Appendix P

Social Impact Assessment

REPORT

Socio-Economic Impact Assessment

Prepared for

Gladstone Pacific Nickel

24 October 2006

URS

Project Manager:

Chris Pigott
Senior Principal

URS Australia Pty Ltd
Level 14, 240 Queen Street
Brisbane, QLD 4000 Australia
GPO Box 302, Queensland 4001
Tel: 61 7 3243 2111
Fax: 61 7 3243 2199

Project Director:

Bob McGowan
Regional Manager

Author:

Leonie Van Vaerenbergh
Senior Environmental Planner

Date:	**24 October 2006**
Reference:	42625791
Status:	Rev 1

Contents

1.1 Study Area

Due to the large geographical extent of the project, the socio-economic impact assessment discusses two study areas where appropriate:

- the refinery/RSF study area – that area around the refinery including the immediate surrounding area and the two surrounding Local Government Areas (LGAs)- Calliope Shire and Gladstone City;
- the pipeline study area – the corridor between the existing Marlborough mine and proposed refinery site outside of Gladstone. The pipeline study area includes 6 LGAs;

Both the refinery/RSF and pipeline study areas fall within the region of the Fitzroy Statistical Division (SD). The socio-economic impact assessment (SIA) discusses the regional, State and Australian aspects of the project where appropriate. Please note that the economic impact assessment component of this assessment has been undertaken only for the refinery/RSF study area in accordance with the project Terms of Reference.

1.2 Objectives

Issues that have been considered by this SIA include:

- geographical extent of the study area;
- population and demographics;
- community infrastructure and services, access and mobility;
- recreational, cultural, leisure and sporting facilities and activities;
- health, emergency services and educational facilities;
- the housing and land market, including availability and affordability of privately-owned homes, rental properties, welfare and community homes;
- local community values and vitality,
- amenity, lifestyle, sense of community and public health and safety;

The key objectives of the study were to:

- describe the existing social environment and understand the local and wider community attitudes and values;
- discuss the impacts on the demographic, social, cultural and economic profiles;
- identify the social and community impacts to be generated by the proposed development;

- evaluate the extent of the social effects, that is the desirability of such changes in terms of their benefits and detrimental nature;
- recommend appropriate measures to minimise potential adverse social and community impacts and enhance positive impacts; and
- assess the overall social, economic and community impacts of the proposed development taking into account the recommended measures for management of impacts.

2.1 Scope of Project

The overall scope for the socio-economic impact assessment was determined by the EIS Terms of Reference (TOR) which in summary requires that the socio-economic impact assessment:

- Describes the existing social values that may be affected.
- Considers the project's impact, both beneficial and adverse, on the local community.
- Suggests mitigation and enhancement strategies.
- Recommends practical monitoring regimes.

The socio-economic impact assessment has been carried out with reference to the social values and social indicators provided in the TOR, but also with reference to best practice guidelines and principles.

2.2 Review of Existing Information

The socio-economic impact assessment has been conducted using primary sources of information, i.e. statistical information provided by the Australian Bureau of Statistics (ABS) or other government agencies, and information gained through the consultation process. The assessment is based therefore on both quantitative and qualitative analyses of existing social conditions. A summary of the existing information sources reviewed as part of the baseline study is set out below.

The statistical information for the collector districts, LGAs, Fitzroy Statistical Division and Queensland is based on 2001 Census statistics (including Basic Community Profiles, Time Series 1991-2001 and Estimated Resident Profiles) provided by the ABS; Population and Housing Fact Sheets supplied by the Planning and Information Unit (PIFU); LGA and regional profiles prepared by the Office of Economic and Statistical Research (OESR), and the Queensland Regional Statistical Information System (QRSIS) developed by the Queensland Office the Government Statistician. Additional data for these areas were provided by RP Data Ltd, Real Estate Institute of Queensland (REIQ), and data from Gladstone City and Calliope Shire Councils.

Further information reviewed included:

- information from previous studies;
- discussions with relevant State Government Departments;
- interviews with various peak bodies, community groups, and private individuals; and
- information from Gladstone Pacific Nickel Limited (GPNL).

Where available from the above listed sources, more up to date information was obtained and included as the baseline socio-economic data that was analysed and discussed in this socio-economic impact assessment report.

2.3 Consultation and Stakeholder Consultation

The stakeholder and community consultation program was made up of the following:

- consultation period for advertised Terms of Reference (Date TBA);
- community meetings with Yarwun residents and Mount Larcom Progress Association;
- meetings with government agencies, representative groups and other key stakeholders;
- distribution of newsletters to residents in the postal area of Yarwun (Local Post Office 4694), to selected public places and to interested or affected persons;
- community survey and feedback forms enclosed with the project newsletters; and
- establishment of community feedback systems - free-call phone number, reply paid post, fax and e-mail to gain enquiries and comments on the project, project website.

2.4 Description of Socio-Economic Values

Demographic information from the Australian Bureau Statistics (ABS), Planning Information and Forecasting Unit (PIFU), and Office of Economic and Statistical Research (OESR) is used where available to profile populations in the relevant areas including: population, age distribution, country of origin, distribution of family types, employment, income and housing information.

Information on the community services and infrastructure, emergency services, health and education has been derived from desktop studies and consultation with government agencies, representative groups and individuals.

2.5 Identification and Assessment of Potential Social Impacts and Effects

The aims of this stage are to:

- identify the potential social impact categories;
- measure the magnitude and extent of the social impacts and effects within the study area; and
- suggest appropriate impact mitigation measures.

2.6 Identification and Assessment of Potential Economic Impacts

Economic impact analysis is typically carried out to determine the impact of a project or activity on the economy, employment and trade. Such studies are useful where the impact of a project or activity needs to be quantified.

An economic impact analysis measures the economic activity generated by a major commercial or government activity on an economy. The economic impact of an activity or project is usually measured in terms of the contribution to four key economic indicators: output (i.e. sales); value added (i.e. Gross State Product or Gross Domestic Product); household incomes (i.e. wages / salaries); and employment. The economic impacts of the proposed Gladstone Nickel Project have been analysed based on these four indicators in terms of local, regional, state and national economic impacts from both the construction and operation phases for the project.

In determining the overall impacts of the proposed project, a number of steps were undertaken including: data research and collection; the identification of direct economic impacts and economic modelling of flow on impacts.

2.6.1 Data Research & Collection

The first stage of any economic impact assessment is to collect necessary data. The data requirements include information on revenue streams, operating cost items, capital expenditure, wages and salaries, employment numbers and types, and the sources of expenditure. All information used in the economic impact assessment has been developed and supplied by GNPL, and combined with ABS state/national data and findings from previous related studies in the project area.

2.6.2 Direct Impact Analysis

Direct economic impacts are typically a combination of the project’s construction and operational activities. In examining the net economic impact and to ensure not to over estimate the economic impact of the proposed development, the following three impacts are considered in estimating the direct economic impacts:

- **displacement impacts of economic activity** – whereby economic activity is simply relocated from one area to another;
- **substitution expenditure** –where by demand for one industry’s output is switched to another, therefore providing little net stimulus to an economy; and
- **import expenditure** – whereby expenditure is undertaken on imported goods which does not produce economic stimulus to the Australian economy.

2.6.3 Flow-on Impact Analysis

Once the direct impacts have been identified and quantified, the flow-on impacts can be calculated. For this project, analysis has been undertaken at local, regional, state and national levels, utilising input-output techniques.

Input output tables are produced by government and academic statistical organisations. For the Gladstone Nickel Project, ABS input-output multipliers for facility construction and ongoing operations have been used to determine the economic impact of the proposal from a national level. For local, regional and state impacts, multipliers have been based on previous studies of similar infrastructure projects in the local area.

2.6.4 Development Scenario

The development scenario that the analysis has been performed on is characterised by the following characteristics:

- High Pressure Acid Leach Refinery (HPAL);
- residue disposal facility (RSF); and
- project pipelines, including ore slurry pipeline.

Analysis of the economic impact was undertaken over a 20 year period, from October 2007 – September 2027. A start date of capital expenditure is assumed from 2007 and operations from 2010. Throughout the analysis, an exchange rate of AUD$1.35 per USD was used to convert all USD amounts into Australian currency[1].

2.6.5 Model Inputs

Planned capital expenditure and operating expenditure amounts are key inputs to determine the economic impact in the construction and operations phases of the project. These inputs are summarised below.

Capital Expenditure (Construction Phase)

The project construction phase encompasses establishment of the refinery and supporting infrastructure/establishments.

[1] Source: http://www.xe.com/ucc/convert.cgi (18/04/06)

Construction costs included in the economic impact assessment are:

- process refinery development (including residue disposal facility);
- development of stockpiles and port facilities;
- slurry and seawater pipelines;
- labour costs for construction;
- engineering, procurement, and construction management (EPCM) cost;
- owner's cost; and
- contingency.

There are two stages of project construction each spanning over 3.5 years with a small proportion of costs occurring in the fourth year. The construction costs have been assumed to occur over 3.5 years whereas labour spend is expected to occur over the first 3 years of each stage. The economic impact assessment has been run on a stage-by-stage basis.

Construction costs, inclusive of labour, assumed for Stage 1[2] are $3.1 billion, and $1.6 billion for Stage 2[3], indicating that the majority of the capital spend will occur in the first three years of the project.

Operating Expenditure (Operations Phase)

Operating expenditure relates to those costs that are associated with the operating phase of the project. Operating costs included in the economic impact assessment are:

- ore supply contracts and related costs;
- labour cost for ongoing operations;
- major reagents / consumables;
- power;
- maintenance;
- contract and general costs;
- other overheads;

[2] Note: Construction Stage 1 assumed from October 2007 – September 2011

[3] Construction Stage 2 assumed from October 2012 – September 2016

- freight costs; and
- marketing costs.

Stage 1 operations are assumed to begin in year 4 of the project, and continuing for five years until September 2015. Stage 2 of operations (which includes Stage 1) is estimated to begin in year 9 of the project, and has been modelled until September 2027 (year 20) to cover the assessment period for the EIS. The economic impact assessment of the impacts of ongoing operations has been calculated on a year-by-year basis.

Ongoing operation costs per annum assumed for Stage 1 are $358 million, and double to $716 million for Stage 2, which reflects that the nickel and cobalt outputs of the refinery are approximately double in Stage 2. During Stage 2, costs are assumed to double along with the level of production.

Operating Revenue (Operations Phase)

Revenue has been calculated based on GPNL's forecast tonnage of annual nickel and cobalt production. Production tonnage and revenues have been based on annual totals for analytical purposes. Average prices per tonne of nickel and cobalt were used to determine the total price received based on the tonnage yielded. The nickel price used in the economic analysis was USD$7.69 per pound (or AUD$22,921 per tonne)[4], and the cobalt price was USD$15.55 per pound (AUD$46,410 per tonne)[5]. Stage 2 has the higher amount of product and hence the greater revenue.

Operating revenue assumed for Stage 1 is $1.6 billion, and $3.4 billion for Stage 2.

---

4 Source: London Metals Exchange, 2006

5 Source: American Metal Market, 2006

3.1 Geographic Description

3.1.1 Regional Overview

The refinery/RSF study area and pipeline study area are located in the Fitzroy Statistical District comprising the LGAs of Calliope Shire, Gladstone City, Rockhampton City, Banana Shire, Mount Morgan Shire, Fitzroy Shire, Livingstone Shire, Duaringa Shire, Worabinda Aboriginal Council, Bauhinia Shire, Peak Downs Shire, Emerald Shire and Jericho Shire.

Gladstone and Rockhampton are major ports and industrial hubs for the region and are also major service centres and urban areas. Gladstone is located 550 km north of Brisbane and 110 km south of Rockhampton. The greater regional area consists predominantly of rural lands and forestry reserves serviced by a number of small towns including Calliope, Mount Larcom, Marlborough, Mount Morgan and Gracemere. To the west are a number of coal and mineral resource areas serviced by regional centres including Biloela and Emerald. The Great Barrier Reef Marine Park and a number of conservation reserves are located within the region.

3.1.2 Refinery/RSF Site and Surrounding Area

The refinery site and RSF area are located within the Yarwun Precinct of the Gladstone State Development Area (GSDA), which contains a number of industrial operations including the Orica Chemical Complex, Comalco Alumina Refinery and the Cement Australia Cement Plant. The City of Gladstone is the main residential area and includes the suburbs of Barney Point, South Gladstone, West Gladstone, Kin Kora and Sun Valley. There are almost 30,000 people residing in greater Gladstone. Mount Larcom, a small town located on the Bruce Highway with a population of approximately 350 persons is located approximately 10 kilometres from the refinery site.

There is a small population in the local area around the refinery/RSF site. The village of Yarwun, with under 200 residents, is located approximately 5 kilometres from the refinery. There are a number of occupied rural properties are situated within proximity of the residue storage facility (RSF). The ABS collection district – CD 3070107, which includes Yarwun and these surrounding rural residences, has been used to define the local area. Other land uses in the area include agriculture, state forests, conservation areas, and residential settlements.

3.1.3 Pipeline Study Area

The pipeline study area consists predominantly of large agricultural properties of freehold tenure. Many of the properties include occupied rural homesteads. There are several small population settlements in the area, many below 200 residents. The closest population settlements to the route include Bajool, Ragland, Gracemere and Yarwun. Several of these settlements are located alongside the Bruce Highway and railway line, providing basic services to surrounding rural homesteads and to commuters along the highway. The largest population settlement along the pipeline route is Gracemere which is a regional service centre. The cities of Rockhampton (population approximately 60,000) and Gladstone (population approximately 27,000) are the closest major urban settlements to the study area. Apart from rural land use, the area also includes forestry, mining (including the Marlborough Tenements and Mount Morgan) and conservation land uses.

3.1.4 Major Industrial Projects in the Region

Gladstone and the surrounding region have grown to be the most significant heavy industry area in Queensland. The message from the Queensland Government both nationally and internationally is that this region will be "Australia's newest industrial powerhouse" as promoted by the Department of State Development (DSD brochure- Gladstone and Calliope Australia's newest economic powerhouse).

The region has extensive areas of quality agricultural land, strategic industrial development sites at Aldoga and the GSDA, extensive mineral deposits, strategic transport infrastructure and generally a good supply of electricity, water and natural gas. Agricultural, mining, process and service industries are the main industries of the region. Table 3.1 outlines the major industrial facilities that operate in the Gladstone region.

Table 3-1: Industries currently operating in the Gladstone region:

Industrial Site	Operations
Queensland Alumina Limited	World's largest alumina refinery.
Boyne Smelters Limited	Australia's largest aluminium smelter.
Cement Australia Limited	Queensland's largest manufacturer of cement
Orica Chemical Refinery	Produces chemicals including ammonium nitrate and sodium cyanide.
Southern Pacific Petroleum	A pilot plant for shale oil production

(Source: GAPDL, 2006)

Gladstone Area Promotion and Development Ltd estimates the current value of projects under construction or completed in the last 12 months in the Gladstone Region[6] is over $ 3 billion, with an estimated $15 billion of proposed future developments or expansions of existing refinerys (GAPDL, 2006).

Environmental Impact Studies (EISs) are currently being prepared for the Wiggins Island Port and expansion of the Fisherman's Landing. The EISs for these projects and the GPNL project are on a similar timeframe and it is likely that construction of all three projects will occur within a similar time. Table 3.2, provides details of major projects under construction or planned for the region.

[6] GAPDL defines the Gladstone Region as incorporating Gladstone, Calliope, Miriam Vale and Banana local government areas.

Table 3-2: Major Projects under Construction/Planned in the Region

Company	Project	Estimated Construction Workforce	Completion
Air Liquide	Air separation refinery	30 – 40	2006
Boyne Smelters	Hood replacement, S230	45 +	2006
Comalco	Refining centre of excellence	TBA	2006
Orica	Ammonium nitrate refinery expansion	200	2006
Queensland Alumina	Environmental improvement program & rotary kiln demolition	50 +	2006 / 07
Transpacific Industries	TICOR waste management site	50	TBA
Wiggins Island	Port Development	500 persons over 30 months	2010
Fishermans Landing	Expansion of existing facilities	Utilise existing workforce	2010
Comalco Alumina Refinery	Expansion of existing refinery	1600	TBA

The region currently has a relatively broad base of companies (approximately 30 firms in Gladstone area) in the metals industry, fabrication services and engineering services. Major metal suppliers, specialist formers and fabricators, who also serve the agricultural and fishing industries, general construction and other private customers, are also present. There is currently scope for support industries to expand to adequately service the larger new industrial plants proposed for the region.

Gladstone has significant existing infrastructure to support the local community and industrial development. Key infrastructure includes:

- The Gladstone Port Authority;
- NRG Gladstone Power Station;
- Queensland Gas Pipeline;
- Gladstone Area Water Board;
- Queensland Rail;
- Gladstone Calliope Aerodrome Board;
- Main Roads; and
- Local Council Infrastructure.

Of note is the increasing importance of tourism in the local economy. Tourism accounts for approximately 10% of the economic revenue in the area and the industry is growing. Gladstone serves as a gateway for the Great Barrier Reef resorts such as Herron Island. Council has been promoting the tourist industry of recent times (K. Woodcock, GAPDL, pers. comm. 10.05.06).

4.1 Population

4.1.1 Refinery/RSF Area

The preliminary estimated resident population of Calliope and Gladstone LGAs as at 30th June 2005 was 45,274; comprising 16, 467 people from Calliope Shire and 28,807 from Gladstone City. The population in the immediate area around the refinery site and RSF was 325 persons as at the 2001 Census.

Both LGAs have traditionally experienced steady population growth, with Calliope Shire's rate of growth slightly above that of Gladstone. Calliope's population grew 1.4% in the 12 months prior to June 2005. Between 2001 and 2004, the shire experienced population growth rates of between 2.0 – 2.6%, which is higher than population growth experienced for the Fitzroy SD, and traditionally above the rates of annual population change in Queensland (Refer Table 4.1). .

Gladstone City has had steady population growth, but generally at a rate lower than Calliope Shire. The rate of growth between June 2004 and June 2005 was 0.9%. Average annual population growth for Calliope Shire and Gladstone City is above forecast growth for the Fitzroy Statistical Division and Queensland as a whole (refer Table 4.1).

Past population growth in Calliope Shire has been attributed to new residents moving into the shire (refer Figure 4.1). In comparison, growth in Gladstone City has predominantly been attributed to a natural increase (births minus deaths). As indicated in Figure 4.2, there was a significant net migration out of Gladstone City between 1997 and 2000 which balanced any natural population increase

4.1.2 Pipeline Study Area

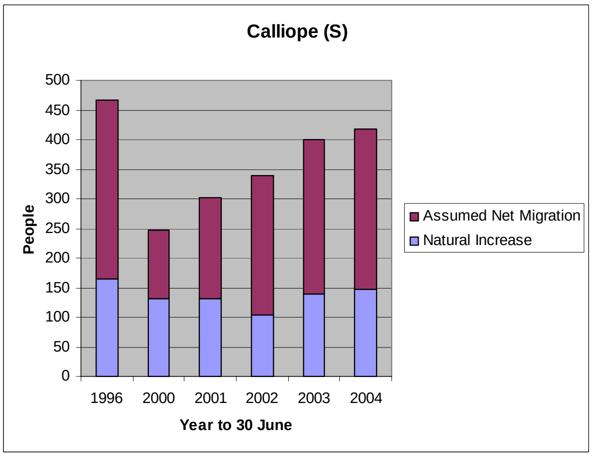
The pipeline corridor study area incorporates Calliope Shire and Gladstone City, Livingstone, Fitzroy, Mount Morgan Shires and Rockhampton City. Most LGAs in the pipeline study area (with the exception of Calliope and Gladstone) have traditionally experienced relatively low population growth. In the twelve months to June 2005, all LGAs in the study area recorded population growth below 2% which was the average State population growth rate. Mount Morgan recorded a decrease in population for the 12 months to June 2005. The rate of population change for most LGAs in the 12 months to June 2005 was lower than the previous 12 months to June 2004.

