

Pancake Creek Moorings Program

Benthic Assessment, June 2018

Report produced for Gladstone Ports Corporation's Biodiversity Offset Strategy. 12 pp.

This report has been produced for Gladstone Ports Corporation's Biodiversity Offset Strategy. The study was undertaken through a Memorandum of Understanding between Gladstone Ports Corporation and Queensland Parks and Wildlife Service, Department of Environment and Science the installation and monitoring of Environmentally Friendly Moorings (EFM's) and Reef Protection Markers (RPM's) within Pancake Creek.

This publication has been compiled by Queensland Parks and Wildlife Service, Department of Environment and Science.

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Benthic Assessment June 2018



Report to Queensland Parks and Wildlife and Gladstone Ports Corporation

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June 2018

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Introduction

Pancake Creek is located on the Central Queensland coast approximately 20km north of the township of 1770. It is a popular anchorage for yacht's and coastal cruisers making their way along the coast. It is also a popular destination for local fishermen and boating based campers.

Pancake Creek supports of diverse range of habitats including mangrove, seagrass, tidal flats and coral reefs. The estuarine system is home to migratory seabirds, marine turtles, dugongs and numerous fish species. The coral reefs and seagrass beds are susceptible to anchor damage.

To aid in the protection of these habitats it is proposed to install a number of environmentally friendly vessel moorings and reef protection markers. The Gladstone Ports Corporation has provided funding for the installation of environmentally friendly moorings under a Biodiversity Offset Strategy. Installation of these moorings is to commence in August 2018.

The original proposal was to use a pin mooring, which are drilled into the substrate to a depth of 2-4m. Due to the substrate consisting of impenetrable rock, cement block will be installed to anchor the moorings.

The purpose of this report is to provide an initial assessment of habitat condition at the proposed mooring sites prior to their proposed installation.

Methods

Two study sites were selected (B3 and S2), one from within each of the two main mooring sites (refer Figure 1). Two divers on scuba were used to survey the sites. The sites were strongly influenced by strong tidal currents and poor visibility, limiting survey techniques and timing.

At each site within a 10m radius of the selected mooring site, 20 x 0.5m quadrats were deployed at random and photographed using a Lumix DMC-FT1. These images were then analysed for percentage cover of the benthos.

Analysis was undertaken adopting the methodology of the Rapid Health Impact Survey (RHIS) developed by the Great Barrier Reef Marine Park Authority. An additional category of seagrass was added to the RHIS benthos categories (macro algae, live coral, rock, rubble, and sand) to capture the presence of seagrass species within the survey.

Results

General site description

Mooring site B3 is located approximately 3km upstream from the main entrance mouth of Pancake Creek. This site is a popular anchorage for yachts and powered vessels. Anchor damage to coral was observed along with rock that had been scoured of surface benthos.

The water depth at Mooring site B3 is 9.6m at highest astronomical tide (HAT). The substrate consists of coarse sand, with rock ridges protruding from the sand. During attempts to install a pin mooring rock was found approximately 0.5m below the sand substrate.

Mooring site S2 is located closer to the mouth of the creek, approximately 1km. Vessels often anchor here to access the adjacent beach and camping area. There is also a significant area of coral reef to the south which can be accessed for snorkelling from this anchorage.

The water depth at Mooring Site S2 is 7.5m at HAT. The substrate consists of fine sand. Rock was also detected below the surface substrate during attempts to install a pin mooring.

