PORT OF GLADSTONE I COMMUNITY FACT SHEET

Seagrass Surveys

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 baseline seagrass surveys within Port Curtis.

These baseline surveys have been established specifically for the Channel Duplication Project and have been operating alongside other monitoring programs in Port Curtis, including the long term annual seagrass monitoring program established for the port region that has been ongoing since 2002.

What are seagrasses?

Seagrasses are specialised marine flowering plants that grow in the nearshore marine environment of most of the world's continents. They survive in a range of conditions and locations; from upper estuarine to deeper than 60 metres.

Seagrasses are recognised as important ecosystems for the maintenance of seabed stability, water quality and biodiversity, as well as acting as breeding grounds and nurseries for important crustacean, finfish and shellfish populations. They provide food for green sea turtles, nearly 100 fish species, waterfowl and dugongs. Seagrasses filter nutrients and contaminants from the water, stabilise sediments, act as dampeners to wave action and store carbon.

Seagrass meadow at Pelican Banks in Port Curtis, Curtis Island.

What is the aim of the surveys?

The seagrass surveys conducted provide complete spatial and seasonal coverage of the Port Curtis seagrass meadows. The findings of the seagrass surveys will be used to characterise the current baseline seagrass conditions, and variations that have occurred over the last few years in Port Curtis. The data will be incorporated into the existing environment sections of the EIS and provides baseline conditions to assess any potential seagrass impact from dredging works.

The seagrass surveys were undertaken in conjunction with the monitoring of benthic light conditions at different seagrass meadows within Port Curtis (refer Water Quality Fact Sheet for further details).

What data is collected?

The baseline seagrass surveys have been designed to capture the natural variation in distribution and abundance of seagrass meadows within Port Curtis. Data collected during the seagrass surveys includes:

- Species composition
- Estimated seagrass cover (%)
- Seagrass above-ground biomass
- Sediment type
- Reproductive structures and sediment cores for analysis of seed density.

Research scientists and seagrass experts from James Cook University - Centre for Tropical Water and Aquatic Ecosystem Research (TropWATER) have undertaken the seagrass surveys for GPC.

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When, where and how is the data collected?

Seagrass surveys have been undertaken in Port Curtis since 2002. Seagrass surveys for the Channel Duplication EIS include:

Annual surveys for all seagrass meadows within Port Curtis and Rodds Bay conducted in November 2013 and 2014	Annual surveys of a subset of representative seagrass meadows throughout the region that have been conducted since 2002	Quarterly surveys at 14 seagrass monitoring sites within Port Curtis conducted between May 2014 and May 2015

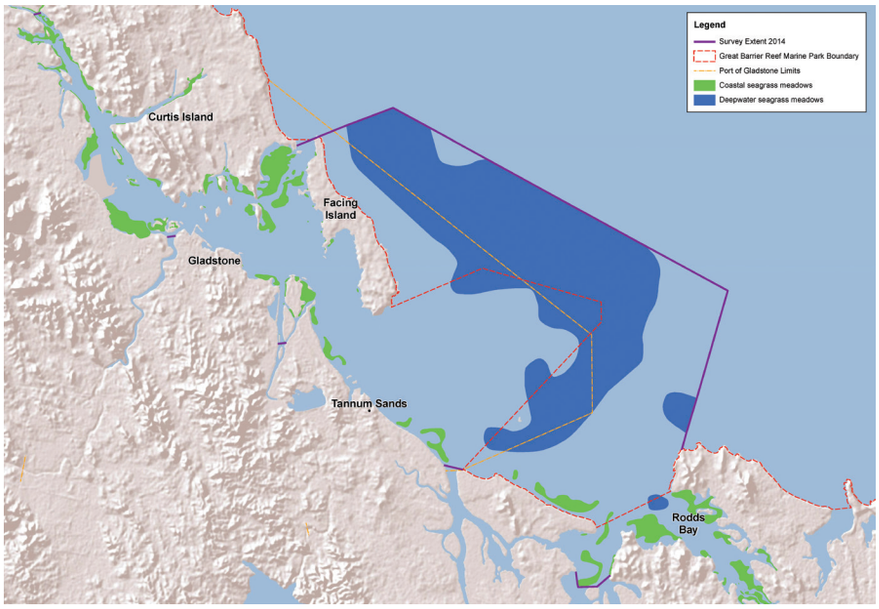
EIS data collection is also being supplemented with ongoing quarterly seagrass surveys conducted for GPC. Coastal seagrass meadows within the enclosed coastal waters were surveyed using a combination of intertidal helicopter surveys and shallow subtidal diver/camera surveys. Deep water seagrass meadows were sampled using an underwater camera system towed behind a vessel while footage was recorded and observed on a TV monitor. Benthos on the sea floor observed through the camera system were confirmed through temporary capture by an attached net and returned upon verification.

Different monitoring methods used for seagrass assessments: Helicopter, free diving and deep water camera tows.

What does the seagrass survey data tell us so far?

The annual and quarterly seagrass survey findings have found:

- Two generalised seasons for seagrass have been observed within Port Curtis:
  1. The growing season between July and January, where species typically increase in biomass and distribution in response to favourable conditions for growth; and
  2. The senescent season between February and June, where species typically retract and rely on stores or seeds to get through wet season conditions, including large rainfall events resulting in low light conditions
- During the 2013 seagrass growing season, substantial increases in seagrass meadow areas were observed and recorded
- In November 2013, substantial deep water seagrass meadows to the east of Facing Island were surveyed for the first time. These seagrass meadows may serve as an additional source of propagules to assist with the recovery of adjacent seagrass meadows within Port Curtis
- Large rainfall events in January 2013 may have resulted in declines in seagrass condition in some areas of Port Curtis



The seagrass distribution observed within Port Curtis during the November 2014 survey is shown ABOVE.

- In November 2014, seagrass distribution within Port Curtis had generally expanded, particularly in The Narrows and Rodds Bay regions where meadows had been absent for a number of years. Total seagrass meadow area within the enclosed coastal waters increased 28% from November 2013, with many meadows increasing in cover from isolated patches to aggregated patches of seagrass.

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