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1 Introduction

1.1 Chapter content

This chapter contains information relevant to the Port of Gladstone Gatcombe and Golding Cutting Channel Duplication Project (the Project) Environmental Impact Statement (EIS), including:

- Project background (refer Section 1.2)
- EIS process completed to date (refer Section 1.3)
- Additional information to address the submissions received during the Project EIS statutory public display period relevant to the introduction matters (refer Sections 1.4 to 1.7).

1.2 Project background

Gladstone Ports Corporation Limited (GPC) propose to duplicate the existing Gatcombe and Golding Cutting shipping channels to provide a permanent duplicated channel parallel to the main shipping channel with sufficient depth to allow improved two-way passage into the Port under all weather and tidal conditions. In summary, the Project, as detailed in the Gatcombe and Golding Cutting Channel Duplication Project draft Environmental Impact Statement (Project EIS) (statutory public display version), involves the activities below.

- Construction of the Western Basin Expansion (WBE) bund walls and a barge unloading facility (BUF) prior to dredging commencing (refer Project EIS Section 2.5)
- Initial dredging works of approximately 0.25 million cubic metres (Mm³) of seabed material (including dredging tolerance) to establish a 2.3 kilometre (km) long access channel to -7 metres (m) lowest astronomical tide (LAT) to allow barges to transport dredged material from the Gatcombe and Golding Cutting shipping channels to the BUF (refer Project EIS Section 2.4)
- Dredging approximately 12.6Mm³ of seabed material (including dredging tolerance) to permanently duplicate the already existing Gatcombe and Golding Cutting bypass shipping channels. The preferred dredging methodology involves utilising a trailing suction hopper dredger (TSHD) which loads the dredged material from the Gatcombe and Golding Cutting shipping channels into barges (four barges will be working in cycles for the entire dredging operation) which will transport the material to the BUF adjacent to the existing Western Basin reclamation area to be unloaded using large excavators into trucks for placement within the existing Western Basin and WBE reclamation areas (refer Project EIS Section 2.5).
- Dredged material placement for beneficial reuse within the Western Basin and WBE reclamation areas (refer Project EIS Section 2.5)
- Provision of supporting services to the Project activities (refer Project EIS Section 2.6)
- Removal, relocation and installation of new navigational aids (refer Project EIS Section 2.7)
- Demobilisation of dredging operation (refer Project EIS Section 2.8)
- Project maintenance phase activities, including:
 - Reclaimed land surface stabilisation and maintenance activities (refer Project EIS Section 2.11.1)
 - Final land uses on reclaimed land (refer Project EIS Section 2.11.2)

- Maritime operation within duplicated channels (refer Project EIS Section 2.11.3)
- Maintenance dredging within duplicated channels (refer Project EIS Section 2.11.4).

The location of the key Project activities are provided in Figure 1.1.

The Project is required to improve the operational and economic efficiency of the Port of Gladstone by reducing vessel incident risk as Port throughput and associated vessel numbers increase, and in particular as the portion of Capesize vessels (large bulk carriers used for both import and export) increases into the future. Improving the tidal constraints for bulk carrier vessel movements allows improved flexibility for vessel passing within the Port.

The improved Port operational efficiencies will enable substantial economic benefits for the region to be realised by enabling future resource and industry growth within the catchment of the Port of Gladstone.

This Additional Information to the Environmental Impact Statement (AEIS) has been prepared in response to submissions and the Coordinator-General's request to provide further clarification on specific matters raised during the statutory public notification for the Project EIS.

1.3 Environmental Impact Statement process

1.3.1 Background

The Project is being assessed as a 'coordinated project' under the *State Development and Public Works Organisation Act 1971* (Qld) (SDPWO Act) and a 'controlled action' under the *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act), which require an EIS. The Project EIS was prepared in accordance with the following requirements:

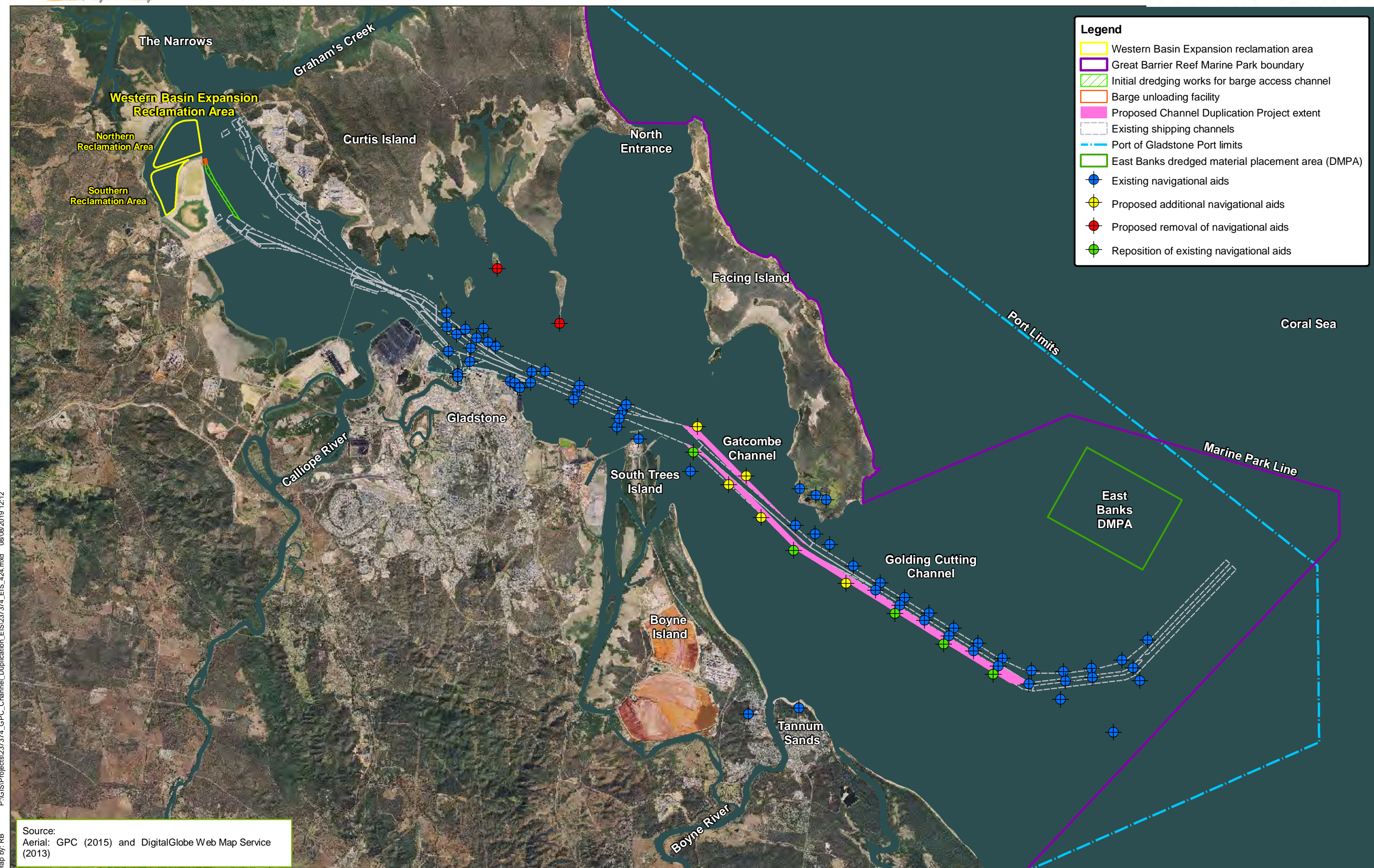
- *Port of Gladstone Gatcombe and Golding Cutting Channel Duplication Project - Terms of reference for an environmental impact statement* (December 2012) (EIS ToR) issued by the Coordinator-General under the SDPWO Act (refer Appendix A1 of the Project EIS)
- *Guidelines for an Environmental Impact Statement for the Port of Gladstone Gatcombe and Golding Cutting Channel Duplication Project, in Port of Gladstone & Great Barrier Reef Marine Park, Queensland* (March 2013) (EIS Guidelines) issued by the Commonwealth Environment Minister under the EPBC Act (refer Appendix A2 of the Project EIS).