Table 4-1: Population Trends for Refinery/RSF and Pipeline Route Areas

	1996	2000	2001	2002	2003	2004	2005[7]
Livingstone (S)	23,156 (3.9%)	25,631 (1.5%)	26,368 (2.9%)	26,888 (2.0%)	27,609 (2.7%)	28,266 (2.4%)	28,745 (1.7%)
Fitzroy (S)	9820 (0.7%)	9937 (0.4%)	9,990 (0.5%)	10,085 (1.0%)	10,185 (1.0%)	10,296 (1.1%)	10,374 (0.8)
Rockhampton (C)	59,857 (0.2%)	59,043 (-0.5%)	59,924 (-0.2%)	59,035 (0.2%)	59,187 (0.3%)	59,755 (1.0%)	60,084 (0.6%)
Mount Morgan (S)	2964 (-1.7%	2,900 (-0.3%)	2,943 (1.5%)	2,963 (0.7%)	2,987 (0.8%)	3,057 (2.3%)	2974 (-2.7%)
Calliope (S)	13,575 (3.6%)	14,753 (1.7%)	15,054 (2.0%)	15,393 (2.3%)	15,793 (2.6%)	16,235 (2.6%)	16467(1.4%)
Gladstone (C)	26,574 (1.4%)	26,631 (0.2%)	26,831 (0.8%)	27,315 (1.8%)	27,807 (1.8%)	28,548 (2.5%)	28,807 (0.9%)
Fitzroy (SD)	180,815 (2.6%)	183,060 (0.1%)	184,411 (0.7%)	186,143 (0.9%)	187,974 (1.0%)	190,466 (1.3%)	192,377 (0.8%)
Queensland	3,338,690 (2.3%)	3,561,537 (1.7%)	3,628,946 (1.9%)	3,710,972 (2.3%)	3,801,039 (2.4%)	3,888,077 (2.0)	3,963,968 (2.0%)

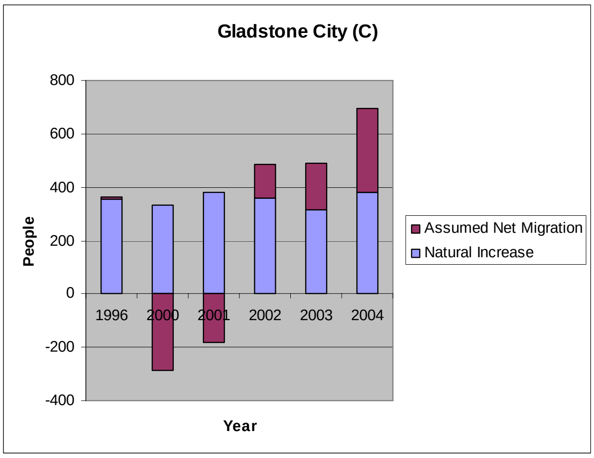
(Source: PIFU 2006)

Figure 4-1: Components of Population Change – Calliope Shire



Source: PIFU, 2006

Figure 4-2: Components of Population Change – Gladstone City



Source: PIFU, 2006

[7] Preliminary estimate based on figures released by PIFU, March 2006

4.2 Population Projections

The Department of Local Government, Planning, Sport and Recreation's medium series population projections predict Livingstone, Calliope and Gladstone LGAs to experience the highest population growth of the refinery/RSF and pipeline study areas. These LGA's are generally expected to have population growth above the forecast Queensland's average population growth. Rockhampton City is predicted to have a relatively static population growth while Mount Morgan's population is expected to decline. Table 4.2, details population projections for the LGAs discussed.

Table 4-2: Population Projection for Refinery/RSF and Pipeline Route LGAs8

	2006	2011	2016	2021	2026
Livingstone (S)	30,471 (2.9%)	34,740 (2.7%)	39,026 (2.4%)	43,286 (2.1%)	47,405 (1.8%)
Fitzroy (S)	10,593 (1.2%)	11,276 (1.3%)	11,923 (1.1%)	12,547 (1.0%)	13,145 (0.9%)_
Rockhampton (C)	60,201 (0.4%)	60,311 (0%)	60,410 (0%)	60,506 (0%)	60,605 (0.0%)_
Mount Morgan (S)	2964 (0.1%)	2,881 (-0.6%)	2,735 (-1.0%)	2,577 (-1.2%)	2,401 (-1.4%)_
Calliope (S)	17,081 (2.6%)	19218 (2.4%)	21256 (2.0%)	23,635 (2.1%)	26,280 (2.1%)_
Gladstone (C)	28604 (1.3%)	31688 (2.1%)	35788.00 (2.5%)	40280 (2.4%)	45,124 (2.3%)_
Fitzroy (SD)	194236 (1.0)%	204,019 (1.0%)	214,529 (1.0%)	225,627 (1.0%)	237,021 (1.0%)_
Queensland	4015722 (2.0%)	4354106 (1.6%)	4677780 (1.4%)	4989871 (1.3%)	5,289,027 (1.2%)

Source: PIFU 2005 (a,b,c,d)

4.3 Age Structure

The estimated age structure of residents in LGAs within the refinery/RSF and pipeline study areas based on preliminary ABS data as at 30 June 2005 is shown in Figure 4.3. For all of the LGAs within the project area, the largest proportion of the population is 'working age' between 15 and 64 years of age, with the 25-44 and 45-64 year age groups making up a dominant component of the resident population. There is also a high proportion of residents between 0 and 14 years of age, particularly in Fitzroy, Calliope and Gladstone LGAs. For most LGAs there is a significantly lower proportion of residents in the 15-24 and 65 plus age groups.

Comparison of the 2005 estimated resident age structure with the age structure as at 2001 census indicates that there have been minor fluctuations in age distribution; however overall, age composition has not changed significantly. Analysis of ABS time series data from 1991 shows an ageing population for the LGAs within the study area. General trends for all LGAs within the refinery/RSF and pipeline study areas include:

- a decrease in the 0-14 year old age bracket;

---

[8] Based on Medium Series Population Projections provided by PIFU, March 2006

- a decrease in the 15-24 and 25-44 year old age brackets;
- an increase in the 45-64 and above 65 year old age brackets.

The trend towards an ageing population is occurring across Australia.

In addition, for the larger centres (Gladstone, Rockhampton, Calliope LGAs) it is expected that the majority of the population moving into the areas at least in the short term will be of working age (24 – 44 years) especially with the proposed large industrial developments and boom in the resource sector currently being experienced in Queensland. These workers will bring with them dependents, most likely partners and children which may influence the population age structure.

4.3.1 Refinery/RSF Area

Calliope Shire and Gladstone City have a resident age structure which is consistent with the age structure of the Fitzroy Statistical Division and of Queensland. Details of age structure for Calliope Shire and Gladstone City are as follows:

- greatest proportion of population is in the 25–44 year age range;
- a smaller portion of people over 60 years of age. The percentage of residents over 60 years of age is lower than that for the Fitzroy Statistical Division and Queensland;
- median age: Calliope – 35; Gladstone – 32, Fitzroy – 34, Queensland – 35.

As at the 2001 Census, the local community around the refinery/RSF had a slightly older age distribution to that of the Calliope and Gladstone LGAs. The local community also had a higher proportion of residents in the 45-64 year and 64 and above age brackets, and a lower proportion of residents in the 0-14, 15-24 and 25-44 year age brackets compared to Calliope and Gladstone LGAs.

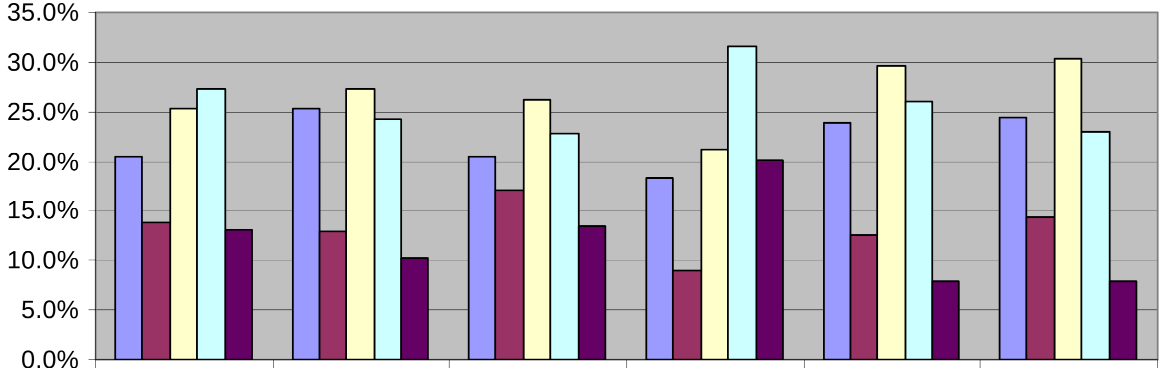
4.3.2 Pipeline Study Area

The age profile of the pipeline study area was relatively consistent with the refinery and residue storage facility study area, and Queensland as a whole. Some characteristics of the age profile are detailed below:

- Calliope and Gladstone LGAs had a higher proportion of people between the ages of 25-44 compared to other LGAs in the study area;
- Fitzroy LGA had a higher proportion of people aged 0-14 than other LGAs;
- Mount Morgan had a lower proportion of people aged 25-44 and a higher proportion of people aged 45-64 than other LGAs
- LGAs Median Age: Livingstone – 38; Fitzroy – 34; Rockhampton – 34; Mount Morgan – 43; Calliope – 35; Gladstone 35.

The median age for residents of LGAs in the pipeline study area was relatively consistent with the Queensland average, except for Mount Morgan which had a significantly older medium population.

Figure 4-3: Comparative Age Structure (%) of Residents in LGAs (2005)[9]



	Livingstone (S)	Fitzroy (S)	Rockhampton (C)	Mount Morgan (S)	Calliope (S)	Gladstone (C)
Persons 0 to 14 Years	20.5%	25.4%	20.5%	18.2%	23.8%	24.3%
Persons 15 to 24 Years	13.8%	12.9%	17.1%	9.0%	12.6%	14.4%
Persons 25 to 44 Years	25.4%	27.3%	26.2%	21.1%	29.6%	30.4%
Persons 45 to 64 Years	27.2%	24.3%	22.8%	31.5%	26.1%	22.9%
Persons 65 Years or Older	13.1%	10.2%	13.5%	20.1%	8.0%	7.9%

Source (QRSIS, 2005)

[9] This data represents the preliminary estimates of the resident populations (ERP) as 30 June 2005.

4.4 Male to Female Ratio

Livingstone, Mount Morgan, Calliope and Gladstone LGAs had a marginally higher proportion of males within their resident population. Fitzroy and Rockhampton LGAs had a slightly higher proportion of females which is consistent with the Queensland average (refer Table 4.3).

Table 4-3: Percentage of Males to Females (2001)

	Males	Females
Livingstone (S)	51%	49%
Fitzroy (S)	49%	51%
Rockhampton (C)	49%	51%
Mount Morgan (S)	50%	50%
Calliope (S)	51%	49%
Gladstone (C)	51%	49%
Fitzroy (SD)	51%	49%
Queensland	49%	51%

Source: ABS, 2002

4.5 Family Structure

Table 4.4, outlines the composition of the Calliope, Gladstone, Fitzroy and Queensland communities by households at the 2001 census. Details of household and family type for the pipeline study area have not been included as most workers will be accommodated at the accommodation camps as single workers and will not be accompanied by partners or dependents. As at the 2001 Census, Calliope had a greater proportion of couple families with children (61%) and a lower proportion of other family types (couple family without children, one parent family, multi-family household, lone person household, group family household) than Gladstone and Queensland 50%). Gladstone had a higher proportion of couple family with children households (55%) than the Queensland average, though other family types were fairly representative of the Queensland average. (Refer Table 4.4). Household types have remained consistent since the 1991 census for both Calliope and Gladstone Local Government areas, with 91 – 92% of households being single family abodes.

Table 4-4: Household Type and Family Type (2001)

	Immediate Area		Calliope (S)		Gladstone ©		Fitzroy (SD)		Queensland	
	%	Persons	%	Persons	%	Persons	%	Persons	%	Persons
One family household:										
Couple family with children	60%	185	61%	8,189	55%	13,582	54%	85,264	50%	1,617,476
Couple family without children	25%	78	20%	2,733	19%	4,788	20%	32,226	21%	676,855
One parent family	8%	23	9%	1,152	12%	2,871	11%	17,761	12%	381,364
Other family	0%	0	0%	50	1%	152	1%	1,435	1%	34,334
Multi-family household		not avail	1%	145	1%	303	2%	2,398	2%	60,899
Lone person household	6%	17	7%	890	9%	2,144	9%	15,042	10%	315,949
Group household	1%	3	2%	228	3%	718	3%	4,765	4%	134,449
Total	100%	**306**	**100%**	**13,387**	**100%**	**24,558**	**100%**	**158,891**	**100%**	**3,221,326**

Source: ABS, 2001 Time Series Profile; ABS, 2001 Basic Community Profile

4.6 Country of Birth and Language Spoken at Home

The majority of residents, 83.7% within the refinery/RSF study area and 85.9% within the pipeline study area, were born in Australia. The most common places of origin for those born overseas were Great Britain and New Zealand.

In 2001, over 95% of residents from both study areas spoke English only. Other languages spoken at home were Dutch, German and Vietnamese (ABS, 2002).

4.7 Indigenous Population

In the 2001 Census, 3.1% of residents of the refinery/RSF study area identified themselves as having indigenous ancestry (either of Aboriginal or Torres Strait Islander descent or both). Within the pipeline study area, 4.1% of the resident population identified themselves as indigenous.

4.8 Labour Force

Table 4.5 shows the estimated labour force as at 31 March 2006 according to QSRIS calculations[10]. The labour force has increased in all Local Government Areas since 2001. As at the 2001 Census, the labour force of the Fitzroy Statistical Division was 138, 517 persons, representing approximately 8 % of Queensland's labour force.

The unemployment rate of the Fitzroy SD at the 31 March 2006 was 4.5 %, which is below Queensland's unemployment rate. LGAs within the project area recording low unemployment rates include Fitzroy Shire (2.6 %), Gladstone City (4.3 %) and Calliope Shire (4.5%), while Mount Morgan recorded the highest unemployment rate at 20% for the March quarter 2006. As indicated on Figure 4.6, unemployment rates for all LGAs within the project area have steadily been declining since 2003 and are considerably lower than the unemployment rates recorded at the 2001 census. As of the 2001 Census, the local area around proposed refinery/RSF site had an unemployment rate of 12 % which was significantly higher than the surrounding local government areas (Calliope 7.6% and Gladstone 9.5 %) and Queensland as a whole (8.2 %).

The majority of employed persons at the 2001 Census were employed full time, indicating that full time employment is much more common in the project area. LGAs within the project area (with the exception of Livingstone, Rockhampton and Mount Morgan) had a higher proportion of employed persons working full time than the Queensland average. In the immediate area, there was a substantially lower percentage of the labour force employed in full– time employment (52 %) than surrounding local government areas (Calliope 67.1 %, Gladstone 66.9%) and Queensland (63.9 %).

Table 4-5: Employment Profiles of Local Government Areas within Study Area (LGAs) as at 2001 Census and 31 March 2006

Area	Employed 2001	Employed Full Time (%) 2001	Unemployment Rate (%) 2001	Labour Force 2001	Estimated Labour Force at 31 March 2006
Livingstone (S)	10,196	61.6	8.5	11,149	14,145
Fitzroy (S):	4,370	64.0	6.9	4,370	5,729
Rockhampton (C)	26,754	63.4	9.3	26,754	33,734
Mount Morgan (S)	614	57.7	23.3	800	1,073
Calliope (S)	6,357	67.1	7.6	6,878	8,823
Gladstone (C)	12,033	66.9	9.5	13,292	16,433
Queensland	1,568,864	63.9	8.2	1,709,612	2,100,248

Source: ABS, 2002; OESR, 2006; QSRIS, 2006

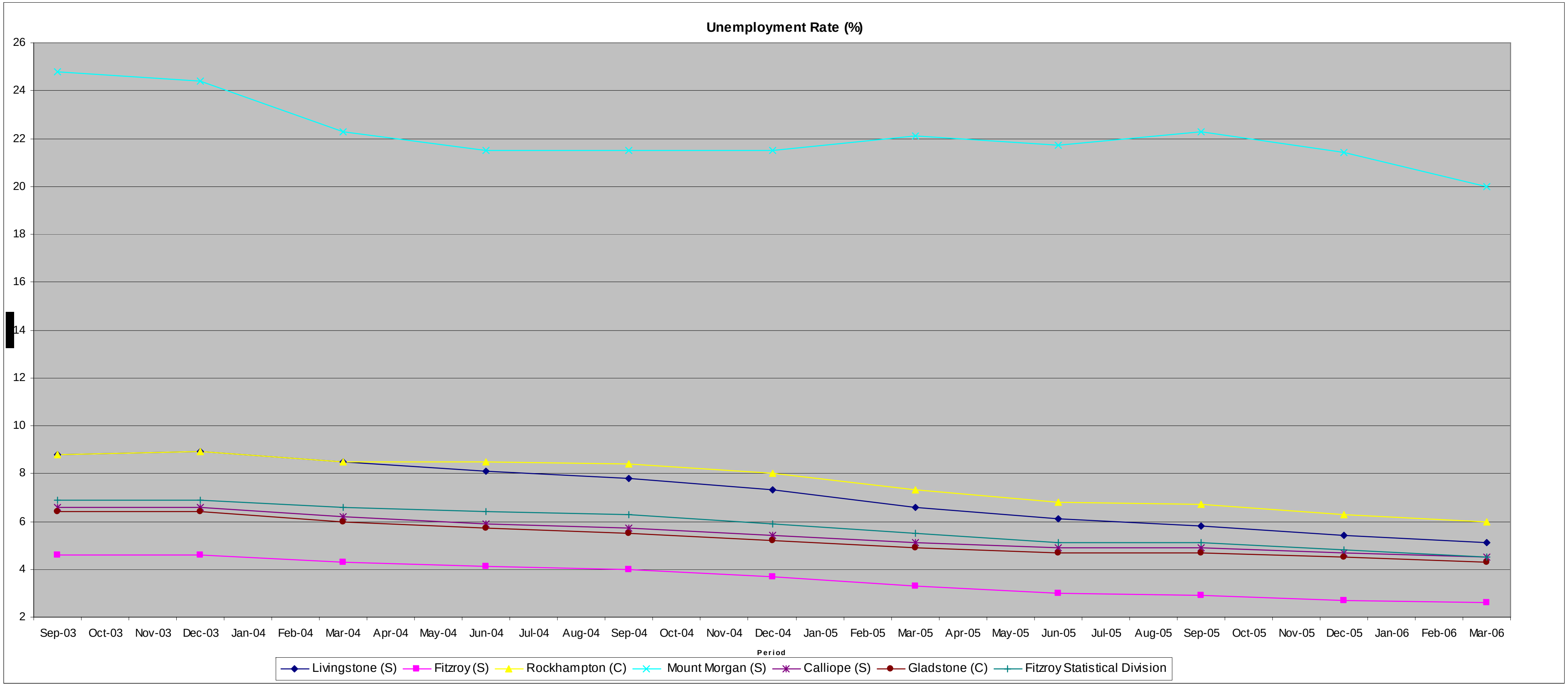
In the past the Fitzroy Region, in particular the Gladstone/Calliope area, has experienced periods where there have been large influxes of non-resident workers into the area. Many of the non-resident workers

[10] Data derived from Australian Government Department of Employment and Workforce Relations

moved into the area to work on the construction phase of large industrial infrastructure projects such as the Comalco Aluminium Refinery development (CAR1). Following construction, these workers have typically moved on to other projects which may be outside of the area. At the 2001 Census, there was a higher proportion (16%) of non-resident workers[11] recorded, many of whom were involved with the CAR 1 project which was under construction at that time. Three-quarters of these new workers in the area moved from other areas within the State, including 14% from the Fitzroy Statistical Division (PIFU, 2003).

[11] Non-resident or 'Imported' refers to workers who moved into Gladstone/Calliope in the twelve months prior to the census, while 'resident' refers to those workers whose usual residence twelve months prior to the census was in the same region, although they may have not moved during this time (PIFU, 2003)

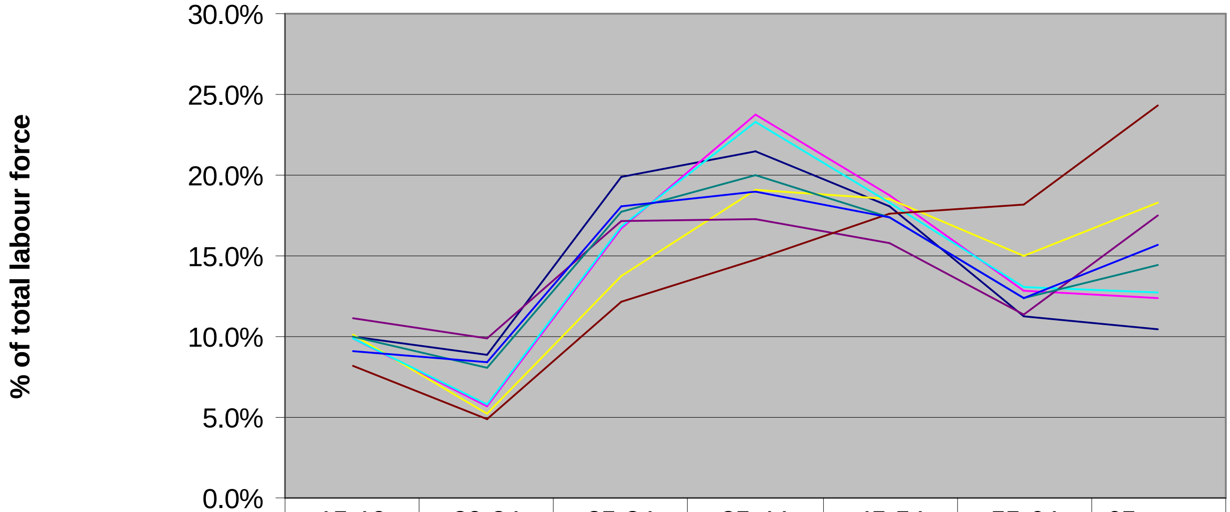
Figure 4-4: Unemployment Rate2003-2006



(Source: QSRIS, 2006).

As of the 2001 Census, the most prevalent age group in the labour force for most LGAs was the 35-44 year old age group (refer figure 4.5). In all LGAs there was a low proportion of 20-24 year olds participating in the labour force. With the exception of the 25-34 year old age bracket, resident workers outnumbered imported workers at the 2001 Census[12]. The male to female ratio of the labour force in Gladstone/Calliope is 60:40.

