VILLAGE BAY

Proposed Nearshore Organic Sediment Removal and Foreshore Rehabilitation Works

Background to the Problem at Village Bay

Like many other shallow embayments around Lake Macquarie, Village Bay contains vast seagrass beds. While these seagrasses provide enormous value to the ecology of the lake, they can cause problems around the foreshore when the plants shed their leaves, or fronds. The fronds typically wash up onto naturally sloping foreshores as wrack, where it then decomposes fairly rapidly. More information regarding seagrasses and seagrass wrack in Lake Macquarie is contained in the attached brochure.

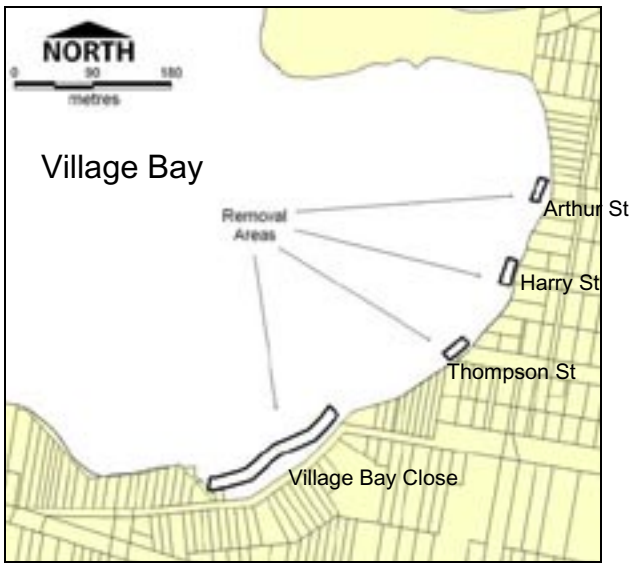
At Village Bay, most of the naturally sloping foreshore has been replaced by vertical seawalls or escarpments due to foreshore filling. So rather than seagrass being washed up onto the foreshore, the wrack in Village Bay accumulates and breaks down underwater in front of the seawalls to form oozy organic sediment.

The management of nearshore organic sediment at Village Bay, as well as some other bays around Lake Macquarie, is currently being considered by the Office of the Lake Macquarie and Catchment Coordinator. The aim of this work is to improve the natural lake processes occurring around the shore and provide a better environment for all. At Swansea Flats and Bonnells Bay, organic sediment close to the shore will be physically removed by excavators and dredgers. At Village Bay, however, access to most of the foreshore is not possible due to private land boundaries. Also, dredging of organic sediments from near the foreshore is not considered to be practical due to the shallow depth of the bay and the extensive seagrass beds that would be damaged by the dredging.

Management of nearshore organic sediment in Village Bay will occur in stages. The first round of works proposed for Village Bay will involve rehabilitation only where public access is available. These initial works will be considered as trial or demonstration sites for foreshore rehabilitation. In the long term, and subject to community cooperation, it is hoped that more widespread rehabilitation of the Village Bay foreshores can be carried out in front of all privately owned properties to overcome the problems caused by vertical seawalls and escarpments.

Proposed Rehabilitation Works and Timing

The works proposed for the public foreshores of Village Bay involve the removal of nearshore organic sediment, using an excavator, followed by the placement of sand and cobble to re-establish a gently sloping beach foreshore. A sandy beach will be created adjacent to the public reserve off Village Bay Close, while cobble beaches will be used in discrete rehabilitation areas at the ends of Thompson, Harry, and Arthur Streets (see map below).



The purpose of reconstructing the natural beach in conjunction with the organic sediment removal is to ensure the natural processes are operating effectively and reduce the likelihood of the organic sediments returning in the future. The new gently sloping beaches will allow seagrass wrack to be washed up onto the shore by wind waves, where it can then decompose or be removed manually.

The organic sediment to be removed from the bay will be reused at Stockyard Quarry for rehabilitation purposes. Sand to be used to re-create the beach will be sourced from other projects being undertaken around Lake Macquarie.

It is anticipated that the initial foreshore works at the demonstration sites around Village Bay will be carried out in the first half of 2005, under the existing Lake Macquarie Improvement Project. The costs of the initial works are estimated at $580,000.

A conceptual sketch of the proposed works at Village Bay is shown below.

