/s. The higher flood velocities predicted in the Newports Creek may be influenced by the narrower cross-sectional area and smaller estuary area compared to Boambee Creek.

Climate change is likely to impact the hydraulics of the estuary. The projected increase in sea level will raise the high and low tide levels in estuaries causing greater tidal inundation and reducing the capacity of low tides to drain low-lying areas. The anticipated increase in inundation has been modelled by BMT WBM (2011) and is shown in Figure 3-3.

In addition to this, areas subject to flooding which are influenced by tidal levels will experience greater flood levels and the flood-affected areas will expand. The changes experienced by the estuary will also result in reduced flushing of low-lying areas, creating an environment with more stagnant water.

The increased inundation levels, in isolation of any change in rainfall regime, would reduce the peak flood velocities and extend the area of influence of saline waters within the estuary.

The projected rainfall increases for the area, if they occur concurrently with the elevated sea level rise, are not expected to significantly increase the peak flow rates beyond those currently experienced for the 100 year ARI design event.

3.7 Water Quality

The achievement of high quality water in the Boambee/Newports Estuary is particularly important for the local community as it is used extensively for a variety of recreational activities.

The monitoring results have shown that the Australia and New Zealand Environment and Conservation Council (ANZECC) trigger values for some parameters analysed, such as faecal coliforms and nutrients, have been exceeded at some locations.

A summary of the data collected since 1999 at Boambee Creek is presented in Table 3-1. The results indicate that the observed values for Faecal Coliforms and Enterococci have, on occasions, exceeded the ANZECC guideline values for recreational water quality and aesthetics. The values obtained for salinity, temperature, DO, turbidity, pH and conductivity are consistent with the values and trends of water quality data collected by Sawtell (2002).



Table 3-1 CHCC Water Quality Data for Boambee Creek, 1999 to 2008

	Minimum	Maximum	Mean	ANZECC 2000 Guidelines	
				Guidelines for recreational water quality and aesthetics	Trigger Values for Slightly Disturbed Ecosystems in South East Australia
Faecal Coliforms (colonies/ 100mL)	0	4,500	117	150 [^] , 1000 ^{^^}	-
Total Coliforms (colonies/ 100mL)	0	5,000	272	-	-
Enterococci (colonies/ 100ml)	0	3,700	141	35 [^] , 230 ^{^^}	-
pH	5.9	9.46	8.3	5.0 - 9.0 [#]	7.0 - 8.5
Conductivity (mS/cm)	4.08	55.7	45.96	-	-
Turbidity (NTU)	0	70	9	Natural visual clarity should not be reduced by more than 20%	-
DO (mg/L)	0.91	13.17	7.37	-	80-100%
Temp (°C)	15	29.8	21.9	15-35	-
Salinity (%)	0.2	40	3.5	-	-
Ammonia Nitrogen * (mg/L)	0.05	0.05	0.05	-	-
Nitrite Nitrogen * (mg/L)	0.05	0.05	0.05	-	-
Nitrate Nitrogen * (mg/L)	0.05	0.07	0.06	-	-
Total Nitrogen * (mg/L)	0.29	1.04	0.61	-	0.3
Total Phosphorus * (mg/L)	0.03	0.03	0.03	-	0.03

*Only three samples between June and August 2008 available for these parameters

[^] Guidelines fro Primary Contact

^{^^} Guidelines for Secondary Contact

[#] Assuming the buffering capacity of the water is low near the extremes of the pH limits

A summary of water quality results from data collected on 21 May 2009 and 2 June 2009 in Table 3-2.

Table 3-2 Observed Water Quality Data from this Study

Parameter	Site 1	Site 2	Site 3
Mean Total Nitrogen (mg/L)	0.60	0.71	0.80
Mean Total Phosphorus (mg/L)	<0.03	0.08	0.13
Mean Total Suspended Solids (mg/L)	10	25	87.5
Mean Faecal Coliforms (cfu/100mL)	290	75	120



The results indicate that the total nitrogen and phosphorus levels are similar to the results obtained by CHCC. The TSS readings for Sites 1 and 2 were relatively low while the value for Site 3 was elevated. The faecal coliforms levels recorded by GHD satisfy the ANZECC guidelines for secondary contact but sometimes exceeded the levels recommended for primary contact. All of the parameters sampled on the 21 May 2009 were elevated compared to other sampling events. It is expected this is attributed to low levels of rain falling in the few days preceding the sampling and greater than 40mm falling on the sampling day.

Continuous loggers were also placed at the three locations and monitored the following parameters from 18 May 2009 through to 12 June 2009. The results obtained from sampling conducted by GHD for this study are generally consistent with the values and trends of monitoring conducted by CHCC, MHL and Sawtell (2002).

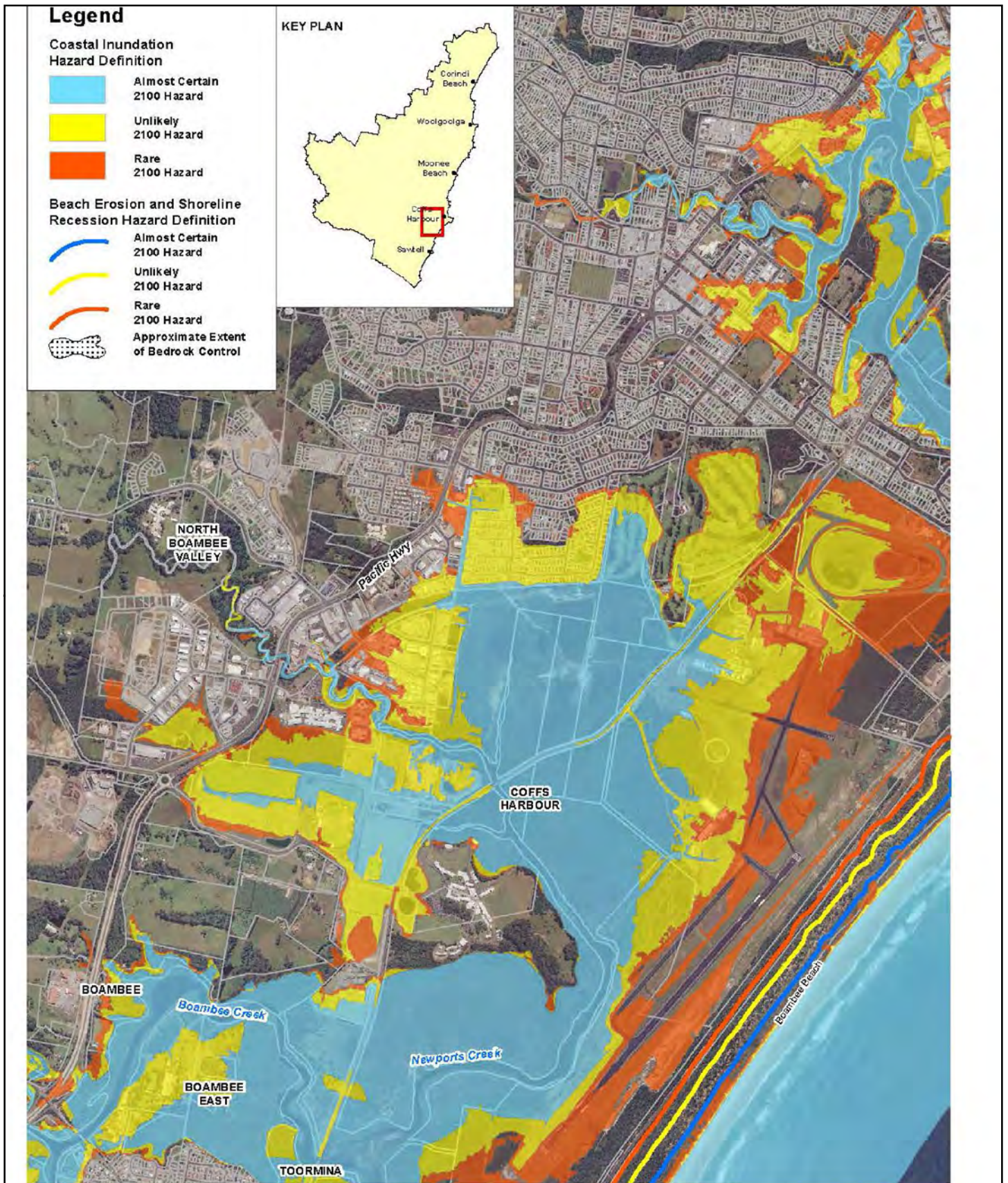
A variety of water quality information was available for Boambee Creek. The data has been collected under various studies for different purposes and there is a general lack of continuity. Based on the data collected for water quality Boambee Creek is of good health. With the exception of the following:

- ▶ The DO trigger values are generally not achieved throughout the estuary during either high water slack or low water slack.
- ▶ The limited nutrient results indicate that nitrogen and phosphorous concentrations are greater than the ANZECC (2000) guidelines, with concentrations generally increasing upstream. Newports Creek appears to have higher concentrations than Boambee Creek.
- ▶ The faecal coliform concentrations, recorded by GHD, satisfy the ANZECC guidelines for secondary contact but occasionally exceeded the levels recommended for primary contact. This is reflective of CHCC monitoring which have recorded concentrations of up to 4,500 cfu/100mL. The mean concentration is 117 cfu/100mL.

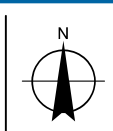
3.7.1 Density

Results show the density of water is greatest at the mouth of the estuary and gradually decreases upstream during high water slack. Low water slack readings also followed this trend but found that in deeper sections of the estuaries density was greater with depth. Higher density water penetrates further upstream during high water slack than during low water slack.

The density of water samples indicates the presence of ocean water. The further penetration of denser water during high water slack reflects the upstream flow of ocean water as the tide rises. Denser portions of water in the deeper sections of the estuary represent ocean water which sinks and is not actively flushed during the ebb stage of the tidal cycle.



Map Projection: Transverse Mercator
 Horizontal Datum: Geocentric Datum of Australia (GDA)
 Grid: Map Grid of Australia 1994, Zone 56



Coffs Harbour City Council
 Boambee / Newports Estuary

Job Number 22-14220
 Revision A
 Date 04 OCT 2011

Coastal Process Hazard Definitions
 2100 Planning Horizon - Boambee Creek **Figure 3-3**

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 Data Source: Coffs Harbour City Council; Imagery - 2011. Created by: fmacckay



3.7.2 Temperature

The variation of water temperature throughout the estuary is approximately 3.5°C. The minimum temperatures were recorded in the deeper sections of the estuary and warmer temperatures were observed upstream and downstream of these locations. The temperature across the estuary increases by between approximately 0.5°C and 1.5°C in the transition from high water to low water slack.

3.7.3 Salinity

Salinity characteristics within the estuary are similar to trends in density. High salinity is observed where high density is observed. Both parameters indicate the presence of ocean water and therefore this trend is expected.

3.7.4 Dissolve Oxygen

The percentage saturation of dissolved oxygen (DO) generally varies from close to 100% at the mouth of the estuary to less than 10% at the tidal limits. The DO levels during the high water slack were higher than samples taken during the low water slack for Boambee Creek while for Newports Creek, the reverse was observed. Insufficient data was obtained from the locations along Cordwells Creek to enable comparisons between high and low water slack.

The ANZECC DO trigger values for estuaries in slightly disturbed ecosystems in south-east Australia are 80% to 110% of saturation. DO levels inside the trigger values are generally not achieved throughout the estuary during either high water slack or low water slack.

3.7.5 pH

Monitoring results indicate a slight decrease in pH of approximately 0.2 across the estuary from high to low water slack. Across all monitoring sites the pH varies between 7.1 and 8.0. The lowest pH values were observed at the upstream reaches of the estuary while the highest pH values were observed closer to the mouth of the estuary. The pH varies based on the level of saltwater or freshwater influence.

3.7.6 Chlorophyll-a

Chlorophyll-a concentrations are low at the mouth of the estuary and generally increase upstream. Most sites indicate an increase of chlorophyll-a concentrations during low water slack. The greatest chlorophyll-a concentrations are located at the confluence of Boambee and Cordwells Creeks.

3.7.7 Nutrients

The limited nutrient results indicate that nitrogen and phosphorous concentrations are greater than the ANZECC (2000) guidelines, with concentrations generally increasing upstream. Newports Creek appears to have higher concentrations than Boambee Creek.



3.7.8 Faecal Coliforms

The faecal coliform concentrations, recorded by GHD, satisfy the ANZECC guidelines for secondary contact but occasionally exceeded the levels recommended for primary contact. This is reflective of CHCC monitoring which have recorded concentrations of up to 4,500 cfu/100mL. The mean concentration is 117 cfu/100mL.

Greater development in the catchment will increase peak runoff rates upstream of detention structures, water yields and potentially pollutant loads. The results of a water quality model at show that without the implementation of mitigation works the future development of the catchment is predicted to result in a significant increase in pollutant loadings. However, with the implementation of appropriate mitigation measures it would be possible to minimise the effect of the increased urban development on the pollutant loads.

Projected sea level rises from climate change will influence the water quality as the effect would be an increased penetration of sea water into the estuary. The increase in rainfall intensity may also increase pollutant loads entering the system.

3.8 Biodiversity

The existing level of biodiversity in the Boambee/Newports Estuary is considered high based upon survey undertaken of the estuarine and riparian vegetation and searches of the OEH, EPBC, Bionet and DPI Fisheries databases. Figure 3-4 shows the riparian vegetation communities along the estuary and they are briefly described below in accordance with Fisher et al (1996) and the Regional Vegetation Communities (RVC).

3.8.1 Flora

The Rapid Appraisal of Riparian Condition (RARC) methodology was used for riparian vegetation whilst the Wetland Assessment Technique was used for estuarine vegetation (mangroves, saltmarshes and seagrass beds). The review of vegetation mapping concluded that the study area contains 9 riparian vegetation communities that are floristically different from one another.

- ▶ Foredune Complex (Fisher) - RVC 3 Coast Banksia low open forest on coastal dunes, North Coast Bioregion
- ▶ Headland Heath and Grassland (Fisher) - RVC 7 Coastal headland heaths, Coastal NSW
- ▶ Swamp Forest (Fisher) - RVC 9 Paperbark swamp forest of the coastal lowlands, Coastal NSW
- ▶ Swamp Forest (Fisher) - RVC 10 Swamp Mahogany – Swamp Box swamp forests of coastal lowlands, NSW North Coast
- ▶ Open Forest (Fisher) - RVC 11 Grey Box – Forest Red Gum – Grey Ironbark open forest of the hinterland ranges, NSW North Coast
- ▶ Tall Open Forest (Fisher) - RVC 24 Blackbutt - Tallowwood tall moist shrubby forests, NSW North Coast
- ▶ Tall Open Forest (Fisher) - RVC 29 Tallowwood tall moist shrubby forests, NSW North Coast



- ▶ Open Forest (Fisher) - RVC 33 Red Mahogany open forest of the coastal lowlands, NSW North Coast
- ▶ Sedgeland/ Rushland Complex (Fisher) - RVC 39 Wet heaths and sedgelands, coastal NSW

In general, the riparian vegetation communities surveyed were in very good condition with an average score of 37.59 out of 50, inferring good habitat values and ecological function. This was indicated by an excellent average habitat score of 9.84 out of 11, as a result of effective connectivity and/or proximity to other vegetation communities within the study area, thus providing linkages between important wildlife corridors. This was further indicated by an average score of 8.01 out of 9 for natives, as determined by the high percentage of native species throughout the stratum layers.

The average cover score was 9.89 out of 12, as determined by the existing coverage of the canopy, understorey and groundcover. This is an indicator of good biodiversity, because many terrestrial species such as small birds prefer to have breeding and foraging habitat that is multi-layered. The average debris score was 6.19 out of 10 and reduces the overall biodiversity slightly, as it is based on potential fauna habitat in the form of hollow bearing trees, standing dead trees and fallen logs. The lack of these attributes indicates that the riparian vegetation may be regrowth and not old growth.

The results indicated that the riparian vegetation communities provide for a high level of biodiversity, as is apparent with the number of flora and fauna species recorded in the study area, and as such, ecological processes are optimised. The edge effects between terrestrial and estuarine ecosystems are continuous throughout most of the estuary enabling effective energy and nutrient movements between the two ecosystems and throughout the food chain.

The hydrodynamic processes of the estuary are benefited by the condition of the riparian vegetation because the vegetation would be assisting in regulating the volume of runoff from the catchment via transpiration. Riparian vegetation would also be assisting in decreasing the volume of sediment entering the system by actively capturing some of the ground surface sediments associated with surface runoff and by stabilising the banks of the estuary.

The lowest scores were associated with areas modified for human use, such as RARC 5 (22.75) and RARC 6 (22.5) associated with Boambee Creek Reserve. RARC 7 (29.75) located just upstream from the Boambee Creek Reserve and RARC 11 (31) upstream from the confluence of Boambee Creek and Newports Creek are also modified through past or present human activities. In many places, disturbances were the result of vehicular access in the form of four-wheel drives, car and motorbike tracks. Footpaths regularly used by humans were also evident in most of the sites surveyed. It is along these tracks and footpaths that weed species were observed, especially Giant Parramatta Grass, Lantana, Bitou Bush and Camphor Laurel. Lantana and Bitou Bush are listed as weeds of National Environmental Significance (NES). Noxious weeds are very invasive and are capable of reducing the habitat values of vegetation communities. At present, the distribution of noxious weeds is limited in the riparian vegetation of the estuary but to maintain the ecological integrity of these communities, these species will need to be controlled.



Coastal Saltmarsh (Endangered Ecological Community)

Table 3-3 Coastal Saltmarsh Condition Index and Health Rating

Saltmarsh ID	Saltmarsh Condition Index	Health Rating
SM1	66.67	Good
SM2	50	Poor to Average
SM3	50	Poor to Average
SM4	83.33	Very Good
SM5	66.67	Good
Estuary Average	63.33	Medium

The medium health rating of the coastal saltmarsh is indicative of past disturbances and the ever increasing encroachment of mangroves and development. The sediment and nitrogen processes that support the saltmarsh appear to be operating effectively as was indicated by the health of the vegetation surveyed and the lack of necrosis.

Mangrove Forests

Table 3-4 Mangrove Condition Index and Health Rating

Mangrove ID	Mangrove Condition Index	Health Rating
M1	60	Medium
M2	50	Poor to Average
M3	60	Medium
M4	70	Good
M5	100	Excellent
M6	100	Excellent
M7	70	Good
M8	60	Medium
M9	60	Medium
M10	70	Good
Estuary Average	70	Good

The distribution and good condition rating of the mangrove forests is indicative of effective nitrogen, hydrodynamic and sediment processes taking place within the estuary as these processes are fundamental to the health and condition of mangrove forests.



3.8.1.3 Seagrass Beds

Table 3-5 Seagrass Bed Condition Index and Health Rating

Seagrass ID	Seagrass Bed Condition Index	Health Rating
SG1	78.57	Very Good
SG2	78.57	Very Good
SG3	64.29	Medium
SG4	78.57	Very Good
SG5	78.57	Very Good
SG6	64.29	Medium
SG7	64.29	Medium
SG8	78.57	Very Good
Estuary Average	73.21	Good

The good health rating is indicative of effective hydrodynamic, nitrogen and sediment processes that provide the seagrass beds with nutrients, organic matter and good light penetration. However, if sediment loads were reduced, the seagrass beds may potentially occur further up the estuary and at greater depths than where they currently exist. In turn this would provide a greater abundance of habitat (nursery grounds) for juvenile, fish prawns and shellfish.

3.8.2 Fauna

The vegetation communities of the Boambee/Newports Estuary provide habitat for essential terrestrial and aquatic species. A five kilometre search of the NSW OEH, Bionet and EPBC database revealed that approximately 355 terrestrial and marine fauna species have been previously recorded in the Boambee/Newports Creek estuarine and terrestrial habitats. Of the 355 fauna species 41 are listed as threatened and 18 are exotic. This indicates a high level of biodiversity within the estuary.

Aquatic Invertebrates

An investigation into the benthic organisms of four sites within the Boambee/ Newports Estuary was undertaken by Sawtell (2002) in 1997 and 1999. A range of bivalve, amphipod, gastropod and polychaete species were recorded. The dominant species varied between sites and years. The dominant species in the lower estuary (Site 1) in 1997 was the bivalve *Tellina deltoidalis* and in 1999 it was the gastropod *Potamididae* family. In the mid estuary, Site 2 was dominated by amphipod species *Urohaustorid* while Site 3 was dominated by the bivalve *Tellina deltoidalis*. Site 4, located in the upper estuary, was dominated by polychaetes *Capitella capitata* and *Notomastus estuaries*.



Aquatic Fauna

Thirty six aquatic fauna species have been recorded in the Boambee/Newports Estuary area. This includes one threatened species. This high level of biodiversity can be attributed to the health and condition of the estuarine vegetation communities in particular the mangrove forests and seagrass beds that provide excellent habitat (nursery grounds) for juvenile, fish prawns and shellfish.

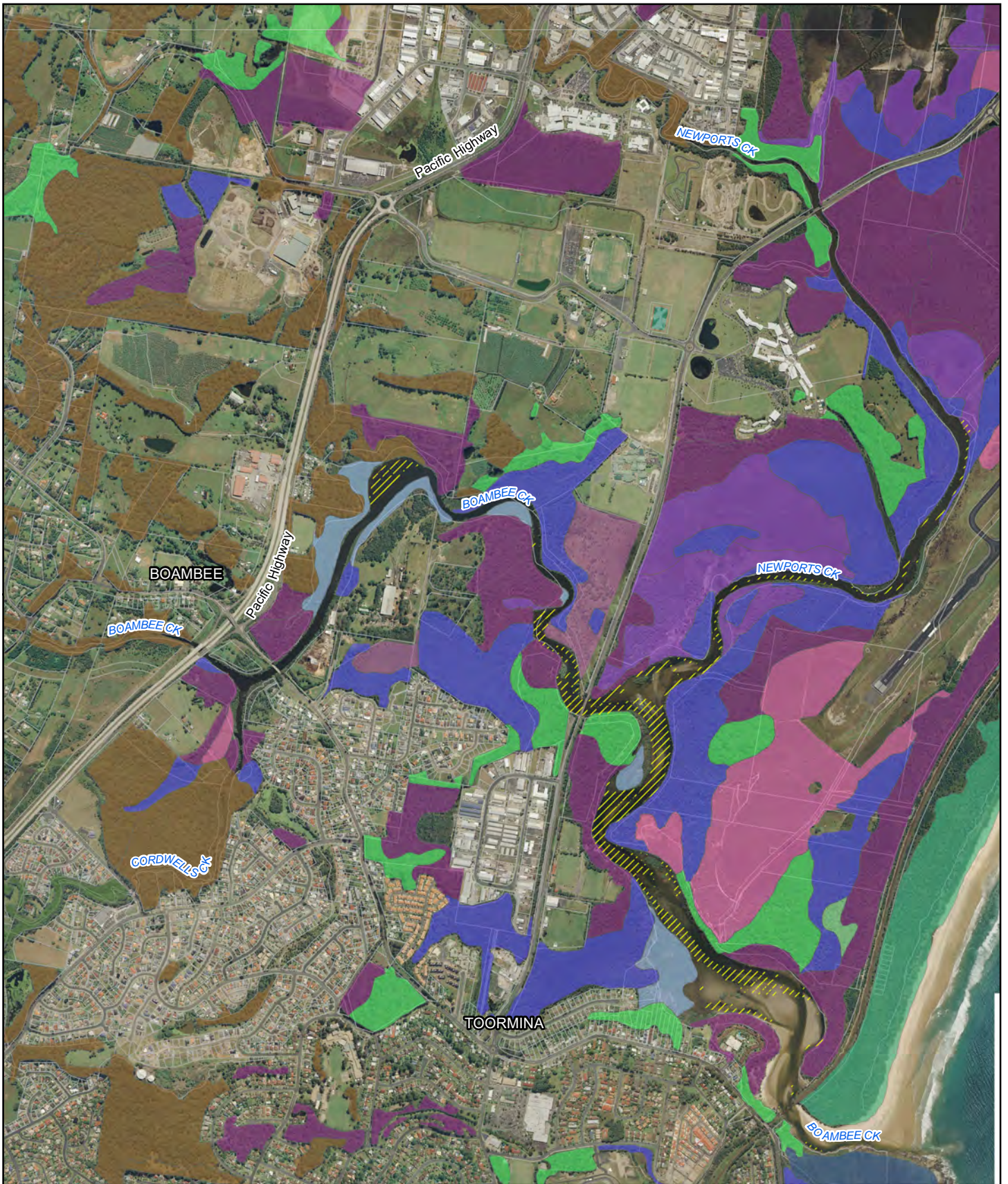
The threatened species considered likely to use the estuary is Black Cod (*Epinephelus daemeli*). Black Cod has been recorded from southern Queensland to Kangaroo Island in South Australia. In Australia it is found on coastal and offshore reefs and islands and is an aggressive territorial species that may occupy a particular cave for life. The rocky southern bank of the entrance of the estuary may provide suitable habitat for the Black Cod.