Figure 4-5: Age Composition of Labour Force



	15-19 years	20-24 years	25-34 years	35-44 years	45-54 years	55-64 years	65 years and over
Gladstone	10.0%	8.9%	19.9%	21.5%	18.1%	11.2%	10.4%
Calliope	9.9%	5.7%	16.7%	23.8%	18.8%	12.9%	12.3%
Livingstone	10.1%	5.2%	13.7%	19.1%	18.5%	15.0%	18.3%
Fitzroy	9.9%	5.8%	16.9%	23.3%	18.3%	13.1%	12.7%
Rockhampton	11.2%	9.8%	17.1%	17.2%	15.8%	11.4%	17.5%
Mount Morgan	8.1%	4.9%	12.1%	14.7%	17.6%	18.2%	24.3%
Fitzroy (SD)	10.0%	8.1%	17.7%	20.0%	17.4%	12.4%	14.4%
Queensland	9.1%	8.4%	18.1%	19.0%	17.4%	12.3%	15.7%

Age Group

Source: ABS, 2002

[12] 2001 Census – Estimated Resident Population

4.9 Employment by Industry and Occupation

Table 4.6, details the proportion of people employed in selected industries (as of the 2001 Census) within the refinery/RSF study area and pipeline study area. Industries shown in Table 4.6 represent some of the core industries involved in the construction and operation of the GPN project.

Manufacturing is the largest employer by industry in both the Calliope Shire (27%) and Gladstone City (19%) LGAs. The percentage of workers employed in manufacturing is considerably higher than for Fitzroy Statistical District (11%) and the state (11%). Retail trade constitutes the second largest employer by industry for Calliope Shire (14%) and Gladstone City (16%) LGAs. Other significant areas of employment include construction, transport and storage, education, and health and community services. Retail trade was the largest employer by industry for most other LGAs in the pipeline study area.

As of the 2001 Census, manufacturing was the largest industry employer in the local area (15 %), followed by retail (11%), transport and storage (11%), property and business services (10%), government administration and defence (10%), and agriculture (8%). Of note was that Agriculture was a significantly higher employer in the immediate area surrounding the refinery than found in Gladstone LGA, reflecting the rural setting of the immediate area. The Transport and Storage industry was also a significantly higher employer in the immediate area compared to Calliope and Gladstone.

Table 4.7, presents the percentage of people employed by occupation category. This table indicates that a high proportion of the working population in the refinery/RSF study area and the pipeline study are employed as tradespersons and related workers.

The high percentage of persons employed in a trade in both study areas, indicates that the local region has a comparative advantage in this area of employment. There is a significantly higher proportion of tradespersons and related workers in Gladstone/Calliope than the surrounding LGAs. The other occupations consisting of a significant proportion of the local project area workforce are intermediate production and transport workers, labourers and related workers, and professionals (in particular Livingstone and Rockhampton LGAs). These findings indicate that there may be a higher proportion of workers in the area with similar occupational skills to what the project will require.

It has been noted in discussions with both Calliope Shire and Gladstone City Councils that a significant portion of the resident labour force in the area works outside of the Gladstone region, which may be due to better employment opportunities around the mines in the Bowen Basin than in the immediate Gladstone area. In Calliope Shire, under half of the labour force was employed in jobs locally within the Calliope area. In Gladstone City, this proportion was higher with close to 70 % of the labour force being employed locally. Council officers believe that a major infrastructure project, such as the Gladstone Nickel Project, would draw a substantial number of the labour force working outside Gladstone region back to Gladstone.

Workforce data analysis also indicates that there is a significant mobile workforce who may be attracted to work in the area should the opportunity arise. In the 12 months prior to the 2001 Census, 7% of the total workforce moved to Calliope/Gladstone and in the 12 months prior to the 1996 Census, 16% of the total workforce moved to the area. Of the employed workers who moved into the area during the 12 months prior to the 2001 Census (1218 workers), 10% were employed in the construction industry (comprising 10% of the total construction workforce) and 15% in manufacturing (comprising 8% of the total manufacturing workforce).

Table 4-6 Key Industries by Employment (%) as at 2001 Census

	Key Industries involved in construction and operations for the project			
Location	Manufacturing	Electricity, Gas, Water Supply	Construction	Transport & Storage
Livingstone	8.2	1.4	7.9	4.4
Fitzroy	9.7	2.1	6.6	8.3
Rockhampton	9.8	2.2	5.9	6.5
Mount Morgan	8.4	1.5	7.1	6.1
Calliope	24.2	1.6	8.8	5.7
Gladstone	18.5	2.7	8.5	8.1
Queensland	10.7	0.8	7.1	4.9

(Source: ABS, 2002)

Table 4-7: Employment (%) by Occupation 2001.

Occupation	Immediate Area	Calliope (S)	Gladstone (C)	Livingstone (C)	Rockhampton (C)	Mount Morgan (S)	Fitzroy (SD)	Queensland
Managers and Administrators	18.7%	8.6%	4.8%	9.3%	4.8%	4.4%	9.0%	8.5%
Professionals	8.2%	12.0%	12.9%	15.7%	15.9%	7.9%	13.1%	16.0%
Associate Professionals	7.0%	10.8%	11.6%	12.6%	12.2%	12.6%	11.1%	12.0%
Tradespersons and Related Workers	21.1%	17.6%	18.7%	13.1%	13.1%	15.0%	14.8%	12.8%
Advanced Clerical and Service Workers	1.8%	2.7%	2.9%	3.4%	2.8%	1.8%	2.7%	3.5%
Intermediate Clerical, Sales and Service Workers	9.4%	11.8%	14.1%	16.2%	18.3%	16.7%	14.6%	16.9%
Intermediate Production and Transport Workers	14.0%	16.9%	15.0%	7.5%	7.6%	12.0%	12.1%	8.5%
Elementary Clerical, Sales and Service Workers	3.5%	7.4%	9.3%	8.9%	10.8%	10.4%	8.8%	10.1%
Labourers and Related Workers	11.1%	10.0%	9.0%	11.3%	12.5%	16.3%	11.9%	9.7%
Inadequately described	1.8%	1.1%	0.7%	0.6%	0.6%	1.0%	0.7%	0.7%
Not stated	3.5%	1.0%	1.0%	1.4%	1.3%	1.9%	1.2%	1.2%
Total no. of workers	**171**	**6,351**	**12,036**	**10,201**	**24,275**	**618**	**78,092**	**1,568,864**

(Source: OESR, 2006)

4.10 Income

The median weekly individual and family income for Gladstone as at the 2001 Census ($376 and $998 respectively) was above the Queensland average ($360 and $871 respectively). Calliope Shire's median family weekly income ($975) was also above the State average; however the median individual income ($343) was below the State average ($376).

As of the 2001 census, the $1 - $199 weekly income bracket was the most prevalent income range for residents (aged 15 years and above) in Calliope Shire (23%) and Gladstone City (22%). This is relatively consistent with Fitzroy SD and Queensland (refer Table 4.8). 11% of Calliope and Gladstone residents fell into the $1,000- $1,499 weekly income bracket, which was the second most prevalent income range. The percentage of residents earning $1,000 - $1,499 per week was considerably higher than the Fitzroy region and Queensland as a whole (ABS, 2001). The figures suggest a significant disparity in income levels between Calliope and Gladstone LGAs.

There were also a significant number of resident families earning low weekly incomes that were below the family poverty line of $550.80 per week [13] (University of Melbourne, 2002). 21% of Calliope's weekly family incomes were below $500, while 18% of Gladstone's weekly family incomes were below $500 (ABS, 2001). The Fitzroy Statistical District and Queensland also recorded a high proportion of families below the poverty line in 2001 (22% of both Fitzroy and Queensland residents' weekly family incomes were below $500 per week).

Within the pipeline study area, median weekly and individual incomes for all LGAs except Gladstone and Calliope were below the state average. As of the 2001 Census, all LGAs except for Mount Morgan recorded median weekly family incomes that were above the family poverty line of $550.80 per week [14] (University of Melbourne, 2002). Mount Morgan recorded a weekly family income of $484. However as with the refinery/RSF study area, there was a large disparity in incomes.

[13] Family Poverty line based on a family income unit comprising two adults and two dependant children where only the head of the family is working and including housing costs.

[14] Family Poverty line based on a family income unit comprising two adults and two dependant children where only the head of the family is working and including housing costs.

Table 4-8: Median Weekly Income for Persons 15 Years and Over (2001)

	Median Weekly Income ($)	
Location	Individual Income	Family Income
Livingstone	303	769
Fitzroy	340	818
Rockhampton	326	814
Mount Morgan	217	484
Calliope	343	975
Gladstone	376	998
Queensland	360	871

(Source: ABS, 2002)

4.11 Education Profile

Table 4.9 outlines educational qualifications and certificates of residents within the refinery/RSF study area and pipeline study area (2001, ABS Census). Of those who responded to the 2001 census, 20.9 % of Calliope residents and 20.2% of Gladstone City residents held a certificate. In Calliope Shire and Gladstone City LGAs, the majority held a qualification in "Engineering and Related Technologies" (ABS, 2002). Within the pipeline study area, certificates were the most common form of educational qualification, with Gladstone and Calliope LGAs having significantly higher rates than the other LGAs.

The proportion of over 15 year-olds with certificate qualifications is higher in Gladstone and Calliope (20% each LGA) than for the Fitzroy District and Queensland. This indicates that a good base of workers with trade qualifications could be available that may be suitable for refinery-type work such as required in the project.

Education levels in the immediate area around the refinery/RSF are generally lower than that of the surrounding local government areas and for Queensland as a whole, particularly in respect to post graduate education levels as shown in Table 4.9. Of the population in the local area, 14.4 % of the population held a certificate qualification, followed by those with an advanced diploma / diploma (4.8%) and those with a bachelor degree (4.4%).

.

Table 4-9: Education Levels of Population Aged 15 Years and Over

Education Levels of Population Aged 15 Years and Over								
	Calliope (S)	Gladstone (C)	Livingstone (S)	Fitzroy (S)	Rockhampton (C)	Mount Morgan(S)	Fitzroy (SD)	Queensland
Postgraduate Degree	1%	1%	1%	0%	1%	0%	1%	1%
Graduate Diploma and Graduate Certificate	1%	1%	1%	1%	1%	0%	1%	1%
Bachelor Degree	6%	6%	6%	4%	7%	2%	6%	8%
Advanced Diploma and Diploma	4%	4%	5%	4%	4%	2%	4%	6%
Certificate	20%	20%	16%	15%	14%	12%	17%	16%
Not stated/not applicable	68%	68%	70%	77%	73%	83%	71%	68%
Total	**11,109**	**20,116**	**20,859**	**6,945**	**45,554**	**2,213**	**138,517**	**2,823,097**
Source: ABS Basic Community Profile 2001								

4.12 Accommodation and Housing

This section summarises the relevant information about the housing and accommodation characteristics for the refinery/RSF study area including land availability for residential development, availability of rental housing and houses available for purchase. Full details are found in the Housing Impacts Study (URS, 2006). Housing and accommodation characteristics for the pipeline study area are not discussed, as the construction and operational aspects of the pipelines will have minimal influence on housing in the surrounding area. Pipeline construction is over a relatively short period and the majority of the pipeline construction workforce will stay in mobile accommodation camps. The small operational workforce for the pipeline will not be significant in terms of housing and accommodation impacts.

4.12.1 Dwelling Structure

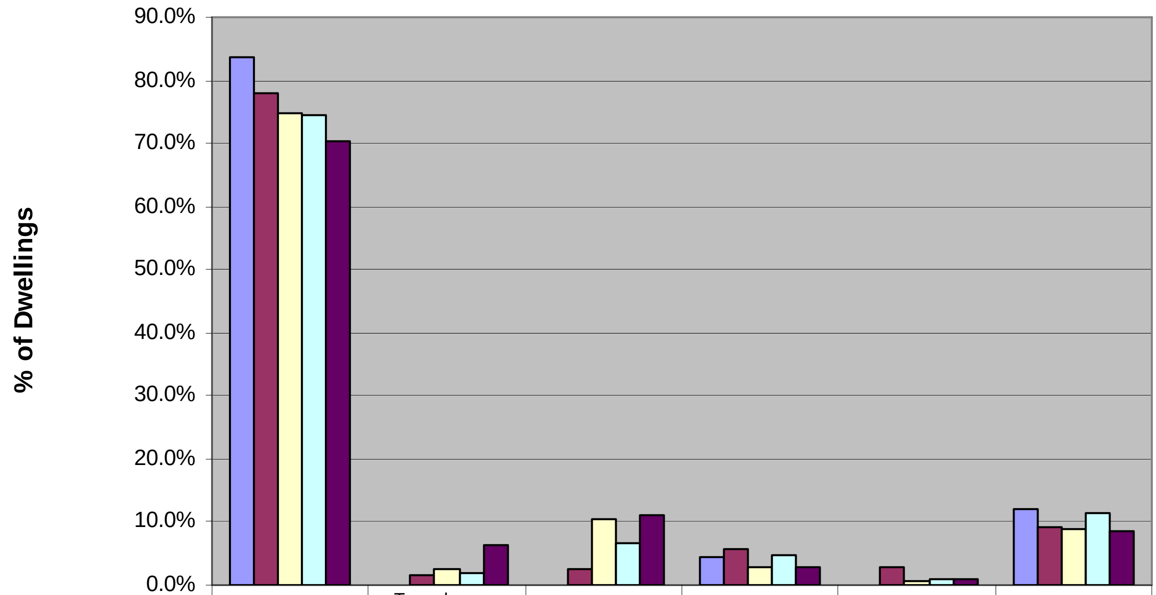
The predominant housing type in the refinery/RSF study area is detached housing, accounting for 78% of Calliope's and 75% Gladstone's total housing stock. The vast majority of Calliope residents (91%) and of Gladstone residents (89%) resided in separate houses (refer to Figure 4.6).

Gladstone has a significantly higher proportion of flats/ units/ apartments (10%) than Calliope Shire (2%) reflecting the more urbanised form of the inner city area of Gladstone. Also of note is the proportion of "other" dwellings located in Calliope (6%) predominantly consisting of caravans, cabins and houseboats. The proportion of "other" dwellings located in Calliope is significantly higher than that for Gladstone, the Fitzroy District, and Queensland.

The predominant housing type in the immediate area surrounding the refinery/RSF is detached houses, accounting for 83.7 % of dwelling types. There are no high density dwellings in the area (such as town houses, flats, apartments) reflecting the low density rural character of the immediate area. Caravans, mobile homes and the like account for 4 % of dwellings in the immediate area. Of note is that 11.9 % of dwellings were recorded as "unoccupied private dwellings" in the 2001 Census, indicating availability for additional population into the local area.

The average household size for all housing types has been decreasing steadily in Gladstone and Calliope LGAs. The rate of decline is consistent with the decreasing household size across Australia. Household sizes for Calliope and Gladstone have dropped from 2.9 (1991 ABS Census) to 2.7 (2001 ABS Census). Household size in these LGAs is slightly above the average household size of Queensland (2.6).

Figure 4-6: Dwelling Type of the Refinery/RSF Study Area



	Separate house	Town house, Semi-detached terrace house	Flat, unit or apartment:	Other dwelling:	Not stated	Unoccupied private dwellings
Immediate Area	83.7%	0%	0%	4.4%	0%	11.9%
Calliope (S)	77.9%	15%	2.6%	5.6%	3.0%	9.3%
Gladstone (C)	74.7%	2.6%	10.4%	2.9%	0.5%	8.9%
Fitzroy (SD)	74.5%	2.0%	6.5%	4.8%	0.9%	11.3%
Queensland	70.5%	6.2%	11.1%	2.8%	0.8%	8.6%

(Source: ABS, 2002)

4.12.2 Tenure Type

Table 4.10, summarises the status of home ownership and rental housing for the refinery/RSF study area in 2001. In Gladstone City there was a lower level of home ownership (30.6%) compared with the Fitzroy District (38 %) and Queensland (37 %). However, the rate of properties being purchased (30%) was above the Fitzroy and Queensland average (25%) and (26%) respectively. There is a relatively high rate of home ownership/purchase within the immediate area around the refinery/RSF (35.3 %) and low rate of rental (16.4%) compared to the surrounding area and State (36.6% fully owned, 25.3 % being purchased, 26.6 -% rented[15]). The high rate of ownership could be attributed to a number of factors including affordability of housing and the presence of a more mature age demographic in the area who are more likely to have purchased/ be purchasing a residence compared to younger age demographics.

Gladstone had a slightly higher rate of non–public housing properties being rented (28%) than the Fitzroy District (26%) and Queensland (27%), while the proportion of rental tenure types in Calliope (21%) was

[15] Does not include Housing Authority rental

significantly lower. The proportion of public housing (6%) was above the proportion of public housing tenures in Queensland (3.5%).

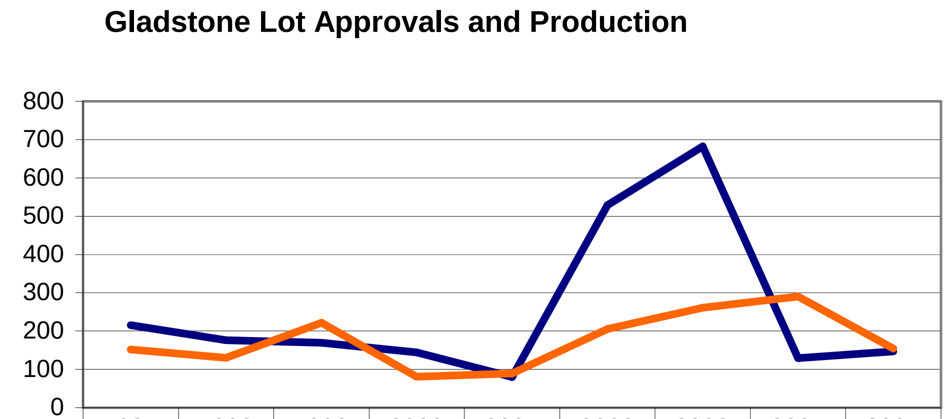
Table 4-10: Tenure Type

Tenure Type	Immediate Area	Calliope (S)	Gladstone (C)	Fitzroy (SD)	Queensland
Fully Owned	35.3%	38.1%	30.6%	37.5%	36.6%
Being Purchased	35.3%	32.7%	29.8%	24.7%	25.8%
Rented - Housing Authority	0.0%	1.1%	6.4%	3.7%	3.5%
Rented - other	16.4%	20.8%	27.9%	26.1%	26.6%
Other (inc. not stated)	12.9%	7.3%	5.3%	8.0%	7.5%
Total	100.0%	100.0%	100.0%	100.0%	100.0%
(number)	116	5,219	9,853	65,924	1,355,613
Source: ABS Basic Community Profile 2001					

4.12.3 Residential Land Supply

Discussions with Gladstone City Council, Calliope Shire Council, and the Queensland Department of State Development indicate there are currently 1000 approved allotments available in Gladstone LGA and 2000 in Calliope in 2006. These lots are approved lots but may not be serviced/ constructed/ or produced. Figure 4.7 details Gladstone and Calliope LGAs lot approvals and production between 1997 and 2005. As indicated in Figures 4.7 and 4.8, there was a sharp rise in the approval of residential allotments in 2001 through until 2004 when a sharp decline occurred and lot approvals and production appears to have levelled off since.

