Appendix Q

Housing Study

R E P O R T

Housing Impacts Study - Gladstone Pacific Nickel Project

Prepared for

Gladstone Pacific Nickel

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Contents

This housing study has been commissioned as part of the Environmental Impact Statement (EIS) for the Gladstone Nickel Project (GNP). It will be incorporated into parts of the social impact assessment of the EIS.

The purpose of the study has been to assemble relevant information about the population of the Gladstone / Calliope region, its housing context, land for residential development, and the availability of rental housing and housing for purchase, as well as to assess the levels of housing demand that will be created by the GNP and the capacity of the local residential construction industry to meet that demand.

1.1 Description and Background – Gladstone Nickel Project

Gladstone Pacific Nickel Limited (GPNL) is investigating the feasibility of developing a high pressure acid leach refinery, to produce nickel and cobalt metal, in the Yarwun Precinct of the Gladstone State Development Area (GSDA), Gladstone, Queensland. The site is located to the south of Hanson Road, and is bounded by Calliope River to the east and Reid Road to the west.

It is proposed that the project be developed in the following stages:

Stage 1 - This phase will result in the refinery producing up to 60,000 tonnes of nickel and 4,800 tonnes of cobalt metal per year from beneficiated ore transported as slurry from the Marlborough mine via pipeline and ore imported from the south-west Pacific through the proposed Wiggins Island Coal Terminal (WICT).

Stage 2 - This phase will involve duplication of the refinery to produce up to 126,000 tonnes of nickel and 10,400 tonnes of cobalt metal per year. Up to 10 million dry tonnes per year of ore will be processed from the Marlborough mine and imported through WICT.

1.2 Housing Study Terms of Reference

The terms of reference (TOR) for the housing study are contained within the TOR set by the Office of the Coordinator-General for the EIS for the project. Those parts of the TOR relevant to this study include the following:

- The size of the private rental market in the area.
- The vacancy rate of rental accommodation, including assessment of seasonal fluctuations.
- Typical rents for the area.
- The availability and typical cost of housing for purchase in the area.
- The level of social housing in the area and demand.
- Constraints and opportunities for new housing construction in the area, including the capacity of the local land development and housing construction industries to provide new housing.

- Land for residential purposes including available serviced residential lots, land under development and undeveloped broad acre land that is appropriately zoned.
- Impacts of both the construction and operational workforces and associated contractors on housing demand, community infrastructure and services and community cohesion.
- The assessment should refer to the projected accommodation needs for the GNP in both the construction and operational phases.
- The capacity of local and regional housing markets to meet the accommodation needs of the GNP workforce, including the potential displacement of low-income residents from affordable rental accommodation and diminished availability of accommodation.
- Any possible cumulative impacts on the local and regional housing market due to the presence of other existing or proposed major projects in the areas, and seasonal employment factors.
- The impact of the construction and operation phases of the proposal on the local and regional residential development and housing construction industry, with particular reference to the demand for local contractors.

2.1 Methodology

The housing study methodology is outlined below. Its intention has been to provide a step-by-step approach to gathering the needed information and analysing that information to obtain a detailed assessment of the likely housing impacts of the GNP on the Gladstone / Calliope region.

The methodology has been to assemble the appropriate information that would allow a quantification of the following:

- Housing demand created by organic population increase within the region.
- Housing demand created by the GNP, including accommodation needs of the temporary construction and long term operational workforces.
- Housing demand created by other contemporary construction projects that may result in cumulative housing demand.
- The capacity of the local residential construction industry to produce the units of housing required to meet the identified demand.

The points below summarise the steps taken to carry out the analysis:

- Define terms of reference and detailed project scope
- Review existing information, including housing studies for previous large projects, and studies for local government and the Department of Housing (DoH).
- Use up-to-date data to create a tailored socio-demographic profile for Gladstone and Calliope.
- Assess housing market supply and demand, rental levels and availability, and comment on housing affordability.
- Plan and carry out targeted stakeholder consultation, including with council staff, state government, and community service providers and representatives of other industries likely to start projects during GNP.
- Quantify the scale of likely changes impacting on housing demand, including increases in population and workforce, timeframes, cumulative changes due to other approved or proposed developments.
- Assess the quantities of housing needed to accommodate the project workforce generated by the project.
- Review options for project housing and accommodation requirements based on information provided by GPN.

- Assess potential housing related impacts on existing communities
- Recommend mitigation measures and a monitoring/reporting program.

The following information sources have been utilised in the research carried out for this study

- Recent EIS studies for other proposed projects in the region.
- DoH Housing Action Plan 2002.
- Demographic information based on the 1996 and 2001 Australian Bureau of Statistics (ABS) census and more recent ABS survey information.
- Demographic and land use information provided by local government sources.
- Workforce and flow-on employment analysis provided by the Office of the Coordinator-General and Planning Information and Forecasting Unit (PFIU) of the Department of Local Government and Planning.

A more complete list is provided in the appendices.

2.2 The Study Area

The City of Gladstone and Shire of Calliope are the main focus of analysis for this study. Past studies have shown that the workforce for large industrial enterprises within the Gladstone region tend to reside primarily within these two local government areas, both during construction and operational phases. While there is some evidence that a small number of workers commute daily from Rockhampton, the distance and travel times between Rockhampton and Gladstone may make it a less viable alternative location for accommodating any significant numbers of the construction and operational workforces associated with the GNP.

2.3 Consultation

Targeted stakeholder consultation has been carried out as part of the information gathering for this study. The following intuitions and individuals have been consulted:

- Calliope Shire Council – Russell Schuller (Director of Development Services) and Christine Krebs (Shire Planner)
- Gladstone Area Promotion and Development Limited – Kevin Wootton
- Gladstone City Council – Brent McAllister (Manager Environment and Community Services), Andrew Kearns (Manager Assessment and Development),

- Gladstone Tenant Advice and Advocacy Service (TAAS), Christina Harris, Chris Woodcock, Andrea Hughes.
- Gladstone Economic and Industry Development Board – Kim Case.
- L. J. Hooker Real Estate – Mark Spearing.
- Queensland Office of the Coordinator-General – Peter Jones.
- Queensland Department of State Development and Innovation – John Beeson, Andrew Bauer.
- Queensland Department of Housing **-** Stuart McLaughlin (A/Manager Affordable Housing Unit), Rockhampton and Gladstone Regional Office Staff (Ray Chapman, Frank Perry).
- Queensland Department of Local Government, Planning, Sport and Recreation – Planning Information and Forecasting Unit (PIFU) – John Thomson.
- Queensland Master Builders Association – Trevor McCubbin.
- St Vincent de Paul Society, Gladstone – Ron Clough (President).
- Comalco **-** Greg Rashford, Project Manager.

Each of the above stakeholders had specific information to contribute to the housing study. Their information is referred to throughout this document (see footnotes).

The main subjects covered in consultations with key stakeholders include:

- Residential and industrial development activity in Gladstone and Calliope – historical and current.
- Major projects that are proposed for the near future and those most likely to proceed.
- Experience of past large industrial projects, in particular Comalco Refinery Stage 1 (CARS 1).
- Housing market history and current condition – housing availability, rental levels and sale prices.
- Annual output of the local residential construction industry and its ability to respond to increased demand.
- Availability of public rental housing.
- Displacement of low income households, homelessness and emergency relief.
- The disposition of government authorities towards a range of workforce housing solutions.

3.1 Tailored Socio-demographic Profile for Gladstone and Calliope

The demographic indicators of most relevance to this study are population, age structure, family structure (including average household sizes) and housing structure, since these give a picture of the existing population composition and housing stock. These indicators also provide the basis from which to analyse the characteristics of the regional housing market and its potential ability to meet the housing needs of a growing population.

3.1.1 Population

Population estimates for the years 1996 and 2000 to 2005, based on ABS census data and annual estimates made by the PIFU[1], are shown in Table 3.1. The estimated resident population of Calliope Shire at 30 June 2005 was 16,467 people. Calliope Shire has experienced steady annual growth rates of 2.0% - 2.6 % since 2001, which are slightly higher than the population growth rates for Queensland for the corresponding period.

