



INITIAL ADVICE STATEMENT

Shell CSG (Australia) Pty Ltd

Shell Australia LNG Project

May 2009



CONTENTS

1.	INTRODUCTION	3
1.1	Background	3
1.2	The Proponent	3
	1.2.1 Overview	3
	1.2.2 Contact Details	5
1.3	Purpose of this Initial Advice Statement	6
2.	PROJECT CONTEXT AND JUSTIFICATION	7
2.1	Project Rationale and Need	7
2.2	Project Resource	7
2.3	Market Analysis	8
2.4	Socio-economic Benefits	9
3.	PERMITTING REQUIREMENTS	10
3.1	Approvals Processes for Other Project Components	10
3.2	Principal Licences and Permits	10
3.3	Environmental and Social Impact Assessment	11
3.4	Other Legislation, Regulations, Conventions and Treaties	12
4.	PROJECT DESCRIPTION	14
4.1	Location	14
4.2	Site Investigations	14
4.3	Proposed Infrastructure	18
4.4	Construction	19
	4.4.1 Land-based Activities	19
	4.4.2 Marine-based Activities	20
4.5	Environmental Rehabilitation	20
4.6	Testing and Commissioning	21
4.7	LNG Facility Operation and Maintenance	21
4.8	Decommissioning	22
4.9	Management of Occupational Health and Safety	22
4.10	Project Schedule	23
5.	EXISTING ENVIRONMENT AND KEY ISSUES	24
5.1	Land Use and Tenure	24
5.2	Landforms, Geology and Soils	24
5.3	Terrestrial Ecology	26
5.4	Marine Ecology	29
5.5	Surface Water Hydrology	30
5.6	Marine Hydrology	33
5.7	Groundwater	33
5.8	Air Quality and Greenhouse Gases	34
5.9	Noise and Vibration	34

5.10	Landscape and Visual	35
5.11	Traffic, Roads and Infrastructure	35
5.12	Marine Traffic	36
5.13	Archaeology and Cultural Heritage	36
5.14	Socio-economic	36
6.	ENVIRONMENTAL MANAGEMENT	38
7.	STUDIES PROGRAM	40
8.	CONSULTATION	41
9.	REFERENCES	42
	LIST OF ABBREVIATIONS	43

Figures

2.1	Shell and Arrow Energy petroleum tenements in the Surat and Bowen basins	8
4.1	Locality map	15
4.2	Precincts of Gladstone State Development Area (GSDA)	16
4.3	Investigation area	17
4.4	Simplified process diagram for LNG production	18
5.1	Land use and tenure	25
5.2	Regional ecosystems	27
5.3	Ground-truthed regional ecosystems	28
5.4	Seagrass distribution of the Fisherman's Landing region, 2007	31
5.5	Seagrass distribution of the Quoin Island and South Trees region, 2007	32

Plates

1.1	LNG carrier berthed at the Karratha Gas Plant, North West Shelf Venture, Western Australia (image provided by Woodside Energy Pty Ltd)	5
4.1	Typical LNG carrier at LNG loading facility (image provided by Sakhalin Energy Investment Company Ltd)	22

Tables

3.1	Legislation, Regulations, Conventions and Treaties	12
4.1	Proposed Development Program	23
7.1	Preliminary Studies Program	40

Appendices

1	Health, Safety, Security and Environment Commitment and Policy
2	Sustainable Development Commitment
3	Climate Change Commitment

1. INTRODUCTION

1.1 Background

Shell CSG (Australia) Pty Ltd (Shell Australia), a wholly owned subsidiary of Royal Dutch Shell plc (Shell), is investigating the development of a Liquefied Natural Gas (LNG) facility on Curtis Island on the central Queensland coast, opposite Gladstone.

