APPENDIX 20

ARROW LNG PLANT

Social Impact Assessment

arrow energy
go further

Arrow LNG Plant Social Impact Assessment

FINAL

9 December 2011

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Sinclair Knight Merz
ABN 37 001 024 095
Floor 11, 452 Flinders Street
Melbourne VIC 3000
PO Box 312, Flinders Lane
Melbourne VIC 3000 Australia
Tel: +61 3 8668 3000
Fax: +61 3 8668 3001
Web: www.skmconsulting.com

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Glossary and abbreviations

AGRU	acid gas removal unit
Base case	Ideal option for a particular part of the project
CEO	Chief Executive Officer
CSG	coal seam gas
DEEDI	Department of Employment, Economic Development and Innovation
DERM	Department of Environment and Resource Management
DIDO	drive-in drive-out
DIP	Former Department of Infrastructure and Planning (now Department of Local Government and Planning (DLGP))
EIS	Environmental Impact Statement
EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
EPC	Engineering, Procurement and Construction
FIFO	Fly-in, fly-out
GAPDL	Gladstone Area Promotion and Development Ltd
GEIDB	Gladstone Economic and Industry Development Board
GSDA	Gladstone State Development Area
GRC	Gladstone Regional Council
LGA	Local Government Area
LGAQ	Local Government Association of Queensland
LNG	Liquefied natural gas
MOF	Materials offloading facility

Mtpa	Million tonnes per annum
PCYC	Police Citizens Youth Club
QRC	Queensland Resources Council
SIA	Social Impact Assessment
SIMP	Social Impact Management Plan
SISP	Social Infrastructure Strategic Plan
SKM	Sinclair Knight Merz
SLA	Statistical Local Area
SDPWO Act	State Development and Public Works Organisation Act 1971
TOR	Terms of Reference
TWAF	Temporary Workers Accommodation Facility

Executive summary

Purpose of the SIA

This social impact assessment is required as part of the Environmental Impact Statement (EIS) for the proposed Arrow LNG Plant. The purpose of the SIA is to consider the potential positive and negative social impacts of the project and to recommend ways to manage and mitigate negative impacts and enhance positive benefits.

Project background

Arrow CSG (Australia) Pty Ltd (Arrow Energy) proposes to construct the Arrow LNG Plant in the Curtis Island Industry Precinct at the south western end of Curtis Island, approximately 6 km north of Gladstone and 85 km southeast of Rockhampton, off Queensland's central coast.

Key elements of the project include:

- Liquefaction facility
- Feed gas pipeline
- Workforce accommodation
- LNG jetty
- Material off loading facility
- Personnel jetty
- Mainland launch site
- Dredging

Workforce profile

The construction workforce

During construction, the project is expected to directly require a peak of up to:

- 3,000 workers to construct Phase 1 of the LNG plant
- 350 EPC staff
- 150 Arrow Energy staff
- 100 workers for the tunnel
- 75 workers for the feed gas pipeline

- 20 and 40 workers for the dredging

The workforce will be composed of a combination of local and non local workers with most non local workers retained on a fly-in, fly-out (FIFO) basis and located in construction camps.

Being located in the construction camp, the majority of FIFO workers will have no opportunity to interact with the wider study area community except in a work capacity or when they are waiting at the airport at the beginning or end of a shift. This will significantly reduce the potential social impacts usually associated with construction workforces.

Table 0-1 provides Arrow Energy's estimate of the local and non local workforces required for the project.

- **Table 0-1: Estimate of local and non local workers in the peak construction workforce**

Worker type	Non local (no.)	Local (no.)	Local (%)
LNG Construction Workforce	2,400 to 2,850	150-600	5% to 20%
EPC	332	18	5%
Arrow Energy	135	15	10%
Feed gas pipeline, tunnel and dredging	215	0	0%
Total	2,868 to 3,318	183 to 633	4.9% to 17%

Source: Arrow Energy

In total, at the peak of construction, 467 workers will be living outside of the construction camps, approximately 12.6% of the workforce.

Accommodation of the Construction Workforce

Two workforce construction camp options are being proposed; a construction camp at Boatshed Point on Curtis Island for the bulk of the construction workforce and a smaller possible mainland construction camp, referred to as a temporary workers accommodation facility.

With the exception of local workers, EPC and Arrow Energy staff, the construction workforce will be housed in these camps. This will be facilitated by the engagement of the majority of FIFO workers on single status.

Prior to the construction camp becoming operational, between 200 and 300 workers will need to be accommodated on the mainland. Options that will be considered for the accommodation of these workers will include, residential properties, third party provided

construction camp facilities or another form of accommodation facilitated by the project, depending on accommodation availability.

While EPC and Arrow Energy staff will be housed on the mainland, the majority of these (380) will be housed in company facilitated communal accommodation which may be met directly by the project, either through the development of purpose built accommodation or through agreements with third party providers.

The tunnel workforce is anticipated to be accommodated on the mainland. Options that will be considered for the accommodation of these workers will include, residential properties, third party provided construction camp facilities, another form of accommodation facilitated by the project or TWAF, depending on accommodation availability. The dredge workforce will be housed onboard the dredge vessel.

The feed gas pipeline workforce is expected to be accommodated in a separate construction camp associated with the construction of the gas pipeline assessed as part of the Arrow Surat Pipeline project.

In total, Arrow Energy estimates that the construction workforce will require up to 90 dwellings in the study area during the construction stage.

The operation workforce

The operation of train 1 and train 2 will require an estimated peak workforce of approximately 450 workers, including 250 staff and 200 contractors.

The operation of trains 3 and 4 would require an estimated additional 150 Arrow employees, resulting in a total peak operation workforce of approximately 600 people.

Table 0-2 provides a breakdown between the local and non local workers in the operation workforce.

- **Table 0-2: Estimate of local and non local workers in the operation workforce**

Worker type	Trains 1 and 2			All trains		
	Total workforce	Local	Non Local	Total workforce	Local	Non Local
Arrow Energy staff	250	75	175	400	120	280
Contractors	200	80	120	200	80	120
Total	450	155	295	600	200	400

Source: Arrow Energy

Arrow Energy has indicated that approximately 30% of the Arrow Energy workforce and 40% of contractors may be local to the study area. This will result in 295 non locals relocating to the study area during the operation of trains 1 and 2. This will increase to 400 upon operation of trains 3 and 4.

It has been estimated by Arrow Energy that with families, the project will result in an increase in the study area population of 663 people during operation of trains 1 and 2, increasing to 988 during operation of stages 3 and 4.

This represents 0.93% of the projected population in 2016, and 1.12% of that projected for 2026.

Accommodation of the Operational Workforce

During the operation of Stage 1, 295 non local operational positions will be generated consisting of 175 Arrow Energy staff and 120 contractor positions. Arrow Energy estimates that up to 70% (approximately 122.5) of non local Arrow Energy staff will relocate to the study area with their families, generating a total demand of up to 130 houses.

This is the maximum anticipated housing demand generated by the project during Stage 1 and the project housing strategy will consider the housing market at the time when this impact will occur and implement appropriate interventions which minimise negative effects on local housing availability and affordability. When Stage 2 is complete a further assessment of housing demand and requirements will be made.

During Stage 1 the 120 non local operational contractor positions along with the remaining 55 non local Arrow Energy permanent staff members are expected to be single status positions.

In addition, another 50 beds for single status will be required for the regular (six monthly) maintenance workforce. Accommodation of this component of the operations workforce will not impact upon the local housing market as the project will facilitate housing either through the direct development of purpose built accommodation or provision through a third party provider.

In addition to the permanent workforce, short term accommodation will be periodically required for the larger maintenance workforce. Whilst the utilisation of temporary accommodation such as hotels, motels and caravan parks would provide a financial benefit to providers, there could be some negative effects on the tourist sector. Should current proposals for third party provided temporary workers villages in the Gladstone

region materialise, the potential use of these facilities is expected to limit the impact on short-term accommodation.

Existing environment

The Gladstone Regional Council (GRC) boundaries define the study area of this assessment. Within the study area, there are several other major industrial projects underway that are already impacting on the existing environment, particularly in terms of population growth and housing.

Population

In 2009, the GRC recorded an estimated resident population of 59,644 people and as one of the fastest growing Local Government Area's in the state is projected to grow to 103,674 people by the year 2031.

Employment

As of September 2010, the unemployment rate was estimated to be 5.4% (1,700 people), comparable to Queensland as a whole, but as with median household incomes, varied geographically across the study area.

The major sectors of employment in the study area were manufacturing and construction with approximately 49% of the workforce employed as technicians, trade workers, machinery operators, drivers and labourers.

Housing and Accommodation

The rental market vacancy rate in the study area was very low (1.4%) as of September 2010 and could be expected to drop even further into the future due to the large number of projects (approved and proposed) drawing workers into Gladstone. As a result of increased demand for housing, in the 12 months to December 2010, the median house price increased 7.2% while units increased 13.3%, a trend consistent with other resource sector markets.

House price growth has been matched by growth in rental costs over the same period with rents increasing between 9.1% for two bedroom units and 43.3% for three bedroom town houses. As a result housing costs in the study area are reportedly becoming unaffordable for low and middle income earners.

There are also a number of temporary accommodation options including hotels, motels and serviced apartments in the study area. Consultation undertaken for the SIA indicated

there has been a recent surge in occupancy due to major projects under development in the region. Responding to this there are a number of planned temporary worker villages/ accommodation planned for development post 2011 by independent providers.

Indigenous Profile

In 2006, 1,575 people within the study area identified themselves as Indigenous (approximately 3.1% of the population) with a median age of 20 years.

Median income for Indigenous households was lower than non-Indigenous households, with an Indigenous unemployment rate of 20.4%. More than one third of Indigenous people were renting privately in 2006, potentially making them more vulnerable to changes in accommodation costs.

Social Infrastructure

Social infrastructure and services ensure people access education, keep healthy, recreate and participate in a range of social activities. Of the facilities provided within the GRC area, most of the larger scale social infrastructure facilities are located in Gladstone City. These include the main hospital, schools, a University, TAFE College and the Gladstone Entertainment Centre.

There is also a wide range of sporting and recreational facilities, providing both formal and informal sporting and recreational opportunities across the study area with boating and fishing popular recreational pursuits.

Community Values and Issues

The employment opportunities present in Gladstone have drawn a lot of people to the study area. This has led to an understanding and acceptance of the industrial nature of the region. However there are also a number of community issues that need to be considered for all major industrial projects, including:

- Community concerns about housing costs
- Maintaining water based recreational opportunities
- Maintaining natural and recreational assets
- Challenges of growth and growing inequality
- The community's desire to influence decisions on large projects
- Contribution of industry and all governments to the study area
- Amenity, particularly in regards to air quality

- The safety of the LNG Industry, particularly in regards to increased shipping movements in the harbour
- Maintaining community health and well-being.

Likely positive and negative social impacts of the Arrow LNG plant

The impacts associated with the project are highly influenced by the timetable of other projects already underway with this project. This has resulted in the cumulative impacts such as those associated with amenity being diminished while the potential cumulative impact of others has been increased.

Table 0-3 below provides a summary of the major likely positive and negative social impacts of the Arrow LNG Plant prior to the application of management measures.

Table 0-2: Summary of likely positive and negative social impacts of the Arrow LNG plant

Social Impact	Description	Nature	Significance
Increased local employment	Up to 633 local workers during construction. Up to 200 local workers during operation.	Positive	High
Increased local training opportunities	School based training, internal training, apprenticeships and traineeships.	Positive	High
Increased local employment - non LNG employers	In businesses which service the project, expand to cater to the increased population or back fill positions.	Positive	High
Ability for local business to benefit from the additional trade	Existing businesses have the potential to provide goods and services directly to the project. While they will have already increased their staffing to do this for other projects, the LNG Plant presents an opportunity to maintain or increase the work they can do for the industry.	Positive	High
Increased housing costs	Small increase in demand on housing stock (90 during construction and 130 during operation) which may sustain prior housing cost growth	Negative	High
Reduced housing affordability for Indigenous people	With lower incomes than the non Indigenous community, Indigenous people are more vulnerable to increased private rents	Negative	High
Reduction in recreational opportunities	Limited impact on recreational boating and related activities in the harbour.	Negative	High

Moderate and low impacts have also been identified including:

Positive

- Employment and business opportunities for Indigenous people

Negative

- Limited increased demand on existing social infrastructure and services
- Community concerns about the management of social issues and other perceived impacts associated with the project
- Increased demand on formal and informal recreational facilities

The Arrow LNG Plant's construction stage will begin following the peak construction period of a number of other LNG projects in the region. This timing will minimise some of the impacts and reduce the cumulative implications of others. However, some impacts will need to be addressed cumulatively with other proponents and government, including:

- Housing and accommodation
- Employment and training opportunities
- The impact on social and community infrastructure
- Recreation

Mitigation measures

A number of mitigation measures have been proposed in the Social Impact Management Plan (SIMP) which is being prepared separately to this SIA. In order to manage and monitor impacts, the SIMP outlines the need to develop the following plans and strategies:

- Community engagement strategy
- Housing strategy
- Workforce and training plan
- Local industry participation plan
- Health and safety program
- Code of conduct
- Indigenous engagement strategy
- A social investment strategy

Residual impacts

The SIMP contains the detailed mitigation measures that will be utilised within the project. As a living document, the SIMP aims to address impacts and where mitigation measures are found insufficient through periodic review; these will be amended to fully address the direct social impacts of the project.

1. Introduction and project description

This social impact assessment (SIA) was undertaken for the proposed Arrow LNG Plant to be located on Curtis Island in Queensland. It was completed in accordance with the terms of reference (TOR) published by the Queensland Coordinator-General under Part 4 of the State Development and Public Works Organisation Act 1971.

The SIA forms part of the Environmental Impact Statement (EIS) being undertaken for the project. The purpose of the SIA is to consider the potential benefits and costs of the project to the study area community and to recommend ways to manage and mitigate negative impacts and enhance positive benefits.

A baseline community profile has been developed to inform this social impact assessment which includes of the Gladstone Regional Council (GRC) local government area (LGA) and its four constituent statistical local area's (SLA's): Gladstone City, Calliope Part A, Calliope Part B and Miriam Vale. Population and demographic information for Indigenous communities and urban centres and localities have also been examined.

Studying the characteristics of communities allows the assessment of potential social impacts and the development of appropriate mitigation strategies. While studying a population gives an indication of the community's social networks, scale, and capacity, it is necessary to consider this in the context of population growth, economic vitality and demographic change.

This assessment covers the anticipated positive and negative, direct and indirect impacts associated with the project. Where possible the cumulative impacts associated with other projects currently underway or planned for the region has also been considered.

Recommended management measures are identified that seek to avoid or manage potential impacts and maximise our enhance project benefits.

These management measures are further developed in the Social Impact Management Plan (SIMP). The SIMP establishes the roles and responsibilities of proponents and stakeholders throughout the life of a project in the mitigation and management of social impacts and opportunities. It also provides a framework for the ongoing monitoring of proposed management measures.

1.1. Proponent

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

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

1.2. Arrow LNG plant

Arrow Energy proposes to construct the Arrow LNG Plant in the Curtis Island Industry Precinct at the south western end of Curtis Island, approximately 6 km north of Gladstone and 85 km southeast of Rockhampton, off Queensland's central coast.

In 2008, approximately 10% of the southern part of the island was added to the Gladstone State Development Area (GSDA) to be administered by the then Queensland Department of Infrastructure and Planning (DIP now the Department of Local Government and Planning (DLGP)).

Of that area, approximately 1,500 ha (25%) has been designated as the Curtis Island Industry Precinct and is set aside for LNG development. The balance of the GSDA on Curtis Island has been allocated to the Curtis Island Environmental Management Precinct as a flora and fauna conservation area.

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

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

Key elements of the project include:

- Liquefaction facility
- Feed gas pipeline
- Workforce accommodation
- LNG jetty
- Material off-loading facility

- Personnel jetty
- Mainland launch site
- Dredging

LNG plant

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

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

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

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

Construction schedule

The plant will be constructed in two phases. Phase 1 will involve the construction of LNG trains 1 and 2, two LNG storage tanks (each with a capacity of between 120,000 m^3 and 180,000 m^3), a Curtis Island construction camp and, if additional capacity is required, a mainland workforce accommodation camp. Associated marine infrastructure will also be required as part of Phase 1.

Phase 2 will involve the construction of LNG trains 3 and 4 and potentially a third LNG storage tank. Construction of Phase 1 is scheduled to commence in 2014 with train 1 producing the first LNG cargo in 2017. Construction of Phase 2 is anticipated to commence approximately five years after the completion of Phase 1 but will be guided by market conditions and a financial investment decision at that time.

Construction method

The LNG plant will generally be constructed using a modular construction method, with preassembled modules being transported to Curtis Island from an offshore fabrication facility. There will also be a substantial stick-built component of construction for

associated infrastructure such as LNG storage tanks, buildings, underground cabling, piping and foundations.

Where possible, aggregate for civil works will be sourced from suitable material excavated and crushed on site as part of the bulk earthworks. Aggregate will also be sourced from mainland quarries and transported from the mainland launch site to the plant site by roll-on, roll-off vessels.

A concrete batching plant will be established on the plant site. Bulk cement requirements will be sourced outside of the batching plant and will be delivered to the site by roll-on roll-off ferries or barges from the mainland launch site.

LNG Plant Power

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

- Base case (mechanical drive): The mechanical drive configuration uses gas turbines to drive the LNG train refrigerant compressors, which are the traditional powering option for LNG facilities.

  This configuration would use coal seam gas and end flash gas (produced in the liquefaction process) to fuel the turbines that drive the LNG refrigerant compressors and the turbine generators that supply electricity to power the site utilities. Construction power for this option would be provided by diesel generators.

- Option 1 (mechanical/electrical – construction and site utilities only): This configuration uses gas turbines to drive the refrigerant compressors in the LNG trains. During construction, mains power would provide power to the site via a cable (30-MW capacity) from the mainland.

  The proposed capacity of the cable is equivalent to the output of one gas turbine generator. The mains power cable would be retained to power the site utilities during operations, resulting in one less gas turbine generator being required than the proposed base case.

- Option 2 (mechanical/electrical): This configuration uses gas turbines to drive the refrigerant compressors in the LNG trains and mains power to power site utilities. Under this option, construction power would be supplied by mains power or diesel generators.

- Option 3 (all electrical): Under this configuration mains power would be used to supply electricity for operation of the LNG train refrigerant compressors and the site utilities. A switchyard would be required. High-speed electric motors would be used to drive the LNG train refrigerant compressors. Construction power would be supplied by mains power or diesel generators.

Liquefaction process

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

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

A propane, pre-cooled, mixed refrigerant process will be used by each LNG train to liquefy the predominantly methane coal seam gas. The liquefaction process begins with the propane cycle. The propane cycle involves three pressure stages of chilling to pre-cool the coal seam gas to -33°C and to compress and condense the mixed refrigerant, which is a mixture of nitrogen, methane, ethylene and propane.

The condensed mixed refrigerant and pre-cooled coal seam gas are then separately routed to the main cryogenic heat exchanger, where the coal seam gas is further cooled and liquefied by the mixed refrigerant. Expansion of the mixed refrigerant gases within the heat exchanger removes heat from the coal seam gas.

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

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

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

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

Workforce accommodation

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

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

Two workforce construction camp locations are proposed: the main construction camp at Boatshed Point on Curtis Island, and a possible mainland overflow construction camp, referred to as a temporary workers accommodation facility (TWAF).

Two potential locations are currently being considered for the mainland TWAF; in the vicinity of Gladstone city on the former Gladstone Power Station ash pond No.7 (TWAF7) or in the vicinity of Targinnie, on a cleared pastoral grazing lot (TWAF8).

Both potential TWAF sites include sufficient space to accommodate camp infrastructure and construction lay down areas. The TWAF and its associated construction lay down areas will be decommissioned on completion of Phase 1 works.

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

The tunnel workforce is anticipated to be accommodated on the mainland. Options that will be considered for the accommodation of these workers will include, residential

properties, third party provided construction camp facilities, another form of accommodation facilitated by the project or TWAF, depending on accommodation availability. The dredge workforce will be housed onboard the dredge vessel.

The feed gas pipeline workforce is expected to be accommodated in a separate construction camp associated with the construction of the gas pipeline assessed as part of the Arrow Surat Pipeline project.

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

Marine infrastructure

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

LNG jetty

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

MOF

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

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

Two alternative options are being assessed, should the Boatshed Point option be determined to be unfeasible:

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

Personnel jetty

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

Mainland launch site

Materials and workers will be transported to Curtis Island via the mainland launch site. The mainland launch site will contain both a passenger terminal and a roll-on, roll-off facility. The passenger terminal will include a jetty and transit infrastructure, such as amenities, waiting areas and car park. The barge or roll-on, roll-off facility will have a jetty, associated laydown areas, workshops and storage sheds.

The two location options for the mainland launch site are:

- Launch site 1: This site is located north of Gladstone city near the mouth of the Calliope River, adjacent to the existing RG Tanna coal export terminal.
- Launch site 4N: This site is located at the northern end of the proposed reclamation area for the Fishermans Landing Northern Expansion Project, which is part of the Port

of Gladstone Western Basin Master Plan. The availability of this site will depend on how far progressed the Western Basin Dredging and Disposal Project is at the time of construction.

Feed gas pipeline

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

- A short length of feed gas pipeline will run from the proposed Arrow Surat Pipeline to the tunnel launch shaft, which will be located on a mudflat south of Fishermans Landing, just south of Boat Creek. This section of pipeline will be constructed using conventional open-cut trenching methods within a 40-m wide construction right of way.

- The next section of the feed gas pipeline will traverse Port Curtis harbour in a tunnel to be bored under the harbour from the mainland tunnel launch shaft to a receival shaft on Hamilton Point. The tunnel under Port Curtis will have an excavated diameter of up to approximately 6 m and will be constructed by a tunnel boring machine that will begin work at the mainland launch shaft. Tunnel spoil material will be processed through a de-sanding plant to remove the bentonite and water.

  It will comprise mainly a finely graded fill material to be deposited in a spoil placement area established within bund walls constructed adjacent to the launch shaft. Based on the excavated diameter, approximately 223,000 m3 of spoil will be treated as required for acid sulfate soil and disposed of at this location.

- From the tunnel receival shaft on Hamilton Point, the remaining section of the feed gas pipeline will run underground to the LNG plant, parallel to the above ground cryogenic pipelines. This section will be constructed using conventional open-cut trenching methods within a 30-m wide construction right of way.

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

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

Dredging

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

Dredge site 1: The dredging of this site would facilitate the construction and operation of launch site 1. This dredge site is located in the Calliope River and extends from the intertidal area abutting launch site 1, past Mud Island to the main shipping channel. The worst-case dredge volume estimated at this site is approximately 900,000 m3.

Dredge site 2: The dredging of this site would facilitate the construction and operation of launch site 4N. This dredge site would abut launch site 4N and extend east from the launch site to the shipping channel. The worst-case dredge volume identified at this site is approximately 2,500 m3.

Dredge site 3: The dredging of this site would facilitate the construction and operation of the personnel jetty and MOF at Boatshed Point. This dredge site would encompass the area around the marine facilities, providing adequate depth for docking and navigation. The worst-case dredge volume identified at this site is approximately 50,000 m^3.

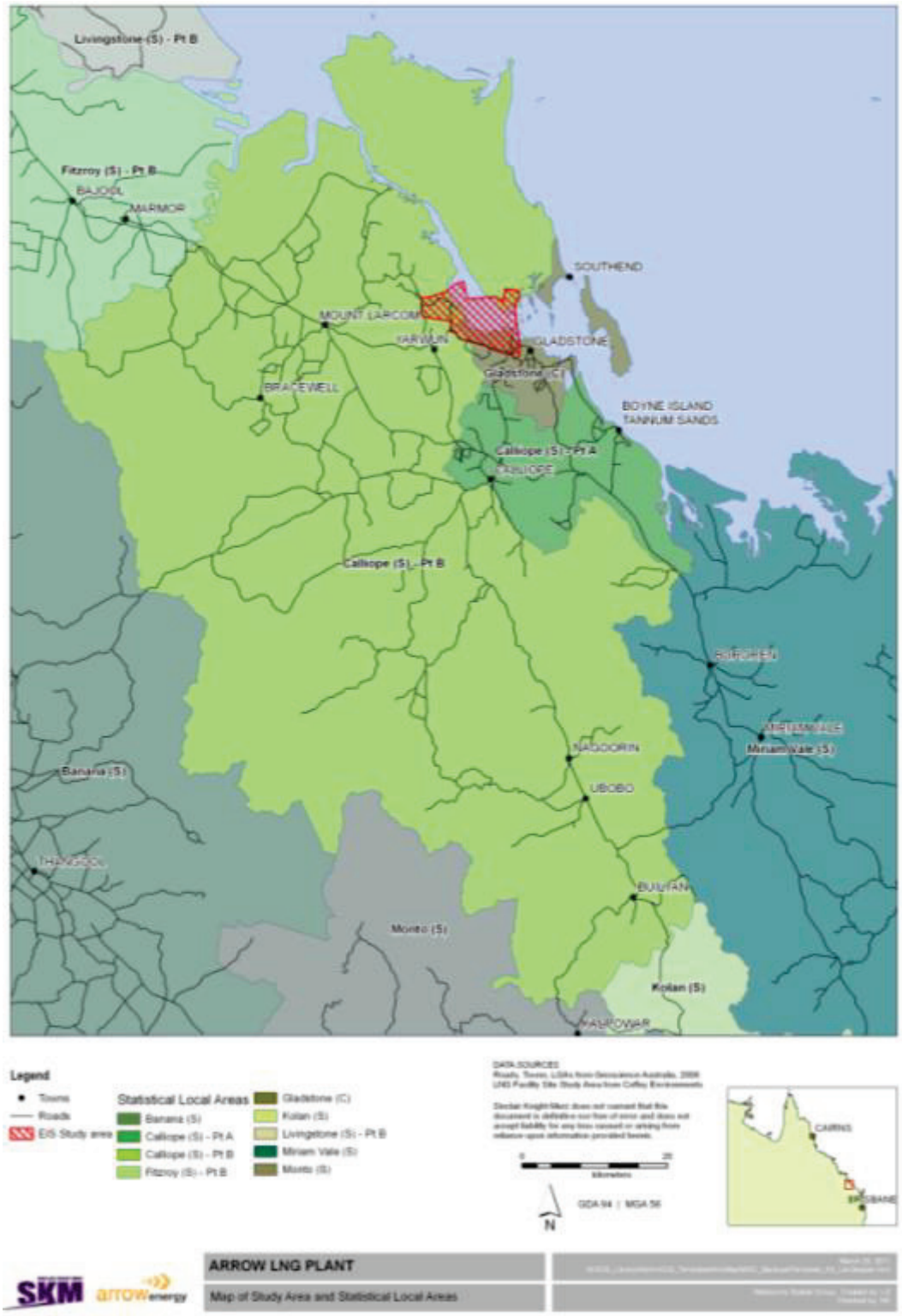
Dredge site 4: The dredging of this site would facilitate the construction and operation of the MOF at Hamilton Point South. This dredge site would encompass the area around the marine facilities, providing adequate depth for docking and navigation. The worst-case dredge volume identified at this site is approximately 50,000 m^3.

Dredge site 5: The dredging of this site will facilitate the construction of the LNG jetty at Hamilton Point. This dredge site extends from the berth pocket to be dredged as part of the Western Basin Strategic Dredging and Disposal Project to the shoreline and is required to enable a work barge to assist with construction of the jetty. The worst-case dredge volume identified is approximately 120,000 m^3.

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

1.3. Study area

The Arrow LNG Plant direct development area encompasses the southern portion of Curtis Island along with areas to the north of Gladstone City. The study area for the SIA was defined to encompass the area of the Gladstone Regional Council (GRC) (Figure 1-1).



- **Figure 1-1: Map of study area and Statistical Local Areas (SLAs)**

1.4. Workforce profile

This section provides an overview of the workforce required for the project, including:

- The construction, operation and decommissioning workforces.
- Proposed strategies for sourcing and mobilising the project workforce.
- Proposed accommodation of the construction, operation and decommissioning workforces.

Construction workforce

The project's construction is expected to directly require a peak workforce of 3,500 in 2016 for construction of trains 1 and 2. The peak construction period for trains 3 and 4 will be 2024, with an estimated 2,300 workers required.

Construction of trains 1 and 2 of the LNG plant will commence in 2014, along with the associated feed gas pipeline and marine facilities. This initial four year construction phase is estimated to be completed by 2018.

The construction and operational workforce profile presented in Figure 1-2 provides an indicative schedule of the construction and operations workforce from 2014 to 2032. The construction timeline for trains 3 and 4 is indicative only, as this will be dependent on future market conditions and a separate financial investment decision.

Arrow Energy is committed to providing the local community, local business and contractors opportunities to obtain employment on the project.

Local workers for the purposes of this assessment are defined as those residing in the study area prior to the commencement of the construction stage of the project. Arrow Energy has conducted an analysis of the local Gladstone workforce, and determined it has the potential capacity to provide between 5% and 20% of the construction workforce required for the project.

Arrow Energy is committed to maximising the employment opportunities for the local community on the project. However, the possible level of local employment will be highly dependent on the actual timing of the Arrow LNG Plant in relation to other projects in the Gladstone region. Where there is significant overlap between projects, this will limit the availability of the local workforce.

Given this, Arrow Energy expects the proportion of the 3000 person construction workforce who will be local will range between 5% and 20%. On this basis the project is

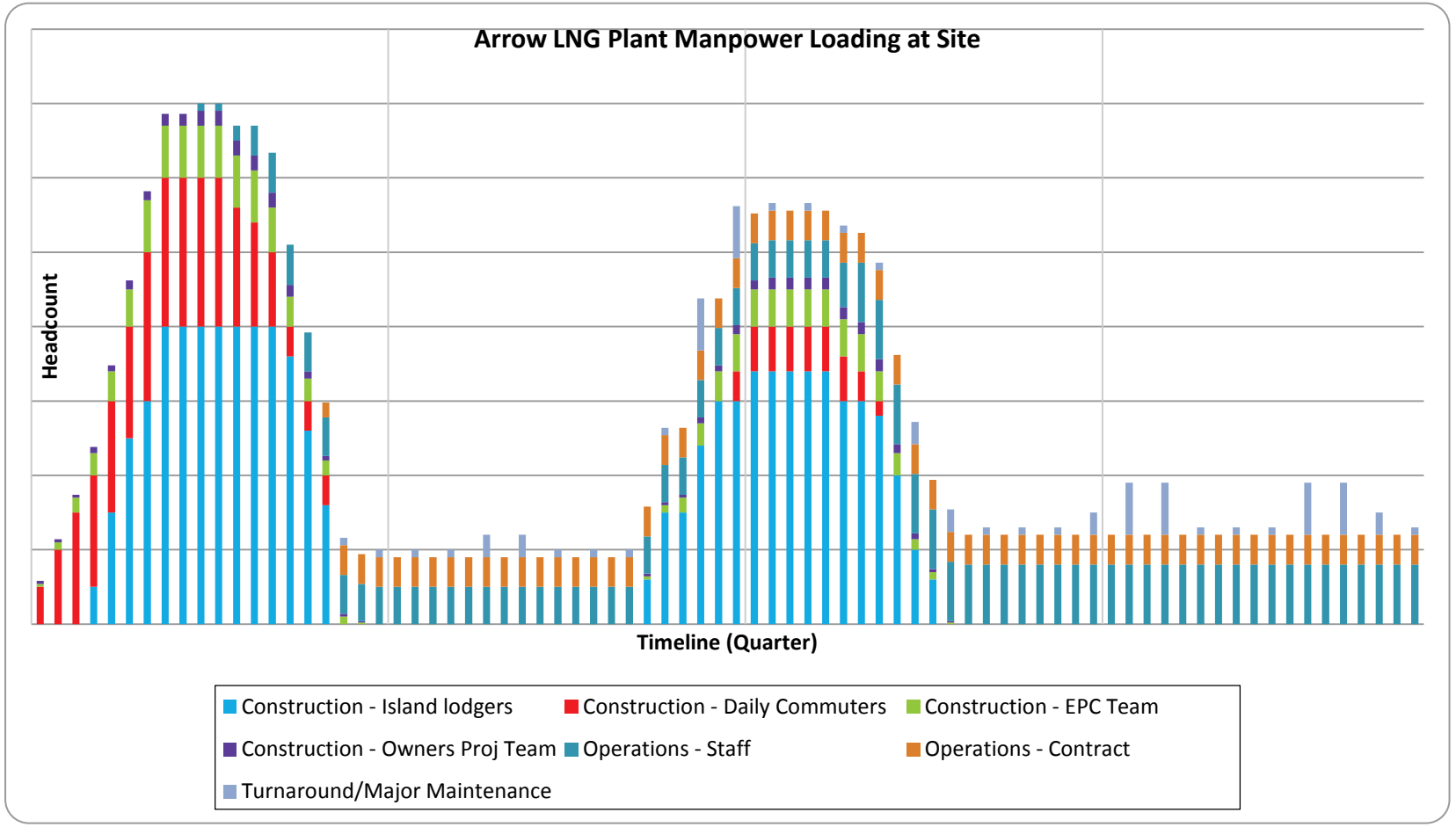
expected to provide employment to up to 600 local construction workers during the peak of the construction phase. In addition, Arrow expects that 5% of the EPC staff will be local and 10% of Arrow management staff will be from Gladstone, this may provide positions for up to a further 33 local workers.

