APPENDIX 28

ARROW LNG PLANT

Land Use and Planning Technical Report

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LAND USE AND PLANNING TECHNICAL REPORT

Arrow LNG Plant

September 2011

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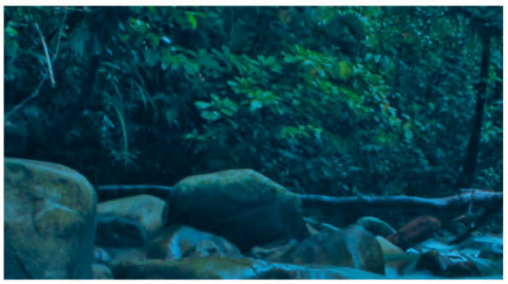





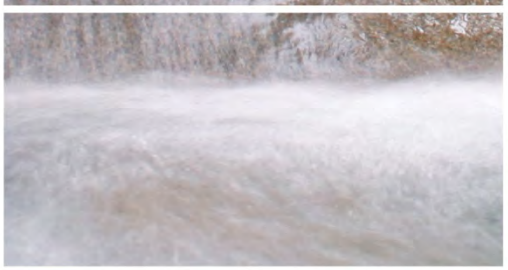



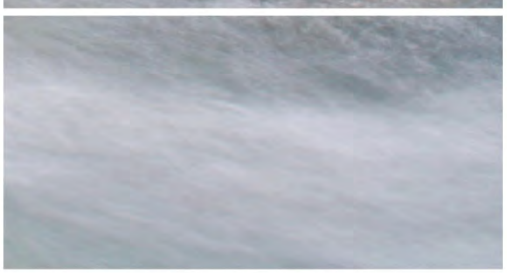


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EXECUTIVE SUMMARY

This technical study provides the specialist land use and planning assessment in response to the final terms of reference for an environmental impact statement (EIS) for the Arrow LNG Plant (formerly known as the Shell Australia Liquefied Natural Gas Project) (Coordinator General, 2010) issued by the Coordinator-General of the State of Queensland in January 2010.

The study area is shown on Figure 1.2. The study describes:

- The legislative context in relation to existing land use and planning, tenure and relationship to protection of environmentally sensitive area values within the study area.
- The existing environment.
- The issues and potential impacts on the existing environment.
- Avoidance, mitigation and management measures.
- Assessment of residual impact.

The study concludes the project is compatible with the existing land uses and consistent with the long term policy framework for the area. This is as reflected in Gladstone State Development Area Development Scheme, Gladstone Port Western Basin Master Plan, Curtis Coast Regional Coastal Management Plan, Central Queensland Regional Growth Management Framework, planning schemes, other statutory instruments, legislation, standards, codes and guidelines, to the extent:

- The LNG plant, being a new export industry, is a coastally dependent development that requires a safe deep water port for LNG carriers, and proximity to the feed gas supply, which is being sourced from the Surat and Bowen basins.
- The LNG plant will co-exist with other planned LNG facilities on Curtis Island.
- The major project components will be located within the Gladstone State Development Area Precincts, as declared by the Coordinator-General, for major industrial development. The majority of proposed uses are considered likely to meet the objectives of the Gladstone State Development Area, subject to the approval of the Coordinator-General. However, a number of uses such as heavy industry, commercial premises, crushing plant, extractive industry, liquid fuel depot, and high impact industry and medium industry in some cases will be inconsistent uses with the potential to compromise the future orderly planning of some precincts. This inconsistency can be avoided if these proposed uses are established subject to approval in accordance with the planning intent of the Gladstone State Development Area Development Scheme.
- The use of existing available marine terminals and infrastructure, and development of new marine terminals, materials offloading facility, jetties and infrastructure is consistent with the use of existing strategic port land, and the planning intent expressed in the Port Land Use Plan 1999 (Gladstone Port Authority, 1999), the 50 year Strategic Plan (Gladstone Ports Corporation, 2008a), the draft Land Use Plan 2010 (Gladstone Ports Corporation, 2010) and the Port of Gladstone Western Basin Master Plan (Queensland Government, 2010a).

Table ES1 summarises the land use and planning impacts and significance prior to taking into consideration the proposed avoidance, mitigation or management measures, and post mitigation measures and environmental offsets.

Table ES1 Summary of land use and planning impacts and significance (pre-mitigation and post mitigation measures)

Project Component	Land Use and Planning Impact	Project Phase	Summary Assessment of Significance (pre mitigation)	Summary Assessment of Significance (post mitigation and offset)
LNG plant, ancillary TWAFs and associated marine facilities	Change to existing land uses	Construction	Moderate	Moderate
		Operation	Moderate	Moderate
		Decommissioning	Negligible	Negligible
	Land use compatibility	Construction	Negligible	Negligible
		Operation	Negligible	Negligible
		Decommissioning	Negligible	Negligible
	Potential environmental harm to adjacent areas	Construction	Moderate	Low
		Operation	Moderate	Low
		Decommissioning	Negligible	Negligible
	Impact on surrounding land uses and human activities	Construction	Low	Low
		Operation	Low	Low
		Decommissioning	Low	Low
	Impact of increase of fire risk	Construction	Major	High
		Operation	Major	High
		Decommissioning	Major	High
	Impacts on millable timber	Construction	Low	Low
		Operation	Negligible	Negligible
		Decommissioning	Negligible	Negligible
	Impacts on quarry resources	Construction	Negligible	Negligible
		Operation	Negligible	Negligible
		Decommissioning	Negligible	Negligible
Feed gas pipeline right of way and tunnel	Change to existing land uses	Construction	Moderate	Moderate
		Operation	Negligible	Negligible
		Decommissioning	Negligible	Negligible
	Land use compatibility	Construction	Negligible	Negligible
		Operation	Negligible	Negligible
		Decommissioning	Negligible	Negligible
	Potential environmental harm to adjacent areas	Construction	Moderate	Low
		Operation	Moderate	Low
		Decommissioning	Negligible	Negligible
	Property disruption and severance, and fragmentation of sites	Construction	Low	Low
		Operation	Negligible	Negligible
		Decommissioning	Negligible	Negligible
	Proximity to electric power	Construction	Low	Low
		Operation	Low	Low

Project Component	Land Use and Planning Impact	Project Phase	Summary Assessment of Significance (pre mitigation)	Summary Assessment of Significance (post mitigation and offset)
	transmission lines and electrified rail lines	Decommissioning	Negligible	Negligible
	Impact of increase of fire risk	Construction	Major	High
		Operation	Major	High
		Decommissioning	Major	High
	Impacts on millable timber	Construction	Low	Low
		Operation	Negligible	Negligible
		Decommissioning	Negligible	Negligible
	Impacts on quarry resources	Construction	Negligible	Negligible
		Operation	Negligible	Negligible
		Decommissioning	Negligible	Negligible

When it comes to land use and planning impacts that are identified as low or negligible, these are unlikely to materially or discernibly change as a consequence of the application of mitigation measures. Therefore the residual impact will be identical to the level of impact pre-mitigation.

Land use and planning impacts resulting from the project will have several unavoidable residual impacts after the application of avoidance, mitigation and management measures. Those assessed as moderate and high include:

- Change of existing land use, which is inevitable with this state significant project.
- Restriction to public access (e.g., security fencing and exclusion zones) to the LNG plant site, the marine terminals and feed gas pipeline easement, which is necessary for the safe construction and operation of the project.
- Impact of increase in fire risk of the project on surrounding life (i.e., people), property and environment outside the study area.

After mitigation, marine plant, essential habitat and regional ecosystem environmental offsets will be required to be provided by the proponent for the project.

The project will contribute to cumulative impacts in the Gladstone region by way of:

- Increased demand for a skilled workforce and workforce availability through competing project construction phases in the region will create an increased housing and accommodation demand. This will require increased areas for urban and residential land uses.
- Further direct losses to environmentally sensitive areas.
- Increased demand on infrastructure, water, waste and need for new, or augmented, supporting infrastructure.
- The construction and operations contributing to increased local traffic and background noise levels in close proximity to sensitive receptors.
- Land use change contributing to an increased loading of the Gladstone regional air shed.

- The land use change forever changing the landscape character, form and visual amenity of the south western corner of Curtis Island within the Great Barrier Reef World heritage Area.
- The change of land use positively contributing to increased economic diversity of the local, regional and state, and national economy.

1. INTRODUCTION

1.1 Purpose and Scope

This technical report provides the specialist land use and planning assessment in response to the final terms of reference for an environmental impact statement (EIS) for the Arrow LNG Plant (formerly known as the Shell Australia Liquefied Natural Gas Project) (Coordinator General, 2010) issued by the Coordinator-General of the State of Queensland (hereafter Coordinator-General) in January 2010.

Table 1.1 provides a summary of the cross reference between the EIS final terms of reference sections and report sections. The full cross reference table is presented in Attachment B.

Table 1.1 Summary cross reference table

EIS final terms of reference	Report sections
Section 1.9	Section 2, Tables 5.1 and 5.2, and Attachment A
Section 3.2.3.1	Section 4
Section 1.9.1	Section 5.3 and Attachment A
Section 3.2.3.2	Sections 5, 6 and 7
Section 7	Section 8 is a part response
Section 9	Section 6 and 7 is a part response
Part B	Section 11 is a part response
Section 12.3	Table 5.2

This report describes:

- The legislative and policies controlling the approvals process and identifies the approvals, permits and licences required to facilitate the project.
- The existing environment within the project area.
- The issues and potential impacts on the existing environment and planning framework.
- Avoidance, mitigation and management measures.
- Assessment of residual impacts.

1.2 Project Description

1.2.1 Proponent

Arrow CSG (Australia) Pty Ltd (Arrow Energy) proposes to develop a liquefied natural gas (LNG) facility on Curtis Island off the central Queensland coast near Gladstone. The project, known as the Arrow LNG Plant, is a component of the larger Arrow LNG Project.

The proponent is a subsidiary of Arrow Energy Holdings Pty Ltd which is wholly owned by a joint venture between subsidiaries of Royal Dutch Shell plc and PetroChina Company Limited.

1.2.2 Arrow LNG Plant

Arrow Energy proposes to construct the Arrow LNG Plant in the Curtis Island Industry Precinct at the southwestern end of Curtis Island, approximately 6 km north of Gladstone and 85 km

southeast of Rockhampton, off Queensland's central coast. In 2008, approximately 10% of the southern part of the island was added to the Gladstone State Development Area to be administered by the Queensland Department of Local Government and Planning. Of that area, approximately 1,500 ha (25%) has been designated as the Curtis Island Industry Precinct and is set aside for LNG development. The balance of the Gladstone State Development Area on Curtis Island has been allocated to the Curtis Island Environmental Management Precinct, a flora and fauna conservation area.

The Arrow LNG Plant will be supplied with coal seam gas from gas fields in the Surat and Bowen basins via high-pressure gas pipelines to Gladstone, from which a feed gas pipeline will provide gas to the LNG plant on Curtis Island. A tunnel is proposed for the feed gas pipeline crossing of Port Curtis.

The project is described below in terms of key infrastructure components: LNG plant, feed gas pipeline and dredging.

LNG Plant

Overview

The LNG plant will have a base-case capacity of 16 Mtpa, with a total plant capacity of up to 18 Mtpa. The plant will consist of four LNG trains, each with a nominal capacity of 4 Mtpa. The project will be undertaken in two phases of two trains (nominally 8 Mtpa), with a financial investment decision taken for each phase.

Operations infrastructure associated with the LNG plant includes the LNG trains (where liquefaction occurs; see 'Liquefaction Process' below), LNG storage tanks, cryogenic pipelines, seawater inlet for desalination and stormwater outlet pipelines, water and wastewater treatment, a 110 m high flare stack, power generators (see 'LNG Plant Power' below), administrative buildings and workshops.

Construction infrastructure associated with the LNG plant includes construction camps (see 'Workforce Accommodation' below), a concrete batching plant and laydown areas.

The plant will also require marine infrastructure for the transport of materials, personnel and product (LNG) during construction and operations (see 'Marine Infrastructure' below).

Construction Schedule

The plant will be constructed in two phases. Phase 1 will involve the construction of LNG trains 1 and 2, two LNG storage tanks (each with a capacity of between 120,000 m^3 and 180,000 m^3), Curtis Island construction camp and, if additional capacity is required, a mainland workforce accommodation camp. Associated marine infrastructure will also be required as part of Phase 1. Phase 2 will involve the construction of LNG trains 3 and 4 and potentially a third LNG storage tank. Construction of Phase 1 is scheduled to commence in 2014 with train 1 producing the first LNG cargo in 2017. Construction of Phase 2 is anticipated to commence approximately five years after the completion of Phase 1 but will be guided by market conditions and a financial investment decision at that time.

Construction Method

The LNG plant will generally be constructed using a modular construction method, with preassembled modules being transported to Curtis Island from an offshore fabrication facility. There will also be a substantial stick-built component of construction for associated infrastructure such as LNG storage tanks, buildings, underground cabling, piping and foundations. Where possible, aggregate for civil works will be sourced from suitable material excavated and crushed

on site as part of the bulk earthworks. Aggregate will also be sourced from mainland quarries and transported from the mainland launch site to the plant site by roll-on, roll-off vessels. A concrete batching plant will be established on the plant site. Bulk cement requirements will be sourced outside of the batching plant and will be delivered to the site by roll-on roll-off ferries or barges from the mainland launch site.

LNG Plant Power

Power for the LNG plant and associated site utilities may be supplied from the electricity grid (mains power), gas turbine generators, or a combination of both, leading to four configuration options that will be assessed:

- Base case (mechanical drive): The mechanical drive configuration uses gas turbines to drive the LNG train refrigerant compressors, which is the traditional powering option for LNG facilities. This configuration would use coal seam gas and end flash gas (produced in the liquefaction process) to fuel the gas turbines that drive the LNG refrigerant compressors and the gas turbine generators that supply electricity to power the site utilities. Construction power for this option would be provided by diesel generators.
- Option 1 (mechanical/electrical – construction and site utilities only): This configuration uses gas turbines to drive the refrigerant compressors in the LNG trains. During construction, mains power would provide power to the site via a cable (30-MW capacity) from the mainland. The proposed capacity of the cable is equivalent to the output of one gas turbine generator. The mains power cable would be retained to power the site utilities during operations, resulting in one less gas turbine generator being required than the proposed base case.
- Option 2 (mechanical/electrical): This configuration uses gas turbines to drive the refrigerant compressors in the LNG trains and mains power to power site utilities. Under this option, construction power would be supplied by mains power or diesel generators.
- Option 3 (all electrical): Under this configuration mains power would be used to supply electricity for operation of the LNG train refrigerant compressors and the site utilities. A switchyard would be required. High-speed electric motors would be used to drive the LNG train refrigerant compressors. Construction power would be supplied by mains power or diesel generators.

Liquefaction Process

The coal seam gas enters the LNG plant where it is metered and split into two pipe headers which feed the two LNG trains. With the expansion to four trains the gas will be split into four LNG trains.

For each LNG train, the coal seam gas is first treated in the acid gas removal unit where the carbon dioxide and any other acid gases are removed. The gas is then routed to the dehydration unit where any water is removed and then passed through a mercury guard bed to remove mercury. The coal seam gas is then ready for further cooling and liquefaction.

A propane, precooled, mixed refrigerant process will be used by each LNG train to liquefy the predominantly methane coal seam gas. The liquefaction process begins with the propane cycle. The propane cycle involves three pressure stages of chilling to pre-cool the coal seam gas to -33°C and to compress and condense the mixed refrigerant, which is a mixture of nitrogen, methane, ethylene and propane. The condensed mixed refrigerant and precooled coal seam gas are then separately routed to the main cryogenic heat exchanger, where the coal seam gas is further cooled and liquefied by the mixed refrigerant. Expansion of the mixed refrigerant gases within the heat exchanger removes heat from the coal seam gas. This process cools the coal

seam gas from -33°C to approximately -157°C. At this temperature the coal seam gas is liquefied (LNG) and becomes 1/600th of its original volume. The expanded mixed refrigerant is continually cycled to the propane precooler and reused.

LNG is then routed from the end flash gas system to a nitrogen stripper column which is used to separate nitrogen from the methane, reducing the nitrogen content of the LNG to less than 1 mole per cent (mol%). LNG separated in the nitrogen stripper column is pumped for storage on site in full containment storage tanks where it is maintained at a temperature of -163°C.

A small amount of off-gas is generated from the LNG during the process. This regasified coal seam gas is routed to an end flash gas compressor where it is prepared for use as fuel gas.

Finally, the LNG is transferred from the storage tanks onto LNG carriers via cryogenic pipelines and loading arms for transportation to export markets. The LNG will be regasified back into sales specification gas on shore at its destination location.

Workforce Accommodation

The LNG plant (Phase 1), tunnel, feed gas pipeline, and dredging components of the project each have their own workforces with peaks occurring at different stages during construction. The following peak workforces are estimated for the project:

- LNG plant Phase 1 peak workforce of 3,500, comprising 3,000 construction workers: 350 engineering, procurement and construction (EPC) management workers and 150 Arrow Energy employees.
- Tunnel peak workforce of up to 100.
- Feed gas pipeline (from the mainland to Curtis Island) peak workforce of up to 75.
- A dredging peak workforce of between 20 and 40.

Two workforce construction camp locations are proposed: the main construction camp at Boatshed Point on Curtis Island, and a possible mainland overflow construction camp, referred to as a temporary workers accommodation facility (TWAF). Two potential locations are currently being considered for the mainland TWAF; in the vicinity of Gladstone city on the former Gladstone Power Station ash pond No.7 (TWAF7) or in the vicinity of Targinnie on a primarily cleared pastoral grazing lot (TWAF8). Both potential TWAF sites include sufficient space to accommodate camp infrastructure and construction laydown areas. The TWAF and its associated construction laydown areas will be decommissioned on completion of the Phase 1 works.

Of the 3,000 construction workers for the LNG plant, it is estimated that between 5% and 20% will be from the local community (and thus will not require accommodation) and that the remaining fly-in, fly-out workers will be accommodated in construction camps. The 350 EPC management workers and 150 Arrow Energy employees are expected to relocate to Gladstone with the majority housed in company facilitated accommodation.

The tunnel workforce of 100 people and gas pipeline workforce of 75 people are anticipated to be accommodated in the mainland in company facilitated accommodation. The dredging workforce of 20 to 40 workers will be housed onboard the dredge vessel.

Up to 2,500 people will be housed at Boatshed Point construction camp. Its establishment will be preceded by a pioneer camp at the same locality which will evolve into the completed construction camp.

Marine Infrastructure

Marine facilities include the LNG jetty, materials offloading facility (MOF), personnel jetty and mainland launch site.

LNG Jetty

LNG will be transferred from the storage tanks on the site to the LNG jetty via above ground cryogenic pipelines. Loading arms on the LNG jetty will deliver the product to an LNG carrier. The LNG jetty will be located in North China Bay, adjacent to the northwest corner of Hamilton Point.

MOF

Delivery of materials to the site on Curtis Island during the construction and operations phases will be facilitated by a MOF where roll-on, roll-off or lift-on, lift-off vessels will dock to unload preassembled modules, equipment, supplies and construction aggregate. The MOF will be connected to the LNG plant site via a heavy-haul road.

Boatshed Point (MOF 1) is the base-case MOF option and would be located at the southern tip of Boatshed Point. The haul road would be routed along the western coastline of Boatshed Point (abutting the construction camp to the east) and enters the LNG Plant site at the southern boundary. A quarantine area will be located south of the LNG plant and will be accessed via the northern end of the haul road.

Two alternative options are being assessed, should the Boatshed Point option be determined to be not technically feasible:

- South Hamilton Point (MOF 2): This MOF option would be located at the southern tip of Hamilton Point. The haul road from this site would traverse the saddle between the hills of Hamilton Point to the southwest boundary of the LNG plant site. The quarantine area for this option will be located southwest of the LNG plant near the LNG storage tanks.
- North Hamilton Point (MOF 3): This option involves shared use of the MOF being constructed for the Santos Gladstone LNG Project (GLNG Project) on the northwest side of Hamilton Point (south of Arrow Energy's proposed LNG jetty). The GLNG Project is also constructing a passenger terminal at this site, but it will not be available to Arrow Energy contractors and staff. The quarantine area for this option would be located to the north of the MOF. The impacts of construction and operation of this MOF option and its associated haul road were assessed as part of the GLNG Project and will not be assessed in this EIS.

Personnel Jetty

During the peak of construction, base case of up to 1,100 people may require transport to Curtis Island from the mainland on a daily basis. A personnel jetty will be constructed at the southern tip of Boatshed Point to enable the transfer of workers from the mainland launch site to Curtis Island by high-speed vehicle catamarans (Fastcats) and vehicle or passenger ferries (ROPAX). This facility will be adjacent to the MOF constructed at Boatshed Point. The haul road will be used to transport workers to and from the personnel jetty to the construction camp and LNG plant site. A secondary access for pedestrians will be provided between the personnel jetty and the construction camp.

Mainland Launch Site

Materials and workers will be transported to Curtis Island via the mainland launch site. The mainland launch site will contain both a passenger terminal and a roll-on, roll-off facility. The passenger terminal will include a jetty and transit infrastructure, such as amenities, waiting areas

and car parking. The barge or roll-on ,roll-off facility will have a jetty, associated laydown areas, workshops and storage sheds.

The two location options for the mainland launch site are:

- Launch site 1: This site is located north of Gladstone city near the mouth of the Calliope River, adjacent to the existing RG Tanna coal export terminal.
- Launch site 4N: This site is located at the northern end of the proposed reclamation area for the Fishermans Landing Northern Expansion Project, which is part of the Port of Gladstone Western Basin Master Plan. The availability of this site will depend on how far progressed the Western Basin Dredging and Disposal Project is at the time of construction.

Feed Gas Pipeline

An approximately 8-km long feed gas pipeline will supply gas to the LNG plant from its connection to the Arrow Surat Pipeline (formerly the Surat Gladstone Pipeline) on the mainland adjacent to Rio Tinto's Yarwun alumina refinery. The feed gas pipeline will be constructed in three sections:

- A short length of feed gas pipeline will run from the proposed Arrow Surat Pipeline to the tunnel launch shaft, which will be located on a mudflat south of Fishermans Landing, just south of Boat Creek. This section of pipeline will be constructed using conventional open-cut trenching methods within a 40-m wide construction right of way.
- The next section of the feed gas pipeline will traverse Port Curtis harbour in a tunnel to be bored under the harbour from the mainland tunnel launch shaft to a receival shaft on Hamilton Point. The tunnel under Port Curtis will have an excavated diameter of up to approximately 6 m and will be constructed by a tunnel boring machine that will begin work at the mainland launch shaft. Tunnel spoil material will be processed through a de-sanding plant to remove the bentonite and water and will comprise mainly a finely graded fill material, which will be deposited in a spoil placement area established within bund walls constructed adjacent to the launch shaft. Based on the excavated diameter, approximately 223,000 m^3 of spoil will be treated as required for acid sulfate soil and disposed of at this location.
- From the tunnel receival shaft on Hamilton Point, the remaining section of the feed gas pipeline will run underground to the LNG plant, parallel to the above ground cryogenic pipelines. This section will be constructed using conventional open-cut trenching methods within a 30-m wide construction right of way. A permanent easement up to 30-m wide will be negotiated with the relevant land manager or owner.

Should one of the electrical plant power options be chosen, it is intended that a power connection will be provided by a third party to the tunnel launch shaft, whereby Arrow Energy would construct a power cable within the tunnel to the LNG plant.

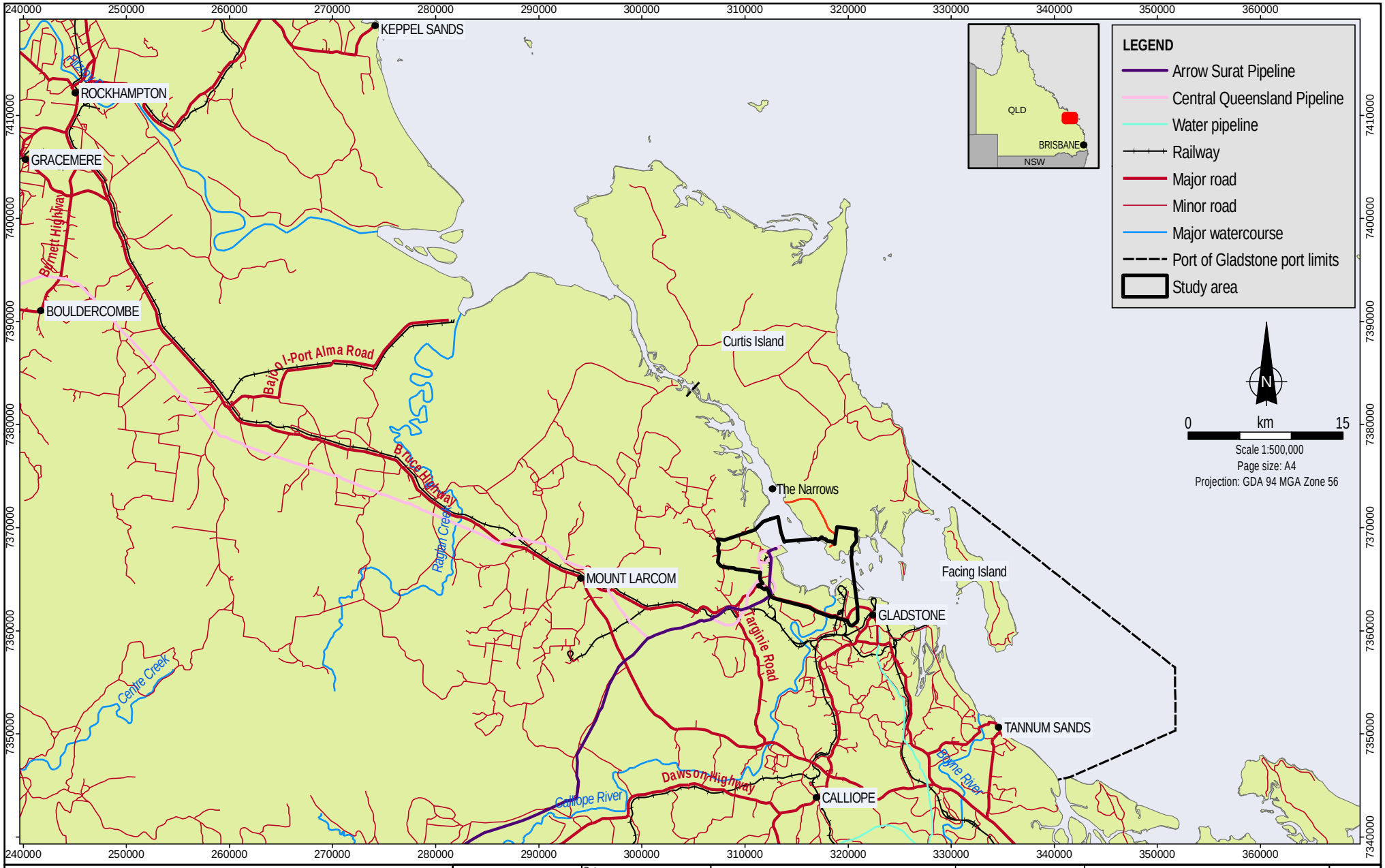
Other infrastructure, such as communication cables, water and wastewater pipelines, may also be accommodated within the tunnel.

Dredging

Dredging required for LNG shipping access and swing basins has been assessed under the Gladstone Ports Corporation's Port of Gladstone Western Basin Dredging and Disposal Project. Additional dredging within the marine environment of Port Curtis may be required to accommodate the construction and operation of the marine facilities. Up to five sites may require dredging:

- Dredge site 1 (dredge footprint for launch site 1): The dredging of this site would facilitate the construction and operation of launch site 1. This dredge site is located in the Calliope River and extends from the intertidal area abutting launch site 1, past Mud Island to the main shipping channel. The worst-case dredge volume estimated at this site is approximately 900,000 m^3.
- Dredge site 2 (dredge footprint for launch site 4N): The dredging of this site would facilitate the construction and operation of launch site 4N. This dredge site would abut launch site 4N and extend east from the launch site to the shipping channel. The worst-case dredge volume identified at this site is approximately 2,500 m^3.
- Dredge site 3 (dredge footprint for Boatshed Point MOF 1): The dredging of this site would facilitate the construction and operation of the personnel jetty and MOF at Boatshed Point. This dredge site would encompass the area around the marine facilities, providing adequate depth for docking and navigation. The worst-case dredge volume identified at this site is approximately 50,000 m^3.
- Dredge site 4 (dredge footprint for Hamilton Point South MOF 2): The dredging of this site would facilitate the construction and operation of the MOF at Hamilton Point South. This dredge site would encompass the area around the marine facilities, providing adequate depth for docking and navigation. The worst-case dredge volume identified at this site is approximately 50,000 m^3.
- Dredge site 5 (dredge footprint for LNG jetty): The dredging of this site will facilitate the construction of the LNG jetty at Hamilton Point. This dredge site extends from the berth pocket to be dredged as part of the Western Basin Strategic Dredging and Disposal Project to the shoreline and is required to enable a work barge to assist with construction of the jetty. The worst-case dredge volume identified is approximately 120,000 m^3.

The spoil generated by dredging activities will be placed and treated for acid sulfate soils (as required) in the Port of Gladstone Western Basin Dredging and Disposal Project reclamation area.



Source:
Place names, roads, railways, watercourses and pipelines from GEODATA250k (Optimum scale 1:250,000)
Coastline from GBRMPA.
Port of Gladstone port limits digitised by Coffey Environments.

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Date: 12.07.2011
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File Name: 7033BC_08_F01.01_GIS

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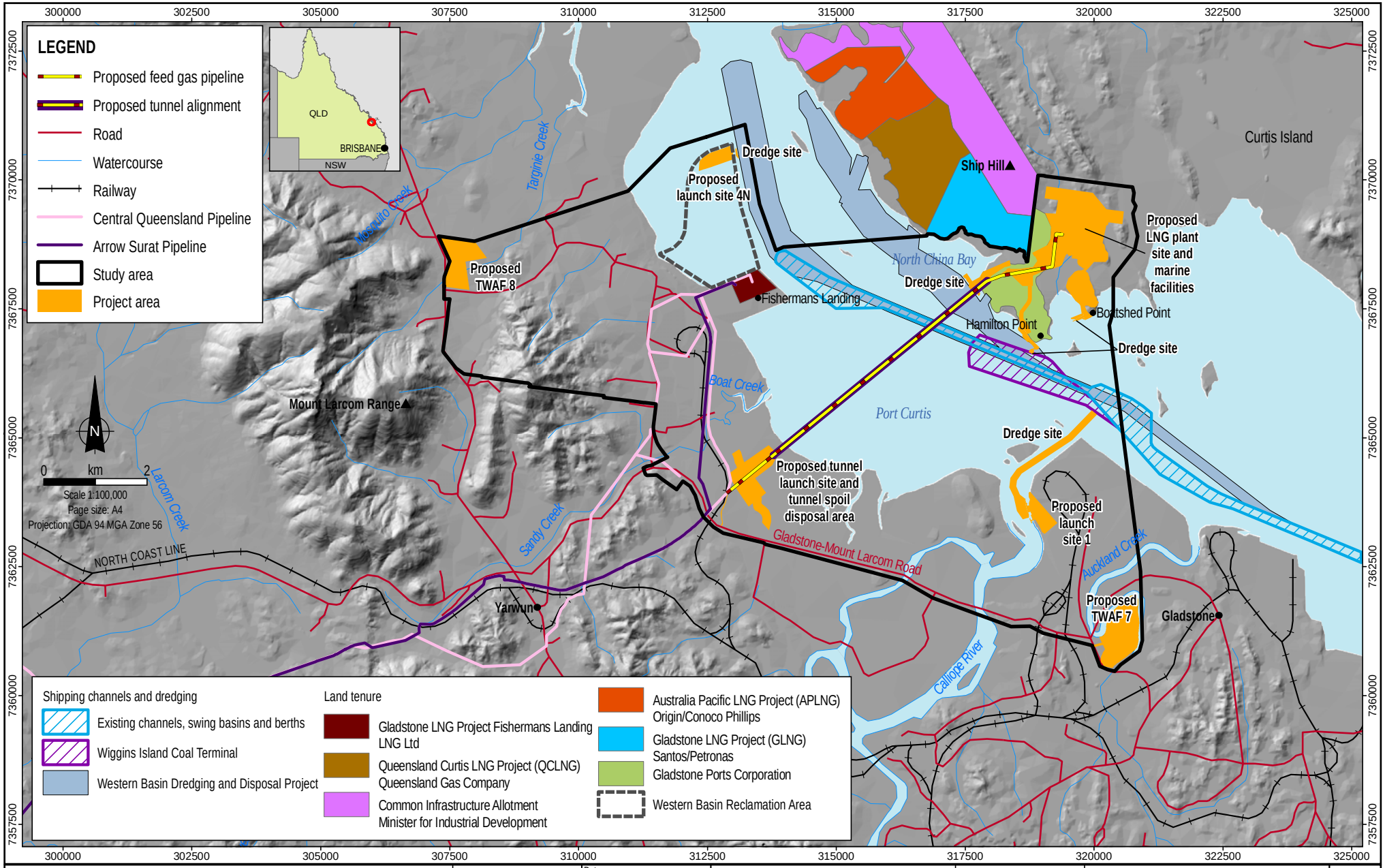
Regional context

Figure No: **1.1**



Source:
Place names, roads and watercourses from DME.
Study area, pipelines, proposed auxiliary facilities and marine infrastructure from Arrow Energy.
Proposed feed gas pipeline, proponents and DEM from Coffey Environments.
Western Basin Dredging Master Plan from Gladstone Ports Corporation.

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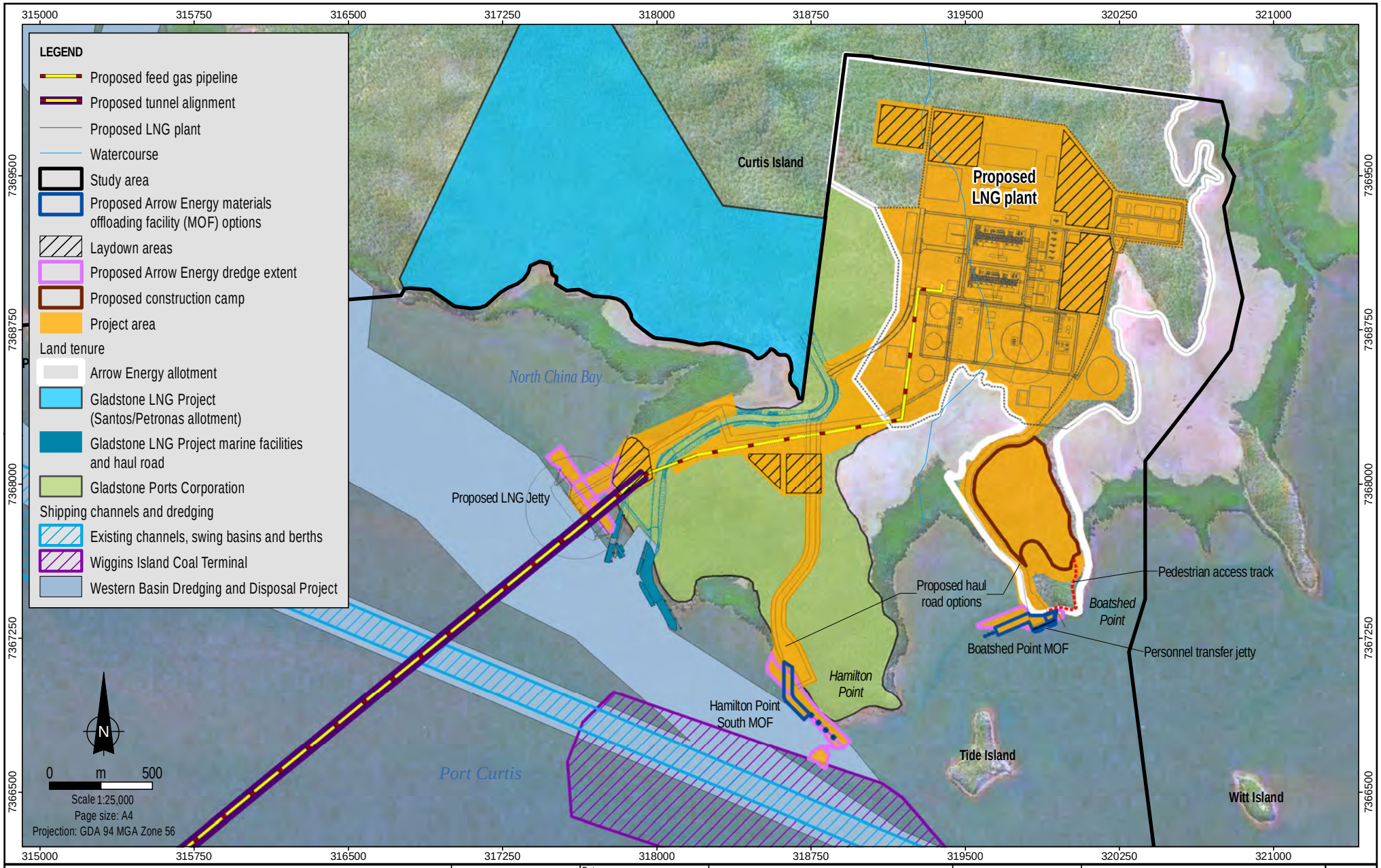
Site locality

Figure No: 1.2



Source:
Place names, roads and watercourses from DME.
Study area, proposed auxiliary facilities and marine infrastructure from Arrow Energy.
Western Basin Dredging Master Plan and Disposal Project from Gladstone Ports Corporation.
Study area and proposed feed gas pipeline from Coffey Environments. Imagery from SPOT (2004-2007).

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Arrow LNG Plant

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LNG plant and associated infrastructure

Figure No: 1.3

2. LEGISLATIVE CONTEXT

2.1 Introduction

This section identifies the key legislation, policies, statutory instruments, and guidelines relating to land use and planning, the approval process and the protection of existing environmental values.

Attachment A provides a more comprehensive list and assessment as it relates to the project, including IFC and World Bank guidelines.

2.2 Commonwealth

The *Environment Protection and Biodiversity Conservation Act 1999* (Cwlth) (EPBC Act) provides a framework to protect and manage nationally and internationally important flora, fauna, ecological communities and heritage places (i.e., matters of national environmental significance).

Impact on any of the matters of environmental significance will be required to be assessed by the Australian Government Minister for Sustainability, Environment, Water, Population and Communities.

The amended bilateral agreement (Australian Government, 2009) between the Commonwealth and the state of Queensland relating to environmental assessment came into effect on 11 August 2009. This amended agreement enables the Commonwealth Minister to rely on specified environmental impact assessment processes of the state of Queensland in assessing actions under the EPBC Act.

The *Great Barrier Reef Marine Park Act 1975* (Cwlth) provides for the long term protection and conservation of the environment, biodiversity and heritage values of the Great Barrier Reef Region by:

- Allowing ecologically sustainable use of the Great Barrier Reef Region.
- Encouraging engagement in the protection and management of the Great Barrier Reef Region by interested persons and groups, including Queensland and local governments, communities, Indigenous persons, business and industry.
- Assisting in meeting Australia's international responsibilities in relation to the environment and protection of world heritage (in particular Australia's responsibilities under the World Heritage Convention).

The act enables LNG shipping and other maritime transport activities through the Great Barrier Reef Marine Park dedicated shipping channels.

The *Native Title Act 1993* (Cwlth) recognises and protects native title, with objectives to:

- Provide for the recognition and protection of native title.
- Establish ways in which future dealings affecting native title may proceed and set standards for those dealings.
- Establish a mechanism for determining claims to native title.
- Provide for or permit the validation of past acts and intermediate period acts invalidated because of the existence of native title.

The National Native Title Tribunal is an independent body set up under the act to provide administrative processes to deal with native title applications and to provide information to Indigenous people and the broader community about the native title process.

The act, in association with the *Native Title (Queensland) Act 1993*, enables a process for native title dealings (for example, the preparation of Indigenous Land Use Agreements, Rights to Negotiate) in relation to the study area Port Curtis Coral Coast native title claim.

2.3 State

The *State Development and Public Works Organisation Act 1971* (Qld) (SDPWO Act) provides for State planning and development through a coordinated system of public works organisation, for environmental coordination and related purposes.

The project has been declared a state significant project, and as an amended bilateral agreement exists, the EIS will be assessed under the Commonwealth accredited Part 4 of the SDPWO Act and the State Development and Public Works Organisation Regulation 1999 (Qld) by the Coordinator-General of the State of Queensland.

The Coordinator-General prepared the Development Scheme for the Gladstone State Development Area under the SDPWOA. The scheme is a statutory instrument regulating land use within the declared Gladstone State Development Area and overrides other statutory planning instruments. It establishes a framework for assessing and deciding Material Change of Use applications, defines land uses and levels of assessment, and includes a regulatory map and land use designation map detailing different land use precincts.

The *Petroleum and Gas (Production and Safety) Act 2004* (Qld) (P&G Act) provides for the exploration, recovery and transportation by pipeline, petroleum and fuel gas. The act also regulates the safe and efficient carrying out of these activities, including the use of associated water, and enables the granting of Survey Licences, Petroleum Pipeline and Petroleum Facility Licences relevant to the project.

The *Environmental Protection Act 1994* (Qld) (EP Act) provides for the protection of Queensland's environment while allowing for development that improves the total quality of life, both now and in the future, in a way that maintains the ecological processes on which life depends (i.e., ecologically sustainable development). The act gives the Environment Minister the power to create Environmental Protection Policies that aim to protect the environmental values identified for Queensland. The act also enables the assessment and granting of Environmental Authority applications in relation to the project.

The *Sustainable Planning Act 2009* (Qld) (SP Act) seeks to achieve sustainable planning outcomes through:

- Managing the process by which development takes place.
- Managing the effects of development on the environment.
- Continuing the coordination and integration of local, regional and state planning.

The Integrated Development Assessment System under the SP Act provides a system for the application for, consideration and grant of approvals for almost all development in Queensland, inclusive of Queensland waters. The exceptions include approvals for mining and petroleum-related activities, which are decided under the EP Act.

The *Building Act 1975* (Qld) provides a regulatory framework for building development approvals, building work, building classification and building certifiers, and provides for particular matters about sustainable buildings. The act enables private certification of building works, and approval of building works, in combination with the payment of the portable long service leave levy.

The *Coastal Protection and Management Act 1995* (Qld) provides for the protection, conservation, rehabilitation and management of the coast, including its resources and biological diversity. The act has regard to the goal, core objectives and guiding principles of the National Strategy for Ecologically Sustainable Development in the use of the coastal zone. The objectives of the act include:

- A coordinated and integrated management and administrative framework for the ecologically sustainable development of the coastal zone.
- Encourage the enhancement of knowledge of coastal resources and the effect of human activities on the coastal zone.

The act enables the granting of permits for works within a coastal management district, for tidal and prescribed tidal works.

The *Fisheries Act 1994* (Qld) provides for the management, use, development and protection of fisheries resources and fish habitats, the management of aquaculture activities and helping to prevent shark attacks. The purpose of the act is to use, conservation and enhancement of the community's fisheries resources and fish habitats in a way that seeks to apply and balance the principles of ecologically sustainable development and promote ecologically sustainable development. The act enables the granting of permits for the disturbance and removal of marine plants.

The *Local Government Act 1993* (Qld) provides for local government and the act includes:

- Providing a legal framework for an effective, efficient and accountable system of local government.
- Recognising a jurisdiction of local government sufficient to allow a local government to take autonomous responsibility for the good rule and government of its area with a minimum of intervention by the State.
- Providing for community participation in the local government system.
- Defining the role of participants in the local government system.
- Establishing an independent process for ongoing review of important local government issues.

The act enables the making of local laws and model local laws with respect to the study area.

The *Nature Conservation Act 1992* (Qld) provides for the conservation of nature through:

- Gathering of information and community education.
- Dedication and declaration of protected areas.
- Management of protected areas.
- Protection of native wildlife and its habitat.
- Use of protected wildlife and areas to be ecologically sustainable.

- Recognition of interest of Aborigines and Torres Strait Islanders in nature and their cooperative involvement in its conservation.
- Cooperative involvement of landholders.

A licence, permit or authority is needed to take, keep, use or interfere with many native plants and animals for educational or scientific purposes. Whilst there are currently no declared 'critical habitats' or 'areas of major interest' listed under the act, development triggers for Conservation Estate as listed in Schedule 7 of the Sustainable Planning Regulation 2009 include a protected area, forest reserve, critical habitat or area of major interest under the act.

The act also enables the granting of permits for the clearing of protected plants and scientific purposes permits, where required.

The *Vegetation Management Act 1999* (Qld) provides for the regulation of clearing of vegetation in a way that:

- Conserves remnant vegetation that is:
  - An endangered regional ecosystem.
  - An of concern regional ecosystem.
  - A least concern regional ecosystem.
  - Provides for an application for re-classification of remnant vegetation.
- Conserves vegetation in declared areas.
- Ensures the clearing does not cause land degradation.
- Prevents the loss of biodiversity.
- Maintains ecological processes.
- Manages the environmental effects of the clearing.
- Reduces greenhouse gas emissions.

The act also provides for the re-classification of a regional ecosystem if a site survey results in a lower classification of vegetation to be located on that site.

The act, in association with the SP Act, and in the context of the project, provides limited mechanisms for bringing forward properly made applications for a clearing permit and some limited exemptions.

The *Water Act 2000* (Qld) provides for the sustainable management of water and other resources and the establishment and operation of water authorities. The act enables the granting of various water licences and permits, including as required by the project, an application to become a water service provider, riverine protection permits for destroying vegetation, excavating or placing fill in a watercourse, lake or spring.

The *Aboriginal Cultural Heritage Act 2003* (Qld) provides for the effective recognition, protection and conservation of Aboriginal cultural heritage by:

- Recognising Aboriginal ownership of Aboriginal human remains wherever held.

- Recognising Aboriginal ownership of Aboriginal cultural heritage of a secret or sacred nature held in state collections.
- Recognising Aboriginal ownership of Aboriginal cultural heritage that is lawfully taken away from an area by an Aboriginal party for the area.
- Establishing a duty of care for activities that may harm Aboriginal cultural heritage.
- Establishing powers of protection, investigation and enforcement.
- Establishing a database and a register for recording Aboriginal cultural heritage.

