

Section 8

LNG Facility Environmental Values and Management of Impacts

8.14 Social and Community

8.14.1 Introduction

This section summarises the outcomes of the assessment undertaken and presented in the Social Impact Assessment (SIA) technical report for the LNG facility (refer Appendix Z). A separate consultation summary can be found in Section 9 of this EIS outlining the key stakeholders and consultation process undertaken for the EIS. Consultation information has been included in the SIA whenever possible to add qualitative data to the assessment, and capture the community perspectives and opinions.

For the purposes of the SIA, the term LNG facility refers to the proposed LNG facility on Curtis Island and includes the LNG facility infrastructure. A potential bridge and connecting road between Friend Point on the mainland and Laird Point on Curtis Island is also considered (refer Figure 8.14.1).

The LNG facility is located in the local government area (LGA) of Gladstone Regional Council, which formed after government amalgamations in March 2008.

Table 8.14.1 shows the former LGAs that make up the new regional council and the statistical division.

Table 8.14.1 LNG Facility Local Government Areas

Study Area	Statistical Division (SD)	New LGA (post-amalgamation)	Old LGA (pre-amalgamation)
LNG facility	Fitzroy SD	Gladstone Regional Council	Gladstone City Council
			Calliope Shire Council

This section looks at the Gladstone Regional Council (see Figure 8.14.2), with a more specific assessment of Gladstone City (see Figure 8.14.1), as it is the principal centre and also the anticipated service and accommodation area for the project.

8.14.2 Methodology

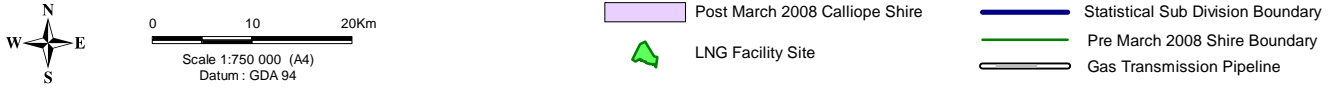
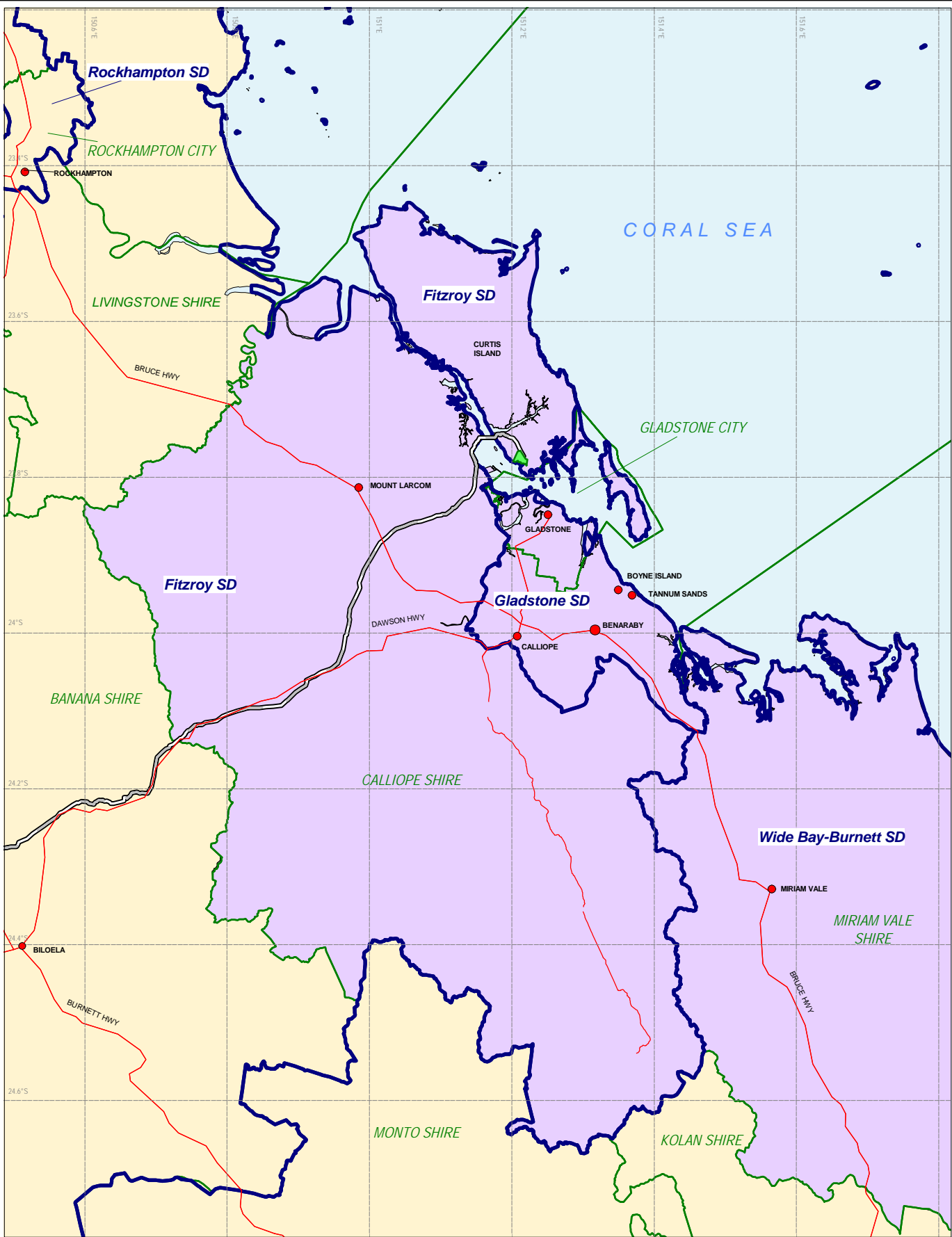
A similar methodology was used in all three study areas and comprised a number of data collection, and analysis steps. For details of the social assessment methodology, see Appendix Z. During the community engagement strategy, stakeholders were given the opportunity to discuss their issues and concerns. Issues and comments raised relating to the scope of the SIA have been discussed here. For an overview of the consultation activities and methodology see Section 9 of this EIS.

8.14.3 Regulatory Framework

The SIA has been developed based on the requirements of the Terms of Reference (ToR). The SIA framework has also been developed around the *Sustainable Resource Communities Policy – social impact assessment in the mining and petroleum industries (Queensland Government 2008)* and best practice guidelines and principles. See Appendix Z for a list of best practice guidelines and principles considered in the development of the assessment.



8.14.4 Existing Regional Social Context

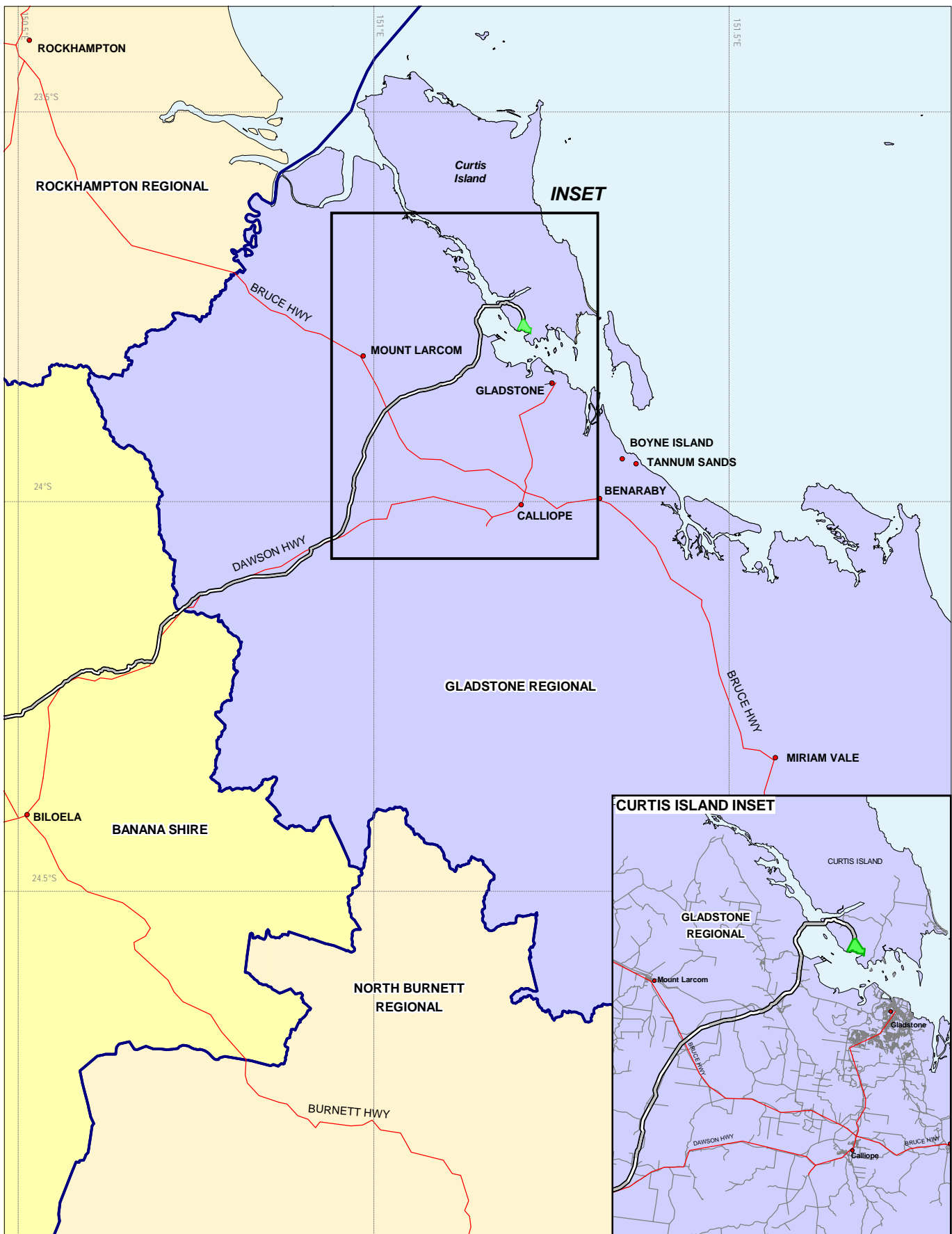
This section outlines the key baseline data for the LNG facility assessment. More detailed information and analysis of the LNG facility can be found in Appendix Z.



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Client  	Project GLADSTONE LNG PROJECT ENVIRONMENTAL IMPACT STATEMENT		Title SIA STUDY AREAS LNG FACILITY	
	Drawn: VH Job No: 4262 6220	Approved: JB File No: 42626220-g-856b.wor	Date: 13-05-2009	Figure: 8.14.1



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 Datum: GDA94

- Post March 2008 Shire Boundary
- Gas Transmission Pipeline
- LNG Facility Site

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Client  	Project GLADSTONE LNG PROJECT ENVIRONMENTAL IMPACT STATEMENT		Title COUNCIL AMALGAMATIONS MARCH 2008	
	Drawn: LL Job No: 4262 6220	Approved: JB File No: 42626220-g-857c.wor	Date: 13-05-2009	Figure: 8.14.2

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8.14.4.1 Demographic Profile

As of 30 June 2007, the estimated resident population for Gladstone Regional Council (the Gladstone population) was 55,523 persons, representing 1.3% of the State's population. The annual average rate of change in population in Gladstone between 30 June 2002 and 30 June 2007 was 3.1 %, compared with 2.4 % for the State (OESR, 2008a). There has been a significant increase in the population of the region since 2002. Growth is associated with industrial development in the region and increasing numbers of retirees moving to coastal areas (commonly referred to as the *sea change* phenomenon). As can be seen in Figure 8.14.3, the population is concentrated around Gladstone, and not at the project site on Curtis Island.