Pancake Creek Mooring Benthic Assessment

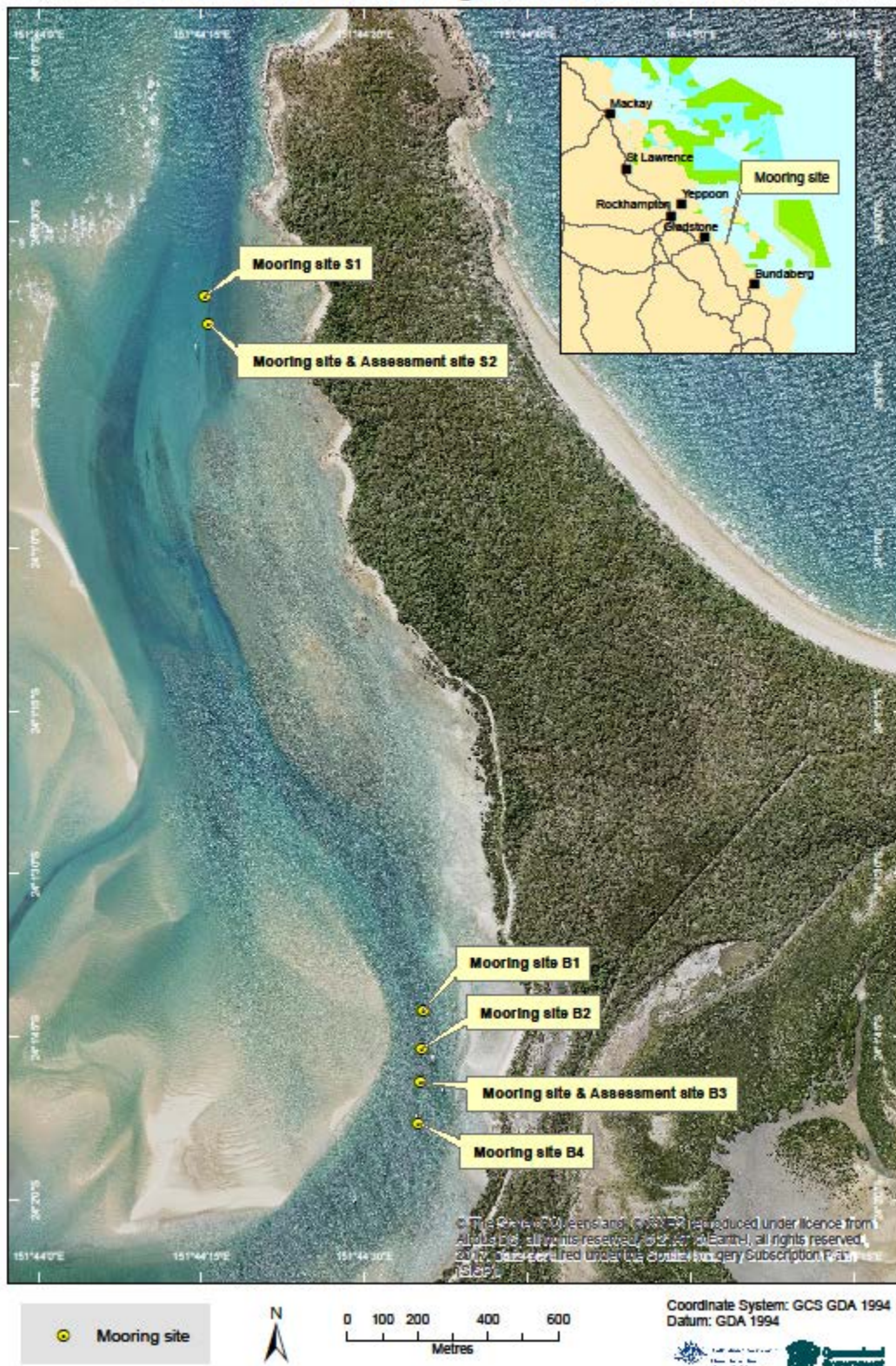


Figure 1 Map showing location of mooring and assessment sites.

Photo quadrat analysis

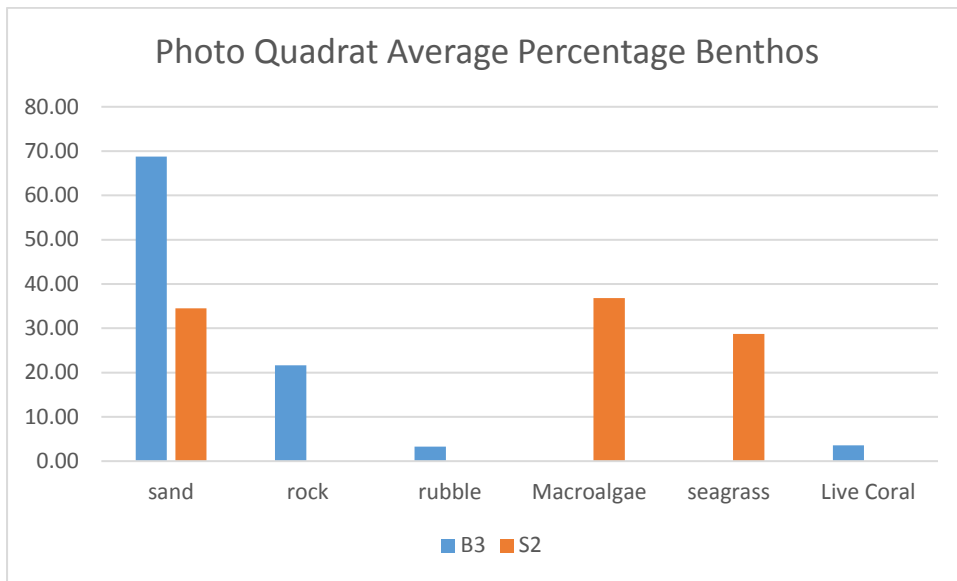


Figure 2 Graph showing the average percentage benthos cover at the two survey sites.

