

Part D

# Addendum to the risk assessment report





# Part D

## Addendum to the risk assessment report

### D1 Master planning and risk assessment report background

The priority Port of Gladstone evidence base documents that have informed the key issues for incorporating into the master planning process include:

- Evidence Base Report for the Proposed Gladstone Port Master Planned Area (AECOM 2016)
- Priority Port of Gladstone growth scenarios (DSD 2016)
- Priority Port of Gladstone master planning – Infrastructure and Supply Chain Requirements Assessment (PSA Consulting 2016)
- Priority Port of Gladstone master planning – Risk Assessment (Aurecon 2016) (herein referred to as the ‘risk assessment’).

The purpose of the master planning risk assessment is to inform the content of the environmental management framework (EMF) for the draft master plan, which:

- Identified and mapped the environmental values within and surrounding the master planned area
- Involved a risk assessment of potential impacts associated with growth scenarios for the master planned area on the OUV of the GBRWHA and other environmental values. The risk assessment was based on potential activities and causes that could occur within master plan draft precincts.
- Outlined EMF objectives for managing potential impacts within the master plan draft precincts
- Identified proposed PMMs to achieve the EMF objectives for managing potential environmental impacts, addressing existing gaps and inconsistencies in statutory and operational environmental management measures, and reducing the risk levels (where practical) for activities within the master planned area.

The risk assessment was finalised on 24 August 2016 (revision 4), prior to the commencement of the preparation of the preliminary draft port overlay.

### D2 Purpose of this addendum to the risk assessment

The purpose of this addendum is to identify and assess whether the findings of other parts of this addendum to the evidence base report result in the need to amend the risk assessment report. This addendum to the risk assessment also assesses the need to amend the risk assessment report based on master planning changes within the preliminary draft port overlay (revision 7).

It is important to note that the intent of this addendum is not to revise and re-issue the complete risk assessment report, however key content has been reviewed, revised and presented in this addendum. Key content of the risk assessment is defined as risk ratings, PMMs, draft precinct EMF objectives and potential impacts.

### D3 Identification of amendments to the risk assessment report

Other parts of this addendum to the evidence base report provided below were reviewed to identify the need to amend the risk assessment report.

- The local expression of the OUV of the GBRWHA report (refer Part A)
- The environmental values monitoring and reporting programs summary table (refer Part B)
- The addendum to the infrastructure and supply chain requirements assessment report (refer Part C).

The master planning process and the preparation of the preliminary draft port overlay (revision 7) have also been reviewed to identify any changes that may require an amendment to the risk assessment report.

Table D1 provides a summary of the findings of the review and assessment of the above addendum to the evidence base deliverables and the preliminary draft port overlay.

Table D1 Summary of amendments required to risk assessment report

Source of potential amendment to the risk assessment report	Potential amendment description from existing risk assessment report	Addressed in this addendum to the risk assessment
Changes to master plan draft precinct names and spatial extent	Amendment to Figure 1.1 required	Refer Figures D1 and D2
	Amendment to precinct names in the EMF objectives required (Section 5.4 of the risk assessment report)	Refer Section D4
	Amendment to precinct names in the potential impacts (Section 5.5 of the risk assessment report)	Refer Section D5
New marine infrastructure precinct	Amendment to Figure 1.1 required	Refer Figures D1 and D2
	Amendment to EMF objectives required (Section 5.4 of the risk assessment report)	Refer Section D4
	Amendment to potential impacts (Section 5.5 of the risk assessment report)	Refer Section D5
New infrastructure and supply chain corridors precinct	Amendment to Figure 1.1 required	Refer Figures D1 and D2
	Amendment to EMF objectives required (Section 5.4 of the risk assessment report)	Refer Section D4
	Amendment to potential impacts (Section 5.5 of the risk assessment report)	Refer Section D5
	The potential activities, causes, potential impacts and risk ratings for the infrastructure and supply chain corridors precinct have been addressed in the previously named port, industry and supply chain precinct and marine precinct, therefore no amendment to the risk assessment table is required	Not applicable

