

REGIONAL STEWARDSHIP STORIES



ESTUARINE COASTAL

Coastal Resilience: Embracing nature-based solutions

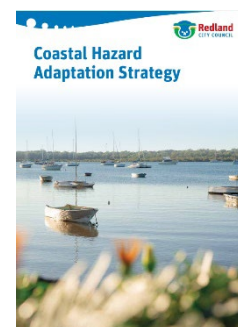
A rich tapestry of coastal habitat

South East Queensland (SEQ) supports a rich tapestry of coastal habitats including mangroves, seagrass, saltmarshes, mud flats and rocky reefs. These diverse habitats are critical to the survival and reproduction of a wide variety of plant and animal species throughout the region. Coastal habitats play a critical role in our economy and society, protecting shorelines from erosion, safeguarding existing and promoting an increase in biodiversity, supporting recreational and commercial fisheries, tourism and capturing carbon to mitigate against climate change.

As SEQ seeks to solve a diverse range of complex environmental and societal challenges, we are increasingly embracing 'nature-based' solutions. To harness the power of nature to support both people and the environment. For challenges like shoreline erosion and flood mitigation, they offer multiple advantages over traditional methods. In the past, we may have relied on engineering solutions such as concrete walls and channels to manage water flow, or complex treatment processes to remove nutrients from wastewater. Today, we are shifting towards approaches that utilise nature's own processes to achieve these goals.

Success story: Nature at work across SEQ: Incorporating nature into coastal hazard protection

Nature-based solutions are being incorporated into coastal hazard adaptation and protection plans across SEQ. For example, Redland City Council recently released a Coastal Hazard Adaptation Strategy (CHAS) that provides a long-term plan to support adaptation to the impacts of coastal hazards like sea-level rise, erosion, and storm surges. Vulnerable areas within Redland City have been identified along with measures to protect communities, infrastructure, and the natural environment. The strategy identifies opportunities for nature-based solutions including environmental enhancement and living shoreline pilot studies.



Similarly, Noosa Council completed its Coastal Hazard Adaptation Plan in 2021, identifying promotion of nature-based solutions such as native vegetation for dune stabilisation and beach sand nourishment.

The analysis found that if Noosa pursues this adaptation measure, there is likely to be a net present value³ (NPV) of \$63m when done at high-risk locations along the eastern beaches and \$0.3m at Teewah. This is because this is a low cost, low risk management response to coastal erosion risks that provides benefits through delaying damage to properties and assets (Noosa 2021, Factsheet #5: Dune and Beach Management).

It should also be acknowledged that without developing and acting on plans, our coastal ecosystems will face increased risk from shoreline erosion and climate change.

Success story: Protecting and improving much-loved river foreshores

Many local planners and communities are facing the challenge of maintaining and enhancing peaceful, relaxing open spaces for people to enjoy foreshore areas, while adapting and responding to the growing impacts of climate change.

In Noosa, a multi-disciplinary team is developing a long-term Noosaville Foreshore Infrastructure Master Plan to identify solutions that mitigate and adapt to increased climate change risks while enhancing community, recreational, cultural, and ecological co-benefits.

The plan includes design concepts to cultivate conditions to repair the environment, welcoming back aquatic and riverine ecological systems, now and as the climate changes. It also identifies cool refuge locations where people can gather during hot days and heat waves with access to shade, cooling breezes, water, amenities, and essential services.

