



UNDERSTANDING COASTAL PROCESSES ACROSS RIVOLI BAY

Building on previous work, Council engaged coastal consultants, Baird, to collect local metocean data that could be used to better inform decision making around coastal infrastructure in Beachport and Southend. This included the collection of water levels, waves and currents to confirm the coastal processes within Rivoli Bay and the development of a scientific base model to simulate coastal processes within Rivoli Bay. This project was co-funded by the Coast Protection Board.

The technical study confirmed the following coastal processes are at play within Rivoli Bay:

Coastal sand movement in Rivoli Bay is primarily driven along the shore by waves.

Waves curve around the headlands at each end of the bay and arrive at Beachport and Southend from consistent directions.

The incoming waves drive sand transport in Rivoli Bay. At Beachport and Southend, sand is transported northward along the shore.

The natural shape of the Bay provides protection at Beachport and Southend from large offshore waves with waves rarely exceeding 1m at Beachport and 1.5m at Southend.

Both locations experience typical seasonal patterns with higher waves and increased storm events in winter that act to transport sand offshore. Calmer conditions occur in summer which allow sand to gradually return to shore, rebuilding the beach.

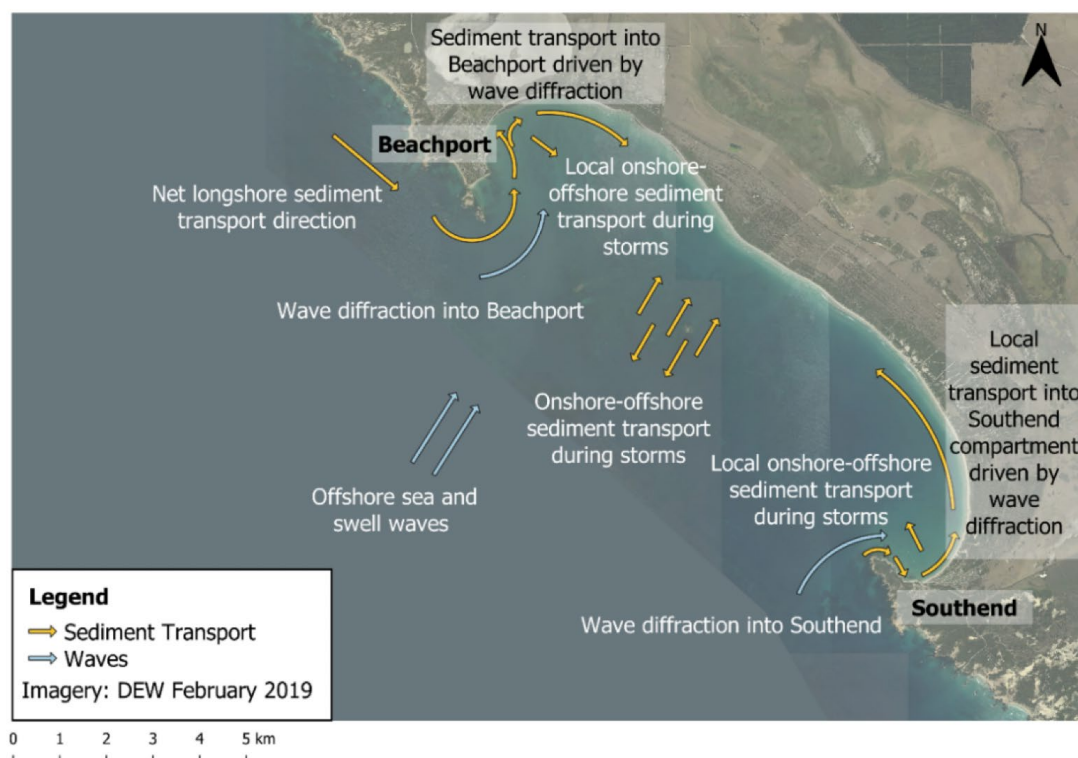
Significant long wave energy is present, at Beachport it represents approximately 40% of the total wave energy.

Currents at Beachport and Southend are driven by tides and are generally mild, increasing when winds and waves align with existing current directions. The tidal driven currents and eddies are generally too weak to move sand.