Gladstone City had an estimated resident population of 28,807 as of June 2005. The rate of population change in Gladstone City was generally lower and more variable than for Calliope Shire and for Queensland as a whole during the same period. Based on these estimates, the population in Calliope grew by 2,892 persons between 1996 and 2005, while Gladstone's population grew by 2,233 in the same period. The Calliope growth was predominately in the Tannum Sands / Boyne Island area.

Table 3.1 Population and Average Annual Population Change (%)

	1996	2000	2001	2002	2003	2004	2005
Calliope	13,575 (3.6%)	14,753 (1.7%)	15,054 (2.0%)	15,393 (2.3%)	15,793 (2.6%)	16,210 (2.6%)	16,467 (1.4%)
Gladstone	26,574 (1.4%)	26,631 (0.2%)	26,831 (0.8%)	27,315 (1.8%)	27,807 (1.8%)	28,503 (2.5%)	28,807 (0.9%)
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%)	3,882,037 (2.1%)	3,963,968 (2.0%)

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

[1] PIFU is a specialist unit within the QLD Department of Local Government, Planning, Sport and Recreation

The population in the Gladstone region is expected to increase significantly in the next 20 years, at rates of 2.1% to 2.4% pa. This rate of growth is almost double the average rate expected for all of Queensland (approximately 1.7% to 2.4%) for the same time period. By 2011 the Gladstone population is expected to increase by about 3,000 to 31,688. Population projections for Calliope Shire estimate an average annual growth in the range of 2 % to 2.6 % between 2006 and 2021. Calliope Shire's population is predicted to increase by around 2,000 to 19,218 by 2011 (PIFU, 2005a). Projected population levels and growth rates for the 20 years to 2026 are shown in Table 3.2.

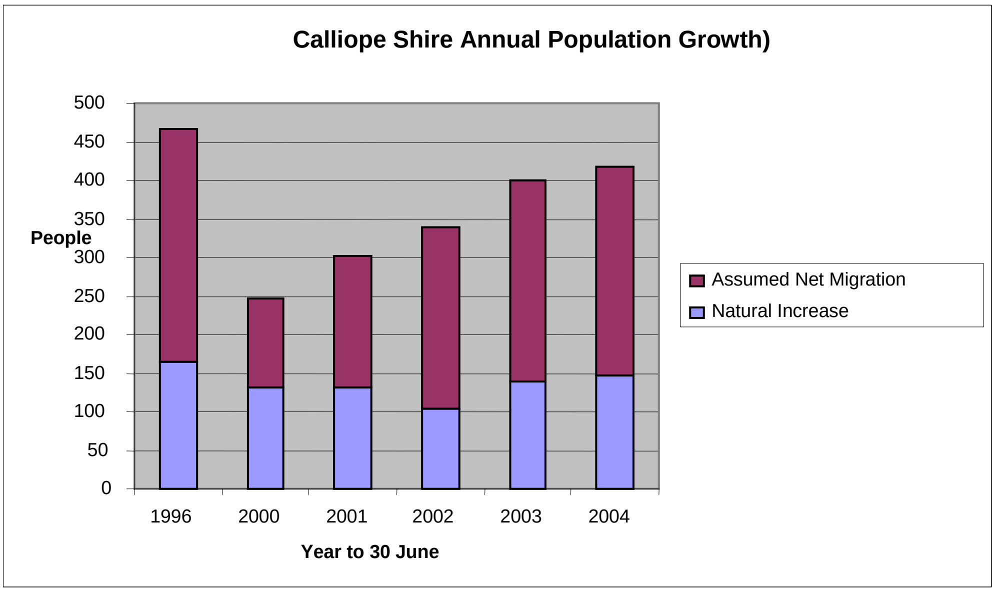
Table 3.2 Population Projections 2006 – 2026*

	2006	2011	2016	2021	2026
Calliope	17,081 (2.6%)	19,218 (2.4%)	21,256 (2.0%)	23,635 (2.1%)	26,280 (2.1%)
Gladstone	28,604 (1.3%)	31,688 (2.1%)	35,788 (2.5%)	40,280 (2.4%)	45,124 (2.3%)
Queensland	4,015,722 (2.0%)	4,354,106 (1.6%)	4,677,780 (1.4%)	4,989,871 (1.3%)	5,289,027 (1.2%)

*Source: PIFU 2005 (a,b,c,d), * Average Annual Change over 5 years to 30 June; based on medium series projection.*

Past population growth in Calliope Shire has been attributed primarily to new residents moving into the shire. This pattern of growth is clearly illustrated in Figure 3.1 where the dark part of each column represents net migration.

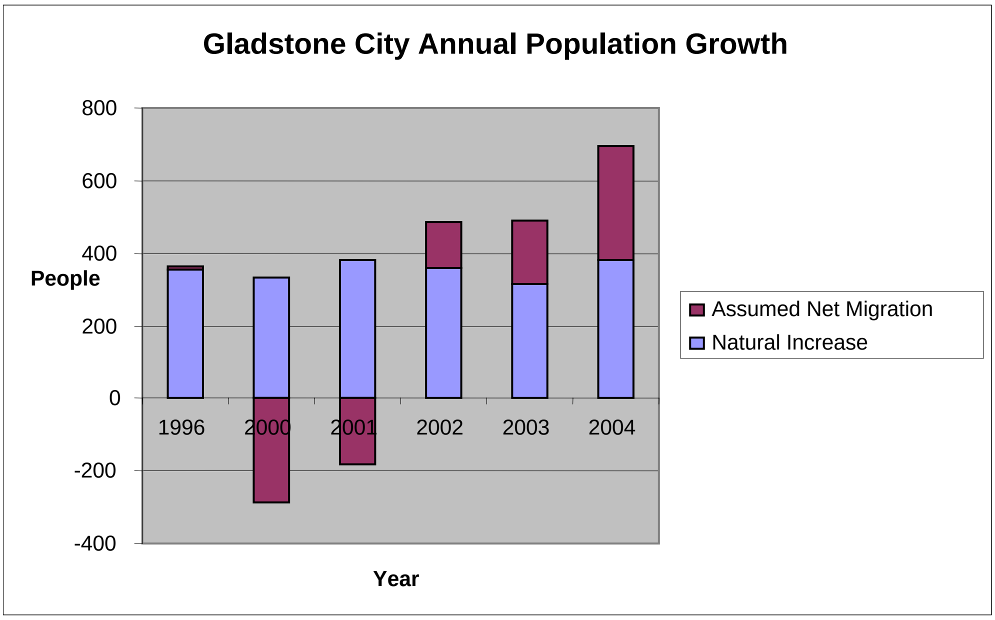
Figure 3.1



Source: PIFU 2005

In comparison, growth in Gladstone City has predominantly been attributed to natural increase (births minus deaths). As indicated in Figure 3.2 there has been a pattern of migration in and out of Gladstone, with significant out-migration in 2000 and 2001, and in-migration between 2002 and 2004.

Figure 3.2



Source: PIFU 2005

These figures are important for the current study because they set the baseline rate of historical population increase against which changes brought about by large industrial projects can be assessed. Everything else being equal, the expected rate of population growth for Gladstone is approximately 600 persons per year. For Calliope Shire the rate of population increase is around 400 persons per annum, giving a combined annual total for both of about 1,000 persons per annum. The fluctuating migration to and from Gladstone, is consistent with the boom-bust history of the city and may reflect movements of temporary construction workers in and out of the city.

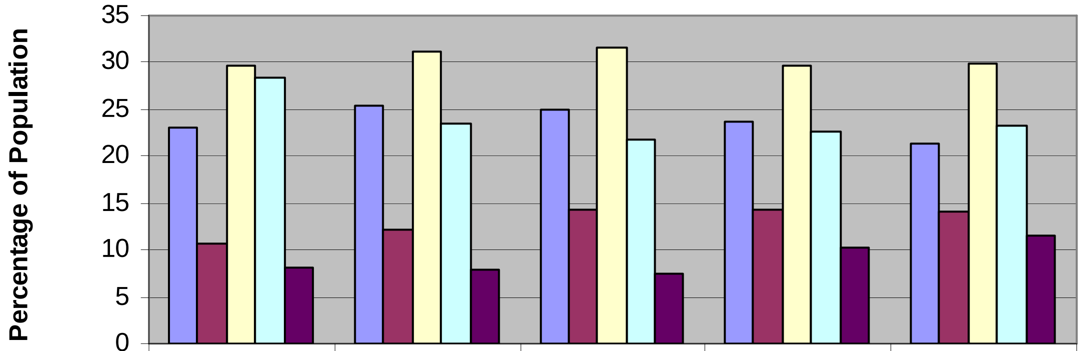
3.1.2 Age Distribution

Both Calliope Shire and Gladstone City have a resident age structure which is consistent with the age structure of the Fitzroy Statistical Division (which includes Rockhampton) and of Queensland. Key features of the Gladstone and Calliope age distributions include:

- Greatest proportion of the population is in the 25 – 44 year age range.
- A smaller portion of people over 60 years of age than for the Fitzroy Statistical Division and Queensland.
- Median Age: Calliope – 35; Gladstone – 32, Fitzroy – 34, Queensland – 35.

