

Coastal hazards

Change to our coastal landscape has been and will continue to be a characteristic of our beach, canal and estuary environments. Whether it's our beaches on Bribie Island, our canal communities in Newport and beyond, or our coastal settlements along our rivers and passage, people continue to choose the Moreton Bay Region as a place to live, work and visit.

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 our coastal landscape. They are usually associated with tropical cyclone impacts and storm events such as East Coast Lows.

Coastal hazards include:

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

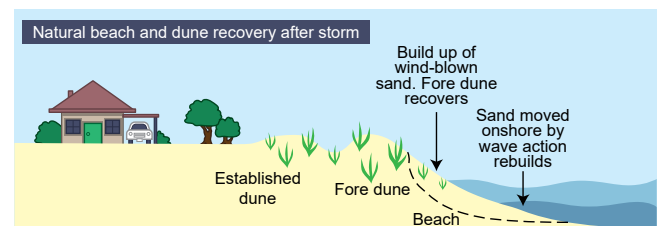
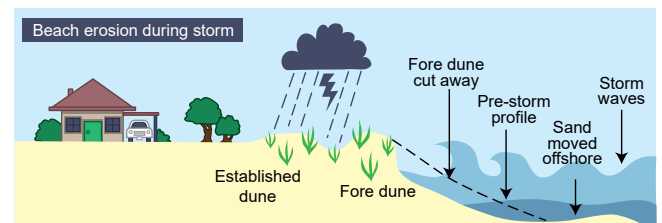
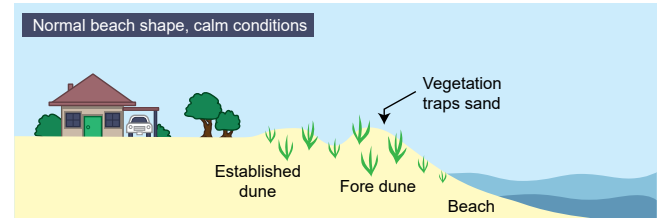
Coastal Erosion

Coastlines naturally erode over time, driven by variations in sediment supply. It occurs when wind, waves and coastal current shift sediment (sand and soil) away from the shoreline.

Short-term erosion is the product of natural beach fluctuations. It occurs over a period of days as a result of extreme weather events such as a severe storm or cyclone activity. During a storm, strong wave action erodes sand from a beach, causing beach erosion (storm bite) and moving the sand seawards. After the storm passes, normal wave processes over months or years transports the sand back onshore, restoring the dune and the equilibrium state of the beach.

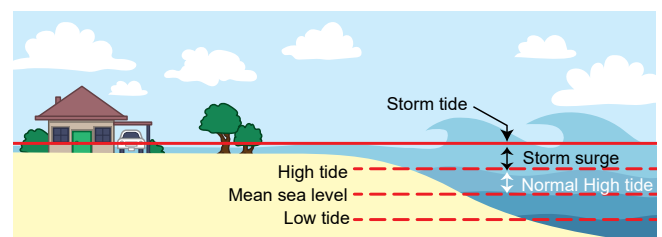
Long-term erosion is continuous and often caused by a reduction in the amount of sand being transported on the beach. During a severe erosion event sand is transported seaward to form an offshore sand bar. If too much of that sand is lost seaward and there is not enough new sand coming into the system, the beach will not be restored to its original state and the coastline will retreat landward.

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



Storm tide inundation

Storm tide inundation is the flooding of low-lying coastal land from a locally elevated sea level. Tropical cyclones and storm events can create a storm surge on top of normal tidal conditions due to low atmospheric pressure and high winds (see diagram). This results in flooding of sea water onto land.



Future impacts

In the future, it is expected the south-east Queensland coastline will experience more intense downpours, sea-level rise and more frequent sea level extremes (see Figure 1).



Temperatures continue to increase year-round



Hotter and more frequent hot days



Harsher fire weather



Fewer frosts



Reduced rainfall



More intense downpours



Rising sea level



More frequent sea level extremes



Warmer and more acidic seas

Projected sea-level rises and an increase in storm intensity to the south-east Queensland coastline is anticipated to increase the extent and impact of coastal hazards, including:

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.
- A potential increase in seawall overtopping may increase nuisance flooding, public safety hazards, and damage to infrastructure behind the wall.

Tidal inundation:

- Areas inundated by king tides will be impacted more often.
- Area, depth, and frequency of tidal inundation is expected to increase for low-lying areas.
- Some areas of low-lying land may be permanently inundated.

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.
- Increased storm activity will escalate the severity of coastal erosion events.

Figure 1. Climate change in the South East Queensland region. DES 2020. https://www.qld.gov.au/__data/assets/pdf_file/0023/67631/seq-climate-change-impact-summary.pdf

Source: Coastal Hazard Technical Guideline (DEHP 2013)

Coastal hazards and the influencing factors require our coastal landscape to adapt and prepare. This can be achieved through implementing adaptation measures (refer Fact sheet - How we prepare for coastal hazards now, and in the future).

In partnership with the community, Moreton Bay Regional Council is committed to preparing our coastline for the likely impacts of future coastal hazards.

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