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QCLNG Project
Draft EIS – Coastal Legislative and Policy Assessment

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QCLNG Project Draft EIS - Coastal Legislative and Policy Assessment

Prepared For:	ERM Pty Ltd
Prepared By:	BMT WBM Pty Ltd (Member of the BMT group of companies)

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Vancouver

DOCUMENT CONTROL SHEET

BMT WBM Pty Ltd

BMT WBM Pty Ltd
Level 11, 490 Upper Edward Street
Brisbane 4000
Queensland Australia
PO Box 203 Spring Hill 4004

Tel: +61 7 3831 6744
Fax: + 61 7 3832 3627

ABN 54 010 830 421

www.wbmpl.com.au

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Project Manager :	Greg Fisk
Client :	ERM Pty Ltd
Client Contact:	Chris Jack, Glenn Boddington
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Title :	QCLNG Project Draft EIS - Coastal Legislative and Policy Assessment
Author :	Greg Fisk
Synopsis :	This report presents and discusses the legislation, policies and planning instruments relevant to describing the coastal environment that may be potentially affected by the proposed QCLNG Project.

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This report addresses particular aspects and requirements within section 3.4.2 (*Coastal Environment*) of the Draft Terms of Reference (un-dated version supplied by ERM) for the EIS being prepared by ERM Pty Ltd associated with the Queensland Curtis LNG project at Gladstone hereafter referred to as the QCLNG project.

The report specifically addresses those legislative and planning requirements within the draft TOR related to the coastal environment which are as follows:

- The State and Curtis Coast Regional Coastal Management Plans and other requirements of the Queensland *Coastal Protection and Management Act 1995*;
- Environmental values under the *Environmental Protection Act 1994*, specifically as they relate to the environmental values of water under the Australian and New Zealand Guidelines for Fresh and Marine Waters (ANZECC 2000), the Queensland *Environmental Protection (Water) Policy 1997* (EPP Water) and Queensland Water Quality Guidelines 2006;
- The Department of Primary Industries and Fisheries Guidelines for Marine Areas (most notably FHMOP 004, *Dredging, Extraction and Spoil Disposal Activities*);
- The Queensland State Planning Policy 2/02 for Planning and Managing Development Involving Acid Sulfate Soils 2002;
- Dredged material placement guidelines under the National Ocean Disposal Guidelines for Dredged Material and the Commonwealth *Environment Protection (Sea Dumping) Act 1981*; and
- The Gladstone Area (Map MPZ 17) of the Great Barrier Reef Marine Park given the boundary of the marine park occurs in close proximity to the proposed project.

For each planning/policy document, an assessment has been undertaken of the relevance of the document to the development associated with the QCLNG Project and consideration of the degree of consistency between the policy outcomes of the relevant planning documents and the proposal.

Based on the key findings of other technical reports for water quality, coastal processes and ecology presented elsewhere in the Draft EIS, in considering the coastal legislative and planning framework, it is likely that the proposed project can be designed and constructed in a way that does not have significant adverse impacts on the coastal environment and its values. However, best practice environmental management measures will be required to be implemented to minimise environmental impacts in sensitive wetland and coastal vegetation communities from key development elements such as pipeline trenching, dredging and access road construction.

Future regulatory approval requirements for the various development elements of the project (eg. the LNG plant, bridge and access roads, proposed submarine pipeline, etc.) under marine and coastal legislation are also identified and discussed. As the full details of the design and construction methodology are not finalised, a conservative list of potential approval requirements has been prepared that will need to be reviewed and re-visited prior to lodgement of any applications.

1 INTRODUCTION

1.1 Background

This report addresses particular aspects and requirements within section 3.4.2 (*Coastal Environment*) of the Draft Terms of Reference (un-dated version supplied by ERM) for the EIS being prepared by ERM Pty Ltd associated with the Queensland Curtis LNG project at Gladstone hereafter referred to as the QCLNG project.

The report specifically addresses those legislative and planning requirements within the draft TOR related to the coastal environment. As such, this report draws upon and should be read in connection with the following assessment reports prepared for the project –

- The Marine Water Quality Assessment Report (BMT WBM, Feb 2009);
- The Coastal Processes and Modelling Report (BMT WBM, Mar 2009); and
- The Terrestrial and Marine Ecology Reports (ERM, *in progress*).

1.2 Study Objectives and Methodology

The objectives of the assessment are to:

- Identify the relevant coastal and marine policy and planning instruments that will need to be considered in the assessment;
- Identify if the environmental impacts of the proposed project (primarily through review of the key findings from other technical coastal assessment reports referred to above) accord or achieve consistency with policy objectives and outcomes for the coastal zone as identified in the relevant policy and planning instruments; and
- Identify the likely assessment and permitting requirements under Commonwealth and State legislation that will need to be obtained following release and acceptance of the EIS for the project to proceed.

Key legislation, policy and planning documentation to be investigated are outlined in the Draft Terms of Reference and include:

- The State and Curtis Coast Regional Coastal Management Plans and other requirements of the Queensland *Coastal Protection and Management Act 1995*;
- Environmental values under the *Environmental Protection Act 1994*, specifically as they relate to the environmental values of water under the Australian and New Zealand Guidelines for Fresh and Marine Waters (ANZECC 2000), the Queensland *Environmental Protection (Water) Policy 1997* (EPP Water) and Queensland Water Quality Guidelines 2006;
- The Department of Primary Industries and Fisheries Guidelines for Marine Areas (most notably FHMOP 004, *Dredging, Extraction and Spoil Disposal Activities*);
- The Queensland State Planning Policy 2/02 for Planning and Managing Development Involving Acid Sulfate Soils 2002;

- Dredged material placement guidelines under the National Ocean Disposal Guidelines for Dredged Material and the Commonwealth *Environment Protection (Sea Dumping) Act 1981*; and
- The Gladstone Area (Map MPZ 17) of the Great Barrier Reef Marine Park given the boundary of the marine park occurs in close proximity to the proposed project.

For each planning/policy document, an assessment has been undertaken of the relevance of the document to the development associated with the QCLNG Project and consideration of the degree of consistency between the policy outcomes of the relevant planning documents and the proposal.

While the principal requirements of the TOR are discussed above, other Commonwealth and State coastal and marine legislation briefly addressed throughout this report includes:

- *Environment Protection and Biodiversity Conservation Act 1999* (Cth);
- *Great Barrier Reef Marine Park Act 1975* (Cth);
- *Integrated Planning Act 1997* (Qld);
- *Fisheries Act 1994* (Qld);
- *Marine Parks Act 2004* (Qld);
- *Petroleum (Submerged Lands) Act 1982* (Qld); and
- *Aboriginal Cultural Heritage Act 2003* (Qld).

A range of other more broadly-focussed regional and local plans and strategies also apply to coastal resources in the study area, but it is assumed that these are being addressed under other relevant sections of the EIS.

These include:

- CQ: A new millennia - Regional Plan and Growth Management Framework 2002 (the regional growth management plan administered by the Department of Infrastructure and Planning);
- Gladstone Harbour Protection and Enhancement Strategy 2003 (prepared by the Queensland EPA);
- Central Queensland Strategy for Sustainability: 2004 and Beyond (prepared by the Fitzroy Basin Association Regional NRM Group);
- Calliope Council Planning Scheme (now integrated within the Gladstone Regional Council);
- Other State Planning Policies such as SPP 1/92 (Good Quality Agricultural Land) and SPP 1/03 (Natural Hazards); and
- Plans and Strategies of the Gladstone Ports Corporation under the *Transport Infrastructure Act 1994*.

2 STUDY AREA AND PROJECT DESCRIPTION

2.1 Study Area and Terminology

The default study area that has been used for this assessment report includes those coastal lands or waters that could be affected by the proposed project in the Port Curtis region including Gladstone Harbour, the Narrows, the mainland coast north of Fishermans Landing Wharf and the southwestern coastline of Curtis Island.

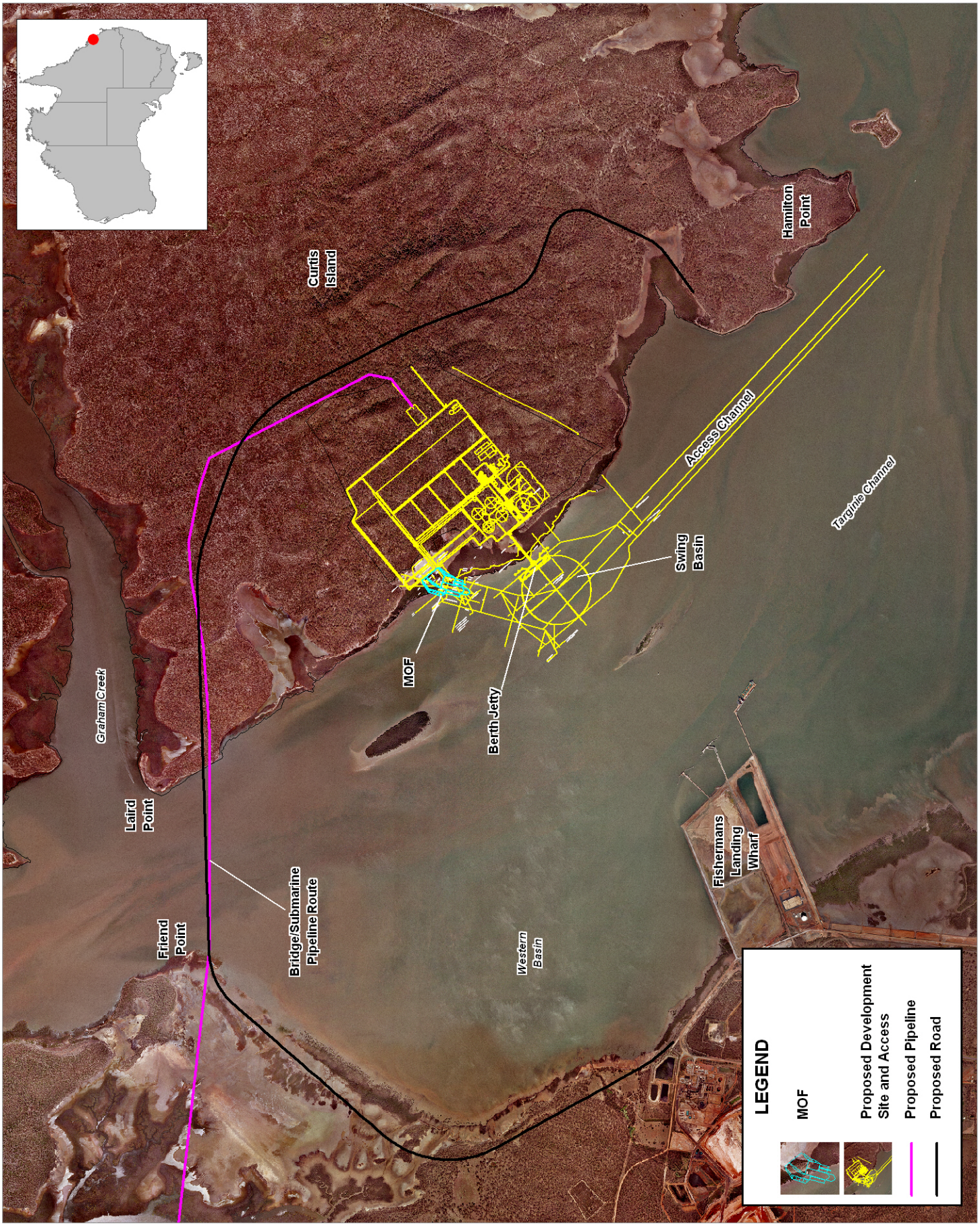
Terminology to describe areas on the coast used in this report follow definitions provided in Queensland coastal statutes. The 'coast' refers to the area within or neighbouring the foreshore. The 'foreshore' is defined as the area between high and low water mark. 'High water mark' is defined as the ordinary high water mark at spring tides. 'Tidal waters' include the sea and any part of a harbour including tidal rivers, creeks and associated wetlands ordinarily within the ebb and flow of the tide at spring tides (MHWS).