Some of these features can be seen in Figure 3.3.

Figure 3.3: Comparative Age Structure (%) of Areas (2001)



	Immediate Area	Calliope	Gladstone	Fitzroy (SD)	Queensland
0-14	23.1	25.4	25	23.7	21.3
15-24	10.7	12.1	14.4	14.2	14.1
25-44	29.6	31.2	31.5	29.6	29.8
45-64	28.4	23.4	21.7	22.6	23.2
65+	8.2	7.9	7.4	10.2	11.6

Source: ABS, 2001 Time Series Profiles; PIFU 2006

Over the next 10 years, the demographics of the Calliope/Gladstone area are forecast to change substantially, with increases expected in the proportions of both older people and children. There has been a steady increase over time in the numbers of people aged 45 and over. By 2011, 9.25 % of the population will be over 65 years old, and 25.5 % will be aged between 45 and 64 years.

The increase in older people corresponds with a proportional decrease in population aged 25-44 years, which is the main labour force age cohort. There is also expected to be a decline in the proportion of 15 to 24 year olds living in Gladstone. Children up to 14 years are expected to increase in Gladstone city, but drop in Calliope Shire.

The implications of the changing age composition include:

- Reduction in 25 – 44 year olds, with possible need to import labour force from outside the area;
- Additional demand on services for the elderly;
- Additional demand for children's services including education facilities.

3.1.3 Families by Household Type

Table 3.3, outlines the household composition for Calliope and Gladstone local government areas, Fitzroy Statistical Division (SD) and Queensland at the 2001 census.

- Calliope has a larger proportion of couple families with children (61%) compared with Fitzroy SD (54 %) and Queensland (50 %).
- Gladstone City has a similar proportion of couple families with children (55 %) to Fitzroy SD and Queensland.
- Calliope Shire has a smaller proportion of one parent families, “other” families, lone person households and group households, when compared to Gladstone City, which has figures more consistent with Queensland as a whole.

Table 3.3 - Household Type and Family Type

	Calliope Shire		**Gladstone City**		**Fitzroy SD**		**Queensland**	
	%	Persons	%	Persons	%	Persons	%	Persons
One family household:								
Couple family with children	61%	8,189	55%	13,582	54%	85,264	50%	1,617,476
Couple family without children	20%	2,733	19%	4,788	20%	32,226	21%	676,855
One parent family	9%	1,152	12%	2,871	11%	17,761	12%	381,364
Other family	0%	50	1%	152	1%	1,435	1%	34,334
Multi-family household	1%	145	1%	303	2%	2,398	2%	60,899
Lone person household	7%	890	9%	2,144	9%	15,042	10%	315,949
Group household	2%	228	3%	718	3%	4,765	4%	134,449
Total	**100%**	**13,387**	**100%**	**24,558**	**100%**	**158,891**	**100%**	**3,221,326**

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

3.1.4 Household Size

The average household size in the Gladstone / Calliope area has been decreasing steadily in line with broader changes in the Australian population. Table 3.4, illustrates the trend in household size in the Gladstone Development Region between the 1991 and 2001 censuses, showing that household sizes for all housing types declined in size during the period, with the average declining from 2.9 to 2.7. Despite this regional trend the average size of households still remained slightly larger that the Queensland average of 2.6.

Table 3.4 – Average Household Size by Housing Type

	Gladstone Development Region			Queensland
	1991	1996	2001	2001
Separate House	3.1	3.0	2.9	2.8
Semi-detached, flats, etc	2.0	1.7	1.7	1.8
Other Dwellings, including caravans	2.0	1.9	1.7	1.8
All occupied private dwellings	**2.9**	**2.8**	**2.7**	**2.6**

Source: PIFU Aug 2005

These average figures give an overview of the region and are considered relevant for the assessment of the operational workforce that GNPL will employ. The population impact of a large temporary construction workforce is different and it may contain a greater proportion of single workers.

PIFU prepared a paper in 2003 that analysed characteristics of the workforce in Gladstone / Calliope, using 1996 and 2001 census data[2]. The study focused on the age structure, living arrangements, and household size of the construction and manufacturing workforce that had moved into the area during the previous 12 months. It found that in total 30% of the newly arrived construction workers lived alone or shared with unrelated persons, or lived in non-private accommodation (eg hotel/motel). The remaining 60% were reported living in private dwellings with at least one other related person. It also found that 59% of the recently arrived construction workers were between 25 – 34 years.

The study concluded that the average household size for the construction workers who had moved into the area within the past 12 months was in the range 2.0 to 2.6 persons per household.

3.1.5 Labour Force

Table 3.5, compares aspects of the Calliope Shire and Gladstone City labour force with the Fitzroy Statistical Division and Queensland. Of those employed in Calliope Shire and Gladstone City at the time of the 2001 census, 67% were employed full-time and 30% were employed part-time. Full time employment rates for both Calliope and Gladstone were slightly higher than the Queensland average (64%).

[2] Planning Information and Forecasting Unit, "Gladstone / Calliope: Workforce Data Analysis – 1996 Census", Qld Dept of Local Govt and Planning, 2002

Table 3.5 - Labour Force Status

	Employed			Unemployed	Total Labour force
	Full-time (a)	Part-time	Not stated (b)		
Calliope Shire	67%	30%	3%	8%	6,878
Gladstone City	67%	30%	3%	10%	13,292
Fitzroy (SD)	66%	31%	3%	8%	84,844
Queensland	64%	33%	3%	8%	1,709,612

Source: ABS Basic Community Profile 2001

(a) Full-time is defined as having worked 35 hours or more in all jobs during the week prior to Census night.

(b) Includes employed persons who did not state their hours worked.

On the night of the 2001 census, 496 of the total Gladstone labour force of 13,292 (residents and non-residents) were not residents of the city. Although a proportion of these workers are likely to have been residents of neighbouring areas such as Calliope Shire, this figure suggests a significant number of workers may come from outside the Gladstone/Calliope area.

3.1.6 Employment by Industry

Table 3.6, provides a summary of the numbers of people employed in the different industry sectors in Gladstone, Calliope and Queensland at the 2001 census. The Gladstone / Calliope area shows a diversified local economy with a larger than usual industrial workforce. Employment in manufacturing in both Gladstone (19%) and Calliope (27%) is much higher than the Queensland total of 11%. Transport and Storage are also higher proportions than for Queensland (5%), reflecting the port activity associated with heavy industry.

Table 3.6 – Employment by Industry

Employment by Industry	Calliope	Calliope %	Gladstone	Gladstone %	QLD	QLD %
Agriculture, Forestry and Fishing	105	6%	124	1%	76,532	5%
Mining	54	1%	125	1%	19,286	1%
Manufacturing	1,543	24%	2,229	19%	167,380	11%
Electricity, Gas and Water	80	2%	327	3%	12,359	1%
Construction	456	9%	1,022	8%	111,209	7%
Wholesale Trade	196	4%	637	5%	79,718	5%

Employment by Industry	**Calliope**	**Calliope %**	**Gladstone**	**Gladstone %**	**QLD**	**QLD %**
Retail Trade	703	13%	1,934	16%	239,615	15%
Accommodation, Cafes and Restaurants	225	5%	540	4%	88,381	6%
Transport and Storage	293	6%	973	8%	77,587	5%
Communication Services	30	1%	86	1%	23,016	1%
Finance and Insurance	61	1%	218	2%	44,562	3%
Property and Business Services	420	8%	1,082	9%	153,864	10%
Government Administration and Defence	141	3%	341	3%	75,048	5%
Education	363	7%	860	7%	118,896	8%
Health and Community	331	6%	784	7%	151,029	10%
Cultural and Recreational	52	1%	165	1%	37,341	2%
Personal and Other Services	142	3%	344	3%	57,662	4%
Non-classifiable	24	0%	74	1%	7,452	0%
Not stated	90	2%	159	1%	27,927	2%
Total	**5,138**	6%	**12,024**	**100%**	**1,568,864**	**100%**

Source: ABS Community Profile 2001

Of particular relevance are the numbers employed in the construction sector, with a combined total for Gladstone and Calliope of 1,478 persons employed, or 8-9%. As a proportion of total employment this sector is slightly larger than the Queensland figure of 7%. Since the 2001 census the Comalco Stage 1 project has been constructed and is now operational. This project and a number of smaller ones may have resulted in a residual construction workforce larger that the census reflects, however this cannot be quantified.