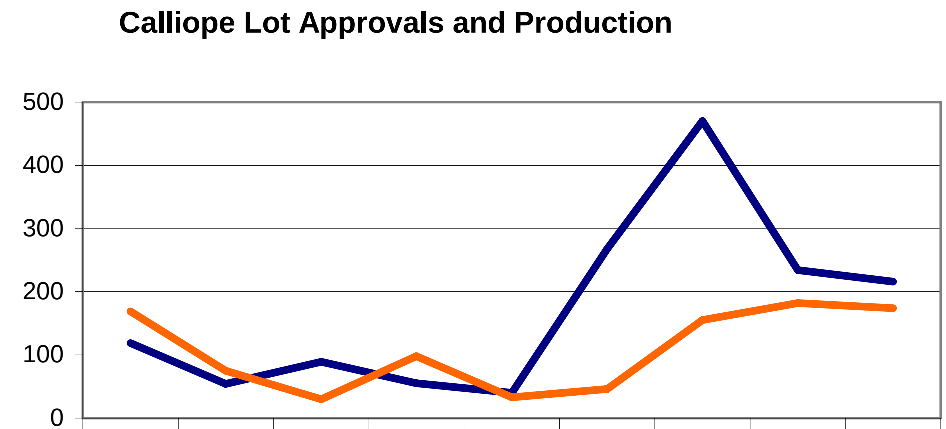
Figure 4-7: Gladstone Lot Approvals and Production



	1997	1998	1999	2000	2001	2002	2003	2004	2005
Lots Approved	215	176	169	144	80	529	682	129	147
Lots Produced	152	130	222	81	89	205	261	290	154

(Source: PIFU 2006)

Figure 4-8: Calliope Lot Approvals and Production



	1997	1998	1999	2000	2001	2002	2003	2004	2005
Lots Approved	119	54	89	55	40	268	470	234	216
Lots Produced	169	75	30	98	33	46	155	182	174

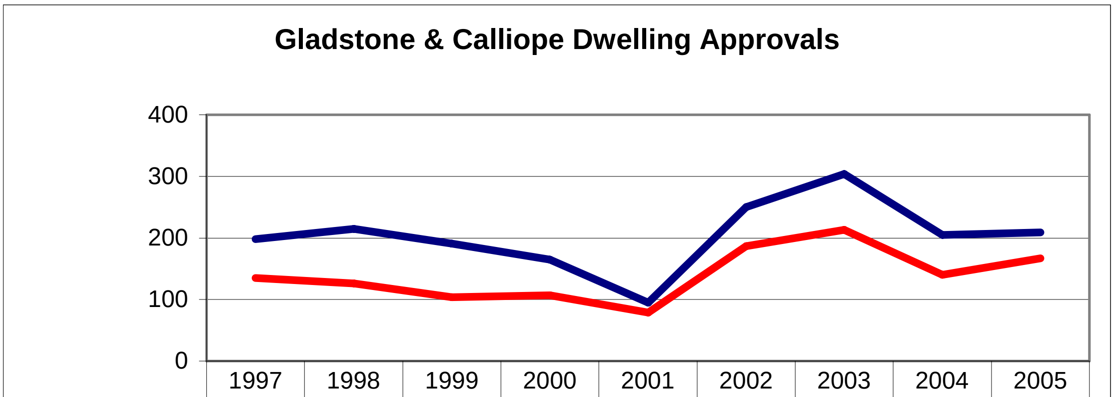
(Source: PIFU, 2006)

4.12.4 Approval and Construction of Dwellings

The Gladstone/Calliope area has an active residential construction industry. Builders from Rockhampton also service the area. Consultation with the Queensland Master Builders Association in Rockhampton provided the estimate that the local industry can complete around 30–35 houses per month (360+ pa) and has the capacity to increase this output to approximately 50 houses per month (600 pa) if required. The main limiting factor in the capacity of the residential construction sector is the shortage of skilled sub-contractors.

Figure 4.9, outlines the number of building approvals for dwellings in Gladstone and Calliope LGAs between 1997 and 2005. The rate of building approvals roughly corresponds with the rate of lot approvals and production for this period. Dwelling approval figures for the March quarter 2006 suggest that the Gladstone residential construction market may be experiencing a surge in demand, with 166 dwellings approved in January and February 2006[16].

Figure 4-9: Gladstone and Calliope Dwelling Approvals



	1997	1998	1999	2000	2001	2002	2003	2004	2005
Gladstone	198	215	191	165	95	250	304	205	209
Calliope	135	126	104	107	79	187	213	140	167

Sources: REIQ, RP Data & Qld Dept of Housing
NB. Based on medians for all house sales (all house sizes)

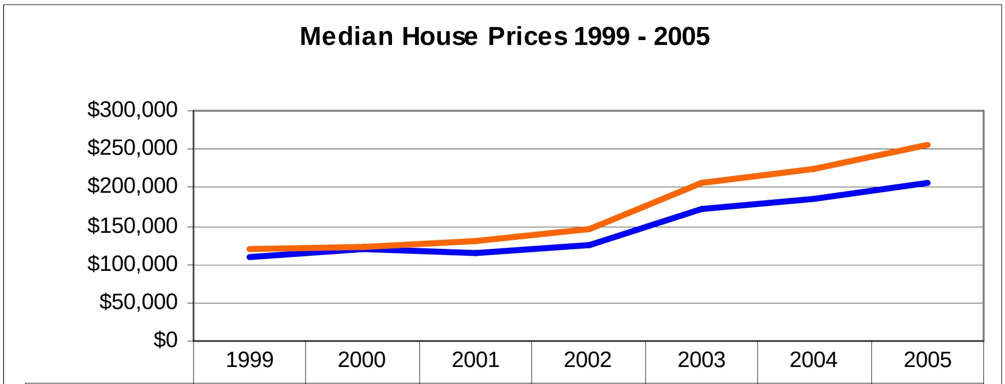
4.12.5 Residential Property Prices

The prices of all residential properties have risen steadily since 1999. Figure 4.10, compares median house prices, based on medians for all house sizes, for Gladstone and Calliope LGAs for the period 1999 to 2005. The table attached to Figure 4.10, illustrates the surge in prices from 2002 onwards, and the generally higher prices prevailing in Calliope when compared to Gladstone. The higher median prices in

[16] Gladstone Area Promotion and Development Ltd, Project Status Report March Quarter 2006, based on local government building approval records

Calliope reflect the higher prices in the beachside suburb of Tannum Sands, which is the main growth area within Calliope Shire. The surge in prices from 2002 onwards may have been associated with Comalco Aluminium Refinery (Stage 1) project, but may equally reflect the Australia wide boom in residential property values.

Figure 4-10: Gladstone and Calliope Median House Prices



	1999	2000	2001	2002	2003	2004	2005
Gladstone	$110,000	$119,000	$114,000	$125,000	$172,000	$185,000	$205,000
Calliope	$121,000	$121,500	$131,000	$145,000	$205,000	$225,000	$255,000

Sources: REIQ, RP Data & Qld Dept of Housing
NB. Based on medians for all house sales (all house sizes)

4.12.6 Rental Property

In 2001, the number of rental properties for the area was recorded as 3,836 rented dwellings (non-public). Availability of rental properties has varied over time. Local property managers reported that in mid-2006 there was a high demand for rental properties which were in short supply[17]. LJ Hooker Gladstone, the agent with the largest rent roll, estimated a vacancy rate of 2% for their portfolio[18]. An informal survey of property managers in Gladstone and Calliope LGAs in May 2006 concluded there were approximately 50 houses and 50 flats / units available for rent at that time[19].

[17] Gladstone Tenant Advice and Advocacy Service, 9 May 2006 in Housing Impact Assessment Report

[18] Consultation meeting with Mark Spearing, LJ Hooker Gladstone

[19] Gladstone Tenant Advice and Advocacy Service, 9 May 2006

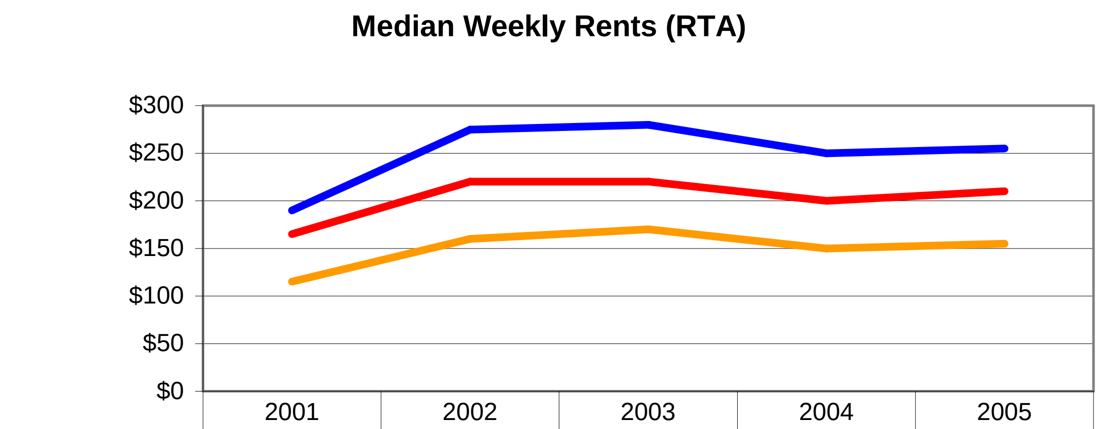
Rent levels have varied over time, as outlined in Figure 4.11. Rental prices were highest between 2002 and 2003, while median rental prices decreased between 2003 and 2005. However recent figures indicate rental prices are now increasing. In the March quarter of 2006 rents have risen slightly for all three categories (by RTA figures), ie:

a) 4 bed house - $270/wk;

b) 3 bed house - $220/wk;

c) 2 bed flat - $160/wk.

Figure 4-11: Median Weekly Rents 2001-2005



	2001	2002	2003	2004	2005
4 bd House	$190	$275	$280	$250	$255
3 bd House	$165	$220	$220	$200	$210
2 bd Flat	$115	$160	$170	$150	$155

At present, there appears to be a fair supply of low cost housing. The Queensland Department of Housing (DoH) Regional Office has commented during the consultation process that they are receiving a good number of applications for bond loans for the cost of rental bonds for private rental accommodation. The DoH considers that the number of applications received provides a fairly direct indicator of the demand for affordable housing for low income households in the Gladstone area [20]. As stated in the Section 4.2.1 of the Housing Impact Study of the EIS, the volatility of rents as shown in the Figure 4.11 means that availability and affordability can change quickly in a situation of local housing shortage.

[20] Telecon, Dept of Housing Regional Office staff, 22 May 2006

4.12.7 Public Housing

The Department of Housing (DoH) currently has 750 rental units in the Gladstone area. The department's housing is always occupied, except for very short periods between tenancies. They maintain waiting lists for all their accommodation with waiting times varying depending on situation of the applicant and the housing type required. In February 2006 the waiting list for public housing in the Gladstone area reached 600 applications[21]. Demand for DoH housing has been steadily increasing over the last 2 years and is at record levels. In particular there has been a marked increase in demand for 1 and 2 bedroom units.

The DoH's housing stock is increasing. Two 2 bedroom duplexes have just been purchased and construction of 12 more units is under way (May, 2006). There are plans to construct a further 24 units in 2006, including 8 senior's units. DoH is now able to buy existing homes and may purchase 1, 2 and 3 bedroom units in the future rather than construct new ones. Further details are outlined in Section 4.2.3 of the Housing Impact Study Report.

4.12.8 Hotel and Motel Accommodation

The number of short-term accommodation units in the region has remained at approximately 660 units for the last few years. However there are a number of motel and hotel developments that have gained town planning approval but had not yet been constructed. Two large hotels in the Gladstone central business area were reported in the housing impacts study to be planning major expansions in the near future, which would increase the pool of short term accommodation by 10% to 20%. The most recent estimate of the occupancy rate for this type of accommodation (end of 2004) was 64.5%, down slightly from the previous year[22].

There are a small number of serviced apartments and boarding houses in Gladstone that can be rented for longer periods. The total number of rooms available is less than 100 and they are generally booked out in advance.[23].

4.12.9 Caravan Parks

There are presently 9 caravan parks in the pipeline/RSF study area, consisting of approximately 860 caravan sites, tent sites, cabins and on-site vans. Demand for caravan park style accommodation is seasonal, with the winter months being the period of highest demand and when all parks experience 100% occupancy. During the summer months occupancy is much lower. Since the closure of the caravan park at Clinton (the largest and cheapest park in the area) in 2005, the remaining parks have a higher occupancy rate and larger numbers of long term residents than previously. This has reduced the capacity

[21] Minister for Housing Robert Schwarten quoted in The Gladstone Observer, 1 Feb 2006

[22] Gladstone Area Promotion and Development Ltd, Project Status Report March Quarter 2006

[23] Aldoga Aluminium Smelter EIS, 2002, pp15.22/23

of all the parks to provide as temporary accommodation for construction workers and the seasonal tourist influx[24]

4.13 Community Health

4.13.1 Health Facilities

There is a wide variety of health services present in the Gladstone region. The major facilities within the refinery/RSF study area and pipeline study area are:

- Rockhampton Base Hospital: Main referral hospital for the region. The hospital provides many of the specialised services for the region. The hospital is located 110 km from Gladstone.
- Gladstone Hospital: Services include emergency, outpatients, general medicine and surgery, basic orthopaedics, obstetrics and gynaecology, and pathology.
- Gladstone Mater Private Hospital. Services include medical, surgical and obstetric as well as oncology, palliative care and after hours arrangements. In addition, there are a number of facilities for the provision of specialist outpatients services.
- Yepoon Hospital: Services include emergency and acute medical care, and post surgical rehabilitation.
- Mount Morgan: Services include general medicine provision and outpatient care.

Table 4.11 details the services available at Rockhampton Hospital. In 2003/2004 there were 22,002 admissions to hospital and 205,641 non-admission patients treated. The hospital provided 21,191 outpatient services between July and December 2005 and has an outpatient waiting list of 5625 persons (as of March 2006) (Queensland Health, 2006).

Table 4.11 also outlines services provided by Gladstone Hospital. The hospital has 80 beds. In 2004/2005 there were 5461 admissions to hospital and 72,710 non-admission patients treated at Gladstone Hospital. Common admissions included childbirth (184 episodes in 2003/2004), dental extractions and restorations (176 episodes in 2004/2005), and colonoscopy (145 episodes in 2004/2005). The annual occupancy rate for 2004-2005 at Gladstone Hospital was 46.6%. Gladstone has never had any access blocks[25] in recent times indicating that the hospital has the capacity to hold additional patients (J.Hannan, Gladstone City Hospital, pers. comm., 31.05.06). As at April 2005, there were 17 medical positions (incorporating doctors, specialists etc., 21 professional staff (including occupational therapists, physiotherapists, pharmacists, radiographers etc.) and 104 full-time equivalent nursing staff. Gladstone receives visiting services from specialists (J.Hannan, Gladstone City Hospital, pers. comm., 31.05.06). Gladstone Hospital also has “telehealth” services, where surgical assistance can be provided by specialists

[24] Gladstone Tenant Advice and Advocacy Service, 9 May 2006

[25] Access block - situation where a bed is not available for a patient who requires admission to hospital.

outside the hospital via remote cameras. In addition, Gladstone's Mater Hospital is a private hospital that contains 30 inpatient and 10 day beds.

The Gladstone/Calliope district provides all basic health services including doctors surgeries, dentists and chiropractors. There are approximately 46 general and specialist medical centres, including ophthalmology, otolaryngology, plastic and reconstructive surgery, physiotherapy, orthopaedic surgery, medical imaging, pathology, and aged care services. There are approximately 10 pharmacies, and 27 dentists in the area.

A community health centre is located in Gladstone and Gladstone City Council holds immunisation clinics at the Gladstone Entertainment Centre as required. Calliope Shire Council offers school-based immunisation services. Several public and private aged care centres are located in Gladstone as well as a day respite care centre located within the Gladstone Hospital grounds.

While the Gladstone Hospital has the physical capacity to hold additional patients, a hospital representative noted that there is a shortage of doctors and nurses at the Hospital. The shortage of medical practitioners is part of a national problem of attracting and retaining doctors in regional areas. In a regional skills audit survey conducted by GAPDL[26], six of the nine health organisations that responded to the survey reported difficulty in attracting staff. These respondents included a regional hospital, a major provider of regional health services, two aged care facilities, a women's health counselling service, and a physiotherapy practice. Of the three survey respondents who reported no difficulty in attracting skilled staff, two of these were private medical practices and one was an aged care service in a small regional town (GAPDL, 2006).

[26] GAPDL prepared a questionnaire survey as part of a skills audit of the region. 1900 questionnaires were issued to businesses and organisations across the Fitzroy Statistical Division, and 256 responses were returned.

Table 4-11: Hospital and Health Services In the Region

Rockhampton Hospital	
Hospital	Day Surgery; Orthopaedics; Neurosurgery; Gynaecology; Facio-maxillary; Ophthalmology; General Surgery; Urology; Ear, Nose & Throat; Operating Suites; Acute Medical; General Medical; Gastroenterology; Renal; Palliative Care/Chemotherapy/Pain Management; Paediatric/Adolescent; Genetic Counselling; Paediatric Cardiology, Paediatric Endocrinology; Maternity/Special Care Nursery/Extended Midwifery Service; Coronary Care; Rehabilitation; Outpatients Department; Respiratory; Diabetes Education; Stomaltherapy; Dermatology; Haematology; Neurology; Pacemaker Checking; Rheumatology; Radium Clinic; Anaesthetics; Emergency Department; Intensive Care Unit; Medical Imaging.
Specialist & Community Services	Child & Family Health; Sexual Health Services; Aboriginal Health; Alcohol, Tobacco & Other Drugs Services; Breastscreen Queensland; Oral Health Services; Aged & Disability Services; Mobile Women's Health; Youth Suicide Prevention; Capricorn Coast Community Health Services; Mental Health Service comprising Adult Inpatient Unit , Child & Youth teams, psycho-geriatric extended stay service, Adult Community teams, Acute Community Assessment and Crisis Response Service.
Clinics Available	Breast Screening Unit
Outreach Services	General Practitioner Clinics; Paediatrics; Mental Health Clinics
Rockhampton Health Services	
Outpatient Clinics	Duaringa, Marlborough, Ogmore, St Lawrence
Primary & Community Health Services	Children and Family Health, Aged and Disability Service, Community Care, Alcohol, Tobacco and Other Drugs Service (ATODS), Youth Suicide Prevention, Health Promotion, Sexual Health, Aboriginal and Torres Strait Islander Health Services, Capricorn Coast Community Health Services, Breastscreen Queensland (Rockhampton Services), Oral Health Services (Central Districts).
Integrated Mental Health Service	Adult inpatient Unit, Child & Youth Community Mental Health, Psycho-geriatric Extended Stay Service, Adult Community Mental health Teams, Acute Community Assessment and Crisis Response Service, Designated Indigenous Mental Health Staff.
Dental Services	Clinics: Mount Morgan, Rockhampton, Woorabinda, Yeppoon. Schools: Allenstown, Berserker, Frenchville, Park Avenue, Rockhampton, Yeppoon
Residential Aged Care	Aged Care Assessment Team. Nursing Homes: Eventide Home - Rockhampton, Gertrude Moore - Yeppoon, North Rockhampton
Private Health Facilities in District	Private Hospitals/Day Centres: Mater - Rockhampton, Hillcrest Private Hospital - Rockhampton, Mater - Yeppoon Private Nursing Home: Bethany Home for the Aged - Rockhampton, Bethesda Hostel - Rockhampton, Capricorn Adventist Retirement Village Hostel - Yeppoon, James Bruce Gordon Hostel - Rockhampton, John Cani Estate Aged Hostel - Mt Morgan, Leinster Place - Rockhampton, McAuley Place Hostel - Rockhampton, Morrison Park Hostel - Rockhampton, Munro Home Hostel - Rockhampton, Munro Home Nursing Home -Rockhampton, Benevolent Home Hostel - Rockhampton
Gladstone Hospital Services	
Gladstone Hospital	Emergency, Pathology,Outpatients, General Medicine and Surgery, Day Surgery, Basic Orthopaedics, Obstetrics and Gynaecology, Medical Imaging, Pharmacy, Central Sterilising
Specialist Services	Obstetrics & Gynaecology (except oncology), Physician
Clinics Available	Public Outpatients - General, Wound Management, Immunisation, Minor Operations, Fracture (Surgeon/Resident/Senior Medical Officer),Medical (Physician/Resident), Surgical (Surgeon/Resident), Gynaecology (Gynaecologist/Resident), AnteNatal (Obstetrician), Post-Natal.
Allied Health Services	Physiotherapy, Occupational Therapy, Speech Pathology, Dietetics, Social Work
Outreach Services	Community Nursing, Child Health, School Health, Indigenous Health, Social Work, Home & Community Care, Mental Health, Alcohol Tobacco & Other Drugs.
Other Aged Services	In Hospital: Nursing Home Type Care (while waiting for permanent placement), Respite Care

Gladstone Health Services	
Health Centres	Gladstone - Community Health Services, Mental Health Services, Oral Health Services Boyne Valley - Primary Health Care
Community Health Services	Community Nursing, Child Health, School Health, Indigenous Health, Social Work, Home & Community Care, Mental Health, Alcohol Tobacco & Other Drugs, Oral Health
Dental Services	Public Clinic - Gladstone, Schools - Gladstone South, Gladstone West (A mobile van visits schools without clinic facilities).
Private Health Facilities in District	Hospital - Mater (40 Beds) Nursing Home - Alchera Park Nursing Home Hostels - Hibiscus Gardens, Bindaree Lodge
Yepoon Hospital Services	
Hospital	Emergency Department; acute medical care; antenatal Clinics; post surgical rehabilitation inpatient care, allied health services and operational and support services.
Clinics Available	General Outpatients
Allied Health Services	Diagnostic Services; Radiology; Pathology
Mount Morgan Hospital Services	
Hospital	General Medicine
Specialist Services	General outpatients

Source: Queensland Health, 2005

4.14 Education and Training Facilities

4.14.1 Primary and Secondary Schools

This section details education and training facilities available within the refinery/RSF study area. Education facilities for the pipeline study area are not discussed as the majority of the workforce is not likely to be accompanied by dependent school-aged children.

Schools located within the Gladstone/Calliope district include 12 primary schools, 9 preschools (often located within primary school grounds), and 6 secondary schools. Clinton State School and Gladstone State High School provide special education facilities. Five of the schools are private schools. The male/female breakdown within the Gladstone/Calliope region is 51.5% boys and 48.5% girls (D.Eborn, pers.comm. 2/6/06).

As detailed in Table 4.12, most schools are currently below enrolment capacity. Education Queensland's anticipated enrolment rates for 2008 are within current enrolment capacity, indicating that most schools have adequate ability to handle additional students. Education Queensland's capital works plan, shows additional facilities being built in the area including prep school facilities (Education Queensland, 2006). Of the three Catholic schools located in the Gladstone area, the two primary schools are at capacity, while the secondary college has room for additional students. The Diocesan Catholic Education Office is currently investigating the potential future need for more catholic education facilities in the Gladstone region.

