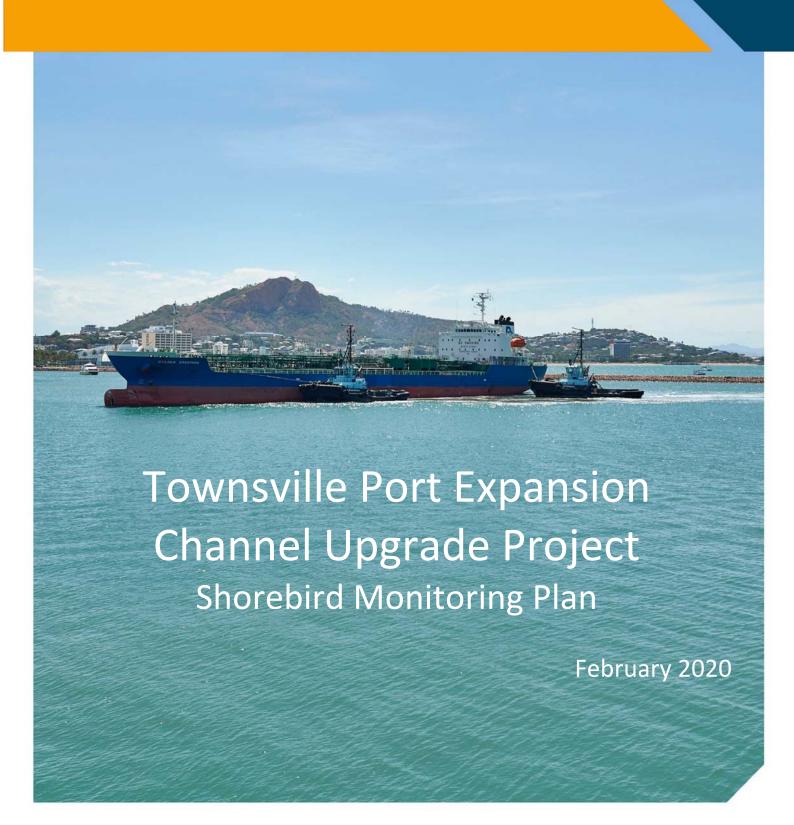
PORT OF TOWNSVILLE LIMITED PORT EXPANSION PROJECT CHANNEL UPGRADE



Document Control Sheet

Revision history

Revision No.	Date	Changed by	Nature of amendment
0	14/02/2020	Tim Smith	Submitted version

Review history

Revision No.	Date	Reviewed by
0	14/02/2020	M Louden, M Wise prior to submission

Document approval

Approval of the final Shorebird Monitoring Plan was issued by DAWE on 26 February 2020.

The Shorebird Monitoring Plan is published on the CU Project's website on 11 March 2020.

This document has been prepared to meet the Commonwealth Government's EPBC Approval No. 2011/5979 Conditions and the Queensland's Coordinator General's Conditions for the Port of Townsville Limited's Port Expansion Project.

© Port of Townsville Limited A.C.N. 130 077 673	Document Type	Plan	Document No.	POT 2156
	Revision	0		
Only electronic copy on server is controlled. To ensure paper copy is current, check			Date	14/02/2020
revision number against entry in Qudos - Master Document List		Page	Page 2 of 27	

DECLARATION OF ACCURACY

EPBC Number

2011/5979

Project Name

Port of Townsville Port Expansion Project

Approval Holder

Port of Townsville Limited

ACN / ABN

130 077 673 / 44 411 774 236

Approved Action

To expand the Port of Townsville, in Townsville Queensland. The action is

for dredging, land reclamation and construction of infrastructure.

Location of the Action

Townsville, Queensland

In making this declaration, I am aware that section 491 of the *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act) makes it an offence in certain circumstances to knowingly provide false or misleading information or documents to specified persons who are known to be performing a duty or carrying out a function under the EPBC Act or the *Environment Protection and Biodiversity Conservation Regulations 2000* (Cth). The offence is punishable on conviction by imprisonment or a fine, or both. I am authorised to bind the approval holder to this declaration and that I have no knowledge of that authorisation being revoked at the time of making this declaration.

Signed

Whie.	-	
Full name (please print)		
Marissa Wise		
Organisation (please print)		
Port of Townsville Limited		

Date <u>14 / 02 /2020</u>

© Port of Townsville Limited A.C.N. 130 077 673	Document Type	Plan	Document No.	POT 2156
Only electronic copy on server is controlled. To ensure paper copy is current, check revision number against entry in Qudos - Master Document List			Revision	0
			Date	14/02/2020
revision number against entry in Qudos	- Master Document List		Page	Page 3 of 27

GLOSSARY

AEIS Townsville Port Expansion Project: Additional Information to the Environmental

Impact Statement - Final (June 2017).

Capital Dredge

Material

Material (clays, silts and sands) derived from capital dredging

Capital Dredging As defined in the NAGD, being 'dredging for navigation, to enlarge or deepen

existing channels and port areas or to create new ones'

CU Project Channel Upgrade Project

CEMP Construction Environmental Management Plan

Department /

DAWE

The Australian Government Department of Agriculture, Water and the Environment, or any other agency administering the *Environment Protection and*

Biodiversity Conservation Act 1999 (Cth) from time to time

EIS PEP Environmental Impact Statement

EPBC Act Environment Protection and Biodiversity Conservation Act 1999

ITAC Independent Technical Advisory Committee

Mechanical Dredge

A dredger that removes sediments via mechanical methods. Can include grab

dredges (clamshells and buckets) or backhoe dredges.

MEMP Marine Environmental Management Plan

Minister The Minister administering the Environment Protection and Biodiversity

Conservation Act 1999 (Cth) and includes a delegate of the Minister

MNES Matters of National Environmental Significance: In the context of this approval:

Great Barrier Reef World Heritage Area, Great Barrier Reef National Heritage place, listed turtle species, listed dolphin species and all other Cetaceans, Dugong (*Dugong dugon*), Commonwealth marine area and the Great Barrier Reef Marine

Park

NRA Environmental Consultants

PEP Port Expansion Project

POTL Port of Townsville Limited

Site Strategic Port Land at the northern extent of the Eastern Reclaim Area at the Port

(Lot 791 on EP2348) and the new reclamation area (not yet a declared lot)

TSHD Trailer Suction Hopper Dredge – a self-propelled ship with a hold (hopper), and a

dredging mechanism comprised of suction pipes connected to draghead(s), by

which it can fill the hopper with dredge material

© Port of Townsville Limited A.C.N. 130 077 673	Document Type	Plan	Document No.	POT 2156
	Revision	0		
Only electronic copy on server is controlled. To ensure paper copy is current, check			Date	14/02/2020
revision number against entry in Qudos - N	revision number against entry in Qudos - Master Document List		Page	Page 4 of 27

TABLE OF CONTENTS

1.	Intro	oduction	6
2.		ting Environmental Values	
	2.1.	Project impacts on Existing Environment	
3.	_	ram Requirements	
	3.1.	Legislative Overview	
	3.2.	Program Objectives	12
	3.3.	Monitoring Stages	13
4.	Shor 4.1.	rebird Monitoring program	
	4.2.	Methodology & Equipment	17
	4.3.	Frequency & Timing	17
	4.4.	Quality Assurance/Quality Control	18
5.	Perf	ormance Objectives	19
6.	Gov	ernance and Review	20
	6.1.	Development of the Shorebird Monitoring Plan	20
	6.2.	Independent Peer Review of the Shorebird Monitoring Plan	20
	6.3.	Finalisation & Submission of Shorebird Monitoring Plan	21
7.	Repo	orting and Responsibility	22
8.	Cont	tinuous Improvement	23
Арр	endix	A: Migratory & Marine Shorebirds	24
Арр	endix	B: NRA proposal: CU Project baseline and Ongoing Shorebirds Monitoring program	26
	BLES		
		mmary of Terrestrial Ecology Impacts and Mitigations Measuresferences for EPBC Approval Conditions	
	LIDEC		
	URES	ocality Plan of the Port of Townsville & PEP	7
		ot Plan for CU Project Rock Wall Construction & Reclamation Activities	
Figu	re 3: S	ite Plan for CU Project Capital Dredging Activities	9
Figu	e 4: Sh	norebird monitoring locations	16

© Port of Townsville Limited A.C.N. 130 077 673	Document Type	Plan	Document No.	POT 2156
	Revision	0		
Only electronic copy on server is controlled. To ensure paper copy is current, check			Date	14/02/2020
revision number against entry in Qudos - Master Document List		Page	Page 5 of 27	

1. INTRODUCTION

Port of Townsville Limited (**POTL**) is a Government Owned Corporation established under the *Government Owned Corporations Act 1993*, which manages the Port of Townsville (**the Port**). The Port is located on Cleveland Bay, approximately three kilometres east of the city centre in Townsville, North Queensland (**Figure 1**). It is a multi-purpose port that handles predominantly bulk and general cargo with a land and sea jurisdiction in excess of 450 km². The Port is situated in the Great Barrier Reef World Heritage Area, outside of the Great Barrier Reef Marine Park. Surrounding the Port of Townsville is Cleveland Bay and the community of Townsville. Townsville is a long-established township with a history of urbanisation and industrial activities in the Ross River and Ross Creek drainage system.

The Townsville Port Expansion Channel Upgrade Project (CU Project) is Stage 1 of POTL's long-term Port Expansion Project (PEP). The PEP (Figure 1) aims to create a series of strategic assets which will address current capacity constraints and accommodate future growth in trade over a planning horizon to 2040. It includes development of port infrastructure and work to "top of wharf" facilities, namely, capital dredging; reclamation; breakwaters and revetments; berths; access roads; rail loop; and trunk services and utilities. It does not include the development of "above wharf" infrastructure such as terminal pavements; ship-loaders and unloaders; product conveyors; storage buildings for products; rail loaders and unloaders; stacking and reclaiming equipment; storage tanks; and pipelines, which will be subject to separate statutory assessment and approval requirements prior to the start of their operations.

The CU Project involves:

- Supply and haulage of marine-grade armour rock required for rock walls and revetments at the Port;
- Creation of a ~62 hectare reclamation area (Figure 2) via the construction of rock walls and revetments forming initial receival ponds for beneficial use of all capital dredge material from the channel widening works;
- Capital dredging on its western side to widen the Platypus Channel (Figure 3) from 92 metres width to 180 metres (at the harbour entrance) tapering to 135 metres (at the seaward end); and
- Capital dredging on its eastern side to widen the Sea Channel (Figure 3) from 92 metres to 120 metres along its length.

For the purposes of this monitoring plan, the Project area relates to all seabed and lands that may be affected by the reclamation works. The Project Area lies within the Study Area, which for Shorebird Monitoring will involve the existing Port reclamation area, the proposed PEP reclamation area (incorporating the CU Project area) and the Sandspit area at the mouth of Ross River.