2.2 Project Description

A full description of the QCLNG project is provided elsewhere.

Figure 2-1 shows the location of the proposed LNG Plant on Curtis Island including the associated Materials Offloading Facility (MOF) jetty, berth terminal, swing basin, shipping access channel, proposed access road, and the proposed submarine pipeline and bridge alignments.

In the context of the above development elements, it should be noted that the access road and bridge as shown on Figure 2-1 are not part of the project reference case but have been considered as part of the broader impact assessment and this report.



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Study Area and Main Development Components

Figure: 2-1

Rev: A

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As shown in Figure 2-1, the main development elements of the project which could have a potential impact on coastal environmental values at Port Curtis, include:

- the development footprint of the QCLNG facility and associated infrastructure (access roads, etc.) on Curtis Island above high water mark. These aspects of the development could affect coastal ecology, water quality (principally through stormwater discharges) and drainage patterns and will be subject to natural coastal processes such as erosion and flooding due to their location within or neighbouring the foreshore;
- works and infrastructure situated below high water including jetty facilities (the MOF; the LNG berth terminal), capital dredging of the swing basin and shipping access channel and placement of a gas transmission pipeline water crossing that could have potential direct (e.g. construction stage sediment plumes) and indirect (e.g. changes in tidal flushing) impacts on tidal hydraulics, water quality and coastal habitats;
- the proposed access bridge from the mainland to Curtis Island which could affect overall tidal water movement patterns, which could in turn affect marine water quality and coastal ecology through placement of the bridge footings and associated access roads to and from the bridge; and
- the proposed wastewater discharge from the proposed reverse osmosis desalination plant and sewage treatment plant from the vicinity of the MOF jetty.

As the details of dredged material placement (generated from the capital dredging of the new swing basin and shipping access channel) are not currently finalised, this report does not specifically assess this aspect of the project against the coastal legislative and policy framework. However, it is understood that material is likely to be placed in a reclamation area north of the existing Fishermans Landing Wharf in the Western Basin of Port Curtis and general information about the applicable legislation, plans and policies for this future dredged material placement is briefly discussed.

Likewise a range of coastal management issues associated with future shipping operations such as ballast water management, controlling the introduction of exotic organisms, maritime safety and navigation and vessel-based waste management (pursuant to the Queensland Marine Operations Acts) have not been addressed here as they have been addressed within another section of the draft EIS Terms of Reference.

3 POLICY AND PLANNING ASSESSMENT

The key policy and planning instruments listed in the draft Terms of Reference are identified, discussed and evaluated in this section of the report. It should be acknowledged that there can be a degree of overlap in the jurisdictional scope among these documents and where practicable, cross references have been made to reduce duplication in responses.

As a general methodology, each section includes a description and a broad overview of the applicability of the document to the key development elements of the proposed QCLNG project (outlined in Section 2 above) and provides a more detailed assessment of relevance and consistency where needed (for instance, assessment against individual coastal management plan policies and key coastal sites).

3.1 Coastal Management Plans

Description

The Queensland *Coastal Protection and Management Act 1995* (the Coastal Act) authorises the preparation of a State and regional coastal management plans for the management of the coastal zone.

The plans are statutory instruments and as such, are key documents that must be considered in the context of assessing the QCLNG Project both in terms of the future approval requirements under the Coastal Act as well as other legislation given the plans are also deemed to be State Planning Policies for the purposes of the *Integrated Planning Act 1997* (IPA). In particular, many of the key development aspects of the project are situated in, on or over the coastal management district declared over tidal lands and waters in the study area. The statutory approval requirements and enforcement mechanisms under the Coastal Act apply to development and activities within the coastal management district as outlined in Section 4 of this report.

Applicability

The *State Coastal Management Plan 2001* (SCMP) and *Curtis Coast Regional Coastal Management Plan 2003* (RCMP) apply to the QCLNG Project on the basis of its location in the coastal zone. The Plans outline a range of outcomes that are supported by underlying principles and policies relevant to coastal management. Within this hierarchy, the policy statements in the plans are most relevant to the assessment of the proposal.

Assessment

Table 3-1 outlines and discusses applicable policies from the coastal plans to the various development elements of the project and provides comments about consistency with the policy outcome sought and other measures. In addition to these policies, discussion is also provided about key coastal sites affected by the proposed development.

Table 3-1 Coastal Management Plans and Outcomes Relevant to the QCLNG Project

Policy Number	Relevance to the Project	Compliance/Consistency with Policy Outcomes
2.1.1	This policy identifies areas of State significance (social and economic). The integrity and functioning of these areas are to be protected from incompatible land uses under the policy.	The Gladstone State Development Area (GDSA) was recently amended in July 2008 to include the Curtis Island Industry Precinct which provides for the establishment of liquefied natural gas facilities on the west coast of southern Curtis Island. The proposed QCLNG project is therefore compatible with the management intent for this area. The regional plan also identifies Fisherman's Landing Wharves is also an area of State significance (social and economic). It is noted that there will be an increase in LNG tanker shipping movements in and out of the proposed LNG jetty/terminal once the QCLNG plant is operational. As such, a range of navigational, port operational and logistical issues and arrangements will need to be made by the proponent with the Gladstone Ports Corporation and Maritime Safety Queensland Regional Harbour Master prior to the use commencing.
2.1.2	This policy seeks to consolidate urban development on the coast through best practice coastal settlement pattern and design principles.	As an industrial use of land, the proposed isolated location of the QCLNG facility on Curtis Island and associated wharf facilities avoids or minimise impacts on neighbouring urban communities, and other recreational uses of the foreshore that exist elsewhere in the study area.
2.1.3	This policy seeks to ensure coastal dependant land uses (eg. uses that require a foreshore location to function) are given priority over non-dependant uses	The QCLNG Facility is a coastal-dependant use in the context of the need to ensure the LNG storage and processing facility is in close proximity to the wharf facility and export vessels. In this context, the proposed location of the facility on Curtis Island is consistent with this policy.
2.1.5	This policy outlines requirements for establishment and siting of maritime infrastructure	The QCLNG Project will involve several maritime structures (eg. jetties, terminals, etc.) that are considered to be maritime infrastructure. For the most part, the proposed maritime infrastructure is abutting leasehold land or in the wet lease area associated with the LNG facility and therefore consistent with the policy (eg. not connecting to State coastal land). For any infrastructure placed on State Coastal Land (for instance, associated with the bridge, access roads and pipeline) a resource entitlement will be needed from the Department of Natural Resources and Water authorising the lodgement of an application and to define future tenure requirements.

Policy Number	Relevance to the Project	Compliance/Consistency with Policy Outcomes
2.1.8	This policy seeks to ensure all dredging and related activity is to be appropriately located and sustainably managed to avoid or minimise adverse impacts on coastal resources and their values. The SCMP also requires that the choice of dredged material placement site must provide the best coastal management outcome, having regard to the nature of the spoil, the cost of alternative sites, and potential impacts on coastal resources and their values. Dredged material placement activities are required to avoid adverse impacts on areas of state significance (natural resources) (see policy 2.8.3 below), and where offshore placement is proposed, the SCMP requires that dredging and dredge material disposal activities must comply with the *National Ocean Disposal Guidelines for Dredged Material, 2002*.	Based on the hydrodynamic and coastal assessments, in the context of the specific assessment criteria in the policy, the proposed dredging: • will not impact on the ability of the site or adjoining land to function as a barrier protecting lands from coastal waters; • will maintain beach or foreshore stability; • is not expected to adversely effect natural coastal processes that supply sand to beaches; • will maintain the stability of the dredging area noting the possibility of some sedimentation impacts at the swing basin and MOF over time (refer WBM Report on Coastal Processes – March 2009); • will maintain water quality accepting temporary impacts from dredging that are within the bounds of natural variability of the system and localized within the swing basin and channel area (refer WBM Report on Water Quality – Feb 2009); • is not expected to adversely impact groundwater levels of underlying aquifers and coastal wetlands; • will maintain the local drainage regime on the site and adjoining areas; and • will not cause unacceptable risk to existing land uses from coastal hazards. Implications of dredge spoil placement are addressed in section 3.4 of the report. In general, the future intention to place dredged material as a large reclamation in the Western Basin of Port Curtis will need to be assessed in the context of this policy, including the likely impacts on coastal natural resources and the suitability of the material for marine placement in accordance with the National Ocean Disposal Guidelines (now National Assessment Guidelines for Dredging).
2.1.9	This policy seeks to ensure reclamation of coastal water are necessary and appropriate for coastal management	Minor reclamation is proposed as part of the construction and operation of the QCLNG Project in relation to the MOF jetty. This reclamation is seen as acceptable given it is associated with a coastal-dependant land use with a net benefit for the region and will ensure the constructed infrastructure is protected from natural coastal processes and erosion.
2.1.10	This policy seeks to ensure the diversity and quality of tourism and	The construction and operation of the QCLNG Project is not expected to have significant negative impacts on the regional