Source of potential amendment to the risk assessment report	Potential amendment description from existing risk assessment report	Addressed in this addendum to the risk assessment
Minor edits to interface precinct boundaries and interface precinct boundaries	Due to the minor changes in these precincts there is no requirement to amend the EMF objectives, potential impacts or the risk assessment table	Not applicable
New environmental management precinct for Aldoga reserve (Lot 87 SP144431)	Amendment to Figure 1.1 required	Refer Figures D1 and D2
	The potential activities, potential impacts, risk assessment table and EMF objectives within the existing risk assessment report adequately address the inclusion of this additional environmental management precinct area, therefore no amendment is required to the risk assessment report	Not applicable
Local expression of the OUV of the GBRWHA report (Part A of the addendum to the evidence base report)	The environmental values within the risk assessment table have been assessed based on the findings of the local expression of the OUV of the GBRWHA report and with the exception of Mount Larcom landform (refer below) there are no changes to the 'sensitivity' ratings presented in the risk assessment report	Not applicable
	Mount Larcom landform is now identified as having a minor contribution to the OUV of the GBRWHA (ie based on its value as a vegetated mountain and the contribution to the OUV criterion vii – aesthetics and superlative natural phenomena). A review of the PMMs in the preliminary draft port overlay (revision 7) and risk assessment was undertaken and it is considered that no additional PMMs are required to manage the environmental values of the Mount Larcom landform.	Not applicable
	Amendment to the environmental values mapping	Refer Part A, Appendix B
Environmental values monitoring and reporting programs (Part B of the addendum to the evidence base report)	The environmental values monitoring and reporting programs assessment and summary table provides additional information to Tables 4.3 to 4.5 (operational environmental management measures) of the risk assessment report	Part B of this addendum to the evidence base replaces Tables 4.3 to 4.5 of the risk assessment report for operational environmental values monitoring and reporting programs
	The findings of the environmental values monitoring and reporting programs assessment and summary table do not require any amendments to the risk assessment table	Not applicable
	The findings of the environmental values monitoring and reporting programs assessment provides input into the development of PMM 2 (environmental values monitoring and reporting program)	Refer Part B, Section B3

Source of potential amendment to the risk assessment report	Potential amendment description from existing risk assessment report	Addressed in this addendum to the risk assessment
Additional potential material placement area (ie Facing Island (West)) included in the addendum to the infrastructure and supply chain requirements assessment	The potential activities, causes, potential impacts and risk ratings for the potential Facing Island (West) material placement area have been addressed by the other potential material placement areas included in the risk assessment report, therefore no amendment to the risk assessment table is required	Not applicable
Construction and operation of a road and rail bridge from the mainland to the potential West Banks Island material placement area included in the addendum to the infrastructure and supply chain requirements assessment	While the potential activity is not specifically included in the risk assessment table, the relevant causes, potential impacts and risk ratings have been addressed by the construction and operation of a road and rail bridge from the mainland to Curtis Island, therefore no amendment to the risk assessment table is required	Not applicable
Maintenance dredged material has the potential to be placed within potential material placement areas	While the potential activity is not specifically included in the risk assessment table, the relevant causes, potential impacts and risk ratings have been addressed by the capital dredged material placement activity, therefore no amendment to the risk assessment table is required	Not applicable