The capital dredging, construction activities and infrastructure development (rock wall) for the CU Project will occur inside the existing port limits; the designated water areas in which navigation falls under the control of the Regional Harbour Master. The land-based construction activities will occur on the new reclamation area, namely Lot 794 on SP308904 adjacent to the northern extent of the East Port Area, namely Lot 791 on EP2348 (the site), which is current strategic port land.

The capital dredge campaign will last approximately 2 to 3 years and dredge approximately 3.9 million cubic metres predominantly using a mechanical dredge, with support from a trailer suction hopper dredge (TSHD). All the capital dredge material will be placed within the new revetment bunds as part of land reclamation activities. Dewatering and ground improvement of emplaced sediments will also be undertaken.

Shorebird Monitoring is required to be completed across all phases of the PEP; this plan has been developed with focus of monitoring relevant to the CU Project activities across reclamation and other Stage 1 works.

© Port of Townsville Limited A.C.N. 130 077 673	Document Type	Plan	Document No.	POT 2156
	Revision	0		
Only electronic copy on server is controlled. To ensure paper copy is current, check revision number against entry in Qudos - Master Document List			Date	14/02/2020
			Page	Page 6 of 27

Figure 1: Locality Plan of the Port of Townsville & PEP



Based on or contains data provided by the State of QLD (DNRNMS) 2019, in consideration of the State permitting use of this data you acknowledge and agree that the State gives no warranty in relation to the data (including accuracy, reliability, completeness, currency or suitability) and accepts no faibility (including without limitation, faibility in negligence) for any loss, damage or costs (including consequential damage) relating to any use of the data. Data must not be used for marketing or be used in breach of the privacy laws.









Port of Townsville Limited Channel Upgrade Marine Water Monitoring Program Project No. 41-32347 Revision No. C Date 02/04/2019

Location Plan of the Port of Townsville and CU Project

FIGURE 1

lighthetight(AUBristene/Projects/41/32347/GIB)Mags/MX DI41-32347_002_Locality_revC.mad Print deta: 02 Apr 2019 - 11:56 Data source: DNRME Imagery (2015), Roads (2016), Watercourse (2014), Places (2016), POTL: GBRMP Sounday, Existing Pot Land, Pot Limits (2016), Chemiel, Reciebration Area, Proposed Chemies Designing (2010); G4: Mainlands, Islands, Populated Places (2007). Created by: ACaladson

© Port of Townsville Limited A.C.N. 130 077 673	Document Type	Plan	Document No.	POT 2156
	Revision	0		
Only electronic copy on server is control	Date	14/02/2020		
revision number against entry in Qudos - Master Document List			Page	Page 7 of 27

TENURE BOUNDARY

SITE LOCATION

ROJCATIVE LOCATION

OF FALWATER
DISCHARGE

Figure 2: Lot Plan for CU Project Rock Wall Construction & Reclamation Activities

© Port of Townsville Limited A.C.N. 130 077 673	Document Type	Plan	Document No.	POT 2156
		Revision	0	
Only electronic copy on server is controlled. To ensure paper copy is current, check			Date	14/02/2020
revision number against entry in Qudos - Master Document List		Page	Page 8 of 27	



© Port of Townsville Limited A.C.N. 130 077 673	Document Type	Plan	Document No.	POT 2156
	and the second selection	Revision	0	
Only electronic copy on server is control	Date	14/02/2020		
revision number against entry in Qudos - Master Document List			Page	Page 9 of 27

2. EXISTING ENVIRONMENTAL VALUES

The CU Project reclamation construction area is located near the coastal and estuarine areas of the Ross River mouth. A number of studies have shown this area support Migratory shorebirds and seabirds considered to be of national and international significance, when assessed against the criteria described in the EPBC Act's Policy Statement 3.21 for Migratory Species (*Significant Impact Guidelines for 36 Migratory Shorebird Species*, Commonwealth of Australia 2009a). While the existing reclamation areas within the Port of Townsville also provide opportunistic habitats for various species of shorebirds, studies have confirmed these are not core or important habitats supporting these species. The majority of Migratory shorebirds and seabirds roost on the sandspit in the Ross River mouth and forage on nearby intertidal banks that are not associated with the port lands.

These habitat areas are located close to the Port area, which currently supports industrial operations. The habitats are, therefore, subject to associated operational disturbances including noise, light and boating activity. Shorebird activity adjacent to the Port area, particularly breeding, indicates frequenting species have adapted to these disturbances. Species frequenting habitats close to the Project area are also known to forage, roost and breed in other intertidal areas in the wider region and are not considered to rely solely on habitats adjacent the Port area or the Ross River sandspit.

From 2011 to 2012, Natural Resource Assessment Environmental Consultants (NRA) undertook desktop study and a migratory and marine shorebird survey of the Project area and surrounds for the PEP EIS. The geographic scope of the study comprised of:

- Proposed PEP area (incorporating the CU Project area);
- Eastern Reclamation Area, between the Marine Precinct and PEP/CU Project area;
- Rock walls that form part of the Marine Precinct and Eastern Reclamation Area; and
- Sandspit area at the mouth of Ross River.

Based on the PEP EIS desktop study and field survey, the following was determined to occur within sites located within the CU Project area, on other port lands and on the Ross River Sandspit area:

- Fifty-one migratory and/or marine bird species have been recorded in the region.
- Twenty-four migratory species were recorded during site surveys in the Study area;
- Five bird species listed as Near Threatened, Endangered or Vulnerable under the Nature Conservation Act were observed in the Study Area;
- Threatened bird species were recorded in the developed sections of the port, the undeveloped sections of Lot 773 on EP 2211 and the Ross River Sandspit; and
- Five migratory species were found on the Ross River Sandspit area only.

The findings from that study have provided background to the development of this shorebird monitoring plan.

2.1. Project impacts on Existing Environment

The PEP Additional Information to the Environmental Impact Statement (AEIS) identified potential impacts to shorebirds resulting from the Project and proposed mitigation measures as listed in the table below.

© Port of Townsville Limited A.C.N. 130 077 673	Document Type	Plan	Document No.	POT 2156
	Revision	0		
Only electronic copy on server is controlled. To ensure paper copy is current, check			Date	14/02/2020
revision number against entry in Qudos - N	evision number against entry in Qudos - Master Document List			Page 10 of 27

Table 1: Summary of Terrestrial Ecology Impacts and Mitigations Measures

	Drimary Impacting		Risk Assessme	nt*			
Element	Primary Impacting Process	Magnitude	Likelihood of Impact	Risk Rating	Mitigation Measures	Mitigated Risk Rating	
Injury and/or loss of avifauna through vehicle /machinery movement	Construction / Operational activities	Major	Possible	Substantial	Limit speed of vehicles. Limit vehicle use to designated access routes.	Low	
Loss of access to artificial avifauna habitat in the Project area	Construction of revetments and reclamation	Serious	Almost Certain	High	Recreate and extend constructed breakwater and revetment areas.	Low	
Degradation of avifauna habitat in the vicinity of the Project area	Construction of revetments and reclamation	Serious	Possible	Medium	Weed and animal pest management on site. Sedimentation and water quality monitoring.	Low	
Disruption to avifauna behaviour/ movement patterns	Noise/ vibration and light emissions from construction activities	Serious	Likely	Substantial	Maintain plant equipment and machinery. Use low-noise equipment where possible. Orientate light / noise-emitting equipment away from foreshore. Shield light sources.	Low	
Disruption to avifauna behaviour/ movement patterns, particularly foraging	Noise/ vibration and light emissions from Operational activities	Minor	Possible	Medium	Use low-noise equipment where possible. Adhere to noise restrictions. Maintain plant equipment and machinery.	Low	

^{*} Risk rating descriptions from AEIS have been revised to align with POTL Risk Management Guidelines (POT442) risk categorisation

© Port of Townsville Limited A.C.N. 130 077 673	Document Type	Plan	Document No.	POT 2156
		Revision	0	
Only electronic copy on server is controlled. To ensure paper copy is current, check revision number against entry in Qudos - Master Document List			Date	14/02/2020
			Page	Page 11 of 27

3. PROGRAM REQUIREMENTS

3.1. Legislative Overview

The PEP was the subject of an Environmental Impact Statement (EIS) and a further AEIS. These were submitted in support of Commonwealth and State project approval applications.

Commonwealth approval (EBPC 2011/5979) under the Environment Protection and Biodiversity Conservation Act 1999 for the PEP was granted on 5 February 2018. Table 2 provides the relevant requirements for the Shorebird Monitoring Plan.

Table 2: References for EPBC Approval Conditions

Ref	Cond. No.	Condition Requirement	Demonstration of how the plan addresses condition requirements and commitments made in the plan to address condition requirements
1	12	The person taking the action must submit a Marine Environmental Management Plan (MEMP) for the Minister's approval, which includes measures to mitigate impacts to MNES from activities in the marine environment, before the commencement of the action. The person taking the action must not commence the action unless the Minister has approved the MEMP. The MEMP must be prepared in accordance with the Department's Environmental Management Plan Guidelines, and include at least the following:	This monitoring plan, as an attachment of the Marine Environment Management Plan, and its implementation, fulfils the requirements of this condition.
		(e) A program to monitor the potential impacts to shorebirds before and during construction activities in the marine environment.	

3.2. Program Objectives

The CU Project involves the supply and haulage of marine-grade armour rock, the construction of a reclamation area; and capital dredging and placement of capital dredge material at the Port. The land-based construction activities will occur on Strategic Port Land (**the Site**) at the northern extent of the East Port area at the Port, namely Lot 791 on EP2348 and the new reclamation area, namely Lot 794 on SP308900 (**Figure 2**).

The CU Project will cause a significant increase in the land based vehicle movements and vessel traffic at the Site. This will have the potential to generate noise/vibration and additional light that may disturb shorebirds. Activities will also increase potential for bird strike and remove opportunistic roosting and nesting habitat (existing unused reclamation area). A Construction Environmental Management Plan (CEMP), detailing appropriate and preferred environmental management controls, will be implemented to manage risk and reduce the potential for negative impacts on the environment associated with the CU Project's construction activities. This will include controls to manage risk to shorebirds.

© Port of Townsville Limited A.C.N. 130 077 673	Document Type	Plan	Document No.	POT 2156
	Revision	0		
Only electronic copy on server is contro	Date	14/02/2020		
revision number against entry in Qudos - I	revision number against entry in Qudos - Master Document List			Page 12 of 27

To inform adequacy of the CEMP controls at managing potential risks to shorebirds from the project, a Shorebird Monitoring Program will be implemented during construction of the CU Project. Whilst the Ross River sandspit is outside the immediate CU Project area, it is a significant high tide roosting site and plays an important role in the dynamics of the local shorebird population and is therefore included in the program area.

