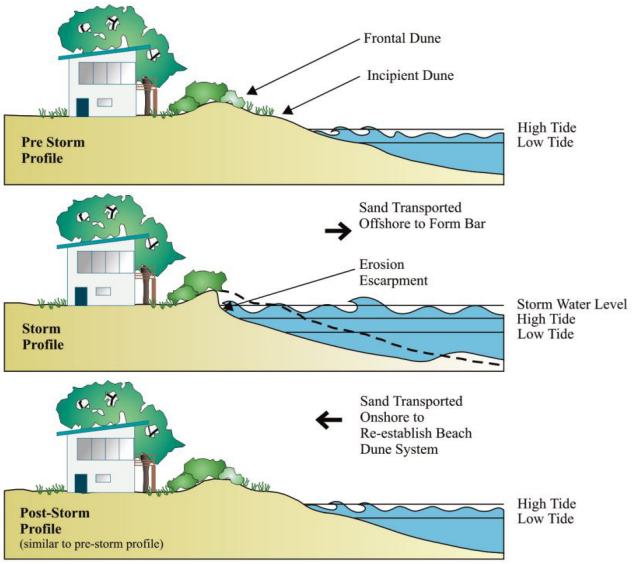
Coastal Management Program
Coastal hazards

TWEED SHIRE COUNCIL

Beach erosion

Beach erosion relates to the gradual erosion of a beach due to the influence of coastal processes. It is usually associated with storms or elevated water levels and can occur on the open coast and in estuaries.

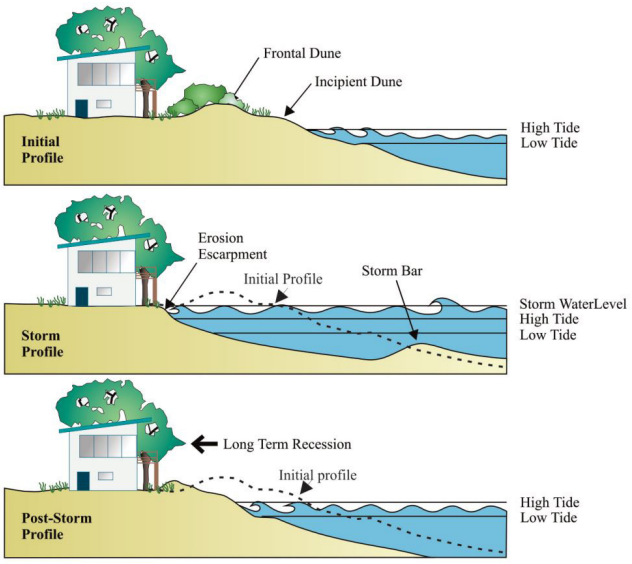
Beach erosion creates a cut out of the foot of coastal dunes, often leaving a steep 'erosion escarpment' which can endanger beach-goers threatening sporadic collapse, revealing buried objects, and jeopardize the viability of nearby vegetation, development and infrastructure.



Shoreline recession

Shoreline recession refers to continuing landward movement of a shoreline or a net landward movement of the shoreline over time because of ongoing coastal erosion. Shoreline recession may relate to an open beach, estuary, or other foreshore.

Recession, like erosion, will often reclaim and threaten coastal assets, infrastructure and vegetation. Recession occurred at Kingscliff between 2010–2011 as depicted below, destroying the road and dune vegetation.



Coastal and tidal inundation

Coastal inundation relates to the temporary flooding of coastal areas because of elevated ocean levels often occurring through storm events. Coastal inundation occurs when a combination of coastal and atmospheric processes raises ocean water levels above normal inundating low-lying areas by spilling over dunes, cliffs and bluffs and seawalls/revetment walls.

Tidal inundation relates to the flooding of low-lying coastal areas by tidal action under regular meteorological conditions (i.e. standard high tide). Tidal inundation may include short-term incursions of seawater due to elevated water level or king tide, or more permanent inundation due to land subsidence, changes in tidal range or sea level rise.

Tidal inundation can intensify flooding of low-lying areas adjacent to waterways, and in some cases may occur in urban areas with water returning from a stormwater outlet to a roadside gutter/drain (known as back-flow).

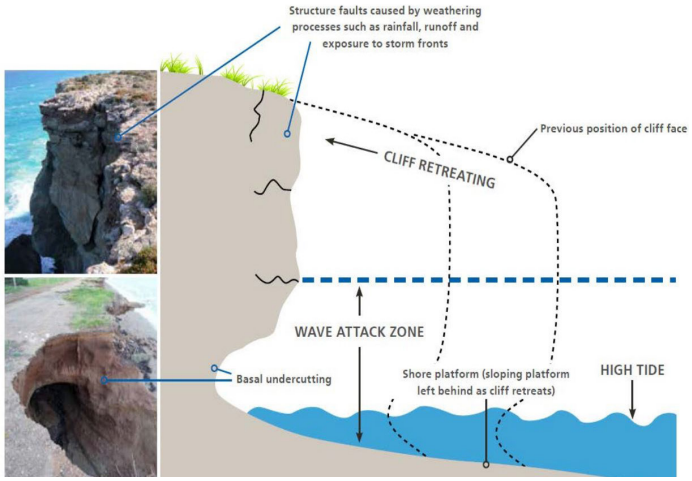
Entrance instability

Entrance instability relates to the migration of coastal lake and watercourse openings to the ocean. Both natural and trained coastal entrances introduce a variety of issues for the management of the coastline, including the up and downstream effects of installing training walls on natural sand migration.

Management of entrance openings is necessary to mitigate adverse impacts to biodiversity, agriculture, development, water quality and human safety.

Coastal cliff/slope instability

Coastal cliff/slope instability relates to the hazard of geotechnical instability of headlands and bluffs within and separating the coastal sediment compartments. Varying instability occurs due to the interaction of weathering and erosion on different geological formations and rock types.



Erosion and inundation caused by coincident events

This hazard describes the erosion and inundation caused by coinciding events within the coastal zone, where flood waters from a catchment interact with coastal flooding caused by intensified coastal processes (storm surge, storm tide).

Erosion of estuarine banks may occur due to excess floodwater from the catchment coinciding with storm swells and tides near entrance openings. Similarly, localised flooding in an urban area may be intensified by the inability for rainwater to discharge from a stormwater pipe due to the higher water level at the outlet (caused by storm tide) or overtopping waterway structures.

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