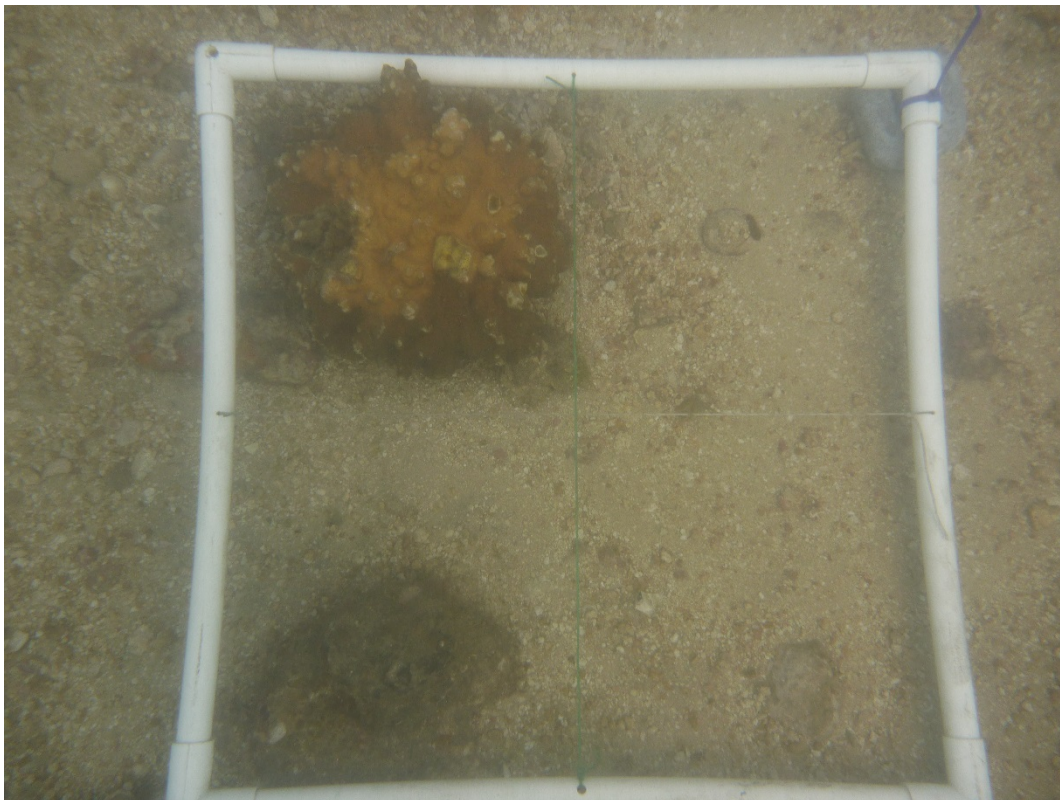


Figure 3 Image showing benthos cover (live coral) at Site B3.



Figure 4 Images showing rock damaged by anchor at Site B3.

