

DUNE & BEACH MANAGEMENT

This fact sheet provides information on one of a set of adaptation options that were considered in detail as part of the Coastal Hazards Adaptation Plan (CHAP) for responding to coastal hazard risks.

What are they?

Dune and beach management involves taking action, often as part of an ongoing program, to restore and enhance the health of the dune system, as well as assisting in the recovery of the beach post-erosion. This often involves restoring and expanding vegetative cover, minimising erosion of the frontal and incipient dunes by minimising foot traffic, and even nourishing the lower portion of the beach with sand relocated there from offshore sources.

Why do it?

A large and functional (i.e. natural-state) dune and beach system is one of the best defences against the effects of coastal erosion. This is because when sea levels and waves are high, the “soft” characteristics of the system are better able to cope¹ and respond² to the high levels of energy attempting to erode the beach compared to many other systems. Dunes and beach systems in an active wave environment naturally go through phases of erosion and accretion, and in the face of rising sea levels, maintaining these systems with careful and ongoing management practices that utilise nature-based methods received high-levels of support from the Noosa community.

Things to consider:

- › How “healthy” the dunes and beach are currently, including whether there has been any illegal clearing of dune vegetation or infestations of exotic species.
- › The effect foot traffic, particularly during peak holiday periods, and whether this can be managed better.
- › How often work needs to be undertaken.
- › Which plant species are most suited to achieving the objective.
- › How large the alternative sand resources are (now and into the future).
- › The design and scale to minimise impacts on the surrounding area and landscape.

