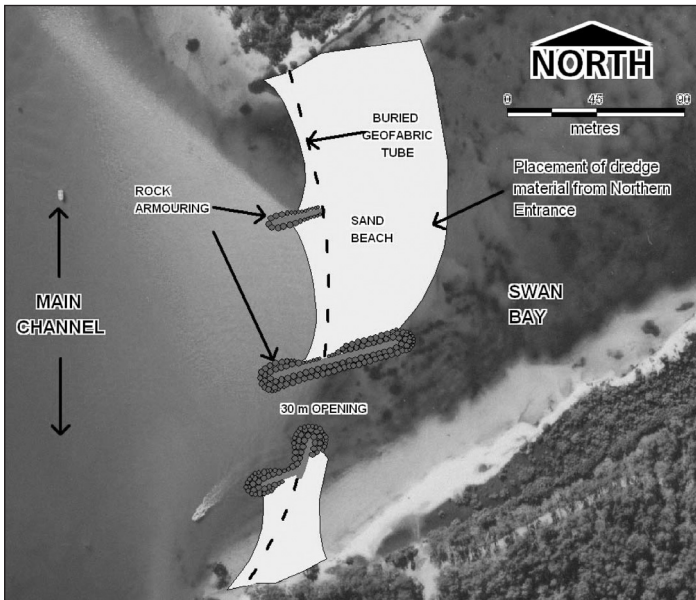


WORKING TO REVIVE, RENEW AND PROTECT THE ECOLOGY OF LAKE MACQUARIE

# Partial Closure

## of Swan Bay Southern Entrance has Commenced

The commencement of the partial closure of the Swan Bay Southern Entrance, following the appointment of Neumann Contractors, will assist with long term channel navigation for boat users entering and leaving Lake Macquarie.

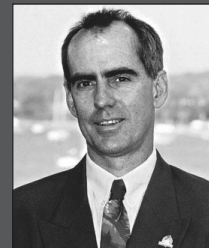


Works at Swan Bay

The works, valued at \$1.3 million, will be completed in conjunction with additional dredging of the Channel. Recent hydrosurveys have shown that the main Channel has changed rapidly and significantly over the past five months causing problems for larger keeled yachts. The partial closure will minimise shoaling and improve the longevity of part and future maintenance dredging carried out in Swansea Channel, preventing the return of the 'dog-leg'. "The partial closure of the constructed opening at Swan Bay is part of a longer term strategy for the navigation of the Channel, and finalises the program of channel works adopted by the Lake Macquarie Project Management Committee" Mayor Greg Piper, Chairman of the Committee said.

"The construction phase requires the southern opening at Swan Bay to be temporarily closed to undertake the works. Studies have indicated that this short term closure will not have any significant impact on water quality within the Bay, and following completion of the works, a 30 metre stabilised entrance gap will be reinstated" he said. The construction method involves the placement of a protective structure made of sand-filled geo-fabric tubing, extending through the centre of the closure to stabilise the works. The structure will then have small rock groynes with sandy beaches along the channel face and some rock work at the entrance gap. A sand beach will also be constructed on the western side providing a recreational area. 🏖️

## Working Together For the Lake's Health



**Greg Piper**  
Chairman,  
Lake Macquarie  
Project  
Management  
Committee

Welcome to the tenth edition of the Living Lake Macquarie newsletter. After enjoying great success in earlier stages of the program, the Lake Macquarie Project Management Committee is now entering the third phase of the Lake Macquarie Improvement Project. An independent review of the first two stages of the Project, carried out by the Integrated Catchment Assessment and Management Centre (ICAM) at the Australian National University, confirmed that it has been "very successful in meeting its objectives." The report found that the Project has enabled the cost-effective implementation of a large works program that can be expected to provide substantial improvements in water quality. These early signs of improvements are now being confirmed by monitoring data, recording changes in water quality and other ecological indicators. However, this new phase presents new challenges with a reduction in Government funding meaning the project now has to seek and compete with normal funding programs. There are a number of projects underway at present including the dredging of the Channel with the partial closure of the southern Swan Bay entrance.

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## Lake's Latest

### Recent Projects

- Rehabilitation of priority natural wetlands at Belmont Lagoon and Toronto. Completed June 2005.
- The installation of a gross pollutant trap and vegetated swale at Cambridge Drive, Garden Suburb. Completed July 2005.
- Removal of near shore organic sediments and rehabilitation of public foreshore areas at Village Bay and Swansea Flats. Completed September 2005 and October 2005 respectively.
- Implementation of creek bank management activities at three priority locations in Dora Creek. Completed May to November 2005.
- Creek bank rehabilitation works adjacent to Stony Creek at Lake Street, Blackalls Park. Completed November 2005.
- The installation of a gross pollutant trap and stormwater improvement channel at The Esplanade, Speers Point. Completed December 2005.

