Adaptation to manage impacts from coastal hazards

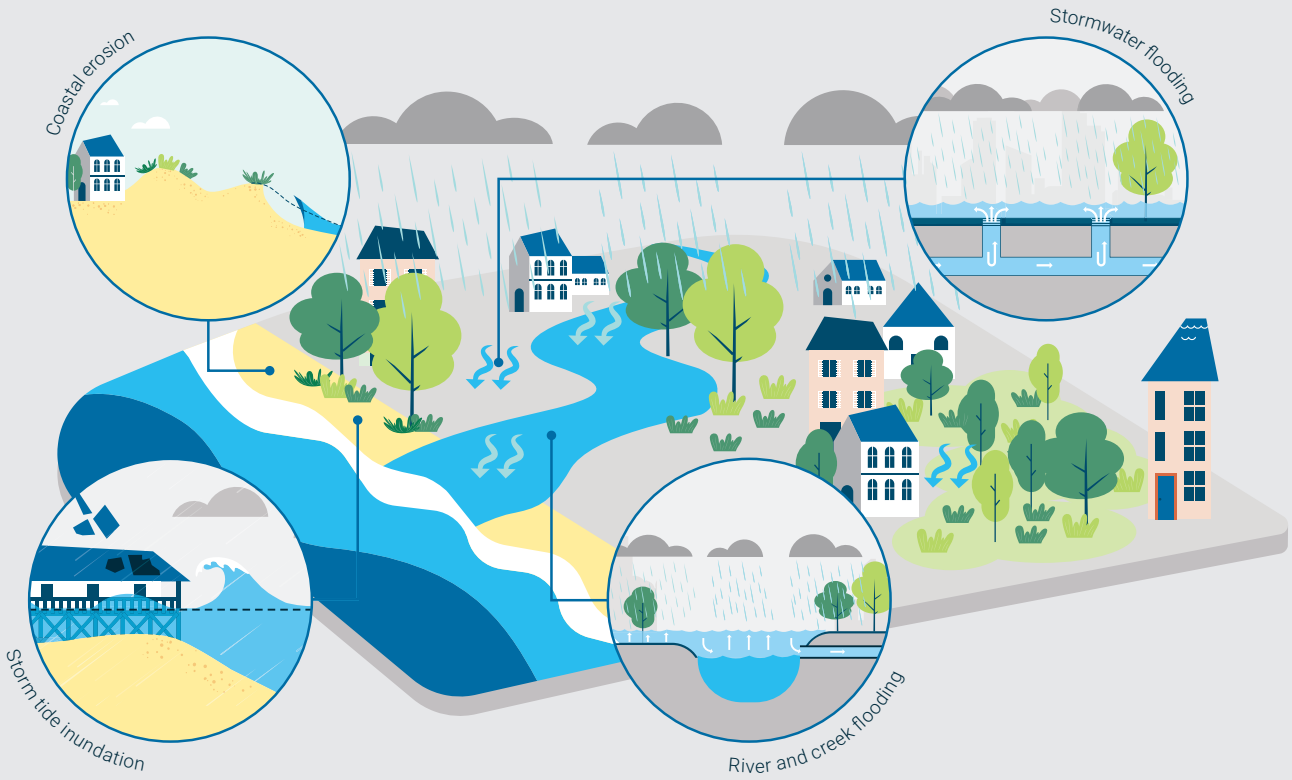
Fact Sheet 02

Investigations are underway in locations to help protect from, and reduce, the risk of coastal hazards and flooding now and into the future. Specifically, Sunshine Coast Council is looking at how we can build stronger and more resilient public assets and infrastructure, which in turn help to reduce these risks for the local community.

Reducing coastal hazard and flood risks is complex due to the dynamic nature of the coastal environment and the way we use the coast. Council's long-term strategic direction for managing the coast and addressing climate change related risks involves recognising and avoiding coastal hazard risks, to inform long-term adaptation planning.

This complexity means that no single adaptation option can effectively reduce all of the risks from flooding and coastal hazards. It will require multiple targeted and integrated actions that can evolve and change with our needs over time.

The coastal lifestyle that is critical to the identity of the Sunshine Coast is defined by the local values and character of our coastal places. Protecting the local values and character of our coastal urban environment is a critical criterion that will be considered during assessments of possible adaptation solutions. The assessment of adaptation options also needs to consider the community's willingness to invest in adaptation. Understanding the consequences of not adapting is the basis for choosing to adapt.



— Coastal hazards and flooding can impact our communities in many ways.

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Keep things the way they are (business-as-usual)

This option allows natural processes to continue without intervention. No active measures are taken to protect coastal areas from the impacts of climate change and other environmental factors.

- Suitable only where erosion buffers are sufficient to accommodate long- and short-term erosion over time.
- Potential for significant social and financial costs for foreshores only where existing development and critical infrastructure is at risk.

Even if we know that the business-as-usual option is not suitable for a given location, considering this scenario provides a useful baseline to compare other options against. This helps us to understand how effective and/or appropriate adaptation options are in reducing impacts.

Interested in learning more about coastal hazards?

Storm tide inundation, tidal inundation and coastal erosion are natural processes that shape the unique landforms of our coastal zone. However, when combined with riverine flooding and stormwater flooding, these hazards can significantly impact our communities, foreshore environments, infrastructure and natural assets.

To learn more about some of the coastal hazards and flooding affecting the Sunshine Coast, please go to the below link or look at **Fact Sheet 01 – Common Coastal Hazard Adaptation and Flooding Terminology**.

For more information on other elements, please refer to the **CHAS Fact Sheet 5 – Coastal Adaptation**.

Elements that combine to develop adaptation options

No one adaptation element, or combination of elements, will suit all coastal urban areas. Note that some adaptation options may not be viable in certain coastal areas. Options will need to be developed by considering the specific challenges and unique nature of each location and combining adaptation elements that create a bespoke adaptation option for each area.

