Priority port master planning

Draft master plan

Priority Port of Townsville

Queensland | Australia | 2018

Queensland Government

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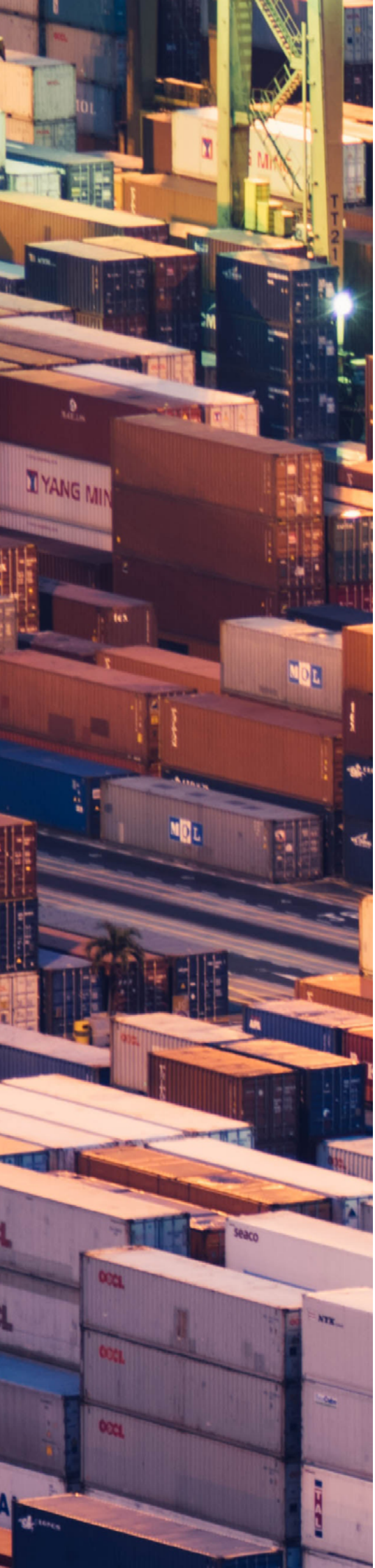

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Overview

The priority Port of Townsville is the largest general cargo and container port in northern Australia and is critical to the state's economy. It supports a wide range of associated industry sectors, including resources, energy and agriculture, while also providing an increasingly strategic role in Australia's defence capabilities.

The port plays a vital role in tourism for the region by providing important facilities for the cruise industry along with local tourism operators, including passenger and vehicle transportation to Magnetic Island and Palm Island.

Northern Australia's trade gateway

This draft master plan recognises that the priority Port of Townsville is well positioned to benefit from the increasing focus on investment in northern Australia and contribute significantly to regional employment opportunities.

The strategic vision acknowledges the port is a major driver of economic growth as North Queensland's primary freight, fuel, logistics, container, tourism, and defence infrastructure hub.

Protecting the Great Barrier Reef

The priority Port of Townsville operates in the Great Barrier Reef World Heritage Area (GBRWHA). The draft master plan establishes a strategic and coordinated approach that ensures that the Outstanding Universal Value (OUV) of the GBRWHA is an intrinsic consideration in the management of port-related development.

This approach complements other initiatives being undertaken by the Queensland Government to manage port operations and development within the GBRWHA.

Promoting economic development

The proposed master planned area encompasses the Townsville Port Expansion Project (PEP), Townsville State Development Area (TSDA), Townsville Port Access Road (TPAR) and the proposed Townsville Eastern Access Rail Corridor (TEARC) which together provide land and supply chain infrastructure to support economic activity generated by port industries.

The proposed master planned area is divided into specific precincts to provide certainty about where port-related development can be established and expanded to capitalise on investment opportunities.

Port optimisation

The proposed TEARC, combined with the PEP, can deliver an increase in port capacity, provide reliable and direct access to the port and minimise unnecessary load transfers, splitting or handling of goods. The draft master plan also supports opportunities for efficient use of existing capacity through multi-user access arrangements which optimise existing supply chain infrastructure.

This will minimise transportation costs for producers, transporters, distributors and consumers, and improve the efficiency of the freight network.

Integrated freight transport network

The efficient movement of freight between producers and customers is vital for the sustainable growth of the region's economy. The draft master plan recognises the port forms a critical component of the freight network that moves goods throughout the region and connects to national and international markets.

Implementation

The master plan is a strategic document that is implemented and given regulatory effect by the port overlay. The port overlay provides regulatory effect for the master plan by providing requirements that are delivered through existing planning processes that regulate development within the proposed master planned area.

The strategic vision acknowledges the port is a major driver of economic growth as North Queensland's primary freight, fuel, logistics, container, tourism and defence infrastructure hub.

The master plan complements the existing regulatory system and does not remove any existing processes. Additional regulation through the port overlay to guide port-related development is only provided where necessary to deliver the outcomes of the master plan. This recognises that the outcomes sought by the master plan are mostly achieved through existing provisions and reduces duplication of provisions.

Introduction

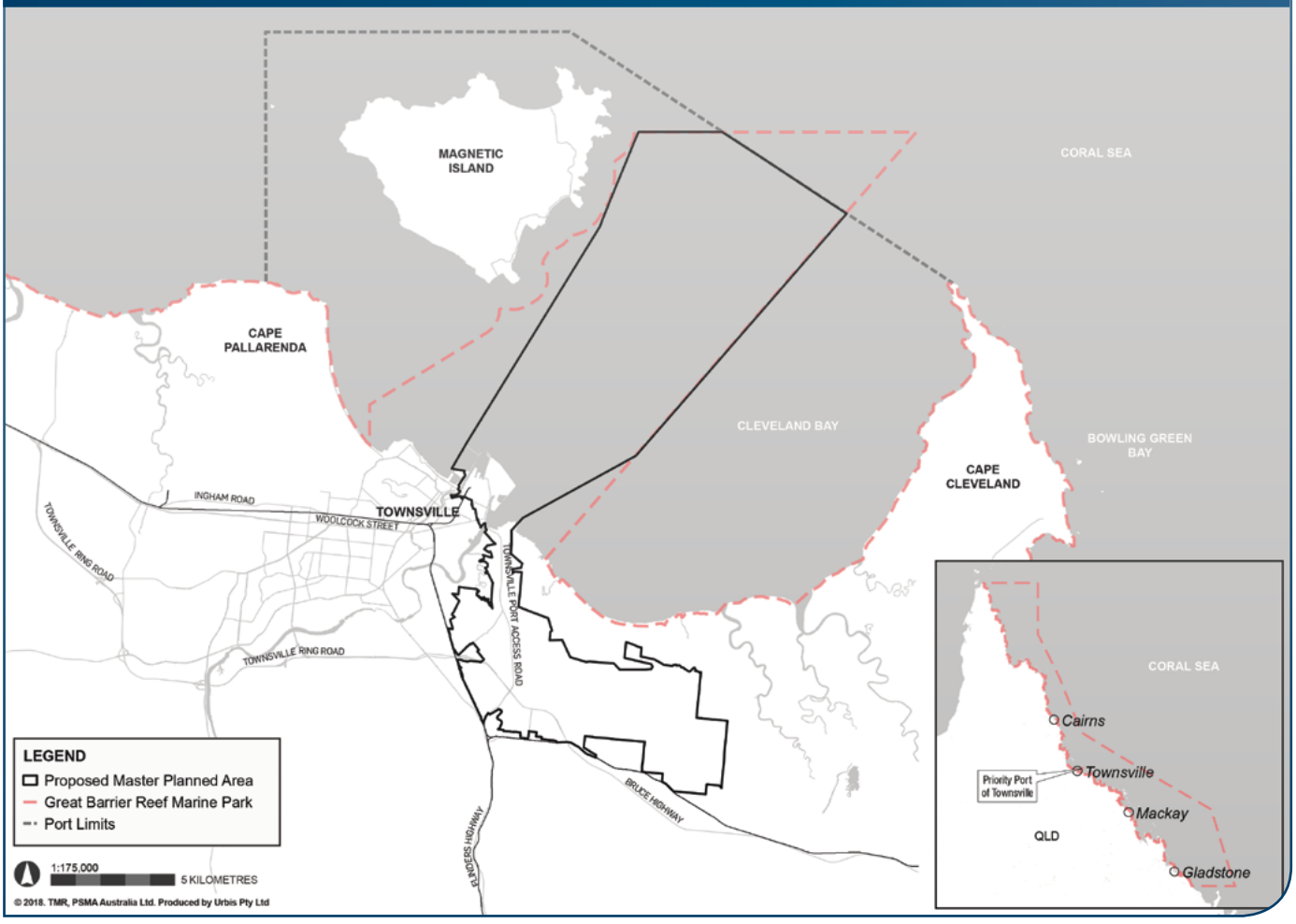
The purpose of this draft master plan for the priority Port of Townsville (the port) is to provide direction and guide the long-term sustainable development of the port and surrounding land and marine areas out to 2050.

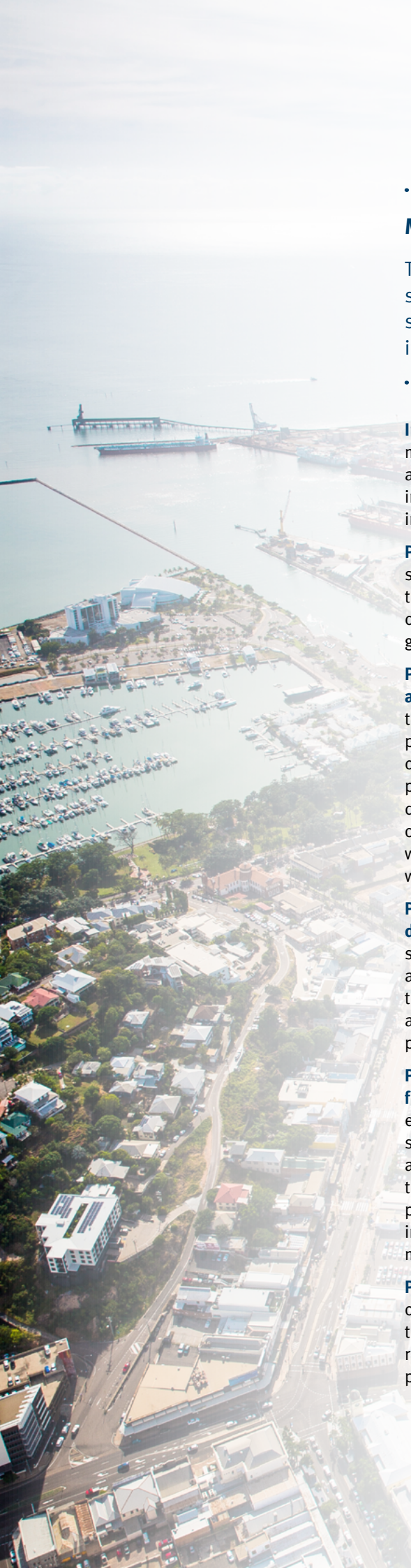
The extent of the proposed master planned area identified in **Figure 1** includes land and marine areas required for the efficient development and operation of the port, and the long-term protection of the Great Barrier Reef. This map of the proposed master planned area is also provided in **Appendix A**.

What is a master plan?

Master plans for priority ports are strategic documents that have a long-term outlook for the sustainable development of port operations through to 2050. Long term master planning provides a strategic and coordinated approach to managing port-related development and considers issues including marine and land-based impacts, port, and supply chain infrastructure optimisation. Master planning also ensures that the OUV of the GBRWHA is an intrinsic consideration in managing port-related development.

Figure 1 – Proposed master planned area





Master plan at a glance

This draft master plan for the priority Port of Townsville consists of several parts which set out the background, state interests, vision, spatial extent, environmental management framework (EMF) and implementation of the master plan.

Introduction: describes the draft master plan, how it is implemented and how it relates to other policy initiatives. It also identifies state interests for the port

Part A – Context: identifies the significance, role and function of the Port of Townsville, as well as key considerations to manage sustainable growth

Part B – Strategic vision, objectives and desired outcomes: states the long-term vision of the proposed master planned area that considers the capacity for growth in conjunction with principles of ecologically sustainable development (ESD), and outlines objectives and desired outcomes which clarify how the strategic vision will be achieved

Part C – Master planned area and draft precincts: identifies a proposed spatial area which the master plan applies to, as well as draft precincts that outline the intent for distinct areas within the proposed master planned area

Part D – Environmental management framework: identifies the environmental values within and surrounding the master planned area (also refer to **Appendix B** for the associated mapping), identifies potential impacts and outlines how impacts on environmental values are managed

Part E – Master plan implementation: outlines the implementation of the draft master plan through the regulatory framework and a separate port overlay instrument

Appendix A – Priority Port of Townsville master planned area regulation map: provides the draft regulatory map of the proposed master planned area

Appendix B – Environmental values mapping: provides consolidated mapping of the various environmental values within and surrounding the proposed master planned area

Appendix C – Definitions: provides a table of definitions relevant to the master plan

Appendix D – Abbreviations and acronyms: provides a table of abbreviations and acronyms used in the draft master plan

Appendix E – Local attributes of OUV/GBRWHA: identifies the natural features of OUV expressed within and surrounding the Port of Townsville. These have been categorised into features having a significant, moderate or a minor contribution to the area

Appendix F – Potential impacts on environmental values: outlines potential impacts on environmental values within and surrounding the proposed master planned area

Appendix G – EMF objectives: outlines objectives for each precinct to minimise potential impacts from development, including the OUV of the GBRWHA, matters of national environmental significance (MNES) and matters of state environmental significance (MSES). The objectives identify sustainable targets to inform environmental management within the proposed master planned area.

Why is there a master plan?

The Queensland Government is implementing master planning for the priority ports of Gladstone, Townsville, Hay Point/Mackay and Abbot Point, in accordance with the *Sustainable Ports Development Act* 2015 (Ports Act), and to meet its commitments under the *Reef 2050 Long-Term Sustainability Plan* (Reef 2050 Plan).

Reef 2050 Long-Term Sustainability Plan

The Reef 2050 Plan is a comprehensive plan developed by the Australian and Queensland Governments to secure the health and resilience of the Great Barrier Reef, and to protect the OUV of the GBRWHA. The Reef 2050 Plan included a number of commitments that related to the management of port-related development.

The commitments involved restricting capital dredging to the four priority ports, prohibiting the sea-based placement of capital dredged material from port-related development, and mandating the beneficial re-use of port-related capital dredged material.

A mid-term review of the Reef 2050 Plan in 2018 monitored the government's progress in meeting its commitments, recognising the introduction of the Ports Act as a key policy response to managing port development in the GBRWHA.

Following the mid-term review, the updated Reef 2050 plan outlines one master planning port-related action) which relates to completing master planning for priority ports in accordance with the Ports Act (MTR EBA9 - Reef 2050 Plan reference)[1].

Sustainable Ports Development Act

The Ports Act provides a legislative framework for sustainable port planning and development in Queensland. The Ports Act implements a number of Queensland Government port-related commitments and actions made under the Reef 2050 Plan and responds to United Nations Educational, Scientific and Cultural Organisations World Heritage Committee World Heritage Committee (UNESCO WHC) recommendations on the reef, ensuring the OUV of the GBRWHA is an intrinsic consideration in future port development.

The purpose of the Ports Act is to provide for the protection of the GBRWHA through the management of port-related development in and adjacent to the area. This is achieved through the following measures:

- concentrating port development in the GBRWHA to the priority ports
- mandating the preparation of master plans and port overlays for each priority port to establish a long-term vision for future port development
- restricting capital dredging for the development of new or expanded port facilities to within regulated port limits of the priority ports
- prohibiting sea-based placement of capital dredged material from port-related development within the GBRWHA and state Commonwealth marine parks
- mandating the beneficial reuse of port-related capital dredged material.

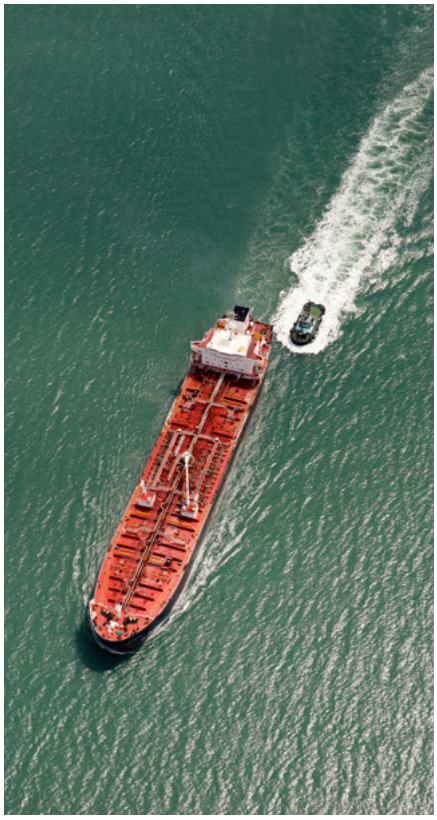
The Ports Act provides requirements for the content of the draft master plan which include the state interests, strategic vision, objectives and desired outcomes for the proposed master planned area.

The master planned area identifies land and marine areas critical to the effective operation of the port network. This allows for consideration of issues beyond port owned land to effectively manage future port-related development and the protection of the GBRWHA.

The Ports Act implements a number of Queensland Government port-related commitments made under the Reef 2050 Long-Term Sustainability Plan.

Under the Ports Act, master plans must include an EMF. The EMF provides for the identification and management of development impacts on environmental values including objectives and measures (priority management measures) for managing potential impacts on environmental values.

The master plan must also adequately consider the principles of ESD.



[1] http://www.environment.gov.au/system/files/resources/35e55187-b76e-4aaf-a2fa-376a65c89810/files/reef-2050-long-term-sustainability-plan-action-tracker-2018.pdf

How is the master plan implemented?

Under the Ports Act, master plans are strategic documents which are implemented by a port overlay. The port overlay will operate with existing planning instruments, as shown in **Figure 2**, to guide future port-related development in the proposed master planned area to achieve the long-term vision.

The master plan complements the existing regulatory system and does not remove or replace any existing processes. Additional regulation through the port overlay to guide port-related development outcomes will only occur where a gap is identified in the existing regulatory framework that would impact delivery of master plan outcomes. This recognises that the outcomes sought by the master plan are in many cases already achieved through existing provisions and reduces duplication of provisions.

The Ports Act requires that the master plan is reviewed every 10 years. Due to the long-term planning horizon, and to provide for an adaptive management approach, the master plan can be reviewed outside of this mandatory period to respond to major changes in policy or legislation, where appropriate. Outcomes from a master plan review will be considered further through the port overlay and other planning instruments in the master planned area.

Figure 2 – Implementation of the port overlay within the current planning frameworks

Sustainable Ports Development Act 2015
Priority port master plan

Port overlay

Statutory instrument

The port overlay enables regulatory implementation of the priority port master plan over priority port master planned areas.

Transport Infrastructure Act 1994

Port land use plan

Planning Act 2016
State planning policy

Local government planning scheme

Mandatory consideration—port overlay prevails

In making or amending local planning instruments or a port land use plan, matters specified in the port overlay must be considered.

Decisions made about development applications must not be inconsistent with the port overlay.

State Development and Public Works Organisation Act 1971
State Development Areas

State Development Area development scheme

Economic Development Act 2012
Priority Development Areas

Priority Development Area development scheme

Consistency

The development schemes for State Development Area (SDA) and Priority Development Area (PDA) must be checked for inconsistency with the port overlay.
The port overlay does not regulate development in a PDA or SDA.

Regulating port operations

Queensland's ports operate within a comprehensive regulatory framework and must satisfy a number of local, state and Commonwealth government planning and other regulatory requirements. Master planning is just one component of the regulatory and compliance framework in which ports operate.

The master plan complements this system and does not remove or replace any existing processes. The existing planning processes operate under relevant legislation as well as the requirements of the Ports Act.

Environmental assessment

State and Commonwealth environmental impact statement (EIS) assessment processes under the *Environmental Protection Act 1994* (EP Act), the *State Development and Public Works Organisation Act 1971* (SDPWO Act) and the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) currently provide for rigorous assessment of major projects to ensure development occurs in a sustainable manner and unacceptable impacts on environmental values do not occur. This includes the appropriateness and acceptability of identified environmental management arrangements.

The EP Act also provides a framework for regulating environmentally relevant activities (ERAs) through a permit and licensing system. This system ensures ERAs manage, enhance or protect environmental values through conditions or enforcement processes.

The E*nvironmental Protection (Air) Policy 2008*, *Environmental Protection (Noise) Policy 2008* and *Environmental Protection (Water) Policy 2009* outline thresholds, indicators, and objectives for enhancing or protecting environmental values, as well as providing a framework for consistent and informed decisions about managing ongoing environmental impacts.

State and local planning processes

State planning instruments, including the *State Planning Policy* (SPP) and regional plans, set out critical planning matters, which guide local planning instruments to achieve development outcomes in each local government area. The SPP adopts the 'avoid-mitigate-offset' hierarchy embedded in planning and environment legislation.

The *Planning Regulation 2017* identifies that certain development must also be assessed against the State Development Assessment Provisions to ensure impacts on matters including transport corridors, coastal development, native vegetation, marine plants and fish habitat areas are subject to rigorous assessment and conditioning before commencing.

Priority Development Areas (PDAs) and State Development Areas (SDAs) promote economic development and growth by concentrating development in selected areas to ensure efficient land use and infrastructure optimisation to avoid or minimise environmental impacts in accordance with the avoid-mitigate-offset environmental hierarchy.

Land use plans under the T*ransport Infrastructure Act 1994* have an important role in planning for port development on Strategic Port Land (SPL) by identifying where and how particular activities should occur.

Regulating development within the master planned area

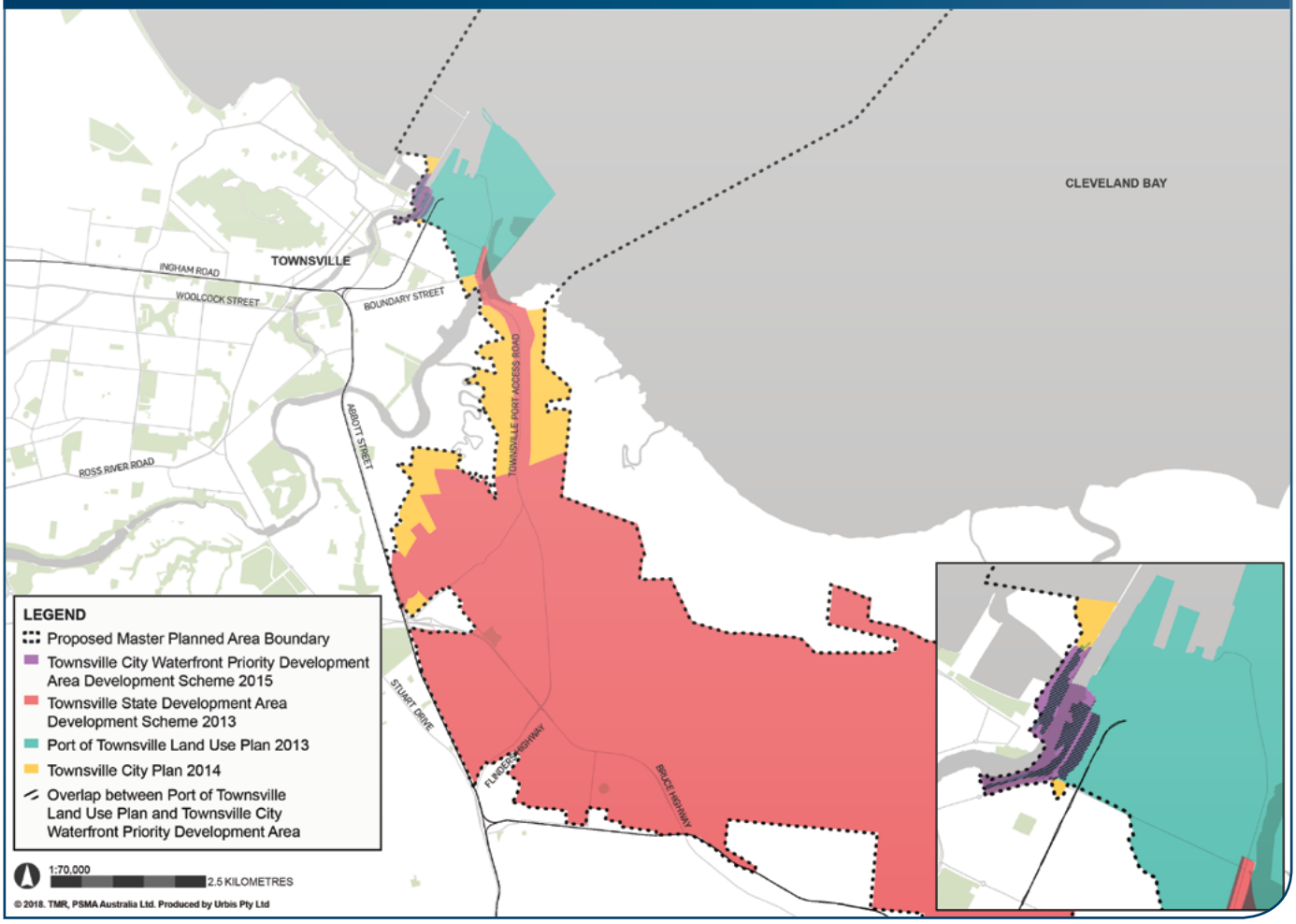
There are a range of Queensland and Australian government controls that apply to port-related development within the proposed master planned area. All environmental legislative requirements will continue to apply to development proposals.

The following instruments currently provide assessment requirements which regulate development within the proposed master planned area (also see **Figure 3**):

- The Townsville City Plan under the *Planning Act 2016*
- The Townsville City Waterfront Priority Development Area Development Scheme under the *Economic Development Act 2012*
- The Townsville State Development Area Development Scheme under the *State Development and Public Works Organisation Act 1971*
- The Port of Townsville Land Use Plan under the *Transport Infrastructure Act 1994*.

There are a range of Queensland and Australian government controls that apply to port-related development within the proposed master planned area.

Figure 3 – Planning instruments operating within the proposed master planned area



Related policy initiatives

There are a number of policy initiatives and projects that are linked with master planning for the priority Port of Townsville. These operate across all levels of government and highlight the significance of the port, supply chain infrastructure, and port-related development.

Queensland Government

Our Future State: Advancing Queensland's Priorities

The Queensland Government has committed to 'Protect the Great Barrier Reef' as one its key priorities identified in *Our Future State: Advancing Queensland's Priorities*. Protecting the environmental, social, and economic value of the Great Barrier Reef drives many of the Queensland Government's environmental policies and activities, including priority port master planning.

Townsville City Deal

The Townsville City Deal is a 15-year commitment by the three levels of government to deliver transformative outcomes for Townsville and its communities. Priority projects under the Townsville City Deal are targeted to support economic growth, deliver major infrastructure, create new and sustainable jobs, and enhance the liveability of the city.

The Commonwealth, state and local governments are progressing a number of City Deal commitments related to the Port of Townsville. These include the Channel Capacity Upgrade, TEARC and acceleration of the TSDA projects under the Port City, and Industry Powerhouse for the North initiatives. The City Deal also identifies several future opportunities for further consideration including Port and Supply Chain Prioritisation.

Maintenance Dredging Strategy and Guideline

The *Maintenance Dredging Strategy for Great Barrier Reef World Heritage Area Ports* (Maintenance Dredging Strategy) provides for sustainable, leading practice management of maintenance dredging. Under the Maintenance Dredging Strategy, Port of Townsville Limited (POTL) is required to develop a Long-term Maintenance Dredging Management Plan (LMDMP) which reflects the *Guidelines for Long-term Maintenance Dredging Management Plans*.

The preparation of a LMDMP will demonstrate a robust long-term approach to the planning, consultation, monitoring and reporting of maintenance dredging activities. The LMDMP offers an avenue for continued improvement in maintenance dredging management, environmental performance, transparency, and accountability.

North Queensland Regional Plan

The Department of State Development, Manufacturing, Infrastructure and Planning is currently preparing the draft North Queensland Regional Plan which will set the vision for northern Queensland, and provide a blueprint for the region's future.

Port Air Emissions Project

The Department of Transport and Main Roads is undertaking a Ports Air Emissions Project to provide further guidance about the air emissions impacts of ports, port-associated industrial activity, and future development of land around ports. The project is being undertaken in partnership with the Department of Environment and Science, and is guided by a steering committee of relevant government partners and ports authorities. The outcomes of this project will help inform future decisions about the siting of development in close proximity to port areas.

Smarter Solutions: Network Optimisation Framework

The Queensland Government's *Smarter Solutions: Network Optimisation Framework* prioritises the consideration of low cost and non-infrastructure solutions within the planning and investment process. The framework encourages network optimisation solutions to ensure the existing transport network and infrastructure is optimised before major investment. In certain situations, this may be able to generate similar outcomes to new infrastructure, reducing or delaying the need for significant capital expenditure and potential environmental impacts that may arise from new development.