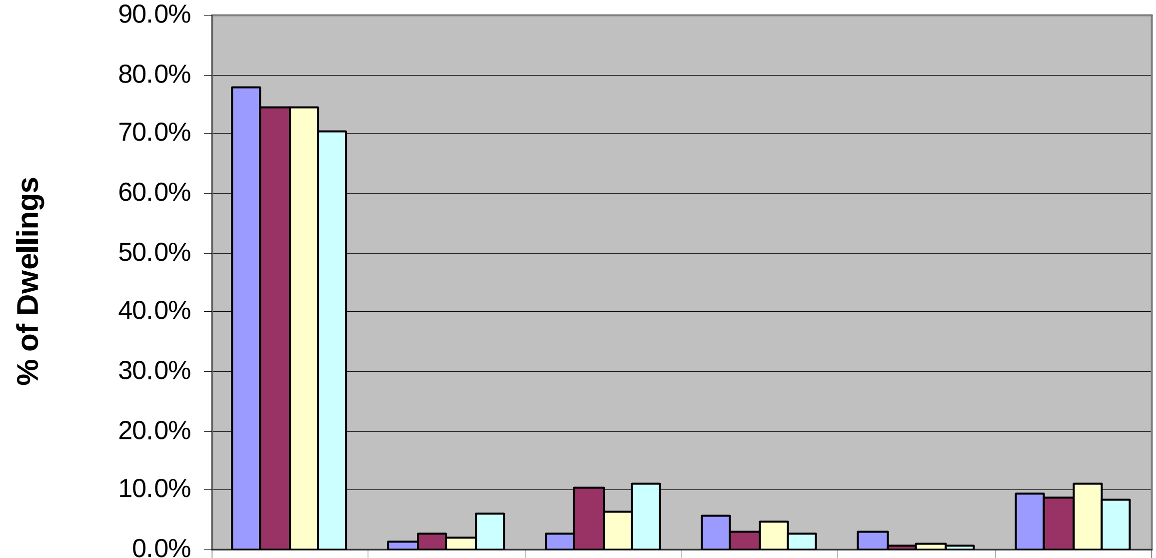
For the purposes of this study, the local construction sector must be assumed to be greater than the 2001 figure of 1,478 persons.

3.1.7 Dwelling Structure

The predominant housing type within the study area is the detached house, accounting for 78% and 75% of the total housing stock of Calliope and Gladstone respectively (see Figure 3.4). In population terms this translates into 91% of Calliope residents and 89% of Gladstone residents being accommodated in detached houses.

Gladstone has a significantly higher proportion of flats/ units/ apartments (10%) than Calliope (2%), reflecting the more urbanised nature of Gladstone. Also of note is the relatively large proportion of "other" dwellings located in Calliope (6%), consisting of caravans, cabins and other structures.

Figure 3.4 - Comparative Dwelling Structure



	Separate house	Tow n house, Semi-detached terrace house	Flat, unit or apartment:	Other dw elling:	Not stated	Unoccupied private dw ellings
Calliope	77.9%	1.5%	2.6%	5.6%	3.0%	9.3%
Gladstone	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: Source: ABS Basic Community Profile 2001

The numbers of dwellings in Calliope, Gladstone and the Fitzroy SD at the 2001 census are shown in Table 3.7. The total number of dwellings of all types in the Gladstone / Calliope area stood at approximately 16,500 at that time. It should be noted that these totals include unoccupied private dwellings. In percentage terms the levels of unoccupied dwellings in Gladstone and Calliope are similar to the averages for Queensland as a whole.

Table 3.7 - Numbers of Dwellings

	Calliope (S)	**Gladstone (C)**	**Fitzroy (SD)**
Separate house	4,483	8,075	55,339
Semi-detached, row or terrace house, townhouse etc.	*87*	*279*	*1,479*
Flat, unit or apartment:	*151*	*1,129*	*4,841*
Other dwelling:	*325*	*310*	*3,572*
Not stated	172	59	694
Unoccupied private dwellings	535	965	8,367

Total	5,753	10,817	74,292

Source: Source: ABS Basic Community Profile 2001

3.1.8 Tenure Type

Table 3.8, summarises the state of home ownership and rental housing. The figures indicate that rates of home ownership (owned and being purchased) differed significantly between Gladstone (60.4%) and Calliope (70.8%) at the time of the 2001 census. Calliope had a notably higher level, while Gladstone was close to the averages for Fitzroy SD (62.2%) and Queensland (62.4%). Conversely Gladstone had a higher rate of non – public housing properties being rented (28%) than Calliope (21%), but again consistent with averages for the Fitzroy SD (26%) and Queensland (27%). Public housing in Gladstone, at 6.4%, is above the Queensland average (4%).

Table 3.8 – Tenure Type by %

Tenure Type	Shire of Calliope	City of Gladstone	Fitzroy (SD)	Queensland
Fully Owned	38.1%	30.6%	37.5%	36.6%
Being Purchased	32.7%	29.8%	24.7%	25.8%
Rented - Housing Authority	1.1%	6.4%	3.7%	3.5%
Rented - other	20.8%	27.9%	26.1%	26.6%
Other (inc. not stated)	7.3%	5.3%	8.0%	7.5%
Total %	100.0%	100.0%	100.0%	100.0%
Total Number	5,219	9,853	65,924	1,355,613

Source: ABS Basic Community Profile 2001

As highlighted in Table 3.9, in 2001 there were 1,086 rental properties in Calliope and 2,750 in Gladstone, giving a combined total of 3,836. There were also 684 public housing rental properties (Calliope and Gladstone) recorded at that time.

Table 3.9 – Tenure Type by Number

	Calliope	Gladstone	Fitzroy (SD)	Queensland
Fully Owned	1,986	3,017	24,720	496,805
Being Purchased	1,708	2,934	16,274	349,333
Rented - Housing Authority	58	626	2,433	47286
Rented - other	1,086	2,750	17,197	360,831

Other (inc. not stated)	381	526	5,300	101,358
Total (number)[3]	5,219	9,853	65,924	1,355,613

Source: ABS Basic Community Profile 2001

Table 3.9 provides a baseline for calculating the number of rental dwellings available in the Gladstone and Calliope local government areas in 2001. The total at that time was approximately 3,800 dwellings.

[3] It should be noted that the totals for numbers of dwellings in Table 3.9 is inconsistent with the number of dwellings stated in the dwelling structure table above (Table 3.9). This is because the tenure table is based on figures for occupied private dwellings and so does not include unoccupied dwellings.

This section gives an overview of housing supply and demand in the Gladstone / Calliope area by summarising a number of critical factors that contribute to the availability of housing, ie:

- Trends in subdivision and residential development.
- Existing housing stock – census plus recent approvals and construction.
- Capacity of the local housing construction industry to deliver – limits to its capacity.
- Housing prices.
- Rental housing and other forms of accommodation.