The objectives of the Shorebird Monitoring Program are to:

Objective One: Develop a Shorebird Monitoring Program to monitor potential impacts to shorebirds

before and during construction activities.

Objective Two: Conduct a pre- CU Project construction activities survey of shorebirds in the Project area

and on the nearby Ross River sandspit to identify and record the abundance of each bird

species.

Objective Three: Monitor and report on changes to shorebird roosting and foraging, beyond natural spatial

and temporal variation, during the Project construction activities in the marine

environment, to identify any impacts from the project on shorebirds.

Objective Four: Provide recommendations on key areas of actual impact and potential mitigation

measures should impacts be detected.

Objective Five: Provide a dataset on shorebird populations in the vicinity of the project to inform

discussions with regulators and provide supporting information for ongoing performance.

The Monitoring Plan has been designed to monitor the environmental impacts of the site activities during both the Preliminary Works and Construction Phase as well as proving background (baseline) information prior to the development of the site. Information from this monitoring program will be used to assist with improving the control measures associated with the CU Project to minimise impacts on shorebird populations.

This plan forms part of the Marine Environment Management Plan (MEMP) for the project. The MEMP provides the environmental management requirements for Matters of National Environmental Significance (MNES) from project activities in the marine environment. This will include a number of the strategies and actions also detailed in the CEMP which addresses impacts from the land based construction activities, recognising the habitat of shorebirds at the interface between marine and terrestrial environment.

This Shorebird Monitoring Plan is Appendix H of the *CU Marine Environmental Management Plan (MEMP POT 2135)*. As this plan covers specifically the monitoring of shorebird populations, this document is to be read in conjunction with the MEMP to ensure all management actions and controls are captures to prevent potential impacts to shorebirds.

3.3. Monitoring Stages

This Shorebird Monitoring Plan details the monitoring program to be implemented across the CU Project, forming stage 1 of the PEP project only. It is not designed to cover the monitoring plan for further stages of

© Port of Townsville Limited A.C.N. 130 077 673	Document Type	Plan	Document No.	POT 2156
		Revision	0	
Only electronic copy on server is controlled. To ensure paper copy is current, check			Date	14/02/2020
revision number against entry in Qudos - N	revision number against entry in Qudos - Master Document List		Page	Page 13 of 27

POTL Channel Upgrade Project – EPBC Approval No. 2011/5979 **Shorebird Monitoring Plan**

the PEP. Monitoring requirements for construction of latter stages of the PEP will be identified when those stages are planned to confirm relevance for management of risk to shorebirds from planned activities.

Shorebird monitoring for the CU Project is comprised of two stages: pre-construction (baseline) and during construction. Baseline works have already been completed to confirm data collection prior to any land disturbance works that may have effect on shorebirds.

Full details of the baseline shorebird monitoring program are provided at Appendix B. It is proposed that the methodology applied in the baseline assessment will largely be continued throughout the project.

The following section summarises the details of the Shorebird Monitoring program to be implemented during CU Project construction works, including locations, methodology and timing.

© Port of Townsville Limited A.C.N. 130 077 673	Document Type	Plan	Document No.	POT 2156
		Revision	0	
	Only electronic copy on server is controlled. To ensure paper copy is current, check revision number against entry in Qudos - Master Document List			14/02/2020
revision number against entry in Qudos - N				Page 14 of 27

4. SHOREBIRD MONITORING PROGRAM

4.1. Monitoring Locations

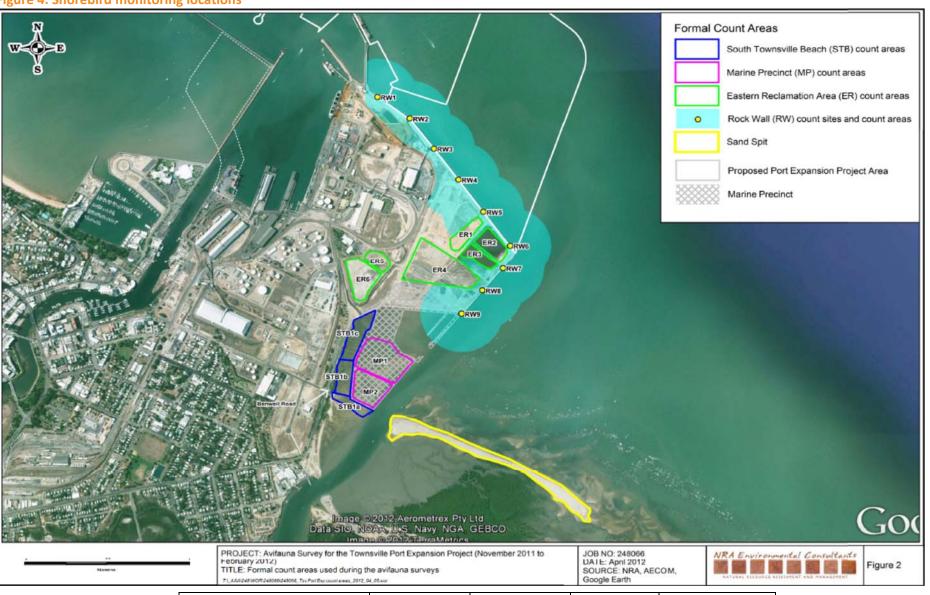
Shorebird monitoring will be conducted at key locations as listed below, replicating the geographic scope undertaken by NRA in 2012 for the PEP assessment and building upon baseline data. The monitoring locations, shown in Figure 4, are as follows:

- Eastern Reclaim Area, between the Marine Precinct and the proposed reclamation development area;
- Rock walls along the Eastern Reclaim Area and the Marine Precinct;
- The vacant area of the Marine Precinct (southern area); and
- Sandspit area at the mouth of Ross River.

It should be noted that some identified monitoring areas within the Port (Eastern Reclaim Area, Rock Wall, Marine Precinct) include areas of vacant land and these undeveloped lands provide opportunistic habitat for shorebirds. While the CU Project shorebird monitoring has made use of these areas while vacant for monitoring, the exact locations of this shorebird monitoring program may require refinement as development of these vacant areas occurs. Ongoing review of program will inform relevance of monitoring locations for managing risk to shorebirds.

© Port of Townsville Limited A.C.N. 130 077 673	Document Type	Plan	Document No.	POT 2156
Only electronic copy on server is controlled. To ensure paper copy is current, check			Date	14/02/2020
revision number against entry in Qudos - N	revision number against entry in Qudos - Master Document List			Page 15 of 27

Figure 4: Shorebird monitoring locations



© Port of Townsville Limited A.C.N. 130 077 673	Document Type	Plan	Document No.	POT 2156
		Revision	0	
Only electronic copy on server is control	opy is current, check	Date	14/02/2020	
revision number against entry in Qudos - i	revision number against entry in Qudos - Master Document List			

4.2. Methodology & Equipment

The Shorebird monitoring approach involves two observers searching for birds within the study area. Once observed, details including species, abundance (counts), location and activity/behavior is recorded. Surveys will involve formal bird counts at fixed locations, informal searches for birds and habitat assessments.

Limited equipment is required; binoculars and cameras will be utilised to make observations from sufficient distance to not unduly disturb the birds for accuracy in counts.

4.3. Frequency & Timing

To determine important habitat and use by shorebirds, it is appropriate to complete four replicate surveys during the period when the majority of shorebirds are present. Given the birds are primarily migratory, this needs to coincide with the peak migration periods to Northern Australia. This has informed design of this program.

Monthly surveys for the baseline assessment were conducted between October and January (baseline). This period was selected as it correlates with peak periods of shorebird abundance in the Ross River/Cleveland Bay area.

Surveys were undertaken over 2 days each month. Surveys were undertaken on consecutive days to ensure relationship of shorebird abundance between sites (Ross River sandspit and POTL areas) were able to be established. Additionally, given tidal influence on shorebird behaviour, surveys were conducted around the spring high and low tides to maximize available search effort.

Survey dates were timed to not occur on weekends and public holidays, given increased public activity may impact on shorebird distribution and behaviour.

Dates and sites surveyed during baseline works conducted across 2018/19 summer are shown in Table 3.

Table 3: Survey dates for Shorebird monitoring – baseline assessment

Month	Baseline Survey Dates	Survey Effort
October 2018	25 – 26 October 2018	RR Sandspit – 1 day POTL areas – 1 day
November 2018	21 – 22 November 2018	RR Sandspit – 1 day POTL areas – 1 day
December 2018	20 – 21 December 2018	RR Sandspit – 1 day POTL areas – 1 day
January 2019	21 – 22 January 2019	RR Sandspit – 1 day POTL areas – 1 day

© Port of Townsville Limited A.C.N. 130 077 673	Document Type	Plan	Document No.	POT 2156
	Revision	0		
Only electronic copy on server is control	Date	14/02/2020		
revision number against entry in Qudos - Master Document List			Page	Page 17 of 27

Data collected during baseline works will be compared to that collected during future construction surveys to support ability to achieve program objectives.

To support data comparison between survey events, construction surveys are planned to occur in the same months and under the same tidal/field conditions as the baseline assessments. Review of data collected during baseline assessment with historically collected data (2012) confirmed this is an appropriate strategy for construction monitoring. Consideration will be given to extending survey timing into February during construction as previous surveys (2012) showed high bird abundances in the January/February period. Extension of survey timing may benefit ability to adequately detect any impacts independently of inter-year variability.

Monitoring completed in the first year of construction may opt to spread survey effort to identify if survey in late January/early February detects high abundance of birds; to inform program implementation for subsequent years. This will form part of the review of program relevance at achieving identified objectives.

It is currently planned that construction monitoring activities will occur between October and January for the duration of the construction program.

4.4. Quality Assurance/Quality Control

The shorebird surveys will be undertaken under NRAs Scientific Purposes Permit WISP15517415 issued under the Queensland *Nature Conservation (Administration) Regulation 2017* and associated Animal Ethics Approval (CA 2017/11/1123).

Data collected will be collated and analysed by NRA. NRA operates under an Integrated Management System that is certified to AS/NZS ISO 9001:2015 (Quality), AS/NZS ISO 140001:2015 (Environment) and AS/NZS ISO 4801:2001 (Safety). All data handling, storage and analysis will be undertaken within this QA system.

© Port of Townsville Limited A.C.N. 130 077 673	Document Type	Plan	Document No.	POT 2156
	Revision	0		
Only electronic copy on server is control	Date	14/02/2020		
revision number against entry in Qudos - Master Document List			Page	Page 18 of 27

5. PERFORMANCE OBJECTIVES

This monitoring plan will address the performance objectives prescribed for Shorebirds by the MEMP.

