

Marine Ecology

EIS FOR DUPLICATION OF THE GATCOMBE AND GOLDING CUTTING CHANNELS

As part of the Environmental Impact Statement (EIS) phase of the Port of Gladstone Gatcombe and Golding Cutting Channel Duplication Project, Gladstone Ports Corporation (GPC) has undertaken a range of baseline marine ecology monitoring within Port Curtis.

This baseline monitoring has been established specifically for the Channel Duplication Project and has been operating alongside other monitoring programs in Port Curtis.

What is the aim of the monitoring program?

Port Curtis sustains a broad range of plant and animal biological diversity and forms part of the southern Great Barrier Reef World Heritage Area. Ecosystems range from coastal and offshore reefs, benthic communities, saltmarshes, mangrove flats and wetlands. The marine ecology monitoring program collected a wide range of baseline marine ecology information that will be incorporated into the existing environment sections of the EIS and provides baseline conditions to assess the potential marine ecology impacts from dredging works.

What data is collected and how?

FISH SURVEYS



Fish are an important recreational, commercial and cultural resource within Port Curtis. There are a number of fish habitats within Port Curtis, including shallow water (intertidal) communities, deep water (sub tidal) communities, seagrass meadows and reef associated communities.

As part of the EIS, fish and other nekton (larger mobile macroinvertebrates) were sampled using a number of different survey methodologies, according to the marine habitat of interest, and include a series of netting techniques (e.g. cast nets, seine nets, gill nets), diver surveys and baited remote underwater video stations. These surveys have provided baseline information on fish species abundance, richness, community diversity and assemblages at each habitat type.

MACROBENTHIC SURVEYS



Macroinvertebrates are a common indicator of ecological stress and range from crabs, sea snails, sea stars and anemones.

Several macrobenthic survey transects were established in areas that have the potential to be impacted by dredging works and at reference sites located away from the predicted dredging impact zone.

Soft sediment macroinvertebrates have been collected using grab samples, which are then sieved and species are sorted and identified. The data collected from these transects is used to calculate species abundance, species richness, diversity and community composition.

A broad survey of macroinvertebrates and algae types has also been undertaken across the wider Port Curtis area using video footage captured during seagrass surveys.

MEGAFAUNA SURVEYS



Port Curtis supports a range of marine megafauna, including whales, dolphins, dugongs and turtles. These megafauna species are found throughout Port Curtis and the wider region, particularly on a high tide.

Boat-based surveys have been undertaken to record the marine megafauna in Port Curtis, at both enclosed coastal and open coastal waters. Data collected during these surveys includes species type, age, behaviours, numbers of individuals and photos.

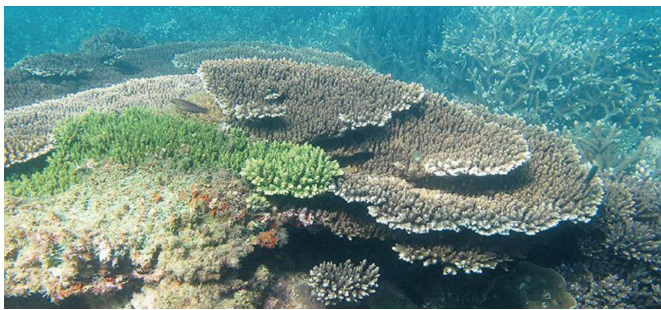
REEF SURVEYS

Coral reefs support a diversity of marine fauna. A number of coral and macroalgae reefs are located within Port Curtis and on the outer coastline of Facing Island and Curtis Island. These reefs are generally characterised by high algal cover and low coral cover.

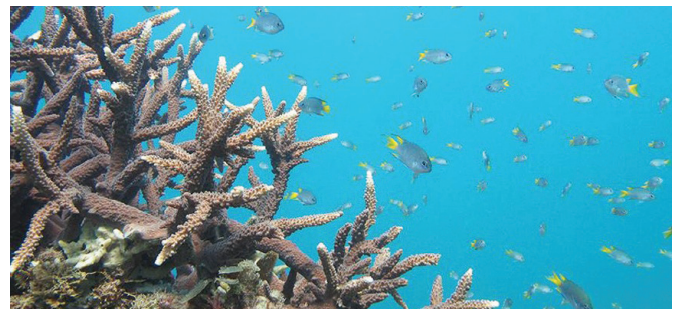
Reef surveys undertaken for the EIS included a combination of surveys carried out by boat, underwater video/camera, satellite and aerial images, and divers. These surveys provide the baseline information on reef species composition, percentage of cover, substrate types, and general health status.



Recent reef surveys identified dominant macroalgae cover at reef monitoring locations in Port Curtis, and the outer coastlines of Facing Island and Curtis Island.



Reef surveys indicated that the corals around Port Curtis, Facing Island and Curtis Island are healthy, with very little signs of stress, discolouration (0.5%) or bleaching (0.1%).



Where and when is data being collected?

Survey locations for each monitoring program have been carefully selected within Port Curtis on the basis of potential dredging impact areas, sensitivity of the receiving environment, and to fulfil the requirements of the scientific based monitoring program being undertaken (e.g. reference sites).

Macroinvertebrate, reef and fish surveys have been undertaken during the wet and dry seasons between June 2014 and May 2015.

Boat-based surveys have been undertaken every three months between June 2014 and May 2015 to account for seasonal variation in marine megafauna presence and activity.

Scientists and ecologists from Vision Environment QLD, James Cook University - Centre for Tropical Water and Aquatic Ecosystem Research (TropWATER) and Aurecon have collected the marine ecology data for GPC.

What does the marine ecology survey data tell us so far?

Key findings to date for the marine ecology surveys include:

- Macroinvertebrate transects have so far identified 111 families and 16 phyla. Common macroinvertebrate creatures found include ascidians (sea squirts), brittle stars, marine worms, polychaete worms and sea snails
- 42 fish species were encountered throughout the four reef study locations. The most common reef associated fish species were the Yellowtail Demoiselle, Spotted-Tail Wrasse and Gregory Damsel
- 17 fish species were encountered at the coastal fish survey locations. The most common estuarine and coastal fish species were the Southern Herring, Spottyface Anchovy and Estuary Glassfish
- Reef survey transects identified dominant substrate cover at reef monitoring locations based on major substrate categories: macroalgae, hard corals, soft corals, sponges and ascidians and other living biota (including other mobile organisms, sea pens and tube building worms)
- Of the coral substrate identified, very little exhibited significant signs of stress, with less than 0.5% of corals showing pale colouration and less than 0.1% presenting bleached white colouration. There were no signs of diseased corals at any of the locations surveyed.

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