The LNG facility is expected to produce up to 16 Mtpa, involving phased construction of up to four LNG trains. It will utilise gas resources supplied from coal seam gas (CSG) developments in the Surat and Bowen basins in South East and Central Queensland. A proposed gas pipeline from the Gladstone City Gate¹ to Curtis Island will supply gas to the LNG plant where it will be processed, cooled and stored in LNG tanks for subsequent loading onto LNG carriers via a jetty and export to international markets.

Shell Australia and Arrow Energy Ltd (Arrow Energy) have agreed to work together to investigate LNG developments in Queensland. Shell is a global leader in LNG production, transportation and supply, and recently acquired 30% of Arrow Energy's resources, which include interests in CSG tenements, providing potential gas supply for LNG production.

Shell has undertaken an extensive site selection study on the Queensland coast (Coffey, 2009), which identified a shortlist of five possible locations for an LNG facility, of which Curtis Island appears the most viable. Curtis Island is located adjacent to the Queensland coast north-east and east of the Surat and Bowen basins respectively.

Shell has been granted an exclusive right by Gladstone Ports Corporation to investigate a site on Curtis Island for the purpose of an LNG project. The site forms part of the 1,500 ha Curtis Island Industry Precinct of the Gladstone State Development Area in the south-western part of Curtis Island, which was gazetted for industrial development by the Queensland Government in July 2008. This is bordered by a 4,500 ha Environmental Management Precinct, which was introduced by the Queensland Government, specifically for conservation purposes at the same time. Other proponents are also currently investigating LNG developments on Curtis Island.

1.2 The Proponent

1.2.1 Overview

Shell is a global group of energy and petrochemical companies. With around 102,000 employees in more than 100 countries and territories, Shell helps to meet the world's growing demand for energy, aiming to do so in economically, environmentally and socially responsible ways.

¹ The Gladstone City Gate or a new facility in the vicinity is the point at which Shell Australia would take coal seam gas supply from the pipeline operators. The Gladstone City Gate is the gas sales point for existing pipeline operators

In 2008, the group's earnings were \$US26.5 billion and production was 3,248 thousand barrels of oil equivalent per day. Oil and gas, by far the largest of Shell's business activities accounted for just over 90% of revenue in 2008.

For more than 40 years, Shell has been investing in and delivering some of the world's largest and most complex LNG projects. Among international energy companies, Shell is the largest equity LNG producer and has the most diverse LNG supply portfolio in the world. Directly or indirectly, Shell owned approximately 9% of the world's LNG capacity as of March 2009.

Shell has a long established presence in the Asia-Pacific region through its participation in several LNG ventures, including Malaysia LNG, Brunei LNG, Sakhalin II LNG, and specifically in Australia with North-West Shelf LNG and the Gorgon joint venture. Plate 1.1 shows an LNG carrier berthed at the Karratha Gas Plant, North-West Shelf venture, Western Australia. Shell has a one-sixth interest in the venture and also serves as technical advisor. The North-West Shelf venture is operated by Woodside Petroleum Limited, in which Shell has a 34% equity stake.

Shell is a leader in LNG shipping, and through Shell International Trading and Shipping Company Ltd (STASCO) operates one of the largest fleets of LNG vessels in the world, currently managing over 40 LNG carriers. Shell has stringent standards to ensure cargoes are delivered safely and reliably. LNG shipping safety performance is consistently in the industry's top quartile and Shell has shipped over 6,000 cargoes of LNG without loss.

Shell has an established industry reputation in LNG technology, project management and operations, and currently acts as technical advisor to a number of LNG operators, covering an aggregated installed LNG production capacity of some 85 Mtpa. Further details about Shell's LNG business are available at:

http://www.shell.com/home/content/aboutshell/our_business/gas_and_power/lng/

Shell Australia employs around 3,000 staff and has operated here since 1901. The business in Australia is broadly divided into upstream and downstream activities. The upstream business explores, develops and supplies LNG, condensates and Liquefied Petroleum Gas (LPG) to overseas markets and natural gas to domestic customers in Western Australia. The downstream business manufactures petroleum products, supplying 25% of Australia's petroleum requirements. Shell trades with over 45,000 customers throughout the country. The products supplied by Shell's businesses and the jobs they generate make a significant contribution to the Australian economy. Further details about Shell in Australia is available at:

http://www.shell.com/home/content/au-en/about_shell/2008/dir_about_shell.html



Plate 1.1 LNG carrier Northwest Seaeagle (managed by Shell) berthed at the Karratha Gas Plant, North West Shelf Venture, Western Australia (image provided by Woodside Energy Pty Ltd)