State Infrastructure Plan

The *State Infrastructure Plan* (SIP), released in 2016, outlines the Queensland Government's strategic direction for the planning, investment and delivery of infrastructure in Queensland. The SIP outlines that ports are key logistics infrastructure providing access to markets, and the importance of coordinating infrastructure and planning initiatives.

The SIP identifies infrastructure priorities and opportunities supporting the long-term sustainable development of the priority Port of Townsville. These include the Channel Capacity Upgrade, the TSDA, Townsville – Mount Isa Rail Line (MIRL), and investment in port infrastructure to improve access to the port.

State Planning Policy

The SPP outlines the state interests[2] in land use planning and development that must be considered in every planning scheme across Queensland. The SPP recognises the importance of ports to the national and state supply chains and includes a state interest to protect the growth and support the development of strategic ports. The Port of Townsville is identified as both a strategic and priority port under the SPP.

Transport Coordination Plan and draft Queensland Transport Strategy

The *Transport Coordination Plan 2017-2027* (TCP) released in October 2017 brings a contemporary approach to the coordinated planning and management of transport, including a strong focus on customer needs and technology. The TCP provides a strategic framework for the planning and management of transport resources in Queensland for the next 10 years. The TCP also includes a specific objective for transport to facilitate the efficient movement of people and freight to grow Queensland's economy, and includes a commitment to focus on improving connectedness along key freight corridors in regional areas.

The TCP will be complemented by a yet to be released draft Queensland Transport Strategy (QTS). The draft QTS is intended to be a future-focused, whole-of system transport strategy based around strategic customer outcomes and objectives from the TCP. The QTS will guide how TMR responds to future change and position Queensland to respond to and maximise the benefits from transformational changes over the long term, and ensure our future transport system continues to meet customer needs. Both of these overarching documents will recognise the pivotal role that ports and freight supply chains play in supporting the state's economy—connecting Queensland industries with domestic and international markets.

Australian Government

Australian Infrastructure Plan

The *Australian Infrastructure Plan,* prepared by Infrastructure Australia, seeks to identify infrastructure reforms and investments required to manage population growth, the Asia-Pacific's growing demand for Australian goods and services, and environmental challenges. The plan focuses on opportunities to develop the economy of northern Australia and identifies the MIRL rail corridor upgrade, including TEARC, as a future initiative on the Infrastructure Priority List.

Defence White Paper

The *Defence White Paper* was released in 2016 and outlines future Australia Government investment in national defence infrastructure capabilities in Townsville. This will involve new and upgraded facilities at Townsville to transform logistics and drive efficiency such as enhancing storage, distribution and logistics facilities.

National Ports Strategy

The *National Ports Strategy* (2011) recommends recognising the important economic role of ports and related freight supply chains, and developing long term integrated master plans for ports guided by leading practice and supported by various levels of planning.

North-East Shipping Management Plan

The *North-East Shipping Management Plan* was prepared in 2014 by the Australian Maritime Safety Authority to demonstrate how shipping is managed in sensitive marine environments and propose actions to minimise environmental impacts on the OUV of the GBRWHA, ensure safety and manage shipping traffic increases. The North-East Shipping Management Group, including both Australian and Queensland Government agencies, implements the actions on an ongoing basis.

White Paper on Developing Northern Australia

The *White Paper on Developing Northern Australia* was released in June 2015 by the Australian Government. It provides a vision and an economic development plan to unlock the economic potential of northern Australia which is based on proximity to Asia, enhanced international trade opportunities, and national security.

Consultation note:
State interests are defined under the Ports Act. State Interests are also separately defined under other legislation including the *Planning Act 2016* and the *Economic Development Act 2012* and continue to apply under relevant legislation.

[2] State interests in the State Planning Policy are defined under the *Planning Act 2016*, and separately under the *Economic Development Act 2012* and the Ports Act

State interests

Under the Ports Act, state interests are matters that are affected, or likely to be affected by existing uses of the master planned area, and future development at, or for, the port. The purpose of the state interests is to provide a clear, consolidated and comprehensive view of the interest of the state in port-related development within the proposed master planned area. The state interests have been informed by the policy context and regulatory framework as described above.

The purpose of the state interests is to provide a clear, consolidated and comprehensive view of the interest of the state in port-related development.

The state interests have been identified to balance and deliver the interest of the state within the proposed master planned area. State interests are consistently applied across the master planned area through the vision, objectives and desired outcomes, to implement the master plan.

State interests for the master plan

Management of port-related development

The ongoing development and operation of the priority Port of Townsville to meet regional industry and defence requirements

Economic

The sustainable economic growth of the priority Port of Townsville and the surrounding region

Environment

Protection of the OUV of the GBRWHA and other environmental values

Infrastructure

Protection and efficient use of port and supply chain infrastructure

Community

The wellbeing of the community of the Townsville region.

Part A : Context

Townsville and its port

Townsville: port city

Townsville is a port city founded in 1864 as a port for the fledgling settlement on the Ross Creek that served the local community, pastoral areas, the sugar industry and regional goldfields.

The history of the port and the city of Townsville are closely aligned and have developed together over time. The port has one of the most diverse trade profiles of any regional port in Australia and is not reliant on one single commodity. This reflects the diverse regional economy, which includes agricultural, mineral, tourism and manufacturing industries.

The historical proximity of the port to the CBD means that port-related development needs to be managed to support both the ongoing operation of the port and the future redevelopment of waterfront areas.

Townsville: largest city in northern Australia

The port is located in Townsville which is the largest city in northern Australia and is the primary administrative and service centre for North and North West Queensland. The port currently serves as a major distribution point and trade gateway for this large geographic region which has a regional population base of around 800,000 people and strong linkages to mineral and energy resource areas and fertile agricultural hinterlands around Townsville.

The catchment population drives demand for everyday goods and materials that arrive through the Port and industries that rely on the import and export of goods and materials through the port.

Vessels at Flinders Street wharves - early 1900s

Townsville: northern Australia's trade gateway

The Port of Townsville has a comparative trading advantage as the largest container port in northern Australia due to its proximity to the economies and markets of South East Asia and China with sailing times from Townsville two days faster than from Brisbane. As a result, the port is one of the most Asian-orientated Australian ports, with more than 76 per cent of trade with Asian markets. The port also supports broader international trade, with freight departing to more than 136 destinations worldwide.

The port promotes trading opportunities with international partners to meet Asia's accelerating demand for minerals, energy, agricultural products, and tourism experiences.

Figure 4 – Port of Townsville international trade destinations

Role and function of the port

The Port of Townsville is the largest container, automotive and general cargo port in northern Australia and the largest exporter of sugar, lead, zinc, copper and fertiliser in Australia. It serves a vital role in the import trade, with imports including essential everyday goods such as fuel, furniture, electrical goods, cement, bitumen, and vehicles. Additionally, the port is home to commercial fishing, ship repair facilities, and ferry services to Magnetic Island and Palm Island.

The well-established role and importance of the port in supporting trade activities and regional economic growth is set to continue.

International trade through the port is valued at around AU$9 billion annually with more than 30 different commodities from high value minerals to agricultural products such as sugar, fertiliser, rice, and live cattle exported through the port.

The port currently caters for Panamax size vessels. The existing channels support single vessel transits and are relatively narrow which restricts movement of larger vessels (such as car carriers, military vessels, and cruise ships) due to weather and tidal conditions.

The well-established role and importance of the port in supporting trade activities and regional economic growth is set to continue. With the recent environmental approval of the PEP, the demand driven development of new berths and operational areas will support the port's vital role as Australia's shipping, containerised trade, and tourism gateway to the Asia Pacific region.

Export route for North West Minerals Province

The North West Minerals Province (NWMP) is the second largest minerals mining area for base metals (lead, silver, zinc, and copper) in the world and holds approximately 75 per cent of Queensland base metals supply. There is significant potential for the future exploration and extraction of rare earths for export through the port.

These resources provide substantial benefits to the region, as well as being a key contributor to Queensland's economy as a whole.

The port forms part of an integrated supply chain for mineral and energy developments in the NWMP. Product from the NWMP is transported via either road or rail to the port for the export market (or processing). The port has capacity to service future NWMP resource developments, and support economic growth and employment opportunities.

Agriculture

The region serviced by the port contains good quality agricultural land with reliable growing conditions that has, and continues to be, a cornerstone of the regional economy for over a century. Agricultural commodities such as sugar, molasses, live cattle, horticulture and fertiliser comprise almost half the volume throughput of the port. This reflects the fact that agricultural areas are serviced by excellent road and rail connections to the port and nearby processing facilities.

The port enables local producers and graziers to build on an existing strong global reputation for high-quality produce to supply high demand international markets. With global food demand expected to rise by 75 per cent by 2050, the port will provide the export route for expanded agricultural production in the future.

Cargo and containerised freight

More than a quarter of trade through the port is general and industrial cargo. This comprises a range of everyday goods such as fridges, cars, and electronic goods through to cement and project cargo for renewable energy projects, such as wind and solar farms.

Containerised trade at the port has increased to support demand for imported goods. It is estimated that larger vessels containing goods and products ultimately destined for the region may bypass Townsville with the cargo being transported by road or rail to Townsville. Transporting these goods directly to Townsville by ship can reduce transport time, cost, and greenhouse gas emissions from road and rail freight movements which can increase competitiveness.

Fuel

The Port of Townsville has a significant role as a major fuel import hub for North and North West Queensland. This includes fuel for cars, public transport, aviation, and defence industries, as well as diesel for mining and agricultural sectors. The port has capacity to service a growing regional population and keep freight moving into the future.

Defence operations

Australia's defence presence in Townsville is strategically and economically important. The city is a key defence site as the location for the Royal Australian Air Force Base, Lavarack Barracks, and the Ross Island Barracks. The port is essential strategic infrastructure for Australian Defence Force (ADF) operations as it provides access for domestic and overseas naval vessels to military bases and training areas to support ADF operational requirements and capabilities in Northern Australia. The ADF accounts for more than 10 per cent of regional Gross Domestic Product (GDP) and supports a large number of direct and indirect jobs.

The ADF and the Port of Townsville have a 25-year agreement which provides the ADF with priority access and mechanisms to continuously review scheduling, usage and future requirements to enable coordination between the ADF and other users. The port has significant scope and potential to support greater defence operations and basing capability over the next decades. It is important to safeguard this long-term opportunity.

Cruise shipping and tourism

North Queensland features natural wonders, including tropical islands, rainforests, beaches, and the Great Barrier Reef. The Port provides a vital link for the tourism industry by providing berthing for cruise ships which is projected to increase significantly at Townsville, and also land for passenger and barge services to and from Magnetic and Palm Islands. As a result, tourism supports a large number of regional jobs and contributes close to AU$500 million to the local Townsville economy.

Great Barrier Reef

The Great Barrier Reef is one of the natural wonders of the world and was inscribed on the World Heritage List in 1981 in recognition of its OUV. The International Union for Conservation of Nature evaluation stated that '*... if only one coral reef site in the world were to be chosen for the World Heritage List, the Great Barrier Reef is the site to be chosen*'.

The priority Port of Townsville operates within the GBRWHA and it is important that port-related development is managed to protect the environmental values of the Great Barrier Reef. Port activities were specifically recognised by the UNESCO WHC as an existing long-established ongoing use within the GBRWHA in the retrospective statement of OUV.

It is important that port-related development is managed to protect the environmental values of the Great Barrier Reef.

In the context of the proposed master planned area, the marine environment of the GBRWHA supports a range of species, dugong habitat, fish nurseries, seabird, wader and raptor habitats, seagrass and mangrove communities, as well as fringing coral reefs. Within the GBRWHA are the Great Barrier Reef Marine Park (Cth) (GBRMP) and the Great Barrier Reef Coast Marine Park (Qld), as well as declared dugong protection and fish habitat areas located in Cleveland and Bowling Green Bays and around Magnetic Island.

In accordance with the Ports Act, the OUV of the GBRWHA must be an intrinsic consideration in managing port-related development within the master planned area. The master planning approach achieves this objective by:

- recognising where existing regulatory processes provide for the protection of the OUV
- identifying the OUV local attributes, and associated environmental values, and their contribution classifications to the OUV of the GBRWHA relevant to the master planned area and surrounding areas (refer to **Part D** and **Appendix E**)
- identifying potential impacts from development in the master planned area on the OUV of the GBRWHA
- stating EMF objectives to manage the OUV of the GBRWHA
- considering the principles of ESD and contributing to wider actions under the Reef 2050 Plan.

In addition to its environmental values, the Great Barrier Reef is important for the Queensland and Australian economies. It supports a large number of jobs from tourism activities, as well as generating important social, cultural, and economic contributions from fishing, recreational, and scientific activities in the region.

Cumulative impact management

The management of system-wide cumulative impacts on the Great Barrier Reef is important to ensure continuous improvement in managing threats to the Great Barrier Reef. The Queensland Government has committed to 'Protect the Great Barrier Reef' as one its key priorities identified in *Our Future State: Advancing Queensland's Priorities*.

The Queensland Government is managing cumulative impacts on the Great Barrier Reef through a range of policy initiatives. This includes strengthening vegetation clearing legislation, introducing a single use plastic bag ban, regulating activities which contribute to water pollution, and introducing the Maintenance Dredging Strategy and guidelines to provide for sustainable, leading practice management of port-related maintenance dredging.

The protection of the Great Barrier Reef and cumulative impact management is also a central concept in the Queensland environmental assessment and planning systems including through environmental impact assessment processes, and state and local planning processes. This process is described in the 'regulating port operations' section.

The draft master plan complements this system and does not replace or remove existing processes. Master planning does not modify the assessment process under the EPBC Act which requires an action that is likely to have a significant impact on a matter of national environmental significance (MNES) (which includes the Great Barrier Reef) to be referred to the Australian Government, to determine if assessment and approval is required, including the assessment of cumulative impacts.

The Queensland Government is managing cumulative impacts on the Great Barrier Reef through a range of policy initiatives.

The Ports Act manages the cumulative impact of port development on the Great Barrier Reef at a strategic level by limiting port development across the GBRWHA to four priority ports. The draft master plan establishes a strategic approach by constraining port-related development and capital dredging to a defined master planned area. The master planned area limits cumulative impacts by using a precinct-based approach to

concentrate port-related development in locations that avoid areas of environmental significance and buffer sensitive receptors from port-related development. Objectives for specific locations within the master planned area are identified to ensure that impacts on environmental values from port-related development are managed to limit cumulative impacts.

The Ports Act requires that the master plan is reviewed every 10 years. Due to the long-term planning horizon, and to provide for an adaptive management approach, the master plan can be reviewed outside of this mandatory period to respond to major changes in policy or legislation, where appropriate, including outcomes from the Reef 2050 Plan.

Townsville Port Expansion Project

Project background

The PEP is a long-term development plan for the port. It includes capital dredging for channel widening and deepening, and land reclamation to develop a new outer harbour, wharves, and associated infrastructure to support new berths.

The expansion will increase the capacity of the existing shipping channels to allow safer and more efficient access for larger post Panamax size vessels to attract new trading opportunities. It will also facilitate an evolution of the layout and functionality of port land use to maximise the efficiency of operations, and accommodate improved integration of supply chain connections and functionality.

The expansion will increase the capacity of the existing shipping channels allow safer and more efficient access for larger post Panamax size vessels to attract new trading opportunities.

The extent and location of the PEP is shown in **Figure 5**.

Assessment and approvals

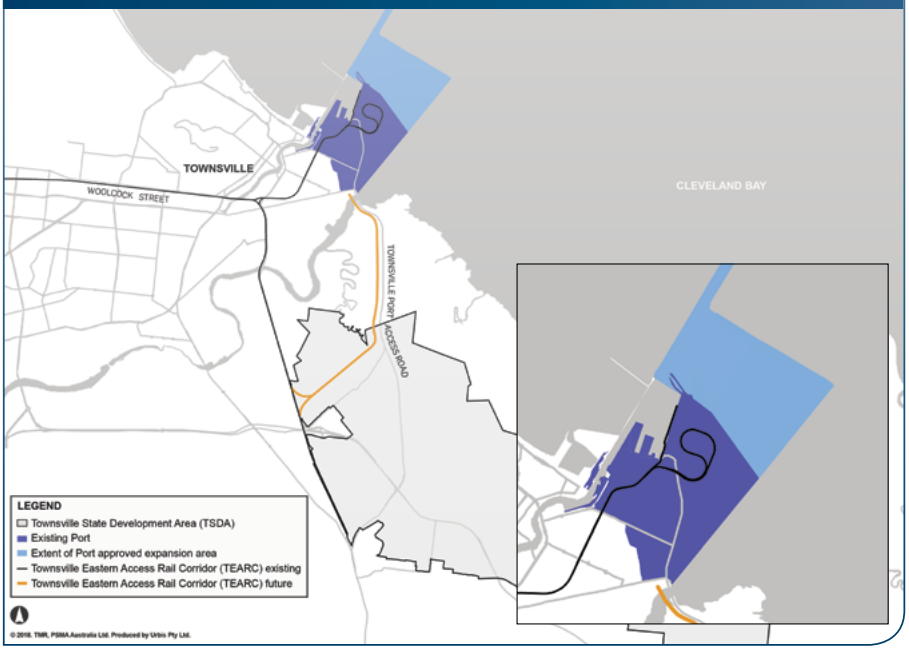
The PEP has been assessed by both the Queensland and Australian Governments under separate state and Commonwealth environmental impact assessment processes.

The PEP was declared as a coordinated project under the SDPWO Act. This process allowed for the potential adverse environmental impacts of the project to be evaluated against the requirements of state legislation which included the Ports Act. On the 29 September 2017[3], the Coordinator-General recommended that the project proceed subject to conditions. Section 49 of the Ports Act includes transitional provisions which allowed for the assessment process for this project to continue as it commenced prior to the commencement of the Ports Act.

The PEP was also determined to be a 'controlled action' under the EPBC Act due to its potential impacts on MNES. The EIS for the PEP was assessed and approved to proceed with conditions by the Commonwealth Government on 5 February 2018 for capital dredging, land reclamation, and infrastructure construction.

It should be noted that whilst environmental approvals have been received, permit requirements and commercial triggers will need to be satisfied for the project to proceed.

Figure 5 – Location of the Port Expansion Project area



Potential environmental impacts

The potential environmental impacts of the PEP have been subject to detailed assessment and approval by the Queensland and Australian Governments in accordance with legislation. This provides certainty that the environmental impacts have been fully considered and will be controlled through conditions on development.

The approval conditions issued by the Commonwealth Government for the PEP include specific measures to manage the impacts from port-related development on MNES and the OUV of the GBRWHA. The conditions are legally enforceable management measures that apply to construction and operational activities to ensure that unacceptable impacts on environment values do not occur. The approval conditions can be found here[4].

A port wide environmental risk assessment was undertaken in association with the master planning process which included consideration of the assessment processes for the PEP in managing potential impacts on environmental values. The risk assessment recognised that existing assessment processes provide for the detailed consideration of potential impacts on environmental values and that approval conditions have been applied to mitigate the impacts of the development.

Capital dredging

Capital dredging has been assessed by the Coordinator-General in accordance with state legislation and the Australian Government against EPBC Act (Cth) requirements. The state and Commonwealth conditions provide for capital dredging to occur with requirements to manage environmental impacts.

This provides certainty that the environmental impacts have been fully considered and will be controlled through conditions on development.

The requirements include establishing a technical committee to oversee dredging works, the preparation of dredge management plans, undertaking environmental monitoring for matters including water quality, marine fauna, seagrasses and corals, and the delivery of offsets to achieve a net benefit for the OUV of the GBRWHA.

The conditions set out in the Townsville PEP – Coordinator-General's Evaluation Report and the EPBC Act approval also provide for the beneficial reuse of capital dredged material to create additional port land consistent with requirements under Section 37(2) of the Ports Act.

The preliminary draft master plan is consistent with the assessed and approved footprint of the PEP.

[3] https://www.statedevelopment.qld.gov.au/resources/project/townsville-port/tpe-evaluation-report.pdf

[4] http://epbcnotices.environment.gov.au/_entity/annotation/of12001e-c30b-e811-9fee-005056ba00a7/a71d58ad-4cba-48b6-8dab-f3091fc31cd5?t=1523926269111

Townsville Eastern Access Rail Corridor

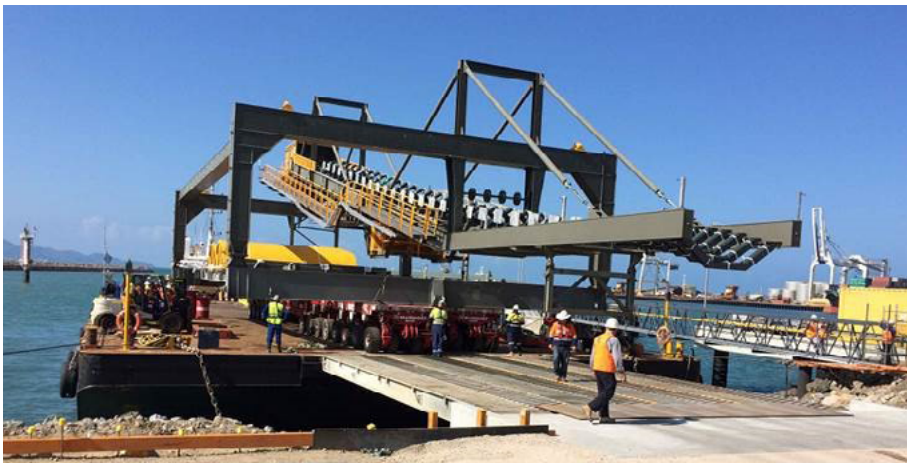
The proposed TEARC will comprise 8.3km of new single narrow-gauge track from Cluden through the TSDA and connecting with the TPAR infrastructure corridor to accommodate rail access for longer trains in the future. Delivery of the TEARC Detailed Business Case is identified in the Townsville City Deal and supported by the Australian Government, Queensland Government and Townsville City Council.

The TEARC Detailed Business Case prepared by Building Queensland has considered the new rail corridor and associated works to connect trains directly into the port without travelling through South Townsville. The Queensland Government has approved corridor protection actions to preserve the TEARC corridor with implementation pending future demand for additional supply chain capacity.

The TEARC project has been identified as critical enabling infrastructure in the short to medium term to support the optimal port layout and the PEP. This will improve the efficiency of the port network, minimise the interaction between the road and rail network and enhance safety outcomes, maintain the competitiveness of the port and support the regional economy.

Townsville State Development Area

The TSDA was declared in 2003 as a defined area of land dedicated for industrial development. It provides industrial land strategically located for the establishment of industrial development of regional, state and national significance with direct connections to major road and rail networks, and the Port of Townsville. The TSDA provides opportunities for a diverse range of industries such as manufacturing, minerals processing, intermodal freight terminals, logistics and bulk storage which supports economic development of the port.



Managing sustainable growth

Port optimisation, supply chain infrastructure, including capital and maintenance dredging are critical to long-term sustainable growth of the port.

Port optimisation

The Port of Townsville is a critical component of a world-class supply chain that enables the efficient movement of freight from producers to consumers, both domestically and worldwide. Port optimisation is a key objective in the efficient planning and operation of port infrastructure and activities which support the sustainable growth of the port, and improve economic, environmental and social outcomes.

To operate efficiently the port relies on the region's integrated infrastructure network. This network is comprised of road, rail, shipping and other transport infrastructure, telecommunications, water and gas pipelines, and electricity generation and transmission assets.

The infrastructure network supports economic productivity and is a critical factor in optimising the movement of goods to and from the port and its connected industries and consumers.

There are a variety of matters that can promote or hinder optimisation initiatives, including whether the initiative is being driven privately or by government. To support both government and private initiatives, a number of strategy and planning documents have been released by the Australian and Queensland governments that consider opportunities for optimisation at the planning and investment stages.

At a national level, the Australian Infrastructure Plan seeks to improve the efficiency of infrastructure networks to drive greater sustainability. This approach has been reflected in various Queensland Government policies, plans and project assessment frameworks which focus on maximising the use of existing infrastructure and planning for smart solutions for new infrastructure.

The Queensland Government's preference is for state agencies to actively consider all opportunities to extend the life of existing assets before capital expenditure is allocated to build new infrastructure. This preferred approach is also reflected in the SIP.

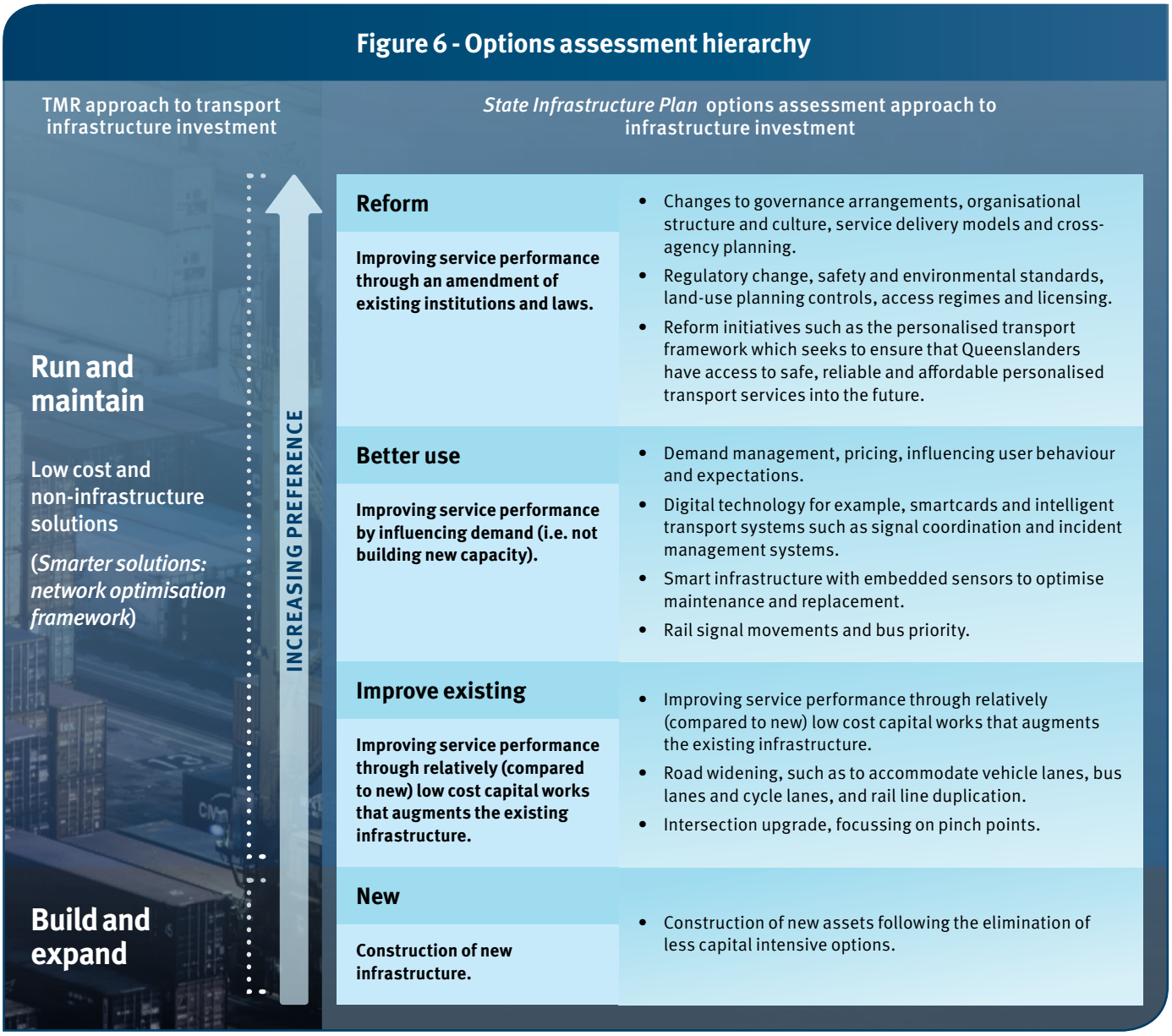
The SIP provides the strategic direction of the planning, prioritisation and delivery of infrastructure in Queensland, and a four-year program of potential future investments based on independent advice provided by Building Queensland. Through the SIP, it is recognised that optimisation can be achieved through, among other things, planning for infrastructure corridors, and data gathering and analytics for improved demand forecasting and information sharing.