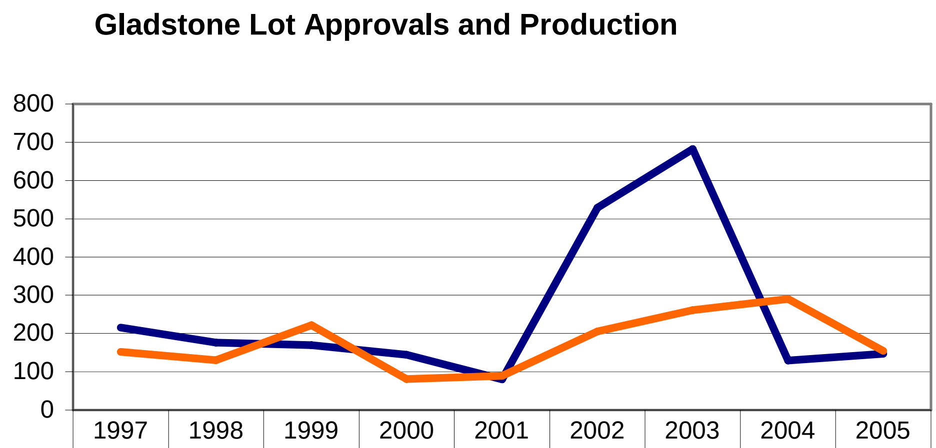
4.1 Subdivision and Residential Development

Two aspects of residential development are of particular importance for this study, ie the amount of approved and developed residential land and the rate of approval and construction of residential dwellings.

4.1.1 Subdivision of land

The supply of land for residential development has fluctuated in the period 1997 to 2005 as illustrated in Figures 4.1 and 4.2. In both Gladstone and Calliope there was a sudden acceleration in the approval of residential allotments in 2001, and after a lag of up to 12 months there was also an acceleration in the construction and servicing of lots (production). It is expected that this sudden increase in demand was a response to the industrial projects proposed for construction at that time.

Figure 4.1

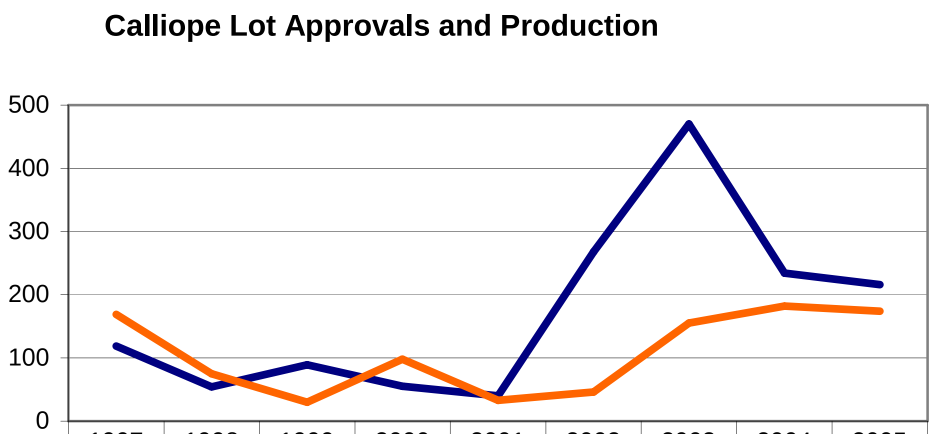


	1997	1998	1999	2000	2001	2002	2003	2004	2005
Lots Approved	215	176	169	144	80	529	682	129	147
Lots Produced	152	130	222	81	89	205	261	290	154

Source: PIFU 2005

From 2004 the uptrend moderated significantly and returned to lower levels, but still above those of 2001. At the peak of production in 2004, 290 lots were developed in Gladstone and 182 in Calliope, giving a total of 472. These figures may represent the maximum number of allotments the local industry can produce in one year, but would also reflect the level of real demand at the time.

Figure 4.2



	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 2005

Consultation with Gladstone City Council, Calliope Shire Council and the Department of State Development has resulted in estimates of approximately 1,000 approved allotments available in Gladstone and 2000 available in Calliope (in Tannum Sands)[4]. These lots are approved but may not be serviced / constructed / produced. In Gladstone it can take 12 to 18 months for site works to be completed once subdivision is approved[5].

4.1.2 Approval and Construction of Dwellings

Gladstone and Calliope have an active residential construction sector with a large number of small builders and approximately three large operators. Builders from Rockhampton also regularly travel to work in the Gladstone / Calliope area[6]. Consultation with the Queensland Master Builders Association in Rockhampton provided the estimate that the local industry can complete around 30–35 houses per month

[4] From notes of consultation meetings with Gladstone City Council, Calliope Shire Council and Dept of State Development, 10 May 2006

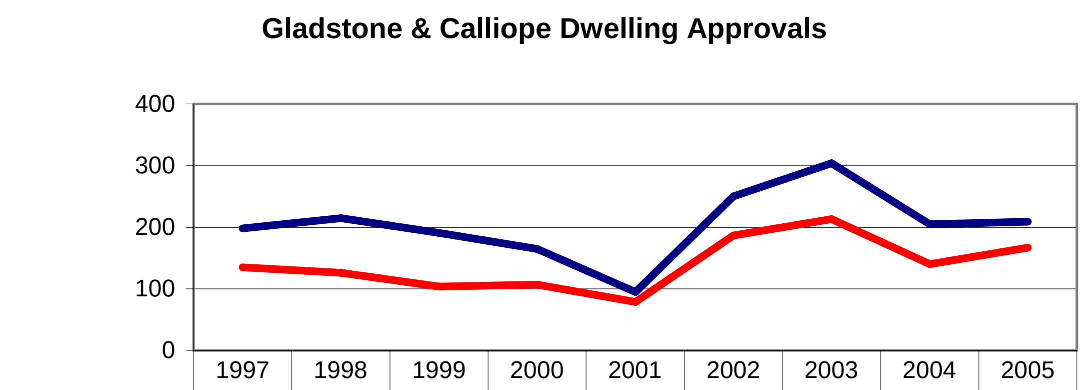
[5] Consultation meeting with Gladstone City Council staff, 10 May 2006

[6] Telecon – Mr Trevor McCubbin, Master Builders Association Rockhampton, 22 May 2006

(360+ pa) and has the capacity to increase this output to approximately 50 houses per month (600 pa) if required. The usual time lag between contract signing and beginning of construction is around four months[7]. The main limiting factor in the capacity of the residential construction sector is the shortage of skilled sub-contractors. The shortage of skilled tradespeople was a point made repeatedly in the consultations for this study.

Figure 4.3, outlines the numbers of building approvals for dwellings in Gladstone and Calliope for the years 1997 to 2005. The combined number of approvals for 2005, i.e, 376, tallies well with the estimate for the rate of dwelling production estimated by the local building industry, i.e about 360 per annum. Looking back to the construction peak in 2003, a combined total of 517 dwellings were approved. Assuming a lag of six months from building approval to completion we can conclude that these dwellings would all have been completed by the first half of the following year[8]. It is interesting to note that in the years 2002 to 2004 the numbers of “Other” dwellings approved in Gladstone, i.e multi unit dwellings, jumped significantly and account for up to 30% of the increase in those years.

Figure 4.3



	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

Source: PIFU 2005 & 2006

Dwelling approvals 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[9].

[7] Ibid

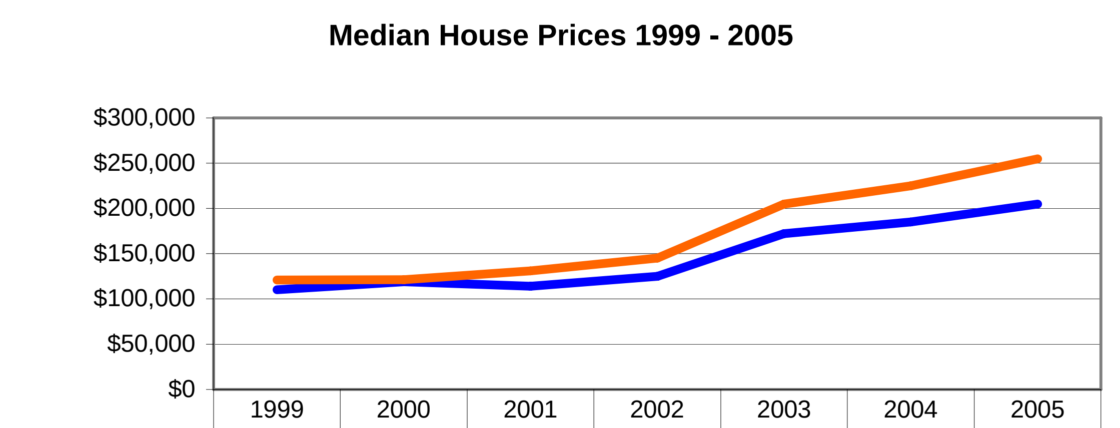
[8] The 6 month time lag is the method used by the Planning Information and Forecasting Unit, Qld DLGPSR

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

4.1.3 Median House Prices

The prices of all residential properties have risen steadily since 1999. Figure 4.4, compares median house prices, based on medians for all house sizes, for Gladstone and Calliope for the period 1999 to 2005. The table 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 Calliope reflect the higher prices prevailing 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 the Comalco Aluminium Refinery project, but may equally reflect the Australia-wide boom in residential property values. Information on local real estate trends suggests that the Gladstone housing market had been highly undervalued prior to the price increases in 2002 [10].