The Project EIS was prepared to address the EIS ToR and the EIS Guidelines, and is being assessed by the Queensland Government and the Commonwealth Government under a parallel EIS process.

1.3.2 Summary of Environmental Impact Statement submissions

1.3.2.1 Summary of submissions received

The Project EIS was placed on public notification from 8 April 2019 to 23 May 2019. Table 1.1 summarises the number of submissions and submitter types received during the Project EIS statutory notification process.



Source:
Aerial: GPC (2015) and DigitalGlobe Web Map Service (2013)

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Map by: RB



0 1,550 3,100 Metres

Date: 08/08/2019 Version: 0 Job No: 237374
Coordinate system: GDA_1994_MGA_Zone_56

Gatcombe and Golding Cutting Channel Duplication Project

Figure 1.1: Location of Project activities

Table 1.1 Summary of submissions received during the Environmental Impact Statement public notification process

EIS process	Submitter type	Number of submissions
SDPWO Act	Government agency	11
	Non-government organisation (Gladstone Conservation Council)	1
	Private submitter	1
SDPWO Act total		13
EPBC Act	Private submitters	8
	Non-government organisation (Gladstone Conservation Council)	1
EPBC Act total		9

This AEIS responds to the Coordinator-General's request to provide further clarification on specific matters raised during the SDPWO Act statutory notification for the Project EIS, and also responds to the submissions received under the EPBC Act public notification for the Project EIS.

It is important to note that this AEIS does not duplicate or replace all sections and appendices of the Project EIS. The AEIS chapter headings follow the EIS structure with responses to submission comments addressed under sub-headings. Due to the type and nature of several submission comments, the AEIS includes a complete revised EIS chapter, sub-section or appendix which is clearly stated at the beginning of the relevant AEIS chapter or sub-section.

1.3.2.2 State Development and Public Works Organisation Act 1971 Environmental Impact Statement public notification submissions

Submissions on the SDPWO Act EIS process were received from the following Queensland Government agencies and organisations:

- Department of Aboriginal and Torres Strait Islander Partnerships
- Department of Agriculture and Fisheries
- Department of Environment and Science
- Department of Housing and Public Works
- Department of Natural Resources Mines and Energy
- Department of State Development, Manufacturing, Infrastructure and Planning (Economic and Infrastructure Strategy)
- Department of State Development, Manufacturing, Infrastructure and Planning (State Development Areas)
- Department of Transport and Main Roads
- Gladstone Conservation Council
- Gladstone Regional Council
- Queensland Ambulance Service
- Queensland Police Service.

One submission was received from a private submitter under the SDPWO Act EIS process.

Submissions under the EPBC Act process were received from the following submitter types:

- Private submitter (nine individual submissions received)
- Organisation (one submission received from the Gladstone Conservation Council).

For the SDPWO Act EIS public notification process, AEIS Appendix A provides a full list of submitter names, their comments and where relevant the AEIS sections and/or appendix that their comments have been addressed within. Due to privacy legislation the names of individual private submitters have been shown as 'private submitter'.

The process below was adopted to effectively address the submissions received under the SDPWO Act EIS process.

- All submissions received during the SDPWO Act and the EPBC Act statutory notification period were registered, categorised from where it was received (i.e. submitter type) and a unique identification code applied to every submitter
- The matters raised within the submission were then identified and a sub-number (ID matter number) applied to the submission comment
- Each ID matter number was assigned to topics based on the chapters of the Project EIS (e.g. nature conservation, air quality, transport)
- The key matters raised in the submissions under each chapter were identified and were summarised at the beginning of each AEIS chapter
- Responses to submissions were documented in sections that relate to the topic area within the relevant chapter. The summarised responses are cross-referenced with the AEIS sub-section and reported in the submission comments register (refer Appendix A).

1.3.2.3 Environment Protection and Biodiversity Conservation Act 1999 Environmental Impact Statement public notification submissions

For the EPBC Act EIS public notification process, AEIS Appendix B provides a full list of the submitter names, their comments and where relevant the AEIS sections and/or appendix that their comments have been addressed within. Due to privacy legislation the names of individual private submitters have been shown as 'private submitter'.

1.3.2.4 Structure of this report

Technical responses to specific matters raised in the submissions are provided in the AEIS chapters shown in Table 1.2, which have adopted the same number and naming convention as used in the Project EIS. The AEIS also contains appendices which replace the Project EIS appendices, the AEIS appendices have adopted a new numbering convention as shown in Table 1.2.