The Queensland Government's *Smarter Solutions: Network Optimisation Framework* prioritises the consideration of low cost and non-infrastructure solutions within the planning and investment process. The framework encourages network optimisation solutions to ensure the existing transport network and infrastructure is optimised before major investment. In certain situations this may be able to generate similar outcomes to new infrastructure, reducing or delaying the need for significant capital expenditure and potential environmental impacts that may arise from new development. Building on the strategic direction set by the SIP, the TCP includes system-level objectives for transport to facilitate the efficient movement of people and freight to grow the economy. It includes a commitment to focus on improving connectedness along key regional freight corridors. The TCP includes an investment prioritisation hierarchy (**Figure 6**) which focuses on optimising existing infrastructure before investing in new infrastructure.

While the port is a critical component of an important supply chain, optimisation needs to be considered broadly. In many cases, infrastructure constraints and opportunities for optimisation sit outside the port. A whole-of-system approach including both land and marine side transport systems is needed to deliver efficient and affordable infrastructure.

The appropriateness of optimisation will vary depending on the location and nature of the matter or type of infrastructure being considered. Optimisation should be approached on a case-by-case basis. No single approach or technology can be applied broadly in all situations everywhere. The relevant environmental, social or economic aspects may apply to a particular optimisation initiative will dictate its appropriateness and likelihood of success.

Figure 6 - Options assessment hierarchy



Factors that may be relevant when considering optimisation across the integrated port supply chain network may include, but are not limited to:

- geographic, tidal and climatic factors
- location and distances between land and marine-based infrastructure
- compatibility of different trades and technologies at key locations including intermodal facilities, storage facilities and wharves
- location of infrastructure corridors and connections, intermodal operations and relevant protection mechanisms
- configuration of uses and compatibilities
- land tenure and licence agreements
- environmental outcomes and the principles of ESD
- safety considerations
- market factors
- the timing and extent of capital and maintenance dredging (i.e. navigation channels, swing basins and/or berth pockets)
- access to, and number and utilisation of, port berths and ability to control allocations
- the operational efficiency of the port and supply chain network.

The PEP provides the opportunity to relocate port operations and land-based access to reduce the extent of interface impacts with surrounding land. The PEP also promotes port optimisation opportunities through the relocation of compatible land uses and facilities to improve alignment and integration with supply chain infrastructure such as the TEARC. Future development and upgraded infrastructure may enable different aspects of port operations and infrastructure to be optimised, subject to commercial arrangements and environmental considerations.

Supply chain infrastructure assists goods transit the port efficiently and is critical to the effective operation of the port network

Efficient vessel movements also play an important role in port optimisation by ensuring that vessels safely navigate the inner port harbour, channels, anchorages and pilotage areas. The *Port Procedures and Information for Shipping – Port of Townsville* issued by the Regional Harbour Master under the *Transport Operations (Marine Safety) Act 1994* provides direction to all ship owners, masters, and other persons to ensure maritime safety and minimise potential environmental impacts.

Supply chain infrastructure

The efficient operation and protection of supply chain infrastructure supports the role of the port as the first and last mile of the regional transport network which operates 24 hours a day, Seven days a week, year round. Supply chain infrastructure comprises a network of infrastructure corridors and nodes which include road, rail, and marine-based infrastructure connecting the port to domestic and international economic markets.

Supply chain infrastructure assists goods transit the port efficiently and is critical to the effective operation of the port network as well as the regional businesses and industries it services. Supply chain corridors benefit from direct and unimpeded access to destinations through an integrated transport network which provides opportunities for increased trade to service the catchment and industry.

The supply chain infrastructure supporting the port and port-related development within the horizon of the draft master plan is summarised in **Table 1**.

New or upgraded supply chain infrastructure which increases the capacity and efficiency of the infrastructure networks servicing the port will support increased levels of trade and enhance economic opportunities.

Table 1 – Supply chain infrastructure			
Type of supply chain infrastructure	**Supply chain infrastructure**	**Function**	**Significance**
Road	Townsville Port Access Road (TPAR)	Connects the Bruce Highway and Flinders Highway (Stuart Bypass) to the port. Future duplication may be required as port trade increases.	Primary freight road link into the port for B double and type 2 road trains.
	The Bruce Highway	Connects the port to points north and south along Queensland's east coast as part of the National Network.	Queensland's primary eastern highway.
	The Flinders Highway (Stuart Bypass)	Connects the port to the western regions, key resources and agricultural operations in Queensland and the Northern Territory.	North Queensland's primary western highway.
	Other local and state road networks	Provides connection for region to the port.	Key to connecting major port road networks with existing highways and haulage routes
Rail	Mount Isa Rail Line (MIRL)	Connects the port to the North-West Minerals Province and Phosphate Hill.	Primary line used by the port's minerals and agriculture supply chains.
	North Coast Line (NCL)	Connects Townsville to Cairns and Brisbane to Townsville.	Primary line along the Queensland coastline.
	TEARC (Proposed)	Future rail line from the MIRL and NCL South of Townsville, parallel to the TPAR and into port. Redirects rail freight away from urban areas and at-grade crossings.	Critical to allowing longer trains to enter the port and increase port operational efficiency.
	Two Intermodal Rail Terminals (Stuart)	Provides intermodal connectivity to the TPAR linked to the NCL and the MIRL.	Major road-to-rail facilities for port industry within local rail and road freight network.
	Port of Townsville (Jetty) Branch Rail Line	Connects the sidings, cargo handling and storage facilities within the port to the external rail network.	Major line connecting the NCL and MIRL to the port.
Marine	Arrival, Sea and Platypus channels (future widening and deepening)	Navigation channels provide safe passage for vessels through Cleveland Bay.	Critical for vessel access into and within the port.
	Jetties, breakwaters, berth pockets, swing basins and wharves situated within the port and Cleveland Bay	Infrastructure required for effective and efficient operation of the port.	Critical infrastructure and facilities for vessel access into and within the port.
	Pilotage areas, anchorages, lead lights and vessel traffic service areas	Maritime areas providing for safe and efficient movement of vessels.	Vital to ensure the safe and efficient shipping operations.
Port (land side)	Gantry cranes, storage facilities, internal road/rail, linear infrastructure (conveyors, pipelines) and trunk infrastructure networks (such as power, water and waste)	Provides for cargo handling, storage and transport of goods within the port.	Critical for ongoing efficiency of port operations.
Other	Multiple road to rail access points	Provides intermodal connections for port-related industries.	Important to ensure efficient access for loading and unloading of goods at many points along the rail corridors.

Dredging requirements

The Ports Act restricts capital dredging to within a master planned area for a priority port and mandates the beneficial reuse of material generated from capital dredging. Capital dredging includes creating or enlarging channels, basins and berths, foundation works, and trenching. Capital dredging is different to maintenance dredging, which involves removing mobile natural sediments that have accumulated in the existing navigation channels, berth pockets, approaches and swing basins to maintain existing approved dredging areas, and ensure continued safe navigational movement of vessels.

Capital dredging

Capital dredging is critical for economic growth by expanding the capacity of the port to accommodate the safe and efficient movement of larger vessels and increased vessel movements through Cleveland Bay.

The Ports Act allows capital dredging within the master planned area providing that the material generated is beneficially reused. Beneficial reuse is the practice of using dredged material for a purpose that provides social, economic or environmental benefits (or a combination of these). This means dredged material is managed as a valuable resource rather than a product destined for disposal.

Future port-related capital dredging will not occur outside the proposed master planned area and will only occur within the defined extent of the Marine infrastructure precinct (refer to **Part C**). The extent of capital dredging anticipated by the draft master plan is consistent with the capital dredging that has been subject to detailed assessment by the state and Commonwealth governments.

Maintenance dredging

Ongoing maintenance dredging is required at the port, as the removal of accumulated sediment is essential to facilitate safe passage of vessels, ensuring optimisation of operations and compliance with navigational requirements. Without maintenance dredging, navigation channels would become shallower and compromise the safe passage of vessels, efficient operation of the port and associated supply chains.

Maintenance dredging and the sea-based placement of dredged material is regulated by a comprehensive regulatory approval system at both the Australian and Queensland Government levels in accordance with international agreements, and state and Commonwealth regulatory requirements.

In accordance with the Maintenance Dredging Strategy, POTL is required to develop a LMDMP that creates a framework for continual improvement in environmental performance of maintenance dredging. The LMDMP will ensure maintenance dredging and any material placement options are properly assessed, and that leading practice measures are in place to manage maintenance dredging operations.

This will involve the preparation of a Maintenance Dredging Environmental Management Plan to provide detailed campaign-specific operational controls supported by environmental monitoring to monitor effects of dredging activities dredging activities and inform adaptive management requirements. These should be reviewed and updated after the completion of each dredge campaign in accordance with the requirements of the relevant state or Commonwealth regulator.

Areas adjoining port operations

The interface between the port and adjacent urban areas is important to ensure that the redevelopment of the waterfront can proceed without compromising the efficient operation of the port, and also protect the wellbeing of communities located in close proximity to the port. Future development at the following locations will have a direct interface with the port:

- Townsville Entertainment and Convention Centre
- land adjacent to the port at the eastern end of Palmer Street
- land within the TCWPDA adjacent to the port.

Future development of these areas must be designed and constructed to address the interface with port operations and mitigate potential reverse amenity impacts that may otherwise conflict with port operations, particularly berths and land used by industry. Similarly, port operations should be located, designed, and operated to minimise potential adverse amenity impacts on adjacent urban areas.

The strategic vision for the master plan

The priority Port of Townsville will be a major driver of economic growth as North Queensland's primary freight, logistics, container, tourism and defence infrastructure hub. Sustainable port development at the priority Port of Townsville will provide for the management of the Outstanding Universal Value of the Great Barrier Reef World Heritage Area and potential impacts on environmental, social and cultural values within and surrounding the master planned area.

Part B: Strategic vision, objectives and desired outcomes

Strategic vision

The long-term strategic vision for the proposed master planned area with the planning horizon out to 2050 is:

'The priority Port of Townsville will be a major driver of economic growth as North Queensland's primary freight, logistics, container, tourism and defence infrastructure hub. Sustainable port development at the priority Port of Townsville will provide for the management of the OUV of the GBRWHA and potential impacts on environmental, social, and cultural values within and surrounding the master planned area'.

Objectives

The objectives for the proposed master planned area identify how the strategic vision will be achieved and the alignment with state interests[5].

The objectives for the master planned area are as follows:

Table 2 – Objectives

State interest	Objectives
Management of port-related development	**Sustainable growth** – enable the ongoing sustainable growth of trade through the priority Port of Townsville. **Safe navigation** – maintain and enhance the safe operation of the port's navigable waterways. **Efficient operations** – maintaining and enhancing the efficient and effective operation of the port. **Effective land use** – continue to use and develop land and marine infrastructure effectively. **Operational integration** – continuous optimisation of the nature and location of port operations to minimise off-site impacts and to improve integration with surrounding land uses.
Economic	**Economic prosperity** – continue to facilitate the economic growth of the state and support the North and the North West Queensland regions.
Environment	**Protecting the GBRWHA** – avoid, minimise and offset impacts from port-related development on the OUV of the GBRWHA. **Environmental values** – avoid and minimise impacts from port-related development and associated activities on environmental values, within and surrounding the proposed master planned area.
Infrastructure	**Supply chain efficiency** – protect land required for supply chain infrastructure to maximise the effective operation of the transport network servicing the port. **Efficient logistics** – ensure port-related development is located to support efficient operation of supply chain infrastructure and improve road freight transport efficiency by catering for High Productivity Vehicles on road freight routes leading to the port. **Industrial opportunities** – promote opportunities for the growth of logistics, freight and complementary land uses at strategic locations.
Community	**Safety and security** – provide for the safety and security of people, shipping and property. **Community wellbeing** – support the wellbeing of the community in the Townsville region. **Community access** – provide for community use of public space.

[5] Objectives may align with more than one state interest.

Desired outcomes

The desired outcomes for the proposed master planned area will contribute to achieving the strategic vision. Outcomes to be achieved within the master planned area are summarised as follows[6]:

Table 3 – Desired outcomes

State interest	Desired outcomes
Management of port-related development	**Port optimisation** – land and marine areas are optimised for port operations and associated industries **Capital dredging** – capital dredging is undertaken, where necessary, to support the ongoing operation, expansion and growth of the priority Port of Townsville **Safe navigation** – safe, efficient access for all vessels to shipping routes is maintained **Maintenance dredging** – maintenance dredging is undertaken to ensure safe and efficient navigation of waterways in accordance with the LMDMP developed under the Maintenance Dredging Strategy, and relevant legislative requirements.
Economic	**Industrial powerhouse** – land areas, associated infrastructure and facilities are provided to encourage port-related industries of regional, state, national and global significance to locate within the master planned area. **Regional prosperity** – economic benefit and employment opportunities are provided for the Townsville and surrounding regions. **Extractive resources** – the economic value of extractive resources and other minerals are recognised.
Environment	**Beneficial re-use** – material generated from capital dredging is beneficially reused or placed on land where it is environmentally safe to do so **Sustainable port development** – protect environmental values, including those that contribute to the OUV of the GBRWHA, by managing port-related development **Environmental management** – existing state and commonwealth legislation, planning processes and policies are recognised and appropriately addressed.
Infrastructure	**Supply chain infrastructure** – critical supply chain infrastructure is protected, including the TPAR, TEARC and connections between land and marine areas **Responsive infrastructure** – port and supply chain infrastructure is planned and provided to meet market demand with capacity to adapt to changing technology and cargo trends **Optimised infrastructure** – the use of port and supply chain infrastructure is optimised, prior to any expansion or development of new infrastructure where practicable **Avoid encroachment** – encroachment from incompatible uses is avoided.
Community	**Built environment** – adverse impacts from port-related development on sensitive uses are appropriately managed and minimised, and sensitive uses do not encroach on port operations. **Waterfront activation** – appropriate public access to the waterfront is provided where practicable having regard to existing and future port operational needs, safety and security considerations. **Cultural heritage** – Impacts on cultural heritage values are minimised, in accordance with the cultural heritage duty of care under section 23(1) of the *Aboriginal Cultural Heritage Act* 2003[7].

[6] It is recognised that outcomes may align with more than one state interest

[7] For further information on the cultural heritage duty of care requirements, refer to the Department of Aboriginal and Torres Strait Islander Partnership's *Aboriginal Cultural Heritage Act 2003* Duty of Care Guidelines at https://www.datsip.qld.gov.au/resources/datsima/people-communities/cultural-heritage/duty-of-care-guidelines.pdf

Part C : Master planned area and precincts

Overview

The spatial extent of the proposed master planned area encompasses land and marine areas needed for the efficient development and operation of the port, and for the management of potential impacts on the OUV of the GBRWHA and other environmental values.

Within the proposed master planned area, precincts have been identified to indicate the long-term intent for port-related development at specific locations.

Under the Ports Act, the master planned area may include land that is outside SPL. This allows for the identification of land and infrastructure outside SPL that is critical to the long-term operation of the port, as well as port and supply chain infrastructure, and a coordinated planning approach for port-related development.

The precinct based approach has enabled identification of those areas suitable for long-term industrial development, and those areas where environmental values are the predominant consideration.

The boundary of the proposed master planned area has been established to consider and avoid areas that contain significant environmental values.

The proposed master planned area includes land that is already identified in existing planning instruments for future port-related industrial development and supply chain infrastructure. This land provides sufficient area for port-related development to occur within the planning horizon of the draft master plan out to 2050. It is also recognised that within the long-term planning horizon existing industrial areas outside the proposed master planned area identified under the Townsville City Plan may also be used for port-related development.

The marine extent of the proposed master planned area is within port limits but outside the state and Commonwealth marine parks. Capital dredging will only occur within the proposed master planned area consistent with state and Commonwealth requirements.

Proposed master planned area

The draft master planned area includes the land and marine areas shown in **Figure 8** below and also provided in **Appendix A**. The proposed master planned area covers approximately 16,500 hectares. The land component has an area of 5000 hectares while the marine component covers 11,500 hectares.

The proposed master planned area comprises:

- the Port of Townsville SPL, including the future approved reclaimed expanded port area
- part of the TSDA
- part of the Townsville City Council (TCC) local government area
- part of the TCWPDA
- marine areas within the Port of Townsville port limits that are not within Commonwealth or state marine parks
- part of the GBRWHA.

Draft precincts

The role of precincts is to identify the long-term purpose and intent for specific areas within the proposed master planned area. The precincts provide for the spatial implementation of the draft master plan.

The following precincts are included within the proposed master planned area and are described as follows:

- Environmental management precinct
- Infrastructure and supply chain corridors precinct
- Interface precinct
- Marine precinct
- Marine infrastructure precinct
- Marine services and recreation precinct
- Port industry and commerce precinct.

Each precinct (see **Figure 7**) is explained in the following sections, by describing the:

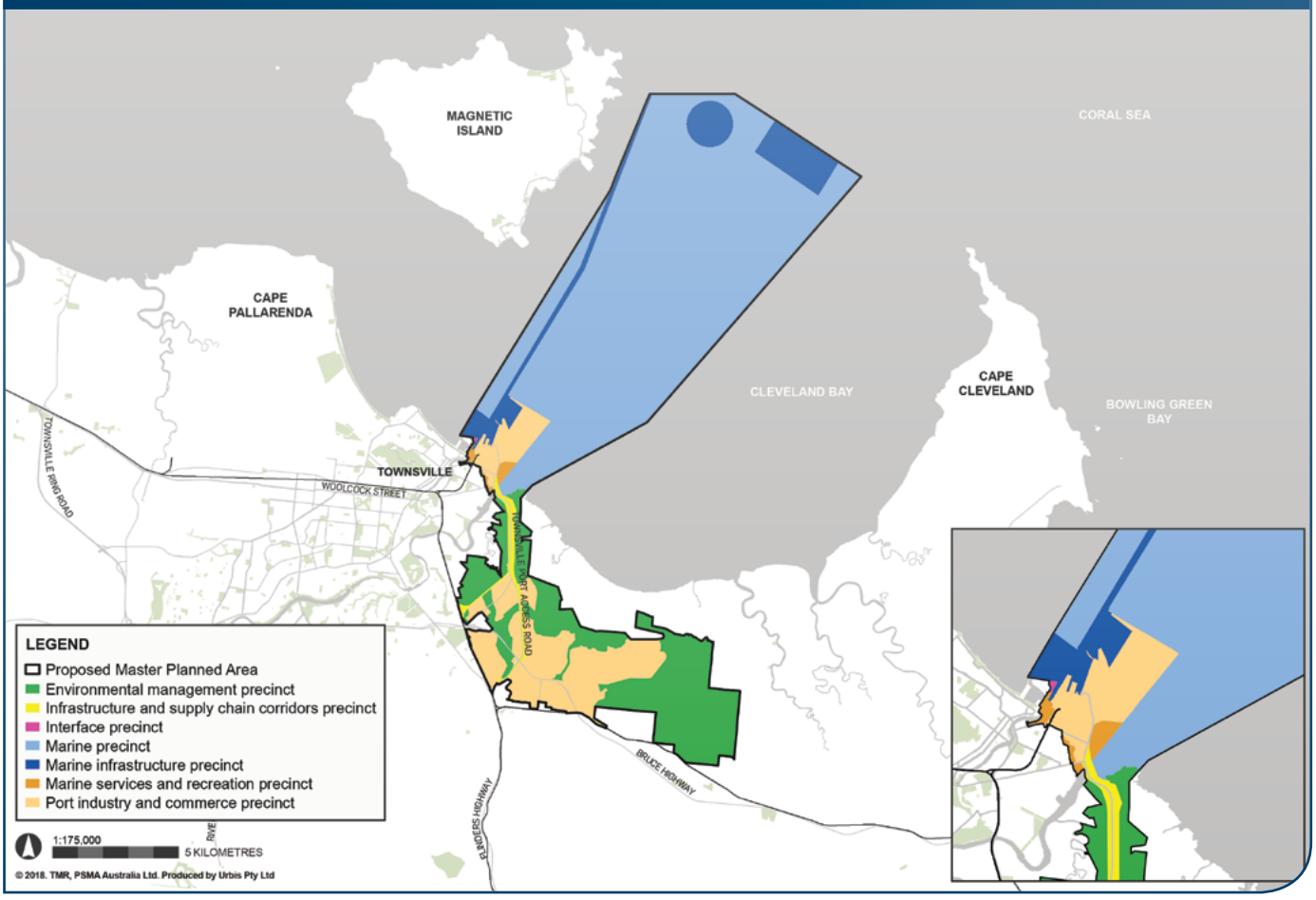
- long-term **purpose** of the precinct
- precinct area **description**
- precinct **outcomes**.

The precincts support cumulative impact management within the master planned area by identifying areas with environmental values where development should be limited, as well as areas that may be suitable for infrastructure. The precinct outcomes apply to specific areas within the proposed master planned area whereas the desired outcomes (identified in **Part B**) apply more broadly to the proposed master planned area.

The EMF objectives outlined in **Part D** provide for the management of potential impacts from port-related development on environmental values within each of the precincts. All these elements combine to achieve the strategic vision for the proposed master planned area.

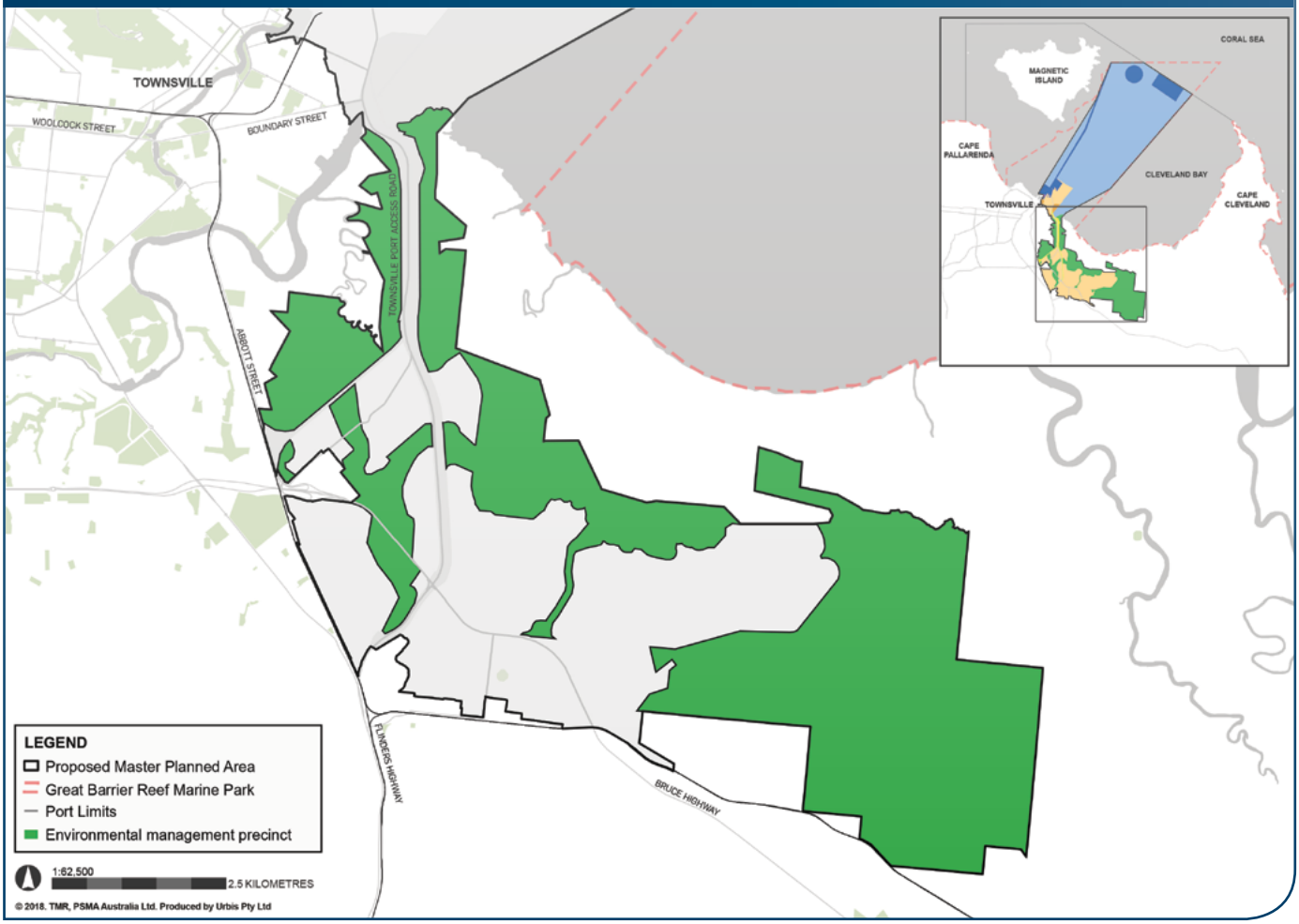
Consultation note:
Amendments to planning instruments and subordinate legislation may result in changes to the proposed master planned area boundary and draft precincts before the master plan is finalised.

Figure 7 – Proposed master planned area draft precincts



Environmental management precinct

Figure 8 – Environmental management precinct



Purpose

The purpose of the **Environmental management precinct** is to limit development and, where possible, avoid adverse impacts on environmental values.

Description

This precinct comprises land within the TSDA identified as being of environmental significance. It functions as an environmental buffer between port-related development and intertidal areas with high ecological significance.

Outcomes

Uses that do not compromise the environmental values of the area may be acceptable.

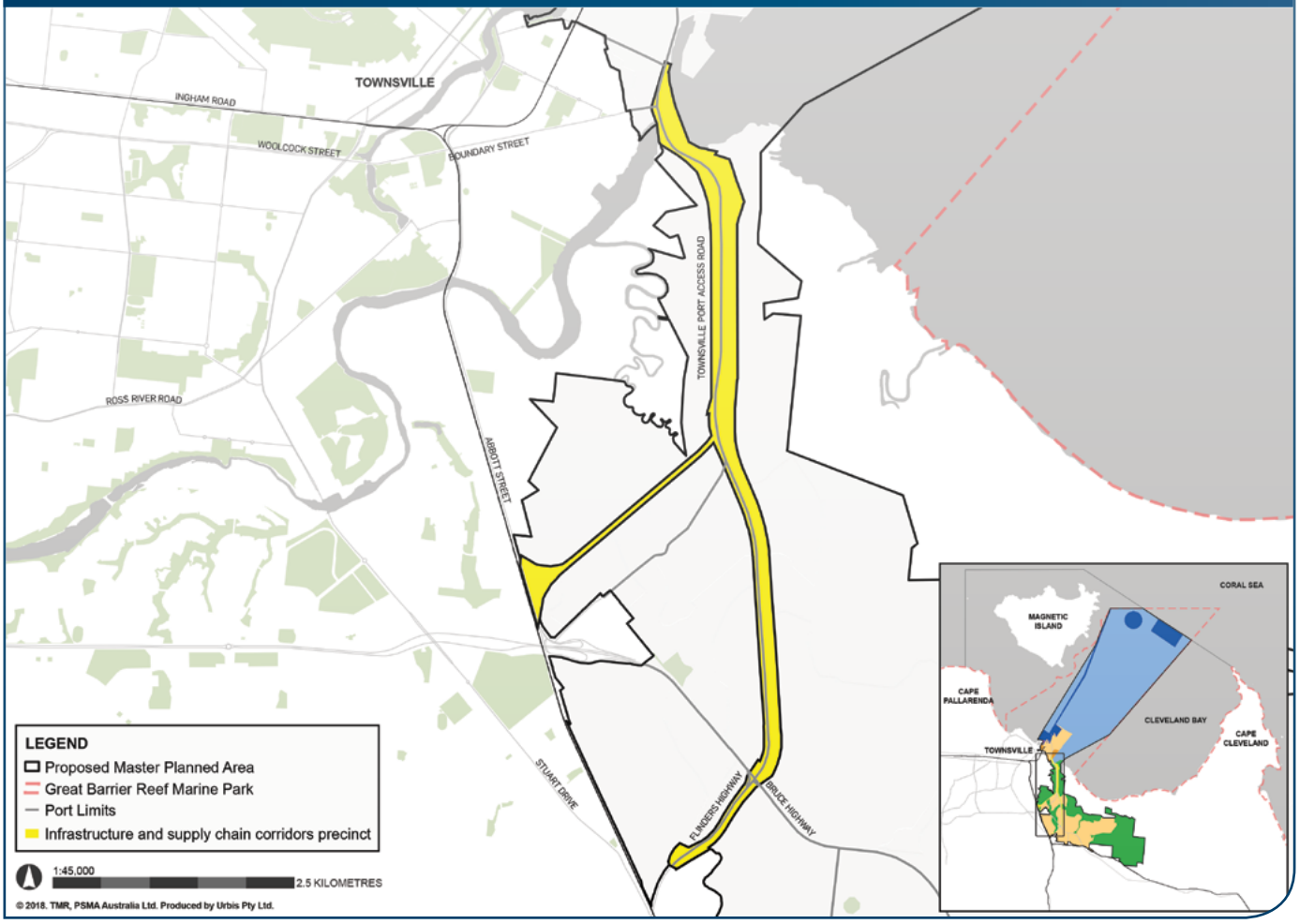
Essential linear infrastructure such as telecommunications and electricity network infrastructure to service adjoining industry may be located in this precinct if no other alternative is available.

