FACT SHEET:
COASTAL LANDSCAPES

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THE COASTAL LANDSCAPE

Coastal zones are dynamic and picturesque parts of the landscape, where the land meets the sea. Across the Douglas Shire, the coastal landscape supports a diversity of cultural, economic and environmental values, and is highly valued by our Traditional Owners, the Douglas Communities and visitors to the area.

Our coastal zones support a diversity of landuse types including productive agriculture, urban development and critical infrastructure, recreation and amenity space, and significant environmental values. Environmental values often include unique coastal landforms (e.g. dunes, estuaries, rocky cliffs), vegetation communities (e.g. mangroves, native dune vegetation, endangered species), ecosystems (e.g. coastal wetlands, rainforest), and significant and endangered species across both land and marine environments (e.g. turtles, birds, fish).

One of the more challenging aspects of the coastal landscape is that it experiences constant, and often rapid change. Wind and wave action continually works to move sediment and shape the shoreline and adjacent coastal land. Understanding the key drivers of landscape change in the coastal zone is the first step to developing a strategic plan to balance key values and landuse, both now and into the future.

WHAT DRIVES CHANGE IN THE COASTAL ZONE?

Key drivers of landscape change in the coastal zone include:

Tides: The periodic rise (flood) and fall (ebb) of the daily tide moves sediment both off and on-shore, and shapes the form of the beach and near-shore environment.

Wind and waves: Waves are generated by wind blowing across the water. Wind, combined with the morphology (shape) of the sea floor, drives the size, frequency, duration and energy of waves. Wave energy has the potential to move sediment both off-shore, on-shore, and along the coastline.

Climate patterns: Local climatic conditions (e.g. dominant wind patterns) as well as extreme events will influence how the coastal landscape develops and changes over time. Extreme weather events such as cyclones can drive major coastline changes in a short period of time, due to coastal erosion. Beaches typically rebuild gradually between extreme events.

Data on tides, wind, waves and climate patterns are collected by buoys, gauges and weather stations situated along our coastline.

Future climate: Future climate change predictions for Far North Queensland include[1]

- higher temperatures
- rising sea level
- hotter and more frequent hot days
- more frequent sea leavel extremes
- more intense downpours
- warmer and more acidic seas
- less frequent but more intense tropical cyclones

1 Climate Change in the Far North Queensland region. Department of Environment Heritage and Protection 2016. https://www.qld.gov.au/environment/assets/documents/climate/far-north-qld-climate-change-impact-summary.pdf

QCoast2100 COUNCILS LEADING COASTAL ADAPTATION

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WHAT DRIVES CHANGE IN THE COASTAL ZONE? (CONT)

Sediment supply: Sediment is delivered to coastlines from catchments, rivers, dunes and off-shore environments. When historical sediment supplies reduce or cease, affected coastlines will be prone to erosion (termed 'retrogradation' or 'recession'). Conversely, when sediment supply is abundant, coastlines will tend to build seaward (termed 'prograde' or 'accretion').

Population dynamics: The number of people living, working and visiting coastal zones is also a key driver of landscape change. Particularly as population increases, the development of urban areas, infrastructure and farmland, can restrict and/or accelerate change.

WHAT DO WE NEED TO PLAN FOR?

The dynamic nature of our coastlines, and susceptibility to extreme weather and a changing climate, requires active management to mitigate the risk of 'coastal hazards'. Coastal hazards typically include flooding of low-lying coastal land and erosion of the existing shoreline. Managing the risk (likelihood and consequence) of coastal hazards involves understanding which areas are likely to be impacted, both now and into the future, and developing a strategic plan such as a Coastal Hazard Adaptation Strategy (CHAS).

FACT SHEETS IN THIS SERIES:

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

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