The act establishes a duty of care requirement on the proponent and facilitates the preparation of a Cultural Heritage Management Plan for the project.

The key legislation mentioned above overlaps operationally, to the extent:

- Activities are authorised under the P&G Act where they occur under a Survey Licence, Petroleum Lease, Petroleum Pipeline Licence or Petroleum Facility Licence. This is defined as being an incidental activity in the area of a lease if carrying out of the activity is reasonable necessary for, or incidental to, another authorised activity.
- Under the EP Act, a Chapter 5A Activity (relevantly, a petroleum activity) will require an Environmental Authority, which outlines the environmental conditions applicable to the project's activities.
- Under the SP Act an activity authorised under the P&G Act cannot be regulated by a local government planning scheme. However a development permit is required under the SP Act for development which is identified in Schedule 3 of the Sustainable Planning Regulation 2009 (Qld). This includes items such as the *Building Act 1975* (Qld), *Water Act 2000* (Qld), *Fisheries Act 1994* (Qld), *Vegetation Management Act 1999* (Qld) and *Coastal Protection and Management Act 1995* (Qld).
- State Development Area Development Schemes are created under the SDPWOA. Regardless of whether or not the P&G Act applies, an application for a Material Change of Use within the Gladstone State Development Area will be required to be assessed by the Coordinator-General under the Gladstone State Development Area Development Scheme. The application is not assessed under the SP Act, and is not exempt from the P&G Act. A Material Change of Use application under the Gladstone State Development Area overrides a Material Change of Use application requirement in the SP Act, but does not override any Material Change of Use application requirement in Schedule 3 of Sustainable Planning Regulation 2009 (Qld).
- Strategic port land and the land use plan as prepared under the *Transport Infrastructure Act 1994* (Qld) (TI Act) will apply subject to the application of the Gladstone State Development Area. The fact activities are authorised under the P&G Act will not be relevant. However designation of land as strategic port land provides exemption from the assessment against the local government planning scheme.
- The proponent will comply with the duty of care requirements under the *Aboriginal Cultural Heritage Act 2003* (Qld) by preparing and implementing an agreed Cultural Heritage Management Plan for the project.

2.3.1 Statewide Planning

Given the significant interest in the development of a LNG industry in Queensland based on processing CSG from the Surat and Bowen basins, the Queensland Government has established an LNG Industry Unit within the Queensland Department of Employment, Economic Development and Innovation. The LNG Industry Unit was established to assist LNG industry proponents engage with government, liaise with local government, peak industry bodies and other project proponents to develop a whole of government policy response and to facilitate the LNG industry in Queensland.

2.3.2 State Planning Regulatory Provisions

State planning regulatory provisions are a feature of the SP Act. They are planning instruments that the planning Minister may introduce in the following circumstances:

- To implement a regional plan.
- To implement structure plans for master planned areas.
- To allow the planning Minister to respond to environmental, cultural, economic or social issues in local areas by affecting the operation of planning schemes.
- To apply state infrastructure charges within master planned areas.

These regulatory provisions affect planning schemes by providing an overarching planning instrument, and may be applied in a range of circumstances, with the ability to regulate and prohibit development. These regulatory provisions may also override regional plans.

There are currently ten introduced state planning regulatory provisions, however none of these affect the study area.

2.3.3 Schedules of the Sustainable Planning Regulation 2009

Section 232 of the SP Act enables a regulation to prescribe that development is:

- Self-assessable development (or).
- Development requiring compliance assessment (or).
- Assessable development, which may require code or impact assessment, or both code and impact assessment.

The Sustainable Planning Regulation 2009 (Qld) identifies a number of schedules, with the following schedules are relevant to the project:

- Schedule 3 identifies assessable and self-assessable development, and identifies the type of assessment for the development.
- Schedule 4 prescribes development that a planning scheme, a temporary local planning instrument, a preliminary approval to which section 242 of the SP Act applies or a master plan can not declare to be self-assessable development, development requiring compliance assessment, assessable development or prohibited development.
- Schedule 5 identifies the applicable codes, laws and policies for particular development.
- Schedule 6 identifies the assessment manager for development applications.

- Schedule 7 identifies referral agencies and their jurisdiction, including other development made assessable under Schedule 3, whether or not the development is also assessable under a planning scheme.
- Schedule 8 identifies special fire services and referral jurisdiction, supporting Schedule 7.
- Schedule 9 identifies public passenger transport related development triggers, supporting Schedule 7.
- Schedule 10 identifies rail transport related development triggers, supporting Schedule 7.
- Schedule 11 identifies thresholds for development not contiguous to state controlled roads, supporting Schedule 7.
- Schedule 12 identifies development impacting on the provision of public passenger transport and thresholds, supporting Schedule 7.
- Schedule 13 identifies development impacting on railway safety and efficiency, and thresholds, supporting Schedule 7.
- Schedule 14 identifies state resources and the required evidence to be provided prior to lodgement of development applications.
- Schedule 17 identifies development for which a notification period of at least 30 business days applies in relation to specific areas.
- Schedule 23 identifies trunk infrastructure charge rates.
- Schedule 24 identifies clearing of native vegetation – not assessable development under Schedule 3, part 1, table 4, item 1.

The project will be triggered under Schedules 3 to 8, 14, 23 and 24. Schedules 9 to 13 and 17 may be triggered depending on the final configuration, location, siting and design of supporting infrastructure and facilities associated with the project.

2.3.4 Statutory Guidelines

Statutory guidelines developed under the SP Act provide direction on process and address planning issues. There are six statutory guidelines relating to development assessment and plan-making under the SP Act, but none specifically affect the study area.

Statutory guideline 05/09 ‘Sufficient grounds for decisions that conflict with a planning instrument’ (Queensland Government, 2009a) is relevant when an assessment manager assesses development applications against the state planning regulatory provisions, any relevant regional plan and state planning policies, any structure plans and master plans, any preliminary approvals that affect a planning scheme, the planning scheme and any temporary local planning instruments.

The guideline provides a list of matters that may be considered when determining whether there are sufficient grounds to justify a decision that conflicts with a relevant instrument. Consideration may be given to the guideline in the context of the mainland TWAF sites.

2.3.5 State Planning Policies

State planning policies (SPP) outline broad principles on environmental, economic, agricultural and development issues and are applied to local planning instruments. The following SPP, as statutory instruments, are relevant to the study area.

- SPP 1/92 Development and the Conservation of Agricultural Land (Queensland Government, 1992a).
- SPP 1/02 Development in the Vicinity of Certain Airports and Aviation Facilities (Queensland Government, 2002a).
- SPP 2/02 Planning and Managing Development Involving Acid Sulfate Soils (Queensland Government, 2002b).
- SPP 1/03 Mitigating the Adverse Impacts of Flood, Bushfire and Landslide (Queensland Government, 2003a).
- SPP 1/07 Housing and Residential Development including Guideline (Queensland Government, 2007a).
- SPP 2/07 Protection of Extractive Resources and Guideline (Queensland Government, 2007b).
- Temporary SPP 1/10 Protecting Wetlands of High Ecological Significance in Great Barrier Reef Catchments (Queensland Government, 2010e).
- State Coastal Management Plan (Queensland Government, 2002c).
- Curtis Coast Regional Coastal Management Plan (Queensland Government, 2003b).

SPP guidelines supporting the SPP relevant to the study area and include:

- Guideline 1 for SPP 1/92 The Identification of Good Quality Agricultural Land (Queensland Government, 1992b).
- Guideline 2 for SPP 1/92 Separating agricultural and residential land uses (Queensland Government, 1992c).
- Guideline for SPP 1/02 Development in the Vicinity of Certain Airports and Aviation Facilities (Queensland Government, 2002d).
- Guideline for SPP 1/03 Mitigating the Adverse Impacts of Flood, Bushfire and Landslide (Queensland Government, 2003c).
- Temporary State Policy Guideline Protecting Wetlands of High Ecological Significance in Great Barrier Reef Catchments (Queensland Government, 2010f).
- State and Regional Coastal Management Plans Queensland's Coastal Policy Implementation Guideline for Planning Schemes (Queensland Government, 2008a).
- State and Regional Coastal Management Plans Queensland's Coastal Policy Implementation Guideline for Development Assessment (Queensland Government, 2008b).

The State Coastal Management Plan and the Curtis Coast Regional Coastal Management Plan will continue to be statutory instruments under the *Coastal Protection and Management Act 1995* (Qld) (CP&M Act), until both are replaced by a new Queensland Coastal Plan, currently being prepared.

The draft Queensland Coastal Plan (Queensland Government, 2009b) is proposed to contain:

- Draft State Policy Coastal Management (Queensland Government, 2009c) is intended to address land management activities that do not constitute development under the SP Act. It applies to coastal management districts as declared under the CP& M Act.
- Draft SPP Coastal Protection (Queensland Government, 2009d) that will be a statutory instrument under the SP Act, and is intended to address issues related to land-use planning and development assessment regulated under the SP Act. It will apply to the coastal zone and sets out the policy outcomes to be achieved when making or amending a planning instrument, assessing development applications, or designating land for community infrastructure.

The draft SPP Coastal Protection is expected to be taken into account when considering applications for the use of state land within the coastal zone under the *Land Act 1994* (Qld), and applications for an allocation of quarry material from below high water mark under the CP&M Act.

Draft coastal plan guidelines, proposed to complement the new coastal management regime, include:

- Draft State Policy Guideline Coastal Management (Queensland Government, 2009e).
- Draft SPP Guideline Coastal Protection (Queensland Government, 2009f).
- Draft Guideline Coastal Hazards (Queensland Government, 2009g).

The Queensland Government has also completed initial consultation in March 2010 on a draft SPP: Air, Noise and Hazardous Materials (Queensland Government, 2010g). The intention of the draft policy is to facilitate the protection of the health and wellbeing of individuals and the community from adverse impacts of air and noise emissions by:

- Facilitating the protection of human safety from the impacts of hazardous materials, while preserving the viable operation of industrial activities in Queensland.
- Requiring local governments to appropriately assess, and plan for, any potential impacts of industrial air and noise emissions on human health and wellbeing when developing new planning schemes. This planning process would involve considering local environmental conditions, the future land use of an area, impacts of industrial emissions, and air quality or noise modelling studies. This process would determine the appropriate separation distance between land zoned for industrial uses and land zoned for sensitive uses (e.g., residential development).
- Ensuring that sensitive uses near, or within, existing industry zones, or identified ‘management areas’, are located, orientated and designed in ways that protect environmental values and human safety.

2.3.6 Gladstone State Development Area

State Development Areas are created under the SDPWO Act. The Gladstone State Development Area is regulated by the Gladstone State Development Area Development Scheme (Queensland Government, 2010h), a statutory land use planning instrument, prepared and administered by the Coordinator-General under the SDPWO Act. In December 2010, the development scheme was further amended to support industrial development and to protect the environmental values of the Gladstone State Development Area.

The development scheme regulates development within the Gladstone State Development Area and overrides the former Calliope Shire planning scheme and the Gladstone City Plan (currently

in force), and will also override the proposed planning scheme provisions under preparation by Gladstone Regional Council.

The SDPWO Act and the development scheme do two important things:

- Whether or not the P&G Act applies, an application for a Material Change of Use within the Gladstone State Development Scheme area will be assessed by the Coordinator-General under the development scheme.
- The application of the SDPWO Act in effect 'ousts' the operation of the SP Act or Sustainable Planning Regulation 2009 (Qld) in relation to an Material Change of Use application, as implied in section 84 of the SDPWO Act and section 8 of the development scheme.

It should be noted however, in accordance with section 8 (3) the development scheme does not apply to development that is assessable development under schedule 3 of the Sustainable Planning Regulation 2009 (Qld).

The regulatory map identifies the Gladstone State Development Area boundary that the development scheme applies to (Queensland Government, 2010h). The designation map divides the Gladstone State Development Area into a number of land use precincts and sub-precincts, and identifies those parts of the Gladstone State Development Area considered suitable for industrial development of national, state and regional significance and complementary industrial, infrastructure and services uses (Queensland Government, 2010h).

The development scheme is also supported by a policy document (Queensland Government, 2010h) formulated by the Coordinator-General, including:

- Policy 1 Information Collection for the Gladstone State Development Area.
- Policy 2 Environmental Management in the Gladstone State Development Area.
- Policy 3 Public Notification.
- Policy 4 Ecologically Valuable Land.

2.3.7 Gladstone Strategic Port Land

The *Transport Infrastructure Act 1994* (Qld) (TI Act) describes the process and requirements for preparing Strategic Port Land Use Plans. The Gladstone Ports Corporation (GPC) has statutory management responsibility over its strategic port land. Strategic port land is not subject to the provisions of local planning schemes. The approval processes for development on strategic port land continue under the SP Act. The GPC is the assessment manager for all assessable development on Gladstone strategic port land and accordingly, and currently uses the Land Use Plan 1999 (Gladstone Port Authority, 1999) as the tool for development assessment. Tenure information contained in the Land Use Plan 1999 has been updated and is held with the Department of Environment and Resource Management (DERM) SmartMaps, which provides current information on Queensland property boundaries and survey information.

Subject to application of a state development scheme, where activities are to be carried out on land designated as strategic port land, the land use plan will apply even if those activities are also with the areas of a petroleum authority. Designation as strategic port land also provides exemption from assessment against the local planning scheme as indicated in section 287 of the TI Act.

The GPC has updated its 50 year Strategic Plan (Gladstone Ports Corporation, 2008a) in 2009. The 50 year Strategic Plan, unlike the Land Use Plan 1999, is not a statutory document and is not bound by legislative requirements on content or process but provides useful background material and strategic direction.

The GPC prepared, and on 20 December 2010 completed public consultation on a Draft Land Use Plan 2010 (LUP 2010) (Gladstone Ports Corporation, 2010). This will replace the Land Use Plan 1999 once the draft LUP 2010 has been approved under the TI Act. Subject to its approval, the draft LUP 2010 will be the principal statutory tool for the management and assessment of development on strategic port land at the Port of Gladstone and Port Alma Shipping Terminal. It will apply to all GPC strategic port land and future strategic port land, including all premises, roads and waterways within strategic port land boundaries.

The Gladstone Port Development Code (not a statutory part of the draft LUP 2010) will provide the more detailed performance criteria and probable solutions that form the technical requirements for built form, sustainable design, landscaping and other physical elements of development on strategic port land.

2.3.8 Gladstone Port Western Basin Master Plan

The Port of Gladstone Western Basin Master Plan (Queensland Government, 2010a) has been prepared under section 10(2) of the SDPWO Act. The 30 year strategic master plan is intended to give direction, identifies current and planned land and marine uses, infrastructure development such as gas pipeline corridors, transport networks and potential bridge access to Curtis Island), port activities, common-user channels, dredging and disposal options until 2039. The plan also examines conservation areas and the potential for environmental areas to be set aside as part of the required mitigation measures.

The master plan is not intended to be used as part of any assessment under the bilateral agreement for individual project environmental impact statements under the EPBC Act, nor stipulate regulatory requirements or project specific conditions.

2.3.9 Clinton Urban Development Area

The Urban Land Development Authority (ULDA) is a key part of the Queensland Housing Affordability Strategy. It was established to help make housing more affordable and to deliver a range of housing options for the changing needs of the community.

The ULDA's role is to plan, carry out and co-ordinate the development of land in selected urban areas. As well as planning and development assessment, the ULDA will also develop key sites and priority infrastructure within selected urban areas.

The ULDA is established under the *Urban Land Development Authority Act 2007* (Qld). Where a development scheme has been released for an urban development area, if there is a conflict between a development scheme and any of the following instruments, the development scheme prevails to the extent of the inconsistency with a planning instrument or a plan, policy or code made under the SP Act or another Act. Development cannot occur within an Urban Development Area without an Urban Development Area Development Approval.

The Minister for Infrastructure and Planning declared the Clinton Urban Development Area at Clinton, Gladstone. The Clinton Urban Development Area is a 26 hectare site approximately 6 km southwest of the Gladstone central business district, and is under the control of the state Government's Urban Land Development Authority.

The Urban Development Area is bounded by the Dawson Highway to the north and west, Harvey Road to the east and established residences along Keppel Avenue to the south. The Urban Development Area is state land set aside to deliver approximately 230 lots of diverse and affordable housing and multiple dwellings for Gladstone.

The Clinton Interim Land Use Plan (Queensland Government, 2010b) is no longer in effect following the Clinton Urban Development Area Development Scheme (Queensland Government, 2010c) coming into effect on 3 December 2010. The Clinton Urban Development Area Regulatory Map (Queensland Government, 2010d) defines the area to which the development scheme applies. All development applications within the Clinton Urban Development Area will be assessed against the development scheme.

2.4 Regional

In Queensland regional plans, inclusive of regional growth management frameworks, manage growth, population change, economic development, protect the environment, and coordinate and integrate infrastructure provision across multiple local government areas.

The regional plans (statutory and non-statutory) operate in conjunction with the other statutory planning tools such as state planning policies, local government planning schemes, state planning regulatory provisions and development assessment processes.

Statutory regional plans generally prevail over most planning instruments, however where required, state planning regulatory provisions can override the regional plan. Non-statutory plans provide strategic advice and direction, and do not prevail over other planning instruments.

2.4.1 Central Queensland Regional Growth Management Framework

The Central Queensland Regional Growth Management Framework (CQRGMF) (Queensland Government, 2002e) is an existing non-statutory regional plan applying to the study area, which was prepared in partnership with local councils, communities and business and industry representatives under the now repealed IPA. The CQRGMF was prepared prior to the commencement of statutory regional plans and whilst not having legislative power, remains in force under the SP Act.

There are no statutory regional plans applying to the study area.

2.4.2 Gladstone Integrated Regional Transport Plan

The Gladstone Integrated Regional Transport Plan (GIRTP) (Queensland Government, 2001) is a comprehensive integrated 30 year transport plan prepared for the Gladstone region which considers all modes of transport. Its aim is to provide a strategic framework for the development of a high quality, safe and efficient transport system for the Gladstone region that considers the needs of the residential population and the economic requirements of major industry and the port in a sustainable manner.

2.4.3 Gladstone Region Social Infrastructure Strategic Plan

The Gladstone Region Social Infrastructure Strategic Plan (SISP) (Queensland Government, 2010i) was developed collaboratively between the Gladstone Regional Council, the Gladstone Economic and Industry Development Board and the Department of Infrastructure and Planning. The SISP provides a framework for future industry investment in regional social infrastructure.

The Gladstone Region Social Infrastructure – Voluntary Industry Contributions Framework (Queensland Government, 2010j) has also been developed and will be updated by the Gladstone

Region Community Development Committee to ensure funds are allocated to areas of greatest identified community need.

2.5 Local

The former Calliope Shire planning scheme (Calliope Shire Council, 2007) and former Gladstone City planning scheme (Gladstone City Council, 2006) manage growth and regulate development (i.e., self assessable and assessable) through tables of development. Both planning schemes also contain desired environmental outcomes, localities and locality codes, overlay codes, assessment criteria in the form of codes, planning scheme overlay maps, zoning maps expressing forward planning intent, infrastructure charges schedule and other schedules and planning scheme policies.

Following local government amalgamation on 15 March 2008, Gladstone Regional Council was formed and is now in the process of preparing a new planning scheme to replace the three existing planning schemes that applied to the former Gladstone City, Miriam Vale Shire and Calliope Shire Councils.

Both former planning schemes apply to the study area to the extent that proposed self assessable and assessable development is not regulated through other legislation or statutory planning instruments. The planning schemes do not apply to the extent the Gladstone State Development Area or strategic port land or P&G Act apply.

2.6 Land Use and Planning Objectives

Objectives have been developed based on the legislative context with the aim of protecting the existing environment and identified environmental values.

The objectives for land use and planning are:

- To minimise project impacts on existing land uses, sensitive receptors and infrastructure.
- To balance land use and planning objectives with the protection of the existing environment and identified environmental values, including:
  - Human health and wellbeing.
  - Amenity of the community.
  - Health and biodiversity of ecosystems.
  - Aesthetics.
- To facilitate sustainable development through:
  - Managing the impacts of development on the environment.
  - Ensuring the sustainable use of renewable natural resources and the prudent use of non-renewable natural resources.
  - Considering housing choice and diversity, and economic diversity.
  - Supplying infrastructure in a coordinated, efficient and orderly way.
  - Applying standards of amenity, conservation, energy, health and safety that are cost-effective and for the public benefit.
  - Providing opportunities for community involvement in decision making.
- To identify the legislative and policies controlling the approvals process and identify the approvals, permits and licences required to facilitate the project.

3. STUDY METHOD

This section describes the methods used to undertake this study.

3.1 Study Steps

The following steps were taken as part of the study:

- Identification and review of applicable legislation, regulations, policy, statutory instruments, standards and guidelines relating to land use and planning and the protection of environmental values.
- Development of objectives for the study based on the legislative context with the aim of protecting the existing environment and identified environmental values.
- GIS mapping and spatial analysis of land use and environmentally sensitive areas (ESA).
- Determination of consistency against applicable legislation, regulations, policy, statutory instruments, standards and guidelines relating to land use and planning and the protection of environmental values.
- Based on desktop assessment and a general site visit, identify likely baseline conditions of the study area and its environs, including the likely sensitivity of receptors.
- Consideration of the issues associated with the project and potential impact on the baseline conditions.
- Identification of appropriate mitigation measures.
- Assessment of significance of residual impacts taking into account any mitigation measures.

The study is based on desktop assessment and third party data and information only, and general study area site visit. No specific consultation or engagement has occurred with key stakeholders as part of this study, although a general site visit and consultation undertaken by Arrow Energy have identified potential issues that have been addressed in this report. Although sensitive receptors have been ground-truthed by Coffey Environments, the specific location and types of land uses, and boundaries of environmentally sensitive areas have not been ground-truthed as part of this study, although key issues have been flagged for further attention as part of other relevant specialist studies.

3.2 Impact Assessment Method

Assessment of significance of impacts is fundamental to environmental and social impact assessment. It provides stakeholders and decision makers with information about the importance of environmental, social and cultural resources potentially affected by a proposed development, particularly the construction and operation activities. It also provides information about the significance of potential impacts on the resources enabling informed decision making.

3.2.1 Approach to Assessment of Significance of Impacts

Impact assessment is used to determine the potential threat that project activities pose to the environmental values of the study area and beyond. Environmental values include physical and biological environmental aspects, as well as cultural, social and economic aspects.

There are various approaches to impact assessment, particularly the assessment of the significance or importance of an impact. An assessment using sensitivity and magnitude to determine the significance of an impact has been adopted for the land use and planning assessment.

In this approach, the significance of an impact is assessed by considering the sensitivity of the environmental value (resource or sensitive receptor) and the magnitude of the impact, before and after the application of mitigation measures. This enabled the effectiveness of the proposed mitigation measures in reducing the predicted impact to be assessed.

This approach assumes the identified impacts will occur, as this conservative method enables a more comprehensive understanding and assessment of the likely impacts of a project. It focuses attention on the mitigation and management of potential impacts through the identification and development of effective design responses and environmental controls.

3.2.2 Assessment of Significance of Impacts

The sensitivity of an environmental value is determined from its susceptibility or vulnerability to threatening processes or as a consequence of its intrinsic value. The significance of impacts is determined by assessing the magnitude of a potential impact on the environmental value having regard to its sensitivity or vulnerability to change.

Sensitivity Criteria

The sensitivity of an environmental value is determined with respect to its conservation status, intactness, uniqueness or rarity, resilience to change and replacement potential. These contributing factors are described below.

The conservation status is assigned to an environmental value by governments (including statutory and regulatory authorities) or recognised international organisations (e.g., UNESCO) through legislation, regulations and international conventions.

Intactness is an assessment of how intact is an environmental value. It is a measure (with respect to its characteristics or properties) of its existing condition, particularly its representativeness.

The uniqueness or rarity of an environmental value is an assessment of its occurrence, abundance and distribution within and beyond its reference area (e.g., bioregion/biosphere).

The extent to which an environmental value can cope with change including that posed by threatening processes determines its resilience to change. This factor is an assessment of the ability of an environmental value to adapt to change without adversely affecting its conservation status, intactness, uniqueness or rarity. The potential for a representative or equivalent example of the environmental value to be found to replace any losses determines its replacement potential.

The criteria for determining high, moderate and low sensitivity are set out below.

High Sensitivity

The environmental value is listed on a recognised or statutory state, national or international register as being of conservation significance. The environmental value is intact and retains its intrinsic value. It is unique to the environment in which it occurs. It is isolated to the affected system/area which is poorly represented in the region, country or the world. It is fragile and predominantly unaffected by threatening processes.

Land use changes would lead to substantial changes to the prescribed value. For example, the land use changes would result in significant land form and physical characteristic changes that

alter the landscape, aesthetic and visual amenity values, being one of the listing criteria for the Great Barrier Reef World Heritage Area. Consequently it would be difficult or impossible to replace.

From a study perspective this includes:

- An internationally designated or significant site or environmentally sensitive areas (e.g., Great Barrier Reef World Heritage Area, Curtis Island National Park or Garden Island conservation park) or listed within the Directory of Important Wetlands.
- A rare/threatened species as listed in IUCN or an area to that supports such species. For example, dredging activities within the habitat of dugong, listed as 'vulnerable' under the IUCN Red List of Threatened Species and within the Rodd Bay dugong protection area (i.e., Dugong Sanctuary 'B').
- A state or nationally designated site or area. For example Gladstone State Development Area precincts identified for the establishment of LNG facilities for processing operations (including liquefaction n and storage) of national, state and regional significance that require access to export wharf facilities.
- Proximity of sensitive receptors such as urban population, dwellings and other sensitive land uses such as schools, child care centres, and hospitals.
- Areas identified as bird feed or roost areas supporting migratory birds under international migratory bird agreements.

Moderate Sensitivity

The environmental value is recorded as being important at a regional level, and may have been nominated for listing on recognised or statutory registers. The environmental value is in a moderate to good condition despite it being exposed to threatening processes. It retains many of its intrinsic characteristics and structural elements. It is relatively well represented in the systems/areas in which it occurs but its abundance and distribution are limited by threatening processes. Threatening processes have reduced its resilience to change. Consequently, changes resulting from project activities may lead to degradation of the prescribed value. Replacement of unavoidable losses is possible due to its abundance and distribution.

From a study perspective this includes:

- Regional and district environmental values. For example," endangered' and "of concern" regional ecosystems.
- Areas adjacent to or adjoining major infrastructure where incompatible land uses could establish or compromise future development.
- Areas identified in the Curtis Coast regional Coastal Management Plan as having state significance at a regional level (i.e., natural and scenic coastal landscape, and the Port of Gladstone and industrial development of economic importance).
- Open space areas and other areas that contain a mix of uses and range of values including ecological, landscape, scenic amenity, recreational or commercial value. For example, resource areas such as good quality agricultural land, extractive minerals, mining and petroleum tenements.
- An area potentially suitable as an environmental offset, presently not recognised or protected.

- A sustainable area of priority habitat, for example, essential habitat.

Low Sensitivity

The environmental value is not listed on any recognised or statutory register. It might be recognised locally by relevant suitably qualified experts or organisations e.g., historical societies. It is in a poor to moderate condition as a result of threatening processes which have degraded its intrinsic value. It is not unique or rare and numerous representative examples exist throughout the system/area. It is abundant and widely distributed throughout the host systems/areas. There is no detectable response to change or change does not result in further degradation of the environmental value. The abundance and wide distribution of the environmental value ensures replacement of unavoidable losses is assured.

From a study perspective this includes:

- Sites, features and attributes (natural or man-made) or populations that are not recognised as being of local significance either socially, culturally or economically.
- Compatible land uses can co-exist or be collocated, and are consistent with the planned outcomes for the areas as recognised in statutory instruments.
- Areas of degraded habitat due to extensive or unsustainable land use practices with limited or no significant value, been the subject of feral pests, and where effective rehabilitation could practically occur.

Magnitude Criteria

The magnitude of impacts on an environmental value is an assessment of the geographical extent, duration and severity of the impact. These criteria are described below.

Geographical extent is an assessment of the spatial extent of the impact where the extent is defined as site, local, regional or widespread (meaning state-wide or national or international).

Duration is the timescale of the effect i.e., if it is short, medium or long term.

Severity is an assessment of the scale or degree of change from the existing condition, as a result of the impact. This could be positive or negative.

The criteria for determining high, moderate and low impacts are set out below.

High Magnitude Impact

A high magnitude impact is an impact that is widespread, long lasting and results in substantial and possibly irreversible change to the environmental value. Avoidance through appropriate design responses is required to address the impact.

From a study perspective this includes:

- Impact likely to have large, severe or negative land use impact on the geographic population, community, environmentally sensitive areas or ecosystem survival and health.
- Impact is regional and widespread up to national scale.
- Environmentally sensitive area recovery, if possible, or replacement potential in the long term.

Moderate Magnitude Impact

A moderate magnitude impact is an effect that extends beyond the area of disturbance to the surrounding area but is contained within the region where the project is being developed. The

impacts are short term and result in changes that can be ameliorated with specific environmental management controls.

From a study perspective this includes:

- Effect on land use and planning will be detectable but not severe; geographic populations or the areal extent of communities (for example, vegetation communities) may be reduced but unlikely to lead to major land use and planning changes to population, community or ecosystem survival or health.
- Generally occurring within the locality of the impact site.
- Environmentally sensitive area recovery is likely in the medium term through direct intervention and rehabilitation.

Low Magnitude Impact

A low magnitude impact is a localised impact that is temporary or short term and either unlikely to be detectable or could be effectively mitigated through standard environmental management controls.

From a study perspective this includes:

- Effect on land use and planning may be detectable but is small and highly unlikely to have any significance.
- Effects the site and immediate surrounds of impact
- Environmentally sensitive area recovery in the short term through natural regeneration, regrowth or decolonisation.

Assessment of Significance of Impacts

The significance of impacts on an environmental value is determined by the sensitivity of the value itself and the magnitude of the change it experiences. Table 3.1 shows how, using the criteria described above, the significance of impacts is determined having regard to the sensitivity of the environmental value and the magnitude of the expected change.

Table 3.1 Assessment of significance of impacts

	Sensitivity of Environmental Value / Receptor		
Magnitude of impact	**High**	**Moderate**	**Low**
High	Major	High	Moderate
Moderate	High	Moderate	Low
Low	Moderate	Low	Negligible

A description of the significance of an impact derived using Table 3.1 is set out below.

Major Impact

A major impact occurs when impacts will potentially cause irreversible or widespread harm to an environmental value that is irreplaceable because of its uniqueness or rarity. Avoidance through appropriate design responses is the only effective mitigation.

High Impact

A high impact occurs when the activities are likely to exacerbate threatening processes affecting the intrinsic characteristics and structural elements of the environmental value. While replacement of unavoidable losses is possible, avoidance through appropriate design responses is preferred to preserve its intactness or conservation status.

Moderate Impact

A moderate impact occurs where, although reasonably resilient to change, the environmental value would be further degraded due to the scale of the impacts or its susceptibility to further change. The abundance of the environmental value ensures it is adequately represented in the region, and that replacement, if required, is achievable.

Low Impact

A low impact occurs where an environmental value is of local importance and temporary and transient changes will not adversely affect its viability provided standard environmental controls are implemented.

Negligible Impact

A degraded (low sensitivity) environmental value exposed to minor changes (low magnitude impact) will not result in any noticeable change in its intrinsic value and hence the activities will have negligible impact. This typically occurs where the activities occur in industrial or highly disturbed areas.

Residual Impact

Residual impacts are the potential impacts remaining after the application of mitigation measures and any design response. The extent to which potential impacts have been reduced is determined by undertaking an assessment of the significance of the residual impacts. This is a measure of the effectiveness of the design response or mitigation measures in reducing the magnitude of the potential impacts, as the sensitivity of the environmental value does not change. If mitigation measures or design responses are ineffective in reducing the significance of the residual impacts, additional or new measures/responses have been developed.

3.3 Cumulative Impacts

To undertake the cumulative impact of the project, a combination of quantitative and qualitative approaches and techniques were adopted to inform the cumulative impact assessment.

3.3.1 Regional Scan and Scoping

Projects for inclusion in the cumulative impact assessment were selected based on the following criteria:

1. The project is located within the Gladstone region.
2. The project is being assessed by one or more of the following:
    a. The *State Development and Public Works Organisation Act 1971* (Qld) and has been declared by the Coordinator-General as a ‘project of state significance’ for which the status of the EIS is either complete or, as a minimum, has an Initial Advice Statement published on the Department of Infrastructure and Planning (DIP) website.

b. The *Environmental Protection Act 1994* (Qld) and has completed an EIS or has an Initial Advice Statement (or similar) listed on the Department of Environment and Resource Management (DERM) website.

3. Envisaged in statutory planning documentation.

Projects were confirmed with the Coordinator-General as a basis for the cumulative impact assessment. This included confirmation on the timing and potential for interaction and overlap of the multiple projects.

3.3.2 GIS Spatial Analysis

A Geographic Information System (GIS) was developed to undertake spatial analysis, map the location and footprint of the agreed scenario-based approach, identify potential project overlap and interactions. This included identification of cumulative impact of multiple projects on sensitive receptors, the cumulative direct loss of environmentally sensitive areas, and potential indirect negative impact on key environmentally sensitive areas, habitat and values using a 2 km buffer.

GIS attributes included:

- Regional ecosystem.
- Essential habitat for specific terrestrial species.
- World Heritage Area landscape and visual character.
- Marine plant communities and seagrass meadows for marine fauna.
- State forests.
- Conservation and National Parks.
- Great Barrier Reef Coast Marine Park.
- Wetlands.
- Shore bird habitat.

3.3.3 Consultation and Engagement

The social impact assessment (SKM, 2011) was informed by a range of consultation and stakeholder engagement activities used to gather relevant information to ascertain the impacts of known, existing and proposed projects in the Gladstone region which impact the project.

The Queensland Government will continue to be responsible for the broad land use and planning framework for the state, including the decision-making framework regarding land use and planning issues, and the planning and decision making in relation to the Gladstone State Development Area. The Gladstone Regional Council will continue to be responsible for local land use and planning matters, outside of the Gladstone State Development Area and strategic port land. The Gladstone Ports Corporation will continue its role in the planning and decision making in relation to strategic port land.

3.3.4 Cumulative Assessment Baseline

The baseline for assessment of cumulative impacts includes all existing developments operating in the Gladstone region, and those projects that have taken a financial investment decision at the date of this study. In addition to existing industry, the projects set out in Table 3.2 are included in the baseline.

Table 3.2 Projects included in the baseline

Name of project	Proponent(s)	Status	Description
Queensland Curtis LNG Project	QGC Pty Limited (BG Group business)	• EIS and Supplementary EIS complete. • Project approved with conditions by the Queensland Coordinator-General (CG). • Project approved with conditions by Commonwealth Department of Sustainability, Environment, Water, Population and Communities (DSEWPC). • Financial Investment Decision taken 31 October 2010.	• Development of coal seam gas (CSG) resources in the Surat Basin. • Construction of gas pipeline from the gas fields to Gladstone. • Development of a liquefied natural gas (LNG) facility (12 million tonnes per annum (Mtpa)) and export terminal on Curtis Island.
GLNG Project	Santos Limited (and partners Petronas, Total and KOGAS)	• EIS and Supplementary EIS complete. • Project approved with conditions by the CG. • Project approved with conditions by DSEWPC. • Financial Investment Decision taken 13 January 2011.	• Development of CSG resources in the Surat Basin. • Construction of gas pipeline from the gas fields to Gladstone. • Development of a 10 Mtpa LNG facility and export terminal on Curtis Island.
Yarwun Alumina Refinery Expansion Project	Rio Tinto	• EIS approved in 2007. • Under construction.	• Expansion of Yarwun Alumina Refinery, increasing output by 2 Mtpa to 3.4 Mtpa by 2011.

3.3.5 Projects included in Cumulative Impact Assessment

The cumulative impact assessment includes projects that have been approved by the Coordinator-General or have sufficient information in the public domain (i.e., EIS) to enable an assessment of the potential impacts. Table 3.3 identifies those projects identified as part of the regional scan and scoping required to be considered in the cumulative impact assessment.

Table 3.3 Projects to be included in cumulative impact assessment

Name of project	Proponent(s)	Criteria	Status	Description
Australia Pacific LNG Project	Australia Pacific LNG (ConocoPhillips and Origin Energy)	1, 2a	• EIS complete. • Project approved with conditions from the CG.	• Development of CSG resources in the Walloon gas fields in the Surat Basin. • Construction of gas pipeline from gas fields to Gladstone. • Development of an 18 Mtpa LNG facility and export terminal on Curtis Island.
Western Basin Strategic Dredging and Disposal	Gladstone Ports Corporation Limited	1, 2a	• EIS and Supplementary EIS complete. • Project approved	• Dredging associated with the deepening and widening of existing channels, swing basins and berth pockets in the Port of

Name of project	Proponent(s)	Criteria	Status	Description
Project			with conditions by the CG. • Project approved with conditions by DSEWPC.	Gladstone. • Dredged material will be placed into reclamation areas near Fishermans Landing to create a land reserve.
Fishermans Landing Northern Expansion Project	Gladstone Ports Corporation Limited	1, 2a	• EIS and Supplementary EIS complete. • Project approved with conditions from the CG.	• Expansion of Fishermans Landing by reclamation. • Reclamation will provide for the containment of dredge material from future maintenance and capital dredge programs.
Arrow Surat Pipeline Project (formerly Surat Gladstone Pipeline Project)	Arrow Energy Ltd	1, 2b	• EIS complete. • EIS assessment report received.	• Construction of a high-pressure gas pipeline to transport CSG from Dalby to Gladstone.
Central Queensland Pipeline Project	Enertrade (AGL Energy and Arrow Energy)	1, 2a	• EIS and Supplementary EIS complete. • Project approved with conditions by the CG. • Project approved with conditions by DSEWPC.	• Construction of a high pressure gas transmission pipeline from Moranbah to Gladstone.
Wiggins Island Coal Terminal Project	Central Queensland Ports Authority and Queensland Rail	1, 2a	• EIS and Supplementary EIS complete. • Project approved with conditions by the CG.	• Development of a coal terminal (25 Mtpa initially and an upgrade capability to a nominal 70 Mtpa in later stages) and associated infrastructure in the Port of Gladstone. • Dredging and reclamation.
Gladstone Nickel Project	Gladstone Pacific Nickel Limited	1, 2a	• EIS and Supplementary EIS complete. • Project approved with conditions by the CG.	• Development of a greenfield high pressure acid leach (HPAL) refinery in the Gladstone State Development Area. • Development of slurry and water pipelines between Marlborough and the plant site. • Development of a tailings storage facility in the GSDA and ore importing facilities at the Port of Gladstone.
Gladstone Steel Plant Project	Boulder Steel Limited	1, 2a	• EIS complete.	• Development of an integrated steel making plant (2.1 Mtpa initially and increasing to 5 Mtpa in later stages) at a site in the GSDA Aldoga Precinct.
Moura Link-Aldoga Rail Project	Queensland Rail Ltd	1, 2a	• EIS complete. • No supplementary required. • Project approved with conditions by	• Development of a new rail line via the Moura Short Line to the existing North Coast Line. • Development of a rolling stock maintenance yard at Aldoga in

Name of project	Proponent(s)	Criteria	Status	Description
			the CG.	the GSDA. • Quadruplication of the North Coast Line from the new yard to east of Yarwun.
Gladstone-Fitzroy Pipeline Project	Gladstone Area Water Board	1, 2a	• EIS and Supplementary EIS complete. • Project approved with conditions by the CG. • Pending approval with conditions from DSEWPC.	• Development of an underground pipeline to connect existing infrastructure from Laurel Bank to Yarwun. • Development of an intake and pump station, water treatment plant, booster pump station and a reservoir.
Hummock Hill Island Community Project	Eaton Place Pty Limited	1, 2a	• EIS and Supplementary EIS complete. • Pending approval with conditions by the CG and DSEWPC.	• Development of a residential and tourism community, including education facilities and a golf course, to accommodate the population of approximately 4000 on Hummock Hill Island.
Boyne Island Aluminium Smelter Extension of Reduction Lines Project	Comalco	1, 2a	• EIS and Supplementary EIS complete. • Project approved with conditions by the CG. • Works deferred until global market for aluminium improves.	• Expansion of the existing smelter to increase the annual capacity to 733, 000 tonnes of aluminium product.
Gladstone LNG Project	Gladstone LNG Pty Ltd	1, 2b	• EIS and Supplementary EIS complete. • Project approved with conditions by DERM.	• Development of a 1.6 Mtpa (initial) LNG facility and export terminal at Fishermans Landing. • Environmental Authority issued 7 May 2010.

The Stuart Oil Shale Project has not been included in the cumulative impact assessment, as despite work commencing on a pilot plant and refurbishment of the site facilities (administration, workshops, visitor's centre and roads) an EIS has not been initiated for the revised project. The Stuart Oil Shale Stage 2 EIS was discontinued in late 2004.

Despite approval being obtained in 2003, Aldoga Aluminium Smelter Pty Ltd's proposed Aldoga Aluminium Smelter Project has not progressed to development. The company was deregistered in July 2010, therefore this project will not be considered in the cumulative impact assessment.

Although still registered as a company and despite receiving approval, Queensland Coke and Energy Pty Ltd, a subsidiary of Macarthur Coal, has not progressed its proposal to develop a coking plant adjacent to Stanwell Power Station near Rockhampton and an export terminal at Fishermans Landing near Gladstone. This project has been excluded from the cumulative impact assessment due to the limited information available about the trading status of the company and progress on the development of the project.

4. EXISTING ENVIRONMENT

4.1 Introduction

This section describes the existing environment and sets out the geographic, physical and biological extents of the area potentially affected by the project.

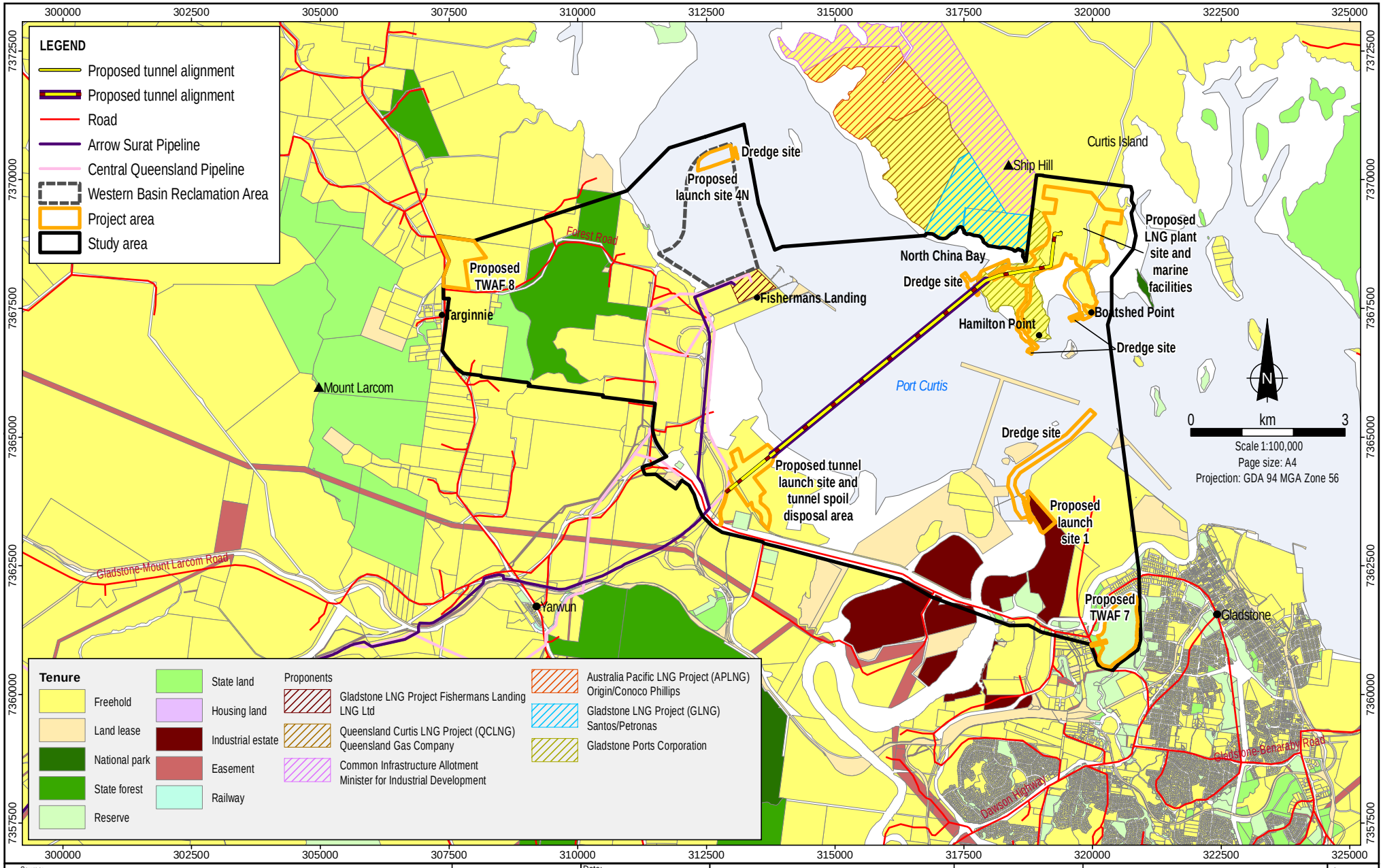
In the context of land use and planning, the existing environment for this study includes:

- Land tenure (including reserves, tenure of special interest such as protected areas and forest reserves, roads, railways, and stock routes).
- Land use (urban, residential, industrial, agricultural, good quality agricultural land, forestry, recreational, mining exploration tenures, mining leases, mining claims, mineral development licences, extractive industry permits, petroleum authorities, state development areas).
- Areas covered by applications for native title determination, with a description of native title representative bodies boundaries.
- Any known occurrences of economic mineralisation and extractive resources, petroleum and gas deposits within the study area and the potential impact of the project on these operations and associated tenements, including the Stuart Shale Oil Project.
- Location of gas and major water pipelines, power lines, telecommunication cables, roads, railways, bridges, airports, airstrips, helipads and any other infrastructure.
- The distance of the project component from sensitive receptors, or other potentially non-compatible land uses.
- Port uses in the context of the port land use plan, and any subsequent version.
- Recreational and commercial fishing activities and values undertaken in proximity to the site and offshore area.
- Location of existing dwellings and the zoning of all affected lands according to any existing town or strategic plan, planning schemes, port land use plan and Gladstone State Development Area development scheme.
- If the land affected by the proposal is, or is likely, to become part of the protected area estate, or is subject to any treaty.
- National parks, marine parks (state and Commonwealth), conservation parks, nature refuges (conservation agreements) declared fish habitat areas, wilderness areas, areas of state significance (scenic coastal landscapes), areas of state significance (natural resources), coastal wetlands, aquatic reserves, heritage and historic areas or items, national estates, world heritage listings and sites covered by international treaties or agreements, areas of cultural significance and scientific reserves.

