

## HAWKESBURY SHELF MARINE BIOREGION ASSESSMENT

# Initiative 2 – On-ground works for healthy coastal habitats and wildlife

## Frequently asked questions

### Initiative 2.1 Rehabilitation works

#### What is meant by ‘on-ground works’?

‘On-ground works’ simply describes a diverse range of physical rather than planning or policy activities that can be carried out to achieve outcomes.

On-ground works include activities such as modifying man-made infrastructure, like road crossings or floodgates, to reduce their impact on the aquatic environment, or improving the physical environment like planting trees, restoring oyster habitat or protecting river banks from erosion. Together these activities help improve the environment, aquatic productivity and water quality and reduce the impact of threats such as physical disturbance and water pollution on the marine estate.

#### What is ‘natural infrastructure’?

‘Natural infrastructure’ is the interconnected ecosystems like rivers, wetlands, estuaries and the ocean, that provide economic, social, health and environmental benefits to people and the environment. Natural infrastructure provides a variety of services compared with man-made infrastructure and is the backbone of a sustainable and resilient economy. Examples include:

- providing for tourism and recreation such as fishing, boating, swimming and birdwatching
- supporting and improving commercial and recreational fisheries
- capturing carbon to assist with reducing the impacts of climate change.

#### What is a barrier to fish passage?

Structures such as weirs, causeways, floodgates can impede natural flows and act as barriers to fish movement, isolating upstream and downstream habitats. Road culverts and piped crossings can also negatively impact fish passage if they are not designed correctly or are not adequately maintained. Structures installed in channel banks and floodplains such as levees, floodgates and other off-stream structures (e.g. detention basins and gross pollutant traps) can disrupt connectivity between rivers and wetlands by isolating habitats on floodplains and wetlands. Blockages to fish passage can reduce the ability of native fish and other aquatic fauna from seeking food, shelter and breeding areas. This can impact many fish species (e.g. Australian bass, sea mullet, eels) which need to migrate between fresh and salt water to complete their natural lifecycles.

Reinstating connectivity between upstream and downstream habitats and adjacent wetlands is an essential part of aquatic habitat management and rehabilitation programs in NSW. NSW DPI has developed a comprehensive database of instream structures impacting on fish passage which can be used to determine priority structures for remediation within the bioregion.

## What is a floodgate and why do they need modifying?

A floodgate is a solid gate that can be opened or closed to admit or exclude water. There are hundreds of floodgates installed on coastal floodplains for flood mitigation purposes. Many of these also restrict tidal flows into coastal wetlands, changing them from saltwater to freshwater wetlands. Generally, floodgates in these areas are top-hinged structures that open on the outgoing tide and shut on an incoming tide or when a river is in flood. They play a significant role in preventing saline tidal water from inundating low-lying agricultural land, as well as preventing river rises from back flooding urban and rural areas. However, the installation of these structures along the coastal waters of NSW has resulted in many negative impacts on aquatic habitat and biodiversity.

Direct and indirect impacts include:

- restriction of juvenile fish and prawn migration pathways
- reduced fish passage and recruitment of juvenile fish behind floodgates
- increased incidence of 'redspot' disease in fish and other sub-lethal effects upon fish and oysters
- fragmentation and loss of fish habitat
- increased export of acid/toxic metals from acid sulfate soils
- increased fish kills from acidic or deoxygenated water
- wetland loss and reduced birdlife
- increased frequency of fires in back-swamps leading to loss of organic topsoil and scalding.

The majority of floodgates could be altered to reduce their negative impacts by opening them, or including a window within the flap to allow controlled tidal flows in non-flood periods. This would allow fish passage and crustaceans to access their former habitat and rehabilitate tidal coastal wetlands, while still providing protection during flood periods.

## How will planting trees help fish?

Riparian (stream bank) vegetation forms an important part of a healthy functioning river, wetland or estuary and has numerous important ecological benefits. Studies show that species diversity and abundance of wildlife are greater in areas with good riparian vegetation. Riparian vegetation:

- provides a source of organic matter such as leaves, twigs and branches which form an important energy source in most stream ecosystems,
- provides shade and shelter, buffers water temperature and creates habitat for aquatic fauna.
- stabilises river beds and banks, binds soil and protects against erosion and bank slumping.
- acts as a filter for sediments and nutrients; improving the quality of water entering the bioregion.

