Western Basin Dredging and Disposal Project (EPBC 2009/4904)

Environmental Performance Report December 2020

For the attention of: The Department of the Agriculture, Water and Environment




Cover photos: *Top Row:* Wildlife Unlimited Pty Ltd 2019, Chartrand et al 2019.
Bottom Row: Limpus et al 2019

#1659745

Contents

Executive Summary

The 2020 Environmental Performance Report (EPR) has been prepared to comply with the following conditions of the Western Basin Dredging and Disposal Project (WBDDP) *Environmental Protection and Biodiversity Conservation Act* (EPBC Act) Approval 2009/4904:

Condition 36

Ecosystem and Research Monitoring Program (ERMP)

The person taking the action must submit to the Minister an Annual Environmental Performance Report covering the following topics:

a) Dolphins, dugong and marine turtles, and other megafauna;

b) Migratory shorebirds; and

c) Seagrass.

Condition 37

ERMP

12 Months from the date of approval, a report must be submitted outlining the initial environmental activities for the 12 month period. The report is to be called the Environmental Performance Report and must be submitted within 42 days of the 12 month activity period. The Environmental Performance Report must include proposed environmental management improvements to be implemented through the DCMP, WQMP and other Plans as relevant. Reports are required annually from thereafter.

The 2020 EPR covers the period from 1 November 2019 to 31 October 2020 and includes the outcomes of the studies conducted under the ERMP. Table 1 provides a status update on the progress of the projects in the current reporting period.

In the current reporting period three ERMP Advisory Panel meetings were held, details of which are presented in Table 2.

Records of formal communication with the Department of Agriculture, Water and Environment (DAWE) in the current reporting period is presented in Table 3 and future action is captured in Table 4.

In 2020, progress of many projects and the submission of reports has been impacted by restrictions imposed by COVID-19. Extensions have been provided to some of the projects. This has influenced the ERMP timeline (Appendix 3) and the ERMPAP has recommended that the ERMP be extended for one more year (October 2022) so that all project deliverables can be achieved. This recommendation has been accepted by GPC and communicated with DAWE.

Table1: Status update on the ERMP Projects in the current Reporting Period (1 November 2019 to 31 October 2020)

Project Name	Objective	Timeline	Status	Documents
Assessment of Toxicological Status of Humpback and Snubfin Dolphins in the Port Curtis and Port Alma	The objective of this study is to improve our understanding of the toxicological status of Snubfin and humpback dolphins in Port Curtis and Port Alma survey areas.	2019-2022	• Sampling for dolphins in Port Curtis and Port Alma was scheduled to commence in February 2020. • Due to travel restrictions imposed by COVID-19, survey was conducted in August and September 2020. During this period six samples were collected (4 Snubfin dolphins and 2 humpback dolphins). • Next round of sampling will commence in November 2020. • Due to delay in commencement of sample collection, the project completion date will be extended by four months to January 2022.	Updated Project Schedule **(#1661942)**
Monitoring of Australian humpback dolphins at Agnes Water to investigate distribution and movement patterns adjacent to the Gladstone Ports Corporation ERMP study area.	The objective of the project was: • Provide information on the movements, habitat, abundance and distribution of Australian humpback dolphins at Pancake Creek - Agnes Waters, a site 20 km from the Port of Gladstone and 10 km from the boundary of the ERMP survey region.	2019-2020	• This Project has been successfully completed. • Quantitative vessel surveys undertaken in a data-limited region on the southern Great Barrier Reef have identified a previously unknown population of Australian humpback dolphins between Round Hill Creek and Pancake Creek. • The results suggested that a small population of at least 24 dolphins is resident in the area,	Final Report **(#1633774)**

Project Name	Objective	Timeline	Status	Documents
	• Understanding movements and connectivity of humpback dolphins between the ERMP region and adjacent areas.		• There have been no positive matches with fin ID catalogues for populations to the north (Port Curtis and Port Alma) and south (Great Sandy Strait and Moreton Bay), • Observations from ecotourism operators suggest that the dolphins are present year-round. • The dolphins seem to be a resident population with no evidence of movement to Port Curtis or Moreton Bay.	
Study on the cause and health condition of beached dugong.	Following the report of a beached dugong on 19 September 2019, field necropsy was conducted and tissue samples collected for histopathology, organic pollutants and trace element concentration in tissues.	2019-2020	The necropsy report revealed that: • The dugong was a pubescent female and belonged to the nutritional category of good to very good. • Cause of death was cardiac arrest probably following stressful mating (evidence of tusk injuries and likely involvement of 4-5 males) • Elevated levels of arsenic was present in the liver, kidney and muscle tissue • Toxicity from PFAS, dioxin, furan, PCB and other trace elements was highly unlikely due to low levels of the toxicants • Potential role of cyanobacteria toxicity in regards to dugong health could not be ruled out as blooms of likely *Trichodesmium* spp. were noted in Gladstone Harbour when the carcass was recovered	Final Report **(#1662084)**

