RESILIENT COAST
DOUGLAS SHIRE COUNCIL

WHAT ARE COASTAL HAZARDS?

Coastal hazards include flooding of low-lying coastal land, and / or erosion of the shoreline. Flooding and erosion are natural processes and contribute to shaping the unique landforms of each coastal region. These processes can also have adverse impacts on infrastructure and natural assets. In north Queensland, major coastal hazard impacts are typically associated with Tropical Cyclones.

STORM TIDE INUNDATION

Storm tide inundation is the flooding of low-lying coastal land from a locally elevated sea level (the 'storm tide').

The storm tide is a combination of the predicted tide, storm surge, and wave action. Storm surge is driven by the combined influence of low atmospheric pressure and high winds associated with events such as Tropical Cyclones.
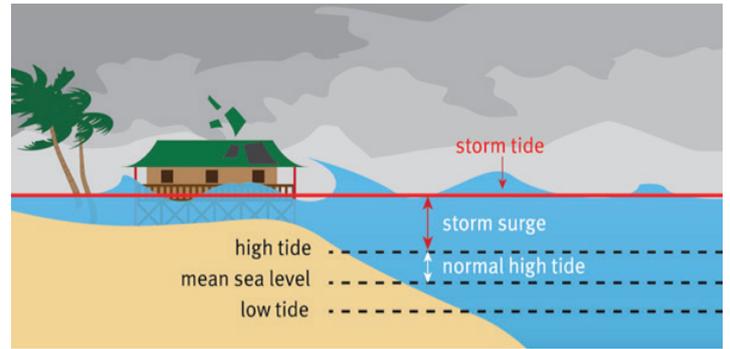
COASTAL EROSION

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 act to shift sediment away from the shoreline. This can be a short-term shift, often associated with storm activity (termed storm bite), and the beach will then gradually rebuild. 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 periodic beach erosion does not result in a long term landward movement of the shoreline.
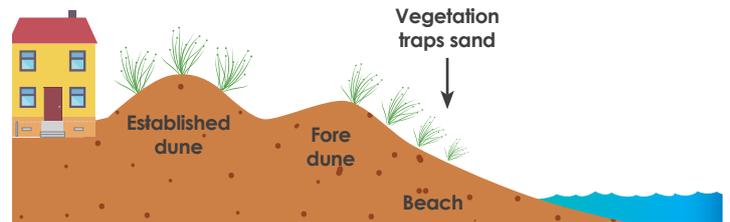
In other cases, due to changing sediment supply or climate conditions, the beach may not have sufficient capacity to rebuild between storm events. In the absence of intervention, long-term erosion (termed recession) may occur, which is the landward movement of the shoreline over a longer timeframes (decades).

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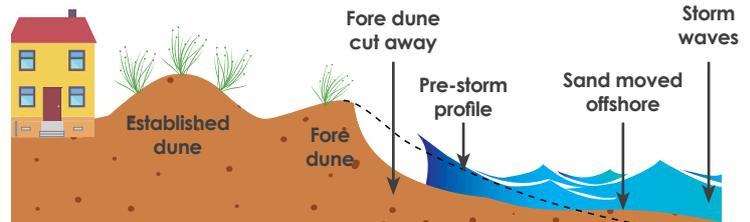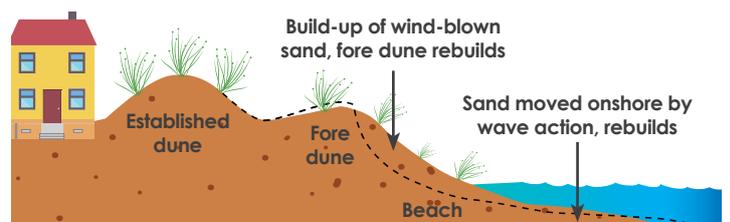

Source: coastadapt.com.au

Normal beach shape, calm conditions

Vegetation traps sand

Established dune

Fore dune

Beach

Beach erosion during storm

Fore dune cut away

Storm waves

Pre-storm profile

Sand moved offshore

Established dune

Fore dune

Beach and dune repair after storm

Build-up of wind-blown sand, fore dune rebuilds

Sand moved onshore by wave action, rebuilds

Established dune

Fore dune

Beach

For more information:
ourcoast.douglas.qld.gov.au
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FUTURE IMPACTS

Projected sea level rise and an increase in cyclone intensity for the 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 cyclone and 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 cyclone and storm intensity will add to the magnitude of storm tide events and the extent of inundation

Source: Coastal Hazard Technical Guideline (DEHP 2013)

PLANNING TO ADAPT

Storm tide inundation, short term erosion and long-term erosion all have the potential to adversely impact existing and future assets in the coastal zone. These impacts 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 ecosystems

✓ Considering the range of planning and adaption options and developing an adaptation plan.

Through the Coastal Hazard Adaptation Strategy (CHAS) process, Local and State Governments are actively planning to avoid or mitigate the impact of coastal hazards, both now and into the future.

FACT SHEETS IN THIS SERIES:

- Terminology
- Coastal landscapes
- Coastal hazards
- Coastal adaptation.

MORE INFORMATION ON COASTAL HAZARDS CAN BE FOUND AT:

✓ Coast Adapt: https://coastadapt.com.au

✓ QCoast2100: http://www.qcoast2100.com.au

For more information:
🌐 ourcoast.douglas.qld.gov.au
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