At a local scale riparian vegetation is frequently degraded by clearing for development, rubbish dumping, weed invasion and livestock grazing and trampling.

## Why restore oyster reefs?

Shellfish reefs (oysters and mussels) are living structures which provide food, shelter and protection for a range of estuarine and marine species. The benefits provided by shellfish reefs include a source of food, water filtration, coastal protection and habitat for other species. Shellfish reefs occur in bays, estuaries and nearshore coastal waters in NSW.

Prior to the 20th century, shellfish reefs were common features of NSW estuaries and were an important food source for Indigenous Australians. Early explorers regularly referred to extensive shellfish reefs in voyage reports, however, during early European settlement of Australia, vast quantities of oysters and mussels were harvested for food and as a source of lime for mortar used in the construction of roads and buildings. The early and rapid overharvest of oysters occurred in many locations including Sydney Harbour and by the late 20th century, shellfish reefs had all but disappeared. Today, only a fraction of shellfish reefs still survive. Poor water quality and sedimentation as a result of catchment clearance, urbanisation and industrial pollution and diseases are thought to have exacerbated the loss of historic shellfish reefs and hinder their natural revival.

However, examples from the United States and elsewhere have demonstrated that when shellfish reef restoration is undertaken on a large scale, ecological function can be repaired and ecosystem services can be restored. The process of restoring shellfish reefs can provide both short- and long-term employment opportunities and established reefs can provide long-term economic gains for coastal communities, particularly in fishing, tourism and coastal protection. Several projects have recently begun the process of restoring shellfish reefs for the purpose of recovering a near extinct habitat and to improve fish habitat, water quality and coastal protection. The most advanced oyster reef restoration project in Australia is in Port Phillip Bay, Melbourne, and there are projects in the planning stages in NSW, South Australia and Western Australia.

### **What is 'green engineering'?**

Marine infrastructure such as boat moorings, seawalls, jetties, pontoons, marinas and floodgates can have negative impacts on surrounding coastal fish habitats. This has contributed to a decline in marine biodiversity and productivity of local recreational and commercial fisheries. Community demand for infrastructure remains, particularly in urban areas for coastal boat storage, access to waterways, protection works from sea level rise and property foreshore erosion. However, new designs can reduce the impact of this infrastructure through innovative construction techniques and retrofitting of existing facilities, to make them 'greener'.

Examples include the design or retrofitting of seawalls to have a more complex and lateral design that can reinstate some rock pool type habitats or saltmarsh vegetation, or modifying shorelines to restore more natural slopes to encourage mangrove and saltmarsh regeneration. Wharves and jetties can be designed to allow light penetration to reduce shading impacts on seagrass and can also be fitted with structures beneath the waterline to provide habitat and shelter. Erosion protection by construction of offshore shellfish reefs is another possible example.

### **Why are on ground works needed?**

Loss in biodiversity within the bioregion is often from a legacy of historical activities that were implemented before the long-term impacts of these activities were understood. For example draining wetlands for urban and agricultural development has resulted into the over drainage of acid sulfate soils and chronic water quality issues in areas like the Hunter River. Clearing riparian and marine vegetation has reduced bank stability and caused erosion. These activities were widely undertaken in the past but are now closely regulated due to the seriousness of their impacts. On ground works can help rehabilitate marine biodiversity, reduce ongoing threats and restore some environmental functions, leading to an overall improvement in the health of the marine bioregion and better social and economic outcomes.

### **Where will on ground works occur and who decides?**

Some key sites such as priority barriers to fish passage have been previously identified; however other actions will need further investigation to identify high priority sites and/or willing partners for works. Undertaking these assessments and prioritisation steps is part of this initiative. Final on-ground works site locations will be determined in collaboration with State and local government and private landholders.

### **Will I be able to be involved?**

There will be a range of ways and opportunities for landholders and the broader community to be involved with the implementation of on ground activities, including partnering to implement and fund on-ground works, volunteering time to get things done or simply being informed about what is happening and why.

### **Will I be made to do something I don't want to?**

All works on private lands beyond normal regulated practices would be negotiated with landholders and only proceed where there is mutual agreement. Various levels of government will continue to work collaboratively to implement works on areas of public land.