The estuary also supports numerous commercial and/or recreational fish species. The most common commercial and recreational fish species include Australian Bass, Bream, Flathead, Garfish, Leatherjacket, Ludrick, Mangrove Jack, Mullet, Mulloway, Octopus, Tailor, Trevally and Whiting.

Terrestrial Fauna Biodiversity

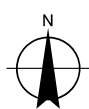
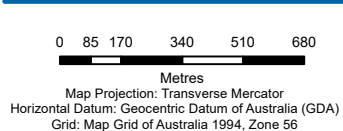
The vegetation communities provide habitat for a diverse range of species as indicated by the database search results. The OEH database search revealed 319 species including 18 amphibians, 216 birds, 57 mammals and 29 reptiles, of which 40 species are listed under the NSW Threatened Species Conservation Act (TSC Act). To view the complete list, please refer to Boambee/Newports Processes Study (GHD, 2010).

The overall condition and status of fauna has not been determined as it is not in the scope of this estuary management plan. However, the terrestrial habitat of the estuary will support the recovery of vulnerable species.



LEGEND

- | | | | | |
|---------------------------------|------------------------------|----------------------------|-----------------------------|------------------|
| Cadastre | Foredune Complex | Littoral Rainforest | Riparian Vegetation | Swamp forest |
| Seagrass | Headland heath and grassland | Mangrove/Saltmarsh Complex | Sedgeland/ Rushland Complex | Tall Open Forest |
| Heathland/ Shrubland Vegetation | Open Forest | Swamp Forest | Wet Heath | |



Coffs Harbour City Council
Boambee / Newports Estuary

Job Number 22-14220
Revision A
Date 15 Nov 2010

Riparian Vegetation Communities Figure 3-4

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 Data Source: Coffs Harbour City Council: Cadastre, Aerial & Vegetation Mapping - 2008. Created by: fmackay



3.9 Foreshore and Waterway Use

Foreshore and waterway use will provide direction on the management of the estuary. The most accessible area is the lower sections via Boambee Creek Reserve and the rail bridge. Boat ramps provide access to boats and various informal vehicle and walking tracks also exist along the banks of the estuary. To establish an understanding of the people using the estuary, what areas they use and what they use the estuary for, a survey of users was conducted.

Predictably, the survey indicated that the majority of the people using the estuary are from the local area. The survey also revealed that people of all ages used the estuary with most people using the estuary regularly. The most popular section of the estuary is the lower section that includes Boambee Creek Reserve and Boambee Beach.

As shown on Figure 3-4, the whole estuary is used for a variety of recreational activities, including:

- ▶ Swimming
- ▶ Fishing
- ▶ Snorkelling
- ▶ BBQs/Picnics
- ▶ Dog Exercising
- ▶ Relaxing
- ▶ Walking
- ▶ Boating/Kayaking.

3.9.1 Swimming/Snorkelling

Swimming and snorkelling is one of the most popular activities in the Boambee/Newports Estuary, especially in summer. The shallow, calm water created by the sand bank at the Boambee Creek Reserve is ideal for small children and families. The deeper section of the estuary from the rail bridge to the mouth is popular with older children and adults. This section is also a popular snorkelling location. Some spots in the mid estuary are also popular swimming locations.

3.9.2 Recreational Fishing

The Boambee Newports Creek Estuary offers a full range of fishing opportunities. Species such as bream, flathead, mangrove jack and whiting can be found in popular fishing spots such as east of the railway bridge and adjacent to Hogbin Drive. The estuary is also a good location to source bait such as nippers.

Many users employ boats or kayaks to fish along the estuary. Activity is highest during holiday periods such as the Christmas and Easter break. There are a number of fishing clubs in Coffs Harbour which utilise the estuary including the Sawtell Anglers Club and the Coffs Harbour Sportfishing Club.

3.9.3 BBQ's/Picnics

The Boambee Creek Reserve is a very popular location for BBQ's and picnics. The Reserve has numerous facilities including BBQ's, a children's playground and kiosk. It also provides safe swimming, fishing, snorkelling and other recreational opportunities. Some other locations along the estuary also appear to be regularly used for family picnics.



3.9.4 Dog Exercising

Boambee Beach is the only leash free beach in the area that is accessible. This makes it a magnet for dog owners. Many of the people surveyed who visited the estuary regularly were dog owners.

3.9.5 Relaxing

Many of the people surveyed commented on how relaxing the estuary is. It is a place they can visit to find some peace and quiet. The undeveloped appearance of the estuary also provides a pleasant outlook that gives the impression of being in nature.

3.9.6 Walking

Some of the people surveyed used the estuary for walking. A few short informal walking tracks exist along banks of the estuary but most people who use the estuary for walking, walk down to the mouth and along Boambee Beach.

3.9.7 Boating/Kayaking

The majority of boating activities within the estuary are related to fishing with only small to medium recreational fishing boats being used. There are three public boat ramps that are located at Boambee Creek Reserve, Hogbin Drive and Sawtell Road. Two private boat ramps exist along Boambee Creek and some informal boat access points were recorded along Cordwells Creek.

Non-motor water craft such as canoes, kayaks are also used frequently on the estuary.

It is predicted that Boambee/Newports Estuary will continue to be a popular location for foreshore and waterway use, with the number of people using the estuary likely to increase in line with the population of the area. The only factor potentially reducing the number of people using the estuary is a decrease in water quality, natural beauty, fish stocks or facilities.

3.10 Aboriginal Heritage

The study area is located within the Gumbayngirr land. The Gumbayngirr speaking people's territory traditionally extended over a wide area from the Clarence River to at least as far south as the Nambucca (Connell Wagner, 2004).

Today, throughout the catchment area, there are numerous Aboriginal sites, including artefacts, camp sites, stone flakes and ground-edge axes. These sites are representative of the close relationship that Aboriginal people had with the land itself and with the creatures of the land and the sea.

The AHIMS search dated 19 May 2009, has shown 58 Aboriginal objects and Aboriginal places in or near the catchment. All Aboriginal places and Aboriginal objects are protected under the National Parks and Wildlife Act 1974 (NPW Act).

Some items listed include middens near Boambee Creek and open camp sites near Newports Creek. Possible foreshore erosion at these sites in the estuary may damage Aboriginal middens.



3.10.1 Native Title Act 1993 (Commonwealth) and Aboriginal Land Rights Act 1983 (NSW) Considerations / Obligations

Where actions proposed on Crown Land consideration of Aboriginal Land Claims lodged under NSW *Aboriginal Land Rights Act 1983* will need to be undertaken. Any works will need to be compliant with the Commonwealth *Native Title Act 1993*

3.11 Non-Indigenous Heritage

Topography and the fact that the Coffs Harbour area did not support a major river were the principle reasons for the slow European settlement of the area. Settlement began with the discovery of rivers and creeks that provided access to the exploitable timber resources. Timber-cutter Walter Harvie is believed to be the first non-indigenous settler in the immediate Coffs Harbour District. During 1865-1866 he established a timber camp on Coffs Harbour Creek near the present showgrounds to draw cedar from the Red Hill area. The timber was floated downstream and dragged by bullock teams across the beach before being shipped to Sydney.

In the early 1880's, the first permanent residents arrived to take up land within the gazetted town reserves at Coffs Harbour. Settlement by Europeans increased in the 1880's, as settlers overflowed from the Bellinger and Clarence River districts. The construction of the jetty in 1892 gave a boost to the district's employment, leading to further growth within the harbour area.

Although settlers have occupied the land within the catchment since the early 1880's, most of the existing buildings are of more recent construction with no sites or places of acknowledged historic cultural heritage significance having been identified in the catchment area.



4. Estuary Values and Issues

4.1 Estuary Values

The Boambee/Newports Estuary is a small, relatively healthy estuary that has numerous values for the local community and environment. As shown by Figure 4-1, over 80% of the 144 community members surveyed consider the estuary very important or important. Many of the respondents who recorded a neutral or not important response were visitors to the area.

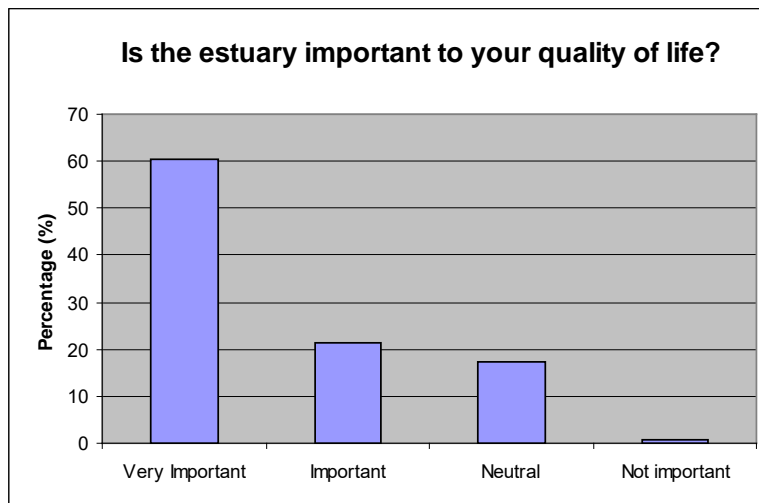


Figure 4-1 Estuary contribution to quality of life

The individual values of the Boambee/Newports Estuary that make it important to the community have been identified by CEMAC, the Processes Study (GHD, 2010) and the community. The results of the community survey are presented in Figure 4-2.

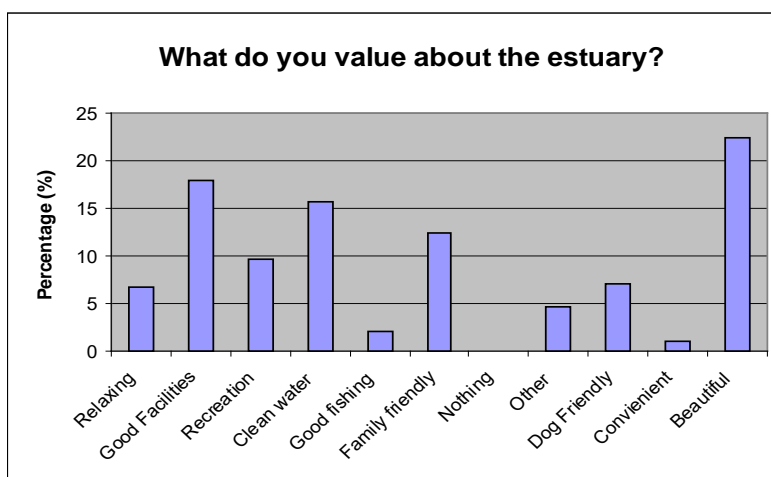


Figure 4-2 Estuary Values

As Figure 4-2 shows, the estuary is valued for various reasons. The most important values were its beauty, followed by the good facilities, clean water and family friendly environment.



Each of the identified values have been detailed in Table 4-1. The intention of the coastal zone management program is to protect these values.

Table 4-1 Estuary Values

Value	Description
Ecological Values	The Boambee/Newports Estuary has a rich ecological diversity that consists of riparian vegetation, salt marsh, mangrove forests, seagrass beds, mud/sand flats and rocky platform habitats. This provides valuable habitat for numerous important fauna species including thirty six aquatic species and 319 terrestrial species including 18 amphibians, 216 birds, 57 mammals and 29 reptiles, of which 40 are listed as threatened.
Scenic Value	Despite the development within the Boambee/Newports Estuary catchment, it still provides some valuable scenic qualities as indicated by the high percentage of users who consider the estuary beautiful, as shown in Figure 4-2. The most well known is the view from Boambee Headland along the lower section of the estuary with the catchment in the background. The relatively “natural” appearance of the area surrounding Boambee Creek Reserve is also highly valued. The limited development along the banks of the estuary also provides attractive views along its length.
Heritage Value	The Boambee/Newports Estuary has important heritage values because waterways, and water, have important spiritual and cultural significance for Aboriginal people. Waterways were important sources of food, such as waterfowl, turtles, fish, rhizomes, bulbs and roots, and they were also significant trade routes and camping sites. Of special significance are the stories of the serpent-like creatures that created many rivers and wetlands. Waterways became a focal point for explorers and settlers with many NSW towns located near them. Waterways supply first settlers with food and drinking water, irrigation for agriculture and water for aquaculture and horticulture.
Recreational Value	The proximity to a residential area and easy access make the Boambee/Newports Estuary a popular recreational location that provides a “sanctuary” from the urban environment. A survey of estuary uses revealed that people of all ages use the estuary regularly and its family friendly environment is one of its highest ranking values (see Figure 4-2), along with good facilities and clean water. The most popular section of the estuary is the lower section that includes Boambee Creek Reserve and Boambee Beach. The most popular activities include boating, fishing, swimming, snorkelling, BBQ’s, walking and dog exercising.
Socio-Economic Value	The ecological, scenic and recreational values of the Boambee/Newports Estuary all contribute to the socio-economic value of the area. The estuary adds to the desirability of the area as a tourist destination which is a major contributor to the local economy. The estuary also contributes to the local economy by being a valuable nursery for commercial and recreational fish species.



4.2 Estuary Issues

To tailor the management options, it is necessary to understand the issues facing the estuary. The issues in Table 4-2 have been identified by a combination of CEMAC input, the Processes Study (GHD, 2010) and community consultation. A survey of 144 estuary users has also been undertaken and provides some guidance on the issues facing the estuary. As shown by Figure 4-3, the majority of the community surveyed have no issues with the estuary which indicates the estuary is in good condition. Some issues raised include:

- ▶ Litter in the Boambee Creek Reserve
- ▶ Boambee Creek Reserve management (e.g. \$5 fee, night access, closed toilets, traffic)
- ▶ Boat ramps and fish cleaning tables need to be installed/repared
- ▶ Rail bridge needs repair and beautification
- ▶ Safety of people jumping off the rail bridge
- ▶ River netting.

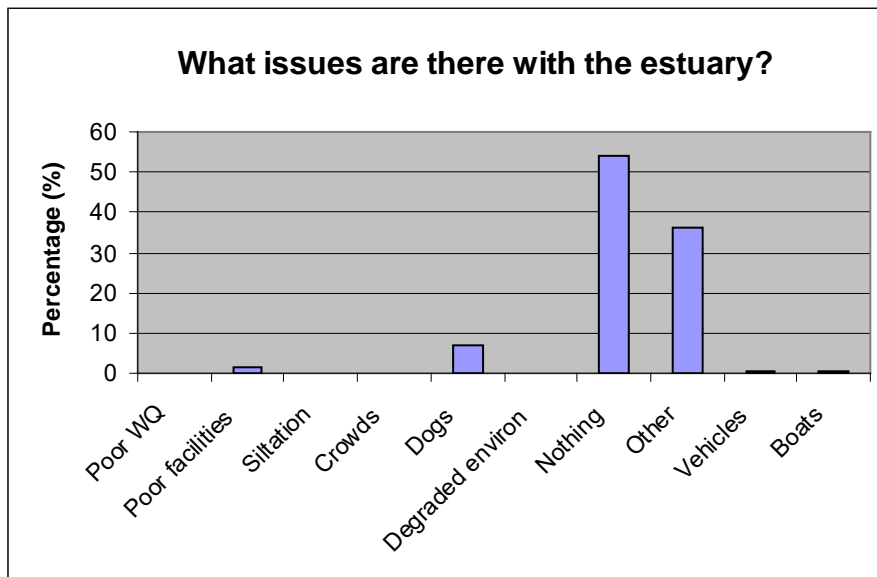


Figure 4-3 Estuary Issues



Table 4-2 Estuary Issues

Issue	Description
Ecological	<p>The vegetation within the Boambee/Newports Estuary is in relatively good condition; however large areas have been cleared in the past. Numerous vehicle access tracks have also been established within the vegetation on the northern bank between Hogbin Drive and the beach. Further clearing should be prevented to maintain and improve the existing situation.</p> <p>The areas of habitat are also susceptible to fire, especially those communities that are connected to large areas of vegetation.</p> <p>Weed invasion was observed within the riparian vegetation with increasing infestation further from the entrance. Weeds included listed noxious and environmental species. Introduced feral animals are also an issue because they compete with the native species.</p> <p>Climate change has the potential to significantly alter the biodiversity of the estuary. Predicted impacts of climate change on biodiversity include changes in species, disruption of the ecological equilibrium, migration of habitats and flooding of lower lying habitats. Boambee/Newports Estuary is vulnerable to these impacts, especially in the lower lying areas.</p>
Water Quality	<p>The agricultural, industrial and urban land uses within the Boambee/Newports Creek catchment are all likely to affect the water quality. Impacts include increased concentrations of bacteria, sediment, chemicals and heavy metals from septic tanks, sewer overflows, erosion from development sites, road runoff and industrial discharges. This is expected to continue or get worse as development continues unless effective mitigation measures are implemented.</p> <p>Chemical and fuel spills on roads also have the potential to impact on the estuary.</p> <p>Climate change is expected to influence water quality by altering freshwater runoff, increasing the penetration of saline water into the estuary and increased acidity.</p>
Bank Erosion and Sedimentation	<p>CHCC have identified siltation and bank erosion as issues, especially at Boambee Creek Reserve. The Processes Study (GHD, 2010) concluded that bank erosion and siltation have been relatively stable over the past 65 years but the rail bridge was possibly a cause of siltation upstream. Bed and bank scour in the upper reaches of the catchment was also identified to be contributing to the sedimentation of the estuary.</p> <p>An increase in sea level and the variable rainfall anticipated as a result of climate change is expected to have an impact on bank erosion and sedimentation. It is likely the increased urban development in the upper catchment (e.g. North Boambee) is expected to increase the flow volume and velocity which could</p>



Issue	Description
	also contribute to bank erosion and sedimentation.
Social	<p>A number of social issues were identified during the community survey. The conflict with dogs and dog waste on Boambee Beach was a concern raised by many estuary users. However, the dog friendly beach was also an important value expressed by many of the estuary users.</p> <p>The Boambee Creek Reserve fee was also an issue raised by many of the estuary users surveyed, as was the interaction of pedestrians and cars in the reserve.</p> <p>Some estuary users raised the issue of fish numbers and commercial fishing. The poor quality of the facilities at the boat ramps was also mentioned.</p>
Heritage	<p>The Boambee/Newports Estuary has some important heritage sites and values that need to be protected and conserved. Many of these features are unknown to the general community and this could be contributing to their degradation.</p>
Scenic	<p>One of the most important values of the estuary identified during the community survey was its scenic value. An issue identified during the community survey that currently detracts from the scenic value of the estuary is the derelict nature of the rail bridge.</p> <p>Impacts on the natural beauty of the area also significantly affect the scenic values of the estuary.</p>
Estuarine Management	<p>Within the catchment there are various private and government land owners and stakeholders that all have different opinions, values and processes in regards to the management of the area. This has the potential to create conflict and delays in implementing appropriate measures for the conservation of the estuary.</p>



5. Management Objectives

To protect the identified values and address the identified issues of the estuary, a suite of management objectives have been developed. The eleven management objectives have been divided into the seven broad issues identified in Table 5-1. The overarching aim of the objectives is to protect and conserve the environmental, social and economic values of the Boambee/Newports Estuary.

Table 5-1 Management Objectives

Issues	Objective
Ecological	<ul style="list-style-type: none"> ▶ To conserve and enhance the ecological values of the estuary, especially the threatened species and habitats. ▶ Accommodate the impacts of climate change on the ecological, social and economic values of the estuary.
Water Quality	<ul style="list-style-type: none"> ▶ Ensure water quality is suitable for aquatic ecosystems and primary recreation purposes during normal flow conditions.
Bank Erosion and Sedimentation	<ul style="list-style-type: none"> ▶ Maintain bank erosion and sedimentation so that it is consistent with the natural processes. ▶ Maintain natural flow volumes and velocities.
Social	<ul style="list-style-type: none"> ▶ Maintain and encourage appropriate recreational uses of the estuary. ▶ Increase the community's knowledge and appreciation of the values of the estuary.
Heritage	<ul style="list-style-type: none"> ▶ Protect and raise the community awareness of the heritage values of the estuary.
Scenic	<ul style="list-style-type: none"> ▶ Maintain and enhance the scenic qualities of the Boambee/Newports estuary.
Estuarine Management	<ul style="list-style-type: none"> ▶ Encourage the cooperative management of the estuary and its catchment. ▶ Establish a complete knowledge base and monitor and review.

5.1 Ranking Objectives

The above management objectives have been ranked to assist with prioritising management strategies. The management objectives were ranked either high, medium-high or medium. The ranking was based on a qualitative assessment following the community survey and Processes Study (GHD, 2010). The rankings were then discussed with CEMAC to ensure they accurately represented the views of the relevant stakeholders.



As shown in Table 5-2, the management objectives ranked high generally consisted of those that pertained to the natural assets of the estuary but also to the protection of the water quality so that it is suitable for recreational use.

Table 5-2 Objectives Rank

Rank	Objective
High	To conserve and enhance the ecological values of the estuary.
	Water quality should be suitable for aquatic ecosystems and primary recreation purposes during normal flow conditions.
Medium-High	Bank erosion and sedimentation should be consistent with the natural processes.
	Maintain natural flow volumes and velocities.
	Protect and raise the community awareness of the heritage values of the estuary.
	Maintain and encourage appropriate recreational uses of the estuary.
	Maintain and enhance the scenic qualities of the Boambee/Newports Estuary.
	Increase the communities knowledge and appreciation of the values of the estuary.
Medium	Accommodate the impacts of climate change on the ecological, social and economic values of the estuary.
	Encourage the cooperative management of the estuary and its catchment.
	Establish a complete knowledge base and monitor and review.



6. Management Strategies

6.1 Management Strategies

To address the identified estuary values, issues and management objectives, a series of 30 management strategies were developed with consideration of the results of the community survey, shown in Figure 6-1 and in consultation with members of CEMAC. As Figure 6-1 suggests, the local community are satisfied with the current conditions of the Boambee/Newports Estuary. Some suggested improvements included:

- ▶ Provide fish cleaning facilities at boat ramps
- ▶ Dredge Boambee Creek Reserve swimming area
- ▶ Cleaning up rubbish
- ▶ Improving Boambee Creek Reserve
- ▶ Provide facilities for older children
- ▶ Provide facilities at other popular recreational areas along the estuary.