It is expected that the majority of non local workers will be sourced within Queensland and the rest of Australia, on a fly-in, fly-out (FIFO) basis. However, some workers will be sourced from overseas where there is insufficient skilled labour available within Australia to meet project needs.

The EPC contractor consortium to be used for the construction stage of the project, is likely to contain some international companies who are not Australian based. As such it is expected that the majority of the EPC staff will be sourced internationally. The majority of these staff will be subject to a FIFO roster, returning to their home country while off shift.

In addition to the main construction workforce on Curtis Island, it is expected there will also be an additional FIFO workforce of approximately 215 people present during the construction stage of the project, working on the following components:

- Tunnel workforce of up to 100 people
- Feed gas pipeline workforce of up to 75 people
- A dredging workforce of between 20 and 40 people



■ **Figure 1-2: Arrow LNG Plant workforce estimation**

An overview of the skills base of the construction workforce is provided in Table 1-1.

- **Table 1-1: Estimated construction man-hours by trade**

Occupation Type	Percentage (%)
Civil Engineering -Tanks	15
Civil Engineering -Marine	10
Other civil works (early works, buildings, U/G, site prep)	30
Mechanical	20
Electrical & Instrumentation	9
Painting & Insulation	6
others	10
Total	100

Accommodation of the construction workforce

Two workforce construction camp options are being assessed; a construction camp at Boatshed Point on Curtis Island for the bulk of the construction workforce and a smaller possible mainland construction camp, referred to as a temporary workers accommodation facility (TWAF) (see Figure 1-3).

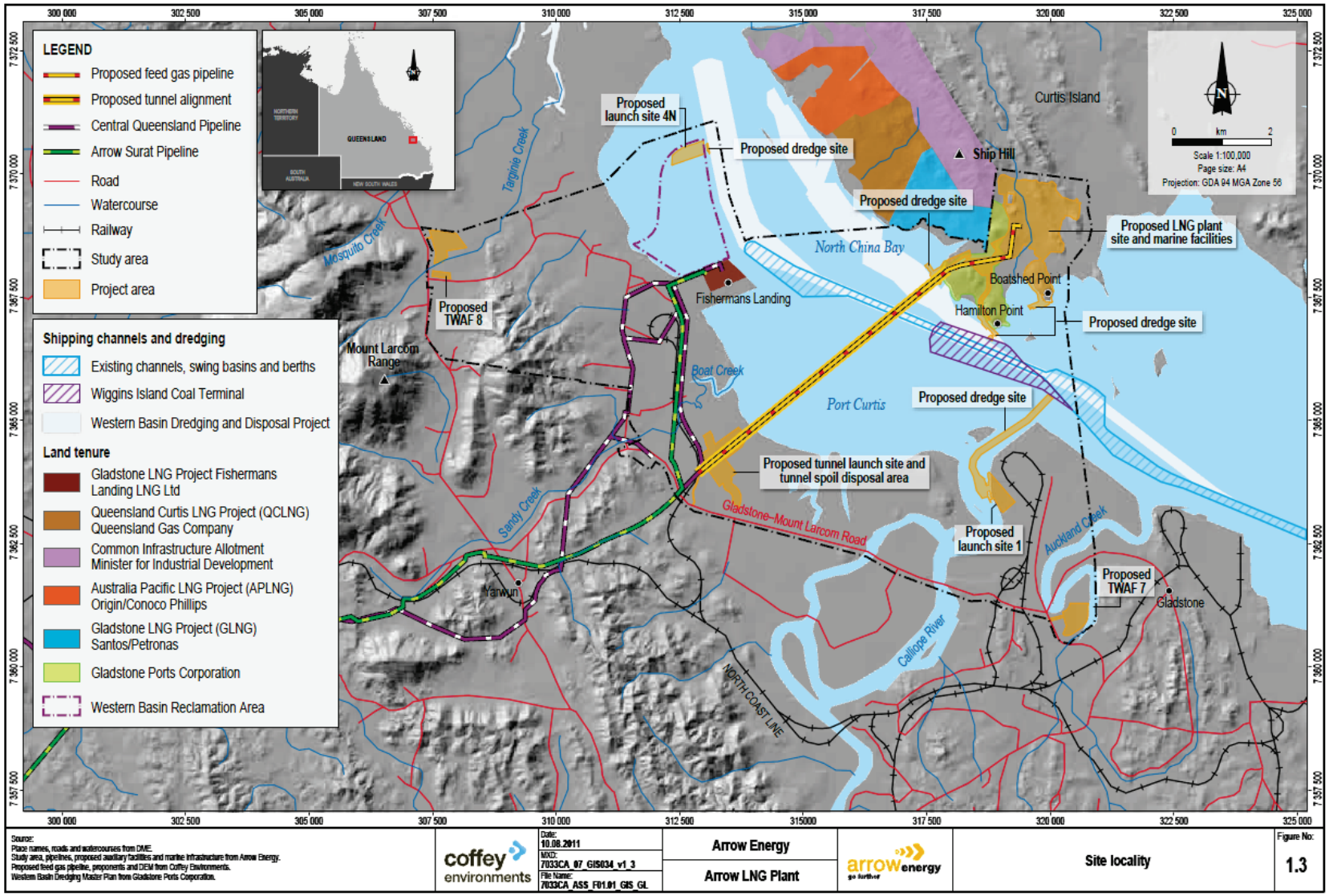
With the exception of local workers, EPC and Arrow Energy staff, the construction workforce will be housed in these camps. This will be facilitated by the engagement of the majority of FIFO workers on single status.

Prior to the construction camp becoming operational, between 200 and 300 workers will need to be accommodated on the mainland. Options that will be considered for the accommodation of these workers will include, residential properties, third party provided construction camp facilities or another form of accommodation facilitated by the project, depending on accommodation availability.

While EPC and Arrow Energy staff will be housed on the mainland, the majority of these (380) will be housed in company facilitated communal accommodation which may be met directly by the project, either through the development of purpose built accommodation or through agreements with third party providers.

The tunnel workforce is anticipated to be accommodated on the mainland. Options that will be considered for the accommodation of these workers will include, residential properties, third party provided construction camp facilities, another form of accommodation facilitated by the project or TWAF, depending on accommodation availability. The dredge workforce will be housed onboard the dredge vessel.

The feed gas pipeline workforce is expected to be accommodated in a separate construction camp associated with the construction of the gas pipeline assessed as part of the Arrow Surat Pipeline project.



■ **Figure 1-3: Arrow LNG plant site locality**

Shift arrangements

The shift arrangements of the construction workforce are detailed in Table 1-2.

- **Table 1-2: Summary of the construction workforce**

LNG plant workforce	
Rotational roster	Non local workers: two weeks on / one week off of three weeks on / one week off (FIFO) Local workforce: Monday- Friday
Working hours (start/end times for shifts)	Typically 7am to 7pm. However, there may be project requirements for night work when modules arrive on vessels, concrete pour, and other construction requirements. There is potential for staggered shifts as per the ferry movements
Transport of staff housed in the mainland camp or on fly-in fly-out shift rotation to Curtis Island by local staff	Bus to mainland launch site. Ferry to personnel transfer facility at Boatshed Point. Bus to construction camp or construction site
Feed gas pipeline workforce	
Working hours (start/end times for shifts)	6am to 6pm
Transport of workforce to construction site	Feed gas pipeline construction personnel will be bused from the Surat Gas Pipeline camp to the mainland construction site and to the personnel wharf for the Curtis Island section
Tunnel workforce	
Working hours	24 hours a day
Transport of workforce to construction site	Bus from TWAF site to tunnel worksite
Dredging workforce	
Working hours	24 hours a day
Transport of workforce to construction site	Assumed that dredging workforce will be accommodated onboard the dredge vessel

Transportation of the construction workforce

Workers located in the TWAF will commute to the launch site by bus, while local residents may use private vehicles or a bus service.

Fly-in fly-out (FIFO) workers will transfer from the Gladstone Airport via buses to either the launch site for ferry transfer to the construction camp on Curtis Island, or to the mainland TWAF.

Two launch site options are being investigated – Launch Site 1 at Calliope River and Launch Site 4N, at the north side of the Western Basin Bunding. Personnel transfer in the early phases of the project (until the launch site facility is fully commissioned) will be carried out from a location still to be determined. Options currently being considered include Gladstone Marina and Auckland Point.

Operational workforce

The operational workforce will gradually increase as each of the trains comprising the LNG plant is completed. Subject to market conditions and financial investment decision, train 1 is expected to commence operations in 2017 followed by train 2 in 2018. To support the operation of the facility, an estimated ongoing workforce of approximately 450 personnel will be required, comprising 250 staff and 200 contractors.

In 2024, subject to market conditions train 3 is expected to begin operating followed by train 4 in 2025. The operational workforce will peak at an estimated 600 workers, 400 of whom will be staff and 200 will be contractors.

Of the staff, Arrow Energy will source 30% locally, while 40% of contractors will also be sourced locally. This would provide employment for approximately 155 local workers during operation of trains 1 and 2, increasing to 200 for the operation of trains 3 and 4.

The remainder of the workforce is expected to be sourced outside the study area. It is assumed that they will either be from Queensland, interstate or internationally through guest worker programs.

The project will require workers across a variety of occupations. Table 1-3 provides an overview of the types of roles for Arrow Energy staff which the project is expected to generate during the operations.

- **Table 1-4: Indicative skills base for Arrow Energy's operational staff workforce**

Occupation type	Percentage of total staff workforce
Operations	46%
Electrical and other trades	18%
Maintenance	9%
Engineering	6%
Supply chain	6%
Human resources	5%
Health and safety	3%
Security	3%
Management	2%
Administration	1%
Marine operations	1%
Total	100%

Transportation of the operational workforce

The operational workforce will be transported either by private vehicle or bus to the mainland launch site and travel by ferry to Curtis Island (see Table 1-5).

- **Table 1-5: Summary of the operation workforce**

Operations – LNG plant	
Working hours (operational, security, maintenance)	Shift patterns are to be determined with 8 hour and 12 hour shift rotations over 24 hours being considered
Transport to Curtis Island	Bus and/or private vehicle to mainland launch site and then via ferry to personnel transfer facility at Boatshed Point
Operations – Planned and major maintenance activities	
Working hours	Planned maintenance: 200 personnel for three weeks Major maintenance: 300 to 500 personnel for approximately three weeks Planned 10 hour working days, 7 days/week. If need arises, 24 hours / seven days a week on shift basis for both planned minor and major plant maintenance

Workforce required for plant maintenance

In addition to permanent operational employees, planned maintenance of the plant will occur every six months. In most cases this will require approximately 50 additional personnel, however periodically this will require up to 350 personnel. These maintenance activities will require a period of approximately 3 weeks to complete.

Accommodation of the operational workforce

During the operation of Stage 1, 295 non local operational positions will be generated consisting of 175 Arrow Energy staff and 120 contractor positions. Arrow Energy estimates that up to 70% (approximately 122.5) of non local Arrow Energy staff will relocate to the study area with their families, generating a total demand of up to 130 houses.

This is the maximum anticipated housing demand generated by the project during Stage 1 and the project housing strategy will consider the housing market at the time when this impact will occur and implement appropriate interventions which minimise negative effects on local housing availability and affordability. When Stage 2 is complete, a further assessment of housing demand and requirements will be made.

During Stage 1 the 120 non local operational contractor positions along with the remaining 55 non local Arrow Energy permanent staff members are expected to be single status positions. In addition another 50 beds for single status will be required for the regular (six monthly) maintenance workforce. Accommodation of this

component of the operations workforce will not impact upon the local housing market as the project will facilitate housing either through the direct development of purpose built accommodation or provision through a third party provider.

In addition to the permanent workforce, short term accommodation will be periodically required for the larger maintenance workforce. Hotels, motels or caravan parks will be utilised or, if they materialise, third party provided temporary workers villages/camps which are currently proposed in the Gladstone region

Decommissioning workforce

The LNG plant design life is 25 years, however with appropriate maintenance programs, the plant may be able to operate for in excess of 25 years, dependent on availability of gas and the market at that time.

Detailed planning for decommissioning will be refined during the life of the Project. It is anticipated that that all plant and equipment on the LNG plant site, including LNG trains, tanks, jetty and supporting infrastructure will need to be removed. Experience on similar projects suggests that the decommissioning workforce would involve approximately 500 employees for a period of approximately one year.

2. Study method

This section details the methodology followed for this SIA. Assessment of the social impacts of the project involved six key phases, including:

- Scoping
- Baseline
- Community engagement
- Assessment of social impacts
- Avoidance, mitigation and management
- Residual impacts

Scoping

The Coordinator-Generals Terms of Reference (TOR) was reviewed to identify the scope of the assessment and a study area. The TOR (see Appendix A for full details) requires a study area to be selected that defines the project's social and cultural area of influence.

It also requires a description of community engagement undertaken, preparation of a baseline community profile for the selected study area, a description of the workforce required for the project, analysis of the direct and indirect social impacts of the project and the development of mitigation and management strategies to address identified impacts. The TOR together with a review of the approach taken in other similar EISs was also used to determine the assessment criteria for the SIA.

Cumulative impacts have also been considered as part of this SIA in line with the requirements and intent of the *Sustainable Resource Communities Policy.* As such cumulative social impacts have been identified and enhancement and mitigation strategies to manage these into the future proposed.

This SIA also considers the findings and approach of the CSRM's document *Cumulative Impacts: A Good Practice Guide for the Australian Coal Mining Industry* (CSRM, 2009). While the guide's focus is directed towards coal-based resource development, its general principles and approach are directly applicable to the Arrow LNG Plant.

Baseline

A community profile of the study area was developed based on work previously undertaken by Coffey Environments. The purpose of the community profile was to build a baseline from which impacts can be measured.

The primary source of information for the profile was the 2006 census. This was supplemented with information from:

- Commonwealth and state agencies (including the ABS, Queensland Police, Tourism Queensland and the Department of Communities)
- Gladstone Regional Council
- Real Estate Institute of Queensland
- Socio-Economic Indexes for Areas (SEIFA) to determine disadvantage
- State and local government policies
- Research undertaken by other bodies in the study area

Supplementing this baseline, a literature and policy review was completed to identify documented community issues and examine any issues raised by projects, previously subject to a social impact assessment.

Community engagement

Community engagement was a key source of background information for this assessment, with two streams of information used:

- The community consultation program for the project
- Consultation with key stakeholders undertaken specifically for the SIA in 2010 by Coffey Environments and SKM in 2011

Community consultation program for the EIS

The SIA is one of the components of the overall EIS. A specific community consultation process was undertaken to directly inform the SIA. However, Arrow Energy was also required to establish a broad scale community consultation program for the overall project and EIS. This was facilitated by JTA Australia. This community consultation program was designed to provide information to the community and identify community values, issues and concerns to inform the preparation of the EIS. Consultation activities undertaken as part of this program have also informed the SIA. These are detailed in Table 2-1.

- **Table 2-1: Arrow Energy's community consultation program to date**

Method of engagement	Location	Date	Conducted by
Direct correspondence with landowners	Project development area and nearby communities	Correspondence outlining Arrow Energy's planned program for the region was mailed out in November 2009	Arrow Energy
Community information sessions, drop-in	Tannum Sands Calliope Miriam Vale	31 Aug to 4 Sept 2010 14 June to 18 June 2011	Arrow Energy, Coffey Environments and

Method of engagement	Location	Date	Conducted by
sessions and stakeholder briefings	Gladstone City Mt Larcom South End		JTA Australia staff
Arrow website and email.	http://www.arrowenergy.com.au	Ongoing	Arrow Energy
1800 toll free community information line	Telephone number is listed on website and on information packs	This service has been operational since August 2010 and calls are answered between business hours, 5 days a week	JTA Australia Community Consultants on behalf of Arrow Energy
One on one meetings	Gladstone City and Curtis Island	Ongoing	Arrow Energy

Meetings were also held with a range of stakeholders including:

- GRC (Officers, Mayor and CEO)
- Capricorn Lodge
- Gladstone Ports Corporation
- Education Queensland
- GAPDL
- St Vincent de Paul
- Anglicare
- Salvation Army
- Gladstone Industry Leadership Group
- Schools and Industry Network
- Gladstone Economic and Industry Development Board (GEIDB)
- Interagency meeting (with multiple community groups)

Information gathered through this consultation provided an insight on community values and attitudes, potential impacts of the project and mitigation methods to avoid or manage potential impacts.

Consultation undertaken specifically for the SIA

A survey of key community stakeholders was undertaken in 2010 by Coffey Environments (see 0) to prioritise community values and impacts identified in the initial consultation undertaken for the EIS. In total 48 surveys were completed.

To better understand the possible direct and cumulative impacts of the project for this SIA, further meetings with stakeholders were held by SKM in April and May 2011. Meetings were either in person or by phone and are detailed in Table 2-2.

Table 2-2 Stakeholders consulted with for the Social Impact Assessment

Stakeholder	Details
Community and cultural organisations	▪ President, Liaison Officer, Outing Co-ordinator, Secretary and members of the Gladstone Sportfishing

Stakeholder	Details
	Club Inc ▪ Captain, Salvation Army ▪ President, St Vincent De Paul Society ▪ Support Worker, OZChild
Department of Employment, Economic Development and Innovation	▪ Employment and Training Manager, Indigenous Employment and Initiatives ▪ Manager, Gladstone Centre, Rural and Regional Development
Department of Education and Training	▪ Principal, Tooloosa State High School
Department of Communities	▪ Area Manager, Housing and Homelessness Services
Department of Local Government and Planning (SIA Unit)	▪ Manager, Social Impact Unit ▪ Project Manager, Social Impact Unit
Education Queensland and Industry Partnership	▪ Chief Executive Officer
Energy Skills QLD LNG Unit	▪ Skills Formation Manager
Gladstone Chamber of Commerce and industry	▪ Acting President ▪ Treasurer
Gladstone Community Advisory Service	▪ Community Development Officer, GRC ▪ Youth Development Officer, GRC ▪ Multicultural Community Relations Officer, GRC ▪ Manager, Roseberry Community Service ▪ Manager, Supported Accommodation Assistance Program ▪ Manager, Relationships Australia ▪ Councillors, Relationships Australia
Gladstone Economic and Industry Development Board	▪ Chief Executive Officer
Gladstone Industry Leadership Group	▪ Chief Executive Officer
GRC	▪ Manager, Human and Social Services ▪ Sports and Recreation Officers ▪ Manager, Gladstone Aquatic Centre ▪ Senior Planning Officer ▪ Planning Officer ▪ Manager project Coordination
Police and Emergency Services	▪ Officer in Charge, Gladstone District Water Police ▪ District Officer, Gladstone Police Station ▪ Business Support Services Manager, Gladstone Hospital ▪ Executive Director Primary and Community Health, Gladstone Hospital
Schools and Industry Network	▪ Chairman

Assessment of social impacts

The potential direct and cumulative impacts of the project were assessed including local and regional impacts on:

- Population and demography
- Property and land use
- Amenity
- Housing and accommodation
- Employment and training
- Business
- Social and community infrastructure
- Recreation
- Transport and access
- Community values (including liveability and community well being)
- Indigenous people

An impact rating tool was used to rate the severity of the various impacts (see Appendix C for details). Impacts were considered from a number of perspectives, including whether they are positive, negative or neutral, their geographic extent of influence, likely duration and severity and probability of occurrence. This enabled the calculation of an overall significance rating of low, medium, high or very high for each of the key impact categories.

An assessment of the potential cumulative impacts of the project with other projects planned or proposed for the study area was also undertaken. Cumulative impacts can be defined as the *"successive, incremental and combined impacts (both positive and negative) of an activity on society, the economy and the environment"* (CSRM, 2009).

The cumulative impact assessment has been based on publically available information. It considers cumulative impacts associated with:

- Changes in local population and demography.
- Demand for accommodation and housing.
- Demand for social services and infrastructure or community investment.
- Changes to existing community values or lifestyles.

Avoidance, mitigation and management

While as part of the SIA, mitigation was explored with stakeholders, the proposed mitigation measures and the associated monitoring framework are outlined in the Social Impact Management Plant (SIMP) being developed simultaneously with this document.

Residual Impacts

Residual impacts are those that remain once controls or mitigation measures have been implemented. As a living document, the SIMP aims to address impacts. Where mitigation measures are found insufficient through periodic review; these will be amended to address the residual social impacts of the project.

3. Legislative context

This section outlines the state and local legislation and policies relevant to the SIA for the Arrow LNG Plant.

Queensland Government legislation and policy

The Arrow LNG Plant has been identified as a significant project for which an Environmental Impact Statement (EIS) is required under the S*tate Development and Public Works Organisation Act 1971.* This SIA forms part of the EIS.

Other legislation relevant to the social environment includes the *Sustainable Planning Act 2009* and the *Local Government Act 2009.* The Sustainable Planning Act is administered by the Department of Infrastructure and Planning (DIP now DLGP) and identifies 'assessable development' that requires development approval. Approval for activities associated with the project, such as the establishment of construction camps, will require development approval. The Act establishes the strategic framework and assessment process including planning schemes.

The Local Government Act is the principal legislation for local governments throughout Queensland. The Local Government Act and its Regulations require every council in Queensland to develop a long term Community Plan. A Community Plan is a ten year (minimum) high level plan that identifies community needs and articulates the council's and community's long-term vision, aspirations and priorities for the community.

A key Queensland Government policy with respect to social impact assessment is the 'Sustainable Resources Communities Policy - a social impact assessment in the mining and petroleum industries', which was released by the Queensland Government in September 2008. This places a strong emphasis on the assessment of social impacts, including cumulative impacts, for resource projects. In particular, SIAs and SIMPs developed under this policy need to forecast changes to communities in terms of local and cumulative impacts, as well as identify agreed strategies for mitigating these changes. This necessitates alignment with regional responses to cumulative impacts, as well as establishment of local and regional networks with government and non-government agencies so that roles and responsibilities can be shared.

The Sustainable Resources Community Policy focuses on communities that are being impacted by rapid development as a result of the resource industry. These impacts, primarily on community infrastructure and services and social structures, have the potential to change the landscape of existing communities.

The policy has four key themes to foster equitable and sustainable resource communities:

- Strengthening the Government's coordination role.
- Improved linkages between social impact assessment and regional planning.
- Fostering partnerships with local government, industry and community.
- An enhanced regulatory environment for social impact assessment.

Within each of these themes are a number of proposed initiatives. The initiatives complement the existing measures in place to support regional communities in priority resource development areas.

In addition to strengthening the requirement for SIA to provide a robust assessment of all potential social impacts, the policy also states that proponents of new or expanding resource development projects are required to develop a social impact management plan (SIMP). The purpose of a SIMP is to establish the roles and responsibilities of proponents, the government, stakeholders and communities throughout the life of a project in the mitigation and management of social impacts and opportunities associated with construction, operation and decommissioning of major resource development projects.

A SIMP needs to be developed and implemented for all resource projects that require an EIS to be prepared under the State Development and Public Works Act (1971). The SIMP must be prepared in accordance with the Social Impact Management Plan Guideline which was formally adopted by the Queensland Government in 2010 (Department of Infrastructure and Planning 2010).

Council policies and strategies

The development of the Arrow LNG Plant has the potential to influence and impact those communities in proximity to the proposed activities. The following provides an overview of local government policies and strategies relevant to the social environment.

Corporate Plan 2009 – 2013

The project is located within the Gladstone Regional Council (GRC) LGA which was formed in 2008 with the amalgamation of the former local governments of Gladstone City, Calliope Part and Miriam Vale. A new corporate plan has been completed and ratified by Council. GRC's Corporate Plan 2009 – 2013 sets out what it would like to achieve over the period of the plan, the outcomes, and how it intends to achieve those outcomes. Its key aspirations include:

- Valuing community input into local decision-making.
- Sustainable, environmentally managed growth.
- Quality of life for our community.

A key deliverable of the GRC's Corporate Plan 2009 – 2013 (GRC 2009) is the preparation of a single new planning scheme for the amalgamated Council. Council recently prepared the 'Our Place Our Plan' Discussion Paper (June 2010, GRC 2010) which sought to inform the initial stage of planning scheme preparation. The Discussion Paper presents key themes to be addressed in the eventual planning scheme and seeks to further develop the issues raised and discussed in the consultation process.

Our Place, Our Plan

'Our Place, Our Plan' (June 2010) states that the cultural, economic, physical and social wellbeing of people and communities is maintained if:

- Well-serviced and healthy communities with affordable, efficient, safe and sustainable development are created and maintained.
- Areas and places of special aesthetic, architectural, cultural, historic, scientific, social or spiritual significance are conserved or enhanced.
- Integrated networks of pleasant and safe public areas for aesthetic enjoyment and cultural, recreational or social interaction are provided.
- Potential adverse impacts on climate change are taken into account for development, and sought to be addressed through sustainable development, including, for example, sustainable settlement patterns and sustainable urban design.

In addition to land use and planning outcomes, GRC administers policies and plans which seek to deliver positive social and community outcomes. These range from the 'Healthy Active Gladstone Region (GRC 2010)' sport and recreation strategy to the Gladstone Multicultural Strategy (GRC 2007). A key recent initiative is the development of the Social Infrastructure Strategic Plan.

The Social Infrastructure Strategic Plan is an innovative attempt to plan for the delivery of social infrastructure in line with population growth and has included the completion of an audit of the region's existing social infrastructure, benchmarking provision of social infrastructure against other regions and the provision of recommendations and strategies for the provision of social infrastructure. The final draft of the Social Infrastructure Strategic Plan (GRC, GEIDB, and QLD Government 2010) has been completed and is presently with the Queensland Government for consideration.

4. Existing environment

This section provides an overview of the existing social environment for the study area.

In 2008 the former LGA's of Gladstone City, Calliope Part and Miriam Vale merged to form the GRC. Located on the central Queensland coast the GRC comprises a total land area of 10,488 km². It is bound by Bundaberg Regional Council to the south, Rockhampton Regional Council to the north, North Burnett Regional Council to the south west and Banana Regional Council to the west.

The existing environment presents data for:

- The SLA's of Gladstone City, Calliope Part A, Calliope Part B and Miriam Vale
- The urban centres and localities of South End, Gladstone City, Calliope, Mount Larcom, Boyne Island and Tannum Sands
- GRC LGA
- QLD

4.1. Historical background

Prior to European settlement the country around Gladstone was occupied by the Goreng Goreng and Bailai Aboriginal peoples. Whilst there is very little recorded history, it is thought likely that the relatively productive land and sea country around Gladstone supported a sizeable Aboriginal population.

In 1802 Lieutenant Matthew Flinders recorded Gladstone harbour, naming it Port Curtis.

Significant industrial and commercial growth began in Gladstone in the 1960's as the natural deep water harbour became an important port for the export of coal. In 1963 a major alumina refinery was established on the site of the old meat works and the port facilities were further expanded.

More recently, the study area has experienced significant industrial growth with a 1,680 megawatt power station built in 1976, followed by the Boyne Island Aluminium smelter in 1982 and Yarwun Aluminium Smelter in 2004. Currently Yarwun is being upgraded to increase output. Orica also run a chemical plant and there is a cement facility operated by Cement Australia.

The history of large projects has led to a history of economic and demographic expansion characterised by booms and busts in the study area. It has also shaped the identity of the community with many identifying the study area as an industrial region.

Indigenous and non-Indigenous cultural heritage have been assessed in specific reports as part of the EIS.

4.2. The people of the GRC area

Population

In 2009, the study area had an estimated resident population of 59,644 people. Gladstone City had the highest population of 33,725 people (half of the study area) followed by Calliope Part A, Miriam Vale and Calliope Part B (see Table 4-1).

Table 4-1: Estimated resident population of the study area, 30 June 2009

SLA	Estimated resident population
Gladstone City	33,724
Calliope Part A	16,813
Calliope Part B	3,069
Miriam Vale	6,037
GRC	59,644
Queensland	4,425,103

Source: Australian Government, ABS, 2009, Regional Population Growth (Cat no. 3218.0).

Population growth

Average annual growth in the study area from 2006 to 2010 was 3.2% (AEC 2011) making it one of the most rapidly growing LGA's in the state.

The population of the study area is projected to grow by approximately 44,030 people to 98,010 people by 2031. This equates to an annual average growth rate of 2.4%, higher than that projected for Queensland as a whole (1.8%).

Table 4-2 provides an indication of where growth is projected to occur throughout the study area. The SLA with highest projected growth is Miriam Vale, which is projected to more than double by 2031. This may be part of a trend driven by an increase in accommodation costs in Gladstone and people moving to more affordable locations.

Calliope is projected to grow an average of 2.7% per year almost doubling its population in 2031. Gladstone City will continue to account for nearly half the total population of the study area in 2031 at 51,898 people.

Table 4-2: Population projections (medium series)

Locality*	2006	2011	2016	2021	2026	2031	Average annual increase (%)
Gladstone City	30,928	35,917	39,952	43,971	47,972	51,898	2.1
Calliope	17,555	20,722	23,496	26,652	30,447	34,276	2.7
Miriam Vale	5,458	6,481	7,479	8,480	9,845	11,868	3.2
GRC	53,941	63,120	70,927	79,102	88,265	98,041	2.4
Queensland	4,090,908	4,567,713	5,040,325	5,478,715	5,884,389	6,273,885	1.7

*Population projections for Gladstone City, Calliope and Miriam Vale are based on pre council amalgamation LGA boundaries, SLA projections are not available.

