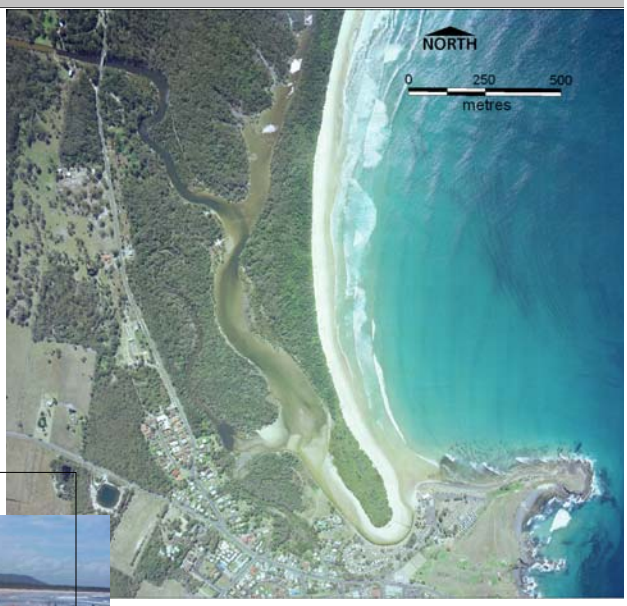
ESTUARY MANAGEMENT PLAN

ESTUARY MANAGEMENT STUDY & PLAN

Killick Creek
Crescent Head

Final Report

April 2006



KEMPSEY Shire Council

NSW Government
DEPARTMENT OF NATURAL RESOURCES

WBM OCEANICS AUSTRALIA

Killick Creek
Estuary Management Study and Plan

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Synopsis:	This document has been prepared under the provisions of the NSW Estuary Policy and NSW Coastal Policy, and in accordance with the Estuary Management Manual. It outlines the management process that is to be followed in order to achieve long term sustainability of the creek with regard to ecological, economic and social values. The Plan is intended to be used by Council to guide future works programs and policy changes.

REVISION/CHECKING HISTORY

REVISION NUMBER	REVISION DESCRIPTION	DATE	CHECKED BY		ISSUED BY	
0	Preliminary draft	10/5/05	PEH		PEH	
2	Draft for exhibition	29/11/05	PEH		PEH	
3	Final	3/4/06	PEH		PEH	

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FOREWORD

Killick Creek Estuary Management Plan

The estuaries of NSW represent a priceless natural resource. Collectively, they are immensely valuable from an ecological, social and economic perspective.

NSW has over 130 estuaries that vary in size from small coastal creeks and lagoons to large lakes and rivers. Estuaries contain diverse ecosystems that form the foundation of the coastal food chain. They provide important habitats for a variety of marine and terrestrial plants and animals.

Estuaries have a special place in the lives of most Australians. Many people want to live near estuaries and if they can't, they want to take their holidays there. Over 75% of the NSW population live and work in towns and cities near estuaries. A high proportion of the State's commercial activity occurs near estuaries as they provide an important focus for industry, tourism and recreational activities. This high level of development pressure means that estuaries are subject to a range of direct and indirect impacts due to land use in the catchment, changes to hydrology and tidal processes, and the direct use of the estuary waterway. In recognition of the need for future sustainable use of high value public assets, the NSW Government is implementing a number of key strategic initiatives, one of which is the Estuary Management Program. The Estuary Management Program commenced in 1992 to assist local government to better manage estuaries through a strategic process outlined in the NSW 'Estuary Management Manual'.

An Estuary Management Plan for Killick Creek is being prepared on behalf of Kempsey Shire Council and the Department of Natural Resources (DNR), to fulfil the requirements of the NSW Estuary Management Policy (1992) and the NSW Coastal Policy (1997). The Plan will provide a program of strategic actions to assist government authorities and other stakeholder groups to sustain a healthy estuary through appropriate waterway, foreshore and catchment management. The Plan presents an integrated suite of management strategies, giving due consideration to the complex interactions between many estuarine processes and functions.

The Killick Creek Estuary Management Plan is designed to provide clear direction regarding responsibilities for actions, which will help achieve the overall goal of a sustainable waterway. The Plan also provides information on who will be responsible for implementation of these actions and how they can be funded. The Plan is designed to be a dynamic document. That is, as the needs or conditions of the estuary change in the future, the options and strategies being implemented as part of this Plan can be adjusted to suit through an on-going review process.

Signed	.....	.....
	Mayor,	Regional Director, North Coast
	Kempsey Shire Council	DNR

EXECUTIVE SUMMARY

Killick Creek is a small estuary on the mid north coast of NSW connected to the ocean adjacent to the township of Crescent Head.

Killick Creek and Crescent Head township

Killick Creek is the principal natural waterway through the township and consequently is used by residents for a variety of recreational activities. Located immediately adjacent to the southern foreshore of Killick Creek is the Crescent Head Caravan Park. During the holiday season (early October to late April), the caravan park and other holiday accommodation within the town attracts a large number of tourists to Crescent Head, who also utilise Killick Creek, especially swimming within the entrance channel.