In a regional skills audit survey conducted by GAPDL[27], 12 of the 15 education and childcare organisations who responded to the survey reported difficulty in fining appropriately skilled professionals (education professionals and child care workers). The 5 respondents from the primary and secondary sectors all reported difficulty in sourcing teaching staff (GAPDL, 2006). A Queensland Department of Education representative noted that school staffing allocation is calculated according to a systemic staffing model (D.Eborn, DoE pers.comm., 2.06.06).

Table 4.12 lists schools in the area and an estimate of the number of students attending each school.

Table 4-12: Schools in the Gladstone/Calliope Area

School	Address	Current Enrolment	Anticipated Enrolment 2008 (excl. prep-school)	Existing Capacity
Primary Schools				
Yarwun State Primary School	Butler Street, Yarwun	56	59	99
Ambrose	Gentle Annie Road, Ambrose	53	54	121
Boyne Island State School	151 Malpas St.	310	312	447
Calliope State School	Stirrat Street, Calliope	370	400	422
Mount Larcom State School and Secondary Department (to year 10)	Ragland Street, Mount Larcom	106	100	309
Clinton State School (& Special education unit)	Harvey Road, Gladstone	625	670	795
Kin Kora State School	43a Hibiscus Avenue, Gladstone	669	739	869
Gladstone South State School	153 Toolooa Street, Gladstone	317	353	701
Gladstone West State School	Boles Street, Gladstone	693	736	717
Gladstone Central State School	74 Auckland Street, Gladstone	284	299	546
St John Baptist Catholic Primary School	J. Hickey Ave., Gladstone	403	Not avail.	493
Star of the Sea Catholic Primary School	181 Goondoon St., Gladstone	333	Not avail.	400
High Schools				
Gladstone State High School (& Special education unit)	Dawson Highway, Gladstone	1091	1052	1362
Toolooa State High School	Philip Street, Gladstone	971	1024	1158
Chanel College (Gladstone)	11 Paterson St., Gladstone	395	Not avail	650
Faith Baptist Christian School	1315 Dawson Highway, Burua	93 (preschool – year 12)	Not avail	Additional capacity
St. Stephones Lutheran College			Not avail	Not avail
Trinity College	4 Archer St., Gladstone	165 (preschool – year 12)	Not avail	Not avail

[27] GAPDL prepared a questionnaire survey as part of a skills audit of the region. 1900 questionnaires were issued to businesses and organisations across the Fitzroy Statistical Division, and 256 responses were returned.

School	Address	Current Enrolment	Anticipated Enrolment 2008 (excl. prep-school)	Existing Capacity
Preschools				
Boyne Island State Preschool	151 Malpas St. Boyne Island	38	Not avail	Not avail
Calliope State Pre-School Centre	Stirrat St., Calliope	49	Not avail	Not avail
Clinton Preschool	Harvey Road, Gladstone	107	Not avail	Not avail
Kin Kora Preschool	43a Hibiscus Avenue, Gladstone	86	Not avail	Not avail
Gladstone South Preschool	153 Toolooa Street, Gladstone	31	Not avail	Not avail
Gladstone West Preschool	Boles Street, Gladstone	24	Not avail	Not avail
Gladstone Central Preschool	74 Auckland Street, Gladstone	24	Not avail	Not avail
Rosella Park School	Cnr Park & Rosella St., Gladstone	53	Not avail	Not avail
Mount Larcom	Ragland Street, Mount Larcom	12	Not avail	Not avail

(Source: Education Queensland (accessed 25.05.06); Education Queensland Unpublished Data, 2006; P.Murphy, DCEO 2/6/06)

Facilities in the area associated with primary and secondary education include the Gladstone and District Life Education Centre, the Boyne Island Environmental Education Centre, and Curtis Library Network,. Gladstone Schools Engineering Centre, Business and Information Technology Centre, and the Port Curtis Education Centre. The Gladstone Schools Engineering Centre and the Business and Information Technology Centre provide trades training for high school students.

A number of School-based apprenticeships and traineeships are available in the area which allows high school students - typically Years 11 and 12 - to work with an employer as paid employees while studying for their Senior Certificate. At the same time, students undertake industry skills training with a registered training organisation, such as the Gladstone Schools Engineering Centre, TAFE, or the Business and Information Technology Skills Centre. Students studying at the Gladstone Schools Engineering Centre can gain a Certificate 1 in Engineering (manufacturing). The TAFE training program provides an opportunity to link into a full time apprenticeship. Students training at the Business and Information Technology Skills Centre gain recognised certificates which assist students being work ready or progress into tertiary education.

4.14.2 Further Education Institutions

The following further education institutions are accessible in the region:

- Central Queensland University (CQU), Gladstone and Rockhampton Campuses; and
- Central Queensland TAFE (Gladstone and Rockhampton).

Some of the courses offered at both the Central Queensland University and the Central Queensland College of TAFE are industry specific. This provides for training of the local and regional residents to allow for employment which benefits the local economy.

Central Queensland University provides a range of courses including distance education and on - campus education. Gladstone Campus has around 400 students at present (August, 2006). Available courses are outlined in Table 4.13. The engineering and technology course is commonly used by students to upgrade from TAFE trade diplomas. CQU also offers some specialised programs which combine university study and industry training as part of the course. The Gladstone CQU campus has capacity to expand enrolments to around 600 students.

Central Queensland TAFE offers a number of courses for trades and skills training including engineering, building and construction, and science. Trades and skills courses available at Central Queensland TAFE are part of the Queensland Government's Training and Employment Strategy which is detailed in Section 4.13. There are presently almost 4,300 students at the Gladstone Campus with capacity to handle additional students.

Table 4-13: Tertiary Courses available at Central Queensland TAFE and Central Queensland University

Central Queensland TAFE	Central Queensland University
• Adult education	• Business and Tourism
• Art & design	• Built environment and design
• Automotive	• Creative and performing arts
• Beauty & hairdressing	• Education
• Building & construction	• Engineering and technology
• Business & finance	• Health and recreation
• Community services	• Humanities and Social Sciences
• Engineering	• Information technology
• Horticulture	• Primary industries and environment
• Hospitality	• Sciences
• Information technology	
• Science	

Source: Central Queensland TAFE, 2006; Central Queensland University, 2006

A full range of educational services is also available in Rockhampton. Several high schools, both government and private, serve the local region offering boarding facilities for students from outside the immediate area. The area also offers special facilities for handicapped children and other special educational needs and remote-area learning. The Rockhampton TAFE offers a wide range of tertiary and vocational education courses in the skilled trades, business and commerce, and hospitality training (RTBI, 2002). The main campus of the Central Queensland University is also located in Rockhampton. It offers over 120 courses and has more than 18,000 students.

4.14.3 Training

A State Government review of the state's vocational education and training system identified two major deficits in Queensland's labour market - an urgent shortage of trade skills and an underqualified associate professional workforce. The Queensland government has released the Queensland Skills Plan and the Breaking the Unemployment Cycle initiative in June 2006 to address these skills shortages and meet the changing needs of industry and the economy.

The Queensland Government has committed to investing $53.5 million into the Fitzroy region in 2006-07 to help create 960 jobs and enable approximately 21,400 students to undertake Government-funded training. Training programs will be held in partnership with Central Queensland TAFE, Central Queensland University, schools, private industry and other partners. Incentives and programs include:

- an increase in the number of trades training places, with potential for 960 additional places in the Fitzroy Region each year by 2010;
- an increase in the number of training places available in Certificate IV and above programs, with 840 additional places in the Fitzroy region each year by 2010;
- Central Queensland Training and Employment Strategy – which sets out training initiatives in manufacturing and trade professions;
- employer subsidies to encourage people to take up apprenticeships;
- travel subsidies for people travelling long distances to get to training; and
- establishment of the Trade and Technician Skills Institute to provide skills in building, construction, manufacturing, engineering, electronics. This institute will also arrange and coordinate apprenticeship placements.

(Source: J.Campbell, CQIT, pers.comm. 16.06.06).

4.15 Community Facilities & Community Vitality and Lifestyle

4.15.1 Community Facilities and Services

Community Services and Social Clubs

A range of community services is available in the region including health support groups, aged person care groups, family planning organisations, crisis assistance and welfare organisations. A full listing of community services available within the refinery/RSF area is provided in Appendix A. A comprehensive range of community facilities and services is also located around Rockhampton for workers involved with the pipelines, as detailed in Appendix B. Community facilities are extensive including community halls, clubs, and numerous churches and places of worship.

Cultural Activities

The Gladstone Entertainment Centre holds a range of concerts, performances and festivals from within and outside of the region. The Gladstone Regional Art Gallery and private galleries host notable art exhibitions and cultural activities throughout the year. Gladstone Cinema plays the latest movies on offer. Cultural events throughout the year include:

- Gladstone Harbour Festival;

- Brisbane to Gladstone Yacht Race;
- 1770 Commemorative Festival;
- Boyne-Tannum Hook – up;
- Agnes Water Triathlon;
- The Gladstone Multicultural Fair;
- Gladstone Seafood Festival;
- Lion’s Lake Awoonga Family Fishing Festival.

Rockhampton’s Pilbeam theatre hosts a variety of productions throughout the year. The Rockhampton Art Gallery and Walter Reid Centre display art from across the Central Queensland Region and hosts travelling exhibitions. A number of cinemas are located in the city. Major annual events include the:

- Rockhampton Agricultural Show;
- Rocky Swap and Multicultural Fair;
- Arts in the Park ;
- Winter Racing Carnival; and
- Big River Jazz Festival.

Sporting & Recreation

Sporting and recreational groups located in the nearby area surrounding the GPN refinery/RSF study area include the Central Coast Cricket Association (Mount Larcom), Mount Larcom & District Fishing Club, Mount Larcom Skate Centre, Central Coast Sports Club (Ambrose), Mount Larcom Swimming Pool, Mount Larcom and District Tennis Association, Mount Larcom and District Show Society, and Mount Larcom & District Youth Centre. The Calliope River near the refinery site has been noted by locals as a good fishing spot. Trail bike riding was also recorded on the site.

Recreational facilities including sports are well represented in the greater area including the communities of Yarwun and Mount Larcom. Such activities include:

- Swimming pools;
- Gym and fitness centres;
- Parks and golf courses;
- Indoor sports centres;
- Fishing and boating;

- Ten-pin and lawn bowling facilities; and
- Sporting ovals.

A full list of sporting and recreational groups in the area is attached in Appendix A. Most recreational facilities and clubs have capacity for an additional population (J.Black, 26.05.06, pers.comm). A draft Open Space and Recreation Plan has been prepared for Gladstone City Council which outlines open space and recreation initiatives for the area. Major projects include the Ashland 7 project, which is investigating development of a 70 hectare parcel of land into a multi-purpose sporting facility. Other initiatives in the plan include a walkway and cycleway strategy.

Gladstone residents also have access to beaches, offshore islands (e.g. Heron Island), national parks, botanical gardens and Gladstone Harbour for recreational activities. It is expected that the additional demand from the increased population due to the GPN project will have a positive influence on recreational facilities for Gladstone.

Many sports are played or followed in the Rockhampton area, including pony clubs, horse and greyhound racing, all codes of football, bowls, golf, water skiing, fishing, tennis, soccer, hockey, netball, basketball, cricket, martial arts, and a variety of other indoor sports. The City has two olympic sized swimming pools, including the Rock Pool Water Park. Other sports facilities include a velodrome, water ski gardens, rowing venues, day and night tennis courts, and indoor sports venues. The Police & Citizens Youth Club and CQU Sports Complex host a range of activities catering for all age groups (Rockhampton City Council, 2005). Details of sporting facilities in the Rockhampton area are available in Appendix B. Rockhampton has adequate facilities to handle any additional population associated with the construction and operation of the pipeline.

Childcare

There are approximately 22 childcare centres operating in the Gladstone area including kindergartens, day care, and before and after school age care. Appendix C lists childcare centres in the Gladstone/Calliope area and their capacity. There are around 32 childcare and 8 family day care centres in Rockhampton. It is understood that occupancy of kindergartens is high and that childcare centres are full for children under three years of age. The occupancy for children over three is very low and a number of rooms in centres are currently not operating due to insufficient demand for care in this age group (M.Ricks, DOC, pers.comm, 29.05.06).

As of 2007, prep schools will be introduced into the Queensland school system. This voluntary education level is offered for four and half to five and a half year olds and is expected to absorb a proportion of children in this age group who would otherwise attend child care (J.Kruise, pers.comm., 11.07.06). In a skills questionnaire prepared by GAPDL as part of a skills audit report, 4 childcare groups responded, with all reporting difficulty finding qualified childcare workers. None of the pre-school groups who responded to the survey reported difficulty in attracting staff (GAPDL, 2006).

Community Welfare Organisations

Government and community based welfare organisations located in the region provide a range of services including housing assistance, counselling, family planning, aged care and support to victims of abuse. A full listing of community services in provided in Appendix A and Appendix B.

Shopping Facilities

The major retail and commercial centres within the Calliope/Gladstone area are:

- Gladstone City Centre – which offers higher order administrative, business, professional and banking services serving the sub-regional population;
- Stockland Gladstone (formerly Kin Kora Centre) high order retailing, based on three department stores (Big W, K Mart, Target Country) and three substantial supermarkets (Coles, Franklins, Woolworths) serving the sub-regional population;
- Centro Gladstone – includes Woolworths and The Warehouse as the two biggest retailers;
- Gladstone Central - established convenience centre (that includes the Night Owl Centre, with a number of franchises including Dominos Pizza, The Cheesecake Shop, Subway, Nightowl, Civic Video, Sports Scene and Toyworld); and
- IGA Express convenience centre.

Major retail and commercial centres within Rockhampton area include Allenstown Plaza, East Street, City Centre Plaza, Kmart Plaza, Northside Plaza, Rockhampton Shopping Fair.

4.15.2 Community Vitality, Lifestyle and Values

The number and variety of community groups and social clubs in the area suggests an active and vibrant community in the region. The region is well serviced by health and emergency services, with equitable access to general and specialised services for a diverse population.

The project's consultation process asked respondents why they liked living in the area. Responses included:

- lifestyle – including good place for families, recreational opportunities, access to services;
- employment opportunities;
- rural nature;
- tranquillity, and
- lack of pollution.

Perceived benefits of the project included:

- employment opportunities;
- boost to local businesses; and
- local and regional economic growth.

Perceived disadvantages included:

- environmental impacts;
- influx of people;
- increased traffic; and
- disruption to farming activities.

4.15.3 Community Safety

Table 4.14, lists the rates of crime recorded by offence for LGAs within the refinery/RSF study area and the pipeline study area. As of 2002-2003, the highest number of recorded offences in all LGAs areas were against property. Gladstone recorded a higher rate of offences in all categories per 100,000 people compared to the offence rates for Queensland, while Calliope recorded a lower rate of offences. Within the pipeline study area, Livingstone Shire recorded the highest rate of offences against the person and Gladstone recorded the highest rate of offences against property.

Senior Sergeant M.P.Dixon of Gladstone Police station noted that staff respond to incidents and disturbances common of large regional centres. Common calls range from disturbances, reports of theft or other property crime, reports of crimes against the person such as assault and other offences encountered by officers during the course of their duties (Senior Sergeant Dixon, pers.comm. 21.04.06).

Table 4-14: Recorded Offences in Calliope and Gladstone 2002-2003

	Offences against the person		Offences against property		Other offences	
	No. offences	Rate*	No. offences	Rate*	No. offences	Rate*
Calliope	114	756	565	3741	334	2,212
Gladstone	397	1,476	2316	8616	1545	5748
Livingstone	459	1,740	1149	4359	846	3207
Fitzroy, Mount Morgan	184	1423	861	6670	511	3959
Rockhampton	760	1292	4631	7879	2212	3763
Qld	40,363	1,110	283,070	7,787	121,099	3,331

(*per 100,000 people) (Source: OESR, 2004)

4.15.4 Emergency Services

Ambulance

The closest ambulance service to the refinery and RSF is the Gladstone Ambulance Station which is the major station in the Gladstone/Calliope region. It has one casualty room for pre-hospital care. In all emergency situations the closest unit is dispatched to the incident.

There are presently 18 permanent Queensland Ambulance Service (QAS) staff based at Gladstone. The QAS has advised they have multi-casualty management plans in place to respond to major incidents.

Three ambulance stations one each at Mount Larcom, Calliope and Boyne Island support the Gladstone station. Each of these stations has two vehicles and the Boyne Island station has four full time staff while Mount Larcom and Calliope stations have two officers (John Monaghan, Mount Larcom QAS, pers. comm.. 27.03.06). Ambulances should be able to respond to emergencies on site in the standard emergency response time of 10 minutes, however this may vary if units are already responding to a call.

Ambulance stations within the pipeline study area are locate at Marlborough, Mount Morgan, Rockhampton, Rockhampton North, Gracemere, Woorabinda and Emu Park.

Queensland Fire & Rescue Service (QFRS)

The following fire stations are located within the Gladstone/Calliope area:

- Gladstone Fire Station;
- Boyne Island/Tannum Sands Fire Station; and
- Calliope Fire Station.

The Gladstone fire station is the largest in the area and employs 21 full time operational staff and 9 auxiliary officers. The station is open 24 hours, 7 days per week, with one crew always on call. There are 7 vehicles available. Common Gladstone QFRS call-outs include grass fires, house fires and vehicle accidents. The station is also equipped to respond to chemical spills, and has vertical rescue and confined space rescue capacities. Estimated emergency response time to the GPN site is under 15 minutes.

The Gladstone QFRS services a wide area and assists with call-outs for the Boyne Island and Calliope auxiliary stations. Mark Rudder, acting officer in Charge believes that while there is always scope for additional resources, the Gladstone QFRS station is currently well serviced (M. Rudder, Gladstone QFRS pers. comm. 27.3.06)

Boyne Island QFRS station is an auxiliary service which employs 16 part time fire fighters and has two vehicles. Calliope QFRS station is also an auxiliary service which employs 8 part time fire fighters with one vehicle. Both stations receive support from Gladstone QFRS and also provide support services to Gladstone QFRS if required (M. Rudder, Gladstone QFRS pers. comm. 27.3.06).

Additional fire stations servicing the pipeline study area are located at Rockhampton, Rockhampton North and Gracemere. There are also a number of rural fire brigades in the area.

Police Services

The Gladstone Police Station and Gladstone District Headquarters are the closest police facility to the project site. The Gladstone station is open 24 hours, 7 days per week and has 60 first response officers and 40 district support staff. The district headquarters has a number of specialised sections including:

- criminal investigation branch;
- juvenile aid bureau;
- traffic branch;
- dog unit;
- intelligence;
- training;
- crime management unit;
- scenes of crime; and
- water police.

There are 13 marked police vehicles and 4 unmarked vehicles located in Gladstone. Police services are also located at Calliope, Mount Larcom, Tannum Sands and Miriam Vale and provide backup as required. The Mount Larcom Police Station is serviced by one police officer and Calliope Police Station is serviced by two police officers. Estimated emergency response time to the refinery site is 10-15 minutes.

Additional police stations within the pipeline study area are located at Emu Park, Yeppoon, Marlborough, Marmor, Woorabinda, Gracemere, Rockhampton and Rockhampton North. The Rockhampton station is the main police headquarters for the Rockhampton and surrounding district.

State Emergency Service (SES)

Voluntary SES groups operate out of Gladstone, Mount Larcom and Boyne Island to provide counter disaster and rescue services. There approximately 10 active members in the Mount Larcom and Boyne Island SES groups. Services commonly provided by the groups include traffic management around accident zones and support to fire fighters. The Air Sea Rescue Service operates from Gladstone. The Capricorn Helicopter Rescue Service operates out of Rockhampton.

A Local Counter Disaster Plan has been prepared for the Gladstone City and Calliope Shire under the provision of Section 26(3)(a) of the *State Counter Disaster Organisation Act 1975*. The Local

Government Counter Disaster Committee is responsible for implementation of operations should a disaster occur in the Gladstone-Calliope area. The Committee is represented by the Local Councils, Emergency Services and the Gladstone Hospital.

