Our Resilient Coast.
Our Future.

Sunshine Coast COUNCIL

Factsheet 4 | February 2020

Coastal hazards

What are coastal hazards?

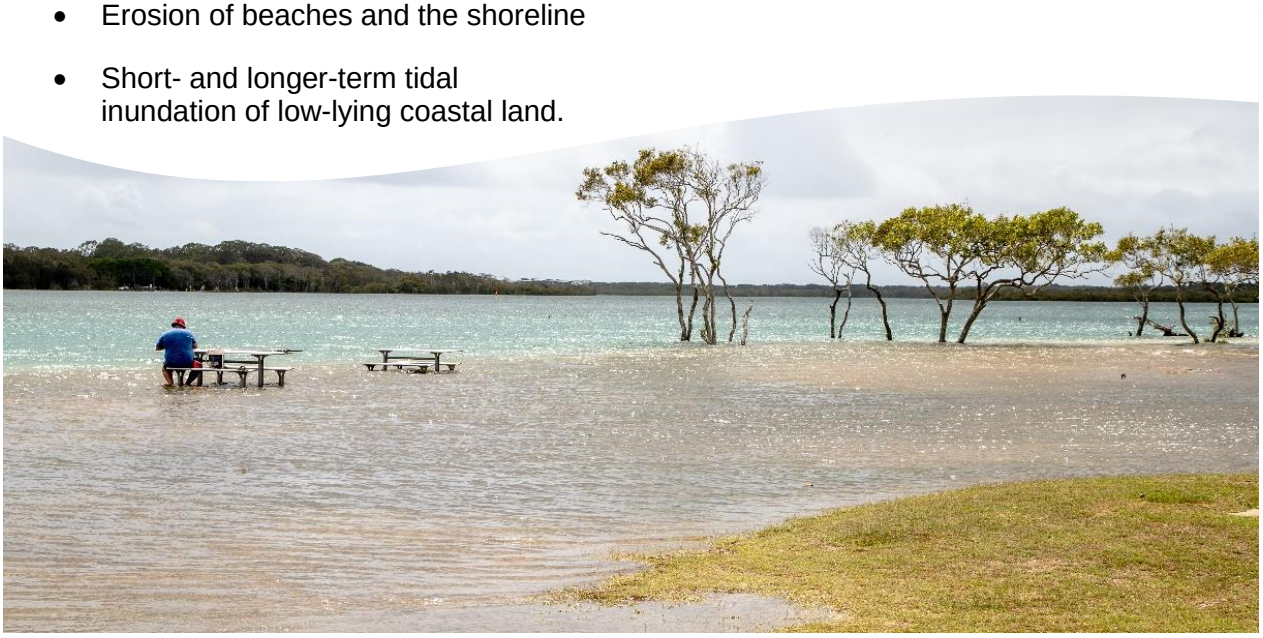
Erosion and inundation are natural processes that shape the coastline. However, they can become hazards when they impact on coastal values and how we use and enjoy the coast.

Coastal hazards include:

- Erosion of beaches and the shoreline
- Short- and longer-term tidal inundation of low-lying coastal land.

Coastal hazards can have adverse impacts on a range of coastal assets including social, cultural, economic and environmental values. In south east Queensland, coastal hazard impacts are typically associated with ex-tropical cyclones and East Coast Lows.

Image credit: Michael Wren



Storm tide inundation

Storm tide inundation is temporary inundation of low-lying coastal land from locally elevated sea levels, also known as a 'storm tide'.

The storm tide is a combination of the predicted (normal) tide, storm surge, and wave action (Figure 1). Storm surge is driven by the combined influence of low atmospheric pressure and high winds associated with storm events.

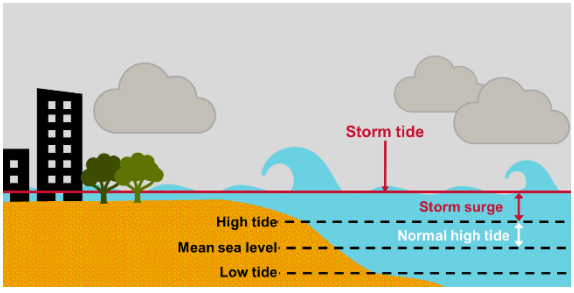


Figure 1. Storm tide inundation

QCoast2100 COUNCILS LEADING COASTAL ADAPTATION

Coastal erosion

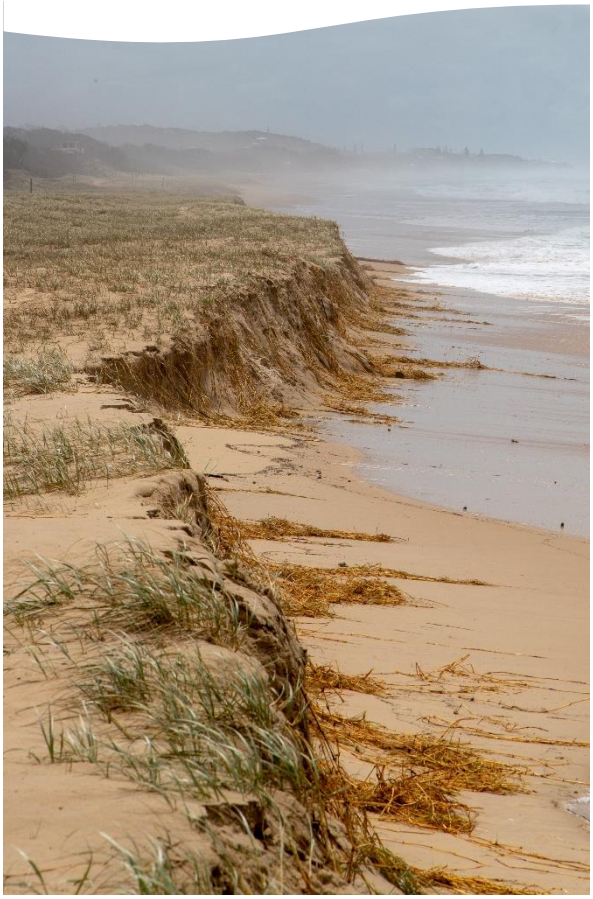
Coastlines naturally erode and accrete over time, driven by variations in sediment supply and climate patterns.