Table 1.2 Summary of structure of AEIS and relevance to Project EIS information

AEIS chapter or appendix number and name	Replaces Project EIS information	Supplements Project EIS information	Comment
1 Introduction	✓	✓	Combination of replacement and supplementary information (refer AEIS Table 1.3 for details)
2 Project description	✓	✓	Combination of replacement and supplementary information (refer AEIS Table 2.1 for details)
3 Land use and tenure	Not applicable	Not applicable	No changes required for the AEIS
4 Visual amenity	✓		Replacement of part of Project EIS Chapter 4 (refer AEIS Table 4.1 for details)
5 Topography, geology and soils	✓	✓	Combination of replacement and supplementary information (refer AEIS Table 5.1 for details)

AEIS chapter or appendix number and name	Replaces Project EIS information	Supplements Project EIS information	Comment
6 Sediment quality	✓	✓	Combination of replacement and supplementary information (refer AEIS Table 6.1 for details)
7 Coastal processes and hydrodynamics	✓	✓	Combination of replacement and supplementary information (refer AEIS Table 7.1 for details)
8 Water quality	✓	✓	Combination of replacement and supplementary information (refer AEIS Table 8.1 for details)
9 Nature conservation	✓	✓	Combination of replacement and supplementary information (refer AEIS Table 9.1 for details)
10 Water resources	✓		Replacement of part of Project EIS Chapter 10 (refer AEIS Table 10.1 for details)
11 Climate and climate change assessment	✓	✓	Combination of replacement and supplementary information (refer AEIS Table 11.1 for details)
12 Air quality and greenhouse gas assessment	✓	✓	Combination of replacement and supplementary information (refer AEIS Table 12.1 for details)
13 Noise and vibration	Not applicable	Not applicable	No changes required for the AEIS
14 Waste	✓		Replacement of part of Project EIS Chapter 14 (refer AEIS Table 14.1 for details)
15 Transport		✓	AEIS Chapter 15 supplements Project EIS Chapter 15 (refer AEIS Table 15.1 for details)
16 Aboriginal cultural heritage	✓		Replacement of part of Project EIS Chapter 16 (refer AEIS Table 16.1 for details)
17 Non-Aboriginal cultural heritage	✓		Replacement of part of Project EIS Chapter 17 (refer AEIS Table 17.1 for details)
18 Social impact assessment	✓		Replacement of part of Project EIS Chapter 18 (refer AEIS Table 18.1 for details)
19 Economics	Not applicable	Not applicable	No changes required for the AEIS
20 Hazard and risk	✓	✓	Combination of replacement and supplementary information (refer AEIS Table 20.1 for details)
21 Cumulative impact assessment			No changes required for the AEIS
22 Environmental management plan	✓		AEIS Chapter 22 replaces Project EIS Chapter 22 (refer AEIS Table 22.1 for details)
23 Conclusion	✓		AEIS Chapter 23 replaces Project EIS Chapter 23
24 References		✓	AEIS only includes references relevant to the content of the AEIS
Appendix A1 – Terms of Reference for an EIS	Not applicable	Not applicable	No changes required for the AEIS

AEIS chapter or appendix number and name	Replaces Project EIS information	Supplements Project EIS information	Comment
Appendix A2 – Guidelines for an EIS	Not applicable	Not applicable	No changes required for the AEIS
Appendix A3 – Terms of Reference for an EIS cross referencing table	Not applicable	Not applicable	No changes required for the AEIS
Appendix A4 – Guidelines for an EIS cross referencing table	Not applicable	Not applicable	No changes required for the AEIS
Appendix B1 – Supplementary Dredged Material Placement Option Investigation Study	✓		Refer AEIS Appendix C
Appendix B2 – Dredged Material Placement Options Investigation	✓		Refer AEIS Appendix C
Appendix C – EIS study team	Not applicable	Not applicable	No changes required for the AEIS
Appendix D – Independent Review of the Port of Gladstone	Not applicable	Not applicable	No changes required for the AEIS
Appendix E1 – Channel Duplication Project – Final Geotechnical Report	Not applicable	Not applicable	No changes required for the AEIS
Appendix E2 – Port of Gladstone DMPA and Western Basin – Final Geotechnical Report	Not applicable	Not applicable	No changes required for the AEIS
Appendix E3 – Geotechnical Investigation Factual Report Channel Duplication (Dredger Access Channel and Transfer Location)	Not applicable	Not applicable	No changes required for the AEIS
Appendix E4 – Sampling and Analysis Plan – Implementation Report (area to be dredged)	Not applicable	Not applicable	No changes required for the AEIS
Appendix E5 – Sediment Characterisation Plan Implementation Report (DMPAs)	Not applicable	Not applicable	No changes required for the AEIS
Appendix E6 – Sampling and Analysis Plan Implementation Report – Barge access channel	Not applicable	Not applicable	No changes required for the AEIS
Appendix E7 – Bund Wall Material Sourcing Strategy	Not applicable	Not applicable	No changes required for the AEIS
Appendix F – Visual amenity photomontages	Not applicable	Not applicable	No changes required for the AEIS
Appendix G – Coastal Processes and Hydrodynamics Technical Report	✓		Refer AEIS Appendix D
Appendix H1 – Water Quality Technical Report	Not applicable	Not applicable	No changes required for the AEIS
Appendix H2 – Time series for turbidity, BPAR and sedimentation	Not applicable	Not applicable	No changes required for the AEIS