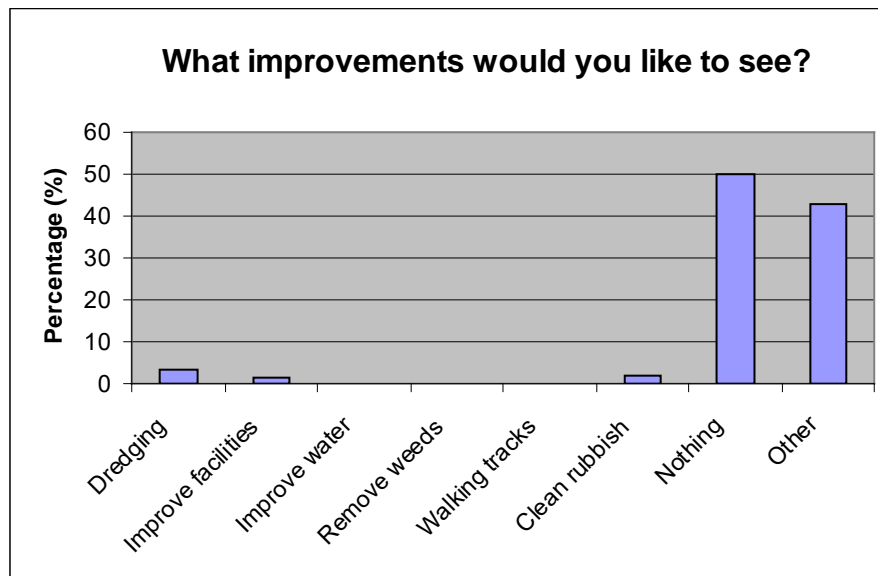


Figure 6-1 Community Suggested Improvements to the Boambee/Newports Estuary

6.2 Ecological Management Strategies

E2: Initiate and Continue Bush Regeneration Programs

The riparian vegetation throughout the estuary is in reasonably good condition however there are some weeds present. Increasing pressure is likely to be placed on these areas as development in the catchment increases and the frequency of bushfire increases. Some vegetation management occurs in the airport lands and State Park but these programs could be assisted and expanded if a bush regeneration program is established. This could be undertaken by CHCC or a Landcare/Rivercare Group established with the support of CHCC and/or the



North Coast Local Land Services. In developing the bush regeneration programs the risk of bushfire needs to be considered.

E3: Establish a Vegetation Buffer

The riparian vegetation along the estuary is in reasonable condition and, in most areas, is reasonably wide considering the development in the catchment. This vegetation corridor along the estuary provides a valuable refuge for local fauna species. It also provides an area for various plant species and communities to reside. It may also provide the communities to migrate in response to the impacts of climate change. Some of the species that benefit from this riparian corridor are threatened, so it is important that they are conserved. Riparian vegetation also provides a buffer to halt or filter material entering the waterway. To do this, it is recommended that a buffer on both sides of the estuary be established, rezoned to environmental protection and revegetated, where practical.

E4: Educate the Community about Protecting Estuarine Communities

To help protect the natural assets of the estuary, especially the threatened species, it is recommended that a community education campaign about the natural assets of the estuary be developed and implemented. If the community become more aware of the natural assets of the estuary, they will be more likely to take an interest in protecting them. Initiatives could include interpretive signage, creek walks, Boambee Creek festival, newspaper articles, etc.

E5: Initiate Pest Control of Feral Animals

Feral animals can compete with native animals, cause erosion and spread disease. The feral animals reported in the Boambee/Newports catchment include pigs, foxes, Indian miners, cats, dogs and cane toads. To prevent the impacts associated with these pests, it is recommended that the actions in the Vertebrate Pest Management Strategy (CHCC, 2009) be implemented within the catchment. The community could also be encouraged to control pests and feral animals.

E6: Investigate Making a Section of the Estuary a Sanctuary Zone or Aquatic Reserve

The Boambee/Newports Estuary is an important nursery for many valuable marine species. It is also a popular fishing spot. To protect the marine species the estuary supports, it is recommended that a section of the estuary is reserved from fishing or bait collection by making it a sanctuary zone, aquatic reserve or similar. A suitable area may be Newports Creek because it has limited access but has a range of habitats. This strategy may receive some resistance from the community but similar sanctuary zones or reserves have been established which could be used as an example of how it could work.

E7: Stock the Estuary with Valuable Commercial and Recreational Species

The Boambee/Newports Estuary is an important nursery for many marine species that are valued by both recreational and commercial fishing. To improve the value of the estuary to both these industries, it is recommended that the viability of stocking the estuary with valuable commercial and recreational species be investigated. Fisheries are currently in the process of obtaining approval for a stocking program and it would be worth investigating if the Boambee/Newports Estuary could be included in the program.



6.3 Water Quality Management Strategies

WQ1: Expand the Current Water Quality Monitoring Program to Align to the Parameters of the Ecohealth Program Consistent with the NSW State Government’s Monitoring and Evaluation Reporting (MER) Guidelines for Estuaries

Currently, the water quality program is focused on human health indicators at popular swimming locations. The Processes Study (GHD, 2010) and other previous assessments (Sawtell, 2002; West et al, 1984) have established a baseline condition for the riparian, mangrove, saltmarsh and seagrass communities. It is recommended that the monitoring program be expanded to the parameters of the Ecohealth program to ensure consistency across the LGA in monitoring and reporting.

Continuing under the Ecohealth monitoring program would provide the benefit of being able to monitor a number of physical, chemical and biological indicators to determine aquatic ecosystem health in the Boambee and Newports estuaries. The information provided would be valuable in measuring the health of the estuary and developing short, medium and long term adaptive and prioritised management responses as well as determining the effectiveness of current and future management actions. Adopting the Ecohealth program is expected to streamline the initial research and development of the monitoring program by expanding on previous and existing monitoring programs undertaken in the past.

WQ2: Removal of Rubbish

During the Processes Study (GHD, 2010) deposits of litter were observed in the mangrove forests and riparian areas of the upper tidal limits. To prevent the litter being washed into the estuary, polluting the water and possibly endangering marine life, it is recommended that the rubbish be removed. It is recommended that these areas be inspected and rubbish removed at least annually. It may be possible to make these sites a “feature” site to be cleaned up during Clean-Up Australia Day.





Photograph 1: Litter in mangrove forests

WQ3: WSUD Policy

Major development is proposed for the Boambee catchment and if water runoff is not controlled, this could have a significant impact on the estuary. Impacts could include increased stormwater volume, velocity and pollutant loads entering the estuary. To minimise these impacts, it is recommended that the existing Water Sensitive Urban Design Policy (CHCC, 2009) continue to be enforced throughout the catchment.

WQ4: Regular On-site Wastewater Systems Inspection

Many of the dwellings in the rural areas west of the highway rely on on-site wastewater systems, such as septic tanks, to treat and dispose of their sewage. Some of these wastewater systems are also located close to creeks and drainage lines and if the on-site systems are not maintained correctly they have the potential to result in increased nutrients and bacterial pollution of the estuary. On-site wastewater systems are unlikely to cause problems providing they are designed, operated and maintained correctly. To ensure this occurs, CHCC has a regular monitoring program. It is recommended that this continues with an emphasis on those located near creeks or drainage lines.

WQ5: Upgrade Stormwater Controls in Existing Urban Areas

Urbanisation of an area can impact on an estuary by increasing stormwater volume, velocity and pollutant loads. Ideally, measures are implemented during the development of an area to minimise these impacts, but actions can still be taken in established urban areas, although they can be expensive. Approximately 38% of the catchment has been developed and the stormwater from these areas is likely to be impacting the estuary. To minimise these impacts, it is recommended that a range of engineering and educational actions be implemented in these established urban areas. Actions may include implementing water sensitive urban design (WSUD) strategies and facilities and public education campaigns, etc.

WQ6: Undertake an Environmental Audit

A number of industrial businesses and large land holdings exist within the Boambee/Newports Estuary. Some are located close to the banks of the estuary and have been in operation for a long period of time. There is the potential for these to have an impact on the estuary from runoff with contamination, litter, nutrients, etc. An environmental audit of these sites would provide an opportunity to identify improvements for these businesses and reduce the impact they may be having on the estuary. CHCC could assist the implementation of the improvements identified by sourcing funding and/or developing partnerships with the businesses.

WQ7: Educate the Community to Limit the Amount of Pesticides and Nutrients Used

Pesticides and nutrients can have toxic effects on an estuary and its ecosystems. The source of these chemicals can be urban gardens, golf courses, large commercial gardens and agricultural lands. The Boambee/Newports creek catchment has all these land uses. Although no detailed information indicating any are creating a problem in the catchment exists, it is recommended that the community is reminded of the potential impacts and what they can do to reduce the amount of pesticides and nutrients used. A focus should be on those land uses that have the potential to have the greatest impact e.g. golf courses, agriculture.



WQ8: Install and Maintain the Sewerage System

The sewerage system transports sewage throughout the catchment to the treatment works. When working, this causes no problem to the estuary, however, if there is a leak or the system is overloaded, raw sewage can be discharged into the estuary. Raw sewage contains high nutrient and faecal loads that can significantly alter the water quality of the estuary. The spills should be investigated and monitored to identify the cause and impacts. This information could then be used to upgrade the system to reduce the number of future impacts. To minimise the potential of sewage entering the estuary it is also recommended that the sewerage system be appropriately designed, constructed and regularly maintained.

6.4 Bank Erosion and Sedimentation Strategies

ER1: Monitor Erosion

The Processes Study (GHD, 2010) identified an issue with erosion in the upper reaches of the catchment being washed into the estuary and creating shoals. Some areas of moderate erosion were also identified within the estuary. Ferguson, et al (1999) in their assessment of river styles also classed the Boambee and Caldwell's Creeks as degraded with a high recovery potential. A comprehensive assessment of the upper catchment should be undertaken to identify areas of erosion. Sites could then be prioritised and landholders encouraged to stabilise problem areas via funding. Erosion within the estuary should also be monitored each year and after large storm events to check that there is no deterioration. If erosion is worsening, environmentally and visually sympathetic stabilisation works should be implemented.



Photograph 2: Bank Erosion

ER2: Encourage the Community to Control Erosion

Erosion from the upper catchment was identified as an issue in the Processes Study (GHD, 2010) and by Ferguson (1999). With the planned future development of North Boambee Valley, sediment and erosion control from development sites is also likely to cause an issue. To



minimise these impacts, the community and specific industries (e.g. agriculture and construction) should be encouraged to implement appropriate controls to stabilise gullies, areas of erosion and unprotected slopes.



Photograph 3: Erosion in upper Cordwells Creek

ER3: Investigate Lengthening the Rail Bridge

The Processes Study (GHD, 2010) indicated that the rail bridge has created a pinch point in the estuary that restricts flows and causes sedimentation of the area directly upstream. This sedimentation is an issue at Boambee Creek Reserve because it silts up the popular swimming area and requires dredging. Although a detailed assessment would be required to confirm the impact, it is suggested that the rail bridge could be extended to alleviate the problem. This strategy may provide some benefit to the estuary but would be expensive, involve many stakeholders and involve a lengthy approval process.

6.5 Social Strategies

S1: Ambassadors Program

To raise the community's interest, knowledge and understanding of the estuary, it is recommended that a Boambee/Newports Estuary walk be included in the Ambassadors Program. Similar to the popular Hearn's Lake, Woolgoolga Lake, Coffs Creek and Moonee Creek walks, a Boambee/Newports Estuary walk could educate the community on the diverse plants and animals within the estuary, the bush tucker and the impacts of development on this vital natural resource. The major limitation for an Ambassadors walk is the absence of a suitable, rubbish-free walking track with raised boardwalks.

S2: Establish a Creek Walk

The Boambee/Newports Estuary still has some relatively natural areas. To promote the value of the estuary, provide a passive recreational outlet and educate the community, it is recommended that a creek walk be established. Ideally the walk would enter various habitats and have interpretive signage that explains the natural and cultural features of the estuary. The Coffs Creek walk provides a good example. This strategy could support the proposed State



Park walk or the walk proposed by the Coffs Harbour Education Campus. Another area where a walk could be established is the wetland west of the Pacific Highway or along the southern bank of the estuary from Boambee Creek Reserve to Hogbin Drive Bridge.

S3: Formalise Access Tracks and Areas of Recreation

The Boambee/Newports Estuary is a popular area for various recreational pursuits including fishing, walking, swimming, four-wheel driving, camping and picnicking. In some locations these activities are causing erosion, gathering litter and damaging vegetation. To limit this damage, it is recommended that these areas either be formalised or closed to the public. The four-wheel drive tracks should be closed to the public because it appears that some areas of salt marsh are being impacted by four wheel drives going off the tracks. Likewise, there are some areas where numerous access tracks have been established and these could be rationalised and the ones no longer required revegetated. The other areas would require various measures, such as bank stabilisation (possibly in association with steps into the water), established access paths and/or roads/carparks, fencing, bins and picnic tables.



Photograph 4: Erosion caused by Bank Access

S4: Educate and Enforce Dog Hygiene

One of the controversial issues identified during the community survey was the attitude of people towards dog access to Boambee Beach. The main issue expressed in regards to dog access was owners who did not clean up after their dog. To address this issue, it is recommended that an education campaign be developed and implemented for dog owners who use Boambee Beach. This could be followed by an enforcement campaign that reinforces the message.



S5: Provide Recycling Bins in Boambee Creek Reserve and Boat Ramps

Bins are located in many of the established recreational areas and the area is usually fairly clear of litter, however, there are no recycling facilities. Now that CHCC has an established recycling service and most of the community are familiar with the practise, it is recommended that recycling bins be placed in all the established recreational areas e.g. Boambee Creek Reserve and boat ramps.

S6: Upgrade and Maintain Hogbin Drive Boat Ramps

Boambee/Newports Estuary is a popular recreational area for fishing, kayaks and boating. The main boat ramp is located adjacent to Hogbin Drive. Currently the facilities at this boat ramp are limited and the depth of water at low tide is insufficient to launch boats. To provide better facilities to users of the estuary, the boat ramp could be improved by the construction of fish cleaning tables and investigating dredging the area at the end of the boat ramp.



Photograph 5: Hogbin Drive Boat Ramp

S7: Investigate Holding Events at Boambee Creek Reserve

Events could be held at Boambee Creek Reserve to raise the profile of the Boambee/Newports Estuary and also provide an opportunity to educate the community on the values of the estuary. An event could also provide a social opportunity for the local community.

S8: Provide a Pontoon at Boambee Creek Reserve

An issue raised during the community survey was the lack of activities at Boambee Creek Reserve for older kids. A suggestion was to provide a pontoon or something similar that would provide something for the older kids to enjoy. This strategy would need to be considered carefully in regards to safety and how the pontoon is secured, especially during flood events.



6.6 Heritage Strategies

H1: Educate the Community on the Heritage Value of the Estuary

Estuaries were an important source of food and recreation for aboriginal people. They were also regularly used by European settlers. Providing interpretive signage that explains this heritage in popular areas along the estuary (e.g. Boambee Creek Reserve, Boat Ramps) would teach the community the value of the estuary to current and past generations.

6.7 Scenic Strategies

SC1: Enhance the Appearance of the Rail Bridge

The rail bridge crosses the Boambee/Newports Estuary between the entrance and Boambee Creek Reserve. This is the most popular area of the estuary and the appearance of the old, rusted rail bridge detracts from the aesthetic appeal of the area. To enhance the area, the bridge could be painted by local artists with an image that reflects the location e.g. a marine scene of the Solitary Island Marine Park with whales, dolphins, turtles, coral, etc.



Photograph 6: Rail Bridge

6.8 Estuarine Management Strategies

MGT 1: Improve Management of Boambee Creek Park Reserve

Boambee Creek Reserve is the most popular area within the estuary however there was a few issues raised in regards to the management of the Reserve. The main issue that visitors complained about was the entrance fee. Other issues included the dredging of the swimming area and the interaction of cars and pedestrians. The Reserve is the responsibility of the NSW Crown Holiday Parks Trust (NSWCHPT). An *Improvement and Management Strategy for the Boambee Creek Park Reserve* (ISD, 2007) has been developed. The Strategy identifies several



actions that could be implemented to improve the management of the reserve. The Trust have undertaken works in the reserve over the last 3-4 years to generally improve public facilities and the viability of the caretaker/kiosk arrangement to adequately cater for current needs. Improvements include:

- ▶ Widening of the access road
- ▶ Separate pedestrian access into the reserve
- ▶ New covered deck adjacent to kiosk
- ▶ New childrens playground
- ▶ New roofs to bbq shelters and bbqs
- ▶ Creek bank stabilisation
- ▶ Weed control and vegetation management

This action encourages the Trust to complete the implementation of the Strategy and to consider the issues raised in relation to the Boambee Creek Reserve during the preparation of this Plan.

MGT 2: Purchase Land to Include in the Coffs State Park

Adjacent to the Boambee/Newports Estuary there are a number of privately owned landholdings e.g. Isles Drive wetland. Some of these holdings are flood prone and also contain important vegetation communities. To protect these communities and assist in establishing a habitat corridor along the estuary, these holdings could be considered if the land became available to be purchased and included in the Coffs State Park.

6.9 Assessment of Management Strategies

The management strategies detailed in Table 6-1 were assessed based on how they achieved the objectives, how practical they were to implement and if they would be acceptable to the community. The sum of these three considerations provided a total score, with the Strategies then sorted from those with the highest total (i.e. highest priority) to those with the lowest (i.e. lowest priority). The draft scores were subsequently refined through discussion with CEMAC members.

How each strategy achieved the objectives is referred to as “Need”. The Need of each strategy was determined by ranking the effectiveness (i.e. 1 = High, 2 = Medium or 3 = Low) of the strategy in addressing each of the management objectives and then totalling the score. The total Need score for each strategy was then divided by 11 (the number of objectives) so it would have the same weight as the other factors in the total score.

Cost, approval process and timeframe were considered when determining how practical each strategy would be. This was termed “Achievable” and ranked either 1 = Major Constraints, 2 = Medium Constraints or 3 = Minor Constraints.

“Acceptance” is the term given to how acceptable each strategy would be to the community. Acceptance was ranked from 1 = Minimal Support, 2 = Medium Support and 3 = Major Support.



Table 6-1 Management Strategy Ranking

Code	Management Strategy	Need	Achievable	Acceptance	Total	Rank
WQ1	Expand the Current Water Quality Monitoring Program to Align to the Parameters of the Ecohealth Program Consistent with the NSW State Government's Monitoring and Evaluation Reporting (MIER) Guidelines for Estuaries	2.2	2	3	7.2	1
WQ2	Remove the Rubbish	1.4	2.5	3	6.9	2
S1	Ambassadors Program	1.7	2	3	6.7	3
S2	Establish a Creek Walk	1.7	2	3	6.7	4
WQ3	WSUD Policy	2.7	2.5	1.5	6.7	5
WQ4	Regular Inspection of On-site Wastewater Systems	1.2	2.5	3	6.7	6
E1	Monitor Biological Indicators (Merged into WQ1)	1.6	2	3	6.6	7
S3	Formalise Access Tracks and Areas of Recreation	1.9	2	2.5	6.4	8
E2	Initiate and Continue Bush Regeneration Programs	1.4	2	3	6.4	9
WQ5	Upgrade Stormwater Controls in Existing Urban Areas	2.8	1	2.5	6.3	10
H1	Educate the Community on the Heritage Value of the Estuary	0.8	2.5	3	6.3	11
E3	Establish a Vegetation Buffer	2.7	2	1.5	6.2	12
S4	Educate and Enforce Dog Hygiene	1.2	3	2	6.2	13
S5	Provide Recycling Bins in Boambee Creek Reserve and Boat Ramps	0.6	2.5	3	6.1	14
E4	Educate the Community about Estuarine Communities	1.1	2	3	6.1	15
ER1	Monitor Erosion	2.0	2	2	6.0	16
MGT1	Improve Management of Boambee Creek Park Reserve	1.3	2	2.5	5.8	17
WQ6	Undertake an Environmental Audit	1.7	2	2	5.7	18



Code	Management Strategy	Need	Achievable	Acceptance	Total	Rank
S6	Upgrade and Maintain Hogbin Drive	0.7	2	3	5.7	19
WQ7	Educate the Community to Limit the Amount of Pesticides and Nutrients Used	1.5	2	2	5.5	20
ER2	Encourage the Community to Control Erosion	1.5	2	2	5.5	21
E5	Initiate Pest Control of Feral Animals	1.0	2	2.5	5.5	22
E6	Investigate Making a Section of the Estuary a Sanctuary Zone or Reserve	2.3	1.5	1.5	5.3	23
E7	Stock the Estuary with Valuable Commercial and Recreational Species	0.7	1.5	3	5.2	24
S7	Investigate Holding Events at Boambee Creek Reserve	0.7	2	2.5	5.2	25
SC1	Enhance the Appearance of the Rail Bridge	0.6	1.5	3	5.1	26
WQ8	Install and Maintain the Sewerage System	1.0	1	3	5.0	27
MGT2	Purchase Land to Include in the Coffs State Park	1.8	1	2	4.8	28
S8	Provide a Pontoon at Boambee Creek Reserve	0.4	2	2	4.4	29
ER3	Investigate Lengthening the Rail Bridge	1.7	0.5	2	4.2	30

Need Rank: 1 = Low; 2 = Medium; 3 = High

Achievability: 1 = Major Constraints; 2 = Moderate Constraints; 3 = Minor Constraints

Acceptance: 1 = Minimal Support; 2 = Moderate Support; 3 = Major Support



7. Description of Preferred Management Strategies

The 20 highest ranking options have been selected as the preferred management strategies for implementation within the period of this plan. Each of the management strategies has been described in detail to provide a clear understanding of what the management strategy is aiming to achieve, why it is being implemented, the actions involved in its implementation, what objectives it addresses, its priority, the other relevant strategies, indicative costs, funding opportunities, responsibility, timing and indicators.



Strategy WQ1: Expand the Current Water Quality Monitoring Program to Align to the Parameters of the Ecohealth Program Consistent with the NSW State Government's Monitoring and Evaluation Reporting (MER) Guidelines for Estuaries

Priority: Very High

Currently, the water quality program is focused on human health indicators at popular swimming locations. The Processes Study (GHD, 2010) and other previous assessments (Sawtell, 2002; West et al, 1984) have established a baseline condition for the riparian, mangrove, saltmarsh and seagrass communities. It is recommended that the monitoring program consistent with the NSW State government's MER guidelines for estuaries be expanded to the parameters of the Ecohealth program to ensure uniformity across the LGA in monitoring and reporting.

Continuing under the Ecohealth monitoring program would provide the benefit of being able to monitor a number of physical, chemical and biological indicators to determine aquatic ecosystem health in the Boambee and Newport estuaries. The information provided would be valuable in measuring the health of the estuary and developing short, medium and long term adaptive and prioritised management responses as well as determining the effectiveness of current and future management actions. Adopting the Ecohealth program is expected to streamline the initial research and development of the monitoring program by expanding on previous and existing monitoring programs undertaken in the past.