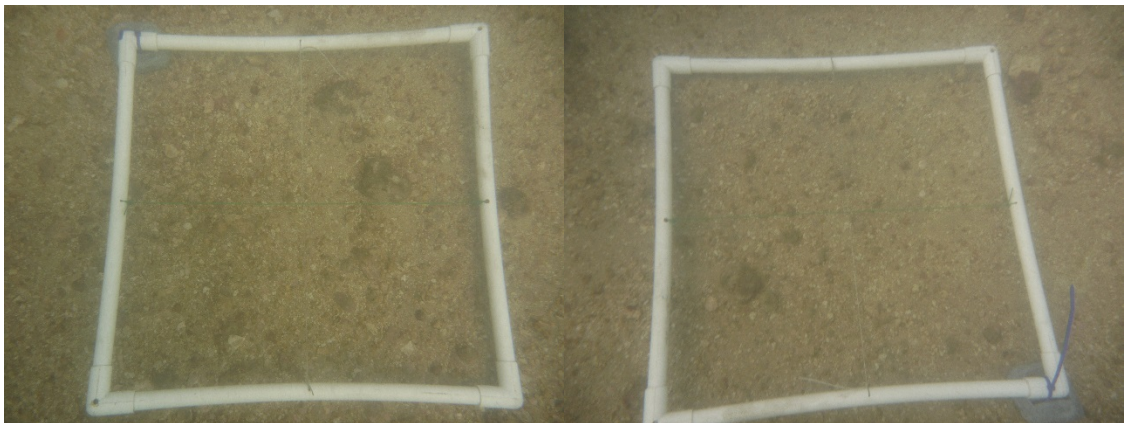


Figure 5 Images showing sand at Site B3

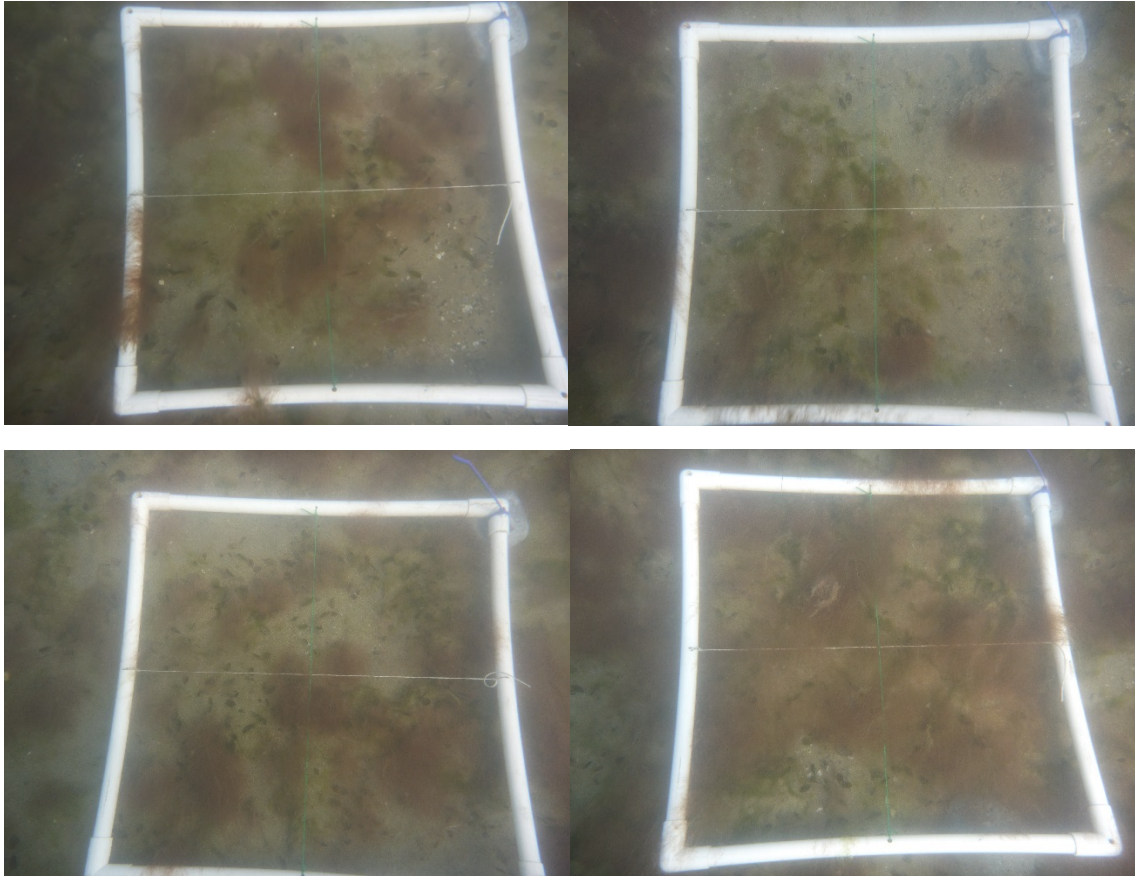


Figure 6 Images showing seagrass and macro algae cover at Site S2.

Discussion

Mooring sites B3 and S2 are considerably different habitats. The B3 site is predominately a sand dominated environment (Figure 5). The live coral cover is quite low with only a low percentage cover detected (Figure 2 and 3). The rock detected at the site is suitable substrate where coral can settle and grow. However there was evidence that anchors have been scouring the rock of coral cover (Figure 4).

With the environmentally friendly moorings in place this damage should be greatly reduced and the existing live coral cover has the potential to increase. Seagrass was not detected during the survey of B3, however optimum conditions for seagrass growth are generally later in the year.

Site S2 was dominated by seagrass and macro algae (Figure 6). The coverage was consistent across most quadrats. The seagrass present was *Halophila spp.* and found in similar density to other locations within the region. There were some areas of disturbance detected. It was unclear whether this disturbance was a result of anchors or marine animals (i.e. stingray, turtle). A large male green turtle was observed feeding during the survey.

No coral was detected at this site and there is no suitable substrate present that would indicate potential for any coral recruitment.

Due to the presence of hard basalt rock less than 1m below the substrate surface at both mooring sites pin moorings will not be placed as mooring anchors. Deadweight anchors will be used with all mooring tackle suspended by riser buoys to achieve environmentally friendly effect.