4.2 Land Tenure

The majority of the study area on the mainland and Curtis Island is freehold land tenure, with several parcels of state forest located on the mainland as shown on Figure 4.1. Kangaroo Island is identified as reserve.

Parts of the inter-tidal area of Port Curtis within the study area are unallocated state land. High voltage electricity, gas pipeline, conveyor, railway and state-controlled road infrastructure traverse the study area. These infrastructure easements and road reserves overlay the existing land tenure.



Source:
Study area, pipelines, proposed auxilary facilities and marine infrastructure from Arrow Energy.
Proposed tunnel alignment, Proponents and Port Curtis study from Coffey Environments.
Place names and roads from DME.
Land tenure and cadastre from DERM (07/01/2010).

coffey environments

Date: 11.07.2011
MXD: 7033BC_08_GIS004_v1_1
File Name: 7033BC_08_F04.01_GIS
Rev: 1

Arrow Energy

Arrow LNG Plant

arrow energy go further

Land tenure

Figure No: 4.1

4.3 Land Use

4.3.1 Existing Land Use

Historically, anthropogenic land uses on Curtis Island have been forestry and grazing. Much of the island has been held as leasehold grazing leases. The Curtis Island National Park and several reserves have been declared to protect conservation assets on the island, outside the study area.

The Port of Gladstone was established alongside Port Curtis in 1914. The port has been progressively developed with key milestones being:

- First coal exports from Auckland Wharf in 1925.
- Expansion and transformation of the port in the 1950s to enable bulk cargo handling.
- Development of the RG Tanna export coal terminal in 1980.
- Progressive development of Fishermans Landing facilities from 1980 to mid 1990s.
- Approval of the proposed Wiggins Island coal terminal which is located adjacent to the RG Tanna coal terminal.
- Approval by the Coordinator-General of the northern expansion of the existing Fishermans Landing facility and associated capital dredging.
- Approval by the Coordinator-General and Australian Government of the Western Basin Strategic Dredging and Disposal project.

The above developments extend along the western shore of Port Curtis, on the mainland coast of Queensland. In 1992, the then Gladstone Port Authority released the Port of Gladstone 50-year Strategic Plan. Updated periodically, the strategic plan sets out development objectives for the port. The 2008 update proposed development of the western basin (north of Fishermans Landing) and provision of LNG export, container and bulk cargo facilities on Curtis Island along with augmentation works at existing wharves.

In July 2008, the Queensland Government declared the south western part of Curtis Island part of the Gladstone State Development Area. The Curtis Island Industry Precinct was set aside for LNG production and export.

Gladstone is a mixed use and urbanised city supporting an estimated resident population for the Gladstone Regional Council area at 30 June 2008 of 57,587 people (Queensland Government, 2009h). Gladstone is a major industrial hub for minerals and metals processing industries on the Central Queensland coast.

The settlement pattern is characterised by a residential core, surrounded by a number of satellite townships, villages, major heavy industries and port related development on the western side of Port Curtis. Townships and villages adjacent to the study area include Mount Larcom, Yarwun, South End on Curtis Island and Farmers Point on Facing Island. A number of islands are located in Port Curtis to the south of the study area which supports small residential communities. Existing land use, key utility and support infrastructure within and adjoining the study area is shown on Figure 4.2.

Existing major heavy industry such as Cement Australia, the Stuart Oil Shale Pilot Facility, Rio Tinto's Yarwun Alumina Refinery, the proposed Gladstone Pacific Nickel and Wiggins Island Coal Terminal are located within the vicinity of the study area is shown on Figure 4.3. The EIS for both the Gladstone Pacific Nickel and Wiggins Island Coal Terminal has been approved by the

Coordinator-General, subject to conditions. Stage one of Wiggins Island Coal Terminal is scheduled for completion by 2012.

In the context of the study area, strategic port land includes the RG Tanna Coal Terminal, the Hanson Road Light Industrial locality, the adjacent Marina and Auckland Inlet, Wiggins Island, Fishermans Landing facilities, inclusive of the Gladstone LNG (Fishermans Landing) LNG Limited Project (Liquefied Natural Gas Limited, 2009), for which an EIS approval has been granted.

The Curtis Island Industry Precinct, whilst largely undeveloped and rural grazing land, is emerging as an LNG precinct with the proposed Origin–ConocoPhillips Australia Pacific LNG (APLNG) Project (Origin–ConocoPhillips, 2009) EIS approval, the Queensland Gas Company's Queensland Curtis LNG Project (QCLNG) (QGC, 2009) now under construction post EIS approval and financial investment decision (FID), and proposed Santos-Petronas Gladstone LNG (GLNG) Project, with an EIS approval and having also made an FID to proceed.

Within and adjoining the study area the existing rural land on the mainland and rural grazing land on Curtis Island are predominantly agricultural land Class C (Pasture land) and Class D (Non-agricultural land) as shown on Figure 4.4. The former tree and small cropping areas of Targinnie valley, which now forms part of the Gladstone State Development Area Targinie Precinct, is identified as being Class A (Crop land) classified as good quality agricultural land (GQAL). TWAF 8, to the north and east of the Gladstone State Development Area Targinie Precinct, will be located on Class A and C agricultural land.

The Clinton Urban Development Area, as shown on Figure 4.5, is located outside the study area, is intended to provide additional affordable housing stock to ease pressure on the affordable housing supply within Gladstone. The project will not be subject to the Clinton Urban Development Area Development Scheme.

4.3.2 Existing Tenements and Restricted Areas

The extent of existing tenements within the study area (i.e., Mining Lease 3631, 80003 and 80081, Mineral Development Licence 177 and 225, and Exploration Permit for Minerals 3215, 4612 and 18190, Petroleum Pipeline Licence 30) is shown on Figure 4.6. There are no Mining Claims, Exploration Permit for Petroleum (Authority to Prospect), Petroleum Lease, or Exploration Permit for Coal tenements within the study area.

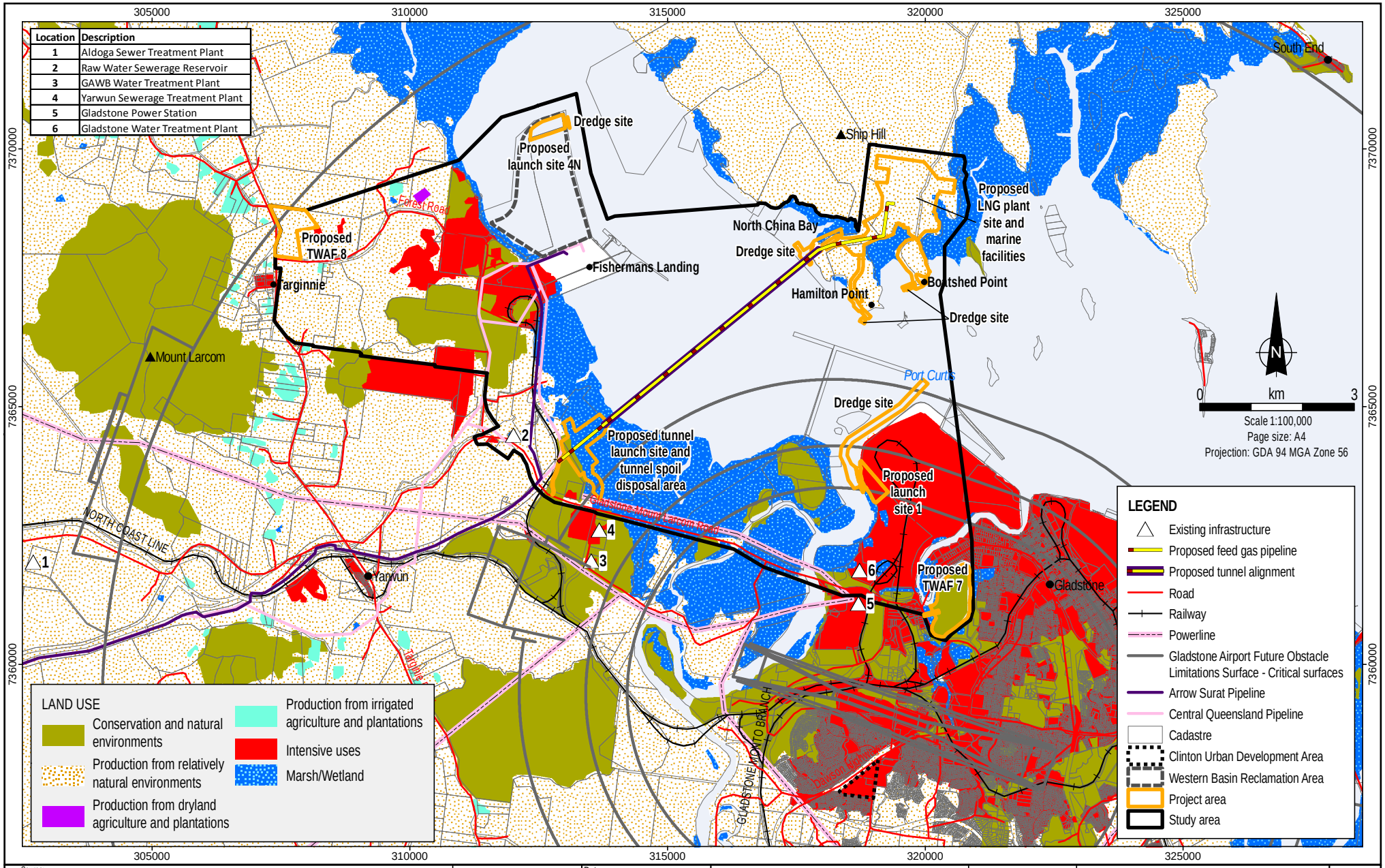
The Queensland Government Gazette No.83 dated 20 November 2009 (Queensland Government, 2009i) advised a new Restricted Area Number 381 (RA 381) had been created by the Minister for Mines and Energy under the *Mineral Resources Act 1989* (Qld). RA 381 prevents the application of mining tenements over areas of Curtis Island and surrounding areas, subject to the Gladstone State Development Area, to provide for future LNG developments. The extent of RA 381 is shown on Figure 4.7.

4.3.3 Gladstone State Development Area Land Use Planning Intent

The Gladstone State Development Area (GSDA) is intended to support the development of Gladstone as a world-class major export hub. The GSDA precincts relevant to the study area, as shown on Figure 4.8, include:

- Targinnie Precinct: provides for the establishment of industrial development that is of national, state or regional significance that requires access to strategic port logistics and maritime facilities.

- Yarwun Precinct: provides for the establishment of industrial development that is of national, state or regional significance that requires access to strategic port logistics and maritime facilities.
- Materials Transportation and Services Corridor Precinct: provides for the priority in the materials transportation infrastructure and utility and service infrastructure over alternate land uses, as part of an efficient and effective route for infrastructure and utility services to link the port of Gladstone with Gladstone State Development Area precincts and areas external to the Gladstone State Development Area. Comprises four corridor sub-precincts; Boat Creek Corridor, Western Corridor, Northern Infrastructure Corridor and Curtis Island Corridor. Each sub-precinct provides for a specific range of linear infrastructure items.
- Curtis Island Industry Precinct: provides for the establishment of LNG facilities for processing operations (including liquefaction and storage) of national, state or regional significance requiring access to export wharf facilities.
- Curtis Island Environmental Management Precinct: provides for the protection of areas of ecological significance, areas for open space where remnant vegetation, wetlands, waterways and areas of ecological significance can remain and where revegetation can occur, and restrict incompatible land uses from occurring near the Curtis Island Industry Precinct.
- Clinton Precinct: provides for the establishment of port related activities and industries necessary to support major industrial development.
- Stuart Oil Shale Resource Preservation Area: recognises the prime areas of the Stuart oil shale resource within the GSDA, and identifies mining as the primary land use within this area.



Source:
Cadastre from DERM (May 2011).
Study area, pipelines and marine infrastructure from Arrow Energy.
Proposed tunnel alignment from Coffey Environments.
Clinton Urban Development Area digitised from DIP figure 'UDA5 - Clinton Urbane Development Area', Dec 2009

Land use from NRW.
Future OLS from Demeyne Aviation (2008).

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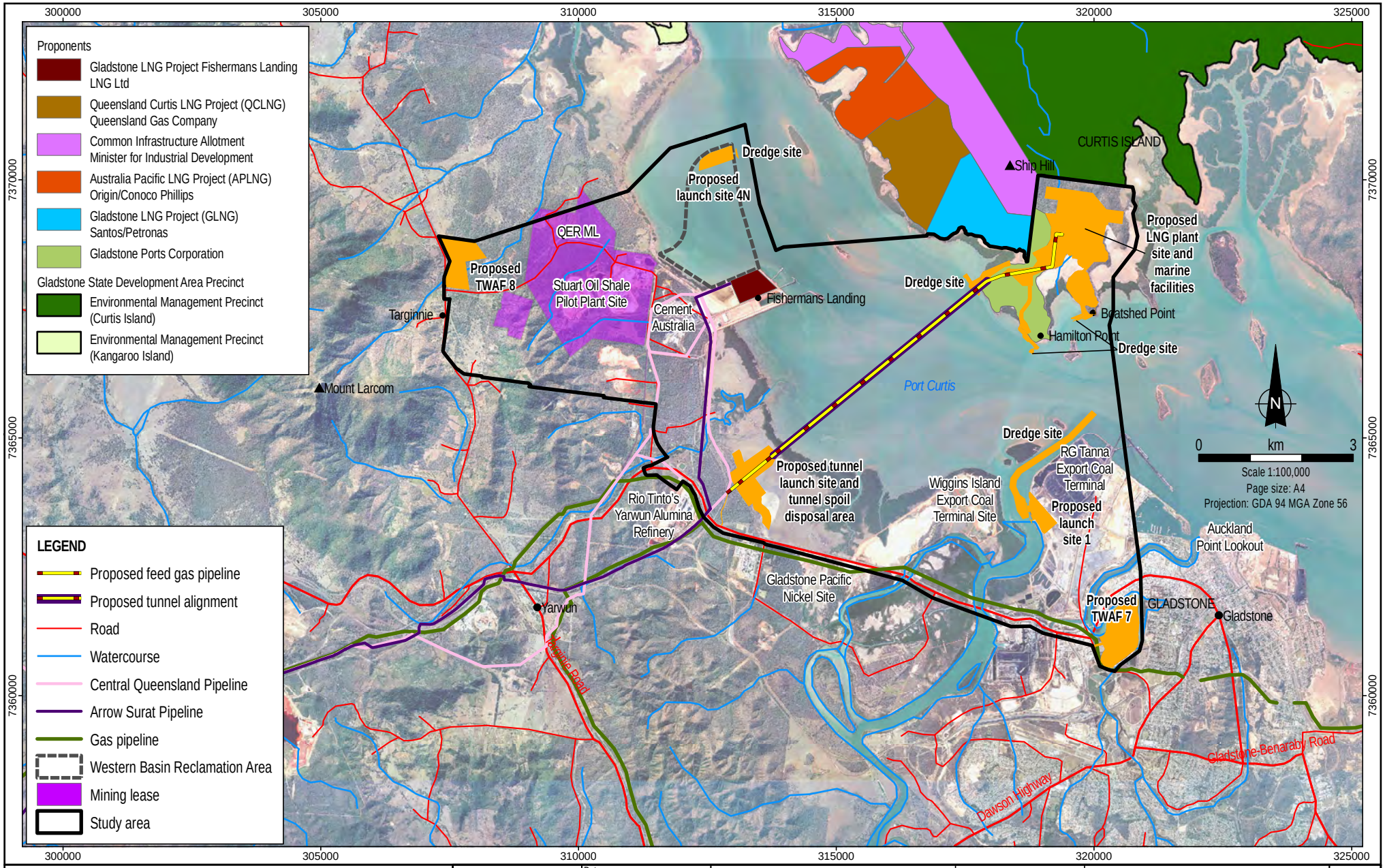
Arrow Energy

Arrow LNG Plant

arrow energy go further

Land use and infrastructure

Figure No: 4.2



Source:
Place names, roads, railways and watercourses from DME.
Study area, pipelines and marine infrastructure from Arrow Energy.
Proposed tunnel alignment and proponents from Coffey Environments.
Mining lease data from DME.
GSDA boundary from DIP.
Imagery from SPOT (2004-2007).

coffey environments

Date: 11.07.2011
MXD: 7033BC_08_GIS006_v1_2
File Name: 7033BC_08_F04.03_GIS

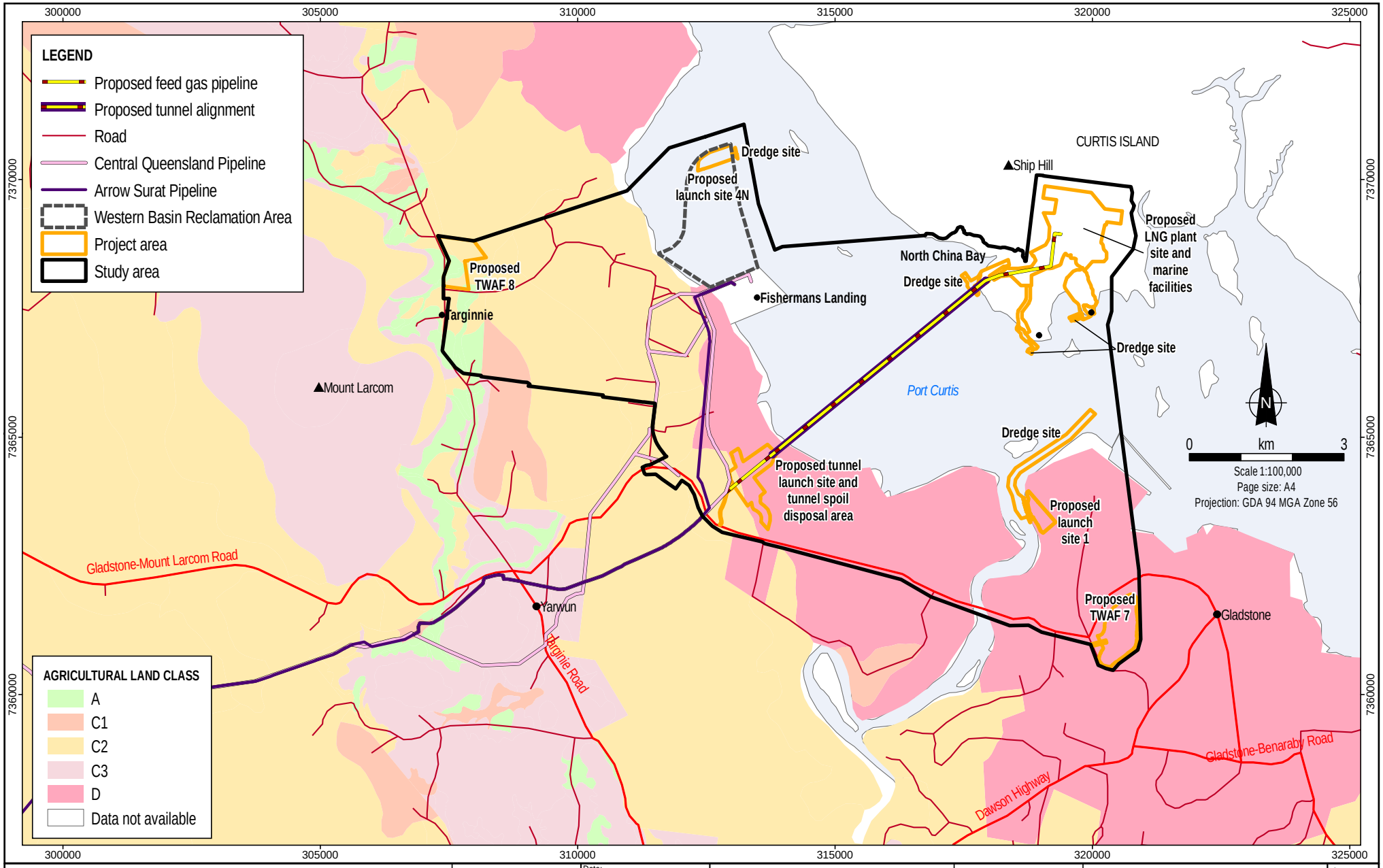
Arrow Energy

Arrow LNG Plant

arrow energy go further

Heavy Industry

Figure No: 4.3



Source:
Place names, roads and watercourse from DME.
Study area, pipelines, proposed auxiliary facilities and marine infrastructure from Arrow Energy.
Conceptual tunnel alignment from Coffey Environments.
Agricultural land classes from DERM.
Conservation parks and state forests from EPA.
Queensland coastline from GBRMPA.

coffey environments

Date: 11.07.2011
MXD: 7033BC_08_GIS007_v1_1
File Name: 7033CA_LUS_F040_GIS

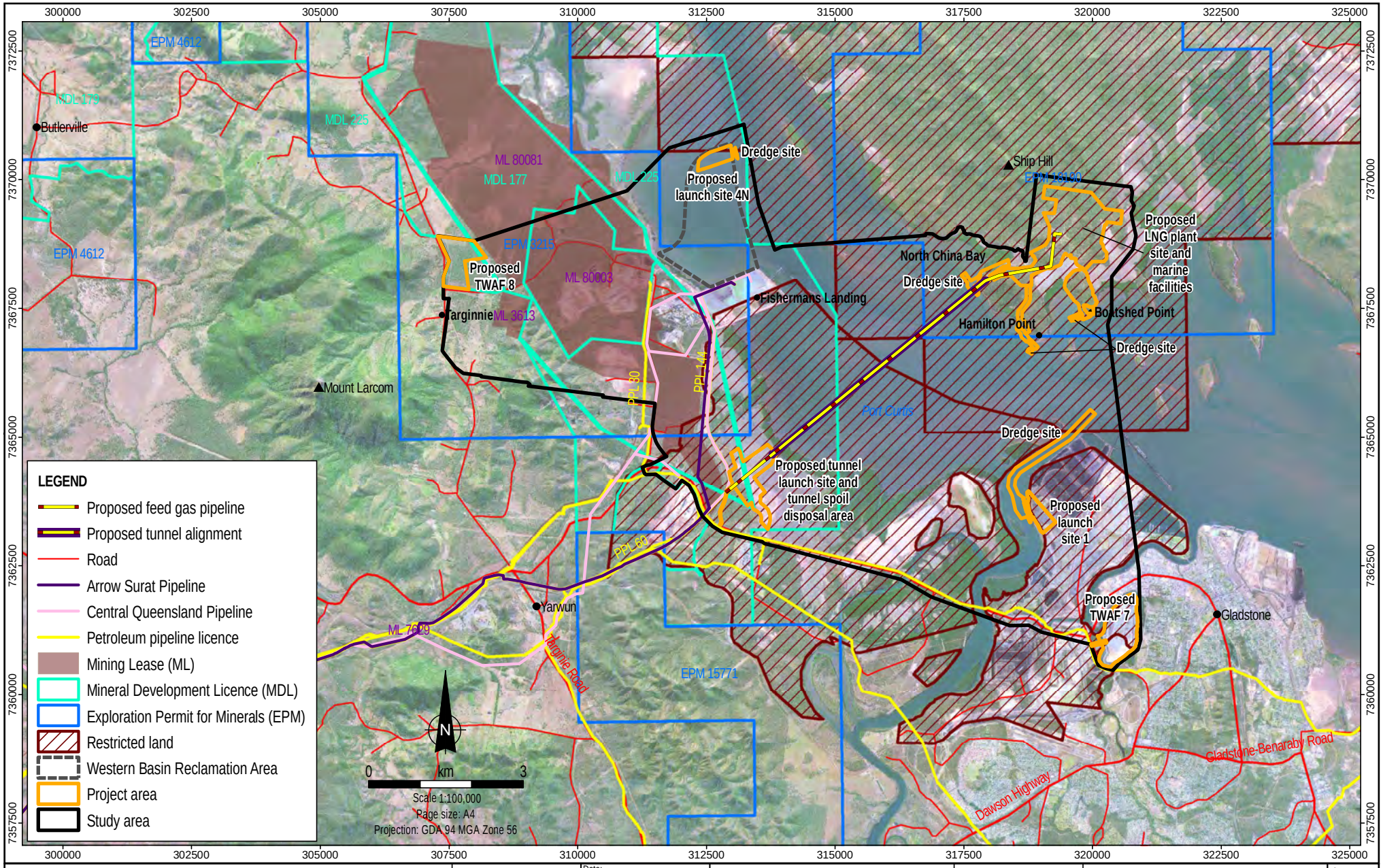
Arrow Energy

Arrow LNG Plant

arrow energy go further

Agricultural land classes

Figure No: 4.4



Source:
Place names, roads, railways, tenements and restricted land from DME.
Study area, pipelines, proposed auxiliary facilities and marine infrastructure from Arrow Energy.
Proposed tunnel alignment, proponents and DEM from Coffey Environments.
Imagery from SPOT (2004-2007).

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MXD: 7033BC_08_GIS008_v1_2
File Name: 7033CA_08_F04.05_GIS

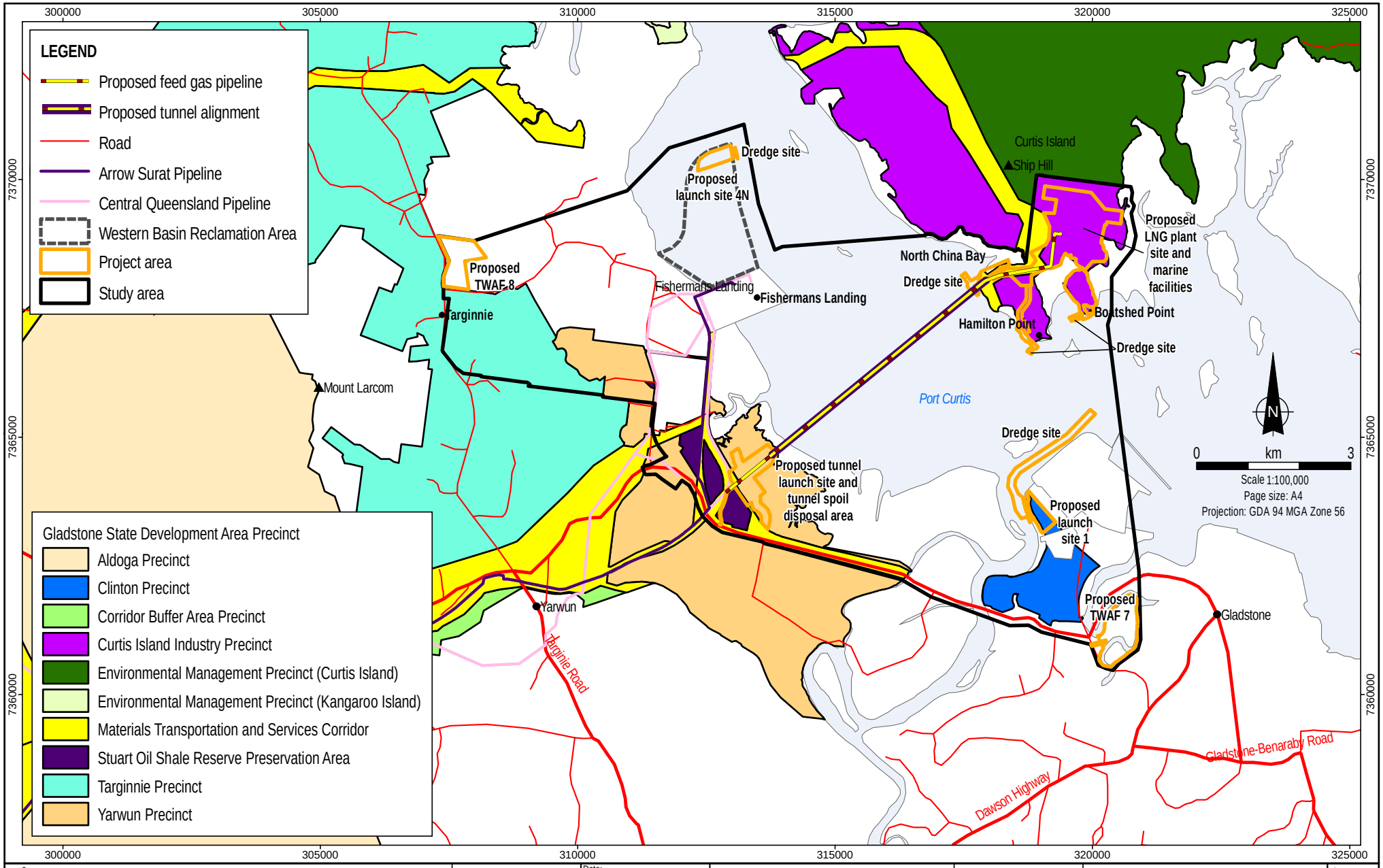
Arrow Energy

Arrow LNG Plant

arrow energy go further

Tenements

Figure No: 4.5



Source:
Place names, roads, railways and watercourses from DME.
Study area, pipelines, proposed auxiliary facilities and marine infrastructure from Arrow Energy.
Conceptual tunnel alignment from Coffey Environments.
Coastline from GBRMPA. GSDA from DIP.
Water pipeline from GEODATA250K (optimum sscale 1:250,000)

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Date: 11.07.2011
MXD: 7033BC_08_GIS009_v1_1
File Name: 7033BC_08_F04.06_GIS

Arrow Energy

Arrow LNG Plant

arrow energy go further

Gladstone State Development Area precincts

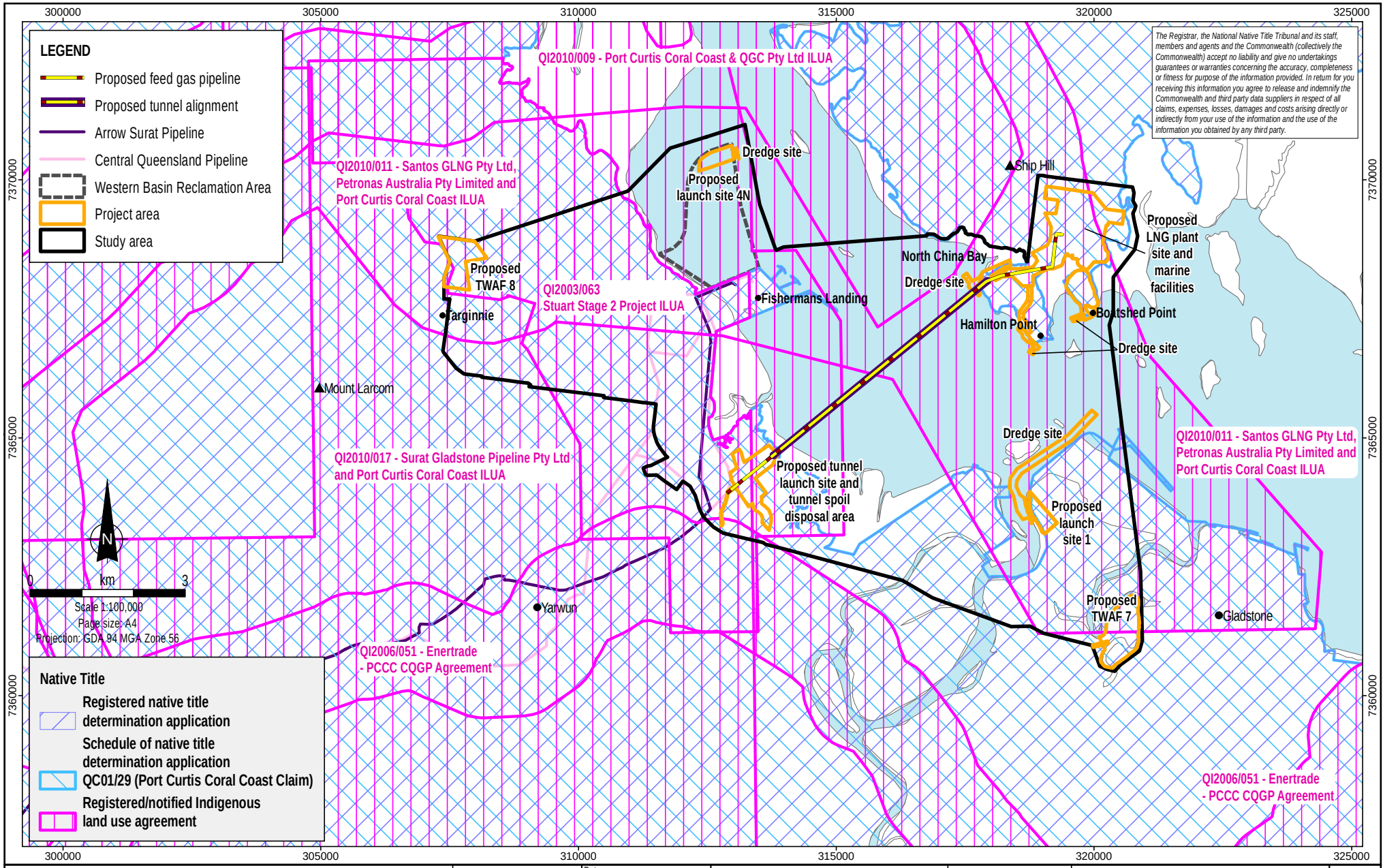
Figure No: 4.6

4.4 Native Title

The Port Curtis Coral Coast Traditional Owners lodged a native title claim QC01/29 on 25 July 2001 over an area of 19,282 km^2 (National Native Title Tribunal, 2010). This claim does not cover Port Curtis or parts of the inter-tidal area adjacent to the LNG plant on Curtis Island or parts of Hamilton Point, Curtis Island.

Five registered Indigenous Land Use Agreements (ILUA) overlay parts of the study area, as shown on Figure 4.7:

- QI2003/063 – Stuart Stage 2 Project ILUA.
- QI2006/051 – Enertrade – PCCC CQGP Agreement.
- QI2010/009 – Port Curtis Coral Coast and QGC Pty Ltd ILUA.
- QI2010/011 – Santos GLNG Pty Ltd, Petronas Australia Pty Ltd and Port Curtis Coral Coast ILUA.
- QI2010/017 – Surat Gladstone Pipeline Pty Ltd and Port Curtis Coral Coast ILUA.



Source:
Placenames, roads and watercourses from DME.
Native title and ILUA from NNTT - 16.02.2011.
Study area, pipelines, proposed auxiliary facilities and marine infrastructure from Arrow Energy.
Conceptual tunnel alignment and DEM from Coffey Environments.

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Date: 11.07.2011
MXD: 7033BC_08_GIS010_v1_1
File Name: 7033BC_08_F04.07_GIS

Arrow Energy

Arrow LNG Plant

arrow energy go further

Native Title

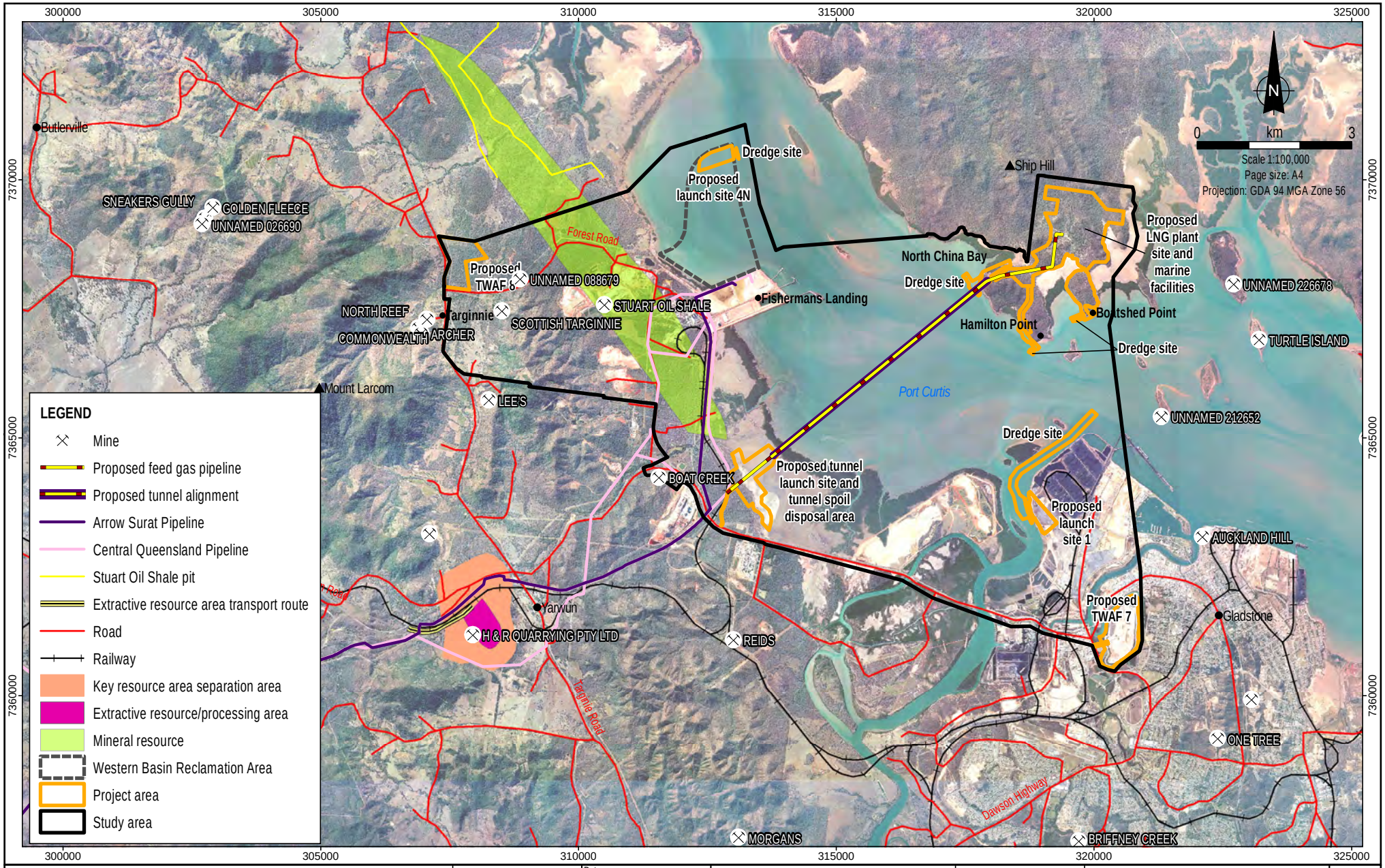
Figure No: 4.7

4.5 Economic Mineralisation and Extractive Resources, Petroleum and Gas Deposits

Part of the oil shale resource is located within the study area, including the proposed Stuart Oil Shale pit as shown on Figure 4.8.

The key resource area shown over the mining lease area on the former Calliope Shire Council planning scheme key resource area map as produced in 2006 is no longer in the Mines and Energy key resources GIS dataset updated in November 2008. The key resource area identified in the former Calliope Shire Council planning scheme key resource area map is also not listed in the SPP 2/07 Protection of Extractive Resources (Queensland Government, 2007b).

There are no known coal resource areas or petroleum wells or deposits within the extent of Figure 4.8, however there are a number of mines and quarries to the west of the oil shale resource located outside the study area.



Source:
Place names, roads, railways, mines and resource areas from DME.
Study area, pipelines, proposed auxilary facilities and marine infrastructure from Arrow Energy.
Proposed tunnel alignment from Coffey Environments.
Imagery from SPOT (2004-2007).

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Date: 11.07.2011
MXD: 7033BC_08_GIS011_v1_2
File Name: 7033CA_LUS_F044_GIS

Arrow Energy

Arrow LNG Plant

arrow energy go further

Resources

Figure No: **4.8**

4.6 Infrastructure

A range of linear infrastructure traverses the study area. This includes Port Curtis Way/Gladstone Mount Larcom Road, the approach line forming part of the Fishermans Landing rail balloon loop, licenced petroleum pipeline 30 and high voltage powerlines as shown on Figure 4.2.

Key bulk supply utilities such as the raw water sewerage reservoir and Gladstone water treatment plant are located within the study area, and the 1680 MW Gladstone Power Station, Gladstone Area Water Board water treatment plant and Yarwun sewerage treatment plant are located adjacent to and outside the study area. Strategic port land and infrastructure is located within the study area. Gladstone airport is located to the southeast of the study area.

4.7 Separation Distance, Sensitive Receptors and Zoning

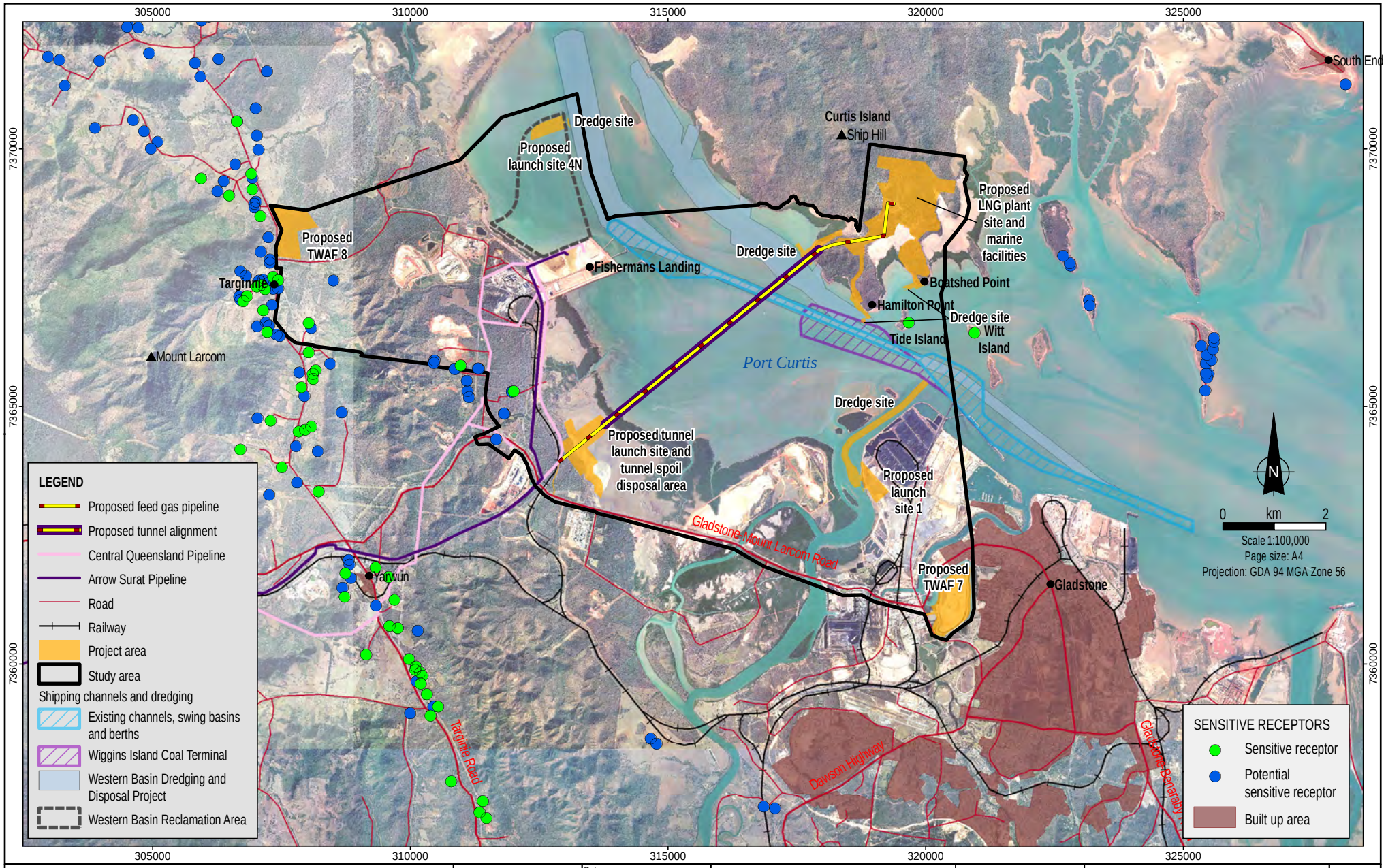
Gladstone residential areas are separated from the Gladstone State Development Area mainland precincts by Auckland Creek, the Calliope River and associated intertidal areas as shown on Figure 4.2 and Figure 4.6.

There are a number of single detached dwellings within and adjoining the study area identified as sensitive receptors as shown on Figure 4.9. On the mainland these sensitive receptors are generally located in the Targinie and Yarwun Precincts of the Gladstone State Development Area and will be adjacent to the TWAF8. Sensitive receptors are also located on the group of islands in Port Curtis immediately to the south and south east of the Curtis Island Industry Precinct, where the LNG plant is to be constructed and operate.

Figures 4.10 and 4.11 shows the consolidated forward planning intent (i.e., zoning and declared precincts) as expressed by a range of statutory planning instruments, including:

- Gladstone State Development Area Development Scheme.
- Former Gladstone City planning scheme, which is current for this part of the Gladstone Regional Council local government area.
- Former Calliope Shire planning scheme, which is current for this part of the Gladstone Regional Council local government area.
- Gladstone Ports Corporation Land Use Plan 1999 and draft LUP 2010 (i.e., regulating strategic port land).

The southwest portion of Curtis Island and large tracts of land to the northwest of Gladstone have been declared and are currently land banked for the future development of range of heavy industry of regional, state and national significance, subject to impact assessment.



Source:
Place names, roads and railways from DME.
Study area, pipelines, proposed auxiliary facilities and marine infrastructure from Arrow Energy.
Proposed feed gas pipeline and sensitive receptors from Coffey Environments.
Western Basin Dredging and Disposal Project from Gladstone Ports Corporation.
Imagery from SPOT (2004-2007).