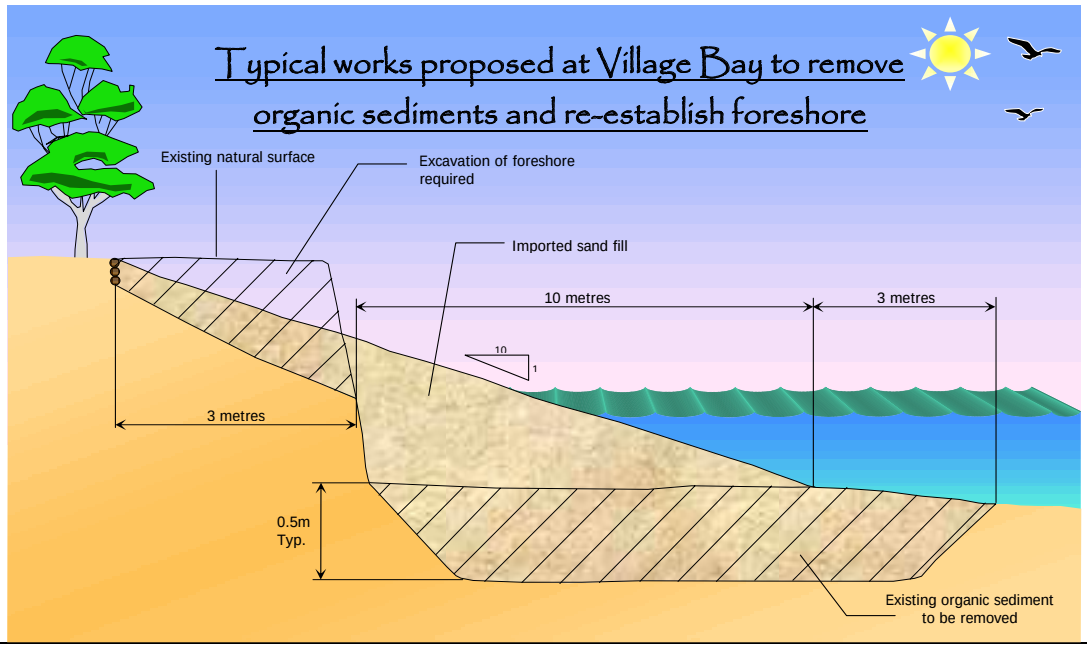
Future Management of Village Bay

Options for the future management of the Village Bay foreshore are significantly limited by existing land ownership issues, and encroachment of yards and private facilities onto foreshore Crown reserves. The Lake Macquarie Project Management Committee is currently considering options for the long-term management of Village Bay and its foreshores. These long term options include continuing beach re-creation works in front of private properties, as well as foreshore reclamation to re-establish public access along the entire Village Bay shoreline. Long term options for Village Bay will consider the social and environmental costs and benefits, and will involve further consultation with the community and relevant stakeholders.

Comments and Further Information

Written comments on the proposed strategy for managing organic sediment in Village Bay by the community are invited. Comments should be made to the Office of the Lake Macquarie and Catchment Coordinator (details provided at bottom of page) and should be received by 25 February 2005.

Further information regarding environmental improvement works underway around Lake Macquarie, can also be obtained by visiting the website www.livinglakemacquarie.org



This brochure was prepared by

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Working to Revive, Renew and Protect the Ecology of Lake Macquarie NSW

Seagrasses

More like your garden than you know!

The Lake Macquarie Foreshore

Lake Macquarie has over 170km of foreshore. Some of these areas have been set aside for recreation, others are private property and some have been left as natural reserves. The foreshore is a very important link between the lake and bushland, and is home to a whole range of animals and plants.

As people moved to Lake Macquarie, they settled in these foreshore areas. Vegetation was removed to make way for houses, parks and roads and measures like seawalls and revetments were put in place to protect them from floods and erosion. The effect of this action is that the link between the bush and the lake has been disrupted.

Animals from the bush can no longer easily access the lake edges, and importantly, the lake cannot access the land! This means seagrass wrack can't get on to the foreshore, breakdown and aid in natural growth of plants like saltmarsh.

What is seagrass wrack?

In autumn and winter, seagrasses drop their leaves (like trees) in a process called "senescence". These leaves (which contain nutrients like normal garden cuttings) then float to the surface and are moved around the waterway according to wind and tidal currents. This process is entirely natural and common to estuaries around the Australian coastline. Shores that face prevailing winds are likely to receive an increased amount of wrack compared to shores that are sheltered from the wind.