AEIS chapter or appendix number and name	Replaces Project EIS information	Supplements Project EIS information	Comment
Appendix I1 – Ecology Technical Report	Not applicable	Not applicable	No changes required for the AEIS (relevant additional existing ecological values information included in AEIS Section Chapter 9)
Appendix I2 – Methodology for ecological impact and risk assessment	✓		Refer AEIS Appendix E1
Appendix I3 – Potential Project impact on threatening processes for conservation significant and migratory species and threatened ecological communities	✓		Refer AEIS Appendix E2
Appendix I4 – Ecology potential impacts and risk assessment ratings	✓		Refer AEIS Appendix E3
Appendix J – Air quality emissions data	✓		Refer AEIS Section 12.6
Appendix K1 – Terrestrial Noise and Vibration Assessment	Not applicable	Not applicable	No changes required for the AEIS
Appendix K2 – Underwater Noise Impact Assessment	Not applicable	Not applicable	No changes required for the AEIS
Appendix L – Pavement Impact Assessment	Not applicable	Not applicable	No changes required for the AEIS
Appendix M – Cultural heritage protocol	Not applicable	Not applicable	No changes required for the AEIS
Appendix N1 – Social infrastructure, facilities and services inventory	Not applicable	Not applicable	No changes required for the AEIS
Appendix N2 – Channel Duplication EIS Engagement Report	Not applicable	Not applicable	No changes required for the AEIS
Appendix N3 – Social Impact Management Plan	✓		Refer AEIS Appendix J
Appendix O – Not used	Not applicable	Not applicable	
Appendix P – Cumulative Impact Assessment	Not applicable	Not applicable	No changes required for the AEIS
Appendix Q1 – Dredging Environmental Management Plan	✓		Refer AEIS Appendix F
Appendix Q2 – Project Environmental Management Plan	✓		Refer AEIS Appendix G
Appendix Q3 – Environmental Monitoring Procedure	✓		Refer AEIS Appendix H
Appendix Q4 – EIS commitments	✓		Refer AEIS Appendix I

Within each AEIS chapter, specific matters are categorised into broader key matters to enable a coordinated and consolidated approach to the response. Where relevant, the responses refer directly to information presented in the Project EIS to avoid repetition.

Submissions that provided general commentary on the Project or the EIS process/methodology or represented information provided for the proponents benefit but were not matters that required a response have been noted in the submission comments registers (refer Appendices A and B).

1.4 Summary of submission comments relevant to Chapter 1 of the Environmental Impact Statement

The Project EIS Chapter 1 (introduction) contained information on the following matters:

- Project name and proponent (refer Project EIS Section 1.2)
- Summary of Project description (refer Project EIS Section 1.3)
- Project rationale and justification (refer Project EIS Section 1.4)
- Relationship to other projects (refer Project EIS Section 1.5)
- Project alternatives (refer Project EIS Section 1.6)
- Environmental impact assessment process (refer Project EIS Section 1.7)
- Public consultation process (refer Project EIS Section 1.8)
- Relevant legislation and approvals (refer Project EIS Section 1.9).

This section provides additional information to address the submissions received during the statutory public display period of the Project EIS. The key issues raised from the Project EIS submission process relevant to the introduction matters are summarised Table 1.3.

Table 1.3 Summary of submission issues received in relation to the Project EIS introduction chapter

Submitter ID number (refer Appendices A and B)	Summary of submission issue raised	Project EIS section (public notification version)	AEIS section containing information to address submission comments	Complete replacement section for Project EIS	Supplements the Project EIS information
7.02	The Port can accommodate growth projections of vessel movements through more efficient ship scheduling	Section 1.4	Section 1.5		✓
12.01 12.02 12.50 12.107	The options investigation should be revised in light of the significant environmental values identified and located at, or adjacent to, the proposed WBE reclamation area that would be impacted by the proposed Project	Section 1.6 Appendices B1 and B2	Section 1.6 Appendix C	✓	
12.08	Amend the EIS to acknowledge that the proposed Project is adjacent the waters of the GBRCMP and has the potential to impact the marine parks natural and cultural values. Amend the description of the relevance of the MP Act to this Project	Section 1.9.2.10	Section 1.7.1	✓	

Submitter ID number (refer Appendices A and B)	Summary of submission issue raised	Project EIS section (public notification version)	AEIS section containing information to address submission comments	Complete replacement section for Project EIS	Supplements the Project EIS information
12.05	Describe in detail why it is believed that the 'Project impact assessment and mitigation measures will be consistent with the objectives of the Great Barrier Reef Biodiversity Conservation Strategy 2013.'	Section 1.9.3.1	Section 1.7.2	✓	
E1.01, E2.01, E3.01, E4.01, E5.01 E6.01, E7.01 E8.01 and E9.01	The economic necessity of this Project is questionable. The need for the Project might have been able to be justified if exports were actually increasing and the port was operating at full capacity.	Section 1.4	Section 1.5		✓

Table notes:

- 1 Submitter ID number commencing with 'E' are submissions received under the EPBC Act public notification process (refer AEIS Appendix B for details)
- 2 Other ID numbers are submissions received under the SDPWO Act public notification process (refer AEIS Appendix A for details)

1.5 Project rationale and justification

This section supplements the Project EIS Section 1.4 (Project rationale and justification).

1.5.1 Existing, committed and predicted estimated future growth of tonnage throughput and vessel numbers

The Port of Gladstone is Queensland's largest multi-commodity port, with RG Tanna Coal Terminal (RG TCT) being the world's fourth largest coal export terminal (by throughput) in the world in the 2017/18 reporting period. Cumulatively, the Port handles the export of mineral resources from Central Queensland and products from local industries, and the import of raw materials from national and international sources (GPC 2014).

The Port of Gladstone is also one of the busiest ports in Australia, important to the local, state and national economies. Major exports from the Port include coal, alumina, cement, petroleum, aluminium and agricultural resources.

Table 1.4 summarises the Port of Gladstone throughput (in million tonnes (Mt)), total vessel numbers and a breakdown of vessel sizes that have occurred over the previous eight financial years.

Since 2010/11, there has been a consistent increase in throughput and vessel numbers utilising the Port of Gladstone. Generally there have been increases in coal export from the Port over the last eight years, and also a general corresponding increase in the number of Capesize vessels within the Port of Gladstone.

Table 1.4 Port of Gladstone existing throughput and number of commercial vessel movements

	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19
Total Port throughput (Mt)	76.40	83.79	85.29	97.67	99.29	115.98	120.29	119.39	124.09
Coal exports (Mt)	53.19	59.75	57.31	69.62	68.56	72.17	68.95	67.16	72.39
Breakdown of vessel size numbers									
Capesize vessels	202	248	281	308	313	328	286	294	308
Panamax vessels	528	516	522	619	600	673	681	667	670
Handymax vessels	263	290	266	250	252	237	207	205	194
Liquefied natural gas (LNG) tanker	0	0	0	0	26	187	295	309	347
Handysize vessels	323	369	461	466	350	329	319	310	323
Total vessel numbers	1,316	1,423	1,530	1,643	1,541	1,754	1,788	1,785	1,842

Source: GPC internal database records

Table 1.5 and Table 1.6 provides the Port of Gladstone predicted estimated future low growth and moderate/high growth of total throughput, respectively. These tables also provide the predicted coal exports and total vessel numbers, including a breakdown of vessel sizes. These estimates include a Port throughput base of 120 million tonnes per annum (Mtpa) which is defined as the average Port throughput that will be consistently achieved in future financial years from the existing operational industries, and potential expansions and new industries within the region.