### Current Projects

- Partial closure of the southern constructed entrance to Swan Bay and associated maintenance dredging activities in Swansea Channel and Swan Bay northern entrance. Valued at \$1.3 million
- Foreshore stabilisation and riparian rehabilitation works at Toonibal Avenue, Eleebana and Styles Point, Rathmines. Valued at \$107,285.

### Upcoming Projects

- Installation of a gross pollutant trap near Marie Street, Charlestown.
- Creek bank restoration works along Cocked Hat Creek at Edgeworth and Cockle Creek at Barnsley.
- Installation of a trash rack within Cocked Hat Creek adjacent to Edgeworth Bowling Club.
- Retrofit of a stormwater treatment device at Spinnaker Ridge Way, Belmont.
- Foreshore stabilisation and riparian rehabilitation works at The Parade, Belmont and Warners Bay foreshore park.

# Unique Stormwater Treatment Design Aims To Improve Water Quality

**A unique stormwater treatment design that naturalises processes in an existing concrete drainage channel is currently being trialled at Speers Point.**

The modifications involved a series of cuts to the concrete base to form beds for special aquatic plants. The aquatic plants filter the fine sediments and nutrients from stormwater runoff and help to add oxygen into the water. "The aim is to restore ecological processes and improve natural systems," Lake Macquarie and Catchment Coordinator Jeff Jansson said.

The project also included the installation of a gross pollutant trap further upstream to remove coarser sediments and litter from stormwater runoff.

Another gross pollutant trap was also recently installed at Garden Suburb, followed with a rock and vegetated swale to remove finer material and nutrients before stormwater enters Tickhole Creek.

"The urbanisation and removal of vegetation and sealing of natural water courses has led to a dramatic increase in the volume of stormwater, carrying nutrients and sediments, entering the Lake.

Today, most stormwater treatment devices attempt to mimic the natural processes that once existed prior to vegetation clearing and concreting," Jeff said.

Under natural conditions, considerable amounts of stormwater would enter the ground and replenish ground water levels.



**Concrete drainage channel improvements, Speers Point**

The vegetation along the edges of creeks and watercourses stabilises the bank and filters sediments and nutrients before they enter the lake. Plants living within the shallow waters act as filters, and also add oxygen to the water which promotes the denitrification process, putting the nitrogen into the atmosphere rather than the lake. ❖

## Chairman's Welcome

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This project will complete the list of works that formed part of the long term strategic plan for the Channel as identified by the Committee.

The Committee now believes that it has fulfilled its obligations to the former Premier's Taskforce Report and intends to return responsibility for navigation to the appropriate authorities. This means that the Committee is now able to concentrate on its primary responsibility of environmental improvement. One of the environmental improvement projects recently completed is the stormwater treatment device at Speers Point, which

is trialling a new design involving the modification of an existing concrete drainage line to form beds for special aquatic plants. For more information on these projects go to [www.livinglakemacquarie.org](http://www.livinglakemacquarie.org).

I hope you enjoy this edition of the Living Lake Macquarie newsletter. ❖

*Greg Piper*

Chairman, Lake Macquarie Project Management Committee  
Mayor of Lake Macquarie

# Positive Signs for Fennell and Edmunds Bay

A recent review of monitoring data examining Fennell and Edmunds Bay, including nearby creeks, has shown positive signs that the environmental health of the area is improving.



Fennell & Edmunds Bay

The Office of the Lake Macquarie and Catchment Coordinator commenced the review of Fennell Bay, Edmunds Bay and their estuarine tributaries - Stony Creek, LT Creek and Mud Creek, to check whether the general observations of improvement were supported by changes in water quality and other ecological indicators.

The results indicate there are two important signs of improvement:

- In dry weather, there appears to be a trend towards lower nutrient concentrations, improved water clarity and less algal blooms than was the case ten years ago. Chlorophyll 'a' levels, which are a good indicator of algal growth in the water, are very similar to the levels in the main part of the Lake and are well within the range for a healthy estuary;
- In response to these three improvements, there has been a recovery of sea grass habitat (54% increase since 2000) in Edmunds Bay and Fennell Bay.

These are both very positive signs for the future health of the bays and creeks. Healthy seagrass means better fishery habitat and a more attractive environment for water birds. It also means less black ooze in the bed of the bays.

Although the report confirmed that Fennell and Edmunds Bay are very different to the open waters of Lake Macquarie, they provide an important habitat for juvenile fish, prawn growth and water birds.

Offering shallow protected waters with limited tidal circulation, the bays and creeks are part of a diverse range of estuarine habitats that contribute to the overall ecological value of Lake Macquarie.

Fennell and Edmunds Bay in particular are very sensitive to runoff from their catchments, because they trap nearly all incoming sediment and nutrients.