A full description of the analysis can be found in the technical report, *Rivoli Bay Data Collection and Modelling*

A summary of the technical report has been prepared and can be found in *Rivoli Bay Summary Report*



Conceptual model of coastal processes in Rivoli Bay



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BEACHPORT FORESHORE

The technical study confirmed the following coastal processes specific to Beachport foreshore:

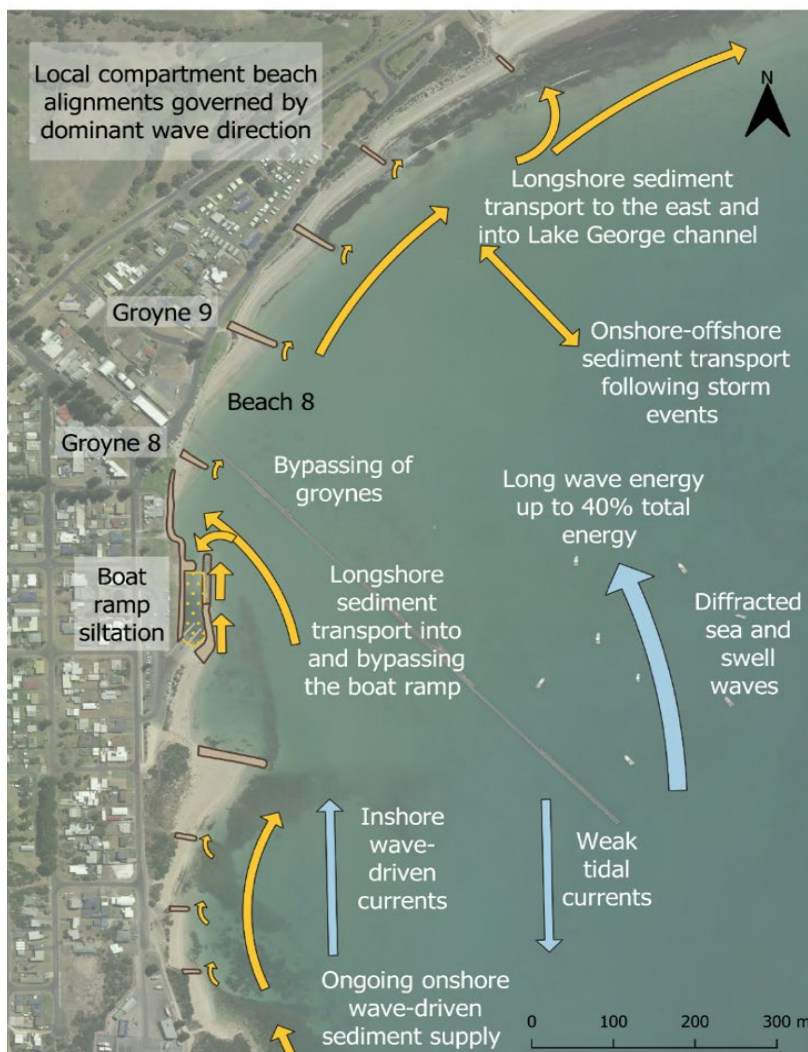
Sand moves along the beach in a net northward direction, primarily driven by waves during storms.

A portion of sand moving northward is transported into the Beachport Boat Ramp basin, leading to siltation at the boat ramp.

Nearshore currents vary at Beachport, with stronger currents travelling northward along the shoreline driven by waves. These currents are strong enough to drive northwards sand movement.

Further offshore, weak currents travel southward driven by the tidal circulation within Rivoli Bay. These currents are not strong enough to move sand.

The width of beaches along the Beachport foreshore is influenced by the shape and dimension of the groynes and their alignment with incoming waves.



Conceptual model of coastal processes for Beachport foreshore processes in Rivoli Bay



Management options are discussed in the full report, summary report and Beachport Foreshore fact sheet

Legend

- ➡ Sediment Transport
- ➡ Shoreline
- ➡ Waves and currents
- ▬ Coastal Structures

Imagery: DEW February 2019



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SOUTHEND FORESHORE

The technical study confirmed the following specific coastal processes for the Southend Foreshore:

