

RTA Weipa Pty Ltd

# Amrun Project Marine Pest Settlement Plate Monitoring Program

August 2017

**RioTinto**



**A report prepared in accordance with requirements of the Amrun Project EPBC Act Approval 2010/5642, Construction Marine and Shipping Management Plan and Port Dredge Management Plan.**

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# 1 INTRODUCTION

The Amrun Project (formerly South of Embley Project) involves the construction and operation of a new Port facility located between Boyd Point and Pera Head. The marine works will include construction of a jetty, wharf and ship loaders. A detailed description of the Project is provided in the Queensland EIS (RTA 2011), the Queensland SEIS (RTA 2012), and the Commonwealth Environmental Impact Statement (RTA 2013).

The increase in artificial structure has the potential to provide habitat for marine pests and increase in shipping movements has potential to translocate marine pests of concern. As part of the marine pest monitoring program a settlement plate monitoring program was established in February 2016. Monitoring has been conducted quarterly since the program's inception to allow early identification of marine pests.

The purpose of this report is to present the monitoring methods and the results between 12 May 2016 (Commencement of the Action) and 12 May 2017. The requirement for monitoring is outlined in Section 8.2 of the Construction Marine Shipping Management Plan and Port Dredge Management Plan.

## 1.1. Marine Pests of Concern

The marine pest settlement plate monitoring program targets eight species including two high priority mussels (Table 1). These species were chosen based on the abiotic and habitat preferences and that they would be likely to survive and establish in the area.

Table 1: Marine pests of concern targeted by settlement plate monitoring program

Species	Common Name	Notes
<i>Hydroides dianthus</i>	Tubeworm	
<i>Mytilopsis sallei</i>	Black-striped mussel	High Priority
<i>Perna viridis</i>	Asian green mussel	High Priority
<i>Codium fragile</i> spp. <i>fragile</i>	Green macroalga	
<i>Crassostrea gigas</i>	Pacific oyster	
<i>Crepidula fornicata</i>	American slipper limpet	
<i>Didemnum</i> spp. (exotic invasive species only)	Tunicate – sea squirt	
<i>Amphibalanus eburneus</i>	Ivory Barnacle	