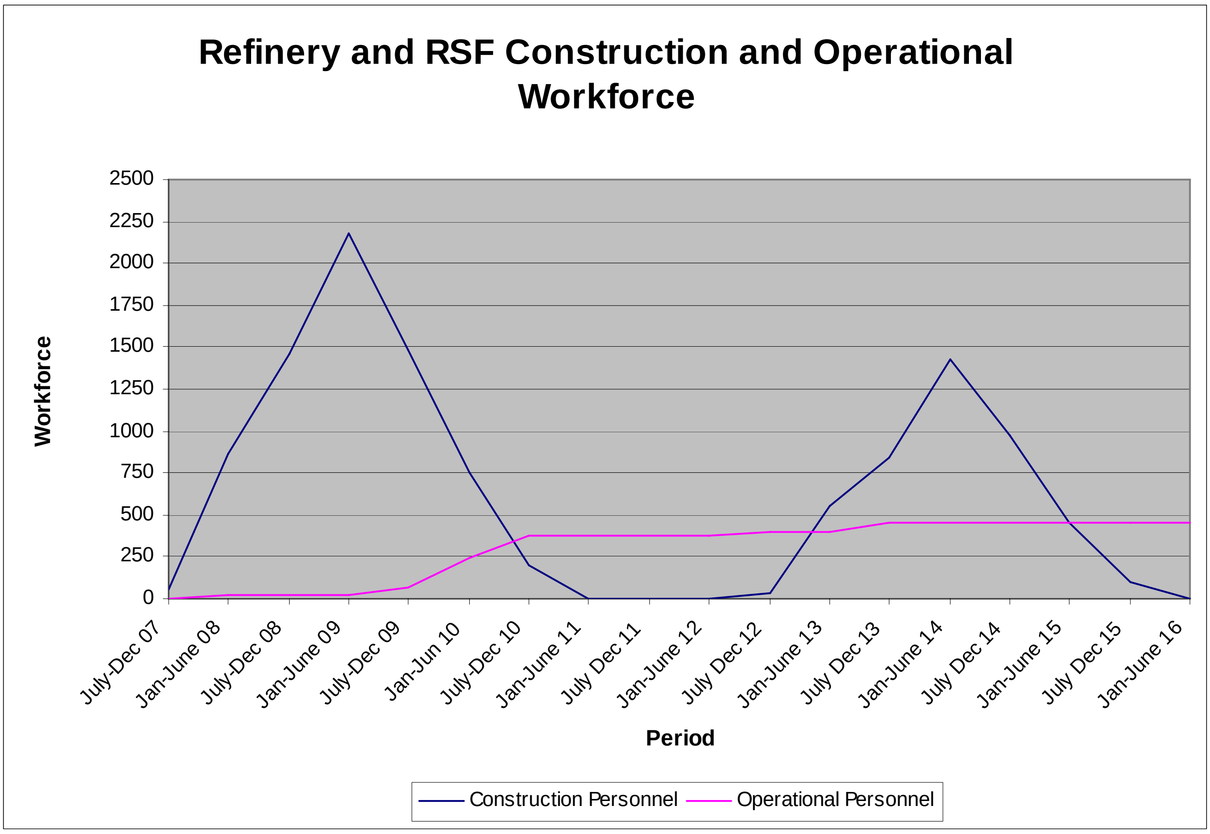
5.1 Construction Workforce Requirements

Construction of Stage 1 is assumed from December 2007 to September 2010. The initial workforce will begin at 400 people and steadily increase to a peak of approximately 2,600 workers in April 2009. After this, construction numbers will steadily decrease, with the end of construction of Stage 1 anticipated in September 2010.

Construction for Stage 2 is expected to commence in October 2012 and steadily increase to 840 workers in October 2013. The construction workforce will peak at approximately 1,750 persons in April 2014 and decrease to 840 by October 2014. Worker numbers for this construction phase will further decrease and it is expected to be finalised by September 2015.

Figure 5-1 summarises the six-monthly average construction workforce for both Stages 1 and 2.

Figure 5-1: Refinery and RSF Construction and Operational Workforce (Six-monthly averages)



Source: GNPL 2006

The construction phase will have a large requirement for skilled trades people, labourers and professionals. The Gladstone/Calliope LGAs and the surrounding region has a high proportion of people in these occupations with appropriate trade qualifications, indicating that GNP will be able to recruit locally as well as to looking outside of the region for its skilled workforce needs.

A maximum construction workforce of 280 personnel is anticipated during the construction phase of the pipeline component of the project. Table 5.1 outlines occupational groups and workforce numbers for the construction of the pipeline.

Table 5-1 Pipeline Construction Workforce

Project phase	Occupational Group	Workforce Numbers at various stages
Construction	Trades' assistants, labourers, others	130
	Trades People	50
	Managers, engineers, office staff, surveyors, supervisors & foremen	30
	Sub - Contractors	60
	Operators / Drivers	30
	Total	300

Source: RLMS, 2006

5.2 Operational Workforce Requirements

5.2.1 Direct Workforce

The operations phase of the project has been split into two stages. Stage 1 is assumed to begin in October 2010. Stage 2 operations involve an increase in production and will begin immediately after the Stage 2 construction phase October 2015. Figure 5.1 details the operational workforce requirements for both Stages 1 and 2 of the project.

A small operational workforce will begin employment at the commencement of the Stage 1 construction phase. The main recruitment for operational staffing will begin in early 2009. Once full operations commence in October 2010, around 385 full time equivalent (FTE) staff will be employed. There will be an increase of approximately 40-50 persons in the operational workforce once Stage 2 of the project has commenced.

The workforce will consist of skilled tradespeople along with professionals, and administration staff. Table 5.2 provides a breakdown of the number of operational staff required for Stage 1. For Stage 2, there will be an approximately 5 to 10% increase in worker numbers across most of these worker categories.

Table 5-2: Operational Direct Workforce (Stage 1)

Worker Type	No. of Staff
Processing Refinery Staff	198
Maintenance Personnel	134
General Administration	48
Environmental Officers	5
Total Operational Staff	385

Source: GPNL 2006

A small operational workforce of four staff will be required for operation and maintenance of the slurry pipeline between Marlborough and the refinery. This workforce will consist of skilled tradespeople who GNP will aim to source locally or within the region. These workers are likely to be based at the Marlborough mine or Gladstone.

5.2.2 GPN and Flow-on Workforce

In addition to the direct workforce, the project will also result in additional indirect jobs being generated by other supporting industries servicing the project or its workforce. The Office of the Coordinator-General developed a population model for Gladstone (Gladstone Growth Management Initiative Model – GGMIM 2002) which predicts flow-on employment (indirect employment) affects associated with projects in Gladstone. The model also provides an estimate of the additional workers most likely required to be imported from outside of the Gladstone region to meet the demand for direct and indirect workers.

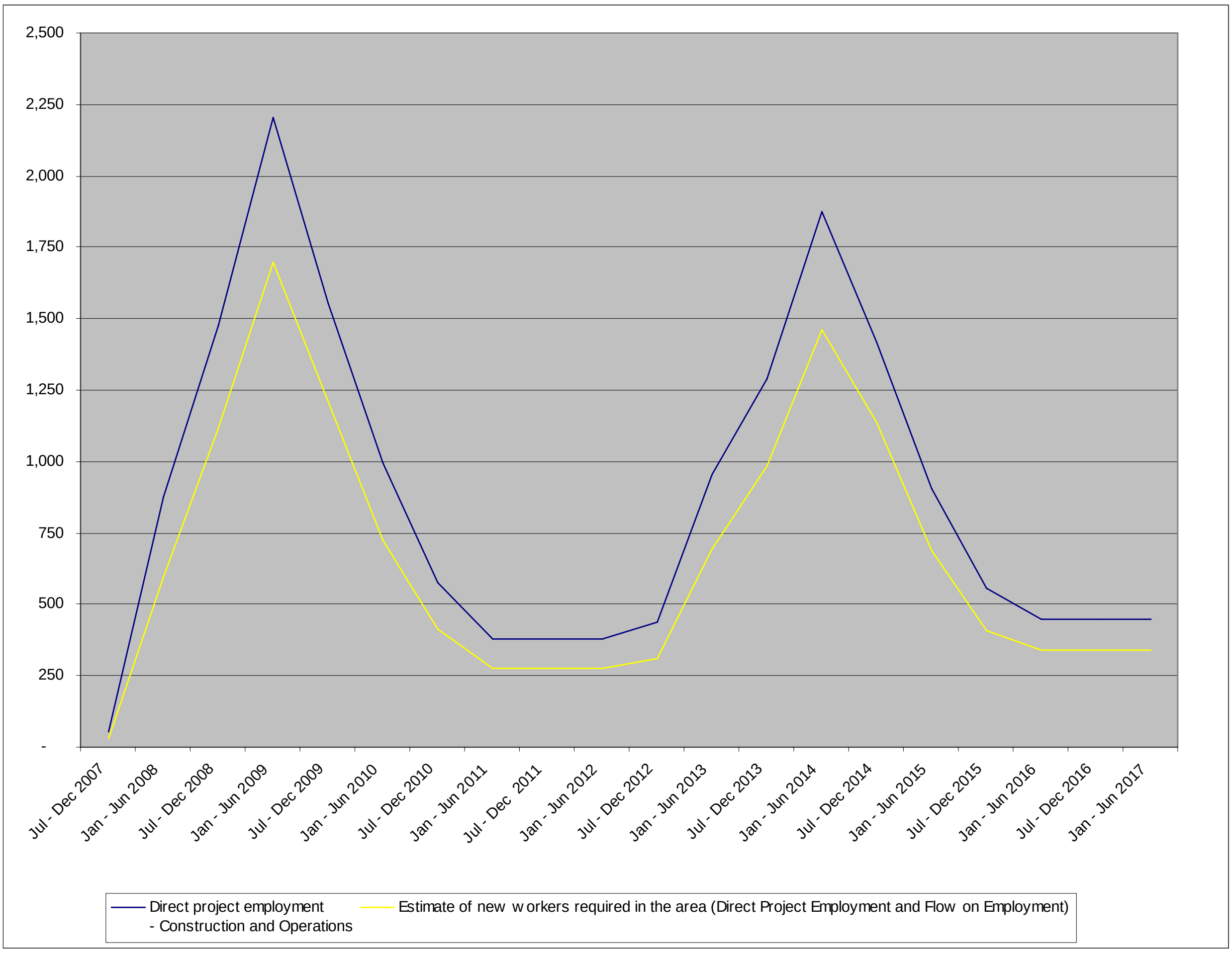
The GGMIM uses six monthly intervals for its analysis and to achieve this it averages monthly data over each six monthly interval, January to June and July to December, for each year assessed in the modelling period. Accordingly, the workforce over the model's six-monthly average will not show any monthly highs within the modelling period. The underlying data on which the GGMIM is based are drawn from the 2001 ABS Census. Therefore the results will not reflect any changes to the demographic profile of the Gladstone / Calliope area since 2001.

The results presented in Figure 5.2 and Table 5.3 show the direct and indirect employment impacts of the GNP. This does not include the employment impacts of the construction of the slurry pipeline from Marlborough. The flow-on employment effects of the pipeline's construction will be minimal as the workforce will be small, short-term, and will be fully catered for in mobile construction camps.

Results of the model's calculations show that indirect employment will be greatest in January to June 2009 when approximately 750 indirect jobs will be created and in January to June 2014 when approximately 850 indirect jobs will be created. Industries set to benefit from the development include support and supply industries, service industries, and property and building industries.

Even if the total current unemployed labour force for both Gladstone and Calliope LGAs was to be employed on the project, there would be insufficient local workers to meet the total workforce demand. The model results indicate that additional workers will need to be imported into the area to address any labour shortage. The GGMIM has calculated that in the period of January to June 2009 there will need to be approximately 1,700 direct and indirect workers imported into the area. In the period of January to June 2014 approximately 1,500 direct and indirect workers will be required.

Figure 5-2: Workforce Requirements (six-monthly averages)



Source: GGMIM (Office of the Coordinator-General), August 2006

Table 5.3 - GPN Direct and Flow on Employment (six-monthly averages)

Year	Year Half	Direct	Flow-On	Total	Local Recruitment	External Recruitment
2007	Dec-07	53	14	67	37	30
2008	Jun-08	878	269	1147	554	593
2008	Dec-08	1478	544	2022	907	1115
2009	Jun-09	2203	753	2956	1258	1698
2009	Dec-09	1553	614	2167	955	1212
2010	Jun-10	995	417	1412	689	723
2010	Dec-10	575	325	900	486	414
2011	Jun-11	380	235	615	340	275

Year	Year Half	Direct	Flow-On	Total	Local Recruitment	External Recruitment
2011	Dec-11	380	235	615	340	275
2012	Jun-12	380	235	615	340	275
2012	Dec-12	438	263	701	393	308
2013	Jun-13	954	501	1455	761	694
2013	Dec-13	1290	670	1960	978	982
2014	Jun-14	1873	846	2719	1260	1459
2014	Dec-14	1418	763	2181	1043	1138
2015	Jun-15	905	506	1411	723	688
2015	Dec-15	555	333	888	479	409
2016	Jun-16	450	295	745	405	340

Source: GGMIM

5.2.3 Workforce Requirements from Other Projects

There could be additional cumulative demand for labour if other proposed industrial development projects proceed at a time overlapping the GNP phases. Other large scale projects proposed in the region include the Wiggins Island Coal Terminal (WICT) development, the Fisherman's Landing port expansion, Stage 2 of the Comalco Alumina Refinery, and the Australian Nitrogen Project. Mines in the region also have a demand for workers, particularly tradespeople.

Phase 1 of the WICT project is expected to begin construction in July 2007 and is forecast to be completed by December 2010. The proponent has advised that there will be a peak of approximately 650 construction workers between February 2010 and the end of April 2010, with an additional 130 permanent jobs created when operational at completion of Phase 1. Phase 2 for the project is expected to begin construction in June 2013 and is forecast to be completed by November 2015. There will be a peak of approximately 450 construction workers for Phase 2 in January 2015.

The Central Queensland Port Authority, the proponent for the Fisherman's Landing Project proposes to use its existing workforce to undertake the construction activities (Office of the Queensland-Coordinator General, 15 August 2006).

Other developments which have previously been approved include Comalco Aluminium Refinery expansion and the Aldoga Aluminium Smelter. The status and timing of these projects is uncertain. If these projects proceed they will create additional cumulative demand for both construction and operational workforce. Comalco has provided estimates for its proposed Alumina Refinery Stage 2 project with construction to commence in mid-2007 over a 30 month period building up from 50 construction workers, with a peak of 2,000 workers over 6-9 months in 2009.

Australian Nitrogen has provided estimates for its proposed plant with construction to commence in the fourth quarter 2007 over a 30 month period with a peak of 350 construction workers from approximately the fourth quarter 2008 to the first quarter 2009. The operational workforce is forecast to be 50 persons and operations are expected to commence in the second quarter 2010.

5.2.4 Workforce Availability

The GGMIM workforce modelling suggests that there are not enough construction workers in the local area to meet the required GNP workforce demand. Hence, workers will need to be brought in from outside of the local region (imported workers). The need for imported workers for the GNP would peak in the first half of 2009 and the first half of 2014 for Stages 1 and 2 respectively.

Workforce data analysis and experience from previous large scale development projects such as the Comalco Aluminium Refinery indicate that there is a highly mobile workforce, particularly in the construction industry.

Despite projections detailing the need for a large number of imported workers to be brought into the area, it is the opinion of some Gladstone City Council representatives that many skilled workers currently employed outside of the area would return to Gladstone if a development such as GNP occurred. (B.McAlister, GCC, pers.comm. 24.01.06). This may mean that new housing may not be necessary for the entire imported workforce.

GPNL will engage a specialist employment firm to recruit their construction and operational workforce from both local sources (where possible) and from outside the region. Previous workforce analysis conducted during a similar scale project (the CAR project) noted a large percentage of 'imported workers' were from outside the Fitzroy Statistical District, including a significant component from interstate (PIFU, 2003). Previous analysis also suggests that large projects such as the GNP are likely to attract a higher proportion of older workers and married workers than would smaller and shorted construction projects.

The demand for workers from the GNP and other projects in the region are expected to create additional demand for skilled workers who are already in short supply in the local area. The 2002 Central Queensland Training and Employment Strategy and the 2006 Gladstone Region Skills Report outlined the workforce pressure associated with the proposed large scale industrial developments in the region and the shortage of skilled workers. There is considered to be a skills shortage in the area of the following trades:

- Metal fabricators, boilermakers and welders;
- Mechanical fitters, machinists and pipe fitters;
- Electricians and instrument fitters; and
- Carpenters and form workers.

The large demand for workers required by the GNP may affect the ability of other businesses in the area to attract and retain staff, particularly smaller businesses. Previous experience suggests that smaller businesses can have difficulty in competing against larger firms to attract and retain staff. This may be attributed to the ability of larger firms to provide more attractive employment conditions to smaller firms. In a questionnaire conducted as part of the Gladstone Region Skills Survey, 74% of businesses and organisations who responded to the questionnaire had difficulty in attracting and/or retaining staff, with 47% having a great deal of difficulty or find it impossible to do so (GAPDL, 2006). The vast majority of the businesses and organisations (91% out of 256 businesses) who responded to the questionnaire were small businesses of 50 workers or less. The top reasons cited by respondents for difficulty in attracting staff included inability to offer competitive salaries; lack of available qualified, experienced people; and difficulty in encouraging people to relocate to a regional area (GAPDL, 2006).

5.3 Maximise Local Employment Benefits for GNP

GPNL will develop an employment policy which promotes the use of local workforces for the construction phase. An industry participation plan will be developed which will detail the level of local industry participation expected and the benefits that would flow to Queensland in industry development, technology transfer, job creation and skills development.

Within the industry participation plan, GPNL will commit to:

- Ensuring potential local suppliers are provided with information in an equitable and timely manner;
- Appropriate design and procurement strategies to maximise local participation;
- Ensuring local suppliers are provided with opportunities to supply under the same terms, standards and conditions as interstate or overseas suppliers;
- Ensuring contracts are awarded on the basis of the most competitive proposal which includes due consideration of non-cost factors such as reliability, maintainability, servicing etc; and
- Performance measurements and feedback mechanisms.

This may include strategies such as GPNL registering its skilled workforce requirements with the Rockhampton Regional Development Limited's Central Queensland jobs register (CQ Jobs) which aims primarily at recruiting workers locally but also provides opportunities for regional and interstate workers to apply for positions they are appropriately skilled to fill.

6.1 Introduction

This section discusses the potential impacts of the project on the socio-economic profile of the study area.

6.2 Impacts on Demographic Profile

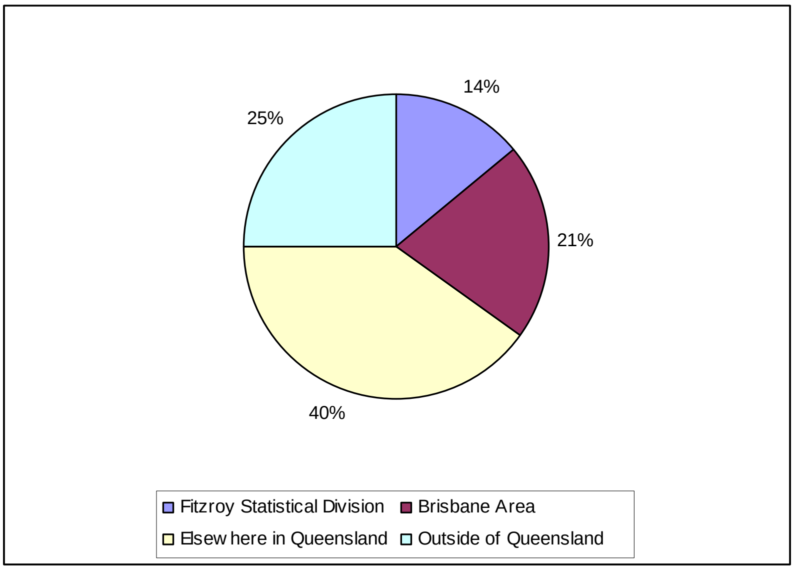
The main demographic influences in the Gladstone/Calliope area from the project will be associated with the imported workforce coming in to work on the project from outside the Gladstone/Calliope area. The influx of construction workers is likely to bring about short to medium term impacts to the demographic profile of the study area. The operational workforce will have a longer term influence.

6.2.1 Origin of Additional Population

At the 2001 Census, 75% of the workers who moved into the Gladstone/Calliope area in the previous 12 months were from within Queensland, compared to 65% during the 12 month period prior to the 1996 Census. Of this, 14% of workers coming into the area were from within the Fitzroy Statistical District and 61% were from elsewhere in Queensland. Figure 6.1 details the origin of imported workers to the area during 2001.

Assuming that a similar situation exists for the GNP, it can be expected that the majority of imported workers will be from Queensland. Judging from the current high employment rates of skilled workers in the region, it is likely that a significant proportion of workers will be from outside of the Fitzroy Statistical Division.

Figure 6-1: Origin of Imported Workers to Gladstone/Calliope in 12 Months prior to 2001 Census



Source: PIFU, 2003

6.2.2 Living Arrangements of Additional Population

Table 6.1 shows living arrangements of all workers who arrived in the Gladstone/Calliope area in August 2000 to August 2001. Of these people, 1,218 persons, or 41% of adults (aged 15 or more) had found employment by the time of the 2001 Census (August, 2001). Table 6.1 distinguishes between the imported construction and manufacturing workforce. GPNL's construction workforce would fit the definition of an 'imported construction workforce' and the operational workforce would fit the classification of an 'imported manufacturing workforce'. The percentage of imported construction workers living alone in 2001 (30%) was considerably higher than the percentage of imported workers living alone (16%), or for residents who have lived in the area for over 12 months (8%) (PIFU, 2003). A large proportion of the imported manufacturing workforce lived with spouses / defactos or in a family.

Table 6-1: Living Arrangements of Imported Workers

	Total Imported Workers	Imported Construction Workforce	Imported Manufacturing Workforce
With Spouse	40%	39%	52%
With a de-facto partner	17%	19%	10%
With a family	16%	12%	14%
Shared private housing with someone else	11%	0%	9%
Lived alone	16%	30%	15%

Source: PIFU, 2003

Assuming these trends are still relevant, it can be expected that approximately 57% to 60% of newly arrived GNP workers will live with partners. Only a relatively small percentage (approximately 12% to 16%) will be accompanied by children.