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Date: 11.07.2011
MXD: 7033BC_08_GIS012_v1_1
File Name: 7033BC_08_F04.09_GIS

Arrow Energy

Arrow LNG Plant

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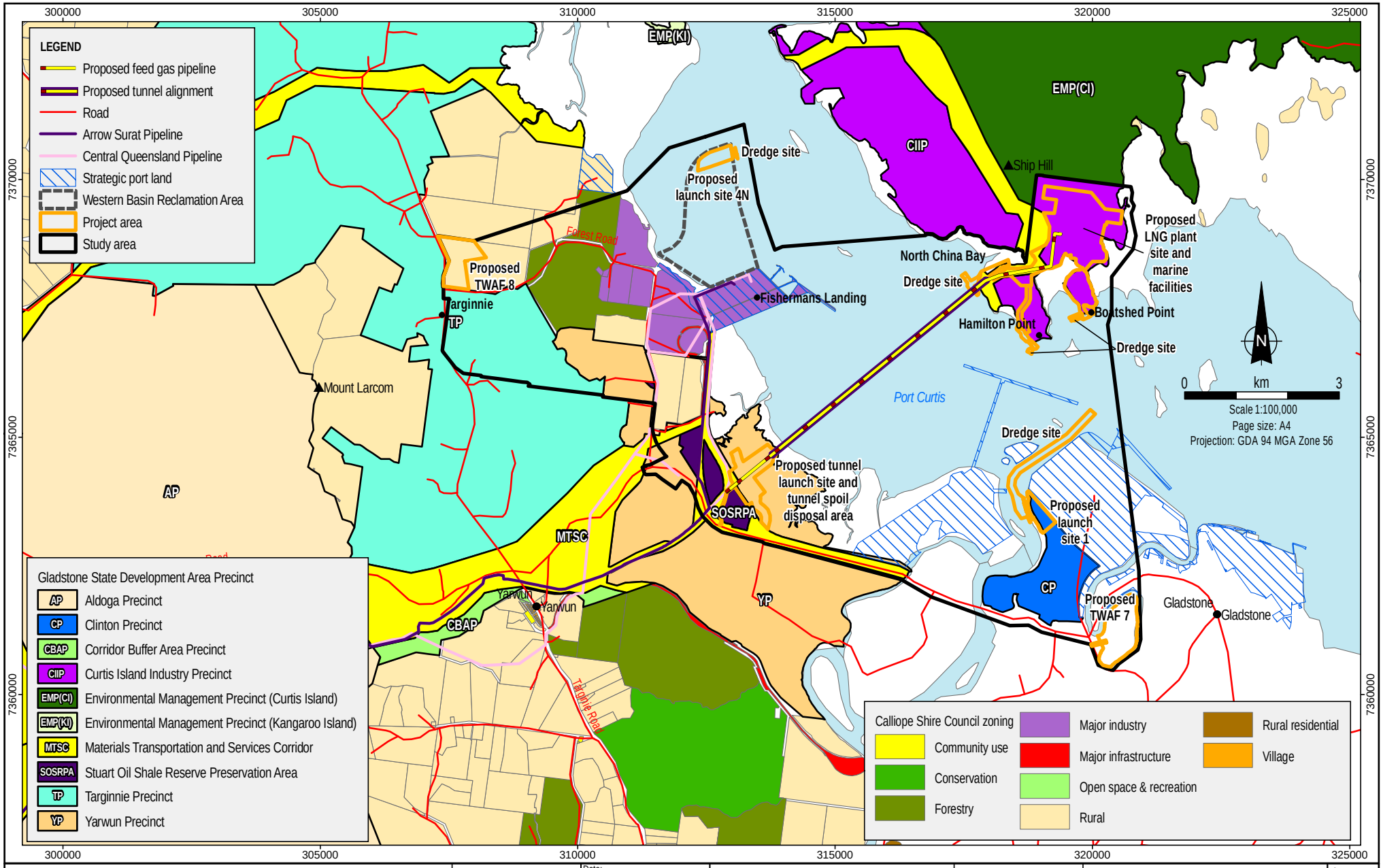
Sensitive receptors

Figure No: **4.9**



Source:
Place names, roads, railways and airport from DME.
Gladstone State Development Area from DIP.
Gladstone and Calliope zoning from Gladstone Regional Council.
Strategic port land from DERM Draft Coastal Management Plan (2009).
Imagery from SPOT (2004-2007).

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Date: 11.07.2011
MXD: 7033BC_08_GIS013_v1_1
File Name: 7033BC_08_F04.10_GIS

Arrow Energy

Arrow LNG Plant

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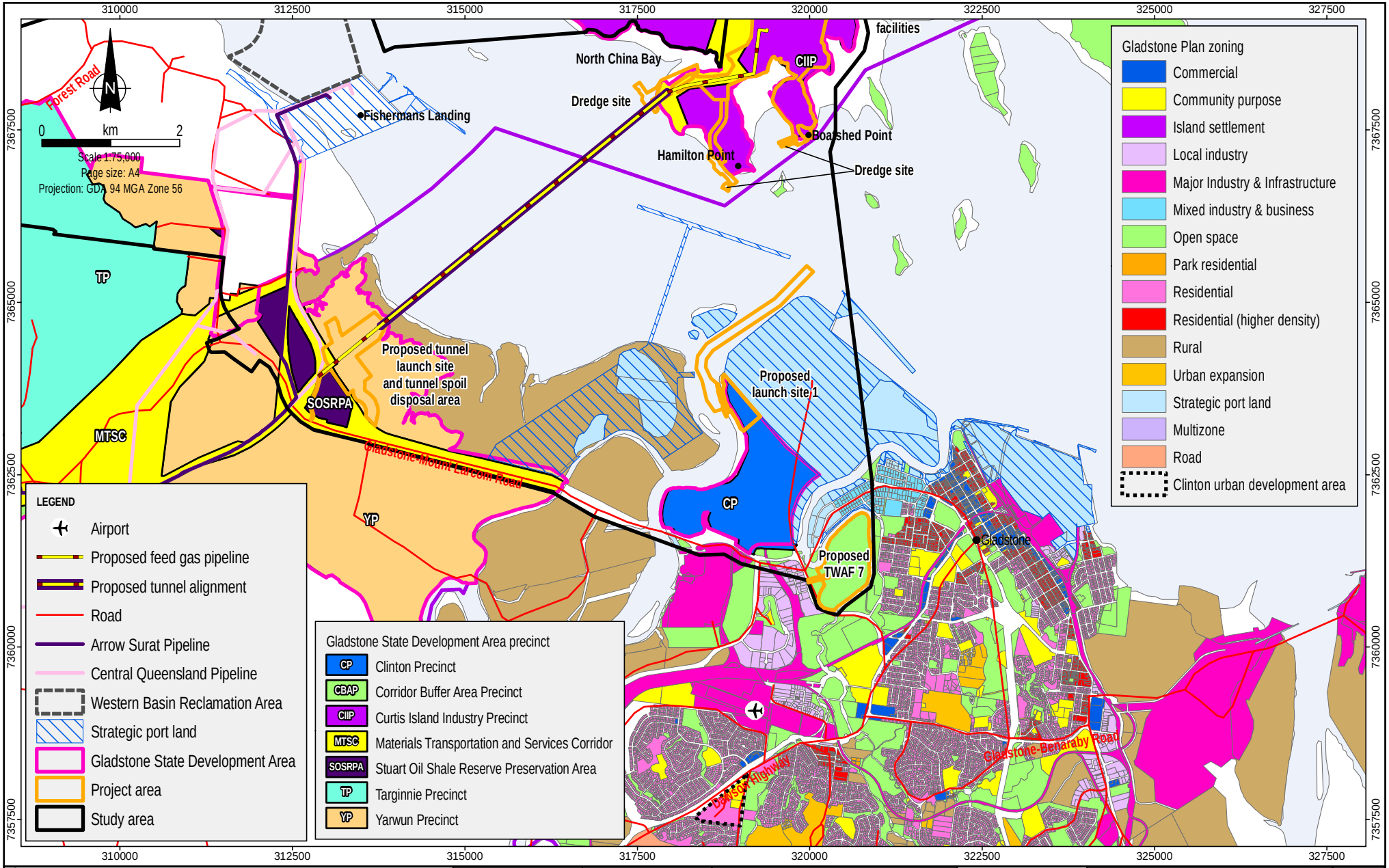
Consolidated Calliope zoning

Figure No: 4.10



Source:
Place names, roads, railways and airport from DME.
Gladstone State Development Area and urban development area from DIP.
Gladstone and Calliope zoning from Gladstone Regional Council.
Strategic port land from DERM Draft Coastal Management Plan (2009).
Study area, pipelines, proposed auxiliary facilities and marine infrastructure from Arrow Energy.
Proposed tunnel alignment and DEM from Coffey Environments.

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Date: 11.07.2011
MXD: 7033BC_08_GIS014_v1_1
File Name: 7033BC_08_F04.11_GIS

Arrow Energy

Arrow LNG Plant

arrow energy go further

Consolidated Gladstone City zoning

Figure No: 4.11

4.8 Port Uses

Fishermans Landing comprises three wharves and is located within the study area as shown on Figures 4.10 and 4.11. The specific port activities of the individual wharves (Gladstone Ports Corporation, 2008b) include:

- Fishermans Landing Wharf No.2 exports alumina to smelters in Australia and overseas, and imports bauxite and caustic soda.
- Fishermans Landing Wharf No.4 facilitates bulk cement clinker, cement and flyash exports.
- Fishermans Landing Wharf No.5 is a Bulk Liquids Facility, multi-product wharf, which facilitates Liquid Ammonia (import) that is pumped to adjacent storage tank via pipeline.

RG Tanna Coal terminal is currently a 4 berth 21 stockpile facility. The draft LUP 2010 (Gladstone Ports Corporation, 2010) indicates an intent that future reclamation may occur to accommodate a proposed alternate tug harbour and further areas for light industrial activity.

The Wiggins Island area is currently vacant and undeveloped, but is intended to accommodate an approved coal export terminal, rail infrastructure and supporting infrastructure to service the increasing demand for export coal.

Vacant strategic port land on Curtis Island is located at Hamilton Point, surrounded by significant coastal wetland and regional ecosystems. Hamilton Point is intended as a possible common-user port facility (i.e., container port or liquid products export facility and for storage of bulk material/products), subject to environmental approvals.

The GPC proposes to develop the 153 ha northern expansion of the existing Fishermans Landing facility through the reclamation of additional land adjacent to the existing port facility. This reclamation will provide for the construction of six new wharves and provide an area for the development of transport, storage, loading and unloading facilities.

The GPC has also initiated, as proponent, the Western Basin Strategic Dredging and Disposal Project. This project proposes to undertake dredging associated with the deepening and widening of existing channels and swing basins, and the creation of new channels, swing basins and berth pockets in the Western Basin. Material dredged is proposed to be placed into a reclamation area to the north and immediately adjacent to the existing Fishermans Landing reclamation area, which will create a land reserve that will be used to service new port facilities.

Both of these port projects are located within the study area as shown on Figure 1.2.

4.9 Recreational and Commercial Fishing Activities and Values

The Narrows estuarine waters are fringed with dense closed mangrove communities and a range of other marine plant species. Port Curtis coastal waters have fringing intertidal wetlands and seagrass meadows provide important habitat and feeding areas for an assemblage of fish and crustacean species. Offshore fishing locations include Cape Capricorn on the north eastern headland of Curtis Island, and the Capricorn Bunker Group offshore reefs (Cooperative Research Centre for Coastal Zone, Estuary and Waterway Management, 2006). Despite a significant loss of intertidal habitat within Port Curtis over the past 60-70 years, these areas continue to support high participation recreation and commercial fishing, trawling and crabbing activities (Cooperative Research Centre for Coastal Zone, Estuary and Waterway Management, 2006). The intrinsic

value of the habitat area is discussed in detail in the marine ecology technical report for the project (Coffey Environments, 2011b).

Gladstone marina and South End on Curtis Island are public nodes for access to a range of recreational and commercial fishing activities, onshore and offshore. Various boat ramps, with a major one located at the end of Goondoon Street, one located on the Calliope River adjacent to the power station, and the Toolooa Bends and Boyne Island boat ramps, provide access for small recreational powerboats.

In addition to individual recreational fishing and boating activity, various recreation fishing clubs hold competitions throughout the year and include:

- Wanderers Amateur Fishing Club.
- Yaralla Deep Sea Fishing Club.
- Boyne Tannum Hookup Fishing Committee.
- Gladstone Sportfishing Association.
- Mount Larcom & District Fishing Club.
- South End Fishing Club.
- Bits Deep Sea Fishing Club.

A number of commercial fishing charter operators operate out of Gladstone marina and include, amongst others:

- Swains Fishing Charters.
- Mikat.
- Gladstone Coral Charters.
- Still Cruisin Sport Fishing.
- Norval Reef Charters.

The commercial operators, licensed under the *Fisheries Act 1994* (Qld), comprise a fishing and seafood industry around:

- An inshore fin fish fishery (i.e., primarily a net fishery).
- A reef-line fishery.
- A mud, blue and spanner crab fishery.
- A trawl fishery, of which two thirds of the Queensland east coast is in the Great Barrier Reef World Heritage Area (QSIA, 2010).

4.10 Protected Area Estate and Treaty

Protected area estate, such as the Curtis Island National Park and the Garden Island Conservation Park, established under the *Nature Conservation Act 1992* (Qld), is discussed in section 4.11.1. The Australian Government manages the marine protected area estate, the Great Barrier Reef, a Commonwealth reserve under the EPBC Act. The Great Barrier Reef and Great Barrier Reef World Heritage Area is discussed further in section 4.11.3.

The Vienna Convention on the Law of Treaties (Australian Government, 1969) defines a treaty in the international context as an agreement whereby two or more nation states establish, or seek to establish, a relationship imposing binding obligations and governed by international law. Existing treaties relevant to land use and planning within the study area include:

The three Australian Government bilateral migratory bird agreements include:

- Japan-Australia Migratory Bird Agreement (JAMBA) (Australian Government, 1974).

- China-Australia Migratory Bird Agreement (CAMBA) (Australian Government, 1986).
- Republic of Korea-Australia Migratory Bird Agreement (ROKAMBA) (Australian Government, 2002).

The Australian Government has also endorsed migratory bird conservation through the Partnership for the East Asian-Australasian Flyway (Australian Government, 2006).

All migratory bird species listed in the bilateral agreement annexes are protected in Australia as matters of national environmental significance under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

4.11 Environmentally Sensitive Areas

There are a number of environmentally sensitive areas within and adjacent to the study area as identified on Figure 4.12 and Figure 4.13. These are briefly discussed below and described in detail in the following technical studies:

- Terrestrial ecology (Ecosure, 2011).
- Marine ecology (Coffey Environments, 2011b).
- Landscape and visual assessment (AECOM, 2011).
- Indigenous cultural heritage (CQCHM, 2011).
- Non-Indigenous cultural heritage (Heritage Consulting Australian, 2011).

4.11.1 National Parks, State Forests and Conservation Parks

A number of forest parks and conservation areas are located within the vicinity of the Curtis Island Industry Precinct. Curtis Island National Park, north of Graham Creek, is approximately 8 km northeast from the LNG plant, and Curtis Island State Forest is located approximately 10 km northwest of the LNG plant.

Garden Island Conservation Park is listed under Schedule 3 of the Nature Conversation (Protected Areas) Regulation 1994 as a Conservation Park. The park contains an area of approximately 7.2 hectares, and is located on the southern coast of the Curtis Island, approximately 1 km southeast of the LNG plant as shown on Figure 4.12 and Figure 4.13.

4.11.2 Great Barrier Reef Coast Marine Park

The marine park affecting The Narrows and Laird Point is the Great Barrier Reef Coast Marine Park (GBR Coast MP), which came into effect on 5 November 2004 (refer Figure 4.12 and Figure 4.13). The GBR Coast MP is a state marine park that supports the zoning system of the Great Barrier Reef Marine Park (GBRMP).

The definition of the GBR Coast MP is described in Schedule 6 of the Marine Parks Regulation 2006 (Qld) and Schedule 11 of the GBR Coast MP Zoning Plan 2004 (GBRMPA, 2007) as that described in the Marine Parks (Declaration) Regulations 2006 (Qld) schedule 2.

Schedule 2 of the Marine Parks (Declaration) Regulations 2006 (Qld) defines the boundary of the GBR Coast MP between Laird and Friend points as extending west along latitude 23º44.905' south to where it intersects Kangaroo Island at high water. This boundary includes a substantial part of Laird Point and part of Friend Point. Friend Point is located on Kangaroo Island which is considered part of the Queensland mainland.

The GBR Coast MP Zoning Plan identifies The Narrows as a 'habitat protection zone'. The boundary of the habitat zone extends to 23º45.000' south, which is south of the boundary defined

in the declaration. The GBR Coast MP Zoning Plan 'habitat protection zone' is located approximately 6 km to the northwest of the LNG plant.

4.11.3 World Heritage Listing

The Great Barrier Reef was nominated for inclusion on the World Heritage List to stop oil exploration, proposals to mine the coral reefs for limestone and to address the threat posed by the crown-of-thorns starfish. The coral reef system, its cultural values and habitat formed the basis for its nomination and ultimate inclusion on the list. Also noted in the Australian Government's nomination and IUCN review were the extensive feeding grounds for the dugong, an endangered species and nesting grounds for the endangered green and loggerhead turtles.

Port Curtis, despite a history of industrial development, supports populations of dugong that feed on seagrass meadows in Rodds Bay and the western basin of Port Curtis. Nesting grounds for endangered turtles are found along the east coast of Curtis Island.

In 1981, the World Heritage Committee included the Great Barrier Reef on the World Heritage List. The geographic extents of the World Heritage Area are defined in Schedule 1 of the *Great Barrier Reef Marine Park Act 1975* (Cwlth). The World Heritage Area extends to the low water mark of the Queensland coast.

The *Great Barrier Reef Marine Park Act 1975* (Cwlth) also defines the Great Barrier Reef region as:

> **Great Barrier Reef region** means:
> (a) the area described in Schedule 1; and
> (b) such area (if any) contiguous with the northern boundary of that area as is prescribed; other than any part of such an area that is referred to in section 14 of the *Seas and Submerged Lands Act 1973* or is an island, or a part of an island, that forms part of Queensland and is not owned by the Commonwealth.

The *Great Barrier Reef Marine Park Act 1975* (Cwlth) established the GBRMP Authority which is responsible for ensuring the World Heritage Area values of the Great Barrier Reef region are protected. The authority is also responsible for management of the GBRMP, the boundaries of which are declared by the Governor General of Australia under that act.

In 2004, the Governor General of Australia amalgamated all areas covered by previous proclamations in the Amalgamated Marine Park Area, the current extent of the marine park. Consistent with the above definition of the Great Barrier Reef region, the marine park boundary follows the eastern coast of Curtis Island and excludes the island and Port Curtis.

Subsequent to the amalgamation, the Queensland Government created the GBR Coast MP to cover the area in between the low and high water marks, and some bays and inlets of the Queensland coast. Schedule 2 of the Marine Parks (Declaration) Regulation 2006 (Qld) defines the extent of the coastal marine park in the Gladstone area. It includes The Narrows north of the line between Friend Point on Kangaroo Island (mainland) and Laird Point on Curtis Island. It does not include Port Curtis.

The Great Barrier Reef Marine Park Authority (GBRMPA) has prepared a zoning plan for the planning and control of activities in the GBRMP. A similar plan has been prepared by the Queensland Government for the GBR Coast MP. Zones described in the plans do not encompass Port Curtis or Curtis Island. Habitat protection zones abut the eastern coast of Curtis and Facing Islands and cover The Narrows north of Friend and Laird Points.

Curtis Island is located in the Great Barrier Reef World Heritage Area but is excluded from the Great Barrier Reef region, GBRMP and GBR Coast MP (refer Figure 4.12 and Figure 4.13).

The GBR Coast MP and habitat protection zone defined in the GBR Coast MP Zoning Plan are within the Great Barrier Reef World Heritage Area, which is defined as the Great Barrier Reef region in the *Great Barrier Reef Marine Park Act 1975* (Cwlth). The habitat protection zone of the GBR Coast MP protects mangrove and estuarine communities of The Narrows. The definition of the zone describes the zone boundaries as “The part of The Narrows that is within the marine park and between the following lines– ". The line (latitude) nominated for the southern boundary of the zone is, for unknown reasons, some 250 m south of the marine park boundary.

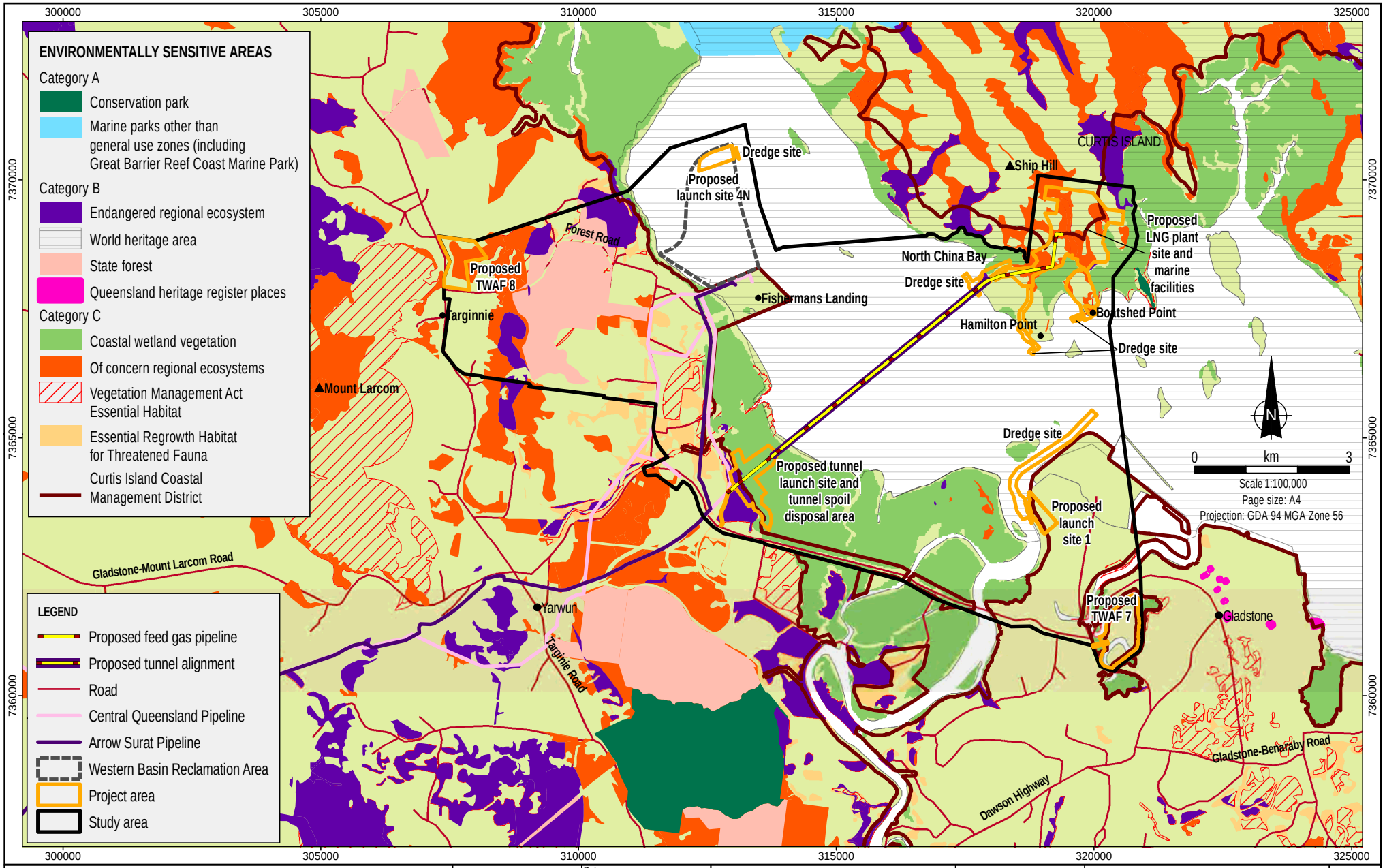
The EPBC Act protects matters of national environmental significance. An action that will or is likely to have a ‘significant’ impact on matters of national environmental significance must be referred and if declared a controlled action, assessed to determine if it will have a ‘significant’ impact.

Matters of national environmental significance triggered by the development include:

- World Heritage Area (Great Barrier Reef World Heritage Area including Curtis Island, Port Curtis and The Narrows).
- Listed threatened species and communities (including dugong and turtles).
- Listed migratory birds (various).

The EPBC Act protects the environmental values of conservation assets including those of the Great Barrier Reef World Heritage Area. The values sought to be protected by the EPBC Act at Curtis Island and in Port Curtis are habitat for listed threatened species and communities, and migratory birds.

The project will be assessed under Queensland and Australian Government legislation. The terms of reference for the environmental impact assessment include a requirement to assess potential impacts on matters of national environmental significance, as well as the cumulative impact of the development and other proposals for which environmental impact statements have been prepared and published.



Source:
Place names and roads from DME.
Study area, pipelines, proposed auxilary facilites and marine infrastructure from Arrow Energy.
Proposed tunnel alignment from Coffey Environments.
Queensland from GBRMPA. World heritage areas from DEWHA.

Marine parks, parks, forests and coastal management district from EPA.
Endangered regional ecosystems and essential habitat from DERM.
Coastal wetland vegetation from Fisheries Queensland (DEEDI).

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Date: 12.07.2011
MXD: 7033BC_08_GIS015_v1_1
File Name: 7033BC_08_F04.12_GIS

Arrow Energy

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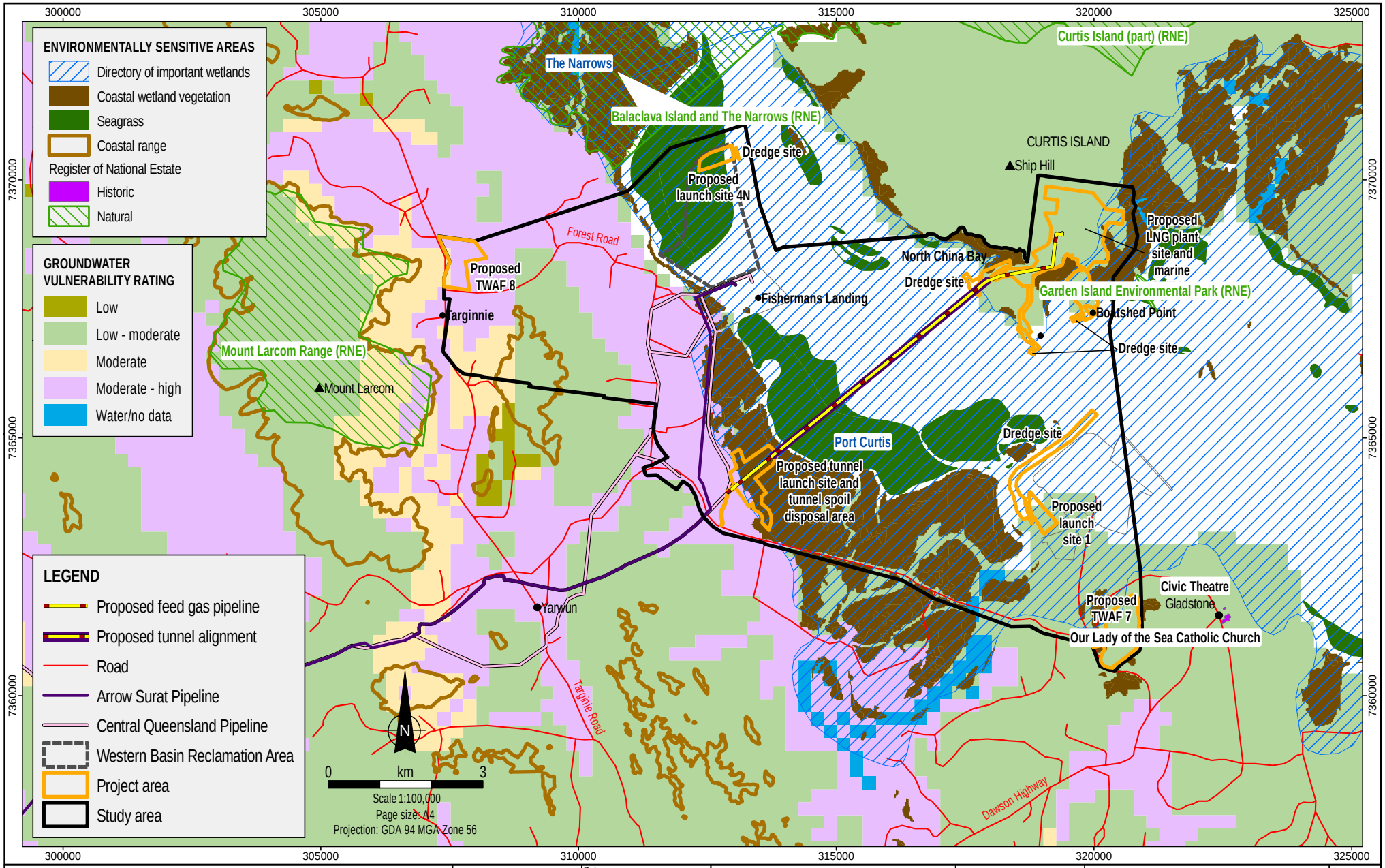
Categories of environmentally sensitive areas

Figure No: 4.12



Source:
Place names and roads from DME. World heritage areas from DEWHA.
Study area, pipelines, proposed auxilary facilities and marine infrastructure from Arrow Energy.
Proposed tunnel alignment from Coffey Environments. Coastal ranges and protected wetlands from DERM. Register of National Estate and directory of important wetlands from EPA.
Coastal wetland vegetation and Seagrass from DEEDI.

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Date: 28.02.2011
MXD: 7033BC_08_GIS016_v1_1
File Name: 7033BC_08_F04.13_GIS

Arrow Energy

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Other identified environmentally sensitive areas

Figure No: 4.13

4.11.4 Regional Ecosystem and Essential Habitat

Regional ecosystem vegetation communities on the southern end of Curtis Island (refer Figure 4.12) include 'endangered', 'of concern' and 'not of concern' regional ecosystems, as listed under the *Vegetation Management Act 1999* (Qld). Endangered forest red gum (*Eucalyptus tereticornis*) woodland to open forest communities on alluvial plains are located in the northern section of the study area on Curtis Island. 'Of concern' remnant vegetation which comprises a complex mix of *Eucalyptus siderophloia*, *E. crebra*, *E. tereticornis* and *Corymbia intermedia* is found in the central section of the study area on Curtis Island. Some vegetation may support vulnerable koala (*Phascolarctos cinereus*) populations.

The Queensland coastline adjacent to Curtis Island is largely dominated by remnant 'not of concern' vegetation communities. Fragmented essential habitat is present throughout the region and supports the koala and coastal sheathtail bat (*Taphozous australis*). These values are discussed in detail in the terrestrial flora and fauna technical study (Ecosure*,* 2011).

4.11.5 Marine Ecology

The Great Barrier Reef is of great scientific interest as habitat for the dugong (*Dugong dugon*), listed as 'vulnerable' under the *IUCN Red List of Threatened Species* and the large green turtle (*Chelonia mydas)*, listed as 'threatened' under the *IUCN Red List of Threatened Species.* Both species are listed as 'vulnerable' under the *Nature Conservation Act 1992* (Qld)*.*

Seagrass beds in the region occur in intertidal, subtidal and deep water zones and largely comprise *Zostera capricornia* communities with *Halophila ovalis* and *Halodule uninervis* also commonly observed (Rasheed *et al.,* 2008). Large aggregated patches of seagrass occur in the shallow waters of the Queensland coast extending from the mouth of Calliope River to Friend Point as shown on Figure 4.13. The southwestern coastal region of Curtis and Quoin Islands comprises of continuous seagrass cover with small unvegetated areas. Seagrass communities are of ecological significance as nursery habitats for many marine species including turtles, dugongs, fish and invertebrates.

All species of marine turtles occurring in Australian waters are protected under the EPBC Act. There is a major nesting site (25 to 50 individuals per year) for the flatback turtle (*Nator depressus*) on the ocean beaches of Facing Island and southern Curtis Island, approximately 10 km east of the LNG plant (Limpus *et al.,* 2006). Green turtles (*Chelonia mydas*) are also known to occasionally nest adjacent to the study area. Loggerhead (*Caretta caretta*) and hawksbill (*Eretmochelys imbricata*) turtles have also been recorded adjacent to the study area.

Nationally significant coastal wetlands exist within the study area as shown on Figure 4.13. The complex structure of wetlands are important for many ecological processes. They provide nursery habitat for many juvenile fish species and marine invertebrates and behave as buffers of sedimentation and strong weather, and act as a natural nutrient filtration system, which is important in Port Curtis due to high flows within the system. The intertidal mangrove communities are dominated by the red mangrove, (*Rhizophora stylosa*) (Danaher, 2005).

Coastal vegetation likely to be impacted by the development may provide essential habitat for the beach stone-curlew (*Esacus neglectus*), listed as 'vulnerable' under the *Nature Conservation Act 1992* (Qld). A number of other birds listed under international migratory agreements occur throughout the study area, including Radjah shelduck (*Tadorna radjah*), chestnut teal (*Anas castanea*), little tern (*Sterna albifrons*), sooty oystercatcher (*Haematopus fuliginosus*) and black-necked stork (*Ephippiorhynchus asiaticus)*.

These species and marine ecology values are discussed in detail in the marine ecology technical study (Coffey Environments, 2011b).

4.11.6 Other Identified Environmentally Sensitive Areas

The closest national heritage places (Register of National Estate) are Our Lady of the Sea Catholic Church and the Civic Theatre in Gladstone approximately 1.5 km to the east of proposed TWAF 7 in the study area.

There are no wilderness areas or wildflower areas identified within the study area.

The closest RAMSAR wetland is the Shoalwater Bay and Corio Bay area approximately 87 km north northwest of the study area. Port Curtis and The Narrows are identified as being on the Directory of Important Wetlands and are shown on Figure 4.13. The study area is also located within the Great Barrier Reef Wetlands Protection Areas as identified in Temporary SPP 1/10 Protecting Wetlands of High Ecological Significance in Great Barrier Reef Catchments (Queensland Government, 2010e). The Curtis Coast Regional Coastal Management Plan (Queensland Government, 2003b) identifies wetlands in Port Curtis, and within and adjacent to the study area, as areas of state significance (natural resources and scenic coastal landscape).

The closest declared fish habitat area is near Raglan Creek approximately 16 km northwest of the study area.

Port Curtis forms part of the Rodds Bay dugong protection area (i.e., Dugong Sanctuary ‘B’) from the southern extent of The Narrows (south of Graham Creek), southeast of Facing Island and extending to Rodds Peninsula.

5. ISSUES AND POTENTIAL IMPACTS

5.1 Introduction

The issues and potential impacts resulting from the project are discussed in this section. Details are provided on both potential adverse and potential beneficial impacts on existing land uses and identified environmental values and on the significance of the direct and indirect project impacts.

This section discusses potential impacts prior to taking into consideration the proposed avoidance, mitigation or management measures that will be implemented during all stages of the project. A significance assessment has been applied to environmental values to enable stakeholders and government agencies to understand the impacts associated with the project.

Section 5 also discusses the project's consistency with existing land uses and the long-term policy framework for the area as reflected in planning schemes and regional plans, other statutory instruments, legislation, standards, codes and guidelines.

The issues and potential impacts on the existing environment include:

- The potential for the construction and operation of the project to change existing land uses of the project sites and adjacent areas.
- Impacts arising from property disruption and severance, fragmentation of sites, construction and maintenance.
- The potential environmental harm to adjacent areas currently used for agriculture, urban development, recreation, tourism or other business, and the constraints on land uses.
- The compatibility of the proposal with surrounding existing and proposed land uses such as mining, residences, and agriculture.
- Possible impacts on surrounding land uses and human activities, including impacts to tidal lands, loss of access to land and waterways and tidal lands.
- Increase of fire risk and impacts on residential and industrial uses.
- The strategy and progress in relation to making of native title agreements, including Native Title representative bodies, consultant selection, traditional owner involvement and related statutory processes.
- Proximity of the project to electric power transmission lines and electrified rail lines, both at crossing points, where lines run parallel, and where construction and maintenance machinery is used in the vicinity of other infrastructure corridors.
- Impacts on millable timber or quarry resources on the feed gas pipeline and liquefied natural gas (LNG) plant site and the commercial value of these resources.

5.2 Project Consistency with Existing Land Uses and the Long-term Policy Framework

In broad terms, the project is generally consistent with the existing land uses and the long-term policy framework for the area as reflected in planning schemes, regional plans, other statutory instruments, legislation, standards, codes and guidelines, to the extent:

- The LNG plant, a new export industry, is a coastally dependent development that requires a safe deep water port for LNG carriers, and proximity to the feed gas supply that will be sourced from the Surat and Bowen basins.
- The major project components will be located within the Gladstone State Development Area Precincts, as declared by the Coordinator-General, for major industrial development. The majority of proposed uses are considered likely to meet the objectives of the Gladstone State Development Area, subject to the approval of the Coordinator-General. However, a number of uses such as heavy industry, commercial premises, crushing plant, extractive industry, liquid fuel depot, and high impact industry and medium industry as identified in Table 5.1 will be inconsistent uses with the potential to compromise the future orderly planning of some precincts.
- The Curtis Island primary construction camp, to be located on Boatshed Point, will be ancillary to, and support the development and operation of the primary land use, being the LNG plant. The location and operation of the primary construction camp is unlikely to compromise the future orderly development of Hamilton Point for possible common-user port facility (i.e., container port or liquid products export facility and for storage of bulk material/products) as envisaged in the Gladstone Ports Corporation draft LUP 2010 (Gladstone Ports Corporation, 2010).
- The mainland overflow camp option TWAF 7 will be subject to an impact assessable material change of use (MCU) and other development applications under the former Gladstone City planning scheme Open Space zone. Alternatively, TWAF 8 will be a code assessable MCU and other development applications under the former Calliope Shire planning scheme Rural zone.
- The use of existing available marine terminals and infrastructure, and development of new marine terminals, MOFs, jetties and infrastructure is consistent with the use of existing strategic port land, and the planning intent expressed in Gladstone Ports Corporation Port Land Use Plan 1999 (Gladstone Port Authority, 1999), the draft LUP 2010 (Gladstone Ports Corporation, 2010), the 50 year Strategic Plan (Gladstone Ports Corporation, 2008a), and the Port of Gladstone Western Basin Master Plan (Queensland Government, 2010a).
- The LNG plant will co-exist with other planned and approved LNG facilities on Curtis Island.
- Existing land uses can continue and co-exist with the feed gas pipeline.

Attachment A provides an assessment of the level of project consistency with the long-term policy framework as it applies to the project.

Table 5.1 provides an assessment of the level of project consistency with the Gladstone State Development Area Development Scheme in relation to the extent to the study area.

Table 5.1 Assessment of project consistency with the GSDA Development Scheme

GSDA Precinct Intent	MCU in GSDA	Assessment of the level of consistency
Yarwun Precinct: To encourage the establishment of industrial development that is of national, state or regional significance that requires access to strategic port logistics and maritime facilities. To manage and develop the area in an	Heavy Industry (power stations, engineering works, bitumen or asphalt works) Medium industry (cement or concrete product works, electric-welding	Based on Schedule 2 of the GSDA Development Scheme: • Uses that are considered highly likely to meet the objectives of the GSDA: infrastructure facility, local infrastructure facility, materials transport infrastructure, heavy

GSDA Precinct Intent	MCU in GSDA	Assessment of the level of consistency
appropriate manner recognising that this area may include land uses other than industry. To provide for infrastructure that may or may not be associated with activities within the GSDA. To provide for the management of waste from industry including recycling. To have regard to the physical characteristics of the land in considering the location of the industrial development. To encourage and promote industry having regard to the cultural heritage values of the Yarwun Precinct.	works, engineering work) Commercial premises (offices as part of construction and operation of the plant) Crushing plant (where a crushing plant be used in the construction of the LNG plant) Extractive industry (where reuse of any material claimed from site, as opposed to crushing plant, which is for imported goods) Liquid Fuel Depot High impact industry limited to natural gas (liquefaction and storage). Infrastructure facility Local infrastructure Materials transport infrastructure Gas transportation infrastructure	industry, liquid fuel depot, high impact industry, medium industry. • Uses that may meet the purpose of the land use designation: Commercial premises, crushing plant, extractive industry. • Uses that are considered likely to compromise the purpose of the land use designation: Gas transportation infrastructure. Refer Figures 4.6, 4.10, 4.11. The majority of proposed uses are taken to be consistent and will be further demonstrated as part of a Material Change of Use application within the GSDA.
Materials transportation and services corridor (MTSC): Comprises four corridor sub-precincts; Boat Creek Corridor, Western Corridor, Northern Infrastructure Corridor and Curtis Island Corridor. Each sub-precinct provides for a specific range of linear infrastructure items. ***Boat Creek Corridor Sub-Precinct*** To establish the priority in the Materials Transportation and Services Corridor Precinct of materials transportation infrastructure and utility and service infrastructure over alternate land uses. To provide an efficient and effective route for infrastructure and utility services to link the Port of Gladstone with GSDA precincts and areas external to the GSDA. To provide for infrastructure that may or may not be associated with activities within the GSDA. Development Scheme – Gladstone State Development Area 16 To provide for multiple users and for multiple purposes in the Materials Transportation and Services Corridor Precinct. Appropriate uses include	Heavy Industry (power stations, engineering works, bitumen or asphalt works) Medium industry (cement or concrete product works, electric-welding works, engineering work) Commercial premises (offices as part of construction and operation of the plant) Crushing plant (where a crushing plant be used in the construction of the LNG plant) Extractive industry (where reuse of any material claimed from site, as opposed to crushing plant, which is for imported goods) Liquid Fuel Depot High impact industry limited to natural gas (liquefaction and storage). Infrastructure facility	Based on Schedule 3 of the GSDA Development Scheme: • Uses that are considered highly likely to meet the objectives of the GSDA: infrastructure facility and local infrastructure facility, materials transport infrastructure, gas transportation infrastructure. • Uses that may meet the purpose of the land use designation: N/A. • Uses that are considered likely to compromise the purpose of the land use designation: heavy industry, commercial premises, crushing plant, extractive industry, liquid fuel depot, high impact industry and medium industry. Refer Figures 4.6, 4.10, 4.11. The majority of proposed uses are taken to be consistent and will be further demonstrated as part of a Material Change of Use application within the GSDA. Heavy industry, commercial premises, crushing plant, extractive industry, liquid fuel depot, high impact industry and medium industry uses in

GSDA Precinct Intent	MCU in GSDA	Assessment of the level of consistency
pipelines for potable and sea water, sewage, slurry and gas as well as conveyor systems, rail lines, industry construction and operation haul roads, and any other compatible infrastructure services. To develop the Materials Transportation and Services Corridor Precinct in a manner that efficiently uses the land in the corridor. To recognise the requirements of existing users' infrastructure in considering the appropriateness of future infrastructure. To encourage and promote infrastructure having regard to the cultural heritage values of the Materials Transportation and Services Corridor Precinct.	Local infrastructure Materials transport infrastructure Gas transportation infrastructure	the sub-precinct are inconsistent uses with the potential to compromise the future orderly planning of this sub-precinct.
Curtis Island Corridor Sub-Precinct To establish the priority in the Materials Transportation and Services Corridor Precinct for gas transportation infrastructure and other compatible infrastructure services over alternate land uses. To provide an efficient and effective route for infrastructure services to link Hamilton Point on Curtis Island to Laird Point to provide a link to mainland GSDA. To provide for infrastructure that may or may not be associated with activities within the GSDA. To provide primarily for gas transportation infrastructure but with capacity for road, rail, and other infrastructure services compatible with the gas transportation infrastructure. To develop the Materials Transportation and Services Corridor Precinct in a manner that efficiently uses the land in the corridor. To recognise the requirements of existing users' infrastructure in considering the appropriateness of future infrastructure. Development Scheme – Gladstone State Development Area 18 To encourage and promote infrastructure having regard to the cultural heritage values of the Materials Transportation and Services Corridor Precinct.	Heavy Industry (power stations, Engineering works, bitumen or asphalt works) Medium industry (cement or concrete product works, electric-welding works, Engineering work) Commercial premises (offices as part of construction and operation of the plant) Crushing plant (where a crushing plant be used in the construction of the LNG plant) Extractive industry (where reuse of any material claimed from site, as opposed to crushing plant, which is for imported goods) Liquid Fuel Depot High impact industry limited to natural gas (liquefaction and storage). Infrastructure facility Local infrastructure Materials transport infrastructure Gas transportation infrastructure	Based on Schedule 3 of the GSDA Development Scheme: • Uses that are considered highly likely to meet the objectives of the GSDA: gas transportation infrastructure. • Uses that are considered may meet the objectives of the GSDA: infrastructure facility, local infrastructure, materials transport infrastructure. • Uses that are considered likely to compromise the objectives of the GSDA: heavy industry, commercial premises, crushing plant, extractive industry, liquid fuel depot, high impact industry and medium industry. Refer Figures 4.6, 4.10, 4.11. The majority of proposed uses are taken to be consistent and will be further demonstrated as part of a Material Change of Use application within the GSDA. Heavy industry, commercial premises, crushing plant, extractive industry, liquid fuel depot, high impact industry and medium industry uses in the sub-precinct are inconsistent uses with the potential to compromise the future orderly planning of this sub-precinct. .
Corridor Buffer Area:	N/A.	Based on Schedule 4 of the GSDA

GSDA Precinct Intent	MCU in GSDA	Assessment of the level of consistency
To recognise that activity in the MTSC may have adverse impacts and that there should be a physical separation between these activities and areas where sensitive land uses may occur. To ensure activity on land adjoining the MTSC is compatible with the long term operation of the MTSC. To make effective use of the buffer areas consistent with the operation of the MTSC. To provide for infrastructure that may or may not be associated with activities within the GSDA. To strongly discourage sensitive land uses such as dwellings from locating near to the MTSC. To encourage and promote industry having regard to the cultural heritage values of the Corridor Buffer Area.		Development Scheme: • Uses that are considered highly likely to meet the objectives of the GSDA: N/A. • Uses that are considered may meet the objectives of the GSDA: N/A. • Uses that are considered likely to compromise the objectives of the GSDA: N/A. Refer Figures 4.6, 4.10, 4.11. Therefore taken to be consistent.
Stuart Oil Shale Resource Preservation Area: To recognise the prime areas of the Stuart Oil Shale Resource within the GSDA. To identify mining as the primary land use within this area.	Heavy Industry (power stations, engineering works, bitumen or asphalt works) Medium industry (cement or concrete product works, electric-welding works, engineering work) Commercial premises (offices as part of construction and operation of the plant) Crushing plant (where a crushing plant be used in the construction of the LNG plant) Extractive industry (where reuse of any material claimed from site, as opposed to crushing plant, which is for imported goods) Liquid Fuel Depot High impact industry limited to natural gas (liquefaction and storage). Infrastructure facility Local infrastructure Materials transport infrastructure Gas transportation infrastructure	There is no Schedule within the GSDA Development Scheme regulating land use within the Stuart Oil Shale Resource Preservation Area. Mining lease and Mineral Development Licence, and petroleum tenements such as the petroleum pipeline licence may overlap and co-exist. Refer Figures 4.6, 4.10, 4.11. The establishment of any of the proposed uses associated with the project in the Stuart Oil Shale Resource Preservation Area are likely to be inconsistent uses that will compromise the primary intended land use being mining.
Clinton Precinct: To provide for the establishment of port	Heavy Industry (power stations, engineering	Based on Schedule 5 of the GSDA Development Scheme:

GSDA Precinct Intent	MCU in GSDA	Assessment of the level of consistency
related activities and industries necessary to support major industrial development. To encourage the establishment of industrial development and other uses that support industrial development in the Clinton Precinct and the GSDA. To provide for the management of waste from industry. To encourage and promote industry having regard to the cultural heritage values of the Clinton Precinct.	works, bitumen or asphalt works) Medium industry (cement or concrete product works, electric-welding works, engineering work) Commercial premises (offices as part of construction and operation of the plant) Crushing plant (where a crushing plant be used in the construction of the LNG plant) Extractive industry (where reuse of any material claimed from site, as opposed to crushing plant, which is for imported goods) Liquid Fuel Depot High impact industry limited to natural gas (liquefaction and storage). Infrastructure facility Local infrastructure	• Uses that are considered highly likely to meet the objectives of the GSDA: infrastructure facility, local infrastructure, heavy industry, medium industry, liquid fuel depot, high impact industry. • Uses that are considered may meet the objectives of the GSDA: commercial premises, crushing plant, extractive industry. • Uses that are considered likely to compromise the objectives of the GSDA: N/A. Refer Figures 4.6, 4.10, 4.11. Therefore taken to be consistent and will be further demonstrated as part of a Material Change of Use application within the GSDA.
Targinie Precinct: To encourage the establishment of industrial development that is of national, state or regional significance that requires access to strategic port logistics and maritime facilities. To encourage the establishment of industrial development and other uses that support industrial activities in the Targinie Precinct and the GSDA. To provide for the management of waste from industry. To provide for transport linkages to other areas of the GSDA and surrounding transport networks. To provide for infrastructure that may or may not be associated with activities within the GSDA. To provide scope for buffering of industrial activities to sensitive land uses. To manage and develop the area in an appropriate manner recognising that this precinct may include land uses other than industry. To have regard to the physical characteristics of the land when considering the location of the	N/A	Based on Schedule 6 of the GSDA Development Scheme: • Uses that are considered highly likely to meet the objectives of the GSDA: N/A. • Uses that are considered may meet the objectives of the GSDA: N/A. • Uses that are considered likely to compromise the objectives of the GSDA: N/A. Refer Figures 4.6, 4.10, 4.11. Therefore taken to be consistent.