Implementation Details

Relevant Objectives	1, 2, 7, 8, 9, 10, 11	Actions
Responsibility	CHCC, OEH	<ul style="list-style-type: none"> ▶ Financially support the ongoing management of the Ecohealth program consistent with the State's MER guidelines for estuaries. ▶ Monitor, data collection, and reporting as outlined by the Ecohealth monitoring program. ▶ Review management priorities and opportunities for CZMP implementation in accordance with recommendations derived from the monitoring program.
Related Strategy	WQ3, WQ4, WQ5, WQ6	
Cost Estimate	\$10,000-\$50,000/yr	
Funding Options	Environmental Levy	
Timing	2011 – Ongoing	
Indicators	<ul style="list-style-type: none"> ▶ Water Quality Protocol ▶ Database ▶ Established Program 	



Strategy WQ2: Remove the Rubbish

Priority: Very High

During the Processes Study (GHD, 2010) deposits of litter were observed in the mangrove forests and riparian areas of the upper tidal limits, as shown in Figure 7-1. To prevent the litter being washed into the estuary, polluting the water and possibly endangering marine life, it is recommended that the rubbish be removed. The easiest way to access many of these sites is likely to be via boat. It is recommended that these areas be inspected and rubbish removed at least annually. It may be possible to make these sites a “feature” site to be cleaned up during Clean Up Australia day.

Implementation Details	
Relevant Objectives	1, 2, 7, 8
Responsibility	CHCC
Related Strategy	WQ5
Cost Estimate	\$1,000 - \$10,000/yr (depending on who and when the works are undertaken)
Funding Options	Environmental Levy
Timing	2011 – Ongoing
Indicators	<ul style="list-style-type: none"> ▶ Tonnes of Rubbish Removed ▶ Number of Areas Cleaned
Actions	<ul style="list-style-type: none"> ▶ Identify priority sites. ▶ Identify source of rubbish pollution. ▶ Determine if the clean-up will be Council or community based. ▶ Organise participants. ▶ Undertake the works. ▶ Record the amount and type of rubbish removed. ▶ Dispose of rubbish appropriately.



LEGEND

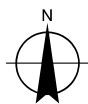
- Catchments
- Cadastre
- Location of Rubbish

1:25,000 (at A4)

0 125 250 500 750 1,000

Metres

Map Projection: Transverse Mercator
Horizontal Datum: Geocentric Datum of Australia (GDA)
Grid: Map Grid of Australia 1994, Zone 56



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Boambee / Newport's Estuary

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Location of Rubbish

Figure 7-1



Strategy S1: Ambassadors Program

Priority: Very High

To raise the community's interest, knowledge and understanding of the estuary, it is recommended that a Boambee/Newports Estuary Walk be included in the Ambassadors program. Similar to the popular Hearn's Lake, Woolgoolga Lake, Coffs Creek and Moonee Creek walks, a Boambee/Newports Estuary walk could educate the community on the diverse plants and animals within the estuary, the bush tucker and the impacts of development on this vital natural resource. The major limitation for an Ambassadors walk is the absence of a suitable, rubbish-free walking track with raised boardwalks.

Implementation Details

Relevant Objectives	1, 5, 6, 7, 8	Actions
Responsibility	CHCC	<ul style="list-style-type: none"> ▶ Identify a suitable Ambassador. ▶ Organise the walk. Try to include information on the natural and cultural features of the estuary. ▶ Promote the walk through the CHCC Ambassadors program. ▶ Hold the walk. ▶ Get feedback from participants (user survey) on what they like and dislike about the walk to use in improving the walk.
Related Strategy	S2, H1, E4	
Cost Estimate	\$1,000	
Funding Options	Environmental Levy, Environmental Education Grants	
Timing	Subject to grant funding availability	
Indicators	<ul style="list-style-type: none"> ▶ Number of Ambassador Walks Held ▶ Number of Participants on the Walks ▶ Walk Feedback 	



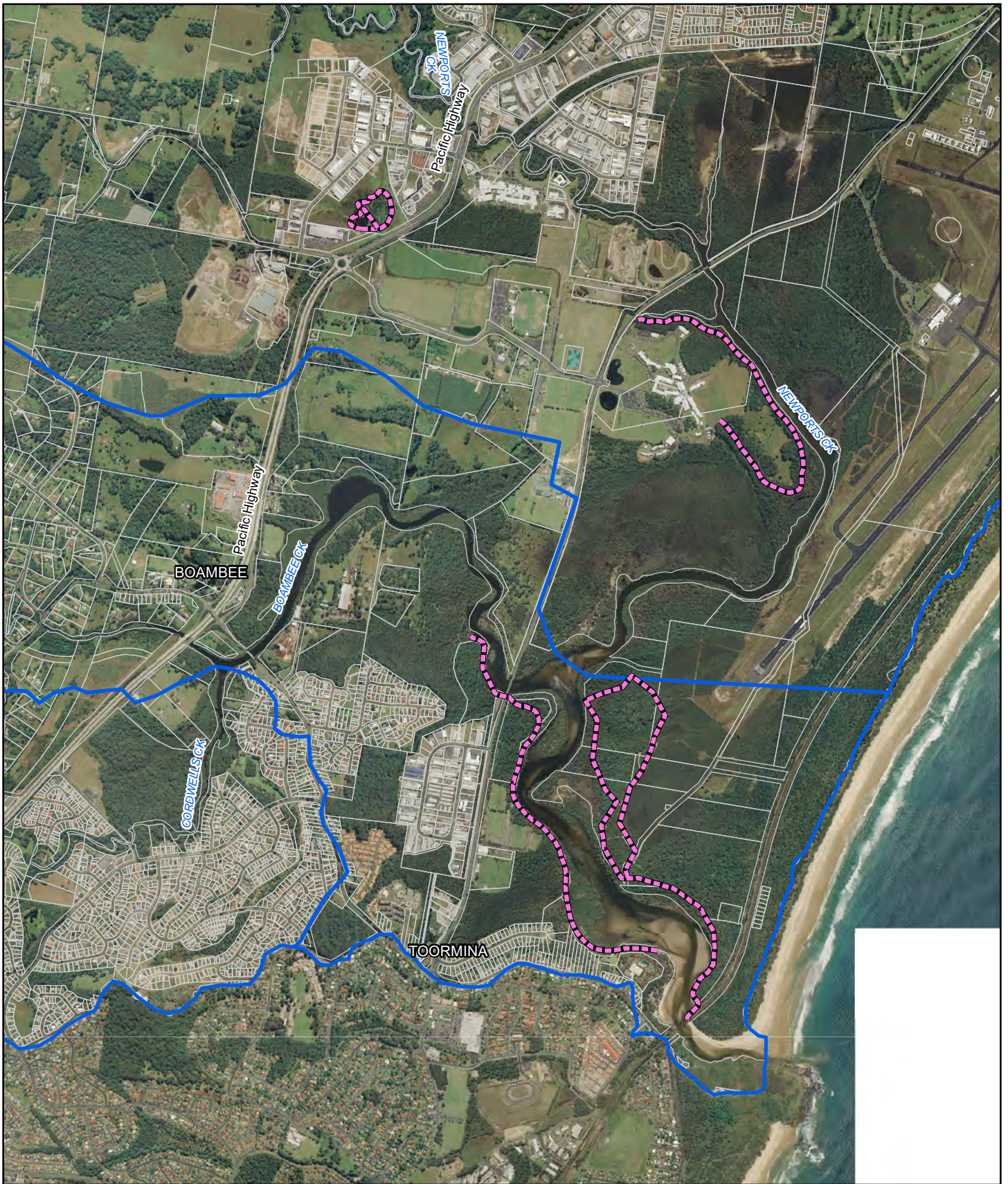
Strategy S2: Establish a Creek Walk

Priority: Very High

The Boambee/Newports Estuary still has some relatively natural areas. To promote the value of the estuary, provide a passive recreational outlet and educate the community, it is recommended that a creek walk be established. Ideally the walk would enter various habitats and have interpretive signage that explains the natural and cultural features of the estuary. The Coffs Creek walk provides a good example. This strategy could support the proposed State Park walk or the walk proposed by the Coffs Harbour Education Campus. Another area where a walk could be established is the wetland west of the Pacific Highway or along the southern bank of the estuary from Boambee Creek Reserve to Hogbin Drive Bridge. See Figure 7-2 for some route options.

Implementation Details

Relevant Objectives	1, 5, 6, 7, 8	Actions
Responsibility	CHCC with support from other land managers such as NSWCHPT	<ul style="list-style-type: none"> ▶ Identify some options for the route of the walk. ▶ Undertake preliminary costings of the various options. ▶ Consult the community on the different options. ▶ Identified the preferred option. ▶ Obtain the relevant approvals for the walk. ▶ Construct the walk and interpretive signage.
Related Strategy	S1, H1, E4, S3	
Cost Estimate	\$100,000 - \$200,000 (depending on the length and route of the walk)	
Funding Options	Environmental Levy, Coastal & Estuary Management Program	
Timing	Subject to grant funding availability	
Indicators	<ul style="list-style-type: none"> ▶ Length of Walk Constructed ▶ Number of People using the Walk 	



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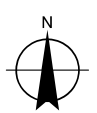
- Catchments
- Cadastre
- Estuary Walk Options

1:25,000 (at A4)

0 125 250 500 750 1,000

Metres

Map Projection: Transverse Mercator
 Horizontal Datum: Geocentric Datum of Australia (GDA)
 Grid: Map Grid of Australia 1994, Zone 56



Coffs Harbour City Council
 Boambee / Newports Estuary

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 Date 18 JUL 2011

Creek Walk Options

Figure 7-2

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 Data Source: Coffs Harbour City Council; Cadastre, Aerial & Riparian Vegetation - 2008. Created by: fmacqay



Strategy WQ3: WSUD Policy Review and Implementation

Priority: High

Major development is proposed for the Boambee catchment and if water runoff is not controlled, this could have a significant impact on the estuary. This could be a particular problem if the predicted increase in rainfall is realised as a result of climate change. Impacts could include increased stormwater volume, velocity and pollutant loads entering the estuary. To minimise these impacts, it is recommended that the existing Water Sensitive Urban Design Policy (CHCC, 2009) continue to be enforced throughout the catchment.

Implementation Details

Relevant Objectives	1, 2, 3, 4, 7, 8, 9	Actions
Responsibility	CHCC	<ul style="list-style-type: none"> Review WSUD Policy with consideration of local conditions, water quality monitoring results and current best practice
Related Strategy	WQ1	<ul style="list-style-type: none"> Incorporate WSUD into the relevant DCPs and the LEP.
Cost Estimate	\$0 - \$50,000 depending on the water monitoring program	<ul style="list-style-type: none"> Conduct education workshops for Council Officers, developers, consultants and builders.
Funding Options	Environmental Levy, Coastal & Estuary Management Program, Urban Sustainability	<ul style="list-style-type: none"> Enforce compliance with the policy in development applications and construction.
Timing	Ongoing [Completed and Ongoing]	<ul style="list-style-type: none"> Monitor the quality, volume and velocity of water from subdivisions before and after construction works.
Indicators	<ul style="list-style-type: none"> The Number of WSUD Principles included in Developments Water Quality, Volume and Velocity from New Development Compared to Pre-development 	<ul style="list-style-type: none"> Review the policy based on what measures work and what measures did not.



Strategy WQ4: Regular On-site Wastewater Systems Inspection and Upgrade

Priority: High

Many of the dwellings in the rural areas west of the highway rely on on-site wastewater systems, such as septic tanks, to treat and dispose of their sewage. Some of these wastewater systems are also located close to creeks and drainage lines. On-site wastewater systems are unlikely to cause problems providing they are designed, operated and maintained correctly. To ensure this occurs, CHCC has a regular monitoring program. It is recommended that this continues with an emphasis on those located near creeks or drainage lines because if the on-site systems are not maintained correctly they have the potential to result in increased nutrients and bacterial pollution of the estuary.

CHCC should also consider requiring all new on-site wastewater systems to treat the wastewater to a secondary level or better, especially when located within 100 m of a drainage line.

Implementation Details

Implementation Details		Actions
Relevant Objectives	1, 2, 7, 8	
Responsibility	CHCC	<ul style="list-style-type: none"> ▶ Identify priority sites. ▶ Develop a consistent inspection program. ▶ Record inspections in a database or GIS system. ▶ Amend the relevant DCP and On-site Wastewater Strategy to require secondary level treatment.
Related Strategy	WQ1	
Cost Estimate	CHCC Officer time	
Funding Options	N/A	
Timing	Ongoing [Completed and Ongoing]	
Indicators	<ul style="list-style-type: none"> ▶ Number of Inspections ▶ Number of Systems Requiring Upgrades 	

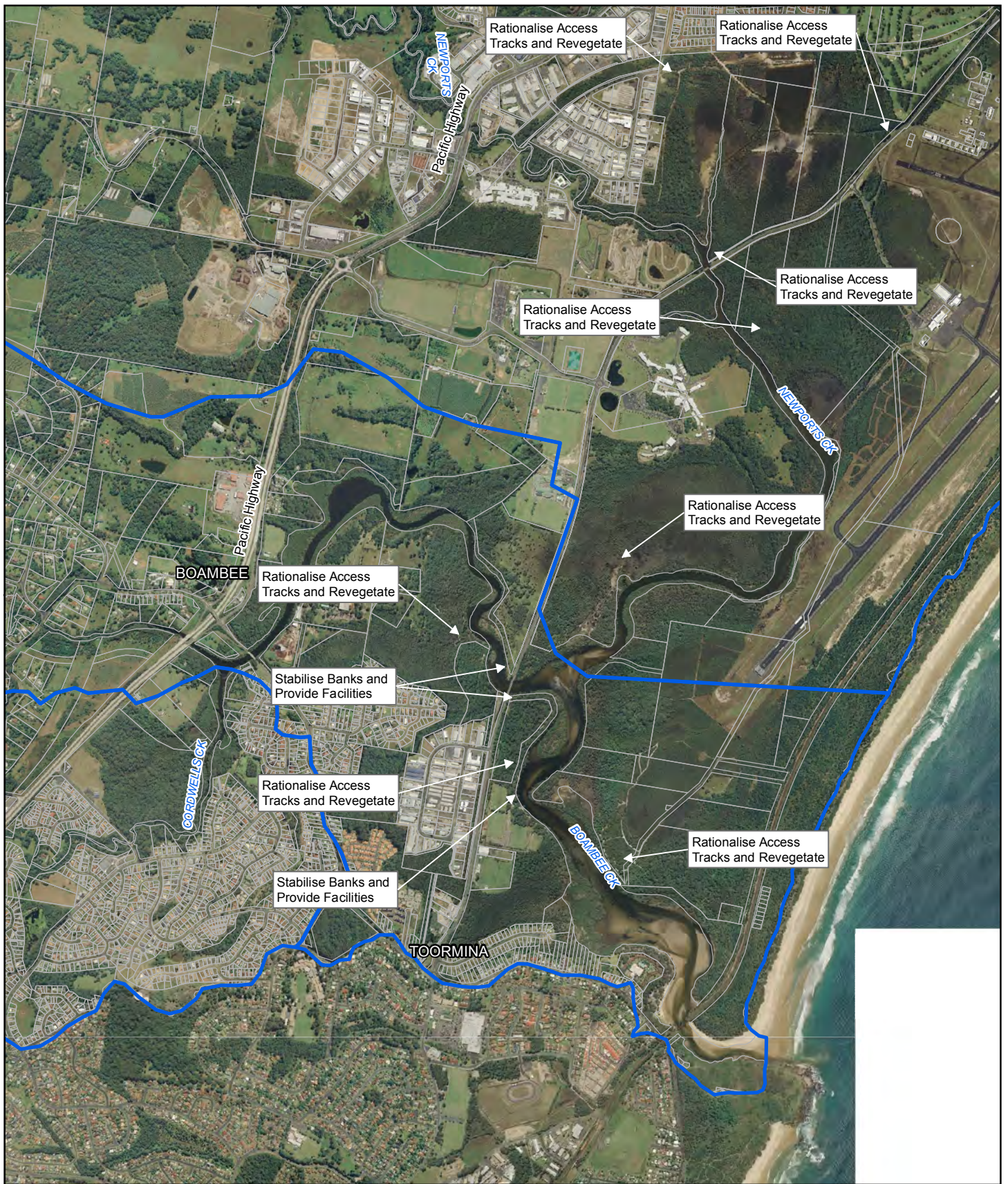


Strategy S3: Formalise Access Tracks and Areas of Recreation

Priority: High

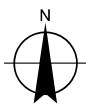
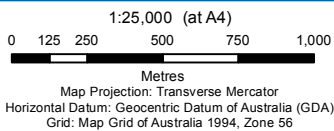
The Boambee/Newports Estuary is a popular area for various recreational pursuits including fishing, walking, swimming, four-wheel driving, camping and picnicking. In some locations these activities are causing erosion, gathering litter and damaging vegetation, as indicated in Figure 7-3. To limit this damage, it is recommended that these areas either be formalised or closed to the public. The four-wheel drive tracks should be closed to the public because it appears that some areas of salt marsh are being impacted by four-wheel drives going off the tracks. Likewise, there are some areas where there have been numerous access tracks established and these could be rationalised and the ones no longer required revegetated. The other areas would require various measures, such as bank stabilisation (possibly in association with steps into the water), established access paths and/or roads/carparks, fencing, bins and picnic tables.

Implementation Details	
Relevant Objectives	1, 2, 3, 6, 7, 9
Responsibility	CHCC
Related Strategy	S1, S2, E2
Cost Estimate	\$10,000 - \$100,000 (depending on the type of works undertaken)
Funding Options	Environmental Levy, Coastal & Estuary Management Program, Urban Sustainability
Timing	2012 - Ongoing (subject to grant funding availability)
Indicators	<ul style="list-style-type: none"> ▶ Number of Areas Formalised ▶ Improvement in Site Conditions
Actions	
<ul style="list-style-type: none"> ▶ Identify priority sites. ▶ Determine the improvements required. ▶ Attract funding for the improvements. ▶ Implement improvements. ▶ Maintain improvements (where necessary). 	



LEGEND

- ▭ Catchments
- Cadastre



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Formalise Access Tracks and Recreation Areas

Figure 7-3



Strategy E2: Initiate and Continue Bush Regeneration Programs

Priority: High

The riparian vegetation throughout the estuary is in reasonably good condition however there are some weeds present as shown on Figure 7-4. The most common weed observed was lantana but other common weeds included bitou bush, camphor laurel, senna and parramatta grass have also invaded the area. Increasing pressure will also be placed on these areas as development in the catchment increases. Some vegetation management occurs in the airport lands and State Park but these programs could be assisted and expanded if a bush regeneration program can be established. This could be undertaken by CHCC or a Landcare/Rivercare Group established with the support of CHCC and/or North Coast LLS.

Implementation Details		Actions
Relevant Objectives	1, 2, 3, 7, 9	
Responsibility	CHCC with support from other land managers.	<ul style="list-style-type: none"> ▶ Further liaison with and agreement from NSWCHPT may be required ▶ Identify priority sites.
Related Strategy	S3, E3	<ul style="list-style-type: none"> ▶ Develop a Restoration Action Plan.
Cost Estimate	\$5,000 - \$10,000/yr	<ul style="list-style-type: none"> ▶ Co-ordinate a group of volunteers or include the sites in CHCC bush regeneration routine.
Funding Options	Environmental Levy, Caring for our Country, Environmental Restoration and Rehabilitation Grants, NSW Weeds Action Program	<ul style="list-style-type: none"> ▶ Undertake the revegetation works. ▶ Monitor the revegetation works and undertake maintenance, if required.
Timing	Ongoing	
Indicators	<ul style="list-style-type: none"> ▶ Area Regenerated ▶ Weed Cover 	



LEGEND

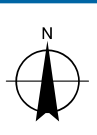
- ▭ Catchments
- Cadastre
- 〰〰〰 Areas with Weeds
- B = Bitou
- ⊙ C = Camphor Laurel
- Ⓢ S = Senna
- Ⓛ L = Lantana
- P = Parramatta Grass

1:25,000 (at A4)

0 125 250 500 750 1,000

Metres

Map Projection: Transverse Mercator
Horizontal Datum: Geocentric Datum of Australia (GDA)
Grid: Map Grid of Australia 1994, Zone 56



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Location of Weeds

Figure 7-4

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Data Source: Coffs Harbour City Council; Cadastre, Aerial - 2008. Created by: fmnackay



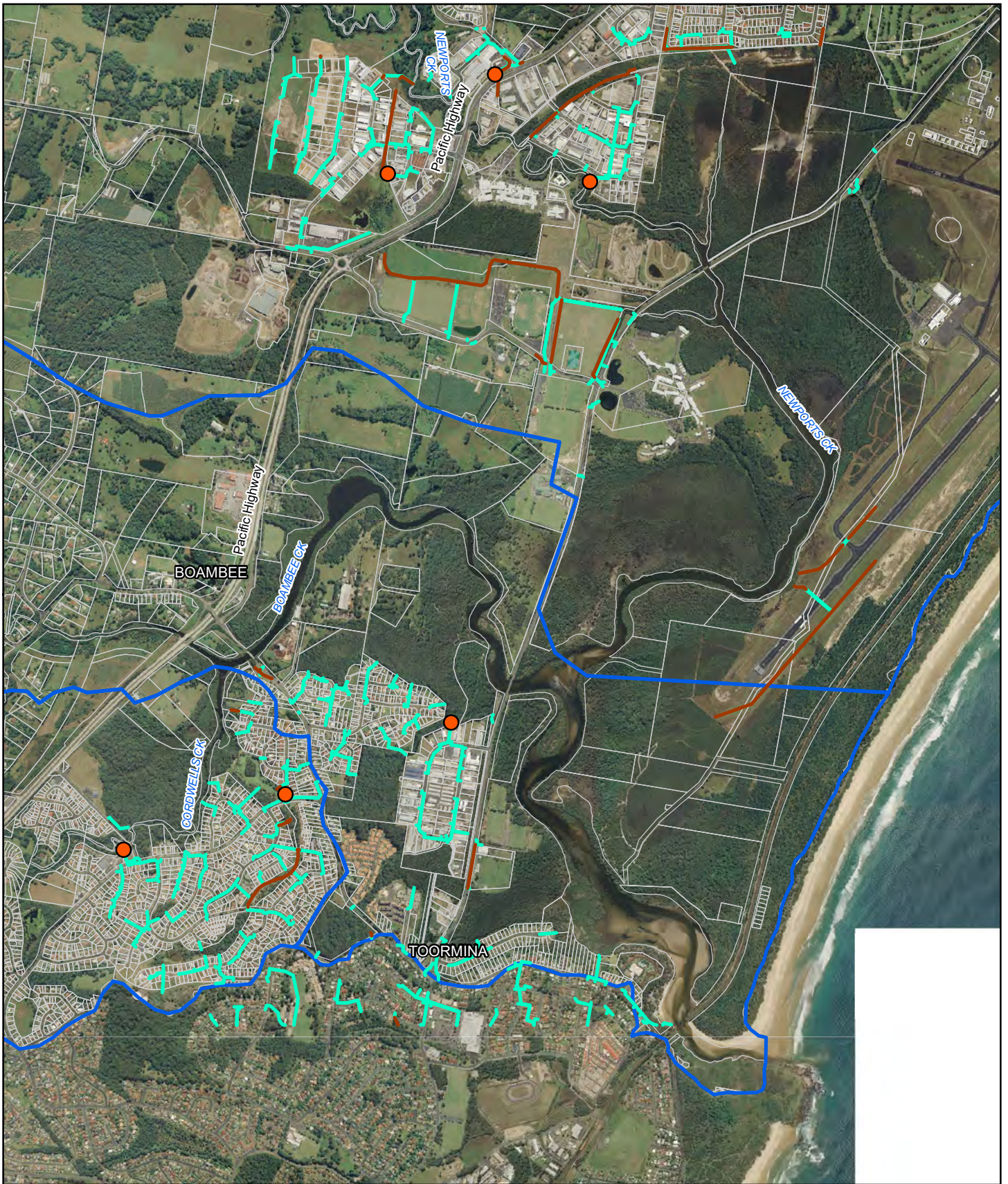
Strategy WQ5: Upgrade Stormwater Controls in Existing Urban Areas

Priority: High

Urbanisation of an area can impact on an estuary by increasing stormwater volume, velocity and pollutant loads entering the estuary. Ideally, measures are implemented during the development of an area to minimise these impacts but actions can still be taken in established urban areas, although they can be expensive. Approximately 38% of the catchment has been developed and the stormwater from these areas is likely to be impacting on the estuary. To minimise these impacts it is recommended that a range of engineering and educational actions be implemented in these established urban areas. Actions may include gross pollutant traps, education campaigns, artificial wetlands, etc.