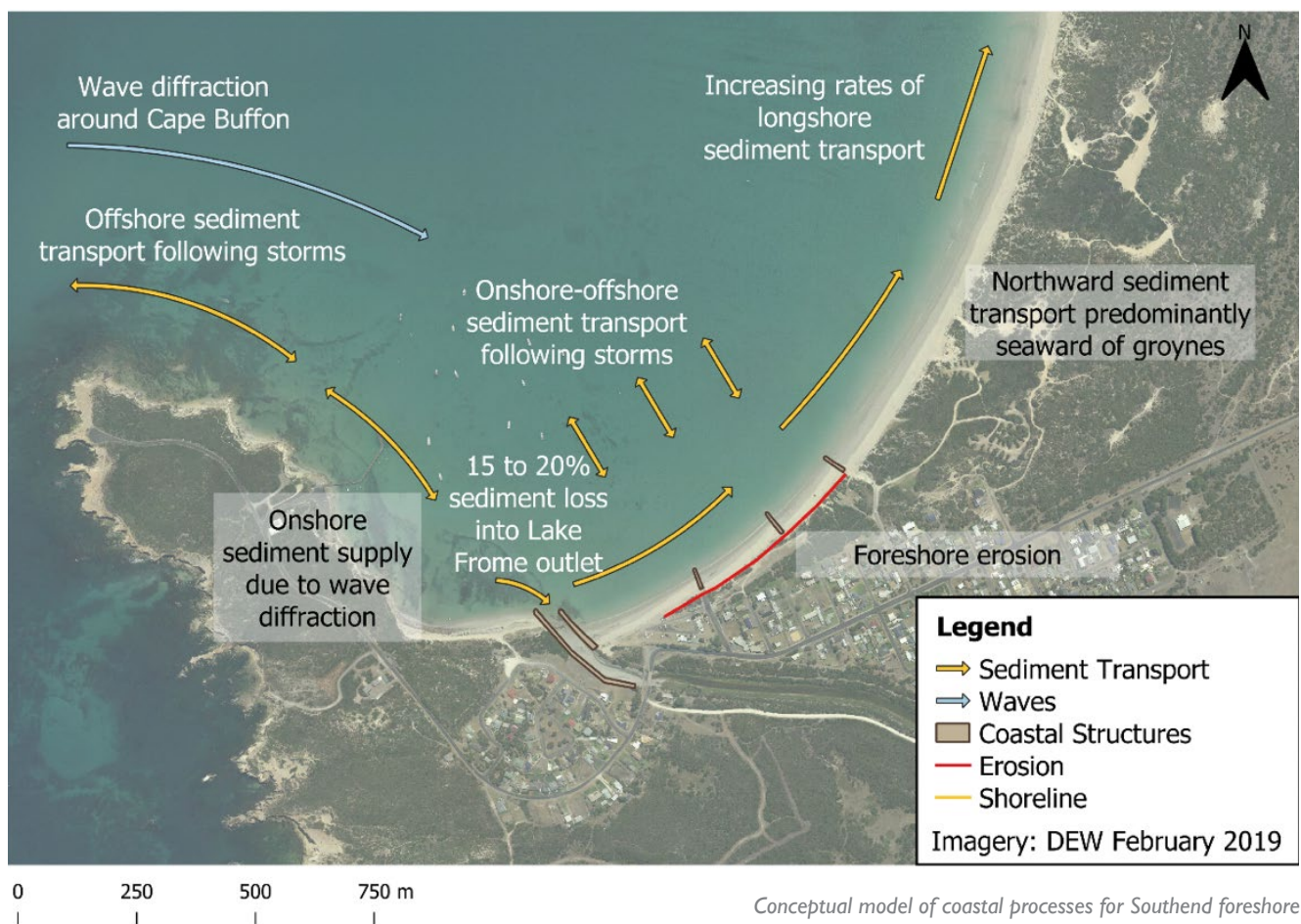
The dominant coastal process at Southend is waves driving sand transport in shallow water and along the shore to the north.

Longshore sand transport increases towards the eastern end of Southend where shorelines are more exposed to waves. The sand transport rates are also higher during the winter months.

The groyne on the west side of the Lake Frome outlet is effective at capturing sand moving east and as a result the beach west of the Lake Frome outlet is stable.

The Lake Frome outlet drain traps approximately 15% to 20% of sand moving east along the coast.

Beaches east of the Lake Frome outlet are eroding, with those east of the groyne field eroding at a fastest rate.



Conceptual model of coastal processes for Southend foreshore

This fact sheet is part of a series summarising the investigations into:

- Coastal Processes across Rivoli Bay
- Beachport Foreshore
- Beachport Boat Ramp, and;
- Southend Foreshore