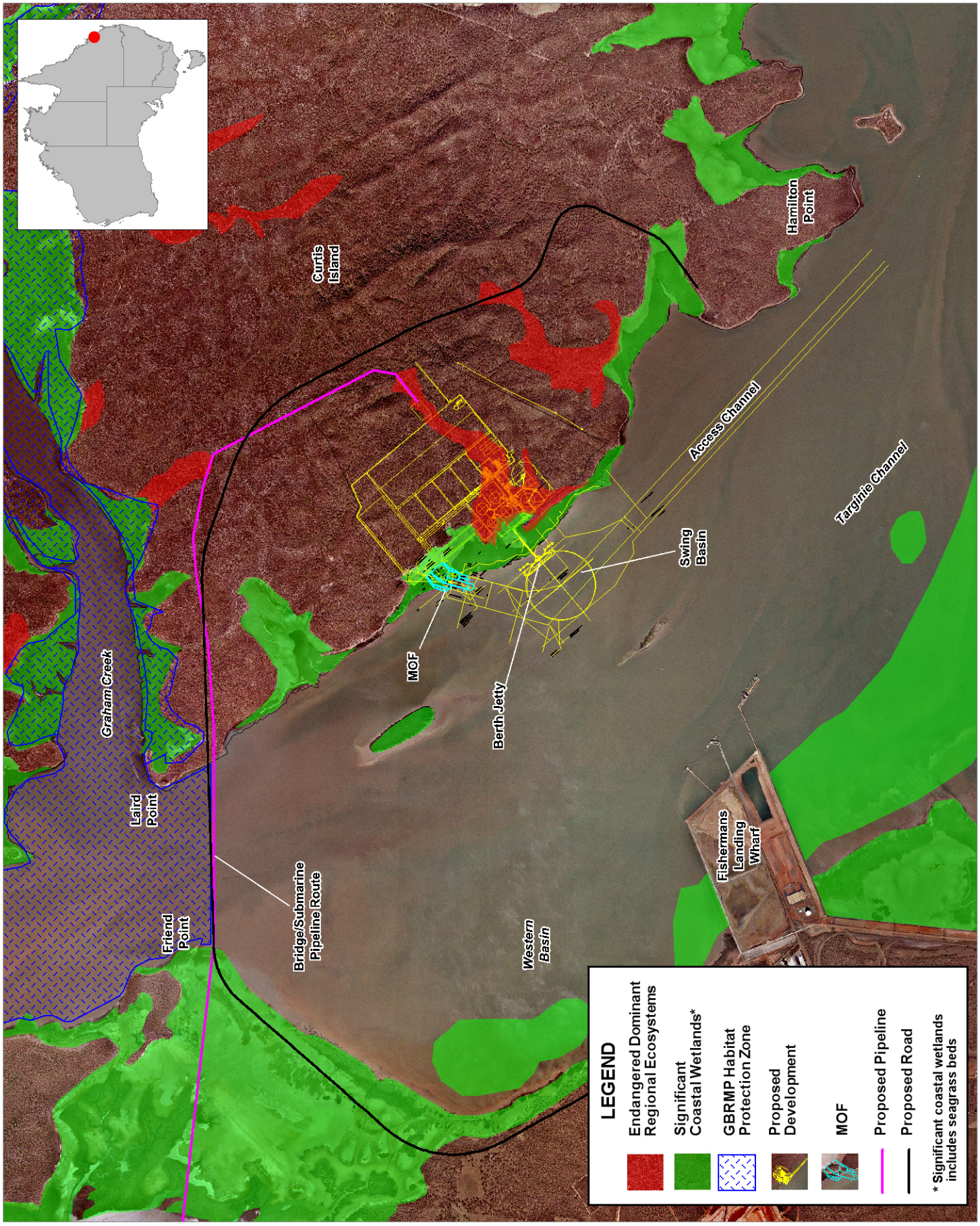
Policy Number	Relevance to the Project	Compliance/Consistency with Policy Outcomes
	recreational opportunities in the coastal zone are protected.	tourism industry or on recreational activities given the largely industrial use and likely future intensification of such use in the Gladstone Harbour area for a range of LNG facilities. As outlined above, a range of navigational, port operational and logistical issues and arrangements will need to be made by the proponent with the Gladstone Ports Corporation and Maritime Safety Queensland Regional Harbour Master to ensure vessel safety in the harbour and shipping channel areas.
2.1.16	This regional coastal plan policy seeks to ensure land-based infrastructure is designed, location and constructed to avoid detrimental impacts on coastal resources and their values.	In the context of this policy, the proposed LNG Facility: • is largely situated outside of the erosion prone area but will contain development elements (such as the bridge and marine infrastructure) that are likely to be required to be situated in part within the area and protected from coastal processes (see policy 2.2 below). Where practicable, associated infrastructure such as access roads[1] (that do not require a coastal location to function) should be situated outside of the erosion prone area; • largely avoids areas of high conservation significance (eg. areas of state significance natural resources) with the exception of some areas of coastal vegetation and marine wetlands (see policies 2.8 below); • will not have significant impacts on water quality or hydrodynamics (see policy 2.1.8) associated with dredging and wastewater discharge (see policy 2.4); and • may have some adverse effects on public access and useability of coastal waters and coastal landscape values given the establishment of the swing basin, marine terminal, MOF structure and bridge will occur in an area that is currently in a predominantly natural state. These matters are discussed in greater detail in the social impact assessment section of the EIS.
2.2	The suite of policies under this section of the Plan outline the need to consider climate change and coastal hazards in the context of future decision making on the coast and the need to avoid	There is no specific erosion prone area width defined by EPA plans SC 3379 or SC 3380 for Curtis Island, so the erosion prone area at the location of the LNG Facility is defined as an area 40 m from high water mark or HAT (whichever is the greater). In the context of the Curtis Coast Regional Plan, it is

[1] As previously noted, the access road and bridge are not part of the project reference case but have been initially considered as part of the broader impact assessment and this report.

Policy Number	Relevance to the Project	Compliance/Consistency with Policy Outcomes
	placement of infrastructure in the erosion prone area.	noted that the project area is not identified as a 'priority area' (as defined by the plan) for erosion management. Based on the site plan (shown in Figure 2-1) the bulk of the LNG Facility itself would be situated outside of the erosion prone area with only essential infrastructure (between the plant and the berth/MOF) situated in the area of concern. This is not seen as posing an unacceptable impact on coastal management on the basis that the facility is a coastal-dependant land use and there are no practicable alternatives to re-location of the infrastructure if it is to function. Accordingly, protection measures will need to be incorporated into the design to take into account the erodibility of the land and likely inundation during coastal storm events including consideration of climate change induced sea level rise and increased intensity of coastal storms. Coastal mangroves and other vegetation along the coast should be retained to the extent practicable as an additional buffer against natural coastal processes. On the western mainland coast, it is likely that the bridge and access road would be partially located in the erosion prone area given the low lying nature of the coastal wetlands at this location (with the erosion prone area extending to HAT in such areas). Measures will also need to be taken to protect this infrastructure from coastal processes.
2.3.1	This policy seeks to ensure no net loss of public access to the foreshore or public useability of costal waters.	The construction and operation of the QCLNG project will likely have some effects on public access and useability of coastal waters given the establishment of the swing basin, marine terminal and MOF structure will occur in an area that is currently in a predominantly natural state. The usage of the site and impacts are discussed in greater detail in the social impact assessment section of the EIS. Temporary access restrictions will need to be enforced during the construction stage for health and safety reasons and more permanent access restriction will apply as part of establishment and enforcement of security areas for the LNG Berth during operation.
2.4	The suite of policies under this section of the Plan deal with the management of water quality through wastewater discharges, stormwater management, groundwater management and acid	As outlined in the Section 3.2 below, there are no scheduled Environmental Values and Water Quality Objectives under the EPP Water for waters in the study area. The Queensland Water Quality Guidelines 2006 provide regional water quality guidelines for nutrients, sediments and other physico-chemical

Policy Number	Relevance to the Project	Compliance/Consistency with Policy Outcomes
	sulfate soils	parameters for the Central Coast region that are relevant. In the context of wastewater releases, the operation of the LNG Plant will involve a direct discharge of contaminants to coastal waters through operation of the sewage treatment plant and reverse osmosis plant. As outlined in Section 3.2 below, these discharges do not present unacceptable impacts to coastal management. Stormwater issues and management measures are also outlined in Section 3.2 and will need to be addressed as part of the operational EMP/Site-Based Management Plan for the facility. Best practice measures will need to be employed during construction activities to avoid or minimise soil erosion and sedimentation into coastal waters given the climatic and geomorphologic nature of the project area.
2.5/2.6	The suite of policies under these sections of the Plan identify areas of State significance for Indigenous Traditional Owners and cultural heritage and seeks to provide for their conservation and management	As outlined in the discussion about key coastal site below, significant cultural heritage values are identified in the regional coastal plan being associated with The Narrows, Cattle Crossing and Ramsey's Crossing. Cultural heritage values are also associated with Graham Creek on Curtis Island. Engagement with the relevant Aboriginal Parties as part of the EIS through a Cultural Heritage Management Plan under the *Aboriginal Cultural Heritage Act 2003*, is the most appropriate means of identifying and ensuring appropriate management of these values in the context of the project. This issue is addressed elsewhere in the EIS.
2.7	The suite of policies under this section of the Plan identifies areas of State significance (scenic coastal landscapes) and seeks to provide for their protection.	Curtis Island is recognised within the coastal plan as providing a significant scenic coastal landscape feature able to be viewed from the mainland and forming part of the coastal landscape. Retention of native vegetation and coastal mangroves along the coastline will assist in retaining some of these landscape values, but it is likely that there will be an overall impact on visual amenity from the interruption of an otherwise undeveloped coastal landscape. Likewise the proposed bridge between Friend Point and Laird Point is likely to result in some impact on visual amenity. Further discussion about these issues are contained within the landscape and visual amenity sections of the EIS.