Implementation Details

Relevant Objectives	1, 2, 3, 4, 7, 8, 9	Actions
Responsibility	CHCC	<ul style="list-style-type: none"> ▶ Identify priority sites and what actions are required. It is recommended that those areas with the highest pollution loads be addressed as a priority. Some possible priority areas are indicated on Figure 7-5. ▶ Develop an implementation plan and identify or allocate appropriate funding for implementation. ▶ Implement improvements. ▶ Maintain improvements (where necessary). ▶ Monitor water quality, volume and velocity to determine if the improvements have been effective.
Related Strategy	WQ1, WQ6	
Cost Estimate	\$10,000 - \$1,000,000 (depending on the type of works undertaken)	
Funding Options	Environmental Levy, Coastal & Estuary Management Program, Urban Sustainability, Stormwater Management Levy	
Timing	2012 – Ongoing	
Indicators	<ul style="list-style-type: none"> ▶ Number of Measures Implemented ▶ Water Quality, Volume and Velocity from Existing Development 	



LEGEND

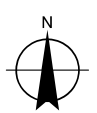
- Catchments
- Stormwater Channels
- Priority Stormwater Management Locations
- Stormwater Pipes
- Cadastre

1:25,000 (at A4)

0 125 250 500 750 1,000

Metres

Map Projection: Transverse Mercator
Horizontal Datum: Geocentric Datum of Australia (GDA)
Grid: Map Grid of Australia 1994, Zone 56



Coffs Harbour City Council
Boambee / Newports Estuary

Job Number	22-14220
Revision	A
Date	04 OCT 2011

Priority Stormwater Management Locations

Figure 7-5

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 Data Source: Coffs Harbour City Council; Cadastre, Aerial & Riparian Vegetation - 2008. Created by: fmackay



Strategy H1: Educate the Community on the Heritage Value of the Estuary **Priority: Medium-High**

Estuaries were an important source of food and recreation for aboriginal people. They were also regularly used by European settlers. Providing interpretive signage that explains this heritage in popular areas along the estuary (e.g. Boambee Creek Reserve, Boat Ramps) would teach the community the value of the estuary to current and past generations. Information could also be included in the proposed Ambassadors Program creek walk.

Implementation Details	
Relevant Objectives	5, 6, 8, 10
Responsibility	CHCC
Related Strategy	S1, S2
Cost Estimate	\$10,000
Funding Options	Environmental Levy, Environmental Education Grants
Timing	2013 - Ongoing (subject to grant funding availability)
Indicators	<ul style="list-style-type: none"> ▶ Number of Signs Installed
	<p>Actions</p> <ul style="list-style-type: none"> ▶ Consult the Local Aboriginal Land Council on the information, sites and values they would like the community to learn about. ▶ Identify interesting sites and stories that relate to the heritage of the estuary. ▶ Design signs. ▶ Install signs.



Strategy E3: Establish a Vegetation Buffer

Priority: Medium-High

It is recommended that a buffer zone be investigated and rezoned to environmental protection and revegetated, where practical. The buffer area will consider the “Almost Certain 2100 Hazard” area identified in the Coastal Processes and Hazard Definition Study (BMT WBM, 2011). The buffer area would therefore allow the vegetation to migrate in response to the predicted hydrological changes in the estuary associated with climate change. This initiative could be extended to all water courses in the catchment with a range of buffer areas based on the type of stream. Areas with threatened species or endangered ecological communities should be a priority.

Implementation Details

Relevant Objectives	1, 2, 3, 4, 7, 9, 10	Actions
Responsibility	CHCC	<ul style="list-style-type: none"> ▶ Determine the area for the buffer zone which takes into account areas of threatened species, endangered ecological communities and inundation from sea level rise ▶ Compare the existing and proposed zoning and assess the feasibility of rezoning. ▶ Undertake consultation ▶ Include the buffer requirements in DCP.
Related Strategy	S3, E2	
Cost Estimate	\$10,000 - \$100,000 (depending on the amount of revegetation works undertaken)	
Funding Options	Environmental Levy, Caring for our Country, Environmental Restoration and Rehabilitation Grants, NSW Weeds Action Program, Planning Reform Fund	
Timing	2011 – Ongoing	
Indicators	<ul style="list-style-type: none"> ▶ Length of Estuary with Zoned Vegetation Buffer 	



Strategy S4: Educate and Enforce Dog Hygiene		Priority: Medium-High
<p>One of the controversial issues identified during the community survey was the attitude of people towards dog access to Boambee beach. The main issue expressed in regards to dog access was owners who did not clean up after their dog. To address this issue, it is recommended that an education campaign be developed and implemented for dog owners who use Boambee Beach. This could be followed by an enforcement campaign that reinforces the message.</p>		
Implementation Details		
Relevant Objectives	1, 2, 6	Actions
Responsibility	CHCC	<ul style="list-style-type: none"> Design and install signs at the entrance and on Boambee Beach informing dog owners of their responsibilities.
Related Strategy	-	<ul style="list-style-type: none"> Provide free "Poo Bags" and bins in obvious locations.
Cost Estimate	\$2,000/campaign	<ul style="list-style-type: none"> Monitor compliance and issue fines if necessary.
Funding Options	Environmental Levy, Environmental Education Grants	
Timing	Signs – Within 12 months of CZMPs Gazettal. Monitoring – Ongoing	
Indicators	<ul style="list-style-type: none"> Signs Installed. Fines Issued. Bins/ bags Receptacles Installed. 	



Strategy S5: Provide Recycling Bins in Boambee Creek Reserve and Boat Ramps		Priority: Medium-High
<p>Bins are located in many of the established recreational areas and the area is usually fairly clear of litter, however, there are no recycling facilities. Now that CHCC has an established recycling service and most of the community are familiar with the practise, it is recommended that recycling bins be placed in all the established recreational areas e.g. Boambee Creek Reserve and boat ramps.</p>		
Implementation Details		
Relevant Objectives	2, 5, 6	Actions
Responsibility	NSWCHT, CHCC	<ul style="list-style-type: none"> Replace existing bins with recycling bins and appropriate signs informing the community what goes in which bin.
Related Strategy	WQ2	
Cost Estimate	\$2,000	
Funding Options	Environmental Levy, Maritime Boating Infrastructure Program	
Timing	Completed	
Indicators	<ul style="list-style-type: none"> Bins Installed. 	



Strategy E4: Educate the Community about Estuarine Ecosystems

Priority: Medium-High

To help protect the natural assets of the estuary, especially the threatened species, it is recommended that a community education campaign be developed and implemented. If the community become more aware of the natural assets of the estuary, they will be more likely to take an interest in protecting them. Initiatives could include interpretive signage, creek walk, Boambee Creek festival, newspaper articles, etc.

Implementation Details

Relevant Objectives	1, 7, 8	Actions
Responsibility	CHCC	<ul style="list-style-type: none"> ▶ Identify interesting facts about the estuarine communities within the estuary. ▶ Develop a community education campaign that may include signage, creek walk, Boambee Creek festival, newspaper articles, etc. ▶ Implement the education campaign.
Related Strategy	S1, S2	
Cost Estimate	\$10,000/campaign	
Funding Options	Environmental Levy, Environmental Education Grants	
Timing	2012 and Ongoing	
Indicators	<ul style="list-style-type: none"> ▶ Number of Education Initiatives Implemented. 	



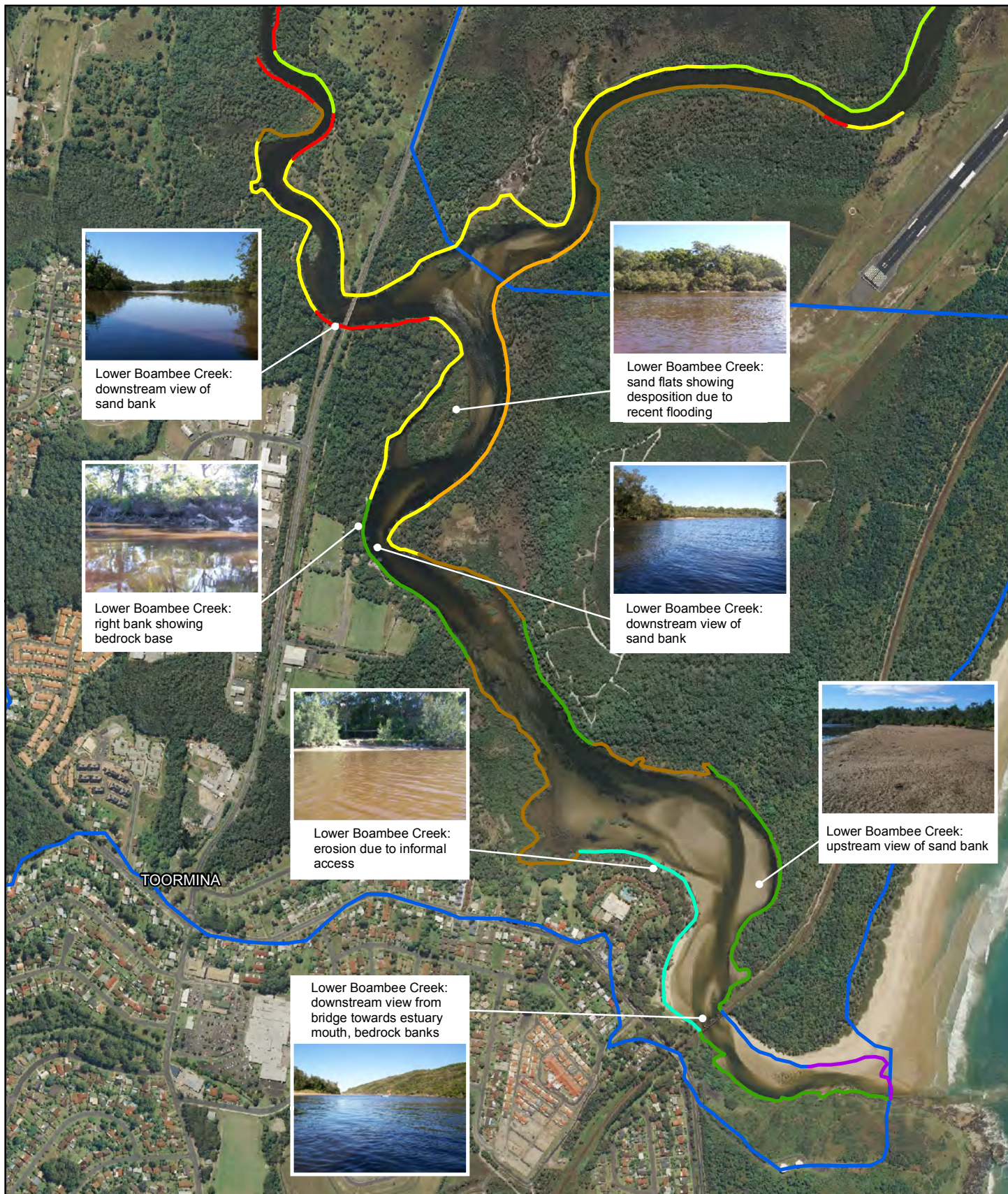
Strategy ER1: Monitor erosion

Priority: Medium-High

The Processes Study (GHD, 2010) identified an issue with erosion in the upper reaches of the catchment being washed into the estuary and creating shoals. Some areas of moderate erosion were also identified within the estuary; see Figures 7-6 to 7-8. Bank erosion may increase as a result of sea level rise and increased runoff. A comprehensive assessment of the upper catchment should be undertaken to identify areas of erosion. Sites could then be prioritised and landholders encouraged to stabilise the problem areas via funding, etc. Erosion within the estuary should also be monitored each year and after large storm events to check that there is no deterioration. If erosion is worsening, stabilisation works should be implemented.

Implementation Details

Relevant Objectives	1, 2, 3, 7, 8, 9, 10, 11	Actions
Responsibility	CHCC in conjunction with other land managers.	<ul style="list-style-type: none"> ▶ Undertake a detailed assessment of the erosion throughout the whole catchment. ▶ Identify required remediation actions and costings. A source of successful options could be the work completed by CHCC and North Coast LLS in Coffs Creek and Orara Valley. ▶ Prioritise sites and develop an implementation schedule. ▶ Consult landholders and provide funding incentives for the work. ▶ Implement the work. ▶ Monitor the works and other sites annually and after storm events to check that they are not deteriorating. ▶ Protect Aboriginal sites from foreshore erosion.
Related Strategy	WQ3, WQ5, E3	
Cost Estimate	\$10,000 - \$100,000 (depending on how much work is required and if Council fund the works)	
Funding Options	Environmental Levy	
Timing	Assessment 2011. Control Works – Ongoing	
Indicators	<ul style="list-style-type: none"> ▶ Number of Areas Formalised. ▶ Improvement in Site Conditions. 	



Lower Boambee Creek:
downstream view of
sand bank



Lower Boambee Creek:
sand flats showing
deposition due to
recent flooding



Lower Boambee Creek:
right bank showing
bedrock base



Lower Boambee Creek:
downstream view of
sand bank



Lower Boambee Creek:
erosion due to informal
access



Lower Boambee Creek:
upstream view of sand bank



Lower Boambee Creek:
downstream view from
bridge towards estuary
mouth, bedrock banks

LEGEND

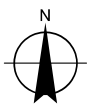
- | | | | |
|------------|---------------------------------|--------------------------------|---------------------------|
| Catchments | Bank Stability Condition | Minimally to Moderately Active | Estuary Mouth |
| | Stable Bedrock Bank | Moderately Active | Stable Mangrove Mud Flats |
| | Stable to Minimally Active | Active Beach Environment | Did Not Access |
| | Minimally Active | Erosion due to Informal Access | |

1:12,000 (at A4)

0 40 80 160 240 320

Metres

Map Projection: Transverse Mercator
Horizontal Datum: Geocentric Datum of Australia (GDA)
Grid: Map Grid of Australia 1994, Zone 56



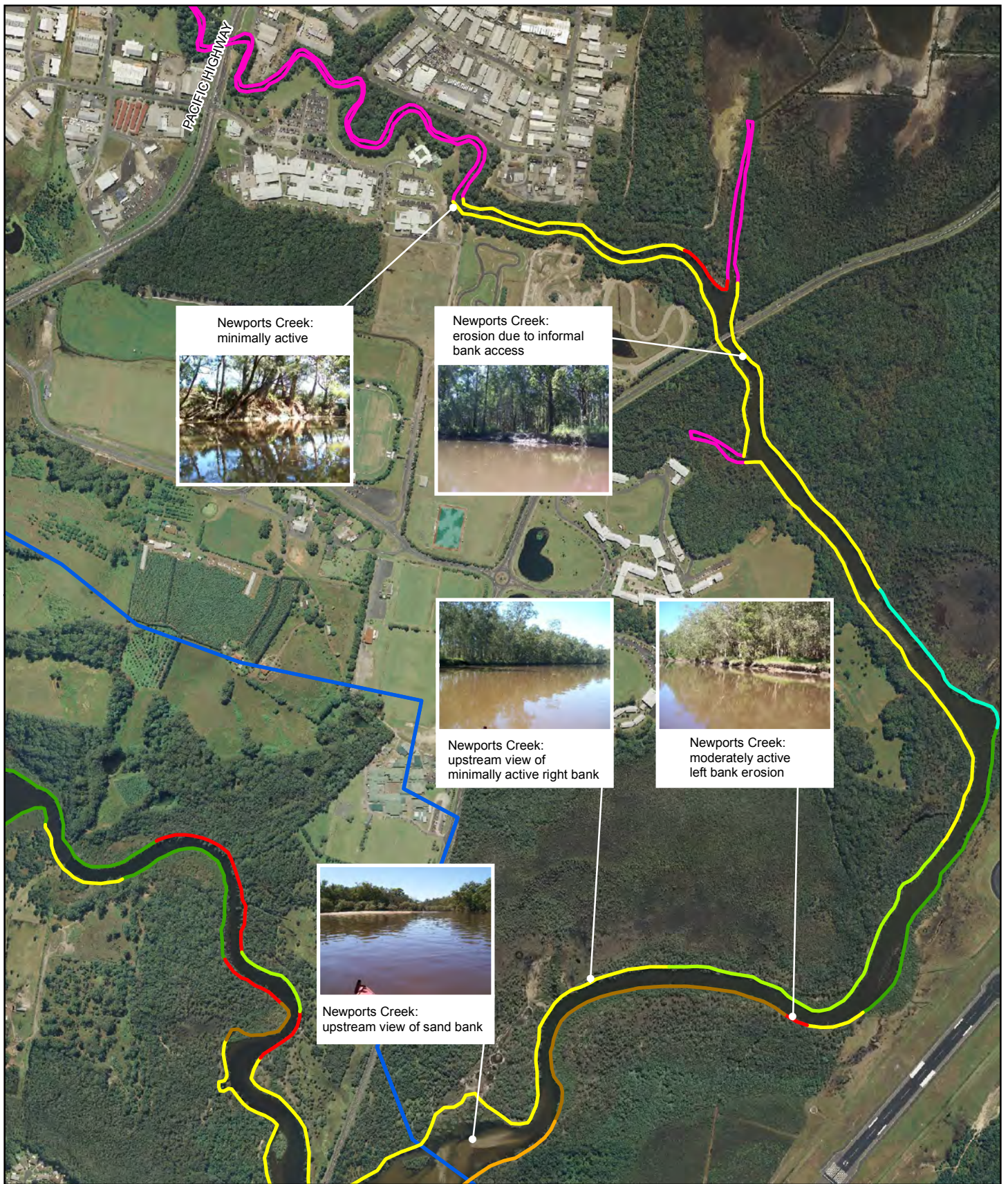
Coffs Harbour City Council
Boambee / Newport's Estuary

Job Number 22-14223
Revision A
Date 10 Nov 2010

**Bank Stability
Lower Boambee Creek**

Figure 7-6

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Data Source: Coffs Harbour City Council; Land Use - 2007. Created by: fmacKay, rholmewood



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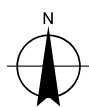
- | | | | |
|------------|---------------------------------|--------------------------------|---|
| Catchments | Bank Stability Condition | Minimally Active | Stable with Localised Failures, Low Banks |
| | Stable | Minimally to Moderately Active | Stable Mangrove Mud Flats |
| | Stable to Minimally Active | Moderately Active | Did Not Access |

1:12,000 (at A4)

0 40 80 160 240 320

Metres

Map Projection: Transverse Mercator
Horizontal Datum: Geocentric Datum of Australia (GDA)
Grid: Map Grid of Australia 1994, Zone 56



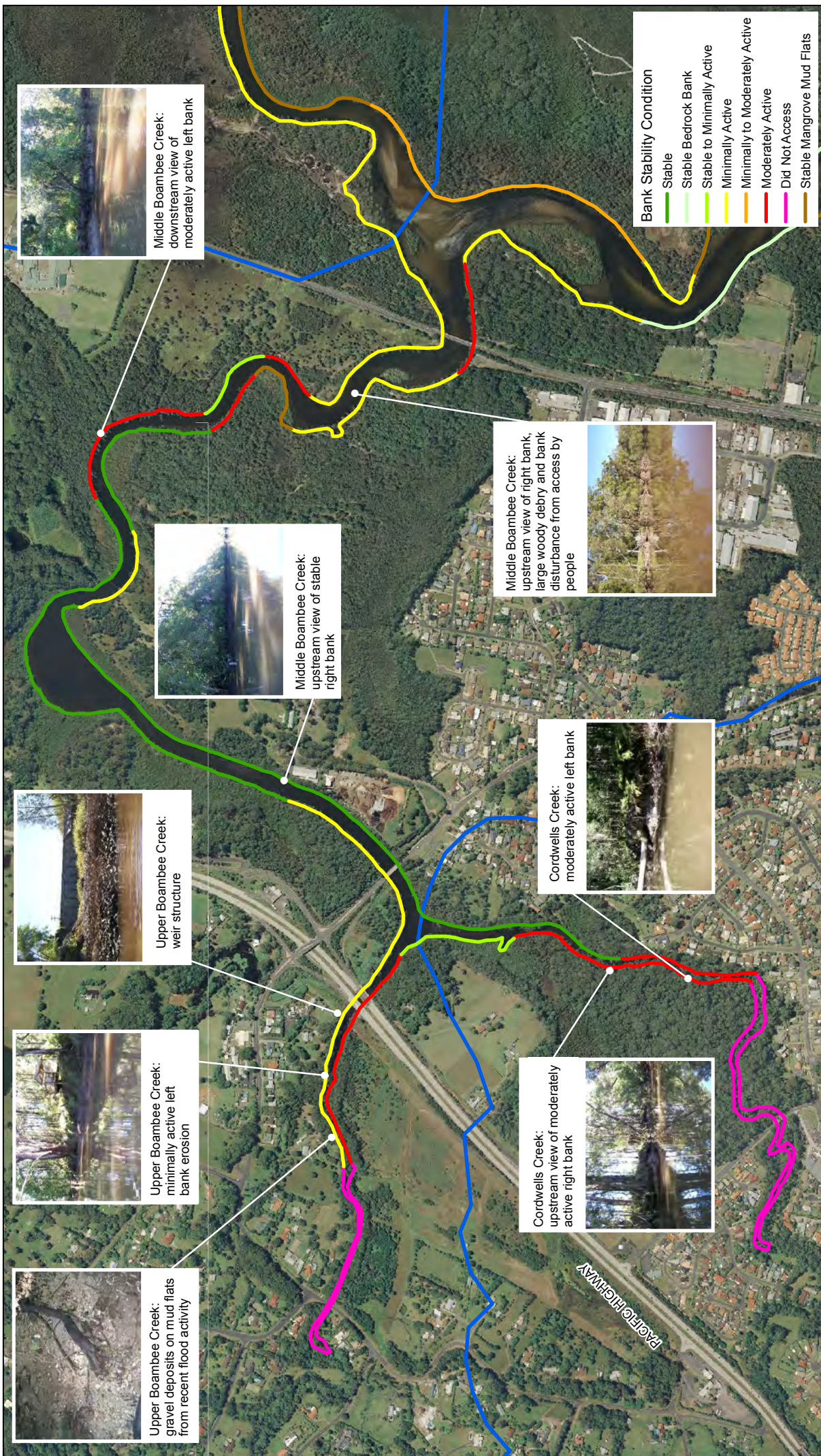
Coffs Harbour City Council
Boambee / Newports Estuary

Job Number 22-14223
Revision A
Date 10 Nov 2010

**Bank Stability
Newports Creek**

Figure 7-7

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Data Source: Coffs Harbour City Council; Land Use - 2007. Created by: fmackay, rmholmeowd



Bank Stability Condition

Stable
Stable Bedrock Bank
Stable to Minimally Active
Minimally Active
Minimally to Moderately Active
Moderately Active
Did Not Access
Stable Mangrove Mud Flats

Coffs Harbour City Council
Boambee / Newports Estuary

Job Number 22-14223
Revision A
Date 10 Nov 2010



LEGEND

Catchments

N

1:12,000 (at A4)

0 45 90 180 270 360
Metres

Map Projection: Transverse Mercator
Horizontal Datum: Geocentric Datum of Australia (GDA)
Grid: Map Grid of Australia 1994, Zone 56

**Bank Stability
Cordwells / Upper Boambee Creek**

Figure 7-8

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Data Source: Coffs Harbour City Council: Aerial - 2006; Coffs Harbour City Council: Catchment Data - 2008. Created by: f.mackay, t.morton



Strategy MGT1: Improve Management of Boambee Creek Park Reserve

Priority: Medium-High

Boambee Creek Reserve is the most popular area within the estuary however there was a few issues raised in regards to the management of the Reserve. The main issue that visitors complained about was the entrance fee. Other issues included the dredging of the swimming area and the interaction of cars and pedestrians. The Reserve is responsibility of the NSW Crown Holiday Parks Trust. An *Improvement and Management Strategy for the Boambee Creek Park Reserve* (ISD, 2007) has been developed. The Strategy identifies several actions that could be implemented to improve the management of the reserve. The Trust have undertaken works in the reserve over the last 3-4 years to generally improve public facilities and the viability of the caretaker/kiosk arrangement to adequately cater for current needs. It is noted that a short term licence (RI579766 expires 4 May 2019) for dredging and related works was granted to the NSWCHPT by the DoI – Crown Lands & Water under section 34a. This was granted for the purpose of environmental rehabilitation in relation to *Improvement and Management Strategy for the Boambee Creek Park Reserve*. Further maintenance of the dredging works may be required and will be conducted in line with relevant licences and approvals.