GSDA Precinct Intent	MCU in GSDA	Assessment of the level of consistency
industrial development. To encourage and promote industry having regard to the cultural heritage values of the Targinie Precinct. To ensure the protection and preservation of the historic cemetery located within the Targinie Precinct on Lot 95 on DS287.		
Curtis Island Industry Precinct: To provide for the establishment of liquefied natural gas (LNG) facilities for processing operations (including liquefaction and storage) of national, state or regional significance that require access to export wharf facilities. To provide for establishment of infrastructure associated with LNG facilities including transport linkages to wharf facilities. To have regard to the physical characteristics of the land when considering the location of the industrial development. To prevent the establishment of uses that may be incompatible with, adversely affect, or constrain existing or future LNG processing operations within the Curtis Island Industry Precinct. To provide for the physical separation of significant industrial and infrastructure activities within the Curtis Island Industry Precinct from the adjoining Environmental Management Precinct.	Heavy Industry (power stations, Engineering works, bitumen or asphalt works) Medium industry (cement or concrete product works, electric-welding works, Engineering work) Commercial premises (offices as part of construction and operation of the plant) Crushing plant (where a crushing plant be used in the construction of the LNG plant) Extractive industry (where reuse of any material claimed from site, as opposed to crushing plant, which is for imported goods) Liquid Fuel Depot High impact industry limited to natural gas (liquefaction and storage). Infrastructure facility Local infrastructure Materials transport infrastructure Gas transportation infrastructure	Based on Schedule 7 of the GSDA Development Scheme: • Uses that are considered highly likely to meet the objectives of the GSDA: High impact industry limited to natural gas (liquefaction and storage), infrastructure facility, local infrastructure, materials transport infrastructure, gas transportation infrastructure. • Uses that are considered may meet the objectives of the GSDA: extractive industry. • Uses that are considered likely to compromise the objectives of the GSDA: heavy industry, commercial premises, crushing plant, liquid fuel depot, high impact industry and medium industry. Refer Figures 4.6, 4.10, 4.11. The majority of proposed uses are taken to be consistent and will be further demonstrated as part of a Material Change of Use application within the GSDA. Heavy industry, commercial premises, crushing plant, liquid fuel depot, high impact industry and medium industry uses in the precinct are inconsistent uses with the potential to compromise the future orderly planning of this precinct.
Curtis Island Environmental Management Precinct: To recognise, protect and maintain areas of ecological significance. To provide areas for open space where remnant vegetation, wetlands, waterways and areas of ecological significance can remain and where revegetation can occur. To restrict incompatible land uses from establishing near the Curtis Island Industry Precinct.	N/A	Based on Schedule 8 of the GSDA Development Scheme: • Uses that are considered highly likely to meet the objectives of the GSDA: N/A. • Uses that are considered may meet the objectives of the GSDA: N/A. • Uses that are considered likely to compromise the objectives of the GSDA: N/A. Refer Figures 4.6, 4.10, 4.11. Therefore taken to be consistent.

Schedule 10 of the Gladstone State Development Area Development Scheme relating to previous approvals is not relevant in this instance.

5.3 Permits and Approvals

Table 5.2 identifies the activity which triggers the need for various approvals, permits and licences for project construction, operation and decommissioning.

Table 5.2 Approvals, permits and licences required for the project

Activity which trigger the need for approval	Legislation	Approval, Permits, Licence Type	Relevant Agency
Whole of Project			
Whole of Project Construction, Operation.	*Environment Protection and Biodiversity Conservation Act 1999* (Cwlth).	Approval to take a controlled action (Part 9).	Commonwealth Minister for Sustainability, Environment, Water, Population and Communities / Department of Sustainability, Environment, Water, Population and Communities
	State Development and Public Works Organisation Act 1971(Qld).	Coordinator-General EIS Assessment Report – concurrence agency response.	Department of Infrastructure and Planning
		A Development Permit for a MCU within the Gladstone State Development Area for the following uses: • Heavy Industry (power stations, Engineering works, bitumen or asphalt works) and incorporating medium industry (cement or concrete product works, electric-welding works, Engineering work) • Commercial premises (offices as part of construction and operation of the plant) • Crushing plant (where a crushing plant be used in the construction of the LNG plant) • Extractive industry (where reuse of any material claimed from site, as opposed to crushing plant, which is for imported goods) • Liquid Fuel Depot	Department of Infrastructure and Planning

Activity which trigger the need for approval	Legislation	Approval, Permits, Licence Type	Relevant Agency
		• High impact industry limited to natural gas (liquefaction and storage). • Infrastructure facility. • Local infrastructure. • Materials Transport infrastructure. • Gas transportation infrastructure.	
	Environmental Protection Act 1994 (Qld) / Environmental Protection Regulation 2008.	Level 1 Environmental Authorities in relation to petroleum pipeline licences and a petroleum facility licence involving petroleum activities as specified in Schedule 5 of the Environmental Protection Regulation 2008 (Qld), specifically Item 3 (i.e., a petroleum activity that is likely to have a significant impact on category A or B environmentally sensitive area) and Item 8 (i.e., including Environmentally Relevant Activities (ERA)). Level 1 activities likely to include, but not limited to the following: ERA 8 Chemical storage ERA 9 Hydrocarbon gas refining ERA 10 Gas producing ERA 14 Electricity generation ERA 15 Fuel burning ERA 18 Boiler making or engineering ERA 43 Concrete batching ERA 50 Bulk material handling ERA 60 Waste disposal ERA 63 Sewage treatment ERA 64 Water treatment Level 2 activities (low impact activities) will also be relevant to the	Department of Environment and Resource Management (Qld).

Activity which trigger the need for approval	Legislation	Approval, Permits, Licence Type	Relevant Agency
		project.	
	Petroleum and Gas (Production and Safety) Act 2004 (Qld).	Permission or easement for construction and operation of petroleum facility (ss 439 and 441). Permission or an easement for petroleum facility land, may apply for a Part 5 Permission to the land which gives Arrow access rights for nine months after which the state may compulsorily acquire easement rights for Arrow if other rights not granted. Land access where entering or using land the subject of another mineral/gas tenement. Consent of petroleum facility licence holder to build on petroleum facility land (s 810) required where Arrow plans to share MOF or build on another parties PPFL. Licence holder consent required. Notice of commissioning or operation of a plant (s 673A) given by Operator – the person who is responsible for the management and safe operation of the plant (s 673) but does not include a person who in relation to the plant is subject to the control of another person who has the role of being responsible for the management and safe operation (s 673(4)). National Standard for the Control of Major Hazard Facilities Lodgement of safety report (s 7.1 NOHSC Standard). Obligation where under	Department of Employment, Economic Development and Industry (Qld).

Activity which trigger the need for approval	Legislation	Approval, Permits, Licence Type	Relevant Agency
		the NOHSC the operating plant is a major hazard facility. Safety management plan for the plant must include details in addition to those provided in s 670. Gas work authorisation for a gas device (Type B) (s 727 and reg 120). Gas work authorisation required if any work on a gas device (type B) is carried out. Gas work includes installing, removing, altering, repairing, servicing, testing or certifying the gas system of a gas device. A gas device (type B) is defined in s 724(3). Petroleum Survey Licence. Intention to drill, drill completion, intention to conduct seismic work under the Act (if and where required). Petroleum Pipeline Licence.	
	Sustainable Planning Act 2009 (Qld) / Sustainable Planning Regulation 2009 (Qld) *Dangerous Goods Safety Management Act 2001* (Qld).	A Development Permit for a MCU for a Major Hazard Facility or possible Major Hazard Facility as per Schedule 3, part 1, table 2 item 5 of the Sustainable Planning Regulation 2009 (Qld). Section 36 notice of commissions of a MHF.	Gladstone Regional Council. Department of Employment, Economic Development and Industry (Qld).
	Sustainable Planning Act 2009 (Qld) / Schedule 14 of the Sustainable Planning Regulation	Evidence of resource entitlement when submitting development applications for State	Department of Environment and Resource Management.

Activity which trigger the need for approval	Legislation	Approval, Permits, Licence Type	Relevant Agency
	2009.	land for: - land subject to a lease, including a freeholding lease or a reserve or deed of grant in trust, where DERM administers the land on behalf of the State as the lessee or trustee of the land (item 1). - land subject to a lease, including a freeholding lease, or a reserve or deed of grant in trust where the lessee or trustee is not or does not represent the State (item 2). - strategic port land under the *Transport Infrastructure Act 1994*, other than freehold land (item 3). - land subject to a permit to occupy or license under the *Land Act 1994* (Qld) (item 4) - land subject to an estate in fee simple (freehold) where DERM administers the freehold on behalf of the State (item 5). - land that is unallocated State land (item 6). - land that is a road (other than a State-controlled road) or stock route (item 8). The above items specially exclude some State resources. For example, item 17 (quarry material taken under the *Forestry Act 1959* (Qld)) is excluded from items 1, 2, 4, 5, 6 and 8. Schedule 14 of the regulation sets out in full when evidence of resource entitlement is required.	
	Coastal Protection and Management Act 1995 (Qld)	Section 69, Approval to damage vegetation on state coastal land. State	Department of Environment and Resource Management.

Activity which trigger the need for approval	Legislation	Approval, Permits, Licence Type	Relevant Agency
		coastal land means land in a coastal management district other than freehold land, a state forest or timber reserve etc, a watercourse or land subject to a lease or licence issued by the state. Approval for the placement or removal of quarry material below high water mark (s 73). Quarry material means material on Sate Coastal land such as stone, gravel, sand, rock, mud, silt and soil. Sustaining Planning Regulation 2009 (Qld) Development permit for certain work carried out completely or partly within a coastal management district (Schedule 3, Part 1, Table 4, Item 5(b) of the SPR and s 100A(3)(a)(ii)) A development permit is required where operational work is carried out completely or partly in a coastal management district to: • Interfere with quarry material on state coastal land above the high water mark. • Dispose of dredge spoil or other solid water material in tidal water. • Draining or allowing drainage or flow of water or other matter across state coastal land above high water mark. • Reclaim land under tidal water. • Construct or install works in a water course	

Activity which trigger the need for approval	Legislation	Approval, Permits, Licence Type	Relevant Agency
		if carried out completely or partly within a coastal management district. Likely to be within the Curtis Coast Regional Coastal Management District. Carrying out operational work completely or partly within a coastal management district that involves interfering with quarry material on state coastal land above high water mark, or draining or allowing drainage or flow of water or other matter across state coastal land above high water mark, is assessable development under the Sustainable Planning Regulation 2009: Schedule 3, Part 1, Table 4, Items 5(b)(i) and (iii), respectively. Not required where works are on land below the high water mark. Would include activities carried out on strategic port land. Sustaining Planning Regulation 2009 (Qld) Sustaining Planning Act 2001 (Qld) Coastal Protection and Management Regulation 2003 (Qld) Development Permit for tidal work (Schedule 3, Part 1, Table 4, Item 5(a) SPR, Reg 14 of SPR, s 264 SPA, s 103 CPMA) - before a permit for tidal work can be applied for a Resource Entitlement is required in accordance with	

Activity which trigger the need for approval	Legislation	Approval, Permits, Licence Type	Relevant Agency
		Schedule 14 of the Sustainable Planning Regulation 2009 as mentioned above. Development Permit for operation work required to carry out: • Prescribed tidal works (within a local government tidal area – from High Water Mark to 50m seaward). • Tidal works other than prescribed tidal works. "tidal works' are defined under the CPMA as work in, on or above land under tidal water, or land that will or may be under tidal water because of development on or near the land. This includes construction of a breakwater, bridge, pipeline, embankment, groyne, jetty, seawall or wharf and works in tidal water necessarily associated with the construction. Not required where works are on land below the high water mark. Include operational work outside of the GSDA that is incidental to construction of items. Operational work required for any expansion of services/facilities on the mainland on strategic port land. Approval for seawater intake - as captured in abovementioned Operational Works approvals.	
	Environmental	Approval from local	Gladstone Regional

Activity which trigger the need for approval	Legislation	Approval, Permits, Licence Type	Relevant Agency
	*Protection (Waste Management) Regulation 2000 (*Qld*).*	government to deposit/dispose of waste and in respect of prescribed sanitary conveniences (regs 10I and 10N) An approval is required from the local government to: • Deposit or dispose of general water from premises other than serviced premises (reg 10I); and • Place or construct a prescribed sanitary convenience (being the mobile package sewage treatment plant) at premises (reg 10N). A 'prescribed sanitary convenience' is a sanitary convenience that is not a cesspit or cesspool and is not connected to a sewer or a septic tank.	Council
	Building Act 1975 (Qld). *Building and Construction Industry (Portable Long Service Leave) Act 1991* (Qld) *Workplace Health and Safety Act 1995* (Qld).	Certificate of classification for buildings obtained by way of private certification of building works (i.e., buildings and structures). Certificate of classification for buildings. Payment of the portable long service leave levy. Notice of appointment of Principle Contractor. Registration of plant and plant design. Notification of building and construction work Reg 129.	Private certifier / Gladstone Regional Council. QLeave Department of Employment and Industrial Relations (QLD)
	National Greenhouse and Energy Reporting	Application to be registered on the	Climate Change and

Activity which trigger the need for approval	Legislation	Approval, Permits, Licence Type	Relevant Agency
	Act 2007 (Cwlth)	National Greenhouse and Energy Register (s 12) Already registered.	Energy Efficiency.
	Building Act 1975 (Qld) / *Sustainable Planning Regulation 2009*	Development permit for building work required per Schedule 3 part 1 table 1 item 1 of the Sustainable Planning Regulation 2009 (Qld) for assessing building work under the Building Act 1975 (Qld) that is not self-assessable and declared to be exempt. Required for LNG facilities, MOF for development in a local government area (excluding below high water mark). Applies even where activity is authorised under the P&G Act.	Private certifier / Gladstone Regional Council.
Foreign Investment.	*Foreign Acquisitions and Takeovers Act 1975* (Cwlth).	Foreign Investment Review Board approval only required for acquisition of land or other interest covered by *Foreign Acquisitions and Takeovers Act 1975* (Cwlth).	Treasury (Cwlth).
Cultural heritage.	*Aboriginal and Torres Strait Islander Heritage Protection Act 1984* (Cwlth) and *Aboriginal Cultural Heritage Act 2003* (Qld). (s. 86 and 87).	Cultural Heritage Management Plan (CHMP) agreement under Part 7 of the *Aboriginal Cultural Heritage Act 2003 (Qld)*. or Indigenous Land Use Agreement or Right to Negotiate. Where a project must submit an approved EIS, the issuance of an environmental authority as part of the EIS process must not occur unless a CHMP has been approved under the ACHA Act. This approval doesn't apply where an ILUA has been entered.	Minister or Chief Executive, Department of Environment and Resource Management (Qld).
	Native Title Act 1993 (Cwlth)	Rights to access land to construct the LNG facility to the extent that this	National Native Title Tribunal

Activity which trigger the need for approval	Legislation	Approval, Permits, Licence Type	Relevant Agency
		affects Native Title (s 24OA) The NTA must be complied with prior to the granting of the appropriate tenure for the LNG facility, except on land where native Title has been extinguished. May be through use of ILUAs with registered native title claim groups and other parallel future act processes under the NTA, including submission to the State on the applicability of s 24KA or s 24MD, use of Part 5 permission process under the P&G2004 Act and compulsory acquisition process under the SDPWOA.	
	Water Act 2000 (Qld) / *Sustainable Planning Act 2009 (Qld)* / Sustainable Planning Regulation 2009 (Qld)	Approval to take seawater for construction purposes. In addition to the abovementioned permits: Application for water licence – section 206 of the *Water Act 2000* (Qld). Application for Water Permit – section 237 of the *Water Act 2000* (Qld) Development permit for assessing operational work against the *Water Act 2000* for taking or interfering with water from a watercourse, artesian water, overland flow water or sub artesian water.	Department of Environment and Resource Management.
LNG plant construction			
Temporary access roads	*Local Government Act*	Local Law Permit to	Gladstone Regional

Activity which trigger the need for approval	Legislation	Approval, Permits, Licence Type	Relevant Agency
and establishment of laydown areas.	*1993* (Qld) and Gladstone City Council Local Law No. 12 – Roads, Clause 10.	make an alteration or improvement to a local government road	Council.
	Schedule 7 and 11 of the Sustainable Planning Regulation 2009 (Qld) *Transport Infrastructure Act 1994* (Qld)	In addition to assessing a Material Change of Use application as a referral agency under the Sustainable Planning Act 2009, other approvals may be required including: • Driveway / crossover / access approvals under the *Transport Infrastructure Act 1994*, where TMR does not approve access as part of a development permit, a separate approval may be required for new or upgraded access to a State controlled road. • Ancillary works and encroachments (AWEs) under the *Transport Infrastructure Act 1994*, an AWE approval may be needed if works on a State controlled road are required as part of the development, for example, intersection upgrades, stormwater connections, roadside advertising, roadside awnings • Public utility approvals, where public utility plant is built inside the State controlled road reserve under powers set out in state, local or commonwealth legislation (including acts, regulations and local laws), consent is required from TMR. Public utility plant is infrastructure related to such things as telecommunications, electricity, gas, sewage and water • Resource entitlement, where development applications include land on a state-controlled road, evidence of resource entitlement	Department of Transport and Main Roads (TMR)

Activity which trigger the need for approval	Legislation	Approval, Permits, Licence Type	Relevant Agency
		may need to be submitted with the development application as required under the Sustainable Planning Regulation 2009 (Qld), Schedule 14.	
	Vegetation Management Act 1999 (Qld) / *Sustainable Planning Act 2009* (Qld).	Operational Works Permit for clearing remnant vegetation. Some exemptions may apply to clearing of vegetation.	Department of Environment and Resource Management/ Gladstone Regional Council.
		Application for Property Map of Assessable Vegetation (where required).	Department of Environment and Resource Management
	Electricity Act 1994 (Qld).	Works near electricity infrastructure.	Ergon/Powerlink
	Nature Conservation Act 1992 (Qld).	Permits for the clearing of protected plants Note: The project design is not sufficiently advanced to be able to accurately identify each individual permit and approval as it relates to individual parcels of land, nor the number of times the approval will be required. The proponent will complete this post EIS in consultation with their appointed EPC contractor. It is recognised there are different approvals required for entering off a state owned road or local council road. Where clearing of vegetation, and working near electricity infrastructure, approvals will also be required under the *Electricity Act 1994* (Qld). To this extent this is a non-	Department of Environment and Resource Management

Activity which trigger the need for approval	Legislation	Approval, Permits, Licence Type	Relevant Agency
		exhaustive list as there may be other applicable approvals that can not be readily identified at this stage in this section.	
Site preparation, clearing, bulk earthworks and blasting.	*Environmental Protection Act 1994* (Qld). *Vegetation Management Act 1999* (Qld) / *Sustainable Planning Act 2009* (Qld).	A MCU for an environmentally relevant activity (ERA 50 – bulk material handling). An application for an ERA registration certificate.	Department of Environment and Resource Management/ Gladstone Regional Council.
		Operational Works Permit for clearing remnant vegetation. Some exemptions may apply to clearing of vegetation.	Department of Environment and Resource Management/ Gladstone Regional Council.
		Application for Property Map of Assessable Vegetation (where required).	Department of Environment and Resource Management.
	Nature Conservation Act 1992 (Qld).	Permits for the clearing of protected plants (s89, Reg15). Permit to take or interfere with cultural or natural resources of a protected area (s.62) Permit to take protected animal s.88) Permit to drive vehicle in protected area or conduct a commercial activity (reg 115) Permit to take wildlife (s.97). Permit to erect a structure in a protected area (reg 107).	Department of Environment and Resource Management.
	Explosives Act 1999 (Qld).	The following licences and permits may be required to be issued under the *Explosives Act 1999* and include: • A licence to import explosives. • A licence to manufacture explosives. • A licence to store explosives.	Department of Employment, Economic Development and Industry (Qld).

Activity which trigger the need for approval	Legislation	Approval, Permits, Licence Type	Relevant Agency
		• A licence to transport explosives. • A licence to use explosives. • A shotfirer licence. • A permit to import explosives • A permit to store explosives. • An explosives trial approval.	
	Water Act 2000 (Qld) / *Sustainable Planning Act 2009* (Qld) / Sustainable Planning Regulation 2009 (Qld)	Riverine protection permit (s266(1)). Development permit for assessing operational work against the *Water Act 2000* for taking or interfering with water from a watercourse, artesian water, overland flow water or sub artesian water. Development permit for removing quarry material from a watercourse. Refer to Schedule 3, Part 1, Table 4, Items 3 (a), (b) and (c) of the Sustainable Planning Regulation 2009 (Qld) SPR and Table 5 Item 1.	Department of Environment and Resource Management.
	Vegetation Management Act 1999 (Qld)	Notice to DERM to clear regulated regrowth under a regrowth vegetation code – were regulated regrowth is present. Likely to relate to more than just the one area where present. Note: Petroleum activities are exempt from this however in relation to areas not covered by a tenure or Environmental Authority this will be required.	Department of Environment and Resource Management.
Source and transfer of aggregates.	*Environmental Protection Act 1994* (Qld).	A MCU for an environmentally relevant activity (ERA 33 – crushing, milling, grinding or screening and ERA 50 – bulk material handling). An application for an ERA registration	Department of Environment and Resource Management/ Gladstone Regional Council.

Activity which trigger the need for approval	Legislation	Approval, Permits, Licence Type	Relevant Agency
		certificate.	
	Water Act 2000 (Qld) / *Sustainable Planning Act 2009* (Qld).	Development permit for assessing operational work against the Water Act for removing quarry material from a watercourse (Schedule 3, Part 1, Table 4, Items 3 (a), (b) and (c) of SPR and Table 5 Item 1.	Department of Environment and Resource Management.
LNG train and tank foundations (including piling).	*Environmental Protection Act 1994* (Qld).	A MCU for an environmentally relevant activity (ERA 18 – boilermaking or engineering). An application for an ERA registration certificate.	Department of Environment and Resource Management/ Gladstone Regional Council.
Delivery to site of prefabricated modules / materials via MOF and haul road.	*Environmental Protection Act 1994* (Qld).	A MCU for an environmentally relevant activity (ERA 50 – bulk material handling). An application for an ERA registration certificate.	Department of Environment and Resource Management.
	Customs Act 1901 (Cwlth).	Import declaration under section 71A of the Act.	Customs.
	Quarantine Act 1908 (Cwlth).	Establishment of agreed quarantine procedures and infrastructure to support the importation of LNG modules, pipe and other associated equipment, and the health of any imported workforce.	Australian Quarantine Inspection Service.
Storage tanks (on-site concrete batching).	*Environmental Protection Act 1994* (Qld).	A MCU for an environmentally relevant activity (ERA 18 – boilermaking or engineering, ERA 43 – concrete batching, ERA 38 – surface coating). An application for an ERA registration certificate.	Department of Environment and Resource Management/ Gladstone Regional Council.
MOF, jetties, loading facilities and associated infrastructure.	*Environmental Protection Act 1994* (Qld).	A MCU for an environmentally relevant activity (ERA 50 – bulk material handling). An application for an ERA registration	Department of Environment and Resource Management/ Gladstone Regional Council.

Activity which trigger the need for approval	Legislation	Approval, Permits, Licence Type	Relevant Agency
		certificate.	
	Sustainable Planning Act 2009 (Qld) / *Coastal Protection and Management Act 1995* (Qld).	Where not associated with a Material Change of Use application: Operational Works Permit for tidal works.	Department of Environment and Resource Management. (referrals to Gladstone Ports Corporation, Regional Harbour Master Maritime Safety Queensland).
		Operational Works Permit for prescribed tidal works.	Gladstone Regional Council.
	Fisheries Act 1994 (Qld).	Operational Works Permit to remove, destroy or damage marine plants.	Department of Employment, Economic Development and Industry (Qld).
	Coastal Protection and Management Act 1995 (Qld).	Operational Works Permit works within a coastal management district). Approval of a dredge management plan required for the removal of quarry material below the high water mark or the placing of spoil derived from the removal (ss89 and 91) required for all dredging work at or around the MOF and jetty.	Department of Environment and Resource Management.
Buildings, communications and emergency response facilities (control, administration, maintenance and amenity).	*Fire and Rescue Service Act 1990 (Qld)*	Certificate of classification for buildings. Certificate of Compliance (s.104H)	Queensland Fire and Rescue Authority.
	Plumbing and Drainage Act 2002 (Qld).	Compliance permit for plumbing and drainage work (s78). Approval for an onsite sewerage treatment plant (s 91).	Gladstone Regional Council.
	Radiocommunication Act 1992.	Licence for an apparatus or spectrum (s.99), and use of existing allocated spectrum and use of approved radiocommunications technology during the construction and	Australian Communications and Media Authority.

Activity which trigger the need for approval	Legislation	Approval, Permits, Licence Type	Relevant Agency
		operations phase of the project (i.e., UHF, VHF, telemetry, etc).	
	Telecommunication Act 1997.	Carrier licence (or exemption), and Facilities Installation Permit, Notices and Agreements with public utilities and land owners and occupiers for the establishment and use of telecommunications facilities to support the project construction and operations.	Australian Communications and Media Authority.

Activity which trigger the need for approval	Legislation	Approval, Permits, Licence Type	Relevant Agency
Feed Gas Pipeline and Associated Infrastructure Construction			
Feed Gas pipeline and associated infrastructure.	*Local Government Act 1993* (Qld) and Gladstone City Council Local Law No. 12 – Roads, Clause 10.	Local Law Permit to make an alteration or improvement to a local government road.	Gladstone Regional Council.
	Vegetation Management Act 1999 (Qld) / *Sustainable Planning Act 2009* (Qld).	Operational Works Permit for clearing remnant vegetation. Some exemptions may apply to clearing of vegetation.	Department of Environment and Resource Management/ Gladstone Regional Council.
	Nature Conservation Act 1992 (Qld).	Permits for the clearing of protected plants	Department of Environment and Resource Management
	Forestry Act 1954 (Qld).	Permit for vegetation clearing within a state forest. Permit for the sourcing and use of quarry material (unlikely, but if required).	Department of Employment, Economic Development and Industry (Qld).
	Mineral Resources Act 1989 (Qld).	Coordination arrangement on the basis of a development plan with the tenement holder, where required.	Department of Employment, Economic Development and Industry (Qld).
	Queensland Heritage Act 1992 (Qld).	Permit to enter a protected area (s.105). Advice agency role for any permit for development adjacent to places on the Queensland Heritage Register.	Department of Environment and Resource Management.
	Water Act 2000 (Qld) / *Sustainable Planning Act 2009* (Qld).	Permit for taking water for an activity (s.237), Development permit for operational works – take or interfere with a watercourse or overland flow or remove quarry material from a watercourse; riverine protection permit (s.266); allocation of quarry material (s.815).	Department of Environment and Resource Management.

Activity which trigger the need for approval	Legislation	Approval, Permits, Licence Type	Relevant Agency
Temporary access roads and establishment of pipeline laydown areas.	*Local Government Act 1993* (Qld) and Gladstone City Council Local Law No. 12 – Roads, Clause 10.	Local Law Permit to make an alteration or improvement to a local government road	Gladstone Regional Council.
	Schedule 7 and 11 of the Sustainable Planning Regulation 2009 (Qld) *Transport Infrastructure Act 1994* (Qld)	In addition to assessing a Material Change of Use application as a referral agency under the Sustainable Planning Act 2009, other approvals may be required including: • Driveway / crossover / access approvals under the *Transport Infrastructure Act 1994*, where TMR does not approve access as part of a development permit, a separate approval may be required for new or upgraded access to a State controlled road. • Ancillary works and encroachments (AWEs) under the *Transport Infrastructure Act 1994*, an AWE approval may be needed if works on a State controlled road are required as part of the development, for example, intersection upgrades, stormwater connections, roadside advertising, roadside awnings • Public utility approvals, where public utility plant is built inside the State controlled road reserve under powers set out in state, local or commonwealth legislation (including acts, regulations and local laws), consent is required from TMR. Public utility plant is infrastructure related to such things as telecommunications, electricity, gas, sewage and water • Resource entitlement, where development applications include land on a state-controlled road, evidence of	Department of Transport and Main Roads (TMR)

Activity which trigger the need for approval	Legislation	Approval, Permits, Licence Type	Relevant Agency
		resource entitlement may need to be submitted with the development application as required under the Sustainable Planning Regulation 2009 (Qld), Schedule 14.	
	Vegetation Management Act 1999 (Qld) / *Sustainable Planning Act 2009* (Qld).	Operational Works Permit for clearing remnant vegetation. Some exemptions may apply to clearing of vegetation.	Department of Environment and Resource Management/ Gladstone Regional Council.
	Electricity Act 1994 (Qld).	Works near electricity infrastructure.	Ergon/Powerlink
	Nature Conservation Act 1992 (Qld).	Permits for the clearing of protected plants Note: The project design is not sufficiently advanced to be able to accurately identify each individual permit and approval as it relates to individual parcels of land, nor the number of times the approval will be required. The proponent will complete this post EIS in consultation with their appointed EPC contractor. It is recognised there are different approvals required for entering off a state owned road or local council road. Where clearing of vegetation, and working near electricity infrastructure, approvals will also be required under the *Electricity Act 1994* (Qld). To this extent this is a non-exhaustive list as there may be other applicable approvals that can not be readily identified at this stage in this section.	Department of Environment and Resource Management

Activity which trigger the need for approval	Legislation	Approval, Permits, Licence Type	Relevant Agency
Right of way preparation, clearing, bulk earthworks and blasting.	*Environmental Protection Act 1994* (Qld). *Vegetation Management Act 1999* (Qld) / *Sustainable Planning Act 2009* (Qld).	A MCU for an environmentally relevant activity (ERA 47 – timber milling and woodchipping and ERA 50 – bulk material handling). An application for an ERA registration certificate.	Department of Environment and Resource Management/ Gladstone Regional Council.
		Operational Works Permit for clearing remnant vegetation. Some exemptions may apply to clearing of vegetation.	Department of Environment and Resource Management/ Gladstone Regional Council.
	Nature Conservation Act 1992 (Qld).	Permits for the clearing of protected plants (s89, Reg15). Permit to take or interfere with cultural or natural resources of a protected area (s.62) Permit to take protected animal s.88) Permit to drive vehicle in protected area or conduct a commercial activity (reg 115) Permit to take wildlife (s.97). Permit to erect a structure in a protected area (reg 107).	Department of Environment and Resource Management.
	Explosives Act 1999 (Qld).	The following licences and permits may be required to be issued under the *Explosives Act 1999* and include: • A licence to import explosives. • A licence to manufacture explosives. • A licence to store explosives. • A licence to transport explosives. • A licence to use explosives. • A shotfirer licence. • A permit to import explosives • A permit to store explosives. • An explosives trial	Department of Employment, Economic Development and Industry (Qld).

Activity which trigger the need for approval	Legislation	Approval, Permits, Licence Type	Relevant Agency
		approval.	
	Water Act 2000 (Qld) / *Sustainable Planning Act 2009* (Qld) / Sustainable Planning Regulation 2009 (Qld)	Riverine protection permit (s266(1)). Development permit for assessing operational work against the *Water Act 2000* for taking or interfering with water from a watercourse, artesian water, overland flow water or sub artesian water. Development permit for removing quarry material from a watercourse. Refer to Schedule 3, Part 1, Table 4, Items 3 (a), (b) and (c) of the Sustainable Planning Regulation 2009 (Qld) SPR and Table 5 Item 1.	Department of Environment and Resource Management.
	Vegetation Management Act 1999 (Qld)	Notice to DERM to clear regulated regrowth under a regrowth vegetation code – were regulated regrowth is present. Likely to relate to more than just the one area where present.	Department of Environment and Resource Management.
Welding, coating and testing (feed gas pipeline).	*Environmental Protection Act 1994* (Qld).	A MCU for an environmentally relevant activity (ERA 17 – Abrasive blasting, ERA 18 – Boilermaking or engineering, ERA 38 – Surface Coating). An application for an ERA registration certificates.	Department of Environment and Resource Management/ Gladstone Regional Council.
	Electrical Safety Regulation 2002 (Qld)	Notice prior to installation of Cathodic Protection System s173.	Department of Employment and Industrial Relations.
Trenching and drilling.	Various.	No specific additional approvals other than those required for whole of project, as identified above.	Various.
Tunnelling	*Land Title Act 1994 (Qld)*	Volumetric format plan of subdivision under section 49D of the Land Title Act 1994 (Qld) or section 290 H of the	Department of Environment and Resource Management.

Activity which trigger the need for approval	Legislation	Approval, Permits, Licence Type	Relevant Agency
		Land Act 1994 (Qld), subject to tenure. The freehold tenure of the mainland and Curtis Island sections of the proposed tunnel within Lot 1 on SP157699 and Part of Lot 2 on SP207281 could take the form of either an easement, lease or volumetric subdivision. The middle (Port Curtis) section with its current unallocated state land (USL) tenure means the tunnel could be dealt with only by way of lease or easement, unless a Deed of Grant in Trust (DOGIT) is issued to facilitate the conversion of the USL to freehold tenure, thereby enabling volumetric subdivision. Whether tenure over the tunnel is freehold or leasehold, the tenure applying to the pipes (gas and possibly other services) is most appropriately an easement or sublease or lease depending on the primary tenure. Resource entitlement under the Land Act 1994 (Qld).	
	Forestry Act 1959 (Qld)	Permit to extract quarry material on State lands.	Department of Employment, Economic Development and Industry (Qld).
	Water Act 2000 (Qld)	Where part of a watercourse, an application for quarry material allocation under the Water Act 2000 (Qld).	Department of Environment and Resource Management.
	Petroleum and Gas (Production and Safety) Act 2004 (Qld)	An application for a Petroleum Survey Licence (PSL), and followed by a Petroleum	Department of Employment, Economic Development and

Activity which trigger the need for approval	Legislation	Approval, Permits, Licence Type	Relevant Agency
		Pipeline Licence (PPL) for the tunnel. An Environmental Authority is also needed before the tenures (both PSL and PPL) will be granted.	Industry (Qld).
	Dangerous Goods Safety Management Act 2001 (Qld).	Notice under section 49 of the Dangerous Goods Safety Management Act 2001 (Qld) for location of storing or handling dangerous goods. Licence to store flammable and combustible liquids on premises under section 84, Dangerous Goods Safety Management Regulation 2001.	Department of Employment, Economic Development and Industry (Qld).
	Environmental Protection Act 1994 (Qld).	Chemical storage (ERA 8). Cement manufacturing (ERA 41). Bulk material handling (ERA 50).	Department of Environment and Resource Management.
	Water Act 2000 (Qld) / *Sustainable Planning Act 2009* (Qld).	Riverine protection permit (s266(1)). Development permit for assessing operational work against the Water Act 2000 for taking or interfering with water from a watercourse, artesian water, overland flow water or sub artesian water. Development permit for removing quarry material from a watercourse. Refer to Schedule 3, Part 1, Table 4, Items 3 (a), (b) and (c) of the Sustainable Planning Regulation 2009 (Qld) SPR and Table 5 Item 1.	Department of Environment and Resource Management.
	Explosives Act 1999 (Qld).	The following licences and permits may be required to be issued under the Explosives Act 1999 and include: • A licence to import	Department of Employment, Economic Development and Industry (Qld).

Activity which trigger the need for approval	Legislation	Approval, Permits, Licence Type	Relevant Agency
		explosives. • A licence to manufacture explosives. • A licence to store explosives. • A licence to transport explosives. • A licence to use explosives. • A shotfirer licence. • A permit to import explosives • A permit to store explosives. • An explosives trial approval.	
Cut and fill.	Various.	No specific additional approvals other than those required for whole of project, as identified above.	Various.
X-ray and pneumatic testing.	*Radiation Safety Act 1999* (Qld).	Licence to possess radiation source (s.12), Approval to acquire radiation source (s.23) and Certificate of Compliance (s.18).	Queensland Health.
Hydrostatic testing (dewatering).	Various.	No specific additional approvals other than those required for whole of project, as identified above.	Various.
Pigging, drying and purging.	Various.	No specific additional approvals other than those required for whole of project, as identified above.	Various.
Commissioning and Operation			
Introduction of hydrocarbons, and LNG process (Liquefaction, CSG pre-treatment).	*Environmental Protection Act 1994* (Qld).	A MCU for an environmentally relevant activity (ERA 9 – hydrocarbon gas refining). An application for an ERA registration certificate.	Department of Environment and Resource Management/ Gladstone Regional Council.
LNG plant regular and major maintenance.	Various.	No specific additional approvals other than those required for whole of project, as identified above.	Various.
LNG and other shipping movements.	*Customs Act 1901* (Cwlth). *Great Barrier Reef*	Export Declaration Notice under section 113 of the Act. LNG shipping and other	Customs (Cwlth). Australian Maritime

Activity which trigger the need for approval	Legislation	Approval, Permits, Licence Type	Relevant Agency
	Marine Park Act 1975 (Cwlth).	maritime transport activities through the Great Barrier Reef Marine Park dedicated shipping channels.	Safety Authority.
	Maritime Transport and Offshore Facilities Security Act 2003 (Cwlth).	Approval and implementation of a maritime security plan for LNG shipping (s.42 (b)), security assessment (s.47(1)(a)) and other maritime transport and security requirements (eg: Maritime Security Identification Card s.105(2)) as a contribution to the achievement of the maritime security outcomes. Gladstone is a Security Regulated Port. Approval will be required for a Maritime Security Plan. The regulations outline detailed requirements of any security plan. Establishment of Port Security Zones within the site (s 49(2)) Map of such scale and size to accurately show boundaries of site and security zones. This forms part of the maritime Security Plan which is above.	Department of Infrastructure, Transport, Regional Development and Local Government.
	Transport Operations (Marine Safety) Act 1994 (Qld).	Registration, licensing, permits and accreditation; pilotage areas; harbour masters; accreditation of ship designers, ship builders and marine surveyors; navigational aids (reg 209); and orderly control over ships, which are relevant aspects for any marine vessel construction, and also for the use of marine vessels during the construction and	Regional Harbour Master, Maritime Safety Queensland.

Activity which trigger the need for approval	Legislation	Approval, Permits, Licence Type	Relevant Agency
		operations phases.	
	Transport Operations (Marine Pollution) Act 1995 (Qld).	Regulated use of marine vessels and ships during the construction and operations phases. Approval for night transfers involving a ship (s 63) A night transfer operation is the transfer of a pollutant – a harmful substance including sewerage – between two ships or a ship and a place at night) involving a ship of more then 15m in length. A general approval for night operations of a specific kind at a specific place can be given.	Maritime Safety Queensland.
	Navigation Act 1912 (Cwlth)	Notice of intention to ship (Marine Order Part 41-Order 9) Section 255 of the Navigation Act requires that, before any dangerous goods are shipped in any ship, the shipper thereof must give notice of intention to ship the goods in the manner and to the person prescribed. The organisation that prepares the consignment of LNG for transport is considered to be the 'shipper'. The carriage of LNG could be classified as class 2.1 dangerous goods under the IMDG code as synonymous to 'methane, refrigerated liquid or natural gas, refrigerated liquid with high methane content'.	Department of Infrastructure, Transport, Regional Development and Local Government.
LNG storage and loading.	*Environmental Protection Act 1994*	A MCU for an environmentally relevant	Department of Environment and

Activity which trigger the need for approval	Legislation	Approval, Permits, Licence Type	Relevant Agency
	(Qld).	activity (ERA 50 – bulk material handling). An application for an ERA registration certificate.	Resource Management/ Gladstone Regional Council.
	Dangerous Goods Safety Management Act 2001 (Qld)	Notice prior to storing scheduled quantities under section 36.	Department of Employment, Economic Development and Industry (Qld).
Other marine transport (roll-on/roll-off / lift-on/lift-off).	*Environmental Protection Act 1994* (Qld).	A MCU for an environmentally relevant activity (ERA 50 – bulk material handling). An application for an ERA registration certificate.	Department of Environment and Resource Management/ Gladstone Regional Council.
	Various	Refer also to approvals and permits under project activity: LNG and Other Shipping Movements.	Various.
	Sustainable Planning Act 2009 (Qld)	Development Permit for MCU on Strategic Port Land that is inconsistent with the relevant land use plan, to the extent works are not performed within the GSDA.	Gladstone Ports Corporation.
	Sustainable Planning Act 2009 (Qld) / *Coastal Protection and Management Act 1995* (Qld).	Where not associated with a Material Change of Use application: Operational Works Permit for tidal works.	Department of Environment and Resource Management. (referrals to Gladstone Ports Corporation, Regional Harbour Master Maritime Safety Queensland).
		Operational Works Permit for prescribed tidal works.	Gladstone Regional Council.
	Fisheries Act 1994 (Qld).	Operational Works Permit to remove, destroy or damage marine plants.	Department of Employment, Economic Development and Industry (Qld).
	Coastal Protection and Management Act 1995 (Qld).	Operational Works Permit works within a coastal management	Department of Environment and

Activity which trigger the need for approval	Legislation	Approval, Permits, Licence Type	Relevant Agency
		district).	Resource Management.
Flaring (routine and emergency).	*Civil Aviation Act 1998* (Cwlth) / Civil Aviation Safety Regulation 1998	Application for an Operational Assessment of a proposed Plume Rise. Civil Aviation Safety Regulation 1998 - Reg 139.365 : Notification of structures 110 metres or more above ground level.	Civil Aviation Safety Authority (Cwlth).
Import of ethylene, propane and liquid nitrogen.	*Customs Act 1901* (Cwlth) *Quarantine Act 1908* (Cwlth).	Import declaration under section 71A of the Act. Establishment of agreed quarantine procedures and infrastructure to support the importation at the MOF.	Customs (Cwlth). Australian Quarantine Inspection Service.
Buildings, communications and emergency response facilities (control, administration, maintenance and amenity).	*Fire and Rescue Service Act 1990 (Qld)* *Plumbing and Drainage Act 2002* (Qld). *Radiocommunication Act 1992.* *Telecommunication Act 1997.*	Certificate of classification for buildings. Certificate of Compliance (s.104H) Compliance permit for plumbing and drainage work (s78). Approval for an onsite sewerage treatment plant (s 91). Licence for an apparatus or spectrum (s.99), and use of existing allocated spectrum and use of approved radiocommunications technology during the construction and operations phase of the project (i.e., UHF, VHF, telemetry, etc). Carrier licence (or exemption), and Facilities Installation Permit, Notices and Agreements with public utilities and land owners and occupiers for the establishment and use of	Queensland Fire and Rescue Authority. Gladstone Regional Council. Australian Communications and Media Authority. Australian Communications and Media Authority.