Project Name	Objective	Timeline	Status	Documents
			• Genetic factors as a cause of poor cardiac health could not be ruled out	
Marine turtle nesting populations: Avoid, Peak and Curtis Island Flatback Turtles.	To conduct an annual mid-season census (tagging census) of nesting flatbacks at index beaches within the Eastern Australian genetic stock In the Gladstone regions: South End Curtis Wild Duck and Peak Islands	2013-2021	• A two week mid-season census was conducted at Avoid, Peak and Curtis islands in 2019-2020 (last week of November and first week of December 2019). • Emergence success was monitored in January /February 2020 • The report from the monitoring has not yet been submitted to GPC. • This contract was extended to allow for one more year of monitoring at Peak and Curtis Island. Due to logistical difficulties associated with monitoring at Avoid Island, this site has been discontinued for the 2020/2021 monitoring season. • Wild Duck Island has been included in the 2020/2021 monitoring, as this island supported second largest Flatback nesting population in Eastern Australia. • Monitoring for the 2020/2021 season is proposed to be conducted in the last week of November and first week of December 2020 and emergence success proposed to be conducted in late January/ February 2021.	Field Plan for 2019/2020 season: **(#1592428)**
Increase the Understanding of the Green Turtle Population in Port Curtis	To obtain information pertaining to green turtles for the period from 2015 to 2019 inclusive of size, sex, maturity,	2016-2019	• In 2019, 296 captures of green turtles were carried out at multiple locations in the Gladstone Harbour	Year 4 field report **(#1621716)**

Project Name	Objective	Timeline	Status	Documents
	growth rates, survivorship, recruitment and general health of the green turtle population in Port Curtis and the Narrows.		• Additionally 580 green turtles were observed, but not captured. • Two incidents of turtle death following vessel interaction was reported. • Samples from the captured turtles were taken for undertaking health studies (additional Funding from LTTMP), population genetics, and diet study and habitat usage. • The outcomes from the four years of study is being complied into a Final Project report which was due in October 2020 but has been delayed as blood biochemistry analysis of some samples could not be completed. The Final report is now due in April 2021.	
Assessing the Impact of Dredging operations on Megafauna at the Port of Gladstone	The objective of the study will be to identify changes to the population and behaviour of key megafauna species in the harbour as a result of dredging and associated works for the CVIP project.	2019-2020	• Some aspects of Condition 33 c of the EPBC approval 2009/4094 could not be assessed during the WBDDP. • A decision was made not to proceed with megafauna studies at that time (2011-2013), due to the poor health of the megafauna post 2011 flood events (i.e. not wanting to risk further stressing the local marine megafauna, such as through capture-based or otherwise intrusive studies). By the time the health condition of the megafauna recovered, the WBDDP dredging activities had been completed. • ERMPAP advised that the Clinton Vessel Interaction Project (CVIP) provided an	Support during procurement of contractor(s) assessing impact of dredging operations on megafauna at port of Gladstone **(#1566430)**

Project Name	Objective	Timeline	Status	Documents
			opportunity to address the condition. • GPC engaged the services of BMT/WBM to provide feasibility report based on expressions of interest received from interested parties. • Five interested parties were contacted (Department of Environment and Science, James Cook University, Southern Cross University, Murdoch University, and Central Queensland University). • Response was received from Southern Cross University and Murdoch University. • The ERMPAP reviewed each proposal and the feasibility report and were not convinced that the program designs would be able to address the query. • The ERMPAP recommended that the "neither of the projects meet the requirements in terms of methodology, addressing the condition and value for money" hence the Panel recommended that neither of the projects be recommended for execution.	
Comprehensive survey of the migratory shorebirds.	Comprehensive monitoring of Shorebirds as required under Condition 33(i) of the EPBC Act approval. e range of normal variability. The annual report providing details of all observations is expected in December 2019.	2011-2013-Comprehensive (5 surveys per year) surveys 2014-2018-Annual summer surveys 2019-2020-	• In 2020, four surveys were conducted (January, February, August and October). • Due to travel restrictions imposed due to COVID-19, the March 2020 survey could not be undertaken. • GPC had informed DAWE of this predicament through a letter dated 26 March 2020. • This missed survey has been rescheduled to be	Interim Survey reports January 2020 **(#1624870)** February 2020 **(#1624870)**