This action encourages the Trust to complete the implementation of the Strategy and to consider the issues raised in relation to the Boambee Creek Reserve during the preparation of this Plan.

Implementation Details

		Actions
Relevant Objectives	5, 6, 8, 10	<ul style="list-style-type: none"> ▶ Continue to implement the <i>Improvement and Management Strategy for the Boambee Creek Park Reserve</i>. ▶ Monitor and maintain any improvements to the area. ▶ Consider the issues raised in relation to the Boambee Creek Reserve during the preparation of this Plan.
Responsibility	NSWCHPT	
Related Strategy	H1, E4, SC1	
Cost Estimate	\$10,000 - \$75,000 (depending on the type of works undertaken)	
Funding Options	NSW Local Infrastructure Fund	
Timing	Ongoing	
Indicators	<ul style="list-style-type: none"> ▶ Development of Master Plan or Management Strategy. ▶ Implementation of Master Plan or Management Strategy. 	



Strategy WQ6: Audit of Industrial Businesses and Large Land Holdings

Priority: Medium-High

A number of industrial businesses and large land holdings exist within the Boambee/Newports Estuary. Some are located close to the banks of the estuary and have been in operation for a long period of time. There is a potential for these to have an impact on the estuary from runoff with contamination, litter, nutrients, etc. An environmental audit of these sites would provide an opportunity to identify improvements for these businesses and reduce the impact they may be having on the estuary. CHCC could assist the implementation of the improvements identified by sourcing funding and/or developing partnerships with the businesses.

Implementation Details

Relevant Objectives	1, 2, 7, 8	Actions
Responsibility	CHCC	<ul style="list-style-type: none"> ▶ Identify priority sites to audit. ▶ Determine how improvements would be funded.
Related Strategy	WQ1, E4	<ul style="list-style-type: none"> ▶ Develop an auditing process.
Cost Estimate	\$10,000 - \$200,000 (depends on if improvements are funded)	<ul style="list-style-type: none"> ▶ Contact sites to arrange an audit. ▶ Undertake audit.
Funding Options	Environmental Levy	<ul style="list-style-type: none"> ▶ Provide audit results to the site.
Timing	Within 12 months of CZMP gazettal	<ul style="list-style-type: none"> ▶ Identify and assist, where appropriate, in gaining funding for the improvements.
Indicators	<ul style="list-style-type: none"> ▶ Number of Sites Audited. ▶ Number of Recommendations Implemented. 	<ul style="list-style-type: none"> ▶ Follow up to confirm that recommendations have been implemented.



Strategy S6: Upgrade and Maintain Hogbin Drive Boat Ramp

Priority: Medium

Boambee/Newports Estuary is a popular recreational area for fishing, kayaks and boating. The main boat ramp is located adjacent to Hogbin Drive. Currently the facilities at this boat ramp is limited and the depth of water at low tide is insufficient to launch boats. To provide better facilities to users of the estuary, the boat ramp could be improved by the construction of fish cleaning tables and investigating dredging the area at the end of the boat ramp.

Implementation Details

Relevant Objectives	6, 9	Actions
Responsibility	CHCC & Maritime	<ul style="list-style-type: none"> ▶ Assess the existing facilities. ▶ Determine the improvements required. ▶ Consult with Dol – Crown Lands & Water and seek appropriate authorisation. ▶ Gain approval for the improvements, if necessary. ▶ Attract funding for the improvements. ▶ Implement improvements. ▶ Maintain improvements (where necessary).
Related Strategy	S5, H1, E4	
Cost Estimate	\$10,000 - \$50,000 (depending on the type of works undertaken)	
Funding Options	Maritime Boating Infrastructure Program	
Timing	Completed and Ongoing	
Indicators	<ul style="list-style-type: none"> ▶ Works Undertaken. 	



Strategy WQ7: Educate the Community to Limit the Amount of Pesticides and Nutrients Used		Priority: Medium
<p>Pesticides and nutrients can have toxic effects on an estuary and its ecosystems. The source of these chemicals can be urban gardens, golf courses, large commercial gardens and agricultural lands. The Boambee/Newports creek catchment has all these land uses. Although no detailed information indicating any are creating a problem in the catchment exists, it is recommended that the community is reminded of the potential impacts and what they can do to reduce the amount of pesticides and nutrients used. A focus should be on those land uses that have the potential to have the greatest impact e.g. golf courses, agriculture.</p>		
Implementation Details		
Relevant Objectives	1, 2, 7, 8, 10	<p>Actions</p> <ul style="list-style-type: none"> ▶ Survey the communities knowledge of issue and attitude, focusing on land uses with the greatest impact. ▶ Identify the strengths and weaknesses in the community in regards to the issue. ▶ Develop a community education campaign that may include workshops, demonstrations, information packs, fliers, newspaper articles, etc. ▶ Implement the education campaign. ▶ Undertake a post campaign survey.
Responsibility	CHCC	
Related Strategy	E4, WQ1, WQ6	
Cost Estimate	\$10,000/campaign	
Funding Options	Environmental Levy	
Timing	Ongoing	
Indicators	<ul style="list-style-type: none"> ▶ Number of education campaigns ▶ Community knowledge of issues ▶ Water quality improvements 	



7.1 Management Strategy Implementation Summary

Table 7-1 provides a summary of each strategy, when they are proposed to be implemented and how much they will cost. Some Strategies are a single event e.g. WQ6 while others are ongoing e.g. WQ1. This provides the stakeholders time to get organised, allocate the required budget and apply for funding for the more complex, more expensive Strategies. Some of the lower ranked Strategies are also included in the first year because they are already being undertaken or are planned to be undertaken by the relevant stakeholders in the near future.

Implementation of the Strategies may be influenced by available funding and subsequent reviews of the Plan but Table 7-1 provides an initial reference for scheduling works. When external funding is required to implement a strategy, this will need to be considered in the year prior to implementation because funding applications are often required to be submitted at the end of the financial year prior to the works being undertaken/ funded. Funding is discussed in more detail in Section 7.2 below.

7.2 Funding

To protect and conserve the valuable assets of Boambee/Newports estuary, funding will be required to implement some of the recommended Strategies. As shown in Table 7-1, a total of approximately \$504,000 is required for the implementation of the preferred management Strategies over the next five years. In the first year approximately \$38,000 has been estimated to be required with this increasing to a little over \$100,000 for the following four years.

The estimated costs do not include the costs associated with stakeholders' time, as it has been assumed that this cost is allowed for in operating budgets. The costs associated with some of the Strategies may also already be accounted for in other budgets e.g. WQ1, S1, S2, E2, WQ5, E3. This could significantly reduce the funding required specifically for the implementation of the Plan.

The relevant stakeholders may be able to fund some of these projects through general revenue e.g. Environmental Levy but due to the high costs of some Strategies, it is likely that some form of external funding will be required. Fortunately there are numerous sources of funding for environmental management works. Each source of funding has particular criteria and requirements on what they will fund, how much they will fund, etc. but having a strategy included in this Plan may assist in attracting some of this funding. Sources of funding include:

- ▶ Environmental Levy
- ▶ Caring for our Country
- ▶ Coastal and Estuary Management Programs
- ▶ NSW Weeds Action Program
- ▶ Planning Reform Fund
- ▶ Climate Ready Program
- ▶ Urban Sustainability
- ▶ Environmental Restoration and Rehabilitation Grants



- ▶ Environmental Education Grants
- ▶ Environmental Research Grants
- ▶ Environmental Research Program
- ▶ Eco-Schools Program
- ▶ Maritime Boating Infrastructure Program
- ▶ Australian Pest Animal Management Project (APAMP)
- ▶ NSW Local Infrastructure Fund
- ▶ Project AWARE Foundation Grants
- ▶ Sustainability and the Environment Large Grants Program
- ▶ Ian Potter Foundation Grants – Environment and Conservation.
- ▶ Re-tooling for Climate Change
- ▶ Local Adaptation Pathways Program
- ▶ Stormwater Levy.

More information on each of these funding sources is provided in Appendix C.

Table 7-1 Management Strategy Implementation Schedule and Approximate Budget

Priority	Code	Management Strategy	2011-12	2012-13	2013-14	2014-15	2015-16	Cost	Status
Very High	WQ1	Expand the Current Water Quality Monitoring Program to align to the parameters of the Ecohealth Program consistent with the NSW State Government's Monitoring and Evaluation Reporting (MER) guidelines for estuaries	\$ 10,000	\$ 10,000	\$ 10,000	\$ 10,000	\$ 10,000	\$ 50,000	Ongoing
	WQ2	Remove the Rubbish	\$ 2,000	\$ 2,000	\$ 1,000	\$ 1,000	\$ 1,000	\$ 7,000	Ongoing
	S1	Ambassadors Program	\$ -	\$ 1,000	-	-	-	\$ 1,000	Not Started
	S2	Establish a Creek Walk	-	\$ 50,000	\$ 50,000	\$ 50,000	-	\$ 150,000	Not Started
High	WQ3	WSUD Policy	NC	NC	NC	NC	NC	\$ -	Ongoing
	WQ4	Regular Inspection of On-site Wastewater Systems	NC	NC	NC	NC	NC	\$ -	Ongoing
	E1	Monitor Biological Indicators (Merged into WQ1)	-	-	\$ 10,000	-	-	\$ 10,000	Ongoing
	S3	Formalise Access Tracks and Areas of Recreation	-	\$ 10,000	\$ 10,000	\$ 10,000	-	\$ 30,000	Ongoing
	E2	Initiate and Continue Bush Regeneration Programs	-	\$ 10,000	\$ 5,000	\$ 5,000	\$ 5,000	\$ 25,000	Ongoing
	WQ5	Upgrade Stormwater Controls in Existing Urban Areas	-	\$ 10,000	\$ 10,000	\$ 10,000	\$ 10,000	\$ 40,000	Ongoing
Medium-high	H1	Educate the Community on the Heritage Value of the Estuary	-	-	\$ 10,000	-	-	\$ 10,000	Ongoing
	E3	Establish a Vegetation Buffer	\$ 2,000	\$ 2,000	\$ 2,000	\$ 2,000	\$ 2,000	\$ 10,000	Ongoing
	S4	Educate and Enforce Dog Hygiene	\$ 2,000	-	-	\$ 2,000	-	\$ 4,000	In Progress
	S5	Provide Recycling Bins in Boambee Creek Reserve and Boat Ramps	\$ 2,000	NC	NC	NC	NC	\$ 2,000	Complete
	E4	Educate the Community about Estuarine Communities	-	\$ 10,000	-	-	-	\$ 10,000	Ongoing
	ER1	Monitor Erosion	\$ 10,000	\$ 10,000	\$ 10,000	\$ 10,000	\$ 10,000	\$ 50,000	Ongoing
	MGT1	Review the Management of Boambee Creek Reserve	-	-	NC	NC	\$ 75,000	\$ 75,000	Ongoing
	WQ6	Undertake an Environmental Audit	-	-	-	\$ 10,000	-	\$ 10,000	Not Started
Medium	S6	Upgrade and Maintain Hogbin Drive Boat Ramp	\$ 10,000	-	-	-	-	\$ 10,000	Ongoing
	WQ7	Educate the Community about Pesticide and Nutrient Use	-	-	-	\$ 10,000	-	\$ 10,000	Ongoing
Cost			\$ 38,000	\$ 115,000	\$ 118,000	\$ 120,000	\$ 113,000	\$ 504,000	

NC = Strategy being implemented but there is no significant cost e.g. no Council staff time costs

The costs are a preliminary estimate only. Actual prices, costs and other variables may be different to those used to prepare the cost estimate.



8. Monitoring and Evaluation

Monitoring the effectiveness of the implementation of the management objectives, strategies and actions detailed in this Plan is critical in order to provide quantifiable measures of progress against baseline conditions. Monitoring provides information that is useful in assessing whether scarce resources are being most effectively targeted to obtain the best outcomes.

Ultimately, the success of the Plan depends on the management objectives being achieved but these are long term objectives, so a range of short, medium and long term evaluation methods are required. A discussion of the short, medium and long term monitoring and evaluation options is presented below.

8.1 Short Term

Short term monitoring is the simplest form of evaluation and basically involves assessing if the management actions have been implemented. Each organisation responsible for implementing the actions identified in the Plan would be required to review, on an annual basis, if the actions they are responsible for have been completed. If the action has not been completed, the reason should be investigated and remedial action undertaken.

8.2 Medium Term

The indicators outlined for each management strategy constitute the medium term monitoring and evaluation mechanism. If there has been an improvement in the indicators, the management strategy is considered to have been successful. However, monitoring should continue to ensure the long term success of the Plan (see Long term Options below). If no improvement in the indicators is observed, the reasons should be investigated and remedial action implemented.

8.3 Long Term

The long term monitoring and evaluation options relate to the management objectives and if they are being achieved. Essentially the management objectives relate to maintaining and improving the environmental, social and economic values of the estuary. The most appropriate way to monitor these would be long term environmental monitoring and assessment (e.g. water quality, benthic surveys, vegetation distribution, length of bank erosion). Periodic community surveys would also be a valuable method of assessment. Some objectives would be relatively simple to monitor, while others would require long term monitoring and assessment. Establishing a baseline condition would also be required so that the results of the monitoring could be effectively assessed.

A range of long term monitoring systems have already been established by CHCC, North Coast LLS and State Government agencies, such as Ecosystem Health Monitoring Program and Report Card Scoping Study (WBM, 2007), New South Wales Monitoring, Evaluation and Reporting Strategy (DECCW, 2010) and State of the Environment reporting. It is recommended that any monitoring and reporting program be consistent with these systems, so results can be assessed against the wider region.



If the long term monitoring and evaluation program indicates that the objectives are not being achieved, the reason why they are not being achieved should be assessed and remedial action undertaken.

8.4 Estuary Management Plan Review

It is recommended that the actions within the Plan be reviewed annually. This will allow the management actions and strategies to be updated as they are implemented or rescheduled if they have not. A complete review should be undertaken at least every 5 years to ensure that the issues, objectives, strategies and actions are still relevant. The complete review would provide the opportunity to alter the management strategies and actions if the long term monitoring and evaluation indicates the management objectives are not being achieved.

A comprehensive review will be required prior to 31 December 2021 to transition this CZMP into a Coastal Management Plan in order to retain its certification status under the Coastal Management Act 2016. Implementation of the strategies and the associated tasks will be coordinated by Council staff and monitored by the Coast and Estuary Management Advisory Committee (CEMAC) throughout the duration of the CZMP. During the revision phase of this document, any substantial changes to the Plan and strategies will be reported to Council, CEMAC, and State government and appropriate agencies to ensure that all relevant stakeholders are informed.

Community reporting will be provided by way of disclosing all relevant information on the Council website throughout the process allowing the community a platform to comment and provide feedback.



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Appendix A

Coastal Zone Management Principles

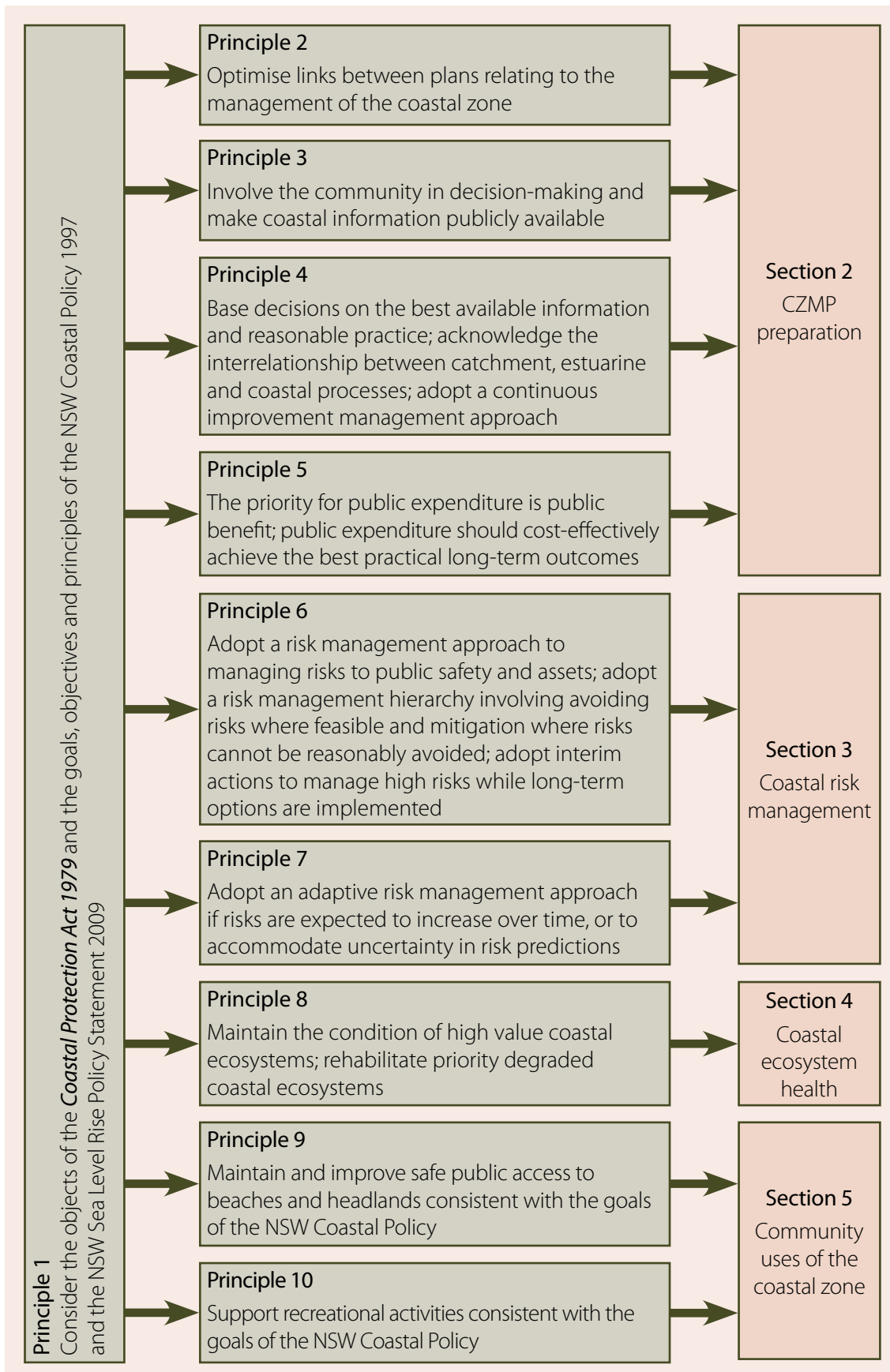


Figure 2: Coastal Management Principles



Appendix B

Legislation, Policies and Plans



9.1 Commonwealth Legislation and Policies

Environmental Protection and Biodiversity Conservation Act 1999 (EPBC Act)

The EPBC Act is a Commonwealth Act that requires the Federal Environment Minister's approval for an Action that will, or is likely to, have a detrimental or adverse impact on a matter of National Environmental Significance (NES) or on Commonwealth Land unless the action is exempt.

Matters of NES currently include World Heritage properties, Ramsar Wetlands, Nationally Threatened Species and Ecological Communities, Migratory Species, Commonwealth Marine Areas, Nuclear Actions and Natural Heritage Places.

9.2 State Legislation and Policies

Catchment Management Act 2003

The purpose of the Catchment Management Act 2003 is to establish catchment management authorities that would carry out certain natural resource management functions in their regions. There are thirteen catchment management authorities in New South Wales. Boambee/Newports Creek falls in the Northern Rivers catchment area.

The objects of this Act are as follows:

- (a) to establish authorities for the purpose of devolving operational, investment and decision-making natural resource functions to catchment levels,
- (b) to provide for proper natural resource planning at a catchment level,
- (c) to ensure that decisions about natural resources take into account appropriate catchment issues,
- (d) to require decisions taken at a catchment level to take into account State-wide standards and to involve the Natural Resources Commission in catchment planning where appropriate,
- (e) to involve communities in each catchment in decision making and to make best use of catchment knowledge and expertise,
- (f) to ensure the proper management of natural resources in the social, economic and environmental interests of the State,
- (g) to apply sound scientific knowledge to achieve a fully functioning and productive landscape,
- (h) to provide a framework for financial assistance and incentives to landholders in connection with natural resource management.

Each of the thirteen catchments have a LLS and the North Coast LLS is an important stakeholder in the management of the Boambee/Newports Creek catchment. It is important that the North Coast LLS is engaged in the Plan and the Plan is consistent with the North Coast LLS Catchment Action Plan (explained further below).

Coastal Protection Act 1979

The objects of this Act are to provide for the protection of the coastal environment of the State for the benefit of both present and future generations and, in particular:

- (a) to protect, enhance, maintain and restore the environment of the coastal region, its associated ecosystems, ecological processes and biological diversity, and its water quality, and



- (b) to encourage, promote and secure the orderly and balanced utilisation and conservation of the coastal region and its natural and man-made resources, having regard to the principles of ecologically sustainable development, and
- (c) to recognise and foster the significant social and economic benefits to the State that result from a sustainable coastal environment, including:
- (i) benefits to the environment, and
 - (ii) benefits to urban communities, fisheries, industry and recreation, and
 - (iii) benefits to culture and heritage, and
 - (iv) benefits to the Aboriginal people in relation to their spiritual, social, customary and economic use of land and water, and
- (d) to promote public pedestrian access to the coastal region and recognise the public's right to access, and
- (e) to provide for the acquisition of land in the coastal region to promote the protection, enhancement, maintenance and restoration of the environment of the coastal region, and
- (f) to recognise the role of the community, as a partner with government, in resolving issues relating to the protection of the coastal environment, and
- (g) to ensure co-ordination of the policies and activities of the Government and public authorities relating to the coastal region and to facilitate the proper integration of their management activities, and
- (h) to encourage and promote plans and strategies for adaptation in response to coastal climate change impacts, including projected sea level rise, and
- (i) to promote beach amenity.