Of the imported construction workforce, 27 % to 30% is expected to live by themselves as opposed to only 15% of manufacturing workers. This may be because the short duration of construction employment does not warrant bringing partners or families into the area. As such, the potential impacts and social requirements are expected to differ between the operational and construction workforce on matters such as accommodation and community services.

6.2.3 Additional Population Associated with Imported Workers

PIFU has developed a model to estimate the population increase from the imported workforce. Data on living arrangements of workers who moved into the Gladstone/Calliope area during the 12 months prior to the 2001 Census have been used together with average household size (based on persons in private dwellings). Analysis of data indicates that only 27% of workers moving into the Gladstone/Calliope study area lived alone or shared a house with an unrelated person (refer to Table 6.1). Living arrangements show that approximately 57% of new workers to the area live with a spouse or partner and an additional 16% also have dependent children. The average population/worker ratio living as a family utilised was 2.6 and for those living with a spouse or partner the average population ratio was 2.0. The above information has been utilised to provide an estimate of the overall population increase for the Gladstone/ Calliope area associated with the project.

Table 6.2, shows the imported workforce and expected increase in population associated with the GNP workforce based on this PIFU model. Population increases associated with the imported workforce are expected to peak for stage 1 in the period of January to June 2009 with an estimated 3101 extra persons. There is expected to be a second peak associated with the construction phase of stage2 between January to June 2014 where there are an estimated 2,664 additional persons associated with the imported workforce.

Table 6-2: Anticipated Population Increase in Gladstone/Calliope from Direct GNP Workforce and Indirect Workforce

Six months to	Imported Workers	Associated Persons			Total Estimated Population Increase
		Single status workers	Workers accompanied by partner	Workers with families	
Dec-07	30	8	17	5	55
Jun-08	593	160	338	95	1083
Dec-08	1115	301	635	179	2036
Jun-09	1698	458	968	272	3101
Dec-09	1212	327	691	194	2213
Jun-10	723	195	412	116	1321
Dec-10	414	112	236	66	756
Jun-11	275	74	157	44	502
Dec-11	275	74	157	44	502
Jun-12	275	74	157	44	502
Dec-12	308	83	176	49	562
Jun-13	694	187	396	111	1268
Dec-13	982	265	560	157	1793
Jun-14	1459	394	832	233	2664
Dec-14	1138	307	649	182	2078
Jun-15	688	186	392	110	1256
Dec-15	409	110	233	65	745
Jun-16	340	92	194	53	618

Note: Imported workers data covers both the construction and operation phases of GPN project Sourced from GGMI Model Coordinator Generals Office 2006

Note: Associated persons estimate takes assumptions from DGPSR 2003 Gladstone/Calliope Workforce Analysis Model that 57% of households will be two person, 16% will be families (2.6 ratio) and 27% will be single persons.

Source: GPN Data, GGMIM results and URS analysis.

6.2.4 Age Structure of New Workforce Arriving in Gladstone/Calliope Area

Table 6.3 utilises 2001 Census data to compare the age distribution of workers who moved into Gladstone/Calliope in the previous year with those who resided in the area for more than twelve months. Higher proportions of workers aged 20-34 have moved into the region since 2000, particularly for workers in the construction industry. A lower proportion of 'imported' workers were aged over 35 years in 2001 and there were a higher proportion of 'resident' workers between the ages of 35 and 64. Figures from the 2001 data are relatively consistent to the 1996 Census data.

If the age profile of imported workers for the GNP remains consistent with historic trends, Gladstone and Calliope LGAs are expected to see a high proportion of the 'imported' workforce in the 20-34 year old bracket.

Table 6-3: Age Profile of Imported and Resident Workforce as at 2001

2001	**Construction**		**Manufacturing**		**All Industries**	
	Imported	Resident	Imported	Resident	Imported	Resident
15-19	nr	4%	nr	4%	7%	8%
20-24	12%	9%	18%	8%	20%	8%
25-34	59%	23%	29%	24%	34%	21%
35-44	15%	29%	34%	32%	20%	29%
45-54	nr	24%	10%	23%	13%	23%
55-64	nr	10%	nr	9%	4%	9%
65+	nr	nr	nr	1%	1%	1%
Total 15+	100%	100%	100%	100%	100%	100%

nr=not reliable (figure size less than 10 persons)
Source – PIFU, 2003

6.3 Economic Impact of the Project

The GNP will have an economic impact on the local, state and national economy in two phases: the construction phase and the on-going operational phase. As mentioned previously, economic impact is typically measured in terms of the following key indicators:

- **output** – the value of total sales;
- **value added** – an approximation of the contribution to Gross Domestic Product (GDP), consisting of gross operating surplus and wages/salaries of the employees; and
- **household income** – the wages/salaries before tax of employees.

All valuations have been carried out in 2006 dollars which should result in a consistent outcome across the time period being considered. Impacts on prices and resource availability have not been assessed in this study due to the fact that input-output analysis takes these as being static. The input-output multipliers used in the economic impact analysis have been taken from various sources including the ABS and previous studies.

The analysis included impacts at the local (Gladstone LGA), regional (Fitzroy SD), state and national levels.

Assessment of the impacts of displacement effects, substitution and import expenditure was undertaken on the direct inputs into the economic model. The results are shown in Table 6.4.

Table 6-4 Origin of Inputs

	Construction Phase		Operations Phase	
	Costs	Labour Inputs	Costs & Revenues	Labour Inputs
Local	15%	35%	20%	40%
Regional	5%	25%	10%	25%
QLD	20%	20%	5%	20%
Australia	20%	15%	5%	15%
International (Imports)	40%	5%	60%	0%

The economic impacts shown in this section are not cumulative i.e. the impacts shown for, say Queensland, are additional to those shown for the local and regional areas.

6.3.1 Construction Phase Impacts

The construction phase of the GNP occurs over a nine-year period, with two stages of 3.5 years each. To quantify the construction impacts, the capital expenditure has been calculated for Stages 1 and 2 to determine the effect of output and value added increases for each stage. For the other two key indicators of economic impact (income and employment), annual averages over each stage have been calculated.

The construction impacts for Stage 1 are shown in Table 6.5.

Table 6-5 Construction Phase Impacts – Stage 1

	Output (per stage) $ mill	Value Added (per stage) $ mill	Household (per year) $ mill
Direct Impacts			
Local	467.1	93.4	48.6
Regional	155.7	31.1	34.7
Queensland	622.8	124.6	27.8
Australia	622.8	124.6	20.8
Indirect Impacts			
Local	176.7	65.5	11.4
Regional	58.3	23.3	24.7
Queensland	1,502.5	175.2	36.1
Australia	1,197.0	233.4	45.0
Total Impacts			
Local	643.8	158.9	60.0

	Output (per stage) $ mill	Value Added (per stage) $ mill	Household (per year) $ mill
Regional	214.0	54.4	59.4
Queensland	2,125.3	299.7	63.9
Australia	1,819.8	358.0	65.8

The table highlights that the total value added or GDP effects of Stage 1 of the construction period are $159 million in the local Gladstone area, with the Australian economy receiving the greatest GDP effects of $358 million for this stage. This indicates that a large proportion of GDP contribution from this stage of operations will occur at a national level. The per annum Stage 1 effect of this increase in employment on household incomes is $60 million in Gladstone LGA, and $59 million in the Fitzroy region. The direct household income impacts around Australia are much less than the direct impacts in Gladstone LGA, however when the indirect flow-on impacts are also considered, the total household income impacts are higher in Australia at $66 million.

Table 6.6 presents the Stage 2 construction impacts.

Table 6-6: Construction Phase Impacts – Stage 2

	Output (per stage) $ mill	Value Added (per stage) $ mill	Household (per year) $ mill
Direct Impacts			
Local	244.3	48.9	41.1
Regional	81.4	16.3	29.4
Queensland	325.7	65.1	23.5
Australia	325.7	65.1	17.6
Indirect Impacts			
Local	92.4	34.3	9.7
Regional	30.5	12.2	20.9
Queensland	785.8	91.6	30.6
Australia	626.0	122.1	38.1
Total Impacts			
Local	336.7	83.1	50.8
Regional	111.9	28.5	50.3
Queensland	1,111.5	156.7	54.1
Australia	951.7	187.2	55.7

Table 6.6 indicates that the Stage 2 total impacts are lower than Stage 1, which reflects that the largest proportion of construction expenditure will occur in Stage 1. The total value added effects of Stage 2of the construction period are $83 million in the local Gladstone area, with Australia receiving the greatest GDP effects of $187 million in this stage, and the Fitzroy region receiving a GDP contribution of $29 million. The annual effect of this increase in employment on household incomes is $51 million in Gladstone LGA, and $56 million in Australia.

6.3.2 Operations Impacts

The operational phase of the GNP has been evaluated over the two stages of operations. Stage 1 is assumed to begin in October 2010, and continuing for five years, and Stage 2 begins immediately following. The operational revenues and costs have been calculated on an annual basis to indicate the economic impact of one year of GNP operations. It must be noted that the revenue effects (inputs to determine both output and value added effects) have been estimated on the basis of the volume of nickel and cobalt produced and the prevailing market price for the nickel and cobalt that will be sold. Income and employment have also been averaged annually for each stage to represent the likelihood of continuous employment from the project.

The economic impacts for Stage 1 operations are shown in Table 6.7.

Table 6-7: Operations Phase Impacts – Stage 1

	Output (per year) $ mill	Value Added (per year) $ mill	Household (per year) $ mill
Direct Impacts			
Local	319.6	252.6	9.2
Regional	159.8	126.3	5.8
Queensland	79.9	63.1	4.6
Australia	79.9	63.1	3.5
Indirect Impacts			
Local	124.5	69.9	1.2
Regional	61.6	73.4	7.9
Queensland	198.5	52.7	10.3
Australia	96.0	58.6	1.9
Total Impacts			
Local	444.1	322.5	10.4
Regional	221.4	199.7	13.7
Queensland	278.5	115.9	14.9
Australia	175.9	121.8	5.3

The table above indicates that each year of operations in Stage 1 will generate value added effects to the Gladstone and Fitzroy Region economies that exceed the effects of the construction phase. The total value added effects of Stage 1 operations are $323 million per annum in the local Gladstone area, $200 million in the Fitzroy Region, $116 million in Queensland, and $122 million nationally. These results indicate that the largest proportion of GDP contribution occurs in the local Gladstone area. Employment effects for this stage total 265 FTE positions in the local Gladstone area for each year of Stage 1 operations, 377 FTE across the state and 383 nationally. The annual effect of this increase in employment on household incomes is $10 million in Gladstone, and $15 million in Queensland.

Table 6.8 presets the Stage 2 operations impacts.

Table 6-8: Operations Phase Impacts – Stage 2

	Output (per year) $ mill	Value Added (per year) $ mill	Household (per year) $ mill
Direct Impacts			
Local	674.1	540.1	18.4
Regional	337.1	270.1	11.5
Queensland	168.5	135.0	9.2
Australia	168.5	135.0	6.9
Indirect Impacts			
Local	262.6	149.4	2.5
Regional	130.0	156.9	15.8
Queensland	418.8	112.7	20.7
Australia	202.4	125.3	3.7
Total Impacts			
Local	936.8	689.5	20.9
Regional	467.1	427.0	27.3
Queensland	587.3	247.8	29.9
Australia	371.0	260.3	10.6

Table 6.8 provides the direct, indirect and total economic impacts of Stage 2 operations of the GNP. The Stage 2 impacts are significantly greater than Stage 1, as a result of the increased nickel and cobalt outputs. This results in the GNP producing higher economic impacts on a continuous basis from year 9. The total value added effects for each year of Stage 2 operations are $690 million in the local Gladstone area, $427 million in the Fitzroy region, $248 million in Queensland, and $260 million nationally. The annual effect of this increase in employment on household incomes is $21 million in Gladstone, and $27 million in Fitzroy.

6.3.3 Household Income Levels

Based on 2001 Census data, 37.9% of households in Gladstone LGA have weekly incomes that are $1,000 or more, in comparison to 34.2% earning this level of income Australia-wide. It is anticipated that the increase in workers required for the GNP will result in a growth in the proportion of residents receiving this higher-level income. This indicates that there is likely to be increases in income within the region as a result of the GNP.

6.3.4 Government Revenue Implications

The development of the nickel refinery and its ongoing operation will result in an increase in government revenue which is likely to arise in the form of:

- income taxes due to increases in employment and income levels within the region;
- company taxes as a result of nickel and cobalt sales and increased business activity in other industries that support project-induced population growth;
- rates and fees – rates for government/council for provision of services, and local government fees; and
- export income – export of nickel and cobalt product will contribute to Queensland's economic performance.

6.3.5 Outcomes of Economic Analysis

Table 6.9 summarises the economic impacts of the GNP on the local area. Of the two project phases, the operational phase is anticipated to have the largest impact. In Stage 1 operations, value added GDP impacts average $323 million per annum and in Stage 2 this is greater at $690 million per annum. This is in comparison to GDP impacts of $160 million for the entire Stage 1 construction, and $83 million for Stage 2 construction. In terms of household income, the annual economic impact generated is greater during construction ($51 million to $60 million per annum) than operations ($10 million to $20 million per annum).

Table 6.9– Gladstone Nickel Project
Total Economic Impact on Local Area (per annum average)

Economic Impact Indicator	Construction Stage 1	Construction Stage 2	Operation Stage 1	Operation Stage 2
Output ($ mill)	643.8*	336.7*	444.1	936.8
Value Added ($ mill)	158.9*	83.1*	322.5	689.5
Household Income ($ mill)	60.0	50.8	10.4	20.0

*Indicates per stage impact (construction output and value added impacts have been calculated for each stage as opposed to a per annum average)

Table 6.10 indicates the impacts of the proposed development on the economy of the broader Fitzroy Region. The value added/GDP effect of the GNP operations is expected to be high averaging $200 million per annum in Stage 1 and $427 million in Stage 2.

Table 6.10 – Gladstone Nickel Project
Total Economic Impact on the Fitzroy Region (per annum average)

Economic Impact Indicator	Construction Stage 1	Construction Stage 2	Operation Stage 1	Operation Stage 2
Output ($ mill)	214.0*	111.9*	221.4	467.1
Value Added ($ mill)	54.4*	28.5*	199.7	427.0
Household Income ($ mill)	59.4	50.3	13.7	27.3

Indicates per stage impact (construction output and value added impacts have been calculated for each stage as opposed to a per annum average)

The economic impacts of the GNP on the state of Queensland are summarised in Table 6.11. Value added and household income impacts for GNP construction are higher for Queensland than for the region or local area, reflecting a higher multiplier effect at the state-level for construction projects. Household income impact on the state is highest in Stage 1 construction, with an estimated $64 million generated per annum.

Table 6.11 – Gladstone Nickel Project
Total Economic Impact on Queensland (per annum average)

Economic Impact Indicator	Construction Stage 1	Construction Stage 2	Operation Stage 1	Operation Stage 2
Output ($ mill)	2,125.3*	1,111.5*	278.5	587.3
Value Added ($ mill)	299.7*	156.7*	115.9	247.8
Household Income ($ mill)	63.9	54.1	14.9	30.1

* Indicates per stage impact (construction output and value added impacts have been calculated for each stage as opposed to a per annum average)

Table 6.12, indicates the impacts of the GNP on the Australian economy. The construction GDP/value added impact is greater on the Australian economy than the state and local regions, reflecting the greater flow-on impacts of construction on the national economy. Stage 1 construction GDP value added impact is $358 million over the length of the stage, and is $187 in Stage 2. Value added impact is $122 million per annum for Stage 1 operations and $260 million per annum for Stage 2 operations.

Table 6.12 – Gladstone Nickel Project
Total Economic Impact on Australia (per annum average)

Economic Impact Indicator	Construction Stage 1	Construction Stage 2	Operation Stage 1	Operation Stage 2
Output ($ mill)	1,819.8*	951.7*	175.9	371.0
Value Added ($ mill)	358.0*	187.2*	121.8	260.3
Household Income ($ mill)	65.8	55.7	5.3	10.6

*Indicates per stage impact (construction output and value added impacts have been calculated for each stage as opposed to a per annum average)

6.4 Impacts on Housing and Accommodation

6.4.1 Predicted Housing Requirements

Full details on the anticipated impacts of the project on housing and accommodation are detailed in the Housing Impacts Study. This section provides a summary of findings only.

Additional demand for housing will be attributed to:

- natural growth (organic growth) of the existing local population;
- workforce and families (including construction and operation) imported for the GNP;
- indirect imported flow-on workforce and families as a result of the GNP;
- other projects in the area and their imported workforce requirements.

Natural Population Growth

There are projected to be an additional 5,221 residents between 2006 and 2011 in Gladstone and Calliope LGAs based on organic population growth. This growth is based on historic population growth rates for the LGAs and does not consider proposed or intended large scale industrial or residential developments which would bring in additional population. Based on the current Queensland average of 2.6 persons per household, it could be assumed that there will be 2,008 additional units of housing required to meet the natural population growth.

Housing Related to the GPN Project

Based on GGMIM modelling (Table 6.2), a peak of approximately 1700 direct and indirect workers (in the first six months of 2009) will be recruited from outside of the local area. It is assumed that these workers will require accommodation in the local area. The largest part of the housing demand will be for temporary construction workers during the construction peak. The long-term demand from the operational workforce for permanent housing is much smaller.

During the construction peak for Stage 2 it is estimated that approximately 1,450 units of temporary accommodation will be required- for both direct and indirect works recruited from outside the Gladstone area.

The GGMIM analysis indicates that the demand for long term / permanent housing created by the project's direct and indirect imported workforce will be for 275 units of housing for Stage 1 increasing to 340 for Stage 2 (Table 6.2).

Cumulative Impacts on Housing Demand

Cumulative impacts on housing demand relate to demand generated by other new developments under construction at around the same time as the GPN project. Projects proposed in the area include:

- Wiggins Island Coal Terminal.
- Fisherman's Landing Expansion.
- Comalco Aluminium Refinery Stage 2 (CAR 2)
- Australian Nitrogen plant.

Details of the likely workforce and timing of these projects are given in Section 5.3.2.

6.4.2 Housing Demand Strategies

Permanent housing demand will be derived from organic population growth and the direct and indirect GNP operational workforce. Together these total around 2283 units of housing. If housing production can be increased from its present level (around 400 housing units each year) to 500 units per annum, then sufficient new housing can be delivered to meet medium term demand for permanent accommodation by 2010 when Stage 1 operations commence.

There will be approximately 1,700 units of accommodation required during the peak of the construction of Stage 1 of the project and around 1,460 units of accommodation required for the peak of Stage 2.

Analysis of the rental and real estate sales markets in Gladstone and Calliope (Section 4.12) indicates that the existing local market will not be able to fully meet the housing demand from the project's direct and indirect construction workforce.

In order to avoid major disruption to the local housing market during the construction phase options are being considered including:

- Accommodating workers in Rockhampton and providing transport to and from the project construction site;

- A self-contained workers camp to accommodate up to 600 single-status workers;
- Fly-in/fly-out and/or drive-in/drive-out arrangements combined with a workers camp;
- Securing a proportion of the local market's rental accommodation to temporarily house imported workers with partners/family; and
- Securing a proportion of new residential production which will be needed to house imported workers with partners/family.

An important consideration in planning for temporary accommodation is to match the accommodation provided to the characteristics of the proposed workforce.

Additional strategies for the provision of temporary accommodation may include augmenting a workers camp with larger and more comfortable temporary dwellings that could accommodate two-person households or smaller families for short periods of time or the provision of shared permanent dwellings for single-status workers under GPNL management.

The housing strategy for the GNP has the following three aims:

- To ensure that adequate housing is made available in the private market to accommodate the project's construction and operational workforces,
- To stimulate the creation of new housing that will add to the permanent housing stock of the Gladstone / Calliope area, and,
- To address concerns related to the impact of a large housing demand during the construction period, on existing lower income households.

The key elements of the strategy include:

- Stimulating construction of new dwellings including houses, townhouses, units, permanent villages for temporary accommodation, motels and hotels;
- Coordinated leasing of existing rental properties;
- Promotion of utilising accommodation options in the greater regional area; and
- Development of a temporary workers village.

These elements together form a coordinated multi-faceted approach, which will have the best chance of achieving the house requirements for the GNP.

For more details on the proposed GPNL Housing Strategy refer to Section 7 of the Housing Impacts Study.

6.5 Impacts on Health and Education

The additional populations associated with the GPN project and other projects in the area will create demand for additional health, education, and human services delivery.

6.5.1 Health Care

The medical facilities in Gladstone seem to be adequate to meet the forecast increase in population (J Hannan, Gladstone City Hospital, pers. comm.). The main difficulty associated with the forecast population increase is a shortage of nurses and doctors and some specialised medical practitioners such as physicians.

More medical professionals are required, however if the shortage of medical professionals persists while the population increases, more health services could be referred on to Rockhampton, which is 110 km north of Gladstone. Travelling doctors and medical specialists, and “telehealth” technology (surgical assistance provided by specialists outside the hospital via remote cameras) may also assist in dealing with medical professional shortages.

A first-aid station will be located at the refinery. It will treat non-serious injuries and stabilise more serious injuries prior to transport to the region’s medical facilities.