Policy Number	Relevance to the Project	Compliance/Consistency with Policy Outcomes
2.8	This suite of policies identifies and seeks to conserve and manage areas of State significance (natural resources) and regionally important coastal habitats mapped under the regional coastal plan.	The broad policy intention of this suite of policies is to avoid, minimise and mitigate impacts to natural coastal resource values. Based on the mapping contained in the Curtis Coast regional coastal plan (refer Figure 3-1), the principal areas of state significance that could be affected by the proposal are significant coastal wetlands and in particular intertidal mangrove and saltmarsh areas along the coastline of Curtis Island and at Laird and Friends Points that could be impacted through construction of the LNG facility, access roads, and bridge. 2003 Regional Ecosystem (RE) Mapping also shows an area of endangered regional ecosystem that will be disturbed by the establishment of the proposed LNG facility on Curtis Island (eg. within the footprint of the facility). Sparse seagrass may also exist throughout the sub-tidal areas of the planning area, but has not been specifically mapped or observed in abundance within or near key development areas of the project such as the submarine pipeline alignment. Further information on the baseline coastal values of the area and how they are impacted by the project are described in the marine ecology report (*ERM in progress*). Based on the location of the infrastructure and the location of mapped resources within the plan, there is expected to be some of disturbance from the development elements to these values. Accordingly, the detailed design and construction methodology will need to take into account how any impacts to coastal wetlands and vegetation can be further avoided or minimised in accordance with best practice. If unavoidable, the impacts to the coastal endangered RE area and to marine plant communities will need to be addressed through an offset or similar measure. It should be noted that the discussion above does not apply to the proposed reclamation of land in the Western Basin associated with dredged material placement. This area has a range of mapped sub-tidal and inter-tidal marine vegetation that is declared as significance coastal wetlands under the Plan. Accordingly, the disturbance/removal of these natural resources will need to be assessed as part of a separate impact assessment process.



Title:

Areas of State Significance (Natural Resources)

Figure: **3-1**

Rev: **A**

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Sources:
EPA Regional Ecosystems 2003
Curtis Coast Regional Coastal Management Plan 2003 (Wetlands)

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Key Coastal Sites

The main development elements of the project also fall within various key coastal sites defined within the Curtis Coast Regional Coastal Management Plan as shown in Figure 3-2. These include:

- KCS #1 (Curtis Island – relevant to the proposed LNG plant and associated infrastructure situated above high water mark including the footings of the bridge and submarine pipeline)
- KCS #2 (The Narrows – relevant to the proposed footings of the bridge and submarine pipeline);
- KCS #5 (Targinie Remnant Vegetation – relevant to the proposed access road and pipeline alignment on the mainland coast)
- KCS #6 (Gladstone Harbour – relevant to capital dredging associated with the swing basin and access channel and future dredge spoil placement).

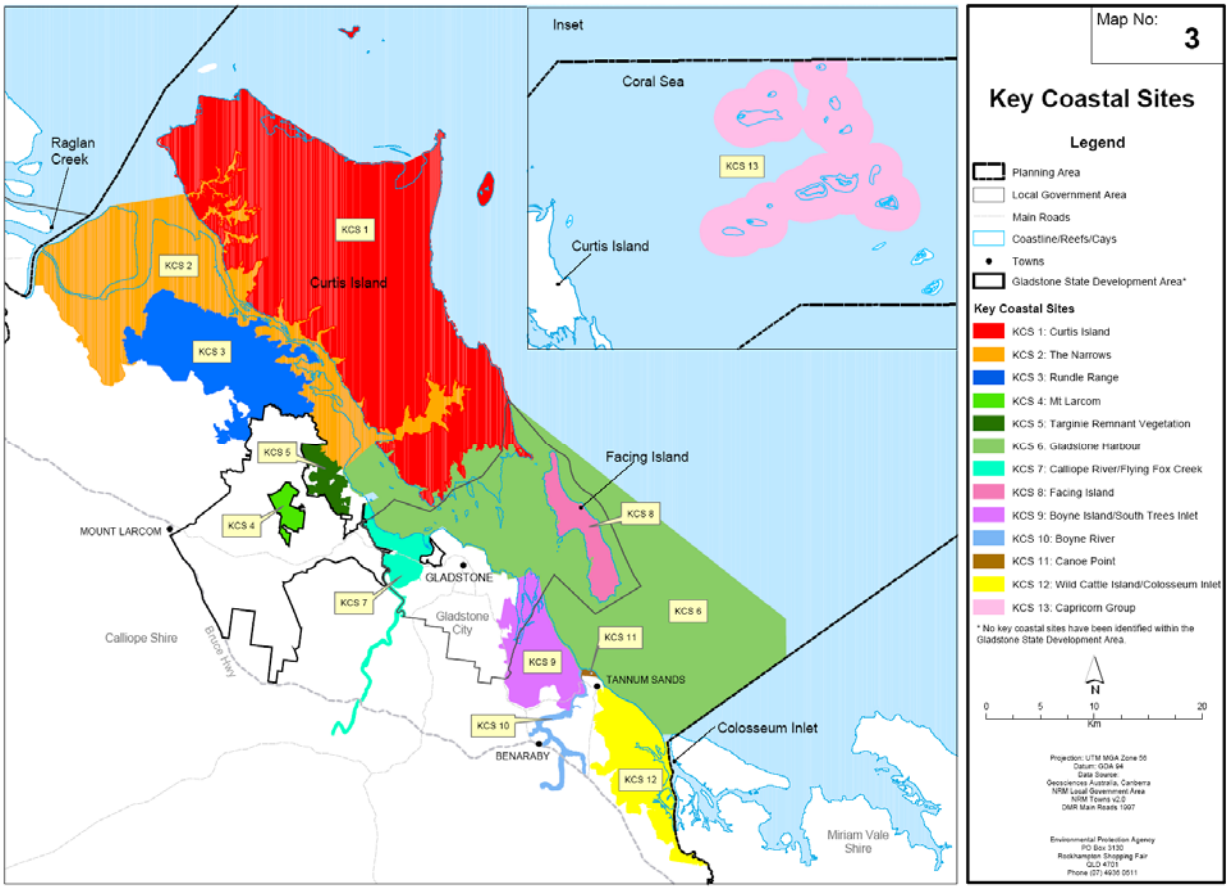


Figure 3-2 Key Coastal Sites

(appended from Map No. 3 of the Curtis Coast Regional Coastal Management Plan)

Each key coastal site is addressed separately below:

Key Coastal Site 1: Curtis Island

Within Key Coastal Site #1, Coastal locality 1.2: Curtis Island (South West) is most relevant as it is the area where the proposed LNG facility and access roads are to be located.

Desired coastal outcomes for the locality within the key coastal site are:

- Planning for future development appropriately identifies and takes into consideration the values of areas of high conservation significance including the cumulative impacts of associated development on these values.
- Planning for future development considers the design and location of development ensuring any impacts on the scenic coastal landscape values associated with the island are minimised.

Significant coastal resources (natural and cultural) and their values within the key coastal site include:

- 'endangered' and 'of concern' regional ecosystems;
- adjacent significant coastal wetlands associated with The Narrows, Graham Creek and Gladstone Harbour;
- coastal ranges providing a significant scenic coastal landscape feature able to be viewed from the mainland and forming part of the coastal landscape;
- part of a strike ridge system that runs along the western side of Curtis Island; and
- cultural heritage values associated with Graham Creek.

Significant social and economic resources and their values include:

- outdoor recreational opportunities including fishing and bush walking; and
- Hamilton Point which has been identified for possible future port expansion.

It is recognised in the key coastal site designation that, 'although this coastal locality is undeveloped there is significant potential for future development associated with port and industrial expansion. Gladstone Port Authority's Strategic Plan identifies part of this coastal locality for future port development by 2025.'

Given the desired coastal management outcomes sought, future development of this coastal locality as part of the QCLNG project (and other projects) needs to be carefully planned and managed in an ecologically sustainable manner to avoid significant impact on the area's biodiversity and coastal landscape values.

Key Coastal Site 2: The Narrows

Key Coastal Site #2, 'The Narrows' is relevant in the context that this key coastal site includes Graham Creek and the likely bridge and submarine pipeline alignment between Friend Point and Laird Point.

Desired coastal outcomes for this key coastal site relevant to the project are:

- This key coastal site is given the highest level of protection in recognition of its near pristine state and significant coastal resources and their values;
- Protection of the area's integrity and ecological functioning from incompatible development, land uses and activities;
- Maintenance of the mangrove fringe bordering The Narrows and associated waterways to protect scenic amenity and water quality;

- Maintenance of World Heritage values associated with the area's outstanding coastal landscape values including its scientific value as an indicator of past geomorphologic processes and its scenic amenity values;
- Monitoring of water quality to detect any adverse impacts on marine and estuarine biodiversity from contaminants including suspended solids.

Significant coastal resources (natural and cultural) and their values in this key coastal site include:

- being within the Great Barrier Reef World Heritage Area;
- recognition as an area of national significance through its listing on the Australian Heritage Commission Register of National Estate;
- recognition as an area of international significance through its World Heritage listing;
- recognition in the Directory of Important Wetlands for its significance (along the entire waterway area);
- distinctive geological features such as Balaclava Island, Kangaroo Island, Targinie Creek and Graham Creek which are significant as important indicators of past geomorphologic processes;
- an uncommon passage landscape that is one of only five narrow tidal passages separating large continental islands from mainland Australia;
- a large area of relatively undisturbed coastal wetland habitat including mangroves, claypan, mudflats and saltmarsh;
- habitat for a range of significant migratory shorebirds many of which are rare and threatened including the beach stone-curlew and great-billed heron;
- coastal wetlands that are critical to the maintenance of regional fish and crustacean populations;
- significant cultural heritage values associated with The Narrows, Cattle Crossing and Ramsey's Crossing; and
- Indigenous Traditional Owner cultural resources.