Specifically, the following performance objectives will apply for this Shorebird Monitoring Program:

- All surveys to be undertaken as per this plan using methods consistent with baseline works, on the intended programming or a similar program that meets the tide and other criteria; and
- Undertake Annual Program Review to identify trends and Identify areas of potential concern to
 ensure all appropriate management controls or mitigations measures are implemented; and
- Establish a temporal and spatial dataset to inform discussions with regulators and provide supporting information for ongoing performance; and
- Timely delivery of draft and final annual monitoring reports and datasets, with Final Report and dataset provided within 1 week of POTL comments on draft being provided.
- Annual review undertaken against the Performance Objectives to review the effectiveness and relevance of the performance indicators.

Unless otherwise prescribed by the agreed schedule of works, timely delivery is taken to be within a period of four weeks from activity having occurred.

The selection of highly experienced contractors for the implementation of the Shorebird Monitoring Plan will provide some surety of meeting the objectives. The selected contractors are qualified, local fauna consultants with extensive experience in shorebird monitoring in North Queensland and at the mouth of Ross River.

© Port of Townsville Limited A.C.N. 130 077 673	Document Type	Plan	Document No.	POT 2156
Only electronic copy on server is controlled. To ensure paper copy is current, check			Revision	0
			Date	14/02/2020
revision number against entry in Qudos - Master Document List		Page	Page 19 of 27	

6. GOVERNANCE AND REVIEW

6.1. Development of the Shorebird Monitoring Plan

The Shorebird Monitoring Plan has been developed in consultation with key stakeholders including:

- Representatives of the Traditional Owners, the Gurambilbarra Wulgurukaba people who are identified as the Native Title claimants of the land covering the Project area;
- POTL's Community Liaison Group (CLG), which comprises a number of community representatives;
- Environmental, engineering and modelling consultants (where applicable);
- The CU Project Steering Committee, which comprises members of the POTL Executive Management Team; and
- The Commonwealth Department of Agriculture, Water and the Environment (DAWE).

Traditional Owners were consulted in accordance with Condition 25 of EPBC Approval No. 2011/5979 during the development. This consultation involved the following:

- An initial presentation to Traditional Owners on the CU Project on 20 February 2018;
- The draft MEMP (incorporating Shorebird monitoring) was subsequently presented to a meeting of the nominated Traditional Owners representatives on 30 May 2019. Comments raised were noted during the meeting with the Traditional Owners Working Group asked to provide any further comments on the Monitoring plan within a nominated timeframe. All comments received from Traditional Owners were compiled, with the only shorebird related comment raised as part of a generic query on what changes to the hydrology of Ross River Channel will occur and what impact any changes will have on birds and fish. A copy of all comments made by the Traditional Owners Working Group was provided to the Minister with the MEMP;
- An update regarding the consultation with the Traditional Owners Working Group was then
 presented to the CU Project Steering Committee, which formally noted that the Traditional
 Owners Working Group had been consulted in relation to the MEMP and Shorebird
 Monitoring Plan development.

6.2. Independent Peer Review of the Shorebird Monitoring Plan

In accordance with Condition 31 of EPBC Approval No. 2011/5979, the draft MEMP and associated monitoring plans were independently peer reviewed by GHD Pty Ltd (who have not been directly involved with either the rock wall design or construction planning) before submission to the Minister for approval. A copy of all advice and recommendations made by the independent peer reviewer was provided to the Minister with the draft Shorebird Monitoring Plan at time of submission (per Condition 33).

© Port of Townsville Limited A.C.N. 130 077 673	Document Type	Plan	Document No.	POT 2156
Only electronic copy on server is controlled. To ensure paper copy is current, check			Revision	0
			Date	14/02/2020
revision number against entry in Qudos - Master Document List		Page	Page 20 of 27	

6.3. Finalisation & Submission of Shorebird Monitoring Plan

The draft MEMP and associated monitoring plans was submitted on 07/08/2019 for the Commonwealth Minister for the Environment's approval to meet the submission timing requirements of EPBC Approval No. 2011/5979 Condition 12.

© Port of Townsville Limited A.C.N. 130 077 673	Document Type	Plan	Document No.	POT 2156
			Revision	0
Only electronic copy on server is controlled. To ensure paper copy is current, check revision number against entry in Qudos - Master Document List		Date	14/02/2020	
		Page	Page 21 of 27	

7. REPORTING AND RESPONSIBILITY

POTL will take responsibility for coordinating the implementation of this monitoring plan, with the assistance of suitably qualified contractors/consultants.

Annual reporting relating to the Shorebird Monitoring Program against the program objectives will occur. This reporting will incorporate details of monitoring undertaken, results found and an interpretation of the results in relation to reporting on changes to shorebird roosting and foraging during the Project construction activities to identify any impacts from the project on shorebirds. This reporting will also identify any recommendations for management action to mitigate risk of impacts or monitoring program modifications for improvement.

The annual report will also be included as part of annual reporting and review of the MEMP and for compliance reporting against the EPBC Act Approval conditions. Reporting will, therefore, provide information against each of the Shorebird Monitoring Program objectives in relation to those elements.

Where management controls are to be amended during the CU Project in response to recommendations, the relevant Management Plans (CEMP, MEMP, DMP) will be updated to incorporate updated management arrangements into the on-ground practices. The updating of the plans will occur immediately, or as part of the regular review of the plan depending on the significance of the management action modification. A record of changes made will be kept.

In the event that the monitoring plan needs to be revised during implementation, then POTL will consult with the Department on the need for amendments and submit a revised plan for approval. Changes of a minor administrative nature will not require approval, in accordance with the Department's policy on management plans.

Copies of all finalised report(s) will be kept on-site and will be available for regulatory inspection. If requested by the regulators, all survey data and information related to this Monitoring Plan will be submitted within 30 business days of the request, or within a timeframe agreed in writing between POTL and the relevant regulator.

© Port of Townsville Limited A.C.N. 130 077 673	Document Type	Plan	Document No.	POT 2156
			Revision	0
Only electronic copy on server is controlled. To ensure paper copy is current, check revision number against entry in Qudos - Master Document List		Date	14/02/2020	
		Page	Page 22 of 27	

8. CONTINUOUS IMPROVEMENT

The Shorebird Monitoring Program will be subject to regular review.

This monitoring plan is a "living document" which will undergo formal review annually during the construction phase. During delivery, review and amendment will occur as necessary via adaptive management actions to ensure the program remains relevant and achieves the required program objectives inclusive of identification and implementation of any new or changing environmental risks and mitigation actions. Recommendations on improvements or amendments will be reported as part of the annual reporting process. This will align with the regular review of the performance of the MEMP as required under the EPBC Act approval conditions.

The current program is based on the monitoring arrangements implemented as part of the baseline monitoring program. The 'during CU Project construction' monitoring will be conducted under the same arrangements, albeit incorporating any improvements that are identified through ongoing review.

Changes to this monitoring plan may be developed and implemented in consultation with relevant regulators and other stakeholders over time. All changes are to maintain the approval conditions and be approved by the CU Project Management, before implementation.

Information from this monitoring plan will be used to assist with improving the control measures in the MEMP and CEMP where relevant and required.

As noted in section 7, an annual report on the shorebird Monitoring Plan will be produced that will identify the results found and an interpretation of the results in relation to changes to shorebird populations within the study area to identify any impacts from the project where practically able. This information will be reviewed and considered by POTL to identify any recommendations on likely causes/stressors to shorebird populations and necessary management actions to be implemented as a result of the survey outcomes.

Where the monitoring identifies the need for revised management actions, this monitoring plan and the associated management plans will be revised to incorporate the adaptive management arrangements. This will include the assessment of any monitoring program modifications.

As per Condition 38 of the EPBC Act Approval (EPBC 2011/5979), any changes to this monitoring plan, or any of the Management Plans as a result of the outcomes of the Shorebird Monitoring Plan will be notified to the Department.

Continuous improvement will also be achieved via the *Marine Environmental Management Plan*, to which this monitoring plan is a part of (Appendix H of MEMP). Consideration and review of improvements to the MEMP will be reflected within this Monitoring Plan.

© Port of Townsville Limited A.C.N. 130 077 673	Document Type	Plan	Document No.	POT 2156
			Revision	0
Only electronic copy on server is controlled. To ensure paper copy is current, check revision number against entry in Qudos - Master Document List		Date	14/02/2020	
		Page	Page 23 of 27	

APPENDIX A: MIGRATORY & MARINE SHOREBIRDS

Scientific Name	Common Name	EPBC Ac	t Status	Presence Confirmed
		Migratory	Marine	
Actitis hypoleucos	Common sandpiper	Yes	Yes	Port area
Apus pacificus	Fork-tailed swift	Yes	Yes	-
Ardea ibis	Cattle egret	Yes	Yes	Port area
Ardea intermedia	Intermediate egret	-	Yes	-
Ardea modesta	Eastern great egret	Yes	Yes	Port and sandspit
Arenaria interpres	Ruddy turnstone	Yes	Yes	-
Calidris acuminata	Sharp-tailed sandpiper	Yes	Yes	Port and sandspit
Calidris alba	Sanderling	Yes	Yes	-
Calidris canutus	Red knot	Yes	Yes	Sandspit
Calidris ferruginea	Curlew sandpiper	Yes	Yes	Port area
Calidris ruficollis	Red-necked stint	Yes	Yes	Port and sandspit
Calidris tenuirostris	Great knot	Yes	Yes	Port and sandspit
Charadrius leschenaultia	Greater sand plover	Yes	Yes	Port and sandspit
Charadrius mongolus	Lesser sand plover	Yes	Yes	Port and sandspit
Charadrius ruficapillus	Red-capped plover		Yes	-
Charadrius veredus	Oriental plover	Yes	Yes	-
Chlidonias leucopterus	White-winged tern	Yes	Yes	-
Coracina novaehollandiae	Black-faced cuckoo-shrike	-	Yes	-
Coracina papuensis	White-bellied cuckoo- shrike	-	Yes	-
Egretta sacra	Eastern reef egret	Yes	Yes	Port area
Esacus magnirostris	Beach stone-curlew	-	Yes	-
Haliaeetus leucogaster	White-bellied sea eagle	Yes	Yes	Port area
Haliastur indus	Brahminy kite	-	Yes	-
Haliastur sphenurus	Whistling kite	-	Yes	-
Himantopus	Black-winged stilt	-	Yes	-
Hirundo rustica	Barn swallow	Yes	Yes	-
Hydroprogne caspia	Caspian tern	Yes	Yes	Port and sandspit
Limicola falcinellus	Broad-billed sandpiper	Yes	Yes	-
Limosa lapponica	Bar-tailed godwit	Yes	Yes	Port and sandspit
Limosa	Black-tailed godwit	Yes	Yes	Sandspit
Merops ornatus	Rainbow bee-eater	Yes	Yes	Port area
Monarcha melanopsis	Black-faced monarch	Yes	Yes	-