The predicted estimated future growth throughput numbers for the Port of Gladstone have been based on:

- Government approved throughput capacity for existing wharf centres (e.g. Environmental Authorities (EAs) under the *Environmental Protection Act 1994* (Qld) (EP Act)
- New projects and expansion projects that have been approved by Government (e.g. projects with an EIS approved and proponent funding commitment) and which are expected to be operational within the relevant timeframes
- Predicted industrial and resource growth within the Gladstone region and resource catchment, including potential developments that may utilise the future Port wharves identified within GPC's *50 Year Strategic Plan* (Strategic Plan).

There is likely to be continued strong growth in bulk carrier vessel movements within the Port of Gladstone (refer Section 1.5.2). Given the high portion of existing and future coal and LNG throughput for the Port, there is likely to be a corresponding increase in the number of Capesize vessels and LNG tanker utilising the Port.

There is also the potential future requirement for the Port of Gladstone to accommodate the arrival of deep drafted vessels with import cargo on high tides.

Table 1.5 Port of Gladstone predicted estimated future low growth in throughput and number of vessel movements

	2019/20	2025/26	2030/31
Port throughput base (Mt)	120	120	120
Port throughput predicted estimated growth (Mt)	12	16	16
Total Port throughput (Mt)	132	136	136
Coal exports (Mt)	76	78	76
Capesize vessels	308	317	309
Panamax vessels	736	756	746
Handymax vessels	224	230	227
LNG tanker	319	328	328
Handysize vessels	344	354	349
Total vessel numbers	2,271	2,335	2,307

Source: GPC internal database records

Table 1.6 Port of Gladstone predicted estimated future moderate/high growth in throughput and number of vessel movements

	2019/20	2025/26	2030/31
Port throughput base (Mt)	120	120	120
Port throughput predicted estimated growth (Mt)	12	32	52
Total Port throughput (Mt)	132	152	172
Coal exports (Mt)	76	86	96
Capesize vessels	320	352	385
Panamax vessels	736	756	780
Handymax vessels	224	230	227
LNG tanker	319	328	328
Handysize vessels	344	354	349
Total vessel numbers	2,283	2,410	2,509

Source: GPC internal database records

The key throughput assumptions used to predict the estimates of future growth within the Port of Gladstone are summarised in Table 1.7.

Table 1.7 Key assumptions for predicted estimated Port of Gladstone throughput and number of vessel movements (low and moderate/high growth)

Year	Key assumptions		
	Port centre	Predicted estimated throughput change for low growth (Mtpa)	Predicted estimated throughput change for moderate/high growth (Mtpa)
2019/20	WICT and RGTCT	+2	+2
	Other Port centres	+2	+2
2025/26	WICT and RGTCT	+2	+10
	Other Port centres	+2	+10
2030/31	WICT and RGTCT	-2	+10
	Other Port centres	+2	+10

Figure 1.2 shows the actual and predicted estimated future low and moderate/high growth in total Port throughput and the number of Capesize vessels between 2010/11 and 2030/2031 financial years.

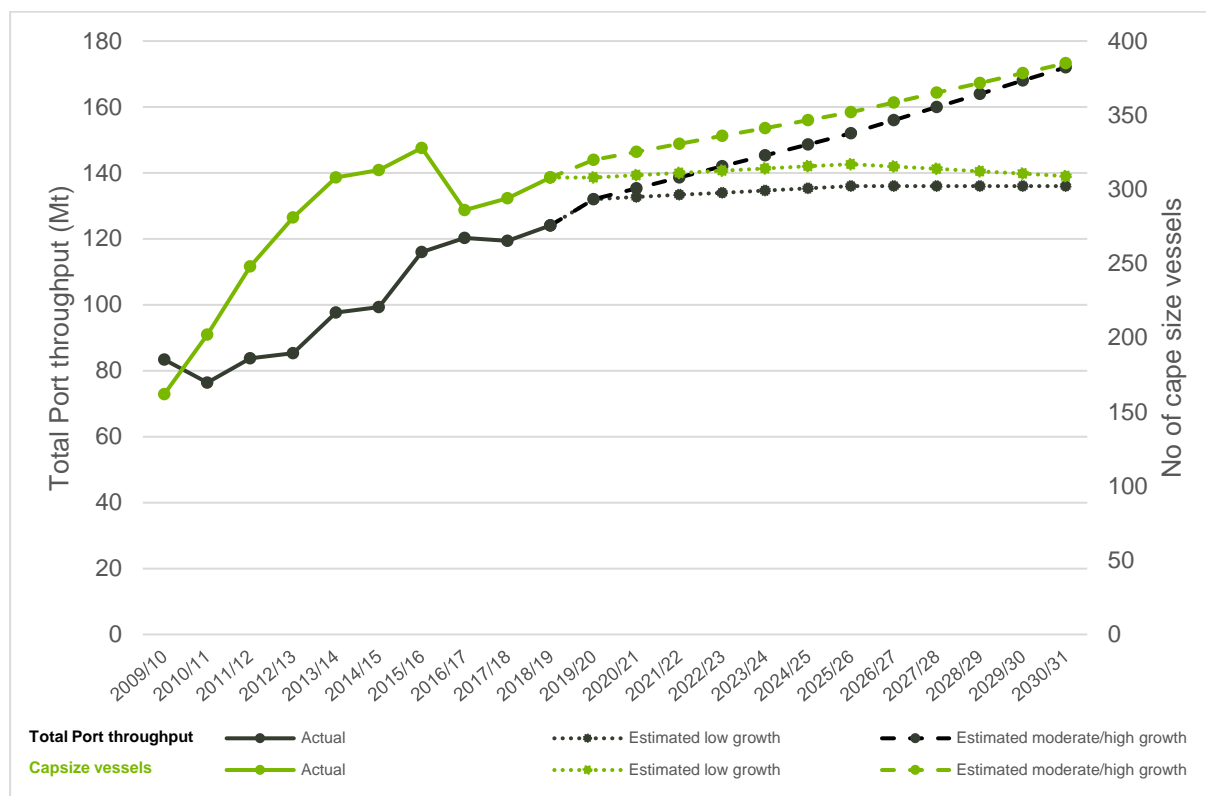


Figure 1.2 Actual and predicted estimated future low and moderate/high growth in Port throughput and number of Capesize vessels

1.5.2 Summary of Project need

Since 2010/11, there has been an increase in throughput and vessel numbers utilising the Port of Gladstone with a corresponding increase in the number of Capesize vessels (large bulk carriers).