Table 8.14.2 Estimated resident population by local government area, Gladstone Regional Council, 2002, 2006, and 2007^(a)

Local government area	Estimated residential population at 30 June			Change	
	2002	2006	2007	2002 to 2007 ^(b)	2006 to 2007
	Number			%	%
Gladstone Regional Council	47,659	53,941	55,523	3.1	2.9
Queensland	3,714,798	4,090,908	4,181,431	2.4	2.2
Region as % of Qld	1.3	1.3	1.3	N/A	N/A

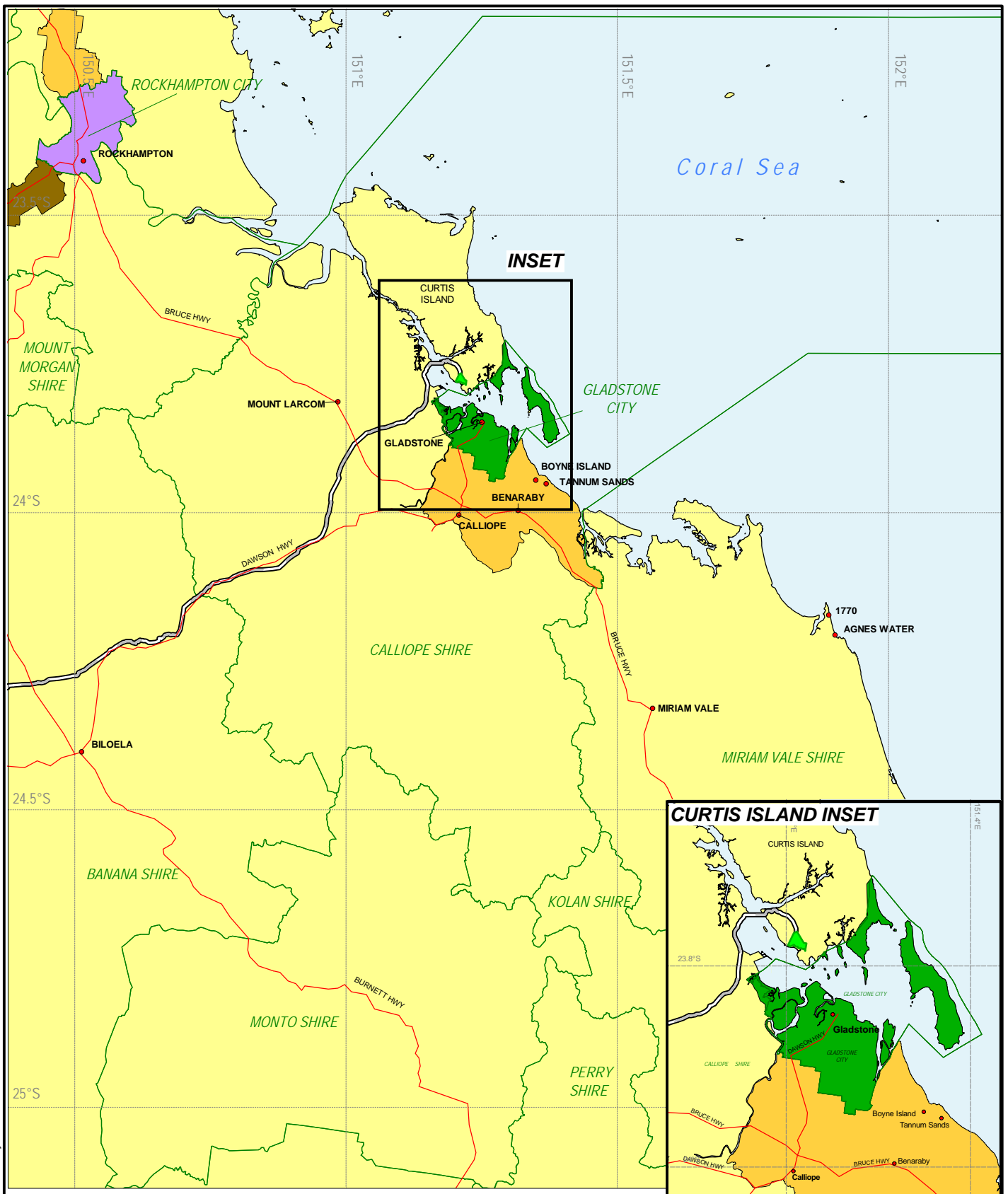
^(a) Figures may be different from those published in Australian Bureau of Statistics (ABS): *Population Estimates by Age and Sex, Australia and States* (Cat no. 3255.0.55.001).

^(b) Average annual growth rate.

Source: Australian Bureau of Statistics, Regional Population Growth (Cat no. 3218.0) and unpublished data.

Gladstone City and Calliope Shire (which make up Gladstone Regional Council) have consistently experienced higher growth rates than the Queensland average. From 1997 - 2007, the population of Gladstone City increased by 5,273 persons, or 19.8 %. From 1997 - 2007, the population of Calliope Shire increased by 4,215 persons, or 30.2 %.

Table 8.14.3 shows urban settlements around the study area. Gladstone is the main centre for the region, with a population of approximately 30,000 people. Tannum Sands and Boyne Island have also experienced significant growth, with these coastal communities considered favoured locations.



0 12.5 25km
Scale 1:1 000 000 (A4)
Datum : GDA94

Statistical Division (SD) Data Maps

1. Fitzroy-Qld (Statistical Division)
2. Wide Bay-Burnett-Qld (Statistical Division)

SD Data Map Sourced



- 1 & 2
- 1
- 1
- 1
- 1

Population Density Per Square KM

- 0-7
- 7-32
- 32-46
- 46-179
- 179-312

- Pre March 2008 Shire Boundary
- Gas Transmission Pipeline
- LNG Facility Site

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Client  	Project GLADSTONE LNG PROJECT ENVIRONMENTAL IMPACT STATEMENT		Title POPULATION DENSITY	
	Drawn: VH Job No: 4262 6220	Approved: JB File No: 42626220-g-858b.wor	Date: 03-03-2009	Figure : 8.14.3
			Rev:B A4	

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Table 8.14.3 Estimated resident population by major urban centre/locality, 2007

Urban centre/locality	Estimated resident population as at 30 June 2007	Area (sq km)	Population density (per sq km)	State rank (population size)
Gladstone City (C)	30,731	67.1	458.1	11
Tannum Sands (C)	4,388	4.8	920.6	45
Boyne Island (C)	3,910	6.8	573.5	48
Agnes Water (C)	1,707	45.6	37.4	100
Calliope (C)	1,646	4.1	398.4	103
Benaraby (L)	630	3.5	180.7	223
Miriam Vale (L)	382	3.7	102.7	283
Mount Larcom (L)	267	1.6	162.9	331
Seventeen Seventy (L)	64	6.6	9.7	364
Gladstone Regional Council	55,523	10,487.8	5.3	N/A
Queensland	4,091,546	1,734,174.0	2.4	N/A

L = Locality; C = City. Note: Based on ASGC 2006.

Source: Australian Bureau of Statistics, Regional Population Growth (Cat no. 3218.0) and unpublished data

Gladstone is predicted to continue experiencing significant growth see Figure 8.14.4. Table 8.14.4 shows medium series population projections up to year 2031. High series population projections may apply if the rate of industrial development in the area continues and proposed projects are developed.

Table 8.14.4 Gladstone Regional Council Population Projections 2011–2031¹

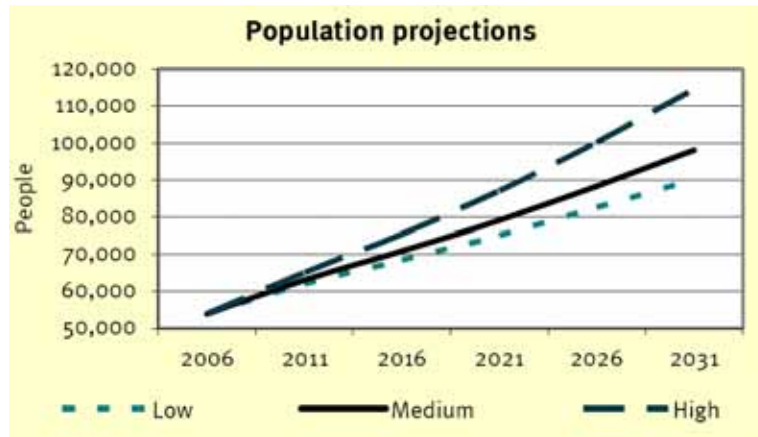
Area	Year									
	2011		2016		2021		2026		2031	
	No.	%	No.	%	No.	%	No.	%	No.	%
Gladstone Regional Council	63,120	3.2	70,927	2.4	79,102	2.2	88,265	2.2	98,041	2.1
Queensland	4,091,546	2.4	4,428,138	1.6	4,823,408	1.7	5,211,995	1.6	5,583,956	1.4

¹ Note: Average Annual Change over five years to 30 June; based on median series projections.

Source: PIFU, Population and Housing Fact Sheet 2008 a, b, c.

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Source: PIFU, Population and Housing Fact Sheet 2008 a, b, c.

Figure 8.14.4 Gladstone Regional Council Population Projections

Figure 8.14.5 highlights the differences in age groups between Gladstone and Queensland populations in June 2007 (OESR, 2008a). The age profile of Gladstone Regional Council has the following characteristics:

- Higher proportion of children (zero - 14 years) than the Queensland average;
- Higher proportion of adults (35 - 59 years) than the Queensland average;
- Smaller proportion of aged residents (65 years and older) than the Queensland average; and
- Smaller proportion of young residents (20 - 34 years) than the Queensland average.

A high proportion of Gladstone's population is in the middle age ranges, where the majority of the working aged individuals fall. The age profile reflects the prevalence of young-middle age working families with children.

At the time of the 2006 Census, there were 5,335 persons in Gladstone who stated that they were born overseas (10.5 % of the total population) and 41,945 persons who stated that they were Australian-born (82.6 % of the total population). In comparison, 17.9 % of the Queensland population were born overseas and 75.2 % were Australian-born (OESR, 2008a). The Gladstone population is predominantly Australian-born, but is starting to transition more towards a greater mix similar to the rest of Queensland. The majority of Queensland's overseas born residents live in South East Queensland.

There are an increasing number of 457 Visa holders in Gladstone. Discussion with Gladstone Regional Council representatives indicates that there have been challenges integrating those workers with limited English language skills into the community (pers. comm., Arroyo, 2008). Efforts are being made in Gladstone to ease integration, and enhance multiculturalism, including the Multicultural Strategy for Gladstone 2007, which provides a strategy and tracks and measures success for six indicators: integration; liveability; health; education; community access; and industry/business. This strategy is a collaborative effort between the former Gladstone City Council and the Gladstone Multicultural Association.