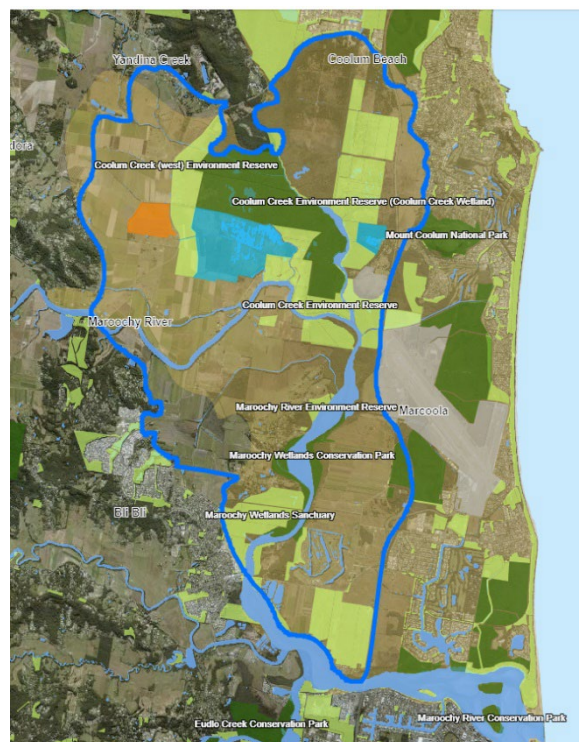


Recognising that sea level rise, increasing temperatures and storm events require innovative and complementary management approaches to protect the Noosa River foreshore, a range of measures including beach nourishment, dune reshaping, revegetation, fish friendly low sloping sea walls, and living sea wall tiles are planned.

Success story: Sustainable and adaptive coastal floodplain management

Perhaps the most ambitious example of nature-based solutions in SEQ is the Blue Heart project within the Sunshine Coast's Maroochy River catchment. Extending over 5000 ha the project involves restoring and establishing new coastal wetlands and floodplain ecosystems which is critical to the ongoing flood management and protection of built environments. By employing a nature-based solution to flood management, this project will provide multiple additional environmental benefits such as increasing biodiversity, improved water quality in the Maroochy River and carbon capture. Additional socio-economic value of the project includes new recreational opportunities, community amenity, and sustainable agriculture while balancing environmental and community needs.

The Blue Heart project has seen significant steps forward, including land acquisitions and the beginning of restoration activities. Blue Heart is a partnership between government agencies, local communities, and environmental organisations and is a transformational action for Sunshine Coast Council's Environment and Liveability Strategy - delivering a healthy environment and liveable Sunshine Coast in 2041.



Success story: Nature-based solution to nutrient removal

A nature-based solution is being employed to further remove nutrients after wastewater is treated at the new Southern Redland Bay Wastewater Treatment Plant. Over 9.8 ha of mangroves and saltmarsh habitat are being established in this innovative approach to address increasing pressure on wastewater treatment plants. With the planting of over 35,000 new mangroves and translocation of 14,000 m² of saltmarsh, the project is not only offsetting nutrients discharged from the local wastewater treatment plant, but also creates a new habitat for birds and promotes a greater diversity for marine life.

The project is being led by Stockland in partnership with Redland City Council.

Success story: Nature-based solution to shoreline erosion

This project involves stabilising and revegetating 2.4 km of eroding riverbank across nine separate sites in the lower Caboolture River. Using a nature-based solution to bank stabilisation, including planting over 30,000 seedlings, will not only help offset 1.6 tonnes of nitrogen entering the river each year, but create new habitat, capture carbon and increase biodiversity. This approach clearly has many environmental benefits compared to traditional engineered solution to bank stabilisation such as a rock wall.

The project is led by Unitywater and delivered in partnership with Healthy Land & Water.

Working with nature can be unpredictable

Nature-based solutions are a preferred approach to coastal restoration and protection, however there are many inherent challenges that either must be overcome or may mean a traditional engineered solution is the only option. One of the greatest limitations to using nature-based solutions is the suitability of the project location. For example, a nature-based solution may require more space for the planting of trees and other vegetation compared to other solutions. In many coastal areas, development has encroached up to the shoreline limiting opportunity for nature-based solutions, meaning an engineered solution such as a rock wall is the only option.

Nature-based solutions can also require significant maintenance over time to ensure the plants establish and the area does not become overrun with weeds. This means an ongoing commitment to ensuring the long-term success of each project.

Within SEQ we are seeing a greater uptake of nature-based solutions to offset nutrient discharge from wastewater treatment plants. While nature-based offsets provide significant additional environmental benefits compared to costly treatment plant upgrades, it can be challenging to accurately ensure the nature-based solution is providing the identified benefit.

While using nature-based solutions is not always easy or a suitable option, it should be the starting point for any project and incorporated where feasible.

Simple actions for coastal protection

Discover how you can support coastal resilience through everyday actions. Whether it's participating in local beach clean-ups, planting native vegetation, or advocating for policies that prioritise nature-based solutions, your involvement can make a difference.