Project Name	Objective	Timeline	Status	Documents
		Comprehensive surveys	conducted in March 2021.	August 2020 **(#1646807)** October 2020 **(#1662324)**
Assessing the impact of Reclamation Activities on migratory Shorebirds at the Western basin Reclamation Area	The objective of the study was to record the numbers of shorebirds in the WBRA over the high tide period on a fortnightly basis tentatively from December 2019 to December 2020	2019-2020	• GPC recently undertook the Clinton Vessel Interaction Project (under a separate approval) whereby 800,000m^3 of dredge material was placed in the Western basin Reclamation Area. • This activity provided an opportunity to study the impact of bund filling activities on shorebirds. • Due to safety concerns, similar monitoring could not be undertaken during the construction and filling of the Western Basin Reclamation Area in 2013. • Preliminary observations show that the WBRA is being used by 9 to 10 species of migratory shorebirds and other resident shorebirds. • Preliminary observations also demonstrated that the vehicle movements and reclamation activities did not have an impact on the shorebirds as they continued using the area. • The project report is due in January 2021.	
Monitoring the survival and recovery of shorelines, specifically Tidal Wetlands **(Mangroves/Saltmarsh/Saltp**	The objective of the study is to generate essential baseline data, including comparisons with historical information, as the basis for evaluations of environmental condition and change	2014-2021	The 2020 annual report provided an update on the 5 Project components: • Project Components 1 and 2 - High Resolution Mapping and Change Detection and Ecological Condition Mapping: Analyses of data continues.	2020 Interim report **(#1662347)**

Project Name	Objective	Timeline	Status	Documents
ans)	in mangroves and Tidal wetlands from Port Alma to Rodds Bay.		• Project Component 3 - Aerial shoreline surveys: Full aerial coverage of the study area was repeated as planned during late April 2019. • Project Component 4: Boat based surveys were undertaken in 2019. Analysis of data continues. • Project Component 5 - Public access online data display and archive. Aerial imagery from 2016 and 2019 surveys are being uploaded to the archive. • Final report for the project is expected in 2021.	
Migratory Shorebird Monitoring: **Correlates of changing shorebird numbers**	Design and conduct an analysis to determine how changing environmental conditions are related to the changing abundances and distributions of migratory shorebirds within the study area over the data collection period (2011 to 2020), involving (i) distinguishing local drivers of change (those operating within the ERMP region) from remote drivers (those operating outside the region, including overseas), and (ii) determining which drivers best explain changing numbers	2021-2022	• GPC is currently undertaking the procurement process to finalise the contract for this project. • Desktop data analysis for this project is expected to commence in early 2021.	
ERMP Synthesis Report	The purpose of this report is to synthesise the findings and outcomes of the ERMP that can be used to identify any potential impacts and inform	2019-2022	• Workshops held with ERMPAP to work through the structure of the Report. • The Panel members are contributing towards the development of the technical chapters. • The report will be finalised following	

Project Name	Objective	Timeline	Status	Documents
	adaptive management responses.		completion of all programs under the ERMP.	
Publication from ERMP	One peer reviewed journal paper was published from the ERMP (Satellite Tagging of interesting Flatback Turtles)		Shimada T, Thums M, Hamann M, et al. Optimising sample sizes for animal distribution analysis using tracking data. Methods Ecol Evol. 2020;00:1–10. https://doi.org/10.1111/2041-210X.13506	

Table 2: Record of ERMPAP Meetings:

Date	Agenda	Recommendations
3 December 2019	To Evaluate Proposal received for assessment of marine megafauna during capital dredging operations for the Clinton Vessel Interaction Project.	Neither of the projects meet the requirements in terms of methodology, addressing the condition and value for money. Hence the Panel recommended that neither of the projects be endorsed for execution under the ERMP. The Panel further recommended that GPC draft a justification letter to be submitted to the Commonwealth Government articulating the efforts made to address Condition 33c of the ERMP.
5 March 2020	ERMP Project update ERMP Future projects Synthesis Report Discussion	The Panel recommended that Marcel Klassen be engaged as a reviewer for the project. The Panel recommended that the ERMP document be amended to include the new projects and submitted to the Department for approval. Chris Crossland advised that the Panel would reconvene after all individual sections of the Synthesis report had been completed by the subject matter experts. Chris Crossland further recommended that project related discussions would be conducted through teleconference.
13 August 2020	ERMP Project update	The Panel recommended that approval be sought from the Department of Agriculture, Water and Energy to extend the term ERMP for another year (October 2022) as some milestone

	Synthesis Report Discussion	deliverables could not be met in 2020 owing to restrictions imposed by COVID-19. A letter of recommendation will be provided to GPC by Chris Crossland.

