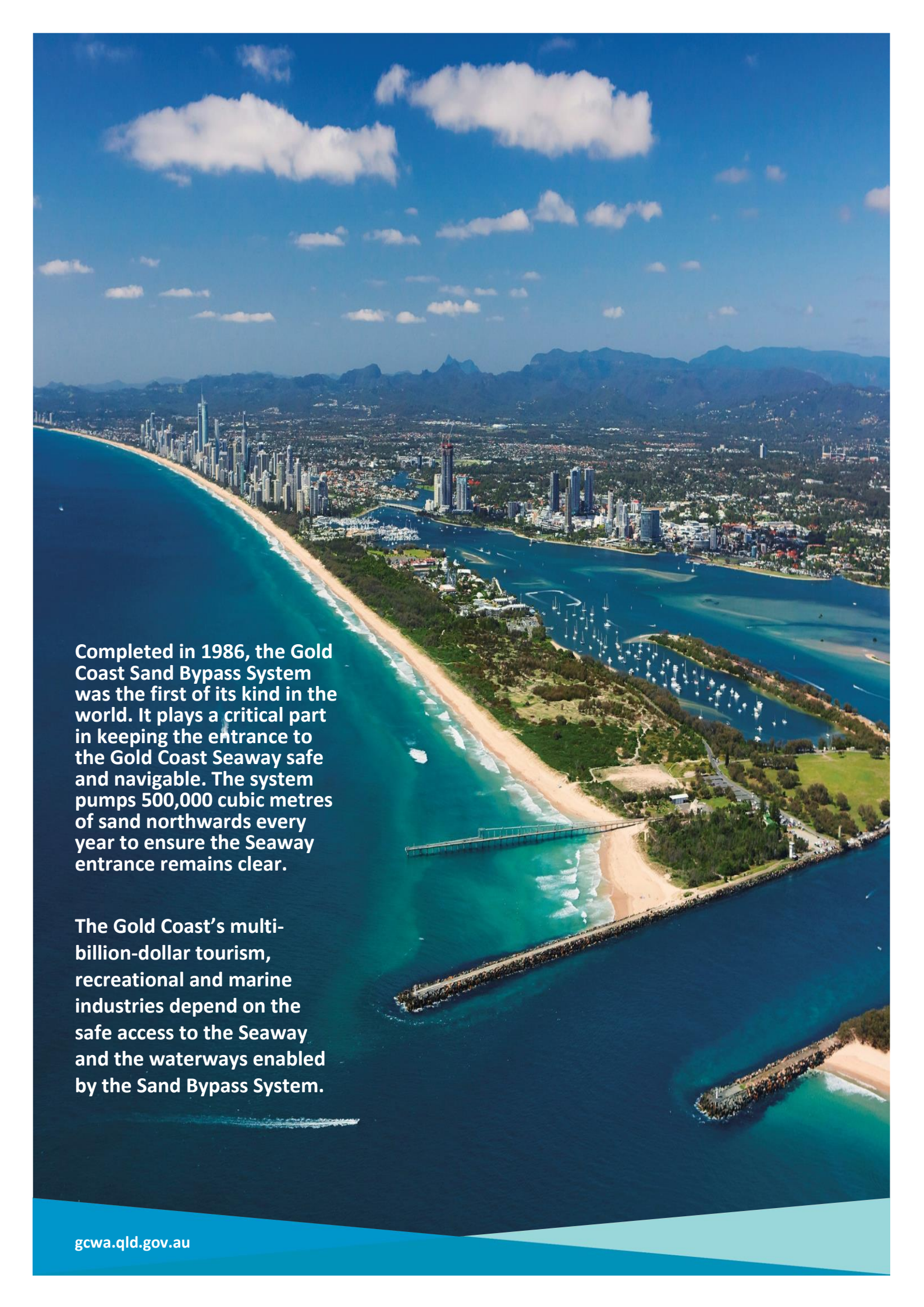




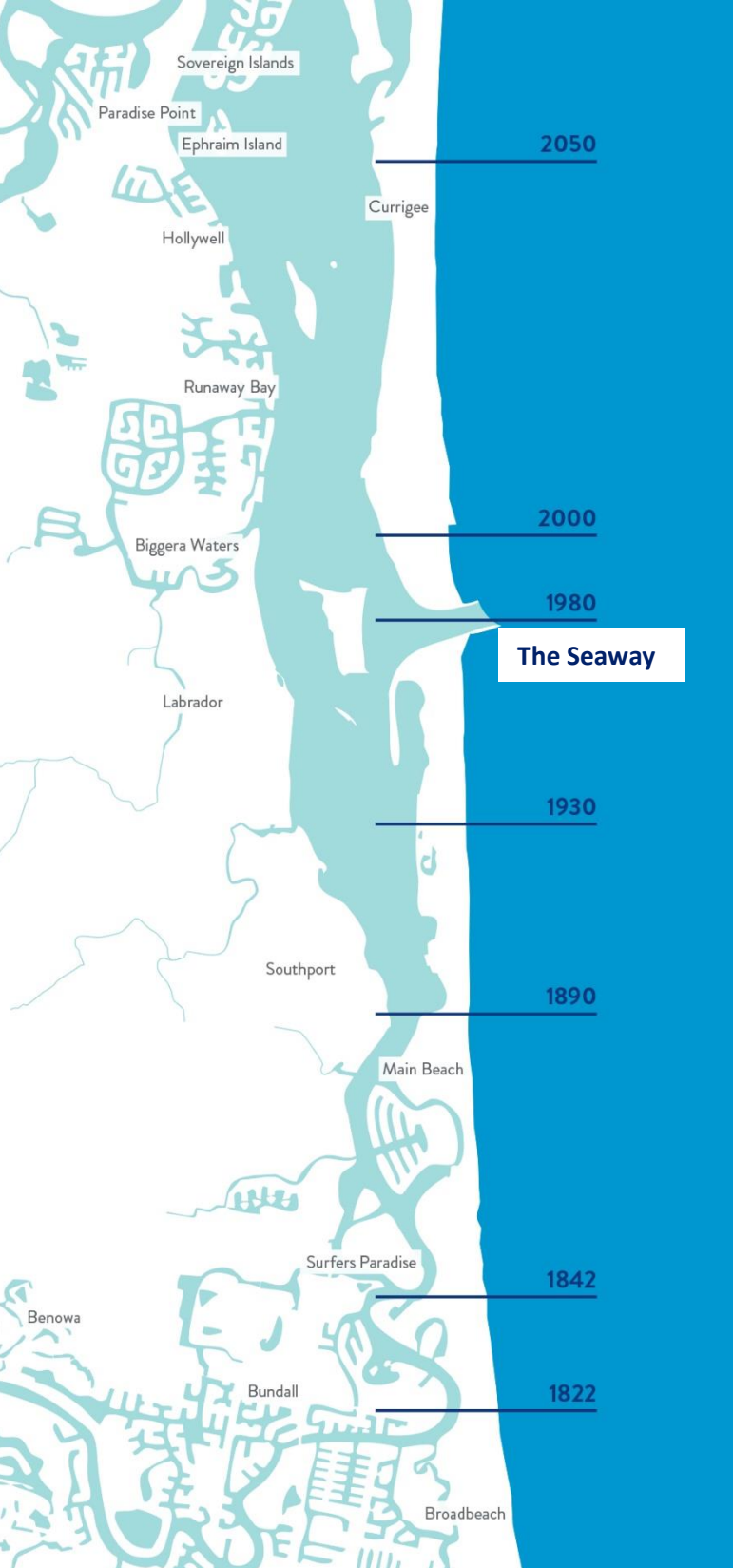
Sand Bypass System



An aerial photograph of the Gold Coast, Queensland, Australia. The image shows a long, sandy beach curving along the coast, with turquoise water meeting the shore. In the background, a dense urban area with numerous high-rise buildings is visible, extending towards a range of mountains under a bright blue sky with scattered white clouds. The Gold Coast Seaway is a prominent feature, a large body of water that provides access to the ocean. A long pier extends into the water, and many sailboats are visible in the harbor area. The overall scene is vibrant and scenic, highlighting the coastal and urban landscape.

Completed in 1986, the Gold Coast Sand Bypass System was the first of its kind in the world. It plays a critical part in keeping the entrance to the Gold Coast Seaway safe and navigable. The system pumps 500,000 cubic metres of sand northwards every year to ensure the Seaway entrance remains clear.

The Gold Coast's multi-billion-dollar tourism, recreational and marine industries depend on the safe access to the Seaway and the waterways enabled by the Sand Bypass System.



Historical movement of the Nerang River entrance. The construction of the Seaway in the 1980s stopped the movement of the river mouth as shown above.

Why was it built – the moving mouth of the Nerang River

Until the Seaway was built, the Nerang River mouth was migrating northward by about 60 metres every year. In the early 1800s, the Nerang River entered the Pacific Ocean at Broadbeach. By 1930, the entrance was located near where Sea World stands today.

The constant movement of sand caused serious erosion on South Stradbroke Island and was choking the Broadwater with sand. The moving river mouth created a treacherous and constantly changing sand bar causing hazardous boating conditions for people trying to travel between the ocean and our inland waterways.