## 2 METHOD

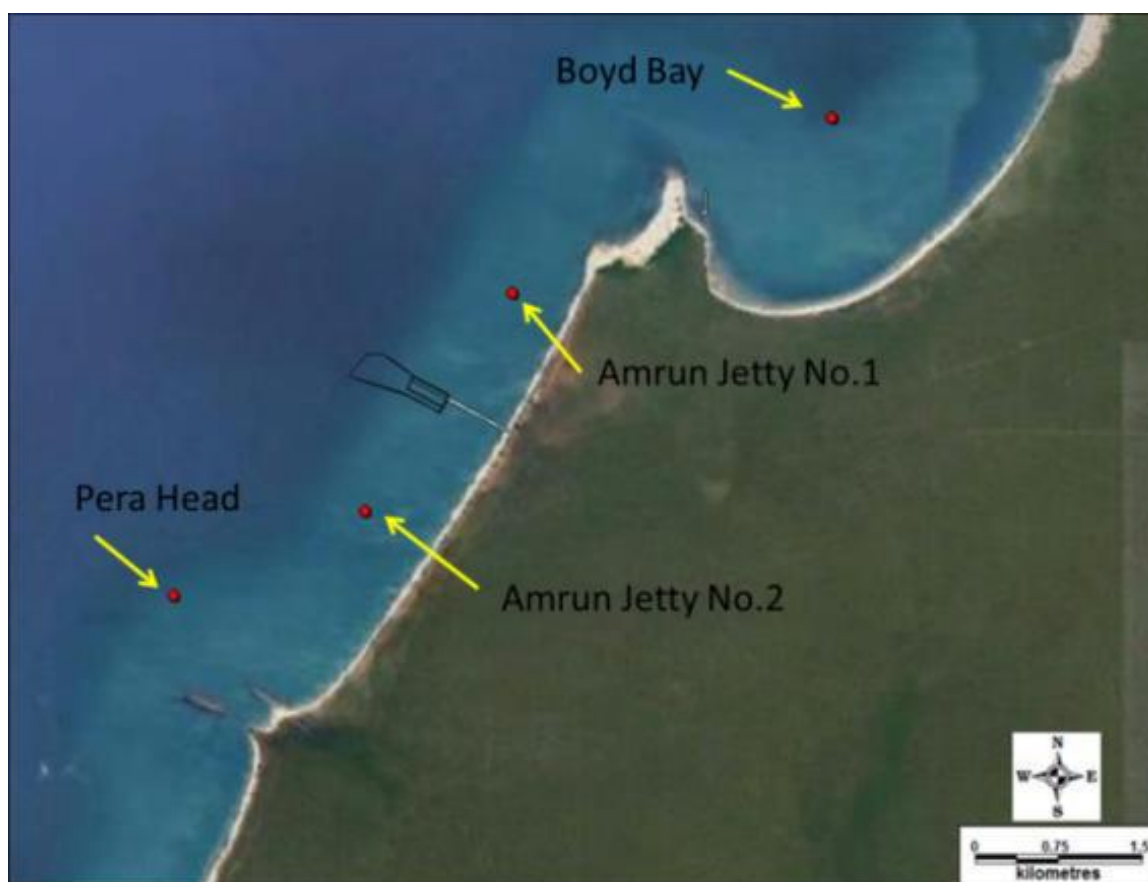
### 2.1. Locations

Monitoring was conducted at four sampling locations during the reporting period (Table 2; Figure 1) with locations approximately 150m north and south of the designated jetty alignment, a location in Boyd Bay and a location north west of Pera Head

Table 2: Marine pest settlement plate monitoring locations

Location	Coordinates
Pera Head (PH)	S12° 56.577' E141° 35.674'
Amrun Jetty No 1. (AJ1)	S12° 55.129' E141° 37.354'
Amrun Jetty No 2 (AJ2)	S12° 56.173' E141° 36.626'
Boyd Bay (BB)	S12° 54.283' E141° 38.938'

Figure 1: Marine pest settlement plate monitoring locations



## 2.2. Mooring and Settlement Arrays

The mooring and settlement array is shown in Figure 2 and consists of:

- Mooring:
  - A 50kg anchor;
  - A heavy base chain section (20mm) connected to a lighter chain (13mm); and
  - A large surface buoy.
- Settlement arrays :
  - Two stainless steel open frame cubes (approximately 300mm x 300mm x 300mm) suspended from the lighter chain at water depths of 2m and 5m;
  - The chain is passed through central rings at the top and bottom of the cube and is attached with shackles:
    - the mooring chain passes through the pair of central rings so the chain cannot dislodge the plates or rope collectors
  - Each frame has four settlement plates (250mm x 250mm), one on each vertical face;
  - Settlement plates are 4.5 mm black acrylic sanded on both sides and attached to the cube by cable ties;
  - Each array also has two spat ropes, which are frayed ropes cut into 10cm long sections and attached via cable ties