1.2.2 Contact Details

Shell's registered office address in Australia is:

Level 2
8 Redfern Road
Hawthorn East VIC 3123
AUSTRALIA

All inquiries on this project should be sent to:

Roger Bounds
Vice President New Business Development, Gas and Power Asia
C/o Shell Australia Limited
GPO Box 872K
Melbourne VIC 3001
AUSTRALIA

1.3 Purpose of this Initial Advice Statement

This Initial Advice Statement (IAS) has been prepared for the Shell Australia LNG Project (the project). The purpose of this IAS is to:

- Provide the Queensland Coordinator-General with sufficient information about the project and its potential environmental and social impacts to determine whether the project should be declared a significant project under the *State Development and Public Works Organisation Act 1971*, for which an Environmental Impact Statement (EIS) is required.
- Enable terms of reference to be developed for the project's EIS.
- Inform key Queensland Government departments and other statutory and non-statutory stakeholders of the proposed development.

2. PROJECT CONTEXT AND JUSTIFICATION

2.1 Project Rationale and Need

Due to increasing demand for cleaner energy and predicted worldwide energy deficits, natural gas is an important energy resource. Queensland has an abundance of CSG resources, which exceed domestic market demands. Shell Australia believes it is well positioned to deliver this project and intends to use its technological and operational experience to build a robust LNG business based on the monetisation of these resources for export to Asia-Pacific and possibly Atlantic markets.

This project aims to:

- Enable the development of Queensland's CSG resources, providing a secure and substantial investment in the local, state and national economies.
- Utilise the abundant supply of CSG from the Surat and Bowen basins, at a time when demand for LNG is expected to continue to grow in the medium term, and the world is increasingly looking for more carbon efficient fuels to address climate change.
- Make the most of Queensland's favourable position for supplying LNG to Asia-Pacific markets.
- Leverage Arrow Energy's knowledge of CSG field development and Shell's pre-eminent position as a global leader in the production and supply of LNG.

2.2 Project Resource

The Surat and Bowen basins form part of the extensive black coal deposits of Central and South East Queensland. The Surat Basin coal deposits extend from Injune in Central Queensland to Dalby in South East Queensland. The Bowen Basin coal deposits extend from Collinsville to Theodore in Central Queensland. Significant CSG reserves are associated with these black coal deposits and they have the potential to supply large volumes of gas to the proposed LNG developments on Curtis Island. Approximately 250,000 PJ of CSG resources are estimated by the Australian Bureau of Agricultural and Resource Economics (ABARE) to be in eastern Australia.

Shell recently acquired 30% of Arrow Energy's resources, which include interests in CSG tenements in Queensland, which will supply the Shell Australia LNG Project (Figure 2.1). The project is designed to allow for expansion from expected additional exploration and production success in the future from both the Shell and Arrow Energy CSG tenements, and also potentially from other CSG acreage holders and/or developers.

The foundation LNG train will use approximately 200 PJ per annum as feed gas. Typically, a total of up to 4,000 PJ would be required for a foundation train in the first 20 years of operation. Shell believes that the Shell and Arrow Energy CSG tenements contain sufficient gas resources for a foundation train. Shell is currently in negotiations with Arrow Energy and others to procure the additional gas necessary to support this project.