Figure 4.4



	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

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

The current property market in the Gladstone / Calliope area is moving into "buyers market" conditions, which can be characterised as:

- Strong buyer demand – with many properties being sold immediately they are listed;
- Shortage of properties for sale/purchase; and
- Rising prices[11].

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

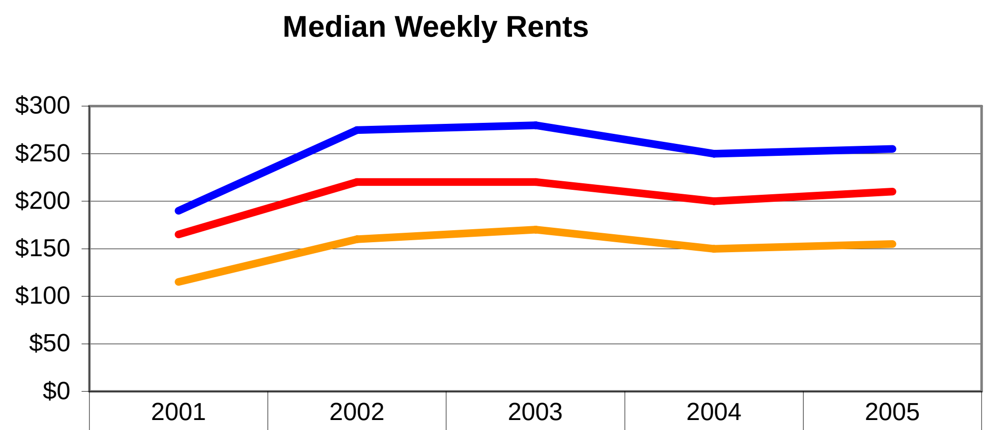
[11] Ibid, and Gladstone Tenant Advice and Advocacy Service, 9 May 2006

4.2 Rental Accommodation

4.2.1 Private Rental

A number of rental properties are managed privately by their owners, so they are therefore not listed with real estate agents and may not have rental bonds registered with the Queensland Residential Tenancies Authority. However, these properties are expected to be only a small proportion of properties being rented out in the Gladstone / Calliope area. The most recent estimate comes from the 2001 census which recorded 3,836 rented dwellings (non-public) in total at that time (see Section 3.1.8).

Figure 4.5



	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

Source: Residential Tenancies Authority QLD, Rental Bond Lodgements

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

Availability of rental properties has also varied over time. Local property managers report that in May 2006 the market was tight, with rental properties in short supply[12]. LJ Hooker Gladstone, the agent with the largest rent roll, estimates a vacancy rate of 2% for their portfolio[13]. This is a low vacancy rate and confirms the existence of a tight rental market. There is no clear reason for this situation, however it has been suggested that there are a number of construction projects under way in Gladstone that are bringing new people to town and increasing the demand for rental accommodation.

An informal survey of property managers in Gladstone and Calliope in May 2006 concluded there approximately 50 houses and 50 flats / units available for rent at that time[14].

The affordability of rents and availability of low-cost rental housing is difficult to assess without detailed analysis. The Queensland Government has identified a benchmark for affordable housing as "low income households paying no more than 30% of their gross household income on rent" however this is not meant to stimulate a rent-setting function. This means that criteria for affordable housing can be set for different dwelling types and households where new housing development is proposed. The DoH 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 consider that the number of applications received provide a fairly direct indicator of the demand for affordable housing for low income households in the Gladstone area[15]. The volatility of rents, as shown in the figure above, means that availability and affordability can change quickly in a situation of local housing shortage.

4.2.2 Hotel and Motel Accommodation

A range of hotel and motel style accommodation is available in the Gladstone / Calliope region, catering to tourist and business travellers and providing a further residential option for those working temporarily in the region. The number of accommodation units in the region is estimated to be approximately 660, a number that has remained stable for the last few years. 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[16].

Both Gladstone and Calliope Council staff indicated that a number of motel and hotel developments had gained town planning approval but had not yet been constructed. Two of the larger hotels in the Gladstone central business area were also reported to be planning major expansions in the near future. These developments, if brought to fruition, would increase the pool of short term accommodation by 10% to 20%.

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

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

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

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

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

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 well in advance by tourists[17].

4.2.3 Public Housing

The Department of Housing (DoH) currently has 750 rental units in the Gladstone area consisting of individual units, duplexes, houses, and senior units. Most accommodation is in the form of 2-3 bedroom units however the stock ranges from 1 bedroom flats through to 5 bedroom houses. The department's housing is always occupied, except for very short periods between tenancies. A standard lease runs for 4 years however occupants may end their lease at any time[18].

The DoH maintains waiting lists for all its accommodation with waiting times varying depending on situation of the applicant and the housing type required. The wait time for a three bedroom house is 12 – 18 months, while the wait time for units is 3 years or more. In February 2006 the waiting list for public housing in the Gladstone area reached 600 applications[19].

Demand for public housing has been slowly 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. Common residents for this kind of accommodation are smaller families, e.g. a couple with one child, single parent family, or a disabled person with room for equipment[20].

The DoH's housing stock is increasing. Two 2 bedroom duplexes have just been purchased and construction of 12 more units is under way. There are plans to construct a further 24 units by the end of 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.

In Gladstone there is crisis accommodation for women and children through domestic violence programs and a limited amount of youth crisis accommodation. Efforts are currently under way to establish a men's shelter through a funded community welfare organisation (Roseberry Community Services)[21].

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

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

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

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

[21] "Shelter Woes", The Gladstone Observer, 24 January 2006

4.2.4 Caravan Parks

In 2003, there were 10 caravan parks in the study area containing a total of 1,031 caravan sites, tent sites, cabins and on-site vans. Since that time the Clinton caravan park in Gladstone has closed (2005), reducing the overall number of accommodation units by 154 sites, 9 cabins and 4 on-site vans. None of the remaining caravan parks has expanded in the intervening time.

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[22].

Closure of the Clinton Park has had a number of important impacts. Clinton was the largest park and the cheapest, catering to people on very low incomes. In many ways it operated as accommodation of last resort in Gladstone, but it also contained a large number of long term residents. Community welfare agencies including the Gladstone Tenant Advice and Advocacy Service worked hard to relocate the residents to other caravan parks in the region. As a result, the other parks now have a higher occupancy rate and larger numbers of long term residents than previously. This has reduced the capacity of all the parks to operate as temporary accommodation for construction workers and the seasonal tourist influx[23].

4.2.5 Workers Camps

There are no existing workers camps in the Gladstone / Calliope area at the present time but camps have been proposed in the past as a means to accommodate temporary construction staff working on large scale industrial projects. During consultation with state and local government agencies in Gladstone and Calliope the disposition of those agencies towards workers camps was explored.

Gladstone City Council is opposed to workers camps and would not support such a proposal. There have been widespread objections to proposed camps in the past by potential neighbours and adjacent land owners, and council is alert to this community sentiment. The Gladstone office of the Department of State Development and Innovation indicated that it would not wish to act contrary to the council's attitude and community sentiment, and pointed out that the state government has previously rejected proposals for camps within the GSDA.

Calliope council staff indicated that their council was willing to accept workers camps to house single men, subject to conditions. It would be important that the camp was away from residential areas and should be fairly self contained, having good quality recreational facilities including its own wet canteen.

