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Cairns Regional Council: Half Moon Bay Offshore Disposal Area - Marine Plant Survey and Ecological Assessment - December 2022

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1 BACKGROUND & SCOPE

Cairns Regional Council (CRC) has planned maintenance dredging at Bluewater, Half Moon Creek and Half Moon Bay Entrance Channels and require a new location for disposal of dredge material. CRC engaged TropWATER to conduct marine plant surveys within an area of interest outlined in figure 1, from which a new spoil ground will be defined. The survey specifically set out to examine the presence and/or absence, type and extent of marine plants within the survey area (Figure 1).

Figure 1. Survey area and Cairns City Council approved proposed assessment sites.

The marine plant (seagrass and algae) assessments followed established methods previously used by TropWATER for benthic habitat monitoring as part of ongoing contracted works by Ports North for the Long-Term Seagrass Monitoring Program in Cairns (Reason *et al.* 2022) and other Queensland ports; Weipa, Karumba, Thursday Island, Townsville, Abbot Point, Mackay/Hay Point, Gladstone.

The following methods were used to survey benthic habitat in the area of interest:

- 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);
- 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 marine plants was collected and included;

- Time and position (latitude/longitude) fixes;
- Depth below mean sea level (MSL);
- Sediment type;
- Marine plant presence/absence, if marine plant present; biomass (seagrass), percent cover (algae & seagrass), species composition and distribution.

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.

2 RESULTS & DISCUSSION

Marine plant assessments in the area of interest (Figure 1 & 3) were conducted on the 1st of December 2022. Forty-four sites were assessed for marine plants in the survey area.

No seagrass was found at any assessment sites within the survey area (Figure 3). No algae or any other benthic habitat forming species were present at any assessment sites. Across all the sites the sediment was predominately mud or sand or a combination of the two (Figure 4). Some sites dominated by sand had ripples indicating sediment movement and a recent shifting from wave action occurring at the site.