© Port of Townsville Limited A.C.N. 130 077 673	Document Type	Plan	Document No.	POT 2156
			Revision	0
Only electronic copy on server is controlled. To ensure paper copy is current, check revision number against entry in Qudos - Master Document List		Date	14/02/2020	
		Page	Page 24 of 27	

Scientific Name	Common Name	EPBC Act Status		Presence Confirmed
		Migratory	Marine	
Monarcha trivirgatus	Spectacled monarch	Yes	Yes	-
Myiagra cyanoleuca	Satin flycatcher	Yes	Yes	-
Numenius madagascariensis	Eastern curlew	Yes	Yes	Port and sandspit
Numenius minutus	Little curlew	Yes	Yes	-
Numenius phaeopus	Whimbrel	Yes	Yes	Port and sandspit
Philomachus pugnax	Ruff	Yes	Yes	-
Pluvialis fulva	Pacific golden plover	Yes	Yes	Sandspit
Pluvialis squatarola	Grey plover	Yes	Yes	Sandspit
Recurvirostra novaehollandiae	Red-necked avocet	-	Yes	-
Sterna albifrons	Little tern	Yes	Yes	Port and sandspit
Thalasseus bengalensis	Lesser crested tern	Yes	Yes	-
Thalasseus bergii	Crested tern	-	Yes	-
Threskiornis molucca	Australian ibis	-	Yes	-
Tringa brevipes	Grey-tailed tattler	Yes	Yes	Port area
Tringa incana	Wandering tattler	Yes	Yes	Predicted
Tringa nebularia	Common greenshank	Yes	Yes	Port and sandspit
Tringa stagnatilis	Marsh sandpiper	Yes	Yes	Predicted
Xenus cinereus	Terek sandpiper	Yes	Yes	Port area

© Port of Townsville Limited A.C.N. 130 077 673	Document Type	Plan	Document No.	POT 2156
			Revision	0
Only electronic copy on server is controlled. To ensure paper copy is current, check revision number against entry in Qudos - Master Document List		Date	14/02/2020	
		Page	Page 25 of 27	

APPENDIX B: NRA PROPOSAL: CU PROJECT BASELINE AND ONGOING SHOREBIRDS MONITORING PROGRAM

© Port of Townsville Limited A.C.N. 130 077 673	Document Type	Plan	Document No.	POT 2156
			Revision	0
Only electronic copy on server is controlled. To ensure paper copy is current, check revision number against entry in Qudos - Master Document List		Date	14/02/2020	
		Page	Page 26 of 27	

NRA Reference: Shorebird monitoring_Prop P01.docx

28 September 2018

Port of Townsville Limited PO Box 1031 Townsville QLD 4810

Attention: Tim Smith, Environmental Advisor (CCUP)

Dear Tim

RE: Shorebird Monitoring - CCU Project

NRA Environmental Consultants (NRA) is pleased to provide Port of Townsville Limited (POTL) with this fee proposal to conduct baseline shorebird monitoring in support of the Townsville Port Expansion Project (PEP).

On 5 February 2018, POTL received approval under the Commonwealth *Environmental Protection* and *Biodiversity Conservation Act* 1999 (EPBC Act) for the PEP. Condition 12 of the EPBC referral (EPBC 2011/5979) requires the implementation of "a program to monitor the potential impacts to shorebirds before and during construction activities in the marine environment". In response to this requirement, POTL seeks to develop a Shorebird Monitoring Program to achieve the following objectives:

- **Objective One**: Develop a Shorebird Monitoring Program to monitor potential impacts to shorebirds before and during construction activities.
- **Objective Two**: Conduct a pre-construction survey of shorebirds in the PEP area and on the nearby Ross River sand spit to identify and record the abundance of each bird species.
- **Objective Three**: Monitor and report on changes to shorebird roosting and foraging, beyond natural spatial and temporal variation, during the project construction activities in the marine environment, to identify any impacts from the project on shorebirds.
- **Objective Four**: Provide recommendations on key areas of actual impact and potential mitigation measures should impacts be detected.
- **Objective Five**: Contribute to improving public awareness on local avifauna biodiversity and species richness in the vicinity of the project area.

Construction works for Stage 1 of the PEP, the Channel Capacity Upgrade (CCU) Project, are planned to begin in April 2019. Prior to construction works, POTL require that baseline shorebird monitoring surveys and reporting on results occur.

Scope

The following services will be provided as part of baseline shorebird monitoring.

- A project inception meeting to confirm project scope and objectives.
 - NRA Project Manager (Peter Buosi) will meet with POTL to discuss the shorebird monitoring program and relevant logistics (eg site access arrangements, inductions).

- An optional, initial site reconnaissance survey, to determine the changes in site conditions since the NRA (2012)¹ avifauna surveys.
 - Changes in site conditions may affect the survey approach, including the optimal timing of surveys with respect to tides. The reconnaissance survey will reduce the risk of time lost due to unexpected site conditions.
- Four shorebird monitoring events, one per month between October 2018 and January 2019 (the period of peak shorebird abundance at the site). The surveys shall be designed so as to permit comparison with previous work (NRA 2012) and be repeatable during construction.
- A report, including the following.
 - Study context, scope and methods.
 - A description of shorebird habitat within the study area.
 - A description of shorebird species composition (ie a species list) present in the study area.
 - Identify any species listed as Endangered, Vulnerable, Near Threatened and/or Migratory under the EPBC Act and/or the Queensland *Nature Conservation Act* 1992 (NC Act) occurring in the study area, and their abundance.
 - Assess the significance of observed species, abundances and habitats with reference to EPBC Act policy.
 - Compare the results of the 2018/2019 survey to those reported in NRA (2012), noting any changes in the significance of identified values to shorebirds.
 - Include recommendations if any adverse impacts to shorebirds are detected.
 - Include, as an appendix to the report, a summary of salient findings of public interest and site-specific photographs (for use in communication tools for public consumption).

The geographic scope (or study area) will replicate that assessed by NRA (2012), comprising:

- Eastern Reclaim Area, between the Marine Precinct and the proposed reclamation area
- rock walls along the Eastern Reclaim Area and Marine Precinct
- sand spit area at the mouth of Ross River.

Methods

The 2018/19 methodology will be consistent with NRA (2012), and shall involve two observers searching for birds within the study area and noting species, abundance, location and activity/behaviour. Surveys within the POTL section of the study area will involve formal bird counts at fixed locations, informal searches for birds and habitat assessments. A boat will be used to access the sand spit and land based counts will be made around high tide from vantage points that offer optimal views without unduly disturbing birds.

Monthly surveys between October 2018 and January 2019 are the recommended minimum sampling regime as this correlates with the period when shorebirds are present in greatest abundance in the Ross River mouth. Wherever possible, the POTL section and sand spit section of the study area will be surveyed over consecutive days so that the relationship between these areas can be established.

Shorebird behaviour is influenced by tides. NRA (2012) conducted surveys on or around spring high and low tides to maximise available search effort. The preferred tides, and survey timings,

¹ NRA 2012, *Avifauna Survey for the Townsville Port Expansion Project November 2011 to February 2012*. Prepared for AECOM, April 2012.

during the 2018/19 assessment are described below in **Table 1**. These dates are provisional and may be subject to change if the site reconnaissance visit is undertaken and it is found that the survey approach needs to be altered.

The shorebird surveys will be conducted under NRA's Scientific Purposes Permit number WISP15517415 (and associated Animal Ethics Approval (CA 2017/11/1123)) provided under the Queensland *Nature Conservation (Administration) Regulation* 2017.

Upon completion of fieldwork, the data will be collated and analysed, and a report will be prepared in accordance with the project scope. Birdlife Townsville will be contacted to ascertain if they have recent data relevant to the project scope. Their data shall be used if it is deemed to be relevant, reliable and readily usable.

Table 1: Preferred survey dates for shorebird monitoring

Month	Preferred dates ¹	Survey effort ²
October 2018	24 to 26 October 2018	Sand spit $= 1$ day
		POTL area = 1 day
November 2018	22 to 26 November 2018	Sand spit $= 1$ day
November 2018 22 to	22 to 20 November 2018	POTL area = 1 day
D	10 4 21 D 1 - 2010	Sand spit = 1 day
December 2018 19 to 21 December	19 to 21 December 2018	POTL area = 1 day
I 2010	21 4- 22 1 2010	Sand spit = 1 day
January 2019	21 to 23 January 2019	POTL area = 1 day

¹ It is preferable that surveys are not conducted on weekends when public activity impacts on bird behaviour. These dates are provisional and may be subject to change following the site reconnaissance visit (if undertaken).

Program

The proposed work schedule is provided in **Table 2**. These dates are indicative and may change subject to discussion with POTL.

Table 2: Proposed works program¹

Task	Anticipated date
Project inception meeting	October 2018
Site reconnaissance	October 2018
Monitoring surveys	October 2018 – January 2019 (see Table 1)
Reporting	January - March 2019
Draft report issued	8 March 2019
Final report issued	Within one week of receiving comments on draft report

¹ These dates are indicative and may change subject to discussion with POTL. The later stages are contingent on the timing for the earlier stages.

Personnel

NRA Principal Ecologist Peter Buosi will be responsible for the delivery of this project. He will be assisted by NRA Senior Ecologist Lindsay Popple and NRA Environmental Scientist Rhiannon Williams. Peter and Lindsay have substantial experience conducting shorebird surveys. Peter's experience includes multiple studies in the mouth of the Ross River, including projects associated with the approvals stage of the PEP, and approvals and monitoring stages of the Port Access Road

² POTL area comprises the Eastern Reclaim Area, between the Marine Precinct and the proposed reclamation area and the rock walls along the Eastern Reclaim Area and Marine Precinct.

Project. Lindsay's experience includes undertaking and leading shorebird monitoring studies in Caley Valley Wetlands, Brisbane Airport and Curtis Island. Rhiannon has a keen interest in birds and has assisted with avifauna surveys in Townsville. Short CVs for Peter, Lindsay and Rhiannon are provided below. Long CVs can be provided on request.

Peter Buosi BAppSc (Hons) - Principal Ecologist

Project Role - Project lead, field surveys and reporting

Peter has more than 20 years of experience in research and applied science. He has been with NRA since 1998, and during this time he has worked for a wide variety of clients. Peter has experience in a range of science disciplines and his specific area of expertise is in the design, management and conduct of ecological studies in north Queensland, specifically the Townsville region. Peter is a recognised threatened species ecologist and has conducted national reviews of two endangered species (Cassowary and Black-throated Finch). Much of his threatened species work has required analysis of results within a legislative context. In addition, he is regularly contracted by Local, State and Commonwealth government agencies and authorities to provide expert advice, review and witness services.