Non-essential infrastructure and port-related development may be considered where environmental impacts can be managed to maintain ecological processes.

Extractive industry uses in the identified Muntalunga Key Resource Area (KRA 154) will avoid and minimise impacts on the environmental and cultural heritage values of the Muntalunga Range.

Infrastructure and supply chain corridors precinct

Figure 9 – Infrastructure and supply chain corridors precinct



Purpose

The purpose of the **Infrastructure and supply chain corridors precinct** is to allow for the provision of the major land-based supply chain corridor infrastructure and the development of critical marine supply chain infrastructure to and from the port, required for the ongoing operation and expansion of the port, within the master planned area.

Description

This precinct includes land containing the TPAR and land also reserved for the preferred alignment of the TEARC (including space for possible future port connection for bulk material handling and transportation). It also includes part of the NCL and part of the Flinders Highway (Stuart Bypass).

Outcomes

Development provides for or maintains the safe and efficient operation and management of supply chain infrastructure.

Development protects future rail and road alignments and existing transport corridors.

Non-port-related development is limited to necessary minor and interim service infrastructure. This may include linear infrastructure, utility installations and telecommunication facilities.

Development optimises the efficient use of land and infrastructure to minimise its footprint.

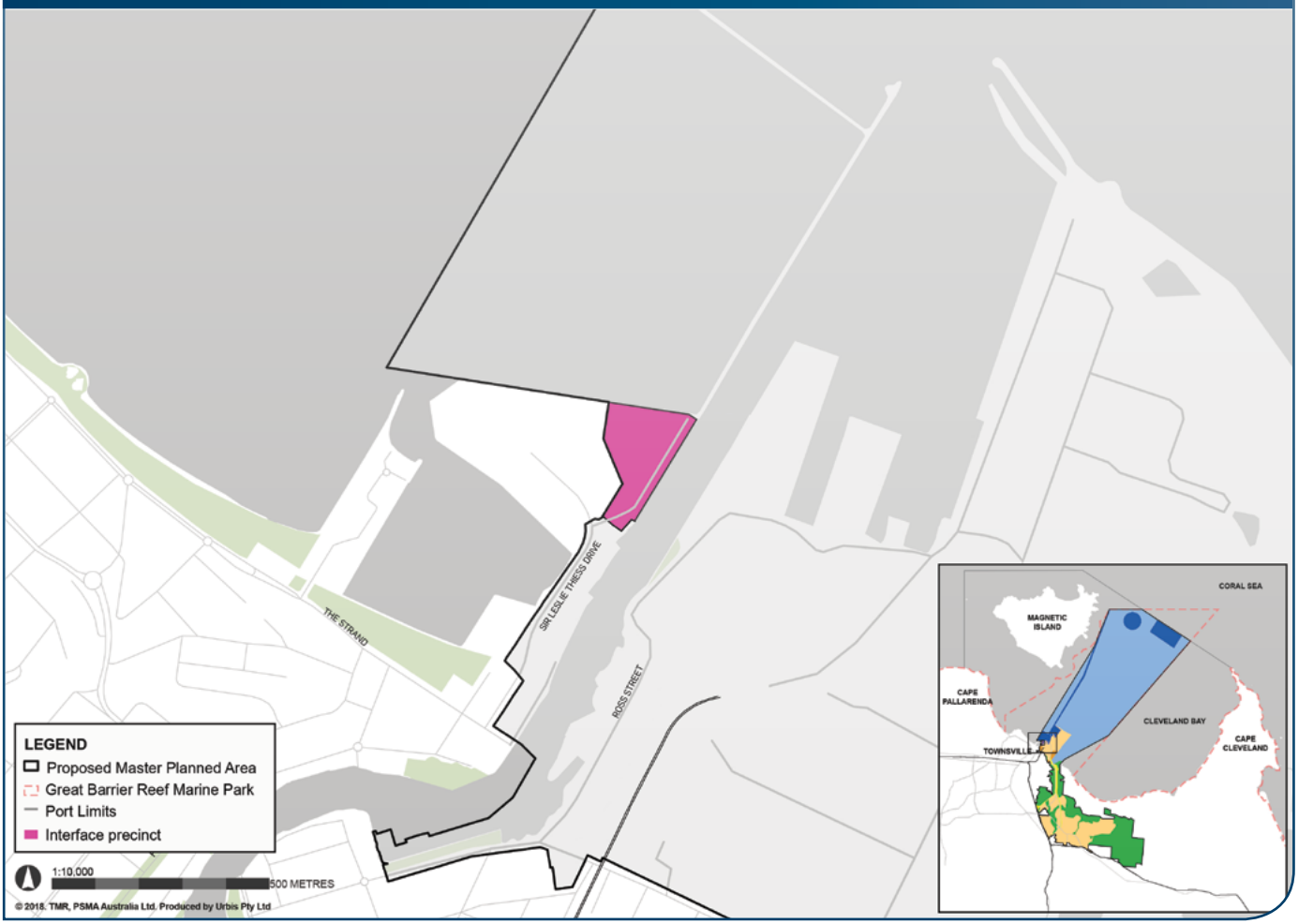
Development supports the establishment of common use infrastructure where practicable.

Development within this precinct is not to cause or result in reverse amenity impact on the development of, or upgrading of key transport routes critical to the priority Port of Townsville.

Development is to be appropriately located, designed, constructed and operated to avoid potential adverse impacts on environmental values where possible.

Interface precinct

Figure 10 – Interface precinct



Purpose

The purpose of the **Interface precinct** is to manage the interface between sensitive land uses or areas where sensitive land uses may be developed adjoining port operations.

Description

This precinct includes a portion of the western breakwater peninsula currently occupied by the Townsville Entertainment Centre. During the life of the master plan the Townsville Entertainment Centre may relocate, and if this occurs, this land will be available for redevelopment. Given the proximity of this land to the port, future development of the area has the potential to impact on the operation of the port, as well as the future use of this land potentially being impacted by port operations.

Outcomes

Development within this precinct must not restrict the operation or development of port activities including supply chain infrastructure.

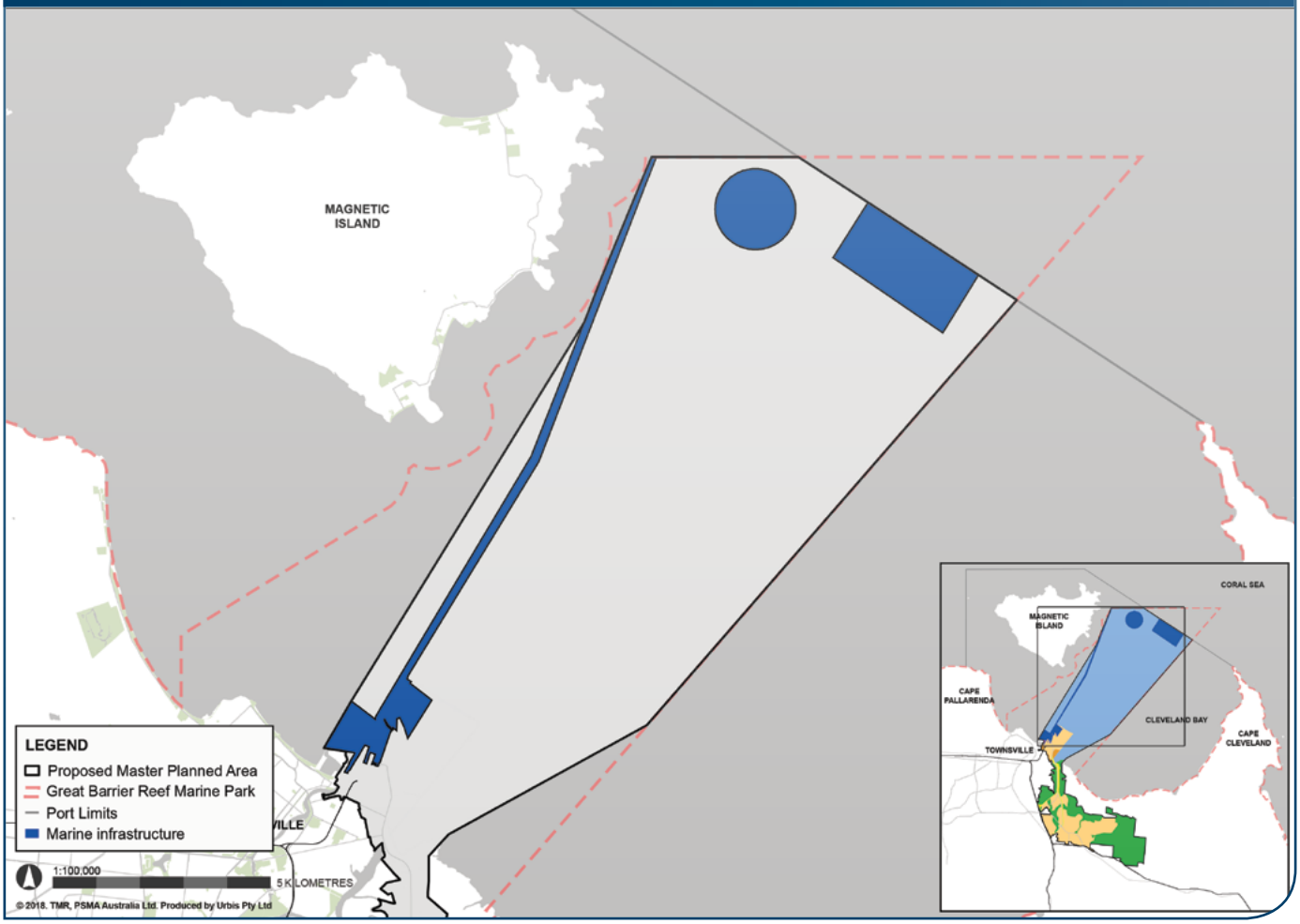
Development and land uses must be appropriately located, and incorporate suitable design measures to minimise potential impacts from port operations on sensitive land uses including:

- orientation and design of development to minimise visual impacts
- built form, including building design, height and materials
- management of emissions, noise, light, odour and dust.

Future development in this precinct should maintain public access to the waterfront.

Marine infrastructure precinct

Figure 11 – Marine infrastructure precinct



Purpose

The purpose of the **Marine infrastructure precinct** is to ensure safe shipping access to navigation channels and waterside areas is maintained and to provide for marine-based port infrastructure. The precinct provides for works required to widen and deepen the existing shipping channels to facilitate the sustainable growth of the port.

Description

This precinct includes the existing shipping channels, swing basins, berth pockets, breakwaters, and the existing maintenance dredged material placement area. Future capital dredging for shipping channels and to create a new outer harbour and berth pockets will occur in this precinct consistent with state and Commonwealth PEP approvals.

This precinct generally extends to the Highest Astronomical Tide (HAT) and includes:

- the marine area surrounding the port berths
- the shipping channels (Platypus and Sea)
- maintenance dredged material placement area
- part of Ross Creek
- breakwaters and anchorage.

Outcomes

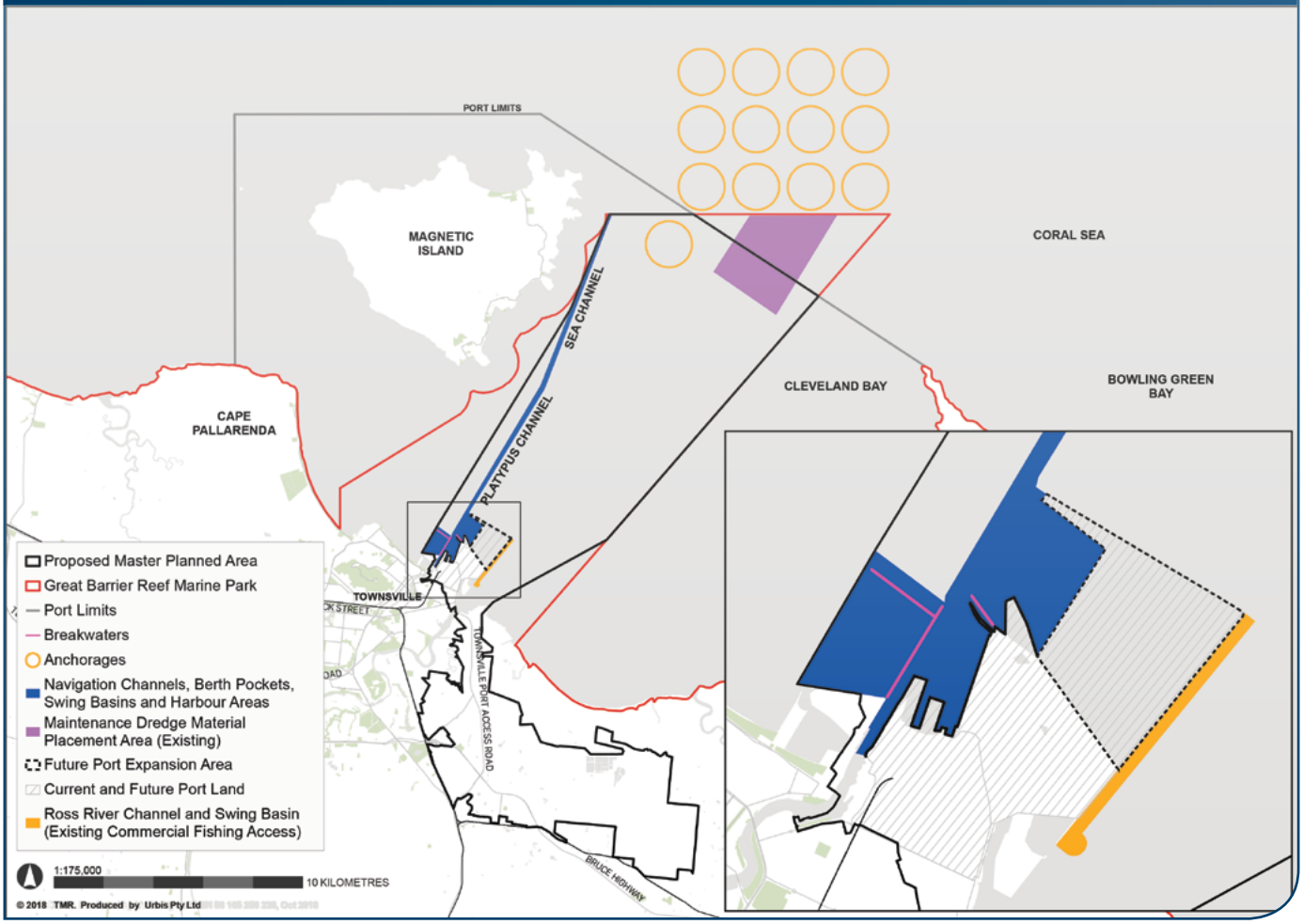
Development within this precinct is limited to activities associated with vessel navigation, berthing of vessels, and capital and maintenance dredging required to maintain and enhance the safe navigation and operation of waterways.

Development includes the establishment of a new outer harbour and additional berths in the expanded port area.

Development maintains and protects port infrastructure that provides for safe navigation, including the shipping channels, breakwaters, swing basins and navigational works.

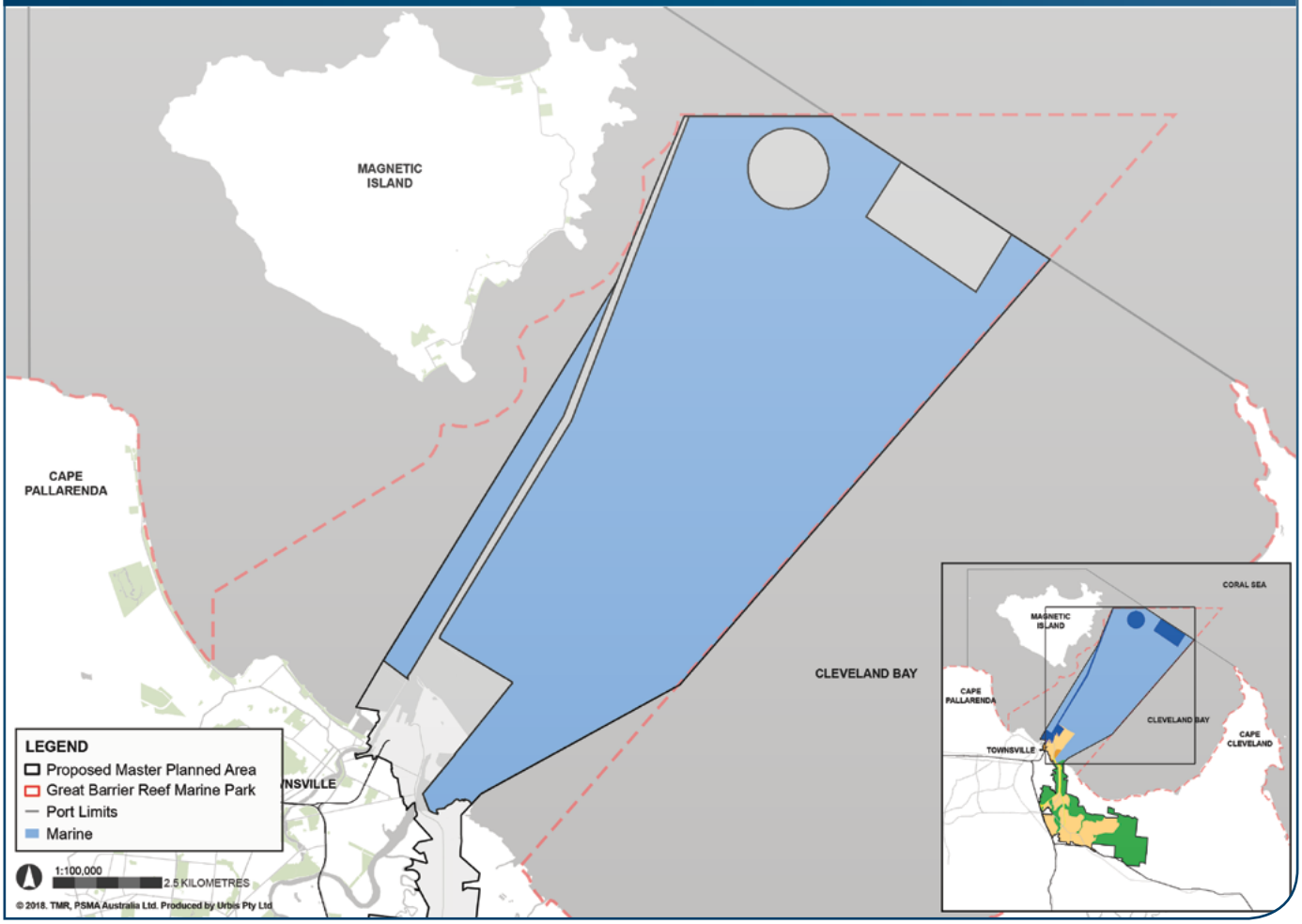
Development maximises the effective and efficient utilisation of infrastructure and port facilities, including the establishment of common user arrangements where practicable.

Figure 12 – Marine infrastructure within and surrounding the proposed master planned area



Marine precinct

Figure 13 – Marine precinct



Purpose

The purpose of the **Marine precinct** is to avoid impacts on environmental values and provide for limited port and industry development, and non-port-related marine activities.

Description

This precinct generally extends to the HAT and includes marine areas adjoining the marine infrastructure precinct that are not critical to the operation or growth of the port. It includes intertidal and marine waters within port limits in Cleveland Bay that are not within the GBRMP.

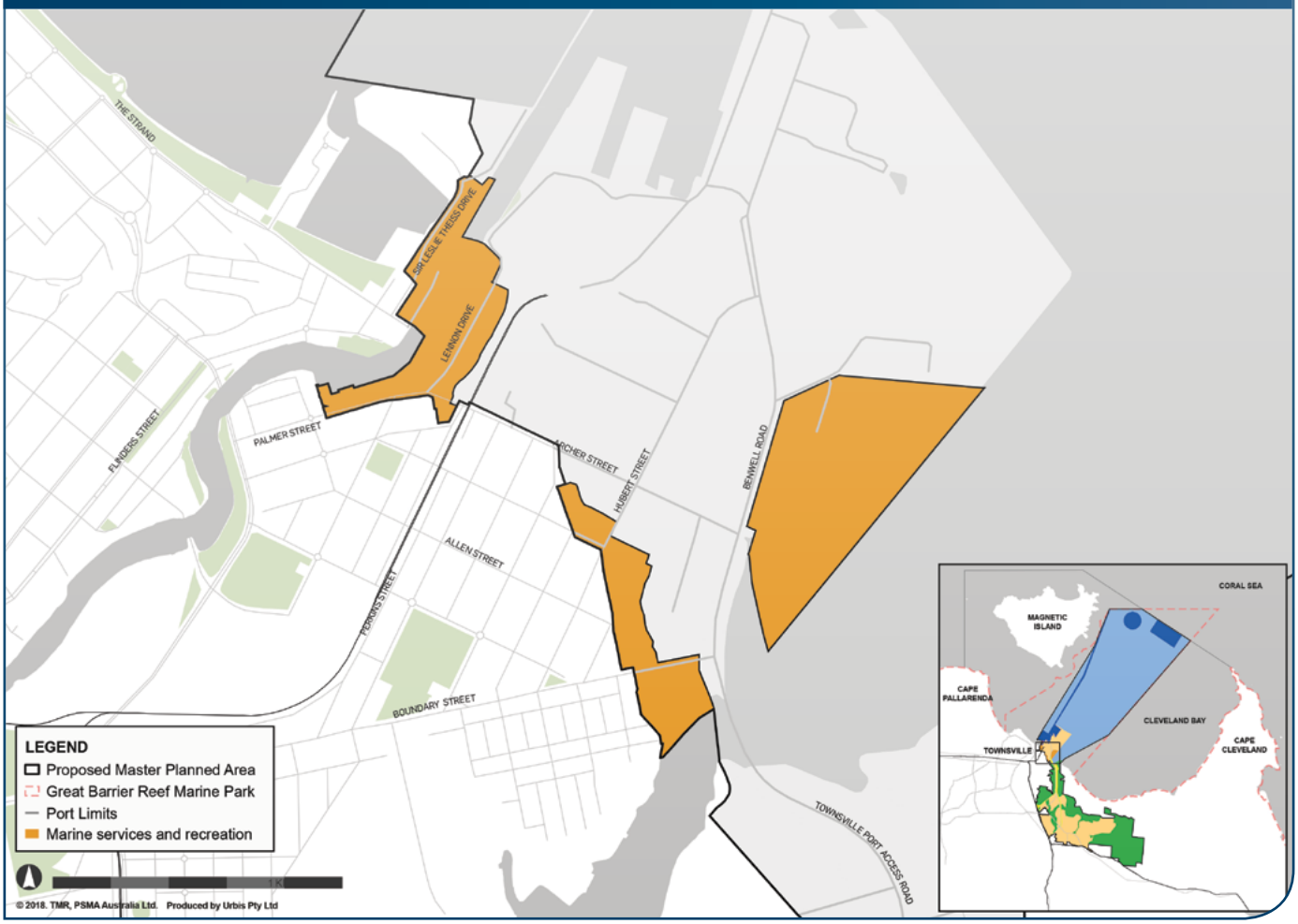
Outcomes

Uses that do not compromise the efficiency of ship movements may be acceptable, including small scale maritime infrastructure, boat ramps, pontoons and coastal protection structures, coastal rescue services, commercial fishing, tourism, defence, and recreational uses.

Development must be appropriately designed and located to avoid and minimise impacts on environmental values within and surrounding the master planned area.

Marine services and recreation precinct

Figure 14 – Marine services and recreation precinct



Purpose

The purpose of the **Marine services and recreation precinct** is to provide for a range of maritime activities, associated marine industries, access to the waterfront and facilities to support tourism, recreational activities and commercial fishing in a manner that maintains maritime safety. The precinct is also to provide for urban development where appropriately designed and located to mitigate potential impacts on or from port operations.

Description

This precinct comprises the following areas:

- parts of SPL, where within the TCWPDA
- SPL located on the southern side of the port operations
- Ross Creek public boat ramp and associated infrastructure
- part of the Townsville City Plan area.

Outcomes

Development within this precinct includes commercial and marina activities and associated marine industries, small boat harbour, coastal rescue services, commercial, light industry, educational facilities, and public open space.

Development provides public access to the waterfront and the harbour (including boat ramps, marina, open space and community facilities) where it does not compromise public safety or the security of port operations.

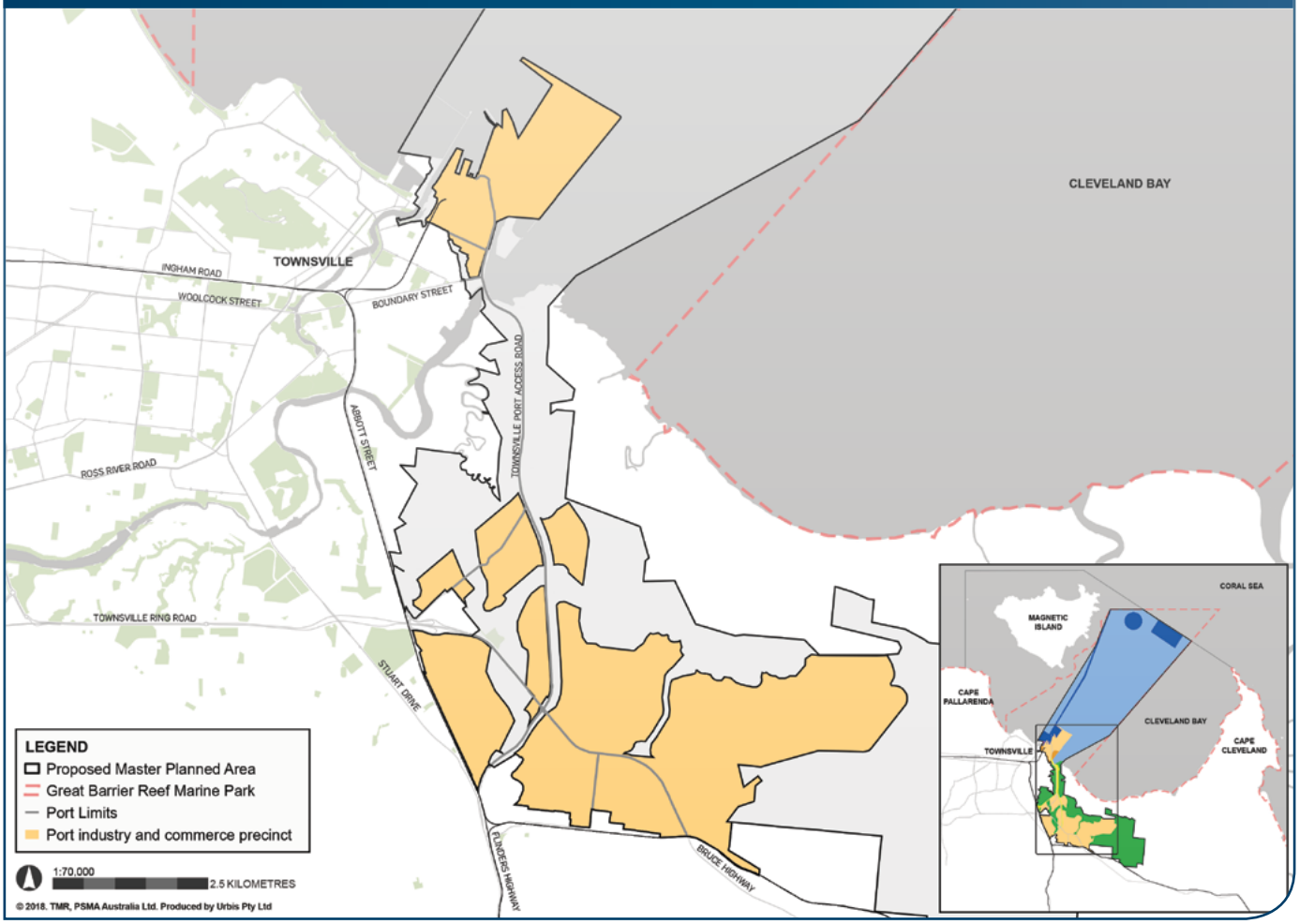
Permanent residential accommodation (i.e. multiple dwellings and retirement facilities) is only located in areas that do not have a direct interface with port operational areas.

Sensitive uses, including permanent residential accommodation and short-term accommodation, may otherwise be provided along Ross Creek and Archer Street / Perkins Street where the development can be appropriately designed to minimise potential impact from light, noise, odour, dust, and visual impact on, or from, the port operations or port infrastructure.