6.5.2 Education

As detailed in Table 4.12, most schools are well below enrolment capacity levels. Education Queensland’s anticipated enrolment rates for 2008 are within current enrolment capacity, indicating that most schools have adequate ability to handle additional students.

The estimated peak in demand for school places from both direct and indirect imported workers with accompanying children will be for 295 students in 2009 for Stage 1 and 250 places in 2014 for Stage 2. Education Queensland representatives note that adequate resources would be provided to meet any increased demand (D.Eborn, 2.06.06 pers. comm.).

Further education institutions in the area including Central Queensland TAFE –Gladstone and Rockhampton campuses, and Central Queensland University – Gladstone and Rockhampton campuses have capacity to accommodate additional students. A range of courses and certificates are available including courses for trades.

GPNL will engage a specialist or employment firm(s) to recruit their construction and operational workforce from both local sources (where possible) and otherwise from within the wider region of Central Queensland or the remainder of Australia. During the construction phase, normal industrial training programs will be conducted as required by labour awards, as well as in agreements set out for the construction of the plant and relevant State and Commonwealth legislation. Most of these programs will be the responsibility of the contractors and sub-contractors.

During the operation of the refinery, an ongoing program of skills enhancement will be provided. This will be a combination of specific in-plant training plus more generalised skills instructions at off-site locations. In addition, an apprenticeship and/or traineeship program will be implemented by an internal program or in close consultation with existing local and regional technical training institutions.

6.6 Impacts on Community Facilities and Services

6.6.1 Recreation Facilities

Discussions with Gladstone and Calliope Councils indicate that there are adequate sporting and recreation facilities available to handle an expected increase in population.

6.6.2 Childcare Facilities

At present, occupancy at childcare centres is full for certain age group categories. Additional childcare services may be required to handle additional demand for childcare services in certain age groups. As of 2007, prep schools will be introduced into the Queensland school system which will accommodate some children who would otherwise be in childcare. This may reduce demand for childcare and daycare facilities.

6.6.3 Welfare Services

There is a wide network of support and welfare groups in the region. Some groups who were contacted during consultation believe that the additional population associated with the GNP will create an increasing demand for their services. Housing support services believe that the additional workforce in the area may limit the availability of low budget housing, and force some low income earners out of the area.

6.6.4 Retail Facilities

The five main shopping centres in the Gladstone / Calliope area service the local and wider communities, including Gladstone City, Calliope Shire, Miriam Vale, Banana Shire and Monto Shire. The role of Gladstone as a regional centre is well recognised in the community, although for specialist services or infrequent purchases, residents tend to travel to either Rockhampton or Brisbane.

The existing facilities will adequately cater for the shopping demands of the population increase resulting from the GNP.

6.7 Impacts on Emergency Services

Consultation with emergency services representatives indicates that the most of the existing emergency services have capacity to handle additional workload that could be associated with the project. Representatives also noted that services would also be increased when there was a need.

Senior Sergeant M.P. Dixon of Queensland Police Service (QPS) noted that Queensland Police has learnt from the experiences of the construction and commencement of operation of the Comalco Aluminium Refinery, when there were increased calls for service. QPS recognise the need to be aware of future developments and participate in the planning process so that they can adequately handle future demands (Senior Sergeant M.P. Dixon, Gladstone QPS, 21.04.06). A representative of QFRS notes that while there is always more scope for additional resources, the Gladstone QFRS station is currently well serviced (M. Rudder, Gladstone QFRS pers. comm. 27.3.06).

GPNL will maintain regular contact with emergency service representatives to discuss the project and likely impacts including:

- potential need for increased on-site medical emergency medical services at the site;
- additional requirements to adequately respond to potential emergencies characteristic to the projects operation (all services); and
- incorporating GNP operations into Queensland Ambulance Service multi-casualty management plans.

6.7.1 Effects on Local Residents

The majority of the land in the immediate area of the refinery and the RSF is within the GSDA and is designated for industrial use. Yarwun and a number of rural properties along Calliope River Road are the closest populated areas.

6.7.2 Land Use

The refinery site is vacant land with no current land use other than as a source of fill for the Central Queensland Port Authority (CQPA). Construction of the refinery will result in a lowering of the hill which is used as the fill source. Some of the fill generated by the lowering of the hill will be used in the filling for nearby land for CQPA use.

A number of properties in the vicinity of the RSF are currently leased for cattle grazing which is an interim use of the land until it is ultimately required for industrial purposes as indicated in the GSDA Development Plan. Grazing activities will be displaced by the construction and operation of the RSF. This is not anticipated to be a significant issue as there is extensive availability of suitable grazing land in the region.

6.7.3 Community Values

Section 4.15.2 lists the lifestyle aspects and values of the local community (based on responses to the project's community consultation program), why residents like living in the area, and what concerns they had about the project. These values and concerns, and the potential impacts of the project, are summarised below:

- **Lifestyle.** The project will not significantly affect existing recreational opportunities. There will be an increased demand for existing community services and GPN will work closely with service providers to ensure adequate planning is undertaken to enable any necessary expansion of service provision to be undertaken in a timely manner so that the additional demand can be met.

- **Employment Opportunities.** The project will provide a significant increase in both direct and indirect employment opportunities.

- **Rural Nature.** The existing rural nature of the proposed refinery and RSF site will change to an industrial use. However this is in accordance with the planning intent of both sites which are included in the Gladstone State Development Area (GSDA). The rural nature of land beyond the GSDA will not be affected by the project.

- **Tranquility.** The project will increase noise and traffic levels which will have localised effects on tranquility. However these effects will generally be limited to the surrounding industrial areas and the arterial roads that serve them. There will be no substantial noise or traffic impacts in the surrounding residential areas.

- **Pollution.** Air quality studies have shown that air emission from the refinery will not result in ground level concentrations exceeding human health guidelines in any surrounding residential areas. Assessment of the water quality impacts from the refinery's discharge to Port Curtis has shown that the area's marine values will not be significantly affected.

- **Economic Growth.** The project will result in a significant boost to local businesses and will further stimulate the economic growth of the region.

- **Population Increase.** There will be a significant but short-term increase in population associated with the construction phase. Additional services (housing, transport) will be provided to cater for this increase to minimise the impacts on existing residents. The population increase associated with the operational workforce will be much less (1.4% of the existing Gladstone/Calliope population).

- **Traffic.** The majority of the increased traffic to be generated by the project will be on the major arterial roads that service the GSDA. Allowance has been made to upgrade some of these key roads and intersections to cater for the additional traffic. Some additional traffic will be generated along Calliope River Road with the potential to impact on Yarwun and nearby rural residential properties. However, this traffic increase is relatively small and short term and well within the capacity of the road system.

- **Disruption to Farming Activities.** The project will result in minimal disruption to farming activities. The only effect will be to the cattle grazing which is currently undertaken on the RSF site. However this is only an interim use of this land as it is located in the GSDA which is planned to be ultimately used for industrial purposes.

6.7.4 Pipeline Study Area

The majority of the proposed pipeline route between Marlborough and the refinery site is located on farm land of freehold tenure. Impacts on landowners/occupiers will mostly be associated with construction activities.

During construction there will be some impacts on farm operations such as restricted access to areas where construction work is to occur and increased traffic. Once the pipes have been installed there will be minimal impact on existing land uses. Construction and operation environmental management plans will be prepared which will include strategies for minimising impacts on surrounding land uses.

As part of the GNP EIS, a socio-economic impact assessment was undertaken to determine the effect of the potential developments that may occur as part of the Project. The analysis has been undertaken for the construction phase and the operational phase, with both phases analysed over the two stages 1 and 2.

The main demographic influences from the project will be associated with the additional direct and indirect workforce imported from outside the local area to work on the project. The influx of construction workers is likely to bring about short to medium term impacts to the demographic profile of the study area. The operational workforce will have a longer tem influence on the demographic profile of the area.

The direct construction workforce is expected to have a peak of approximately 2,600 in the May 2009 (Stage 1) with a second peak of approximately 1,750 persons in May 2014 (Stage 2). Workforce for the pipeline construction is around 300 personnel. Indirect employment associated with the project is expected to be greatest in the first half of 2009 and the first half of 2014 when approximately 750 and 850 indirect jobs will be created in each respective period.

It is expected that there will not be enough local workers to meet the project's workforce demand. The GGMIM has calculated that in the first six months of 2009, 1,750 additional workers will need to be brought into the area, and in the first six months of 2014, approximately 1,500 additional workers will need to be imported. There could be additional cumulative demand for labour if other projects proceed at a time overlapping with the GNP.

A proportion of the imported workforce is expected to be accompanied by spouses/partners/family. Based on PIFU modelling, it is estimated the project will result in a peak population increase of 3,101 for Stage 1 and 2,664 for Stage 2.

The current housing situation in Gladstone / Calliope is tight and is expected to remain this way for the foreseeable future. There is a steady organic growth in population taking place that is expected to take up most available new and existing accommodation (both for sale and rental) in the local housing market.

Availability of land for residential development is not a constraint as there is a large quantity of existing land with existing planning approvals. The rate of production of serviced allotments is expected to be adequate to meet the demand from builders and the broader housing market.

In order to meet organic growth and the increase in permanent employment directly and indirectly created by the GNP, (ie operational workforce plus flow-on employment) the rate of residential production will need to increase to around 500 units of housing per year. This rate is equivalent to the recent peak in production in 2003. An increase to a higher rate, e.g. 600 units of housing per annum would be beneficial as it would generate enough additional housing over time to assist the GNP achieve its overall housing requirements while reducing negative impacts on the local housing markets (rental and sales). However, an increase to this rate of production may not be possible within the context of a shortage of skilled construction trades within the region.

The demand for short-term housing from the imported construction workforce will peak at 1,700 units for Stage 1 and 1,460 units for Stage 2. It is proposed that this demand will be met by a combination of rental and temporary accommodation, new residential development, and a workers camp.

The impacts of the additional population on services and facilities are summarised below:

- **Health and Education –** The medical facilities in the region seem adequate to meet the forecast increase in population. The main difficulty is a shortage of nurses and doctors and some specialised medical practitioners.
- **Education –**Given the present enrolment vacancy, there is sufficient capacity for schools and education institutions to accommodate additional students associated with the GNP.
- **Emergency Services –** Services have capacity to handle additional workload that could be associated with the project.
- **Community Services and Facilities –** Adequate services and facilities to handle an expected increase in population

For the Gladstone / Calliope area the estimated economic outcomes for the GNP are expected to be:

- Stage 1 construction, value added GDP impacts average of $160 million for the entire Stage 1 construction, and $83 million for Stage 2 construction
- Stage 1 operations, value added GDP impacts average $323 million per annum and in Stage 2 this is even greater at $690 million per annum.
- Annual household income generated during construction is estimated to be $50.8 million to $60.o million for the GNP and during operations it is estimated to be $10.4 million to $20.4 million.

Australian Bureau of Statistics (ABS), (2002a) Basic Community Profile CD3070107.

Australian Bureau of Statistics (ABS), (2002b) Basic Community Profile Gladstone LGA.

Australian Bureau of Statistics (ABS), (2002c) Basic Community Profile Calliope LGA.

Australian Bureau of Statistics (ABS), (2002d) Basic Community Profile Livingstone LGA.

Australian Bureau of Statistics (ABS), (2002e) Basic Community Profile Fitzroy LGA.

Australian Bureau of Statistics (ABS), (2002f) Basic Community Profile Rockhampton LGA.

Australian Bureau of Statistics (ABS), (2002g) Basic Community Profile Mount Morgan LGA.

Australian Bureau of Statistics (ABS), (2002h) Basic Community Profile Fitzroy Statistical Division

Australian Bureau of Statistics (ABS), (2002i) Basic Community Profile Queensland

Australian Bureau of Statistics (ABS), (2002j) Time Series Profile Calliope LGA.

Australian Bureau of Statistics (ABS), (2002k) Time Series Profile Fitzroy Statistical Division

Australian Bureau of Statistics (ABS), (2002l) Time Series Profile Queensland.

AMMA,(2006), Industrial Relations Report for the Definitive Feasibility Study, (unpublished)

Calliope Shire Council (2005) Development Approvals Overview, Extract form the Annual Report 2004-2005, Calliope Shire Council.

Central Queensland Regional Information System - State of Queensland (2005)Regional Overview, Gladstone-Calliope Sub-region, http://www.cqris.com.au/opencms/opencms/regional_overview/gladstone.html

Central Queensland TAFE, 17/7/06 http://www.cqit.qld.edu.au/site/Courses/

Central Queensland University, 17/7/06 http://handbook.cqu.edu.au/Handbook/programs.jsp

Connell Wagner, (2002), Aldoga Aluminium Smelter Environmental Impact Statement, Connell Wagner

Dames & Moore (1998), Comalco Alumina Refinery Environmental Impact Study, Dames & Moore.

Department of State Development, Osleach Pty Ltd April (2002), Gladstone Growth Management Initiative- Direct and Indirect Workforce Study, Queensland Government.

Department of State Development (2002), Gladstone Growth Management Initiative- Workforce and Population Estimates for Major Projects Under Investigation in Gladstone and Calliope, Queensland Government.

Department of State Development, 2005 (estimated date) (2005), Gladstone and Calliope: Australia's Newest Economic Powerhouse, Queensland Government.

Department of State Development Trade and Innovation (2006), Comalco Alumina Refinery Project – first phase complete, 14/06/2006 http://www.sdi.qld.gov.au/dsdweb/v3/guis/templates/contenVgui_cue_cntnhtml.cfm

Education Queensland, http://education.qld.gov.au/schools/directory/ (accessed 25.05.06).

Education Queensland (2006) Education Queensland – Capital Works Planning System (Unpublished Data).

Gladstone Area Promotion and Development Limited (GAPDL) (2004): The Gladstone Advantage , GAPDL.

Gladstone Area Promotion and Development Limited (GAPDL) (2005), The Gladstone Region

Project Status Report, GAPDL.

Gladstone Area Promotion and Development Limited (GAPDL) (2006): Gladstone Region Skills Survey, GAPDL.

Gladstone Tenant Advice and Advocacy Service, (2006), Summary Report on Rental and Sale Properties in Gladstone & Calliope, (unpublished).

Image Showcase Properties, Sydney (2006) Gladstone Property Update: There is a serious shortage of rental accommodation, Image Showcase Properties.

Office of Economic and Statistical Research (OESR), (2004): Crime and Social Profiles – Local Crime Areas 2002-2003, Qld. Treasury.

Office of Economic and Statistical Research (OESR), (2004b): Queensland Regional Profiles 2004: Fitzroy Statistical Division.

Office of Economic and Statistical Research (OESR) (2005) Gladstone – Calliope Region: A Social and Economic Profile Gladstone–Calliope Region, Queensland Government.

Office of Economic and Statistical Research (OESR), (2006a): Local Government Area Profile – The Gladstone (C) Region, OESR.

Office of Economic and Statistical Research (OESR), (2006b): Local Government Area Profile – The Calliope (S) Region, OESR.

Office of Economic and Statistical Research (OESR), (2006c): Local Government Area Profile – The Livingstone (S) Region, OESR.

Office of Economic and Statistical Research (OESR), (2006d): Local Government Area Profile – Fitzroy (S) Region, OESR.

Office of Economic and Statistical Research (OESR), (2006e): Local Government Area Profile – Rockhampton (C) Region, OESR.

Office of Economic and Statistical Research (OESR), (2006f): Local Government Area Profile –Mount Morgan (S) Region, OESR.

Planning Information and Forecasting Unit (PIFU) (2002), Gladstone / Calliope: Workforce Data Analysis – 1996 Census, Qld Dept of Local Govt and Planning, May 2002

Planning Information Forecasting Unit (PIFU), (2003): Gladstone/Calliope Workforce Data Analysis – 2001 Census, Queensland Dept of Local Govt and Planning.

Planning Information and Forecasting Unit (PIFU) (2005a), Population and Housing Fact Sheet: Gladstone Region, Qld Dept of Local Govt, Planning, Sport and Recreation, August 2005.

Planning Information Forecasting Unit (PIFU), (2006a) Population and Housing Facts Gladstone City. Queensland Government, Department of Local Government, Planning, Sport and Recreation.

Planning Information Forecasting Unit (PIFU), (2006b) Population and Housing Facts Calliope Shire. Queensland Government, Department of Local Government, Planning, Sport and Recreation.

Planning Information Forecasting Unit (PIFU), (2006c) Population and Housing Facts Livingstone Shire. Queensland Government, Department of Local Government, Planning, Sport and Recreation.

Planning Information Forecasting Unit (PIFU), (2006d) Population and Housing Facts Fitzroy Shire. Queensland Government, Department of Local Government, Planning, Sport and Recreation.

Planning Information Forecasting Unit (PIFU), (2006e) Population and Housing Facts Rockhampton City. Queensland Government, Department of Local Government, Planning, Sport and Recreation.

Planning Information Forecasting Unit (PIFU), (2006f) Population and Housing Facts Mount Morgan Shire. Queensland Government, Department of Local Government, Planning, Sport and Recreation.

Planning Information Forecasting Unit (PIFU), (2006g) Population and Housing Facts Fitzroy Statistical Division. Queensland Government, Department of Local Government, Planning, Sport and Recreation.

Planning Information Forecasting Unit (PIFU), (2006h) Population and Housing Facts Queensland. Queensland Government, Department of Local Government, Planning, Sport and Recreation.

Planning Information and Forecasting Unit (PIFU) (2006i), Total Residential Land Activity Fact Sheet: Gladstone City, Sept Quarter 2005, Qld Dept of Local Govt, Planning, Sport and Recreation

Queensland Department of Housing & State Development (2002) Housing Action Plan for Gladstone/Calliope, Queensland Government.

Queensland Regional Statistical Information System (QRSIS) 2005: http://www.oesr.qld.gov.au/online_services/online_tools/qrsis/qrsis_public.shtml

Queensland Health: http://www.health.qld.gov.au/wwwprofiles/gstone_gstone_hosp.asp#services (accessed 30/05/2006)

Queensland Health (2006) Queensland Public Hospital Specialist Outpatient Services Status Report

REIQ-Media Release (3/04/2006), Gladstone house prices on move, http://www.reiq.com.au/mediaReleases/view_media.asp?media_id=274

RLMS (2006) Marlborough Tenements to Gladstone Corridor Study

Rockhampton City Council, (2005) Rockhampton – The Lifestyle City, Rockhampton City Council

Sinclair Knight Merz, (2002), Gladstone Growth Management Initiative – Residential Land Study, Sinclair Knight Merz.Sinclair Knight Merz, (2002), Gladstone Growth Management Initiative - Supplementary Report: Infrastructure Provision and Costing, Sinclair Knight Merz.

http://en.wikipedia.org/wiki/Gladstone,_Queensland, 14.06.06

http://www.buslinkqld.com.au/gladstone, 24/04/2006).

(http://www.trainandemploy.qld.gov.au/resources/about_us/pdf/mr_budget0607_fitzroy.pdf, (16.06.06))

Personal Communications:

B.McAlister, Gladstone City Council, pers.comm. 21.01.06

D.Eborn, Queensland Department of Education and Arts (DoE), pers. comm. 2.06.06

J.Black, Gladstone City Council, pers.comm. 26.05.06

J.Campbell, Central Queensland Institute of TAFE (CQIT), pers.comm. 16.06.06

J.Kruise Education Queensland, pers.comm. 12.07.06

K. Woodcock, Gladstone Area Promotion and Development Limited (GAPDL), pers. com. 10.05.06

M. Ricks, Department of Communities (DOC), pers.comm. 29.05.06

Senior Sergent M.P.Dixon, Queensland Police, pers.comm. 21.04.06

P. Murphy, Diocese Catholic Education Office, email correspondence. 2.06.06

Ross Barker, Planning Information & Forecasting Unit (PIFU), *Residential Land Development and Dwelling Activity Trends in Central Queensland*, Department of Local Government and Planning, Rockhampton, 13th July 2005 (Power Point Presentation)

Wendy Yardy and Steve Thompson (Anglicare Central Queensland), *HOUSING DROUGHT IN CENTRAL QUEENSLAND*, Paper presented at the 3rd National Homelessness Conference 'Beyond the Divide', convened by the Australian Federation of Homelessness Organisations, and held at the Sheraton Hotel Brisbane, 6-8 April 2003

URS Australia Pty Ltd (URS) has prepared this report in accordance with the usual care and thoroughness of the consulting profession for the use of Gladstone Pacific Nickel and only those third parties who have been authorised in writing by URS to rely on the report. It is based on generally accepted practices and standards at the time it was prepared. No other warranty, expressed or implied, is made as to the professional advice included in this report. It is prepared in accordance with the scope of work and for the purpose outlined in the Proposal dated October 2005.

The methodology adopted and sources of information used by URS are outlined in this report. URS has made no independent verification of this information beyond the agreed scope of works and URS assumes no responsibility for any inaccuracies or omissions. No indications were found during our investigations that information contained in this report as provided to URS was false.

This report was prepared between May and October 2006and is based on the information available at the time of preparation. URS disclaims responsibility for any changes that may have occurred after this time.

This report should be read in full. No responsibility is accepted for use of any part of this report in any other context or for any other purpose or by third parties. This report does not purport to give legal advice. Legal advice can only be given by qualified legal practitioners.