Recreational activities within Killick Creek Entrance, January 2002

In addition to the recreational demands, Killick Creek serves a major role in the Macleay River Flood Mitigation Scheme. When the floodplains of the Upper Belmore River are inundated, floodwaters discharge into Killick Creek in order to mitigate flood risks and minimise inundation of pasture lands. Flood mitigation works in the 1950s resulted in the Killick drain cutting (connecting the estuary with the floodplains of the Upper Belmore and Upper Maria Rivers), and rock training works at the entrance, along with general widening and deepening of the estuary in some of the upper reaches.

Kempsey Shire Council, in collaboration with the Department of Natural Resources (DNR) has prepared an Estuary Management Plan for Killick Creek, under the NSW Government's Estuary Management Program. The aim of the Estuary Management Plan is to ensure ecological sustainability of the estuary, whilst balancing the demands on the system by human uses. Essentially, the Plan strives to protect aspects of the estuary that are valued, and remedy those aspects that degrade the system.

A combination of scientific investigations and community consultation was adopted in preparing the Plan. First, an Estuary Processes Study (MHL, 2002) was conducted, which investigated and described the physical, chemical and biological processes occurring within the estuary. Consultation was then carried out with the relevant stakeholders of Killick Creek (including the upstream landholders) as well as local community. The consultation was designed to identify a range of issues that needed to be addressed by future management actions.

Based on a detailed understanding of the environmental processes and the concerns and aspirations of the community and stakeholders, a series of strategies were developed to meet long term objectives for the Killick Creek estuary. The strategies, which were assessed and short-listed based on likely costs and effectiveness, cover a range of management issues, including Water Quality, Entrance Works, Sedimentation, Ecology and Floodplain / Agricultural Management.

Strategies were designed and customised to address 18 separate objectives, each aiming to ensure long term sustainability of the estuary. Many strategies were able to address multiple objectives, meaning that these strategies represent the best opportunities for future conservation and environmental restoration.

The Estuary Management Plan provides a "user manual" for future environmental sustainability of Killick Creek. It provides details of what strategies should be adopted to achieve the greatest benefits to Killick Creek, whilst also balancing existing and future human demands on the system. For each strategy, sufficient detail is given in the Plan to commence implementation, including costs, responsibilities and timeframes.

The management strategies for Killick Creek estuary are presented below, in priority order.

Ref.	Strategy Description
	To commence implementation immediately (within 6 – 12 months, i.e. before Dec 2006)
A	Prepare and implement a formal Entrance Management Policy to guide Council on when, how and where to artificially dredge the entrance (*see Appendix A for interim protocols*)
B	Prepare and implement a formal Floodgate Management Plan to guide Council on when to allow floodwaters into the estuary to minimise impacts on the environment and users (*see Appendix B for interim protocols*)
C	Critically assess the actual threat to the coastal dunes to determine if Council's periodic "meander correction" dredging in the entrance is justified
D	Install 'leaky pits' in the caravan park to reduce low-flow stormwater discharge into the lower reaches of Killick Creek (especially the area used for swimming)
E	Continue to monitor for bacteria (eg enterococci) for human health purposes
F	Continue to implement the Crescent Head Stormwater Management Plan (GHD, 2003)
G	Install permanent signage at the entrance advising of strong currents in the channel
	To commence implementation in the short term (within 1 – 3 years, i.e. before Dec 2008)
H	Remove sediment shoals in Killick Creek which inhibit tidal flushing and flood discharge
I	Upgrade existing Killick Creek floodgates to ensure they operate effectively
J	Prepare a DCP for all new urban development around the estuary requiring adoption of improved watercycle management and on-site runoff management (eg rainwater tanks)
K	Continue trials of improved backswamp management with targeted education of agricultural landholders regarding improved land management practices
L	Conduct an agricultural and economic assessment of land practices within the Belmore River floodplain to determine ways of possibly improving discharge to Killick Creek
M	Carry out a water quality monitoring program for Killick Creek with a number of sites throughout the estuary to help determine ecosystem health and impacts of inputs
N	Restore entrance training wall to current engineering standards, including a consistent and larger rock size, a geotextile filter, and appropriate provision for stormwater outlets
O	Undertake re-vegetation of the riparian zone around the estuary, particularly the public lands behind the southern bank between the entrance and Muddy Arm
	To commence implementation in the medium term (within 3 – 5 years, i.e. before Dec 2010)
P	Carry out an environmental flows assessment to determine the maximum amount of discharge that can be accommodated by the estuary without significant degradation
Q	Hydrologic and hydraulic modelling study of the Belmore Swamp area to identify efficiency of existing flood mitigation scheme and to assess possible alternatives
R	Construct a block in the drain u/s of the floodgates to help control water levels in the drain and to induce sedimentation before agricultural sediment reaches the estuary
S	Assess wetland and estuarine habitat to identify critical habitat areas and Endangered Ecological Communities, and protect these areas through appropriate landuse zonings
T	Rezone the Killick Creek waterway to 'Environmental Protection' as part of the Kempsey LEP review to reflect the environmental significance of the estuary
U	Conduct flora and fauna surveys of the waterway and the foreshore to provide better information on ecological values, and threats to these values, including weed invasion
V	Encourage on-site stormwater management for existing development within Crescent Head, including retrofitting rainwater tanks and using grass swales, where appropriate

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