

## SHEET 6 TO 11 – ADAPTATION ACTIONS – COASTAL MANAGEMENT AND ENGINEERING

### SHEET 9 – STRUCTURES TO DISSIPATE ENERGY OFF-SHORE

Structures can be installed off-shore to create a zone where wave energy will break and dissipate prior to reaching the beach. These structures include breakwaters and artificial reefs.



Breakwaters are erosion control structures most frequently placed parallel to the coast. Breakwaters are typically constructed using rock or geo-bags. **Exposed breakwaters** have a crest that rises above the surface of the water, whereas **submerged breakwaters** do not.

**Artificial reefs** can similarly be used to reduce wave energy and erosion of shorelines and are typically composed of base materials such as rock or geo-bags. They are submerged structures that function through wave dissipation and wave rotation, leading to salient growth in the lee of a reef. To a greater extent than breakwaters, artificial reefs can also be used to enhance marine biodiversity and recreational amenity.



#### Mangroves

Mangroves have an important role in providing natural dissipation of wave energy. The role of Mangrove communities in providing coastal hazard protection is becoming increasingly recognised.

The protection, enhancement, and restoration of mangrove communities along shorelines is becoming a key focus of coastal hazard adaptation initiatives. Where extensive Mangrove communities are established, these should be protected and encouraged to expand to provide additional protection for the shoreline from wave energy. This is

typically an extension of dune protection and maintenance activities.



#### Relevant and priority areas

Protection and enhancement of Mangroves is a priority across all localities where they are established / can be established.

Breakwaters and artificial reefs require careful design and construction to ensure they work effectively. This is often cost prohibitive for many locations. These options are also unlikely to be relevant to the Gympie Region Coastline due to the dynamic nature of the coastline and the presence of marine protected areas.

Structures to dissipate energy off-shore			
	Breakwaters	Artificial reef	Mangrove protection and enhancement
Cooloolo (Estuarine frontage)			Priority
Cooloolo (Ocean frontage)			
Cooloolo Cove			Priority
Inskip Point South			Priority
Inskip Point Spit			Priority
Rainbow Beach (Estuarine frontage)			Priority
Rainbow Beach (Ocean frontage)			
Tin Can Bay			Priority

	Relevant / feasible
	Priority
	Not applicable