

Coastal change adaptation pathways

Climate change and sea level rise will continue to influence coastal hazards such as storm tide inundation and coastal erosion. As sea levels continue to rise, impacts from coastal hazards are expected to become more severe. Through the Coastal Hazard Adaptation Strategy (CHAS) Council can work together with the community to build the resilience of the coastline and adapt to coastal change.

How can we adapt?

There are a range of ways we can adapt to coastal change in the Bundaberg region. Across each settlement three broad adaptation categories can be applied:



Maintain

Continue to use the land and maintain the current risk level. Activity in this category includes the constant work in the areas of disaster management, land use planning, asset planning and maintenance, and community education and awareness programs. These activities do not remove the risk or the hazard.



Modify

Use of physical interventions that modify our settlements where the risk becomes intolerable. Activity in this category includes soft solutions such as beach nourishment and physical options such as raising key access roads to mitigate isolation risks; seawalls or storm surge barriers to protect the land from the sea.



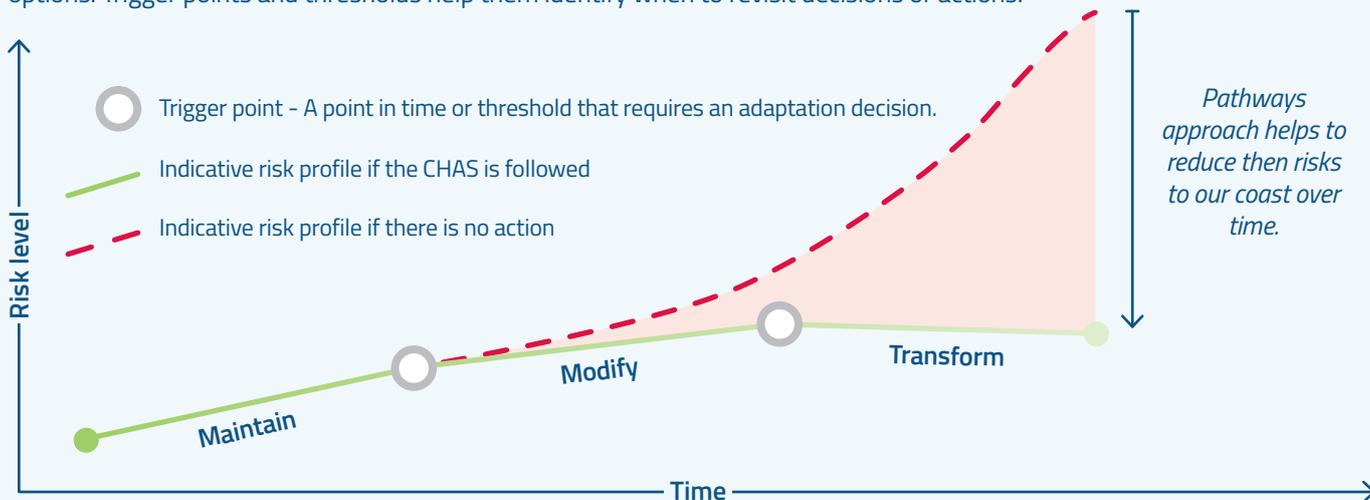
Transform

Relocate or withdraw assets that are exposed to intolerable risks, activity in this category include land use and tenure transition and land swap. Land use and tenure transition is complex to due to high capitalisation of coastal land and is generally only appropriate in certain circumstances when the land value becomes a true reflection of the risk level.

A responsive, flexible and long-term implementation plan considers all possible adaptation options along with the effectiveness, acceptability and consequences of any option.

The costs of maintaining the current coastline shape and asset positions will likely become inefficient in the face of natural change or prohibitively expensive in the future.

The adaptation pathways approach allows decision makers to plan for, prioritise and stagger investment in adaptation options. Trigger points and thresholds help them identify when to revisit decisions or actions.



More information on coastal adaptation can be found at coastadapt.com.au or qcoast2100.com.au

Adaptation options include

There are three categories of options considered for adapting to coastal change in the Bundaberg Region:

1. Maintain

There are a range of options available in this category that seek to maintain the current risk profile.



Disaster management

Council, the State Emergency Service, volunteer and local disaster management groups play an important role in keeping the community safe. The local disaster management plan outlines activities within the key stages of prevention, preparedness, response and recovery. Disaster management strengthens community disaster preparedness and coordinates systematic responses to potential coastal hazard events.



Land use planning

Land use planning responses such as zoning, development controls and risk mapping are employed to avoid the risks for new development in a strategic and future sense. The visions for each settlement must align with coastal change to ensure projected in-fill development is appropriate and a risk-based approach to planning is in place.



Education and awareness campaigns

Council provides extensive resources as part of their disaster management activities for community awareness. The information is valid for all hazards and assists the community in the lead up to potential natural hazard events. The resources provided include a household emergency plan guide, an emergency kit guide, an evacuation plan template, preparing pets information; and relevant emergency contact numbers.

Including specific information to enhance understanding of coastal processes, adaptation options and impacts of coastal changes can build resilience in the community through communication and messaging.



Resilient Infrastructure

Building or replacing infrastructure assets that are resilient to coastal hazards increases the service to the community and is necessary for the ongoing function of a settlement. This approach also minimises interruptions to services such as drainage, roads, water supply and electricity during and after coastal hazard events. Using the evidence and supporting data available to asset owners, future infrastructure and asset planning decisions can build in resilience based on an understanding of coastal hazards.

2. Modify

There are a range of options in the Modify category that form physical alterations to protect people and property from the impacts of climate change, sea level rise, coastal erosion, permanent inundation or storm tide inundation.



Beach nourishment

Beach nourishment is the artificial addition of sand to a beach system, increasing the buffer against erosion or preventing further loss of sand. This option reduces the risk of storm tide inundation when combined with dune creation and vegetative stabilisation. A long-term beach nourishment strategy requires continuous monitoring of shoreline changes to identify timing of renourishment campaigns.



Seawalls

A wall or embankment structure put in place to stop tidal inundation or coastal erosion. Seawalls are often constructed in combination with beach nourishment and dune regeneration to provide a last line of defence under the coastal dune, reducing the risks of erosion and floods.



Raising key access roads

Raising the level of key access routes reduces the frequency of inundation and mitigates the risk of isolation to affected communities. Raising the road level or construction of causeway crossing which may experience inundation ensures a key access road remains available as an evacuation route, allows emergency services access and improve logistics during recovery.



Storm surge barrier and earth dyke

Barriers and dykes are an artificially constructed wall designed to avoid inundation from storm tides. Barriers and dykes are hard engineered structures usually made from earth and rock covered with vegetation, grass or esplanade to maintain a public amenity value.

3. Transform



Land-swap

Land swap may be applied to assets or buildings that are impacted by intolerable risks. The land swap activity is dependent on availability of an alternative site but is fully effective in removing risk to life and property.



Land use and tenure transition

Land use and tenure transition should be applied to areas subject to high hazards where it may be appropriate to cease occupation of the property in order to free residents from dangerous situations and intolerable risks.