TropWATER
Centre for Tropical Water and Aquatic Ecosystem Research

JAMES COOK UNIVERSITY
AUSTRALIA

Port of Townsville Temporary Offloading Facility Seagrass Assessment May 2021

McKenna, SA.

Report No. 21/27

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Information should be cited as:
McKenna, S.A. 2021, 'Port of Townsville Temporary Offloading Facility Seagrass Assessment May 2021', JCU Publication 21/27, Centre for Tropical Water & Aquatic Ecosystem Research, Cairns.

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This publication has been compiled by the Centre for Tropical Water & Aquatic Ecosystem Research (TropWATER), James Cook University.

Acknowledgments:

We wish to thank the James Cook University TropWATER staff and JCU interns for their invaluable assistance in the field.

1. Background & Scope

Port of Townsville Limited (POTL) are proposing to build a Temporary Offloading Facility between berth 11 and the reclamation rock wall as part of the ongoing works for completion of the Channel Upgrade Program. TropWATER (JCU) has been commissioned to complete benthic habitat surveys of the Temporary Offloading Facility area as outlined in Figure 1.

The survey specifically set out to examine the presence and/or absence, and extent of seagrasses growing within the proposed construction envelope (Figure 1).

Objectives of this scope of works were to:

- Determine the presence, distribution and density of seagrasses that may occur within the area of interest;
- Provide a written report and GIS layers of the presence, distribution and density of seagrasses within the area of interest.

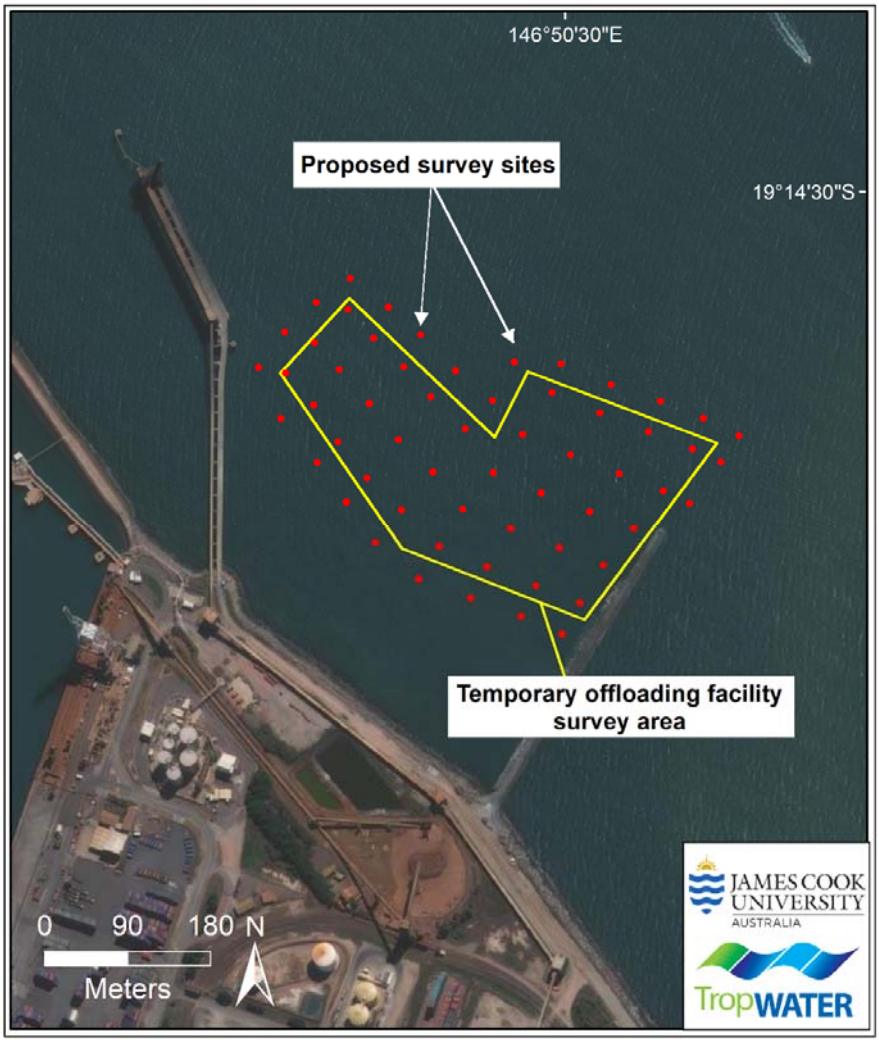

Figure 1. Temporary offloading facility survey envelope and sites proposed to be sampled in and around the envelope.

2. Sampling approach and methods

The sampling methods followed those used in the established annual seagrass monitoring program and previous whole of port surveys in the Port of Townsville area (Mckenna et al. 2020). These standard methods are based on the JCU TropWATER seagrass program for baseline assessment and monitoring in the Townsville area and for other areas of Queensland including the ports of Cairns, Mackay/Hay Point, Weipa, Gladstone, Abbot Point, Karumba and Thursday Island.

The following techniques were used to survey seagrass in the survey area:

1. Digital camera mounted to a drop frame provided a live feed to the surface and incorporated a 0.25m^2 view of the seafloor from which a researcher could estimate habitat cover, density and functional groups present (Figure 2a & b);
2. Van Veen sediment grab (grab area 0.0625 m^2) captured a sample of the upper seafloor sediment to confirm species/habitat type seen on the screen (Figure 2c).