Crown Lands Act 1989

The Crown Lands Act 1989 is one of the principal Acts for the management of Crown Reserves. The Crown Lands Act 1989 is administered by the Department of Industry - Crown Lands and Water. The Department is responsible for the management of Crown Reserves along with an appointed trustee on behalf of the NSW community.

Section 11 of the Crown Lands Act sets out the principles by which Crown Reserves are to be managed:

- ▶ that environmental protection principles be observed in relation to the management and administration of Crown land,
- ▶ that the natural resources of Crown land (including water, soil, flora, fauna and scenic quality) be conserved wherever possible,
- ▶ that public use and enjoyment of appropriate Crown land be encouraged,
- ▶ that, where appropriate, multiple use of Crown land be encouraged,
- ▶ that, where appropriate, Crown land should be used and managed in such a way that both the land and its resources are sustained in perpetuity, and
- ▶ that Crown land be occupied, used, sold, leased, licensed or otherwise dealt with in the best interests of the State consistent with the above principles.



A number of Crown reserves are located within the Boambee/Newports Creek catchment, including Boambee Creek Reserve and Boambee Beach. Any management recommendations in the Plan should therefore be consistent with the *Crowns Land Act 1989*.

Environmental Planning & Assessment Act 1979 (EP&A Act)

The EP&A Act provides the statutory planning framework to control the use and development of land in New South Wales. A range of planning controls (LEPs, DCPs and SEPPs) need to be considered when planning the future use and development in the Boambee/Newports Creek catchment.

Fisheries Management Act 1994 (FM Act)

The FM Act and Regulations is the principle legislation enabling the management of both commercial and recreational fishing in NSW. The legislation aims to ensure that the biological diversity is maintained and fishing activities remain sustainable throughout NSW. The State Government views the State's fisheries as a community-owned resource with the onus on users to protect and safeguard this resource. Underpinning the FM Act is the NSW Fisheries Policy and Guidelines for Aquatic Habitat Management and Fish Conservation Act 1999. The FM Act also requires that a permit be obtained prior to the undertaking of certain estuary works, including any works that will affect mangroves or seagrasses, or obstruct fish passage.

The Plan needs to be consistent with the FM Act and some of the recommended actions may need to obtain a permit prior to implementation.

Local Government Act 1993 (LG Act)

The LG Act sets out the role and responsibilities of Coffs Harbour City, which involve management, development, protection, restoration, enhancement and conservation of the environment for the local government area. The functions of the local government are to be performed in a manner that are consistent with and promote the principles of ecologically sustainable development.

The Plan assists in meeting CHCC obligations under the LG Act and the LG Act may assist in the implementation of some of the Plan actions.

Noxious Weeds Act 1993 (NW Act)

The NW Act is a NSW government instrument outlining the definition, declaration, and control of noxious weeds throughout the State. Local government bodies have the responsibility to ensure that the Act is complied with within their boundaries.

Landowners or occupiers have obligations under the Act to control any declared weed on their property. Council is required to conduct inspections of private properties to check compliance with the Act and Noxious Weed Officers have the authority to issue control notices for any breach.

The NW Act provides an mechanism for the control of noxious weeds within the Boambee/Newports Creek catchment.

NSW Coastal Policy 1997 and Coastal Protection Act 2010 (CP Act)

The NSW Coastal Policy seeks to balance population growth and economic development in a sustainable way. The Policy aims to reduce the level of impact or risk placed on the natural, cultural, spiritual and heritage values of the coastal environment by incorporating ecologically sustainable development.



The *Coastal Protection and Other Legislation Amendment Act 2010* was passed by the NSW Parliament on 21 October 2010 and largely commenced on 1 January 2011. This Act amended the *Coastal Protection Act 1979*, the *Local Government Act 1993* and the *Environmental Planning and Assessment Act 1979*, and the three accompanying regulations.

The primary objective of the Act is to improve the arrangements for managing coastal erosion risks. It provides additional tools and options for councils and landowners, as well as reinforcing coastal zone management planning as the way to develop local solutions for local erosion problems.

NSW Coastal Policy and CP Act provide the overarching framework for the Plan and the recommended actions.

Protection of the Environment Operations Act 1997 (POEO Act)

The POEO Act regulates water pollution, air pollution and noise pollution in New South Wales. Under the POEO Act it is considered an offence to pollute the environment.

Under the POEO Act a number of activities require an environmental protection licence, which is detailed in Schedule 1 of the Act.

The POEO Act provides a mechanism for the controlling pollution within the Boambee/Newports creek catchment.

State Environmental Planning Policy (SEPP) 14: Coastal Wetlands

SEPP 14 – Coastal Wetlands is designed to protect and preserve Coastal Wetlands in NSW. SEPP 14 aims to ensure that the coastal wetlands are preserved and protected in the environmental and economic interests of the State.

The policy applies to all land outlined by the outer edge of the heavy black line on the SEPP 14 – Coastal Wetlands maps. A number of SEPP 14 wetlands are within the Boambee/Newports estuary. Thus this policy is directly applicable to any future planning and development within Boambee/Newports estuary.

State Environmental Planning Policy (SEPP) 26: Littoral Rainforest

This policy applies to land mapped as littoral rainforest. The intention of the policy is to protect the littoral rainforest with a view to the preservation of those areas in their natural state.

No areas of littoral rainforest are mapped within the Boambee/Newports Estuary catchment.

State Environmental Planning Policy (SEPP) 71: Coastal Protection

SEPP 71 aims to ensure that development in the NSW coastal zone is appropriate and suitably located. The Policy provides a consistent and strategic approach to coastal planning to ensure a clear development assessment framework for the coastal zone and protects the coastal area of the estuaries studied in this Plan.

The National Parks and Wildlife Act 1974 (NPW Act)

The NP&W Act provides the primary basis for the legal protection and management of Aboriginal sites within NSW. The implementation of the Aboriginal heritage provisions of the Act is the responsibility of the OEHL. The Act aims to prevent the unnecessary or unwarranted destruction of relics, and the active protection and conservation of relics that are of high cultural significance.



Under Section 87 of the Act, it is an offence to disturb or excavate any land for the purpose of discovering an Aboriginal object, disturb or move an Aboriginal object, or to take possession of or remove an Aboriginal object from certain lands, without a permit from the Director-General of OEH.

The NP&W Act provides the mechanism for protecting aboriginal sites within the Boambee/Newports creek catchment.

The NSW Heritage Act 1977

The purpose of the NSW Heritage Act 1977 is to ensure that the heritage of New South Wales is adequately identified and conserved. In practice the NSW Heritage Act has focused on items and places of non-indigenous heritage to avoid overlap with the NP&W Act which has primary responsibilities for nature conservation and the protection of Aboriginal relics and places in NSW.

The Heritage Act is concerned with all aspects of heritage conservation and recognises two levels of heritage significance, State significance and Local significance. The Act provides protection to items that have been identified, assessed and listed on various registers including State government section 170 registers, local government LEPs and the State Heritage Register.

The Heritage Act provides the mechanism for protecting heritage sites within the Boambee/Newports creek catchment.

Threatened Species Conservation Act 1995 (TSC Act)

The TSC Act was introduced on 1st January 1996 and aims to:

- ▶ Conserve threatened species, populations, ecological communities and their habitats;
- ▶ Promote their recovery; and
- ▶ Manage the processes that threaten or endanger them.

The TSC Act identifies and protects native plants and animals of 'threatened' conservation status. The Act also provides for species recovery and threat abatement programs.

The Boambee/Newports creek catchment contains various threatened species, populations, ecological communities and their habitats and the TSC Act is the legislation that can be used to protect them.

Water Management Act 2000

The Rivers and Foreshores Improvement Act 1948 has been repealed and replaced by the controlled activity provisions in the Water Management Act 2000 (WM Act). The controlled activity approval provisions commenced on 4 February 2008. A controlled activity approval under the WM Act is required for certain types of developments and activities that are carried out in or near a river, lake or estuary.

Under the WM Act, a controlled activity means:

- ▶ The erection of a building or the carrying out of a work (within the meaning of the EP&A Act), or
- ▶ The removal of material (whether or not extractive material) or vegetation from land, whether by way of excavation or otherwise, or
- ▶ The deposition of material (whether or not extractive material) on land, whether by way of landfill operations or otherwise, or
- ▶ The carrying out of any other activity that affects the quantity or flow of water in a water source.



Public authorities and local councils are exempt from the requirement to hold a controlled activity approval in relation to all controlled activities that they carry out in, on or under waterfront land.

The WM Act needs to be considered in the Plan because some of the recommendations may require a controlled activity approval.

Wetlands Management Policy 1996

The NSW Government promotes the conservation, sustainable management and use of wetlands and developed the Wetlands Management Policy to reflect this aim. The Policy gives consideration to the biophysical requirements of wetlands within all NSW Government decision-making and assists in protecting wetlands in good condition and rehabilitating degraded wetlands where feasible.

The Plan is implementing the aim of the Wetlands Management Policy.

9.3 Local Legislation and Policies

Mid North Coast Regional Strategy

The purpose of the Regional Strategy is to ensure that the Mid North Coast can continue to prosper over the next 25 years while protecting areas of high environmental, cultural and resource value. The Strategy indicated the level of development in the catchment and the Plan reinforced its environmentally sustainable development principles.

Coffs Harbour Coastal Reserves Plan of Management 2000

The Coastal Reserves Plan of Management has been prepared to guide the future management, use and development of Coastal Crown Reserves for which Coffs Harbour City Council is the appointed Corporate Manager of the Reserve Trust. The plan also covers Council owned reserves on the coastal strip.

The Plan of Management is prepared in accordance with the Crowns Lands Act 1989, Local Government Act 1993 and the NSW Coastal Policy 1997. The plan outlines the Coastal Reserve lands, resources, values and the goals of the Plan. It provides an overview and a guide to management of beaches, natural areas and recreation reserves. The plan also includes a management strategy which details strategies for specific aspects of management of natural areas and coastal processes, recreation, access, and implementation (including regulation of activities, planning, works and funding).

The Plan covers the coastal strip along Boambee Beach but does not include Coastal Crown Reserves which are managed by Community trust; this includes Boambee Creek Reserve.

Coffs Harbour City Local Environmental Plan 2013 (LEP)

The Coffs Harbour City LEP is the primary local planning document that guides development in the local government area. The LEP zones land for particular types of use, including residential, commercial or industrial areas, open spaces and other protected areas. The LEP identifies what types of development are allowed to occur in different zones.

The LEP identifies standards for subdivision and development bulk and scale. The LEP lists heritage items establishes controls for development in or adjacent to Boambee/Newports Creek catchment in relation to biodiversity conservation, wetlands, flood risk, bushfire, contaminated land management, and acid sulfate soils. The LEP has been amended numerous times and is currently being reviewed consistent with state government planning reforms.



Development Control Plans (DCPs)

Council's DCPs are supplementary plans to LEP 2013. They outline detailed development guidelines and controls which are specific to the land where a DCP applies.

Various DCPs apply to the Boambee/Newports Creek catchment. The DCP controls need to be considered in the Plan and could provide an avenue for implementing any recommendations.

Koala Plan of Management

This Comprehensive Koala Plan of Management (CKPoM) was prepared by the NSW National Parks and Wildlife Service (NPWS) in close consultation with Coffs Harbour City Council (CHCC) under the statutory provisions of State Environmental Planning Policy 44 - Koala Habitat Protection (SEPP 44). The adoption of a CKPoM which covers the whole Coffs Harbour Local Government Area (LGA) replaces the requirement under SEPP 44 for developments in Coffs Harbour LGA to address koala issues individually, and sets out a framework for conserving koalas in Coffs Harbour LGA.

The Plan can assist the implementation of the KPoM by including relevant management actions.

Northern Rivers Catchment Action Plan

The Northern Rivers Catchment Action Plan (CAP) is a 10-year statutory, non-regulatory, plan developed by the community and the North Coast LLS that was approved for implementation by the NSW Government in 2004.

The CAP is the central mechanism used by the North Coast LLS to prioritise and deliver natural resource management investment and outcomes in the region. The CAP:

- ▶ Identifies and provides long term direction (with goals set for 2016) to address natural resource management issues impacting on the sustainability of our natural resources
- ▶ Establishes a clear direction for government-funded investments to repair and rehabilitate natural resources in our catchments
- ▶ Directs the development of incentive programs to maximise environmental outcomes

At the centre of the CAP is the northern Rivers community's common goals - or targets - developed over a period of 5 years through several 'catchment blueprint' consultation and planning processes. The CAP also includes:

- ▶ Results expected to be achieved by the implementation of the plan and timeframes for achieving specified results
- ▶ Performance indicators and program delivery outlines

The CAP is the main mechanism directing natural resource management within the region. The Plan needs to be consistent with the CAP to ensure a coordinated approach to natural resource management in the region. Consistency with the CAP could also assist in obtaining funding for the recommended management actions in the Plan.

Urban Stormwater Management Plan (CHCC, 2000)

The Urban Stormwater Management Plan (USMP) aims to meet the requirements set out by the EPA, in order to "co-ordinate the effective management of the impacts of urban stormwater on aquatic ecosystems, public health and amenity within the Coffs Harbour Local Government Area". The USMP



describes the catchment conditions, identifies values, objectives and issues, and recommends management options.

The USMP is now 10 years old but shares many of the issues and objectives of the Plan. Any stormwater management options in the Plan should act to reinforce the aims of the USMP.

Vertebrate Pest Management Strategy (CHCC, 2009)

The Vertebrate Pest Management Strategy (VPMS) has been prepared for the purpose of guiding future CHCC management of vertebrate pests within the Coffs Harbour LGA. It is intended that the management actions contained in the VPMS be incorporated into all existing Plans of Management for Community, Operational and Crown lands currently managed by the CHCC.

The VPMS consists of five primary objectives that focus on conserving biodiversity, controlling and managing known pest populations, developing cooperative approaches to pest management and improving community education and awareness.

The VPMS has identified the occurrence of at least 18 terrestrial vertebrate pest species within the LGA. Species-specific pest plans have been prepared for the six highest priority vertebrate pest species. The VPMS has also identified 17 high priority CHCC managed areas for which a series of site-specific management actions have been recommended, including the undertaking of ground-truthing surveys and the preparation of individual management plans.

Some of the 17 high priority areas are within the Boambee/Newports Creek catchment and therefore pest management should be considered in the Plan.

CHCC Water Sensitive Urban Design Policy

The CHCC Water Sensitive Urban Design (WSUD) policy aims to protect and improve the natural water cycle quality within the Coffs Harbour Local Government Area, by minimizing the impacts of urban development on the water cycle, and thus improving the health of aquatic ecosystems.

In approving any development of land (as defined within WSUD Policy), the principles of WSUD (as contained in the WSUD Policy) are to be applied, to ensure all urban infrastructure is compatible with the natural features of the site, thereby reducing negative impacts on the natural water cycle and protecting and improving the health of aquatic ecosystems and riparian vegetation, including surface and ground water resources, rivers, streams, wetlands, estuaries and marine environments

The WSUD Policy addresses one of the major issues (ie water quality) within the Boambee/Newports Creek catchment and the Plan should support and reinforce the implementation of this policy.

Coffs Harbour Coastal Processes and Hazard Definition Study

The Coffs Harbour Coastal Processes and Hazards Definition Study is the first step in developing a Coastal Zone Management Plan to help tackle such risks in the Coffs Harbour local government area (LGA). The Study contains a thorough technical assessment of the possible threats posed by climate change, extreme weather and sea level rise.

Using the NSW Government's scientific guidelines and forecast sea level rise, it investigates the coastal processes occurring along the Coffs Harbour LGA coastline and the extent of the coastal hazards arising from these processes.

The Study looks at the likelihood of either coastal erosion or coastal inundation during extreme weather at three different timescales. These are 'Immediate', in the year '2050' and in the year '2100'. At each of



these timescales, maps and hazard lines have been developed for the LGA that show erosion or inundation on the basis of 'almost certain', 'unlikely' and 'rare'.

This study provides an indication of the areas within the Boambee/Newports Estuary that are at risk from climate change, extreme weather and sea level rise. It will also provide management recommendations that should overlap those in this Plan.

Coffs Harbour 2030 Plan

The Coffs Harbour 2030 Plan is a plan for the whole of the Coffs Harbour community. It is driven by the Community Vision 2030 which was developed in 2008 and outlines the key steps we need to take to deliver a more sustainable Coffs Harbour to the year 2030 and beyond. Whilst the Community Vision 2030 is aspirational in nature, the strategic plan identifies the specific strategies that we, as a community, need to undertake in our moves towards achieving a more sustainable society.

The 2030 Plan is a more strategic document and this Plan supports it by improving the management of Boambee/Newports Estuary.



Appendix C

Funding Sources

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Grant Programs

Name of Grant	Description	Organisation	Contact Details	Phone Details	Website
Caring for our Country	<p>Caring for our Country is the Government's new natural resource management program. Caring for our Country is designed as an integrated package with one clear goal, a business approach to investment, clearly articulated outcomes and priorities and improved accountability. It commenced on 1 July 2008 and will integrate delivery of the Commonwealth's existing natural resource management programs, the Natural Heritage Trust, the National Action Plan for Salinity and Water Quality, the National Landcare Program, the Environmental Stewardship Program and the Working on Country Indigenous land and environmental program.</p>	<p>Department of Agriculture, Fisheries and Forestry Department of the Environment, Water, Heritage and the Arts</p>	<p>GPO Box 787 Canberra ACT 2601</p>	<p>1800 552 008</p>	<p>Caring for our Country</p>
Climate Ready Program	<p>The Climate Ready Program is one of the three elements of the \$240 million Clean Business Australia initiative. The other elements are Re-Tooling for Climate Change and Green Building Fund. The Climate Ready program (\$75m over 4 years) is a competitive grants program providing grants from \$50,000 up to \$5m on a matching funding basis to support research and development, proof-of-concept and early-stage commercialisation activities to develop solutions to climate change challenges.</p>	<p>AusIndustry</p>	<p>GPO Box 9839 Canberra ACT 2601</p>	<p>13 2846</p>	<p>Climate Ready Program</p>



Name of Grant	Description	Organisation	Contact Details	Phone Details	Website
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Urban Sustainability

Aim of the program

The Urban Sustainability Program aims to facilitate projects of significant environmental benefit to NSW, delivered by local government organisations in partnership with other government agencies, local businesses, community organisations and householders. Through these projects, the Program also aims to improve the capacity of communities and organisations to protect, restore and enhance the sustainability of our urban environment.

DECC

http://www.environment.nsw.gov.au/grants/urban_sustainability.htm

Objectives

The objectives of the Program are to:

- ▶ improve urban water management with particular focus on stormwater and urban runoff to achieve sustainable water quality and conservation outcomes
- ▶ improve resource conservation through effective waste management, avoidance, reuse, recycling and support for sustainable products and services
- ▶ improve and protect urban bushland and creeks, urban wildlife and habitats of rare and endangered flora and fauna
- ▶ improve the quality of the local urban environment, through integrated approaches that address a combination of the following examples: air quality, noise, odour, chemical use, biodiversity, litter and dumping
- ▶ improve the sustainability performance of local councils, small businesses and community organisations and householders in urban areas.



Name of Grant	Description	Organisation	Contact Details	Phone Details	Website
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Environmental Restoration and Rehabilitation Grants

Aim of the program

The aim of the Restoration and Rehabilitation (R&R) program is to facilitate projects to prevent or reduce pollution, the waste stream or environmental degradation of any kind, run by community organisations and State and Local government organisations. Through these projects, we also aim to improve the capacity of communities and organisations to protect, restore and enhance the environment.

Objectives

The Objectives of the Environmental Restoration and Rehabilitation Program are:

- ▶ to restore degraded environmental resources, including rare and endangered ecosystems
- ▶ to protect important ecosystems and habitats of rare and endangered flora and fauna
- ▶ to prevent or minimise future environmental damage
- ▶ to enhance the quality of specific environmental resources
- ▶ to improve the capacity of eligible organisations to protect, restore and enhance the environment
- ▶ to undertake resource recovery and waste avoidance projects and to prevent and/or reduce pollution.

DECC

<http://www.environment.nsw.gov.au/grants/restoration.htm>

Environmental Education Grants

Aim of the program

The aim of the Environmental Education program is to support educational projects or programs that develop or widen the community's knowledge of, skills in, and commitment to protecting the environment and promoting sustainable behaviour.

Objectives

The Objectives of the Environmental Education Program are:

- ▶ to help attain one or more of the outcomes in the NSW Government's Environmental Education Plan, Learning for Sustainability
- ▶ to facilitate changes in behaviour of individuals and groups which affect specific environmental problems
- ▶ to develop and promote education projects which improve the environment.

DECC

<http://www.environment.nsw.gov.au/grants/education.htm>



Name of Grant	Description	Organisation	Contact Details	Phone Details	Website
Environmental Research Grants	<p data-bbox="359 504 391 725">Aim of the program</p> <p data-bbox="391 504 454 725">The aim of the Research program is to support research projects that help address environmental problems in NSW.</p> <p data-bbox="454 504 486 725">Objectives</p> <p data-bbox="486 504 518 725">The Objectives of the Environmental Research Program are:</p> <ul data-bbox="518 504 742 725" style="list-style-type: none"> ▶ to generate new knowledge or information to facilitate local solutions to environmental problems ▶ discover new methods of operation for NSW industries that are less harmful to the environment ▶ provide knowledge about general environmental problems ▶ to assess environmental degradation. 	DECC			http://www.environment.nsw.gov.au/grants/research.htm
Environmental Research Program	<p data-bbox="758 504 790 725">Aim of the program</p> <p data-bbox="790 504 853 725">The aim of the Research program is to support research projects that help address environmental problems in NSW.</p> <p data-bbox="853 504 885 725">Objectives</p> <p data-bbox="885 504 917 725">The Objectives of the Environmental Research Program are:</p> <ul data-bbox="917 504 1141 725" style="list-style-type: none"> ▶ to generate new knowledge or information to facilitate local solutions to environmental problems ▶ discover new methods of operation for NSW industries that are less harmful to the environment ▶ provide knowledge about general environmental problems ▶ to assess environmental degradation. <p data-bbox="1141 504 1185 725">The Trust is expecting to call for Expressions of Interest to the Research program and applications to the Research Seeding Grants program around mid-January 2011. Applications are usually open for a period of four weeks.</p>	DECC			http://www.environment.nsw.gov.au/grants/research.htm



Name of Grant	Description	Organisation	Contact Details	Phone Details	Website
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Eco-Schools Program

Aim of the program

This program provides grants to schools to give them the opportunity to involve their students and community in developing and implementing environmental management projects.

Objectives

The overall objective of the Eco Schools Program is to support schools to develop best practice in environmental education and innovative solutions to environmental issues. The program will fund school environmental management projects aimed at one or more of the objectives below.

Students:

- ▶ to promote the development of students' knowledge, values and behaviour that supports environmental sustainability
- ▶ to promote participation of some or all students in identifying, designing, implementing and monitoring solutions that improve the quality of the school and local environment.

Teachers:

- ▶ to assist teachers to integrate school environmental management projects into school programs and therefore maximise student learning
- ▶ to enable project related professional learning for teachers to gain practical and pedagogical skills and knowledge about the environment.