Prior to settlement, wrack was deposited onto gently sloping foreshores where it would breakdown and release its nutrients back into the natural environment. Where foreshores have been modified with steeper slopes or seawalls, wrack cannot get out of the water. It can become waterlogged, sink to the bottom and break down without oxygen. This process produces the smelly, black sediments that can be found in some locations around the lake. While this process is also natural, it would be less of a problem if wrack could break down in air, on shore.

What are seagrasses?

Seagrasses are aquatic flowering plants – just like flowering plants in your garden! There are four different types in Lake Macquarie:

- *Zostera capricorni* (Eelgrass)
- *Ruppia megacarpa* (Stackweed)
- *Halophila ovalis* (Paddleweed)
- *Posidonia australis* (Strapweed)

Seagrasses are a very important part of a healthy Lake Macquarie. They stabilise sediments (which helps prevent erosion and cloudy water), provide nursery habitat for small fish (vital in sustaining the fish population), recycle nutrients that get washed in with sediment from the catchment (reducing the amount available for algal blooms), and are home for a range of animals including seahorses.

Seagrasses are sensitive to certain conditions like sunlight. As with the plants in your garden, they need adequate light. In low light conditions, seagrasses need to either grow longer leaves to reach better light, or they will die in that location.

Some areas of Lake Macquarie have lost over 20% of their seagrasses, mostly due to decreased water clarity (from sediments in runoff) and human disturbance (like raking/removal and boating).

What is being done?

Lake Macquarie City Council and the Office of the Lake Macquarie and Catchment Co-ordinator have been working towards a balanced foreshore program. Some foreshores on Lake Macquarie, such as Speers Point (shown right) have suffered erosion and high wrack loads in the past.

Council has been treating these affected beaches with special cobbles that provide a surface for the wrack to collect on and then naturally break down. The cobbles also reduce the power of waves, which helps control erosion. Some areas of the foreshore receive so much wrack that the foreshore cannot naturally break it down. These areas are included on Council's wrack removal programme.

Recent studies have examined ways of managing black "ooze" sediments and seagrass wrack by identifying which beaches are more susceptible to heavy loads based on presence of seagrass beds, prevailing winds and tidal currents. This will allow Council to target at-risk areas and allocate its resources accordingly.

In the future, Council will continue to look for ways to protect our foreshores using natural methods. A trial that you may see pop up in your neighbourhood is using saltmarsh to break down wrack. This will involve reshaping the foreshore to a shallow slope, and allowing the lake to deposit wrack on the foreshore naturally. Pilot programs in Tuggerah Lakes have found that this technique brings back natural vegetation and grasses, as well as providing an odourless way of recycling wrack into the foreshore environment.

How can I help?

The foreshores around Lake Macquarie today are very different from their condition prior to settlement. While many of them will remain modified for flooding and safety reasons, the rest of them need your help.

Litter is one of the most unsightly problems on our foreshores. Council is working hard at reducing litter entering waterways by installing stormwater control devices and running community awareness programmes. You can reduce litter at the source by putting all your rubbish in the bin (or if they are full, by taking it home). Mulch lawn clippings at home, and help keep foreshores weed free.

The shallow areas at the edge of the lake are particularly sensitive to disturbance. The sediments contain nutrients, which can be released if they are stirred up and can contribute to algal blooms. Take care when walking along beaches especially those with wrack - they are an important habitat for crabs and birds and are easily damaged.

Wrack on private land

Some properties have private frontage on to Lake Macquarie. Residents often call Council to ask about their rights and responsibilities when it comes to removing wrack from their property or in the water adjacent to their property.

It is an offence to remove or damage live seagrasses in the water under the Fisheries Management Act. You may legally remove up to 20kg per day of wrack washed onto your property. Wrack in the water is not actually on your property and because of this it's illegal to remove or damage.

Can I reuse wrack?

Yes you can. Council uses the following process in both their worm farm and compost facility:

- Rinse the wrack with freshwater to remove salt
- Dry the wrack by spreading thinly and allowing to air dry
- Mix the wrack with other garden material (lawn clippings etc), five parts clippings to one part wrack
- Mulch and spread on your favourite plants.

Did you know?

Seagrasses are like the plants in your garden. They take their nourishment from the sediments they live in and drop their leaves at certain times of the year. Seagrasses use nutrients to grow and when their leaves drop, they take some of these nutrients with them. Fish and seahorses use seagrasses much the same way as birds and insects use the trees and plants in your garden. Without these plants, the animals will go elsewhere or may die.

For further information on wrack management issues contact Council on (02) 49210333