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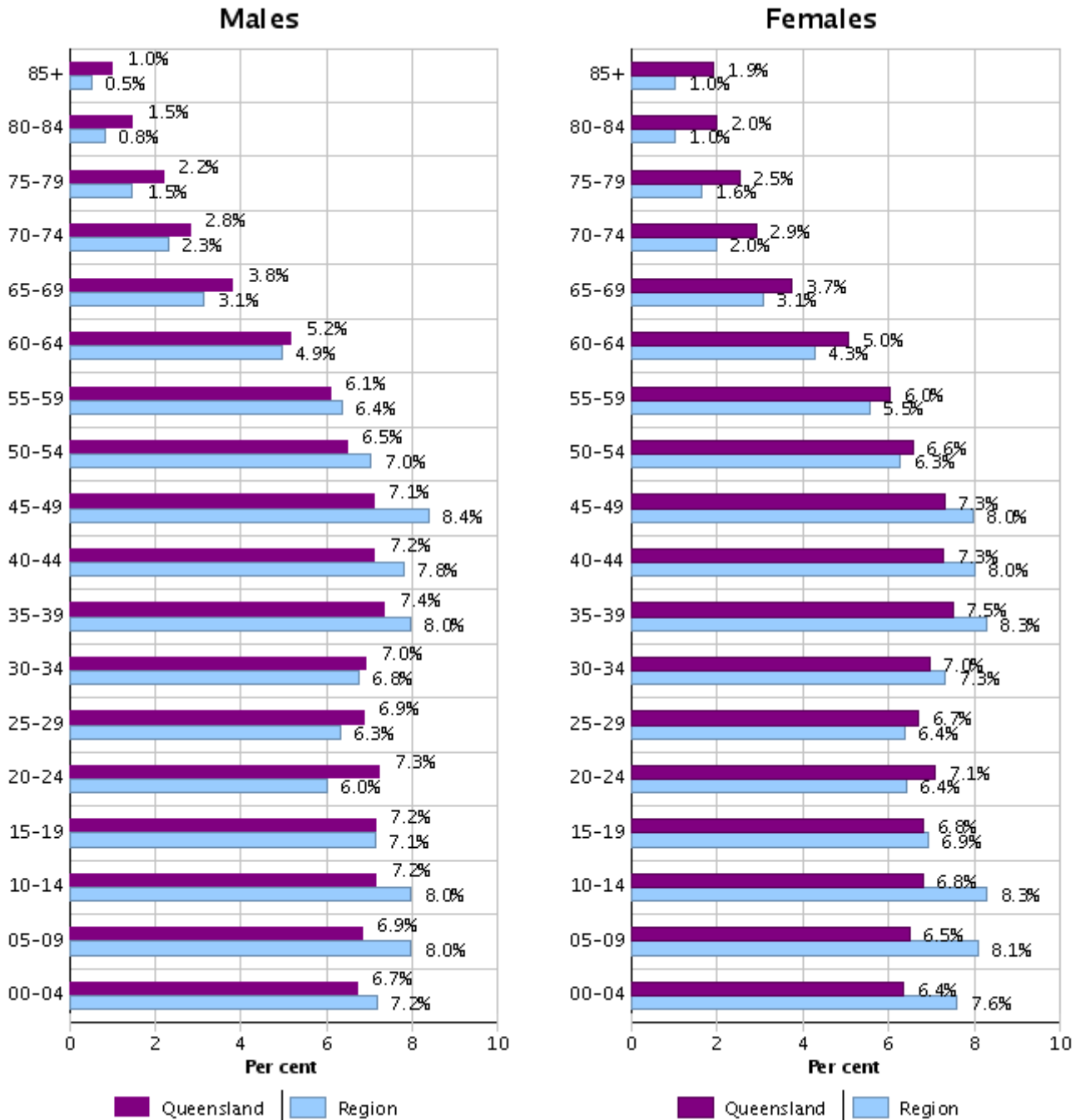


Figure 8.14.5 Population by age group and sex, Gladstone Regional Council and Queensland, June 2007

Note: Based on ASGC 2006.

Source: Australian Bureau of Statistics, Population Estimates by Age and Sex, Australia and States (Cat. no. 3235.0.55.001).

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Table 8.14.5 Number of persons by birthplace^(a), Gladstone Regional Council and Queensland, 2006

Local government area	Born in Australia		Overseas Born		Total persons ^(b)
	Number	%	Number	%	Number
Gladstone Regional Council	41,945	82.6	5,335	10.5	50,751
Queensland	2,935,260	75.2	699,444	17.9	3,904,533
Region as % of Qld	1.4	N/A	0.8	N/A	1.3

^(a) Based on place of usual residence.

^(b) Includes country of birth not stated. Note: Based on ASGC 2006. Data for Reformed Local Government Area(s) is based on concordant Statistical Local Area data (ASGC 2006). The concordance is population based and has been derived from the Planning Information and Forecasting Unit within the Department of Infrastructure and Planning.

Source: Australian Bureau of Statistics, Census of Population and Housing, 2006, Basic Community Profile - B09.

8.14.4.2 Employment

At the time of the 2006 Census of Population and Housing, Gladstone Regional Council had a labour force consisting of 25,190. The unemployment rate was relatively low at 5.4 % (1,348 unemployed persons) and matched the State unemployment rate (see Table 8.14.6) (OESR, 2008a). The unemployment rate is likely to have increased in recent times due to the economic downturn. The impact of employment on local and state markets is discussed in Section 8.15.4.1.

Table 8.14.6 Number of unemployed persons, persons in the labour force and unemployment rate^(a), Gladstone Regional Council and Queensland, 2006

Local government area	Unemployed	Labour force	Unemployment rate (%)
Gladstone Regional Council	1,348	25,190	5.4
Queensland	90,950	1,915,947	4.7
Region as % of Qld	1.5	1.3	N/A

^(a) Based on place of usual residence. Note: Based on ASGC 2006. Data for Reformed Local Government Area(s) is based on concordant Statistical Local Area data (ASGC 2006). The concordance is population based and has been derived from the Planning Information and Forecasting Unit within the Department of Infrastructure and Planning.

Source: Australian Bureau of Statistics, Census of Population and Housing, 2006, Basic Community Profile – B41.

Income

Household and individual median incomes for Gladstone and Calliope are above the State average (refer Table 8.14.7). Gladstone is a more affluent area, with a higher proportion of people earning \$800 plus per week and less people on low incomes (earning below \$200 per week) compared to Queensland as a whole. Calliope is a slightly less affluent area than Gladstone, with a greater proportion of people on lower incomes; however, there is roughly the same proportion of people on higher incomes (above \$800) as the State as a whole.

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Table 8.14.7 Median Weekly Income

Area	Individuals 15+	Household
Fitzroy SD	\$481	\$1,067
Calliope (LGA)	\$510	\$1,278
Gladstone (City)	\$534	\$1,189
Queensland	\$476	\$1,033

Based on place of normal residence.
Source: ABS basic community profiles, 2006 census data.

Occupation and Industry

Manufacturing is the largest employer by industry in Calliope Shire and Gladstone City, and the percentage of workers is considerably higher than that for Queensland as a whole. The construction and retail industries are also large employers (refer Table 8.14.8).

Table 8.14.9 shows the percentage of people employed by occupation category. The table shows that a high proportion of the working population is employed as tradespersons. The other occupations consisting of a significant proportion of the workforce are intermediate production and transport workers, labourers and related workers. These findings indicate that there are a high proportion of workers in the area who have similar occupational skills to those that the project will require.

Previous discussions with Council representatives suggest that a significant portion of the resident labour force works outside of the Gladstone region, in part due to better employment opportunities around the mines in the Bowen Basin area. A large and long term infrastructure project such as GLNG could draw a substantial amount of the labour force currently working outside of the Gladstone region back to the area.

Workforce data analysis also indicates that there is a significant mobile workforce which could be attracted to work in the area.

8.14.4.3 Affordability

A survey of retail prices in Queensland in May 2006 compared the prices of a range of goods and services in 48 urban centres with prices in Brisbane City¹. A summary of Gladstone's relative affordability is as follows:

- Food, alcohol and tobacco was around 5 % more expensive than Brisbane;
- Housing was around 17 % cheaper than Brisbane; and
- Transportation costs were around 3 % cheaper than Brisbane.

An aggregation of the above groups shows Gladstone retail prices to be around 4 % below Brisbane.

¹ OESR, 2006, Index of Retail Prices in Queensland Regional Centres – May 2006.

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Table 8.14.8 Gladstone Area – Employment within Selected Industry 2006

Area	Total employment	Mining	Manufacturing	Electricity, gas, water & waste services	Construction	Retail trade	Accommodation & food services	Transport, postal & warehousing
	No.	%*	%*	%*	%*	%*	%*	%*
Fitzroy SD	87,632	6.8	10.8	2.3	9.3	10.6	6.7	5.8
Calliope (LGA)	7,827	2.1	23.2	2.1	13.1	9.2	5.9	5.9
Gladstone (City)	14,288	1.4	19.6	2.7	11.8	10.9	6.5	8.1
Queensland	1,840,887	1.7	9.9	1.0	9.0	11.6	7.0	5.1

* Percentage of total area employment, based on place of remuneration. Rows do not add up to 100 % because 'Not stated' was not included.
Source: ABS time series profiles, 2006 census data.

Table 8.14.9 Gladstone Area – Employment (%) by Occupation 2006

Occupation	Fitzroy SD	Calliope LGA	Gladstone City	Queensland
	%	%	%	%
Managers	11.9	10.8	8.2	12.4
Professionals	13.1	11.9	13.2	17.1
Community and Personal Service Workers	18.5	21.7	22.6	15.4
Clerical and Administrative Workers	7.9	6.4	7.3	9.1
Sales Workers	12.7	11.3	12.3	14.8
Technicians and Tradespersons	8.7	7.6	9.1	10.4
Machinery Operators and Drivers	11.9	14.9	12.3	7.2
Labourers	13.4	13.3	13.1	11.9

Source: ABS 2006 Census Community Profile Series – Basic Community Profile, Calliope LGA, Fitzroy SD, Gladstone (C) LGA and Queensland (State)

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8.14.4.4 Health, Emergency Services and Education

Health

Gladstone has a diverse medical and health services sector. The Emergency Unit of the Gladstone Hospital provides 20 beds, 70 % are available on a short term call. During a dayshift, six to seven nurses and three to four doctors are on duty. Gladstone Mater Private Hospital provides a range of services (refer Table 8.14.10). Rockhampton Hospital 110 km north is the main referral hospital for the region and provides many of the specialised procedures not carried out at Gladstone.

Table 8.14.10 Medical and Health Facilities – LNG Facility

Health Services District	Facility	Description
Central Queensland	Gladstone Hospital	Emergency, Outpatients, General Medicine and Surgery (including Day Surgery), basic Orthopaedics, Obstetrics and Gynaecology, Medical Imaging, Pharmacy, Pathology, Central Sterilising
	Gladstone Mater Private Hospital	General Surgery, General Medicine, Obstetrics and Gynaecology, Oncology and Palliative Care, After Hours Medical Service, Radiology, Pathology, Visiting Specialist Clinics
	Rockhampton Hospital	Red Cross Blood Transfusion Service, Emergency Medicine, Anaesthetics, Radiology & Ultrasound, Specialist Outpatient Department review, Central Sterilising Services & Supply, Rehabilitation, Renal, Coronary Care, Intensive Care, Palliative Care & Chemotherapy, Day Surgery Unit, Operating Rooms, General Surgery, General Orthopaedics, Visiting Urology, Visiting Neurosurgical, ENT, General Medicine, Visiting Facio/Maxillary, Obstetrics and Gynaecology, Ophthalmology, Visiting Haematology, Visiting Rheumatology, Visiting Oncology, Paediatrics, including Neonatal (Special care nursery), Visiting Paediatric Cardiology, General Respiratory Medicine

Source: Queensland Health: Queensland Health District Profiles, 2007

The recent upgrades to the Gladstone Hospital at the end of 2008 will improve health services in the area. Reports released at the end of 2008 found that waiting times had been significantly reduced (Queensland Health, 2008).

There are over 100 other health services available in the area, including 16 dentists, seven chemists, three community health centres, and 30 medical centres/GPs in Gladstone. Discussion with medical practitioners suggests that existing services are insufficient to service the whole community. This is particularly true for dental services. The Hornery Institute (THI, 2008) acknowledged that dental services were identified as inadequate, but that a new dental service is proposed for development in 2009 which might help alleviate the current requirement for dental services. THI also reports a lack of mental health services, as there is a high demand for preventative, follow-up, clinical and therapeutic services. There is also limited access to disability services in the community.

State Emergency Services

The State Emergency Service (SES) is tasked with assisting people and communities in times of natural disasters and other emergency situations. The SES is active in the Gladstone area and runs eight units in the area of Gladstone Regional Council. The central Queensland regional headquarters is at Rockhampton.