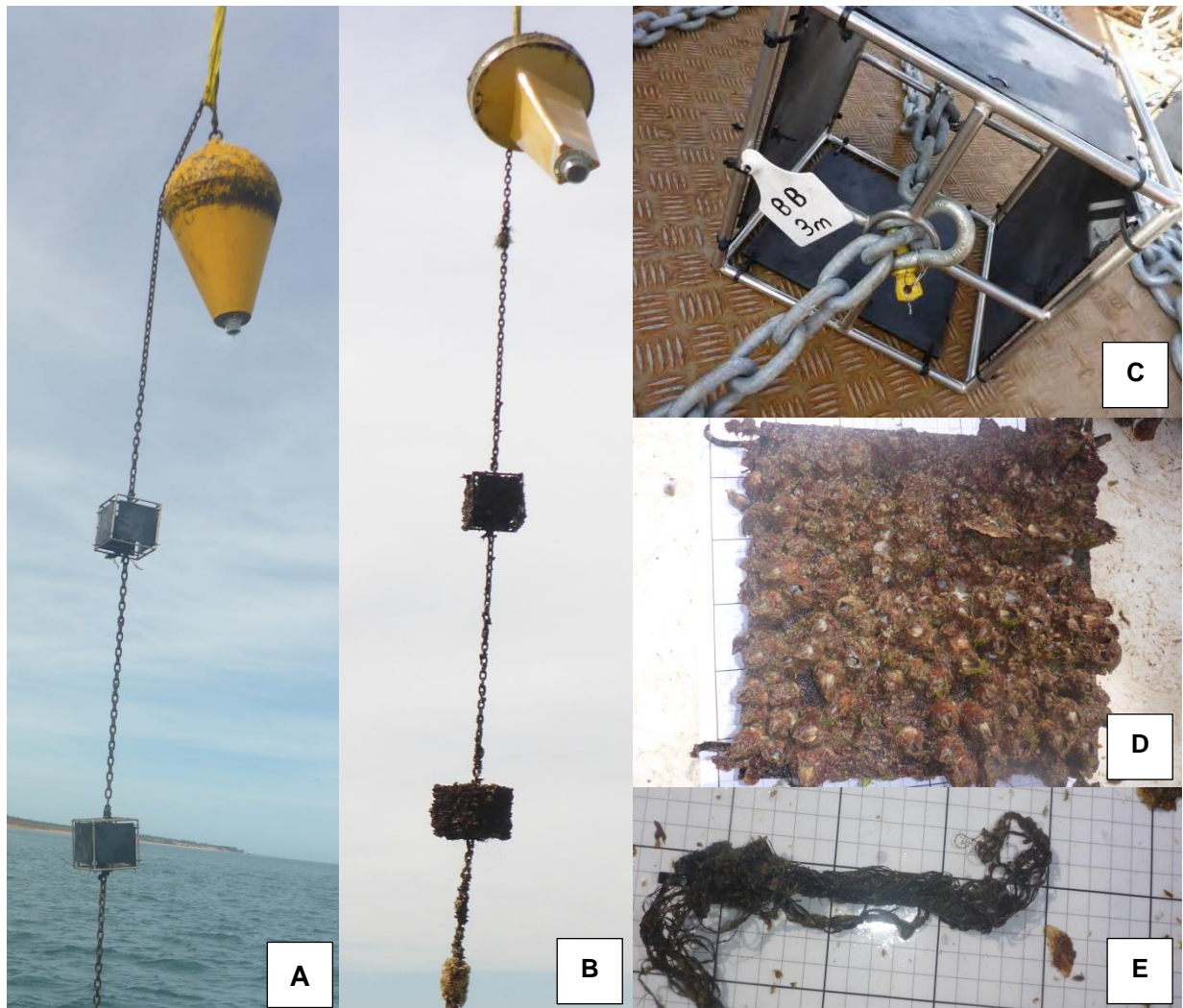


Figure 2: Images of settlement array including mooring arrangement (A and B), settlement array (C), biofouled plates (D) and spat rope (E).

### 2.3. Collection and change out

1. At each location the mooring and arrays (to 5m) are removed from the water and inspected by an experienced and trained person to identify if any marine pests of concern are present.
2. Each section of the mooring and arrays are photographed while connected and the composition of biofouling assemblages is recorded.
3. The settlement plates and ropes are disconnected and each plate is photographed identifying the depth and surfaces (inside outside of the plate) on a scale bar mat.
4. Any suspected marine pests are carefully removed and photographed to determine species. Samples collected are then preserved and sent for identification.

5. Plates and ropes are replaced (with new plates and ropes) and the assemblage is returned to the water.









### 3 RESULTS AND CONCLUSIONS

Date	Survey type	Pests identified
30 May 2016	Inspection, training and change out	No pests identified
15 September 2016	Inspection and change out	No pests identified
07 December 2016	Inspection and change out	No pests identified
15 February 2017	Inspection and change out	No pests identified

No marine pests were recorded on any sampling event during the reporting period. Biofouling on all surfaces was high with tertiary assemblages recorded for all sampling events, indicating plates were effective and the system would be successful in attracting marine pests, should they occur in the area. Representative images from each sampling event are presented below.