School development and management:

- ▶ to encourage a whole of school approach to sustainable management of school operations
- ▶ to fund schools to utilise the natural and built environment to facilitate student learning
- ▶ to encourage schools to link with the local community (including other schools) to undertake activities which address local environmental issues.

Environment:

- ▶ to promote more efficient resource use and improve the quality of the local environment
- ▶ to enable schools to address community and government environmental concerns and priorities.

The ultimate goal of the Eco Schools Grant Program is the development of ecologically sustainable schools.

Eligibility

Schools that did not receive an Environmental Trust grant in the previous year are eligible to apply. Schools must also be registered on the [Sustainable Schools NSW](http://www.environment.nsw.gov.au/grants/schools.htm) website. Please note that preschools are not eligible to apply.

<http://www.environment.nsw.gov.au/grants/schools.htm>



Name of Grant	Description	Organisation	Contact Details	Phone Details	Website
<p>Australian Pest Animal Management Project (APAMP)</p>	<p>The Australian Pest Animal Management Program (APAMP) is funded by the Australian Government Department of Agriculture, Fisheries and Forestry and administered by the Bureau of Rural Sciences. APAMP funds research projects that develop and promote improved approaches to the management and monitoring of agricultural pest animals. The program is aligned with the goals and objectives of the Australian Pest Animal Strategy.</p> <p>The main objectives of APAMP are to:</p> <ul style="list-style-type: none"> ▶ develop integrated, strategic approaches to manage the impacts of nationally significant pest animals on agriculture ▶ improve the effectiveness of control techniques and strategies for reducing pest animal impacts on agriculture ▶ produce guidelines and extension materials for the best practice management of nationally significant pest animals ▶ quantify the benefits of pest animal management. <p>Priority pest species include those addressed by the BRS 'Managing Vertebrate Pests' guidelines, as well as the species recognised as priorities in the Caring for our Country business plan (available from What is Caring for our Country?) where they have demonstrated agricultural impacts. APAMP also considers projects that quantify the impacts of native species (e.g. flying foxes) on agricultural production and develop approaches to reduce these impacts. In addition, economic, environmental and social assessments of large-scale on-ground pest animal management (e.g. Caring for our Country projects) to quantify their benefits, have also been identified as a priority.</p>	<p>Jeanine Baker Feral Animals Switchboard d: +61 2 6272 3933 email: Jeanine Baker web: www.brs.gov.au/feral-animals/apamp</p>	<p>http://www.daff.gov.au/bars/lanc/feral-animals/apamp</p>		



Name of Grant	Description	Organisation	Contact Details	Phone Details	Website
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Coastal and Estuary Management Programs

The NSW Government's Coastal Management Program's primary objective is to provide support to local councils to manage the risks from coastal hazards such as coastal erosion. A secondary objective of the program is to restore degraded coastal habitats. The primary objective of the Government's Estuary Management Program is to provide support to councils to improve the health of NSW estuaries and understand the potential risks from climate change.

DECC

<http://www.environment.nsw.gov.au/coasts/info/CoastEstFloodGrants.htm>

The support provided to councils under these programs includes financial assistance to:

- ▶ prepare coastline, estuary and coastal zone management plans and supporting studies
- ▶ carry out projects to reduce risks associated with coastal hazards, improve coastal environments and improve estuary health.

A review of these programs has resulted in a revised focus on funding, with a greater emphasis placed on:

- ▶ updating coastal hazard studies to incorporate sea-level rise benchmarks
- ▶ updating estuary plans to consider climate change impacts, including sea level rise
- ▶ estuary health monitoring and improvement
- ▶ focusing on high-hazard coastal areas and stressed estuaries.

Grant offers are subject to availability of funds for each financial year and State-wide priorities. Funding of up to 50% of a project's costs will normally be offered for successful grant applications.

NSW Weeds Action Program

The NSW Weeds Action Program is a NSW Government initiative to reduce the impact of weeds under the *NSW Invasive Species Plan*.

DPI

<http://www.dpi.nsw.gov.au/agriculture/pests-weeds/weeds>

The *NSW Weeds Action Program* replaces a range of noxious weed grant programs provided by the NSW Government to local and public authorities, and trustees of reserves and commons. For 2009–10, the Government provided noxious weed grants totalling \$8.555 million in six components. The *NSW Weeds Action Program* will target these funds directly at the weed outcomes in the *NSW Invasive Species Plan*. The Noxious Weeds Advisory Committee proposed the changes to ensure that local weed control authorities and other key stakeholders meet the *NSW Invasive Species Plan* targets for weed management



Name of Grant	Description	Organisation	Contact Details	Phone Details	Website
Planning Reform Fund	<p>Creating Australia's best planning system is a priority of the NSW Government. The aim of the Planning Reform Fund is to support initiatives to streamline the planning process, making it more strategic, efficient and transparent while enhancing community involvement. The Planning Reform Fund helps fund the reforms and can assist councils in particular by supporting the delivery of new local plans and key strategic planning projects.</p> <p>In particular, it supports local councils to deliver key strategic planning projects for their local area.</p>	NSW Department of Planning	<p>prf@planning.nsw.gov.au www.planning.nsw.gov.au/Programs/PlanningReformFund/tabid/131/language/en-US/Default.aspx</p>	02 9228 6249	
NSW Local Infrastructure Fund	<p>The NSW Local Infrastructure Fund has been established as an interest-free loan scheme to bring forward infrastructure projects which have been delayed due to a lack of funding and are essential to urban development.</p>	NSW Department of Planning	<p>nswlif@planning.nsw.gov.au</p>	02 9228 6249	<p>http://www.planning.nsw.gov.au/Programs/SWLocalInfrastructureFund/tabid/256/language/en-US/Default.aspx</p>
Project AWARE Foundation Grants	<p>Project AWARE Foundation grants support conservation of underwater environments, both marine and freshwater and are awarded to a variety of nonprofit organizations, institutions and individuals worldwide.</p> <p>Grant program funding is made possible solely by donations from divers and water enthusiasts involved with Project AWARE. Over the years the grant program has assisted many excellent community conservation projects which have made a significant difference to local people and their marine environments.</p>	Project Aware			<p>http://www.projectaware.org/content/index.php?pid=59</p>
Sustainability and the Environment Large Grants Program	<p>The Myer Foundation aims to assist in the area of Sustainability and Environment with its Large Grants Program through the areas of:</p> <ul style="list-style-type: none"> ▶ Biodiversity ▶ Northern Australia ▶ Water. <p>Please note, we do not accept unsolicited applications to the Large Grants Program.</p>	Myer Foundation	<p>enquiries@myerfoundation.org.au</p>	(03) 9207 3040	<p>http://www.myerfoundation.org.au/programs/overview.cfm?loadref=22</p>



Name of Grant	Description	Organisation	Contact Details	Phone Details	Website
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Ian Potter Foundation Grants – Environment and Conservation.	<p>The aim of this Program Area is to support Australian urban and regional communities to live sustainably and preserve biodiversity. This is considered important in the context of a challenging future due to factors such as land degradation, Australia's limited water resources and climate change.</p> <p>Environment & Conservation grants are of two types. The Foundation has a particular interest in supporting programs and research that promote sustainable approaches to agriculture, opportunities within the carbon economy and land management practices that encompass a landscape-scale approach to protecting areas of high conservation value. Applications for \$100,000 or more are received via an Expression of Interest process.</p> <p>In addition, the Foundation supports smaller projects by recognising the important role played by volunteers and environmental organisations in increasing public understanding and awareness. Applications of up to \$20,000 should be made on the Small Grants Application Form.</p> <p>Funding objectives and further information regarding both grant types is below. Please note that the Foundation will not fund grants between \$20,001 and \$99,999 in the Environment & Conservation program area.</p> <p>Grants submitted within this area may also be considered for an Alec Prentice Sewell Gift.</p>	Ian Potter Foundation	http://foundation.ianpotter.org.au/environment-amp-conservation		
Re-tooling for Climate Change	<p>The Re-tooling for Climate Change program is one of the three elements of the \$240 million Clean Business Australia initiative. The other elements are the Climate Ready Program and the Green Building Fund. The Re-tooling for Climate Change program (\$75m over 4 years) will help small and medium sized Australian manufacturers reduce their environmental footprint, through projects that improve the energy and/or water efficiency of their production processes. The program provides grants of between \$10,000 and \$500,000, up to a maximum of half of the cost of each project.</p>	AusIndustry	hotline@ausindustry.gov.au	13 28 46	Re-tooling for Climate Change
Local Adaptation Pathways Program	<p>Local Adaptation Pathways Program provides around \$2m in funding to help local government build their capacity to respond to the likely impacts of climate change.</p>	Department of Climate Change			Local Adaptation Pathways Program
Better Boating Program	<p>The Better Boating Program (BBP) is a State Government grants program aimed at providing recreational boating infrastructure for the benefit of the boating community on New South Wales waterways.</p>	Maritime		(02) 9563 8847	http://www.maritime.nsw.gov.au/mpd/infra_grants.html



Appendix D
Letters of Support from Agencies for
Relevant Actions

Jackson Pfister

From: Trent Gearside <Trent.Gearside@reflectionsoliday.com.au>
Sent: Tuesday, 13 February 2018 10:17 AM
To: Sally Whitelaw
Cc: Jackson Pfister; David Fahey
Subject: RE: Certification of the Boambee / Newports Coastal Zone Management Plan

Hi Sally,

Happy to provide support thanks Sally.

Trent Gearside

Executive Manager - Capital Works

PO Box 212, Carrington, NSW 2294

t: 02 4914 5506

e: Trent.Gearside@reflectionsoliday.com.au

w: reflectionsolidayparks.com.au

NSW Crown Holiday Parks Trust trading as:



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From: Sally Whitelaw [mailto:sally.whitelaw@chcc.nsw.gov.au]
Sent: Monday, 12 February 2018 3:13 PM
To: Trent Gearside <Trent.Gearside@reflectionsoliday.com.au>
Cc: Jackson Pfister <jackson.pfister@chcc.nsw.gov.au>; David Fahey <David.Fahey@reflectionsoliday.com.au>
Subject: RE: Certification of the Boambee / Newports Coastal Zone Management Plan

Hi Trent,

I'm just chasing up a response to the below email. Happy to discuss if that helps?

Thanks,

Sally Whitelaw

Senior Biodiversity Officer | Coffs Harbour City Council

P: | 02 6648 4673

E: sally.whitelaw@chcc.nsw.gov.au | W: www.coffsharbour.nsw.gov.au |



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From: Sally Whitelaw
Sent: Tuesday, 6 February 2018 3:04 PM
To: 'Trent.Gearside@reflectionsoliday.com.au'
Cc: Jackson Pfister; 'David.Fahey@reflectionsoliday.com.au'
Subject: RE: Certification of the Boambee / Newports Coastal Zone Management Plan

Hi Trent,

Thank you for your email.

I can confirm your understanding as you have outlined below and it's great to know that much of the work is complete or underway.

In regards to the recurring maintenance requirements of the dredging we have updated the CZMP (MGT 1) to reflect this. Please find attached updated action MGT 1 (the other actions have not changed since your comments). Most recent changes are highlighted in blue.

Assuming your agreement with revised MGT1 can you now provide support from NSW Crown Holiday Parks Trust for the draft action strategies MGT1, S2, E2 and S5 within the Boambee / Newports Estuary CZMP so that we can progress towards certification?

Regards,

Sally Whitelaw
Senior Biodiversity Officer | Coffs Harbour City Council
P: | 02 6648 4673
E: sally.whitelaw@chcc.nsw.gov.au | W: www.coffsharbour.nsw.gov.au |



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From: David Fahey [<mailto:David.Fahey@reflectionsoliday.com.au>]
Sent: Monday, 15 January 2018 5:50 PM
To: Trent Gearside; Jackson Pfister
Cc: David Fahey
Subject: Re: Certification of the Boambee / Newports Coastal Zone Management Plan

Hi Trent and Jackson,

My apologies, I meant to clarify. Recycling bins are already in place.

Regards,

David Fahey

Regional Manager

PO Box 2063, Coffs Harbour, NSW 2450

t: 02 6691 0300 | m: 0435 376 118

e: David.Fahey@reflectionsoliday.com.au

w: reflectionsolidayparks.com.au

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From: Trent Gearside
Sent: Monday, January 15, 2018 5:39:28 PM
To: Jackson Pfister
Cc: David Fahey
Subject: RE: Certification of the Boambee / Newports Coastal Zone Management Plan

Dear Jackson,

I believe that we can offer support however due to some ambiguity perceived from reading the document I will articulate my understanding.

The Trust will:

Strategy	Action
----------	--------

MGT-1	<p>Continue to implement the <i>Improvement and Management Strategy for the Boambee Creek Park Reserve</i>.</p> <p>Monitor and maintain any improvements to the area.</p> <p>Consider the issues raised in relation to the Boambee Creek Reserve during the preparation of this Plan.</p>
S2	Provide support for CHCC to implement
E2	Provide support for CHCC to implement
S5	Work with CHCC to replace existing bins with recycling bins and appropriate signs informing the community what goes in which bin.

You may be aware that the dredging was completed late 2017. I understand that this will be a recurring maintenance requirement and as such expect that the CZMP should reflect that.

I trust this provides the response you required.

Trent Gearside

Executive Manager - Capital Works

PO Box 212, Carrington, NSW 2294

t: 02 4914 5506

e: Trent.Gearside@reflectionsoliday.com.au

w: reflectionsolidayparks.com.au

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From: Jackson Pfister [<mailto:jackson.pfister@chcc.nsw.gov.au>]

Sent: Wednesday, 10 January 2018 3:09 PM

To: David Fahey <David.Fahey@reflectionsoliday.com.au>; Trent Gearside <Trent.Gearside@reflectionsoliday.com.au>

Subject: RE: Certification of the Boambee / Newports Coastal Zone Management Plan

Hi David and Trent,

Support for actions required to be undertaken by NSW Crown Holiday Parks Trust under Council's Boambee / Newports Coastal Zone Management Plan (CZMP)

Thanks for taking the time to discuss the updated actions in the Boambee / Newports CZMP and all the work that you have undertaken in the reserve to date, David.

Are you now in a position to be able to provide support from NSW Crown Holiday Parks Trust for the draft action strategies MGT1, S2, E2 and S5 within the Boambee / Newports Estuary CZMP so that we can progress towards certification?

The certification of these CZMPs will allow for the continuation of the plans and increase the competitiveness of grants and funding for works which align to strategies within the CZMP.

For reference - the original Boambee / Newports CZMP with all the relevant maps and illustrations can be viewed at: http://www.coffsharbour.nsw.gov.au/environment/our-coast/Documents/Final%20Coastal%20Zone%20Management%20Plan%20for%20Boambee_Newports%20Aug%202012.pdf

Regards,

Jackson Pfister

Assistant Planner/ Urban Designer | Sustainable Places Group, Coffs Harbour City Council

P: 02 6648 4662 |

E: jackson.pfister@chcc.nsw.gov.au | W: www.coffsharbour.nsw.gov.au |



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DOC18/000676

Steve McGrath
General Manager
Coffs Harbour City Council
Locked Bag 155
Coffs Harbour NSW 2450

Attn: Marten Bouma

By email: council@chcc.nsw.gov.au
CC: marten.bouma@chcc.nsw.gov.au

Dear Mr McGrath

Re: Draft Woolgoolga Lake, Boambee / Newports Creek and Coffs Creek Coastal Zone Management Plans as amended 14 December 2017 (draft CZMPs)

The Department of Industry – Lands & Water (DoI Crown Lands) has reviewed the draft Woolgoolga Lake, Boambee / Newports Creek and Coffs Creek Coastal Zone Management Plans (as amended 14 December 2017) where relevant to the NSW *Crown Lands Act 1989*.

The review has considered technical, planning and financial aspects of the draft CZMPs as relevant to Crown land management. The review has not considered the adequacy of the draft CZMPs in relation to other legislation or the 'Guidelines for Preparing a Coastal Zone Management Plans', produced by the NSW Office of Environment & Heritage (2013).

DoI Crown Lands agrees 'in principle' to the amended draft CZMPs under section 55C(2)(b) of the *Coastal Protection Act*. This agreement does not exclude or replace the need for authorities to undertake the various planning, regulatory and approval processes that may be required as per the *Crown Lands Act 1989* and as part of implementing the CZMPs.

Should you wish to discuss this matter further, please do not hesitate to contact Ms Catherine Knight, Coastal Management Specialist, on 0428 967 997 or by email at catherine.knight@crownland.nsw.gov.au.

Yours sincerely



Glenn Bunny
Director Infrastructure and Land Management
10 January 2018

437 Hunter Street Newcastle NSW 2300
PO Box 2185 Dangar NSW 2309
Tel: 1300 886 235 www.crownland.nsw.gov.au ABN: 72 189 919 072

From: Sara Cuthbertson
To: [Sally Whitelaw](mailto:Sally.Whitelaw@chcc.nsw.gov.au)
Cc: [John Schmidt](mailto:John.Schmidt@environment.nsw.gov.au); [Ben Fitzgibbon](mailto:Ben.Fitzgibbon@environment.nsw.gov.au); [Jackson Pfister](mailto:Jackson.Pfister@chcc.nsw.gov.au)
Subject: RE: OEH Agency support for actions under Estuary Coastal Zone Management Plans
Date: Tuesday, 5 December 2017 12:08:14 PM
Attachments: [image002.jpg](#)
[image003.png](#)
[image004.png](#)

Hi Sally,

Thanks for sending through council's updated version.

I can confirm that we provide support for the updated draft action strategy (Strategy WQ1) within the Boambee/Newports Estuary CZMP as it now demonstrates that it is consistent with the State's monitoring and reporting (MER) guidelines for estuaries.

Kind regards,

Sara



Sara Cuthbertson
Coast and Estuary Officer
Water, Floodplain & Coast
Regional Operations Group

494 Bruxner Highway, Alstonville
PO Box 856, Alstonville NSW 2477
T (02) 8289 6332
W www.environment.nsw.gov.au

From: Sally Whitelaw [mailto:sally.whitelaw@chcc.nsw.gov.au]
Sent: Tuesday, 5 December 2017 11:58 AM
To: Sara Cuthbertson <Sara.Cuthbertson@environment.nsw.gov.au>
Cc: John Schmidt <John.Schmidt@environment.nsw.gov.au>; Ben Fitzgibbon <Ben.Fitzgibbon@environment.nsw.gov.au>; Jackson Pfister <jackson.pfister@chcc.nsw.gov.au>
Subject: RE: OEH Agency support for actions under Estuary Coastal Zone Management Plans

Hi Sara,

Thank you for your email. I can confirm that we have updated the Boambee/Newports Estuary CZMP as per your comments. The relevant strategy is attached.

Are you now in a position to be able to provide support from OEH for the draft action (Strategy WQ1) within the Boambee/Newports Estuary CZMP so that we can progress towards certification?

Regards,

Sally Whitelaw
Senior Biodiversity Officer | Coffs Harbour City Council
P: | 02 6648 4673
E: sally.whitelaw@chcc.nsw.gov.au | W: www.coffsharbour.nsw.gov.au |



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From: Sara.Cuthbertson@environment.nsw.gov.au [<mailto:Sara.Cuthbertson@environment.nsw.gov.au>]

Sent: Tuesday, 5 December 2017 8:33 AM

To: Sally Whitelaw

Cc: John Schmidt; Ben Fitzgibbon

Subject: RE: OEH Agency support for actions under Estuary Coastal Zone Management Plans

Hi Sally,

Thank you for your email sent to my colleague, John Schmidt regarding Council's adopted Coastal Zone Management Plan (CZMP) undertaken for Boambee/Newports Estuary.

In your email you requested support from OEH for the draft action (Strategy WQ1) within the CZMP. In order for OEH to support this action, amendments to the current wording will be required. Instead of referring solely to Ecohealth monitoring within the action, it is suggested that the action additionally describes that Ecohealth is consistent with the State's Monitoring Evaluating and Reporting (MER) guidelines for estuaries as set out on the draft Manual Toolkit at <http://www.environment.nsw.gov.au/resources/coasts/150808-estuary-health-guide.pdf>.

Ecohealth was designed to align with the States MER for estuaries, however, as it is not an adopted State-wide strategy, referral in the action to the State's MER guidelines will be necessary.

Council should also be aware that both Environmental Trust and Estuary Program funding streams are contestable, funding is not guaranteed and there is currently no funding source for long term waterway condition monitoring program available.

Please find attached my suggested edits for the action.

Feel free to contact me if you would like to discuss this further.

Kind regards,

Sara



Sara Cuthbertson
Coast and Estuary Officer
Water, Floodplain & Coast
Regional Operations Group

494 Bruxner Highway, Alstonville
PO Box 856, Alstonville NSW 2477
T (02) 8289 6332
W www.environment.nsw.gov.au

From: Sally Whitelaw [<mailto:sally.whitelaw@chcc.nsw.gov.au>]
Sent: Monday, 27 November 2017 9:16 AM
To: John Schmidt <John.Schmidt@environment.nsw.gov.au>
Cc: Jackson Pfister <jackson.pfister@chcc.nsw.gov.au>
Subject: OEH Agency support for actions under Estuary Coastal Zone Management Plans

Dear John,

Support for actions required to be undertaken by Office of Environment and Heritage under Council's adopted Coastal Zone Management Plans (CZMPs)

I refer to Council's adopted Coastal Zone Management Plan (CZMP) undertaken for Boambee / Newports Estuary. Council has recently submitted all eligible CZMPs to the Minister of Environment for Certification under Section 55G of the Coastal Protection Act 1979. Prior to finalizing certification, the Minister requires confirmation of written support from various agencies for nominated actions that they are responsible for under those plans.

Accordingly, Council is seeking written support from Office of Environment and Heritage for the action nominated in the Boambee / Newports CZMP as outlined in **Attachment 1**. The action outlined in attachment 1 is in draft format, and will be incorporated into the Boambee / Newports CZMP pending OEH approval. The drafted amendments are a subsequent result of agency restructuring and departmental re-focusing, since the original publication the CZMP in 2012.

It should also be noted that the EMPs were endorsed for adoption by the Coffs Harbour Coastal Estuary Management Advisory Committee. This committee included members from various State Government and community agencies, including - NSW OEH (Coasts and Catchments), Marine Parks Authority, OEH (National Parks and Wildlife Authority), Roads and Maritime Services, Local Land Services, Marine Park Authority, State Emergency Service, Coffs Harbour Regional Landcare and Crown Lands Division.

In order to help expedite the Ministerial certification process for the CZMP can you now provide a written response as soon as possible ie. within 30 days, that you are in support, or have no objection, to the certification of the Boambee / Newports CZMP.

If you wish to view the actions in context the Boambee / Newports CZMP can be found on Council's website at: http://www.coffsharbour.nsw.gov.au/environment/our-coast/Pages/boambee_newports_estuary.aspx

Should you require any further information please contact myself (details in below signature) or Jackson Pfister on 6648 4662, or jackson.pfister@chcc.nsw.gov.au

Regards,

Sally Whitelaw
Senior Biodiversity Officer | Coffs Harbour City Council
P: | 02 6648 4673
E: sally.whitelaw@chcc.nsw.gov.au | W: www.coffsharbour.nsw.gov.au |



GHD

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Coffs Harbour NSW 2450
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This report should not be altered, amended or abbreviated, issued in part or issued incomplete in any way without prior checking and approval by GHD.

Document Status

Rev No.	Author	Reviewer		Approved for Issue		
		Name	Signature	Name	Signature	Date
5	B Luffman	R Berg		R Berg		30.08.12