If the Seaway hadn't been built, by 2050 the river entrance would be opposite Runaway Bay, threatening Currigee on South Stradbroke Island.

Stopping the movement of the river mouth

After a series of engineering and environmental studies, the Gold Coast Seaway was built to stop the river mouth moving north, providing safe access between the ocean and the waterways and stopping sand from building up in the Broadwater.

In 1984, two breakwaters, 320 metres apart, were built through the Spit just south of the existing river mouth. The southern wall extends 600 metres offshore and the northern wall 400 metres offshore. They're orientated slightly northward to reduce wave penetration.

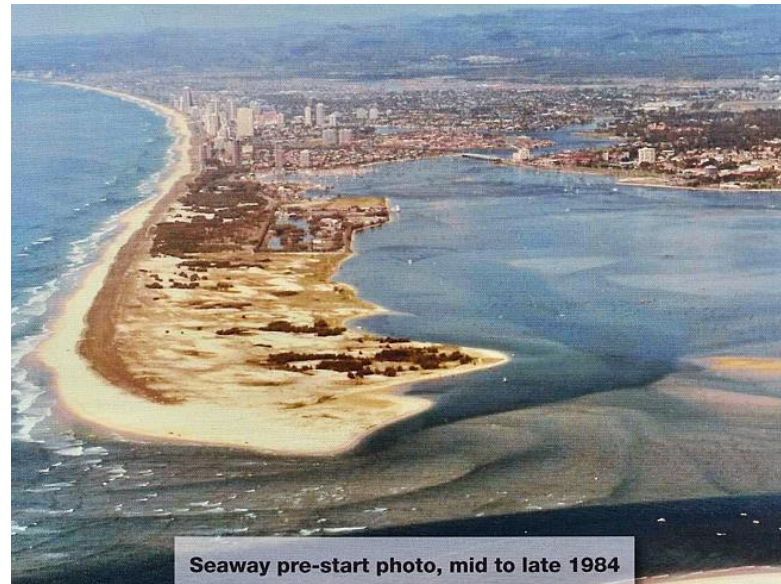
Wave Break Island was created at the same time to protect the western shore of the Broadwater from storm surges and navigation channels were dredged.

Managing sand drift

About 500,000 cubic metres of sand drifts northward along the coast each year. That volume of sand is enough to fill 10 rugby league fields to a depth of 10 metres.

Unless intercepted, the sand would build up behind the southern wall and form a new bar, defeating the purpose of the Gold Coast Seaway.

The Sand Bypass System overcomes this problem by pumping the littoral drift sand from the south side of the Seaway to the beach on South Stradbroke Island, copying nature.



How the Sand Bypassing System Works

The System uses 10 jet pumps each suspended 30 metres apart along the jetty to pump sand under the Seaway across to South Stradbroke Island. The pumps are buried to a depth of 17 metres below the jetty deck.

Clear water to operate the jet pumps is pumped at low pressure from the Broadwater to the control building where the water pressure is boosted and delivered to selected jet pumps on the jetty.

The sand/water mix from the jet pumps returns along the jetty through a gravity fed flume to the control building. Excess water is sent back to the ocean. The concentrated sand slurry is then pumped through a pipeline under the Seaway to the beach on South Stradbroke Island.

The pumping system is computer controlled and pumps 250-400 cubic metres of sand each hour. The System is mainly operated at night to take advantage of off-peak power periods and minimise electricity bills.





Economic and environmental benefits of the Sand Bypass System and the Seaway

It would be hard to imagine our Waterways City without the Sand Bypass System and Seaway. Certainly, the Gold Coast's tourism, recreational boating and fishing and marine industries wouldn't be where they are today.

Safe, navigable access between the ocean and waterways has encouraged major investments in these industries. An economic study commissioned by the Gold Coast Waterways Authority in 2017 showed our waterways have a natural capital value of \$26 billion. They contribute \$770 million directly and indirectly to the local economy each year and support 6,000 direct and indirect jobs.

Without the System and Seaway, the development of industry zones such as the Gold Coast Marine Industry Precinct on the Coomera River, one of the key boat building and servicing centres on Australia's east coast, would not have been viable. The Precinct services all types of vessels including Superyachts up to 60 metres in length.

Apart from keeping the Seaway clear, by pumping the sand across to South Stradbroke Island the Sand Bypass System has created a world-class surf break – The Other Side, or TOS as it's known by surfers around the world.



It was the world's first Sand Bypass System



Since operation began, more than 18 million cubic metres of sand has been pumped through the system



\$50 million was invested in constructing the Sand Bypass System



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