Figure 2. Benthic habitat assessments using (a & b) live digital camera and (c) Van Veen sediment grab.

At each survey site information on benthic habitats (specifically seagrass) was collected. Information collected at each site included;

- Seagrass presence/absence biomass, percent cover, species composition and distribution;
- Depth below mean sea level (MSL);
- Sediment type;
- Time and position (latitude/longitude) fixes;

All survey data was entered into a Geographic Information System (GIS) database for analysis. From this survey, one GIS layer was created in ArcGIS to describe the habitat in the survey area:

- Habitat characterisation survey sites – site (point) data containing percent cover of each major benthic habitat type, depth below mean sea level (MSL), sediment type (based on visual estimates), latitude and longitude from GPS fixes, sampling method and comments;

3. Results & Discussion

Benthic habitat surveys in the area of interest (Figure 3) were conducted on the 7th May 2021. Forty-nine camera drops and 147 adjacent sediment grabs were conducted within and around the proposed temporary offloading facility envelope. Camera drop survey sites were approximately 50 metres apart (Figure 3).

No seagrass was recorded at any of the camera drop sites or adjacent sediment grab sites. Four sites recorded hydroids (Figure 4) and eight sites recorded filamentous, turf-mat and macro-algae.

The substrate was predominantly mud as verified from grab samples. A couple of sites had a higher portion of sand and rocks that were larger in size that the Van veen sediment grab (Figure 5).

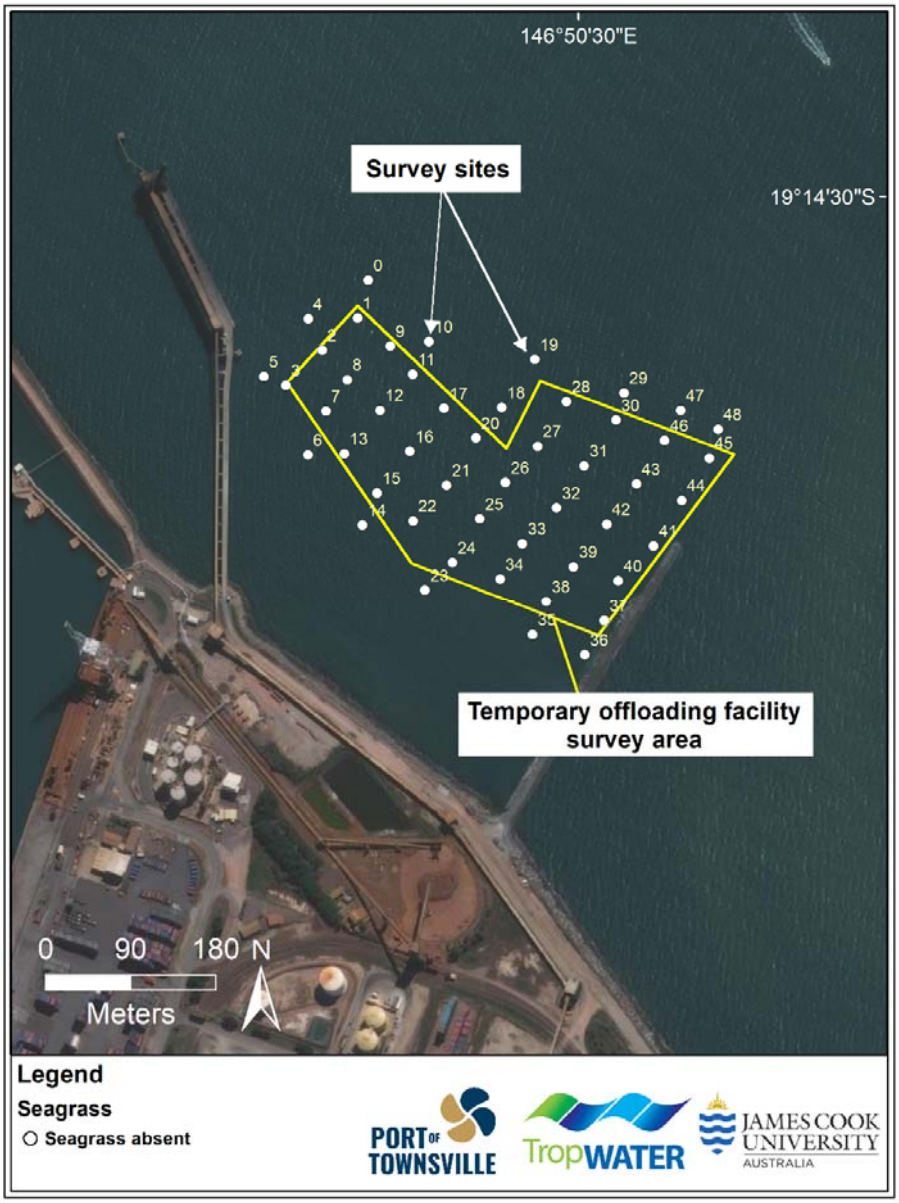

Figure 3. Location of survey sites, with site numbers, noting absence of seagrass.

Figure 4: An example of hydroids found at survey sites.

Figure 5: Van veen sediment grabs showing **A)** a predominantly mud sample and **B)** a sample with a higher proportion of sand.

4. References

McKenna SA, Chartrand KM, Van De Wetering C, Wells J, Carter AB & Rasheed MA, 2020. 'Port of Townsville Seagrass Monitoring Program: 2019,' James Cook University Publication, Centre for Tropical Water & Aquatic Ecosystem Research (TropWATER), Cairns.