### **Where will the funding come from?**

Funding will be sourced from a range of partners, including various levels of government, the private sector and industry. Where possible, resources will be combined to achieve greater on ground outcomes.

## **Initiative 2.2 Urban mangrove policy**

## What is a development offset site?

A development offset site is a site that is used to compensate for anticipated or actual negative environmental impacts of proposed developments. This can include the creation of new or enhancement of existing fish habitats or fisheries resources.

## How will allowing mangroves to be cut down for views protect healthy coastal habitats? How will this decrease the regulatory burden?

Mangroves are an important component of healthy coastal ecosystems. They help protect low lying foreshore areas from erosion by reducing wave energy through their roots, pneumatophores, trunks and lower branches and leaves within the intertidal zone. The bushier or more complex the trees are throughout the tidal range, the more effective they are in protecting coastal foreshores.

The removal of mangroves can have a significant impact on the health of coastal habitats, however limited trimming of mangroves can still maintain many of their ecosystem functions. Studies of trimming fringing mangroves on foreshore properties indicate that there is no detectable difference in fish populations between trimmed and untrimmed mangroves. Trimming of larger trees also allows more light into the understorey, which will generally encourage the growth of smaller trees. This provides greater complexity and increases the capacity of mangroves to reduce wave energy and protect foreshore habitats.

There are many instances where mangroves have already been illegally cut or removed to improve or maintain views or access in the bioregion, and this activity is likely to continue in future. If not done properly, trimming can kill mangroves and result in the loss of many benefits that mangroves provide. Allowing mangroves to be trimmed in an approved and controlled manner provides an alternative approach to maintain access or views of waterways, without injuring or killing mangroves.

Under the proposed policy, councils and other public land managers have the opportunity to develop Mangrove Management Plans (MMPs) specifically for their local government area (LGA) or for a management area within their LGA. The Plans would contain an assessment of mangrove distribution and health, identify old growth mangroves trees and areas that may be trimmed for view or access purposes. These plans can also include regular mangrove maintenance activities that may be required for other purposes such as public safety (e.g. safe line of sight for footpaths, roads, stormwater drainage maintenance etc.). These plans would be approved by DPI Fisheries under a permit for specified periods giving Councils and land managers ongoing authority to undertake controlled trimming and/or clearing of mangroves.

The policy is likely to result in a reduction in regulatory action to investigate and prosecute illegal trimming and clearing by providing clear policy and pathways for land managers to retain mangroves along with access and views.

The urban mangrove policy would not apply to areas covered by State Environmental Planning Policy 14 – Coastal Wetlands (SEPP 14). It is important to also be aware of the provisions of SEPP 14 when considering any work or activities in or near coastal wetlands such as mangroves.

## My house has mangroves blocking my view – can I get a permit to trim or remove them?

Under the proposed policy a property owner with mangroves on their land can apply to DPI Fisheries for a permit to harm (trim) fringing mangroves to maintain waterway views in accordance with the urban mangrove policy and guidelines.

Where the mangroves occur on public land a permit to harm mangroves to maintain waterway views must be obtained by the land owner or manager of the land (such as Council).

These permits will only be issued after the land manager/owner has prepared a Mangrove Management Plan that has been publically exhibited and approved by DPI Fisheries.

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## Where can I find more information?

More information is available at [www.marine.nsw.gov.au](http://www.marine.nsw.gov.au).

Hawkesbury Shelf marine bioregion assessment: [www.marine.nsw.gov.au/key-initiatives/hawkesbury-shelf-marine-assessment](http://www.marine.nsw.gov.au/key-initiatives/hawkesbury-shelf-marine-assessment)

If you would like to receive updates on the Hawkesbury Shelf assessment or other marine estate initiatives please advise us via [contact.us@marine.nsw.gov.au](mailto:contact.us@marine.nsw.gov.au) and provide your name, email address and postcode.

### Feedback requested

We would appreciate feedback on these Frequently Asked Questions: Was it useful information? Was it easy to understand? What other questions would you like answered? Please email your comments to [contact.us@marine.nsw.gov.au](mailto:contact.us@marine.nsw.gov.au)

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