[22] Aldoga Aluminium Smelter EIS, 2002, pp15.24/25

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

The council would prefer that transport between the camp and the construction site is by bus, to minimise the impact of additional traffic on local roads[24].

Both councils recognised the potential for rowdiness and alcohol related anti-social behaviour when large numbers of single men gathered in town centres and other recreational areas.

[24] Consultation meetings with Gladstone City Council, Calliope Shire Council and Dept of State Development, 10 May 2006

5.1 Introduction

The critical factors to be taken into account in analysis of the GPN workforce composition are:

- Size of the short and medium term construction workforce.
- Size of the long term operational workforce.
- Timeframe for project construction and completion.
- Household composition associated with the workforce.
- Flow-on employment / population impacts of the GPN workforce.

5.2 GPN Construction and Operational Workforce

There are three components to the project workforce, ie the temporary workforce for each of the two construction stages of the project, and the ongoing operational workforce. The workforce numbers and their distribution over time described in Table 5.1.

Table 5.1 – Workforce Composition Stages 1 and 2

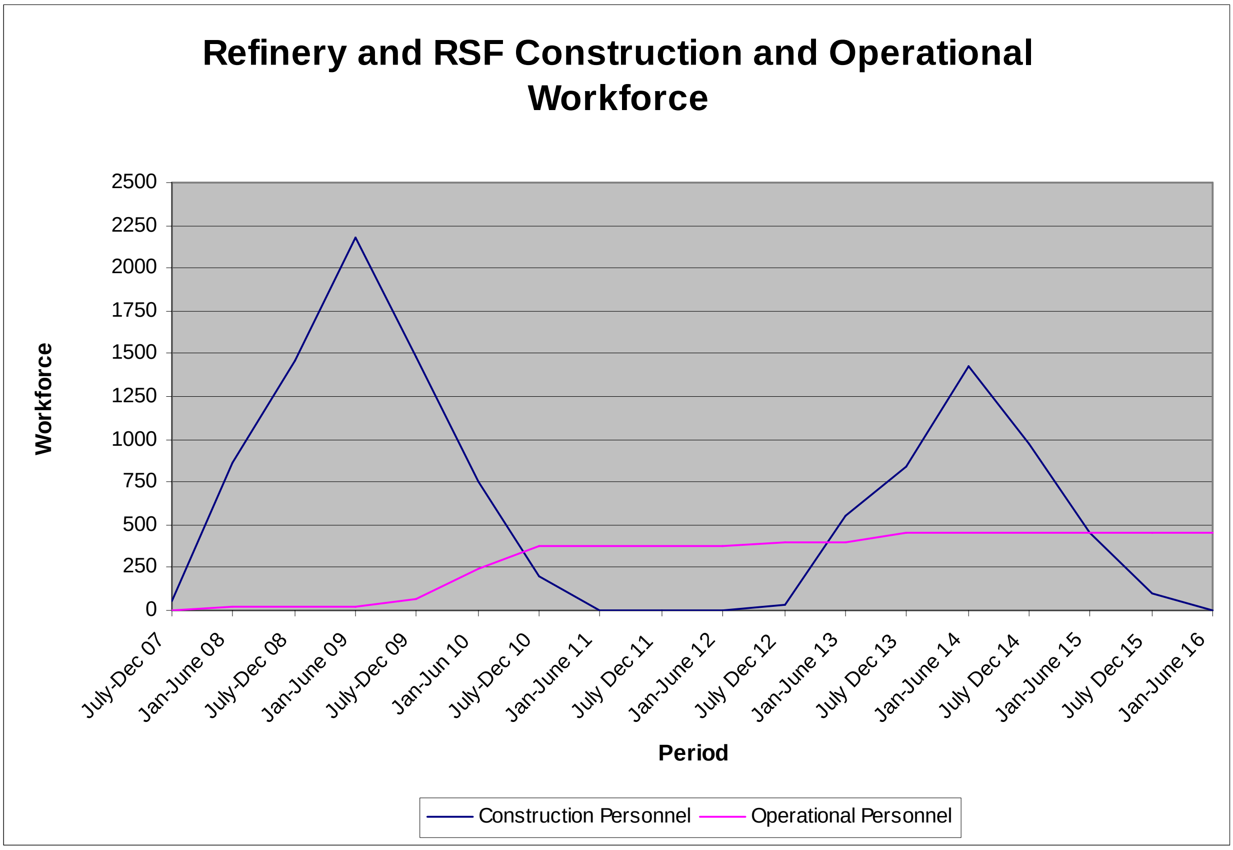
Workforce	Timeframe	No. at Peak (Date)
Construction Stage 1	Dec 2007 – Sept 2010	2,600 (May 2009)
Construction Stage 2	Dec 2012 – Sept 2015	1,750 (May 2014)
Operational	Dec 2007 – Dec 2015 on	450 (July 2013 on)

Source: GPNL 2006

Construction stages 1 and 2 represent two distinct construction projects with a similar timeframe of three years for each stage. Stage 1 is a larger construction task and is forecast to engage a workforce of 2,600, at its peak in May 2009. Stage 2 is forecast to require a construction workforce of 1,750 at its peak in May 2014. The operational workforce will begin to build up from the start of construction in late 2007 but will not reach its required level of 380 needed to operate the first stage of production until August 2010.

Figure 5.1, outlines the estimated workforce numbers over the three-year period from November 2007 to November 2010 (Stage 1) for both constructional and operational categories. It can be seen that there are three elements to the accommodation needs of the project, ie a long term need for permanent housing, a medium term need for temporary housing, and a short term need to deal with the construction peak.

Figure 5.1 – Stage 1 Workforce Deployment



Source; GPN Ltd, 2006

The timing and numbers of staff to be housed are as follows:

- **Long Term Requirement** – increase in permanent housing (relates to operational workforce) – from August 2009 the operational staffing will increase over 12 months to 380, and ultimately grow to 450 by July 2013 (after Stage 2 construction)
- **Medium Term Requirement** – 1,000 to 1,300 construction workers need accommodation between April 2008 and February 2010, a period of almost 2 years
- **Short Term Requirement** – relates to the construction workforce peak – a further 200 to 1,300 construction workers need accommodation between October 2008 and August 2009, a period of less than 12 months

In the course of Stage 1 construction there will be a need to develop an underlying permanent increase in regional housing stock that will accommodate the long term operational workforce plus any additional permanent population increase brought about by the indirect job creation relating to the refinery. As a result of Stage 2, the operational workforce will increase further and the permanent housing stock will need to expand accordingly.

The short term (peak) and medium term construction workforces (for Stages 1 and 2) will require a large scale temporary housing solution over the critical construction timeframes, ie 2007 to 2010 and 2012 – 2015.

5.3 Direct and Flow-On Workforce Implications

The GPN project will create further employment in the Gladstone region during the construction phases and also in the form of permanent long term jobs. However, as shown in the previous section, the bulk of employment will be of a temporary nature during the construction peak. The Office of the Coordinator-General has put the GPN workforce estimate through its Gladstone Growth Management Initiative Model (GGMIM) to make the calculations of six-monthly average summarised in Tables 5.2 & 5.3.

Table 5.2 - GPN Stage 1 – Direct and Flow-On Employment

	Construction & Operational				Recruitment	
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
2011	Dec-11	380	235	615	340	275

Source: Queensland Office of Coordinator-General, based on GPNL workforce forecasts

Table 5.3 - GPN Stage 2- Direct and Flow-On Employment

	Construction & Operational				Recruitment	
Year	Year Half	Direct	Flow-On	Total	Local Recruitment	External Recruitment
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: Queensland Office of Coordinator-General, based on GPNL workforce forecasts

The model shows that there is a significant amount of flow-on employment created by the GNP during the construction phases and also residual long term employment. For example, at the peak of construction in the first half of 2009 there will be an estimated additional 753 jobs flowing-on to local businesses, suppliers, transport, etc, as a result of the project. By the first half of 2011, when construction has ceased, there are an expected 235 flow-on jobs in addition to the direct GNP operational workforce of 380.

The other significant aspect of the findings of the GGMIM modelling, is the estimated breakdown of the source of recruitment of the GPN and flow-on workers. The model has predicted that 42.5% of the peak construction related workforce, and 55% of the long-term operational related workforce, will be recruited locally (ie within the Gladstone region).