Lindsay Popple PhD, BSc (Hons) - Senior Ecologist

Project Role - Project assistant, field surveys and reporting

Lindsay has led flora and fauna surveys for over 20 years. He is experienced in ecological impact assessment, flora and fauna monitoring, species management plans, habitat modelling and ecological project management. He also has specialist expertise in the identification of insects, birds and eucalypts, as well as acoustic recording and identification. Lindsay is a Certified Environmental Practitioner (number 803).

In addition to his broad ecological expertise, Lindsay is an internationally recognised expert on Australian cicadas. Many of the skills and work methods applied to his work on cicadas are relevant to surveys and assessments of flora and vertebrate fauna.

Prior to joining NRA, Lindsay worked in a variety of roles, including as a research associate in plant molecular phylogenetics at the Australian National University, as a Curator of Entomology at the Queensland Museum and as a Senior Ecologist at a consultancy specialising in terrestrial ecology.

Rhiannon Williams BSc (Hons) MRes - Environmental Scientist

Project Role - Project assistant and field surveys

Following her undergraduate degree, Rhiannon completed a Research Masters in Biodiversity, Evolution and Conservation at University College London in 2014. Prior to joining NRA, Rhiannon worked as an ecological consultant for three years in the UK. In January 2017, she was selected for a two-month secondment to Cumberland Ecology in Sydney, and has since relocated to Australia. She has experience in undertaking and leading a range of threatened species surveys and is competent in the preparation of technical ecological reports. She has worked on a variety of projects, including mining, renewable energy, national infrastructure and housing developments. Rhiannon has been involved with numerous revegetation and monitoring projects in Townsville in a voluntary capacity through which she has gained valuable knowledge and skills.

Relevant Experience

NRA has directly relevant project experience having been involved with the following shorebird studies.

- In 2012, NRA undertook avifauna surveys for the Townsville Port Expansion Project (AECOM).
- In 2011, NRA conducted shorebird monitoring during bridge construction for the Townsville Port Access Project (Abigroup Seymour Whyte Joint Venture).

 $G: \label{lem:contracts} G: \label{lem:contr$

- In 2008, NRA carried out literature reviews, field surveys and database analysis to report on the "Use Patterns of the Ross River Mouth by Migratory Birds" (Maunsell) to inform approvals for the Townsville Port Access Project.
- In 2005, NRA completed a Migratory Bird Impact Assessment for the Townsville Port Access Project (Queensland Department of Main Roads) to inform planning for the Townsville Port Access Project.

NRA has also been involved with the following planning and approval work for POTL.

- Black-throated Finch (*Poephila cincta cincta*) assessment and management plan for the Marine Stone Quarry (various projects from 2010-present).
- Assessment of the potential impacts of the Marine Stone Quarry on the Greater Large-eared Horseshoe Bat (*Rhinolophus philippinensis*) (various projects from 2009-2010).

Budget

[REDACTED]

Terms and Conditions

Conditions of Engagement

Work will be completed according to the Service Agreement between POTL and NRA (contract number T00407, dated 20 September 2018).

Term of Budget

This budget is valid for 90 days from the date of this offer.

GST

Our fee offer is quoted inclusive of any Goods and Services Tax (GST).

Insurances

Copies of Insurance Certificates of Currency can be provided on request.

Assumptions and Exclusions

Assumptions used in preparing our offer of services have been outlined with the budget. NRA will not exceed the agreed budget without POTL's approval.

Scope Changes

Please note that changes to the scope of work, numbers of field trips and project meetings, deliverables or project duration may result in a change in the project budget.

Assumptions in this regard have been noted in the scope and the budget.

Meetings

Allowance for one project meeting has been made in our budget.

Data

It is assumed that POTL will supply all background information, project specifications, GIS layers *etc* at no cost to NRA and in time to support the timely commencement of work.

Site Access and Access to Project Team

It is assumed that POTL will facilitate timely access to sites and key personnel where required. In the event that access is denied or delayed for reasons beyond our control, or if additional site visits and meetings are needed to complete works, additional costs may be incurred.

Deliverables

The budget estimate has allowed for the delivery of:

• Draft report – 1 copy in PDF format for comment

G:\CU Project\4. Environment\02. Monitoring Contracts\T00407 Shorebird - baseline\3 - Award - Filed in ECM\Shorebird monitoring_Prop - NRA P01_CostsRedacted.docx

• Final report – 1 hardcopy report, PDF copy on CD/by email.

GIS Output

The proposal does not include allowance for preparation of specific GIS outputs. Mapping used in reports will be prepared using MapInfo software and outputs in selected formats can be provided to clients with prior advice.

Consolidated Feedback on Drafts

It is assumed that POTL will provide a single set of consolidated comments to NRA on our Draft report.

Timing

Work can commence upon written acceptance by POTL of this proposal and confirmation that work is authorised to proceed.

Quality Assurance

NRA is committed to providing technically accurate and practical solutions that are responsive to the ecological and social environments. We operate under an Integrated Management System that is certified to AS/NZS ISO 9001:2015 (Quality), AS/NZS ISO 14001:2015 (Environment) and AS/NZS 4801:2001 (Safety).

If you have any questions about the proposed work please call me on 4796 9444 or email me at peter@natres.com.au.

Yours sincerely

NRA Environmental Consultants

Peter Buosi

Principal Ecologist

© Natural Resource Assessments Pty Ltd

This document is the property of Natural Resource Assessments Pty Ltd. Apart from any use as permitted under the Copyright Act 1968, all other rights are reserved. Unauthorised use of this document in any form whatsoever is prohibited.

NRA Reference: Shorebird monitoring Program_P01.docx

21 October 2019

Port of Townsville Limited PO Box 1031 Townsville QLD 4810

Attention: Tim Smith, Environmental Advisor (CU)

Dear Tim

RE: Shorebird Monitoring Program - Channel Upgrade Project

NRA Environmental Consultants (NRA) is pleased to provide Port of Townsville Limited (POTL) with this fee proposal to implement the Shorebird Monitoring Program for the Channel Upgrade (CU) Project. This proposal has been prepared in response to the 'Request for Quotation – T00439 – Channel Upgrade Shorebird Monitoring Program ("the services")' (hereafter RFP) dated 14 October 2019.

The CU Project is Stage 1 of POTL's broader Port Expansion Project (PEP). On 5 February 2018, POTL received approval under the Commonwealth *Environmental Protection and Biodiversity Conservation Act* 1999 (EPBC Act) for the PEP. Condition 12 of the EPBC Act approval (EPBC 2011/5979) requires the implementation of 'a program to monitor the potential impacts to shorebirds before and during construction activities in the marine environment'. In response to this requirement, POTL seeks to develop a Shorebird Monitoring Program to achieve the following objectives as stated in the RFP.

- **Objective One**: Develop a Shorebird Monitoring Program to monitor potential impacts to shorebirds before and during construction activities.
- **Objective Two**: Monitor and report on changes to shorebird roosting and foraging, beyond natural spatial and temporal variation, during the project construction activities in the marine environment, to identify any impacts from the project on shorebirds.
- **Objective Three**: Provide recommendations on key areas of actual impact and potential mitigation measures should impacts be detected.
- **Objective Four**: Contribute to improving public awareness of local avifauna biodiversity and species richness in the vicinity of the project area.

NRA undertook baseline shorebird surveys for the CU Project between October 2018 and January 2019. Construction works for the CU Project have since commenced, and ongoing shorebird monitoring is required during the construction phase of the project.

It is noted that some of the objectives of the Shorebird Monitoring Program as stated in the RFP differ to the objectives described in the draft *Shorebird Monitoring Plan* (POTL 2019)¹. The approach described in NRA's proposal will address the objectives stated in both documents.

¹ POTL 2019, Townsville Port Expansion Channel Upgrade Project Shorebird Monitoring Plan, Port of Townsville Limited, August 2019.

Scope

The following services will be provided as part of the shorebird monitoring program.

- A project inception meeting to confirm project scope and objectives.
 - NRA Project Manager (Peter Buosi) will meet with POTL to discuss the shorebird monitoring program and relevant logistics (eg site access arrangements, inductions).
- NRA will provide a draft work method in line with the draft *Shorebird Monitoring Plan* (POTL 2019) to POTL within two weeks of being commissioned.
- Four or five shorebird monitoring events per year during the CU Project construction phase.
 - Surveys will nominally occur once per month between October and January (the period of peak shorebird abundance at the site). A survey in February will also occur in 2020.
 - The surveys will be designed to permit comparison with previous work (NRA 2012, 2019)², be repeatable during and post-construction and address the PEP EPBC Act approval requirement for monitoring.
 - A post-construction survey event may also occur. The completion date for construction activities is assumed to be January 2023³, though may be as early as 2022⁴.
- Annual reporting following the shorebird monitoring surveys, including the following.
 - Study context, scope and methods.
 - A description of shorebird habitat within the study area.
 - A description of shorebird species composition (ie a species list) present in the study area.
 - Identify any species listed as Endangered, Vulnerable, Near Threatened and/or Migratory under the EPBC Act and/or the Queensland *Nature Conservation Act* 1992 (NC Act) occurring in the study area, and their abundance.
 - Assess the significance of observed species, abundances and habitats with reference to EPBC Act policy.
 - Compare the results of surveys before (NRA 2019) and during CU Project construction activities, and previous surveys reported in NRA (2012), noting any changes in the significance of identified values to shorebirds and potential CU Project-related impacts.
 - Include recommendations if any adverse impacts to shorebirds are detected.
 - Include, as an appendix to the report, a summary of findings of public interest and site-specific photographs (for use in communication tools for public consumption).

The geographic scope (or study area) will replicate that assessed by NRA (2012, 2019), comprising:

- Eastern Reclaim Area, between the Marine Precinct and the proposed reclamation area
- the vacant area of the Marine Precinct (southern area)
- rock walls along the Eastern Reclaim Area and Marine Precinct (if practicable)
- the reclamation area under construction as part of the CU Project
- sand spit area at the mouth of Ross River.

² NRA 2012, Avifauna Survey for the Townsville Port Expansion Project November 2011 to February 2012, prepared for AECOM, April 2012.

NRA 2019, Baseline Shorebird Monitoring Study for the Townsville Port Expansion Project October 2018 to January 2019, R02 (Final), prepared by NRA Environmental Consultants for Port of Townsville Limited, 2 May 2019.

³ Source: https://www.townsville-port.com.au/major-projects/infrastructure-projects/channel-upgrade/project-schedule/; viewed 17/10/2019.