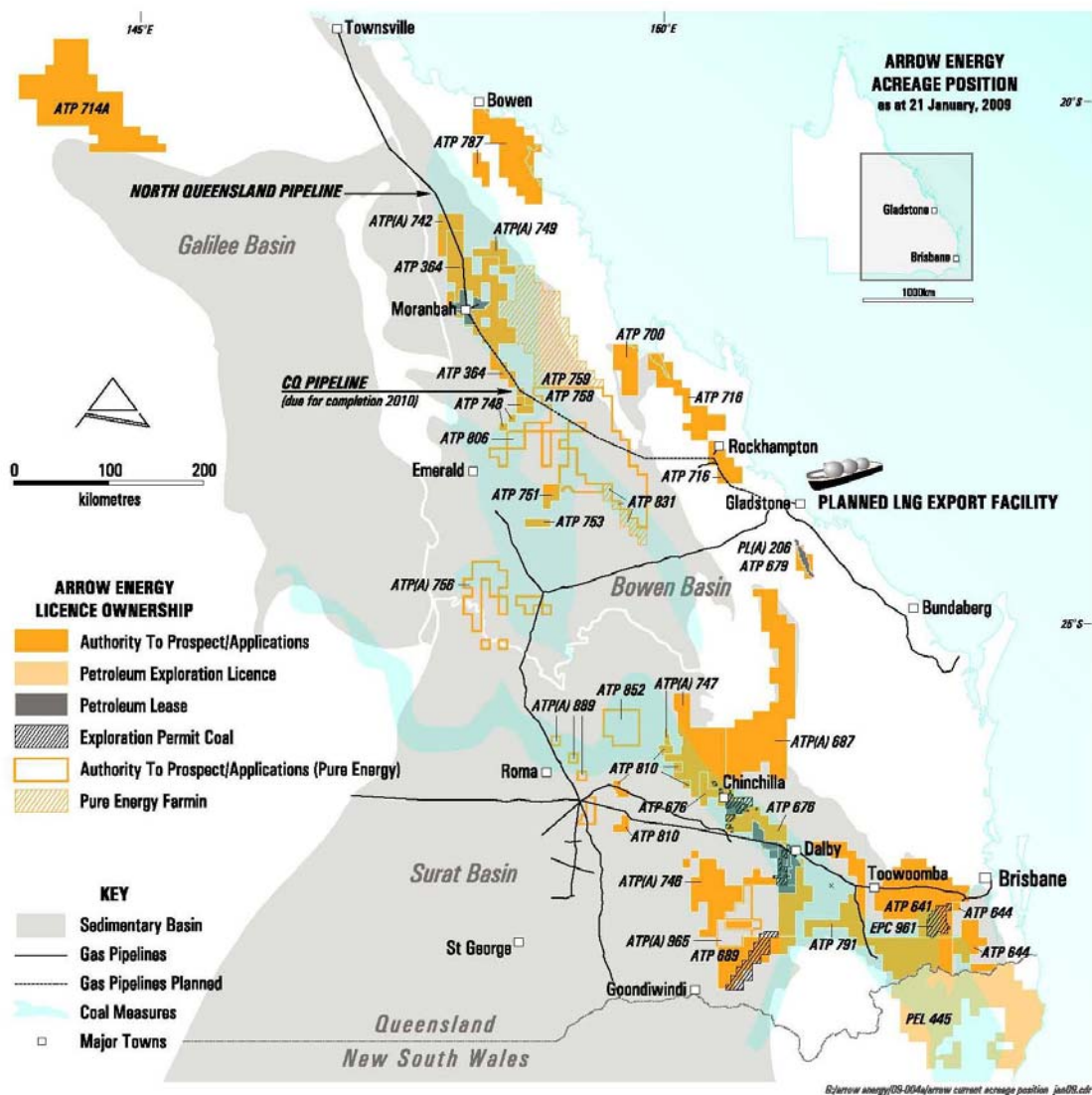


Figure 2.1 Shell and Arrow Energy petroleum tenements in the Surat and Bowen basins