The predicted growth in tonnage throughput is estimated to be 16Mt in 2030/31, with a rise in total Port throughput from 128Mt in 2018/19 to 136Mt in 2030/31. With industrial expansion and new industries occurring in the Gladstone region, there is the potential for much higher growth in throughput of up to 172Mt by 2030/31.

With respect to vessel numbers, continued strong growth in trade export bulk carrier vessel movements is predicted. Given the high portion of coal and LNG throughput, there is likely to be a corresponding increase in the number of Capesize vessels and LNG tankers utilising the Port. Increasing bulk carrier size was a clear trend at the Port between 2011 and 2018, and a continuation of this trend is predicted.

Increased demand for maritime transport around the world has given rise to a need for better economies of scale using larger vessel sizes. With increasing trading volumes, bulk vessels are also increasing in size. Therefore, for a port to be competitive in the international market it must be able to provide deeper access channels for these larger vessels and ensure vessel safety so that improved economic efficiencies can be realised.

Vessel capacity at the Port of Gladstone, however, is constrained by the existing depth of the Gatcombe and Golding Cutting bypass channels; the under-keel clearance requirements for deep draft vessels; and vessel follow-on times required to ensure safe operation within the harbour. Consequently, the number of Capesize vessels it can accommodate is limited.

It is noted that the Port of Gladstone is already experiencing vessel interaction issues between moored vessels and larger vessels departing terminals within the Port and has recently secured State and Commonwealth approval for the Clinton Vessel Interaction Project to widen the Clinton Channel to improve safety and increase Port efficiency, as a direct result of the increased size of vessels using the Port. This dredging project is expected to commence in early 2020.

The Project is needed to improve Port of Gladstone operational and economical efficiencies, and reduce existing and increasing vessel incident risk as the Port throughput and associated vessel numbers increase, and the portion of predicted Capesize vessels (import and export) also increases.

Improving the tidal constraints for bulk carrier vessel movements will also allow improved flexibility for vessel passing within the Port. The improved Port operational efficiencies will enable substantial economic benefits for the region to be realised by enabling future resource and industry growth within the catchment of the Port of Gladstone.

The Project is consistent with the National Ports Strategy and the Master Plan for the priority Port of Gladstone 2018 as it addresses the primary objective of improving the efficiency and safety of port vessel movements.

The consequence of not proceeding with the Project (i.e. without the duplication of the Gatcombe and Golding Cutting Channels) is that there will continue to be existing vessel incident risk which has a direct impact on the safety of commercial vessel movements within the Port of Gladstone. The future growth in Port vessel movements, including Capesize (import and export) vessels, will further increase this vessel incident risk, and increase Port traffic congestion and delays, and significantly limit the Port's shipping capacity.

It is important to note that while the Project will facilitate an improvement in the existing and future vessel movement efficiency, and a reduction in the likelihood of vessel incident risk, the duplication of the Gatcombe and Golding Cutting Channels will not have any direct influence on increasing vessel movement numbers within the Port.

Based on the current and future predicted Port of Gladstone throughput and bulk carrier vessel movements, the Gatcombe and Golding Cutting Channel Duplication dredging is likely to be required in 2023 (or later) to improve the operational and economical efficiencies of the Port of Gladstone, and mitigate an existing incident risk for vessel movement within the harbour.

It is also important to note the potential long lead times required for obtaining the post-EIS dredging and dredged material placement (e.g. new or expanded reclamation area) approvals, undertaking detailed design, procurement of dredging and civil works contractors, and implementing pre-dredging commitments and approval conditions. These long lead time items result in a Project program requirement to receive EIS approval in late 2019.

1.6 Project dredged material placement area alternatives

A Dredged Material Placement Options Investigation (DMPOI) was undertaken between 2013 and early 2015 to support the Project EIS. The methodology and findings of the DMPOI were originally published in a standalone DMPOI report. During 2015 and 2016, significant legislative changes occurred in Commonwealth and Queensland Government policy and environmental regulation which directly impacted the Project, triggering the need to undertake a review of the findings of the DMPOI, and detail the review findings in a Supplementary DMPOI.

The findings of the Supplementary DMPOI completed in 2017 and 2018 were provided in the Project EIS (refer Project EIS Appendix B1). During the statutory public notice period for the Project EIS the Department of Agriculture and Fisheries (DAF) and Department of Environment and Science (DES) provided comments on the Supplementary DMPOI and the proposed WBE reclamation area in relation to the selection of the WBE reclamation area as the preferred dredged material placement area for the Project.

Both the original DMPOI and Supplementary DMPOI were prepared in response to the EIS ToR and EIS Guidelines requirements to assess placement options for both capital and maintenance dredged material and provide justification for the final dredged material placement option site.

In response to the public notice period comments on the Project EIS a Revised DMPOI (refer AEIS Appendix C) was prepared to review and update the findings of the original DMPOI and Supplementary DMPOI. The legislative changes that occurred in 2015 and 2016 (and more specifically, the mandating of the beneficial reuse of port-related capital dredged material) and the requirement for the Western Basin Dredging and Disposal Project (WBDDP) Long Term Sediment Disposal Plan (LTSDP), have required that greater consideration be given to the future approved dredged material placement needs of future approved capital dredging projects within the Port of Gladstone.

The opportunities for dredged material placement to accommodate dredged material from other (yet to be approved) future Port of Gladstone dredging projects to 2050 (to align with priority port master planning, introduced under the *Sustainable Ports Development Act 2015* (Qld) (Ports Act)) are considered in the LTSDP (refer AEIS Appendix C (Section 4.2)).