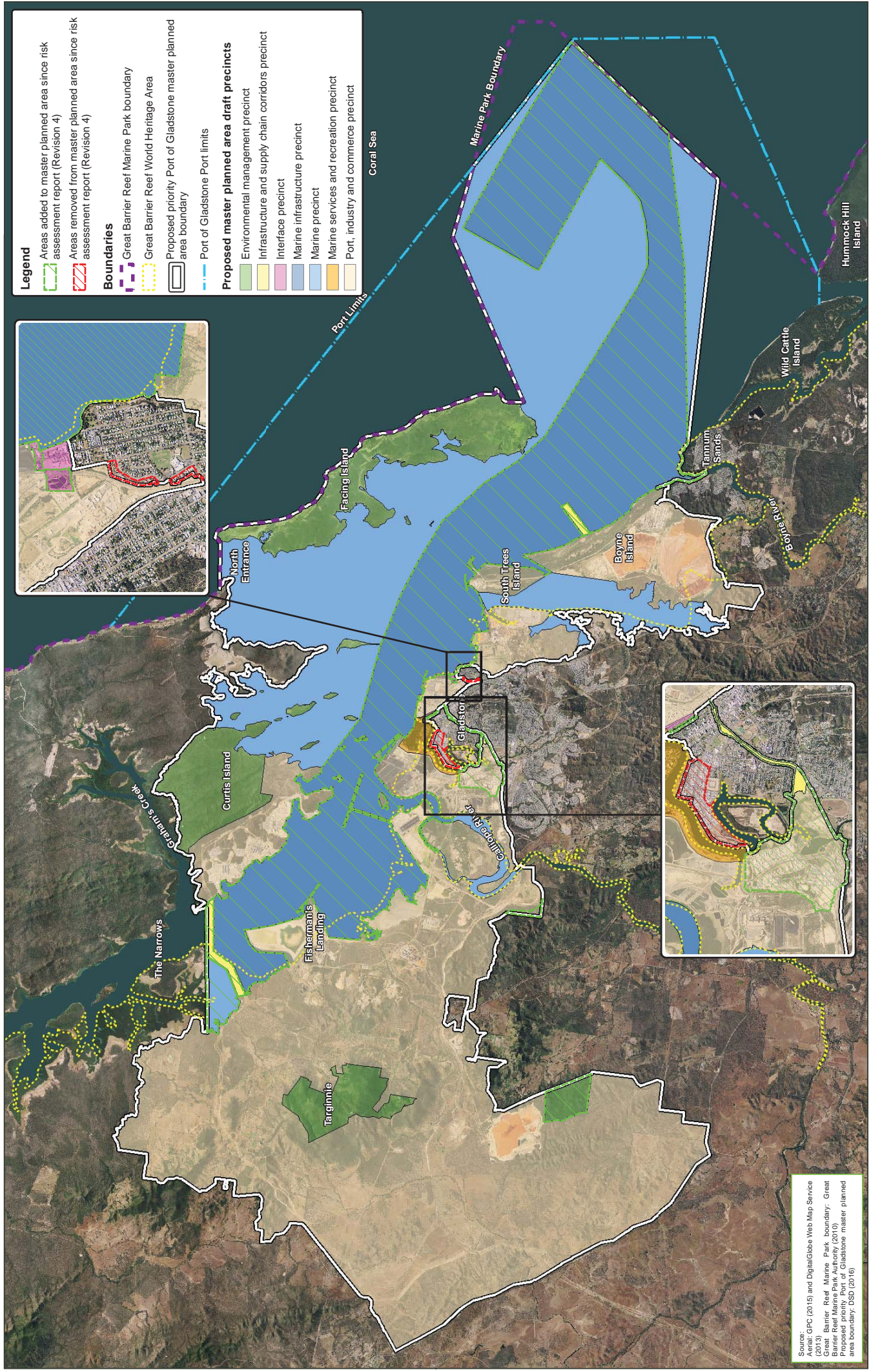
## D4 Amended EMF objectives for the master planned area draft precincts

The EMF objectives below replace Section 5.4 of the risk assessment report.

### Port, industry and commerce precinct

- To manage development impacts on the OUV of the GBRWHA and other environmental values below to as low as practically possible
  - Threatened ecological communities listed under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act)
  - Endangered and Of concern Regional Ecosystems listed under the *Vegetation Management Act 1999* (VM Act)
  - Conservation significance flora species and fauna species habitat listed under the EPBC Act and *Nature Conservation Act 1992* (NC Act)
  - Migratory shorebird habitat and populations
  - Natural scenic amenity values of the coastal zone
  - Cultural heritage values
- To increase the understanding of the presence and habitat value for EPBC Act and NC Act conservation significant fauna species and migratory species listed under the EPBC Act
- To maintain appropriate access to areas that provide Indigenous cultural heritage values and natural scenic amenity values to residents, recreational users and tourists that contribute towards the OUV of the GBRWHA
- To manage development impacts on cultural heritage and social values.