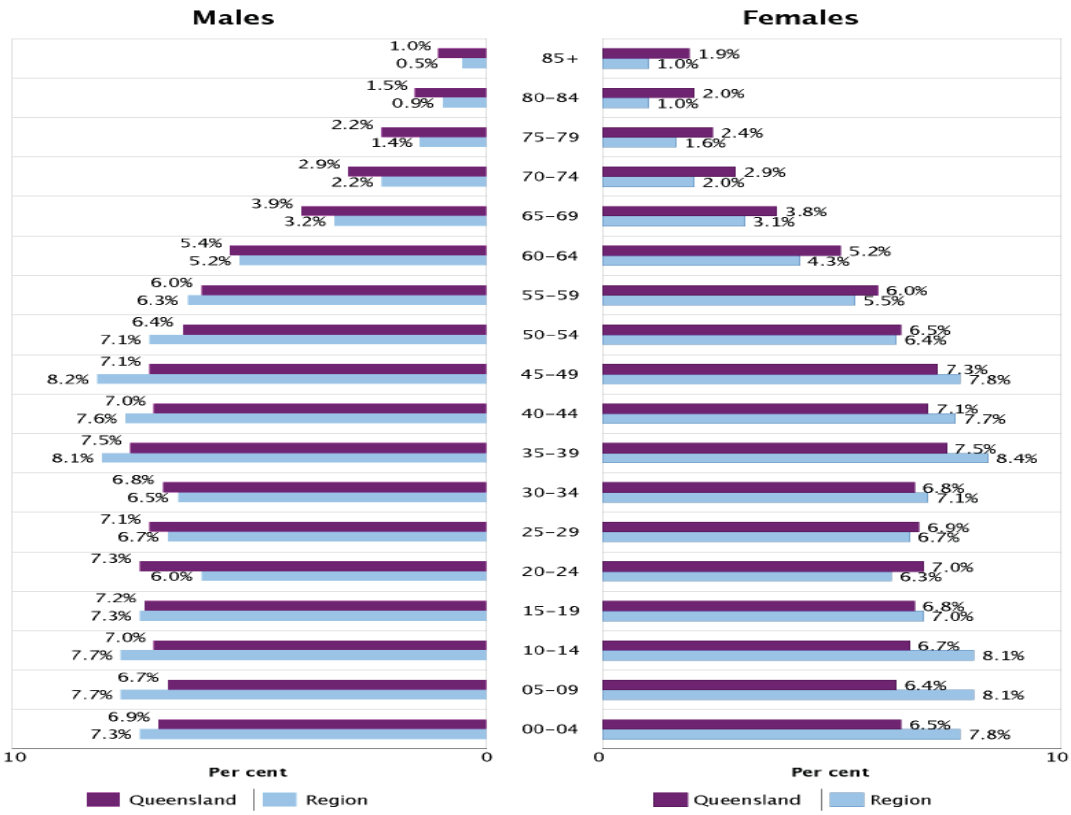
Source: Department of Infrastructure and Planning, Planning Information Forecasting Unit (PIFU), Queensland's Future Population (2008 Edition).

Population age and gender distributions

The diversity and demographic mix of a population contributes to the character and potentially the cohesiveness of a particular community. Demographics considered in this context include gender, age, disability and cultural characteristics.

In 2006, the study area's population was approximately 51.2% male and 48.8% female. Figure 4-1 provides a breakdown of age groups by gender within the study area and Queensland.

The slight imbalance towards males is caused by the SLA's of Miriam Vale and Calliope Part A, where 53% of the population was male. This imbalance may be the result of the industrial nature of the study area, which traditionally attracts more male workers.



Source: OESR 2010 (GRC).

- **Figure 4-1: GRC by age and gender, 2006**

In 2006 the study area had a high proportion of children aged 14 years or younger but a low proportion of people aged 15 to 24 years, possibly because people within this age cohort will pursue educational and employment opportunities outside of the study area.

Table 4-3 shows that in 2006 the study area had a low proportion of people aged 65 years and over, particularly in the SLA's of Gladstone City, Calliope Part A and Calliope Part B. The low proportion of people aged 65 years or older reflects the younger, mobile population base within the study area.

- **Table 4-3: Estimated resident population by age (%)**

SLA	0-14 years (%)	15-24 years (%)	25-44 years (%)	45-64 years (%)	65 years and above (%)
Gladstone City	23.3	14.8	31.0	22.9	8.0
Calliope Part A	24.7	12.9	28.9	25.0	8.4
Calliope Part B	23.2	10.3	25.8	30.1	10.6
Miriam Vale	18.7	7.6	23.7	37.6	12.4
GRC	23.2	13.3	29.4	25.4	8.7
Queensland	20.1	14.3	28.4	24.9	12.3

Source: ABS, Census of Population and Housing, 2006

While in 2006 the study area's population was young, the Gladstone Region Social Infrastructure Strategic Plan (Buckley Vann et. al., 2009) notes the population is aging with increasing numbers of people seeking to retire to the study area. This has direct implications for industrial development that might bring additional people to the study area including:

- The pressures of increased costs of living for older people on fixed incomes.
- The disparity of income between resource-industry workers retiring in the area and other retirees.
- The ability of the existing labour market to supply a workforce to major projects.

The plan also noted that people currently moving into the study area are generally either young single workers or workers with young families, similar to the anticipated workforce for the project. The increased number of these people entering the area is leading to:

- Increased demand for low cost housing.
- Increased pressure on employment and welfare services if people are unable to find jobs.

The plan also noted that many of these people have limited or no support networks locally, meaning they are more likely to rely on community facilities and services in future.

People aged 18 Years or older in 2006

Table 4-4 shows the proportion of people in the study area aged 18 years or older was 70% compared to 74% for Queensland in 2006. The low proportion is being driven by the low percentage of people aged 65 years or older in the study area.

- **Table 4-4: Percentage of the population aged 18 years or older in 2006**

SLA	People aged 18 years or older	Total population (%)
Gladstone City	20,354	70.0
Calliope Part A	9,432	68.3
Calliope Part B	1,987	72.9
Miriam Vale	3,864	75.4
GRC	35,637	70.2
Queensland	2,879,718	73.8

Source: ABS, Census of Population and Housing, 2006

Disability prevalence

Disability prevalence can be determined through the need for assistance. In 2006, the study area had a low proportion of people needing assistance in self care, mobility or communication. This reflects the relatively young age of the study area population. In the SLA of Miriam Vale, which had an older population, the rate of people needing assistance was high compared to Queensland as a whole.

- **Table 4-5: Need for assistance in 2006**

SLA	Number	Percentage of population (%)
Gladstone City	830	2.9
Calliope Part A	393	2.8
Calliope Part B	87	3.2
Miriam Vale	260	5.1
GRC	1,570	3.1
Queensland	154,707	4.0

Source: ABS, Census of Population and Housing, 2006

Those who need assistance may be less likely to benefit from the employment opportunities provided in the study area due to an inability in some cases, to work in construction or other roles that require high levels of physical activity. The relatively low proportion of people needing assistance in the study area suggests that most people would be able to access project employment opportunities.

Cultural diversity

In 2006 7.7% of the GRC population was born overseas compared to 17.9% for Queensland as a whole. Table 4-6 shows that all SLAs had high proportions of

people being born in Australia compared to Queensland. This is consistent with the trend for overseas people to relocate to major cities rather than regional areas. The exception to this is those on visas that require them to live in a specific location or work for a specific employer.

- **Table 4-6: Country of birth, 2006**

Locality	Born in Australia (%)	Born in English speaking countries (a) (%)	Born in non English speaking countries (%)	Total born overseas (%)
Gladstone City	83.3	6.2	3.5	9.7
Calliope Part A	82.7	9.1	2.9	11.0
Calliope Part B	85.9	4.7	4.1	8.8
Miriam Vale	87.5	8.5	4.0	12.5
GRC	82.6	7.1	0.6	7.7
Queensland	75.2	10.0	7.9	17.9

(a) Includes the UK, Ireland, Canada, USA, South Africa and New Zealand.

Source: Source: ABS, Census of Population and Housing, 2006

The majority of the population in the study area spoke English only at home, with the rate of languages other than English spoken at home low across all SLA's.

- **Table 4-7: Language spoken at home, 2006**

SLA	English only (%)	Language other than English (%)
Gladstone City	91.3	2.9
Calliope Part A	93.7	2.4
Calliope Part B	93.1	3.5
Miriam Vale	89.2	2.2
GRC	91.8	2.7
Queensland	86.4	7.8

Source: ABS, Census of Population and Housing, 2006

Cultural diversity information collected by the GRC (Buckley Vann et. al., 2009) suggests there has been an influx of foreign born people in recent years. Skilled migration programs combined with local skill shortages have resulted in increased numbers of migrants in Gladstone, particularly over the last four years. The top five emerging migration groups include South African, Indonesian, Indian, Philippine and Iranian. It is anticipated that the 2011 Census will reflect this growth in migration.

This influx of skilled workers from non-English speaking backgrounds is potentially increasing the proportion of people relying on settlement and multicultural services in the study area (Buckley Vann et. al., 2009). In future this will increase pressure on schools to support non-English speaking students.

Migration

In 2006 the study area had a higher level of population mobility than Queensland as a whole (Table 4-8). This was led by the Gladstone City and Calliope Part A SLA's.

Table 4-8: Proportion of people living at a different address compared to 12 months and five years previous in 2006.

Locality	Different address 12 months previous (%)	Different address 5 years previous (%)
Gladstone	22.8	49.5
Calliope Part A	22.6	52.3
Calliope Part B	17.8	43.6
Miriam Vale	17.6	47.4
GRC	22.0	49.8
Queensland	19.7	47.6

Source: ABS, Census of Population and Housing, 2006

Given the high level of population growth high population mobility is not unusual.

Table 4-9 shows the residential location of the GRC workforce in 2006. Overall a small proportion of the workforce travelled from other locations to GRC (4.2% of the workforce).

Table 4-9: Residential location of people who work in GRC, 2006

Worker location	Number	Percent (%)
Live and work within GRC.	20,581	95.8
Live outside, but work within GRC.	897	4.2
Total workers in GRC.	21,481	100.0

Source: ABS, Journey to Work, unpublished data, 2006

There would also have been a percentage of GRC residents working outside the GRC on a FIFO or DIDO basis. However during consultation for the SIA, some stakeholders indicated that more recently this percentage may have increased. Job

losses associated with the global financial crisis were thought to have led to an increase in FIFO workers commuting out of the study area.

Employment and Income

As of the September quarter 2010, 1,700 people in the study area were unemployed. This represents 5.4% of the workforce, a rate comparable to Queensland as a whole (5.6%, see Table 4-10).

Table 4-10: Unemployment and labour force in the study area, September quarter 2010

SLA	People unemployed	Labour force	Unemployment rate	Labour force participation rate[1] (%)
Gladstone City	956	18,694	5.1	72.3
Calliope Part A	440	8,612	5.1	68.0
Calliope Part B	105	1,644	6.4	69.8
Miriam Vale	199	2,684	7.4	54.7
GRC	1,700	31,634	5.4	69.1
Queensland	135,400	2,423,500	5.6	68.5

Source: DEEWR 2011

1. Population aged 15 years and over based on ERP projections, June 2009.

The level of unemployment varied across the study area with Miriam Vale (7.4%) recording a higher unemployment rate than the other three SLA's (ranging between 5.1% in Calliope Part A and 6.4% in Gladstone City) for the September quarter 2010.

Labour force participation rates were higher in the GRC than Queensland. Labour force participation was highest in Gladstone City at 72.3%. Miriam Vale, at 54.7% was the only locality to record a lower participation rate than Queensland, reflecting its relatively older population. When viewed in tandem with the high unemployment rate, there is the potential that a number of these people may still be of working age, but have withdrawn from the workforce.

Household and personal income

In 2006 median household weekly incomes varied across the study area. Miriam Vale ($638) recorded a median household income significantly below that of the other three SLA's and that of Queensland ($1,033), reflecting an increased presence of retirement age people and higher levels of unemployment. Calliope Part A recorded the highest median household income ($1,378), followed by Gladstone City ($1,189) and then Calliope Part B ($993).

Median individual income is less geographically skewed with Miriam Vale having the lowest median individual income ($337) followed by Calliope Part B ($420). Calliope Part A ($530) and Gladstone City ($534) both had median individual incomes above Queensland ($476).

These figures suggest Calliope Part B and Miriam Vale are likely to be much more vulnerable to increases in living costs.

More recent estimates of average incomes (AEC 2011) suggest that there is also a large disparity in average wages across industries in the study area. While estimated average income ($1,125) was higher than Queensland as a whole $987, some industries had low estimated income as detailed in the table below.

Table 4-11: Estimated average individual weekly income by industry, Gladstone and Queensland, 2010

Industry	Gladstone	Queensland
Health care and social assistance	$774	$895
Agriculture, forestry and fishing	$742	$734
Arts and recreation services	$571	$683
Retail trade	$549	$611
Accommodation and food services	$450	$540

Source: ABS (2007), ABS (2011c) as cited in AEC 2011.

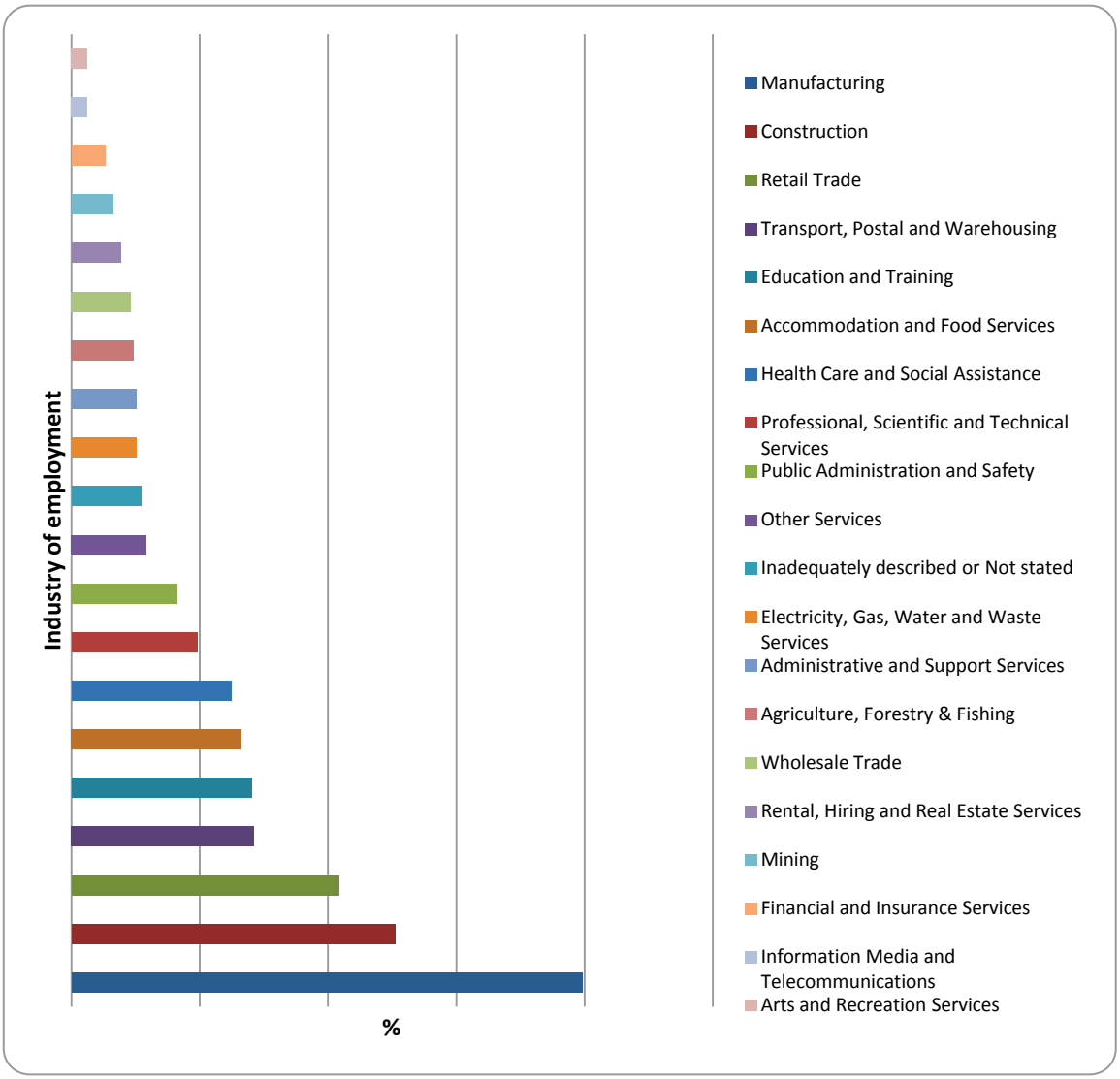
Industry of employment

Figure 4-2 provides an overview of industry of employment in the study area. Manufacturing was the greatest provider of employment followed by construction and retail.

Manufacturing was the leading industry of employment in all SLA's with the exception of Miriam Vale, where construction was the leading employer. The industry most underrepresented as a share of employment was health care and social assistance, which accounted for 6% of employment in the study area, compared to 10.5% in Queensland as a whole.

The study area also had high proportions of resident technician and trade workers (22%), machinery operators and drivers (14%), and labourers (13%), compared to Queensland as a whole, reflecting the dominance of manufacturing and construction. Collectively, approximately 49% of the study area workforce was employed in these occupations.

The prevalence of these semi-skilled and skilled workers suggests that the study area may be able to provide some of the labour force required for the project's construction and operation.



Source: ABS, Census of Population and Housing, 2006

- **Figure 4-2: Top 10 industries of employment**

Education

The study area recorded a lower level of educational attainment than Queensland as a whole in 2006. Table 4-12 shows that in Miram Vale and Calliope Part B less than one third of people reported they had finished year 11 or 12. Part of the reason for the high rates of non completion may be the opportunities for apprenticeships

and traineeships in the study area which require certificate qualifications but not completion of year 12.

- **Table 4-12L Highest level of school completed, 2006**

SLA	Did not attend school or year 8 or below (%)	Year 9 or 10 completed (%)	Year 11 or 12 completed (%)
Gladstone City	7.0	38.4	45.4
Calliope Part A	7.1	40.7	44.0
Calliope Part B	14.0	45.5	32.0
Miriam Vale	10.9	44.6	32.2
GRC	7.8	40.1	42.9
Queensland	7.9	32.8	49.5

Source: ABS, Census of Population and Housing, 2006

In 2006, post school educational attainment was skewed towards certificates rather than academic qualifications such as degrees. In 2006, 8.3% of people in GRC had a Bachelors degree or higher compared to 13.1% for Queensland. Conversely, 22.9% of people aged 15 years or over, not currently in school, had completed a certificate when compared to 17.9% for Queensland (Table 4-13).

- **Table 4-13: Post school qualifications, 2006 (%)**

SLA	Bachelor degree or higher (%)	Advanced diploma or diploma (%)	Certificate I, II, III or IV (%)	Total with qualifications* (%)
Gladstone City	9.1	4.5	22.9	48.0
Calliope Part A	8.7	4.9	24.5	49.0
Calliope Part B	4.7	4.3	19.2	38.8
Miriam vale	5.2	4.7	20.8	46.0
GRC	8.3	4.6	22.9	47.6
Queensland	13.1	6.6	17.9	50.0

** Includes qualifications not stated.*

Source: ABS, Census of Population and Housing, 2006

The high rate of certificate holders suggests there is a skilled workforce able to take advantage of some of the employment opportunities presented by major projects. However, where roles require tertiary qualifications, such as engineering, the study area may be less able to provide the required skills than other areas in Queensland.

Household structure and composition

In 2006 there were 17,394 households in the study area, 58% of which were located in Gladstone City (Table 4-14).

Table 4-14: Average household size in 2006

SLA	Total households	Average household size
Gladstone City	10,048	2.7
Calliope Part A	4,522	2.8
Calliope Part B	932	2.7
Miriam Vale	1,892	2.3
GRC	17,394	2.7
Queensland (state)	1,391,632	2.6

Source: ABS, Census of Population and Housing, 2006

The average household size across the GRC was 2.7 people per household, slightly higher than that for Queensland as a whole (2.6), reflecting the younger age profile of the study area. Miriam Vale recorded the lowest average household size of 2.3 people per household as a result of its older age profile and greater proportion of lone person households than in the other SLA's.

Within the study area there was a high proportion of family households (77%) compared to Queensland as a whole (74%), indicating that people who have historically moved to the study area have brought their families (Table 4-15). It also reflects the younger age of the community with younger family households, more likely to have children.

Table 4-15: Household type in 2006

SLA	Family household	Group household	Lone person household
Gladstone City	75%	4%	21%
Calliope Part A	83%	2%	15%
Calliope Part B	78%	2%	19%
Miriam Vale	73%	2%	24%
GRC	77%	3%	20%
Queensland (state)	74%	4%	22%

Source: ABS, Census of Population and Housing, 2006

The high rates of family households also meant that overall there were low levels of lone person and group households. Along with the higher household size, this suggests that existing housing stock is well utilised and the number of spare bedrooms potentially available for rent in the future limited.

The most common form of family household was the couple family household (with or without children). This comprised approximately 67% of all households compared to 61% for Queensland (Table 4-16).

Table 4-16: Family composition and average household size

SLA	Couple family no children	Couple family with children	Single parent family	Other family
Gladstone City	27%	36%	12%	1%
Calliope Part A	30%	45%	8%	0.5%
Calliope Part B	37%	35%	7%	0%
Miriam Vale	38%	25%	9%	1%
GRC	30%	37%	10%	1%
Queensland (state)	29%	32%	12%	1%

Source: ABS, Census of Population and Housing, 2006

The higher rate of couple family households was driven by Calliope Part A where couple households comprised 75% of all households (with or without children). This would suggest any influx of non family households to this area may impact on the overall composition of the community and could lead to conflict should they engage in activities considered not amenable to an area with a high proportion of families. Furthermore, a low proportion of lone parent households prevailed in all SLA's except Gladstone City, which was comparable with the rate for Queensland as a whole.

Housing and accommodation

In 2006 there were more than 19,000 occupied dwellings in Gladstone of which separate dwellings comprised 15,805 dwellings. Separate dwellings represented 87% of housing stock in Gladstone City, with higher proportions found in rural areas. This was a higher proportion of separate dwellings than for Queensland, which is typical for a regional centre. While there has been increased development of higher density dwellings since this time, separate dwellings still account for the vast majority of housing stock in the study area.

Housing tenure

Gladstone City recorded a home ownership rate of 29% in 2006 (Table 4-17) slightly lower than Queensland (30%). When combined with those in the process of purchasing their homes, this figure increases across all SLA's from 64% in Gladstone City to 78% for Calliope Part B, compared to 62% for Queensland. This high rate of home ownership suggests that the population of the study area may be

better insulated from rental cost increases compared to living in other areas of Queensland with lower rates of home ownership.

Table 4-17: Tenure and landlord type for households in 2006

Tenure and landlord type	Gladstone City	Calliope Part A	Calliope Part B	Miriam Vale	QLD
Fully owned	24.1%	29.3%	42.0%	44.3%	31.6%
Being purchased (a)	39.6%	45.5%	36.2%	28.4%	33.8%
Rented	33.7%	22.4%	18.6%	22.3%	31.1%
Landlord Type					
Real estate agent	17.3%	13.4%	4.4%	7.3%	15.8%
State or territory housing	6.6%	1.1%	0.5%	0.5%	3.4%
Person not in same household (b)	6.6%	4.9%	9.0%	9.2%	8.1%
Housing Co-op/community/ church group	0.9%	0.2%	0.0%	0.4%	0.7%
Other landlord type (c)	1.8%	2.2%	1.8%	2.3%	2.1%
Other landlord (not stated)	0.5%	0.6%	2.8%	2.5%	0.9%
Total Households	10,048	4,552	932	1,892	1,391,632

(a) Includes dwellings being purchased under a rent/buy scheme.
(b) Comprises dwellings being rented from a parent/other relative or other person.
(c) Comprises dwellings being rented through a 'residential park (includes caravan parks and marinas)', 'Employer-government (includes Defence Housing Authority)' and 'Employer-other employer' (private).
(d) Includes dwellings 'Being occupied under a life tenure scheme'.
Source: ABS Census of Population and Housing, 2006.

However, there were still households renting in the private market which are likely to be more sensitive to fluctuations in housing costs. Gladstone City had the highest rate of private renters at 23.9% of all households (similar to Queensland as a whole) while Calliope Part B had 13.4%. This suggests larger numbers of households may be impacted by increased rental demand in Gladstone City than other areas. Over recent years this may have changed with new developments in areas such as Calliope potentially changing the proportion of renters across the study area.

Current market availability and costs

The Department of Communities suggests that an ideal rental market vacancy rate is considered to be approximately 3% (Queensland 2010f) but vacancy rates in the March Quarter of 2011 were 1.4% (REIQ 2011b).The tight supply of housing is expected to continue into the future with announcements of several LNG projects in the study area stimulating demand for rental accommodation.

Some developers are reported to be acting on the opportunity presented by the constrained housing supply. It was reported that, as is being built in Calliope currently, there are third party construction camps planned that will provide accommodation to the construction and maintenance workforces associated with major projects.

In the normal residential market, while the high level of housing demand is anticipated to encourage the construction of additional rental housing, it is expected demand will continue to be greater than supply (REIQ 2011b). Should this occur, it is very likely that rental costs will continue to rise.

Table 4-18 shows the median price for houses increased 7.2% in the 12 months to December 2010, while units increased 13.3% a trend consistent in other markets with activity in the resource sector.

Table 4-18: Median house, unit and land prices Dec 2009 – Dec 2010 in the study area

	Dec Qtr 2010	Change from 12 months previous	Change from 5 years previous
Houses	$385,000	7.2%	67.4%
Units	$340,000	13.3%	106.1%
Vacant urban Land	$180,000	0.0%	74.8%

Source: REIQ 2011a

Table 4-19 provides a summary of rental housing costs in the December quarter of 2010. In the 12 months to the December quarter, rents increased by 9.1% for two bedroom units and 10.3% for 3 bedroom houses. While the increase in rental costs for town houses was high (43.3%), it is based on a limited number of available residences. Over this same period the number of bond lodgements dropped slightly.

Table 4-19: Median house and unit rents Dec 2009 – Dec 2010 in the study area

	Dec Qtr 2009 weekly rent	Dec Qtr 2009 number of new bonds	Dec Qtr 2010 Weekly rent	Dec Qtr 2010 Number of new bonds	Change in rent over 12 months
3 bedroom Houses	$290	229	$320	212	10.3%
2 Bedroom Flats / Units	$220	146	$240	139	9.1%
3 Bedroom Town houses	$300	37	$430	23	43.3%

Source: REIQ 2011a

Much of the growth in house prices and rents have been driven by increased first home buyer activity and investors responding to news about major projects (REIQ

2011). During consultation for this assessment, a number of stakeholders indicated that contractors were leasing properties in the private market reducing available supply.

A search of realestate.com has confirmed that the rental market continues to experience limited supply with some 143 properties currently available for rent (Realestate.com.au 2011).

Issues were raised during consultation for this SIA about the displacement of some households due to reduced availability of rental housing and reduced rent affordability.

Of the 143 rental listings identified within the postcode of 4680 the cheapest dwelling available was $220 per week. A further 48 properties were available for under $400 per week, a level still high even for those with full time employment. As such housing costs in the study area are already largely unaffordable for low and middle income earners.

The Gladstone Region Social Infrastructure Strategic Plan also recognises that the housing market has been impacted by major projects with existing residents incurring increasing living costs which have the potential to be unsustainable. However, the report also recognises that there is the potential for a market response to the housing shortfall which may result in a future surplus of housing (Buckley Vann et al., 2009).

While it is recognised that the levels of rental availability are based on a point in time and that the housing market is in a state of continual flux, it is likely that this trend will continue and the impact on housing by any major project will need to be carefully considered.

Housing production rates

There has been a steady climb in the number of lots being approved since 2006 (Barker 2011). In the short term it is expected that some of these would be developed to meet some of the current housing demand.

The majority of these lots are yet to be developed with possible reasons cited by stakeholders in consultation for the SIA including anticipation of higher prices, an inability to secure finance and a perceived high level of investment risk. To accommodate the anticipated population increase associated with major projects planned for the study area, Gladstone Regional Council have approved the release of up to 4,000 residential lots (AEC 2011). This is expected to encourage development of residential accommodation in the medium term.

Temporary accommodation

There are a number of temporary accommodation options available in the study area including hotels, motels and serviced apartments. The most recent period for which data is available (Tourism Queensland 2010) shows that as of the year ending June 2010, there was a relatively low occupancy rate of 48.6%. This was down 13.1% from the 12 months previously, suggesting that up to 12 months ago there was a lot of temporary accommodation available. However, more recently, it was reported in consultation for the SIA that there has been a surge in occupancy due to a number of major projects starting in the region. This was said to have led to difficulties in securing short term accommodation for tourists and local businesses and was anticipated to worsen as other projects started in the region.

Social housing

There were 943 social housing dwellings in the GRC in February 2009. Gladstone City had 860 social housing dwellings, followed by Calliope Part A with 71 houses and Miriam Vale with 12 houses. There were no social housing dwellings in Calliope Part B.

A total of 75 applicants were recorded on the social housing register. Of these three quarters of the applicants were from lone person households, a greater proportion than Queensland as a whole (48%)[1]. The remainder of the applicants were from single parent households (12%), couple only households (9%) and couples with children households (3%).

Research undertaken for the GRC (Buckley Vann et al., 2009) identified a need for transitional housing within the region so that people in crisis and boarding housing can progress successfully to secure long term housing. At present, many people who leave crisis housing fall back into homelessness. The research also states that housing suitable for extended families, Indigenous people, single men and young people needs to be increased.

The majority of social housing stock comprises detached houses (611 dwellings or 65%) with units accounting for 14% and apartments 9%.

Summary of the people of GRC

- In 2009, there were 59,644 people in the study area, of which more than half lived in Gladstone City.
- The study area is expected to experience a strong annual average population growth of 2.4% to 2031, a higher rate than Queensland as a whole.
- The population is comparatively young although there are increasing proportions of older people and it is skewed towards males.

[1]No social housing data was available at the SLA level.

- There are relatively low levels of disability in the community.
- There is currently a low level of cultural diversity in the study area with the majority of people speaking English only at home. More recently this may have changed with an influx of foreign born people due to skilled migration programs and local skills shortages.
- Reflecting the relatively high population growth, there is a higher level of internal migration than Queensland as a whole.
- Current unemployment is comparable to the rest of Queensland.
- Median weekly household incomes vary across the study area, although median individual incomes are less geographically skewed.
- The communities of Calliope Part B and Miriam Vale that will be much more vulnerable to impacts on living costs due to their lower incomes.
- There is a high proportion of the workforce employed in manufacturing.
- The study area has high rates of home ownership although there were still approximately 29% of households renting, with the highest proportion in Gladstone City.
- Recently there has been upwards pressure on rental and purchase costs in the study area with accommodation vacancy rates relatively low at 1.4% as of September 2010. The level of vacancies is expected to worsen into the future with the announcements of several other LNG projects in the study area stimulating demand to the point where some agencies are reporting to have zero vacancies.
- As of February 2009, there were 943 social housing dwellings in the GRC suggesting that these households will largely be insulated from increases in accommodation costs.

4.3. Social infrastructure

Social infrastructure and services are essential in ensuring that people be educated, keep healthy, recreate and participate in a range of social activities. Regional social infrastructure includes community facilities, services and networks which help individuals, families, groups and communities meet their social needs, maximise their potential for development, and enhance community well-being. In particular, it includes:

- Universal facilities and services such as education, training, health, open space, recreation and sport, safety and emergency services, religious, arts and cultural facilities, and community meeting places.
- Lifecycle-targeted facilities and services, such as those for children, young people and older people.
- Targeted facilities and services for groups with special needs, such as families, people with a disability, Indigenous and culturally diverse people (State of Queensland, 2007).