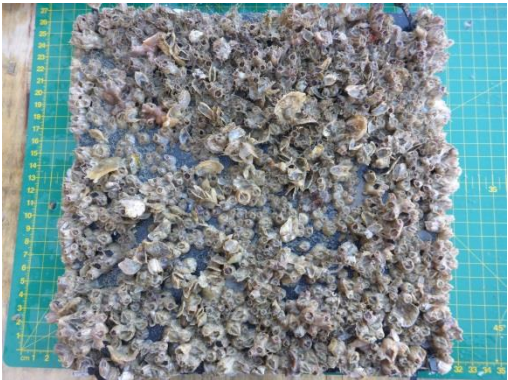
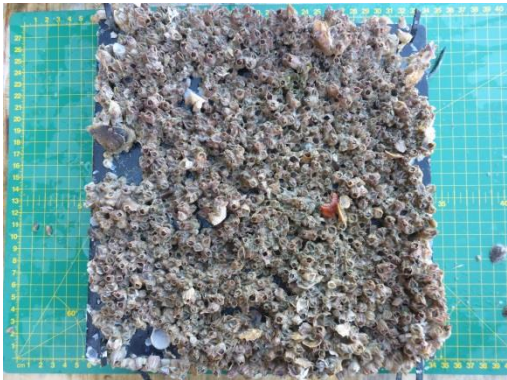




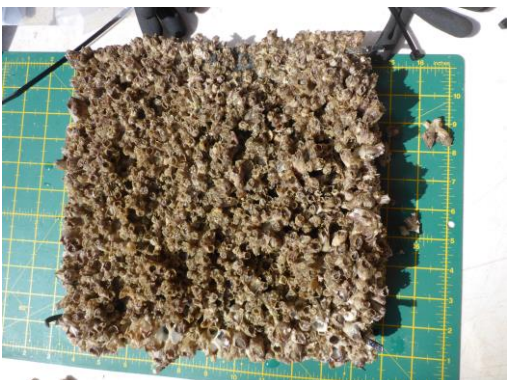



Representative photographs of biofouling communities for each sampling event – Boyd Bay, 3m

	<i>Inner Surface</i>	<i>Outer Surface</i>
May 2016		
September 2016		
December 2016		
February 2017		


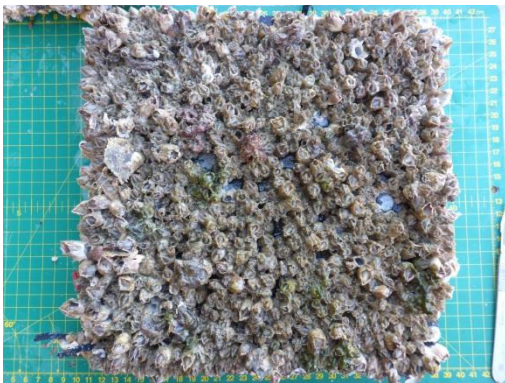


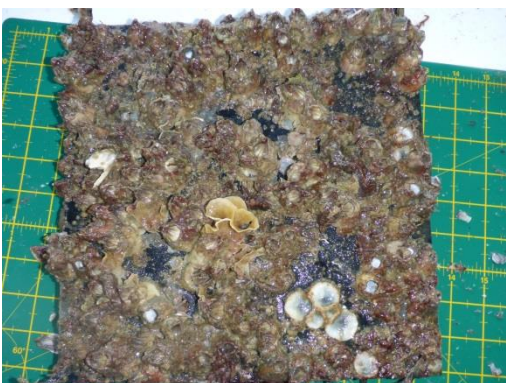





**Representative photographs of biofouling communities for each sampling event – Boyd Bay, 5m**

	<i>Inner Surface</i>	<i>Outer Surface</i>
May 2016		
September 2016		
December 2016		
February 2017		



