Managing Urban Sand Dunes
- Gold Coast -

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Dunes are a vital part of our coastal environment. Not only do they provide a reserve supply of sand for the use of waves during storms, they are the basis of critical ecosystems, supporting valuable communities of plants and animals. Unfortunately, some of our coastal dunes have been damaged over the years due to residential development, sand mining and recreational activities such as 4-Wheel-Driving.

Where there is an inadequate dune, properties and facilities near the back of the beach may be subject to inundation from the ocean, to structural damage from wave attack, undermining by foreshore erosion, or to sand drift. The presence of a stable and healthy dune system provides a natural defence mechanism against these hazards.

Classification of Urban Sand Dunes

Dune systems on the Gold Coast are classified into four different types depending on the amount of usage that each area receives. Each dune type is managed to meet the needs of both the environment and the community.

Non-Urban dune: Areas that have minimal impacts from development and have minimal usage such as The Spit.

Photo: The Spit (Source: GCCM)

Urban dune: Areas which are seaward of private residence, resort properties and all urban public parkland that have frontages to ocean beaches, such as Main Beach, Mermaid Beach and Palm Beach.

Public dune – Minor: Areas that have a slightly higher intensity of public use and activity than crown land within urban dune areas. These areas include many surf lifesaving club precincts, parks and areas where large numbers of people can access the beach.

Public dune – Major: Areas of crown land that are locations for major events within the city underpin a major tourist centre and have, extreme levels of intensity of public usage and activity. These include Surfers Paradise, Kurrawa, Burleigh, Kirra and Coolangatta, and the foreshore areas of Greenmount.

Photo: Main Beach erosion scarp (Source: GCCM)

Dune systems run in a distinct profile with three different groups – Primary, secondary and tertiary vegetation zones.

Frontal Dunes (Primary)

Vegetated foredunes are flexible when damaged by storms, the remaining vegetation traps sand blown from the beach and the dune is reformed, protecting the dune from future wave attack. Dune vegetation is important. Without vegetation the sand will blow away or be washed by waves resulting in a loss of beach.

The area is managed and maintained in a manner which replicates, as closely as possible, typically occurring natural local conditions. Management techniques can include beach nourishment programs and

redistribution techniques with the use of heavy equipment e.g. Narrowneck Beach.

Hind Dunes (Tertiary and Secondary)
The management and maintenance of hind dunes attempt to replicate the natural and local conditions; however, due to the relative stability of the dunes, low level passive recreation and public access ways are acceptable. Dune fencing is used extensively to protect the hind dune system and indicate safe beach access. Dune contractors assist in the management of hind dunes in relation to weed control and native revegetation.

Property landward of the hind dunes
This zone incorporates primarily private gardens areas and all urban public parkland that is directly adjacent to the dunal area. The type of dune species chosen and the landscape design has a direct impact on the aesthetic and functional aspects of the dunal system and the beach.

Private property owners are encouraged to have regard to the use, activity and vegetation requirements of urban dune areas.

Photos: Erosion at Palm Beach from 1967 cyclone (Source: GCCC)

Development Impacts & Erosion
Issues associated with the management of urban dune areas are complex due to the proximity of adjacent development and associated activity. Some of the issues involved are:

- Urban development encroaching on what were once active frontal dune areas
- Removal or pruning of native species to create views and gardens, destabilising the dune area
- Encroachment of turf and inappropriate vegetation into public land and dune areas
- Uncontrolled access in dune areas, resulting in instability and disruption of dune formation
- Wind erosion resulting from the loss of appropriate vegetation
- Susceptibility of private property and urban parkland to damage during an erosion event
- Perceptions that public land is private or inaccessible.

Damaging dune vegetation is illegal and can result in a fine. For more information on the management of urban dunes see the Gold Coast City Council's Planning Scheme Policy 15 at www.goldcoast.qld.gov.au.

Photo: Healthy dunal system at Narrowneck (Source: GCCM)

Contact Information
For further information on coastal dunes please contact GCCM at gccm@griffith.edu.au or (07) 55528506.

Need more information?

For other information sheets on sand dune ecosystems please visit the GCCM website www.griffith.edu.au/coastal-management

- Ecological Processes
- Human Impacts on Sandy Beach Environments
- Sandy Beach Ecology
- Active Dune Systems Southeast Queensland
- Appropriate Dune Vegetation for Beach Areas
- Importance of Dune Vegetation
- Sand Dune Zonation