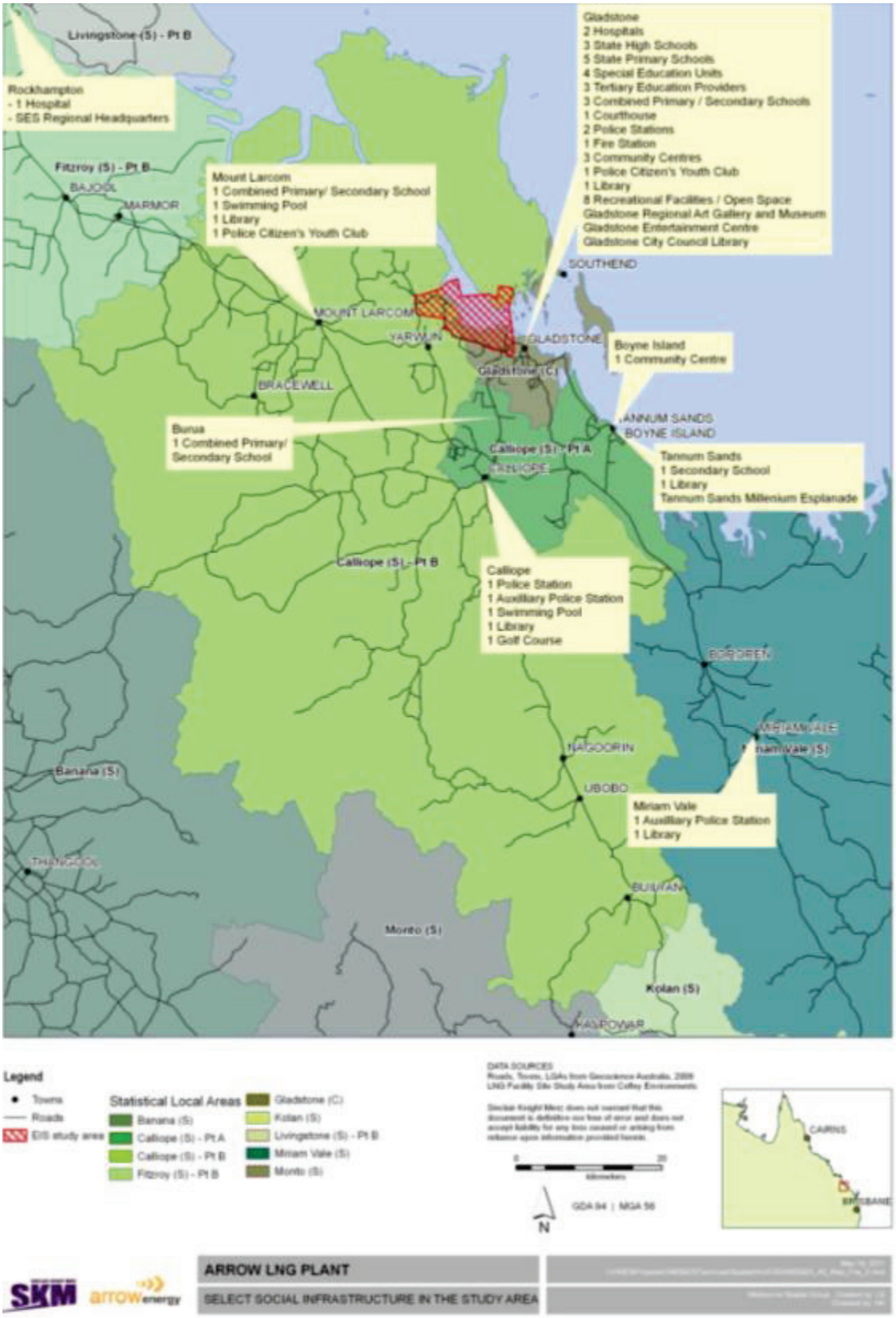
Overview

Figure 4-3 provides a summary of select social infrastructure in the study area.[2]

An audit of social infrastructure in the Gladstone Region (Buckley Vann et. al., 2009c) undertaken by the GRC found:

- The existing provision of community facilities and services in the study area are predominantly focussed within the Gladstone CBD.
- There is relatively poor provision of community facilities and services in other suburbs of Gladstone City.
- There is a reasonable level of social infrastructure provision in the outlying townships of the Gladstone region, where many small centres provide a level of service provision higher than the total population catchment would potentially demand.
- There is limited social infrastructure in small rural or coastal localities
- Key regional community facilities and services are primarily located in Rockhampton, approximately 110 kilometres north of Gladstone City.

[2] This is not a comprehensive list; it is social infrastructure of most interest to this assessment.



- **Figure 4-3: Select social infrastructure in the study area**

The draft needs assessment based on this audit (Buckley Vann et. al., 2009d) identified that social infrastructure, particularly at the regional and district level is urgently required in Gladstone in order to meet the additional demands from high levels of forecast population growth.

Of the facilities provided within the Gladstone region, most of the larger scale social infrastructure facilities are located in the SLA of Gladstone City. These include the following:

- Gladstone Hospital
- Mater hospital
- Three of the four state high schools.
- Five of the 17 state primary schools
- Four of the five special education units
- All three tertiary educational establishments – including Central Queensland University
- Gladstone Courthouse
- Gladstone Regional Art Gallery and Museum
- Gladstone Entertainment Centre
- Two of the three police stations
- One permanent fire station
- Gladstone City Council Library
- The district community centre

Supporting Gladstone as the regional service centre is a number of smaller townships which provide district and local level services. These include Calliope, Agnes Waters, Miriam Vale and Mount Larcom.

Healthcare and emergency services

The study area has an established medical and health services sector with two hospitals located in Gladstone City. The larger of these two possesses 69 beds. The emergency unit has a short term call availability of 70%. The emergency unit is also available sat weekends. The hospital is staffed by: a staff physician, staff surgeon, staff paediatrician, staff obstetrician and gynaecologist, eight senior medical staff, and nine junior medical staff. There are generally up to seven nurses and three doctors on duty. Simple surgery can be performed at Gladstone Hospital.

A small private hospital is also located in Gladstone (Gladstone Mater Private hospital) which provides specialists services. It also has an Outpatients Department and a Day Surgery Unit.

Rockhampton Hospital is the main referral hospital (approximately one hour by road or 10 minutes by helicopter).

A summary of the services provided in each of the hospitals is provided in Table 4-20.

Table 4-20: Hospital services provided

Hospital	Description
Gladstone Hospital	Emergency, outpatients, general medicine and day surgery, basic orthopaedics, obstetrics and gynaecology, medical imaging, pharmacy, pathology and central sterilising.
Gladstone Mater Private Hospital	General surgery, general medicine, obstetrics and gynaecology, oncology and palliative care, after hour's medical service, radiology, pathology and visiting specialist clinics.
Rockhampton Hospital	Red Cross Blood Transfusion Service, Emergency Medicine, Anaesthetics, Radiology and Ultrasound, Specialist Outpatient Department review, Central Sterilising Services and Supply, Rehabilitation, Renal, Coronary Care, Intensive Care, Palliative Care and Chemotherapy, Day Surgery Unit, Operating Rooms, General Surgery, General Orthopaedics, Visiting Urology, Visiting Neurosurgical, Ears Nose and Throat, General Medicine, Visiting Facio/Maxillary, Obstetrics and Gynaecology, Visiting Haematology, Visiting Rheumatology, Visiting Oncology, Paediatrics, including Neonatal (special care nursery), Visiting Paediatric Cardiology, General Respiratory Medicine.

Source: Queensland Health (2011 & 2011b), Mercy Health (2011)

The majority of emergency trips are handled by the Queensland Ambulance Service which has stations at Agnes Water, Calliope, Gladstone, Miriam Vale and Mount Larcom. The service works closely with rescue helicopters based at Rockhampton and Mackay and with the Royal Flying Doctor Service fixed wing aircraft, also based at Rockhampton (Queensland Ambulance Service, 2011). These services are part funded by industry and Government.

During consultation for the SIA, it was noted by officers from the GRC that there were concerns about existing access to medical services offered in Rockhampton. Limited public transport between Rockhampton and Gladstone means that people without access to private transport are constrained in their ability to access these services.

Two police stations are located in Gladstone and one police station is located in Calliope. There is one permanent fire station in Gladstone City. Auxiliary stations are also located in Calliope and Miriam Vale. The region's primary communication centre is located in Rockhampton (Queensland Police 2011).

The study area is currently well serviced by Queensland Police, with one officer for every 450 people. This is higher than the state average (at 435) as well as other similar regional police districts, such as Gympie and Rockhampton. When consulted with for the SIA, the local Queensland Police Service reported that staffing levels

are adequate to meet current demands but commented that as the region continues to grow, additional resources will be required. In particular, the provision of resources to meet the demands associated with an increasing transitional workforces and the transportation of heavy equipment and wide loads in the region, is identified as a challenge for the local police (District Officer, Gladstone Police Station).

The State Emergency Service (SES) assists people and communities in times of natural disasters and emergency situations. There are eight units located across the GRC area, providing a high level of coverage across the region. The Central Queensland SES regional headquarters is located in Rockhampton.

Education

Education infrastructure is concentrated in Gladstone City; with limited high school options in either Miriam Vale or Calliope Part B.

There is currently a school bus service that services the following schools (Buslink Queensland 2011):

- Bernarby State Primary School
- Boyne Island State Primary School
- Faith Baptist Primary and Secondary
- Gladstone State High School
- Kin Kora State Primary School
- Star of the Sea Primary School
- South primary School
- St Francis Primary School
- St John the Baptist Primary School
- Tannum Sands Primary School
- Tannum Sands State High School
- Toolooa State high School
- West State Primary School

Educational facilities in the study area include:

- Seventeen kindergartens and preschools
- Twenty primary schools
- Four secondary schools (three in Gladstone and one at Tannum Sands)
- Five combined primary and secondary schools (at Burua and Mount Larcom, plus three in Gladstone)
- Three tertiary campuses (all in Gladstone)

Additionally there are a number of non-accredited education-related facilities including several tutoring services, and a music academy in Gladstone; Special

Education Units at Clinton, Tannum Sands and Gladstone; and numerous Parents and Citizens/Friends Associations attached to primary and secondary schools.

Community infrastructure

A range of community centres, libraries and youth facilities are available across the study area including:

- Libraries: Gladstone City Council library is the central library; there are also six smaller libraries in the study area.
- Community centres: One district community centre is located in Gladstone City and 11 local halls provide community spaces predominantly in rural towns (as progress halls, Country Women's Association halls). There are also three local community centres (two in Gladstone and one at Boyne Island).
- Youth facilities: a Police Citizens Youth Club (PCYC) in Gladstone City (Gladstone PCYC) and one in Mount Larcom (Mount Larcom and District Youth Centre).

Recreational facilities and open space

There are a wide range of sporting and recreational facilities providing both formal and informal sporting and recreational opportunities across the study area. Popular open spaces and recreational facilities include:

- Gladstone Entertainment Centre
- Tanyella Recreation Centre
- Gladstone Marina Parklands
- Tondoon Botanic Gardens
- Flat Rock Picnic Area
- The Gladstone Aquatic Centre
- Harbour City Indoor Sports Centre
- Clinton Park
- Tannum Sands Millennium Esplanade
- Mount Larcom Swimming Pool
- Calliope Swimming Pool

Boating and fishing are extremely popular recreational pursuits in Gladstone. Infrastructure provided to support these activities include Gladstone marina and boat ramps such as the major one located at the end of Goondoon Street, another located on the Calliope River adjacent to the power station, and the Toolooa Bends, South End and Boyne Island boat ramps. The ramps also provide access for small recreational powerboats.

In addition to individual recreational fishing and boating activity, a number of boating and fishing competitions as well as harbour focused events are held throughout the year, with these attracting residents from across the study area and the wider Central Queensland region. These include:

- Brisbane Gladstone Yacht Race
- Observer Boyne Tannum HookUp
- Harbour festival

Community networks

There are a number of clubs and groups in Gladstone, these include:

- Wanderers Amateur Fishing Club
- Yaralla Deep Sea Fishing Club
- Boyne Tannum Hookup Fishing competition
- Gladstone Sportfishing Association
- Mount Larcom and District Fishing Club
- South End Fishing Club
- Bits Deep Sea Fishing Club
- Lions Club
- Conservation Volunteers
- Scouts
- Baffle Creek Boat Club inc
- Curtis Coast Spearfishing Club
- Gladstone Sportfishing Club
- Port Curtis Sailing Club

4.4. Urban centres and localities in the study area

This section provides an overview of urban centres and localities within the study area that are likely to be affected by the project. Many of the urban centres and localities share names with the SLA in which they are located but are not the same. Instead urban centres and localities are the population centres within the SLA's discussed earlier in this chapter.

While the Arrow LNG Plant will be located approximately 8 km west south-west of the town of South End, demographic data is not available and has not been included in this section.

South End

South End is a small community consisting of approximately 100 dwellings which is located on the southern tip of Curtis Island. As the only residential community

located on Curtis Island, particular focus has been provided to understanding the nature of the community and any impacts which the project might have upon the community.

Of the 100 dwellings which comprise the South End community, only a small number are permanently occupied, with the remainder generally comprising holiday houses for residents in Gladstone or the wider region. Consultation for the project identified that approximately 20 to 40 people live in the community during the week, with this number increasing to more than 100 at weekends and holidays.

The community includes an accommodation lodge which also serves as a general store, a take away store and a fuel outlet. There is also a camp ground. South End provides a base for outdoor recreational pursuits such as fishing, crabbing and bush walking. There is a regular ferry service operating between South End and Gladstone City, which is also used by people wishing to access the national park.

Gladstone city

Gladstone is the largest urban centre in the region and the closest centre to the proposed project. It is likely to provide many of the services to the construction workforce outside of those available in the construction camps. In 2009, Gladstone had a residential population of approximately 33,000 people.

Key issues and trends:

Key population and demographic characteristics for Gladstone include:

- A young population with a median age of 32 years, four years lower than Queensland as a whole.
- A higher labour force participation rate suggesting limited spare capacity in the local workforce.
- A high median household income reflecting the higher levels of workforce participation.
- Low high school completion rates, likely the result of the high proportion of people who possess trade certificates.
- High rates of homes being purchased or rented reflecting a degree of community mobility and the younger age of the community.

Labour Force

Manufacturing and construction were the main industries of employment within Gladstone. Both industries recorded higher rates of employment than Queensland. Gladstone also recorded higher proportions of transport, postal and warehousing jobs compared to that of Queensland as a whole.

There were lower rates of people employed in education and training, public administration and safety and health care and social assistance compared to Queensland

Technicians and trade workers and machinery operators were the top two occupations in the locality reflecting the positions available within the manufacturing and construction industries.

Calliope

Calliope is located on the Dawson Highway, approximately 22 kilometres south of Curtis Island. It is a relatively small town, with an estimated resident population of approximately 2,133 people in 2009. It is expected that some residents from Calliope may work on the project, while others who relocate to the study area for the project, may choose to live in Calliope.

Key issues and trends:

Similar to Gladstone, Calliope differs from Queensland as a whole with:

- A young population with a median age of 33 years driven by the high proportion of people aged 14 years or younger. The median age would likely have been even lower, if not for the low proportion of people aged between 15 years and 24 years.
- A high level of workforce participation which contributes to high household incomes.
- High proportions of people employed as technicians, tradesmen, machinery operators and drivers; professions which require trade certification.
- As is typical for communities with younger populations, the town had a high proportion of people buying their own home (at over 50% of all households).

Labour Force

Manufacturing and construction were the main industries of employment within Calliope, with both industries recording higher rates of employment than Queensland. Calliope Part A also recorded higher proportions of public administration and safety, but lower rates of people employed in education, training and health care and social assistance, compared to Queensland.

Technicians, trade workers, machinery operators, drivers and labourers were the top occupations in the locality in 2006 accounting for over half of all occupations.

Mount Larcom

Mount Larcom is a small community of approximately 258 people (2009) located on the Bruce Highway, approximately 32 kilometres west of Gladstone.

Key issues and trends:

Mount Larcom has an older population, with a median age of 42 years, almost 10 years older than Gladstone. Key population and demographic characteristics include:

- A lower labour force participation rate, reflecting the older population of the town who are more likely to have retired.
- Low median household income.
- Low levels of high school completion compared to Queensland as a whole.
- High rates of home ownership reflecting the slightly older population of the town.

Labour Force

Construction is the main industry of employment in the town with one out in five workers employed in the industry. Mount Larcom also recorded higher levels of employment in the retail trade, manufacturing, public administration, safety, education, training, accommodation and food services sectors, compared to Queensland. Lower proportions were recorded in health care and social assistance, mining and wholesale trade.

Occupations in Mount Larcom reflected the main industries of employment; with technicians, trades workers, machinery operators and drivers recording the highest proportion of employment.

Boyne Island and Tannum Sands

Boyne Island and Tannum Sands are twin towns located to the southeast of Gladstone. In 2006, the towns had a combined population of 7,826 people.

Key issues and trends:

- Boyne Island and Tannum Sands had a young population with a median age of 34 years. They also had a high median household income.
- A high labour force participation rate suggesting many of the people able to work are currently doing so.
- Low levels of high school completion compared to Queensland levels, which when combined with the high household incomes and high rates of households purchasing their own home, suggests the prevalence of high levels of skilled or semi skilled trades people who can attract higher wages for their work.
- High rates of home ownership reflecting the slightly older population of the town.

Labour Force

The biggest sector of employment in Boyne Island and Tannum Sands is manufacturing, accounting for more than one quarter of all employment. The next largest sectors are construction (at 12.9%) and retail trade (at 10.2%). There are also large numbers of skilled workers in the two towns, with approximately 22.1% of workers employed as technicians and trades workers.

The following tables provide a summary of key demographic and employment data for select urban centres and localities in the study area.

Table 4-21: Top 10 industries of employment for urban centres in the study area 2006

Industry of Employment	Gladstone City (%)	Calliope (%)	Mount Larcom (%)	Boyne Island and Tannum Sands (%)
Accommodation and food services	6.6	4.8	7.5	5.6
Construction	11.6	14.6	20.6	12.9
Education and training	7.2	3.3	8.4	7.8
Electricity, gas, water and waste services	2.8	*	*	*
Health care and social assistance	6.5	6.7	5.6	6
Manufacturing	19.6	18	11.2	27.8
Mining	*	3.4	3.7	2
Professional, scientific and technical services	5.2	3.9	*	*
Public administration and safety	4	8.3	8.4	2.8
Retail trade	11.2	9.6	14	10.2
Transport, postal and warehousing	*	*	6.5	4.1
* = not one of the top 10 industries of employment				

Source: ABS, Census of Population and Housing

- **Table 4-22: Occupations for urban centres in the study area 2006**

Occupation	Gladstone (%)	Calliope (%)	Mount Larcom (%)	Boyne Island and Tannum Sands (%)	Queensland (%)
Clerical and administrative workers	12.3	11.7	13.4	11.7	14.8
Community and personal service workers	12.3	13.4	13.4	6	9.1
Labourers	13.1	16.3	21.4	12	11.9
Machinery operators and drivers	12.3	19.1	16.1	14.4	7.2
Managers	8.1	6.9	3.6	9.3	12.4
Professionals	13.2	7	8	14.7	17.1
Sales workers	9.1	7.9	4.5	7.9	10.4
Technicians and trades workers	22.5	21.4	16.1	22.1	15.4

Source: ABS, Census of Population and Housing

- **Table 4-23: Demographic summary of urban centres in the study area**

Demographic characteristics	Urban Centre				Queensland
	Gladstone	Calliope	Mount Larcom	Boyne Island and Tannum Sands	
Population, 2006 (No.)	28,810	1,550	258	10,331	4,425,103
Median age (years)	32	33	42	34	36
Indigenous population (no.)	1,075	33	10	187	127,578
Indigenous population (%)	3.7	2.1	3.6	1.8	3.3
Age profile					
0-4 years	7.9	8.3	7.1	8.0	6.6
5-14 years	16.2	18.6	12.6	17.3	14.1
15-24 years	14.6	11.4	12.3	12.6	13.8
25-54 years	44.3	44.3	42.3	45.2	42.0
55-64 years	9.3	9.7	12.6	8.8	11.2
65 years and over	7.8	7.9	12.3	8.1	12.4
Workforce					
Total workforce (no.)	14,780	754	120	3,939	1,915,949
Labour force participation (%)	67.6	66.4	59.7	67.4	61.8
Unemployment, Sept 2010 (%)[2]	5.1	6.4	6.4	7.4	5.6

Demographic characteristics	Urban Centre				Queensland
	Gladstone	Calliope	Mount Larcom	Boyne Island and Tannum Sands	
Income					
Median household income ($)	1,187	1,195	17.3	36.4	1,033
Education					
Completed grade 12 (%)	35.2	25.9	17.3	36.4	41.3
Housing and tenure					
Total dwellings (No.)	11,794	558	110	2,642	1,660,750
Median house price, Dec 2010[1]	$395,000	$408,000	$395,000	$440,000 (BI) $435,000 (TS)	-
Median weekly rent for a 3 bedroom house, Dec 2010 [1]	$320	$320	$320	$320	-
Average household size (people)	2.7	3.0	2.4	2.8	2.6
Fully owned (%)	23.4	28.8	38.7	26.8	30.4
Being purchased (%)	36.7	51.9	29.2	42.0	31.4
Rental houses (%)	32.6	16.8	23.7	29.3	30.0

Source: ABS, Census of Population and Housing, 2006, REIQ 2011a

1. *Based on Gladstone Regional Council LGA figures*
2. *Based on SLA figures*

4.5. Community values

The study area community shares a number of values and aspirations, which need to be considered when assessing the impacts of projects in the study area. These have already been explored as part of a number of studies and reports, including:

- Gladstone Regional Visioning Panel (Vision 2028) Final Project Report. (FutureEye, 2008).
- Gladstone Region Social Infrastructure Strategic Plan Background Report. (Buckley Vann et. al., 2009b).
- The Central Queensland Strategy for Sustainability - 2004 and Beyond. (Fitzroy Basin Association, 2004).
- Port of Gladstone Western Basin Master Plan (Coordinator General, 2010).
- Curtis Coast regional coastal management plan (Queensland Government, 2003).

- Gladstone Industry leadership Group Community Survey (Greer 2010).
- Gladstone Community Plan (GRC 2010c).
- Gladstone Region Wellbeing Study (The Hornery Institute 2010).

Through the consultation process of the SIA and other background reports, it became clear residents of the study area were supportive of industrial development and also valued:

- The lifestyle of the area, particularly fishing and boating.
- The relatively good educational opportunities.
- The family friendly nature of the area.
- The environment.
- The growing multiculturalism of the community.

Drawing on these values, the community expects:

- Protection of these while encouraging industrial development.
- Industry and all governments to contribute to the region.
- To be involved in decisions about how their community develops.
- Increased services as a result of the economic growth associated with the LNG industry.

Lifestyle and educational opportunities

Residents of the study area, many of whom are attracted by employment opportunities, are also highly appreciative of the lifestyle the region provides with ample boating and fishing opportunities. There are also a range of educational opportunities ranging from pre and primary school through to TAFE College and University which make the study area an attractive one for families. This mix of job and recreational opportunities paired with social infrastructure differentiates the study area from many other regional communities dependent on extractive industries.

Protection of environmental and recreational values

Water based recreation such as boating and fishing is enjoyed by a large proportion of the community in the study area, with the harbour and the reef seen as key environmental assets for the region. The environment is seen as key to supporting these activities with sea grass beds and mangroves providing habitat and food for fish, dugongs and other sea creatures.

The natural and recreational assets of the water are considered by residents to be “integral to the lifestyle” of the study area, with stakeholders noting during consultations, that boating and fishing help retain people who move to the study area for work. Planned activities such as the upcoming dredging by the Gladstone

Ports Corporation, combined with major projects that have the potential to alter the environment, are viewed with some concern by residents, particularly if they impact on recreational activities.

The GRC, aware of the tension between growth and the protection of environmental and recreational values, is committed to achieving a balance between economic growth and the protection of the environment and the lifestyle with a desire for the Gladstone region to be ….

> *..recognised, nationally and internationally, as a sustainable "region of choice" for achieving the best integration of large industry and commerce, environment protection and community well-being. We will be renowned for balance: a friendly, clean and vibrant place in which to work, live and raise a family.*
>
> (Gladstone Region Vision 2028 Statement, Gladstone Regional Visioning Panel Final Project Report, August 2008, pp. 10-12).

The Gladstone Regional Visioning Community Survey (FutureEye 2008) also found that the study area community:

- Believes the community has traditional family values.
- Embraces multiculturalism.

Contribution of industry and all governments to the study area

During consultation by SKM for this SIA it was noted that based on stakeholders experiences with previous projects, there is an expectation that a number of the traditional government roles such as social infrastructure and service provision need to be filled by private industry. The Social Infrastructure Strategic Plan is one such example, where there is a growing stakeholder expectation that facilities normally provided by government, should now be provided by industry to offset their impact on the environment or community infrastructure.

Increased services

There is a desire in the study area to reduce reliance on other areas such as Rockhampton or Brisbane for the provision of key social services and retail opportunities.

4.6. Community issues

There are a number of current issues that potentially conflict with the values identified in Section 4.5, including:

- Challenges of growth and growing inequality.
- Inability to influence decisions.
- Tensions between industrial development and the environment, including air quality.

Challenges of growth and growing inequality

Economic growth is perceived positively by many community members as it creates employment and leads to the development of improved infrastructure and expansion of services. However, there is some concern that 'uncontrolled growth' has the potential to place additional pressure and constraints on existing community services and facilities and impact on the region's "relaxed, sporty, out-doors, lifestyle".

Growth has led to a level of inequality in the study area between people working in higher paying industrial or construction sectors and people working in lower paying services and support sectors. During SIA consultation, the inequality was said to be causing tension with those working full time in low to medium level positions in services, government and other industries, now experiencing difficulty in securing housing.

For households renting in the private market, the current upward trend in housing costs is leading to reduced standards of living and reported by stakeholders to have in the worst cases displacement of households unable to pay higher rents.

Despite the challenges of growth, overall the community does have a positive outlook towards the future supported by research undertaken for the Gladstone Regional Vision 2028, finding that 80% of respondents were optimistic about the prospects for the study area.

Inability to influence decisions

Much of the economic growth and social change in the study area is the result of large projects, such as refineries, the port, the power station and now, the LNG industry. This and the creation of the GSDA have resulted in community concern over the inability to contribute to decision making and regional planning.

Tensions between industrial development and the environment

There is widespread acceptance of the industrial nature of the study area but there is a growing desire to maintain the existing environment and lifestyle, as well as

control some of the negative impacts of industrial development such diminished air quality.

A survey undertaken on behalf of the Gladstone Industry leadership Group (GILG) found that over half the people in the study area were concerned about the health impacts associated with air quality (FutureEye 2009). These concerns have persisted with reports in local media covering instances where ship loading activities have led to reductions in air quality and the impact this is having on local residents' lives. As such, any project in the study area that results in a reduction, perceived or actual in air quality, will likely be of concern to the community.

Concerns about the safety of the LNG plant and management of the project workforce

Some concerns exist in the study area about the safety of the LNG industry and the potential for accidents either at the proposed LNG plants or with tankers that transport the LNG.

There are also community concerns about the transient nature of the construction workforces associated with major projects planned in the area. Based on previous experience, there is a belief that inadequate management of construction workforces can lead to law and order issues.

Concerns about the strain on workers and their families

Shift work can cause long absences from home, resulting in workers being too tired to fully participate in family life and is often incompatible with normal family schedules. This can be a source of tension within families potentially leading to domestic violence. T

he study area has significant numbers of shift workers already employed at different industrial facilities but does not have reported rates of domestic violence that are higher than many of the adjoining regions and cities (Queensland Police 2010 & District Officer, Gladstone Police Station).

However, there still exists a concern about the impact of increasing levels of shift work being undertaken in the study area and the impact this will have on families.

4.7. Community health and well-being

Good health has both physical and psychological elements and is a highly valued aspect of human life. There are a broad range of social, environmental, cultural and economic factors which influence health and well-being at both the individual and community level.

Social determinants of health and well-being are largely framed by the social and environmental conditions in which people live and work. Research completed by the

World Health Organisation (2003) and the Royal Australian College of Physicians (2005) identified a broad range of key social factors which influence health outcomes. Such factors include socio economic disadvantage, stress, food and nutrition, education, and early life circumstances. Variables which provide an indication of the health and well-being of the study area's community include:

- Socio-economic disadvantage
- Amenity
- Crime and safety
- Access to facilities and services

Socio economic disadvantage

A person's level of social and economic disadvantage has been shown to affect their health throughout their life. A measure of disadvantage is provided by the ABS Index of Relative Socio-economic Disadvantage, which is derived from census data related to disadvantage such as: low income, low educational attainment, unemployment and dwellings without access to a motor vehicle. Using the index every SLA is provided a score which ranks its disadvantage relative to other SLA's. The lower a SLA's score on the SEIFA index the more disadvantaged it is relative to other SLA's.

In 2006, the SIEFA Index of Disadvantage score for Miriam Vale indicated that there was a high level of relative disadvantage, with the SLA ranked in the lowest 19% of all SLA's in Queensland. Calliope Part B was marginally less disadvantaged ranked in the lowest 27% of all SLA's in the state. Gladstone in contrast, scored just below the State average and Calliope Part A, with a percentile of 65%, was amongst the least disadvantaged communities in the state.

Research undertaken for the Gladstone Regional Social Infrastructure Plan (Buckley Vann et al., 2009) notes the unequal distribution of the study area's industrial growth has led to gains by groups, such as those directly employed in major projects, having a negative impact on lower socio-economic groups thus decreasing their standard of living.

The unequal distribution of benefits from industrial development (e.g. wages and job opportunities) is geographic in nature with small townships less likely to experience equal benefits from major industrial and infrastructure growth compared to larger urban centres.

The geographic distribution of disadvantaged groups has been compounded by the trend for some lower socio-economic residents to move to outer areas of Gladstone and remote areas to find affordable housing. If this trend continues there is the potential for the number of people disadvantaged to increase in these areas, leading to further polarisation of income inequality in the study area.

Amenity

Social amenity has a physical (or tangible) component, which includes the character and appearance of buildings, open space and infrastructure and absence of noise, unsightliness or offensive odours and deteriorated air quality. It also has a psychological or social component which relates to being in an environment where people feel safe and secure with opportunities for personal enjoyment.

People obtain considerable psychological benefits from surroundings which are visually appealing. Natural surroundings in particular have been shown to be highly appealing to people and contribute to overall well-being (Ulrich 1979, cited in Weng, P., Chang, C., 2008). Currently, Curtis Island is undeveloped and from Gladstone, presents a view of a forested island largely in its natural state, and at night time there are presently no visible lights on the island. However, the approval of three LNG Projects on Curtis Island is currently in the process of changing this outlook.

Air quality in Gladstone has been a matter of public interest for some time. Community concern that pollutants released by heavy industry have negatively affected health outcomes has led to the Queensland Government initiating the Clean and Healthy Air for Gladstone Project in 2008 (Queensland Government, 2008b).

The project involved monitoring the air for pollutants in and around Gladstone over a 12 month period. These results did not identify any key pollutants present at levels consistently exceeding the relevant health based standards or would be considered to pose unacceptable risks to health. Despite this outcome, there still remains community concern that air quality is being affected by major industry in Gladstone. As such projects in the study areas with the potential to impact either positively or negatively on air quality are likely to be of interest to the community.

A separate air quality impact assessment is being prepared as part of the EIS and is summarised and specifically referenced in the EIS report. Results of this report have also been considered in section 5.3.

Crime and safety

A further factor which heavily influences an individual's ability to enjoy their surroundings relates to feelings of safety and security. Not only does an unsafe social environment present direct risks to heath, but the apprehension and fear felt by individuals can lead to anxiety, depression and the general erosion of individual well-being. Community perceptions of safety are sometimes nebulous and difficult to measure and often highly influenced by media and other external influences.

