

RTA Weipa Pty Ltd

Amrun Project Marine Pest Monitoring Report

August 2020



Contents page

1. Introduction	3
1.1 Marine pests in Queensland	3
1.2 Previous marine pest settlement monitoring (1999 – May 2019)	3
2. Post construction survey	5
3. Marine pest settlement plate monitoring	7
4. Beach wrack surveys	11
5. References	12

DOCUMENT CONTROL

Version	Purpose	Approval	Submission	Date
00A	Draft for review	11/08/2020		10/08/2020
000	Final Version	11/08/2020	11/08/2020	11/08/2020

Front page – Image shows an aerial picture of the Amrun wharf

1. Introduction

The Amrun Project (formerly South of Embley) involves the construction and operation of a bauxite mine and associated processing and port facilities to be located near Boyd Point on the western side of Cape York Peninsula. A detailed description of the Project is provided in the Queensland Environmental Impact Statement (EIS) (RTA 2011), the Queensland Supplementary EIS (RTA 2012), and the Commonwealth EIS (RTA 2013, EPBC 2010/5642). The project has now commenced operations with the the new port facility including a jetty, wharf and ship loaders along with navigable berth pockets and departure channel which make up the Amrun CHITH export facility (the Amrun Port). With this operational phase comes continued monitoring and management of marine pest risk as was the case during the construction phase.

With commencement of bauxite shipping on 2 December 2018¹ the project effectively commenced operations. The project has a current estimated production rate of 22.8 million dry product tonnes per annum (Mdptpa). Actual production rates and the timing and size of capacity expansions will depend on market conditions. The anticipated mine life is approximately 40 years, depending on production rates.

A risk has been identified where vessels that may have visited ports of marine pest concern have the potential to translocate marine pests. Should a marine pest be introduced to local marine waters, an increase in artificial structure at the Amrun Port has the potential to provide suitable habitat for marine pests to become established.

Marine pests are marine biota that are translocated into waters outside their natural geographic range and subsequently settle, survive and spread. Translocation and survival of these species in new areas can cause irreversible impacts to the local ecosystem by competing with and/or predating on native species, as well as introducing disease. The consequences can include a combination of environmental, social and economic impacts.

This report presents the monitoring methods and results of marine pest monitoring conducted in accordance with management plans approved under the South of Embley Bauxite Mine and Port Environmental Protection and Biodiversity Conservation Act approval (EPBC2010/5642). This report presents monitoring and analysis conducted during the fourth annual reporting period (May 2019 and May 2020). The requirement for monitoring is outlined in the Construction Marine Shipping Management Plan, Operational Marine and Shipping Management Plan and Port Capital and Maintenance Dredge Management Plans.

1.1 Marine pests in Queensland

Over the past 12 months marine pest surveillance has increased across Queensland waters with the introduction of the Biosecurity Queensland lead, Queensland Seaports E-DNA Surveillance (Q_SEAS) program. Using this surveillance technique, detections for multiple species have occurred across Queensland with evidence they have been established for a substantial time-period with spread through a number of Australian jurisdictions.

1.2 Previous marine pest settlement monitoring (1999 – May 2019)

A historical marine pests study at the Port of Weipa was completed in October 1999 by the CRC Reef Research Centre and James Cook University (Hoedt et al., 2001). No marine pests were detected during this survey. Larval settlement plates have been used to monitor marine pests at the Port of Weipa since 2000. The plates target the black-striped false mussel (*Mytilopsis salleri*) since its detection at the Port of Darwin in 1999 and 2000, as well as the Asian green mussel (*Perna viridis*) (AGM) since its detection in Cairns in 2006. North Queensland Bulk Ports Corporation (NQBP) currently manages the Port of Weipa and carries out maintenance dredging and material placement at the existing Albatross Bay spoil ground. No incursions

¹ Preliminary works commenced October 2015 and significant construction commenced in May 2016.

of marine pests have been recorded at the Port of Weipa using settlement monitoring plates (NQBP, pers comms).

Prior to capital dredging for development of the Port of Amrun site, a baseline marine pest survey was completed at the Port of Weipa and at the Port of Amrun areas from 16 to 21 December 2015 (Biofouling Solutions, 2016). The objective of the survey was to identify the presence of any established marine pest populations listed on the National Monitoring Strategy Target Species List (NMTSL). No marine pests on the restricted NMTSL were detected in the Weipa Port area or the Port of Amrun area during the 2015 baseline survey.