Given the above, it is important to ensure development proposed as part of the QCLNG project in this key coastal site avoids or minimises adverse impacts on natural values to the greatest extent practicable and that all reasonable alternatives to the location of the infrastructure in the key coastal site such as the alignment of the submarine pipeline have been fully explored.

Key coastal site 5: Targinie remnant vegetation

Key Coastal Site #5, 'Targinie Remnant Vegetation' is relevant in the context that the access road/bridge and submarine pipeline alignment from the mainland to Curtis Island will need to traverse through the area.

Desired coastal outcomes for this key coastal site relevant to the project are:

- Conserve and appropriately manage biodiversity including the values associated with remnant vegetation while allowing for development in suitable areas.
- Maintenance of viable networks of wildlife habitat including the importance of this area in contributing to a bioregional wildlife corridor and in providing wildlife linkages to the coast.

- Preservation of 'endangered' regional ecosystems.

Significant coastal resources (natural and cultural) and their values in this key coastal site include:

- large areas of intact remnant vegetation containing 'endangered' and 'of concern' regional ecosystems and other significant coastal habitats such as creeks and waterways flowing to The Narrows;
- biodiversity values associated within the overlap of two bioregions: Brigalow Belt and south-east Queensland and part of a bioregional wildlife corridor;
- remnant vegetation which provides an important habitat linkage to the coast;
- 'rare' and 'endangered' species including the chain fruit Alyxia magnifolia;
- significant landscape values associated with the coastal ranges; and
- Indigenous Traditional Owner cultural resources.

Although the pipeline and access route do not appear to traverse any endangered regional ecoystems in this location (refer Figure 3-1), construction of the road and placement of the pipeline will need to be carefully managed in this key coastal site to minimise to the greatest extent practicable, impacts upon the remnant vegetation and wetland values present.

Key Coastal Site 6: Gladstone Harbour

The major marine development elements of the project (eg. the location of the proposed swing basin, access channels to be dredged, placement of dredged material) will occur in Key Coastal Site #6, 'Gladstone Harbour'.

Desired coastal outcomes for this key coastal site that are relevant to the proposal include:

- Management of the harbour providing for a range of uses, while ensuring conflicts between these uses are managed and adverse impacts on coastal resources and their values are minimised.
- Continued development of the Port of Gladstone in an ecologically sustainable manner avoiding the location of port infrastructure in areas of high conservation significance, where possible.
- Coordination of management approaches among land and marine resource managers in relation to monitoring the health of the harbour in regards to water quality, managing increasing vessel use and minimising impacts to shorebirds, turtles and dugong.

Significant coastal resources (natural and cultural) and their values include:

- marine areas that are within the Great Barrier Reef World Heritage Area;
- marine areas that are within the extensive significant coastal wetlands listed in the Directory of Important Wetlands including mangroves, claypans and seagrass beds providing critical habitat for a range of terrestrial and marine species;
- critical habitat for many shorebirds and seabirds (listed on either JAMBA or CAMBA) and turtles;
- significant scenic coastal landscape, public access and biodiversity values; and
- Indigenous Traditional Owner cultural resources.

In addition to natural values, this key costal site contains a range of significant social and economic resources and their values which include:

- a natural deep-water harbour providing for the internationally significant economic activities of the Port of Gladstone;
- tourism values associated with the Gladstone Marina and outdoor and nature-based recreational opportunities within Gladstone Harbour including fishing, diving and sailing; and
- recreational values associated with the harbour and adjacent areas for activities such as boating, fishing and sailing.

As outlined in the key coastal site description, a critical issue for Gladstone Harbour is providing for future port and industrial expansion while ensuring significant adverse impacts to coastal resources and their values are minimised.

Given the predicted impacts from the project, the proposed QCLNG project is generally consistent with the desired coastal outcomes for this key coastal site assuming construction and operation are managed in an ecologically sustainable manner.

3.2 Environmental Values of Water

Description

The Queensland *Environmental Protection Act 1994* and subordinate *Environmental Protection (Water) Policy 1997* provide for the management of surface water quality in Queensland. Specific environmental values and water quality objectives under the EPP have not been declared for the receiving waters of the Narrows and Port Curtis Region, although water quality guidelines for the Central Coast Queensland Region are set out in the Queensland Water Quality Guidelines 2006 prepared under the Policy.

Applicability

The Queensland Water Quality Guidelines (2006) provide guideline values for waters in this region (see Table 3-2) including those in Port Curtis and within adjoining waterways. It is likely that waters within Port Curtis would be classified as 'Enclosed Coastal Waters', while waters at the lower end of Boat Creek would be classified as 'Mid Estuarine' up to the point of the in-stream weir and upstream of this location, the waters would be classified as 'Lowland Stream'.

As shown in the Table, the main focus of the water quality guidelines are on physico-chemical parameters, noting that the Queensland Water Quality Guidelines refer back to the National Water Quality Guidelines (ANZECC) in relation to water quality guidelines for toxicants.

Table 3-2 Queensland Water Quality Guideline Values for waters in Study Area

Parameter	units	Water body type		
		Enclosed coastal	Mid Estuarine	Lowland Stream
Ammonia Nitrogen	µg/L	6	10	20
Oxidised Nitrogen	µg/L	3	10	60
Organic Nitrogen	µg/L	180	260	420
Total Nitrogen	µg/L	200	300	500
FRP	µg/L	6	8	20
Total Phosphorus	µg/L	20	25	50
Chlorophyll *a*	µg/L	2	4	5
Dissolved Oxygen (% saturation)	lower	90	85	85
	upper	100	100	110
Turbidity	NTU	6	8	50
Secchi	m	1.5	1	NA
Suspended Solids	mg/L	15	20	-
pH	lower	8	7	6.5
	upper	8.4	8.4	7.5

Assessment

The water quality assessment report (BMT WBM 2009) provides a summary of water quality data for Port Curtis. The salient points from that report include the following;

- Port Curtis is a well connected estuary which allows dissolved material to be dispersed relatively evenly, however material does not as readily leave the estuary to the offshore environment. This reduced flushing time is likely to contribute to the anomalous bioaccumulation of some metals in biota of Port Curtis;
- The characters of the estuarine waters within Port Curtis are generally close to seawater.
- Nutrient, total organic carbon and biochemical oxygen demand concentrations appear generally low, consistent with high quality estuarine water;
- Water clarity as defined by Secchi disc visibility is generally poor, being less than 2 m. Similarly, turbidities and suspended solids concentrations are moderate. Turbidity increases with depth and tidal velocity;
- Low chlorophyll a concentrations characterise Port Curtis;
- Elevated metal concentrations can exist within the Port; and

- Trace element, cyanide and phenol concentrations do not appear to be elevated above typical seawater or the ANZECC guideline concentrations.

When compared with relatively stringent water quality guidelines, water quality is generally good, though spatially variable. Some metal concentrations are high in places, and water quality objective exceedences may occur at times.

In assessing the impacts of the QCLNG Project, the water quality study combined field assessments, mathematical modelling and expert interpretation in order to determine the significance of potential hydrodynamic and water quality changes. Based on this assessment, the following key findings from the water quality assessment report are relevant:

- The hydrodynamic impacts of the proposed works were found to be generally minimal, with the exception of in the immediate vicinity of the proposed dredged swing basin, where the significant dredging will change velocities quite considerably.
- Tidal flushing times for the pre and post QCLNG cases were estimated. In most cases however, even though the model was run for a 45 day period, the required definitive 'e-folding' value (equivalent to 37% flushing) was not reached and as such definitive flushing times cannot be reported. What can be reported is that there were practically indiscernible differences in flushing behaviour with and without the QCLNG project.
- Near and far field numerical modelling of the proposed discharge of a brine waste stream from a desalination facility associated with the project was undertaken. Both modelling activities found that there is unlikely to be detectable changes in local salinity due to this discharge.
- Sediment plume dispersion analyses were executed for representative swing basin dredging, bridge and pipeline construction activities using the far field model. Appropriate sediment resuspension rates were estimated for the scenarios.
- In the case of swing basin dredging, greater concentrations were realised during neap tides, where dispersion was less as a result of reduced tidal velocities. An immediate impact zone of the order of several hundred metres in scale was identified during these times, and outside this area, maximum additional TSS concentrations of approximately 25 mg/L were predicted (over ambient). These values are in the order of the natural variability of TSS concentrations across the site. Concentration increases during spring tides were generally less than during neap tides.
- Similar behaviour was observed in the model results for the bridge and pipeline construction scenarios. The immediate impact zones were again in the order of hundreds of metres in dimension during neap tides (and considerably smaller during spring tides) with maximum additional TSS concentrations outside this zone of 15 to 17 mg/L.

Based on these findings, the impacts to hydrodynamics and marine water quality from the proposal can be characterised as being short term (related to construction stages) and while there will be unavoidable localised impacts from the dredging works such as increased in TSS, these increases are within the bounds of natural variability of the system and are not expected to have any significant impacts on marine environmental values of water (eg. the environmental values of the study area will be protected).

3.3 Fish Habitat Guidelines

Description

In the context of policies and guidelines for marine areas promulgated by the Department of Primary Industries and Fisheries (DPIF), FHMOP 004, *Dredging, Extraction and Spoil Disposal Activities* is the most relevant guideline to the proposal.

The policy objectives of Policy FHMOP 004 are to ensure the protection of Queensland's fisheries resources and habitats whilst ensuring, enabling and contributing to ecologically sustainable industry and economic development and include:

a) ensuring the minimisation of adverse impacts, including direct or indirect damage, to fisheries resources through dredging activities (i.e. extractive industry, navigational dredging, dredging for waterway management, dredging for development and spoil disposal);

b) achieving optimum community, economic and other benefits obtainable from fisheries resources;

c) ensuring equitable access to fisheries resources;

d) providing all stakeholders (e.g. extractive industry/dredge operators, community, fishing industry, government agencies, landholders, developers, consultants, River Improvement Trusts, educators and non-government organisations) with a clear statement on the Department's position with regard to the assessment of Permit applications for dredging activity;

e) encouraging the protection and enhancement of fisheries resources;

f) providing an assessment process to achieve a) - e).