As part of the consultation undertaken for the EIS and for the SIA it was noted by stakeholders that there were concerns about the safety of the LNG industry in the

study area, particularly in regard to shipping. These concerns have also gained media attention recently[3] with the temporary grounding of a ship in the harbour.

Levels of crime in the study area are consistent with other areas in Queensland. Table 4-24 shows while the murder rate in the study area was three per capita compared to one for Queensland, other categories of crime against an individual were generally consistent with or lower than those for Queensland as a whole.

Table 4-24: Crime against the person, 2009/10

Crime	Gladstone (rate per capita)	Queensland (rate per capita)
Murder	3	1
Attempted Murder	0	1
Conspiracy to Murder	0	0
Manslaughter (excl. by driving)	0	0
Driving Causing Death	0	0
Grievous Assault	21	22
Serious Assault	177	209
Serious Assault (Other)	41	41
Common Assault	186	179
Rape and Attempted Rape	31	31
Other Sexual Offences	90	89
Armed Robbery	12	17
Unarmed Robbery	9	23
Kidnapping and Abduction etc.	3	6
Extortion	1	1
Stalking	20	13
Life Endangering Acts	69	64

Source: Queensland Police 2009-2010 Annual Statistical Review

The Gladstone police district (which includes the study area) recorded higher rates of 'other offences' (4,728 offences/ 100,000) compared to Queensland as a whole (3,921 offences/ 100,000), particularly in the areas of drug and traffic related offences.

Rates of domestic violence are shown in aggregate with other assault data which is slightly lower in the study area than Queensland as a whole. The Gladstone Police

[3] http://www.couriermail.com.au/news/sunday-mail/ships-grounding-ignites-gas-fears/story-e6frep2f-1226047580794. Accessed 20 May 2011
http://www.gladstoneobserver.com.au/story/2011/05/03/safety-fears-sparked-gladstone-harbour-lng-ship/ Accessed 20 May 2011

Service has confirmed that overall rates of domestic violence are consistent with other towns such as Bundaberg and Rockhampton in the study area.

Access to facilities and services

People without private transport and people in places with poor or no public transport are less able to participate fully in the life of the community and access facilities and services which support health and well-being. As of the 2006 census, between 2.8% (Calliope Part B) and 6.9% (Gladstone City) of households did not possess a car compared to Queensland (7.9%).

While in Gladstone City lack of car ownership may be less of a problem with services within close proximity and limited public transport options available. In other areas this could potentially be a significant barrier to households pursuing employment, social interaction or accessing social infrastructure.

In localities such as Miriam Vale, where services are less likely to be accessible by any means other than motor vehicle, the high proportion of households (37.1%) with only one vehicle is notable. If this car is used for travelling to work, then potentially the non-working partner and children are effectively isolated from facilities and services throughout the day.

Whilst there are high quality inter-regional rail and bus services linking Gladstone to other urban centres across Queensland, the public transport network within the study area is limited. There is no local passenger rail service within the study area. Buslink Queensland provides a 10 route urban passenger bus service operating in Gladstone City, between Gladstone and Boyne Island, Tannum Sands, Awoonga Dam, Calliope Part A and Benaraby. The study area also includes 365 school bus routes which transport students to primary and secondary schools across the study area. Taxi services are limited to Gladstone City.

Compared with other regional centres in Queensland, Gladstone City has a relatively extensive network of cycle ways and footpaths. The Gladstone Integrated Regional Transport Plan (Queensland Government, 2001) recognises cycling as a viable and convenient travel mode and proposes to extend the cycle network currently providing linkages to a number of major community and shopping facilities, such as the TAFE College and the airport, and a number of major employers, such as the NRG Gladstone Power Station and Gladstone Hospital.

4.8. Indigenous profile

In 2006, 1,575 people in the study area identified themselves as Indigenous, approximately 3.1% of the population. Approximately 68% of the Indigenous population resided in Gladstone City (refer to Table 4-25).

Table 4-25: Total indigenous population, 2006

Locality	Population	Percentage (%)
Gladstone City	1,078	68.5
Calliope Part A	329	20.9
Calliope Part B	76	4.8
Miriam Vale	92	5.8
GRC (total)	1,575	100

Source: ABS Census of Population and Housing, 2006.

Indigenous age profile

The median age of the Indigenous population within the GRC was 20 years; lower than that the median age of the non-Indigenous population (36 years) (refer to Table 4-26).

The younger median age reflects the larger proportion of children (aged 0-14 years) in each of the SLAs. In particular, Calliope Part B recorded a very high proportion of children aged 5-14 years in comparison to Queensland.

Table 4-26: Indigenous age profile, 2006 (%)

Locality	0-4 yrs	5-14 yrs	15-24 yrs	25-44 yrs	45-64 yrs	65 yrs & over
Gladstone	12.9	30.0	17.9	26.3	11.1	1.8
Calliope Part A	13.7	27.4	19.8	24.0	12.2	2.7
Calliope Part B	9.2	38.2	13.2	22.4	9.2	7.9
Miriam Vale	12.0	26.1	7.6	31.5	18.5	4.3
GRC (total)	12.8	29.6	17.5	25.9	11.7	2.4
Queensland	12.9	26.0	18.5	26.4	13.2	3.0

Source: ABS Census of Population and Housing, 2006.

Overall, there were lower rates of Indigenous people aged 25-64 years than Queensland in all SLAs except Miriam Vale. Calliope Part B generally recorded higher proportions of older Indigenous people.

In 2006, there were more Indigenous females living in the study area (at 51%) than Indigenous males (at 49%). This is in contrast to the non-Indigenous population which comprised more males.

Indigenous household profile

Family households were the most common form of Indigenous household in the study area (see Table 4-27). Calliope Part A recorded the highest level at 89.5% of all households. Miriam Vale had the lowest proportion at 78.6%, which was lower than Queensland as a whole.

The proportion of Indigenous people living in lone person households varied across the study area, ranging from 21.4% of households in Miriam Vale to 4.5% of households in Calliope Part A.

Levels of Indigenous group households in the GRC were similar to the State. Calliope Part A and B did not record any group households.

Table 4-27: Indigenous household profile, 2006 (%)

Locality	Family household	Lone person household	Group household
Gladstone City	83.9	10.5	5.6
Calliope Part A	89.5	4.5	6.0
Calliope Part B	88.2	11.8	0.0
Miriam Vale	78.6	21.4	0.0
GRC	84.9	10.0	5.0
Queensland	82.9	11.9	5.2

Source: ABS Census of Population and Housing, 2006

Indigenous income and affordability

In 2006, the median income for Indigenous households in all SLAs was lower than the non-Indigenous households. However, Indigenous household incomes were higher in Gladstone City and Calliope Part A than for Queensland as a whole, suggesting Indigenous people in the study area may be in a better financial position than in other parts of Queensland. Indigenous household incomes for the four SLAs were:

SLA	Indigenous households	Non-Indigenous households
Gladstone City	$1046	$1195
Calliope Part A	$1374	$1378
Calliope Part B	$762	$1003
Miriam Vale	$669	$637

Indigenous employment and business

In 2006, the study area recorded a total Indigenous workforce of 548 people, with approximately 71% located in Gladstone City. The unemployment rate for this group was substantially higher than for the non Indigenous population at 20.4% (see Table 4-28). Calliope Part A and B had lower unemployment rates than the Indigenous rate across Queensland as a whole.

- **Table 4-28: Indigenous labour force profile, 2006**

Locality	Total Labour Force	Unemployment %	Labour Force Participation %
Gladstone City	392	20.4	63.8
Calliope Part A	110	8.2	57.0
Calliope Part B	25	12.0	64.1
Miriam Vale	21	14.3	36.2
Queensland	43,848	13.1	56.2

Source: ABS Census of Population and Housing, 2006.

The high unemployment rate paired with a low labour force participation rate (63.8% compared to 71.6% for the non Indigenous population) suggests that Indigenous people could significantly benefit from major projects in the study area that provide Indigenous employment. Of note the lower participation rate was driven by Indigenous females (52.6% for Indigenous and 62% for non-Indigenous), while difference in participation rates between the two male groups were comparatively lower (76.8% and 80.9%).

In Calliope Part A SLA, the rate of Indigenous unemployment is twice as high as the non-Indigenous population (8.2 % to 4.1%). In contrast, Calliope Part B SLA reported a lower Indigenous unemployment rate than the non-Indigenous population. This is reflected in the relatively high rate of qualifications held by Indigenous people in the SLA (20% held advanced diploma or diploma and 35% held a post secondary school qualification). Calliope Part A had the lowest unemployment rate at 8.2%

Manufacturing and construction were the two main industries of employment for Indigenous people in 2006, with both industries recording higher rates of employment than the Queensland. There was a lower proportion of the Indigenous population in the study area employed in public administration, safety, health care and social assistance compared to Queensland as a whole. The proportion of Indigenous people employed in education and training was in line with Queensland.

- **Table 4-29: Top 10 Indigenous employment by industry[1], 2006 (%)**

Industry	Gladstone City	Calliope Part A	Calliope Part B	Miriam Vale	GRC	Queensland
Manufacturing	19.4	27.9	10.0	0.0	20.0	7.9
Construction	14.8	19.2	10.0	37.5	16.3	7.6
Retail trade	11.0	9.6	20.0	0.0	10.9	7.2
Education and training	7.4	7.7	0.0	31.3	7.8	7.4
Accommodation and food services	8.7	6.7	0.0	0.0	7.4	6.5

Public administration and safety	6.8	5.8	10.0	0.0	6.5	20.2
Transport, postal and warehousing	4.8	5.8	0.0	31.3	5.7	4.1
Health care and social assistance	7.7	0.0	0.0	0.0	5.2	12.5
Mining	1.9	9.6	0.0	0.0	3.5	2.4
Administrative and support services	3.5	0.0	0.0	0.0	2.4	3.5
Rental, hiring and real estate services	2.3	0.0	10.0	0.0	2.2	1.0
Other services	8.0	7.6	30.0	0.0	9.3	13.5

Source: ABS Census of Population and Housing, 2006
1. Top ten industries are based on GRC.

Indigenous education and training

In the 2006 census, educational qualifications of the Indigenous population were recorded as generally lower than the non-Indigenous population in all the SLAs.

As of the 2006 census, Indigenous people in the study area left school earlier with the percentage of children completing Year 12 or equivalent lower for Indigenous than non-Indigenous people. The SLA with the highest percentage of Indigenous people competing year 12 or equivalent (26.8%) was Gladstone City, while the lowest (7.3%) was Calliope Part B.

Table 4-30: Indigenous students, year of completion, 2006 (%)

Locality	Year 12 or equivalent	Year 10 or equivalent	Did not go to school
Gladstone City	26.8	32.0	0.5
Calliope Part A	20.3	33.9	0.0
Calliope Part B	7.3	51.2	0.0
Miriam Vale	15.0	33.3	0.0
GRC	23.8	33.4	0.3
Queensland	25.5	28.6	1.2

Source: ABS Census of Population and Housing, 2006

In 2006, the most common highest post school qualification completed by an Indigenous person in the study area was a Certificate level III or IV.

The percentages of Indigenous people aged 15 years or over that had completed a diploma or higher level of education was lower than for non-Indigenous people, in all SLAs (refer Table 4-31).

- **Table 4-31: Indigenous post school qualification, 2006 (%)**

Locality	Bachelor Degree or Higher	Advanced Diploma or Diploma	Certificate I, II, III or IV
Gladstone City	10.4	7.4	49.0
Calliope Part A	4.2	9.9	60.6
Calliope Part B	16.7	0.0	50.0
Miriam vale	12.0	0.0	24.0
GRC	9.5	7.0	49.7
Queensland	10.2	9.3	39.9

Source: ABS Census of Population and Housing, 2006

Indigenous housing

More than one third of Indigenous people were renting in the private market in 2006. This suggested that Indigenous people might be more vulnerable to changes in housing affordability.

- **Table 4-32: Indigenous housing type and tenure, 2006 (%)**

Industry	Gladstone City	Calliope Part A	Calliope Part B	Miriam Vale	GRC	Queens-land
Manufacturing	19.4	27.9	10.0	0.0	20.0	7.9
Construction	14.8	19.2	10.0	37.5	16.3	7.6
Retail trade	11.0	9.6	20.0	0.0	10.9	7.2
Education and training	7.4	7.7	0.0	31.3	7.8	7.4
Accommodation and food services	8.7	6.7	0.0	0.0	7.4	6.5
Public administration and safety	6.8	5.8	10.0	0.0	6.5	20.2
Transport, postal and warehousing	4.8	5.8	0.0	31.3	5.7	4.1
Health care and social assistance	7.7	0.0	0.0	0.0	5.2	12.5
Mining	1.9	9.6	0.0	0.0	3.5	2.4
Administrative and support services	3.5	0.0	0.0	0.0	2.4	3.5
Rental, hiring and real estate services	2.3	0.0	10.0	0.0	2.2	1.0
Other services	8.0	7.6	30.0	0.0	9.3	13.5

(a) Includes dwellings being purchased under a rent/buy scheme.
(b) Comprises dwellings being rented from a parent/other relative or other person.
(c) Comprises dwellings being rented through a 'residential park (includes caravan parks and marinas)',

5. Issues and potential impacts

The following section provides an assessment of the potential social impacts, beneficial and adverse, associated with the project's construction and operation. Cumulative impacts of this and other proposed LNG projects are described in Section 8.

Where impacts pertain to the lifestyles, liveability or the wellbeing of the community of the study area, these have been examined in terms of the primary impacts, for example housing, recreation or social and community infrastructure.

5.1. Population and demography

The following provides an overview of likely changes to population and demography from the project's construction and operation. The implications of changes in population and demography for housing and accommodation, social and community infrastructure and facilities and community values are discussed in Section 5.6, Section 5.4 and Section 5.9.

Construction phase

During construction, the project is expected to directly require a peak of up to:

- 3,000 workers to construct Phase 1 of the LNG Plant.
- 350 EPC staff
- 150 Arrow Energy staff
- 100 workers for the tunnel.
- 75 workers for the feed gas pipeline.
- 20 to 40 workers for the dredging.

These workers will be a combination of local and non local workers with most non local workers retained on a FIFO basis and located in construction camps. Being located in the construction camp, the majority of FIFO workers will have no opportunity to interact with the wider study area community except in a work capacity or when they are waiting at the airport at the beginning or end of a shift. This will significantly reduce the potential social impacts usually associated with construction workforces.

Table 5-1 provides Arrow Energy's estimate of the local and non local workforces required for the project.

Table 5-1: Breakdown between local and non local workers in the peak construction workforce

Worker type	Total	Non local (no.)	Local (no.)	Local (%)
LNG Construction Workforce	3000	2,400 to 2,850	150-600	5% to 20%
EPC	350	332	18	5%
Arrow Energy	150	135	15	10%
Feed gas pipeline, tunnel and dredging	215	215	0	0%
Total		2,868 to 3,318	183 to 633	4.9% to 17%

Source: Arrow Energy

In total, Arrow Energy estimate there will be a maximum of 3,318 non local workers during the peak of the construction period. The majority of these workers will be FIFO and resident in construction camps. Most FIFO workers will have a minimal opportunity to interact with the remainder of the community outside of their project role.

It is non local workers residing in the community who are of most interest to this assessment. Table 5-2 presents a summary of Arrow Energy's estimate of the breakdown between workers located in construction camps and those who will be resident in the study area.

Table 5-2: Breakdown between estimated number of workers residing in a construction camp and those residing in the community during Peak Construction

Worker type	Non local workers (no.)	Resident in the community (no.)
LNG Construction Workforce	2,400 to 2,850	0
EPC	332	332
Arrow Energy	135	135
Feed gas pipeline, tunnel and dredging	215	0
Total	2,868 to 3,318	467 (380 - Company Facilitated Communal Accommodation) (87 - Housed within community)

Source: Arrow Energy

In total, at the peak of construction, 467 workers will be living outside of the construction camps, approximately 12.6% of the total workforce. It is expected that only a small number of workers will bring their families with them due to the following factors:

- The majority of workers will be engaged on contracts specifying their position is FIFO and single status.
- The relatively short term nature of individual positions on the project (typically 18 months).
- The long nature of the shifts (two weeks / one week off, or three weeks on / one week off).
- Visa restrictions associated with the international portion of the EPC workforce.
- The structure of FIFO workers contracts will discourage them from relocating to the community from the construction camps.

Table 5-3 provides a breakdown of the non local workforce and Arrow Energy's estimate of the number of families likely to relocate to the study area.

Table 5-3: Proportion of workers likely to bring their families

Worker type	Non local workers (no.)	Workers bringing families (%)	Resident in the community (no.)
LNG Construction Workforce	2,400 to 2,850	0%	0
EPC	332	5%	33
Arrow Energy	135	10%	54
Feed gas pipeline, tunnel and dredging	215	0%	0
Total	2,868 to 3,318	-	87

Source: Arrow Energy

The project is anticipated to directly result in 87 workers relocating to the study area to live during the construction stage. Based on an assumed family size of four (two children and one spouse), this is anticipated to lead to a total population increase in the study area community of approximately 729 people (including workers and their families) during construction. This is equivalent to 1.2% of the 2009 population of the study area.

Operation phase

The operation of train 1 and train 2 will require an estimated peak workforce of approximately 450 workers, including 250 staff and 200 contractors. The operation of trains 3 and 4 would require an estimated additional 150 Arrow employees, resulting in a total peak workforce of approximately 600 people.

Periodic maintenance would require a further 50 to 350 workers over short periods (i.e. about three weeks). It is assumed that these workers would be sourced from outside the study area. Given the short duration of the maintenance period, the

influx of these workers is not expected to impact on population and demography in the study area and is not considered further in this section.

Table 5-4 provides a breakdown between the local and non local workers in the operation workforce.

Table 5-4: Breakdown between local and non local workers in the estimated operation workforce

Worker type	Trains 1 and 2			All trains		
	Total workforce	Local	Non Local	Total workforce	Local	Non Local
Arrow Energy staff	250	75	175	400	120	280
Contractors	200	80	120	200	80	120
Total	450	155	295	600	200	400

Source: Arrow Energy

Arrow Energy has indicated that approximately 30% of the Arrow Energy workforce and 40% of contractors will be local to the study area. This will result in 295 non locals relocating to the study area during the operation of trains 1 and 2. This will increase to 400 upon operation of trains 3 and 4.

Table 5-5 shows Arrow Energy expects that 70% of non local Arrow Energy staff will relocate to the study area with their families, while the balance of contractors will be FIFO single status. Based on an assumed family size of four (two children and one spouse), this will result in approximately 368 family members relocating to the study area during the operation of trains 1 and 2, increasing to 588 during the operation of trains 3 and 4.

Table 5-5: Proportion of workers likely to bring their families during operation

Worker type	Trains 1 and 2				Trains 3 and 4			
	Non Local workforce	% with families	Family members (no.)	Total people	Non Local workforce	% with families	Family members (no.)	Total
Arrow Energy staff	175	70%	368	543	105	70%	220	325
Contractors	120	0%	0	120	0	0%	0	0
Total	295	-	368	663	105	-	220	325

Source: Arrow Energy

Allowing for non local FIFO and permanent employees on the project this will increase the study area population by approximately 663 during operation of trains 1 and 2, increasing to 988 during operations of stages 3 and 4.

This represents 0.93% of the projected population in 2016, and 1.12% of that projected for 2026.

Families re-locating to the area will help offset the aging of the population, with an increase in the number of school age and working age people but not people aged 65 years or over.

It is expected the majority of workers who relocate with their families would reside in Gladstone in order to access education, child care, sport and recreation and health and medical services.

For smaller towns in the study area (i.e. Calliope), a small proportion of this estimated population increase has the potential to change the demographic profile of individual towns.

The retention and attraction of young people is important for the future growth and vitality of the region with many young people currently leaving the area to seek education and employment opportunities elsewhere. Employment and training associated with the project may provide opportunities for young people to remain in the study area and gain skills in the construction industry. The magnitude of this benefit would be dependent on access to appropriate skilling and employment programs prior to construction.

The industrial nature of employment opportunities provided by the project during construction and operation means the increased population is likely to be skewed towards males. This is likely to reinforce the existing gender distribution in the study area.

It is expected that overseas workers would be used where skills are not available within Australia. The EPC staff will also likely be predominately sourced from overseas and may come from a non-English speaking country. While these staff will reside in the community they will be engaged predominantly as single status FIFO.

The project will also likely generate an indirect impact on population with other employers hiring non local and potentially overseas workers to meet labour shortages or back fill positions. However, as the project will follow several other major projects in the study area, it is expected that its contribution to this impact will be small.

5.2. Property and land use

The project will be located within the Gladstone State Development Area, on the south west coast of Curtis Island. The area is intended for LNG production and export. Conservation areas, including a national park and other reserves are also located on Curtis Island. The nearest town to the LNG site is South End, which is the only residential community on the Island. South End is located on the southern tip of Curtis Island approximately 8 km east northeast from the project site.

The proposed LNG site has previously been used for grazing. The adjoining Curtis Island Environmental Management Precinct has been subject to grazing by cattle, feral horses and pigs resulting in degraded ecosystems (Coffey 2011).

Access to the LNG site is currently limited and would be restricted once the LNG construction commences.

The mainland TWAF options (i.e., TWAF 7 or TWAF 8) would be required when the Curtis Island camp is fully utilised. TWAF 7 is proposed to be located west of Gladstone City on the site of a former ash pond. TWAF 8 is proposed to be located on agricultural land at Targinie. The nearest sensitive receptors to TWAF 8 include two rural dwellings located approximately within one kilometre. Following construction, these sites would be reinstated for either their current use or other use consistent with the relevant land use policies.

The project is not expected to have long term impact on access to private property. However, during construction, access to private property may be temporarily disrupted in some locations due to the movement of heavy vehicles or equipment and works associated with the upgrading of roads and intersections. Given the temporary nature of these works, impacts are likely to be minimal and appropriately managed through consultation with property owners.

5.3. Amenity

During construction, impacts on local amenity would principally result from construction noise and dust and an increase in construction traffic on local roads, including heavy vehicles. In the longer term, potential impacts on amenity may result from visual impacts associated with the LNG Plant.

Modelling indicates that emissions from the project are likely to impact on Gladstone very infrequently (Katestone Environmental 2010). However, community concerns about existing air quality in the study area will mean that the community will be sensitive to any adverse changes, actual or perceived, to air quality from the project.

The project will impact on visual amenity from some locations in the study area including tourist lookouts, Port Curtis Islands, the water and the summit of Mount Larcom (AECOM 2011). However, the relative visual impact of the project would be

reduced by its proximity to other LNG plants on Curtis Island and the presence of existing heavy industrial development within the Gladstone region.

Increase noise from construction and operation may impact on the amenity of communities closest to the proposed works. Further community concerns were raised during consultation about potential noise impacts, particularly for residents at South End.

Noise modelling has identified that, with the implementation of appropriate acoustic treatments, noise levels during evening and night time periods at the nearest sensitive receptors would be below sleep disturbance criteria (Sonus, 2011). Vibration from the Project's construction or operation is not expected to impact on amenity of surrounding uses. Ongoing consultation and communication with residents nearest to the project will assist in mitigating potential impacts on amenity due to changes, either actual or perceived, in noise levels.

5.4. Housing and accommodation

The following section provides an overview of expected demand for housing in the study area during construction and operation.

Construction

During construction, the majority of workers would be accommodated in the construction camp on Curtis Island and, if required, the mainland TWAF. It is anticipated that the majority, if not all of these workers, will remain in the camps for the reasons stated in section 5.1.

Prior to the construction camp becoming operational, between 200 and 300 workers will be need to be accommodated on the mainland. Options that will be considered for the accommodation of these workers will include, residential properties, third party provided construction camp facilities or another form of accommodation facilitated by the project, depending on accommodation availability.

Arrow Energy and EPC staff will be accommodated outside of these construction camps. It has been estimated by Arrow Energy that 10% of the non local EPC staff will relocate to the study area with their families, with a further 40% of non local Arrow Energy staff also relocating to the study area with their families. The remainder of the non local EPC and Arrow Energy staff will be engaged as single status.

Based on the estimated local and non local workforce numbers provided in Table 5-1, Table 5-6 and Table 5-7 show that during construction there will be an additional housing demand of up to approximately 380 beds and 90 dwellings.

- **Table 5-6: Housing demand for singles – construction**

Worker type	Non local workers (No.)	Company facilitated housing (no.)
Construction workforce in construction camps	2,500	0
Feed gas pipeline, tunnel and dredging in construction camps or barges	215	0
EPC staff	332	299
Arrow Energy staff	135	81
Total extra accommodation demand	-	380 beds

- **Table 5-7: Housing demand for families – construction**

Worker type	Non local workers living within the community(no.)
Workers Families - EPC (10%)	33
Workers Families - Arrow Energy (40%)	54
Total extra accommodation demand	up to 90 houses

It is anticipated that the full 380 bed demand for singles housing will be met through the use of company facilitated communal housing. This housing demand will be met directly by the project, either through the development of purpose built housing or through agreements with third parties. It is not anticipated to result in any increased demand for existing dwellings.

The impact of the project on existing housing will be limited to the families that need to be housed within the community. During construction there will be a need to secure up to 90 dwellings in Gladstone for the project.

Operation

During operation, the project will generate limited housing demand. As outlined in section 5.1, approximately 295 workers are expected to relocate to the study area for the operation of train 1 and train 2 (Stage1) increasing to 400 with the operation trains 3 and 4 (Stage2).

Arrow has estimated that this will result in a demand for 175 beds and 130 houses during Stage1. In addition another 50 beds for single status will be required for the regular (six monthly) maintenance workforce.

It is anticipated that the full demand for 225 beds will be met through the use of company facilitated accommodation, either through the development of purpose built housing or through agreements with third party providers. This housing is expected to be provided outside the existing housing stock so as to minimise impact on the local housing market.

The periodic maintenance workforce of up to 350 people is expected to be accommodated in a combination of local housing and temporary accommodation where FIFO workers are utilised.

Impact on housing

There is currently insufficient housing stock to meet the forecast housing demand during construction and operation. It is unlikely that the private market will be able to generate sufficient housing stock in time for the construction stage with a current rental vacancy rate of 1.4% (REIQ 2011) and demand on housing from other preceding projects likely to contribute to a continued shortage of rental housing (REIQ 2011).

There are currently 4,000 uncompleted lots in Gladstone that can be utilised to meet the housing demand of the project. However, despite the number of projects already underway there is still a rental housing shortage. If this persists and the project places demand for 90 to 130 dwellings on the housing market it is likely to maintain the pressure on housing costs already increased by preceding projects.

Impact of increased rents and housing costs

Upon the commencement of the project, it is likely that there will have been increases in housing costs associated with LNG projects that are already underway in the study area. The project will likely sustain these high costs by placing additional demand on housing.

This will likely impact most on affordable rental housing access, resulting in a potential increase in housing stress for those households on low or fixed incomes[4] (i.e., those receiving government pensions and allowances as their principal source of income).

Prior to the construction stage, households vulnerable to increased housing costs will likely have already been forced out of the local private housing market. This will have placed increased pressure on alternative rental accommodation such as public housing or private rental housing in more affordable locations (e.g. Miriam Vale). This is also likely to have resulted in increased transport costs for these households due to longer commuting times and reduced access to existing social infrastructure and support networks.

While the project will not be the initial trigger for this impact, it will lengthen its duration.

People most vulnerable to increases in housing costs include those on low incomes such as young people, people receiving government pensions and allowances, lone

[4]Housing stress is defined as where a lower income households pay at least 30 per cent of their income on housing costs (AHURI 2007)

parent households and people employed in lower paid roles such as in retail or entry level positions.

Impacts on social housing

By sustaining the increased demand for private rentals, the project will also sustain a likely increased demand for public housing, resulting in lower turnover and longer waiting times.

House values

The study area is currently experiencing increased house prices in response to existing housing demand from other projects, with this expected to continue (REIQ 2011). The project is likely to maintain these high house prices during the construction stage. Existing investors will benefit from realised capital gains, but home buyers will find it more difficult to enter the housing market. Higher property prices may also lead to increased council rates, potentially impacting households with fixed incomes, who may own their dwelling but are income poor.

Short-term accommodation

It is anticipated that during construction and operation, some workers would seek temporary accommodation options, such as motels, cabins, caravans and other 'guest' accommodation.

During construction, the project will use temporary accommodation such as proposed independent workers villages to house some of the construction workforce. The peak demand for this will occur during the ramp up stage of the project while the pioneer camp is being established.

During operation, the workforce required for plant maintenance will vary with 50 workers required every six months for minor maintenance and 150 to 350 people required every 24 to 30 months for major maintenance.

Should existing temporary accommodation be utilised (e.g. hotels, motels, caravan parks) to house this workforce, minor maintenance works will place a small increased demand on temporary accommodation in the study area, equivalent to 0.08%[5] of the total nights stayed in Gladstone in the year ending 2010 (Tourism Queensland (2010). Major maintenance works will place a large demand on existing temporary accommodation equivalent to 0.5% of the total nights stayed during the year ending 2010.

The accommodation arrangements for this workforce are still to be determined but it is expected that these workers will be able to stay in workers camps being planned

[5]Assumes all 50 people stay in Gladstone for three weeks to undertake the maintenance.

by third parties. Should these camps be utilised there will be a negligible impact on the availability of existing temporary accommodation

If these camps cannot be used, the use of short term accommodation such as hotels, motels and caravan parks would provide a financial benefit for providers. However, non LNG businesses, which currently account 16.5% of nights stayed (Tourism Queensland 2010) may face higher costs and face increased difficulties accessing temporary accommodation, potential impacting on these businesses.

If hotels or motels are used this may impact on the ability of the tourist sector to meet demand, potentially impacting on tourists and visitors to the study area such as those visiting friends , family or attending functions such as weddings in the area.

5.5. Employment and training

This section describes impacts on employment and training from the construction and operation of the Project.

Increased employment

The project is expected to generate up to 3,715 direct construction jobs and up to 600 direct jobs during operation. Modelling undertaken for the EIS suggests that the project would result in a net increase of up to 3,450 full time equivalent (FTE) jobs in the study area during construction (AEC Group 2011), including both direct and indirect jobs.

Arrow Energy has identified that the local region has the potential to provide between 5% and 20% of the construction workforce, approximately 30% of the operations staff and 40% of the contractors required for operations.

During construction, it is expected that up to 633 workers will be locals, equivalent to 2.0% of the 2006 workforce. During operation, up to 200 workers (when all four trains are operating) would be locals.

During construction, the percentage of local employment will fluctuate according to the skills required and those available within the community. The workforce for the initial site works is expected to be approximately 50% local as the study area possess many of the civil construction skills required.

Balancing this, some of the later stages, involving more specialised skills, will likely have a very small proportion of local labour as local skills sets may not necessarily be sufficient to meet all the project's needs. This will result in the need for labour to be sourced outside the study area (CSQ, 2010).

The project will also provide opportunities for indirect employment through other employers who provide goods and services directly or who provide services to

workers and their families (i.e. retail, entertainment, etc). These jobs are expected to require a mixture of skills sets ranging from low skilled (e.g. cleaners and caterers) to high skilled workers (tradesmen or technicians). The creation of low and semi skilled employment, if supported by appropriate training such as work ready programs, will provide opportunities for the distribution of benefits associated with the project to vulnerable groups within the community.

Training opportunities

The construction and operation of the project will provide improved training opportunities for school leavers, people with lower skills and trainees.

Youth training opportunities

Arrow Energy proposes to establish a graduate program, vacation employment and school based training to provide opportunities for students and school leavers.