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Royal Flying Doctor Service

The closest Royal Flying Doctor Service (RFDS) is based out of Rockhampton. For medical emergencies that require travel to Rockhampton Regional Hospital, RFDS can transfer patients in approximately 30 minutes.

Queensland Ambulance Service (QAS)

Ambulance stations are located in Gladstone and Mount Larcom (Department of Emergency Services, 2008).

Fire and Police Services

Gladstone has a permanent fire station. Auxiliary stations can be found in Calliope and Miriam Vale. The Region's Fire Communications Centre is in Rockhampton (Department of Emergency Services, 2008).

The police stations within the study area are located in Gladstone, Calliope, Mount Larcom and Tannum Sands.

Education

In the 12 months ending 31 December 2006, 83 % of students attending a school in Gladstone Regional Council attended Government schools and 17% attended non-government schools. 4,762 primary school students (years 1 to 7) attended a government primary school and 1,081 attended a non-government primary school, while 3,268 secondary school students (years 8 to 12) attended a government secondary school and 533 attended a non-government secondary school (see Table 8.14.11) (OESR, 2008a).

Table 8.14.11 School students by local government area^(a), Gladstone Regional Council, 12 months ending 31 December 2006

Local government area	Government school students			Non-government school students			Total school students
	Primary (Years 1–7)	Secondary (Years 8–12)	Total ^(b)	Primary (Years 1–7)	Secondary (Years 8–12)	Total ^(b)	
	— number —						
Gladstone Regional Council	4,762	3,268	8,746	1,081	533	1,818	10,564
Queensland	284,726	165,285	489,295	104,861	96,115	211,132	700,427
Region as % of Qld	1.7	2.0	1.8	1.0	0.6	0.9	1.5

^(a) Based on school location rather than students' places of usual residence.

^(b) Includes prep year and pre-school students, and ungraded and special school students. Note: Based on ASGC 2006. Data for Reformed Local Government Area(s) is based on concorded Statistical Local Area data (ASGC 2006). The concordance is population based and has been derived from the Planning Information and Forecasting Unit within the Department of Infrastructure and Planning.

Source: Queensland Department of Education, Schools Census, Unpublished data.

Further education services are provided by the Central Queensland Institute of TAFE and the Learning Network QLD. To meet the growing demands of industry in the region, Gladstone Area Group Apprentices Training and Apprenticeships provide training of apprentices and trainees. The Gladstone Schools Engineering Skills Centre allows school-based students to undertake certificates in Engineering (Manufacturing) and Automotive Maintenance and Service through theory and practical work.

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8.14.4.5 Accommodation and Housing

Key urban settlements in the Gladstone region include Gladstone City (population 30,000), Tannum Sands (population 4,300) and Boyne Island (3,900). A number of smaller towns and settlements are interspersed throughout the rural area. The small settlements of South End on Curtis Island and Garden Island are in close proximity to the LNG facility site.

Gladstone has had a strong property market in recent years characterised by high sales rates, high demand for housing stock and a strong increase in median house and land prices. Rental vacancy rates are understood to be less than 1% and median rent prices have been steadily rising. House sales have slowed and prices have softened recently with the economic downturn.

Lower income groups within the community have experienced difficulty in finding appropriate accommodation due to limited vacancies and high costs. Previous large construction projects in the area have had a significant impact on housing availability and pricing in the region. Some have moved out of the area to more affordable housing locations. Demand for housing assistance is high.

Hotels and caravan parks are frequently booked out. For the June 2008 quarter, hotels in Gladstone City had a 71 % occupancy rate. A detailed assessment of the housing market is conducted in the SIA (Appendix Z).

8.14.4.6 Recreation, Sport and Leisure

The Open Space and Recreation Plan 2006 from the Gladstone City Council describes Gladstone as an area with a substantial quantity of open space, especially open space with utility, corridor and environmental values. However, the authors estimate that 54 ha of sport and recreation open space will need to be acquired or developed to service the population growth in the next 20 years. A need to invest in sport and recreation clubs has been identified, as sport is struggling with low quality facilities and a high degree of competition for revenue and resources.

The following sections provide a brief overview of the recreational, sporting and leisure services and facilities in Gladstone Regional Council. For a more detailed assessment of these services and facilities, refer to Appendix Z.

Recreational facilities and activities

There are 57.6 ha of recreation parks in Gladstone, providing a wide range of recreation facilities with several functions, including a botanic garden, beaches, parks and BBQ areas (Gladstone City Council, 2008).

The tourist information centre in Gladstone provides further information for visitors and locals interested in outdoor activities. Fishing is a popular activity within Port Curtis and the surrounding area.

There are 18 parks and gardens in Boyne and Tannum, whereas Calliope and Mt. Larcom have three parks and gardens.

Cultural facilities

The Gladstone Entertainment Centre holds a range of concerts, performances and festivals from within and outside of the region. The Gladstone Regional Art Gallery and private galleries host notable art exhibitions and cultural activities throughout the year. Gladstone Cinema plays the latest movies on offer and the Maritime Museum provides thematic exhibitions. Gladstone City Library has a home library service for residents who are unable to travel to the library. Libraries are located in Calliope, Mt. Larcom and Boyne Island. There are numerous cultural activities held during the year.

Sporting facilities

Gladstone City Council has 69.6 ha of land covered by sporting facilities (Gladstone City Council, 2008). The Gladstone Aquatic Centre and the John Dahl Pool provide facilities for water sports. There are 17

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sporting grounds/complexes and stadiums, which are mostly located along the northern fringe of the city (Gladstone City Council, 2008). Facilities range from Bowls Clubs to field hockey and rugby grounds to tennis courts. Furthermore, there are 13 multipurpose sports facilities and fitness centres, as well as three playing fields/ovals. Around 70 sport clubs were identified in Gladstone.

Calliope has 7 sport facilities, including a 25 m pool, rodeo and pony riding and a soccer sport ground. Boyne and Tannum have 12 sports facilities, ranging from fitness centres to a public pool and a tennis court. In Mt. Larcom, there are six sports facilities, including a bowls club.

Shopping facilities

The Stockland (formerly Kin Kora) Shopping Centre is the major shopping centre in Gladstone. There are also 13 local shopping centres, seven supermarkets, and ten national retail outlets. The Gladstone CBD consists primarily of smaller private businesses.

Calliope is served by a local shopping centre and two supermarkets. Boyne/Tannum Sands has three shopping centres and four supermarkets. South End on Curtis Island has a local general store but all shopping is done on the mainland, generally in Gladstone.

Local service providers and residents have previously cited a lack of shopping facilities and shopping options. The general complaint concerned the lack of diversity in the smaller businesses and boutique businesses (Gladstone Interagency Meeting, March 2008).

8.14.4.7 Community Facilities and Services

Child Care

There are long waiting lists and a need for more child care facilities in the study area. During the site assessment in October 2008, it was indicated that there were 550 children on the waiting list for child care places, including 170 four year olds (THI, 2008).

Places of Worship

There were 44 identified places of worship or religious organisations in the study area. In addition to the churches, there are several cultural clubs active in the area to help form social networks within the community. A Multicultural Community Relations Officer is employed by Gladstone Regional Council in order to assist people of different faiths moving to the area.

Government Services

There are over 100 government services including Legal Aid, Victims Counselling Support Services, Relationships Australia and offices for Gladstone Youth Justice Service and AQIS Australian Quarantine and Inspection Service.

Most of the main regional offices are located in Rockhampton. Gladstone has satellite offices for numerous State agencies. Gladstone is the main centre for the Gladstone Regional Council, with satellite offices in the neighbouring communities.

8.14.4.8 Community Values, Vitality and Lifestyles

During July 2008, a workshop was held with government and community group attendees to discuss community views and perspectives on a range of topics. This has assisted in identifying community values, vitality and lifestyle. A survey in 2008 of Gladstone residents commissioned by Queensland Alumina Ltd (QAL)² has also helped to identify community issues in Gladstone, and to gain an

² Media Link, 2008, Community and Corporate Issues Survey – Research Report for Queensland Alumina Ltd

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understanding of what businesses and residents believe are the major roles that companies should be responsible for in the community. Further details are provided in the Appendix Z.

Community Perceptions

The 2008 QAL survey indicated that the most important issues in the community were caring for and protecting the environment – in particular, ensuring clean air and water. Other key issues that emerged were “maintaining the standard of education” and “addressing drug abuse” (Media Link, 2008).

Key issues raised by attendees at the workshop held in July 2008 were as follows:

- House rental prices are high and there are limited vacancies;
- Limited transportation services in and around Gladstone reduce accessibility;
- There is a lack of health services both primary and allied;
- More opportunities are required for young, Indigenous and disadvantaged people to get into industry and the business workforce;
- Gladstone is a generous community both in terms of cash donations and in kind assistance;
- There is reasonable social infrastructure but it could use some strengthening; and
- Additional elderly support services are required to help keep elderly people in the community.

(Source: Interagency meeting, July 2008).

Community Values

At the workshop convened in July 2008, attending government and community groups were asked what Gladstone residents liked about their area and their community. Perceived positive values were as follows:

- Family orientated;
- Sense of community;
- Community works well together;
- Economic security; and
- “Although an industrial town, the town is still liveable”.

These values generally reflect the results of previous surveys regarding values. The Gladstone Pacific Nickel Project EIS recorded the following values and concerns during their community consultation program:

- Lifestyle;
- Employment opportunities;
- Rural nature;
- Tranquillity; and
- Economic growth.

(Source URS, 2007)³

The following points were raised as to what people didn't like about Gladstone:

- Unfair distribution of government funding (ranked number one);

³ URS, 2007 Gladstone Pacific Nickel Environmental Impact Statement – Appendix P Socio-economic impact assessment.

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- Little diversity in training opportunities (ranked number two);
- Lack of shopping venues and variety;
- Need better balance between industry, tourism and the community;
- Integration (how we engage newcomers with existing residents); and
- Lack of youth activities.

Community Expectations

The survey commissioned by QAL was designed to gain an understanding of what Gladstone businesses and residents believe are the major roles that companies should be responsible for in the community. The top answers were ensuring clean air and water, and providing a safe workplace and economic sustainability.

The July 2008 workshop reflected the survey when asked “What do you want to see happen in the community?” Additional comments included providing employment opportunities, and better integration of newcomers to encourage them to stay in the community.

8.14.5 LNG Facility Workforce

Figure 8.14.6 illustrates the estimated workforce requirements throughout the construction and operational phases of the LNG facility.