⁴ *Pers. comm.* Tim Smith, Environmental Advisor (CU), POTL, via email on 16 October 2019. G:\CU Project\4. Environment\02. Monitoring Contracts\T00439 Shorebird - ongoing\3 - Award\Shorebird monitoring Program - NRA _P01_CostsRedacted.docx

Methods

Overview

The proposed survey design for the Shorebird Monitoring Program will be generally consistent with NRA (2012, 2019). Some adaptation to the survey design will be necessary to account for changes in the receiving environment that will occur as a consequence of the construction process. Further, certain adaptations to the survey design provide opportunities for cost-savings for POTL without compromising the Shorebird Monitoring Program objectives. Because the optimal survey design is intrinsically linked to the construction process, some of the opportunities for adaptation will be clear only when the timing of specific construction milestones are known. NRA has the skills and experience to advise POTL on modifications to the survey design if and when needed.

General approach

The field method will be consistent with NRA (2012, 2019) and will involve one or two observers searching for shorebirds within the study area and noting species, abundance, location and activity/behaviour, and recording habitat information. Surveys will occur as follows.

- POTL section of the study area: One observer will conduct shorebird counts at fixed locations, maintain a record of incidental shorebird observations and conduct habitat assessments (to describe habitat types and condition). The site will be accessed by vehicle and/or on foot, subject to conditions and POTL requirements. Survey timing (with respect to tides) will vary according to the CU Project construction process and is described in the following section.
- Sand spit section of study area: Two observers will undertake land-based counts around high tide from vantage points that offer optimal views without unduly disturbing birds. A boat will be used to access the sand spit.

As described in NRA (2012, 2019), surveys on the sand spit are necessary to contextualise the shorebird activity observed on POTL land, which assists in the interpretation of monitoring results. Wherever possible, the POTL section and sand spit sections of the study area will be surveyed over consecutive days so that the relationship between these areas can be established.

Survey regime (frequency and timing)

NRA (2019) advised that monthly surveys between October and January were appropriate for assessing the shorebird population in the Ross River mouth, and generally correlates with the period of greatest shorebird abundance in that broad area. However, NRA (2012) reported that on POTL land, the smaller shorebird species were present in greatest abundance during January to February. There is insufficient data to know if these patterns are regular or unusual. Extending the survey period to include February will help address the uncertainty. Extending the 2019/20 survey period to include February is also consistent with the scope as described in the RFP. It is recommended that the continuation (*ie* beyond 2019/20) of this extended monitoring period be reviewed upon completion of the 2019/20 monitoring season.

Shorebird usage of POTL has varied, and will continue to vary, according to the CU Project development stages. NRA (2019) assessed the baseline condition via surveys at high and low tides and found that very little shorebird activity occurred on POTL during low tide. The result reflected the habitat types present at the time and was expected. This pattern of habitat use is likely to continue until the new reclamation area is complete and the ground level in the new reclamation area becomes exposed. On this basis, it is recommended that the survey effort at low tide be reduced until the latter stages, or after completion, of the CU Project reclamation process.

NRA (2012, 2019) reported very low levels of bird activity along the rock walls of the POTL study area. Therefore, it will be impossible to detect a negative CU Project-related impact on shorebirds using this habitat. Further, surveys at sites RW1 to RW6, adjacent to where the new reclamation area is proposed, may be impractical during certain stages of the construction process due to site access and safety. It is recommended that these sites be excluded from the survey area. Survey sites RW7 to RW9 should be retained (subject to POTL approval). New survey sites should be established when the new rock walls are complete (subject to POTL approval).

The proposed survey regime is shown in **Table 1**, and takes into account the potential variation in survey timings and locations described above. It is recommended that the survey regime be reviewed annually and revised if required.

Shorebird behaviour is influenced by tides. NRA (2012, 2019) conducted surveys on or around spring high and low tides to maximise available search effort. The preferred tides, and survey timings, during the 2019/20 assessment are described in **Table 2**. These dates are provisional and may change subject to discussion with POTL. It is preferable that surveys are not conducted on weekends when public activity impacts on bird behaviour. Based on NRA's experience in 2018/19, the extreme high spring tides will be avoided (where possible) due to access limitations on the sand spit.

The shorebird surveys will be conducted under NRA's Scientific Purposes Permit (currently WISP15517415) and associated Animal Ethics Approval (currently CA 2017/11/1123) provided under the Queensland *Nature Conservation (Administration) Regulation* 2017.

Upon completion of fieldwork, the data will be collated and analysed, and a report will be prepared in accordance with the project scope. Birdlife Townsville will be contacted to ascertain if it has recent data relevant to the project scope. This data will be used if it relevant, reliable and readily usable.

Table 1: Recommended survey regime for the POTL Shorebird Monitoring Program

	Construction activity ¹	Survey location and timing ²										
Date ¹		October		November		December		January		February		Comments ³
	activity	POTL	SS	POTL	SS	POTL	SS	POTL	SS	POTL	SS	
2019/2020	Rock haulageRock wall construction	Н	Н	Н	Н	Н	Н	H&L	Н	H&L	Н	Reduced low tide survey effort in POTLPOTL survey area excludes RW1 to RW6
2020/2021	 Rock wall completion (Nov 2020) Capital dredging Land reclamation 	Н	Н	Н	Н	Н	Н	H & L	Н	H & L	Н	 Reduced low tide survey effort in POTL POTL survey area excludes RW1 to RW6 Sampling period (Oct – Feb) contingent on 2019/20 results
2021/2022	Capital dredgingLand reclamation	Н	Н	Н	Н	Н	Н	H&L	Н	H & L	Н	 Reduced low tide survey effort in POTL Sampling period (Oct – Feb) contingent on previous results POTL survey area excludes RW1 to RW6 Establish new monitoring points along constructed rock wall (if permitted by POTL)
2022/2023	Capital dredgingLand reclamation	H & L	Н	H & L	Н	H & L	Н	H & L	Н	H & L	Н	 Exposure of land surface in reclamation area may occur, and trigger recommencement of high tide surveys in POTL Monitoring of new rock wall sites (if permitted by POTL)
2023/2024	• Completion of capital dredging and CU Project (January 2023)	H & L	Н	H&L	Н	H & L	Н	H&L	Н	H & L	Н	 Post-construction monitoring (if requested) may occur in 2023/24 Exposure of land surface in reclamation area is likely, and triggers requirement for high tide surveys in POTL Monitoring of new rock wall sites (if permitted by POTL)

¹ Dates for construction are based on information provided by Tim Smith (POTL Environmental Advisor (CU)), via email on 16 October 2019, and from https://www.townsville-port.com.au/major-projects/infrastructure-projects/channel-upgrade/project-schedule/ [viewed 17/10/2019].

² Port of Townsville Limited (POTL) land and sand spit (SS) in the Ross River mouth as surveyed by NRA (2012, 2019). The recommendation for high (H) and/or low (L) tide surveys are as indicated.

³ The rationale for these inclusions/exclusions is provided in the methods sections of this proposal.

Table 2: Preferred survey dates for shorebird monitoring in 2019/2020

Month	Preferred dates ¹
October 2019	28–30 October 2019
November 2019	11–13 or 25–27 November 2019
December 2019	9–13 December 2019
January 2020	7–9 or 27–28 January 2020
February 2020	24–26 February 2020

¹ It is preferable that surveys are not conducted on weekends when public activity affects bird behaviour. These dates are provisional and may be subject to site conditions and approval by POTL.

Program

The Shorebird Monitoring Program schedule is likely to be the same each monitoring season. The generalised work schedule is provided in **Table 3**. These dates are indicative and may change subject to discussion with POTL.

Table 3: Generalised work schedule for the Shorebird Monitoring Program (2019/20 to 2023/24 seasons)¹

Task	Anticipated date
Project inception meeting	October
Draft work method	November (within two weeks of project commissioning)
Monitoring surveys	October – February (see Table 1)
Reporting	February – March
Draft report issued	March
Final report issued	Within two weeks of receiving comments on draft report

¹ These dates are indicative and may change subject to discussion with POTL and the progression of the construction activities associated with the CU Project. The later stages are contingent on the timing of the earlier stages.

Personnel

NRA Principal Ecologist Peter Buosi will be responsible for the delivery of this project. He will be assisted by NRA's team of environmental scientists, including Senior Ecologist Lindsay Popple and Environmental Scientist Rhiannon Williams. Peter and Lindsay have decades of experience designing and implementing shorebird surveys. Peter, Lindsay and Rhiannon were all involved in the 2018/19 baseline shorebird monitoring surveys at POTL. Short CVs for Peter, Lindsay and Rhiannon are provided below. Detailed CVs can be provided on request.

As described in the methods section of this proposal, adaptations to the shorebird survey design may be necessary to account for changed receiving environmental conditions that will occur as a consequence of the development process. NRA has the site knowledge and specific experience with shorebird studies to advise POTL on when changes to the program area are required and how to implement the changes so that the monitoring program objectives continue to be met in a cost-effective manner.

Peter Buosi BAppSc (Hons) – Principal Ecologist

Project lead, field surveys and reporting

Peter has more than 20 years of experience in research and applied science. He has been with NRA since 1998, and during this time he has worked for a wide variety of clients. Peter has experience in a range of science disciplines, and his specific area of expertise is in the design, management and conduct of ecological studies in north Queensland. Peter is a recognised threatened species ecologist

 $\label{lem:contracts} G:\CU\ Project\A.\ Environment\O2.\ Monitoring\ Contracts\T00439\ Shorebird\ -\ ongoing\A\ -\ Award\Shorebird\ monitoring\ Program\ -\ NRA\ _P01_CostsRedacted.docx$

and has conducted national reviews of two endangered species (Cassowary and Black-throated Finch). Much of his threatened species work has required analysis of results within a legislative context. In addition, he is regularly contracted by Local, State and Commonwealth government agencies and authorities to provide expert advice, review and witness services.

Peter has undertaken numerous shorebird studies in the Townsville region, and in the Ross River mouth specifically. These studies include projects associated with the approvals (2011/12) and baseline monitoring (2018/19) stages of the PEP, and the approvals (2004/05, 2007/08) and monitoring stages (2011/12) of the Townsville Port Access Road Project.

Lindsay Popple PhD, BSc (Hons) – Senior Ecologist

Project assistant, field surveys and reporting

Lindsay has led flora and fauna surveys for over 20 years. He is experienced in ecological impact assessment, flora and fauna monitoring, species management plans, habitat modelling and ecological project management. He also has specialist expertise in the identification of insects, birds and eucalypts, as well as acoustic recording and identification. Lindsay is a Certified Environmental Practitioner (number 803).

In addition to his broad ecological expertise, Lindsay is an internationally recognised expert on Australian cicadas. Many of the skills and work methods applied to his work on cicadas are relevant to surveys and assessments of flora and vertebrate fauna.

Prior to joining NRA, Lindsay worked in a variety of roles, including as a research associate in plant molecular phylogenetics at the Australian National University, as a Curator of Entomology at the Queensland Museum and as a Senior Ecologist at a consultancy specialising in terrestrial ecology.

Lindsay's experience includes undertaking and leading shorebird monitoring studies in Caley Valley Wetlands, Brisbane Airport and Curtis Island.