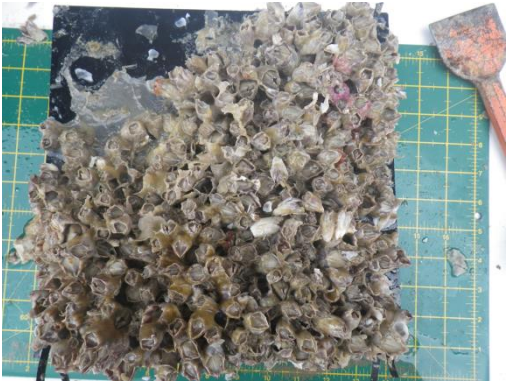







**Representative photographs of biofouling communities for each sampling event – Amrun Jetty 1, 3m**

	<i>Inner Surface</i>	<i>Outer Surface</i>
May 2016		
September 2016		
December 2016		
February 2017		




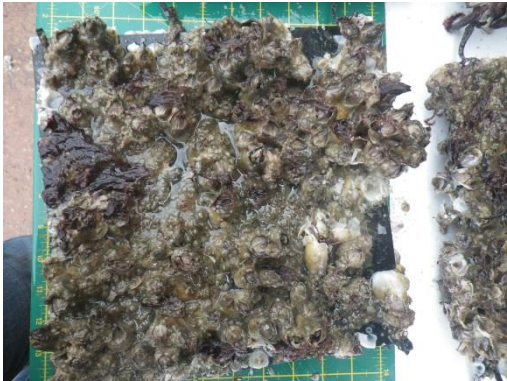

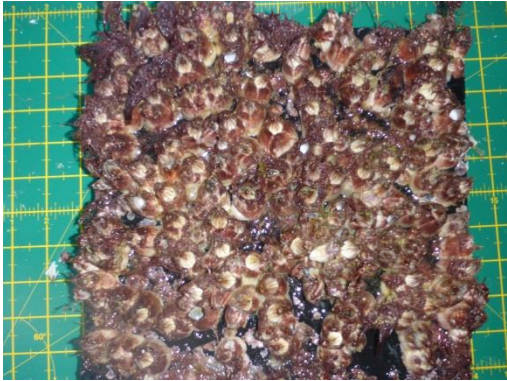




**Representative photographs of biofouling communities for each sampling event – Amrun Jetty 1, 5m**

	<i>Inner Surface</i>	<i>Outer Surface</i>
May 2016		
September 2016		
December 2016		
February 2017		






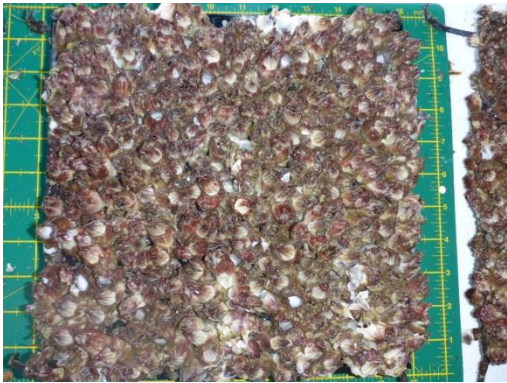


**Representative photographs of biofouling communities for each sampling event – Amrun Jetty 2, 3m**

	<i>Inner Surface</i>	<i>Outer Surface</i>
May 2016		
September 2016		
December 2016		
February 2017		











**Representative photographs of biofouling communities for each sampling event – Amrun Jetty 2, 5m**

	<i>Inner Surface</i>	<i>Outer Surface</i>
May 2016		
September 2016		
December 2016		
February 2017	Plates Missing	Plates Missing









**Representative photographs of biofouling communities for each sampling event – Pera Head, 3m**

	<i>Inner Surface</i>	<i>Outer Surface</i>
May 2016		
September 2016		
December 2016		
February 2017		



**Representative photographs of biofouling communities for each sampling event – Pera Head, 5m**

	<i>Inner Surface</i>	<i>Outer Surface</i>
May 2016		
September 2016		
December 2016		
February 2017	