Factsheet | Our Coastal Landscape

Across the Gladstone Region, the coastal landscape supports a diversity of cultural, economic and environmental values, and is highly valued by our Traditional Owners, local communities and visitors to the area. The shoreline stretches over 150 km from Raglan Creek in the north to Baffle Creek in the south. The coastal region includes Gladstone Harbour, which is a deep-water harbour that services a number of industries and exports that combined, contribute over half of the economic value for the region.

The Gladstone coastal landscape is characterised by a network of sandy beach systems backed by elevated coastal dunes, interspersed with rocky headlands, estuaries, coastal creeks and wetlands, and pockets of adjacent coastal plains. A number of islands sit off the coast, including the larger continental barrier islands of Curtis Island and Facing Island and smaller islands further offshore, which comprise the most southern islands of the Great Barrier Reef.

One of the more challenging aspects of the coastal landscape is that it experiences constant, and often rapid change. Wind and wave action continually work 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 land use, both now and into the future.

What changes do we need to plan for?

Tides: The periodic rise and fall (or flood and ebb) of the daily tide moves sediment both on and off-shore and shapes the form of the beach and near-shore environment. The Gladstone coast experiences semi-diurnal tides, meaning there are

two high tides and two low tides each day. The difference between the lowest and highest tides experienced under normal conditions is called the tidal range. The tidal range is around 4.83 m at Gladstone, but extreme weather events can cause considerably higher tides.

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

Weather and climate patterns: Local climatic conditions (e.g. dominant wind patterns) as well as extreme events like cyclones will influence how the coastal landscape develops and changes over time. Extreme weather events can drive major coastline changes in a short period of time, including erosion (loss) of sand. Sandy beaches and dunes typically rebuild gradually between extreme events. Long-term changes in climate also influence sea level and coastal processes.

Sediment supply: Sediment is delivered to coastlines from catchments, rivers, dunes and offshore environments. When historical sediment supplies reduce or cease, coastlines may be prone to erosion. When sediment supply is abundant, coastlines will tend to build seaward. Sources of sand to the Gladstone coast include sand delivered to the coast by the major waterways, as well as sediment transport from offshore and along the coast.

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.

How do we plan for change?

Understanding the key drivers of change in the coastal zone helps to inform management activities. This includes pro-active planning 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. The development of a Coastal Hazard Adaptation Strategy, as part of the Gladstone *Our Coast Our Future* project, will assist to inform both short and long-term management of our coastline.

Working together

Across Queensland, councils and communities are working together to develop a tailored approach to adaptation across different localities.

More information on coastal adaptation can be found at:

- QCoast2100: http://www.qcoast2100.com.au
- Coast Adapt: https://coastadapt.com.au
- www.gladstone.qld.gov.au

Fact sheets in this series

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