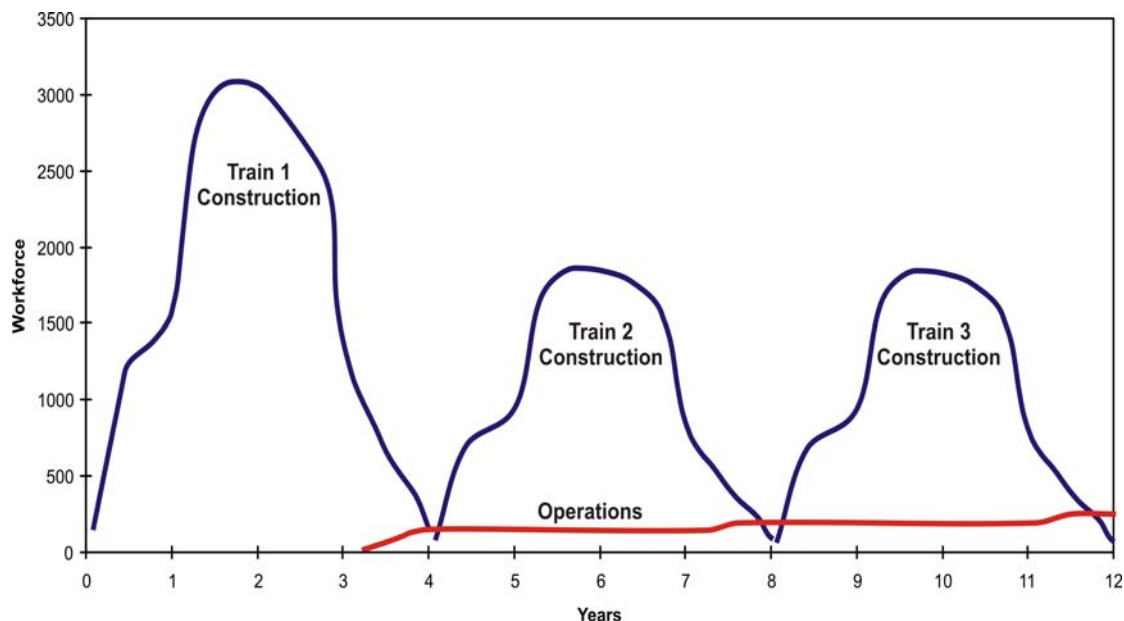


Figure 8.14.6 LNG Facility Workforce for Construction and Operations

The anticipated construction workforce will not exceed the numbers presented in Figure 8.14.6 and may be close to 25 % less at peak. Staging of the construction of Trains 2 and 3 may change and this will impact on workforce numbers (refer to Construction Workforce Requirements). The workforce numbers provided below were assessed following feedback from the social services providers, Gladstone Regional Council administrators, Department of Communities and Department of Housing, who all expressed concern over historical social impacts associated with large construction workforces in Gladstone. If Trains 2 and 3 are constructed simultaneously the peak workforce is not anticipated to exceed that of the Train 1 construction.

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8.14.5.1 Assumptions

It is currently proposed that workers will be housed in a construction accommodation facility (CAF) on Curtis Island. The workforce has been split between local (those already living in the Gladstone Regional Council) and non-local (those requiring to move or transported to the area for employment). The non-local workforce will be entirely housed at the CAF and treated as a non-local fly-in/fly-out FIFO workforce. Since moving to the study area will provide no perceived benefit to non-local workers (since they have no access to the community while on their work rotation), it is considered unlikely that any significant number of non-local workers will move to the area as a result of employment on the GLNG Project.

Table 8.14.12 Percentage of Workforce Local and Non-local for Construction and Operations

Worker Location	LNG Facility			
	Const ¹		Oper ²	
	%	Range (%)	%	Range (%)
Local	35	30 - 40	60	50 - 70
Non-local	65	60 - 70	40	30 - 50%

Note: ¹ = Construction. ² = Operations. The number is the anticipated percentage of local or non-local workforce in that phase at that location. Number in brackets is anticipated range. The percentage of local employees will depend upon workforce availability.

Table 8.14.12 illustrates the breakdown of local to non-local workers assumptions. The construction phase will require more non-local workers due to the size of the workforce required, the specialty skills required, as well as the ability of the local workforce to meet labour demand. A higher percentage of locals will be employed during operations as the number of workers required is less and the duration of operations is longer term.

8.14.5.2 Construction Workforce

Three distinct phases are associated with construction of the three trains at the LNG facility on Curtis Island. There will be up to 3,080 construction workers involved during construction of the first train (peaking year 2). Phases 2 and 3 are both expected to have up to a maximum of 1,848 construction workers at their respective peaks (year 6 and 10). Construction activity for each train is expected to be completed 12 months after initial commencement.

Approximately 65 % of the construction workforce is expected to be sourced from outside of the local area due to the existing labour shortage, particularly for skilled trades people. Table 8.14.13 shows the breakdown of local and non-local construction workers. Table 8.14.14 shows the total construction workforce over time.

Table 8.14.13 Breakdown of Local & Non-Local Construction Workforce at Peak Periods - LNG facility

Project Year	Year 2 (Train 1)	Year 6 (Train 2)	Year 10 (Train 3)
Nominal Year	2,011	2,015	2,019
Local Workforce (35%)	1,080	646	646
Non-local Workforce (65%)	2,000	1,201	1,201
Total Construction Workforce	3,080	1,848	1,848

This study has estimated the potential size of the flow on workforce resulting from the GLNG Project. Estimations have been derived from a model developed by DIP to estimate the size of the flow on workforce associated with the GPN project. This model was adapted for the GLNG Project since it was the best model available. DIP no longer runs the model so assumptions were made based on the results

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from the GPN model. A full explanation of the model and the various other scenarios run can be found in Appendix Z. The most likely scenario anticipated was a 35:65 ratio for local to non-local workers respectively. Since the non-local workforce is likely to be exclusively housed in the CAF, the flow-on workforce was assumed to be generated from the employment opportunities created in the community. The non-local flow-on workers were assessed as the number of flow-on employment opportunities anticipated to be filled by someone required to move to the Gladstone area. The non-local flow-on workforce was assumed to be 10% of the total flow-on work generated with the remainder being filled locally (see Table 8.14.14).

Table 8.14.14 LNG Facility Direct and Flow-on Construction Employment (six monthly averages) up to June 2022

Year	Half Year	Direct	Flow-on	Total	Recruitment		Imported Flow-on
					Local	Imported	
2010	Jun	168	21	189	77	111	2
2010	Dec	1,260	154	1,414	580	834	15
2011	Jun	1,680	206	1,886	773	1,113	21
2011	Dec	2,940	360	3,300	1,353	1,947	36
2012	Jun	2,940	360	3,300	1,353	1,947	36
2012	Dec	2,576	316	2,892	1,186	1,706	32
2013	Jun	1,120	137	1,257	515	742	14
2013	Dec	560	69	629	258	371	7
2014	Jun	101	19	120	53	68	2
2014	Dec	756	146	902	396	506	15
2015	Jun	1,008	194	1,202	527	675	19
2015	Dec	1,764	340	2,104	923	1,181	34
2016	Jun	1,764	340	2,104	923	1,181	34
2016	Dec	1,546	298	1,844	809	1,035	30
2017	Jun	672	129	801	352	450	13
2017	Dec	336	65	401	176	225	6
2018	Jun	101	19	120	53	68	2
2018	Dec	756	146	902	396	506	15
2019	Jun	890	171	1,061	466	596	17
2019	Dec	1,764	340	2,104	923	1,181	34
2020	Jun	1,764	340	2,104	923	1,181	34
2020	Dec	1,764	340	2,104	923	1,181	34
2021	Jun	1,008	194	1,202	527	675	19
2021	Dec	403	78	481	211	270	8
2022	Jun	168	32	200	88	112	2

Table 8.14.15 shows the break down of flow-on workers by married status. Traditionally in Gladstone workers were broken down by the following categories and percentages to determine population estimates. The categories and percentages are based off the estimates used in the GPN model developed by DIP as follows:

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- Single status worker: 27 %;
- Workers accompanied by partner: 57 %; and
- Workers with families: 16 %.

The singles were therefore counted as one new person, the workers accompanied with partners were considered two people, and the workers with families were 2.6 people based on the average family size. Only the non-local flow-on workers were assessed because they are anticipated to increase local populations.

Table 8.14.15 Anticipated Population Increase in Gladstone Regional Council from Non-local Flow-on Workforce during Construction up to June 2022

Year	Half Year	Non-local Flow-on	Associated Persons			Total Estimated Population Increase	Total Number of Children
			Single Status Worker	Workers Accompanied by Partner	Workers with Families		
2010	Jun	2	1	1	0	4	0
2010	Dec	15	4	9	2	28	1
2011	Jun	21	6	12	3	38	1
2011	Dec	36	10	21	6	66	1
2012	Jun	36	10	21	6	66	1
2012	Dec	32	9	18	5	58	1
2013	Jun	14	4	8	2	25	1
2013	Dec	7	2	4	1	13	0
2014	Jun	2	1	1	0	4	0
2014	Dec	15	4	8	2	27	1
2015	Jun	19	5	11	3	35	1
2015	Dec	34	9	19	5	62	1
2016	Jun	34	9	19	5	62	1
2016	Dec	30	8	17	5	54	1
2017	Jun	13	3	7	2	24	0
2017	Dec	6	2	4	1	12	0
2018	Jun	2	1	1	0	4	0
2018	Dec	15	4	8	2	27	1
2019	Jun	17	5	10	3	31	1
2019	Dec	34	9	19	5	62	1
2020	Jun	34	9	19	5	62	1
2020	Dec	34	9	19	5	62	1
2021	Jun	19	5	11	3	35	1
2021	Dec	8	2	4	1	14	0
2022	Jun	3	1	2	1	6	0

As can be seen in Table 8.14.15 the total estimated population increase is manageable for the community, as is the anticipated number of children requiring schooling.

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8.14.5.3 Bridge and Barge Options

A bridge and road may be constructed to connect Friend Point on the mainland to Laird Point on Curtis Island. Table 8.14.16 presents the on-ground workforce required at the peak of the 20 month bridge and road construction period.

Table 8.14.16 Potential Bridge and Road Construction Workforce at Peak Periods

Area	Month 11
Bridge	181
Road	40
Total	221

There are two barge options Santos is considering as part of this EIS:

- No bridge option – construction workers will be barged to and from Curtis Island; and
- Materials to construct the marine dredged material placement facility will be barged from the mainland.

There is a potential that a bridge connecting the mainland and Curtis Island will not be constructed, or not constructed prior to the commencement of construction for the LNG facility. In this case Santos will be required to transport the entire construction workforce to and from the island using barges. A separate traffic assessment on this option was conducted and can be found in Section 4 and Appendix J of this EIS. Santos is currently considering Auckland Point as the primary collection point or pick-up area for transport by barge to the Island, with the Gladstone marina as an alternative or additional site. Santos will provide adequate parking spaces at the collection points as well as other reasonable provisions like sheltered areas to protect workers from the elements.

Potential social impacts identified for this option are the increased amount of marine traffic during construction, the impact on recreational and commercial fishers and recreational boaters, and the interaction with local residents and businesses. Consultation did not identify a significant amount of use of the areas where the barging options will occur except as areas where boaters travel through (see Section 3 of this EIS for details). The potential negative social impact is therefore considered low, as it is likely more of a nuisance than a significant social effect. Santos will continue to consult with local boaters and fishers in the area and monitor issues arising from their barging activities.

There is a potential for positive and negative social interaction at the collection points on the mainland. The Auckland Point option is considered the primary location because it is in an industrial area away from most of Gladstone residents and their activities, and therefore is less likely to negatively affect the people and businesses in the area. Santos will likely require additional space to store materials at the collection point and Auckland Point is likely to have more potential sites. Santos is still exploring the exact locations of the sites at these locations, and the details surrounding either option.

Auckland Point is likely to have a lower negative social impact because it is a more isolated location; however there is also a lower potential for positive social and economic interaction from workers accessing local businesses while waiting to be transported to site. The marina area may have a slightly increased potential for positive impacts because it has shops and cafes, as well as room for additional businesses which could cater to workers coming and going from the barges. The Gladstone tourism information centre and university campus are also located at or near the marina respectively.

Santos considers Auckland Point to be a more reasonable option because the workforce movements have a greater potential to impact the community at the marina since the marina is more central to Gladstone and has established local businesses. Santos will continue to assess the pros and cons of both options including that the marina option is a more direct commute to the LNG facility site, while the Auckland Point option requires barges to transect the main shipping corridor to Gladstone Port.

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Increased marine traffic as a result of the construction of the dredge material disposal facility at Laird Point is anticipated to have a low social impact and is more likely to be considered a nuisance to some local users rather than an impact. Areas of Laird Point will no longer be accessible to the community which could have potential impacts on regular users. Santos will continue to consult and monitor the situation.

Santos will continue to barge workers to and from the LNG facility during operations, if a bridge is not constructed, with all staff returning to Gladstone at the end of their work day. This will be a significantly reduced endeavour to the construction activities, and is therefore assessed as a low social impact. Barge movements will be routine and predictable to area residents, and are not anticipated to negatively affect them. Positive impacts are the sustained business opportunity to transport workers to and from the LNG facility.