In February 2016, a marine pest settlement plate monitoring program was implemented in the vicinity of Amrun Port (Biofouling Solutions, 2017). The settlement plates were used to target seven marine pests, including two high priority mussels. Ongoing monitoring has been conducted targeting quarterly checks at four sampling locations situated approximately 150 m north and south of the designated jetty alignment, in Boyd Bay and northwest of Pera Head (Figure 1).

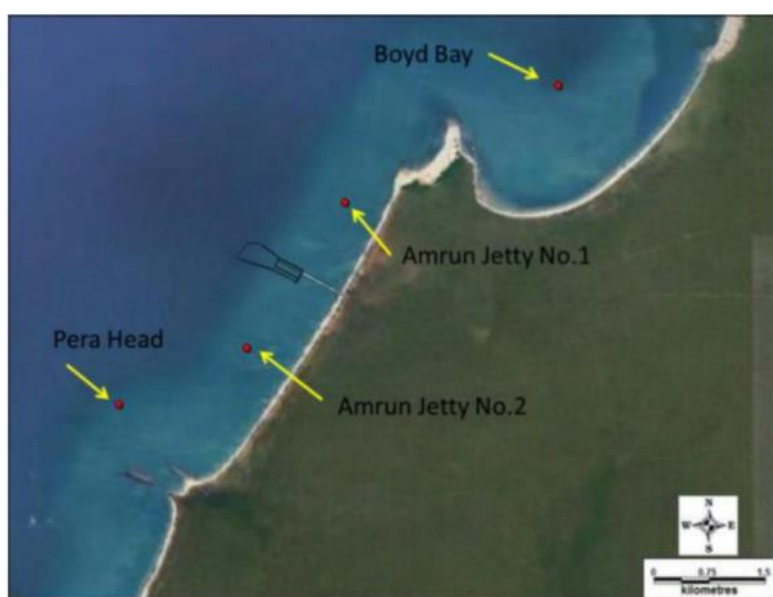


Figure 1: Marine pest settlement monitoring locations

One individual specimen of an Asian green mussel *P. viridis* was found during the May 2017 Amrun Project settlement plate monitoring event at the Amrun Jetty No. 2. As per the Biosecurity Act 2014, Act RTA notified the Department of Agriculture Fisheries (DAF). The specimen was confirmed as Asian Green Mussel by the Curator of Molluscs at the Museum and Art Gallery of the Northern Territory.

RTA have worked closely with DAF to assist with the investigation to potentially identify the causal vessel and with the investigation and surveillance to delimit the area of the incursion. Since identification of *P. Viridis*, surveillance methods including beach walks, remote operated vehicle, infrastructure inspections, vessel inspections, plankton tows, diver inspection of pylons and continuation of settlement plate monitoring have been implemented, with no additional marine pest specimens identified in the area (as of June 2018).

It is unknown how the mussel arrived in Australia and is not thought to be associated with any project vessels. Biosecurity Queensland commended RTA for the proactive measures implemented in accordance with the Biosecurity Act 2014 and continues to work closely with RTA and NQBP while they maintain the

marine pest surveillance program. Reports surrounding previous monitoring can be found on the Rio Tinto website https://www.riotinto.com/search/documents#main-search_e=0&main-search_sxatags=weipa.

Monitoring activities associated with this report include:

- Post construction marine pest survey completed by Biofouling Solutions in August 2019.
- Marine pest settlement plate monitoring.
- Ongoing beach wrack surveys

Note that early 2020 monitoring activities were impacted by the coronavirus pandemic.

2. Post construction survey

A post construction survey was completed at the Amrun and Weipa ports between the 14 to 21 September 2019. The survey aimed to detect established populations on a refined National Monitoring Strategy Target Species List (NMSTSL), this includes species listed on the Australian Priority Marine Pest List (APMPL) and the Queensland Marine Pest Watch List (QMPWL). The NMSTSL was refined based on known temperature thresholds of each species reducing the target list to 22 species (**Table 1**).