Development is located and designed to ensure that reverse amenity impacts on port operations are effectively mitigated.

Port industry and commerce precinct

Figure 15 – Port industry and commerce precinct



Purpose

The purpose of the **Port industry and commerce precinct** is to provide for port operations, industry, port-related commercial activities and other supporting or related development.

Description

The Port Industry and Commerce Precinct is the primary industrial precinct within the master planned area and includes the existing port activities and operations, and the future port expansion area, including land and infrastructure connecting to the proposed TEARC.

The precinct comprises:

- SPL owned and administered by the POTL
- areas within the TSDA, comprising those areas identified for potential future port-related development under the TSDA development scheme but excluding the Buffer Precinct
- marine areas (land reclamation) approved for future port expansion

Outcomes

Port land (including the port expansion area)

Development delivers an evolution of the layout and function of land uses generally in accordance with **Figure 16**, to maximise the efficiency of operations and productivity, as well as accommodate improved supply chain connections and functionality.

Development provides a wide range of uses which directly support the import and export of cargo and allied non-industrial uses, such as cargo storage, handling and transportation, which contribute to the effective, efficient and sustainable growth of the port.

Development maximises the effective and efficient utilisation of existing (where to be retained) and future port infrastructure and facilities. In particular, development must protect and integrate with the proposed TEARC and associated future rail loops in the port.

Development encourages the co-location of related industries and facilities to provide enhanced port utilisation, cargo handling and transfer efficiencies.

Development maintains ongoing accessibility by land or water to and from cargo and commodity handling areas.

Development provides for the manoeuvrability of heavy vehicles utilising the internal port road network.

Development that is heavily reliant on wharf or rail dispatch facilities is located adjacent to those facilities or otherwise connected by necessary infrastructure.

Development of essential infrastructure required for daily operations of the port such as security, customs and quarantine requirements, parking facilities, utility installations, staging areas for heavy vehicle movements, and materials transportation infrastructure to support industry is provided.

Interim or temporary development does not compromise the long-term efficient utilisation of the port.

Port operational areas are only located in areas that do not have a direct interface with permanent residential accommodation.

Development encourages intensive port operations (such as movement of dry bulk and livestock) to be located as far away from existing and future sensitive land uses as practical.

Development that has an interface with sensitive land uses is designed to maintain a high standard of amenity for existing and future sensitive land uses.

Development is appropriately located, designed and managed to avoid environmental impacts.

Townsville State Development Area

Development will provide industries which are of regional, state, and national economic significance, and supply chain infrastructure that supports the operation of the port and industry. Uses may include port-related industry, logistics and freight terminals, and linear infrastructure.

Road, rail and conveyor infrastructure within the precinct will maximise transport, infrastructure, and land use efficiencies, including the establishment of common user arrangements where practicable.

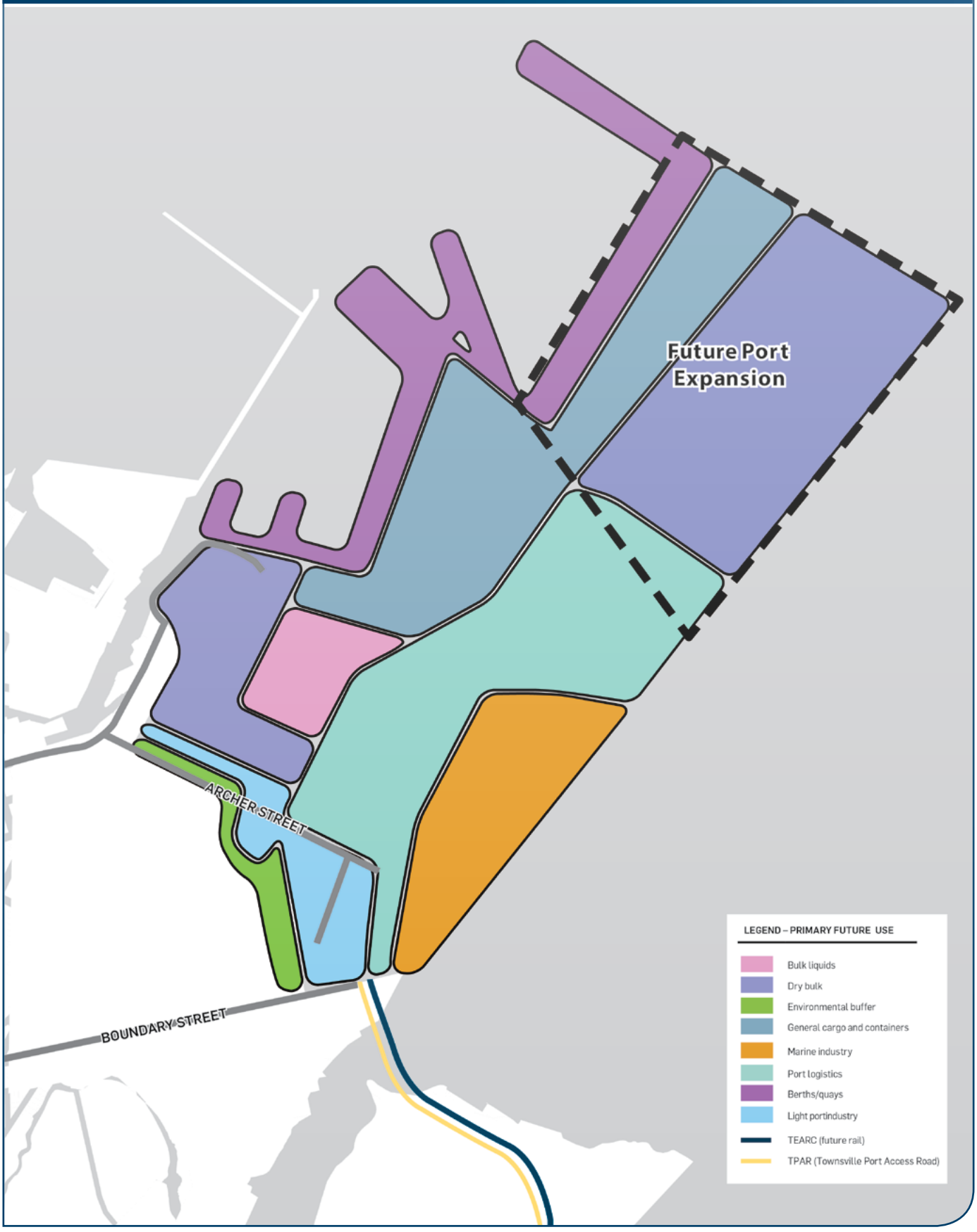
Development must protect the safe and efficient function of the Bruce Highway, the NCL, the proposed TEARC, the existing TPAR, and the future duplication of the TPAR.

Development that is adjacent to the Infrastructure and supply chain corridors precinct does not compromise the establishment and operation of existing and/or potential future infrastructure.

Interim or temporary development does not compromise the long-term efficient utilisation of supply chain infrastructure associated with the operation of the port and industry.

Development is appropriately located, designed, and managed to avoid environmental impacts where possible.

Figure 16 – Preferred future land use arrangement for port land



Part D: Environmental management framework

Overview

The Ports Act establishes the legislative requirement for a master plan to include an EMF. The EMF describes the interaction of port related-development with environmental values.

The draft master plan identifies environmental values that relate to the natural, cultural,and social environments with a focus on MNES, matters of state environmental significance (MSES), and the environmental values that contribute to the local expression of the OUV of the GBRWHA.

The role of the EMF in the draft master plan includes:

- **identifying environmental values** - identifying and mapping environmental values in the proposed master planned area and surrounding areas, including those that contribute to the OUV of the GBRWHA
- **identifying potential impacts** - identifying any potential impacts that development in the master planned area may have on environmental values
- **managing impacts** - stating the EMF objectives and measures (priority management measures) for managing impacts that have been identified.

The draft master plan adopts an approach for managing potential impacts from port-related development within the proposed master planned area which will be achieved by implementing the environmental management hierarchy of avoid, mitigate and/or offset through existing legislation.

This means that in the first instance, development should be located in areas that avoid any potential adverse impacts on environmental values.

Where development occurs and avoidance is not practicable (within the context of the principles of ESD), mitigation measures are implemented to reduce the extent, severity and/or duration of potential impacts on environmental values as a result of the development. If a development, after applying all practicable avoidance and mitigation measures, results in a significant residual impact on an environmental value, an offset may be required in accordance with state and Commonwealth legislation and policies.

An environmental risk assessment of potential development activities was undertaken to identify potential impacts on the environmental values within and surrounding the master planned area. This process considered the existing state and Commonwealth legislation, state and local planning instruments, operational environmental management measures and approvals in managing potential impacts from development on environmental values.

Consultation note: Environmental values within and surrounding the proposed master planned area were identified through a review of all relevant documents, publicly available databases, statutory mapping and EIS technical reports prepared in accordance with state and Commonwealth legislation. Information from new validated data sources (such as recent seagrass surveys) was added as part of the process. Consultation with stakeholders and data custodians occurred to confirm the accuracy of information.

The environmental, social, and cultural values providing a local contribution to the OUV of the GBRWHA were identified as part of the evidence base which was prepared to inform the master planning process. This included a local statement of integrity for the proposed master planned area and surrounding areas. For further information, please refer to the evidence base materials.

Environmental values within and surrounding the proposed master planned area

Land and marine areas within and surrounding the proposed master planned area contain sensitive terrestrial and marine environments of national and international significance. These are recognised and protected through state and Commonwealth legislation.

Cleveland Bay and Bowling Green Bay support rich coastal habitats including fish nurseries and dugong protection areas, and important seabed, fringing coral reef, intertidal sand and mud flats, seagrass and mangrove habitats. Bowling Green Bay is also a Ramsar wetland of international significance comprising a diverse complex of coastal wetland systems that provides habitat for waterbirds and migratory species.

A diverse range of terrestrial habitats are also present within and surrounding the proposed master planned area. These include remnant vegetation communities, coastal lowlands featuring estuaries, rivers, creeks and wetlands, and mountainous landforms such as Mt Louisa, Castle Hill, Mount Stuart, and Magnetic Island which provide habitats that support a diverse range of flora and fauna species.

Mapping of identified environmental values within and surrounding the proposed master planned area, including those that contribute to the OUV of the GBRWHA is included at **Appendix B**.

Environmental values that contribute to the local expression of Outstanding Universal Value

Cleveland Bay comprises a large portion of the proposed master planned area and is located within the GBRWHA. This provides habitat for flora and fauna that contribute to the OUV of the GBRWHA. These include coral reefs, many types of fish, whales, dolphins, dugongs, turtles, migratory shorebirds, macro algal communities, and Magnetic Island.

To ensure that OUV is an intrinsic consideration in priority port planning, management and governance, an evidence-based assessment was undertaken to identify the local expression of OUV relative to the whole GBRWHA. This assessment builds on the OUV attributes identified in the environmental impact assessment processes for the PEP.

All attributes contribute to the structure and diversity of the local ecosystem.

Table 4 summaries the local attributes and associated environmental values within and surrounding the proposed master planned area.

Contribution classifications in **Table 4** vary for each world heritage criterion and specific environmental values. The classifications relate to the attributes' significance relative to the whole GBRWHA and do not contradict any conservation listings under legislation or conventions, condition/trends in outlook reports, status in the retrospective statement of OUV or otherwise. It is recognised all attributes contribute to the structure and diversity of the local ecosystem.

The classifications used in **Table 4** are generally defined as:

- **Minor contribution**: The attribute is present, however it occurs in low abundance or singularly and is:
  - not essential to the sustainability of the attribute (for example substantial breeding population)
  - not recognised as a key feature of the GBRWHA
  - not included in the retrospective statement of OUV
  - not iconic, unique or a high quality example of the attribute.
- **Moderate contribution**: The attribute occurs in moderate abundance or across a moderately large area but is not the prime occurrence or representation of the attribute within the GBRWHA. The attribute does, however, represent a feature for which the Great Barrier Reef was listed as World Heritage.
- **Significant contribution**: The attribute represents locally important examples of the attribute relative to the nature of the attribute across the GBRWHA. Such an attribute may be specifically referred to within the retrospective statement of OUV for the GBRWHA or defined by other legislation, planning instrument or values assessment (for example in *Great Barrier Reef Outlook Report*). The occurrence of the attribute locally is a prime example of the features mentioned in the retrospective statement of OUV (Adaptive Strategies et al. 2017).

Further information about how the contribution of these attributes align with specific OUV criterion is at **Appendix E**.

Table 4 – Local attributes and environmental values that contribute to the OUV of the GBRWHA

Local attribute	Environmental values
Coral reefs	**Minor to moderate contribution to the OUV of the GBRWHA** Coral reefs are present, fringing Magnetic Island and between Magnetic Island and Townsville. Reef communities comprised of hard corals exist around Magnetic Island, at Middle Reef, and at Virago Shoal (located between Magnetic Island and Cape Pallarenda). The Cockle Bay reefs, located on the south-western side of Magnetic Island, are characterised by species adapted to high siltation and turbidity associated with the coastal processes of Cleveland Bay. Cleveland Bay also supports a network of nearshore reefs, which have different levels of inter-connectivity and habitat structure. Based on mapping from the GBRMPA, the total area of reef habitat in Cleveland Bay is approximately 987 hectares. Annual coral spawning occurs at these sites, generally in October. The size and density of inshore reefs does not result in the mass spawning events more commonly associated with mid shelf and outer reefs.
Fish species	**Minor contribution to the OUV of the GBRWHA** Cleveland Bay provides habitat for a variety of fish species. Protected Fish Habitat Areas have been established in Cleveland Bay and in nearby Bohle River and Bowling Green Bay.
Marine megafauna (dugong, whales, dolphins)	**Minor to significant contribution to the OUV of the GBRWHA** Cleveland Bay is recognised as dugong habitat and is a declared Dugong Protection Area. Cleveland Bay is thought to be an important dugong habitat at a regional scale as it contains some of the most extensive and diverse seagrass meadows in north Queensland. Humpback whale adults and calves have occasionally been recorded within the coastal waters of Cleveland Bay, usually during August - September. A number of dolphin species are known, or likely, to occur in Cleveland Bay, including: endangered Australian snubfin dolphin, Indo-Pacific humpback dolphin, Common dolphin, and the Bottlenose dolphin.
Marine turtles	**Minor contribution to the OUV of the GBRWHA** A number of species of sea turtles, including Green turtles, the endangered Loggerhead, Leatherback, and Olive Ridley species, frequent Cleveland Bay and surrounding beaches. Green turtles are the most common. Magnetic Island beaches are known to be regular nesting sites for Green turtles, however, the density is low in comparison to the other sites within the GBR.
Seagrass and macroalgae	**Minor to significant contribution to the OUV of the GBRWHA** Cleveland Bay contains some of the most extensive and diverse seagrass meadows in north Queensland. Eight species of seagrass have been recorded in Cleveland Bay with the most extensive beds located in the eastern portion of Cleveland Bay, with smaller beds occurring off the Strand, Kissing Point, Pallarenda Beach and some bays fringing Magnetic Island. Halimeda beds occur around Cockle Bay (southern Magnetic island), but at the time of 2012 reef surveys, were not found to be significant.
Shorebirds and migratory seabirds	**Minor to significant contribution to the OUV of the GBRWHA** A variety of seabirds are present in the marine areas, however, large colonies of nesting seabirds do not occur within, or surrounding the proposed master planned area. Shorebirds frequently occur within the proposed master plan boundary area, while feeding, resting or migrating from one area to another. Intertidal areas, particularly the east bank of Ross River and at Cape Cleveland, provide foraging habitat for many species of wading birds and migratory bird species.

Table 4 – Local attributes and environmental values that contribute to the OUV of the GBRWHA

Local attribute	Environmental values
Flora, fauna and ecological communities	**Minor to significant contribution to the OUV of the GBRWHA** There is only very minor representation of plant species of conservation significance present within the proposed master planned area, including several threatened mangrove species, and *Croton magneticus*, which is recorded on Magnetic Island. One threatened ecological community (TEC) has the potential to be present within the master plan boundary area - Semi-evergreen vine thickets of the Brigalow Belt (North and South) and Nandewar Bioregions – which is listed as endangered under the EPBC Act. Mapping suggests it is present on Magnetic Island and in parts of the TSDA. Rugged mountains rise abruptly from the coastal plain and including Mount Stuart, as well as the landforms of Castle Hill and Magnetic Island. Substantial mangrove stands occur in Cleveland Bay and around Magnetic Island. The Bowling Green Bay Ramsar wetland is located to the south of Townsville. The site is significant for its extensive and diverse complex of coastal wetlands which are mostly coastal plain covered in tidal mudflats, mangrove forest, and salt marshes.
Continental islands	**Minor to moderate contribution to the OUV of the GBRWHA** Magnetic Island is a continental island with rocky granite headlands, sandy bays, covered with open eucalypt woodlands and surrounded by coral reefs.
Geomorphology	**Minor contribution to the OUV of the GBRWHA** Cleveland Bay provides a variety of seascapes and landscapes including open water, continental islands, sand beaches, mudflats, mangroves and vegetated hills and headlands. Townsville and Magnetic Island have a number of sandy beaches and bays. Fringing coral reefs, Magnetic Island and coastal areas represent geomorphic processes, including ancient volcanic activity. The offshore areas of Cleveland Bay form part of the larger longshore connections within the GBR lagoon. Townsville is underlain by Quaternary-age alluvium and colluvium sediments, which in turn overlie basement geology comprising Late-Palaeozoic age Granite. The near surface lithology comprises Holocene sediments more than 12,000 years old, including silts, mud and sand described as coastal tidal flats, mangrove flats and saltpans.
Marine and terrestrial fauna	**Moderate contribution to the OUV of the GBRWHA** Cleveland Bay, Magnetic Island and surrounding areas provide habitat for a large range of species and ecosystems, the most notable being the habitats of the Bowling Green Bay Ramsar wetland area and the migratory birds that use this area.
Total species diversity	**Moderate contribution to the OUV of the GBRWHA** Common benthic flora and fauna are present in the marine areas. The intertidal and subtidal benthic areas are a key habitat for many species of invertebrates (e.g. crabs, shell fish, and worms).

Other environmental values

Separate to the OUV of the GBRWHA, there are also important environmental values within and surrounding the proposed master planned area that are significant but do not contribute to the OUV of the GBRWHA. These were identified as part of the master planning environmental risk assessment and are summarised below.

- **Fish Habitat Areas** – breeding, feeding and nursery grounds for target species which are important for commercial and recreational fishing.
- **Freshwater, marine and estuarine water quality** – marine waters, fresh waters, and aquatic ecosystem values providing ecosystem services and protected under state legislation.
- **Habitat for threatened terrestrial flora and Fauna** – flora and fauna species protected under state and Commonwealth legislation
- **Heritage places** – state and local heritage places protected under state legislation.
- **Listed threatened and migratory species** - identified under international agreements and protected under Commonwealth legislation
- **Saltmarsh communities and other marine plants** – provide habitat and food sources for a range of invertebrates, birds and fish and protected under state legislation
- **Protected areas** – a range of protected areas providing environmental conservation and recreational opportunities, including National Parks and Conservation Parks, listed under the provisions of state and Commonwealth legislation.
- **Regional ecosystems** – remnant vegetation and ecological communities identified and protected under state and Commonwealth legislation
- **Wetland areas and watercourses** – creeks, rivers and wetlands which support permanent and migratory bird populations, as well as fisheries and specie that are important to local biodiversity values.

Potential impacts from development on environmental values

As part of the environmental risk assessment, future port-related development activities within the proposed master planned area out to 2050 that may have the potential to impact on environmental values were identified and considered against the capacity of the existing statutory requirements and operational measures currently in place to minimise impacts on environmental values.

The potential impacts from development on environmental values have been identified in **Appendix F** at a high level for the purpose of the master planning process due to the large spatial extent of the proposed master planned area and the wide range of activities that could potentially occur within the precincts up to the year 2050.

This process recognised that assessment processes currently provide for the detailed consideration of potential impacts on environmental values in accordance with existing legislation. The process also acknowledged where detailed assessment of potential impacts has been completed and approval conditions applied to mitigate the impacts of the development in the future.

The following port-related development activities were identified as having the potential to result in impacts on environmental values within and surrounding the master planned area:

- capital dredging
- land reclamation for the purposes of beneficial reuse
- establishment of new port-related industries
- construction of supply chain infrastructure to support port-related development.

The state and Commonwealth assessment processes for the PEP has allowed for the detailed identification of potential environmental impacts from the capital dredging, land reclamation and construction of infrastructure associated with that development.

Appendix F contains further information about activities, potential impacts, and values associated with future port-related development.

Managing impacts

The Ports Act states that objectives and measures are required to manage impacts from development on environmental values.

The master plan adopts an approach for managing impacts which involves regulating development by exception only where requirements for port-related development are necessary. This recognises that existing planning and regulatory frameworks across all levels of government provide a comprehensive system for the management of environmental impacts.

The master plan adopts an approach for managing impacts which involves regulating development by exception only where requirements for port-related development are necessary.

The framework for the management of potential impacts from port-related development within the proposed master planned area is provided by existing state and Commonwealth statutory requirements and operational environmental management measures. These statutory requirements and other operational environmental management measures will continue to manage environmental impacts within the master planned area.

The environmental risk assessment considered the existing state and Commonwealth legislation, state and local planning instruments, operational environmental management measures and approval processes, in managing potential impacts on environmental values from development. The outcome of the environmental risk assessment identified that existing legislative processes are expected to avoid, minimise and offset impacts from development.

The draft master plan adopts an approach for managing potential impacts from port-related development within the proposed master planned area which will be achieved by implementing the environmental management hierarchy of avoid, mitigate and/or offset through existing legislation.

EMF objectives

EMF objectives have been identified for each of the draft precincts to avoid, mitigate and/or offset potential impacts from development within the proposed master planned area on environmental values, including the OUV of the GBRWHA, MNES and MSES. The EMF objectives for each of the master planned area precincts are identified at **Appendix G**.

The port overlay will give effect to the EMF objectives by identifying these as matters that must be considered when making and amending planning instruments within the proposed master planned area. This ensures that the EMF objectives can be addressed in future development assessment processes.

Priority management measures

As described above, a comprehensive assessment of the existing statutory requirements and operational environmental management measures that apply to the proposed master planned area was undertaken as part of master planning.

Due to the comprehensive nature of existing state and Commonwealth statutory requirements, approvals and operational environmental management measures that apply to port-related development, a single priority management measure for the proposed master planned area is identified in **Table 5** to manage potential light, noise, odour, dust and visual impacts from development in areas that interface with port operations.

Table 5 – Priority management measures

Priority management measure	Master planned area precinct
Port interface management Manage the interface between sensitive land uses and port operations to ensure that development minimises potential light, noise, odour, dust and visual impacts from port operations on sensitive uses.	Interface
	Marine infrastructure
	Marine service and recreation
	Port industry and commerce

Part E: Master plan implementation

The master plan is a strategic document that will be implemented through a separate port overlay. The port overlay provides regulatory effect for the master plan by providing requirements that are delivered through existing planning instruments that regulate development within the master planned area.

The following planning instruments currently regulate development within the proposed master planned area:

- Townsville City Plan under the *Planning Act 2016*
- Townsville City Waterfront Priority Development Area Development Scheme under the *Economic Development Act 2012*
- Townsville State Development Area Development Scheme under the *State Development and Public Works Organisation Act 1971*
- Port of Townsville Land Use Plan under the *Transport Infrastructure Act 1994*.

It should be noted that the assessment triggers and benchmarks in the *Planning Regulation 2017* also apply within the proposed master planned area.

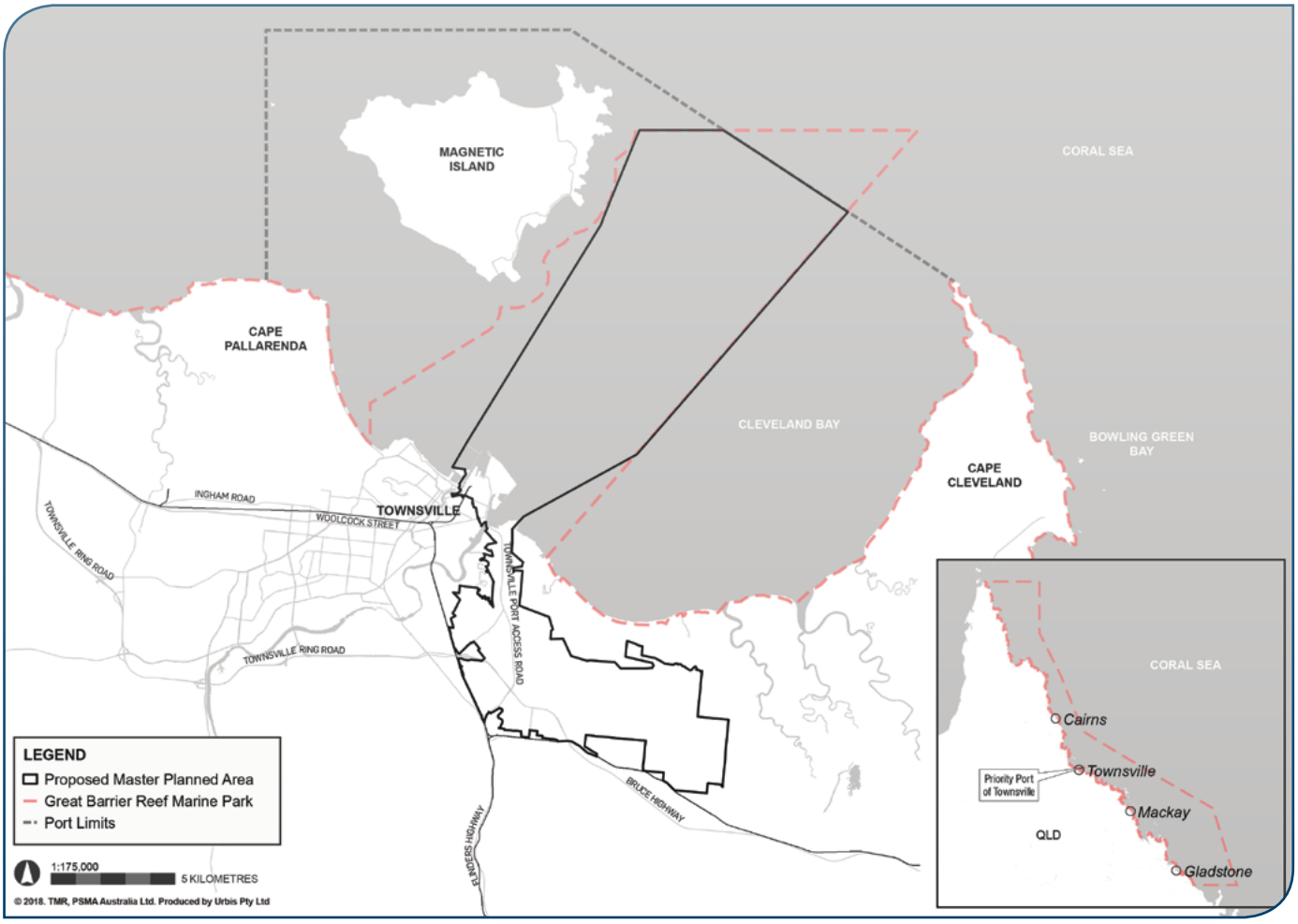
The port overlay only regulates development in those parts of the proposed master planned area where further requirements for port-related development are necessary to implement the master plan in addition to existing planning instruments. This recognises that the outcomes sought by the draft master plan are in many cases already achieved through existing provisions, reduces duplication of provisions and minimises the potential for conflict between provisions, that operate under different legislative heads of power.

Decision making by existing planning and other regulatory entities about relevant planning instruments and environmental legislation applying within the master planned area are not modified by the port overlay, and will continue to apply.

Under the Ports Act, the port overlay cannot regulate development under the Townsville State Development Area Development Scheme or the Townsville City Waterfront Priority Development Scheme.

Consultation note:
A preliminary draft port overlay has also been released for information purposes with this draft master plan to demonstrate how the master plan may be implemented. A revised version of the draft port overlay will be released for separate public consultation in accordance with the Ports Act.