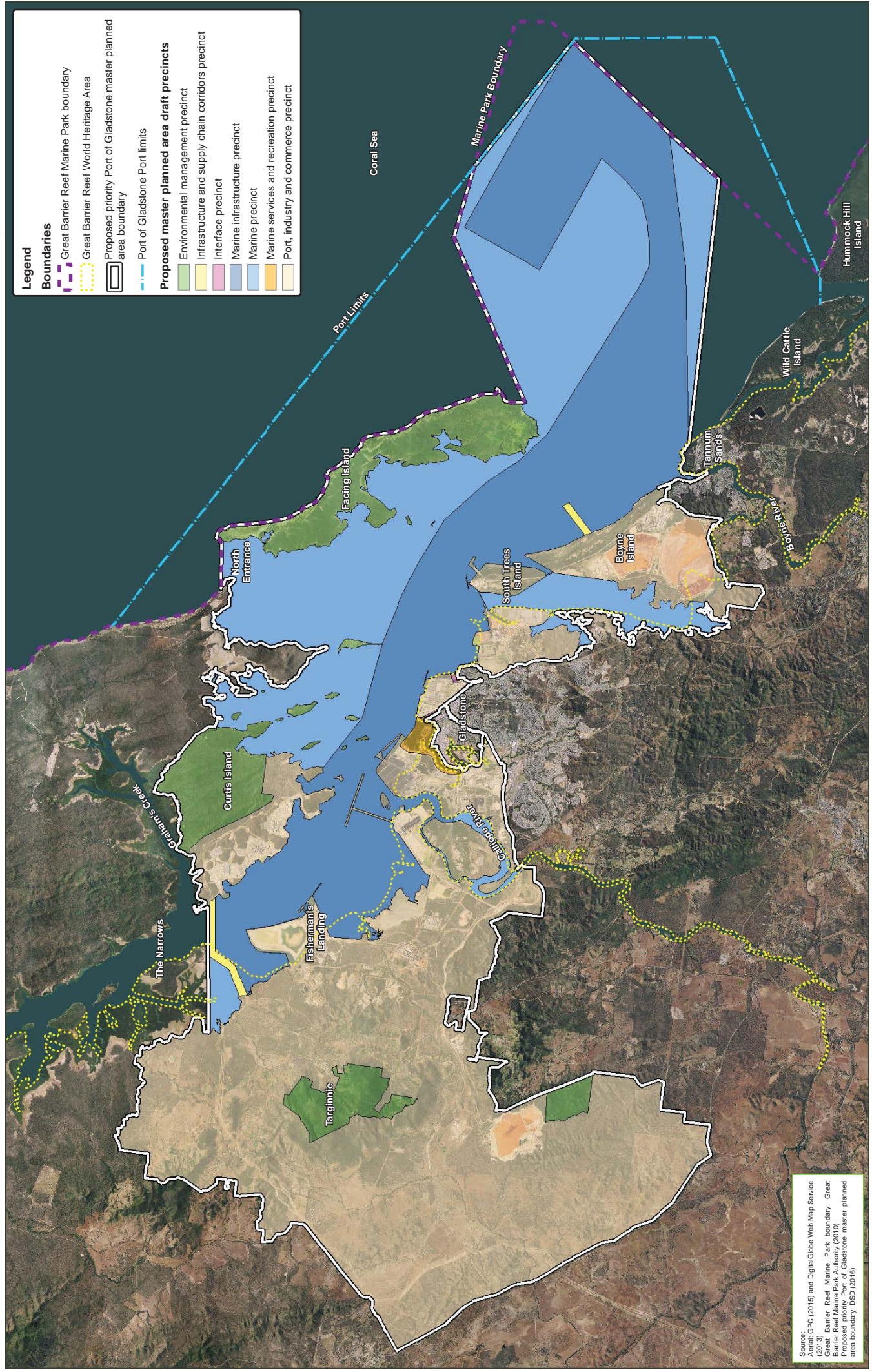




Priority port of Gladstone master planning addendum to the evidence base

Figure D1: Amendments to the master planned area draft precincts









## **Infrastructure and supply chain corridors precinct**

- To support port developments in the port, industry and commerce precinct to operate efficiently and effectively, in a manner that appropriately balances commercial, recreational and cultural activities, and potential impacts on the OUV attributes of the GBRWHA and other environmental values
- To manage development impacts on the OUV of the GBRWHA and other environmental values to as low as practically possible.

## **Marine services and recreation precinct**

- To manage and mitigate development impacts on the OUV attributes of the GBRWHA and other environmental values below to as low as practically possible
  - Threatened ecological communities listed under the EPBC Act
  - Habitat for conservation significant fauna species listed under the NC Act and/or EPBC Act
  - Migratory shorebird habitat and populations
  - Mangroves and other marine plants
  - Wetlands
  - Marine species diversity (flora and fauna)
  - Marine water quality
  - Cultural heritage values
  - Natural scenic amenity values
- To maintain safe access to the waterfront and harbour for commercial operations, residents, recreational users and tourists.

## **Interface precinct**

- To ensure the design of residential development incorporates design measures and other controls that minimise noise, light, visual amenity and air quality impacts from adjoining port and industrial land uses.

## **Environmental management precinct**

- To minimise potential direct disturbance and indirect impacts from development on the following Facing Island OUV attributes of the GBRWHA:
  - Marine turtle nesting beaches and habitat
  - Threatened ecological communities under the EPBC Act
  - Endangered and Of concern Regional Ecosystems under the VM Act
  - Conservation significant fauna habitat
  - Migratory shorebird habitat
  - Coral reefs
  - Island vegetation and fauna species diversity
  - Natural scenic amenity values
  - Dune systems and beaches
- To minimise potential direct disturbance and indirect impacts from development on the following Curtis Island OUV attributes of the GBRWHA:



- Island vegetation and fauna species diversity and
- Natural scenic amenity values