Table 1: Refined National Monitoring Strategy Target Species List (NMSTSL)

Species	Common name	List
<i>Alexandrium monilatum</i>	Toxic dinoflagellate	No
<i>Amphibalanus eburneus</i>	Ivory barnacle	No
<i>Bonnemaisonia hamifera</i>	Red macroalga	No
<i>Callinectes sapidus</i>	Blue crab	No
<i>Caulerpa racemosa</i> (possibly an Australian native)	Green macroalga	No
<i>Caulerpa taxifolia</i> (exotic strains only)	Green macroalga	Revised CCIMPE trigger list
<i>Chaetoceros concavicornis</i>	Centric diatom	Revised CCIMPE trigger list
<i>Chaetoceros convolutus</i>	Centric diatom	Revised CCIMPE trigger list
<i>Codium fragile</i> spp. <i>fragile</i> ¹	Green macroalga	No
<i>Crepidula fornicata</i>	American slipper limpet	Revised CCIMPE trigger list
<i>Didemnum</i> spp. (exotic invasive species only)	Tunicate – sea squirt	Revised CCIMPE trigger list
<i>Ensis directus</i>	Jack-knife clam	Revised CCIMPE trigger list
<i>Grateloupia turuturu</i>	Red macroalga	Revised CCIMPE trigger list
<i>Hemigrapsus sanguineus</i>	Japanese shore crab	Revised CCIMPE trigger list
<i>Hemigrapsus takanoi/penicillatus</i>	Pacific crab	Revised CCIMPE trigger list
<i>Hydroides dianthus</i>	Tube worm	No
<i>Magallana gigas</i>	Pacific oyster	No
<i>Mytilopsis sallei</i>	Black-striped mussel	Revised CCIMPE trigger list, APMPL, QMPWL
<i>Perna viridis</i>	Asian green mussel	Revised CCIMPE trigger list, APMPL, QMPWL

Species	Common name	List
<i>Pseudo-nitzschia seriata</i>	Pennate diatom	Revised CCIMPE trigger list
<i>Rapana venosa</i>	Asian/veined rapa whelk	Revised CCIMPE trigger list
<i>Rhithropanopeus harrisi</i>	Harris mud crab	No, APLMPL, QMPWL

The survey targeted extensive area in both the Port of Weipa and Port of Amrun with new infrastructure developed in both areas. The survey comprised of several sampling techniques which included benthic cores, benthic sled tows, crab box traps, remote operated vehicle (ROV), pile scrapes and intertidal visual surveys. Sites were selected based on determined vector nodes, habitats present, habitat preferences and suitability for application of chosen methods. Sampling locations targeted pre-existing or recently constructed artificial structures where marine pests, if present were likely to establish along with general areas are displayed in Figure 2.