The graduate program will provide participants with opportunities to work in accounting/ finance, business/ commerce, engineering disciplines, environmental science, geoscience and information technology. Vacation employment will consist of twelve weeks' paid vacation employment for university students in geology, petroleum engineering, chemical engineering, mechanical engineering, civil engineering and finance. The school based training program will be provided in partnership with existing training providers to provide year 11 and 12 students with qualifications relevant to the LNG industry.

These training programs will provide increased opportunities for youth training and employment, a cohort that traditionally experiences higher rates of unemployment.

The project may also contribute to the existing skills shortage in the construction and LNG industry. Currently the construction and LNG industry is experiencing a shortage of suitably qualified training supervisors, which limits the number of apprentices and trainees that can be taken on (CSQ 2010). Opportunities offered by the project that attract experienced training supervisors from other industry sectors, may lead to longer term impacts on these sectors.

Other training opportunities

Additional training opportunities will be available for people working directly for Arrow Energy, such as:

- Executive and Management Development Programs.
- External Education Program.
- Vocational/Trade Training.
- Specialist Training.

5.6. Business opportunities

The project would present opportunities for businesses in the study area to supply goods and services to the project, such as:

- Catering/ food services.
- Transportation.
- Sub-contract construction skills.
- Accommodation services.

The Project is also likely to provide opportunities for new businesses to establish in the study area to support the construction and operation phases.

Increased demand on local employment may increase competition for existing labour resources as well as levels of skills shortages in some industries as skilled and semi skilled workers seek employment on the project. This would potentially disadvantage local businesses and limit the ability for some businesses to fully capitalise on opportunities offered by the Project.

Regional labour markets, due to their smaller size can be impacted by the absence of a small number of skilled personnel (Australian Government 2006). As such, the loss of skilled staff from some regional sectors to the Project may also affect service provision for communities within the study area, either increasing the cost of access to services or the ability to provide these services. This will particularly be the case in businesses reliant on tradespersons, such as mechanics, electricians or plumbers.

Increased competition for workers in the study area from the Project and other industrial developments, are also likely to lead to higher labour costs, potentially impacting on the viability of some local businesses or the ability for some businesses to attract or retain qualified local staff. An inability to attract local labour may mean some businesses need to source workers from outside of the study area. This may be limited by the ability of some workers to pay the higher living costs within the study area.

Some existing business activities that are reliant on areas near the Project (e.g. fishing and boating charters), will also be impacted by construction activities associated with the project, such as dredging or the construction of piers. This may require these businesses to find alternate locations, potentially impacting on business viability. Conversely, an increase in the permanent and transient local populations may increase demand for some recreational businesses such as fishing and boating charters, providing an economic benefit for these businesses.

5.7. Social and community infrastructure

An increase in the study area's permanent and transient populations during construction and operation is likely to impact on both social and community infrastructure through increased demand for services and facilities and changes in access to some recreational facilities.

Increased demand on educational services.

An increase in the number of children and young adults, who relocate to the study area with project workers, may increase demand for child care, kindergartens, primary and secondary schools and potentially TAFE and university.

Arrow Energy has estimated that 467 (380 on single status in comany faciliated communal accommodation, and 87 on family status living within the community) workers will relocate to the study area during construction with 87 of these bringing their families. This will result in an estimated 729 people (workers and families) entering the study area.

During operation, it is expected that between 175 and 280 workers would relocate to the study area with 123 to 196 of these bringing their families. This will result in an estimated increase of between 244 (trains 1 and 2) and 392 (all trains) dependent children or students in the study area.

While the public school system currently has capacity for an additional 300 to 450 students (APLNG 2010), this will likely be met or exceed by the cumulative demand placed on it by all projects. However, there are several years before the project will begin providing the education system with time to respond to the increased demand for places.

Child care facilities are currently in short supply and may not have sufficient places to meet the increased demand from project workers and their families.

Increased demand on social infrastructure and services (excluding recreation).

The construction camp will provide workers with a range of medical and other services, minimising the need for workers to access existing services and facilities in the study area. Further the proposed shifts and the single FIFO status of the entire Curtis Island workforce will also deter workers from staying in the area when off shift reducing the potential demand on existing services and facilities.

Workers and families living within the study area are expected to increase demand for services and facilities such as medical and emergency services, libraries, cultural facilities, community support and counselling services and entertainment venues.

Demand for these services from the project's workforce and their families, while likely to be moderate, would be in addition to demand from other projects currently under construction or planned for the study area. The cumulative increase in demand across all projects has the potential to be large.

High housing costs will also limit the ability of medical and other social infrastructure provider's to maintain staffing levels. High housing costs make it harder to attract staff and potentially result in the loss of lower paid staff from some service providers. This will limit the ability of the study area to service increasing demand and contribute to a shortage of entry level police, council officers, teachers and other workers.

This impact is likely to be constrained to the study area during the construction stage and will result in a reduction in access and availability for existing residents. Given there are several projects preceding the Arrow LNG Plant, it is likely that the study area will have already experienced this.

Volunteering

The study area, like any other community relies on volunteers to run many of the clubs and associations and to be involved in community life. However, there is a risk that during construction the project will result in reduced levels of volunteering.

This is most likely to occur where people leave employers where they are currently working a standard working week and move to longer shifts or engage in excessive overtime on the project. However, with some of the workforce housed locally they will have weekends off meaning that impacts on volunteering will be lessened.

5.8. Recreation

Water based recreation

During construction there will be a number of facilities constructed in the harbour, including jetties and material offloading facilities, as well as dredging activities. During construction, these areas will be inaccessible for fishing, boating or crabbing. Further, facilities such as the Calliope boat ramp may be temporarily unavailable.

In addition, increased shipping movements associated with ferries, barges and other vessels, both during construction and operation, will lead to a large increase in traffic congestion on the water which has the potential to impact recreational boat users.

There may also be a perceived safety risk associated with changed harbour conditions.

During operation there will be exclusion zones placed around jetties and LNG tankers, reducing the ability of boats to use the waters adjacent to Curtis Island. Arrow Energy has advised that the fixed safety zones will not impede the passage of recreational boats, including between South Passage Island and the terminal jetty on Curtis Island. The exclusion zones will also not include the main channels.

However, currently fishing and boating is occurring in some of the areas that will be impacted by the safety zones. Cumulatively with the other projects in the region, the placement of exclusion zones in the harbour is expected to have a minimal impact on existing recreational uses.

Land based recreation

The majority of the construction workforce will not have access to the study area when they are on shift and will use recreational facilities on the island.

Members of the workforce residing on the mainland and their families will use existing formal and informal recreational facilities, such as parks, sporting ovals, the swimming pool, cycle ways and walking tracks. In isolation, this is likely to have a small impact on these facilities and existing residents' enjoyment of them.

During operation, it is expected there will be increased demand for these facilities but with minimal impact. Conversely, the presence of an additional ongoing population will potentially support the creation of additional formal and informal recreational facilities, increasing the diversity of those currently available for the community.

5.9. Transport and access

The increase in traffic associated with the project, particularly when considered with other projects is likely to be of concern to the community. Increased truck and private traffic movements may increase the risk profile of some existing roads. The transport impact assessment (GTA 2011) has proposed mitigation measures to manage this risk.

Concerns about the safety of roads will negatively impact on existing residents enjoyment of the study area and in the extreme may lead to people being unwilling to travel to particular locations. This will impact more on vulnerable groups such as school children or the elderly who are more likely to travel on foot.

Some of the families who relocate to the study area are also likely to want to use public transport. This will lead to a small increase in demand for public transport, particularly where families have one car or where they need to commute to Gladstone City to access services or shop.

5.10. Community values

A number of community values were identified in section 4.5 but not all will be impacted either positively or negatively by the project. Those that will be are identified below.

Increased services

The population increase associated with the project and remaining projects may increase the overall range of services and retail opportunities the study area population can support. This is likely to be perceived as a benefit with people presently having to travel to Rockhampton or Brisbane for some services.

Health and safety

The majority of the construction workforce will be located on Curtis Island with a roster that will limit interaction with the community. Upon the completion of their shift, workers will be transported directly to the airport to meet a connecting flight to their point of origin. This will reduce the likelihood workers can engage in anti social behaviour.

During operation, the non-transient nature of the workforce will reduce the likelihood of antisocial behaviour.

While the risk posed by the LNG Plant to community safety is minimal, this is still likely to be of concern in both the construction and operational stages of the project. Cumulatively, the presence of up to four plants and the requisite shipping will likely increase the concern over the level of this risk.

Strain on workers and their families

The majority of the workforce will be FIFO and rostered on two or three week shifts. This is likely to place some stress on them and their relationships with friends and families in their home communities, which potentially could lead to increases in domestic violence (Western Australian Government 2006).

Income disparity

The project in isolation and cumulatively is likely to cause an increase in income disparity in the study area. Paired with increased housing costs this may lead to divisions between those who enjoy high wages and can afford good lifestyles and those on low or middle incomes. This may result in a reduction in community cohesion.

Management of environmental issues

The project will result in the clearing of part of Curtis Island and works within the harbour such as dredging. This is likely to be of concern to people within the study

area and potentially further afield, particularly if the works are seen to impact on dolphins, dugongs and fish; or important natural assets, such as sea grasses or mangroves. The community's sensitivity will be reduced by activities that will take place prior, such as the Port's dredging program and other LNG projects. Recognising that the study area is an industrial one, activities that balance industrial development with environmental protection, are likely to be well received.

Community concerns about the management of social issues

The community in the study area is concerned about the pressures on housing in the study area and the provision of social infrastructure. Any project that is perceived to worsen this is likely to create significant concern.

Of particular concern is the management of cumulative impacts, with limited discrimination between the four LNG proponents on Curtis Island. During the construction stage, the project will have to take a collaborative approach to managing cumulative impacts with other projects and stakeholders.

5.11. Indigenous people

The Indigenous community is vulnerable to changes in housing costs with over half of Indigenous households renting in 2006. Household incomes were also lower for Indigenous people in all towns and localities in the study area except Miriam Vale (which reported low median incomes for both Indigenous and non-Indigenous people).

The higher levels of unemployment experienced by the Indigenous community suggests there is a skills gap or other barrier to people securing employment, meaning they are less likely than the non-Indigenous community to benefit from increased job opportunities. Likewise, the higher unemployment rate would suggest that there may be fewer Indigenous businesses able to secure contracts on the project.

The project provides an opportunity for members of the Indigenous community to gain employment, as long as relevant training is provided. Cumulatively, all the projects are likely to present a number of employment opportunities which will be of disproportionate benefit to this small community. The project also presents an opportunity to encourage existing Indigenous businesses to secure contracts giving them the opportunity to expand and in turn reduce unemployment further in the Indigenous community. Further, the skills developed by Indigenous people will potentially be transferable to other projects leading to long term improvements in their employability.

One potential barrier that exists for the Indigenous community is discrimination or a lack of cultural awareness. This could potentially lead to Indigenous people being deterred from securing employment on the project.

5.12. Summary of positive and negative impacts before mitigation

The following table provides a summary of the impacts that have been identified as part of this assessment. Population growth and demographic change have not been included in this table as these are triggers for the positive and social impacts identified below. For an explanation of the ratings scale, refer to Appendix B.

- **Table 5-8: Summary of impacts**

Theme in the SIMP	Social impact	Description	Project phase	Nature	Extent (1 – 5)	Duration (1-5)	Severity (1-5)	Probability (1-5)	Significance (0-20 low 20 -35 moderate 35+ = high)
Workforce and Training	Increased local employment	During construction up to 633 workers will be local equivalent to 2.0% of the 2006 workforce. During operation up to 200 workers will be local.	Construction and operation	Positive	3	4	4	5	High (55)
Workforce and Training	Increased local training opportunities	The project will provide training opportunities for students through Arrow Energy's scholarship, vacation employment and school based training and Graduate programs. Employees working directly for Arrow Energy will also potentially be able to benefit from internal training, vocational/trade training and specialist training. Arrow Energy staff and contractors may take on apprentices and trainees providing opportunities for younger people.	Construction and operation	Positive	3	4	3	4	High (36)

Theme in the SIMP	Social impact	Description	Project phase	Nature	Extent (1 – 5)	Duration (1-5)	Severity (1-5)	Probability (1-5)	Significance (0-20 low 20 -35 moderate 35+ = high)
Workforce and training	Increased local employment opportunities with non LNG employers	The project will create additional positions in other businesses that service the project, expand to cater to the increased population or back fill positions. Continued increased patronage of existing hotels/ motels is likely to contribute to local employment and benefit the financial wellbeing of business operators in the hospitality industry.	Construction and operational	Positive	3	3	3	4	High (36)
Housing and Accommod-ation	Increased housing costs	The project will result in a small increase in demand for housing stock (90 during construction and 130 during operation) which will reduce the availability of exiting accommodation. This may be sufficient to sustain housing costs growth that had already occurred under previous projects	Construction and operation	Negative	2	4	3	5	High (45)
Indigenous community	Reduced housing affordability for Indigenous people	With lower incomes than the non Indigenous community, Indigenous people are more vulnerable to increased private rents	Construction and operation	Negative	2	4	3	5	High (45)
Local content and investment	Ability for local business to benefit from the additional	Existing businesses have the potential to provide goods and services directly to the project. While they will have already increased their staffing to do this for	Construction and Operation	Positive	3	4	2	4	High (36)

Theme in the SIMP	Social impact	Description	Project phase	Nature	Extent (1 – 5)	Duration (1-5)	Severity (1-5)	Probability (1-5)	Significance (0-20 low 20 -35 moderate 35+ = high)
	trade	other projects, the LNG Plant presents an opportunity to maintain or increase their workload. Some businesses ability to benefit from the project will be constrained due to an inability to compete on wages or higher living costs							
Recreation	Reduction in recreational opportunities	The project will have a limited impact on recreational boating and related activities in the harbour. In addition, workers and their families based on the mainland will place limited demand on formal and informal recreational facilities.	Construction and operation	Negative	2	4	2	4	Moderate (32)
Property and land use	Changes to land uses	Existing land uses at the TWAF and project site on Curtis Island will cease.	Construction and ongoing	Negative	1	4	1	5	Moderate (30)
Community Investment and wellbeing	Increased demand on existing social infrastructure and services	The small proportion of worker's living in the study area outside of construction camps and their families will place increased demand on social infrastructure and services (e.g. medical, educational).y	Construction and operation	Negative	2	2	2	4	Moderate (24)
Community values	Community concerns about the management of social issues	The project may create or amplify existing community concerns about the pressures on housing in the study area and the provision of social infrastructure and maintenance of exiting lifestyles.	Construction and operation	Negative	2	3	2	4	Moderate (28)

Theme in the SIMP	Social impact	Description	Project phase	Nature	Extent (1 – 5)	Duration (1-5)	Severity (1-5)	Probability (1-5)	Significance (0-20 low 20 -35 moderate 35+ = high)
Community values	Increased income inequality in the community	The project will contribute to an increased income disparity between people working in or for the LNG industry and those not. Significant increases in income disparity can be a contributing factor to a loss of community cohesion..	Construction and operation	Negative	2	3	2	4	Moderate (28)
Community health and safety	Strain on workers and their families	Shift work is perceived by some stakeholders to be a risk factor that may contribute to incidents of domestic violence. However, it is anticipated that the proposed Monday to Friday shift will mitigate the potential incidence of this risk. However, the FIFO, component of the workforce will be subject to two weeks on site, potentially placing a strain on their relationship with their families. It is commonly reported that another risk factor for domestic violence is financial stress, which can be exacerbated by cost of living increases.	Construction and ongoing	Negative	4	3	2	3	Moderate (27)
Indigenous community	Employment opportunities	The project is likely to result in employment opportunities for the Indigenous community to work directly or indirectly for the project or in filling other positions in the community.	Construction and operation	Positive	3	3	2	3	Moderate (24)

Theme in the SIMP	Social impact	Description	Project phase	Nature	Extent (1 – 5)	Duration (1-5)	Severity (1-5)	Probability (1-5)	Significance (0-20 low 20 -35 moderate 35+ = high)
Indigenous community	Business opportunities for Indigenous people	The project may be of benefit to Indigenous contractors or other businesses. These operators may take on more employees in response to business growth providing further benefit to the community.	Construction and operation	Positive	3	3	2	3	Moderate (24)
Community investment and wellbeing	Reduced availability of staff at existing social infrastructure	By placing limited pressure on housing stock, the project will place some pressure on affordable housing limiting the ability of entry level police, council officers, teachers and other workers to reside in the area.	Construction and operation	Negative	2	3	2	3	Moderate (21)
Community investment and wellbeing	Increased demand on formal and informal recreational facilities.	Workers and their families based on the mainland will place limited demand on formal and informal recreational facilities.	Construction and operation	Negative	2	3	2	3	Moderate (21)
Amenity	Visual Impact	The project will impact on existing visual amenity but this will be diminished by the presence of a number of other industrial facilities	Construction and operation	Negative	2	4	1	3	Moderate (21)
Amenity	Noise and vibration impacts	There will be increased noise levels, however it will not be sufficient to create sleep disturbance.	Construction and operation	Negative	2	4	1	3	Moderate (21)

Theme in the SIMP	Social impact	Description	Project phase	Nature	Extent (1 – 5)	Duration (1-5)	Severity (1-5)	Probability (1-5)	Significance (0-20 low 20 -35 moderate 35+ = high)
Community values	Balancing environmental concerns and industrial development	Clearing of part of Curtis Island and works within the harbour are likely to be of community concern. Sensitivity to this will be diminished by activities that will take place prior to this such as the port's dredging program and other LNG projects. Activities that balance industrial development with environmental protection are likely to be well received.	Construction and operation	Neutral	3	2	2	3	Moderate (21)
Community values	Increased services	Population increase associated with the project and cumulatively with all the projects is likely to lead to an increase in the overall range of services and retail opportunities that the study area's population can support.	Operation	Positive	2	4	1	3	Moderate (21)
Community values	Increases in the public risk as a result of increased traffic, people and the project.	There will potentially be an increase in the level of risk resulting from increased traffic movements. This increased risk will also extend to the harbour, with changed harbour conditions and congestion increasing the likelihood of accidents.	Construction and ongoing	Negative	2	4	5	2	Moderate (22)
Indigenous vommunity	Construction workforce not respecting Indigenous values	The construction workforce may not understand Indigenous values.	Construction and operation	Negative	2	3	2	3	Moderate (21)

Theme in the SIMP	Social impact	Description	Project phase	Nature	Extent (1 – 5)	Duration (1-5)	Severity (1-5)	Probability (1-5)	Significance (0-20 low 20 -35 moderate 35+ = high)
Amenity	Changes in air quality	The project will impact on air quality very infrequently. Infrequent change in air quality could be expected to be of concern to the community.	Construction	Negative	2	4	1	3	Moderate (21)
Housing and accommod-ation	Reduced availability of hotel/motel accommodation	High utilisation of temporary accommodation may impact on businesses or other users who will find it more difficult to access temporary accommodation	Construction	Negative	2	1	2	3	Low (18)
Community investment and wellbeing	Reduced level of volunteering and participation in community groups	Increases in the proportion of locals employed as shift workers will negatively impact on their ability to volunteer or participate in sporting or interest groups, or engage in normal social activities.	Construction and operation	Negative	2	2	2	3	Low (18)
Housing and Accommod-ation	Impact on property values	Increased demand for housing as a result of the LNG industry will increase property values; however, the Arrow LNG project following the early projects is likely to only sustain existing price increases. This will make it harder for first home buyers to purchase property but benefit those who are seeking to sell their dwellings.	Construction and operation	Neutral	2	3	1	3	Low (18)
Property and land use	Reduced access to private	There may be some temporary loss of access as a result of construction traffic or activities	Construction	Negative	2	2	1	3	Low (15)

Theme in the SIMP	Social impact	Description	Project phase	Nature	Extent (1 – 5)	Duration (1-5)	Severity (1-5)	Probability (1-5)	Significance (0-20 low 20 -35 moderate 35+ = high)
	property								
Community health and safety	Increased risk of anti social behaviour	The influx of a construction workforce will likely result in increased risk of alcohol related offences.	Construction and ongoing	Negative	2	3	2	2	Low (14)
Community health and safety	Perceived increased risk of alcohol / anti social related offences	The influx of a construction workforce will likely be perceived to result in an increased risk of alcohol related offences or crime/anti-social behaviour in the study area.	Construction and ongoing	Negative	2	2	2	2	Low (12)

6. Avoidance, mitigation and management measures

The follow table provides a high level summary of the avoidance, mitigation and management measures that will be used to address the positive and negative impacts identified in section 5. Full details of the approaches to managing and monitoring impacts are provided in the Social Impact Management Plan (SIMP) which accompanies this SIA.

The SIMP is a living document subject revision. As such the mitigation measures below may differ from those contained within the finalised SIMP or future iterations of it.

- **Table 6-1: Avoidance, mitigation and management measures**

Impact category	Summary mitigation measures
Property and land use	Consult with directly impacted land owners.
Amenity	Communicate details on how visual, noise, vibration and air quality impacts are being managed on the Arrow Energy website.
Housing and accommodation	Development of a housing strategy. Provision of accommodation advice services for workers and their families. Assist state government bodies charged with providing affordable housing. Assist housing providers with Indigenous housing
Employment and training	Develop a workforce and training plan Continue to implement equal opportunity to maximise the benefit for groups underrepresented in the resource industry, e.g. women or Indigenous people. Continue to provide workplace traineeships and apprenticeships. Encourage contractors to recruit and retain apprentices or trainees. Continue to provide training to students and school leavers. Work with training providers to deliver work readiness and skills development training programs to the unskilled or under skilled people.
Business opportunities	Develop a Local Industry Participation Plan. Source local goods and services where possible. Participate in existing programs that provide technical assistance and briefings to local and regional businesses about opportunities and requirements.
Social and community infrastructure	Consider opportunities to work government and other with stakeholders to identify projects that can be funded to directly offset the anticipated additional impact the project workforce will have on these during construction and operation. Work with government departments responsible for educational, health and other social infrastructure to assist with planning for the workforce
Recreation	Minimise any ongoing restrictions on recreational infrastructure during the operation of the project. Where recreational activities could be impacted such as during dredging, the community will be informed in advance. Ensure restrictions on recreational activities apply to project staff as well as residents. Ensure the construction camp has sufficient social and recreational facilities.
Transport and access	Details of mitigation and traffic management plans will be available to the public through the Arrow Energy website.

Community values	Implement a Code of Conduct and 'drug and alcohol' policies for project employees based on Arrow Energy's current code and policies. Explore staggered rostering options with other proponents to avoid staff from all LNG projects being in Gladstone simultaneously. Provide non local employees with a workers induction and welcome kit which includes a statement of community expectations for new arrivals
Indigenous people	Develop an Indigenous engagement strategy to address recruitment and retention strategies specific to Indigenous Australians. Implement a cultural awareness program for construction and operational staff and contractors. For underemployed or unemployed Indigenous people, identify apprenticeships or traineeships that could be made available.. Quarantine roles for Indigenous participants in work ready programs. Appoint an officer responsible for Indigenous affairs. Where appropriate provide assistance to the traditional owners with developing their businesses to meet project needs.

7. Residual impacts

The SIMP contains the detailed mitigation measures that will be utilised within the project. As a living document, the SIMP aims to address all positive and negative social impacts associated with the project.

Allowing for the implementation of the mitigation measures proposed in the SIMP, this section provides a summary of the remaining positive and negative impacts as well as an assessment of their significance.

All of the highly significant residual social impacts were positive and include the creation of employment and training as well as business opportunities. There were no highly significant residual negative impacts identified.

The table below provides a summary of the likely residual impacts once the measures in the SIMP have been implemented.

Table 7-1: Residual impacts

Impact category	Residual impact	Nature	Significance
Property and land use	The project site will not be available for alternative land uses for the life of the project.	Neutral	Moderate
Amenity	Prior to the operation of the plant there may be some concerns about the impact it will have on amenity.	Negative	Low
Housing and accommodation	Previous increases in housing costs will be sustained during the initial operation period.	Negative	Moderate
	There will be increased utilisation of temporary accommodation if alternative third party provided construction camps can be provided at the ramp up period of construction.	Neutral	Low
	The availability of affordable housing will increase through support provided by Arrow Energy.	Positive	Moderate
Employment and training	Up to 633 positions during the peak construction period will be filled by local workers. Up to 200 positions will be filled by local workers during operation.	Positive	High
	Additional employment will be created through roles in contracting companies other businesses that provide goods and services to the project.	Positive	High
	Additional training opportunities will be made available to the local community	Positive	Moderate
Business opportunities	Local businesses will have the opportunity to bid on project components.	Positive	High
	There will be continued high staff turnover at some local businesses during construction.	Negative	Moderate
	If temporary construction camps can't be used during the initial ramp up period of the project, the reduced availability of temporary accommodation (hotels and motels) may impact on the tourism industry as well as other users of temporary accommodation.	Negative	Low

Impact category	Residual impact	Nature	Significance
Social and community infrastructure	There will be a small increase in the utilisation of social and community infrastructure during construction and a moderate increase during operation.	Neutral	Moderate
Recreation	There will be a small reduction in water based recreational opportunities with key areas uncompromised.	Negative	Moderate
Transport and access	The will be a diminished level of community concern over construction traffic.	Negative	Low
Community values	There will likely still be limited concerns about the safety of the industry during construction and how environmental impacts will be managed.	Negative	Low
Indigenous people	There will be improved employment outcomes in the Indigenous community.	Positive	Moderate
	There will be the opportunity for Indigenous businesses to benefit, improving outcomes for the Indigenous community as a whole	Positive	Moderate

8. Cumulative impacts

This section provides a high level assessment of the cumulative social impacts of the project with other major industrial projects currently under construction or planned for the study area. Projects considered for this cumulative assessment are outlined in Table 8-1 and shown in Appendix C.

Table 8-1: Projects considered in the cumulative impact assessment

Achieved FID at commencement of the EIS	Planned at commencement of the EIS
▪ Gladstone LNG Project ▪ Queensland Curtis LNG Project (QCLNG) ▪ Yarwun Alumina Refinery Expansion Project	▪ Australia Pacific LNG Project ▪ Western Basin Strategic Dredging and Disposal Project ▪ Fishermans Landing Northern Expansion Project ▪ Arrow Surat Pipeline Project (formerly Surat Gladstone Pipeline Project) ▪ Central Queensland Pipeline Project ▪ Wiggins Island Coal Terminal Project ▪ Gladstone Pacific Nickel Refinery ▪ Gladstone Steel Making Facility ▪ Moura Link Aldoga Rail Project ▪ Gladstone-Fitzroy Pipeline Project ▪ Hummock Hill Island Community Project. ▪ Boyne Island Aluminium Smelter Extension of Reduction Lines Project ▪ Fisherman's Landing Gladstone LNG

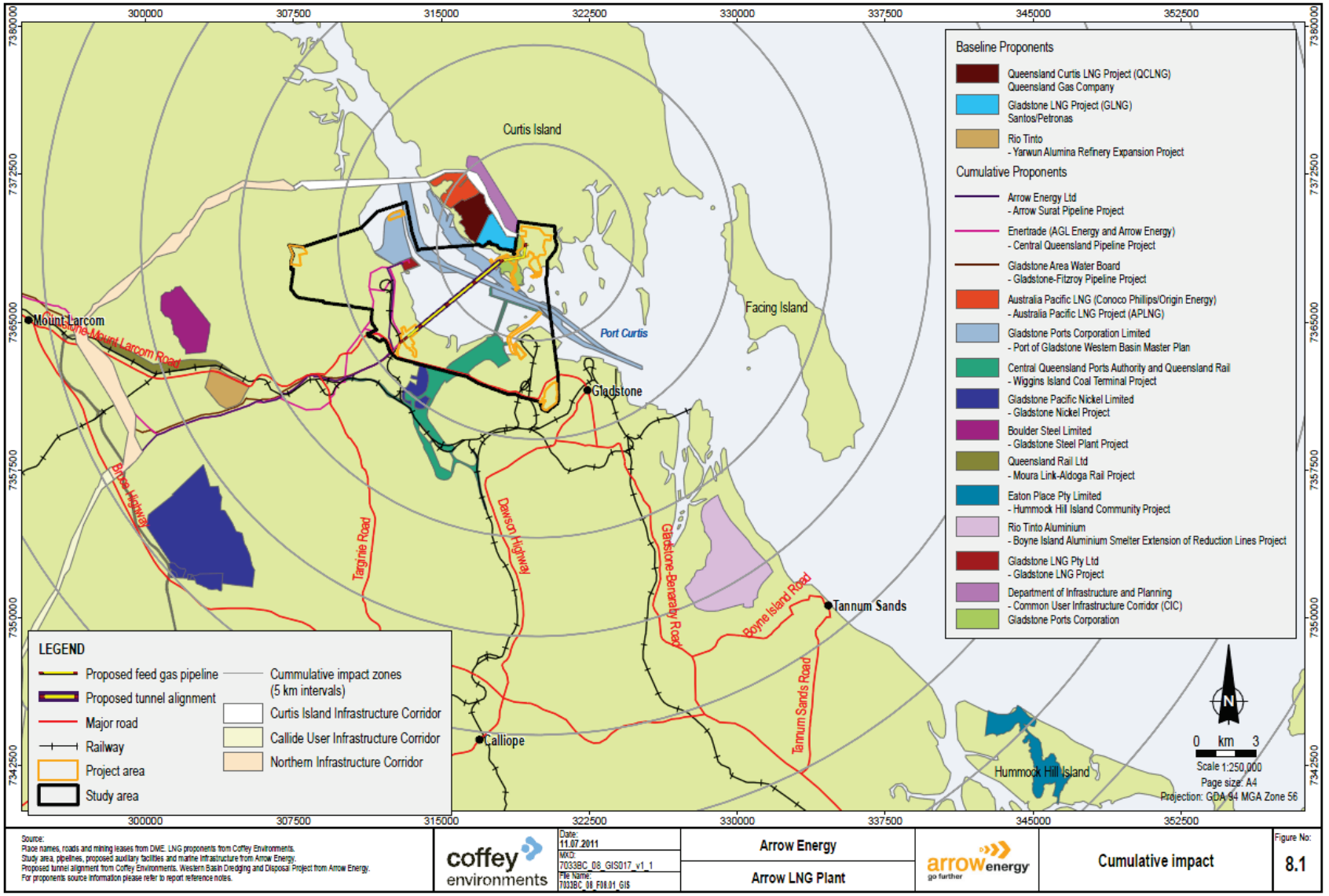
This assessment has considered potential impacts of the above project's construction and operation, particularly focussing on:

- The construction and operations workforces of each project, including peak workforces and the timeframes of each project phase
- Proposed worker accommodation for each project, including the location and size of proposed accommodation camps and FIFO/DIDO workforce arrangements.

Information on the workforce, proposed schedule and accommodation arrangements of projects in the study area has been gathered from existing publicly available information, such as EISs and project websites.

For many of these projects, the scheduled start dates published in EIS or other documents have not corresponded with actual start dates. As such the workforce projections contained in this chapter may be subject to deferment, significantly changing the date of the peak workforce.

Mitigation of identified cumulative impacts has been identified in the social impact management plan being prepared for the project.



■ **Figure 8-1: Arrow LNG plant cumulative impact**

8.1. Cumulative workforce projections

Projects that have received FID

The cumulative construction workforce of projects that achieved FID on commencement of this assessment is expected to peak in 2011, with a second peak occurring in 2017. Based on the current construction schedule for the Arrow LNG Plant, the construction of trains 1 and 2 will not contribute to the initial cumulative construction peak but would comprise approximately 58.4% of combined workforce in the 2017 peak if these projects proceed as per schedule (Figures 8-2).

The operational workforce for the Arrow LNG Plant is expected to comprise approximately 13% to 14% of the combined operational workforces of major projects in the study area.

