

Gold Coast beach nourishment



Aerial photograph of Miami Beach (Source: Skyepics 2011)

Beach nourishment projects have been undertaken on the Gold Coast since 1974. They are designed to mimic natural coastal processes and allow sand to shift continuously in response to changing waves and water levels. They are a prime example of how Gold Coast City Council's coastal engineering activities are working *with* nature to care for our coast, and achieve better outcomes for the community, economy and environment of the Gold Coast.

There are several positions along a beach that may be nourished as part of a beach nourishment project: beach berm, submerged berm, or as a dune (refer to Figure 1). Wind, tides, currents and waves act naturally on the beach to redistribute this sand across the beach system. This nourishment enhances the natural buffering ability of the beach sand store (including its dunes, visible beach, and submerged beach) and protects our valuable coastline.

Beach nourishment projects on the Gold Coast are planned very carefully. Variations in physical, geological, environmental and economic characteristics of the beach must be taken into account, as well as the level of protection required. Extensive modelling is undertaken in the planning phase of a beach nourishment project, taking into consideration expected beach behaviour under a variety of storm scenarios. Currently, sand dredged from Currumbin Creek is used to nourish Southern Palm Beach, Tallebudgera Creek is dredged to nourish Burleigh Beach, and nourishment of southern Gold Coast beaches is ongoing through the Tweed River Estuary Sand Bypassing Project. For more information, see the other information sheets in this series.

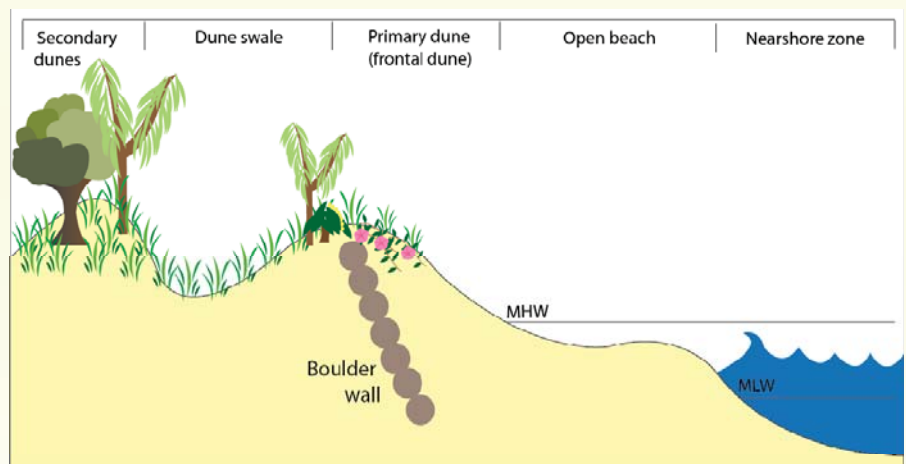


Figure 1. The beach system: more than meets the eye

Benefits of beach nourishment

Besides mitigating against storm damage and protecting life and property, there is a range of benefits derived from beach nourishment projects. In terms of recreation, a wider beach obviously facilitates more activities on the beach. Beach nourishment also strengthens the Gold Coast economy and better protects our beachfront infrastructure.



Where does the sand come from?

Factors considered in selecting an appropriate sand source include sand grain size, colour, composition, texture, and sustainability of the source.

- ◆ Offshore
- ◆ Estuaries
- ◆ Feeder beaches (beaches that are artificially widened that nourish downdrift beaches through natural littoral currents)
- ◆ Construction sites within 500m of the beach (this source has supplied in the order of millions of cubic metres of sand to our beaches since 1985).



Figure 1. 22/05/09 The Spit during severe May storm

May 2009 storms—How did our beaches cope?

In May 2009 a significant east coast low storm hit the Gold Coast region. The maximum wind gust recorded was 117km/h from the south east on 20 May 2009. The minimum pressure reading was 1008.3 hectoPascal on 21 May 2009. Figures 1 and 2 demonstrate the benefits of sand nourishment at Main Beach and Narrowneck in maintaining a healthy beach during severe storms. Previous beach nourishment campaigns assisted in minimising damage to shoreward properties and protected ecological communities on the dunes. For more information on this event, see *Beach erosion events in 2009 – How did our beaches cope?* information sheet.



Figure 2. Reprofiling at Narrowneck three days later

What about the environmental impacts?

Beach nourishment can create or restore habitat, nesting areas and spawning areas lost through erosion. Particularly for sea turtles (endangered) and shorebirds (several endangered or threatened), see Figures 3 and 4, below.

The Gold Coast City Council funds many important studies conducted by the Griffith University Centre for Coastal Management that investigate how species and ecological communities respond to the physical changes in the beach over time that result from nourishment projects in our city. For more information on these studies visit the Griffith Centre for Coastal Management's website: griffith.edu.au/coastal-management



Figures 3 and 4 (above). Loggerhead Turtle and Little Tern are just two species that require a healthy beach (pictures taken on South Stradbroke Island, GCCC 2007)

Since sediment is constantly being redistributed—and coastlines and beaches are always on the move—plants, fish species and other marine life are well adapted to the natural processes of accretion and erosion - (Coastal and Hydraulics Laboratory 2007)

Reference:

Coastal and Hydraulics Laboratory, Engineer Research and Development Center (2007) *Shore Protection Assessment: Beach Nourishment – how beach nourishment projects work*