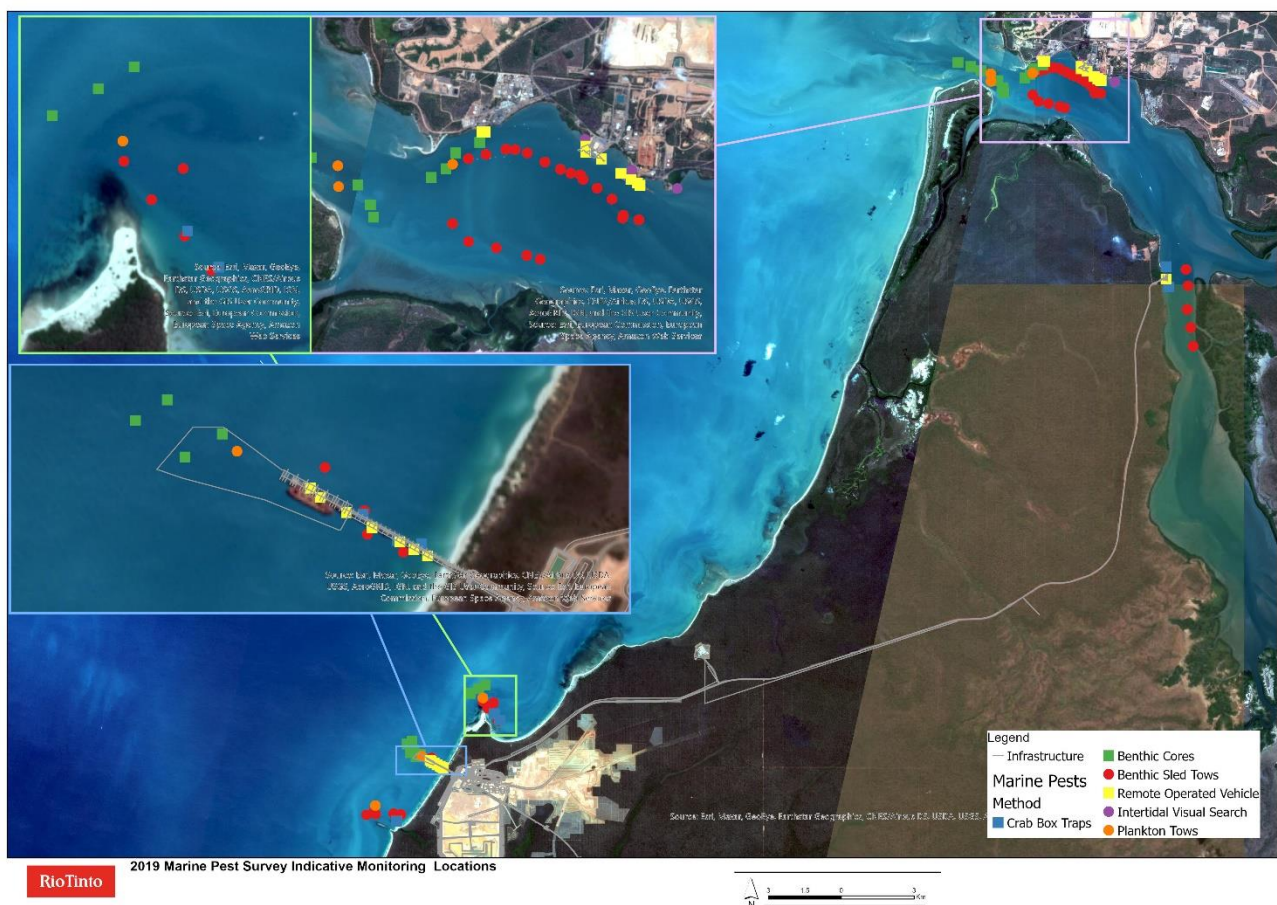


Figure 2: Marine Pest Survey Monitoring Locations

Results of the program recorded a species of white colonial ascidian in both the Port of Weipa and Port of Amrun. Scrapings at Amrun confirmed the specimen was *Didemnum perlicudum*. While suspected there is no confirmation of *Didemnum perlicudum* at Port of Weipa as the specimens were too deep on the structure to sample. *Didemnum perlicudum* is not listed on either the APMLP or the QMPWL. The information was provided to Biosecurity Queensland who confirmed the species had been identified at a number of Ports around Queensland and Australia. Biosecurity Queensland provided the information to the Consultative

Committee on Introduced Marine Pest Emergencies (CCIMPE) for their discussions. CCIMPE advised this species is not feasible to eradicate due to a number of compounding factors including:

- The high reproductive capacity of the species.
- No known effective control methods.
- Inability to manage introduction and spread vectors/pathways.
- Evidence of its spread through other Australian jurisdictions.

No other pest species were identified during the survey.

3. Marine pest settlement plate monitoring

Monitoring was initially conducted at four sampling locations during the reporting period (**Table 2**; Error! Reference source not found.) with locations approximately 150m north and south of the designated jetty alignment, a location in Boyd Bay and north-west of Pera Head. The Boyd Bay and Pera Head locations were removed in January 2020 with the cessation of construction.

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'

The mooring and settlement array is shown in **Figure 3**. It consists of:

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

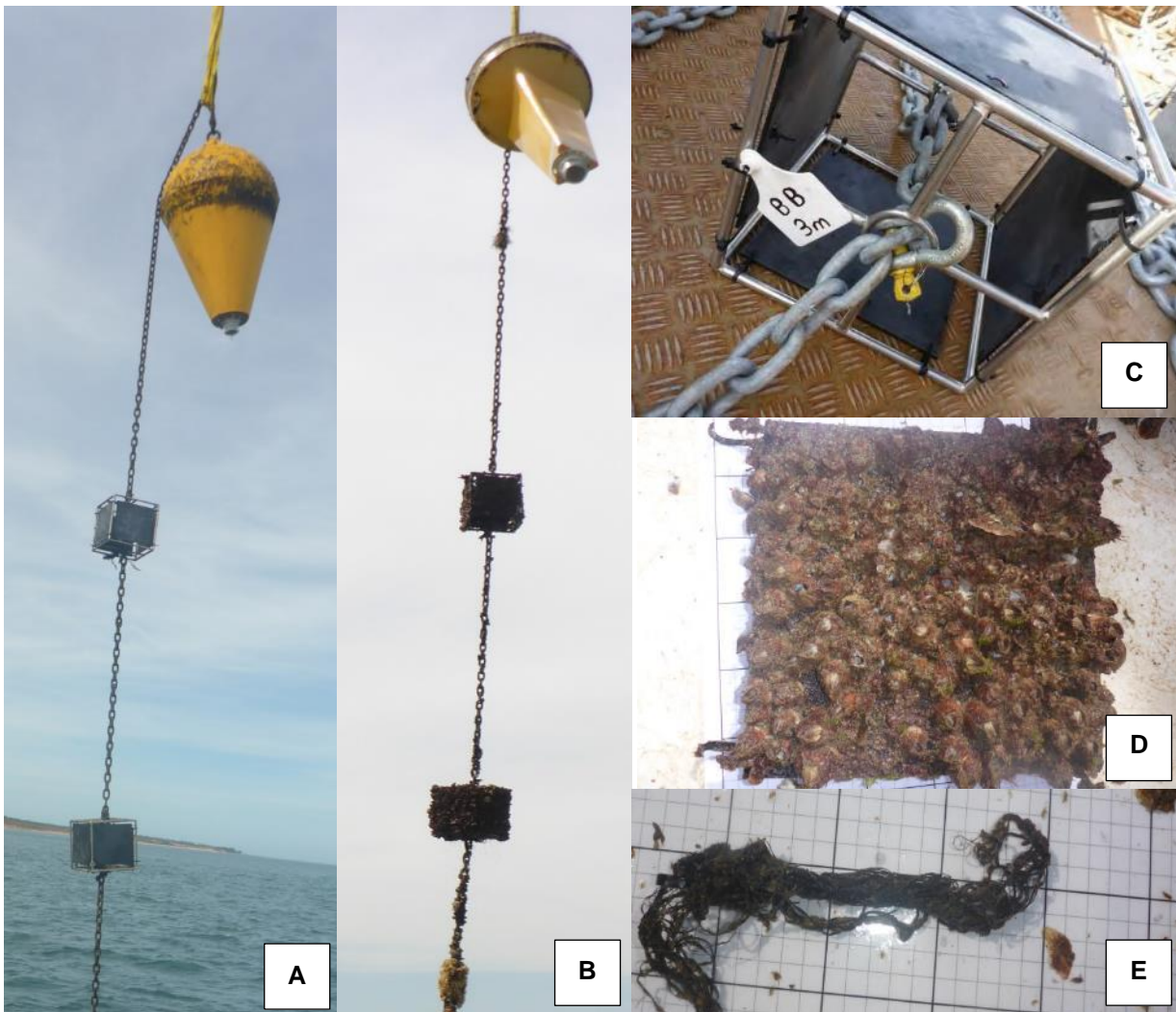


Figure 3: Images of settlement array including mooring arrangement (A and B), settlement array (C), biofouled plates (D) and spat rope (E).

The collection and change out process follows the below procedure:

- 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
- Each section of the mooring and arrays are photographed while connected and the composition of biofouling assemblages is recorded.
- The settlement plates and ropes are disconnected and each are photographed identifying the depth and surface (inside outside of the plate) on a scale bar mat.
- Any suspected marine pests are carefully removed and photographed to determine species. Samples collected are then preserved and sent for identification.
- Plates and ropes are replaced using appropriate cable ties and the assemblage is returned to the water.

The marine pest settlement plate monitoring established in 2016 continued throughout the current reporting period (**Table 3**). Since the cessation of construction there has been ongoing issues obtaining suitable vessels which enable safe operation and lifting. Large vessels with appropriate lifting gear are only in Weipa for short durations and operations are impacted by last minute changes due to circumstances outside of RTAW control. Accordingly, the program is being amended to utilise the settlement plate design program developed by Biosecurity Queensland as part of their Q-SEAS Program. This adaptive management

measure has been discussed with Biosecurity Queensland. This approach in no way compromises the effectiveness of the marine pest surveillance program as the previous arrangement was established to service the construction phase prior to the establishment of the CHITH export facility. Now this superstructure is in place it provides an appropriate alternative.