All planned projects

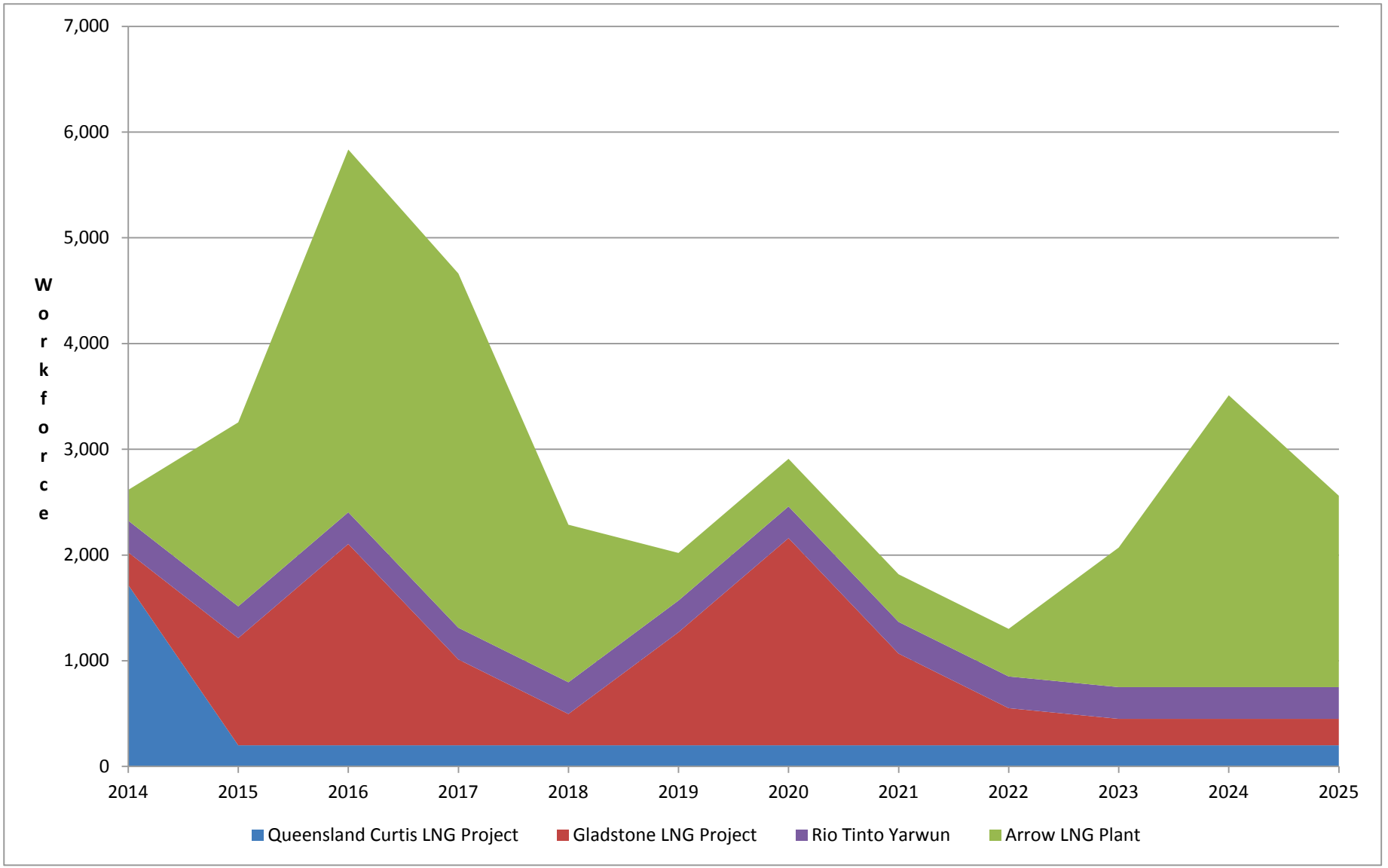
There are significantly more projects planned for the study area than have received FID, with many planned to have begun in 2011. Figure 8-3 shows that should these have proceeded as planned, this would have resulted in a cumulative workforce peak of approximately 14,000 workers in 2016 but this is very unlikely to occur. Several of these projects have been delayed or will not proceed, reducing the cumulative workforce growth.

Accommodation

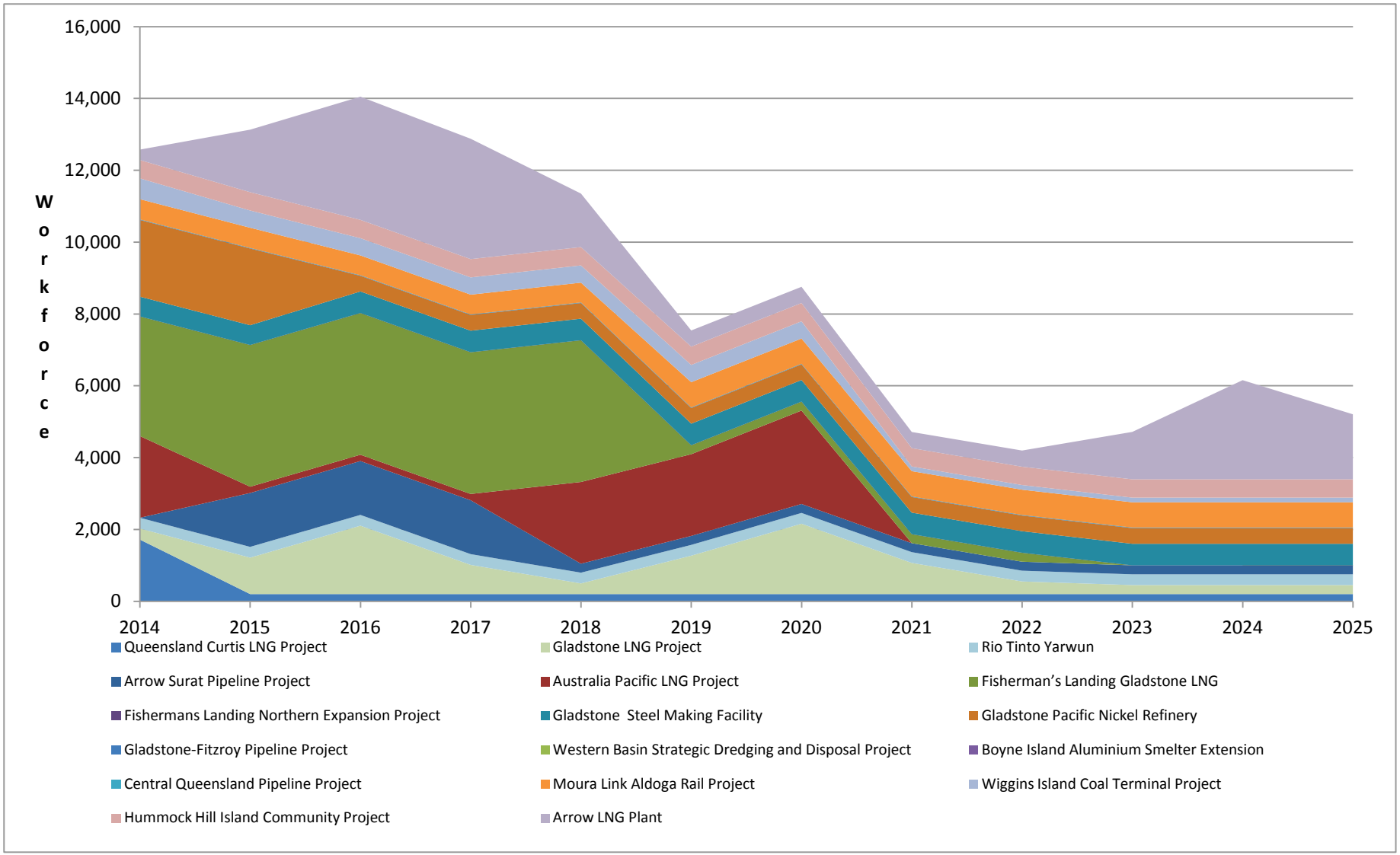
Many proponents have prioritised the use of local labour but the cumulative scale of the required workforce will mean a large proportion of workers will need to be sourced outside the study area on a FIFO or DIDO basis during the construction phase.

Four projects have identified Curtis Island as the preferred location for their accommodation facilities, including:

- Australia Pacific LNG Project (peak of approximately 2,000 construction workers and 325 operations workers).
- Fisherman's Landing LNG (peak of approximately 1,800 construction workers and 250 operations workers).
- Queensland Curtis LNG Project (peak of approximately 1,500 construction workers and 200 operations workers).
- Gladstone LNG Project (peak of approximately 3,000 construction workers and 250 operations workers).



- **Figure 8-2: Projected cumulative workforce 2011 to 2025 (includes Arrow LNG plant with all projects that have received FID)**



■ **Figure 8-3: Cumulative workforce projections 2007 – 2025 (includes Arrow LNG plant with all planned projects**

8.2. Housing and accommodation

Projects that have received FID

Projects that achieved FID prior to the commencement of this EIS would increase demand for available housing stock. Without the supply of additional housing, this would likely exhaust all current and proposed housing stock provided by the private market. However, this will occur prior to the construction of the Arrow LNG Plant.

All planned projects

When all planned projects are considered, demand for housing is likely to exhaust existing housing stock prior to the construction of the Arrow LNG Plant. The highest demand is likely to be experienced over the three years prior to 2014. With the commencement of construction for the Arrow LNG Plant, demand for housing from other projects is expected to have eased slightly and will plateau for the duration of the construction phase. Following construction, demand for housing is likely to further decline.

8.3. Employment and training

Projects that have received FID

Cumulatively, there will be a large increase in peak local employment. During the peak construction of the Arrow LNG Plant, the combined workforce with all projects that have received FID would be 5,834 workers.

Assuming 20% cumulative local employment, approximately 1,200 local workers will employed at the peak of the construction phase.

During operation a total of 1,500 workers will be required, of which, based on 20% local employment, approximately 300 would be local workers.

All planned projects

The cumulative workforce during the peak construction period of the Arrow LNG Plant will be 14,800 people. Assuming local employment of 20%, this would employ a total of approximately 3,000 local workers. It is unlikely, based on the size of the local labour force, that a pool of available labour would exist to meet this need.

The combined construction period of all of these projects will also likely provide a source of construction related employment to at least 2025.

Cumulatively during operation, 5,000 positions will be created. Allowing for 20% local employment, this will create 1,000 positions for local workers.

8.4. Social and community infrastructure

Cumulatively there will be an increase in the number of families in the study area as a percentage of workers relocate to the study area with their spouses and children. This will increase demand for a range of community services and facilities, including child care, education, health and medical services, family support services and cultural and entertainment facilities.

While there is capacity in the existing school system to cater for some growth in population, ongoing consultation with Education Queensland will be required to ensure that Education Queensland's future planning aligns with expected demand.

An influx in population is also expected to increase demand for health and medical services, including public hospital services and GPs. Difficulties in accessing local GP services is likely to result in increasing numbers of people presenting to the emergency department of Gladstone Hospital for minor health and medical issues.

Indirect effects on community services and facilities are also likely to occur with higher living costs making it increasingly difficult for some services to attract and retain staff. Without appropriate planning, this may lead to reduced access to these services for existing users, potentially requiring people to access some services such as GP's or maternal health outside of the study area. This may extend the cumulative impacts of these projects to residents of other regional centres such as Rockhampton.

8.5. Recreation

Increased development activity associated with the construction of the approved and planned LNG plants is expected to impact on water based activities such as boating and fishing. During construction, works at Curtis Island will result in multiple exclusions zones affecting marine and recreational traffic.

Increased vessel traffic for the LNG projects will result in increased congestion and potential safety impacts, impacting on the community's use and enjoyment of the marine environment in the Gladstone port area.

Increased population growth and subsequent demand for water based recreation is also likely to impact on the use and access to the harbour and waterways. Concerns were

raised during the SIA consultation that increased use of boat ramp facilities is likely to cause congestion.

Increased population growth is also expected to increase demand for other formal and informal recreational facilities, such as pools, tennis courts, squash courts, gyms, indoor sports, parks and bikeways.

8.6. Transport and access

Cumulatively with other projects planned and underway in the study area, there is the potential for a large increase in construction traffic. Large increases in construction traffic will likely increase the actual and perceived risk of travelling on impacted roads. This may lead to some community severance as people avoid impacted roads.

8.7. Summary of cumulative impacts

Should all projects that have received FID prior to the SIA proceed as scheduled, there will likely be cumulative impacts on accommodation, social infrastructure and recreation. However, most of the cumulative impacts will be felt prior to the construction stage of the Arrow LNG Plant, with the project contributing only partially to these. These impacts will need to be monitored and addressed in a collaborative fashion by proponents to reduce the potential scope and severity of each, while maximising positive impacts associated with employment and training.

Should all planned projects go ahead, it will be very difficult to address the cumulative impacts generated. However, this is unlikely to occur as the majority of these projects have not begun as scheduled suggesting that some at least are unlikely to proceed.

9. Conclusion

The impacts associated with the project are highly influenced by the timetable of other projects already underway with this project. This has resulted in the cumulative impacts such as those associated with amenity being diminished while the potential cumulative impact of others has been increased.

Allowing for this, the project is likely to have a range of positive and negative social impacts within the study area. The key positive impacts include:

- Increased local employment.
- Increased local training opportunities.
- The ability for local business to benefit from additional trade.
- Employment and business opportunities for Indigenous people.

While without mitigation key negative impacts include:

- Increased housing costs.
- Reduction in recreational opportunities.
- Limited increased demand on existing social infrastructure and services.
- Community concerns about the management of social issues and other perceived impacts associated with the project.
- Increased demand on formal and informal recreational facilities.

The Arrow LNG Plant's construction stage will begin following the peak construction period of a number of other LNG projects in the region. This timing will minimise some of the impacts and reduce the cumulative implications of others. However, some impacts will need to be addressed cumulatively with other proponents and government, including:

- Housing and accommodation.
- Employment and training opportunities.
- The impact on social and community infrastructure.
- Recreation.

To address direct and cumulative impacts, the SIMP has been developed in parallel with this assessment. It will assist Arrow Energy, state and local government as well as other project partners in protecting the local community from any adverse impacts while maximising the benefits associated with the project.

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Appendix A Terms of reference table

- **Table 10-1 Terms of Reference Cross Reference Table for the Social Impact Assessment Technical Study**

Section	EIS requirement	Technical Study Name	Technical specialist report section
4.1.1 Social and cultural area	The SIA should define the project's social and cultural area of influence, including the local, district, regional and state level as relevant, taking into account: ▪ the potential for social and cultural impacts to occur ▪ the location of other relevant proposals or projects ▪ the location and types of physical and social infrastructure, settlement and land use patterns ▪ the social values that might be affected by the project (e.g. including integrity of social conditions, visual amenity and liveability, social harmony and wellbeing, and sense of community) ▪ Indigenous social and cultural characteristics such as native title rights and interests and cultural heritage.		Section 1.3
4.1.2 Community engagement	This section of the SIA should detail the community engagement processes used to conduct open and transparent dialogue with stakeholders. This dialogue should include the project's planning and design stages and future operations including affected local and state authorities. Engagement processes will involve consideration of social and cultural factors, customs and values and relevant consideration of linkages between environmental, economic, and social impact issues.		Section 2
4.1.3 Social baseline study	Major population trends/changes that may be occurring irrespective of the project		Section 4.2
	Total population (the total enumerated population for the social and cultural area and the full time equivalent (FTE) transient population), 18 years and older		Section 4.2
	Estimates of population growth and population forecasts resulting from the proposal		Section 4.2
	Family structures		Section 4.2

Section	EIS requirement	Technical Study Name	Technical specialist report section
	Age and gender distributions		Section 4.2
	Education, including schooling levels		Section 4.2
	Health and wellbeing measures		Section 4.2
	Cultural and ethnic characteristics		Section 4.2
	The Indigenous population including age and gender		Section 4.2
	Income including personal and household		Section 4.2
	Labour force by occupation and industry		Section 4.2
	Housing costs (monthly housing repayments (percent of dwellings in each category), and weekly rent (percent dwellings in each category), housing tenure type and landlord type, household and family type Housing availability and affordability: the rental market (size, vacancy rate, seasonal variations, weekly rent by percentage dwellings in each category); the availability and typical costs of housing for purchase, monthly housing repayments by percentage dwellings in each category; and the availability of social housing		Section 4.2, 4.4
	Disability prevalence		Section 4.2
	The social and economic index for areas, index of disadvantage—score and relative ranking crime, including domestic violence		Section 4.7
	The social infrastructure including community and civic facilities, services and networks		Section 4.3
	Settlement patterns including the names, locations, size, history and cultural aspects of settlement in the social and cultural area		Section 4.1, 4.2, 4.4
	The identity, values, lifestyles, vitality, characteristics and aspirations of communities in the social and cultural area, including Indigenous communities		Section 4.5 and 4.6
	Land use and land ownership patterns including: ▪ rural properties, farms, croplands and grazing areas including on-farm activities near the proposed activities ▪ the number of properties directly affected by the project ▪ the number of families directly and indirectly affected by the project including Indigenous traditional owners and their families, property		Land use and planning report

Section	EIS requirement	Technical Study Name	Technical specialist report section
	owners, and families of workers either living on the property or workers where the property is their primary employment ▪ use of the social and cultural area for forestry, fishing, recreation, business and industry, tourism, aquaculture, and Indigenous cultural use of flora and fauna.		
4.1.4 Workforce profile	The number of personnel to be employed, the skills base of the required workforce and the likely sources (i.e. local, regional or overseas) for the workforce during the construction and operational phases for each component of the project		Section 1.4
	The estimated number of people to be employed during construction and operation, and arrangements for their transport to and from the project areas, including proposed use of regional or charter air services		Section 1.4
	Estimates should be provided according to occupational groupings and variations in the workforce numbers for the duration of the project and show anticipated peaks in worker numbers during the construction period.		Section 1.4
	The SIA should provide an outline of recruitment schedules and policies for recruitment of workers, addressing recruitment of local and non-local workers including Indigenous workers and people with a disability.		SIMP. Section 1.4, section 6
	If re-locatable camp sites are to be used to accommodate the workforce, details on the number, size, location (shown on a map), management, proximity to the construction site, and typical facilities for these sites should be provided. The duration and any variations in workforce numbers within the proposed camp should also be provided. Information should outline any local government or other regulatory approvals required for establishment and operation of such camps, including building, health and safety and waste disposal purposes.		Section 1.2
	The section should provide information in relation to the location of other major projects or proposals under study within the social and cultural area together with workforce numbers.		Section 8. Appendix C
	Describe and summarise outcomes of community engagement processes including the likely response of the affected communities, including Indigenous		Section 2, JTAA's consultation

Section	EIS requirement	Technical Study Name	Technical specialist report section
	people		report
Direct, indirect and secondary impacts from any existing projects and the proposed project	Key population/ demographic shifts; disruptions to existing lifestyles, the health and social wellbeing of families and communities; social dysfunction including alcohol and drugs, crime, violence, and social or cultural disruption due to population influx		Sections 5.1, 5.7, 5.8, 5.10 and 5.4,
	The needs of vulnerable groups including women, children and young people, the aged and people with a disability		Section 5.4, 5.5
	Indigenous people including cultural property issues		Cultural heritage report
	Local, regional and state labour markets, with regard to the source of the workforce. This information is to be presented according to occupational groupings of the workforce. In relation to the source of the workforce, information is required as to whether the proponent, and/or contractors, is likely to employ locally or through other means and whether there are initiatives for local employment business opportunities		Sections 1.4, 5.5 and 8
	Proposed new skills and training related to the project including the occupational skill groups required and potential skill shortages anticipated		Section 5.5, SIMP
	Comment on how much service revenue and work from the project would be likely to flow to the project's social and cultural area		microeconomic study
	Impacts of construction and operational workforces, their families, and associated contractors on housing and accommodation availability and affordability, land use and land availability. The capability of the existing housing and rental accommodation, to meet any additional demands created by the project is to be discussed including direct impacts on Indigenous people.		Section 5.4
	The SIA will include an evaluation of the potential cumulative social impacts resulting from the project including an estimation of the overall size, significance and likelihood of those impacts. Cumulative impacts in this context is defined as the additional impacts on population, workforce, accommodation, housing, and use of community infrastructure and services, from the project, and		Section 8

Section	EIS requirement	Technical Study Name	Technical specialist report section
	other proposals for resource development projects in the area which are publicly known or communicated by DIP, if they overlap the proposed project in the same time frame as its construction period.		
Mitigation measures and management strategies	Mitigation measures and management strategies		Section 6 and the SIMP

Appendix B Impact assessment method

Identified issues and impacts were rated and ranked according the methodology outlined below. Particular consideration was accorded to the nature, duration, extent, severity and likelihood of each. This allowed Arrow Energy to calculate an overall significance rating of: low, medium, high or very high according to the formulas below.

Consequence = Extent + Duration + Severity

Significance = Consequence x Probability

Nature	Description
Positive	Impacts have a positive or uplifting effect on the project-affected community and stakeholders. The quality of life of affected individuals, households or the community is improved.
Negative	Impacts have a negative or oppressive effect on the project-affected community and stakeholders. The quality of life of affected individuals, households or the community is diminished.
Neutral	Impacts are neither positive nor negative in nature and have no meaningful effect on project-affected communities and stakeholders.

Extent	Description
5	International scale
4	National scale
3	Regional scale (substantially beyond site boundaries)
2	Areas adjacent to the project site (local)
1	Site-specific

Duration	Description
5	Permanent / irreversible (more than 50 years)
4	Long-term (25 – 50 years)
3	Medium-term (5 – 25 years)
2	Short-medium term (1 – 5 years)

1	Short-term (less than 1 year)

Severity	Description
5 Very High	• Significant loss of human, social, financial or built capital • Significant enhancement of human, social, financial or built capital
4 High	• Large loss of human, social, financial or built capital • Large enhancement of human, social, financial or built capital
3 Medium	• Moderate loss of human, social, financial or built capital • Moderate enhancement of human, social, financial or built capital
2 Low	• Limited loss of human, social, financial or built capital • Limited enhancement of human, social, financial or built capital
1 Negligible	• Negligible loss of human, social, financial or built capital • Negligible enhancement of human, social, financial or built capital

Probability	Description
5	Definite (>90% chance)
4	Probable (50 - 90% chance)
3	Possible (10 – 50% chance)
2	Unlikely (<10% chance)
1	Impossible

Appendix C Other projects in the study area

- **Table 10-2: Baseline cumulative scenario**

Name of Project	Proponent	Construction			Operation			Accommodation Strategy	Accommodation Camp Location (if applicable)
		Peak W/Force Numbers	Timeframe	Targeted % Local W/Force	Peak W/Force Numbers	Timeframe	Targeted % Local W/Force		
Gladstone LNG Project	Gladstone LNG Pty Ltd	Train 1: 3,000	2011-2013	Undefined	Train 1: 140	2013	Undefined	A maximum 2,000-person capacity accommodation facility for construction workers	Curtis Island
		Train 2: 1,800	2014-2017		Train 2: 190	2017			
		Train 3: 1,800	2018-2021		Train 3: 250	2021			
		Train 2: 1,848	2014-2018						
		Train 3: 1,848	2014-2018						
Queensland Curtis LNG Project (QCLNG)	Queensland Gas Company Ltd	Early works – 1,517	2010-2014	At least 50%	200	2012	At least 50%	Workers camps for non-local employees (approximately 1,200 person camp)	Preferred option on Curtis Island
Yarwun Alumina Refinery Expansion Project	Rio Tinto	2500	2007- 2011	Undefined	250	2011	Undefined	Local staff and a mixture of private rentals as well as hotels / motels	-

Sources: Publically available EIS documents and proponents' website.

- **Table 10-3: Workforce and accommodation details – cumulative impact assessment**[6]

Name of Project	Proponent	Construction			Operation			Accommodation Strategy	Accommodation Camp Location (if applicable)
		Peak W/Force Numbers	Timeframe	Targeted % Local W/Force	Peak W/Force Numbers	Timeframe	Targeted % Local W/Force		
Australia Pacific LNG Project	Conoco Phillips and Origin Energy	Train 1 and 2: 2,100	2011-2014	20%	175	2014-2020	Dependent on available skills and experience.	Non-local workers accommodated in a temporary accommodation facility.	Curtis Island
		Train 3 and 4: 2,100	2018-2020	20%	325	2020			
Western Basin Strategic Dredging and Disposal Project	Gladstone Ports Corporation Limited	300	2010- 2012	80%	No operational workforce	Not applicable	Not applicable	Use of existing commercial accommodation	-
Fishermans Landing Northern Expansion Project	Gladstone Ports Corporation Limited	50	2011-2012	Utilise existing workforce	No operational workforce	Not applicable	Not applicable	Not applicable	-
Arrow Surat Pipeline Project (formerly Surat Gladstone Pipeline	Arrow Energy Ltd	1,500	2015-2017	Undefined	250	40 years from 2017	Undefined	Temporary camps.	Near the pipeline route on neighbouring rural properties.

[6] Workforce estimates and timeframes are based on the latest data available within the public domain, and do not account for delays in Final Investment Decision or project approvals.

Project)									
Central Queensland Pipeline Project	Enertrade (AGL Energy and Arrow Energy)	250	2010- 2012	Undefined	8	2012	Undefined	Use of construction camps for non-local workers	Camp approximately 70 km from Moranbah Camp at Stanwell
Wiggins Island Coal Terminal Project	Central Queensland Ports Authority and Queensland Rail	Stage 1: 650	2007–2010	67%	130	2013 onwards	67%	Use of Calliope Workers Accommodation Village from June 2011. Use of available local accommodation for other requirements.	Calliope
		Stage 2: 450	2013–2015						
		Stage 3: 350	2015-2020						
Gladstone Pacific Nickel Refinery	Gladstone Pacific Nickel Ltd.	Stage 1 - 2,600	2009-2012	Undefined	Stage 1 – 385	Mid-2010	Undefined	Housing strategy under development.	Housing strategy under development.
		Stage 2 – 1,750	2013-2015		Stage 2 - 40-50	2015			
Gladstone Steel Making Facility	Boulder Steel Limited	Stage 1 - 1,500	2011-2012	Undefined-	Stage 1 – 550	2012 onwards	Undefined	Temporary construction camp for non-local workers. Attempt to source operational positions locally to minimise need for accommodation camp over the longer term.	Under investigation
		Stage 2 – 1,500	2011-2012		Stage 2 – 600	Undefined			
Moura Link Aldoga Rail	Queensland Rail Ltd.	235	2010- 2012	Undefined	252	Late 2010	Undefined	Use of accommodation	Moura
					400	2012–2013			

Project					561 702	2014–2015 2019 and beyond		village facility during construction. During operations, some accommodation will be sourced locally in Calliope where available	
Gladstone-Fitzroy Pipeline Project	Gladstone Area Water Board	200	2010-2013	40 % full time staff 50% contractors	Less than 10	2013	40 % full time staff 50% contractors	Secure rental properties, mostly in Rockhampton, where possible	-
Hummock Hill Island Community Project	Eaton Place Pty Ltd.	320 people	2008-2023	Undefined	190	2008-2035	All sourced locally	Use of tourist accommodation such as motels, apartments and guest houses for short-term construction and operation workers to the degree possible. Will prepare an accommodation management strategy. Operation	Undefined
Boyne Island Aluminium Smelter Extension of Reduction Lines Project	Rio Tinto Aluminium	450	2009-2012	Undefined	No operational workforce	2012	Not applicable	Use of existing Boyne Island workers accommodation.	Boyne Island Project site

Gladstone LNG Project	Gladstone LNG Pty Ltd	Train 1: 3,000	2011-2013	Undefined	Train 1: 140	2013	Undefined	A maximum 2,000-person capacity accommodation facility for construction workers	Curtis Island
		Train 2: 1,800	2014-2017		Train 2: 190	2017			
		Train 3: 1,800	2018-2021		Train 3: 250	2021			
Fisherman's Landing Gladstone LNG	Gladstone LNG Pty Ltd	Train 1: 3,080	2010-2014	35%	250	2014-2022	40%	A maximum 2,000-person capacity accommodation facility for construction workers	Curtis Island
		Train 2: 1,848	2014-2018						
		Train 3: 1,848	2014-2018						
Queensland Curtis LNG Project (QCLNG)	Queensland Gas Company Ltd	Early works – 1,517	2010-2014	At least 50%	200	2012	At least 50%	Workers camps for non-local employees (approximately 1,200 person camp)	Preferred option on Curtis Island

Sources: Publically available EIS documents and proponents' website.

Appendix D Survey forms

Arrow Energy LNG Project - Environment and Recreation

1. Environment and Recreation Questions

With respect to the environment and recreation in the Gladstone region, key issues which have been identified to date are the following:

• The potential for air emissions, dust and noise to affect amenity and lifestyle

• Ground water including water quality and the protection of water recharge areas

• The potential impact of development on coastal wetlands, mangroves and associated habitat

• Protection of significant ecological and habitat areas and wildlife corridors, including the protection of the Curtis Island reserve and regional biodiversity

• Protection of local marine species and their habitat, including the Flatback, Green and Loggerhead Turtles and Dugongs

• Protection of fish habitats (particularly at Colosseum Inlet, Rodds Harbour and Eurimbula)

• Impacts associated with clearing of vegetation

• Appreciation of and respect for the scenic values of the coastal landscape

• The potential for reduced access to marine-based recreation, including access to coastal areas for fishing, boating and walking.

• Identification and protection of cultural heritage sites, including the ability to include and protect new areas of cultural heritage over time.

1. Based on the key issues identified above, do you believe that this list addresses the main areas of concern with regard to environmental and recreation in the Gladstone region?

◯ Yes ◯ No

2. Are there any additional issues relating to the environment and recreation in the Gladstone region which you believe are important? Please provide in the text box below.

Arrow Energy LNG Project - Environment and Recreation

3. Of these key issues, please rank according to your perception of their relative importance.

	Not concerned at all	Not very concerned	Quite concerned	Concerned enough to talk about it	So concerned I would actively protest	N/A
Air emissions, dust and noise impacts upon amenity and lifestyle	◯	◯	◯	◯	◯	◯
Ground water and the protection of water recharge areas	◯	◯	◯	◯	◯	◯
Potential impacts on coastal wetlands, mangroves and associated habitat	◯	◯	◯	◯	◯	◯
Protection of significant ecological and habitat areas and wildlife corridors and regional biodiversity	◯	◯	◯	◯	◯	◯
Protection of local marine species	◯	◯	◯	◯	◯	◯
Protection of fish habitats	◯	◯	◯	◯	◯	◯
Impacts associated with clearing of vegetation	◯	◯	◯	◯	◯	◯
Appreciation of and respect for the scenic values of the coastal landscape	◯	◯	◯	◯	◯	◯
Potential of reduced access to marine-based recreation	◯	◯	◯	◯	◯	◯
Protection of cultural heritage sites	◯	◯	◯	◯	◯	◯

Comments

4. Of the key issues identified, how effectively do you think the respective issues can be managed as part of the Arrow Energy LNG project?

	No ability to manage issues	Limited ability to manage issues	Some ability to manage issues	Strong ability to manage issues	Very strong ability to manage issues	N/A
Air emissions, dust and noise impacts upon amenity and lifestyle	◯	◯	◯	◯	◯	◯
Ground water and the protection of water recharge areas	◯	◯	◯	◯	◯	◯
Impact on coastal wetlands, mangroves and associated habitat	◯	◯	◯	◯	◯	◯
Protection of significant ecological and habitat areas and wildlife corridors and regional biodiversity	◯	◯	◯	◯	◯	◯
Protection of local marine species	◯	◯	◯	◯	◯	◯
Protection of fish habitats	◯	◯	◯	◯	◯	◯
Impacts associated with clearing of vegetation	◯	◯	◯	◯	◯	◯
Appreciation of and respect for the scenic values of the coastal landscape	◯	◯	◯	◯	◯	◯
Potential for reduced access to marine-based recreation	◯	◯	◯	◯	◯	◯
Protection of cultural heritage sites	◯	◯	◯	◯	◯	◯

Comments

5. With respect to air emissions, dust and noise impacts upon amenity and lifestyle, please provide any additional information on this issue which you feel may be important for Arrow Energy to understand.