8.14.5.4 Operations Workforce

Operations will commence from year 4 (nominally 2013) with an initial workforce of 140. The workforce will gradually increase to a peak of 250 (with Train 3 commencement). Santos plans for at least 60% of the operational workforce to come from the local area due to skill requirements for operators of LNG facilities.

The LNG facility will operate 24 hours a day, 7 days a week. This will require four shifts (20 persons per shift) for Train 1. These shifts are likely to be 12 hour shifts, and may be on a four days on, four days off rotation (refer Table 8.14.17).

Table 8.14.17 LNG facility Operational Workforce

Staff Type	Work Schedule	No. Shifts	Train 1	Train 2	Train 3
Maintenance.	Mon-Fri 0700-1600	1	30	40	50
Operations.	24hr/d 7d/wk	4	20	30	40
Administration.	Mon-Fri 0700-1600	1	30	35	40
Total on site at any one time.			80	105	130
Total employed.			140	195	250

The same model for construction was used for operations with some minor alterations (see Table 8.14.18). The operations workforce was anticipated to be split 60:40 local to non-local workers respectively. The entire operations workforce is expected to be locally accommodated. The ratio of flow-on workers remains the same as local and non-local direct workers in this model. The total number of flow-on employment opportunities created as a result of employment at the LNG facility peaks at 388 once Train 3 is operational. Once again, the number of non-local workers is further analysed to determine potential population increase (see Table 8.14.19).

Table 8.14.18 Facility Direct and Flow-on Operations Employment for each Train

Year	Half Year	Direct	Flow-on	Total	Recruitment	
					Local	Imported
2014	June	140	77	217	130	87
2018	June	195	107	302	181	121
2022	June	250	138	388	233	155

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As seen in Table 8.14.19, the total estimated population increase ranges from 158 for Train 1 up to 283 for Train 3 by June 2022. These increases are anticipated to occur very close to the start of operations since the workforces will be required at the start of each Train's operations phase. Total housing units required at each Train start are anticipated to be the values in the imported workers column, which is within the normal range in the area. Santos will work with council and their employees to coordinate accommodation close to the beginning of operations for each Train.

Table 8.14.19 Anticipated Population Increase in Gladstone Regional Council from Non-local Construction and Flow-on Workforces during Operations for each Train

Year	Half Year	Non-local Workers	Associated Persons			Total Estimated Population Increase	Total Number of Children
			Single Status Worker	Workers Accompanied by Partner	Workers with Families		
2014	June	87	23	49	14	158	8
2018	June	121	33	69	19	221	12
2022	June	155	42	88	25	283	15

8.14.6 Potential Impacts and Mitigation Measures

For the LNG facility, the whole of Gladstone Regional Council area was considered with the focus on the community of Gladstone. Although there is a community located on Curtis Island at South End and several private residences elsewhere on the island, these individuals were assessed with the rest of the areas population due to the lack of access to the LNG facility site. Although they share Curtis Island with the LNG facility, they have no greater accessibility to the project than the rest of Gladstone. There are families on the neighbouring islands, including Tide Island, and they have been included in the impact assessment.

Santos will develop a social management plan with the SIA as a foundation. Santos will monitor social impacts associated with the project and work with local services and stakeholders to develop practical solutions. Unforeseen impacts will be identified through Santos' established consultation network and mitigated. This social management plan will allow Santos to mitigate negative social impacts, enhance positive impacts and update the management strategy as the project evolves.

8.14.6.1 Impact on Demographic Profile

Population Increase

Construction Phase

The main demographic influence from the project will be during the construction phase. As seen in Table 8.14.14, as many as 2,040 (1,940 in table though peak is not captured and is anticipated to be 2,040) construction workers are anticipated to be imported from outside the local Gladstone region at peak. Based on high employment rates of skilled workers in the region, a significant proportion of workers will be from outside the Fitzroy Statistical Division (SD), however given the recent economic down-turn in the mining industry, there may now be more skilled workers available within the region.

Previous demographic analysis indicates that workers from outside the region are predominantly from other regions within Queensland, however a small proportion is likely to come from other states/territories or overseas (URS, 2007).

This study has assumed that few of the non-local construction workforce will be accompanied by their partners or families. Non-local workers will be on FIFO or drive-in/drive-out (DIDO) work arrangements, and will usually return home to their families (outside of the local area) at the end of their work roster. As

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workers will be located in a construction accommodation facility (CAF) during their work roster, there is reduced incentive for families/partners to move to accompany workers into the area.

The construction workforce will cause an increase in Gladstone's population over the short-medium term. Much of the workforce will leave Gladstone following the end of their contract. However, given the potential duration of employment and opportunities for follow-on employment, some workers may stay in Gladstone.

The construction workforce is expected to be predominantly male, which could increase the ratio of male to females in the area during the construction period. Potential implications of increased numbers of males are discussed further in this study. There is anecdotal evidence that construction workforces often comprise younger workers, who are suited to the FIFO/DIDO working arrangements.

Operational Phase

There will be 250 operational workers at the LNG facility; the majority (60%) are anticipated to be from the local area. Approximately 40% of the LNG facility operational workforce (up to 100 workers) are expected to be imported from outside of the local area (see Table 8.14.14). Operational workers may be accompanied by their partners and family. The additional population associated with the incoming operational workforce and their accompaniments is minimal in relation to the overall population.

The existing age profile in Gladstone shows predominance of residents in the 30 - 65 year age range, reflecting the prevalence of a young-middle aged working population (refer Section 8.14.4.1). The LNG facility workforce is likely to be similar to this age profile.

8.14.6.2 Impact on Employment

The project presents a significant employment opportunity for the region. Santos' policy will still be to hire locals first where practicable. The workforce profile of Gladstone and the greater region (based on industry of employment and occupation) generally matches the skills required of the GLNG workforce.

The range of skills required, will provide opportunities for unemployed workers to gain employment. Workers have the opportunity to develop skills with the available training courses proposed to be provided. Santos intends to develop training and skills development programs in conjunction with education institutions such as TAFE, and existing employment and training programs provided by government and local economic groups.

A significant portion of Gladstone's residents work outside of the local area. The opportunity of longer term, suitable employment may attract some residents to return to working in the local area. The LNG facility will also generate a range of flow on employment opportunities within local business and supporting industry. For more information on the impact on the regional labour market and impacts by occupational groupings see Section 8.15 of the EIS.

8.14.6.3 Impact on Income and Cost of Living

Based on 2006 Census data, Gladstone has a higher proportion of households with weekly incomes above \$1,000 than the Queensland and Australian average. It is anticipated that the increase in skilled and semi-skilled workers required for the project will result in a growth in the proportion of residents earning higher level incomes.

Major developments in areas where there are constraints on capacity or supply of goods and services has the potential to impact on affordability for residents in the area. Gladstone is well serviced by retail sector and is unlikely to experience retail supply shortages pushing up prices of goods. Impacts on housing affordability are discussed below.

8.14.6.4 Impact on Housing and Accommodation

As discussed in Section 8.14.4.5, Gladstone region has experienced a strong property market and a tight rental market in recent years. Previous large construction projects in the area have had a significant

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impact on housing availability and pricing in the region, which has had serious impacts on low income and marginalised members of the community. Potential impacts on housing and accommodation during construction and operation are discussed below.

Construction

Increased demand for accommodation could further disadvantage low income and marginalised groups, who already have difficulty finding affordable accommodation. Santos proposes to provide a CAF on Curtis Island, within the LNG facility site. Accommodating the construction workforce on-site will reduce the risk of increasing rental demand and property prices. It will also minimise disruption to the community.

The workforce accommodation facility will have a maximum capacity of around 2,000 (largely dependent on whether a stick build or modular construction methodology is selected), sufficient to accommodate the rostered on construction workforce.

It is possible that there may be some increased demand for housing from non-local workers who intend to stay in the area when off their roster. Related demand for housing may also be generated from the family of non-local workers, who move into the area to be closer to their partners. In a scenario where 10% of the non-local workforce are accompanied, around 200 units of accommodation will be required in construction year two to meet the needs of this group. This will have significant implications on the already limited supply of rental housing and inflate housing prices. This is discussed in further detail in Appendix Z. Based on recent movement patterns, Gladstone and the coastal locations such as Boyne Island and Tannum Sands are likely to be areas experiencing accommodation demand.

Visiting contractors, consultants and other professionals not involved in the on-site construction will likely seek hotel/motel accommodation in Gladstone. This will likely increase occupancy rates but will also limit vacancies of hotel/motel accommodation. A number of hotels/motels are currently being developed which will increase supply.

Santos proposed actions to minimise impacts on housing in Gladstone include:

- Developing an on site CAF to offset demand for residential housing in Gladstone;
- Liaising with government and industry peak bodies to collaboratively tackle the issue of accommodation shortages;
- Exploring employment options that reduce the need for medium-long term housing; and
- Promoting accommodation for families outside of the Gladstone region.

Further details are provided in Appendix Z.

Operation

It is anticipated that most local workers will already have accommodation arrangements and will not affect housing availability and demand. The small number of operational workers moving into the area and requiring accommodation should not significantly affect housing availability and affordability in the Gladstone area.

Based on development trends and movement patterns, Gladstone and coastal locations such as Boyne Island and Tannum Sands will have adequate capacity to meet the demand.

8.14.6.5 Impact on Health, Emergency Services and Education

Members of the Gladstone community have been vocal in their concern over air quality in Gladstone. The Queensland government released The Clean and Healthy Air for Gladstone Project – Interim Report in November, 2008. The report covers the majority of general health concerns in the area compared with Queensland averages.

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Consultation indicates that the community has concerns regarding air quality, particularly the impact of additional industry.

A health risk assessment was considered for potential releases of hazardous or toxic material from the LNG facility. The study into air quality has revealed that emissions will meet the regulatory levels prescribed by the EPA. On this basis, a health risk assessment has not been conducted. Section 8.8 of this EIS provides further details.

Currently the EPA is conducting a comprehensive health risk assessment in the Gladstone region. This study is expected to provide a much broader picture on the cumulative health risks in the Gladstone region. Santos GLNG will participate in the Queensland EPA's "Clean and Healthy Air for Gladstone" project and will provide site emissions data as appropriate for use in the EPA health risk assessment.

The additional population associated with the project will create additional demand to existing health services.

The main difficulty associated with the increased demand is a shortage of nurses and doctors and some specialised medical practitioners such as physicians. This shortage is being experienced across Queensland.

In instances where there is a shortage of medical professionals' available, health services could be referred on to Rockhampton Hospital 110 km north, which is the main hospital for the region.

A first-aid facility will be located at the LNG facility which can treat non-serious injuries and stabilise more serious injuries prior to transport to hospital.

Previous consultation with emergency services representatives indicates that most of the existing emergency services have capacity to handle additional demand associated with the GLNG Project (URS, 2007). Santos will maintain regular contact with emergency service representatives to discuss the project and likely impacts including:

- Developing emergency response plans and management plans for the project; and
- Additional requirements to adequately respond to potential emergencies characteristic to the GLNG Project operations.

A community survey commissioned by QAL found that "maintaining education services" was a priority issue for respondents (Media Link, 2008). Based on enrolment rates for 2008, most schools have adequate ability to handle additional students.

Few school age children are likely to arrive in the area during the construction phase as the majority of construction workers will be unaccompanied FIFO/DIDO workers. A small number of construction workers may move into the area accompanied with school age children, requiring school services but this figure is not anticipated to be large due to a lack of incentives to move as discussed previously.