- Marine turtle nesting beaches and habitat
- Migratory shorebird habitat
- Threatened ecological communities under the EPBC Act
- Endangered and Of concern Regional Ecosystems under the VM Act
- Conservation significant fauna habitat
- Coral reefs
- To minimise and mitigate direct and indirect development impacts on the inshore islands, Mount Larcom landform and Aldoga reserve OUV attributes of the GBRWHA and/or other environmental values within this precinct listed below:
  - Threatened ecological communities under the EPBC Act
  - Endangered and Of concern Regional Ecosystems under the VM Act
  - Conservation significance flora species and fauna species habitat under the EPBC Act and NC Act (including migratory species under the EPBC Act)
  - Cultural heritage values
  - Natural scenic amenity values
- To increase the understanding of the presence and contribution of local attributes that contribute to the OUV of the GBRWHA
- To limit future development to low impact recreational and nature-based activities or essential infrastructure with community benefit that does not reduce the OUV of the GBRWHA and other environmental values
- To maintain appropriate access to areas that provide Indigenous cultural heritage values and natural scenic amenity values to residents, recreational users and tourists that contribute towards the OUV of the GBRWHA.

## Marine precinct

- To protect the OUV attributes of the GBRWHA below from direct disturbance from development
  - Pelican Banks North, Pelican Banks South, Facing Island and Quoin Island seagrass meadows
  - Inshore turbid reefs and fringing reefs, including: coral reefs on the seaward side of Curtis Island and Facing Island, coral reefs associated with Seal Rocks, Turtle Island Reef, Bushy Reef and Manning Reef
  - Kangaroo Island wetland and important shorebird roosting habitat at Friend Point, North Passage and South Passage Islands, Boyne Island Beach, shorebird habitat associated Curtis Island, Facing Island and the other inshore islands
- To minimise and mitigate direct and indirect development impacts on the following OUV attributes of the GBRWHA and other environmental values:
  - Pelican Banks North, Pelican Banks South, Facing Island and Quoin Island seagrass meadows and deep water seagrass meadows
  - Mangroves and other intertidal marine plants
  - Migratory shorebird habitat and populations
  - Marine faunal groups diversity