Appendix A
Priority Port of Townsville master planned area regulation map



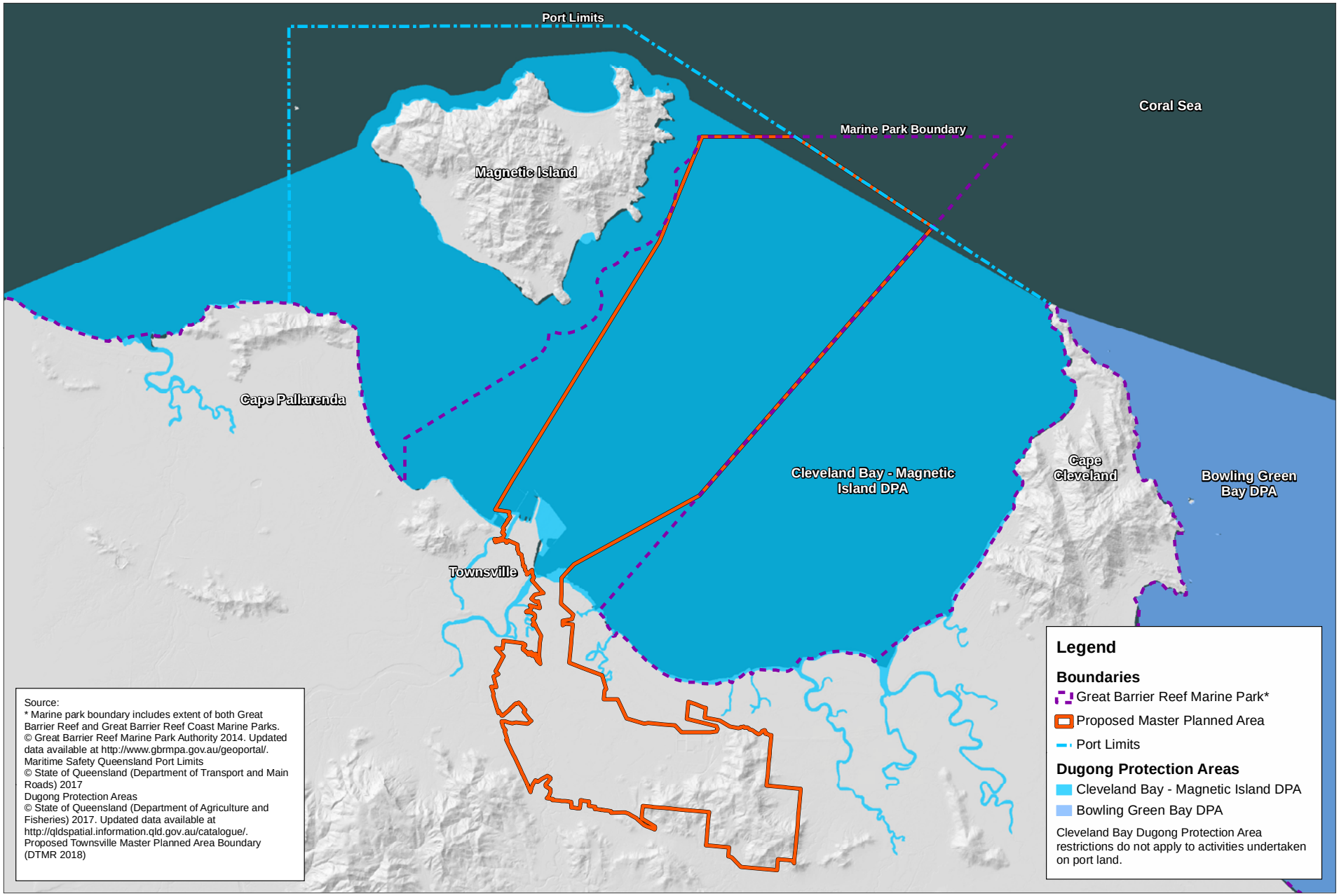
Appendix B
Mapping of the OUV of the GBRWHA and other environmental values

The mapping in this appendix has been prepared using existing datasets at the time of master plan publication. While some of these datasets have been synthesised using field collected data, it is acknowledged that some of the datasets are the result of desktop studies and not all mapping has been confirmed through field surveys. Data sources are referenced on each map.

It should also be noted that some mapping has been prepared over a period of time to account for seasonal variability of environmental values (for example, seagrass meadows) and should be considered as indicative only.

The mapping presented in this appendix is not exhaustive, and there may be other areas of environmental, social or cultural value that are not specifically identified.

- Dugong Protection Areas
- Fish Habitat Areas
- Freshwater, marine and estuarine water types
- Great Barrier Reef Marine Park zoning
- Habitat for threatened terrestrial flora and fauna
- Heritage places
- Marine megafauna
- Native title claims
- Protected areas
- Reefs and shoals
- Regional ecosystems
- Regional ecosystems containing mangroves, saltmarsh communities and marine plants
- Seagrass meadows
- Wetland areas
- Wetlands and watercourses.



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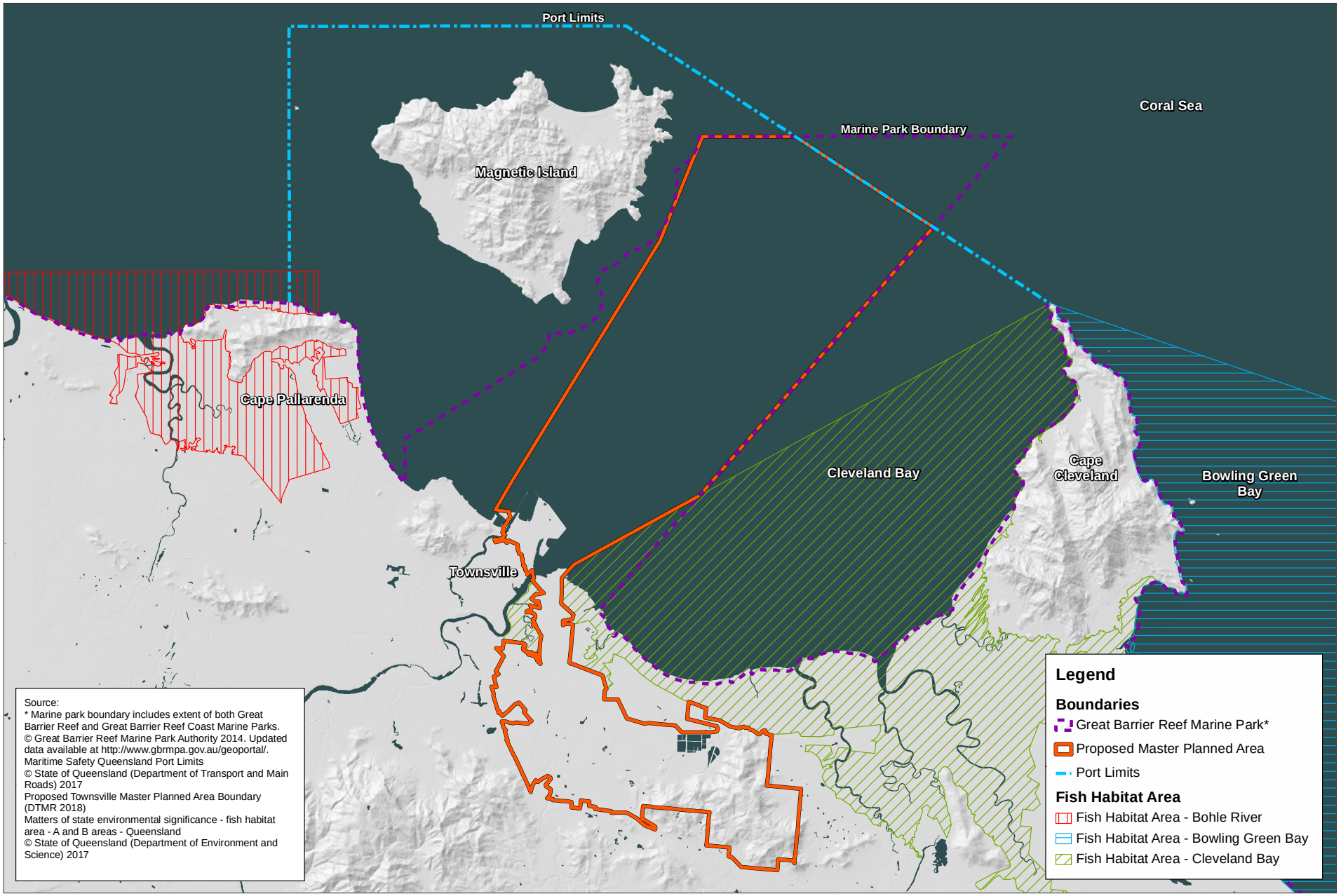
Dugong Protection Areas



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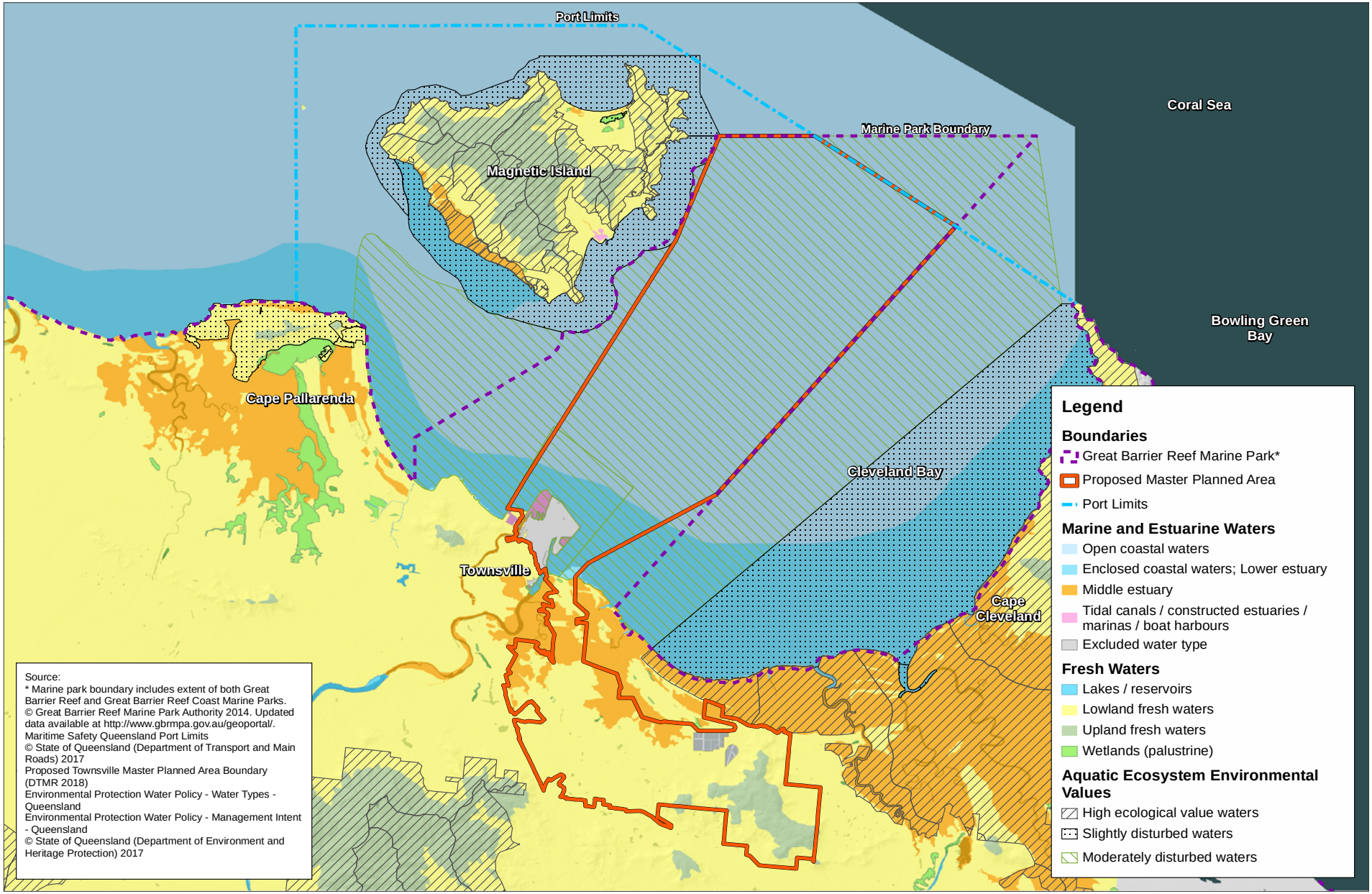
Fish Habitat Areas



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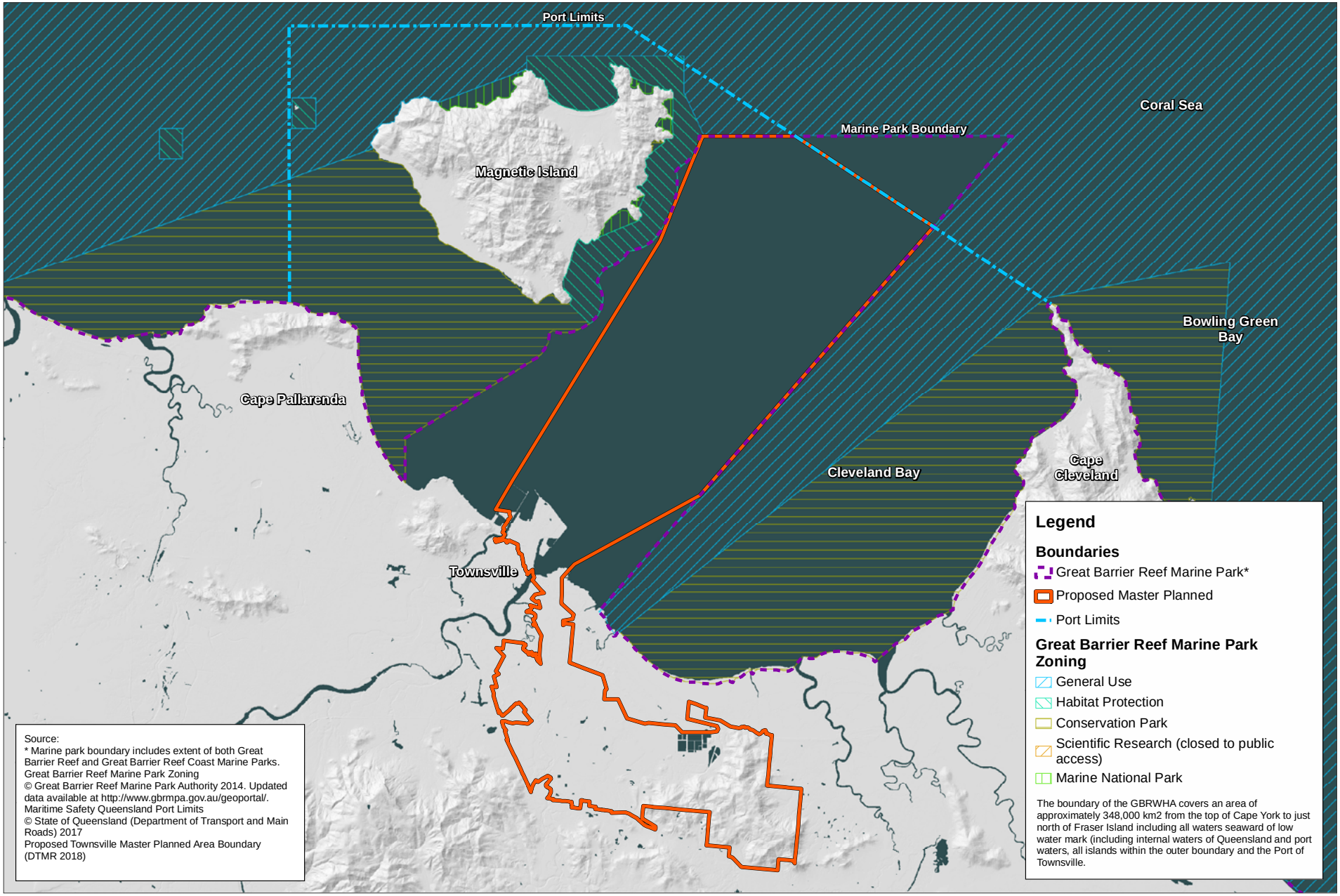
Freshwater, marine and estuarine water types



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Coordinate System: GDA 1994 MGA Zone 55

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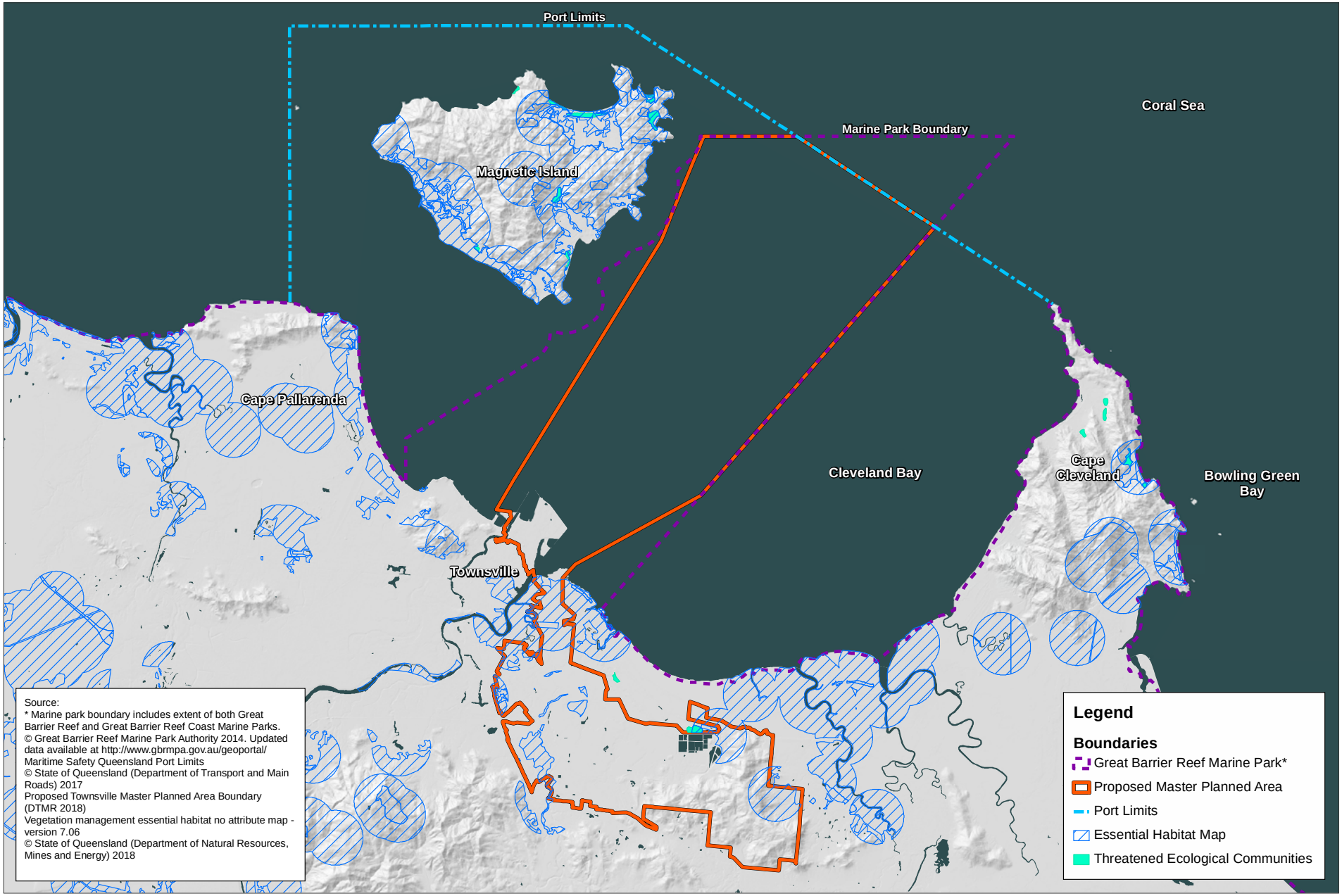
Great Barrier Reef Marine Park zoning



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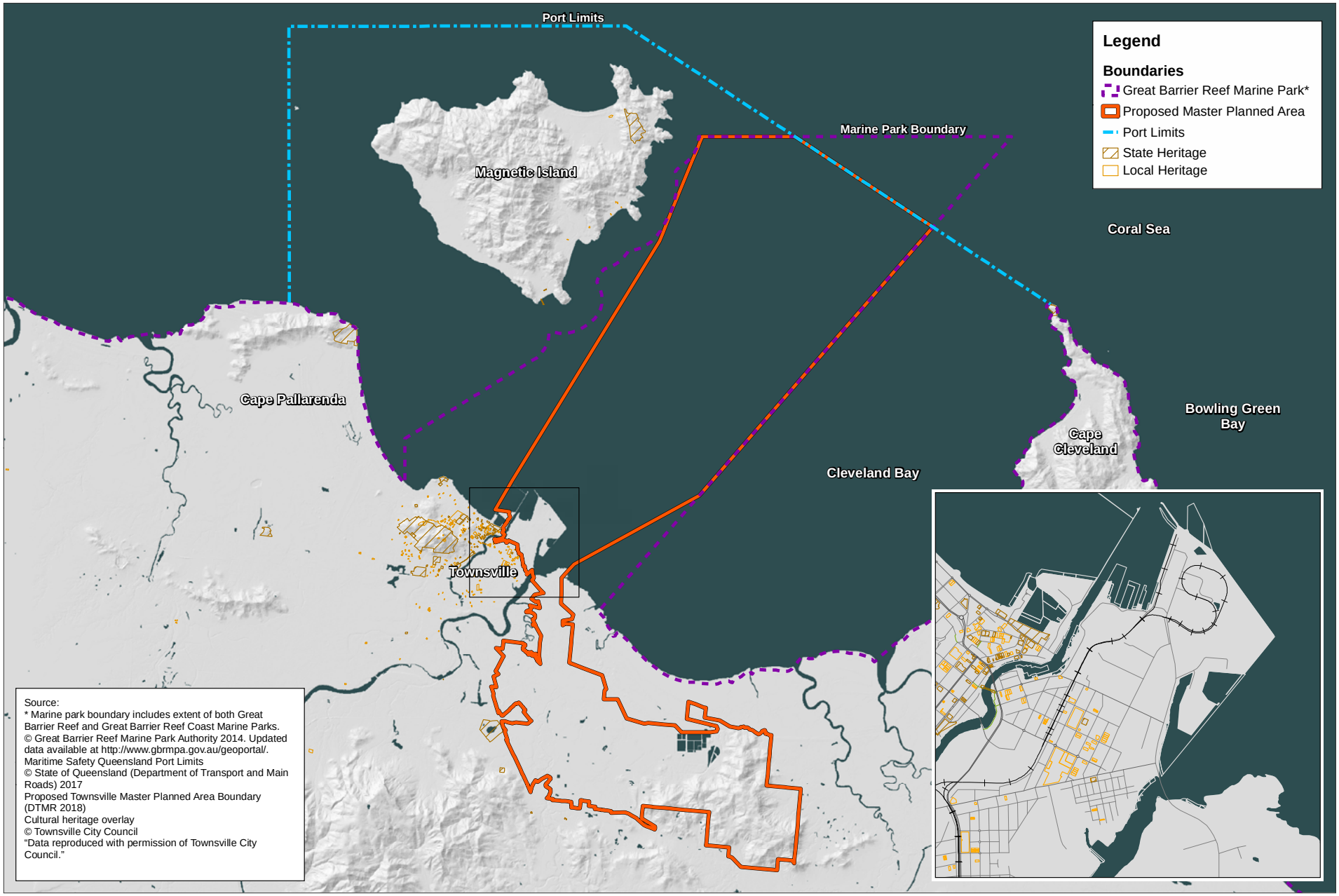
Habitat for threatened terrestrial flora and fauna species



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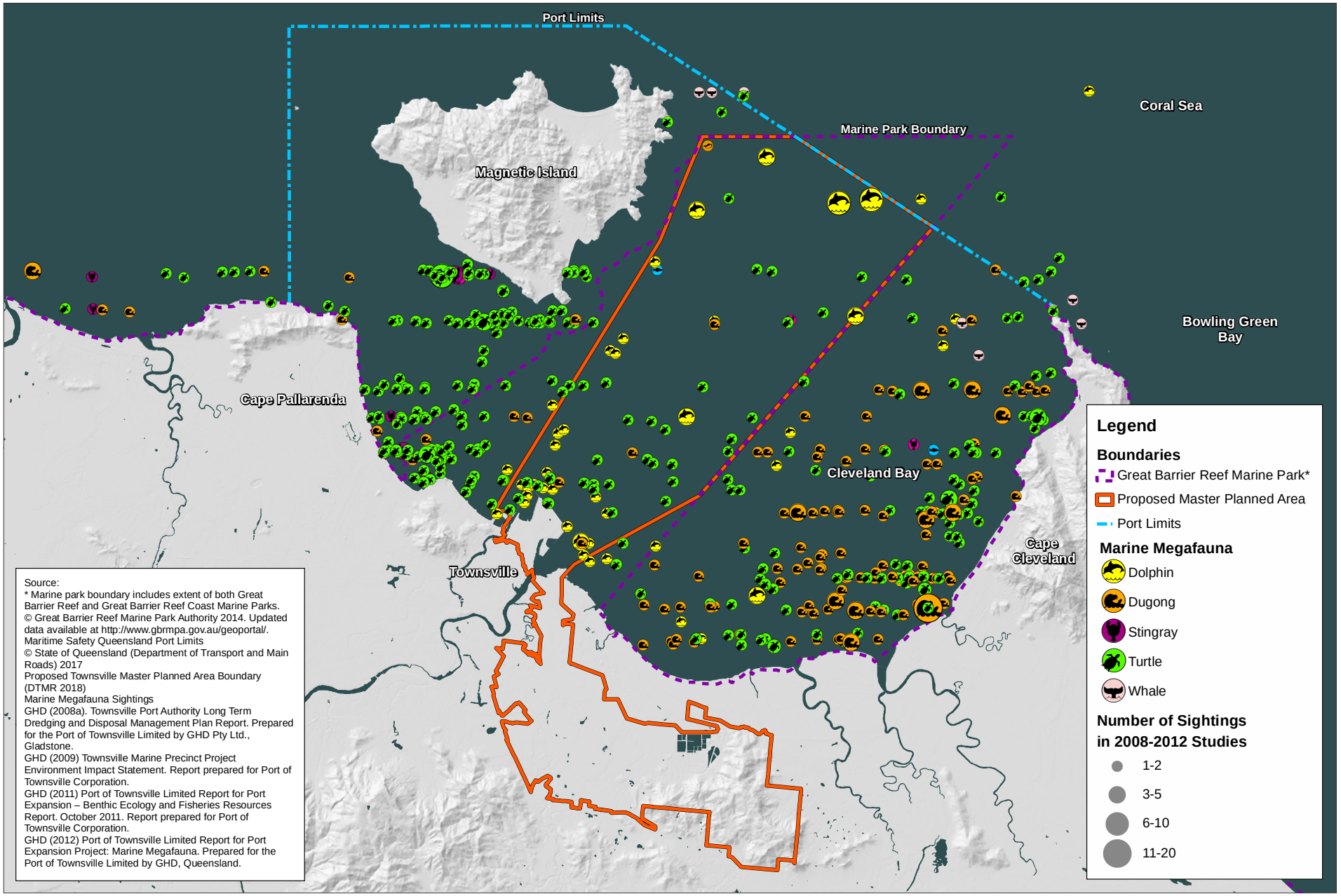
State and local heritage places