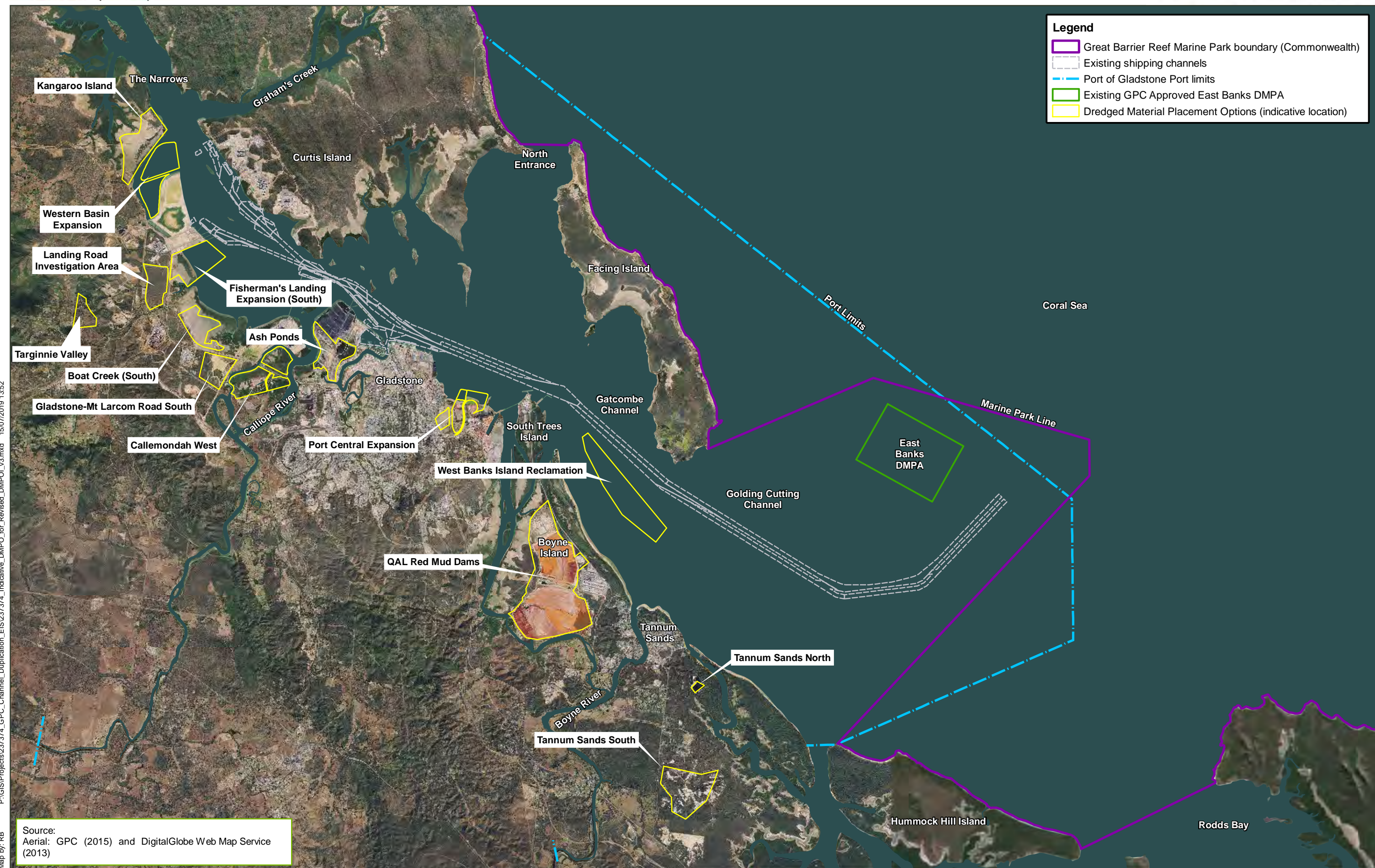
Through undertaking additional consultation with government agencies and industry in June and July 2019 and additional desktop investigations, 14 potential dredged material placement sites were identified (refer Figure 1.3).

Targeted desktop investigations of each of the potential dredged material placement sites was undertaken to assess potential site availability, feasibility and potential constraints to support the identification of a short-list of feasible sites to take forward into a multi-criteria analysis (MCA) (refer Section 6 of AEIS Appendix C). The investigations included an assessment of:

- The future intended use of privately owned sites, including commercial restrictions and dredging campaign timing
- Dredging equipment and placement methods
- Dredged material placement capacity
- Potential environmental and other constraints.

The additional consultation and investigations identified the following sites as no longer being feasible options for dredged material placement:

- Targinnie Valley Investigation Area (conflict with future Queensland Energy Resources Pty Ltd (QER) development)
- Landing Road Investigation Area (conflict with future QER development)
- Queensland Alumina Limited (QAL) Red Mud Dams (conflict with future red mud storage)
- Tannum Sands North (conflict with future silica sand extraction)
- Tannum Sands South (conflict with future silica sand extraction)
- Ash Ponds (conflict with future flyash storage)
- Gladstone Mount Larcom Rd (South) (conflict with future WICT dredged material placement)
- Kangaroo Island (significant environmental constraints).



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Gatcombe and Golding Cutting Channel Duplication Project

Figure 1.3: Indicative dredged material placement options for revised DMPOI

The Revised DMPOI MCA process assessed the five remaining short-listed sites, including:

- Western Basin Expansion
- Port Central Expansion
- Fisherman's Landing Expansion (South) and Boat Creek (South)
- Fisherman's Landing Expansion (South) and Callemondah West
- West Banks Island.

At the conclusion of the Revised DMPOI, the WBE reclamation area was identified as the preferred dredged material placement option in conjunction with the use of the existing Western Basin reclamation area. The key reasons for the WBE reclamation area scoring higher than the other placement options in the Revised DMPOI MCA process were that the site has:

- Been identified as the preferred dredged material placement area to receive dredged material from future stages of the WBDDP (as detailed in the LTSDP)
- Avoids the need to have additional impacts on intertidal and marine habitats associated with constructing multiple reclamation areas to accommodate dredged material from the Project and future stages of the WBDDP
- Potential impacts to terrestrial vegetation and fauna that are lower when compared to all other short-listed options
- The lowest potential impact to intertidal vegetation (i.e. mangroves) when compared to all other short-listed options
- Potential impacts to aquatic environmental values are lower than that of the Fisherman's Landing Expansion (South) and Boat Creek (South) option, and the Fisherman's Landing Expansion (South) and Callemondah West option
- Potential impacts to social and cultural heritage values (i.e. land use intent, community and recreational activities, amenity and traffic) are lower than the Fisherman's Landing Expansion (South) and Callemondah West option and the West Banks Island option, and comparable to those of the Fisherman's Landing Expansion (South) and Boat Creek (South) option
- Potential impacts to economic values and objectives are lower when compared to all other short-listed options.