6. With respect to the issue of ground water and the water recharge process, please provide any additional information on this issue which you feel may be important for Arrow Energy to understand.

7. With respect to the impact on coastal wetlands, mangroves and associated habitat, please provide any additional information on this issue which you feel may be important for Arrow Energy to understand.

8. With respect to the protection of significant ecological and habitat areas, wildlife corridors and regional biodiversity, please provide any additional information on this issue which you feel may be important for Arrow Energy to understand.

9. With respect to the protection of local marine species, please provide any additional information on this issue which you feel may be important for Arrow Energy to understand.

10. With respect to the protection of fish habitats, please provide any additional information on this issue which you feel may be important for Arrow Energy to understand.

11. With respect to the impacts associated with clearing of vegetation, please provide any additional information on this issue which you feel may be important for Arrow Energy to understand.

12. With respect to the issue of appreciation of and respect for the scenic values of the coastal landscape, please provide any additional information on this issue which you feel may be important for Arrow Energy to understand.

13. With respect to the potential for reduced access to marine-based recreation, please provide any additional information on this issue which you feel may be important for Arrow Energy to understand.

14. With respect to the protection of cultural heritage sites, please provide any additional information on this issue which you feel may be important for Arrow Energy to understand.

15. If you had to pick three things that you would like Arrow Energy to put in place to enhance the opportunities for the Gladstone community with regard to the environment and recreation, what would they be?

16. If you had to pick three things that you would like Arrow Energy to put in place to minimise the negative aspects associated with the Project, with regard to the environment and recreation, what would they be?

As a valued member of the Project's stakeholder community, we would also be grateful for any additional feedback or suggestions that you have with regard to general aspects of the Project's development. The questions below are designed to capture such information.

17. What key issues (other than the environment and recreation) do you see as having the most significant impact on the Gladstone community?

18. What do you think are the main benefits this project could have for the local community?

19. Do you have any suggestions as to how Arrow can maximise these opportunities?

20. What are the main concerns regarding the project?

21. Do you have any suggestions as to how Arrow can minimise or address these concerns?

22. Finally, do you feel that completing this questionnaire has allowed you to express all concerns and issues that you may have with the proposed Project, or would you prefer to have the opportunity to discuss these issues in further detail?

- ◯ YES I am satisfied with the level of consultation contained within this questionnaire
- ◯ NO I would like the opportunity to participate in a Stakeholder Focus Group Workshop on this issue

23. If you indicated above that you would like to participate in a Stakeholder Focus Group Workshop on the issue of the Environment and Recreation, please provide your name and contact details below.

Name	
Occupation/Representative Group	
Email address	
Telephone number	

Thank you for your time and valuable contributions.
If you have any questions about this process please contact Chris Mahoney on (07) 3002 0446 or 0451 631 618 or email chris_mahoney@coffey.com

Arrow Energy LNG Project - Social Infrastructure

1. Social Infrastructure Questions

With respect to social infrastructure in the Gladstone region, key issues which have been identified to date are the following:

• The adequacy/ inadequacy of long day care, after school care and child care centre places

• The adequacy/ inadequacy of kindergarten facilities

• Demands on primary and secondary educational facilities as population increases

• The availability of flexible child care arrangements for 24hr shift workers

• The adequacy/ inadequacy of Youth Programs, including recreational and cultural programs, youth counselling services and drug and alcohol support, youth homelessness, youth assistance in the housing market and programs on life skills (particularly financial and renting skills)

• The adequacy/ inadequacy of local health care services including hospital services

• Availability of education and prevention programs for key determinations of male health (smoking, alcohol and mental health)

• The adequacy/ inadequacy of community health and project safety awareness

• The demand and availability of aged care services

• The potential for increased demand on emergency services as a result of construction activities

• The provision of first response capabilities on Curtis Island

• Community safety and well being in the event of an LNG accident

• The adequacy/ inadequacy of disaster mitigation policies, plans and procedures

1. Based on the key issues identified above, do you believe that this list addresses the main areas of concern with regard to social infrastructure in the Gladstone region?

◯ Yes ◯ No

2. Are there any additional issues relating to social infrastructure in the Gladstone region which you believe are important? Please provide in the text box below.

Arrow Energy LNG Project - Social Infrastructure

3. Of these key issues, please rank according to your perception of their relative importance.

	Not concerned at all	Not very concerned	Quite concerned	Concerned enough to talk about it	So concerned I would actively protest	N/A
Water, waste and energy infrastructure, services and/or supply	◯	◯	◯	◯	◯	◯
Road, water and sewerage services, stormwater drainage, and standards	◯	◯	◯	◯	◯	◯
Access to major destinations and freight routes	◯	◯	◯	◯	◯	◯
Environmental protection measures in new roads and infrastructure	◯	◯	◯	◯	◯	◯
Equitable cost recovery	◯	◯	◯	◯	◯	◯
Adverse traffic impacts	◯	◯	◯	◯	◯	◯
Road safety awareness and driver training	◯	◯	◯	◯	◯	◯
Alternative transport (walking, cycling and public transport)	◯	◯	◯	◯	◯	◯

Comments

4. Of the key issues identified, how effectively do you think the respective issues can be managed as part of the Arrow Energy LNG project?

	No ability to manage issues	Limited ability to manage issues	Some ability to manage issues	Strong ability to manage issues	Very strong ability to manage issues	N/A
Water, waste and energy infrastructure, services and/or supply	◯	◯	◯	◯	◯	◯
Road, water and sewerage services, stormwater drainage, and standards	◯	◯	◯	◯	◯	◯
Access to major destinations and freight routes	◯	◯	◯	◯	◯	◯
Environmental protection measures in new roads and infrastructure	◯	◯	◯	◯	◯	◯
Equitable cost recovery	◯	◯	◯	◯	◯	◯
Adverse traffic impacts	◯	◯	◯	◯	◯	◯
Road safety awareness and driver training	◯	◯	◯	◯	◯	◯
Alternative transport (walking, cycling and public transport)	◯	◯	◯	◯	◯	◯

Comments

5. With respect to water, waste and energy infrastructure, services and/or supply, please provide any additional information on this issue which you feel may be important for Arrow Energy to understand.

6. With respect to road, water and sewerage services, stormwater drainage, and standards, please provide any additional information on this issue which you feel may be important for Arrow Energy to understand.

7. With respect to the issue of access to major destinations and freight routes, please provide any additional information on this issue which you feel may be important for Arrow Energy to understand.

8. With respect to the issue of environmental protection measures in new roads and infrastructure, please provide any additional information on this issue which you feel may be important for Arrow Energy to understand.

9. With respect to the issue of equitable cost recovery, please provide any additional information on this issue which you feel may be important for Arrow Energy to understand.

10. With respect to the issue of adverse traffic impacts, please provide any additional information on this issue which you feel may be important for Arrow Energy to understand.

11. With respect to the issue of road safety awareness and driver training, please provide any additional information on this issue which you feel may be important for Arrow Energy to understand.

12. With respect to alternative transport (walking, cycling and public transport), please provide any additional information on this issue which you feel may be important for Arrow Energy to understand.

13. If you had to pick three things that you would like Arrow Energy to put in place to enhance the opportunities for the Gladstone community with regard to social infrastructure, what would they be?

14. If you had to pick three things that you would like Arrow Energy to put in place to minimise the negative aspects associated with the Project, with regard to social infrastructure, what would they be?

As a valued member of the Project's stakeholder community, we would also be grateful for any additional feedback or suggestions that you have with regard to general aspects of the Project's development. The questions below are designed to capture such information.

15. What key issues (other than social infrastructure) do you see as having the most significant impact on the Gladstone community?

16. What do you think are the main benefits this project could have for the local community?

17. Do you have any suggestions as to how Arrow can maximise these opportunities?

18. What are the main concerns regarding the project?

19. Do you have any suggestions as to how Arrow can minimise or address these concerns?

20. Finally, do you feel that completing this questionnaire has allowed you to express all concerns and issues that you may have with the proposed Project, or would you prefer to have the opportunity to discuss these issues in further detail?

- ◯ YES I am satisfied with the level of consultation contained within this questionnaire
- ◯ NO I would like the opportunity to participate in a Stakeholder Focus Group Workshop on this issue

21. If you indicated above that you would like to participate in a Stakeholder Focus Group Workshop on the issue of Social Infrastructure, please provide your name and contact details below.

Name	
Occupation/Representative Group	
Email address	
Telephone number	

Thank you for your time and valuable contributions.
If you have any questions about this process please contact Chris Mahoney on (07) 3002 0446 or 0451 631 618 or email chris_mahoney@coffey.com

Arrow Energy LNG Project - Housing and Accommodation

1. Housing and Accommodation Questions

With respect to housing and accommodation in the Gladstone region the key issues identified to date are the following:

• The construction of a temporary accommodation facility for construction workers (and associated behavioural management of its residents)

• An increase in housing and/or rental prices caused by increased demand and limited supply (resulting in poor levels of housing affordability and an over inflated market)

• Constrained availability of affordable housing and accommodation for socially vulnerable groups

• Increased demand on hotel/motel accommodation

• Land release programs which meet the needs of anticipated future growth in an efficient and sustainable urban form

• Management of urban sprawl

• Neighbourhood design standards and improved liveability and sustainability

• Choice of housing styles

1. Based on the key issues identified above, do you believe that this list addresses the main areas of concern with regard to housing and accommodation in the Gladstone region?

◯ Yes ◯ No

2. Are there any additional issues relating to housing and accommodation in the Gladstone region which you believe are important? Please provide in the text box below.

Arrow Energy LNG Project - Housing and Accommodation

3. Of these key issues, please rank according to your perception of their relative importance.

	Not concerned at all	Not very concerned	Quite concerned	Concerned enough to talk about it	So concerned I would actively protest	N/A
Temporary accommodation for construction workers (and associated behavioural management of its residents)	◯	◯	◯	◯	◯	◯
An increase in housing and/or rental prices	◯	◯	◯	◯	◯	◯
Constrained availability of affordable housing and accommodation for socially vulnerable groups	◯	◯	◯	◯	◯	◯
Increased demand on hotel/motel accommodation	◯	◯	◯	◯	◯	◯
Land release programs	◯	◯	◯	◯	◯	◯
Management of urban sprawl	◯	◯	◯	◯	◯	◯
Neighbourhood design standards which improve liveability and sustainability	◯	◯	◯	◯	◯	◯
Choice of housing styles	◯	◯	◯	◯	◯	◯

Comments

Arrow Energy LNG Project - Housing and Accommodation

4. Of the key issues identified, how effectively do you think the respective issues can be managed as part of the Arrow Energy LNG project?

	No ability to manage issues	Limited ability to manage issues	Some ability to manage issues	Strong ability to manage issues	Very strong ability to manage issues	N/A
Temporary accommodation for construction workers (and associated behavioural management of its residents)	◯	◯	◯	◯	◯	◯
An increase in housing and/or rental prices	◯	◯	◯	◯	◯	◯
Constrained availability of affordable housing and accommodation for socially vulnerable groups	◯	◯	◯	◯	◯	◯
Increased demand on hotel/motel accommodation	◯	◯	◯	◯	◯	◯
Land release programs	◯	◯	◯	◯	◯	◯
Management of urban sprawl	◯	◯	◯	◯	◯	◯
Neighbourhood design standards which improve liveability and sustainability	◯	◯	◯	◯	◯	◯
Choice of housing styles	◯	◯	◯	◯	◯	◯

Comments

5. With respect to the issue of temporary accommodation, please provide any additional information on this issue which you feel may be important for Arrow Energy to understand.

6. With respect to the increased house/rental prices, please provide any additional information on this issue which you feel may be important for Arrow Energy to understand.

7. With respect to the housing for socially vulnerable groups, please provide any additional information on this issue which you feel may be important for Arrow Energy to understand.

8. With respect to the increased demand on hotel/motel accommodation, please provide any additional information on this issue which you feel may be important for Arrow Energy to understand.

9. With respect to land release programs, please provide any additional information on this issue which you feel may be important for Arrow Energy to understand.

10. With respect to managing urban sprawl, please provide any additional information on this issue which you feel may be important for Arrow Energy to understand.

11. With respect to improving liveability and sustainability, please provide any additional information on this issue which you feel may be important for Arrow Energy to understand.

12. With respect to the issue of wider choices in housing styles, please provide any additional information on this issue which you feel may be important for Arrow Energy to understand.

13. With respect to the issue of affordable housing, please provide any additional information on this issue which you feel may be important for Arrow Energy to understand.

14. If you had to pick three things that you would like Arrow Energy to put in place to enhance the opportunities for the Gladstone community with regard to housing and accommodation, what would they be?

15. If you had to pick three things that you would like Arrow Energy to put in place to minimise the negative aspects associated with the Project, with regard to housing and accommodation, what would they be?

As a valued member of the Project's stakeholder community, we would also be grateful for any additional feedback or suggestions that you have with regard to general aspects of the Project's development. The questions below are designed to capture such information.

16. What key issues (other than housing and accommodation) do you see as having the most significant impact on the Gladstone community?

17. What do you think are the main benefits this project could have for the local community?

18. Do you have any suggestions as to how Arrow can maximise these opportunities?

19. What are the main concerns regarding the project?

20. Do you have any suggestions as to how Arrow can minimise or address these concerns?

21. Finally, do you feel that completing this questionnaire has allowed you to express all concerns and issues that you may have with the proposed Project, or would you prefer to have the opportunity to discuss these issues in further detail?

- ◯ YES I am satisfied with the level of consultation contained within this questionnaire
- ◯ NO I would like the opportunity to participate in a Stakeholder Focus Group Workshop on this issue

22. If you indicated above that you would like to participate in a Stakeholder Focus Group Workshop on the issue of Housing and Accommodation , please provide your name and contact details below.

Name	
Occupation/Representative Group	
Email address	
Telephone number	

Thank you for your time and valuable contributions.
If you have any questions about this process please contact Chris Mahoney on (07) 3002 0446 or 0451 631 618 or email chris_mahoney@coffey.com

Arrow Energy LNG Project - Physical Infrastructure

1. Physical Infrastructure Questions

With respect to physical infrastructure in the Gladstone region, the key issues identified to date are the following:

- Ability to ensure sufficient development of infrastructure for effective water, waste and energy services and/or supply
- Determination of appropriate standards for roads, water and sewerage services and stormwater drainage
- Options for new or upgraded connections to major destinations and freight routes
- The adequacy of environmental protection measures with respect to new roads and infrastructure
- Cost recovery for roads and infrastructure from new LNG project development
- Industrial developments creating adverse traffic impacts on local and main roads
- Road safety awareness and driver training
- The availability of alternative transport methods such as walking, cycling and public transport

1. Based on the key issues identified above, do you believe that this list addresses the main areas of concern with regard to physical infrastructure in the Gladstone region?

◯ Yes ◯ No

2. Are there any additional issues relating to physical infrastructure in the Gladstone region which you believe are important? Please provide in the text box below.

Arrow Energy LNG Project - Physical Infrastructure

3. Of these key issues, please rank according to your perception of their relative importance.

	Not concerned at all	Not very concerned	Quite concerned	Concerned enough to talk about it	So concerned I would actively protest	N/A
Water, waste and energy infrastructure, services and/or supply	◯	◯	◯	◯	◯	◯
Road, water and sewerage services, stormwater drainage, and standards	◯	◯	◯	◯	◯	◯
Access to major destinations and freight routes	◯	◯	◯	◯	◯	◯
The adequacy of environmental protection measures for new roads and infrastructure	◯	◯	◯	◯	◯	◯
Equitable cost recovery	◯	◯	◯	◯	◯	◯
Industrial developments creating adverse traffic impacts	◯	◯	◯	◯	◯	◯
Road safety awareness and driver training	◯	◯	◯	◯	◯	◯
Availability of alternative transport options(walking, cycling and public transport)	◯	◯	◯	◯	◯	◯

Comments

Arrow Energy LNG Project - Physical Infrastructure

4. Of the key issues identified, how effectively do you think the respective issues can be managed as part of the Arrow Energy LNG project?

	No ability to manage issues	Limited ability to manage issues	Some ability to manage issues	Strong ability to manage issues	Very strong ability to manage issues	N/A
Water, waste and energy infrastructure, services and/or supply	◯	◯	◯	◯	◯	◯
Road, water and sewerage services, stormwater drainage, and standards	◯	◯	◯	◯	◯	◯
Access to major destinations and freight routes	◯	◯	◯	◯	◯	◯
Adequacy of environmental protection measures for new roads and infrastructure	◯	◯	◯	◯	◯	◯
Equitable cost recovery	◯	◯	◯	◯	◯	◯
Industrial developments creatng diverse traffic impacts	◯	◯	◯	◯	◯	◯
Road safety awareness and driver training	◯	◯	◯	◯	◯	◯
Availability of alternative transport options (walking, cycling and public transport)	◯	◯	◯	◯	◯	◯

Comments

5. With respect to water, waste and energy infrastructure, services and/or supply, please provide any additional information on this issue which you feel may be important for Arrow Energy to understand.

6. With respect to road, water and sewerage services, stormwater drainage, and standards, please provide any additional information on this issue which you feel may be important for Arrow Energy to understand.

7. With respect to the issue of access to major destinations and freight routes, please provide any additional information on this issue which you feel may be important for Arrow Energy to understand.

8. With respect to the issue of the adequacy of environmental protection measures for new roads and infrastructure, please provide any additional information on this issue which you feel may be important for Arrow Energy to understand.

9. With respect to the issue of equitable cost recovery, please provide any additional information on this issue which you feel may be important for Arrow Energy to understand.

10. With respect to the issue of adverse traffic impacts, please provide any additional information on this issue which you feel may be important for Arrow Energy to understand.

11. With respect to the issue of road safety awareness and driver training, please provide any additional information on this issue which you feel may be important for Arrow Energy to understand.

12. With respect to the availability of alternative transport options (walking, cycling and public transport), please provide any additional information on this issue which you feel may be important for Arrow Energy to understand.

13. If you had to pick three things that you would like Arrow Energy to put in place to enhance the Gladstone community with regard to physical infrastructure, what would they be?

14. If you had to pick three things that you would like Arrow Energy to put in place to minimise the negative aspects associated with the Project, with regard to physical infrastructure, what would they be?

As a valued member of the Project's stakeholder community, we would also be grateful for any additional feedback or suggestions that you have with regard to general aspects of the Project's development. The questions below are designed to capture such information.

Arrow Energy LNG Project - Physical Infrastructure

15. What key issues (other than physical infrastructure) do you see as having the most significant impact on the Gladstone community?

16. What do you think are the main benefits this project could have for the local community?

17. Do you have any suggestions as to how Arrow can maximise these opportunities?

18. What are the main concerns regarding the project?

19. Do you have any suggestions as to how Arrow can minimise or address these concerns?

20. Finally, do you feel that completing this questionnaire has allowed you to express all concerns and issues that you may have with the proposed Project, or would you prefer to have the opportunity to discuss these issues in further detail?

- ◯ YES I am satisfied with the level of consultation contained within this questionnaire
- ◯ NO I would like the opportunity to participate in a Stakeholder Focus Group Workshop on this issue

21. If you indicated above that you would like to participate in a Stakeholder Focus Group Workshop on the issue of Physical Infrastructure, please provide your name and contact details below.

Name	
Occupation/Representative Group	
Email address	
Telephone number	

Thank you for your time and valuable contributions.
If you have any questions about this process please contact Chris Mahoney on (07) 3002 0446 or 0451 631 618 or email chris_mahoney@coffey.com

Arrow Energy LNG Project - Social Cohesion

1. Social Cohesion Questions

With respect to social cohesion in the Gladstone region, the key issues identified to date are the following:

• Avenues for expressing and addressing community grievances

• Integration issues associated with an increase in overseas migrants working on gas projects

• Cultural awareness training within the industry

• Population growth disrupting the existing social balance of the Gladstone community

• Training opportunities and utilisation of existing skills for spouses of workers that move to the region

• Indigenous social and cultural awareness

• Potential for socially unacceptable behaviour of temporary and Fly-in Fly-out (FIFO) LNG contractors and employees

• Impacts of shift work decreasing the time workers spend with their families and participating in community activities (such as volunteering)

• Challenges associated with relationship between increased disposable income and how people spend it (e.g. increased spend on gambling, alcohol or drugs) and the impacts of this on local community values

1. Based on the key issues identified above, do you believe that this list addresses the main areas of concern with regard to social cohesion in the Gladstone region?

◯ Yes ◯ No

2. Are there any additional issues relating to social cohesion in the Gladstone region which you believe are important? Please provide in the text box below.

Arrow Energy LNG Project - Social Cohesion

3. Of these key issues, please rank according to your perception of their relative importance.

	Not concerned at all	Not very concerned	Quite concerned	Concerned enough to talk about it	So concerned I would actively protest	N/A
Effective avenues for community grievances	◯	◯	◯	◯	◯	◯
Migrant integration within local community	◯	◯	◯	◯	◯	◯
Cultural diversity training within the industry	◯	◯	◯	◯	◯	◯
Population growth disrupting the existing social balance	◯	◯	◯	◯	◯	◯
Training opportunities for spouses	◯	◯	◯	◯	◯	◯
Protecting Indigenous social and cultural values	◯	◯	◯	◯	◯	◯
Behaviour of LNG employees and contractors	◯	◯	◯	◯	◯	◯
Impacts of shift work on community and family life	◯	◯	◯	◯	◯	◯
Increased disposable income and associated spending behaviours e.g. increased spending on gambling, alcohol or drugs)	◯	◯	◯	◯	◯	◯

Comments

Arrow Energy LNG Project - Social Cohesion

4. Of the key issues identified, how effectively do you think the respective issues can be managed as part of the Arrow Energy LNG project?

	No ability to manage issues	Limited ability to manage issues	Some ability to manage issues	Strong ability to manage issues	Very strong ability to manage issues	N/A
Effective avenues for community grievances	◯	◯	◯	◯	◯	◯
Migrant integration within local community	◯	◯	◯	◯	◯	◯
Cultural diversity training within the industry	◯	◯	◯	◯	◯	◯
Population growth disrupting the existing social balance	◯	◯	◯	◯	◯	◯
Training opportunities for spouses	◯	◯	◯	◯	◯	◯
Protecting Indigenous social and cultural values	◯	◯	◯	◯	◯	◯
Behaviour of LNG employees and contractors	◯	◯	◯	◯	◯	◯
Impacts of shift work on community and family life	◯	◯	◯	◯	◯	◯
Increased disposable income and associated spending behaviours (e.g. increased spending on gambling, alcohol or drugs)	◯	◯	◯	◯	◯	◯

Comments

5. With respect to the issue of effective avenues for community grievances, please provide any additional information on this issue which you feel may be important for Arrow Energy to understand.

6. With respect to the issue of migrant integration within the local community, please provide any additional information on this issue which you feel may be important for Arrow Energy to understand.

7. With respect to the issue of cultural diversity training, please provide any additional information on this issue which you feel may be important for Arrow Energy to understand.

8. With respect to the issue of population growth disrupting the existing social balance of the Gladstone community, please provide any additional information on this issue which you feel may be important for Arrow Energy to understand.

9. With respect to the issue of training opportunities for spouses, please provide any additional information on this issue which you feel may be important for Arrow Energy to understand.

10. With respect to the issue of protecting Indigenous social and cultural values, please provide any additional information on this issue which you feel may be important for Arrow Energy to understand.

11. With respect to the behaviour of LNG employees and contractors, please provide any additional information on this issue which you feel may be important for Arrow Energy to understand.

12. With respect to the impacts of shift work on community and family life, please provide any additional information on this issue which you feel may be important for Arrow Energy to understand.

13. With respect to the issue of increased disposable income and associated spending behaviours (e.g. increased spending on gambling, alcohol or drugs), please provide any additional information on this issue which you feel may be important for Arrow Energy to understand.

14. If you had to pick three things that you would like Arrow Energy to put in place to enhance the opportunities for the Gladstone community with regard to social cohesion, what would they be?

15. If you had to pick three things that you would like Arrow Energy to put in place to minimise the negative aspects associated with the Project, with regard to social cohesion, what would they be?

As a valued member of the Project's stakeholder community, we would also be grateful for any additional feedback or suggestions that you have with regard to general aspects of the Project's development. The questions below are designed to capture such information.

16. What key issues (other than social cohesion) do you see as having the most significant impact on the Gladstone community?

17. What do you think are the main benefits this project could have for the local community?

18. Do you have any suggestions as to how Arrow can maximise these opportunities?

19. What are the main concerns regarding the project?

20. Do you have any suggestions as to how Arrow can minimise or address these concerns?

21. Finally, do you feel that completing this questionnaire has allowed you to express all concerns and issues that you may have with the proposed Project, or would you prefer to have the opportunity to discuss these issues in further detail?

- ◯ YES I am satisfied with the level of consultation contained within this questionnaire
- ◯ NO I would like the opportunity to participate in a Stakeholder Focus Group Workshop on this issue

22. If you indicated above that you would like to participate in a Stakeholder Focus Group Workshop on the issue of Social Cohesion, please provide your name and contact details below.

Name	
Occupation/Representative Group	
Email address	
Telephone number	

Thank you for your time and valuable contributions.
If you have any questions about this process please contact Chris Mahoney on (07) 3002 0446 or 0451 631 618 or email chris_mahoney@coffey.com

Arrow Energy LNG Project - Employment, Training and the Local

1. Employment, Training and Local Economy Questions

For the area of employment, training and the local economy key issues which have been identified to date are the following:

- The availability of training to help locals access the vocational needs of LNG projects
- Educational and employment opportunities for Indigenous people
- Employment and training opportunities for women and disengaged youth
- Educational and employment opportunities for people with disabilities
- Local supply chain policies, including preferential sourcing of supplies, labour and services from Gladstone region
- The ability of local business to compete with LNG projects for labour
- Increases in local income and associated inflationary pressures
- Impact of development on local tourism and commercial fishers
- Capacity building for local businesses including Indigenous businesses

1. Based on the key issues identified above, do you believe that this list addresses the main areas of concern with regard to employment, training and the local economy in the Gladstone region?

◯ Yes ◯ No

2. Are there any additional issues relating to employment, training and the local economy in the Gladstone region which you believe are important? Please provide in the text box below.

3. Of these key issues, please rank according to your perception of their relative importance.

	Not concerned at all	Not very concerned	Quite concerned	Concerned enough to talk about it	So concerned I would actively protest	N/A
The availability of training to help locals access LNG projects	◯	◯	◯	◯	◯	◯
Educational and employment opportunities for Indigenous people	◯	◯	◯	◯	◯	◯
Employment and training opportunities for women and disengaged youth	◯	◯	◯	◯	◯	◯
Educational and employment opportunities for people with disabilities	◯	◯	◯	◯	◯	◯
Local supply chain policies, including preferential sourcing of supplies, labour and services from Gladstone region	◯	◯	◯	◯	◯	◯
The ability of local business to compete with LNG projects for labour	◯	◯	◯	◯	◯	◯
Increases in local income and associated inflationary pressures	◯	◯	◯	◯	◯	◯
Impact of development on local tourism and commercial fishers	◯	◯	◯	◯	◯	◯
Capacity building for local businesses including Indigenous businesses	◯	◯	◯	◯	◯	◯

Comments

4. Of the issues identified, how effectively do you think the respective issues can be managed as part of the Arrow Energy LNG project?

	No ability to manage issue	Limited ability to manage issue	Some ability to manage issue	Strong ability to manage issue	Very strong ability to manage issue	N/A
The availability of training to help locals access the vocational needs of LNG projects	◯	◯	◯	◯	◯	◯
Educational and employment opportunities for Indigenous people	◯	◯	◯	◯	◯	◯
Employment and training opportunities for women and disengaged youth	◯	◯	◯	◯	◯	◯
Educational and employment opportunities for people with disabilities	◯	◯	◯	◯	◯	◯
Local supply chain policies, including preferential sourcing of supplies, labour and services from Gladstone region	◯	◯	◯	◯	◯	◯
The ability of local business to compete with LNG projects for labour	◯	◯	◯	◯	◯	◯
Increases in local income and associated inflationary pressures	◯	◯	◯	◯	◯	◯
Impact of development on local tourism and commercial fishers	◯	◯	◯	◯	◯	◯
Capacity building for local businesses including Indigenous businesses	◯	◯	◯	◯	◯	◯

Comments

5. With respect to the availability of local training which meets the vocational needs of LNG projects, please provide any additional information on this issue which you feel may be important for Arrow Energy to understand.

6. With respect to educational and employment opportunities for Indigenous peoples, please provide any additional information on this issue which you feel may be important for Arrow Energy to understand.

7. With respect to education and employment opportunities for people with a disability, please provide any additional information on this issue which you feel may be important for Arrow Energy to understand.

8. With respect to training and employment opportunities for women and worker's spouses, please provide any additional information on this issue which you feel may be important for Arrow Energy to understand.

9. With respect to education and employment opportunities for disengaged youth, please provide any additional information on this issue which you feel may be important for Arrow Energy to understand.

10. With respect to local supply chain policies, including preferential sourcing of supplies, labour and services from the Gladstone region, please provide any additional information on this issue which you feel may be important for Arrow Energy to understand.

11. With respect to the issue of local businesses having to compete with LNG projects for labour, please provide any additional information on this issue which you feel may be important for Arrow Energy to understand.

12. With respect to the issue of increases in local income and associated inflationary pressures, please provide any additional information on this issue which you feel may be important for Arrow Energy to understand.

13. With respect to then issue of LNG developments potentially impacting local tourism and commercial fishers, please provide any additional information on this issue which you feel it may be important for Arrow Energy to understand.

14. With respect to the issue of the need to increase the capacity of local businesses including Indigenous businesses, please provide any additional information on this issue which you feel may be important for Arrow Energy to understand.

15. If you had to pick three things that you would like Arrow Energy to put in place to enhance the opportunities for the Gladstone community with regard to employment, training and the local economy, what would they be?

16. If you had to pick three things that you would like Arrow Energy to put in place to minimise the negative aspects associated with the project, with regard to employment, training and the local economy, what would they be?

As a valued member of the Project's stakeholder community, we would also be grateful for any additional feedback or suggestions that you have with regard to general aspects of the Project's development. The questions below are designed to capture such information.

17. What key issues (other than employment, training and the local economy) do you see as having the most significant impact on the Gladstone community?

18. What do you think are the main benefits this project could have for the local community?

19. Do you have any suggestions as to how Arrow Energy can maximise these opportunities?

20. What are the main concerns regarding the project?

21. Do you have any suggestions as to how Arrow Energy can minimise or address these concerns?

22. Finally, do you feel that completing this questionnaire has allowed you to express all concerns and issues that you may have with the proposed Arrow Energy LNG Project, or would you prefer to have the opportunity to discuss these issues in further detail?

- ◯ YES I am satisfied with the level of consultation contained within this questionnaire
- ◯ NO I would like the opportunity to participate in a Stakeholder Focus Group Workshop on this issue

23. If you indicated above that you would like to participate in a Stakeholder Focus Group Workshop on the issue of employment, training and the local economy, please provide your name and contact details below:

Name	
Occupation/Representative Group	
Email address	
Telephone number	

Thank you for your time and valuable contributions.
If you have any questions about this process please contact Chris Mahoney on (07) 3002 0446 or 0451 631 618 or email chris_mahoney@coffey.com