Our Ref: 5839

7/04/2022

Marine Plant Monitoring Program

Redland Bay Islands Vehicle Ferry Terminal Upgrade

Client: Sealink

PLANS AND DOCUMENTS
referred to in the PDA
DEVELOPMENT APPROVAL

Approval no: DEV2021/1187

Date: 24 June 2022

Queensland Government

Future-Plus Environmental
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Signed on behalf of
Future-Plus Environmental

Date: 7 April 2022

Paul Wood
Director

DOCUMENT CONTROL INFORMATION

Project Number: 5839

Project Manager: Daniel Willis

Client: Sealink

Report Title: Marine Plant Monitoring Program

Project Summary: Monitoring program for marine plants between the Redland Bay Vehicle Ferry Terminal and the public jetty

Site Address: Redland Bay Vehicle Ferry Terminal, 1 Weinam Street, Redland Bay

Document Review

Document Version	Document Status	Author	Reviewed By	Approved By
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Issue Approval

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EDQ	5839-220321-1.0	24 March 2022
EDQ	5839-220321-1.1	7 April 2022

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1.0 INTRODUCTION

1.1 BACKGROUND

Future-Plus Environmental (FPE) was engaged by Sealink to prepare a Marine Plant Monitoring Program (MPMP) for the Redland Bay Vehicle Ferry Terminal Upgrade. The Redland Bay Ferry Terminal is located approximately 32km southeast of the Brisbane Central Business District on Weinam Street, Redland Bay. The facility is being upgraded to cater for a new fleet of ferries which courier vehicles between the Southern Bay Islands and the mainland. As a part of the upgrade, a capital dredging campaign is proposed which will result in the removal of excess sediment to ensure adequate depth is available to accommodate the new vessels. Modelling has indicated that the proposed dredging and construction will not restrict tidal movement within the section dominated by marine plants, however the Department of Agriculture and Fisheries have requested a plan is prepared to detail ongoing monitoring of marine plants following completion of construction. The monitoring will occur for a period of time to determine if marine plants are adversely affected by changes to tidal movements, water quality or sediment loads.

1.2 PURPOSE

This plan sets out the monitoring commitments associated with the ferry terminal upgrade and details:

- Criteria to determine whether impacts have occurred;
- The methodology proposed for monitoring;
- The frequency of monitoring events, including a baseline survey proposed prior to the commencement of construction;
- Records and reporting requirements; and
- Actions to be undertaken in the event that adverse impacts are identified on marine plants during the monitoring period.

1.3 SITE DESCRIPTION

The existing ferry terminal has capacity to cater for two ferries and includes an area for vehicle queuing, a site office and other facilities. The vehicle ferry terminal is used by workers and tourists to access the southern Moreton Bay islands of Macleay, Russel, Lamb and Karragarra as well as North Stradbroke Island. Mangroves are present immediately to the north of the facility within a small enclave formed by the ferry terminal and the public jetty (see **Figure 1**). This area of marine plants is proposed to form the focus of the investigation.

The marine plants present comprise a narrow band of grey mangrove (*Avicennia* marina), with several other species such as orange mangrove (*Rhizophora stylosa*) and river mangrove (*Aegiceras corniculatum*) also present. Some salt marsh species are also present in proximity to the existing revetment wall.

Figure 1. Marine plant impact site

2.0 CRITERIA

The following criteria have been proposed to determine whether the marine plants have been adversely impacted by construction works occurring in relation to the ferry terminal upgrade:

- General coverage of marine plants (maybe measured by foliage cover, pneumatophore density/coverage, etc);
- Retained species richness;
- Plant health/mortality/evidence of disease;
- Presence of weeds;
- Changes in depth of sediment;
- Presence of contaminants in sediment profile.

3.0 MONITORING

3.1 BASELINE ASSESSMENT

A baseline survey will be completed prior to construction commencement so that future monitoring may be comparable. During this initial assessment, FPE will establish a minimum of four fixed monitoring points from which photographs can be collected and record the coordinates of each location using GPS. Monitoring locations will be established in close locations to the marine plants from which photographs can capture marine plants within the monitoring area.

A 5m x 5m monitoring plot will be established at each monitoring point. The criteria nominated in Section 2 will be assessed within four (4) 1m x 1m quadrats established in each corner of the 5m x 5m plot.

Photographs will be taken from the central point of each monitoring plot in each cardinal direction (i.e. north, south, east and west) and assessed against the criteria nominated in Section 2. These locations, or comparable locations will be used for consecutive monitoring events. Where monitoring points are located within the tidal reach, monitoring should be undertaken at low tide to maximise access to the area as well as exposure of marine plants.

A sediment monitoring location shall be established at a representative point at which a star picket will be placed. Sediment depth will be determined by measuring from the top of the star picket to the height of sediment around the base. A single sample will be collected from the monitoring point to ascertain the following parameters:

- pH
- Total recoverable hydrocarbons
- BTEXN

Analysis shall be completed by a NATA accredited laboratory within the designated holding times.

Evidence of little build up within the area occupied by marine plants will be recorded.

3.2 SUBSEQUENT MONITOIRNG

Subsequent monitoring events will follow the same general methodology as proposed for the baseline survey apart from sediment sampling and chemical analyses, with photographs taken from each of the predetermined monitoring points.

Sediment sampling and analysis may be undertaken in the event that a decline in mangrove health is evidenced.

4.0 FREQUENCY

Following the baseline survey which is to occur prior to construction commencing, monitoring will occur every six months from the completion of construction through to a period of three years. Where there has been no substantial evidence of deleterious effects on marine plants, the frequency of monitoring will be reduced to annually for the following two years. Where deleterious effects are observed after three years, monitoring will continue at a six monthly frequency for an additional two years.

Monitoring commitments under this plan will be limited to five years.

5.0 RECORDS AND REPORTING

Records will be retained for each monitoring event, including the baseline survey.

An annual report summarising the outcomes of the assessment will be submitted to notifications@daf.qld.gov.au within two weeks of annual post construction inspections occurring.

6.0 ACTIONS AND FOLLOW UP

Where deleterious impacts to marine plants are observed as a result of the monitoring program, details shall be documented on likely causes, possible measures to mitigate impacts and whether any other actions are proposed (such as increased monitoring, rehabilitation or rectification). This information shall be documented in the annual reporting submitted to the Department.