Further improvements can be achieved by ensuring that flows from the catchments of Stony Creek and LT Creek do not carry excessive nutrient and sediment loads. Residents can assist by ensuring ongoing vigilance in the application of fertilisers and other gardening activities, to minimise the flow of nitrogen into the creeks and bays. Since 2002, The Office of the Lake Macquarie and Catchment Coordinator has invested over \$1.5 million to help to steer Fennell and Edmunds Bay towards ecological health and improve the amenity for local residents.

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# The Lake Macquarie Improvement Project Gets a Thumbs Up

An independent review of the Lake Macquarie Improvement Project has found that the Project has been "very successful in meeting its objectives."

The review, carried out by the Integrated Catchment Assessment and Management Centre (ICAM) at the Australian National University, followed almost six years of environmental works around the Lake.

Councillor Greg Piper, Mayor of the City of Lake Macquarie and Chairman of the Project Management Committee, welcomed the ICAM report as "a ringing endorsement of the extensive work carried out since 1999 to improve water quality and other standards in the lake."

"It's been a constant struggle to come up with a sustainable plan of management which balanced economic viability, environmental stewardship and social needs. This review proves that we have made the right decisions," he said.

Former Premier, Bob Carr, established the Lake Macquarie Task Force in April 1998 to address issues affecting the health of Lake Macquarie, including the impact of development and urbanisation.

The key recommendation of the Task Force was funding for the Lake Macquarie Improvement Project, which was provided by the State Government, Lake Macquarie and Wyong Councils.

Managed by a committee with membership from Councils, government departments, the community and others, the project has completed a wide range of integrated activities totaling almost \$18 million, including foreshore restoration, installation of wetland/stormwater treatment devices, creek and stormwater channel remediation/vegetation, and extensive community education and reporting.

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# Removal of Organic Sediments Undertaken at Swansea Flats and Village Bay

Nearshore organic sediment has been removed, in conjunction with the creation of sloping beaches, at Swansea Flats and Village Bay, improving the area for residents, lake users and the environment.

Forming part of the Lake Macquarie Improvement Project, approximately 1,200 cubic meters of organic sediment was removed from Swansea Flats and 904 cubic meters from Village Bay. The material was taken to a disused quarry for treatment before being used in rehabilitation activities within the quarry. At Village Bay, for example, the problem has occurred because previously most of the naturally sloping foreshore has been replaced by vertical seawalls or escarpments due to foreshore infilling. Rather than seagrass being washed up onto the foreshore, the wrack accumulates and breaks down underwater in front of the seawalls to form oozy organic sediment.

These conditions result in sea life leaving the area and can create a build up of odour from the anaerobic decomposition. Under natural conditions, wind and tidal flow removes seagrass wrack and deposits in onto sloping beaches, where it becomes a source of food for micro-organisms on the shoreline. Native vegetation along the foreshore also



Organic sediment removal and beach re-creation during construction, Village Bay

assists in this process, in addition to filtering nutrients from storm water entering the Lake and binding the soil to prevent erosion. "In areas where a sloping beach and foreshore vegetation has been re-instated, there have been reports of marked improvements in water quality and an increasing presence

of sealife," Lake Macquarie and Catchment Coordinator Jeff Jansson said. To date, the Office of the Lake Macquarie and Catchment Coordinator has undertaken almost 26km of foreshore stabilisation and beach reconstruction. 🏠

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## Positive Signs for Fennell and Edmunds Bay

Key actions have included ongoing investment in better control and treatment of urban stormwater flows to the bays; foreshore stabilisation and vegetation on public lands; reducing constrictions to the naturally slow tidal circulation of Edmunds Bay and Mud Creek; advice to residents on natural management choices for creek and bay banks (such as design of low impact jetties, sea walls); advice on encouraging natural vegetation along the foreshore and how to minimise nutrient flows from private property to the sensitive bays. 🏠

## The Lake Macquarie Improvement Project Gets a Thumbs Up

CONTINUED FROM PAGE 3.

The ICAM report says "all the evidence available to the review team points to the execution of the works program by the Office of the Lake Macquarie and Catchment Coordinator being well-managed" "Overall", the report concludes, "the Lake Macquarie Improvement Project has enabled the cost-effective implementation of a large works program that can be expected to provide substantial improvements in water quality in Lake Macquarie." Lake Macquarie and Catchment Coordinator Jeff Jansson said the ICAM review was an endorsement of the policy of directing a high proportion of the project funding

directly to works on the ground, which the report found was approximately 77% of the total project value.

The report also found that the program included:

- Good consultation with affected members of the public prior to individual works;
- A transparent and efficient tendering procedure with good cost comparisons and spending control;
- Energetic distribution of relevant educational material; and
- Adherence to a schedule.

A full copy of the report can be downloaded from the website [www.livinglakemacquarie.org](http://www.livinglakemacquarie.org)