The DPIF Code for Self-Assessable Development; Works for education, research and monitoring purposes involving marine plant removal or disturbance (Code MP05, May 2008) is also relevant to the project in the context of geotechnical investigations undertaken to support the EIS. However, the scale of works associated with future construction of the LNG Plant and associated infrastructure will likely trigger assessable development requirements under which FHMOP 004 is relevant (refer Section 4 of this report, *Approval Requirements*).

Applicability

Dredging activities associated with the QCLNG project are characterised using the terminology of the FHMOP 004 as:

- 'Navigational' dredging (associated with the dredging of the shipping access channels and swing basin); and
- 'Development' dredging (associated with the trenching of the submarine pipeline); and
- Spoil disposal activities (associated with the placement of dredged material in proposed the Western Basin reclamation area)

In general the policy states that the DPIF will not oppose proposals for navigational dredging, dredging for development and spoil disposal activities where:

a) there are clearly no (or very minimal) immediate or foreseeable, permanent, adverse impacts on fisheries resources; or

b) there has been a Whole of Government approval for a development to proceed and Fisheries Group comments are sought (negotiation and mitigation still apply); or

c) there are demonstrated Fisheries related benefits; or

d) there are essential community benefits (including maintenance of navigational channels and beach replenishment programs).

Provided the following are ALL in place:

e) appropriate mitigation measures have been agreed to by the proponent and by Fisheries Group;

f) appropriate arrangements have been negotiated with Fisheries Group to avoid potential disruption of fishing activities;

g) where requested by the Lead Agency, plans to undertake a monitoring program have been developed with reference to details of impacts of the dredging activity on the surrounding fish and fisheries habitats;

h) spoil placement is undertaken on terrestrial land or at a designated spoil disposal site (or at an alternative site agreed to by Fisheries Group);

i) where a proposal involves works which will require future maintenance dredging (e.g. construction of marinas or canal developments), details of locations for future disposal of dredged spoil have been identified;

j) all other necessary Fisheries approvals have been obtained and conditions specified under any other relevant Act or law are adhered to;

k) all other reasonable options have been explored and eliminated.

Assessment

Based on the above, in order to be consistent with the policy, the following measures are recommended to be addressed as part of the detailed design and implementation of the project:

- Consultation with the Department in terms of the characterisation of potential impacts on fish habitats from the dredging activity noting that the water quality/hydrodynamic modelling assessment (see section 3.2 above) has shown dredging and discharge impacts to be minor and temporary;
- An environmental management plan for the dredging and excavation elements of the project is developed that addresses:
    a) The timing of the works to consider/avoid important local biological processes such as seagrass flowering periods, fish migration periods, fish spawining periods where practicable;

b) Incorporation of appropriate buffers between the works and waterway banks, marine vegetation and tidal lands that are identified as being sensitive/significant from a fish habitat perspective;

c) Monitoring of turbidity and total suspended solids from dredging activities and appropriate contingency measures if performance standards set for these parameters in the monitoring plan are exceeded (eg. suspending or relocating dredging works until tidal/winds conditions are more favourable, installation of silt curtains or similar measures that assist to reduce turbidity from dredging/spoil placement operations where such measures are practicable and efficient).

Compared to the dredging, the impacts of dredged material placement proposed in the Western Basin have a much greater potential to impact on fish habitats given the known seagrass assemblages, mangroves and saltmarsh resources that occur in that area.

In addition to the habitat loss or degradation associated with large scale reclamation, as outlined in the policy, marine sediments to be dredged would also need to be sampled and analysed in accordance with the National Ocean Disposal Guidelines and SPP for acid sulfate soils (see sections 3.4 and 3.5 below) to ensure the dredged material is appropriate for marine placement and environmental risks from oxidation of potential acid sulfate materials can be avoided or minimised.

3.4 Acid Sulfate Soils SPP

Description

The State Planning Policy (SPP) for Planning and Managing Development Involving Acid Sulfate Soils (2002) sets out the planning and assessment requirements for development and works involving disturbance with actual or potential acid sulfate soils as a result of extraction or filling activities within the coastal zone.

Applicability

In terms of the coastal environment, the main potential acid sulfate soil management issues associated with the proposal include:

- Filling and excavation of coastal land (including any on-site drainage works) associated with the construction of the LNG facility and associated infrastructure on Curtis Island including the extent to which any excavated material needs to be treated prior to re-use or disposal;
- Mobilisation of potentially acidic groundwater through actual acid sulfate soil material as a result of the filling and surcharging of land associated with ground treatment and construction;
- Potential oxidation of excavated material from the seabed associated with trenching of the submarine pipeline (noting that the risk of impact will largely depend on whether or not the material is removed from the marine environment prior to re-use to fill the excavated trench);
- Filling and excavation of coastal land associated with the construction of the bridge footings and access roads;
- Dredging of material from land below high water, particularly if the material is to be placed on land above high water mark as envisioned in the reclamation site in the Western Basin given that the material has greater potential to oxidise once removed from the marine environment.

Assessment

Based on the above, appropriate testing and sampling of actual and potential acid sulfate soils and an acid sulfate soil (ASS) management plan will need to prepared in accordance with the SPP and associated guidelines to identify and mitigate these risks.

It is understood that this assessment and management plan are addressed elsewhere in the EIS.

3.5 Ocean Disposal Guidelines

Description

The National Ocean Disposal Guidelines for Dredged Material (NODG) were recently revised in February 2009 and re-named as the National Assessment Guidelines for Dredging (NAGD). The NAGD outline the requirements for at sea placement of dredged material in Australia.

Applicability

Given that the future proposed placement site in the Western Basin for dredged material associated with the project is within State waters, an approval under the Commonwealth *Environment Protection (Sea Dumping) Act 1981* will not apply to the future activity but the Guidelines will be relevant nonetheless in consideration under other approval requirements including sea dumping approvals under the IPA/Coastal Act. In this context, the NADG are identified as relevant considerations under the State Coastal Management Plan (refer policy 2.1.8) and other policy instruments discussed previously.

The NADG outline two relevant processes for future dredged material placement associated with the QCLNG project including:

1) requirements and studies associated with the selection of a suitable disposal site; and

2) the sediment quality sampling and analysis process outlined in the guidelines to ensure the marine sediment to be dredged is uncontaminated and suitable for marine disposal.

Assessment

It is understood that the current EIS is not seeking approval for marine placement and as such, consistency with the requirements of the guidelines in terms of site selection and sediment quality sampling and analysis will need to be determined at a later date.

3.6 Great Barrier Reef Marine Park

Description

The marine environment within and adjacent Curtis Island is protected as a marine park at both State and Commonwealth levels within the Great Barrier Reef Marine Park (Commonwealth) and Great Barrier Reef Coast Marine Park (State).

The *Great Barrier Reef Marine Park Act 1975* (GBRMP Act) is administered by the Great Barrier Reef Marine Park Authority (GBRMPA). The GBRMPA manages and controls activities within the GBRMP.

The GBRMP includes the waters within the area, the sea-bed and subsoil beneath the sea and the airspace above the area, and extends from mean low spring tide to 200 nautical miles. The Queensland State Marine Park is designed to complement the GBRMP by conserving the intertidal and other internal waters of Queensland, extending from high water mark to 3 nautical miles.

Legislation and regulation governing the State marine park is the *Marine Parks Act 2004* and the *Marine Parks Regulation 2006*. The *Marine Parks (Great Barrier Reef Coast) Zoning Plan 2004* (Zoning Plan) includes the objectives for each zone and specifies the activities that are allowed and prohibited, and those that require a marine park permit.

Applicability

Figure 3-3 shows the boundaries and zoning for the marine park (excerpt from MPZ 17) in the vicinity of the proposed QCLNG project on Curtis Island. In this figure, the marine area shown as a darker blue colour is declared as 'Habitat Protection Zone' under the zoning plan, whereas the lighter blue area is an exclusion zone that is outside of the boundaries of the Park.

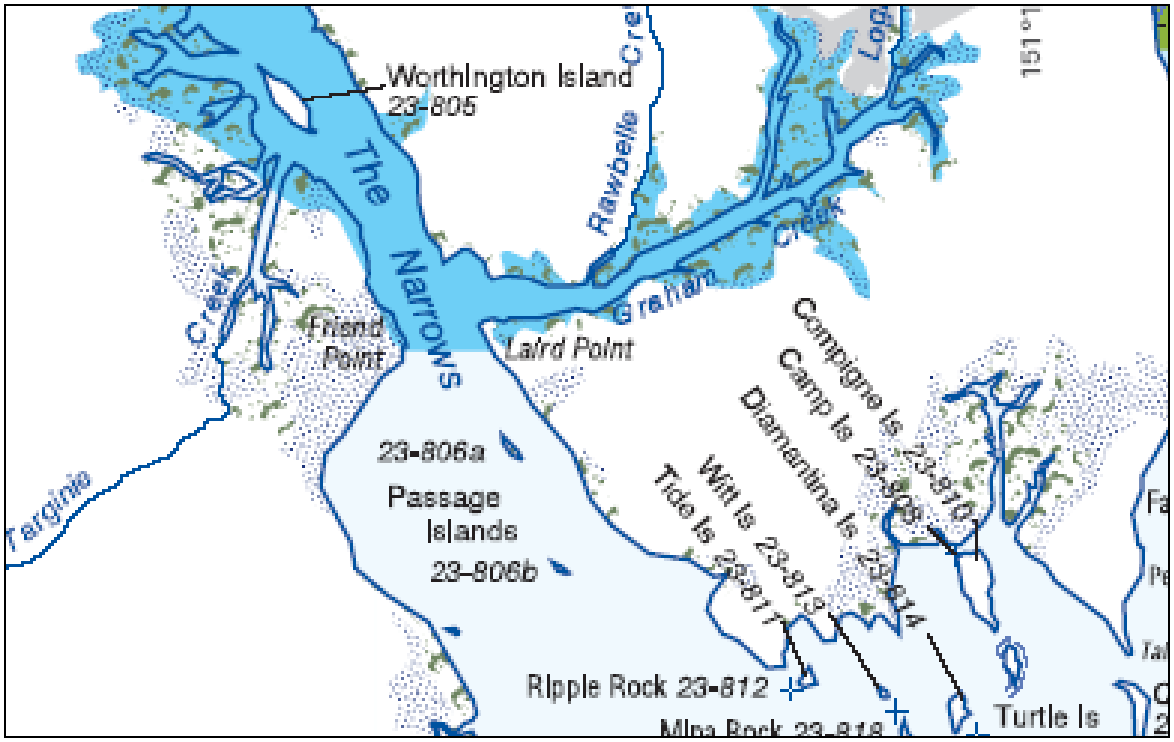


Figure 3-3 Extract from MPZ 17 – Gladstone Area of the Great Barrier Reef Marine Park

In the above figure, the darker blue area is a 'Habitat Protection Zone'. The lighter blue area shown in the figure is excluded from the boundaries marine park area (no permit requirements under the Act apply in this area).