Activity which trigger the need for approval	Legislation	Approval, Permits, Licence Type	Relevant Agency
		telecommunications facilities to support the project construction and operations.	
	Civil Aviation Act 1998 (Cwlth) / Civil Aviation Regulation 199 (Cwlth).	Approval for the helicopter landing pad.	Civil Aviation Safety Authority.
Routine operations.	Various.	Conditions included in permits as identified for whole of project.	Various.
Solid and liquid waste disposal.	*Environmental Protection Act 1994* (Qld).	A MCU for an environmentally relevant activity (ERA 58 – regulated waste treatment, ERA 60 – regulated waste disposal, ERA 63 – sewage treatment). An application for an ERA registration certificate.	Department of Environment and Resource Management/ Gladstone Regional Council.
	Local Government Act 1993 (Qld).	Approval for connection to local government storm water system (s 956A) Will be required in the event there is to be a connection of a storm water installation or sewerage facility to the local government storm water system as part of any on-shore works (Curtis island not having any storm water system).	Gladstone Regional Council.
Remedial works (reinstatement of contours, topsoil, vegetation, control of weeds).	Various.	Conditions included in permits as identified for whole of project.	Various.
Decommissioning			
Removal of LNG Plant, facilities / associated infrastructure, jetties.	Various.	Conditions included in permits as identified for whole of project.	Various.
Export gas pipeline.	Various.	Conditions included in permits as identified for whole of project.	Various.
Land reinstated.	Various.	Conditions included in permits as identified for whole of project.	Various.
Logistics and Support Facilities			

Activity which trigger the need for approval	Legislation	Approval, Permits, Licence Type	Relevant Agency
Vehicle / Machinery Movement.	*Environmental Protection Act 1994* (Qld).	A MCU for an environmentally relevant activity (ERA 15 – Fuel burning). An application for an ERA registration certificate.	Department of Environment and Resource Management/ Gladstone Regional Council.
	Land Protection (Pest and Stock Route Management) Act 2002 (Qld).	Weed and seed washdown conditions as part of Environmental Authority.	Department of Environment and Resource Management.
	Transport Infrastructure Act 1994 (Qld). *Transport Planning and Coordination Act 1994* (Qld). *Transport Operations (Road Use Management) Act 1995* (Qld).	Road Corridor Permit for undertaking an activity, works or erecting a structure within the road corridor, and works on or adjacent to a railway. Approval if activities or infrastructure enter an intersection area. Approval if road upgrades impact public transport or local government roads. Temporary or permanent road closure applications. Permits for the transport of dangerous goods, mass dimensions and loads via roads.	Department of Transport and Main Roads (Qld).
Fuel, chemical and hazardous materials.	*Dangerous Goods Safety Management Act 2001* (Qld). *Environmental Protection Act 1994* (Qld).	Notice under section 49 of the *Dangerous Goods Safety Management Act 2001* (Qld) for location of storing or handling dangerous goods. Licence to store flammable and combustible liquids on premises under section 84, Dangerous Goods Safety Management Regulation 2001. A MCU for an environmentally relevant activity (ERA 8 – Chemical storage). An application for an ERA registration	Department of Environment and Resource Management/ Gladstone Regional Council.

Activity which trigger the need for approval	Legislation	Approval, Permits, Licence Type	Relevant Agency
		certificate.	
Workforce.	*Quarantine Act 1908* (Cwlth).	Establishment of agreed quarantine procedures and infrastructure to support the importation of LNG modules, pipe and other associated equipment, and the health of any imported workforce.	Australian Quarantine Inspection Service.
	Migration Act 1958 (Cwlth).	Work Permit Visa	Department of Immigration and Citizenship.
	Health Act 1937 (Qld)	Health (Drugs and Poisons) Regulation 1996 (Qld) Operating approval to establish or operate a controlled drugs administration facility (reg 122A) Where any medical services are going to be offered to Arrow personnel and drugs may be stored on-site. A 'controlled drug' or a 'restricted drug' is a drug or poison classified as such under the Reg and the Standard for the Uniform Scheduling of Drugs and Poisons.	Queensland Health
Accommodation and associated infrastructure / operations.	*Sustainable Planning Act 2009* (Qld). *Environmental Protection Act 1994* (Qld).	A MCU for an ERA. ERA registration certificate. Operational Works Permit. Curtis Island Temporary Workers Accommodation Facility included in permits as identified for whole of project. Mainland TWAF 7 or TWAF 8 - MCU for Workers Accommodation" (Residential Temporary) Development Code compliance for Temporary	Gladstone Regional Council. Gladstone Regional Council

Activity which trigger the need for approval	Legislation	Approval, Permits, Licence Type	Relevant Agency
		Accommodation Buildings and Structures.	
	Liquor Act 1992 (Qld).	Application for New Restricted Liquor Permit.	Treasury (QLD).
	Local Government Act 1993 (Qld) and Gladstone City Council Local Law No. 12 – Roads, Clause 10.	Local Law Permit to make an alteration or improvement to a local government road.	Gladstone Regional Council.
	Food Act 2006 (Qld).	Licence to carry on a food business (s.49).	Gladstone Regional Council.
	Sustainable Planning Act 2009 (Qld).	Development Permits for MCU, reconfiguration of a lot, and operational works regulated under the Gladstone Regional Council planning schemes.	Gladstone Regional Council.
	Environmental Protection Act 1994 (Qld).	Sewage treatment (ERA 63)	Department of Environment and Resource Management/ Gladstone Regional Council.
	Plumbing and Drainage Act 2002 (Qld)	Approval to connect to local stormwater systems (if required).	Gladstone Regional Council.
	Nature Conservation Act 1992 (Qld)	Clearing protected species (if required).	Department of Environment and Resource Management
		Approval to drive a vehicle in a protected area.	
Desalination plant and treatment.	*Environmental Protection Act 1994* (Qld).	A MCU for an environmentally relevant activity (ERA 15 – Fuel burning and ERA 64 – Water treatment). An application for an ERA registration certificate.	Department of Environment and Resource Management/ Gladstone Regional Council.
Effluent Treatment Plant.	*Environmental Protection Act 1994* (Qld).	A MCU for an environmentally relevant activity (ERA 63 – Sewage treatment). An application for an ERA registration	Department of Environment and Resource Management/ Gladstone Regional Council.

Activity which trigger the need for approval	Legislation	Approval, Permits, Licence Type	Relevant Agency
		certificate.	
Power generation and distribution.	*Environmental Protection Act 1994* (Qld).	A MCU for an environmentally relevant activity (ERA 14 – Electricity generation and ERA 15 – Fuel Burning). An application for an ERA registration certificates.	Department of Environment and Resource Management/ Gladstone Regional Council.
	Electricity Act 1994 (Qld)	Permits and notices as relevant to electricity generation and distribution (s.88), carrying out works: near third party infrastructure (s.99) , or in a publicly controlled place (s.102), or on a road (s.102), or beyond the property (reg 24). A generation authority is required to connect a generation plant to a transmission grid or supply network. However its not required if a third party carries out the activity of operating the generating plant. A distribution authority will be required if an internal distribution network is constructed and operated to supply electricity generated to (for example) the jetty, supplying a customer, etc. Notice is required for proposed works if that work is likely to come into contact with or disturb overhead powerlines, soil or other material supporting or covering the entities work. Notice prior to carrying out works in a publically controlled place. Notice is required of proposed electricity works if that work is	Powerlink / Ergon Energy.

Activity which trigger the need for approval	Legislation	Approval, Permits, Licence Type	Relevant Agency
		likely to interfere with soil, vegetation, sewer, etc of that relevant entity. Approval to carry out works on a public road. Written approval from the relevant road authority must be obtained prior to carrying out electricity on a public road. Consent to install and operate electricity lines forming part of the electrical installation beyond the property. Request for approval to install and operate electricity lines is to be sent to the relevant entities with an interest in the proposed location. If an electricity line is to be installed on a place beyond the property boundaries and where Arrow Energy become the 'customer' of an electricity entity, written consent of the entities that may have an interest in the proposed location of the electricity installation must be obtained.	
	Electricity National Scheme (Queensland) Act 1997 (Qld).	Registration (or exemption) of operating a generation system and connecting to the national grid. If generating system or distribution system is connected to national grid, registration as a registered participant under the Rules is required. However a general exemption from the requirement may be available. Registration is not required if one or more third parties carry	Queensland Competition Authority.

Activity which trigger the need for approval	Legislation	Approval, Permits, Licence Type	Relevant Agency
		out all of the activities of owning, controlling and operating the system or distribution system subject to operating a supply network.	
Capital and maintenance dredging and spoil disposal (where required outside of Gladstone Ports Corporation Western Basin Dredging and Reclamation project).	*Environment Protection and Biodiversity Conservation Act 1999* (Cwlth). *Environment Protection (Sea Dumping) Act 1981* (Cwlth). *Sustainable Planning Act 2009* (Qld). *Coastal Protection and Management Act 1995* (Qld). *Environmental Protection Act 1994* (Qld). *Fisheries Act 1994* (Qld).	EPBC referral and decision whether controlled action or not. Sea Dumping Permit for the loading and disposal at sea of dredged material. Disposing of dredge spoil in tidal waters, using dredged material to reclaim land under tidal water will require a development permit for operational works (tidal works or works within a coastal management district). Alternatively, for land based disposal, an application for a Development Permit for a MCU and Operational Works Permit (i.e., tidal works, marine plant disturbance, within a coastal management district) under the *Sustainable Planning Act 2009* (Qld). Includes compliance with MP05 and FHMOP 004. The removal of quarry material from state coastal land below high water mark in a coastal management district is regulated by means of either a resource allocation or a dredge management plan. A MCU for an environmentally relevant activity (ERA 16 – Extractive and screening activities). An application for an ERA registration certificate.	Commonwealth Minister for Environment, Department of Environment, Water, Heritage and the Arts (Cwlth). Department of Environment and Resource Management. Gladstone Regional Council. Department of Infrastructure and Planning (where on GSDA land). Referrals to Gladstone Ports Corporation, Regional Harbour Master Maritime Safety Queensland, and Department of Employment, Economic Development and Industry (Qld). Gladstone Regional Council.

5.4 Change to Existing Land Uses

Subject to approvals, the existing land use on the LNG plant site will change for the life of the project from largely undeveloped and rural grazing land with a single farm outbuilding, to the construction and operation of a LNG export plant in continuous operation. This land use change, subject to approvals, will have a moderate impact during the construction and operation phases on existing rural and environmental management land uses. Decommissioning will have a negligible impact on existing land uses.

The Curtis Island workers construction camp will be an integral component of the project to support the construction of the four train LNG plant. The mainland TWAF options (i.e., TWAF 7 or TWAF 8) are required as overflow camp options to accommodate the project construction workforce, and will have a moderate impact during the construction and operation phases, and negligible impact during decommissioning.

The construction of the feed gas pipeline and tunnel will have a moderate impact. The operation of the feed gas pipeline and tunnel will co-exist with surrounding land uses and have a negligible impact. Decommissioning will have a negligible impact.

The majority of proposed uses are taken to be consistent with the precinct consistent use tables in the Gladstone State Development Area Development Scheme and will be further demonstrated as part of a Material Change of Use application within the GSDA.

However, a number of uses such as heavy industry, commercial premises, crushing plant, extractive industry, liquid fuel depot, and high impact industry as identified in Table 5.1 will be inconsistent uses with the potential to compromise the future orderly planning of some precinct.

5.5 Property Disruption and Severance, and Fragmentation of Sites

The feed gas pipeline easement over existing land parcels will not result in physical severance of existing parcels. However, the feed gas pipeline easement will result in a constraint to existing landowner access and limit the rights of those landowners to use the land, the subject of the easement. New access and feed gas pipeline crossing points will be negotiated, designed, constructed and supervised in accordance with reasonable landowner requirements.

A low impact will be experienced with regard to property disruption will result during the construction phase within the feed gas pipeline right of way and tunnel locality. This may include changes to or disruption to utility services, property access, fencing, and continuation of existing use and activities on parts of the property.

For the operation phase of the feed gas pipeline, directly affected landowners will experience negligible impact with a reduction in allowable land use activities within the feed gas pipeline easement and right of way. Decommissioning will have a negligible impact.

Where land parcels are required for the project, fragmentation, sterilisation and ongoing compatible landuse will be key considerations of land access negotiations.

5.6 Potential Environmental Harm to Adjacent Areas

The direct potential environmental harm or project footprint is shown on Figure 1.2. The likely extent of clearing of regional ecosystem vegetation is summarised in Table 5.3.

Table 5.3 Type and extent of disturbance

Project Area		Total Present within the Study Area		Area to be Cleared	
	Regional Ecosystem (RE) (VMA Status, Biodiversity Status)	**Remnant Vegetation (ha)**	**High Value Regrowth Vegetation (ha)**	**Remnant Vegetation (ha)**	**High Value Regrowth Vegetation (ha)**
Curtis Island	12.1.2 (LC, NC)	521.77	-	4.87	
	12.1.3 (LC, NC)	552.17	-	5.04	
	12.3.3 (E,E)	32.48	-	25.69	
	12.3.6 (LC, NC)	5.23	-	3.56	
	12.3.7 (LC, NC)	9.07	-	4.21	
	12.11.4 (OC, OC)	6.56	-	3.04	
	12.11.6 (LC, NC)	140.57	-	71.4	
	12.11.14 (OC, OC)	240.17	-	123.57	
	12.11.14/12.11.6 (60/40) (OC/LC, OC/NC)	12.76	-	0.75	
Mainland tunnel entry shaft and tunnel spoil disposal area	12.1.2 (LC, NC)	521.77	-	53.6	
	11.3.4 (OC, OC)	285.11	57.49	16.1	
TWAF8	11.3.4 (OC, OC)	285.11	57.49	30.3	8.03
Launch Site 1	12.1.2 (LC, NC)	521.77	-	1.7	
	12.1.3 (LC, NC)	552.17	-	1.8	
	Total			345.63	8.03

E = Endangered, OC = Of Concern, LC = Least Concern, NC = No Concern at Present, n/a = not applicable.

It is important to note that the disturbance calculations in Table 5.3, include the areas of disturbance for all options being evaluated for the project, and as such, the overall area of disturbance is likely to only require clearance for one of the options for a MOF and associated haul roads on Curtis Island and one of the TWAF options.

Moderate impacts on regional ecosystems, essential habitat, wetlands and marine plants will occur during the construction and operation phase of all components of the project.

Decommissioning of all components of the project will have a negligible impact on regional ecosystem, essential habitat, wetlands and marine plants.

The conceptual LNG plant master plan has been developed having regard to safety and separation distances, optimum use of land, compliance with regulations and standards, modular construction, future expansion, logical product flow, constructability, minimum cut and fill, avoiding hot air recirculation, and avoiding environmental harm to adjacent areas.

The LNG plant site and adjoining Curtis Island Environmental Management Precinct has been subject to cattle grazing and continued grazing by feral horses and pigs and this pressure has resulted in degraded ecosystems with varying habitat value. Rural grazing and destocking of the Curtis Island Industry Precinct and Environmental Management Precinct is progressing.

Discharges to the environment will be designed and controlled to meet local, state, national and international standards. The more stringent of these standards will be adopted as the design, construction and operation standard to minimise environmental harm to adjacent areas.

The feed gas pipeline will be constructed to avoid the Great Barrier Reef Coast Marine Park and associated habitat protection zone. It will be designed and constructed in a manner that reduces environmental impacts to the extent that there will be a temporary moderate impact on matters of national environmental significance, particularly habitat. The tunnel across Port Curtis significantly reduces the environmental harm to the environmentally sensitive areas.

The development will have a moderate impact on the values of the Great Barrier Reef World Heritage Area and moderate impact on habitat for listed threatened species and communities, and migratory birds during the construction and operation phase. Decommissioning will have a negligible impact on the values of the Great Barrier Reef World Heritage Area and habitat for listed threatened species and communities.

The potential environmental harm to adjacent areas used for recreation, tourism and other business will also be a moderate impact during the construction and operation phase. Decommissioning will have a negligible impact. The social impacts on the recreational fishing activities, commercial licenced operators, tourism and other business are discussed in the Social Impact Assessment for the project (SKM, 2011). The health impacts on the community are further discussed in the Health Impact Assessment for the project (ARUP, 2011).

The Gladstone Port Corporation proposes to provide marine access to LNG export terminals and container and bulk cargo facilities in the western basin of Port Curtis through a capital dredging program that includes reclamation of seabed adjacent to Fishermans Landing (reclaimed land). This activity, to which the proponent will contribute costs, was proposed in the 50-year strategic plan and assessed in the Western Basin Strategic Dredging and Disposal Project EIS, as approved by the Queensland and Commonwealth governments. It will result in loss of seagrass and may displace dugong and turtles. Extensive seagrass meadows are found in the southern part of Port Curtis in Rodds Bay. The impact of further dredging activities as part of the project on the dugong and its habitat is considered in the marine ecology technical study (Coffey Environments, 2011b).

The various statutory planning instruments mention in section 2 of this study provide policy direction and impose constraints on the pattern and types of existing and future land use, and protection and management of environmentally sensitive areas.

5.7 Land Use Compatibility

There will be potential for overlapping tenements associated with the feed gas pipeline easement and tunnel, and existing Mining Lease 80003, Mineral Development Licence 225 and Exploration Permit for Minerals 19190. Where the feed gas pipeline easement will potentially overlap the existing Mining Lease 80003, the proponent will enter into a coordination arrangement on the basis of a development plan with the tenement holder. The impact of the feed gas pipeline on overlapping tenements will be moderate.

The construction and operation of the feed gas pipeline will be restricted to a designated right of way and will have a negligible impact on existing agricultural activities during the construction and operation phase, and negligible during decommissioning. The feed gas pipeline will co-exist with other land uses and is generally compatible with a range of rural activities.

The major project components will be located within the Gladstone State Development Area Precincts, as declared by the Coordinator-General, for major industrial development. The majority of proposed uses are considered likely to meet the objectives of the Gladstone State Development Area, subject to the approval of the Coordinator-General. However, a number of uses such as heavy industry, commercial premises, crushing plant, extractive industry, liquid fuel depot, and high impact industry and medium industry as identified in Table 5.1 will be inconsistent uses with the potential to compromise the future orderly planning of some precincts.

The LNG plant will have a negligible impact on the proposed neighbouring LNG facilities throughout the project life. The construction and operation of the Curtis Island construction camp will not compromise the future development of Hamilton Point, and will have a negligible impact. The LNG plant risk contours show explosion risk will be contained within the plant site boundary and will have negligible impact on existing rural and environmental management land uses surrounding the LNG plant. The LNG plant will have a negligible impact on the Curtis Island Environmental Management Precinct during the construction and operation phases as no clearing, bulk earthworks, infrastructure, buildings or structures will be located in the Curtis Island Environmental Management Precinct.

The mainland TWAF options will have a negligible impact from a land use compatibility perspective with the proposed use of the former ashpond for TWAF 7 (subject to the findings of land contamination and remediation, geotechnical, engineering, and health impact studies) and the location of two rural dwellings within 1 km of proposed TWAF 8.

5.8 Impacts on Surrounding Land Uses and Human Activities

The Gladstone State Development Area has been declared by the Coordinator-General for major industrial development. Surrounding land uses on the mainland include rural and residential. Existing land uses on Curtis Island include rural and environmental management. Industrialisation of the Curtis Island Industry Precinct is underway with the construction of the QCLNG and GLNG projects. To the south of Curtis Island, on the islands located in Port Curtis, the surrounding land use is residential and conservation. The construction, operation and decommissioning of the LNG plant will have a low impact in terms of elevated noise, air and light emissions on identified sensitive receptors.

The LNG plant at Boatshed Point and LNG loading areas in North China Bay will have both land and marine safety exclusion zones, which will restrict and deny public access to specific land, inter tidal areas and marine areas for recreational and commercial fishing and boating activities in

the immediate vicinity of these facilities. The significance of this impact will be low during the construction and operation phase, and negligible during decommissioning.

5.9 Impact of Increase of Fire Risk

Under SPP 1/03 the development is required to maintain the safety of people and property by either avoiding areas of high or medium bushfire hazard, or mitigating the risk through specific mitigation measures listed within SPP 1/03 (such as firebreaks, access provisions and water supply). A bushfire risk assessment prepared by Eco Logical (Eco Logical, 2011), has identified the mainland as predominantly low hazard and Curtis Island is predominantly medium hazard with areas of high hazard. The Eco Logical report (Eco Logical, 2011) indicates:

> *Assuming fire escapes the development, there is a low to medium risk of fire (adversely) impacting on the surrounding life, property and environment. The highest risk rating scored was medium in three situations, these are;*
>
> - *The possible damage to property and chance of fatalities or major injuries to life on Curtis Island;*
> - *Damage to other port and industrial facilities proposed on Curtis Island; and*
> - *The possible chance of damage to ecological values on Curtis Island or the mainland.*

On this basis the significance of the impact of bushfire generated by the project on the surrounding environment will be major during construction, operation and decommissioning phases.

5.10 Native Title

The proponent will settle any native title issues through settlement of an ILUA and will take all such steps as required under the *Native Title (Queensland) Act 1993* (Qld) for this purpose. In circumstances where this is impossible, either because agreement cannot be reached or the ILUA is not registered by the National Native Title Tribunal, the proponent will make use of other procedures available under Queensland legislation. In seeking to settle an ILUA, the proponent has engaged and will continue to engage with all those parties who hold or may hold native title in areas to be affected by the project. This includes but may not be limited to the Port Curtis Coral Coast native title claimants. In doing so, it is also discussing all relevant issues with, and involving, the relevant representative body, being Queensland South Native Title Services, to the extent necessary. Appropriate briefings to relevant Queensland Government agencies will be provided as necessary on progress of ILUA negotiations and requirements to consider alternative procedures.

It had been hoped to have concluded negotiations by this stage. However, issues internal to the registered native title claim group, including matters still-active before the Federal Court, have intruded and delayed settlement.

5.11 Proximity to Electric Power Transmission Lines and Electrified Rail Lines

The approach line forming part of the Fishermans Landing rail balloon loop traverses the study area. Powerlink high voltage powerlines ranging from 275 kV to 110 kV from the Gladstone Power

Station also traverse the study area in the vicinity of Gladstone - Mount Larcom Road. The feed gas pipeline and tunnel construction activities and use of construction machinery will be limited to the feed gas pipeline right of way and tunnel alignment.

The proponent has liaised and agreed with a range of infrastructure operators (i.e., QCL, Rio Tinto, Orica, Powerlink) on the feed gas pipeline and tunnel alignments and construction technique, the detailed design of feed gas pipeline crossings of infrastructure and easements, and construction supervision protocols.

A cathodic protection will be installed at regular intervals along the feed gas pipeline to minimise impact on the feed gas pipeline from any stray electrical current.

Construction and operation of the feed gas pipeline will have a low impact on existing and proposed rail and high voltage power transmission and other infrastructure, and negligible during decommissioning.

5.12 Impacts on Millable Timber or Quarry Resources

No millable timber within a state forest will be impacted by the development.

Prior to bulk earthworks on the LNG plant site, identified millable timber will be cut using chainsaws and where appropriate, timber harvesting machinery, stockpiled and transported to the mainland for reuse. Branches and other material will be chipped or mulched, stockpiled and reused on site where possible. Where chipped or mulch material is in excess of requirements, stockpiled chips will be transported to the mainland for re-use. The impact on millable timber on Curtis Island will be low during the construction phase, and negligible during operations and decommissioning.

Native vegetation in the feed gas pipeline right of way on Curtis Island will be removed and stockpiled. If necessary, trees will be felled using chainsaws and where appropriate, timber harvesting machinery. Large timber will be retained for use as fauna habitat or as snags at watercourse crossings. The impact on millable timber from the feed gas pipeline right of way will be low during the construction phase. The impact will be negligible during operations and decommissioning. No millable timber or clearing residue will be burnt.

Based on the proximity of the study area to identified and known quarry resources (i.e., sand, gravel, quarry rock, clay and soil), key resource area separation area and extractive resource area transport route, as shown on Figure 4.8, it is concluded the development within the study area will have negligible impact on these resources, areas or routes during the construction, operation and decommissioning phases. Quarry resources are distinct from the oil shale resource located within the study area, which is an identified mineral resource under the *Mineral Resources Act 1989* (Qld).

5.13 Summary of Impacts

Table 5.4 provides a summary of the Section 5 identified land use and planning impacts and significance, prior to taking into consideration the proposed avoidance, mitigation or management measures that will be implemented throughout the project.

Table 5.4 Summary of land use and planning impacts and significance (pre-mitigation measures)

Project Component	Land Use and Planning Impact	Project Phase	Summary Assessment of Significance (pre mitigation)
LNG plant, ancillary TWAFs and associated marine facilities	Change to existing land uses	Construction	Moderate
		Operation	Moderate
		Decommissioning	Negligible
	Land use compatibility	Construction	Negligible
		Operation	Negligible
		Decommissioning	Negligible
	Potential environmental harm to adjacent areas	Construction	Moderate
		Operation	Moderate
		Decommissioning	Negligible
	Impact on surrounding land uses and human activities	Construction	Low
		Operation	Low
		Decommissioning	Low
	Impact of increase of fire risk	Construction	Major
		Operation	Major
		Decommissioning	Major
	Impacts on millable timber	Construction	Low
		Operation	Negligible
		Decommissioning	Negligible
	Impacts on quarry resources	Construction	Negligible
		Operation	Negligible
		Decommissioning	Negligible
Feed gas pipeline right of way and tunnel	Change to existing land uses	Construction	Moderate
		Operation	Negligible
		Decommissioning	Negligible
	Land use compatibility	Construction	Negligible
		Operation	Negligible
		Decommissioning	Negligible
	Potential environmental harm to adjacent areas	Construction	Moderate
		Operation	Moderate
		Decommissioning	Negligible
	Property disruption and severance, and fragmentation of sites	Construction	Low
		Operation	Negligible
		Decommissioning	Negligible
	Proximity to electric power transmission lines and electrified rail lines	Construction	Low
		Operation	Low
		Decommissioning	Negligible
	Impact of increase of fire risk	Construction	Major
		Operation	Major

Project Component	Land Use and Planning Impact	Project Phase	Summary Assessment of Significance (pre mitigation)
		Decommissioning	Major
	Impacts on millable timber	Construction	Low
		Operation	Negligible
		Decommissioning	Negligible
	Impacts on quarry resources	Construction	Negligible
		Operation	Negligible
		Decommissioning	Negligible

6. AVOIDANCE, MITIGATION AND MANAGEMENT MEASURES

6.1 Introduction

This section describes the management measures designed to avoid or reduce potential land use and planning impacts to as low as reasonably practicable. Mitigation measures are not proposed for low or negligible impacts.

6.2 Change to Existing Land Use

The change of land use cannot be avoided if the project is to proceed.

Project components will be sited, designed, constructed, operated and decommissioned having regard to existing legislative, policy, statutory instruments and guidelines.

The Gladstone Ports Corporation Land Use Plan 1999 and the draft LUP 2010, the former Calliope Shire and former Gladstone City Council planning schemes will not require amendment to facilitate the project.

The project is consistent with the intent of the recently amended Gladstone State Development Area Development Scheme. Applications for MCU will be triggered under the development scheme.

The level of compliance with design codes and standards of the project components during construction, operation and decommissioning will be assessed and decided through a range of post EIS applications for approvals, permits and licences.

The feed gas pipeline will be co-sited and co-located with other existing and gas pipelines (i.e., Central Queensland Pipeline and Arrow Surat Pipeline within the Gladstone State Development Area materials transportation and services corridor sub-precincts. This will minimise the project land requirement, environmental footprint, extent of disturbance and disruption, prospect of multiple gas pipeline easements separately traversing private and state land, and additional future land use conflicts.

Prior to construction activities, relevant landowners within the project area will be consulted regarding the direct impacts to their assets, land use activities, and any temporary disruption to supporting utility services and infrastructure. This consultation will also identify and result in the incorporation of any specific design and mitigation measures.

6.3 Potential Environmental Harm to Adjacent Areas

Detailed construction and operations environmental management plans will be developed and implemented prior to project activities commencing. Impacts will be managed through application of appropriate practice and pragmatic environmental management (i.e., construction environmental management plan, operations environmental management plan, and the social impact management plan).

The proponent will be responsible for arranging and coordinating on the ground environmental support and auditing of compliance with environmental permit and licence conditions during the construction phase. Auditing of environmental performance against operating licence conditions will also be required during the operations phase.

In addition, following construction activities, land, stock dams, any diverted water courses, access tracks, TWAF sites and depots, fencing, gates and grids will be reinstated. Rehabilitation of the feed gas pipeline right of way will be undertaken in accordance with land and asset owner requirements, and permit and licence approval conditions.

Following project construction activities associated with the LNG plant, parts of the site not required for ongoing LNG operations (for example part of the construction camp) will be reinstated by the proponents construction contractor as soon as practicable in accordance with both land and asset owner requirements, and permit and licence approval conditions. Site preparation for train 3 and 4 will be done as part of the initial construction phase but will not be reinstated.

Restrictions will apply to adjoining land uses and activities, land and marine access to the LNG plant (i.e., exclusion and safety zones) and public access to and from the Gladstone State Development Area Curtis Island Industry Precinct and Curtis Island Environmental Management Precinct.

6.4 Impact of Increase of Fire Risk

The vulnerability and susceptibility of the LNG plant assets to increase of fire risk has been considered in the engineering design and layout of the LNG plant. The bushfire risk assessment (Eco Logical, 2011) identifies mitigation measures such as bushfire buffers and minimum set back requirements, having regard to State Planning Policy 1/03 Mitigating the Adverse Impacts of Flood, Bushfire and Landslide (SPP1/03) (Queensland Government, 2003a).

The bushfire risk assessment (Eco Logical, 2011) indicates risk treatments (i.e. mitigation measures) were chosen to reduce the likelihood and/or harmful consequences to assets through the process of selecting and implementing risk treatment options that modify the bushfire risk characteristics. The Eco Logical report (Eco Logical, 2011) also includes a management plan was developed identifying the risk treatments including those required by SPP 1/03. Table 6.1 summarises the treatments proposed.

Table 6.1 Summary of bushfire hazard mitigation measures

Risk Treatment Strategies	Risk Treatment Options
Avoid the risk	Prohibit ignition creation activities
Reduce the likelihood	Education
	Training
Reduce the consequence	Firebreak establishment for facility and buildings
	Firebreak establishment for construction activities in the field
	Adequate access for response and evacuation
	Afford assembly and administrative buildings protection
Accept and manage the risk	Suppression and response for operations
	Suppression and response for construction activities in the field
Transfer the risk	Adequate insurances
Retain the risk	Evacuation plan and residual risk

7. RESIDUAL IMPACTS

7.1 Introduction

This section draws together the findings of the study to reach a conclusion about the extent, duration and the remaining impacts of the activities.

Residual impacts are the potential impacts remaining after the application of mitigation measures and any design response. The extent to which the significance of potential impacts have been reduced is determined by undertaking an assessment of the significance of the residual impacts. This is a measure of the effectiveness of the design response or mitigation measures in reducing the magnitude of the potential impacts, as the sensitivity of the environmental value does not change.

Table 7.1 provides a summary of the identified land use and planning impacts and significance, prior to taking into consideration the proposed avoidance, mitigation or management measures that will be implemented throughout the project, and post mitigation measures.

When it comes to land use and planning impacts that are identified as low or negligible are unlikely to materially or discernibly change as a consequence of the application of mitigation measures. Therefore the residual impact will be identical to the level of impact pre-mitigation.

Table 7.1 Summary of land use and planning impacts and significance (pre-mitigation and post mitigation measures)

Project Component	Land Use and Planning Impact	Project Phase	Summary Assessment of Significance (pre mitigation)	Summary Assessment of Significance (post mitigation and offset)
LNG plant, ancillary TWAFs and associated marine facilities	Change to existing land uses	Construction	Moderate	Moderate
		Operation	Moderate	Moderate
		Decommissioning	Negligible	Negligible
	Land use compatibility	Construction	Negligible	Negligible
		Operation	Negligible	Negligible
		Decommissioning	Negligible	Negligible
	Potential environmental harm to adjacent areas	Construction	Moderate	Low
		Operation	Moderate	Low
		Decommissioning	Negligible	Negligible
	Impact on surrounding land uses and human activities	Construction	Low	Low
		Operation	Low	Low
		Decommissioning	Low	Low
	Impact of increase of fire risk	Construction	Major	High
		Operation	Major	High
		Decommissioning	Major	High
	Impacts on millable timber	Construction	Low	Low
		Operation	Negligible	Negligible

Project Component	Land Use and Planning Impact	Project Phase	Summary Assessment of Significance (pre mitigation)	Summary Assessment of Significance (post mitigation and offset)
		Decommissioning	Negligible	Negligible
	Impacts on quarry resources	Construction	Negligible	Negligible
		Operation	Negligible	Negligible
		Decommissioning	Negligible	Negligible
Feed gas pipeline right of way and tunnel	Change to existing land uses	Construction	Moderate	Moderate
		Operation	Negligible	Negligible
		Decommissioning	Negligible	Negligible
	Land use compatibility	Construction	Negligible	Negligible
		Operation	Negligible	Negligible
		Decommissioning	Negligible	Negligible
	Potential environmental harm to adjacent areas	Construction	Moderate	Low
		Operation	Moderate	Low
		Decommissioning	Negligible	Negligible
	Property disruption and severance, and fragmentation of sites	Construction	Low	Low
		Operation	Negligible	Negligible
		Decommissioning	Negligible	Negligible
	Proximity to electric power transmission lines and electrified rail lines	Construction	Low	Low
		Operation	Low	Low
		Decommissioning	Negligible	Negligible
	Impact of increase of fire risk	Construction	Major	High
		Operation	Major	High
		Decommissioning	Major	High
	Impacts on millable timber	Construction	Low	Low
		Operation	Negligible	Negligible
		Decommissioning	Negligible	Negligible
	Impacts on quarry resources	Construction	Negligible	Negligible
		Operation	Negligible	Negligible
		Decommissioning	Negligible	Negligible

7.2 Residual Impacts

7.2.1 Change of Existing Land Use

Following approval of land use planning and other applications, a change of land use within the study area will occur during the construction phase and endure for the life of the project. A change of existing land use is inevitable with this state significant project.

The change of land use is almost certain, subject to approval. The project is consistent with the intent of the Curtis Island Industry Precinct within the Gladstone State Development Area Development Scheme.

7.2.2 Impact on Surrounding Land Use and Human Activities

Following Queensland and Australian government approval of the EIS and subsequent development applications, restrictions to public access (e.g., security fencing and exclusion zones) will be initiated for the LNG plant, the marine terminals and feed gas pipeline easement. This will be necessary for the safe construction and operation of the project.

Public access to these sites and areas will no longer be possible and therefore will remain the same post mitigation.

7.2.3 Impact of Increase of Fire Risk

Using vulnerability criteria and risk rating for life, property and environment, the bushfire risk assessment (Eco Logical, 2011) summarises the increase in fire risk as follows:

> *Assuming fire escapes the development, there is a low to medium risk of fire (adversely) impacting on the surrounding life, property and environment. The highest risk rating scored was medium in three situations, these are;*
>
> - *The possible damage to property and chance of fatalities or major injuries to life on Curtis Island;*
> - *Damage to other port and industrial facilities proposed on Curtis Island; and*
> - *The possible chance of damage to ecological values on Curtis Island or the mainland.*

Even with the application of mitigation measures there is a potential for an increase in fire risk for all components of the project for the construction, operation and decommissioning phases. Notwithstanding consideration in the engineering design of the LNG plant and incorporation of other mitigation measures such as bushfire buffers and fire breaks, it is still possible for the increase of fire risk to lead a catastrophic event of loss of life, property and environment where bushfire impacts extend to locations other than the project area.

The bushfire risk assessment (Eco Logical, 2011) also indicates:

> *Many projects proposed within the region on the potential change in the risk of a bushfire igniting and spreading to impact on surrounding assets was also assessed. A test of an increased risk of ignition due to the additional construction and operation activities was undertaken resulting in an increase in risk levels. However, increased development in an area is also coupled with factors that can reduce the risk such as a change (reduction) in the coverage of bushland and the provision of additional fire fighting resources to aid in control.*

To this extent it is concluded the impact of increase of fire risk post mitigation will be high.

7.2.4 Potential Environmental Harm to Adjacent Areas

An environmental offset is an action taken to counterbalance unavoidable, negative environmental impacts that result from the project. The offset may be located within or outside the

geographic site of the impact. Environmental offsets are only applicable when the impacts cannot be avoided or minimised, and if all other Government environmental standards have been met.

An offset differs from mitigation in that it addresses residual impacts, after attempts to avoid and reduce (or mitigate) the impact have been undertaken.

The proponent will be required to provide environmental offsets for project loss of fish habitat, marine plants, regional ecosystem and essential habitat. The ecological impacts discussed in this report will require a provision of offsets in accordance with Queensland and Commonwealth policy and legislation. An offset strategy will be developed for the project based on information detailed in the terrestrial flora and fauna report (Ecosure, 2011).

8. CUMULATIVE IMPACTS

This section also provides a summary of the cumulative impacts from the project, taking into consideration the effects of other known, existing or proposed projects to the extent where information has been provided by the Department of Infrastructure and Planning or is publicly available.

The *Environment Protection and Biodiversity Conservation Act 1999* (Cwlth) (EPBC Act) provides a framework to protect and manage nationally and internationally important flora, fauna, ecological communities and heritage places (i.e., matters of national environmental significance (MNES)).

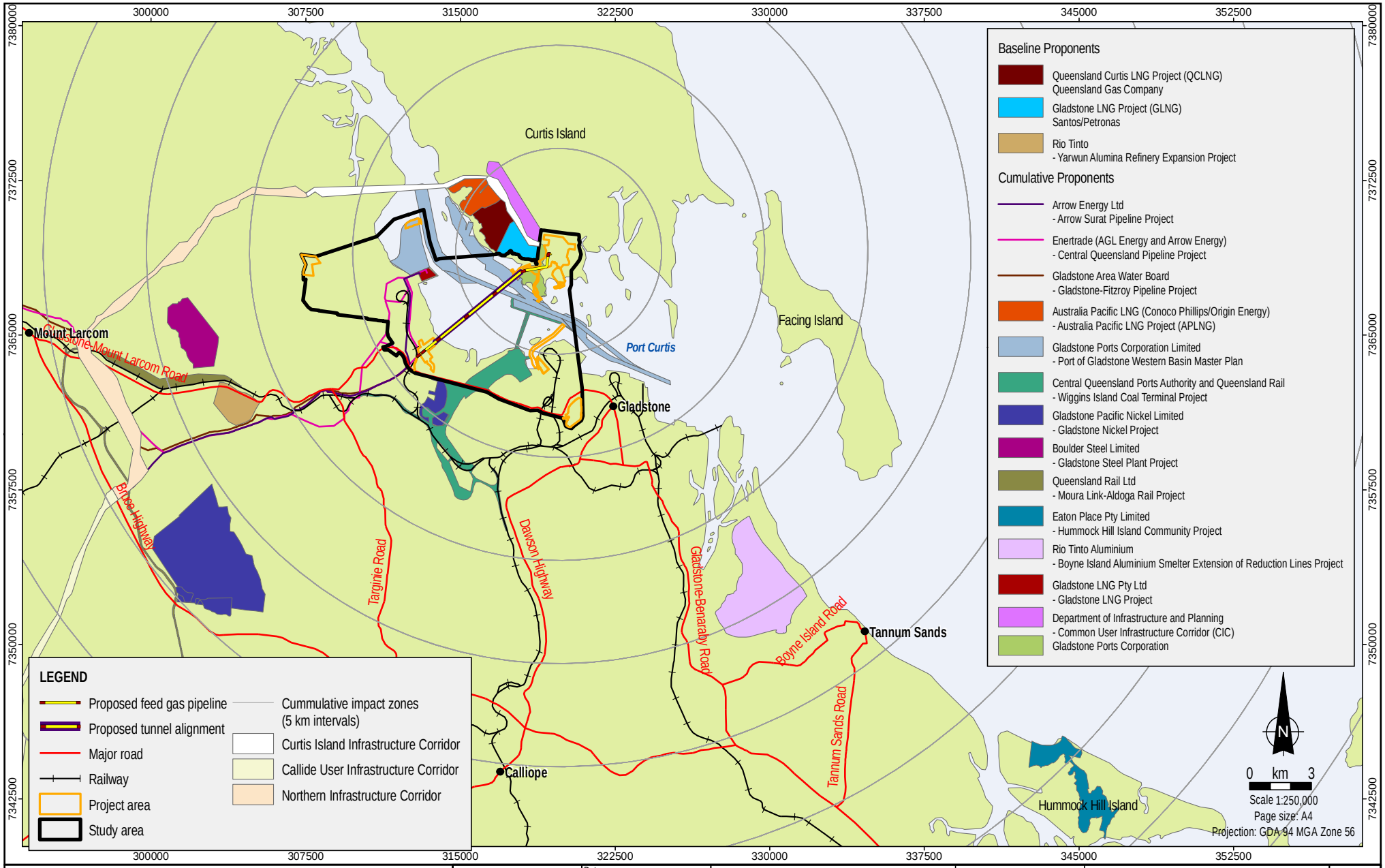
Cumulative environmental impact is also required to be considered as part of the environmental impact assessment process under the following legislation in Queensland:

- *State Development and Public Works Organisation Act 1971* (Qld) (SDPWO Act), via an environmental impact statement for a declared state significant project.
- *Environmental Protection Act 1994* (Qld) (EP Act), via a voluntary environmental impact statement or environmental management plan.
- *Sustainable Planning Act 2009* (Qld) (SP Act), via either:
  - An EIS.
  - Applications for development permits through the Integrated Development Assessment System.
  - A community infrastructure designation.

8.1 Cumulative Impact Assessment

The cumulative impact footprint from a land use and planning perspective is shown on Figure 8.1. Potential cumulative impacts from a land use and planning perspective have been minimised through the planning of the Gladstone State Development Area, and siting and engineering design of the project. From a land use and planning perspective, the following cumulative impacts are expected:

- Land use change from rural to high impact industry on Curtis Island through a continuation of the industrialisation of the declared Curtis Island Industry Precinct and use of the declared designated materials transportation and services corridors.
- Fixed safety zones (i.e., exclusion zones) around the four LNG facilities on Curtis Island and transitory temporary exclusion zones for LNG shipments within Port Curtis, resulting in a permanent loss of public access to the inter-tidal areas and foreshore of southern and south west parts of Curtis Island and some loss of or disruption to recreational and commercial boating and fishing activities along the southern and southwest parts of Curtis Island
- Increased bushfire risk from the LNG facilities on the South End community, and potential increased bushfire risk to vulnerable assets of the different LNG facilities, and mainland land uses. However, increased development in these areas is also coupled with factors that can reduce the risk such as a change (reduction) in the coverage of bushland and the provision of additional fire fighting resources to aid in control.



Source:
Place names, roads and mining leases from DME. LNG proponents from Coffey Environments.
Study area, pipelines, proposed auxiliary facilities and marine infrastructure from Arrow Energy.
Proposed tunnel alignment from Coffey Environments. Western Basin Dredging and Disposal Project from Arrow Energy.
For proponents source information please refer to report reference notes.

coffey environments

Date: 11.07.2011
MXD: 7033BC_08_GIS017_v1_1
File Name: 7033BC_08_F08.01_GIS

Arrow Energy

Arrow LNG Plant

arrow energy go further

Cumulative impact

Figure No: **8.1**

The project will also contribute to cumulative impacts in the Gladstone region by way of:

- Increased demand for a skilled workforce and workforce availability through competing project construction phases in the region will create an increased housing and accommodation demand. This will require increased areas for urban and residential land uses.
- Further direct losses to environmentally sensitive areas.
- Increased demand on infrastructure, water, waste and need for new, or augmented, supporting infrastructure.
- The construction and operations contributing to increased local traffic and background noise levels in close proximity to sensitive receptors.
- Land use change contributing to an increased loading of the Gladstone regional air shed.
- The land use change forever changing the landscape character, form and visual amenity of the south western corner of Curtis Island within the Great Barrier Reef World Heritage Area.
- The change of land use positively contributing to increased economic diversity of the local, regional and state, and national economy.

These aspects are discussed in detail in specific technical studies.

The development will be located in the Curtis Island Industry Precinct, declared for the establishment of LNG facilities for processing operations (including liquefaction and storage) of national, state or regional significance that require access to export wharf facilities. The project does not constrain future development of Hamilton Point for port industry purposes. Any opportunities for co-location and joint use of infrastructure and facilities on Curtis Island can potentially reduce the land requirements and subsequent environmental footprint; however, this would be a commercial decision.

9. CONCLUSIONS

In broad terms, the project is compatible with the existing land uses and consistent with the long term policy framework for the area. This is as reflected in planning schemes, regional plans, other statutory instruments, legislation, standards, codes and guidelines, to the extent:

- The LNG plant, being a new export industry, is coastally dependent development that requires a safe deep water port for LNG carriers, and proximity to the feed gas supply, which is being sourced from the Surat and Bowen basins.
- The LNG plant will co-exist with other planned LNG facilities on Curtis Island.
- The major project components will be located within the Gladstone State Development Area Precincts, as declared by the Coordinator-General, for major industrial development. The majority of proposed uses are considered likely to meet the objectives of the Gladstone State Development Area, subject to the approval of the Coordinator-General. However, a number of uses such as heavy industry, commercial premises, crushing plant, extractive industry, liquid fuel depot, and high impact industry and medium industry in some cases will be inconsistent uses with the potential to compromise the future orderly planning of some precincts. This inconsistency can be avoided if these proposed uses are established subject to approval in accordance with the planning intent of the Gladstone State Development Area Development Scheme.
- The use of existing available marine terminals and infrastructure, and development of new marine terminals, materials offloading facility, jetties and infrastructure is consistent with the use of existing strategic port land, and the planning intent expressed in the Port Land Use Plan 1999 (Gladstone Port Authority, 1999), the 50 year Strategic Plan (Gladstone Ports Corporation, 2008a), the draft Land Use Plan 2010 (Gladstone Ports Corporation, 2010) and the Port of Gladstone Western Basin Master Plan (Queensland Government, 2010a).

Table 9.1 summarises the land use and planning impacts and significance prior to taking into consideration the proposed avoidance, mitigation or management measures, and post mitigation measures and environmental offsets.