Coastal erosion occurs when winds, waves and coastal currents shift sediment away from the shoreline. This can be a short-term shift, or a longer term erosion trend.

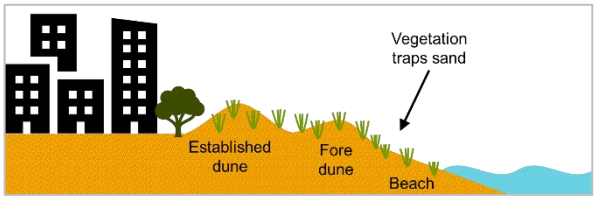
When a beach is stable, all of the sand moved offshore during a storm eventually moves back onto the beach (over timeframes of months to years). In this case the beach erosion (storm bite) is only temporary.

In other cases, due to changing sediment supply or climate conditions, the beach may not have sufficient capacity to rebuild between storm events. In the absence of intervention, long-term erosion (termed recession) may continue.

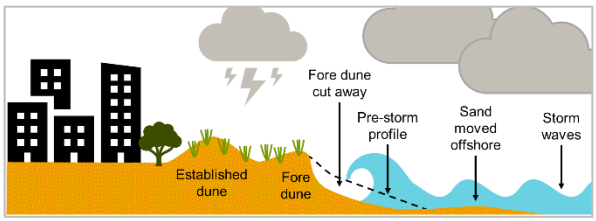
Both short term and long-term erosion processes may impact on coastal assets, depending on how close to the fore dune assets are located.



Normal beach shape, calm conditions



Beach erosion during storm



Beach and dune rebuilding after storm

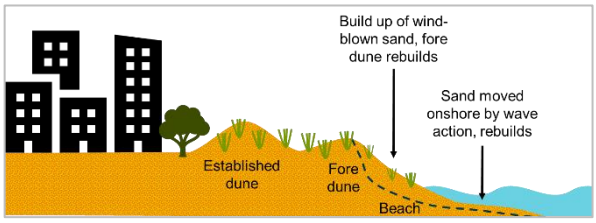


Figure 2. Coastal erosion

Coastal hazard impacts

Coastal hazards periodically impact the Sunshine Coast and are predicated to have an increased impact in the future (Figure 3, Figure 4).

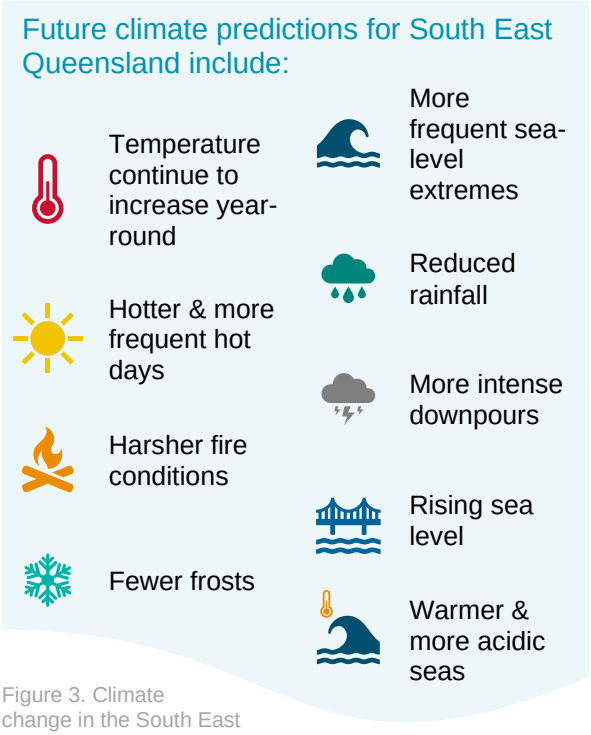


Figure 3. Climate change in the South East Queensland region. DEHP 2016. https://www.qld.gov.au/__data/assets/pdf_file/0023/67631/seq-climate-change-impact-summary.pdf

Projected sea level rise and an increase in storm intensity for the south Queensland coastline is anticipated to increase the extent and impact of coastal hazards.

Coastal erosion:

- Increased water levels will accelerate coastal erosion
- Sediment transport patterns may be altered by shifts in wave direction, triggering changes to the form and location of shorelines
- Low-lying land may be permanently inundated
- Increased storm activity will escalate the severity of coastal erosion events

Storm tide inundation:

- Sea level rise will increase the apparent severity and frequency of storm tide inundation and will cause inundation to occur further inland
- Increased storm intensity will add to the magnitude of storm tide events and the extent of inundation

Figure 4. Source: Coastal Hazard Technical Guideline (DEHP 2013)

Planning to adapt

Adverse impacts of coastal hazards can be minimised through strategic planning and adaptation actions. This involves:

- Understanding the physical processes
- Assessing the likely extent of storm tide inundation and erosion, now and in the future, and assets that may be impacted
- Assessing the consequence of impacts for communities and assets
- Considering the range of planning and adaption options and developing an adaptation strategy.