Assessment

As shown in Figure 3-3, the Great Barrier Reef Marine Park boundaries do not include the proposed LNG site and surrounding waters of Port Curtis. The Habitat Protection Zone (shown as the darker blue area) covers the northern areas of 'The Narrows' and extends southward to a line between Friend Point and Laird Point. It is assumed for the purpose of this report that the proposed bridge

and submarine pipeline alignment associated with the project are situated just outside (eg. to the south) of this boundary (refer also mapping shown in Figure 3-1).

However, it should be noted that all marine areas of Port Curtis are within the Great Barrier Reef World Heritage Area and are therefore relevant to the *Environment Protection and Biodiversity Conservation Act 1999* as discussed in the following section, *Approval Requirements*.

4 APPROVAL REQUIREMENTS UNDER COASTAL LEGISLATION

Table 4-1 outlines the future approval requirements of the project, separated into the key development elements discussed in Section 2. As the full details of the design and construction methodology are not finalised, a conservative list of potential approval requirements has been prepared that will need to be reviewed and re-visited prior to lodgement of any applications. The client is advised to obtain appropriate legal advice to confirm these requirements as part of the EIS process.

In the context of the development elements shown in Table 4-1, it should be noted that the access road and bridge are not part of the project reference case but have been considered as part of the broader impact assessment and this report.

A range of specific information will be needed for the various development applications based on the jurisdiction of the Act under which the approval requirements apply and various Departmental guidelines. The information contained within this report and the broader EIS will fulfil many of these information requirements but more detailed information (for instance detailed engineering plans for construction signed by a registered professional engineer) will be required prior to lodgement of certain applications. These plans and similar detailed requirements will likely be developed following initial consideration and assessment of the EIS by the Government.

In interpreting the applicability of coastal laws and regulations to the project, there are two key spatial areas with the study area that are 'triggers' for various coastal and marine environmental approval processes under State and Commonwealth legislation. These include the coastal management district (declared by regulation under the *Coastal Protection and Management Act 1995*) and the Great Barrier Reef Marine Park (declared under the State and Federal Marine Park legislation).

As shown in Figure 4-1, the coastal management district (defined within *Sheet 5: Gladstone* in the Curtis Coast Regional Coastal Management Plan) is generally defined as a distance of 400 m from the high water mark on the western coastline of Curtis Island, and varies from distances of 40 m to 100 m from MHWS or to the extent of HAT along the mainland coast in the study area. Key aspects of the QCLNG project such as the proposed bridge and pipeline alignment between Friend and Laird Points and LNG marine infrastructure (eg. jetties, terminals, dredging, etc.) are contained within the coastal management district.

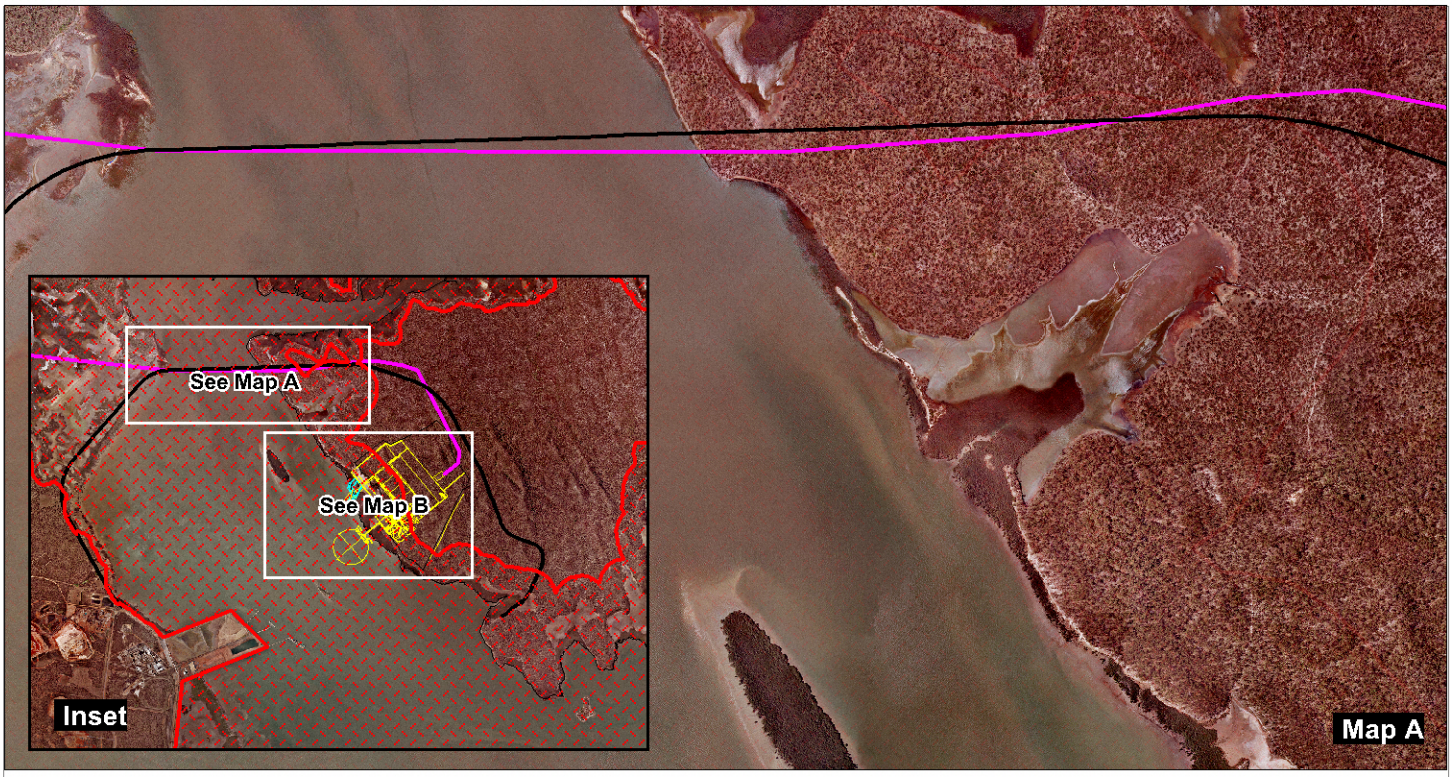
As already discussed and as shown in Figure 3-1, the proposed bridge and pipeline alignment are intended to be located just south of the GBRMP Habitat Protection Zone. As such, it is likely that a marine park permit under the Federal and State Acts will not be required assuming the alignments as currently shown are maintained.

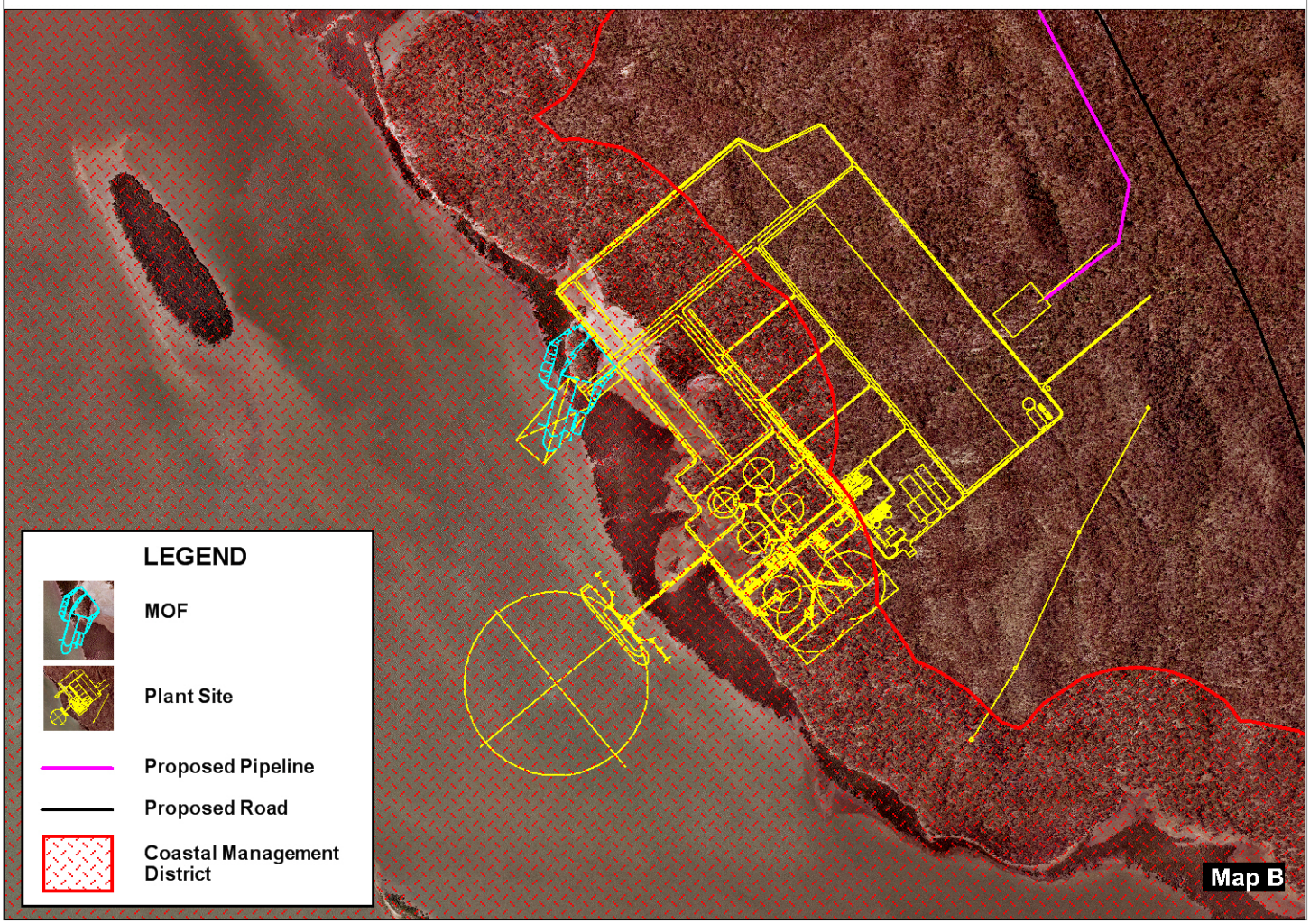
In terms of matters of National Environmental Significance (NES) under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act), other relevant spatial layers that apply to the broader study area include:

- recognition of the marine environment as an area of national significance through its listing on the Australian Heritage Commission Register of National Estate;

- recognition of the marine environment as an area of international significance through its World Heritage listing within the Great Barrier Reef World Heritage Area;
- recognition of the marine and coastal environment in the National Directory of Important Wetlands for its significance (along the entire waterway area); and
- recognition of the likelihood of the area to support habitat for a range of coastal and marine threatened and migratory species listed under the EPBC Act.