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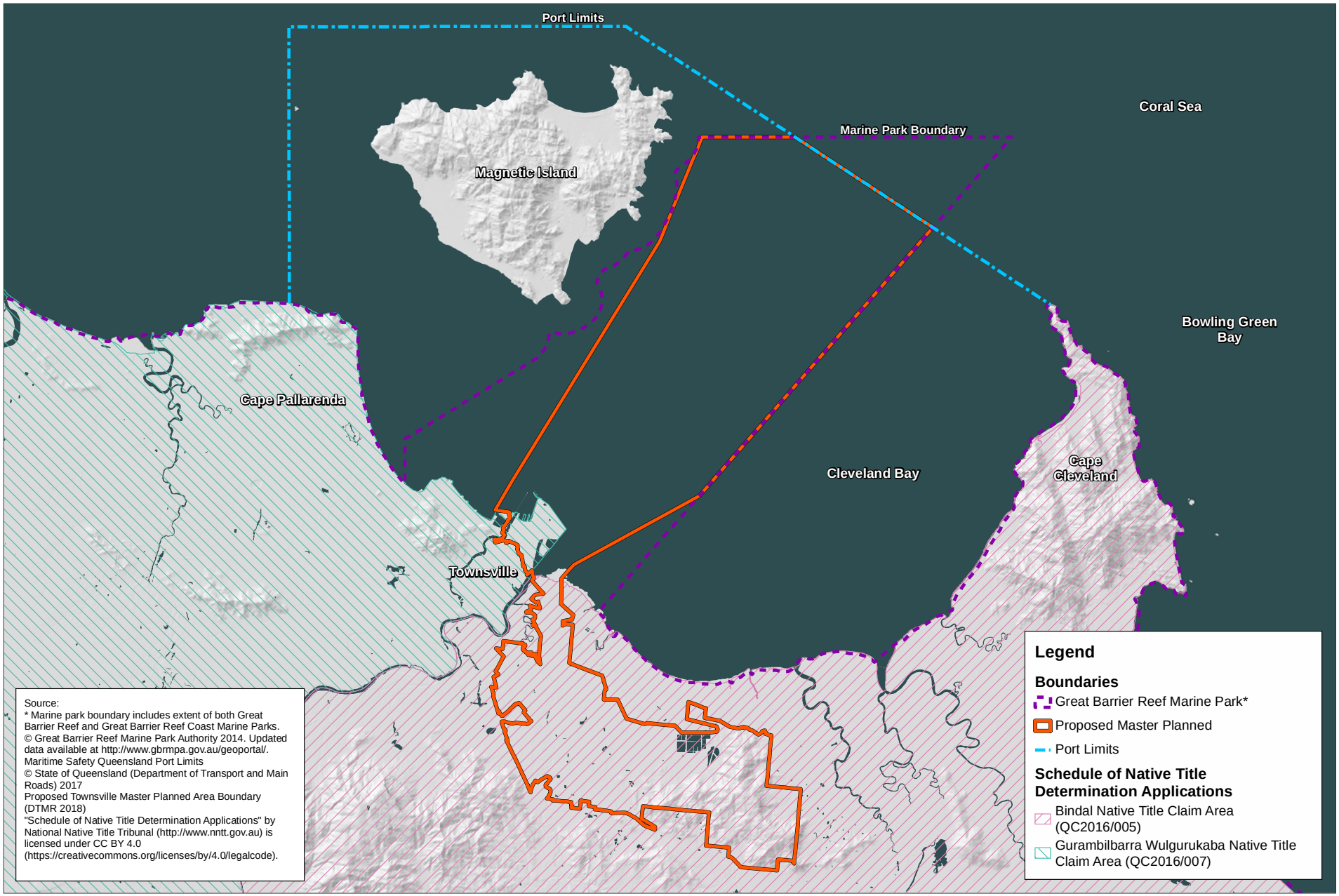
Marine megafauna



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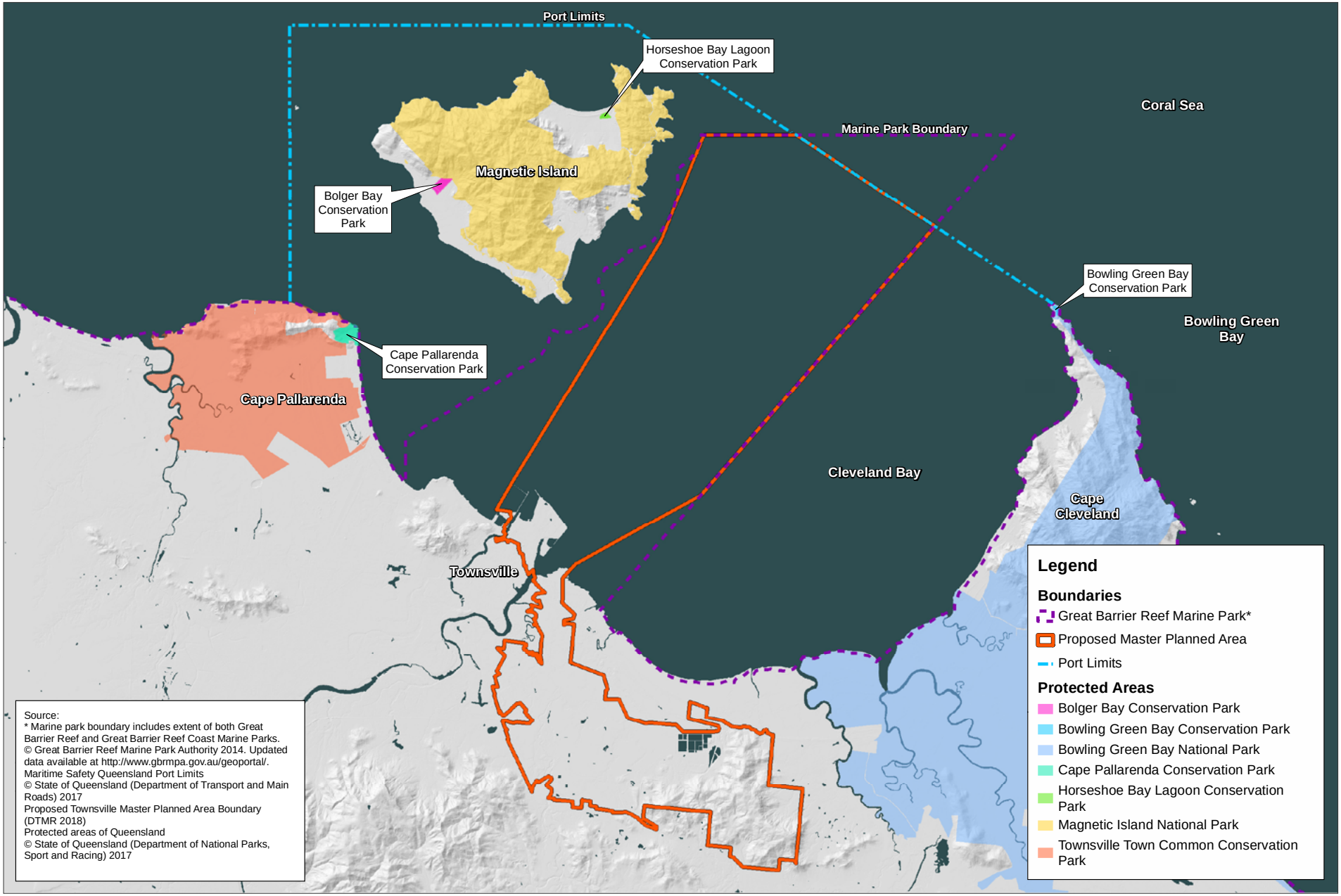
Native title claims



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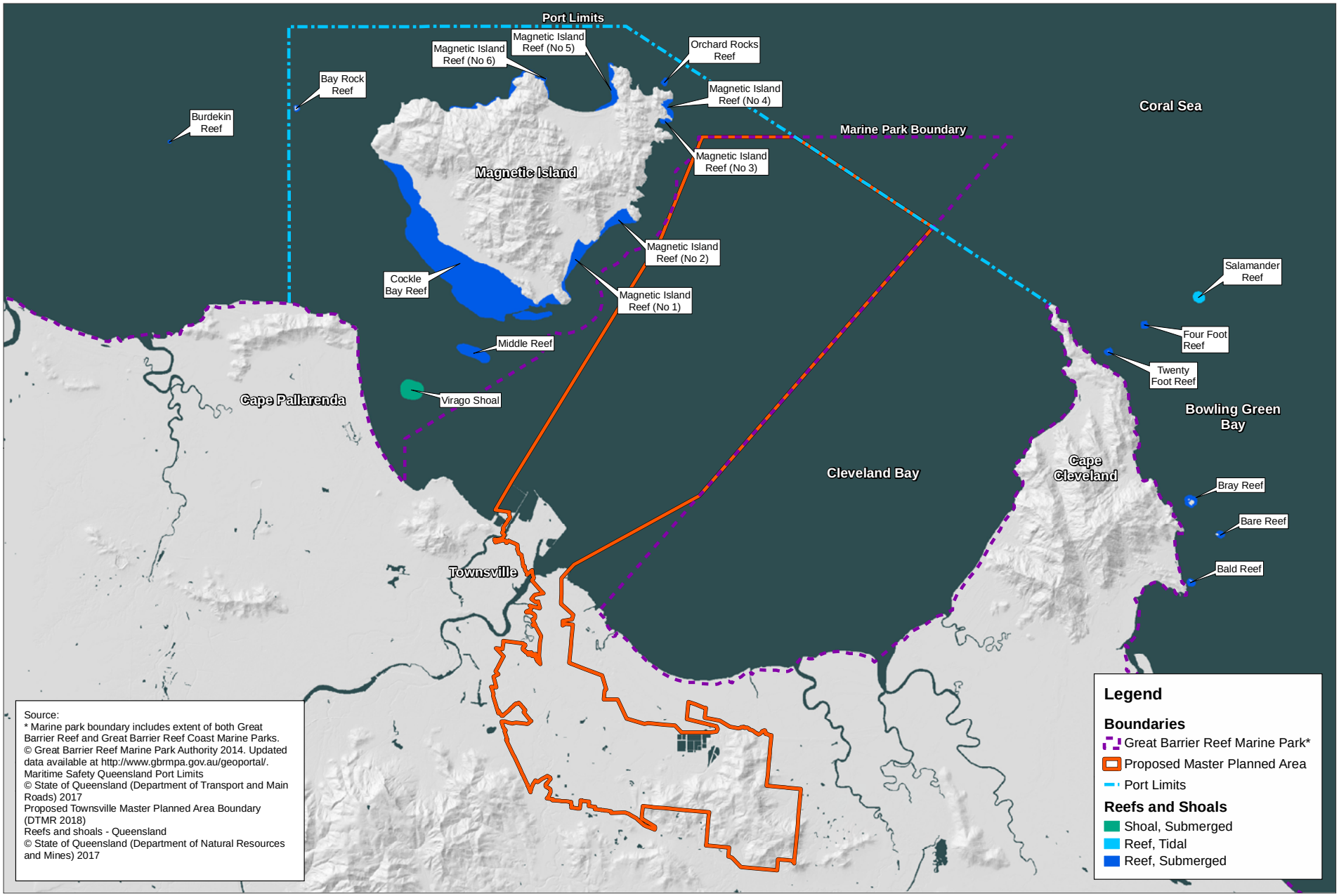
Protected areas



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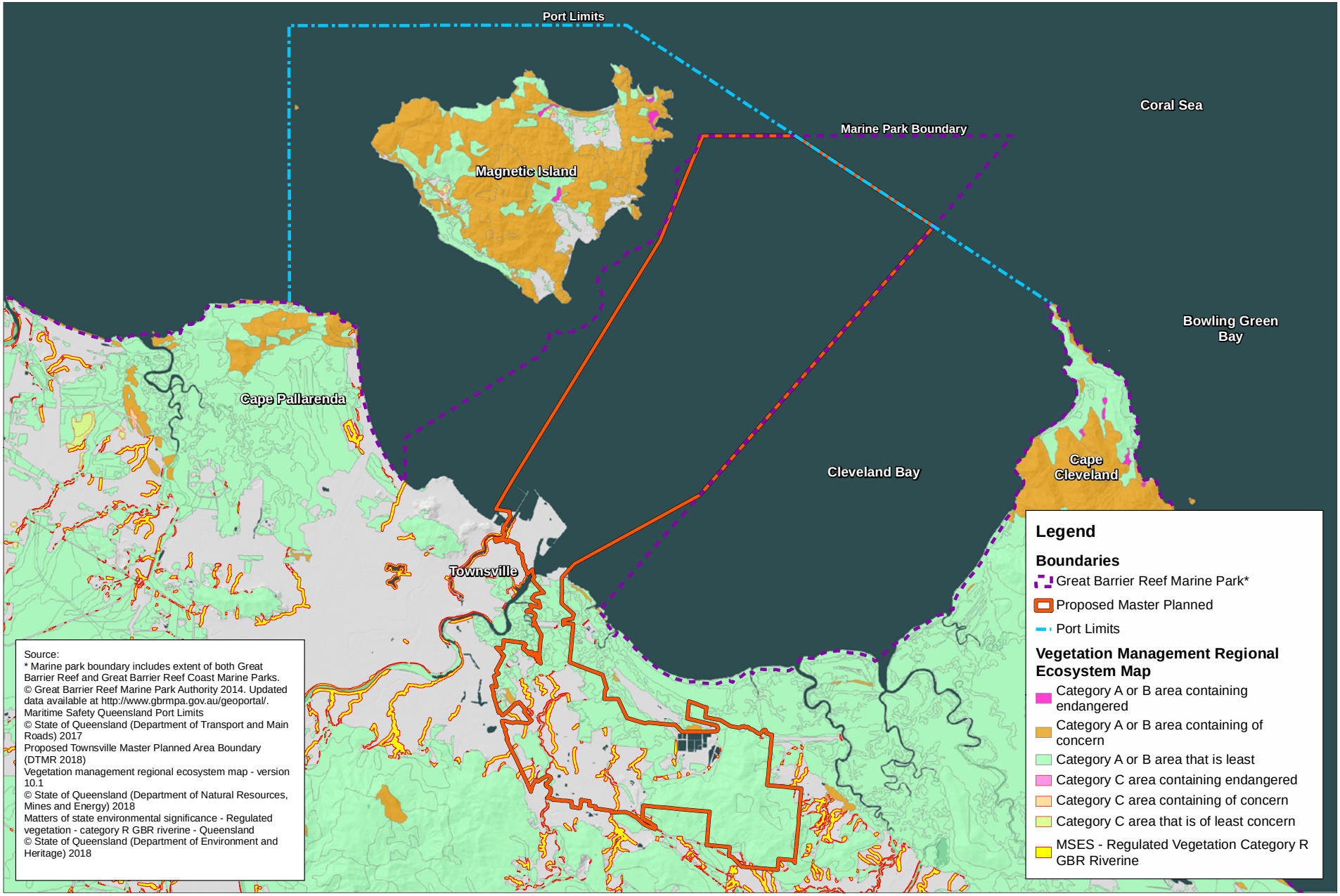
Reefs and shoals



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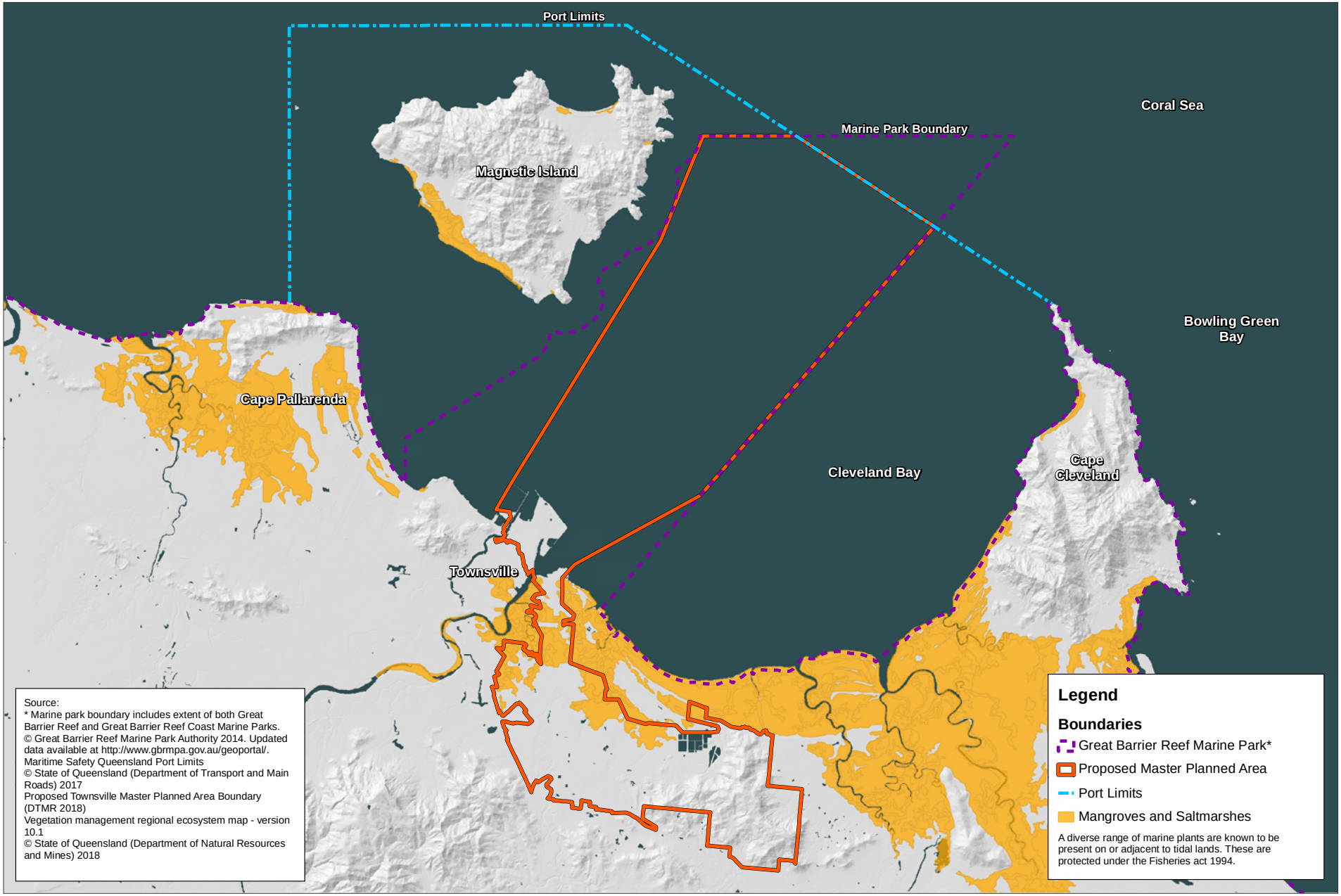
Regional ecosystems



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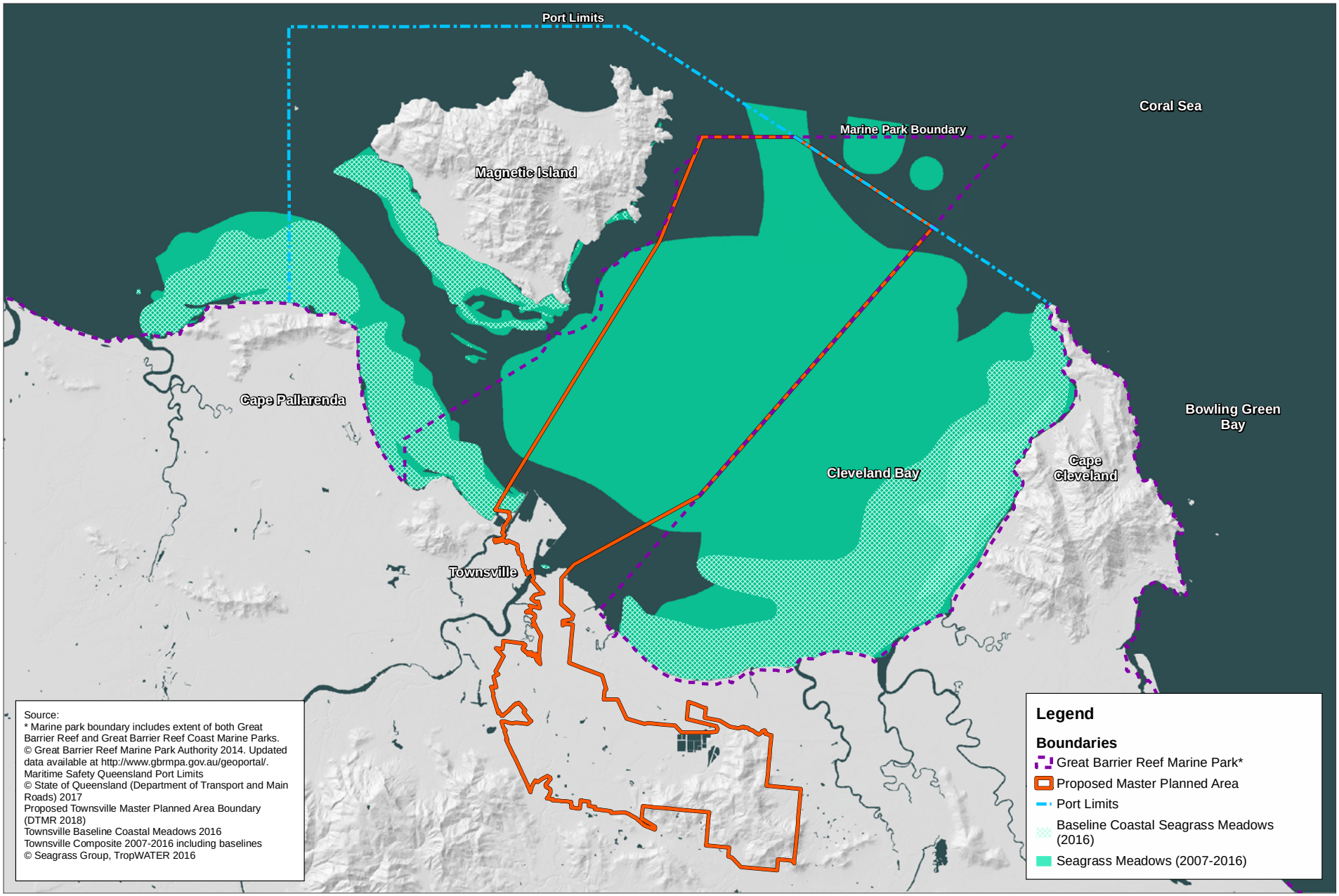
Coordinate System: GDA 1994 MGA Zone 55

Draft master plan - priority Port of Townsville

Regional ecosystems containing mangroves, saltmarsh communities and marine plants



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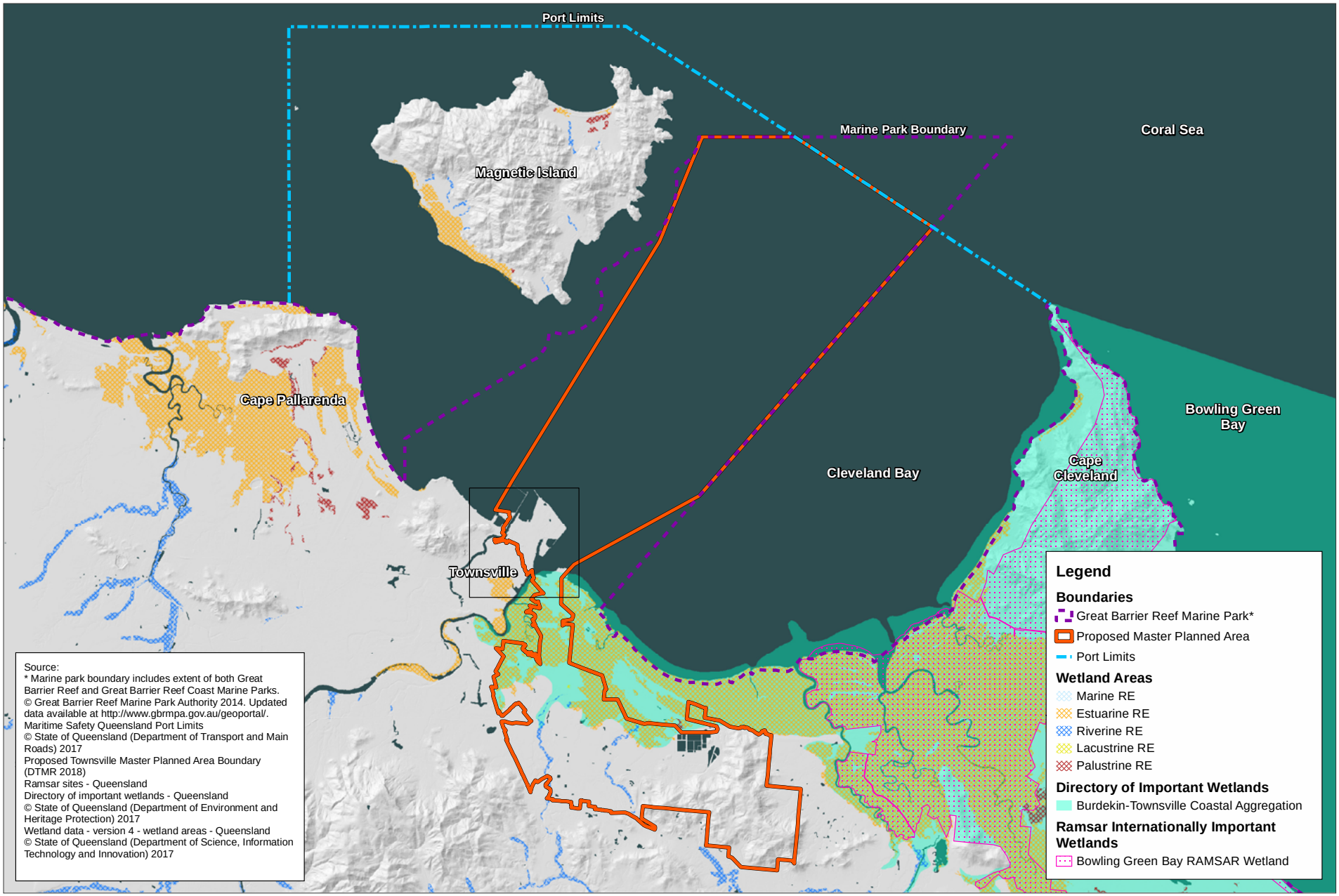
Seagrass meadows



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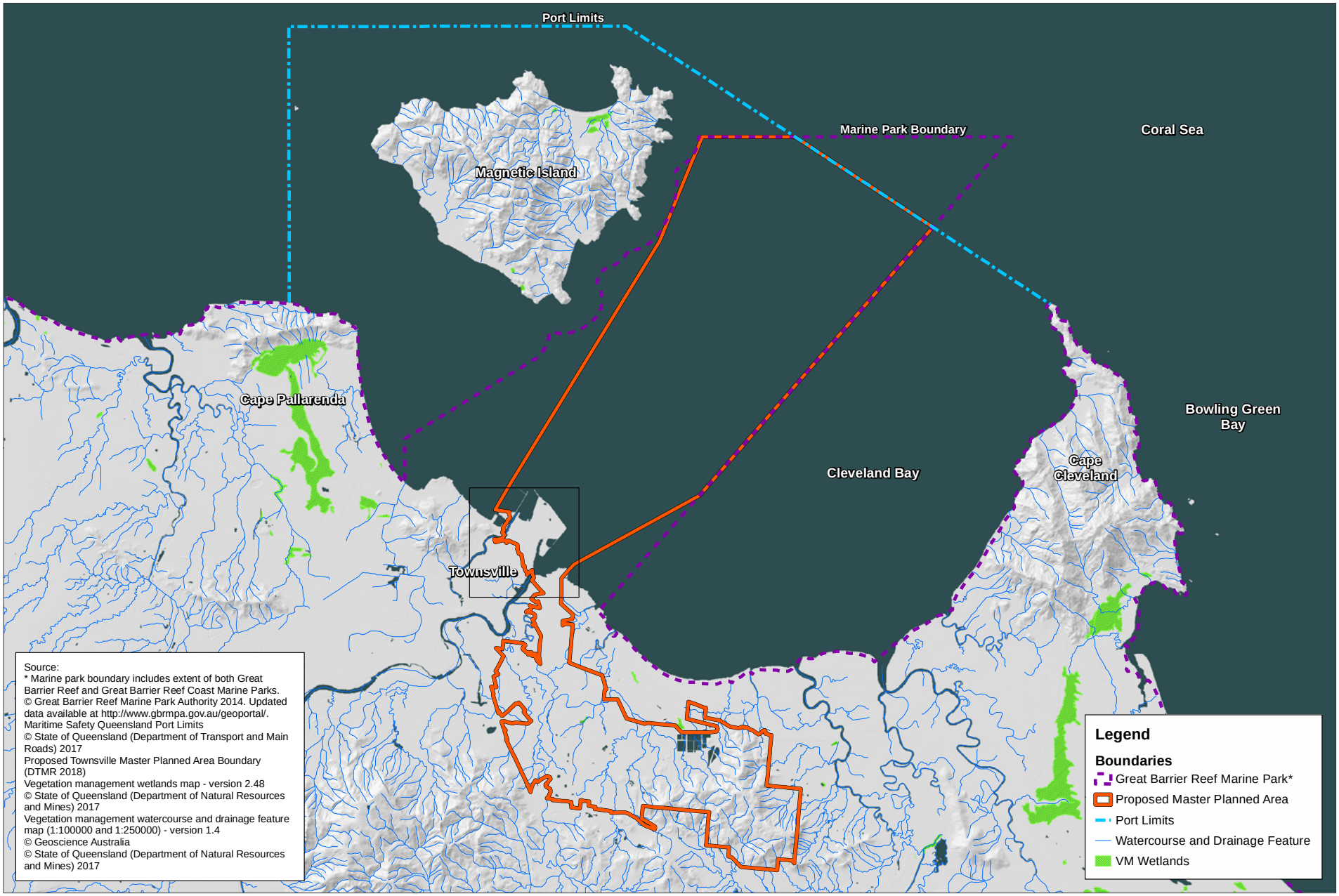
Wetland areas



Draft master plan - priority Port of Townsville

Wetlands and watercourses

Appendix C
Definitions

Term	Definition
adjoin (or adjoining)	development that is directly adjacent (i.e. shares a common boundary).
beneficial reuse	dredged material that has been used for a purpose that provides social, economic or environmental benefits (or a combination of these). That is, the dredged material is managed as a valuable resource rather than a product destined for disposal. Beneficial reuse can involve the placement of dredged material on-land and in the aquatic zone (i.e. underwater or in intertidal areas). Consideration of beneficial reuse in the Queensland context to date has been focused on applications that provide economic benefits such as on-land processing and industry reuse or land reclamation (Royal Haskoning DHV and AMA 2016).
capital dredging	see schedule 1 .
dredged material	capital and maintenance dredged material required for the ongoing operation and future expansion of the port
ecologically sustainable development	see *Environment Protection and Biodiversity Conservation Act 1999*, section 3A. Note: Under the EPBC Act the principles of ecologically sustainable development are: a) Decision-making processes should effectively integrate both long-term and short-term economic, environmental, social and equitable considerations b) If there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation c) The principle of inter-generational equity – that the present generation should ensure that the health, diversity and productivity of the environment is maintained or enhanced for the benefit of future generations d) The conservation of biological diversity and ecological integrity should be a fundamental consideration in decision-making e) Improved valuation, pricing and incentive mechanisms should be promoted.
environmental value	see the *Environmental Protection Act 1994*, section 9
fringing reef	intertidal to subtidal reefs that grow along the mainland or around the margins of continental high islands (Smithers 2011).
Great Barrier Reef Coastal Zone	the areas adjacent to the Great Barrier Reef and includes Queensland waters, islands and adjacent inland areas, five kilometres (inland and 10 metres Australian Height Datum, whichever is further).
Great Barrier Reef World Heritage Area	The GBRWHA extends from the top of Cape York in north-east Australia to just north of Bundaberg, and from the low water mark on the Queensland coast to the outer boundary of the GBRMP, which is beyond the edge of the continental shelf. The area was declared a World Heritage Area in 1991 because of its OUV. • About 99 per cent of the World Heritage Area is within the GBRMP but encompasses: • Some 980 islands which are under Commonwealth and Queensland jurisdiction • Some internal waters of Queensland (for example, so deep bays, narrow inlets or channels between islands) • All waters seaward of the low water mark from north of Bundaberg to Cape York.