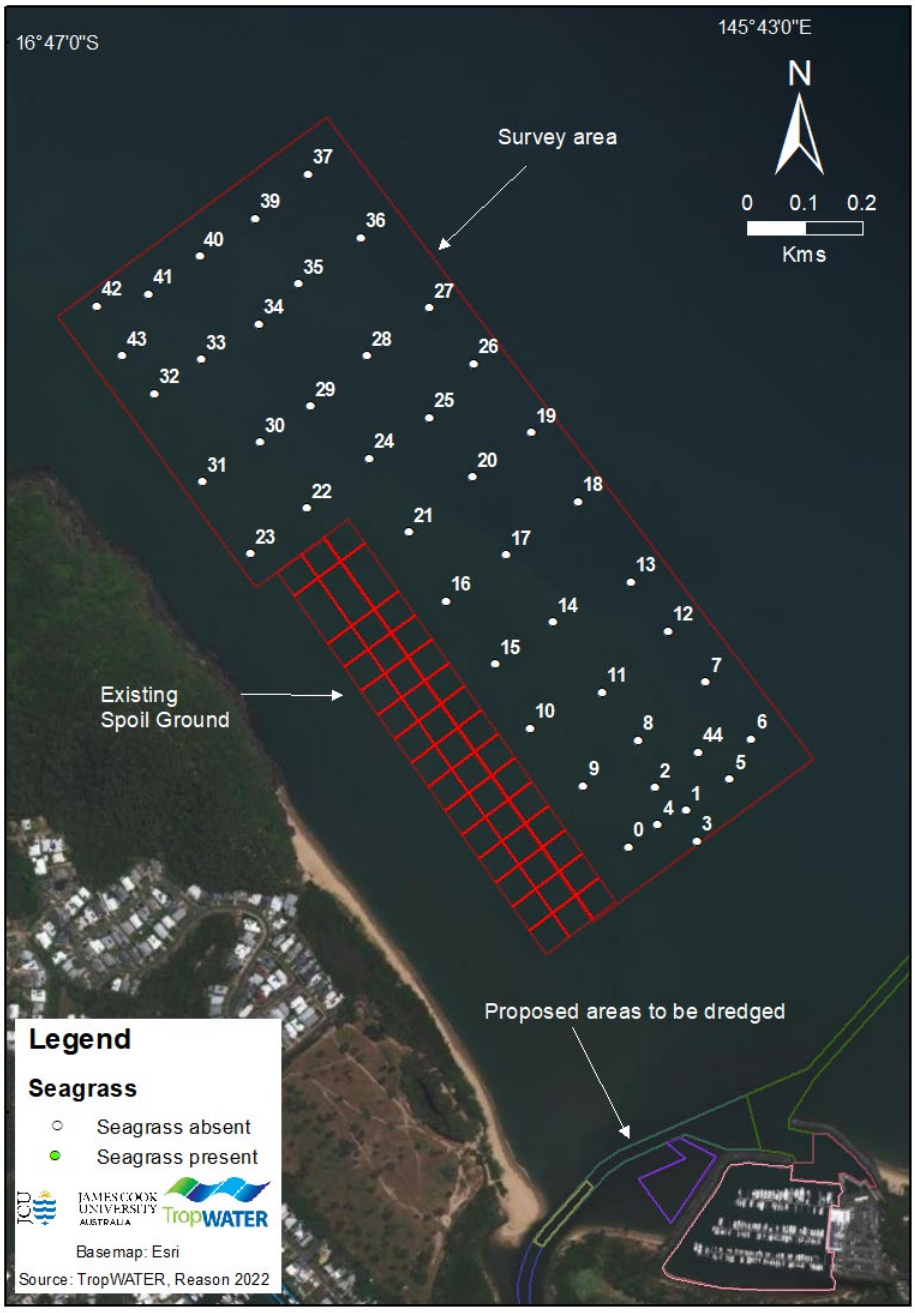

Figure 3. Habitat assessment sites displaying marine plant presence/absence. No other benthic habitats were present at assessment sites.

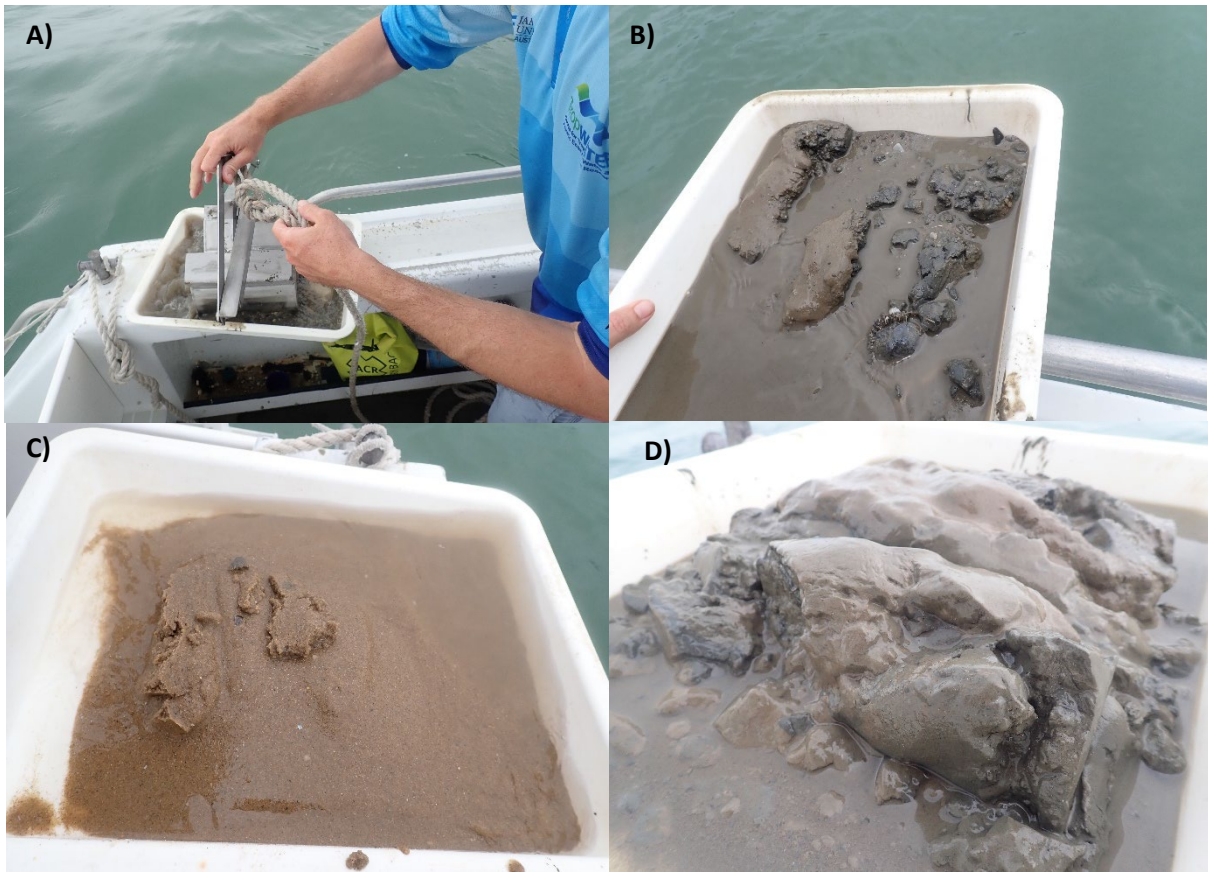

Figure 4: A) Collecting samples using the Van veen sediment grab **B)** Sediment at Site 3 showing a combination of sand and mud **C)** Sediment at site 11 predominantly sand **D)** The sediment at the majority of sites consisted of mud similar to Site 36.

3 REFERENCES

Reason CL, York PH & Rasheed MA (2022). Seagrass habitat of Cairns Harbour and Trinity Inlet: Cairns Shipping Development Program and Annual Monitoring Report 2021. JCU Publication, Centre for Tropical Water & Aquatic Ecosystem Research Publication 22/03, Cairns.