These matters will be addressed as part of the referral and controlled action approval process under the EPBC Act and as such, are not discussed here.





Title:

Coastal Management District - Curtis Island and Surrounds

Figure: 4-1

Rev: A

N

0 2 4km

Scale - Inset

0 0.5 1km

Scale - Main Maps

BMT WBM

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Table 4-1 Future Coastal and Marine Approval Requirements

Development Component	Approval Acts that Apply	Specific Triggers	Notes/Comments
MOF and other marine terminals	IPA/Coastal Protection and Management Act 1995	Operational works that are tidal works	The MOF and jetty/terminal structure will be tidal works under the Act (eg. works in, on or over tidal waters).
	IPA/Coastal Protection and Management Act 1995	Operational works that are reclamation of land from tidal water	The current design of the MOF involves some minor reclamation of land from tidal water.
	IPA/Fisheries Act 1994	Works that disturb or damage marine plants	Applies to the extent that any marine plants are disturbed or removed as a result of MOF construction.
Bridge and access roads	IPA/Coastal Protection and Management Act 1995	Operational works that are tidal works	The footings of the bridge will be on land below high water mark and thus require a tidal work approval. In addition, the bridge will be situated over tidal waters also triggering tidal works (principally for navigational safety assessment)
	IPA/Coastal Protection and Management Act 1995	Road construction within the coastal management district (interference with quarry material on State coastal land)	It is understood that access roads from the mainland to the bridge and then along the coast of Curtis Island to the LNG plant will be required as part of the project. While the exact location of this road is not known, there is a 400 m wide coastal management district defined along the coastal area of Curtis Island and a 100 m wide district defined on the main land coast or to HAT (whichever is the greater). Works to establish the road within this district will require approval pursuant to the trigger identified. It should be noted that this approval requirement only applies to the extent that the roadworks occur State coastal land (eg. land held as a reserve or USL) and does not apply to works on freehold or leasehold land.

Development Component	Approval Acts that Apply	Specific Triggers	Notes/Comments
	IPA/Vegetation Management Act	Operational works that involve the removal of native vegetation	Native, remnant vegetation on the coast that is removed or destroyed as a result of the construction of the bridge and access roads will require a development permit to clear.
	IPA/Fisheries Act 1994	Works that disturb or damage marine plants	Applies to the extent that any marine plants are disturbed or removed as a result of construction of the bridge footings and the associated roadworks
	Marine Parks Act 2004/GBRMP Act 1974	Works in a marine park zone	The bridge route is located immediately adjacent to the boundary of the habitat protection zone of the Great Barrier Reef Marine Park. If any part of the works are located within the zone, a joint permit would need to be issued for such works from the Queensland Government and Great Barrier Reef Marine Park Authority.
Pipeline	IPA/Coastal Protection and Management Act 1995	Operational works that are tidal works	The trenching works will be a tidal work; assuming the material excavated is used as fill a separate allocation of quarry material under the Coastal Act for placement of dredge material will not be required.
	IPA/Coastal Protection and Management Act 1995	Pipeline construction within the coastal management district (interference with quarry material on State coastal land)	There is a 400 m wide coastal management district defined along the coastal area of Curtis Island and a 100 m wide district defined on the main land coast or to HAT (whichever is the greater). Works to establish the proposed pipeline within this district will require approval pursuant to the trigger identified. It should be noted that this approval requirement only applies to the extent that the pipeline occurs on State coastal land (eg. land held as a reserve or USL) and does not apply to works on freehold or leasehold land.
	IPA/Fisheries Act 1994	Works that disturb or damage marine plants	Applies to the extent that any marine plants are disturbed or removed as a result of trenching and re-filling for the submarine pipeline.

Development Component	Approval Acts that Apply	Specific Triggers	Notes/Comments
	IPA/Environmental Protection Act 1994	'Extractive and screening activities' (ERA 16)	Applies to the trenching works - removal of material from the bed of waters and any extraction associated with pipeline trenching on land is an environmentally relevant activity
	Marine Parks Act 2004/GBRMP Act 1974	Works in a marine park zone	The pipeline route is located immediately adjacent to the boundary of the habitat protection zone of the Great Barrier Reef Marine Park. If any part of the works are located within the zone, a joint permit would need to be issued for such works from the Queensland Government and Great Barrier Reef Marine Park Authority.
	Petroleum (Submerged Lands) Act 1982	Licence to operate a petroleum pipeline	Applies to the extent any part of the pipeline occurs in the 'Adjacent Area' as defined in the Schedule to the Act in marine waters.
Capital Dredging of Swing Basin and Access Channels and Dredge Material Placement	IPA/Coastal Protection and Management Act 1995	Operational works that are tidal works Operational works that are reclamation of land from tidal water in a coastal management district Operational works that involve the disposal of dredged material in a coastal management district	The capital dredging works will involve the removal of material from the bed of water to a specified depth and design that is defined as a tidal work. The placement of material will likely result in the reclamation of land from tidal water in the proposed Western Basin reclamation area and will also require a State dredge material disposal approval pursuant to the IPA/Coastal Act. Given the proposed placement area is in State waters, a Commonwealth Sea Dumping Permit would not be required.

Development Component	Approval Acts that Apply	Specific Triggers	Notes/Comments
	IPA/Fisheries Act 1994	Works that disturb or damage marine plants	Applies to the extent that any marine plants are disturbed or removed as a result of dredging or dredged material placement.
	IPA/Environmental Protection Act 1994	'Extractive and screening activities' (ERA 16)	The capital dredging works will involve the removal of material from the bed of water which is an environmentally relevant activity (requiring development approval) and registration certificate under the *Environmental Protection Act 1994*.
	Coastal Protection and Management Act 1995	Allocation of quarry material	An allocation of quarry material will be required to remove dredged material from land under tidal water and place the material on land above high water mark. This approval will not apply to the extent that the area to be dredged below high water mark is leasehold land (eg. wet lease). It should be noted that the standard royalty for use of material as fill (set under the Coastal Regulation) does not apply to works undertaken by a port authority.
Outfall and discharge from reverse osmosis and sewage treatment plants	IPA/Environmental Protection Act 1994	Discharge of sewage (ERA 63) and wastewater (ERA 64)	Depending on the concentration and rate of discharge from both plants, the discharges are likely to be an environmentally relevant activity (requiring development approval) and a registration certificate under the *Environmental Protection Act 1994*.

Development Component	Approval Acts that Apply	Specific Triggers	Notes/Comments
LNG Plant and Associated Infrastructure	IPA/Coastal Protection and Management Act 1995	Operational works that are reclamation of land from tidal water	The current design may require some minor reclamation of land from tidal water within the wet lease area.
	Environmental Protection Act 1994	Operation of a petroleum activity	An environmental authority is required under the Act to construct and operate the proposed LNG facility. Other relevant operational works triggers under IPA such as the disturbance/removal of native vegetation pursuant to the Vegetation Management Act and marine plant disturbance pursuant to the Fisheries Act do not apply in the context of the exemption provided under Schedule 8, Table 4, 1A(j) - specified activity. Schedule 10 of IPA then defines specified activity (c) ...a petroleum activity as defined under the EP Act.

BMT WBM Brisbane
Level 11, 490 Upper Edward Street Brisbane 4000
PO Box 203 Spring Hill QLD 4004
Tel +61 7 3831 6744 Fax +61 7 3832 3627
Email wbm@wbmpl.com.au
Web www.wbmpl.com.au

BMT WBM Denver
14 Inverness Drive East, #B132
Englewood Denver Colorado 80112 USA
Tel +1 303 792 9814 Fax +1 303 792 9742
Email wbmdenver@wbmpl.com.au
Web www.wbmpl.com.au

BMT WBM Melbourne
Level 5, 99 King Street Melbourne 3000
PO Box 604 Collins Street West VIC 8007
Tel +61 3 8620 6100 Fax +61 3 8620 6105
Email wbmmelbourne@wbmpl.com.au
Web www.wbmpl.com.au

BMT WBM Newcastle
126 Belford Street Broadmeadow 2292
PO Box 266 Broadmeadow NSW 2292
Tel +61 2 4940 8882 Fax +61 2 4940 8887
Email wbmnewcastle@wbmpl.com.au
Web www.wbmpl.com.au

BMT WBM Perth
1 Brodie Hall Drive Technology Park Bentley 6102
Tel +61 8 9328 2029 Fax +61 8 9486 7588
Email wbmperth@wbmpl.com.au
Web www.wbmpl.com.au

BMT WBM Sydney
Suite 206, 118 Great North Road Five Dock 2046
PO Box 129 Five Dock NSW 2046
Tel +61 2 9713 4836 Fax +61 2 9713 4890
Email wbmsydney@wbmpl.com.au
Web www.wbmpl.com.au

BMT WBM Vancouver
1190 Melville Street #700 Vancouver
British Columbia V6E 3W1 Canada
Tel +1 604 683 5777 Fax +1 604 608 3232
Email wbmvancouver@wbmpl.com.au
Web www.wbmpl.com.au