Term	Definition
inshore turbid reef	are generally located in turbid water which is shallower than 10 metres, and are usually located within 10 kilometres of the coast. Inshore turbid reefs include both shore attached (fringing reefs in locations close to the mainland) and non-shore attached shoals (Whiteway et al, 2014).
High Productivity Vehicles	road freight transport vehicles which have increased transport efficiency over contemporary heavy vehicles.
local expression of the Outstanding Universal Value of the Great Barrier Reef World Heritage Area	environmental values present within and surrounding the priority Port of Townsville master planned area that contribute to the OUV of the GBRWHA. Note: The local expression of the OUV of the GBRWHA within and surrounding the priority Port of Townsville master planned area has been identified as part of the evidence base and is specifically referred to in the master plan EMF.
maintenance dredging	dredging carried out for the purposes of removing sediments that have accumulated in existing channels, berths, approaches and swing basins of a port to maintain an approved capital dredging profile.
marine megafauna	large marine species which may include cetaceans (whales and dolphins), reptiles (marine turtles), dugongs, chondrichthyes (sharks, rays, skates and chimaeras) and pinnipeds (seals or sea lions).
marine parks	see Ports Act, section 6(4).
marine plants	see the *Fisheries Act 1994*, section 8.
master planned area	see Ports Act, section 6 (1), however, for this master plan means all of the area shown on **Figure 1** and **Appendix A**.
material placement area or areas	existing and future potential material placement areas for the placement of dredged material from maintenance dredging.
matters of national environmental significance	see EPBC Act 1999, section 34 Note: The matters of national environmental significance are: • world heritage properties • national heritage places • wetlands of international importance (often called Ramsar wetlands after the international treaty under which such wetlands are listed) • nationally threatened species and ecological communities • migratory species • Commonwealth marine areas • the Great Barrier Reef Marine Park • nuclear actions (including uranium mining) • a water resource, in relation to coal seam gas development and large coal mining development.
matters of state environmental significance	see State Planning Policy 2017.
offsets (environmental offset)	see Environmental Offsets Act 2014, section 7(2), and the relevant state and Commonwealth policies.

Term	Definition
Outstanding Universal Value (OUV)	as defined in the UNESCO Operational Guidelines for the Implementation of the World Heritage Convention means cultural and/or natural significance which is so exceptional as to transcend national boundaries and to be of common importance for present and future generations of all humanity. As such, the permanent protection of this heritage is of the highest importance to the international community as a whole.
planning instrument	see *Planning Act 2016*, section 8 (1), and land use plan under the *Transport Infrastructure Act 1994*, section 285, and approved development scheme under the *State Development and Public Works Organisation Act 1971*, Schedule 2, and development scheme under the *Economic Development Act 2012*, Schedule 1.
port berths	means jetties, berths/wharves and associated infrastructure.
port operations	development or activities carried out for or in association with core port, industrial, supply chain or commercial activities necessary for the efficient functioning of the priority Port of Townsville and its supply chain
port limits	see Transport Infrastructure (Ports) Regulation 2016, schedule 2, part 2, section 7.
port optimisation	the act of making a port system, design or decision as effective or functional as possible. This may include for example, making efficient use of strategic port land, berths and/or land-based facilities, ability to control berthing allocations and scheduling, minimising capital-intensive marine- based infrastructure, minimising the distance between land-based facilities and berths and/or minimising capital or maintenance dredging. Port optimisation requires a balance to be achieved across a number of these issues. For port infrastructure, optimisation usually centres on the resources that are scarcest. However, different development may require different aspects of the infrastructure to be optimised, having regard to the economic, environmental and social context of the project.
port overlay	see Ports Act, section 19.
priority management measures	see Ports Act, section 8 (1)(c)(iii).
priority ports	see Ports Act, section 5
responsible entity	the entity or entities responsible for implementation of a priority management measure
sensitive land use or uses	see the Planning Regulation 2017.
Strategic Port Land (SPL)	see the *Transport Infrastructure Act 1994*, section 267.
supply chain infrastructure	infrastructure, services and utilities identified as critical to supporting the future functioning of priority Port of Townsville, and its associated trade and economic growth for the region. This includes, for example road and rail infrastructure and links, above and below ground linear infrastructure (e.g. pipelines and conveyors), infrastructure nodes (e.g. power station, treatment plant, extractive resources), transmission lines that service and link the priority Port of Townsville and industry development.

Appendix D
Abbreviations and acronyms

Acronym / Abbreviation	Definition
ADF	Australian Defence Force
EIS	Environmental Impact Statement
EMF	Environmental Management Framework
EP Act	*Environmental Protection Act 1994*
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999*
ERA	Environmentally Relevant Activities
ESD	Ecologically Sustainable Development
GBRWHA	Great Barrier Reef World Heritage Area
GBRMPA	Great Barrier Reef Marine Park Authority
HAT	Highest Astronomical Tide
LMDMP	Long-term Maintenance Dredging Management Plan
Maintenance dredging strategy	Maintenance Dredging Strategy for Great Barrier Reef World Heritage Area Ports
MIRL	Mount Isa Rail Line
MNES	Matters of National Environmental Significance
MPA	Master Planned Area
MSES	Matters of State Environmental Significance
NC Act	*Nature Conservation Act 1992*
NCL	North Coast Line
NWMP	North West Mineral Province

Acronym / Abbreviation	Definition
OUV	Outstanding Environmental Value
PEP	Townsville Port Expansion Project
PMMs	Priority Management Measures
Port	Priority Port of Townsville
POTL	Port of Townsville Limited
POTLUP	Port of Townsville Land Use Plan
Ports Act	*Sustainable Ports Development Act 2015*
QTS	Queensland Transport Strategy (draft)
Reef 2050 Plan	Reef 2050 Long-Term Sustainability Plan
SDPWO Act	*State Development and Public Works Organisation Act 1971*
SIP	State infrastructure Plan
SPL	Strategic Port Land
SPP	State Planning Policy
TEARC	Townsville Eastern Access Rail Corridor
TCC	Townsville City Council
TEC	Threatened Ecological Community
TCP	Transport Coordination Plan 2017-2027
TCWPDA	Townsville City Waterfront Priority Development Area
TPAR	Townsville Port Access Road
TSDA	Townsville State Development Area
UNESCO	United Nations Educational, Scientific and Cultural Organisation
UNESCO WHC	United Nations Educational, Scientific and Cultural Organisations World Heritage Committee World Heritage Committee
VM Act	*Vegetation Management Act 1999*

Appendix E
Local attributes of OUV of the GBRWHA

OUV is the fundamental concept of the World Heritage Convention and underpins the listing of properties on the World Heritage List. For a World Heritage property to be considered to have OUV, it must:

- meet one or more of the ten criteria set out in the convention
- meet the conditions of integrity
- meet the conditions of authenticity for cultural heritage properties
- have an adequate system of protection and management to safeguard its future.

The World Heritage Committee listed the Great Barrier Reef for the following criteria:

- Criterion (vii)—contain superlative natural phenomena or areas of exceptional natural beauty and aesthetic importance
- Criterion (viii)—be outstanding examples representing major stages of earth's history, including the record of life, significant ongoing geological processes in the development of landforms, or significant geomorphic or physiographic features
- Criterion (ix)—be outstanding examples representing significant ongoing ecological and biological processes in the evolution and development of terrestrial, freshwater, coastal, and marine ecosystems and communities of plants and animals
- Criterion (x)—contain the most important and significant natural habitats for in situ conservation of biological diversity, including those containing threatened species of OUV from the point of view of science or conservation.

The contribution classifications for each OUV local attribute and associated environmental values have been determined as part of a comprehensive, evidence-based assessment. That assessment took account of factors including, but not limited to:

- the history, current function and land uses of the port
- regulatory context of port operations
- environmental, social and cultural heritage values represented within and surrounding the master planned area as well as more broadly across the GBRWHA
- other factors that could affect determination of the master planned area
- potential for future development.

Information used was that available to the master planning process at the time which included the assessment information from the PEP. Detailed findings are reported in the evidence base documentation with key information extracted and presented to inform the local expression of values that contribute to the OUV of the GBRWHA.

The contribution classifications are generally defined as:

- Minor contribution (Min): The attribute is present however, it occurs in low abundance or singularly and is:
  - not essential to the sustainability of the attribute (e.g. substantial breeding population)
  - not recognised as a key feature of the GBRWHA
  - not included in the retrospective statement of OUV
  - not iconic, unique or a high-quality example of the attribute.
- Moderate contribution (Mod): The attribute occurs in moderate abundance or across a moderately large area but is not the prime occurrence or representation of the attribute within the GBRWHA. The attribute does, however, represent a feature for which the Great Barrier Reef was listed as World Heritage.
- Significant contribution (Sig): The attribute represents locally important examples of the attribute relative to the nature of the attribute across the GBRWHA. Such an attribute may be specifically referred to within the retrospective statement of OUV for the GBRWHA or defined by other legislation, planning instrument, or values assessment (e.g. Great Barrier Reef Outlook Report). The occurrence of the attribute locally is a prime example of the features mentioned in the retrospective statement of OUV (Adaptive Strategies et al, 2017).

Category	Local attribute	Relevant OUV criteria and contribution classifications[1]				Summary of the key environmental values
		vii[2]	viii[3]	ix[4]	x[5]	
Coral reefs	String of reef structures including fringing reefs	Min	Mod	Min	-	Coral reefs are present fringing Magnetic Island and between Magnetic Island and Townsville.
	Hard and soft corals	Mod	-	-	-	Reef communities comprised of hard corals exist around Magnetic Island, at Middle Reef and at Virago Shoal (located between Magnetic Island and Cape Pallarenda). The Cockle Bay reefs, located on the south-western side of Magnetic Island, are characterised by species adapted to high siltation and turbidity associated with the coastal processes of Cleveland Bay.
	Coral species diversity and extent	-	Mod	-	Mod	Extensive hard coral reef communities exist around Magnetic Island, at Middle Reef and at Virago Shoal. Cleveland Bay also supports a network of nearshore reefs, which have different levels of inter-connectivity and habitat structure. Based on mapping from the GBRMPA, the total area of reef habitat in Cleveland Bay is approximately 987 hectares.
	Coral spawning	Min	-	-	-	Annual coral spawning occurs at these sites, generally in October. The size and density of inshore reefs does not result in the mass spawning events more commonly associated with mid shelf and outer reefs.
Fish	Significant spawning aggregations of many fish species	Min	-	-	-	Cleveland Bay provide habitat for a variety of fish species. Protected Fish Habitat Areas have been established in Cleveland Bay and in the nearby Bohle River and Bowling Green Bay.
Marine megafauna	Dugong	-	-	-	Sig	Cleveland Bay is recognised as dugong habitat and is a declared Dugong Protection Area. Cleveland Bay is thought to be an important dugong habitat at a regional scale as it contains some of the most extensive and diverse seagrass meadows in north Queensland.
	Species of whales	-	-	-	Min	Humpback whale adults and calves have occasionally been recorded within the coastal waters of Cleveland Bay, usually during August-September.
	Migrating whales	Min	-	-	-	Humpback whale adults and calves have occasionally been recorded within the coastal waters of Cleveland Bay, usually during August-September.

1. **Min** - Minor
   Mod - Moderate
   Sig - Significant
2. **vii** - Aesthetic values and superlative natural phenomena
3. **viii** - Ongoing geological processes
4. **ix** - Ecological and biological processes
5. **x** - Biodiversity conservation

Category	Local attribute	Relevant OUV criteria and contribution classifications[1]				Summary of the key environmental values
		vii[2]	viii[3]	ix[4]	x[5]	
	Species of dolphins	-	-	-	Mod	A number of dolphin species are known or likely to occur in Cleveland Bay, including: Australian snubfin dolphin, Indo-Pacific humpback dolphin, Common dolphin and the Bottlenose dolphin.
Marine turtles	Breeding colonies of marine turtles	Min	-	-	Min	A number of species of sea turtles, including Green turtles, the endangered Loggerhead, Leatherback, and Olive Ridley species, frequent Cleveland Bay and surrounding beaches. Green turtles are the most common. Magnetic Island beaches are known to be regular nesting sites for Green turtles, however, the density is low in comparison the other sites within the GBR.
	Green turtle breeding	Min	-	-	Min	
	Nesting turtles / Turtle rookeries	Min	-	-	Min	
Seagrass and macroalgae	Seagrass	Sig	-	-	Sig	Cleveland Bay contains some of the most extensive and diverse seagrass meadows in north Queensland. Eight species of seagrass have been recorded in Cleveland Bay with the most extensive beds located in the eastern portion of Cleveland Bay, with smaller beds occurring off the Strand, Kissing Point, Pallarenda Beach, and some bays fringing Magnetic Island.
	Beds of Halimeda algae	-	-	Min	-	Halimeda beds occur around Cockle Bay (southern Magnetic island), but at the time of 2012 reef surveys, were not found to be significant.
Shorebirds and migratory seabirds	Breeding colonies of seabirds	Min	-	-	-	A variety of seabirds are present in the marine areas, however, large colonies of nesting seabirds do not occur within or surrounding the proposed master planned area.
	Diversity of shorebirds and migratory birds	Sig	-	-	Sig	Shorebirds frequently occur within the proposed master plan boundary area, while feeding, resting or migrating from one area to another. Intertidal areas provide foraging habitat for many species of wading birds and migratory bird species, particularly the east bank of Ross River and at Cape Cleveland.

Category	Local attribute	Relevant OUV criteria and contribution classifications[1]				Summary of the key environmental values
		vii[2]	viii[3]	ix[4]	x[5]	
Flora, fauna and ecological communities	Plant species diversity and endemism	-	-	-	Min	There is only very minor representation of plant species of conservation significance present within the master plan boundary area, including several threatened mangrove species and *Croton magneticus*, which is recorded on Magnetic Island. One threatened ecological community (TEC) has the potential to be present within the master plan boundary area - Semi-evergreen vine thickets of the Brigalow Belt (North and South) and Nandewar Bioregions – which is listed as endangered under the EPBC Act. Mapping suggests it is present on Magnetic Island and in the TSDA.
	Vegetated mountains	Min	-	-	-	Rugged mountains rise abruptly from the coastal plain and include Mount Stuart, as well as the landforms of Castle Hill and Magnetic Island.
	Mangroves	-	Min	-	-	Substantial mangrove stands occur in Cleveland Bay and around Magnetic Island. The Bowling Green Bay Ramsar wetland is located to the south of Townsville. The site is significant for its extensive and diverse complex of coastal wetlands which are mostly coastal plain covered in tidal mudflats, mangrove forest and salt marshes.
	Mangrove species diversity	-	-	-	Sig	
	Vast mangrove forests	Sig	-	-	-	
Continental islands	Continental islands and green vegetated islands	Mod	Min	-	-	Magnetic Island is a continental island with rocky granite headlands, sandy bays, covered with open eucalypt woodlands and surrounded by coral reefs.
	Vegetation of the continental islands	Mod	-	Min	-	
Geomorphology	Spectacular sandy beaches	Min	-	-	-	Townsville and Magnetic Island have a number of sandy beaches and bays.
	Coral reefs	-	-	Min	-	Fringing coral reefs, Magnetic Island and coastal areas represent geomorphic processes, including ancient volcanic activity.
	Connectivity: cross-shelf, longshore and vertical	-	-	Min	-	The offshore areas of Cleveland Bay form part of the larger longshore connections within the GBR lagoon.

Category	Local attribute	Relevant OUV criteria and contribution classifications[1]				Summary of the key environmental values
		vii[2]	viii[3]	ix[4]	x[5]	
	Processes of geological and geomorphic evolution		Min			Townsville is underlain by Quaternary-age alluvium and colluvium sediments, which in turn overlie basement geology comprising Late-Palaeozoic age Granite. The near surface lithology comprises Holocene sediments more than 12,000 years old, including silts, mud and sand described as coastal tidal flats, mangrove flats and saltpans.
	Unique and varied seascapes and landscapes		Min			Cleveland Bay provides a variety of seascapes and landscapes including open water, continental islands, sand beaches, mudflats, mangroves and vegetated hills and headlands.
Marine and terrestrial fauna	Diversity supporting marine and terrestrial fauna species (global conservation significance)	-	-	-	Mod	Cleveland Bay, Magnetic Island and surrounding areas provide habitat for a large range of species and ecosystems, the most notable being the habitats of the Bowling Green Bay Ramsar wetland area and the migratory birds that use this area.
Total species diversity	Marine diversity and including molluscs, fish, sponges and many others	-	-	Mod	-	Common benthic flora and fauna are present in the marine areas. The intertidal areas are a key habitat for many species of invertebrates (e.g. crabs, shell fish, worms).

Appendix F
Potential impacts on environmental values

As described in the EMF in **Part D**, potential impacts have been identified based on potential development activities that may be needed to support infrastructure and supply chains within the master planned area to the year 2050. These activities were identified based on the current land uses, development potential, environmental values, and precinct purposes within existing planning instruments.

These activities were subject to a risk assessment to determine the likelihood and consequence of potential impacts from development on the environmental values. Where a development activity location was unknown, the potential impacts assumed the highest conservation significance of the value.

The potential impacts from development have been identified at a high level for the purpose of the master planning due to the wide range of activities that may occur across the master planning timeframe.

As identified in **Part D**, there is state and Commonwealth legislation, state and local planning processes, operational environmental management measures and approvals which provide for the management of the potential impacts on environmental values.

Potential impacts on environmental values	Precincts
Marine megafauna	
Direct mortality and/or injury as a result of vessel strike and/or dredging activity	Marine precinct Marine infrastructure precinct Port industry and commerce precinct
Increase in noise, vibration and disruption to behaviour/life-cycle	
Mortality and/or injury as a result of becoming trapped within the reclamation area	
Increase in lighting resulting in disruption to behaviour/life-cycle	
Fish & fisheries	
Mortality and/or injury as a result of becoming trapped within the reclamation area	Marine precinct Marine infrastructure precinct Port industry and commerce precinct
Smothering of benthic habitat under revetment walls	
Localised turbidity plumes from placement of rock armouring	
Operational impacts such as surface water runoff, chemical spills and dust/air quality	
Degradation and/or contamination of water quality from operational waste	
Reduction in breeding/feeding habitat due to increased sedimentation and decreased water quality from dredge plumes	

Potential impacts on environmental values	Precincts
Marine and estuarine protected areas	
Indirect impacts from dredging activities	Marine precinct Marine infrastructure precinct Port industry and commerce precinct
Contamination of surface water runoff as a result of chemical spills from port operations	
Indirect impacts through stormwater runoff	
Degradation of water quality from waste	
Changes to coastal processes indirectly impacting on areas outside of the master planned area.	
Smothering of benthic habitat under the reclamation area within the GBRWHA	
Mangrove, saltmarsh communities and marine plants	
Suspended sediment from dredge plumes accumulate in sensitive areas including beaches and intertidal areas	Marine precinct Marineinfrastructure precinct Port industry and commerce precinct Environmental management precinct Infrastructure and supply chain corridors
Changes to coastal processes resulting in erosion and accretion of sediments	
Indirect impacts on mangrove communities through stormwater runoff	
Direct clearing of mangrove, saltmarsh communities and marine plants.	
Seagrass and macroalgae	
Localised turbidity plumes from placement of rock armour revetment walls	Marine precinct Marine infrastructure precinct Port industry and commerce precinct
Seepage of turbid water through the reclamation wall	
Operational impacts such as surface water runoff, chemical spills and dust/air quality	
Increased turbidity associated with release of tailwater	
Increased sedimentation and turbidity from dredging activities leading to decreased water quality and reduced light attenuation	
Reef communities	
Indirect impacts from capital and maintenance dredging	Marine precinct Marine infrastructure precinct

Potential impacts on environmental values	Precincts
Remnant vegetation	
Direct clearing of remnant vegetation	Environmental management precinct Infrastructure and supply chain corridors precinct Port industry and commerce precinct
Indirect impacts to remnant vegetation through stormwater runoff	
Threatened flora and fauna	
Direct clearing of fauna habitat	Environmental management precinct Infrastructure and supply chain corridors precinct Port industry and commerce precinct
Indirect impacts on threatened ecological communities through stormwater runoff	
Indirect impacts on migratory and wader bird habitat through stormwater runoff	
Direct mortality and/or injury to terrestrial fauna	
Wetlands	
Indirect impacts to wetlands through stormwater runoff	Environmental management precinct Infrastructure and supply chain corridors precinct Port industry and commerce precinct
Listed migratory and threatened species	
Temporary displacement of migratory birds during reclamation activities	Environmental management precinct Marine infrastructure precinct Port industry and commerce precinct
Temporary displacement of migratory species during construction due to indirect noise, light and dust impacts	
Operational impacts from noise and light	
Indirect impacts on a habitat through stormwater runoff	

Potential impacts on environmental values	Precincts
Air quality and noise	
Increase disruption to behaviour/lifecycle of terrestrial and intertidal fauna during development activities	Environmental management precinct Infrastructure and supply chain corridors precinct Port industry and commerce precinct
Operational dust/air quality impacts on adjacent areas	
Increased dust impacts from construction on surrounding areas resulting in reduced air quality	
Water quality (marine, freshwater and groundwater)	
Indirect impacts through the release of contaminants or turbid water	Environmental management precinct Infrastructure and supply chain corridors precinct Port industry and commerce precinct Marine precinct Marine infrastructure precinct
Increased sedimentation and turbidity from capital and maintenance dredge plumes	
Increased sedimentation and nutrients from construction and operational activities	
Disturbance of acid sulfate soils during operational works and/or construction	
Groundwater impacts as a result of significant earthworks	
Aboriginal and Torres Strait Islander cultural heritage	
Direct impacts on cultural heritage sites during land disturbance	Environmental management precinct Infrastructure and supply chain corridors precinct Port industry and commerce precinct

Appendix G
EMF Objectives

EMF objectives have been identified for each of the master planned area precincts to avoid, mitigate and/or offset potential impacts from development within the master planned area on environmental values, including the OUV of the GBRWHA, MNES, and MSES.

The EMF objectives for managing potential impacts from development within each of the precincts of the proposed master planned area are outlined below. These objectives refer to environmental values within and surrounding the proposed master planned area. Due to the range of potential development activities within the master planned area, the different potential impact pathways, varying sensitivities of receptors, and different biological traits of receptors (for example behaviours and responses to stress), the surrounding areas may vary from precinct to precinct.

Precinct	EMF Objectives
Environmental management	Avoids, mitigates and/or offsets potential impacts (direct, indirect and cumulative) from development within and adjacent to the precinct with particular regard to: • avoiding direct impacts on threatened ecological communities under the EPBC Act (Cth) and Endangered and Of concern Regional Ecosystems under the *Vegetation Management Act 1999* (VM Act) (Qld) • addressing the potential for cumulative impacts on environmental values from multiple developments within the Port industry and commerce precinct • early detection of potential impacts on fish passage connectivity, mangrove, saltmarsh communities and other marine plant communities • conservation of habitat and connectivity for threatened and migratory species under the EPBC Act (Cth) and *Nature Conservation Act 1992* (NC Act) (Qld).
Infrastructure supply chain and corridors	Development operates efficiently and effectively, in a manner that appropriately balances industrial, commercial, recreational and cultural activities, and potential impacts from development on the OUV of the GBRWHA and other environmental values. Consolidate infrastructure connecting the port and TSDA to minimise clearing requirements. Ongoing operations should be managed so that the transportation of materials avoids or minimises impacts on sensitive receptors through air quality, noise and stormwater impacts. Minimise potential impacts (direct, indirect and cumulative) from development within the precinct on the following environmental values: • mangroves and other marine plants • migratory shorebird habitat and populations • marine and fresh water quality • cultural heritage values.
Interface	Development incorporates design measures and other controls that avoid and minimise noise, light, visual amenity and air quality impacts from adjoining port and industrial land uses.

Precinct	EMF Objectives
Marine	Development avoids, mitigates and/or offsets impacts (direct, indirect and cumulative) on the following environmental values: • seagrass meadows • mangroves and other marine plants • migratory shorebird habitat and populations • marine megafauna and habitat • marine water quality • cultural heritage values • reef communities. Development increases the understanding of the presence of attributes that contribute to the local expression of the OUV of the GBRWHA, and habitat value for other EPBC Act (Cth) and NC Act (Qld) species, and marine plants. Development collects information to monitor changes to the environmental values and confirm the impact from development within the precinct on the OUV of the GBRWHA and other environmental values.
Marine infrastructure	Development maintains port access to and continued operation of shipping channels and marine based infrastructure areas in a manner that appropriately balances maritime safety, industrial, commercial, recreational and cultural activities and potential impacts on the OUV attributes of the GBRWHA and other environmental values. Development avoids, mitigates and/or offsets direct, indirect and cumulative impacts from development on the following environmental values where possible: • seagrass meadows • mangroves and other marine plants • migratory shorebird habitat and populations • marine megafauna and habitat • marine water quality • cultural heritage values • reef communities. Development increases the understanding of the presence and contribution of attributes that contribute to the local expression of the OUV of the GBRWHA, and habitat value for other EPBC Act (Cth) and NC Act (Qld) species and marine plants. Development collects information to monitor changes to the environmental values and confirm the impact from development within the precinct on the OUV of the GBRWHA and other environmental values.
Marine services and recreation	Development minimises impacts (indirect and cumulative) within the precinct on the following environmental values: • mangroves and other marine plants • migratory shorebird habitat and populations • marine megafauna • marine water quality • cultural heritage values. Development maintains safe access to the waterfront and harbour for commercial operations, residents, recreational users and tourists. Development within the precinct incorporates design measures and other controls that avoid and minimise noise, light, visual amenity and air quality impacts from adjoining port and industrial land uses.

Precinct	EMF Objectives
Port industry and commerce	Development avoids, mitigates and/or offsets impacts (direct, indirect and cumulative) within the precinct on the following environmental values: • threatened ecological communities under the EPBC Act • regional ecosystems under the VM Act • threatened and migratory species under the EPBC Act (Cth) and NC Act (Qld) • seagrass meadows • mangroves and other marine plants • migratory shorebird habitat and populations • marine megafauna • freshwater, marine water and ground water quality • air quality • palustrine wetlands • cultural heritage values • reef communities. Development increases the understanding of the importance of habitat for the long-term conservation of species protected under the EPBC Act (Cth), NC Act (Qld), marine plants and fish. Development maintains appropriate access to areas that provide Aboriginal and Torres Strait Islander cultural heritage values and natural scenic amenity values that contribute to the OUV of the GBRWHA to residents, recreational users and tourists. Development is appropriately located, designed and managed to avoid and minimise noise, light, visual amenity and air quality impacts on adjoining land uses.

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