Approximately 56 operational workers and 21 flow-on workers are expected to move into the area. Approximately 16 % of those workers are likely to be accompanied with children, which will create additional demand for school places. However the number of new students is likely to be minimal, with approximately 8 estimated for Train 1; 12 for Train 2 and 15 for Train 3 (it should be noted that the 15 from Train 2 is actually Train 1 plus three more as with Train 3) (see Table 8.14.19). Santos will liaise with Education Queensland where practicable to discuss how many workers accompanied with children will require enrolment. The number of children anticipated to accompany workers is well within the normal range of new students throughout the region as seen in Table 8.14.15 and Table 8.14.19.

Further education institutions (TAFE and Central Queensland University) operate in Gladstone. Santos will move to improve local skill levels through investment in skills development and training in the community, likely through the local university and TAFE, including apprenticeship programs. Santos is currently developing specific programs for the project to be implemented for construction. Santos will explore the options of partnerships with government agencies such as Department of Education Training and the Arts (DETA) in Queensland and local economic groups such as Chamber of Commerce for

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increased employment opportunities in the area, both with existing programs as well as options for new or additional programs.

8.14.6.6 Impact on Community Facilities and Services

The construction workforce is likely to place limited demand or impact on Gladstone's facilities and services as all imported workers are expected to stay in the CAF on Curtis Island which will be fully self-contained. The majority of the FIFO/DIDO workforce is likely to vacate Gladstone outside of their roster, and not utilise these services.

Construction workers and their families who move into the area and the operational workforce will use community facilities and services in the area. New residents to the area provide an opportunity to support and further develop the services.

During consultation, some welfare and community groups expressed their concern that the additional population associated with the GLNG Project will create an increasing demand for their service, in particular crisis and low cost housing.

As an active member of the Gladstone community, Santos will continue to liaise with the Gladstone Regional Council and interest groups to support community facilities and services. Section 8.15 of the EIS assesses the service revenue and work anticipated to flow to existing communities. Santos will work with key stakeholders in the development of a social management plan upon EIS approval to determine commitments and details with regard to housing and other social management issues.

8.14.6.7 Impact on Community Values and Lifestyles

The GLNG consultation process and other community consultation has helped to identify community values, their concerns, expectations and aspirations. The potential effect of the project on these themes is discussed below.

Community Issues

Protection of the Environment

Particular environmental concerns related to protection of air quality. Emissions to air during construction of the LNG facility will be primarily dust, with some minor sources of combustion pollutants such as NO_x due to diesel and petrol vehicles operating on site. The impacts of construction activities will be managed through the EMP. This will include strategies to prevent or minimise dust emissions during construction activities, an outline of methods to monitor the effects of construction activities and mitigate any adverse off-site impacts. Other perceived air quality related issues relate to facility emissions including SO₂, NO_x, CO, CH₄ and PM_{10s}. Refer to Section 8.8 of this EIS for further details of potential impacts on air quality and proposed mitigation and management measures.

Safety Risks

Consultation has identified community concern about potential safety risks and the possibility of a gas leak, explosion, and other catastrophic risks. This was raised as a particular concern by residents at South End which is located east of the LNG facility on Curtis Island. A comprehensive hazard and risk assessment has been carried out to identify potential risk hazards and provide risk management measures. The report has identified that there is an extremely low probability of catastrophic life threatening events occurring due to the inherently benign nature of LNG and the emergency management measures to be implemented. Appendix BB provides further details.

Anti-Social Behaviour (including Violence)

There was concern that the project workforce may lead to increased anti-social behaviour in the community including drug and alcohol abuse. Potential for increased violence and criminal activity were also raised as concerns. The provision of on-site workforce accommodation and FIFO/DIDO

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arrangements for the non-local construction workforce will minimise these risks from the GLNG Project. Santos will not tolerate any such behaviour and has mitigation measures in place including:

- Dismissal and disciplinary actions for anti-social behaviour;
- Close liaison with the community, police and other stakeholders to monitor and manage anti-social behaviour;
- On-site accommodation facilities ; and
- FIFO.

Visual Amenity

Curtis Island was identified by the community as an important natural area, in particular for its visual amenity values. The visual amenity assessment carried out as part of this EIS is included in Section 8.12.

Lifestyle and Community Character

Community perceptions on what made Gladstone a liveable place included “small town feel with all the services”; limited traffic; and recreational opportunities (multiple community consultation). The GLNG Project was viewed as a threat to these attributes by some. Santos has developed a range of procedures to minimise disruption and disturbance to the community. These include:

- Using ‘park and ride’ locations for workers to park their cars and then be commuted by bus to the worksite – thus relieving traffic congestion;
- Accommodating construction workforce at a CAF on site at Curtis Island; and
- Minimising loss or disturbance to recreational areas where practicable.

Fishing is a popular recreational activity in Port Curtis and the surrounding area and commercial fishers also operate out of the area. During consultation, there were queries on what impact the project will have on fishing. The potential impact of the project on both recreational and commercial fishers is discussed in Appendix Z.

Cattle grazing on the site will cease once construction of the LNG facility commences. The site will be fenced and the surrounding land which is also used for grazing will not be affected by the project. The land is not considered to be good quality agricultural land use (refer to Section 8.3).

Construction Accommodation Facility

Santos is proposing all workers be housed in the CAF during their work rotation for construction, including local residents. For workers and their families from a social perspective this is not the ideal situation. From a psychological stand point, workers and their families will be aware that they are approximately 5 km from Gladstone CBD but are unable to return home at the end of their work day. This is psychologically more difficult to deal with than if the worker was several hundred kilometres away and it was obvious they could not come home daily. This could put a higher strain on families, particularly in times of stress, where a compounding effect could occur. This has to be properly weighed against workers’ health and safety concerns with daily ferry trips moving potentially hundreds of workers on and off the island, as well as the financial cost and logistics required to achieve this. Santos will therefore consult with prospective employees, their families, and key stakeholders to determine realistic, practical strategies to address this. This could include off site rotations where workers can catch the ferry home on certain days to minimise the number of trips required but have to stay at the CAF the other days. The exact details will need to be assessed and discussed as the workforce is employed and the ratio for local to imported workers is known. This will help determine the viability of ferrying local workers home daily.

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8.14.7 Indigenous Social Component

The baseline profile for the Indigenous population was assessed differently to the rest of the SIA to better depict the traditional settlement patterns and to capture the diversity of circumstances across the study area. Indigenous people are represented in the area's population at approximately twice the level of Indigenous representation in the Queensland population, and the population exhibits a significantly younger age profile. In relation to economic security, the income of Indigenous individuals was slightly less than the Queensland median income level for Indigenous individuals. Indigenous household median incomes indicated a higher proportion in the mid-income ranges than non-indigenous households in the area. Indigenous employment was higher in the service industry sectors, and dominated by the labouring occupational category. Indigenous unemployment is generally three to four times higher than non-indigenous unemployment. Indigenous people are significantly more likely to rent housing and to depend on the State housing authority, except for the LNG facility area where the dependence on the State housing authority was broadly similar.

Education and health status combine to give an indication of the level of vulnerability to which the population is subject. Indigenous people are moderately less likely to have completed Year 12 than the non-indigenous population, though the difference between the two populations was less in the LNG facility area. In relation to health, Indigenous people in all areas are disproportionately over-represented in the high socio-economic disadvantage cohort, with major causes of death and illness being stroke, chronic heart disease, diabetes and suicide.

8.14.7.1 Potential Impacts

Table 8.14.20 summarise the potential social impacts to the Indigenous population in the study area. The impacts are discussed within the matrix for each phase of the project, including a pre-construction phase which includes the EIS process. Santos will examine the potential impacts from decommissioning and closure closer to the event, to better assess the potential impacts and suitable mitigation measures.

Table 8.14.20 Potential Indigenous Impacts for LNG Facility Area

Spatial Boundary	Temporal Boundary		
	Pre-construction	Construction	Operations
LNG facility	<ul style="list-style-type: none"> Inter-family and inter-group stress induced by negotiations for Cultural Heritage Management Plan (CHMP) and Indigenous Land Use Agreement (ILUA) over the pipeline, LNG facility, marine facilities and bridge areas. Concerns concerning the protection of significant sites, even where these are not known with certainty. 	<ul style="list-style-type: none"> Potential impacts on cultural heritage to be managed through the CHMP negotiated. Social friction due to the presence of a large number of construction workers, some with attitudes that are intolerant of Indigenous people. Inability to secure employment opportunities due to lack of job readiness (addressed through Santos Aboriginal Engagement policy (AEP)). Impaired ability to access private rental and home ownership market. 	<ul style="list-style-type: none"> Inability to secure employment opportunities due to lack of job readiness (addressed through Santos AEP). Impaired ability to access private rental and home ownership market.

8.14.7.2 Impact Mitigation Measures

Potential social impacts on Indigenous persons in the GLNG Project area will be minimised by the Santos Aboriginal Engagement Plan (AEP). Under this plan, Santos envisages that by 2010 its engagement with Aboriginal peoples will be regarded as representing 'leading practice'.

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Refer to section 6.14.7.2 for mitigation measures which are applicable to the LNG facility as well.

8.14.8 “No Bridge” Barging Options

Two barge options are being considered as part of the EIS:

- No bridge option – LNG facility construction workers and materials will be barged to and from Curtis Island; and
- Materials (plant and equipment) to construct the marine dredge material placement facility at Laird Point will be barged from the mainland.

There is a potential that a bridge connecting the mainland and Curtis Island will not be constructed, or not constructed prior to the commencement of the LNG facility construction. Santos will then be required to transport the entire construction workforce (and materials) to and from Curtis Island using barges. A separate traffic assessment on this option was conducted and can be found in Appendix J. Santos is currently considering Auckland Point as the primary collection point or pick-up area for transport by barge to Curtis Island, with the Gladstone marina as an alternative or additional site. Santos will provide adequate vehicle parking at the collection points as well as other necessary facilities such as workforce shelter areas.

Potential social impacts identified for this option are the increased amount of marine traffic during construction, the impact on recreational and commercial fishers and recreational boaters, and the interaction with local residents and businesses. Consultation did not identify a significant amount of use of the areas where the barging options will occur except as areas where boaters travel through (see Section 3 of this EIS for details). The potential negative social impact is therefore considered low, as it is likely more of a nuisance than a significant social effect. Santos will continue to consult with local boaters and fishers in the area and monitor issues arising from their barging activities.

There is a potential for positive and negative social interaction at the collection points on the mainland. The Auckland Point option is considered the primary location because it is situated in an industrial area remote from residential areas, and is therefore less likely to negatively affect residents and local businesses. Santos will likely require additional space to store materials at the collection point and Auckland Point is likely to have more potential sites. Santos is still exploring the exact locations of the sites at these locations, and the details surrounding either option.

Auckland Point is likely to have a lower negative social impact because of its more isolated location; however there is also a lower potential for positive social and economic interaction from workers accessing local businesses while waiting to be transported to site. The marina area may have a slightly increased potential for positive impacts as it has established shops and cafes, as well as a capacity to accommodate additional businesses which could cater to workers embarking and disembarking from the barges. The Gladstone tourism information centre and university campus are also located at or near the marina respectively.

Auckland Point is the preferred option as the workforce movements have a greater potential to impact the community at the marina since the marina is more central to Gladstone and has established local businesses. Santos will continue to assess both options.

Increased marine traffic as a result of the construction of the proposed dredge materials placement facility at Laird Point is anticipated to have a low social impact and is more likely to be considered a nuisance to some local users rather than a negative impact. Areas of Laird Point will no longer be accessible to the community which could have potential impacts on regular users. Santos will continue to consult and monitor the situation.

Santos will continue to barge workers to and from the LNG facility during operations, if a bridge is not constructed, with all staff returning to Gladstone at the end of their work day. This will be a significantly reduced endeavour to the construction activities, and is therefore assessed as a low social impact. Barge movements will be routine and predictable to area residents, and are not anticipated to negatively affect them. Positive impacts are the sustained business opportunity to transport workers to and from the LNG facility.