2.3 Market Analysis

The world LNG market is expected to remain generally strong in the mid to long-term. Wood Mackenzie research² indicates that in the Asia-Pacific region, emerging LNG markets such as China and India, as well as new markets are expected to support the strong demand growth trend. By 2015, the demand for LNG in the Asia-Pacific region is predicted to be 167 Mtpa and 205 Mtpa by 2020, up from 118 Mtpa in 2008. In 2020, half of this growth in Asia-Pacific demand is expected to come from China and India, a quarter of this growth from the large traditional

² Wood Mackenzie, an LNG industry consulting firm, conducts market research and maintains an industry profile on behalf of participating members, who have access to the information. The forecasts are based on Wood Mackenzie's 2009 review of LNG markets.

markets of Japan, Korea and Taiwan with other emerging markets accounting for the remaining quarter of growth.

Among the international energy companies, Shell has one of the biggest, most diverse LNG trading organisations in the world, as well as access to the important LNG and pipeline markets of Asia-Pacific, Europe and North America. Shell has sufficient market access for the foundation LNG train from the Shell Australia LNG project, through its marketing activities and re-gasification positions across locations such as North Asia, India, Europe and North America.

2.4 Socio-economic Benefits

The proposed project is expected to have positive socio-economic impacts on a local, state and national scale. Some of the benefits of the project include:

- Employment opportunities, both directly through the creation of jobs at the proposed facility and indirectly through provision of goods and services. It is anticipated that the project will require a workforce of 2,500 to 3,000 people during the peak construction period and 200 to 300 people during operation of the LNG plant and associated facilities. Many of the jobs will be highly skilled, technical positions, and Shell Australia will ensure appropriate levels of professional training and skill transfer are integral to the project.
- The growth in Gladstone's economy through increased employment opportunities, provision of goods and services and improved infrastructure.
- The diversification of Gladstone's industry base with the introduction of new technologically advanced businesses for the region.
- Substantial cash flows, expected to accrue to the Australian Government through increased Goods and Services Taxes, company tax and personal income tax and to the Queensland Government through royalties and payroll tax.

Economic impacts of the project on local, state and national economies will be identified and evaluated during the environmental and social impact assessment phase.

LNG projects worldwide typically cost several billion dollars to construct. These costs are exposed to a variety of global economic factors including steel prices, exchange rates, capital costs, labour costs and other variables. Shell's policy is not to disclose capital expenditure estimates for a single project in which it is involved. It would be included in the total Group Capex, which is communicated to the market regularly.

3. PERMITTING REQUIREMENTS

The project will require a number of licences and permits, and also an environmental impact assessment under Queensland and Commonwealth legislation. It forms part of a larger project that encompasses approval of gas pipelines and coal seam gas field developments. This section describes the relationship of this project's approval process to other project components' approvals processes, principal licences and permits, approvals processes and other legislation, regulations, treaties and conventions that might apply to the project.

3.1 Approvals Processes for Other Project Components

This IAS applies to the proposed LNG facility on Curtis Island, a gas pipeline from the Gladstone City Gate, and dredging of Port Curtis to extend shipping channels and develop a swing basin adjacent to either North China Bay or Boatshed Point.

Approvals processes for the other components, including gas pipelines from the Surat and Bowen basins coal seam gas fields, development of those fields, and dredging of Port Curtis are being addressed separately. The other components are:

- **Central Queensland Pipeline:** this proposed 12" high pressure gas pipeline which runs from Moranbah to Gladstone was approved in 2007, and Arrow Energy has been issued with a pipeline licence under the *Petroleum and Gas (Production and Safety) Act 2004*.
- **Surat to Gladstone Pipeline:** an EIS under the *Environmental Protection Act 1994* has been prepared by Surat Gladstone Pipeline Pty Ltd for the pipeline which runs from North Kogan to Gladstone.
- **Surat and Bowen basins CSG fields:** Arrow Energy will be consulting with the Queensland EPA about future LNG projects and the approval process for further development of its Surat and Bowen basins CSG reserves for Shell Australia's proposed LNG facility on Curtis Island.
- **Port of Gladstone Western Basin Strategic Dredging and Disposal Project:** Gladstone Ports Corporation's Port of Gladstone Western Basin Strategic Dredging and Disposal Project which was declared a significant project—for which an EIS is required—on 24 April 2009. An EPBC referral has also been submitted for dredging of shipping channels and swing basins and disposal of dredged material for proposed LNG, export coal and mineral processing facilities in the western part of Port Curtis. While Gladstone Ports Corporation is seeking approval for all of the LNG related dredging works required in Port Curtis, Shell's proposal includes the investigation of channels to either Boatshed Point or to North China Bay. Shell acknowledges Gladstone Port Corporation's Western Basin Strategic Dredging and Disposal Project and will participate in this process by liaising closely Gladstone Ports Corporation.

3.2 Principal Licences and Permits

LNG Facility

The proposed LNG facility will require a petroleum facility licence under Section 446 of the *Petroleum and Gas (Production and Safety) Act 2004*. An environmental authority (petroleum

activity) for the petroleum facility licence under the *Environmental Protection Act 1994* will also be required.

Gas Pipeline

A survey licence (Section 396) and pipeline licence (Section 410) under the Petroleum and Gas (Production and Safety) Act will be required for the proposed gas pipeline from Gladstone City Gate to the LNG plant site. An environmental authority (petroleum activity) for the pipeline licence will be required under the Environment Protection Act.

Works in Great Barrier Reef Marine Park

The project does not currently envisage any works within the Great Barrier Reef Marine Park. If works are required in the Great Barrier Reef Marine Park that are not consistent with the zoning plans, a permit under the *Great Barrier Reef Marine Park Act 1975* (Cwlth), which is administered by the Great Barrier Reef Marine Park Authority, will be required.

Native Title

A Native Title agreement in accordance with the requirements of the *Native Title Act 1993* (Cwlth) will be required for lands covered by Native Title claims. The purpose of the Act is to provide for the recognition and protection of native title rights for Australia's aboriginal people, as well as providing a legislative approach in dealing with issues concerning native title. The Port Curtis Coral Coast people have registered a claim (QUD6026/01) over Curtis Island, adjacent islands and the Queensland coast from north of Gladstone to south of Bundaberg.

3.3 Environmental and Social Impact Assessment

Queensland and Commonwealth government approvals processes triggered by the proposed development are described below.

State Development and Public Works Organisation Act 1971

Shell Australia has requested the Coordinator-General declares the project to be a 'significant project' for which an EIS is required under Section 26 of the State Development and Public Works Organisation Act.

The EIS process includes:

- Preparation of terms of reference (including public review) by the Coordinator-General.
- Preparation by Shell Australia of an EIS in accordance with the terms of reference.
- Public and advisory agency review of the EIS.
- Preparation by Shell Australia of a supplementary report to the EIS to address matters raised in submissions on the EIS, if required by the Coordinator-General.
- Preparation of a report evaluating the EIS by the Coordinator General.

Environment Protection and Biodiversity Conservation Act 1999

The project will be referred as a 'controlled action' under the *Environment Protection and Biodiversity Conservation Act 1999* (Cwlth) (EPBC Act) to the Commonwealth Department of the Environment, Water, Heritage and the Arts (DEWHA) for potential impacts on matters of national environmental significance. It is expected DEWHA will endorse Shell Australia's position citing potential impacts on the Great Barrier Reef World Heritage Area, Commonwealth waters, migratory species and listed threatened species and communities as the controlling provisions. Shell Australia expects DEWHA will endorse the Queensland Government's environmental impact assessment process under the bilateral agreement between the Queensland and Commonwealth governments.

3.4 Other Legislation, Regulations, Conventions and Treaties

Other legislation, regulations, conventions and treaties that are relevant to or may be triggered by the project are listed in Table 3.1.