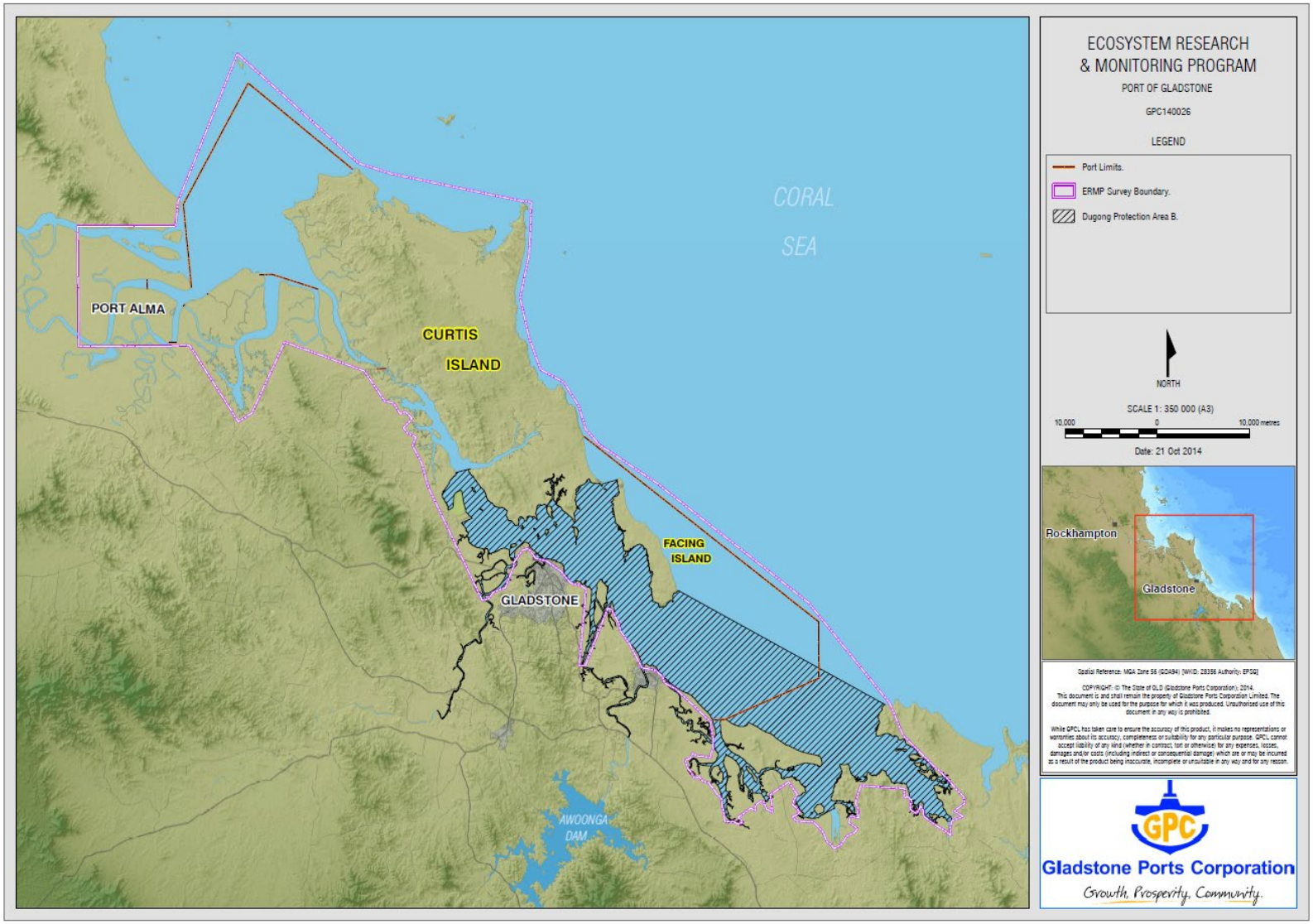
Table 3: Communications with the Department of Agriculture, Water and Environment

Date	Content	Status
26 March 2020	Impact of travel restrictions due to COVI019 on Shorebird Monitoring as required under EPBC 2009/4904	Monitoring has been rescheduled to occur in March 2021
25 August 2020	EPBC 2009/4904: ERMPAP Chairman's Letter of Recommendation No 13 and response from GPC	The ERMPAP have advised that due to restrictions imposed by Global Pandemic COVID-19, some project deliverables have been significantly impacted thus the ERMP which was scheduled to be completed by October 2021 now needs to be extended by one year (October 2022) so that all deliverables can meet the intended quality. GPC has agreed with this recommendation.

