Coastal Monitoring

Monitoring of our coastline guides the development of effective management strategies to maintain its health. It is particularly useful in helping us to understand the effects of severe weather events: a long-term data set provides key information on both the impact of these events and the recovery process. Collected data is also used to predict possible outcomes through the development of computer models.

Many monitoring technologies and techniques have been pioneered on the Gold Coast. These include remote cameras for shoreline position and beach width monitoring (see Coastal Monitoring: shoreline position Information Sheet), hydrographic surveys within the wave breaking zone that detail the beach profile and a coastal observation program pioneered by the Beach Protection Authority in the 1980s.

Hydrographic surveys

Gold Coast City Council has regularly undertaken hydrographic surveys at a number of locations along Gold Coast beaches since the early 1960s. There are 80 fixed survey lines, called ETA lines. These ‘lines’ are set at 400m apart and perpendicular to the coastline (see Figure 1). In addition, there are over 200 sub-lines and project specific lines, meaning that a detailed and comprehensive set of data can be collected as required.

Survey information is collected along the cross section of the beach (the beach profile) which extends in a line from behind the dune, across the beach and into the ocean. The beach survey is obtained using a specialised GPS system and a theodolite with a survey vessel completing the data collection to a depth of up to 20m.

This provides a description of the beach profile including changes due to sand accretion and erosion and the presence of sand bar formations. The volume of sand present on the beach can also be estimated and the survey data can be developed into computer models to monitor the changes in the beach profile to highlight key beaches vulnerable to beach erosion.
Wave Rider Buoys

Gold Coast City Council partners with the Department of Environment and Resource Management (DERM) to operate a directional wave rider buoy offshore from Main Beach. The wave rider buoy collects key information on the wave height, direction and wave period.

Additional monitoring of Queensland’s coastline is undertaken by DERM with a wave rider buoy in place offshore of the Tweed River. For more information please visit: http://www.derm.qld.gov.au/environmental_management/coast_and_oceans/waves_and_storm_tides/wave_monitoring/waverider_buoys.html

Community Monitoring

The Coastal Observation Program – Engineering (COPE) was initially piloted in 1971 by the then Beach Protection Authority (Queensland State Government). The aim of the program was to collect basic data on wind, waves and beach behaviour. This data was collected by volunteer observers who recorded this data on a daily basis for a minimum commitment of three years. The benefit was that a greater number of sites across Queensland’s coast could be monitored. Over 60 sites were established in Queensland, including eight on the Gold Coast.

- Currigee (South Stradbroke Island)
- The Spit (Southport)
- Surfers Paradise
- Burleigh Heads
- Tallebudgera
- Bilinga Beach
- North Kirra Beach
- Coolangatta Beach

COPE concluded during the 1990s, successfully providing an extensive data set on local coastal processes thanks to a dedicated group of volunteers.