Table 3.1 Legislation, Regulations, Conventions and Treaties

International Conventions and Treaties
Japan-Australia Migratory Bird Agreement (JAMBA)
China-Australia Migratory Bird Agreement (CAMBA)
International Convention for the Prevention of Pollution from Ships, 1973 (MARPOL)
Safety of Life at Sea (SOLAS)
Commonwealth Legislation and Regulations
<i>Environment Protection (Sea Dumping) Act 1981</i>
<i>Foreign Investment Review Board Act 1975</i>
<i>National Greenhouse and Energy Reporting Act 2007</i>
Queensland Legislation and Regulations
<i>Aboriginal Cultural Heritage Act 2003</i>
<i>Aboriginal Land Act 1991</i>
<i>Coastal Protection and Management Act 1995</i>
<i>Environmental Protection Act 1994</i>
Environmental Protection Regulation 2008
<i>Fisheries Act 1994</i>
<i>Integrated Planning Act 1997</i>
Integrated Planning Regulation 1998
<i>Land Act 1994</i>
<i>Marine Parks Act 2004</i>
<i>Mineral Resources Act 1989</i>
<i>Native Title (Queensland) Act 1993</i>
<i>Nature Conservation Act 1992</i>
Nature Conservation Regulation 1994
<i>Petroleum and Gas (Production and Safety) Act 2004</i>
<i>Queensland Heritage Act 1992</i>

Initial Advice Statement
Shell Australia LNG Project

<i>Roads Act 2000</i>
<i>Soil Conservation Act 1986</i>
<i>Transport Infrastructure Act 1994</i>
<i>Transport Operations (Marine Pollution) Act 1995</i>
<i>Vegetation Management Act 1999</i>
<i>Water Act 2000</i>

4. PROJECT DESCRIPTION

4.1 Location

Curtis Island is located between Rockhampton and Gladstone on Queensland's central coast (Figure 4.1). The island is around 57,000 ha in size, with approximately 2.5% of the island allocated to LNG development as part of the Gladstone State Development Area and 8% allocated to conservation by declaration of the Environmental Management Zone of the Gladstone State Development Area.

As part of the Development Scheme of the Gladstone State Development Area, the Queensland Government gazetted the south-western part of Curtis Island, south of Graham Creek, for industrial development in July 2008 (Figure 4.2). Shell has been granted an exclusive right by Gladstone Ports Corporation to investigate the development of an LNG facility on a site on Curtis Island.

The site that is being investigated by Shell Australia is located on the southern end of Curtis Island, approximately 6 km north of Gladstone. It is located outside the Great Barrier Reef Marine Park but inside the Great Barrier Reef World Heritage Area, which extends to the low water mark of the Queensland (mainland) coast.

Shell Australia intends to investigate pipeline routes from the Gladstone City Gate and extension of Port Curtis shipping channels (Figure 4.3) to establish an access channel and swing basin at Boatshed Point or North China Bay. It is anticipated Shell Australia's dredging requirements will be encompassed in Gladstone Ports Corporation's environmental approvals process for future development of the Port of Gladstone.

4.2 Site Investigations

To confirm the feasibility of the Curtis Island LNG site, a number of preliminary investigations have been carried out by Shell Australia. These are listed below.

- Coffey Geotechnics Pty Ltd conducted a geotechnical site investigation to define the general topography, assess soil profiles and provide preliminary engineering recommendations for the development.
- 3D Environmental carried out a field assessment of the terrestrial vegetation of the project area to identify landform, vegetation cover and validate regional ecosystem mapping.
- ARCHAEO Cultural Heritage Services Pty Ltd provided advice on the archaeological potential of the project area, following a cultural heritage survey of proposed geotechnical investigation sites.
- Extensive studies and simulations for the safe navigation of LNG carriers within the port of Gladstone have been carried out in conjunction with Maritime Safety Queensland, the Regional Harbour Master, Gladstone Ports Corporation, and other LNG proponents. These aim to ensure a common agreement on the safe navigation of LNG carriers through the port.