Not all adaptation elements are within Council's ability to deliver alone. Some may require collaboration between the community, Council, State Government and other stakeholders.

These adaptation elements could be:



Linear flood barrier

A linear upstanding barrier wall may incorporate streetscape elements to increase public amenity and function. Permeability may be maintained through ramps or removable flood gates. Barrier solutions can impede the views from the road or properties behind the barrier.



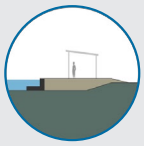
Landscaped berm

Landscaped raised edge, incorporating recreational opportunities including footpaths, cycle paths, new planting and open space recreation assets (e.g. lookout points, seating etc.).



Raised open space

Build up existing open space and revetment walls to withstand future flood events. For example, replace existing amenities and vegetation.



River reclamation

Provides additional space for raising existing open space by reclaiming part of the river using imported fill material.

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Revetment wall variations



Building as flood barrier

Impermeable linear elements within new buildings act as a flood barrier. Elements may include permanent (walls), temporary (flood gates) or operable barriers (over openings).



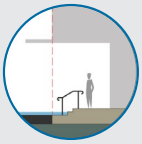
Raised road

Roads raised for improved trafficability during flood events.



Raised road: Transition in verge

Ramped footpath with raised walkway to provide equitable access from street level to internal building floor levels.



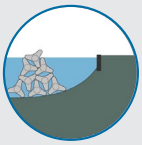
Raised road: Transition in lot

Internal atriums or lifts on private property provide equitable access from raised street level to internal building floor levels.



Lock and weir

A weir creates a fixed or operable barrier across canals or waterways. The height of the weir crest allows Council to control water levels for the benefit of properties and drainage systems behind the weir. An adjacent lock permits boat movement around the weir.



Offshore barrier

An offshore structure, not connected to the beach, acts as a breakwater to dissipate wave energy on the landward side of the barrier. Reduced wave energy can minimise the movement of sand along the shoreline.



Multi-purpose revetment wall

New or improved revetment wall integrates landscape structures such as terrace seating, river access points and other passive/ active recreation infrastructure.



Raised revetment wall: Open space

Increase linear park area by integrating new boardwalk and/or viewing platforms into existing revetment walls when increasing their height.



Raised revetment wall: Commercial lot

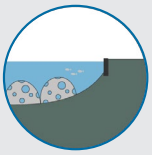
Increase publicly accessible open space in front of commercial lots along waterways by integrating new boardwalk and/or viewing platforms into existing revetment walls when increasing its height.



Revetment wall: Boardwalk

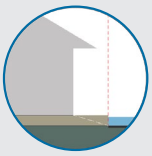
Increase open space connectivity by constructing freestanding boardwalks in front of existing revetment walls.

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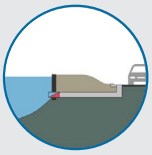
Offshore reef

Man-made underwater structures built from materials such as concrete, steel, or rock. They mimic the function of natural reefs in dissipating wave energy and promote marine biodiversity by providing habitat for aquatic life.



Raised private property

Raising the ground level, building on posts or lifting existing buildings on private land to make properties less susceptible to the consequences of flooding.



Stormwater network with backflow prevention

Establishing a one-way flow system using gates or valves (often called backflow prevention devices) on stormwater pipes. These can help protect low-lying areas from tidal backflow.



Increase stormwater outlet capacity

Increase the capacity of stormwater outlets to improve drainage that may otherwise cause localised flooding.



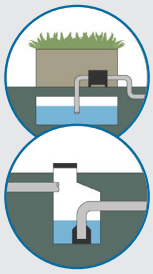
Swales

Swales provide surface drainage relief from localised low-points in raised streets to drain run-off to canals/waterways.



Overland flow paths

Natural or engineered channels that guide stormwater across the land surface. They help manage and control the movement of excess water during storm events to prevent flooding in built-up areas or sensitive zones.



Pumps (above/below ground)

Pump stations collect stormwater which would otherwise be trapped. This water is then pumped to a waterway. Other adaptation options such as barriers and raised road profiles are likely to need pumps to manage local nuisance ponding



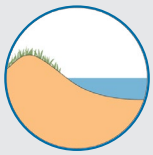
Retrofit water sensitive urban design (WSUD) drainage

Application of Council's existing WSUD drainage controls with defensive and adaptive treatments.



Seawall

Seawalls provide a physical barrier between the ocean and adjacent coastal land, and protect the coastal assets behind the wall from erosion. Seawalls are typically made of rock, concrete or geo-fabric bags, and can be designed as buried revetments or exposed walls.



Dune protection and maintenance

Dune protection and maintenance involves limiting disturbance to dunes and protecting/enhancing dune vegetation to increase the stability of dunes. New dunes can also be created.



Storm surge barriers

Storm surge barriers (tidal barrages or gates) are physical barriers that prevent storm surges travelling inland along rivers, lagoons, inlets or other waterways. Storm surge barriers can generally be opened and closed and are most effectively implemented at narrow tidal inlets. They can vary in size from a flow valve on pipes and culverts to large scale barrages

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How to get involved

Keep an eye on the **CHAPP web page** and Council's social media pages for the latest news, invitations, and progress updates.

Register for regular updates. These updates will include invitations to a range of opportunities to have your say and provide feedback to Council.

Further details of what areas may be subject to future coastal hazards can be found on Council's MyMaps flood mapping.

Ask a question about coastal hazards and Council's coastal planning activities by emailing **ourresilientcoast@sunshinecoast.qld.gov.au**

Visit **haveyoursay.sunshinecoast.qld.gov.au** for more information and engagement.

Find out more

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