Table 3 Settlement plate monitoring summary of events

Date	Survey type	Pests identified
February 2016	Installation	
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
23 May 2017	Inspection and change out	1 AGM identified at AJ2 5m
21 August 2017	Inspection and change out	No pests identified
5 December 2017	Inspection and change out	No pests identified. Corrosion of the chain was recorded at each station as part of the maintenance
20 March 2018	Inspection, change out and maintenance of mooring and array equipment at PH	No pests identified, issues with chain erosion and equipment prevented lifting of other locations and monitoring at AJ1, AJ2 and BB was missed for this event
March 2018	Tropical Cyclone Nora preventing works occurring with food, medical and clean up taking priority	NOTE
11 May 2018	Inspection, change out and maintenance of mooring and array equipment at BB, AJ1 and AJ2	No pest identified
28 May 2018	Inspection and change out at PH	No pests identified
August 2018	No inspection – Multiple attempts were made to organise a local boat which would be suitable but all dates were changes at last minute by contractor	Additional beach walks were completed during this time (August – September) to continue local surveillance
November 2018		
18 December 2018	Inspection and change out	No pests identified
18 December 2018	Tropical Cyclone Owen prevented works occurring with food, medical and clean up taking priority for local operators	No pests identified

Date	Survey type	Pests identified
January, February and March 2018	Tropical cyclones Penny, Oma and Trevor (March) and Tropical Low13U resulted in unsafe conditions. Food, medical and clean-up operations took priority or the NQ area.	
12 April 2019	Inspection and Change out, multiple cyclone delayed completion. Boyd Bay and Pera Head sites removed	No pests identified
July 2019	Inspection and change out cancelled due to tug delay	
August 2019	Inspection cancelled due to poor weather	
October 2019	Inspection and change out cancelled due to weather	
December 2019	Inspection cancelled as tug delayed and no availability to reschedule before Christmas	
10 January 2020	Inspection and change out of all location	<i>Didemnum perlicidum</i> likely
April 2020	Covid pandemic impacted ability to complete survey as tug company is from outside declared biosecurity area	

4. Beach wrack surveys

Visual surveys for AGM were made along beach shores and accessible intertidal rocky reef areas. Suspected shells were collected and provided to marine biologist for identification. Areas explored were limited to between Boyd Bay and Pera Head which is in close proximity to the export facility. Beach wrack surveys are ongoing through the year while completing turtle surveys and no marine pests were identified on the beach throughout the year.

Table 4: Records of Beach wrack surveys with suitable trained persons

Date	Area	Activity
29 May/2019	Thud Point – Norman Creek	Turtle and beach wrack survey
June 2019	Boyd Bay – Pera Head	Ongoing turtle and beach wrack survey (weekly)
July 2019	Boyd Bay – Pera Head	Ongoing turtle and beach wrack survey (weekly)

August 2019	Boyd Bay – Pera Head	Ongoing turtle and beach wrack survey (weekly)
September 2019	Boyd Bay – Pera Head	Ongoing turtle and beach wrack survey (weekly)
October 2019	Boyd Bay – Pera Head	Ongoing turtle and beach wrack survey (weekly)
March 2020	Boyd Bay – Pera Head	Ongoing turtle and beach wrack survey (weekly)
April 2020	Boyd Bay – Pera Head	Ongoing turtle and beach wrack survey (weekly)
May 2020	Boyd Bay – Pera Head	Ongoing turtle and beach wrack survey (weekly)

5. References

Biofouling Solutions (2016). Marine Pest Baseline Survey – Amrun Project . Final Report. . Prepared for RTA Weipa Pty Ltd.

Biofouling Solutions (2019). Marine Pest Post Construction Report – Amrun Project . Final Report. . Prepared for RTA Weipa Pty Ltd.

Biofouling Solutions (2017) Standard Operating Procedures Marine Pests Monitoring: Amrun Project Procedure prepared for RTA Weipa Pty Ltd.

Hoedt, F.E., Choat, J.H., Cruz, J.J., Neil, K.M., & Collins, J. (2001). Survey of the Port of Weipa: Port marine baseline surveys and surveys for introduced marine pests. CRC Reef Research Centre and James Cook University School of Marine Biology and Aquaculture. Report to Ports Corporation of Queensland.