

# TWEED RIVER ENTRANCE SAND BYPASSING PROJECT

## THE PROJECT

Sand is swept northwards along the north coast of NSW by the predominantly south-easterly swells. The extension of the breakwaters at the mouth of the Tweed River in the early 1960s interrupted this movement of sand. As a result, the beaches to the north eroded and the beach to the south of the entrance accreted. Also, the bar re-formed and navigation conditions deteriorated.

The Tweed River Entrance Sand Bypassing Project is an environmental restoration project of the New South Wales and Queensland State Governments that is sustainable in the long-term. It was created to achieve the following objectives:

- Establish and maintain a navigable entrance to the Tweed River;
- Restore the southern beaches of the Gold Coast and supply them with sand in perpetuity.

## HOW THE SAND BYPASS SYSTEM WORKS

The fixed sand bypassing system has been designed to intercept the natural northward movement of sand before it reaches the Tweed River. Sand collects in cone shaped depressions in the sea bed formed by submersible pumps positioned along a 450m long jetty that is 200m south of the river entrance. The sand is pumped on a daily basis, usually at night, through a pipeline under the Tweed River to an outlet below Point Danger. Sand may also be placed at Duranbah Beach, Kirra Point, and to the west of Snapper Rocks when required.

## CURRENT STATUS

### Duranbah Beach

The artificial bypassing of sand from the jetty on Letitia Spit to Snapper Rocks has reduced the natural flow of sand through the river mouth. As a result, Duranbah Beach has become smaller than it was before the start of the sand bypass project. This change is a consequence of re-establishing a deeper entrance to improve navigation conditions.

To compensate for the reduced natural flow of sand onto Duranbah Beach, the project supplies sand to the beach whenever necessary to ensure there is a useable beach and good surfing shoals. The dunes at the rear of the beach were enlarged in May last year and further sand was placed on the upper beach in December. This trial sand placement was undertaken in conjunction with Tweed Shire Council to examine the viability of this approach. It was reasonably successful in providing an increased storm buffer and an improved beach amenity. The enlarged dunes were badly eroded in March and restored again in April/May this year. The project has liaised with Tweed Shire Council to assist it in the preparation of a management strategy for the area.



DURANBAH BEACH DURING RESTORATION - Photo by Ian Taylor

### **Rainbow Bay, Greenmount and Coolangatta Beaches**

Storm and wave conditions can quickly change the size of these beaches. This is a normal occurrence that exists at beaches just north of headlands in this region. Whether the sand originates from natural sand flow or a sand bypass system, it builds up in large quantities to the south of the headland and in larger southerly wave conditions the sand sweeps around the headland in a lump. The beaches have been narrower than they were in the first couple of years of sand bypassing, and these conditions are expected to persist.

### **Kirra and North Kirra Beaches**

These beaches now provide recreational amenity in an area that had been eroded badly for many years. While these beaches have receded from the condition in 2005, they are still wider than expected in the long term. This is because of the lower capacity of the waves to move the sand along the southern Gold Coast beaches compared to the large quantities of sand coming from Letitia spit via the sand bypass system in the early years of the project. The exposed portion of the reef at Kirra is increasing as the beach recedes, and surfing conditions at Kirra Point appear to be improving.



KIRRA SURF – 26 March 2006 - Photo by Matt Brockie [www.surfsnaps.com](http://www.surfsnaps.com)

### **Dredging**

Since the project commenced in 1995, a total of 4.6 million cubic metres of sand has been dredged from the river entrance and delivered to the southern Gold Coast to restore the beaches.

### **Pumping**

A further 3.5 million cubic metres of sand has been pumped by the sand bypass system since it began operating in early 2001. During the first 5 years of operations, the sand bypass system removed some of the sand that had built up on Letitia Spit, immediately south of the Tweed River mouth.

### **Letitia Spit**

More sand than the normal coastal sand drift was pumped during the initial stages of the sand bypass project to construct a sand trap for the sand bypass jetty. At the jetty, the beach was drawn back about 100m. The recession tapers off to the south, and no recession has occurred at Fingal. The position of the beach is now near the long term position, and dune works have been undertaken to establish a natural dune shape. Native vegetation will be planted to help stabilise the dunes and to improve the habitat of the area.

### **River Entrance**

Since the sand bypass system was commissioned over 5 years ago, the navigation conditions have been much safer for boats crossing the bar. Dredging is currently being carried out to improve navigation conditions.

### **WANT TO KNOW MORE?**

Project websites contain a more detailed description of the project. The sites provide information such as seabed maps of the Tweed River Entrance, sand delivery quantities, technical details, newsletters, photographs of the river entrance and the beaches, and links to other weather, tide and wave recording websites. The addresses are:

[www.tweedsandbypass.nsw.gov.au](http://www.tweedsandbypass.nsw.gov.au)

[www.epa.qld.gov.au/sandbypass](http://www.epa.qld.gov.au/sandbypass)

[www.wrl.unsw.edu.au/coastalimaging/tweed](http://www.wrl.unsw.edu.au/coastalimaging/tweed)

Alternatively, you can contact the Tweed Sand Bypass on (02) 6620-5501