Table 4: Future Action

Action	Date
Revision of the ERMP and submission to DAWE for approval	December 2020

Appendix 1: Geographical boundary of the ERMP



Appendix 2: Reports Approved by the ERMPAP in 2019-2020

1. CS1900016- Updated Project Schedule
2. ERMP OS19303516 Monitoring of Australian humpback dolphins at Agnes Water to investigate distribution and movement patterns adjacent to the Gladstone Ports Corporation ERMP study area- Sandra Reimer
3. ERMP Post Mortem Case Report: Dugong - Final Report
4. ERMP CA12000291- Monitoring of Marine Turtle Nesting Population: Curtis Island, Peak and Avoid Islands -Field Plan for 2019/2020 season
5. Env ERMP CA14000241 GPC Milestone 11 Green Turtles Port Curtis 2019 trip report final (May 2020)
6. Env Support during procurement of contractor(s) assessing impact of dredging operations on megafauna at port of Gladstone
7. Env ERMP CA12000289 Shorebird Monitoring January 2020 Field Report
8. Env ERMP CA12000289 Shorebird Monitoring Feb 2020 Field Report
9. Env ERMP CA12000289- Shorebird Monitoring August 2020- Final
10. Env_-ERMP_CA12000289_Shorebird_Monitoring_October_2020_Final Report.pdf
11. Env_ERMP_CA14000114__Monitoring_the_survival_and_recovery_of_shorelines__specifically_Tidal_Wetlands_(Mangroves_Saltmarsh_Saltpans)_2019_2020.pdf

Appendix 3: ERMP timeline

ERMP timeline	2011	2012	2013	2014	2015	2016	2017	2018	2019		2020		2021		2022	
Projects									Jan to June	July to Dec	Jan to June	July to Dec	Jan to June	July to Dec	Jan to June	July to Oct
Baseline Studies																
Baseline Light Monitoring of Marine Turtles																
Shorebird Monitoring																
Marine Megafauna and Acoustic Monitoring																
Tier 1 gap Analysis Studies																
Central Queensland Corals and Associated Benthos: Monitoring review and gap Analysis																
Migratory Shorebird Monitoring Review																
Research, monitoring and management of seagrass ecosystems adjacent to port developments in central Queensland: Literature Review and Gap analysis																
Review of Water Quality Studies																
Review of Coastal Dolphins in Central Queensland, particularly Port Curtis and Port Alma regions																
Status of the dugong population in the Gladstone area																
Monitoring of Coastal Sea turtles Reports 1-6																
Loggerhead																

ERMP timeline	2011	2012	2013	2014	2015	2016	2017	2018	2019		2020		2021		2022	
Projects									Jan to June	July to Dec	Jan to June	July to Dec	Jan to June	July to Dec	Jan to June	July to Oct
Green																
Hawksbill																
Olive Ridley																
Flatback																
Leatherback																
Tier 2 Projects																
Green Turtle population and Health study																
Monitoring Seagrass Seedbank Density and Viability within Port Curtis																
Monitoring the survival and recovery of shorelines, specifically Tidal Wetlands (Mangroves/Saltmarsh/Saltpans)																
Dugong feeding ecology and habitat use (dugong feeding trail assessment)																
Dugong tagging in collaboration with Green Turtle tagging and turtle population and health studies																
Migratory Shorebird Monitoring: Understanding Ecological Impact																
Migratory Shorebird Survey																
Dolphin Monitoring																
Turtle Nesting Populations on Curtis, Peak and Avoid Islands																
Green Turtle Satellite Telemetry																

ERMP timeline	2011	2012	2013	2014	2015	2016	2017	2018	2019		2020		2021		2022	
Projects									Jan to June	July to Dec	Jan to June	July to Dec	Jan to June	July to Dec	Jan to June	July to Oct
Flatback Turtle Satellite Telemetry																
Green Turtle Blood analysis																
Monitoring of Coastal Lighting Effects on Marine Turtles – Pendoley Environment																
Aquatic Ambient Noise Monitoring – Blue Planet Marine																
Study on the cause and health condition of beached dugong																
Monitoring of Australian humpback dolphins at Agnes Water to investigate distribution and movement patterns adjacent to the Gladstone Ports Corporation ERMP study area																
ERMP Synthesis Report																
Assessing the impact of Reclamation Activities on Migratory Shorebirds at the Western Basin Reclamation Area																
Toxicological assessment of Australian humpback and Australian Snubfin Dolphins																
Migratory Shorebird Monitoring: Correlates of changing shorebird numbers																
	Completed															
	In progress															
	Extension															