- Marine water quality
- Cultural heritage values
- Natural scenic amenity values
- Ongoing sustainable use of the marine waters by marine turtles and other marine reptiles, dugongs, dolphins, seabirds, whales, coral reefs, benthic communities, fish and other nekton
- Ongoing sustainable use of marine waters and near shore intertidal areas for recreational and commercial fishing
- To increase the understanding of the presence and habitat value for EPBC Act and NC Act conservation significant fauna species
- To continue to collect water quality information that monitors changes to the water quality and confirms the associated impact on the OUV attributes of the GBRWHA and other environmental values
- Allow port development to occur where it is necessary to support development within the marine infrastructure precinct and/or the port, industry and commerce precinct in a manner that appropriately balances commercial, recreational and cultural activities and potential impacts on OUV attributes of the GBRWHA and other environmental values
- Maintain and protect the OUV attributes of the GBRWHA and other environmental values currently expressed within this precinct.

### **Marine infrastructure precinct**

- To maintain port access to and continued development of shipping channels and waterside areas in a manner that appropriately balances commercial, recreational and cultural activities and potential impacts on the OUV attributes of the GBRWHA and other environmental values
- Where practical to manage the OUV attributes of the GBRWHA below from direct disturbance from development
  - Facing Island and Quoin Island seagrass meadows
  - Inshore turbid reefs and fringing reefs, including coral reefs associated with East Banks (East and West)
  - Important shorebird roosting habitat at North Passage and South Passage Islands, Boyne Island Beach, shorebird habitat associated Curtis Island, Facing Island and the other inshore islands
- To minimise and mitigate direct and indirect development impacts on the following OUV attributes of the GBRWHA and other environmental values:
  - Seagrass meadows and deep water seagrass meadows
  - Mangroves and other intertidal marine plants
  - Migratory shorebird habitat and populations
  - Marine faunal groups diversity
  - Marine water quality
  - Cultural heritage values
  - Natural scenic amenity values
  - Ongoing sustainable use of the marine waters by marine turtles and other marine reptiles, dugongs, dolphins, seabirds, whales, coral reefs, benthic communities, fish and other nekton
  - Ongoing sustainable use of marine waters and near shore intertidal areas for recreational and commercial fishing.



## D5 Amended potential impacts for the master planned area precincts

Table D2 replaces Table 5.5 in the risk assessment report.

Table D2 Summary of relevant potential impacts within each of the master plan draft precincts

Potential impacts	PICP	ISCCP	MSRP	IP	EMP	MP	MIP
<b>Terrestrial flora and fauna</b>							
Direct disturbance resulting in the loss, fragmentation or loss of connectivity values of <b>terrestrial flora species, vegetation communities and/or fauna habitat</b>	Yes	Yes	Yes	No	Yes	No	No
Direct mortality and/or injury to <b>terrestrial fauna</b>	Yes	Yes	No	No	Yes	No	No
Increase in noise, vibration, light and/or other disruption to behaviour/life-cycle of <b>terrestrial fauna</b>	Yes	Yes	Yes	No	Yes	Yes	Yes
Disruption to <b>terrestrial fauna</b> behaviour and/or life-cycle due to increased potential for human interaction	No	No	No	No	Yes	No	No
Increase in operational lighting impacting on <b>terrestrial fauna</b>	Yes	Yes	Yes	No	Yes	No	No
Increase in dust impacts on adjacent <b>terrestrial vegetation communities and/or fauna habitat</b> , reducing the condition and quality of adjacent habitats	Yes	Yes	Yes	No	Yes	Yes	Yes
Increased levels of waste materials resulting in reduced <b>terrestrial fauna habitat condition and/or quality</b>	No	No	No	No	Yes	No	No
Increased edge effects on adjacent <b>terrestrial vegetation communities and/or fauna habitat</b> , reducing the condition and/or quality of adjacent environments	Yes	Yes	Yes	No	Yes	No	No
Introduction or spread of pest and weed species resulting in reduced condition and/or quality of <b>terrestrial vegetation communities and/or fauna habitat</b>	Yes	Yes	Yes	No	Yes	Yes	Yes
<b>Intertidal flora and fauna</b>							
Direct disturbance resulting in the loss, fragmentation or loss of connectivity values of <b>intertidal flora species, vegetation communities and/or fauna habitat</b>	Yes	Yes	Yes	No	Yes	Yes	Yes
Direct mortality and/or injury to <b>intertidal fauna</b>	Yes	Yes	Yes	No	Yes	Yes	Yes
Increase in noise, vibration, light and/or other disruption to behaviour/life-cycle of <b>intertidal fauna</b>	Yes	Yes	Yes	No	Yes	Yes	Yes