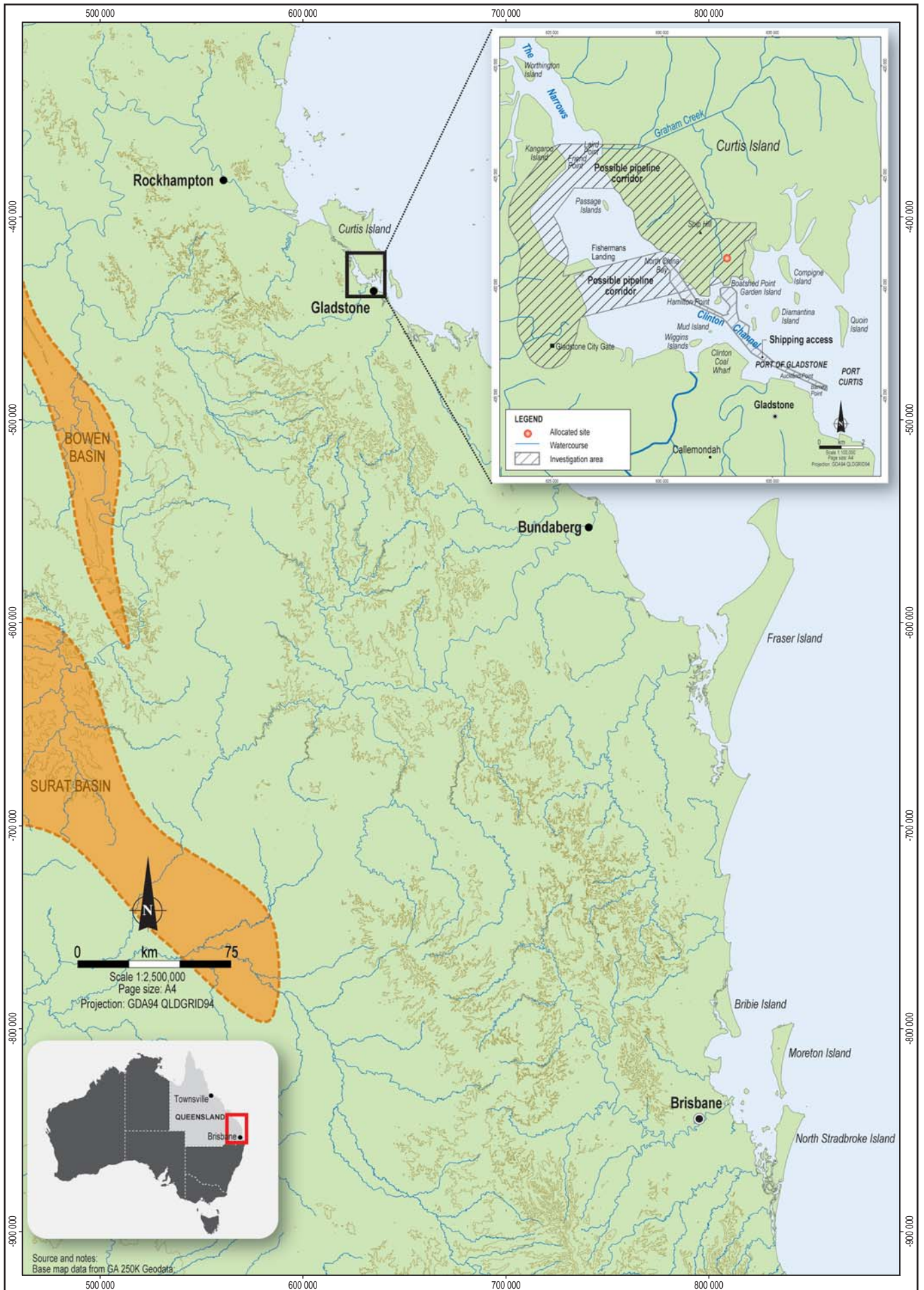


Figure 4.1 Locality map