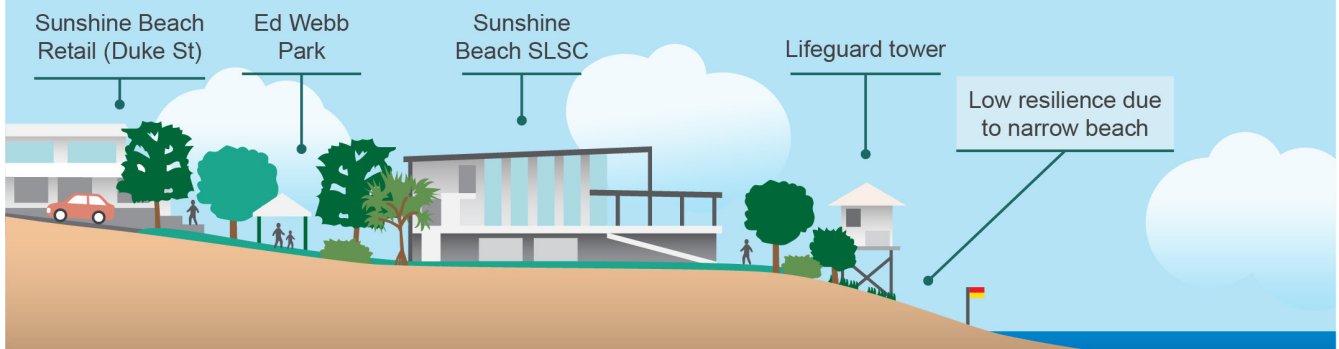


Granite Bay, Noosa National Park, Noosa Heads. Source: Unsplash.com

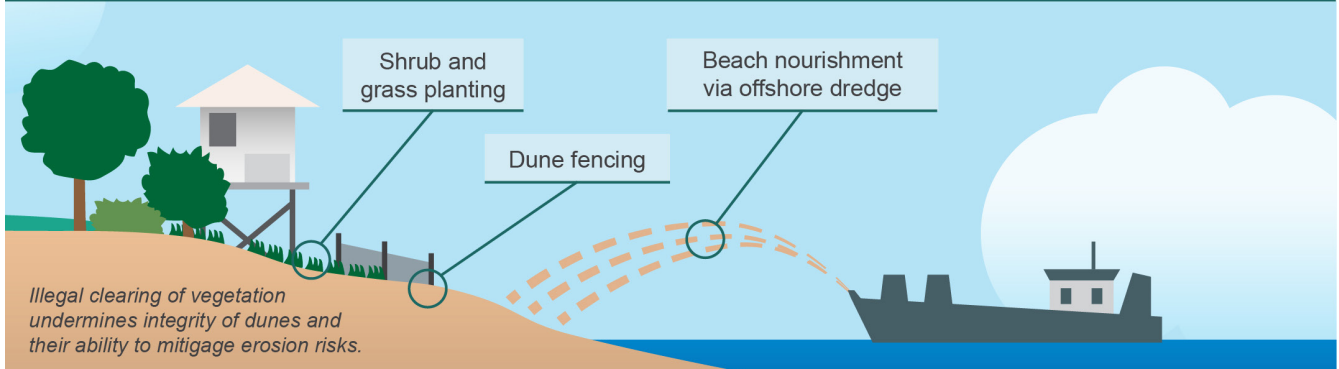
1 – By dispersing the incoming wave energy as it hits and rushes across and up the beach profile.

2 – Sand from dunes is often taken to the inshore wave area, creating a new and larger sandbar that helps to further break up the incoming waves and dissipate their energy before they reach the beach.

1. No management options in place



2. Dune and beach management options



3. Improved resilience to erosion

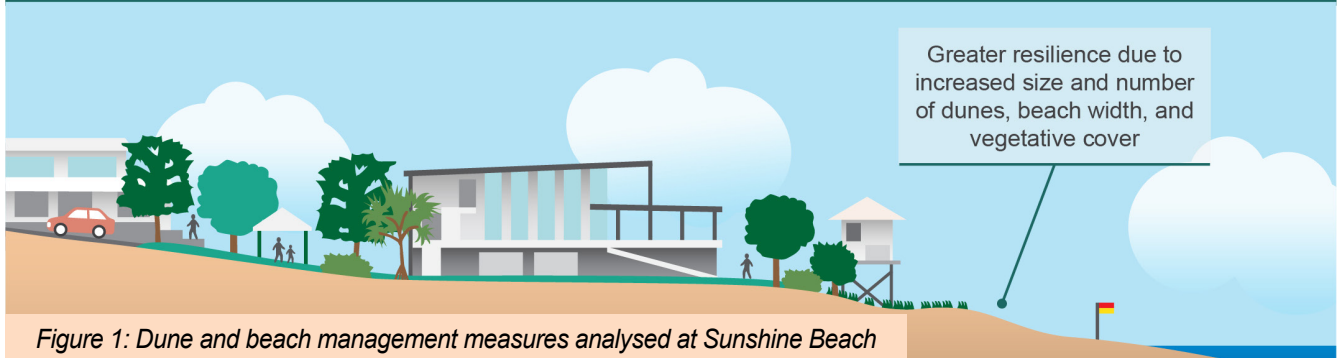


Figure 1: Dune and beach management measures analysed at Sunshine Beach

What did our analysis conclude?

The analysis looked at the costs and benefits associated with:

- › Managing and enhancing the dunal system via vegetation planting etc; and
- › Augmenting and widening the lower portion of the beach via beach nourishment.

The analysis looked at the costs and benefits associated with protecting, revegetating and maintaining dune and beach areas adjacent to developed areas considered high risk. The analysis assumed that significant re-vegetation and maintenance works would need to re-occur approximately every five years on average due to erosion of the frontal dune system from storm events, until the year 2100.

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. Importantly, these expected delays can support other, more substantive, potential erosion risk mitigation measures. Given the high value of assets in the study area and the low cost of implementation and maintenance, dune management is a 'no regrets' action and therefore a preferred response for mitigating erosion risks.

3 – Put simply, Net Present Value is a method of calculating the total return on investment for a project or expenditure by comparing the total costs with the total benefits you expect to result from the investment and translating those returns into today's dollars, so that you can decide whether the project is worthwhile.