1.7 Relevant legislation and approvals

1.7.1 Marine Parks Act 2004

This section replaces the Project EIS Section 1.9.2.10 (Marine Parks Act 2004).

1.7.1.1 Overview

The *Marine Parks Act 2004* (Qld) (MP Act) provides a framework for the management and protection of the marine environment outside Commonwealth waters and under the jurisdiction of the State. The Great Barrier Reef Coast Marine Park (GBR Coast MP) is a State marine park that runs the full length of the Commonwealth Great Barrier Reef Marine Park (GBRMP) from just north of Baffle Creek (north of Bundaberg) to Cape York. It provides protection for Queensland tidal lands and tidal waters. The *Marine Parks (Declaration) Regulation 2006* states that the GBR Coast MP consists of the tidal land waters and tidal land within the following areas:

- Mackay/Capricorn Management Area
- Townsville/Whitsunday Management Area

- Cairns/Cooktown Management Area
- Far Northern Management Area
- Outer Islands Management Area.

The Mackay/Capricorn Management Area which includes the Rodds Bay segment and Keppel Bay segment is the closest management area to the Project impact areas.

The GBR Coast MP and zoning plan commenced in November 2004 as an amalgamation of the previous four individual marine parks in the Great Barrier Reef region. The GBR Coast MP complements the GBRMP through adopting similar zone objectives, and entry and use provisions.

1.7.1.2 Relevance to Project

While the proposed dredging and reclamation works for the Project will not occur within the GBR Coast MP, Project activities will occur adjacent to the GBR Coast MP. The existing environmental values and potential Project impacts on the GBR Coast MP values are provided in Project EIS and AEIS Chapter 8 (water quality) and AEIS Chapter 9 (nature conservation).

1.7.2 Great Barrier Reef Biodiversity Conservation Strategy 2013

This section replaces the Project EIS Section 1.9.3.1 (Great Barrier Reef Biodiversity Conservation Strategy 2013).

1.7.2.1 Overview

The *Great Barrier Reef Biodiversity Conservation Strategy 2013* has been developed to respond to the pressures identified in the *Great Barrier Reef Outlook Report 2009* and biodiversity declines. The *Great Barrier Reef Biodiversity Conservation Strategy 2013* provides a context on the Reef, its biodiversity and the threats acting upon it, and a framework for biodiversity protection, conservation and management within the Reef. A process for determining and documenting the habitat, species and groups of species that are potentially at risk are established by the *Great Barrier Reef Conservation Strategy 2013*. To reduce the impacts on biodiversity, vulnerability assessments have been completed to identify actions.

Three objectives form the basis of the *Great Barrier Reef Conservation Strategy 2013*, including:

- Engaging communities and fostering stewardship to facilitate and support best practice approaches to ensure the long term protection and management of the Great Barrier Reef Region
- Building ecosystem resilience in a changing climate by reducing the threats to potentially at risk elements of biodiversity, especially those found in inshore areas
- Maximise the opportunities for habitats and species to adapt by improving our knowledge about habitats, species, groups of species, ecological processes and cumulative impacts, and then using this information to improve management outcomes.

1.7.2.2 Relevance to Project

The Project is located in habitats which are considered to contain potentially at risk species or groups of species. The Project has considered, and is consistent with, the objectives of the *Great Barrier Reef Biodiversity Conservation Strategy 2013* due to the following:

- Community and stakeholder engagement formed an integral part of the Project EIS preparation. Consultation and engagement activities for the Project EIS built on the initial engagement phase undertaken between 2013 and 2015 which focussed on gaining feedback concerning the purpose of the Project, proposed reclamation sites and baseline monitoring.

GPC's engagement for the Project EIS was guided by the Stakeholder Engagement and Communication Strategy which is appended to the Engagement Report (refer Project EIS Appendix N2).

A stakeholder assessment was completed to indicate which organisations, agencies and parties should be engaged due to their interest and association with the Project activity areas. This assessment concluded that a range of public sector, private sector, non-governmental organisation (NGO) stakeholders and business groups with an interest in the marine and intertidal environment were Project stakeholders.

- The habitat and species or groups of species found to occur within the Project impact areas and identified in the *Great Barrier Reef Biodiversity Conservation Strategy 2013* as being potentially at risk are as follows:

- | | | |
|--------------------|---------------------------|-------------------|
| – Coral reefs | – Islands | – Mangroves |
| – Seagrass meadows | – Dugongs | – Grey mackerel |
| – Humpback whales | – Inshore dolphins | – Marine turtles |
| – Sea snakes | – Seabirds and shorebirds | – Sharks and rays |

The existing environment for all ecological values within the Project impact areas are described in detail within the Project EIS, as well as an assessment of potential impacts and risks associated with Project activities. A range of mitigation measures have been developed and will be implemented to avoid and/or minimise potential impacts on these ecological values. Where residual adverse impacts remain, impacts will be offset through the provision of suitable offsets in accordance with legislative requirements. A draft Project Offset Strategy has been prepared (refer Appendix E4) and will be further developed post EIS, during the detailed design phase of the Project.

- A number of surveys and studies have been undertaken as part of the Project EIS, further increasing the understanding of the ecological habitats and species present within the Project impact areas.

As such the Project impact assessment and mitigation measures are considered to be consistent with the objectives of the *Great Barrier Reef Biodiversity Conservation Strategy 2013*.

Further, the Port of Gladstone is identified as a priority port under the Ports Act. The Project is considered consistent with the Ports due to:

- The Project supporting port development being concentrated within a priority port
- The Project providing for expanding port and supply chain capacity to meet demand.

The Project involves dredging and other development work wholly contained within the existing port limits of the Port of Gladstone, and within a priority port as defined in the Ports Act, for the purposes of maintaining the effective operation of existing and future port facilities. All Project capital dredged material is proposed to be beneficially reused through reclamation of intertidal land and adjoining areas.