Potential impacts	PICP	ISCCP	MSRP	IP	EMP	MP	MIP
Disruption to <b>intertidal fauna</b> behaviour and/or life-cycle due to increased potential for human interaction	No	Yes	Yes	No	Yes	No	No
Increase in operational lighting impacting on <b>intertidal fauna</b>	Yes	Yes	Yes	No	Yes	Yes	Yes
Increase in dust impacts on adjacent <b>intertidal vegetation communities and/or fauna habitat</b> , reducing the condition and quality of adjacent habitats	Yes	Yes	Yes	No	Yes	Yes	Yes
Increased levels of waste materials resulting in reduced <b>intertidal fauna habitat condition and/or quality</b>	No	Yes	Yes	No	Yes	No	No
Increased edge effects on adjacent <b>intertidal vegetation communities and/or fauna habitat</b> , reducing the condition and/or quality of adjacent environments	Yes	Yes	Yes	No	Yes	Yes	Yes
Introduction or spread of pest and weed species resulting in reduced condition and/or quality of <b>intertidal vegetation communities and/or fauna habitat</b>	Yes	Yes	Yes	No	Yes	Yes	Yes
Increased edge effects and/or direct loss of <b>important foraging/roosting habitat for shorebirds</b>	Yes	Yes	Yes	No	Yes	Yes	Yes
<b>Marine flora and fauna</b>							
Direct disturbance resulting in the loss, fragmentation or loss of connectivity values of <b>marine flora species, vegetation communities and/or fauna habitat (including benthic communities, coral reefs and seagrass meadows)</b>	Yes	Yes	No	No	No	Yes	Yes
Direct mortality and/or injury to <b>marine fauna</b>	No	Yes	Yes	No	No	Yes	Yes
Increase in noise, vibration, light and/or other disruption to behaviour/life-cycle of <b>marine fauna</b>	Yes	Yes	Yes	No	No	Yes	Yes
Increase in operational lighting impacting on <b>marine fauna</b>	Yes	Yes	Yes	No	Yes	Yes	Yes
Increase in dust impacts on adjacent <b>marine vegetation communities and/or fauna habitat</b> , reducing the condition and quality of adjacent habitats	Yes	Yes	Yes	No	No	Yes	Yes
Increased edge effects on adjacent <b>marine vegetation communities and/or fauna habitat</b> , reducing the condition and/or quality of adjacent environments	Yes	Yes	No	No	No	Yes	Yes
Introduction or spread of pest and weed species resulting in reduced condition and/or quality of <b>marine vegetation communities and/or fauna habitat</b>	Yes	Yes	No	No	No	Yes	Yes