Table 9.1 Summary of land use and planning impacts and significance (pre-mitigation and post mitigation measures)

Project Component	Land Use and Planning Impact	Project Phase	Summary Assessment of Significance (pre mitigation)	Summary Assessment of Significance (post mitigation and offset)
LNG plant, ancillary TWAFs and associated marine facilities	Change to existing land uses	Construction	Moderate	Moderate
		Operation	Moderate	Moderate
		Decommissioning	Negligible	Negligible
	Land use compatibility	Construction	Negligible	Negligible
		Operation	Negligible	Negligible
		Decommissioning	Negligible	Negligible
	Potential environmental	Construction	Moderate	Low
		Operation	Moderate	Low

Project Component	Land Use and Planning Impact	Project Phase	Summary Assessment of Significance (pre mitigation)	Summary Assessment of Significance (post mitigation and offset)
	harm to adjacent areas	Decommissioning	Negligible	Negligible
	Impact on surrounding land uses and human activities	Construction	Low	Low
		Operation	Low	Low
		Decommissioning	Low	Low
	Impact of increase of fire risk	Construction	Major	High
		Operation	Major	High
		Decommissioning	Major	High
	Impacts on millable timber	Construction	Low	Low
		Operation	Negligible	Negligible
		Decommissioning	Negligible	Negligible
	Impacts on quarry resources	Construction	Negligible	Negligible
		Operation	Negligible	Negligible
		Decommissioning	Negligible	Negligible
Feed gas pipeline right of way and tunnel	Change to existing land uses	Construction	Moderate	Moderate
		Operation	Negligible	Negligible
		Decommissioning	Negligible	Negligible
	Land use compatibility	Construction	Negligible	Negligible
		Operation	Negligible	Negligible
		Decommissioning	Negligible	Negligible
	Potential environmental harm to adjacent areas	Construction	Moderate	Low
		Operation	Moderate	Low
		Decommissioning	Negligible	Negligible
	Property disruption and severance, and fragmentation of sites	Construction	Low	Low
		Operation	Negligible	Negligible
		Decommissioning	Negligible	Negligible
	Proximity to electric power transmission lines and electrified rail lines	Construction	Low	Low
		Operation	Low	Low
		Decommissioning	Negligible	Negligible
	Impact of increase of fire risk	Construction	Major	High
		Operation	Major	High
		Decommissioning	Major	High
	Impacts on millable timber	Construction	Low	Low
		Operation	Negligible	Negligible
		Decommissioning	Negligible	Negligible
	Impacts on quarry resources	Construction	Negligible	Negligible
		Operation	Negligible	Negligible

Project Component	Land Use and Planning Impact	Project Phase	Summary Assessment of Significance (pre mitigation)	Summary Assessment of Significance (post mitigation and offset)
		Decommissioning	Negligible	Negligible

Land use and planning impacts resulting from the project will have several unavoidable residual impacts after the application of avoidance, mitigation and management measures. These include:

- Change of existing land use, which is inevitable with this state significant project.
- Restriction to public access (e.g., security fencing and exclusion zones) to the LNG plant site, the marine terminals and feed gas pipeline easement, which is necessary for the safe construction and operation of the project.
- Impact of increase in fire risk of the project on surrounding life, property and environment outside the study area.

After mitigation, marine plant, essential habitat and regional ecosystem environmental offsets will be required to be provided by the proponent for the project.

The project will contribute to cumulative impacts in the Gladstone region by way of:

- Increased demand for a skilled workforce and workforce availability through competing project construction phases in the region will create an increased housing and accommodation demand. This will require increased areas for urban and residential land uses.
- Further direct losses to environmentally sensitive areas.
- Increased demand on infrastructure, water, waste and need for new, or augmented, supporting infrastructure.
- The construction and operations contributing to increased local traffic and background noise levels in close proximity to sensitive receptors.
- Land use change contributing to an increased loading of the Gladstone regional air shed.
- The land use change forever changing the landscape character, form and visual amenity of the south western corner of Curtis Island within the Great Barrier Reef World heritage Area.
- The change of land use positively contributing to increased economic diversity of the local, regional and state, and national economy.

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11. GLOSSARY AND ABBREVIATIONS

Units and Symbols

% *abbr.* per cent.

A

alignment *n.* an alignment is the line or lines that describe a route.

ANZECC *abbr.* Australian and New Zealand Environment Conservation Council.

APIA *abbr.* Australian Pipeline Industry Association.

APLNG project *n.* Australia Pacific Liquefied Natural Gas project

APPEA *abbr.* Australian Petroleum Production & Exploration Association.

Arrow Energy *abbr.* Arrow Energy Limited.

AS *abbr.* Australian Standard.

AS/NZS *abbr.* Australian/New Zealand Standard.

C

CAMBA *abbr*. China Australia Migratory Bird Agreement.

CASA *abbr*. Civil Aviation Safety Authority.

Category A *n*. projects with potential significant adverse social or environmental impacts that are diverse, irreversible or unprecedented.

Category B *n*. projects with potential limited adverse social or environmental impacts that are few in number, generally site-specific, largely reversible and readily addressed through mitigation measures.

Category C *n.* projects with minimal or no social or environmental impacts.

CG *abbr*. Coordinator-General of the State of Queensland.

CHMP *abbr.* cultural heritage management plan.

CICSDA *abbr*. Callide Infrastructure State Development Area.

CP &M Act *abbr*. Coastal Protection and Management Act 1995 (Qld).

CQRGMF *abbr*. Central Queensland Regional Growth Management Framework.

coal seam gas *n.* Coal seam gas is predominantly methane. It is formed as organic or plant material and is transformed into coal through heat and pressure. The gas is held within the coal by the pressure of the water which is held in the coal seam.

controlled action *n.* an action deemed likely to have a significant impact on matters of national environmental significance under the terms of the EPBC Act.

corridor *n.* the area within which a route or alignment will be selected or designed.

CSG *abbr.* coal seam gas.

Cwlth *abbr.* Commonwealth.

D

dB *abbr.* decibel.

decommission *n.* the condition of a facility once closed down.

DEEDI *abbr.* Queensland Department of Employment, Economic Development and Innovation.

DERM *abbr.* Queensland Department of Environment and Resource Management.

DIP *abbr.* Queensland Department of Infrastructure and Planning.

DSEWPC *abbr*. Department of Sustainability, Environment, Water, Population and Communities.

DTMR *abbr.* Queensland Department of Transport and Main Roads.

Duration of impact *n*. the timescale of an impact or harm to the environment i.e., short, medium or long term.

E

easement *n.* the legal term used to describe land over which a third party has rights to locate infrastructure and undertake certain activities; i.e., the area required to protect the asset; generally, an easement is less wide than the right of way used to construct the asset, but it may be the same.

EIS *abbr.* environmental impact statement.

e.g. *abbr.* for example.

EPBC Act *abbr*. *Environment Protection and Biodiversity Conservation Act 1999* (Cwlth).

EPFI *abbr*. Equator Principles Financial Institutions.

EPA *abbr*. *Environmental Protection Act 1994* (Qld).

EPP *abbr*. Environmental Protection Policy.

ERA *abbr*. Environmentally relevant Activity.

ESIA *abbr*. environmental and social impact assessment.

environmental offset *n.* a measure that compensates for any negative environmental impact that might result from an activity or a development.

Environmental value *n*. a measure of how we value the environment in which we live. A quality or physical characteristic of the environment that is conducive to ecological health or public amenity or safety as defined in Section 9 *Environmental Protection Act 1994* (Qld).

environmentally relevant activity *n.* usually industrial activities with the potential to release contaminants to the environment, for example chemical processing, waste treatment, spray painting etc.

essential habitat *n.* the environment or kind of place necessary for a given animal or plant to naturally survive and grow.

G

GAWB *abbr*. Gladstone Area Water Board.

GBR Coast MP *abbr*. Great Barrier Reef Coast Marine Park.

GBRMP *abbr.* Great Barrier Reef Marine Park.

GBRMPA *abbr.* Great Barrier Reef Marine Park Authority.

Geographical extent *n*. the spatial extent of the impact or harm to the environment i.e., whether it is confined to the site, localised about the site, regional or widespread.

GIRTP *abbr*. Gladstone Integrated Regional Transport Plan.

GIS *abbr.* geographic information system.

Gladstone State Development Area *n.*

GLNG project *abbr*. Gladstone Liquefied Natural Gas project.

GPC *abbr.* Gladstone Ports Corporation Pty Ltd.

GQAL *abbr*. good quality agricultural land.

GSDA *abbr.* Gladstone State Development Area.

GPC *abbr*. Gladstone Ports Corporation.

H

ha *abbr.* hectare.

HDD *abbr.* horizontal directional drilling.

HIA *abbr*. health impact assessment.

High impact *n*. A high impact occurs when the activities are likely to exacerbate threatening processes affecting the intrinsic characteristics and structural elements of the environmental value. While replacement of unavoidable losses is possible, avoidance through appropriate design responses is preferred to preserve its intactness or conservation status.

HWM *abbr*. high water mark.

I

i.e., *abbr.* that is.

ICOMOS *abbr*. International Council of Monuments and Sites.

IFC *abbr.* International Finance Corporation.

ILUA *abbr*. Indigenous land use agreement.

Impact assessment *n*. an evaluation of the impact of a project on the physical, biological, cultural and social environments, as defined by the environmental values.

IUCN *abbr*. International Union for Conservation of Nature.

J

JAMBA *abbr*. Japan Australia Migratory Bird Agreement.

K

key resource area *n.* the location of extractive resources of state or regional significance.

km *abbr.* kilometre.

km^2 *abbr.* square kilometre.

KRA *abbr*. key resource area.

L

Low impact *n*. A low impact occurs where an environmental value is of local importance and temporary and transient changes will not adversely affect its viability provided standard environmental controls are implemented.

LNG *abbr.* liquefied natural gas.

M

m *abbr.* metre.

m^3 *abbr.* cubic metre.

Magnitude of an impact *n*. the scale or degree of an impact having regard to its geographical extent, duration of effect and severity.

Major impact *n*. A major impact occurs when impacts will potentially cause irreversible or widespread harm to an environmental value that is irreplaceable because of its uniqueness or rarity. Avoidance through appropriate design responses is the only effective mitigation.

materials offloading facility *n.*

matters of national environmental significance *n*. the matters of national environmental significance protected under national environment law include, listed threatened species and communities, listed migratory species, Ramsar wetlands of international importance, Commonwealth marine environment, world heritage properties, national heritage places, the Great Barrier Reef Marine Park and nuclear actions.

MCU *abbr*. material change of use.

Moderate impact *n*. A moderate impact occurs where, although reasonably resilient to change, the environmental value would be further degraded due to the scale of the impacts or its susceptibility to further change. The abundance of the environmental value ensures it is adequately represented in the region, and that replacement, if required, is achievable.

MNES *abbr.* matters of national environmental significance.

MOF *abbr.* materials offloading facility.

Mtpa *abbr.* million tonnes per annum.

MTSC *abbr*. materials transportation and services corridor.

MW *abbr.* megawatt; one million (10^6) watts.

N

n/a *abbr*. not applicable.

national environment protection measure *n.* national environment protection measures (NEPM) outline national objectives for protecting or managing particular aspects of the environment. NEPM may be a combination of goals, guidelines, standards or protocols.

Negligible impact *n*. A degraded (low sensitivity) environmental value exposed to minor changes (low magnitude impact) will not result in any noticeable change in its intrinsic value and hence the activities will have negligible impact. This typically occurs where the activities occur in industrial or highly disturbed areas.

NEPM *abbr.* national environment protection measure.

P

P&G Act *abbr*. *Petroleum and Gas (Production and Safety) Act 2004* (Qld).

PetroChina *abbr*. a subsidiary of PetroChina Company Limited.

petroleum authority *n.* A petroleum authority is an authority, lease or licence generally granted by the Minister for Mines and Energy on behalf of the State of Queensland. An authority may, among other things, authorise exploration, production, processing or transport of petroleum under the provisions of the *Petroleum and Gas (Production and Safety) Act 2004* or the *Petroleum Act 1923*.

petroleum lease *n.* a petroleum lease gives its holder the right to explore for, test for production, and produce petroleum within the area of the petroleum lease.

PHA *abbr*. preliminary hazard assessment.

Potential impact *n*. The impact on an environmental value from project activities (construction, operation and maintenance).

Port Curtis Coral Coast native title claim *n.* claim QC01/29 under the *Native Title Act 1993* (Cwlth) for the legal acknowledgment of native title rights and interests in the Bundaberg and Gladstone region.

project area *n.* the area that will be disturbed or potentially disturbed by the development including a buffer that reflects the potential for activities to extend outside the area to be directly disturbed.

Q

QCLNG *abbr*. Queensland Curtis Liquefied Natural Gas project.

Qld *abbr.* Queensland

QRA *abbr*. quantitative risk analysis.

QWQG *abbr*. Queensland Water Quality Guidelines.

R

RA 381 *abbr*. Restricted Area 381 in accordance with Government Gazette No.83 dated 20 November 2009.

Residual impact *n*. the enduring impact on an environmental value from project activities assuming the proper implementation of effective mitigation measures.

right of way *n.* the area required to construct a pipeline, road or railway

ROKAMBA *abbr.* Republic of Korea Australia Migratory Bird Agreement.

S

SDPWOA Act *abbr*. *State Development Public Works Organisation Act 1971* (Qld).

sensitive receptor *n*. potentially sensitive components of the ecosystem, including place of residency, work, recreation, education etc., that react or are influenced by environmental stressors, such as noise and air pollution. A dwelling, school, hospital, church or other community facility located in the vicinity of the project.

Sensitivity *n*. an assessment of the susceptibility or vulnerability of an environmental value to change.

Severity of an impact *n*. an assessment of the degree of change to an environmental value as a consequence of the potential impacts of project activities.

SIA *abbr*. social impact assessment.

Significance of an impact *n*.an assessment of the sensitivity of an environmental value and the magnitude of potential impacts on that value.

significant project *n. a project declared by the Coordinator-General as meeting a set of criteria under the State Development and Public Works Organisation Act 1971 (Qld).*

SISP *abbr*. social infrastructure strategic plan.

SIMP *abbr*. social impact management plan.

SPP *abbr.* state planning policy.

stakeholder *n.* a person or group that has a pecuniary or non-pecuniary interest in the project.

study area *n.* the area required to determine and assess the direct and indirect environmental, social and economic impacts of a proposal.

T

Threatening process *n.* change occurring as a result of past or current activities or events.

TI Act *abbr*. *Transport Infrastructure Act 1994* (Qld).

TOR abbr. terms of reference.
TWAF abbr. temporary worker's accommodation facility**.**

U

UHF abbr. ultra high frequency.
UDA abbr. urban development area.
UN abbr. United Nations.
UNESCO abbr. United Nations Educational, Scientific and Educational Organisation.

V

VHF *abbr.* very high frequency.

W

WBDDP *abbr.* Western Basin Strategic Dredging and Disposal Project.
WHO *abbr.* World Health Organisation.

Attachment A

Assessment of project consistency with long term policy framework

Attachment A Assessment of project consistency with the long-term policy framework

Table 1 Commonwealth Legislation

Long-term policy framework document	Intent / Objective	Assessment of the level of consistency
Aboriginal and Torres Strait Islander Heritage Protection Act 1984.	The Aboriginal and Torres Strait Islander Heritage Protection Act provides for the protection of significant Aboriginal areas and objects and in Australian waters, areas and objects that are of particular significance to Aboriginals in accordance with Aboriginal tradition.	The preparation of a Cultural Heritage Management Plan will be a requirement for the project. The project will obtain all relevant approvals under the Act and comply with any conditions associated with the issuance of the approval/permit.
Australian Heritage Council Act 2003.	The Australian Heritage Council Act provides for the establishment and constitution of the Australian Heritage Council. The act also describes the roles and responsibilities of the council, including keeping the Register of the National Estate and reporting on matters relating to the functions of the council.	Searches will be undertaken to ensure any potential impact is managed in accordance with the Act. Heritage matters within the national interest are located within the study area and identified as places on the National Heritage List and the Register of the National Estate. The project will obtain all relevant approvals under the Act and comply with any conditions associated with the issuance of the approval/permit.
Civil Aviation Act 1998.	The Civil Aviation Act provides for the establishment of a Civil Aviation Safety Authority with functions relating to civil aviation and the safety of civil aviation. The act establishes a regulatory framework for maintaining, enhancing and promoting the safety of civil aviation, with particular emphasis on preventing aviation accidents and incidents.	The act facilitates the continuing safe operation of civil aviation in proximity to the LNG plant through assessing the potential hazard from a plume rise to aircraft operations and construction of a building or structure the top of which will be 110 metres or more above ground level. The project will work with relevant authorise to manage any relevant impacts of Plume Rise from plant.
Customs Act 1901.	The Customs Act provides for the import and export of goods, boarding of ships and aircraft; entry, unshipment, landing; examination of goods, payment and computation of duties; and a range of customs related law enforcement activities.	The act facilitates the importation of components for the construction and operation phases of the project, and the export of LNG. The project will obtain all relevant approvals under the Act and comply with any conditions associated with the issuance of the approval/permit.
Energy Efficiency Opportunities Act 2006.	The Energy Efficiency Opportunities Act provides for the identification and evaluation of energy-efficiency opportunities by large energy-using businesses. The act requires large energy-using businesses to: • Undertake an assessment of their energy-efficiency opportunities.	The act facilitates energy efficiency assessment and reporting by Arrow Energy. The project will obtain all relevant approvals under the Act and comply with any conditions associated with the issuance of the approval/permit and continue

Long-term policy framework document	Intent / Objective	Assessment of the level of consistency
	• Report publicly on the outcomes of that assessment. • Improve the way in which opportunities are identified and evaluated. • Demonstrate to the community that they are effectively managing their energy.	with ongoing reporting.
Environment Protection and Biodiversity Conservation Act 1999 (Cwlth) (EPBC Act).	To protect and manage nationally and internationally important flora, fauna, ecological communities and heritage places, and determine the impact on matters of national environmental significance.	The EPBC Act includes requirements for the approval by the Commonwealth of activities that will, or are likely to, have a significant impact on World Heritage areas, National Heritage places, the Great Barrier Reef, wetlands of international significance, listed threatened species and communities or listed migratory species. Approval is also required for activities in the Commonwealth marine areas, nuclear actions and actions on Commonwealth land that are likely to have a significant impact on the environment. The act enables consideration by the Commonwealth Minister for Environment under Part 9 for controlled actions. Refer to separate EPBC Assessment Report, appended to the project EIS. The project will obtain all relevant approvals under the Act and comply with any conditions associated with the issuance of the approval/permit.
Environment Protection (Sea Dumping) Act 1981.	The Environment Protection (Sea Dumping) Act provides for the protection of the environment through the regulated dumping of, or incineration of, controlled material. The act applies in relation to the State and its coastal waters in relation to the activities where they involve seriously harmful material: • Dumping or incineration at sea. • Loading for dumping or incineration at sea. • Export for dumping or incineration at sea. • Artificial reef placements.	The act also applies both within and outside Australia and extends to every external Territory. The act prohibits dumping of waste or other matter from any vessel, aircraft or platform in Australian waters unless a permit has been issued. The act enables the granting of permits for the disposal of dredge spoil at sea, where required. The project will obtain all relevant approvals under the Act and comply with any conditions associated with the issuance of the approval/permit.
Foreign Acquisitions and Takeovers Act 1975.	The Foreign Acquisitions and Takeovers Act provides a framework for the assessment of direct foreign investment in Australia, including acquisitions and takeovers of shares, assets and interests in Australian urban land.	The act enables Foreign Investment Review Board consideration of acquisitions and investments by the project owner. The project will obtain all relevant approvals under the Act and comply with any conditions

Long-term policy framework document	Intent / Objective	Assessment of the level of consistency
		associated with the issuance of the approval/permit.
Great Barrier Reef Marine Park Act 1975.	The Great Barrier Reef Marine Park Act provides for the long term protection and conservation of the environment, biodiversity and heritage values of the Great Barrier Reef Region. Objectives of the act are to: • Allow ecologically sustainable use of the Great Barrier Reef Region for the following purposes: – Public enjoyment and appreciation. – Public education about and understanding of the Region. – Recreational, economic and cultural activities. – Research in relation to the natural, social, economic and cultural systems and value of the Great Barrier Reef Region; • Encourage engagement in the protection and management of the Great Barrier Reef Region by interested persons and groups, including Queensland and local governments, communities, Indigenous persons, business and industry. • Assist in meeting Australia's international responsibilities in relation to the environment and protection of world heritage (in particular Australia's responsibilities under the World Heritage Convention) by: – Providing for the establishment, control, care and development of the Great Barrier Reef Marine Park. – Establishing the Great Barrier Reef Marine Park Authority. – Providing for zoning plans and plans of management. – Regulating, by a system of permissions, use of the Great Barrier Reef Marine Park in ways consistent with ecosystem-based management and the principles of ecologically sustainable use. – Facilitating partnership with traditional owners in management of marine resources. – Facilitating a collaborative approach to management of the Great Barrier Reef World Heritage area with the Queensland government.	The act enables LNG shipping and other maritime transport activities through the Great Barrier Reef Marine Park dedicated shipping channels. The project will obtain all relevant approvals under the Act and comply with any conditions associated with the issuance of the approval/permit.
Maritime Transport and	The Maritime Transport and	The act enables the

Long-term policy framework document	Intent / Objective	Assessment of the level of consistency
Offshore Facilities Security Act 2003.	Offshore Facilities Security Act purpose is to safeguard against unlawful interference with maritime transport and offshore facilities. The act establishes a regulatory framework centred around the development of security plans for ships, other maritime transport operations and offshore facilities.	implementation of a security plan for LNG shipping and other maritime transport as a contribution to the achievement of the maritime security outcomes. The project will obtain all relevant approvals under the Act and comply with any conditions associated with the issuance of the approval/permit.
National Greenhouse and Energy Reporting Act 2007.	The National Greenhouse and Energy Reporting Act provides for the management of issues relating to the registration of corporations, obligations of those corporations, the disclosure of greenhouse and energy-related information, enforcement of the act, and other administrative and miscellaneous issues.	The act facilitates annual energy reporting by the project owner. The project will obtain all relevant approvals under the Act and comply with any conditions associated with the issuance of the approval/permit and continue reporting.
Native Title Act 1993.	The Native Title Act recognises and protects native title. Objectives of the act are to: • Provide for the recognition and protection of native title. • Establish ways in which future dealings affecting native title may proceed and set standards for those dealings. • Establish a mechanism for determining claims to native title. • Provide for or permit the validation of past acts and intermediate period acts invalidated because of the existence of native title.	The National Native Title Tribunal is an independent body set up under the act to provide administrative processes to deal with native title applications and to provide information to Indigenous people and the broader community about the native title process. The act, in association with the *Native Title (Queensland) Act 1993*, enables a process for native title dealings (for example, the preparation of Indigenous Land Use Agreements, Rights to Negotiate) in relation to the study area Port Curtis Coral Coast native title claim. The project will obtain all relevant approvals under the Act and comply with any conditions associated with the issuance of the approval/permit.
Navigation Act 1912	The Navigation Act requires that before any dangerous goods are shipped in any ship, the shipper thereof must give notice of intention to ship the goods in the manner and to the person prescribed.	The organisation that prepares the consignment of LNG for transport is considered the shipper. The project will obtain all relevant approvals under the Act and comply with any conditions associated with the issuance of the approval/permit.
Quarantine Act 1908.	The Quarantine Act provides for the biosecurity control at Australian borders to minimise the risk of exotic pests and diseases entering Australia. The act provides a framework for the import and export inspection and certification to assist in retaining Australia's animal, plant and human health status and	The act enables the establishment of agreed quarantine procedures and infrastructure with the Australian Quarantine Inspection Services to support the importation of LNG modules, pipe and other associated equipment, and the health of any imported workforce. The project will obtain

Long-term policy framework document	Intent / Objective	Assessment of the level of consistency
	access to overseas export markets. This includes quarantine of vessels, person and goods.	all relevant approvals under the Act and comply with any conditions associated with the issuance of the approval/permit.
Radiocommunication Act 1992.	The Radiocommunication Act provides for the management of the radiofrequency spectrum in order to: • Maximise, by ensuring the efficient allocation and use of the spectrum, the overall public benefit derived from using the radiofrequency spectrum. • Make adequate provision of the spectrum: – For use by agencies involved in the defence or national security of Australia, law enforcement or the provision of emergency services. – For use by other public or community services. • Provide a responsive and flexible approach to meeting the needs of users of the spectrum. • Encourage the use of efficient radiocommunication technologies so that a wide range of services of an adequate quality can be provided. • Provide an efficient, equitable and transparent system of charging for the use of spectrum, taking account of the value of both commercial and non-commercial use of spectrum. • Support the communications policy objectives of the Commonwealth Government. • Provide a regulatory environment that maximises opportunities for the Australian communications industry in domestic and international markets. • Promote Australia's interests concerning international agreements, treaties and conventions relating to radiocommunications or the radiofrequency spectrum.	The act enables the use of existing allocated spectrum and use of approved radiocommunications technology during the construction and operations phase of the project (i.e., UHF, VHF, telemetry, etc). The project will obtain all relevant approvals under the Act and comply with any conditions associated with the issuance of the approval/permit.
Telecommunication Act 1997.	The Telecommunication Act provides a regulatory framework that promotes: • The long-term interests of end-users of carriage services or of services provided by means of carriage services. • The efficiency and international competitiveness of the Australian telecommunications industry.	The act enables via a carrier the granting of permits for the establishment and use of telecommunications facilities to support the project construction and operations. The project will obtain all relevant approvals under the Act and comply with any conditions associated with the issuance of the approval/permit.

Table 2 Queensland Legislation

Long-term policy framework document	Intent / Objective	Assessment of the level of consistency
Aboriginal Cultural Heritage Act 2003.	The Aboriginal Cultural Heritage Act provides for the effective recognition, protection and conservation of Aboriginal cultural heritage by: • Recognising Aboriginal ownership of Aboriginal human remains wherever held. • Recognising Aboriginal ownership of Aboriginal cultural heritage of a secret or sacred nature held in State collections. • Recognising Aboriginal ownership of Aboriginal cultural heritage that is lawfully taken away from an area by an Aboriginal party for the area. • Establishing a duty of care for activities that may harm Aboriginal cultural heritage. • Establishing powers of protection, investigation and enforcement. • Establishing a database and a register for recording Aboriginal cultural heritage. • Ensuring Aboriginal people are involved in processes for managing the recognition, protection and conservation of Aboriginal cultural heritage. • Establishing a process for the comprehensive study of Aboriginal cultural heritage. • Establishing processes for the timely and efficient management of activities to avoid or minimise harm to Aboriginal cultural heritage.	The act establishes a duty of care requirement on the proponent and facilitates the preparation of a Cultural Heritage Management Plan for the project. The project will obtain all relevant approvals under the Act and comply with any conditions associated with the issuance of the approval/permit.
Building Act 1975.	The Building Act provides a regulatory framework for building development approvals, building work, building classification and building certifiers, and provides for particular matters about sustainable buildings.	The act enables private certification of building works, and approval of building works, in combination with the payment of the portable long service leave levy. The project will obtain all relevant approvals under the Act and comply with any conditions associated with the issuance of the approval/permit.
Coastal Protection and Management Act 1995.	The Coastal Protection and Management Act provides for the protection, conservation, rehabilitation and management of the coast, including its resources and biological diversity. The act has regard to the goal, core objectives and guiding principles of the National Strategy for Ecologically Sustainable Development in the use	The act enables the granting of permits for works within a coastal management district, for tidal and prescribed tidal works. The project will obtain all relevant approvals under the Act and comply with any conditions associated with the issuance of the approval/permit.

Long-term policy framework document	Intent / Objective	Assessment of the level of consistency
	of the coastal zone. The objectives of the act include: • A coordinated and integrated management and administrative framework for the ecologically sustainable development of the coastal zone. • Encourage the enhancement of knowledge of coastal resources and the effect of human activities on the coastal zone.	
Dangerous Goods Safety Management Act 2001.	The Dangerous Goods Safety Management Act provides for the safe management in Queensland of the storage and handling of hazardous materials, particularly dangerous goods and combustible liquids, and the management of major hazard facilities and emergencies involving hazardous materials.	The act enables the granting of permits and notifications of major hazard facilities for the gas pipeline and LNG plant. The project will obtain all relevant approvals under the Act and comply with any conditions associated with the issuance of the approval/permit.
Electricity Act 1994.	The Electricity Act provides for the regulation of the electricity industry and use of electricity.	The act enables permits and notices as relevant to electricity generation and distribution, carrying out works: near third party infrastructure, or in a publicly controlled place, or on a road, or beyond the property. The project will obtain all relevant approvals under the Act and comply with any conditions associated with the issuance of the approval/permit.
Environmental Protection Act 1994.	The Environmental Protection Act provides for the protection of Queensland's environment while allowing for development that improves the total quality of life, both now and in the future, in a way that maintains the ecological processes on which life depends (i.e., ecologically sustainable development).	The act gives the Environment Minister the power to create Environmental Protection Policies (EPP) that aim to protect the environmental values identified for Queensland. The act enables the granting of environmental authorities for the gas pipeline and LNG plant, and the granting of environmentally relevant activities, and Environmental Authority applications. The project will obtain all relevant approvals under the Act and comply with any conditions associated with the issuance of the approval/permit.
Environmental Protection (Waste Management) Regulation 2000	The act requires approval from local government to deposit/dispose of waste and prescribed sanitary conveniences.	The project will obtain all relevant approvals under the Act and comply with any conditions associated with the issuance of the approval/permit.
Explosives Act 1999.	The Explosives Act provides for the effective control of explosives and explosives activities but only to the extent necessary for community	The act enables the granting of permits for shot blasting associated with bulk earthworks activities, where required. The

Long-term policy framework document	Intent / Objective	Assessment of the level of consistency
	safety. This includes the use of explosives and the transport by road.	project will obtain all relevant approvals under the Act and comply with any conditions associated with the issuance of the approval/permit.
Food Act 2006.	The Food Act provides for matters relating to handling and selling food, securing the safety and suitability of food and fixing standards for food.	In combination with local government local laws, the act enables the granting of permits for the preparation of food for the construction camp workforce. The project will obtain all relevant approvals under the Act and comply with any conditions associated with the issuance of the approval/permit.
Fisheries Act 1994.	The Fisheries Act provides for the management, use, development and protection of fisheries resources and fish habitats, the management of aquaculture activities and helping to prevent shark attacks. The purpose of the act is to use, conservation and enhancement of the community's fisheries resources and fish habitats in a way that seeks to apply and balance the principles of ecologically sustainable development and promote ecologically sustainable development.	The act enables the granting of permits for the disturbance and removal of marine plants. The project will obtain all relevant approvals under the Act and comply with any conditions associated with the issuance of the approval/permit.
Forestry Act 1959.	The Forestry Act provides for forest reservations, the management, silvicultural treatment and protection of State forests, and the sale and disposal of forest products and quarry material, the property of the Crown on State forests, timber reserves and on other lands.	The act enables the granting of a permit for vegetation clearing within State forest within the study area (where required), and the sourcing and use of quarry material where required. The project will obtain all relevant approvals under the Act and comply with any conditions associated with the issuance of the approval/permit.
Health Act 1937	The Health Act requires operating approval to establish or operate a controlled drugs administration facility where any medical services are going to be offered or drugs stored on site.	The project will obtain all relevant approvals under the Act and comply with any conditions associated with the issuance of the approval/permit.
Land Act 1994.	The Land Act provides for the consolidation and amended law relating to the administration and management of non-freehold land and deeds of grant in trust and the creation of freehold land, and for related purposes. The objective of the act is that land is managed for the benefit of the people of Queensland.	The act enables the administration and changes in tenure to land within the study area, where required. The project will obtain all relevant approvals under the Act and comply with any conditions associated with the issuance of the approval/permit.

Long-term policy framework document	Intent / Objective	Assessment of the level of consistency
Land Protection (Pest and Stock Route Management) Act 2002.	The Land Protection (Pest and Stock Route Management) Act provides for the management of particular pests on land and the management of the stock route network.	The act enables the management of weeds and pests within the project area. The project will obtain all relevant approvals under the Act and comply with any conditions associated with the issuance of the approval/permit.
Liquor Act 1992.	The Liquor Act provides for the regulation of the sale and supply of liquor and the provision of adult entertainment.	The act enables the establishment of a limited liquor licence for a wet camp on Curtis Island or the mainland TWAF, where required. The project will obtain all relevant approvals under the Act and comply with any conditions associated with the issuance of the approval/permit.
Local Government Act 1993.	The Local Government Act provides for local government and the act includes: • Providing a legal framework for an effective, efficient and accountable system of local government. • Recognising a jurisdiction of local government sufficient to allow a local government to take autonomous responsibility for the good rule and government of its area with a minimum of intervention by the State. • Providing for community participation in the local government system. • Defining the role of participants in the local government system. • Establishing an independent process for ongoing review of important local government issues.	The act enables the making of local laws and model local laws with respect to the study area. The project will obtain all relevant approvals under the Act and comply with any conditions associated with the issuance of the approval/permit.
Marine Parks Act 2004.	The Marine Parks Act provides for marine parks and the conservation of the marine environment. The act enables: • Declaration of marine parks. • The establishment of: – Zones, designated areas and highly protected areas within marine parks. – Zoning plans and management plans. • The cooperative involvement of public authorities and other interested groups and persons, including members of Aboriginal and Torres Strait Islander communities. • The cooperative implementation of Australia's international responsibilities, and	The act enables the granting of permits for activities within the Great Barrier Reef Coast Marine Park and habitat protection zone, where required. The project will obtain all relevant approvals under the Act and comply with any conditions associated with the issuance of the approval/permit.

Long-term policy framework document	Intent / Objective	Assessment of the level of consistency
	intergovernmental agreements and instruments. • A coordinated and integrated approach with other environment conservation legislation. • Recognition of the cultural, economic, environmental and social relationships between marine parks and other areas, whether of water or land. • The provision of opportunities for public appreciation, understanding and enjoyment of the marine environment. • Application of the precautionary principle in decision-making processes. • Monitoring and enforcing compliance.	
Mineral Resources Act 1989.	The Mineral Resources Act provides for the assessment, development and utilisation of mineral resources to the maximum extent practicable consistent with sound economic and land use management.	The act enables tenements to co-exist in relation to the oil shale resource within the study area. The project will obtain all relevant approvals under the Act and comply with any conditions associated with the issuance of the approval/permit.
Native Title (Queensland) Act 1993.	The Native Title (Queensland) Act, in accordance with the Native Title Act (Cwth), provides a mechanism to validate past acts, and intermediate period acts, invalidated because of the existence of native title and to confirm certain rights; and to ensure that Queensland law is consistent with standards set by the Commonwealth Native Title Act for future dealings affecting native title.	The act enables a process for native title dealings (for example, the preparation of an ILUA, Rights to Negotiate) in relation to the study area Port Curtis Coral Coast native title claim. The project will obtain all relevant approvals under the Act and comply with any conditions associated with the issuance of the approval/permit.
Nature Conservation Act 1992.	The Nature Conservation Act provides for the conservation of nature through: • Gathering of information and community education. • Dedication and declaration of protected areas. • Management of protected areas. • Protection of native wildlife and its habitat. • Use of protected wildlife and areas to be ecologically sustainable. • Recognition of interest of Aborigines and Torres Strait Islanders in nature and their cooperative involvement in its conservation. • Cooperative involvement of	A licence, permit or authority is needed to take, keep, use or interfere with many native plants and animals for educational or scientific purposes. Whilst there are currently no declared 'critical habitats' or 'areas of major interest' listed under the act, development triggers for Conservation Estate as listed in Schedule 7 of the Sustainable Planning Regulation 2009 include a protected area, forest reserve, critical habitat or area of major interest under the act. The act enables the granting of permits for the clearing of protected plants and scientific

Long-term policy framework document	Intent / Objective	Assessment of the level of consistency
	landholders.	purposes permits, where required. The project will obtain all relevant approvals under the Act and comply with any conditions associated with the issuance of the approval/permit.
Petroleum and Gas (Production and Safety) Act 2004.	The Petroleum and Gas (Production and Safety) Act provides for the exploration, recovery and transportation by pipeline, petroleum and fuel gas. The act also regulates the safe and efficient carrying out of these activities.	The act enables the granting of Survey Licences, Petroleum Pipeline and Petroleum Facility Licences relevant to the project. The project will obtain all relevant approvals under the Act and comply with any conditions associated with the issuance of the approval/permit.
Petroleum (Submerged Lands) Act 1992.	The Petroleum (Submerged Lands) Act makes provision with respect to the exploration for and the exploitation of the petroleum resources, and certain other resources of, and to conveying petroleum resources (wherever recovered) across, certain submerged lands adjacent to the coasts of Queensland.	Amendments were passed in2009 to the Petroleum and Gas (Production and Safety) Act 2004 and the Petroleum (Submerged Lands) Act 1982 to assist industry by ensuring companies wishing to construct gas pipelines between Queensland and the islands located within Queensland's internal waters would only be required to apply for, and obtain, pipeline licences under one act. The amendments require compliance with the safety and health obligations under the one act rather than two. The project will obtain all relevant approvals under the Act and comply with any conditions associated with the issuance of the approval/permit.
Plumbing and Drainage Act 2002.	The Plumbing and Drainage Act regulates plumbing and drainage, the licensing of plumbers and drainers, and on-site sewerage facilities.	The act facilitates the granting of plumbing and drainage permits required for the construction phase of the project. The project will obtain all relevant approvals under the Act and comply with any conditions associated with the issuance of the approval/permit.
Public Health Act 2005.	The Public Health Act provides for the protection and promotion of the health of the Queensland public. The act is achieved in part by preventing, controlling and reducing risks to public health.	The act is relevant in the context of the construction and operation of project components for the LNG plant and gas pipeline (for example, workforce exposure to biting midges and mosquitoes, regional air quality and emissions, and health impacts on the community and health infrastructure). The project will obtain all relevant approvals under the Act and comply with any conditions associated with the issuance of the approval/permit.
Queensland Heritage Act 1992.	The Queensland Heritage Act	The act facilitates the assessment

Long-term policy framework document	Intent / Objective	Assessment of the level of consistency
	provides for the conservation of Queensland's cultural heritage for the benefit of the community and future generations through: • Establishing the Queensland Heritage Council. • Keeping the Queensland heritage register. • Keeping local heritage registers. • Regulating, in conjunction with other legislation, development affecting the cultural heritage significance of registered places. • Providing for heritage agreements to encourage appropriate management of registered places. • Providing for appropriate enforcement powers to help protect Queensland's cultural heritage.	of permits for development adjacent to places on the Queensland Heritage Register or where entering a protected area, where relevant. The project will obtain all relevant approvals under the Act and comply with any conditions associated with the issuance of the approval/permit.
Radiation Safety Act 1999.	The Radiation Safety Act provides for the control generally of sources of ionising radiation and harmful non-ionising radiation.	The act enables the granting of possession licences for the safe use of x-ray technology and techniques for confirmation of gas pipeline weld integrity and related purposes. The project will obtain all relevant approvals under the Act and comply with any conditions associated with the issuance of the approval/permit.
State Development and Public Works Organisation Act 1971.	The State Development and Public Works Organisation Act provide for State planning and development through a coordinated system of public works organisation, for environmental coordination. As the project has been declared a State significant project by the Coordinator-General, and an amended bilateral agreement exists, the project EIS will be assessed under the Commonwealth accredited Part 4 of the act and the State Development and Public Works Organisation Regulation 1999 (Qld) by the Coordinator-General.	Project declared a state significant project requiring an EIS under the bilateral agreement. The act, with the Gladstone State Development Area Development Scheme (a statutory instrument prepared under the act), facilitates a Development Permit for a MCU within the Gladstone State Development Area. The permit application will be considered by the Department of Infrastructure and Planning for uses under the GSDA Development Scheme. Refer to Table 3.1 of the study for GSDA Development Scheme consistency assessment. The project will obtain all relevant approvals under the Act and comply with any conditions associated with the issuance of the approval/permit.

Long-term policy framework document	Intent / Objective	Assessment of the level of consistency
Soil Conservation Act 1986.	The Soil Conservation Act provides for consolidation of law relating to the conservation of soil resources and to facilitate the implementation of soil conservation measures by landholders for the mitigation of soil erosion.	Whilst a permit is not required under the act in relation to the project, the act facilitates environmental outcomes through soil conservation measures. The project will obtain all relevant approvals under the Act and comply with any conditions associated with the issuance of the approval/permit.
Sustainable Planning Act 2009.	The *Sustainable Planning Act 2009* (Qld) seeks to achieve sustainable planning outcomes through: • Managing the process by which development takes place. • Managing the effects of development on the environment. • Continuing the coordination and integration of local, regional and state planning.	The act, through the Integrated Development Assessment System, covers approvals for almost all development in Queensland, inclusive of Queensland waters, which is relevant to the project. The exceptions include approvals for mining and petroleum-related activities, which are decided under the *Environmental Protection Act.* Refer to State Planning Policies, Regional Plans, planning schemes and other planning instruments operation under the SP Act that are assessed for consistency in this table. Refer to the main document section 2.3 for more accurate interpretation of interaction between the various pieces of planning legislation. The project will obtain all relevant approvals under the Act and comply with any conditions associated with the issuance of the approval/permit.
Transport Infrastructure Act 1994.	The Transport Infrastructure Act provides a regime that allows for and encourages effective integrated planning and efficient management of a system of transport infrastructure.	In the context of the project, the act regulates air and road transport infrastructure, State controlled roads, port infrastructure and control of activities at ports, transporting dangerous goods. The act also enables the granting of various permits and approvals such as a Road Corridor Permit for undertaking an activity, works or erecting a structure within the road corridor, and works on or adjacent to a railway. The project will obtain all relevant approvals under the Act and comply with any conditions associated with the issuance of the approval/permit.
Transport Planning and Coordination Act 1994.	The Transport Planning and Coordination Act provides for the planning and coordination of transport through strategic planning	Whilst a permit is not required under the act in relation to the project, the act facilitates coordinated land use and

Long-term policy framework document	Intent / Objective	Assessment of the level of consistency
	and management of transport resources with the objective to improve overall transport effectiveness and efficiency: • The economic, trade and regional development performance of Queensland. • The quality of life of Queenslanders.	transport outcomes. The project will obtain all relevant approvals under the Act and comply with any conditions associated with the issuance of the approval/permit.
Transport Operations (Road Use Management) Act 1995.	The Transport Operations (Road Use Management) Act provides for the effective and efficient management of road use in the State.	The act facilitates granting of permits for the transport of dangerous goods, mass dimensions and loads via roads. The project will obtain all relevant approvals under the Act and comply with any conditions associated with the issuance of the approval/permit.
Transport Operations (Marine Safety) Act 1994.	The Transport Operations (Marine Safety) Act provides a system that achieves balance between: • Regulating the maritime industry to ensure marine safety. • Enabling the effectiveness and efficiency of the Queensland maritime industry to be further developed.	The act provides for registration, licensing, permits and accreditation; pilotage areas; harbour masters; accreditation of ship designers, ship builders and marine surveyors; navigational aids; and orderly control over ships, which are relevant aspects for any marine vessel construction, and also for the use of marine vessels during the construction and operations phases. The project will obtain all relevant approvals under the Act and comply with any conditions associated with the issuance of the approval/permit.
Transport Operations (Marine Pollution) Act 1995.	The Transport Operations (Marine Pollution) Act provides for the protection of Queensland's marine and coastal environment by minimising deliberate and negligent discharges of ship-sourced pollutants into coastal waters.	The act is relevant in the context of the use of marine vessels and ships during the construction and operations phases. The project will obtain all relevant approvals under the Act and comply with any conditions associated with the issuance of the approval/permit.
Vegetation Management Act 1999.	The Vegetation Management Act provides for the regulation of clearing of vegetation in a way that: • Conserves remnant vegetation that is: – An endangered regional ecosystem. – An of concern regional ecosystem. – A least concern regional ecosystem. • Conserves vegetation in declared areas. • Ensures the clearing does not	The act, in association with the *Sustainable Planning Act 2009*, and in the context of the project, provides limited mechanisms for bringing forward properly made applications for a clearing permit and some limited exemptions. The project will obtain all relevant approvals under the Act and comply with any conditions associated with the issuance of the approval/permit.

Long-term policy framework document	Intent / Objective	Assessment of the level of consistency
	cause land degradation. • Prevents the loss of biodiversity. • Maintains ecological processes. • Manages the environmental effects of the clearing. • Reduces greenhouse gas emissions.	
Water Act 2000.	The Water Act provides for the sustainable management of water and other resources and the establishment and operation of water authorities.	The act enables the granting of various water licences and permits, including as required by the project, riverine protection permits for destroying vegetation, excavating or placing fill in a watercourse, lake or spring. The project will obtain all relevant approvals under the Act and comply with any conditions associated with the issuance of the approval/permit.