Rhiannon Williams BSc (Hons) MRes – Environmental Scientist Project assistant and field surveys

Following her undergraduate degree, Rhiannon completed a Research Masters in Biodiversity, Evolution and Conservation at University College London in 2014. Prior to joining NRA, Rhiannon worked as an ecological consultant for three years in the UK. In January 2017, she was selected for a two-month secondment to a consultancy in Sydney, and has since relocated to Australia. She has worked on a variety of projects, including mining, renewable energy, national infrastructure and housing developments. She has experience undertaking flora and fauna surveys (baseline and targeted), vegetation assessments, weed surveys and surface water quality monitoring surveys and is competent in the preparation of technical reports. Rhiannon has been involved with numerous revegetation and monitoring projects in Townsville in a voluntary capacity through which she has gained valuable knowledge and skills.

Relevant Experience

NRA has directly relevant project experience, having been involved with the following shorebird studies.

- In 2018/2019 NRA undertook baseline shorebird monitoring for the PEP (POTL).
- In 2012, NRA undertook avifauna surveys for the Townsville Port Expansion Project (AECOM on behalf of POTL).
- In 2011, NRA conducted shorebird monitoring during bridge construction for the Townsville Port Access Project (Abigroup Seymour Whyte Joint Venture).

- In 2008, NRA undertook literature reviews, field surveys and database analysis to report on the 'Use Patterns of the Ross River Mouth by Migratory Birds' to inform approvals for the Townsville Port Access Project (Maunsell on behalf of TMR).
- In 2005, NRA completed a Migratory Bird Impact Assessment for the Townsville Port Access Project to inform planning for the Townsville Port Access Project (TMR).

NRA has also been involved with the following planning and approval work for POTL.

- Black-throated Finch (*Poephila cincta cincta*) assessment and management plan for the Marine Stone Quarry (various projects from 2010 to 2019).
- Assessment of the potential impacts of the Marine Stone Quarry on the Greater Large-eared Horseshoe Bat (*Rhinolophus philippinensis*) (various projects from 2009 to 2010).

Regional Benefits

An innovator in the arena of environmental services, NRA was the first specialist environmental consultancy in north Queensland. The company was established in 1984, with a permanent office in Townsville since 1996. NRA is locally owned and operated. The company's longevity has allowed it to employ local scientists, including many James Cook University graduates, over an extended period of time. NRA sources goods and services from local providers as much as possible, which reduces costs for the company and our clients, and promotes local businesses.

NRA is proud to support the communities in which it operates and provides direct financial support to local community groups and national and international NGOs. NRA supplements this with intellectual support for capacity building within these organisations on a *pro bono* basis. Individual members of NRA have been active members of their communities, providing their services to organisations such as the Great Barrier Reef Local Marine Advisory Committee, Coastal Dry Tropics Landcare Inc. (Townsville), the Barron River Catchment Committee, the International Erosion Control Association (IECA), the Environment Institute of Australia and New Zealand (EIANZ), Black-throated Finch Recovery Team, and Birds Queensland (Queensland Ornithological Society).

NRA's leadership in social responsibility was independently recognised when NRA was the 2009 Queensland winner of the Sensis Social Responsibility Award at the Telstra Business Awards.

In the delivering the POTL Shorebird Monitoring Program, NRA is committed to only using locally-based service providers, including:

- a Townsville-based company will be engaged for boat hire services
- NRA will liaise and share information with Birdlife Townsville.

Best Practice Principles

NRA has Quality Assurance (QA) systems that have proven effective over 35 years of service. Through a focus on service delivery and technical competence, NRA has built a reputation for providing high quality independent advice. This high quality is achieved through the QA processes that are intrinsic to NRA.

QA has always been important to NRA. Our systems are mature, having been formalised in 1994. NRA operates under an Integrated Management System (IMS) that undergoes periodic third-party review and is certified to AS/NZS ISO 9001:2015 (Quality), AS/NZS ISO 14001:2015 (Environment) and AS/NZS 4801:2001 (Safety).

NRA employs multi-skilled personnel with specialist qualifications in natural resource disciplines. Members of each project team are selected on the basis of their technical qualifications and relevant field experience.

NRA's approach to ensuring best practice principles are adhered to is outlined below (and will be implemented during the shorebird monitoring program).

- Field surveys will be performed by NRA scientists with expertise and experience in the subject discipline and location.
 - Senior scientists are responsible for technical direction (*eg* survey design), client and stakeholder communication, health and safety controls and project planning.
 - Junior scientists assist with field preparation/set-up and provide field support.
- All field team members will have up-to-date First Aid Training.
- A Job Hazard Analysis (JHA) will be prepared prior to each survey.
 - The JHA will outline expected hazards and control measures, safety contacts, journey plans, the nearest hospital *etc*.
 - All field team members will sign off on the JHA prior to surveys.
- For safety and quality control, junior scientists are accompanied in the field by experienced NRA staff.
- NRA is familiar with, and maintains, the necessary accreditations and licences for field survey techniques.
- For each report produced, there is a technical review and an editorial review.
 - Senior staff members with specialist knowledge will undertake technical reviews of reports.
 - NRA editors will assist in providing accessible and high quality reports free of jargon.

NRA is an equal opportunity employer that operates its industrial relations under its Employees Collective Agreement 2009 and has had no industrial relations disputes under this Agreement. NRA has a strong commitment to 'making a difference' and believes that to do this we must practice what we preach. Consistent with this vision, NRA provides support to organisations that work with disadvantaged groups, within our sector and the broader community. NRA has contributed \$307,000 (a significant investment for a company of our size) to the Fred Hollows Foundation indigenous health program.

Budget

[BUDGET REDACTED]

Terms and Conditions

Conditions of Engagement

Work will be completed according to the Service Agreement between POTL and NRA (draft contract number T00439).

Term of Budget

This budget is valid for 90 days from the date of this offer.

GST

Our fee offer is quoted inclusive of any Goods and Services Tax (GST).

Insurances

Copies of Insurance Certificates of Currency can be provided on request.

G:\CU Project\4. Environment\02. Monitoring Contracts\T00439 Shorebird - ongoing\3 - Award\Shorebird monitoring Program - NRA _P01_CostsRedacted.docx

Assumptions and Exclusions

Assumptions used in preparing our offer of services have been outlined with the budget. NRA will not exceed the agreed budget without POTL's approval.

Scope Changes

Please note that changes to the scope of work, numbers of field trips and project meetings, deliverables or project duration may result in a change in the project budget.

Assumptions in this regard have been noted in the scope and the budget.

Meetings

Allowance for one project meeting at the start of each season has been made in our budget.

Site Access and Access to Project Team

It is assumed that POTL will facilitate timely access to sites and key personnel where required. In the event that access is denied or delayed for reasons beyond our control, or if additional site visits and meetings are needed to complete works, additional costs may be incurred.

Deliverables

The budget estimate has allowed for the delivery of:

- Draft report 1 copy in M-Word and PDF format for comment
- Final report 1 copy in PDF format on CD/by email.

GIS Output

The proposal does not include allowance for preparation of specific GIS outputs. Mapping used in reports will be prepared using MapInfo software and outputs in selected formats can be provided to clients with prior advice.

Consolidated Feedback on Drafts

It is assumed that POTL will provide a single set of consolidated comments to NRA on our Draft report(s).

Timing

Work can commence upon written acceptance by POTL of this proposal and confirmation that work is authorised to proceed.

Quality Assurance

NRA is committed to providing technically accurate and practical solutions that are responsive to the ecological and social environments. We operate under an Integrated Management System that is certified to AS/NZS ISO 9001:2015 (Quality), AS/NZS ISO 14001:2015 (Environment) and AS/NZS 4801:2001 (Safety).

If you have any questions about the proposed work, please call me on 4796 9444 or email me at peter@natres.com.au.

Yours sincerely

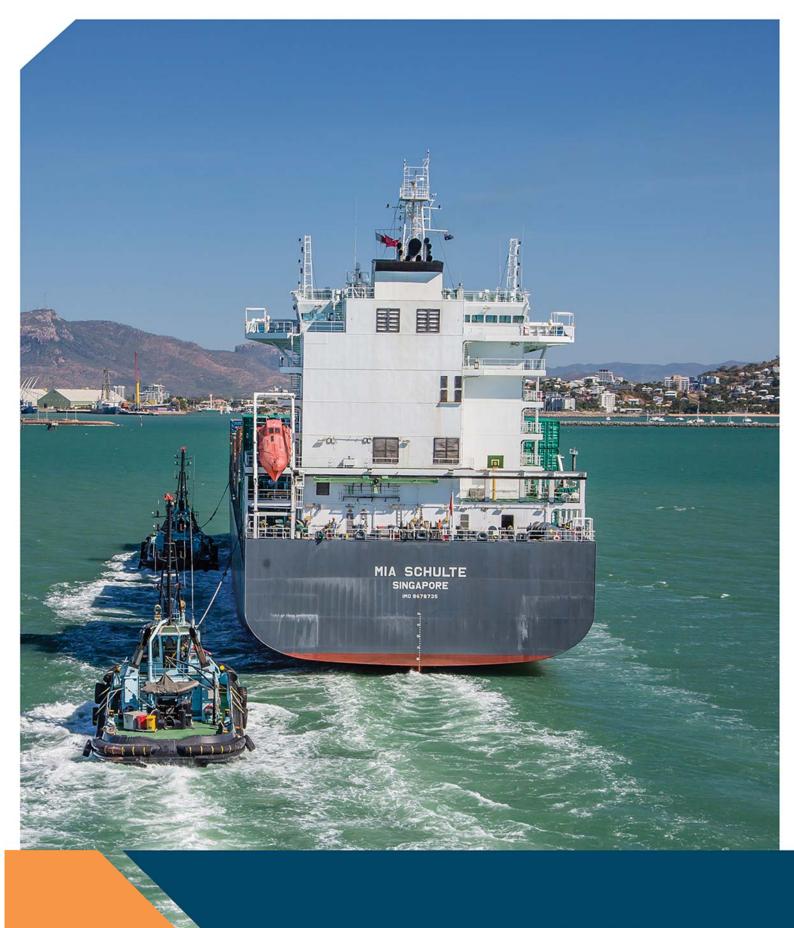
NRA Environmental Consultants

Peter Buosi

Principal Ecologist

© Natural Resource Assessments Pty Ltd

This document is the property of Natural Resource Assessments Pty Ltd. Apart from any use as permitted under the Copyright Act 1968, all other rights are reserved. Unauthorised use of this document in any form whatsoever is prohibited.



Registered Office

Administration Building Benwell Road South Townsville QLD 4810

- **p** + 61 7 4781 1500
- **f** + 61 7 4781 1525
- e ccuproject@townsvilleport.com.au
- w www.channelcapacityupgrade.com.au