Potential impacts	PICP	ISCCP	MSRP	IP	EMP	MP	MIP
Increased edge effects on <b>important nesting habitat for marine turtles</b>	No	No	No	No	Yes	No	No
Beneficial impact that increases the opportunities for establishment of benthic communities and associated marine fauna	No	Yes	No	No	No	Yes	Yes
<b>Water quality impacts</b>							
Sedimentation and decreased <b>water quality</b> in terrestrial areas resulting in decreased condition and/or quality of environments and downstream areas	Yes	Yes	Yes	No	Yes	Yes	Yes
Sedimentation and decreased <b>water quality</b> in intertidal and/or marine areas resulting in decreased condition and/or quality of environments	Yes	Yes	Yes	No	Yes	Yes	Yes
Alteration of <b>groundwater levels and quality</b> resulting in impacts to surrounding terrestrial environments	Yes	Yes	Yes	No	Yes	Yes	Yes
Alteration of <b>groundwater levels and quality</b> resulting in impacts to surrounding intertidal environments	Yes	Yes	Yes	No	Yes	Yes	Yes
Alteration of <b>groundwater levels and quality</b> resulting in impacts to surrounding marine environments	Yes	Yes	Yes	No	Yes	Yes	Yes
Changes to marine water velocities and potential erosion, sedimentation and decreased <b>water quality</b> impacts resulting in decreased condition and/or quality	Yes	Yes	No	No	No	Yes	Yes
<b>Social and cultural heritage impacts</b>							
Decrease in <b>visual amenity</b> for residents, recreational users and tourists	Yes	Yes	Yes	No	Yes	Yes	Yes
Direct impacts on <b>cultural heritage</b> sites during vegetation clearing and land disturbance	Yes	Yes	Yes	No	Yes	Yes	Yes
Loss of <b>Traditional Owner access to land</b> as a result of construction and/or operation of infrastructure	Yes	Yes	No	No	Yes	Yes	Yes
Increased dust impacts in surrounding areas resulting in reduced <b>air quality</b>	Yes	Yes	Yes	Yes	Yes	Yes	Yes
<b>Access impacts</b> on residents and tourists	No	Yes	No	No	Yes	No	No
Increase in light, dust, noise and vibration impacts resulting in a decreased level of <b>social amenity</b> for residents and tourists	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Beneficial impact from an increase in public awareness of the <b>OUV of the GBRWHA and other environmental values</b>	No	No	No	No	Yes	No	No

Potential impacts	PICP	ISCCP	MSRP	IP	EMP	MP	MIP
Increase in the number of residents and/or tourists experiencing <b>social amenity</b> impacts as a result of construction and/or operation of industrial and port industries within the port, industry and supply chain precinct	No	No	No	Yes	No	No	No
Increased dust impacts in adjacent areas resulting in reduced <b>air quality and/or increased odour impacts</b>	No	Yes	No	Yes	No	No	No
Increase in pressure on <b>community infrastructure</b> and services (eg airport; health and emergency services; food, water and electricity supply)	Yes	Yes	No	No	Yes	No	No
Increase in demand for rental/sale properties which may result in decrease in <b>housing affordability</b> if the demand exceeds the supply of housing	Yes	Yes	No	No	No	No	No
Decrease in <b>social/community cohesion</b> due to influx of temporary workforce, potentially leading to increased social and health related issues	Yes	Yes	No	No	No	No	No

**Table notes:**

Draft precincts:

- PICP = Port, industry and commerce precinct
- ISCCP = Infrastructure and supply chain corridors precinct
- MSRP = Marine services and recreation precinct
- IP = Interface precinct
- EMP = Environmental management precinct
- MP = Marine precinct
- MIP = Marine infrastructure precinct

## D6 References

AECOM 2016, Evidence Base Report for the Proposed Gladstone Port Master Planned Area, Prepared for the Queensland Department of State Development, AECOM, Brisbane

Aurecon 2016 Priority Port of Gladstone master planning – Risk assessment, Prepared for the Queensland Department of State Development, Aurecon, Brisbane

Department of State Development (DSD) 2016, *Draft master plan for the priority Port of Gladstone*, State of Queensland, Department of State Development, Brisbane.

PSA Consulting 2016, Priority Port of Gladstone Master Planning – Infrastructure and Supply Chain Requirements Assessment Final Report, prepared for the Queensland Department of State Development, PSA Consulting, Brisbane