Table 3 Policies, Guidelines and Other Documents

Long-term policy framework document	Intent / Objective	Assessment of the level of consistency
Amended Bilateral Agreement	Enables Commonwealth Minister to rely on specified environmental impact assessment processes of the state of Queensland in assessing actions under the EPBC Act.	EIS will be prepared under the bilateral agreement. Consistent.
LNG Industry Unit within the Queensland Department of Employment, Economic Development and Innovation.	To assist LNG industry proponents engage with government, liaise with local government, peak industry bodies and other project proponents to develop a whole-of-government policy response and to facilitate the LNG industry in Queensland.	Forum been used by proponent. Consistent.
State planning regulatory provisions.	• To implement a regional plan. • To implement structure plans for master planned areas. • To allow the planning Minister to respond to environmental, cultural, economic or social issues in local areas by affecting the operation of planning schemes. • To apply state infrastructure charges within master planned areas. These regulatory provisions affect planning schemes by providing an overarching planning instrument, and may be applied in a range of circumstances, with the ability to regulate and prohibit development. These regulatory provisions may also override regional plans.	No state planning regulatory provisions affecting the study area. Therefore taken to be consistent.
Schedules of the Sustainable	To prescribe that development is:	The project approval and permits

Long-term policy framework document	Intent / Objective	Assessment of the level of consistency
Planning Regulation 2009.	• Self-assessable development; or • Development requiring compliance assessment; or • Assessable development that may require code or impact assessment, or both code and impact assessment. To the extent a planning scheme is inconsistent with a regulation made under section 232 of the SP Act the planning scheme is of no effect.	required to facilitate the project are identified in Table 5.1 of the study.
Statutory guidelines.	To provide direction on process and addressing planning issues.	There are six statutory guidelines relating to development assessment and plan-making under the SP Act, but none specifically relate to the study area. Consideration may be given to statutory guideline 05/09 'Sufficient grounds for decisions that conflict with a planning instrument' in relation to TWAF 7 or TWAF 8. Consistency will be determined at the time of an application.
SPP 1/92 Development and the Conservation of Agricultural Land.	GQAL is a finite national and state resource that must be conserved and managed for the longer term. As a general aim, the exercise of planning powers should be used to protect such land from those developments that lead to its alienation or diminished productivity.	The former Calliope Shire planning scheme overlay does not identify GQAL on Curtis Island, but indicates the presence of agricultural land class A, C and D within the study area. The distribution of agricultural land classes is shown on Figure 4.4. The LNG plant has specific siting / location requirements that require the loss of some potential Class C (Pasture land) and Class D non-agricultural land. Being coastally dependent development of State significance, there is an overriding need that justifies the loss of the pasture land. The project is consistent.
SPP 1/02 Development in the Vicinity of Certain Airports and Aviation Facilities.	Development in the vicinity of those airports and aviation facilities essential for the State's transport infrastructure or the national defence system should avoid: • Adversely affecting the safety and operational efficiency of those airports and aviation facilities; • Large increases in the numbers of people adversely affected by significant aircraft noise; and • Increasing the risk to public safety near the ends of airport runways.	The development does not expose people to significant aircraft noise, no increase in the risk to public safety near the ends of the Gladstone airport runway. The former Calliope Sire planning scheme overlay identifies in relation to the existing Gladstone airport: • The MOF may be located within the 8km buffer. • The LNG plant is not within the Obstacle Limitation Surface (OLS). Refer to supporting plume rise assessment in accordance with

Long-term policy framework document	Intent / Objective	Assessment of the level of consistency
		CASA requirements (Katestone, 2011b), and Environmental Management Plans. The project will be consistent. Refer Figure 4.2.
SPP 2/02 Planning and Managing Development Involving Acid Sulfate Soils.	Development involving acid sulfate soils in low-lying coastal areas should be planned and managed to avoid potential adverse effects on the natural and built environment (including infrastructure) and human health.	Actual and potential acid sulfate soils exist between 0-20 m Australian Height Datum. The coastally dependent aspects of the project will be consistent with SPP 2/02 to the extent consideration has been given to the intent and outcomes in the planning and engineering design, and through the proposed management of construction impacts in the low lying coastal areas. Refer to the Acid Sulfate Soils assessment (Coffey Geotechnics, 2011a).
SPP 1/03 Mitigating theAdverse Impacts of Flood, Bushfire and Landslide.	Development should minimise the potential adverse impacts of flood, bushfire and landslide on people, property, economic activity and the environment. Outcome 1: Within natural hazard management areas, development to which this SPP applies is compatible with the nature of the natural hazard, except where: • the development proposal is a development commitment; or • there is an overriding need for the development in the public interest and no other site is suitable and reasonably available for the proposal. Outcome 2: Development that is not compatible with the nature of the natural hazard but is otherwise consistent with Outcome 1: • minimises as far as practicable the adverse impacts from natural hazards; and • does not result in an unacceptable risk to people or property. Outcome 3: Wherever practicable, community infrastructure to which this SPP applies is located and designed to function effectively during and immediately after natural hazard events commensurate with a specified level of risk.	The former Calliope Shire planning scheme overlay identifies: • The LNG plant site as being medium bushfire hazard. • The gas pipeline corridor as a medium bushfire hazard. • The north west corner of the LNG plant has a small area of slope greater than 15% associated with Ship Hill. The LNG plant balanced cut and fill and batters designs have been designed to avoid landslide. Refer to section 5.9 of this report in relation to specific bushfire risk. Climate change implications, flooding and landslide through geotechnical survey and investigation considered as part of engineering design. Refer also to the geology and soils (Coffey Environments, 2011a), climate change (PAE Holmes, 2011a) and bushfire technical studies (Eco Logical, 2011). The project will be consistent.
SPP 1/07 Housing and Residential Development including Guideline.	Local governments identify the housing needs of their community and analyse, and modify if necessary, their planning scheme to	Refer to the Social Impact Assessment and Social Impact Management Plan (SKM, 2011).

Long-term policy framework document	Intent / Objective	Assessment of the level of consistency
	remove barriers to and provide opportunities for a range of housing options that respond to the housing needs of the community.	
SPP 2/07 Protection of Extractive Resources and Guideline.	To identify those extractive resources of State or regional significance where extractive industry development is appropriate in principle, and aims to protect those resources from developments that might prevent or severely constrain current or future extraction when the need for the resource arises. Extractive resources include sand, gravel, quarry rock, clay and soil and are used in concrete, asphalt, road bases and a range of other products. The Policy identifies the location of such extractive resources as key resource areas (KRAs), each of which contain three elements – a resource/processing area, a separation area and an associated transport route (which also includes a transport route separation area) where such a link is needed from the resource / processing area to a major road or railway.	The development does not impact on existing key resource areas (KRAs), resource / processing area, separation area or the associated transport route. Refer Figure 4.8.
Temporary State Planning Policy 1/10 Protecting Wetlands of High Ecological Significance in Great Barrier Reef Catchments.	To avoid further loss or degradation of natural wetlands unless overriding public interest can be shown; and base the management and use of natural wetlands on ecologically sustainable management and integrated catchment management practices.	Refer to the marine ecology assessment (Coffey Environments, 2011b) the identification and mapping of wetlands of high ecological significance in the Great Barrier Reef catchments. The LNG plant, including Boatshed Point and potential tunnel portal on the mainland are not defined as wetlands of high environmental significance under the Temporary SPP 'Protecting Wetlands of High Ecological Significance in Great Barrier Reef Catchments'. However, they are defined as wetlands where operational works and/or MCU applications will be required to be referred to DERM. The objectives of the temporary policy are consistent with SPP relating to wetlands in general. The key policy objectives are to ensure wetlands are not adversely affected and that the hydrological and ecological systems are maintained. Applicable legislation and regulations for the affected wetlands are the *Coastal*

Long-term policy framework document	Intent / Objective	Assessment of the level of consistency
		Protection and Management Act 1995 (Qld), State Coastal Management Plan and the Curtis Coast Regional Coastal Management Plan. The project will be designed, constructed and operated to minimise the loss or degradation of the wetlands and their values. Loss of wetlands and values will be offset as part of an integrated environmental offset strategy. Refer Figures 4.12 and 4.13.
State Coastal Management Plan.	The State Coastal Plan provides statewide direction and guidance for coastal management based on the following topic areas: • Coastal use and development. • Physical coastal processes. • Public access to the coast. • Water quality. • Indigenous Traditional Owner cultural resources. • Cultural heritage • Coastal landscapes. • Conserving nature. • Coordinated management. • Research and information.	Implementation of the Curtis Coastal Plan is a key mechanism for achieving the State Coastal Plan's coastal management outcomes, principles and policies. Refer to the supporting hydrodynamic modelling, marine water quality and coastal process technical studies (BMT WBM, 2011), and Environmental Management Plans. Consistent to the extent the project is coastally dependent development.
Curtis Coast Regional Coastal Management Plan.	The Curtis Coast Regional Coastal Management Plan (CCRCMP) describes how the coastal zone in the Curtis Coast region is to be managed within the policy framework established by the State Coastal Management Plan.	The CCRCMP identifies the key challenge for coastal management within the Curtis Coast region in the future is the long term management of further development related to the Port of Gladstone and associated industrial development, and the management of significant impacts on coastal resources. Refer to the hydrodynamic modelling, marine water quality and coastal process assessments (BMT WBM, 2011). Consistent to the extent the project is coastally dependent development. Refer Figure 4.12.
Draft State Policy Coastal Management.	Intended to address land management activities that do not constitute development under the SP Act. It applies to coastal management districts as declared under the CP& M Act.	Refer to the supporting hydrodynamic modelling, marine water quality and coastal process technical studies (BMT WBM, 2011), and Environmental Management Plans.
Draft State Planning Policy Coastal Protection.	Intended to be a statutory instrument under the SP Act, and is intended to address issues related to land-use planning and development assessment regulated under the SP Act. It will apply to the	Refer to the supporting hydrodynamic modelling, marine water quality and coastal process technical studies (BMT WBM, 2011), and Environmental

Long-term policy framework document	Intent / Objective	Assessment of the level of consistency
	coastal zone and sets out the policy outcomes to be achieved when making or amending a planning instrument, assessing development applications, or designating land for community infrastructure.	Management Plans.
Draft State Planning Policy: Air, Noise and Hazardous Materials	To facilitate the protection of the health and wellbeing of individuals and the community from adverse impacts of air and noise emissions. The SPP will also facilitate the protection of human safety from the impacts of hazardous materials, while preserving the viable operation of industrial activities in Queensland.	Refer to the supporting air quality (Katestone, 2011a), noise and vibration (Sonus, 2011), waste (Coffey Environments 2011c), health impact (ARUP, 2011), and social impact assessment (SKM, 2011) technical studies, and Environmental Management Plans. The project will be consistent.
Gladstone State Development Area (GSDA) Development Scheme.	The intent of the Development Scheme is to: • Establish a set of objectives for the orderly development of the GSDA. • Provide guidance and a framework for the orderly development of the GSDA. • Identify a range of land use designations for the GSDA and specify the intended purpose of each designation. • Establish a procedure for determination by the Coordinator-General of the suitability of land uses in the GSDA. • Recognise that the Coordinator-General has primary carriage for the development, operation and management of the GSDA. • Recognise that other Government and semi-government agencies, Gladstone Regional Council and the community have an interest in the development, operation and management of the GSDA through the implementation of effective referral and public consultation procedures as appropriate in respect of future development proposals. • Assist in achieving ecological sustainability of activities within the GSDA.	Consistent. For consistency details refer to Table 3.1 of the study. Refer Figures 4.6, 4.10 and 4.11.
Gladstone Ports Corporation Port Land Use Plan 1999.	To ensure the Port of Gladstone is operated effectively, efficiently and on a commercial basis, for the continuing benefit of the Regional Community, Port Users and the State of Queensland, contributes to Gladstone's rating as a potential major industrial site.	Consistent. Marine structures will be located in accordance with the plan, not compromise port activities and infrastructure on or adjoining strategic port land. Refer Figure 4.10 and 4.11. Refer to section 2.3 of report in relation to interaction with GSDA. The

Long-term policy framework document	Intent / Objective	Assessment of the level of consistency
		project will obtain all relevant approvals under the Act and comply with any conditions associated with the issuance of the approval/permit.
Gladstone Ports Corporation Draft Land Use Plan 2010.	To achieve: • The sustainable expansion of port areas to accommodate future growth. • Efficient operation of port infrastructure and the timely provision of identified new port infrastructure. • Responsible use of natural and capital resources. • An appropriate balance between economic, environmental and social issues.	Consistent. Marine structures will be located in accordance with the plan, not compromise port activities and infrastructure on or adjoining strategic port land . Refer Figure 4.10 and 4.11. Refer to section 2.3 of report in relation to interaction with GSDA. The project will obtain all relevant approvals under the Act and comply with any conditions associated with the issuance of the approval/permit.
Gladstone Ports Corporation 50 year Strategic Plan (2008 Update).	To inform stakeholders and the wider community about future capacity and infrastructure growth within the Port of Gladstone and Port Alma.	The plan indicates the main focus of the port's future growth will be the Western Basin Development, which will have a capacity to move 150 to 200 megatonnes of product annually. The plan contemplates development takes in Wiggins Island, Fishermans Landing, Friend and Laird Points, North China Bay, Hamilton Point and Boatshed Point. The plan indicates at North China Bay, a potential two berths could accommodate future LNG exports, while Hamilton Point and Boatshed Point would be developed for bulk, container or break bulk trade. Consistent.
Port of Gladstone Western Basin Master Plan.	To provide the strategic planning framework against which the Coordinator-General and other approval agencies will consider future development in the Port of Gladstone Western Basin (Western Basin). The master plan also discusses the implementation mechanisms to be enacted to achieve efficient and coordinated development of the Western Basin.	The Master Plan recognises LNG proposals represent the most significant and immediate contributor to future development of the Western Basin. The master plan also recognises it has not been prepared solely for the benefit of the LNG industry, rather aimed to meet the needs of all future development in the area. Consistent. Refer Figure 1.2 and 4.3.
Clinton Urban Development Area (UDA), Clinton Interim Land Use Plan and Clinton UDA Regulatory Map.	State land set aside to deliver approximately 230 lots diverse and affordable housing and multiple dwellings for Gladstone. The Clinton Interim Land Use Plan and the Clinton UDA Regulatory Map are in effect until the Development Scheme is completed. During this period, all development applications within the Clinton UDA will be	Located outside study area. Refer Figure 4.11. Therefore taken to be consistent.

Long-term policy framework document	Intent / Objective	Assessment of the level of consistency
	assessed against the Clinton ILUP.	
Central Queensland Regional Growth Management Framework.(CQRGMF)	To manage growth, population change, economic development, protect the environment, and coordinate and integrate infrastructure provision across multiple local government areas.	Consistent with the CQRGMF vision of 'economic growth that is ecologically sustainable and where people and industry work in harmony with the environment for the benefit of both present and future generations whilst respecting the diversity of our past'. In a balanced way, the project is consistent with the integrated guiding principles, outcomes, and to the extent relevant strategies for managing the ecologically sustainable growth and development of the region. The development provides a significant opportunity to diversify the regional and State economy, the local employment base of Gladstone and supports the development of a Central Queensland LNG export industry. Refer Figures 1.1, 1.2, 4.2, 4.3, 4.4, 4.5, 4.6, 4.7, 4.8, 4.12 and 4.13.
Gladstone Integrated Regional Transport Plan.	The Gladstone Integrated Regional Transport Plan (GIRTP) provides an integrated 30-year transport plan prepared for the Gladstone region that considers all modes of transport. The plan aims to provide a strategic framework for the development of a high-quality, safe and efficient transport system for the Gladstone region that considers the needs of the residential population and the economic requirements of major industry and the port in a sustainable manner.	Consistent. Project does not compromise the development or use of the regional transport system.
Gladstone Regional Social Infrastructure Strategic Plan.	To inform and guide future planning activities and investment decisions for strategic social infrastructure in the region.	Social impact assessment and social impact management plan (SKM, 2011) has been prepared for the project. Consistent.
Former Calliope Shire planning scheme.	The planning scheme applies to the project to the extent that proposed self assessable and assessable development is not regulated through other legislation or statutory planning instruments such as the GSDA Development Scheme or the Strategic Port Land Use Plan.	TWAF 8 located outside the GSDA and not located on strategic port land. Refer Figure 4.10. Will be designed to be consistent with the planning scheme (code assessable application). Refer above in relation to consideration of planning scheme overlays.
Former Gladstone City planning scheme.	The planning scheme applies to the project to the extent that proposed self assessable and assessable	TWAF 7 will be designed to be consistent with the planning scheme (impact assessable

Long-term policy framework document	Intent / Objective	Assessment of the level of consistency
	development is not regulated through other legislation or statutory planning instruments such as the GSDA Development Scheme or the Strategic Port Land Use Plan.	application). Therefore taken to be consistent. Refer Figure F014. Refer above in relation to consideration of planning scheme overlays.
Kyoto Protocol to the United Nations Framework Convention on Climate Change (UN, 1998).	Australia is a party to the UN Framework Convention on Climate Change and has signed and ratified the Kyoto Protocol. The aim is to set greenhouse gas emission targets for developed countries.	Considered and applied in the greenhouse gas technical assessment and as part of engineering design, and taken to be consistent.
United Nations Framework Convention on Climate Change (UN, 1992).	The convention establishes a framework for governments to respond to the challenges posed by climate change. The objective of the convention is to stabilise greenhouse gas concentrations in the atmosphere at a level that prevents dangerous anthropogenic interference with the climate system, within an appropriate time frame.	Considered and applied in the climate change technical assessment and as part of engineering design, and taken to be consistent.
Equator Principles.	The principles are a voluntary set of standards for determining, assessing and managing social and environmental risk in project financing. The principles are based on the International Finance Corporation (IFC) performance standards on social and environmental sustainability, and on the World Bank Group's Environmental, Health and Safety general guidelines. The principles have been adopted by Equator Principles Financial Institutions (EPFIs) to ensure that the projects financed are developed in a manner that is socially responsible and reflect sound environmental management practices. The Principles apply to all new project financings globally with total project capital costs of US$10 million or more, and across all industry sectors. The EPFIs apply the following social and environmental categorisation, based on IFC's environmental and social screening criteria: • Category A – Projects with potential significant adverse social or environmental impacts that are diverse, irreversible or unprecedented; • Category B – Projects with potential limited adverse social or environmental impacts that are few in number, generally site-specific,	Considered a Category B project, guiding the environmental and social impact assessment (ESIA) process, and taken to be consistent.

Long-term policy framework document	Intent / Objective	Assessment of the level of consistency
	largely reversible and readily addressed through mitigation measures; and • Category C – Projects with minimal or no social or environmental impacts.	
International Finance Corporation (IFC).	IFC's Performance Standards define clients' roles and responsibilities for managing their projects and the requirements for receiving and retaining IFC support. The standards include requirements to disclose information. Applicable IFC Performance Standards include: • Performance Standard 1: Social & Environmental Assessment & Management System • Performance Standard 2: Labor and Working Conditions • Performance Standard 3: Pollution Prevention and Abatement • Performance Standard 4: Community Health, Safety and Security • Performance Standard 5: Land Acquisition and Involuntary Resettlement • Performance Standard 6: Biodiversity Conservation and Sustainable Natural Resource Management • Performance Standard 7: Indigenous Peoples • Performance Standard 8: Cultural Heritage Guidance notes, which relate to each of the performance standards, provide additional direction to clients (and IFC staff) in fulfilling their roles and responsibilities under the standards.	Considered and applied in the ESIA screening, scoping of technical studies, and technical study assessments. Taken to be consistent.
International Finance Corporation (IFC) Environmental Noise Management Guideline.	IFC General Environmental Health and Safety Guidelines for noise specify a daytime (out of doors) level of 55 dBA during daytime (7 am to 10 pm) and 45 dBA at night (10pm – 7am). These levels apply for residential, institutional, and educational facilities and are to be measured as a one-hour Leq, or the summation of noise over a selected period of time. IFC Guidelines state that noise impacts should not exceed these levels, or “result in a maximum increase in background levels of 3dB at the nearest receptor	Considered and applied in the noise and vibration technical study (Sonus, 2011), and taken to be consistent.

Long-term policy framework document	Intent / Objective	Assessment of the level of consistency
	location off site".	
International Finance Corporation; World Bank Group. Introduction to Health Impact Assessment. Washington, 2009.	The document provides direction on conducting a health impact assessment (HIA) to determine potential impacts on community health as a result of project development. The document also presents approaches to assess and address potential community health impacts that might typically be encountered in the development or review of existing or future industrial projects; provides guidance on a HIA TOR and integration of health impacts into ESIA process.	Considered and applied in the HIA social impact assessment (ARUP, 2011), and taken to be consistent.
International Association of Oil and Gas Producers. Strategic Health Management; Principles and Guidelines for the Oil and Gas Industry. Report No. 6.88/307, June 2000.	The document provides a basis for incorporating workforce and community health considerations systematically into project planning and management. The focus of this document is on community health rather than workplace or workforce health.	Considered and applied in the HIA (ARUP, 2011), and taken to be consistent.
International Council on Mining and Metals. Good Practice Guidance on Health Impact Assessment. London, 2010.	The document provides guidance on health impact assessment: • Provides a focus on social determinants. • Advocates for Health Impact Assessment during the early internal feasibility and planning stages of a project, followed up with more formal external commissioned HIAs and ESHIAs. • Develops a hierarchy of health enhancement, in combination with health risk mitigation, for considering mitigation and enhancement measures. • Recognises the link between occupational health risk assessment and (community) health impact assessment.	Considered and applied in the HIA (ARUP, 2011), and taken to be consistent.
World Health Organization Guidelines for Community Noise (WHO, 1999).	The guidelines address annoyance and health effects from community noise. The guideline has set specific values for the onset of health effects from noise exposure. The guidelines have specified values, adverse health effects and suitable noise levels appropriate for varied environments. WHO also suggests a noise measure based only on energy summation and expressed as the conventional equivalent measure (LAeq) is not enough to characterise most noise environments. Rather it is equally	Considered and applied in engineering design and acoustic technical study (Sonus, 2011), and taken to be consistent.

Long-term policy framework document	Intent / Objective	Assessment of the level of consistency
	important to measure the maximum values of noise fluctuations, preferably combined with a measure of the number of noise events.	
Operational Guidelines for the Implementation of the World Heritage Convention.	To be included on the World Heritage List, sites must be of outstanding universal value and meet at least one out of ten selection criteria. These criteria are explained in the Operational Guidelines for the Implementation of the World Heritage Convention (2008). The Great Barrier Reef World Heritage Area, which includes Curtis Island, has been deemed to meet World Heritage Area criteria, being: • Outstanding example representing a major stage of the earth's evolutionary history. • An outstanding example representing significant ongoing geological processes, biological evolution and man's interaction with his natural environment. • Contains unique, rare and superlative natural phenomena, formations and features and areas of exceptional natural beauty. • Provides habitats where populations of rare and endangered plants and animals still survive.	Considered and applied in terrestrial (Ecosure, 2011) and marine ecology (Coffey Environments, 2011b), and landscape and visual amenity (AECOM, 2011) technical studies, and taken to be consistent.
An Introduction to Australian and New Zealand Guidelines for Fresh and Marine Water Quality (ANZECC/ARMCANZ, 2000).	The main objective of the Australian and New Zealand Guidelines for Fresh and Marine Water Quality is to provide an authoritative guide for setting water quality objectives required to sustain current, or likely future, environmental values [uses] for natural and semi-natural water resources in Australia and New Zealand. The guidelines recognise the following environmental values: • Aquatic ecosystems. • Primary industries (irrigation and general water uses, stock drinking water, aquaculture and human consumers of aquatic foods). • Recreation and aesthetics. • Drinking water. • Industrial water (no water quality guidelines are provided for this environmental value). • Cultural and spiritual values (no water quality guidelines are provided for this environmental value).	Considered and applied in engineering design and freshwater and marine technical studies, and taken to be consistent.

Long-term policy framework document	Intent / Objective	Assessment of the level of consistency
Carbon Pollution Reduction Scheme: Australia's Low Pollution Future (White Paper) (Australian Government, 2008).	The paper and subsequent defeated bill of parliament provided a framework for ensuring compliance with Australia's Kyoto targets and successive international agreements to constrain greenhouse gas emissions.	Considered and applied in engineering design and energy efficiency and greenhouse gas assessment (PAE Holmes, 2011b), and taken to be consistent.
National Environment Protection (Assessment of Site Contamination) Measure (NEPC, 1999).	The measure provides a nationally consistent framework for assessment of contaminated land to enable sound environmental management practices by the community, which includes regulators, site assessors, environmental auditors, landowners, developers and industry. Through the framework, the measure aims to provide adequate protection of human health and the environment.	Considered and applied in contaminated land technical study, and taken to be consistent.
National Greenhouse Strategy (Australian Government, 1998).	The strategy is a mechanism for fulfilling Australia's international obligations under the United Nations Framework Convention on Climate Change. The goals of the National Greenhouse Strategy are to: • Limit net greenhouse gas emissions, in particular, to meet our international commitments. • Foster knowledge and understanding of greenhouse issues. • Lay the foundations for adaptation to climate change.	Considered and applied in engineering design and energy efficiency and greenhouse gas assessment (PAE Holmes, 2011b), and taken to be consistent.
The Burra Charter: The Australia ICOMOS Charter for Places of Cultural Significance 1999: with Associated Guidelines and Code on the Ethics of Coexistence (Australia ICOMOS, 2000).	The Burra Charter is a nationally accepted code of practice for heritage assessments and provides guidance for the conservation and management of places of cultural significance. The Burra Charter defines a place of cultural significance as a site, area, land, landscape, building or other work that contains value for past, present or future generations. The charter addresses aesthetic, historic, scientific, and social and spiritual values.	Considered and applied in cultural heritage technical study (Heritage Consulting Australia, 2011), and taken to be consistent.
AS 2885 pipelines-gas and liquid petroleum.	AS 2885 applies to steel pipelines and associated piping and components that are used to transmit single-phase and multi-phase hydrocarbon fluids, such as natural and manufactured gas, liquefied petroleum gas, natural gasoline, crude oil, natural gas liquids and liquid petroleum products. The objective of the	Considered and applied in engineering design, and taken to be consistent.

Long-term policy framework document	Intent / Objective	Assessment of the level of consistency
	Standard is to provide requirements for the safe design, construction and operation of pipelines that carry petroleum fluids.	
AS 4360 risk management.	This Standard provides a generic guide for managing risk. This Standard may be applied to a very wide range of activities, decisions or operations of any public, private or community enterprise, group or individual. The objective of this Standard is to provide guidance to enable public, private or community enterprises, groups and individuals to achieve: • A more confident and rigorous basis for decision-making and planning. • Better identification of opportunities and threats. • Gaining value from uncertainty and variability. • Pro-active rather than re-active management. • More effective allocation and use of resources. • Improved incident management and reduction in loss and the cost of risk, including commercial insurance premiums. • Improved stakeholder confidence and trust. • Improved compliance with relevant legislation. • Better corporate governance.	Considered and applied in engineering design, and taken to be consistent.
Australian Standard 3959 construction of buildings in bushfire-prone areas	Development of buildings on bushfire-prone land should comply with bushfire construction requirements under AS 3959, which provides construction requirements for buildings within, or proposed within, bush fire prone lands.	Bushfire assessment undertaken. LNG plants are not considered specifically within the AS 3959 (2009) standard, however, this standard has been considered for hazard assessment purposes.
APIA Code of Environmental Practice – Onshore Pipelines.	The purpose of the Code is to provide minimum environmental management standards for the Australian onshore pipeline industry, encouraging the adoption and integration of appropriate environmental management systems and procedures. Consequently, it forms the basis for the environmental management guidelines required for project approvals, contributing to the improved efficiency of regulatory approvals processes. In so doing, the Code allows Environmental Management Plans to focus on	Considered and applied in engineering design, and taken to be consistent.

Long-term policy framework document	Intent / Objective	Assessment of the level of consistency
	project specific management issues. The Code applies to the Australian pipeline industry; in particular, pipeline planning, design, construction, operation and decommissioning.	
APPEA Code of Environmental Practice.	This Code of Environmental Practice gives guidance on objectives to be achieved when managing environmental impacts associated with petroleum exploration and production. Recognising the need to avoid or minimise and manage impacts to the environment, this code of environmental practice includes four basic recommendations to APPEA members undertaking activities: • Assess the risks to, and impacts on, the environment as an integral part of the planning process. • Reduce the impact of operations on the environment, public health and safety to as low as reasonably practicable and to an acceptable level by using the best available technology and management practices. • Consult with stakeholders regarding industry activities. • Develop and maintain a corporate culture of environmental awareness and commitment that supports the necessary management practices and technology, and their continuous improvement.	Considered and applied in engineering design, and taken to be consistent.
National Assessment Guidelines for Dredging 2009	The guidelines establish a framework for the environmental impact assessment and permitting of the ocean disposal of dredged material. The framework includes: • Evaluating alternatives to ocean disposal. • Assessing loading and disposal sites. • Assessing potential impacts on the marine environment and other users. • Determining management and monitoring requirements.	Guidelines considered and applied in development of sediment and analysis program and dredging program.
Civil Aviation Safety Authority (CASA) Guidelines for Conducting Plume Rise Assessments	The guidelines provide direction to aerodrome operators and persons involved in the design, construction and operation of facilities with exhaust plumes about the information required to assess the potential hazard from a plume rise to aircraft operations. Aviation	Plume rise assessment (Katestone, 2011b) undertaken in accordance with CASA guidelines.

Long-term policy framework document	Intent / Objective	Assessment of the level of consistency
	authorities have established that an exhaust plume with a vertical gust in excess of 4.3 metres/second (m/s) may cause damage to an aircraft airframe, or upset an aircraft when flying at low levels.	
National Strategy for Ecologically Sustainable Development 1992	The strategy was designed primarily to: • Enhance individual and community well-being and welfare by following a path of economic development that safeguards the welfare of future generations. • Provide for equity within and between generations. • Protect biological diversity and maintain essential ecological processes and life-support systems. Within the strategy there are five key principles for achieving sustainability: • Integration of economic, social and environmental considerations. • Precautionary principle. • Intergenerational equity. • Conservation of biological diversity and ecological integrity. • Improved valuation, pricing and incentive mechanisms.	Strategy considered in engineering design, therefore applied.
Queensland Water Quality Guidelines 2009.	The guidelines are intended to address the need identified in the ANZECC 2000 Guidelines by: • Providing guideline values (numbers) that are tailored to Queensland regions and water types. • Providing a process/framework for deriving and applying more locally specific guidelines for waters in Queensland. Specific environmental values and water quality objectives under the EPP (Water) have not been declared for the receiving waters of The Narrows and Port Curtis Region, although guidelines for the Central Coast Queensland Region are set out in the QWQG (2006), prepared under the policy. These provide values for waters in the region including those in Port Curtis and adjoining waterways.	Guidelines applied in marine ecology technical study (Coffey Environments, 2011b) and marine water quality assessment, (BMT WBM, 2011) and therefore taken to be consistent.
Guidelines to Minimise Mosquito and Biting Midge Problems in New Development Areas	These guidelines provide advice on ways to prevent or minimise the impact of mosquitoes and biting midges in new development areas. Mosquitoes and midges can be a	Health impact assessment (ARUP, 2011) and detailed engineering design consideration of guidelines. Taken to be consistent.

Long-term policy framework document	Intent / Objective	Assessment of the level of consistency
	significant community concern in developing areas with the insects being vectors for possible disease and a biting nuisance. The Guidelines to Minimise Mosquito and Biting Midge Problems in New Development Areas are designed to assist town planners, developers and engineers, during the review of planning schemes and design of development proposals, to minimise the effects of mosquitoes and biting midges. These guidelines are relevant to development in the vicinity of wetland areas in coastal and inland regions. The guidelines contain: • Avoidance measures for consideration by local governments in land-use planning and development assessment. • The mitigation approaches to be adopted on lands included in development proposals, where the development may expose significant numbers of people to insect vectors and pests.	
Queensland Urban Drainage Manual (QUDM).	A manual for the design of urban stormwater drainage works, including details of technical and regulatory aspects for planning of drainage works, formalising the design processes, and details of appropriate design methods and computational procedures.	Detailed engineering design will apply QUDM. Taken to be consistent.
Guidelines for assessment of road impacts of development (DMR, 2006).	The guidelines provide information about the steps involved in assessing road impacts of a project and identifying measures to mitigate any road impacts.	Traffic and transport technical study (GTA, 2011) applies the road impact assessment. Therefore taken to be consistent.
Roads Implementation Program (RIP) 2008-09 to 2012-13, Fitzroy Region.	The capital works program is a primary mechanism for delivering roads to meet current and future needs. The RIP is a rolling five-year program of works, with committed funding for projects in the first two years and indicative funding for planning purposes over the following three years.	Traffic and transport technical study (GTA, 2011) considers the RIP as it relates to the project area. Consistent.
Roads Connecting Queenslanders.	Roads Connecting Queenslanders, developed within the framework of the Transport Infrastructure Act 1994, outlines the role of roads in linking Queensland's communities now and into the future. The document ensures that road system management and infrastructure investment supports the	Traffic and transport technical study (GTA, 2011) considers the framework as it relates to the project area. Consistent.

Long-term policy framework document	Intent / Objective	Assessment of the level of consistency
	Government's social, economic and environmental priorities.	
The Gladstone Land, Port, Road and Rail Infrastructure Study (2008).	The updated study, prepared in collaboration with Queensland Rail and the Department of Infrastructure and Planning, focused on the preservation of corridors between the port, the Gladstone State Development Area, and the broader region.	Traffic and transport technical study (GTA, 2011) considers the study as it relates to the project area. Consistent.
Environmental Protection Policies (EPP).	Environmental Protection Policies (EPP) aim to protect the environmental values identified for Queensland in accordance with the *Environment Protection Act 1994* (Qld) (EP Act). The EPP (Air) is to be reviewed every 10 years with the revised EPP (Air) 2008 having commenced on January, 2009. Air quality objectives from the following guidelines and standards may be adopted where the EPP (Air) does not provide any assessment criteria for hydrocarbons: • NSW Department of Environment and Climate Change (NSW DECC) Approved Methods for the Modelling and Assessment of Air Pollutants in NSW 2005. • Victorian State Environment Protection Policy (Air Quality Management) 2001. • World Health Organisation (WHO) Guidelines for Air Quality (Chapter 3) 2003. • National Exposure Standards for Atmospheric Contaminants in the Occupational Environment (NOHSC:1003(1995). In Queensland, the relevant noise legislation under the EP Act is the Environmental Protection (Noise) Policy 2008 (EPP (Noise)). The objective of the EP Act is to protect Queensland's environment while enabling ecologically sustainable development. The EP Act enables development of the Protection Policies and sets criteria for specific noise offence. The environmental values to be enhanced or protected under this policy include: • The qualities of the acoustic environment that are conducive to protecting the health and biodiversity of ecosystems.	Policy requirements considered in technical studies and engineering design.

Long-term policy framework document	Intent / Objective	Assessment of the level of consistency
	• The qualities of the acoustic environment that are conducive to human health and wellbeing, including by ensuring a suitable acoustic environment for individuals to do any of the following: – Sleep. – Study or learn. – Be involved in recreation, including relaxation and conversation. • The qualities of the acoustic environment that are conducive to protecting the amenity of the community. The EPP (Noise) provides acoustic quality objectives. However, it does not set noise criteria for industrial development. Specific noise legislation and guidelines include: • Department of Environmental and Resource Management (DERM) EcoAccess Guideline Planning for Noise Control 2004. • DERM E1 Construction Noise Criteria. • International Finance Corporation (IFC) Environmental Noise Management Guideline. • WHO Guidelines for Community Noise 1999. The EPP (Water) states a management hierarchy process, to control activities that may affect ground and surface water. The policy states that the release of waste water or contaminants to waters must be dealt with using the following hierarchy of preferred procedures: • Evaluate water conservation measures to reduce the use of water and the production of waste water or contaminants. • Evaluate waste prevention options and implement appropriate waste prevention measures. • If waste prevention does not, or is not likely to, eliminate the release of waste water or contaminants to waters, evaluate treatment and recycling options and implement appropriate treatment and recycling. • If treatment and recycling does not, or is not likely to, eliminate the release of waste water or contaminants to waters, evaluate	

Long-term policy framework document	Intent / Objective	Assessment of the level of consistency
	the following options for waste water or contaminants, in the order in which they are listed: – Appropriate treatment and release to a waste facility or sewer. – Appropriate treatment and release to land. – Appropriate treatment and release to surface waters or ground waters. The Environmental Protection (Waste Management) Policy 2000: • Identifies environmental values to be enhanced or protected. • Provides a framework for the administering authority to make consistent and fair decisions that: – Ensure waste is managed in a way that is consistent with ecologically sustainable development. – Minimise the impact of waste on the environment including, in particular, the impact of waste so far as it directly affects human health. – Minimise the amount of waste generated from all sources. – Promote efficiency in the use of resources. – Promote the maximum use of wastes as a resource. – Otherwise achieve continuous improvement in the standard of waste management activities. • Provides for the preparation of waste management programs to: – Minimise the amount of waste generated. – Promote efficiency in the use of resources. • Provides for the preparation of industry waste reduction programs. • Provides for government planning for waste management	
FHMOP 004, Dredging, Extraction and Spoil Disposal Activities.	The policy objectives 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: • 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	Compliance with FHMOP 004 requirements will be achieved through consideration in the marine ecology technical study and dredge management plan, and therefore taken to be consistent.

Long-term policy framework document	Intent / Objective	Assessment of the level of consistency
	waterway management, dredging for development and spoil disposal). • Achieving optimum community, economic and other benefits obtainable from fisheries resources. • Ensuring equitable access to fisheries resources. • 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. • Encouraging the protection and enhancement of fisheries resources. • Providing an assessment process.	
Code for Self-Assessable Development; Works for education, research and monitoring purposes involving marine plant removal or disturbance (Code MP05, May 2008)	The code provides for self assessable compliance for removal and disturbance of marine plants under limited circumstances.	The scale of works associated with construction of the LNG plant and associated infrastructure will likely trigger assessable development requirements under FHMOP 004, described above. Compliance with self assessable code MP05 will be achieved (where applicable).
Gladstone Ports Development Code.	A development will be assessed against the LUP 2010, and relevant state legislation (in conjunction with the Gladstone Port Development Code), to determine: • Consistency with the 'development vision' for the port • Correlation with the intent of the relevant land use precinct • The ability of the development to meet relevant development assessment principles and criteria. The Code, which contains individual codes and associated policies, is a mechanism for development to achieve compliance with the provisions of LUP 2010. The Code provides performance criteria and probable solutions to ensure that buildings, facilities and other development will realise the desired overall outcomes, locality and precinct intents and the development vision for acceptable land uses described in the LUP 2010.	GPC are currently preparing the code and a draft version is currently not available.

Long-term policy framework document	Intent / Objective	Assessment of the level of consistency
	The Code is not a land use decision-making tool, but instead is a technical document that describes the requirements for the physical form and operational aspects of different types of development on strategic port land. The Code and allied policies are contained within a separate document to the LUP 2010, but assist, in association with the LUP 2010 and other relevant statutory provisions, in assessing development on strategic port land.	
Toward Q2:Tomorrow's Queensland.	The Queensland Government has framed its 2020 vision for Queensland around five ambitions that address current and future challenges: • Strong economy. • Green environment. • Smart education. • Healthy Queenslanders. • Fair communities.	Social impact assessment and social impact management plan (SKM, 2011) has been prepared for the project. Consistent.
Sustainable Resource Communities Policy.	The policy commits to strengthening social impact assessment as well as to development of a Major Project Housing Policy. Under the policy, proponents of new or expanded major resource development projects will be required to develop a social impact management plan.	Social impact assessment and social impact management plan (SKM, 2011) has been prepared for the project. Consistent.
Sustainable Resource Communities Policy Social impact assessment in the mining and petroleum industries.	The policy is initially focused on resource communities, where rapid development brought about by the resources boom is having significant impacts on community infrastructure and services, and the social structure of local and regional communities that support the new or expanded mining and petroleum developments. Resource communities are those local or regional communities that depend on or are affected by mineral extraction and associated activities, including petroleum and gas proposals.	Social impact assessment and social impact management plan (SKM, 2011) has been prepared for the project. Consistent.
Social impact assessment Preparing a social impact management plan: draft guideline	The draft guideline aims to help proponents develop a social impact management plan in collaboration with stakeholders. The plan must be prepared in accordance with the Sustainable Resource Communities Policy and the Queensland Government's environmental impact assessment and resource development legislation, policies and procedures.	Social impact assessment and social impact management plan (SKM, 2011) has been prepared for the project. Consistent.

Long-term policy framework document	Intent / Objective	Assessment of the level of consistency
Draft Sustainable Resource Communities Housing Policy.	The policy supports better planning for, and responses to, housing issues in resource communities. The policy is intended to make government's expectations of the type of accommodation and housing issues that industry will need to consider clearer.	Social impact assessment and social impact management plan (SKM, 2011) has been prepared for the project. Consistent.
Development Code on Temporary Accommodation Buildings and Structures.	The code ensures suitable building standards are in place for temporary accommodation such as single persons' quarters.	The construction camp and TWAF detailed design will have regard to requirements.
Transport Infrastructure Policy (GRC, 2002).	The policy provides the methodology for, and calculations for contributions for the Gladstone sub-arterials and major collector road network in Gladstone.	Traffic and transport technical study (GTA, 2011) considers the relevance of the policy as it relates to the project area.
Land Use Safety Planning (NSW Hazardous Industry Planning Advisory Paper Number 10)	Land use safety planning is essentially a mechanism for dealing with actual or potential conflicts between sources of risk, such as potentially hazardous industrial developments, and surrounding land uses. The risk acceptability criteria presented in the HIPAP documents have been adopted for use by Queensland.	Hazard and risk technical study (Planager, 2011) considers the paper as it relates to the project. Consistent.
Hazard Analysis (NSW Hazardous Industry Planning Advisory Paper No 6)	This document provides guidance on the general approach recommended for hazard analysis and details the requirements for reports to be submitted to government. For new development, a distinction is made between a preliminary hazard analysis (PHA) and a final hazard analysis (FHA). The PHA is required at an early stage of the project and a report on the PHA is typically required with the development application. A PHA may be based on limited information since complete data on the design and precise safeguards may not be available at the initial stage. The PHA should be as final and comprehensive as the available information allows. An outcome of the PHA may be the selection of technology or the site for the development. The results of the PHA form an input to the later stages of the project development. The final hazard analysis extends and updates the PHA with design information that becomes available as the project progresses. It also draws upon and feeds into the results of other studies carried out	Hazard and risk technical study (Planager, 2011) considers the paper as it relates to the project. Consistent.

Long-term policy framework document	Intent / Objective	Assessment of the level of consistency
	as part of the development approval process, including the hazard and operability study, fire safety study and emergency planning.	

Attachment B

Terms of Reference Cross Reference Table for the Land Use and Planning Technical Study

Terms of reference		Coffey Environments	
Section	**EIS requirement**	**Technical Study Name**	**Technical specialist report section**
Section 1.9 Project Approvals	This section should identify and explain the legislation and policies controlling the approvals process and should identify all the approvals, permits and licences that will need to be obtained for the development of the proposed project including those on strategic port land and state development area land and environmental authorities for all parts of the project.	Land Use and Planning Technical Study	Section 2, Section 5, Tables 5.1 and 5.2, and Attachment A.
	This section should discuss the project's consistency with existing land uses or long-term policy framework for the area (e.g., as reflected in local and regional plans) and with legislation, standards, codes or guidelines available to monitor and control operations on site. This section should refer to all relevant Queensland and regional planning policies. This information is required to demonstrate how the proposal conforms to state, regional and local plans for the area. In particular, the relevant planning schemes for the Gladstone State Development Area, the Gladstone Port Western Basin Master Plan and the Curtis Coast Regional Coastal Management Plan and the Central Queensland Regional Growth Management Framework. should be discussed.	Land Use and Planning Technical Study	Section 2, Section 5, Tables 5.1 and 5.2, and Attachment A.
Section 3.2.3.1 Land use and Tenure Description of Values	The EIS should identify the following, with the aid of maps: Land tenure (including reserves, tenure of special interest such as protected areas and forest reserves, roads, railways, and stock routes).	Land Use and Planning Technical Study	Section 4.2
	Land use (urban, residential, industrial, agricultural, GQAL, forestry, recreational, mining exploration tenures, mining leases, mining claims, mineral development licences, extractive industry permits, petroleum authorities, state development areas).	Land Use and Planning Technical Study	Section 4.3
	Areas covered by applications for native title determination, with a description of Native Title Representative Bodies (NTRB) boundaries.	Land Use and Planning Technical Study	Section 4.4
	Information on any known occurrences of economic mineralisation and extractive resources, petroleum and gas deposits within the project area and the potential impact of the project on these operations and associated tenements (e.g., Stuart Shale Oil).	Land Use and Planning Technical Study	Section 4.5
	Location of gas and major water pipelines, power lines, telecommunication cables, roads, railways, bridges, airports, airstrips, helipads and	Land Use and Planning Technical Study	Section 4.5 and 4.6

	any other infrastructure.		
	The distance of the project component from residential and recreational facilities, or other potentially non-compatible land uses.	Land Use and Planning Technical Study	Section 4.7
	Port uses need to be placed into context of the GPC Land Use Plan (1995), and any subsequent version.	Land Use and Planning Technical Study	Section 4.8
	Recreational and commercial fishing activities and values undertaken in proximity to the site and offshore area should be described.	Land Use and Planning Technical Study	Section 4.9
	Location of existing dwellings and the zoning of all affected lands according to any existing town or strategic plan, planning schemes, port land use plan and State Development Area development scheme.	Land Use and Planning Technical Study	Section 4
	In particular, the EIS should indicate if the land affected by the proposal is, or is likely, to become part of the protected area estate, or is subject to any treaty. The following should be identified and mapped - national parks, marine parks (State and Commonwealth), conservation parks, nature refuges (conservation agreements) declared fish habitat areas, wilderness areas, areas of state significance (scenic coastal landscapes), areas of state significance (natural resources), coastal wetlands, aquatic reserves, heritage/historic areas or items, national estates, world heritage listings and sites covered by international treaties or agreements (e.g. Ramsar, JAMBA, CAMBA), areas of cultural significance and scientific reserves.	Land Use and Planning Technical Study	Section 4.10
	MNES under the Commonwealth's EPBC Act should be described in section 8 and mapped where possible.	Land Use and Planning Technical Study	Section 4.10
Section 3.2.3.2 Land use and Tenure Potential Impacts and Mitigation	The potential for the construction and operation of the project to change existing land uses of the project sites and adjacent areas should be detailed. Consideration should be given to impacts arising from property disruption and severance, construction and maintenance.	Land Use and Planning Technical Study	Sections 5, 6 and 7
	The potential environmental harm to adjacent areas currently used for agriculture, urban	Land Use and Planning Technical	

	development, recreation, tourism or other business, and the constraints on land uses should be described. Incompatible land uses (existing and proposed) should be identified and measures to avoid unacceptable impacts defined.	Study	
	In particular, the discussion should: Assess the compatibility of the proposal with surrounding land uses (e.g. mining, residences, agriculture).	Land Use and Planning Technical Study	
	Describe possible impacts on surrounding land uses and human activities, including impacts to tidal lands (addressing loss of access to land and waterways and tidal lands).	Land Use and Planning Technical Study	
	Describe fragmentation of sites, increase of fire risk and impacts on residential and industrial uses.	Land Use and Planning Technical Study	
	Describe strategy and progress in relation to making of native title agreements, including NTRBs, consultant selection, traditional owner involvement and related statutory processes.	Land Use and Planning Technical Study	
	Outline the potential issues involved in proximity of the project to electric power transmission lines and electrified rail lines, both at crossing points, where lines run parallel, and where construction and maintenance machinery is used in the vicinity of other infrastructure corridors.	Land Use and Planning Technical Study	
	Identify if millable timber or quarry resources exist on the pipeline route and LNG plant site and conduct an assessment of the commercial value of these resources.	Land Use and Planning Technical Study	
Section 7 Cumulative Impacts	The purpose of this section is to provide a summary of the cumulative impacts from the project which should have regard to both geographic location and environmental values.	Land Use and Planning Technical Study	Section 8
Section 9 Environmental Management Plan	This section of the EIS should detail the EM Plan developed for the project.	Land Use and Planning Technical Study	Sections 6 and 7
Section 12.3 Development	A list of the development approvals required by	Land Use and Planning Technical	Table 5.2

Approvals	the project should be presented.	Study	
Part B		Land Use and Planning Technical Study	Section 11