

Noosa Council

Living Foreshores Noosaville

Case Study

Introduction

- Noosa's Coastal Hazards Adaptation Plan identified significant areas of Noosaville as high to very high risk to tidal inundation over time
- In the absence of any adaptation response, this inundation will likely restrict access to roads, footpaths and recreational areas, presenting intolerable risks to residents, business owners and visitors
- The CHAP identified the importance of designing for resilience through avoidance, relocation, protection and accommodation of risks in Noosaville Foreshore as the preferred adaptation response, focusing on nature-based solutions which align with the Noosa 'Different by Nature' ethos and UNESCO Biosphere Reserve

Project Details

- Council worked with Alluvium, KKPAC, Tract & UniSC to develop concept designs to build resilience to frequent tidal inundation and heatwaves in Noosaville Foreshore
- This included investigating the potential for nature-based solutions, adaptive landscape structures, restoration, landscape management and urban greening

Project Location





Engagement Activities

- Extensive workshops and a Walk on Country with Kabi Kabi Peoples Aboriginal Corporation
- Phase 1: Community and key stakeholder engagement on Context, Site Analysis and Vision using workshops and pop-ups
- Phase 2: Community and key stakeholder engagement on draft Master Plan using workshops, pop-ups, surveys, walking tours
- Phase 3: Community and key stakeholder engagement on revised draft Master Plan using workshops, pop-ups, coffee chats, surveys, walkshops

Process / Guidance

- Context and Site Analysis Investigation
- Vision Mapping with Community
- Options Investigation
- Multi-Criteria Analysis
- Community & stakeholder engagement
- Detailed engagement with Kabi Kabi Peoples
- Concept Designs
- Integration into Infrastructure Master Plan
- Community & stakeholder engagement

“Communicating climate risks in simple, intuitive and evidence-based ways is essential to gain community acceptance for long-term sustainability measures on the ground” – *Shayan Barmand, Noosa Council*

Resilience Strategies for Climate Change

BEACH NOURISHMENT

Beach nourishment is the topping up of sand levels along a foreshore with sand sourced from dredging. In a river setting, it is typically pumped from the river bed to restore eroded sand edges along the waterway.

Beach nourishment along the Noosaville Foreshore is currently being undertaken by Council. Sand pumping, reshaping and regrading, helps us maintain access to the sand beaches for recreational amenity.



Figure 29. Low Planted Slope

LOW PLANTED SLOPE

Introducing planting with deep/strong root systems to beach nourishment areas will help to capture, stabilise and hold sand, and protect the rivers edge from erosion. Planting beach nourishment areas reduces the frequency of recurring beach nourishment activities and maintenance.

Beach nourishment planting can be a staged process and adapted over time. Plant species would be predominately groundcovers/grasses and would not affect sight lines and views to the river.



Figure 30. Grassed Slope

GRASSED SLOPE

Although planted slopes (see left) are a more effective way to establish stability to the foreshore edge, we recognise the community values uninterrupted beach access. Therefore, some key areas of the foreshore (near playgrounds, popular swimming areas and gathering spaces) are proposed to have a grassed slopes.

Grass does not have a deep and strong enough root system to provide long-term protection from erosion. These areas will require more frequent maintenance (than low planted slopes), longer establishment and recovery periods after severe weather events and use.



Figure 31. Vegetated Swale

NATURE-BASED STORMWATER MANAGEMENT

Nature-based stormwater management aims to mimic the characteristics of natural creeks.

Upgrades to Chaplin Park's existing drainage corridors with additional revegetation will help increase resilience and biodiversity.

There are opportunities to use planted swales and rain gardens in the parkland. Unlike traditional underground pipes, these nature-based systems help slow down and clean stormwater runoff before it enters the Noosa River. They also encourage passive irrigation, accelerate shade tree growth and provide cooler spaces.

TRADITIONAL STORMWATER MANAGEMENT

Our piped infrastructure can be made more resilient through upgrades and the addition of backflow prevention mechanisms.



Figure 32. Living seawall tiles

LIVING SEAWALLS

Living seawall tiles and rock units mimic the features found in natural rocky shores. They can be retrofitted to our existing seawalls, making our foreshore more supportive of marine life by creating intertidal ecosystems and river habitats.

Each tile and rock unit features tiny nooks and alcoves that provide marine life a place to live and hide, just as they would in a natural mangrove ecosystem.

Once established these systems improve marine biodiversity and water quality.

When complimented with signage these interventions can provide a great education opportunity for children and the community on the subject of marine biology.



Figure 33. Fish friendly sea wall

FISH FRIENDLY LOW SLOPING SEA WALLS

Innovative alternatives to traditional sea walls include low sloping fish friendly walls. The use of a gentle slope mimics a natural rock edge and has many environmental and recreational benefits. For maximum benefit, the gentler the slope of the seawall the better.

These slopes are created using rock steps and benches. The mix of horizontal and vertical faces on these steps/benches create prime habitat opportunities for intertidal plants and animals which will lead to greater diversity of species.

These slopes offer protection against erosion, increase fauna and flora biodiversity and have the flexibility to increase heights to reduce the impacts of inundation as needed.

The stepped characteristic of the walls have added benefit in allowing/encouraging the community to interact with the river.



Figure 34. Cool Street

COOL REFUGE

In the context of public open spaces, a cool refuge is an area or feature (such as a cluster of large shade trees) that provide relief and comfort to people during hot weather.

Source: University of the Sunshine Coast

COOL STREET

A 'cool street' has effective street tree planting which reduces the urban heat island effect and makes the street more walkable and pedestrian friendly during hot weather.

Source: University of the Sunshine Coast

Project Problems / Challenges

- Significant community concerns on relocating carparks and tennis courts to activate walking and cycling, improve urban greening and expand greenspace
- Maintaining views and access to the river were important for some in the community, which in some cases, conflicts with the objective to restore the shoreline with beach nourishment and vegetation for stability
- Communicating climate risks in simple and understandable terms with accurate design visualisations is essential to gain community acceptance of resilience strategies proposed

Outcomes

- 12D model developed for the foreshore
- Resilience strategies using nature-based approach identified to combat frequent tidal inundation
- Stormwater backflow prevention devices investigated
- Resilience strategies using nature-based approach identified to combat increasing heatwaves
- Long-term strategies co-designed with Kabi Kabi
- Designs vetted through three rounds of community engagement
- Designs embedded into Noosaville Foreshore Infrastructure Master Plan

Project Partners



**Kabi Kabi Peoples
Aboriginal Corporation**

For more information

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