Section 8**LNG Facility Environmental Values and Management of Impacts****8.14.9 Cumulative Impacts**

Section 1 identifies other potential development projects in the Gladstone region. There is generally limited information available as to the planned development or timing of a number of these projects. Consideration has been given to detailed information where available. From this information a qualitative assessment can be made of the possible cumulative impacts.

Potential cumulative projects and impacts associated with the LNG facility were discussed with the Department of Communities and the Department of Housing in December 2008.

There has been substantial activity in the coal, transport and agricultural sectors as a consequence of improved export demands, increased production and better seasonal conditions. Impacts of this increased economic activity have affected the local, regional and state economies.

As the economic downturn continues, changes to these industries may occur as demand changes, but prediction of the long term trends and effects is beyond the scope of this project. Several projects have been put on hold, or are being reassessed at the drafting of this report, making the assessment of the potential cumulative effects tenuous. Santos will continue to monitor project updates in the area.

The Gladstone Region has experienced significant industrial growth over the past decades. There are over \$100 billion worth of projects currently operating or in the early stages of development. These industrial operations provide significant local employment both directly and indirectly through support industries and flow on employment and business opportunities.

In the 1960's the meat packing plant closed and the economy switched to heavy industry. Gladstone has evolved into the economic engine of the Fitzroy Region in the following decades to the present. The cumulative effects of this industrial growth include:

- Increased population growth and accommodation demand;
- Increased demand for community services and facilities;
- Increased need to attract key occupations to assist in the provision of services and facilities;
- Changes to the lifestyle qualities of the area;
- Increased demand for a greater range of retail, community services and facilities and sporting facilities for use by the local community; and
- Expansion of existing services for the growing population with a resultant reduction in products and services being purchased from outside the region.

For this assessment nine industrial projects in various stages of planning and construction in the region were considered (listed above). Figure 8.14.7 shows the cumulative total number of workers required to construct or operate these projects with the GLNG Project.

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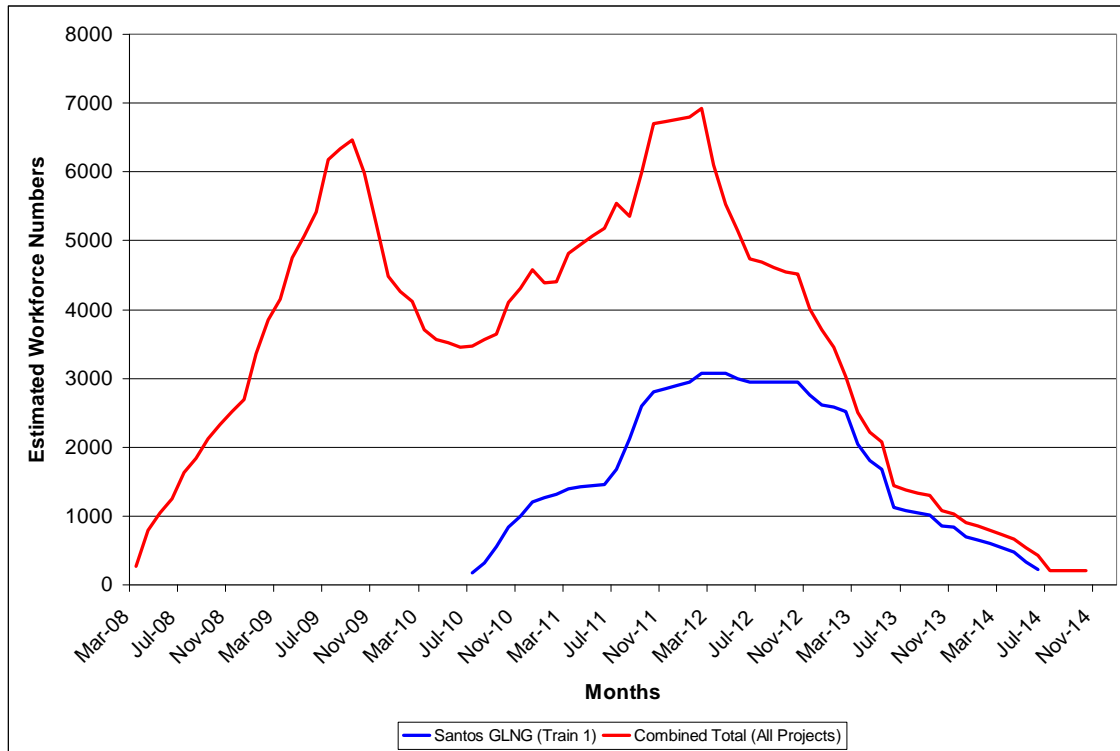


Figure 8.14.7 Cumulative Project Workforce in Relation to GLNG

Based on the size and timing of the various workforces in Figure 8.14.6, the current economic uncertainty (which could affect projects going ahead, unemployment rates, housing and rental prices and vacancies) and the desire to minimise potentially adverse social impacts on the community, Santos has determined that the CAF for construction of the LNG facility is best situated on Curtis Island, within the project footprint. This will keep the majority of workers out of the community, and therefore not reliant on local services and housing.

During operations the workforce and their families could also have a cumulative effect, but not likely outside the anticipated growth from PIFU projections (see Appendix Z), with Gladstone projected to grow by approximately 1,000 people per annum based on trends over the last five years. The workforce and potential family members will fit into the current mainly working aged male population demographic, though an amplification of this demographic is not necessarily ideal for the community. All the heavy industry projects will provide high paying jobs which will add to or maintain the current salary profile of the area which is already high from current industrial activity.

Table 8.14.21 provides a summary of potential social impacts and mitigation measures for the LNG facility.

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Table 8.14.21 Potential Social Impacts and Mitigation Measures

Aspect	Potential Impact	Mitigation Measures	Objective
Construction, Operation and Decommissioning			
Demographic Profile.	Significant increase in population, change in male-female ratio, age, family etc.	<ul style="list-style-type: none"> Prioritise local employment over non-local employment where practical. 	To reduce likelihood of altering existing community profile.
Employment.	Opportunity to reduce unemployment rate, increase the local skills capacity and increase local based employment.	<ul style="list-style-type: none"> Prioritise local employment over non-local employment where practical. Improve local skill levels through investment in skills development and training, likely through the local university and TAFE, including apprenticeship programs. Explore options for partnerships with DEET and local economic groups for increased employment opportunities in the area, with existing and new or additional programs. 	<p>Improve local and regional employment opportunities'.</p> <p>Develop skill level of local community.</p>
Income and Affordability.	Increase in weekly incomes and increase in cost of living.	<ul style="list-style-type: none"> Give priority to local employees. 	Maximise local economic benefits of project.
Housing and Accommodation.	Increased cost of and reduced availability of housing.	<ul style="list-style-type: none"> Accommodate most construction workers in TAF. Liaise with relevant stakeholders to stimulate construction of housing and accommodation. Acquire/lease some properties for workers and families. 	Minimise adverse impact on local accommodation.
Health.	Concerns over air quality. Health services unable to cope with additional demand.	<ul style="list-style-type: none"> Initiate community consultation and stakeholder engagement program to focus on air quality and green house gas (GHG) emissions. Consult directly with Gladstone Regional Council to identify specific perceived and actual risks. Help educate the public on the facts of the project and the baseline conditions in Gladstone area. 	Minimise community concerns over health issues.

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Aspect	Potential Impact	Mitigation Measures	Objective
		<ul style="list-style-type: none"> • Develop a community awareness programs on air quality and the project. • Communicate the NPI website to community groups and stakeholders to increase awareness in the community. • Integrate the Gladstone air quality assessment with GLNG project to enable stakeholders a more integrated summary of results within a more consistent format if required. • Inform local health services prior to commencing activity in the area. 	
Education and Training.	Limited availability/insufficient education and training facilities/ vacancies.	<ul style="list-style-type: none"> • Liaise with Education Queensland. Development of skills training program (refer to employment aspect). 	Maximise education opportunities.
Local facilities and services.	Project may strain local facilities and services.	<ul style="list-style-type: none"> • Consult with Gladstone Regional Council and the interagency group in regard to local services utilised and service requirements. • Provide an opportunity for local services to expand their services in order to capitalise from the project. • Consider programs and agreements to reduce the potential for lost or strained local services. • Develop and implement a community consultation and stakeholder engagement relating to project local facilities and services usage. • Consult directly with Gladstone Regional Council and key stakeholders to identify specific perceived and actual risks, and realistic mitigation or enhancement opportunities. • Develop procurement policies and communicate 	Optimise use of local services and facilities without adverse effect on local community.

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Aspect	Potential Impact	Mitigation Measures	Objective
		those policies to stakeholders.	
Community Values, and Lifestyles.	Project may cause reduction in/loss of community values and lifestyle.	<ul style="list-style-type: none"> • Become an active member of community, supporting events promoting those community values. • Educate community on Santos's requirements of its employees per its HR Policies and Code of Ethics and commit to their enforcement. • Commit to a social monitoring and measuring program, grievance mechanism and community consultation strategy that will focus on project issues. • Undertake project sponsorship / community support program. 	Minimise adverse social impacts of project.

Section 8**LNG Facility Environmental Values and Management of Impacts****8.14.10 Summary of Findings**

The LNG facility is located in Gladstone Regional Council, which has a population of around 55,000. Gladstone City, Boyne and Tannum Sands are the main urban centres. Gladstone is a significant industrial hub. The surrounding area is predominantly rural land use.

The population demographics reflect the industrial nature of the area. The population largely consists of middle age working families with children. People are employed in industry and resource related occupations that operate in Gladstone and the greater region. There is a high proportion of higher income earners as well as a significant portion of low income disadvantaged peoples in comparison to the Queensland average.

Gladstone has a diverse range of services and facilities, however the capacity of these services and facilities is becoming stretched as the population continues to increase. Community values centre on economically sustainable development; environmental features of the area; and a relaxed coastal lifestyle. Key expectations and visions for the area and the community include further developing economic opportunities, improving health and education services; and improving air and water quality.

Development of the LNG facility requires a large construction workforce (up to 3,080 workers), working over a 12 year period. A large proportion of these workers are expected to be sourced from outside of the local area given the limited availability of the required skill-sets. Externally sourced workers (imported workers) will generally FIFO or DIDO for their work roster and will stay at a CAF on-site during their roster. The CAF will house all construction workers during their on-site work rotation, including locally sourced workers. This is anticipated to drastically reduce the potential social impacts of the project by isolating the construction workforce from the general public. Several factors were considered in this decision including logistics, workers safety, cost, the potential for negative social impacts, and the instability of the global economic situation and the effects that might have in Gladstone, Queensland and Australia.

The operational workforce is expected to commence in year 2013 after the completion of Train 1 and will build up to a peak of 250 workers by Train 3 operations. The majority of the operational workforce will be locally sourced.

Key potential social impacts include:

- Change to the demographic profile of the Gladstone community;
- Employment opportunities and increased income benefits;
- Changes to availability and affordability of housing (rental and ownership);
- Impacts to health and education services; and
- Impacts to community values and lifestyle.

Generally impacts associated with construction are more acute and of short to mid term duration, while there are less significant impacts associated with the operational phase. A range of mitigation and management measures are proposed to reduce negative impacts and maximise the positive impacts.

Santos will develop a social management plan with the SIA as a foundation. Santos will monitor social impacts associated with the project and work with local services and stakeholders to develop practical solutions. Unforeseen impacts will be identified through Santos' established consultation network and mitigated. This social management plan will allow Santos to mitigate negative social impacts, enhance positive impacts and update the management strategy as the project evolves. Santos will work with key stakeholders in the development of a social management plan upon EIS approval to determine commitments and details with regard to housing and other social management issues.

In addition to the SIA, an accommodation technical report was also developed to assess the impacts of the various project components on local housing and accommodation.