The implications of this analysis are that:

- There will only be additional housing demand created in the Gladstone region to accommodate part of the GPN workforce and part of the flow-on work force
- The number of additional units of housing required is equal to the number of externally recruited workers.

The first point above is based on the assumption that the local workers will have accommodation in the Gladstone region and therefore will not create demand for new housing. The amount of new demand is therefore associated only with the externally recruited workers.

The assumption made in relation to the second point above is that each job represents demand for one unit of housing. This is a reasonable assumption to make because each job can be expected to represent one household. Only a relatively small number of employees are expected to share accommodation, however, to the extent that sharing accommodation can be achieved by actions of the GPN project, this can be expected to reduce demand for additional housing. Shared accommodation is most likely to occur during the construction phase.

6.1 Assessment of Future Housing Demand

An assessment of future housing demand must take account of the following factors:

- Housing demand related to organic population increase
- Housing demand related to the Gladstone Pacific Nickel project
- Housing demand related to cumulative demand from other contemporary projects

6.1.1 Housing Demand Related to Projected Organic Population Growth

Projected population growth for the study area has been calculated by PIFU. These projections are based on long term trends observed over previous census periods and assumptions about how development will proceed in the future. Using the projections, and assumptions about the average household size, a calculation can be made of the gross units of housing required to accommodate the increase in population in the area. Table 6.1 illustrates this calculation.

Table 6.1 - Housing demand based on Organic Population Growth

Housing Demand Estimate - 2006 to 2011					
	2006 Population	2011 Population	Population Increase	Household Size	Demand for Additional Units of Housing
Calliope	17,081 (2.6%)	19,218 (2.4%)	2,137	2.6	822
Gladstone	28,604 (1.3%)	31,688 (2.1%)	3,084	2.6	1,186
		Total	**5,221**	**2.6**	**2,008**

Average Annual Change over 5 years to 30th June; based on medium series projection
Source: PIFU 2005 (a,b,c,d)
Assumptions:
Household size of 2.6, based on further reduction in average household sizes in the region
Each household will live in a separate unit of accommodation (1 household = one unit of housing)
This calculation is not correlated with an assessment of dwelling types (eg 1, 2, 3 bedroom house, flats or units)
Organic population growth does not include housing demand generated by the GNP[25]

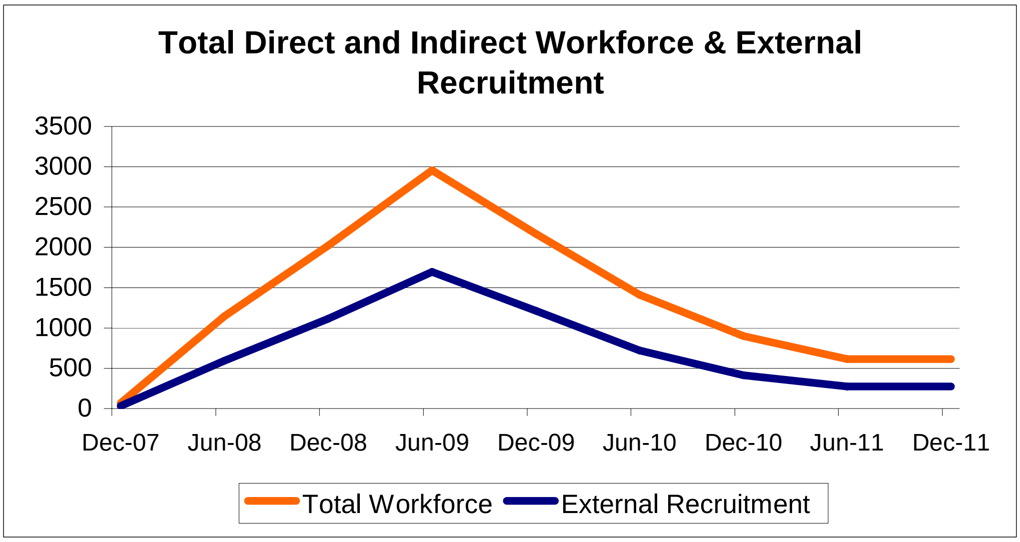
[25] It is important to note that organic population growth in this context means the increase in population attributed to natural increases (due to births over deaths) and net in and out migration. It is a statistical projection that does not take account of population increases due to the GNP.

The calculation provides an estimate of 2,008 new units of housing required, over five years. This translates to a base level of housing demand to be met by the local residential construction industry of about 400 dwellings per year.

6.1.2 Housing Demand Related to Gladstone Nickel Project

As discussed in Section 5.3, modelling conducted by the Queensland Office of the Coordinator-General indicates that, in addition to the construction and operational workforces generated directly by each stage of the project, there is also a considerable number of flow-on or indirectly created jobs. The modelling also made estimates of the source of recruitment of the direct and flow-on workforce, forecasting that a significant proportion of workers will be recruited from within the Gladstone region. The six-monthly average estimates provided by the GGMIM for Stage 1 are summarised in Figure 6.1.

Figure 6.1 – Stage 1 Combined Workforce and External Recruitment



Source: Queensland Office of Coordinator-General, based on GPNL workforce forecasts

Figure 6.1 shows the combined total of construction and operational workforce numbers plus the estimated flow-on employment related to the GPN project (peaking at 2950 during the six months to June 2009), and the much lower number of workers recruited outside the Gladstone region (peaking at 1700 during the six months to June 2009).

Figure 6.1 also illustrates the dynamic nature of the housing demand associated with the project's construction and long term operations. The largest part of the housing demand created will be for temporary construction workers during the construction peak. The long term demand for permanent housing is smaller and associated with the operational workforce and its associated flow-on employment.

A summary of the numbers of workers requiring these two different kinds of accommodation is shown in the Table 6.2.

Table 6.2 - GPN Stage 1 Housing Demand based on Employment Estimates

Construction – Peak Stage 1, 2009		**Operational – Long Term (at 2011)**	
Direct Jobs	2,200	Direct Jobs	380
Indirect Jobs	750	Indirect Jobs	235
Total Construction	2,950	Total Long Term	615
Construction jobs recruited locally	1,250	Operational jobs recruited locally	340
Construction jobs recruited externally	1,700	Operational jobs recruited externally	275
Total	2,950		615

Source: GPNL Workforce Estimates 2006, Office of the Coordinator-General Workforce Modelling 2002 & 2006

Assumptions

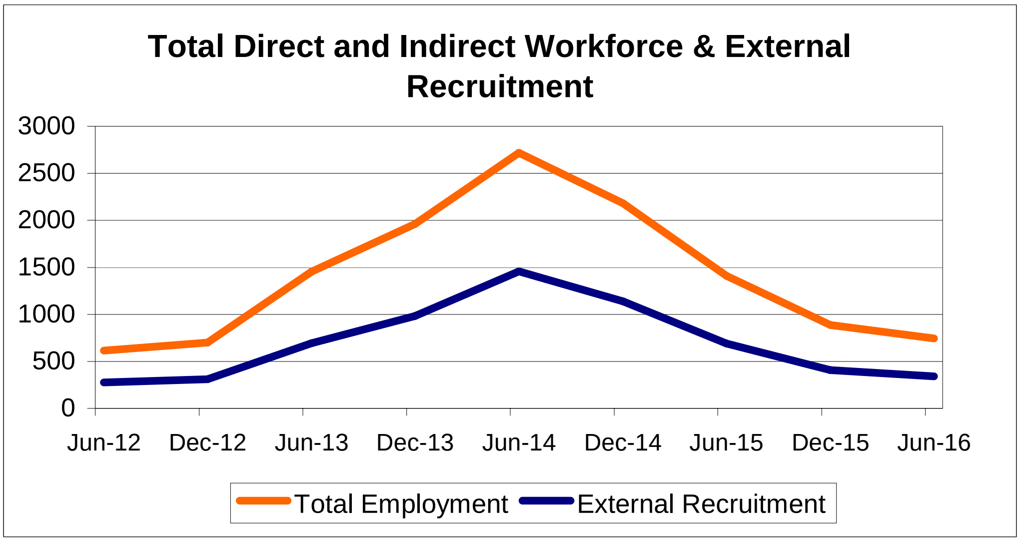
- Each job represents one household and therefore demand for one unit of housing
- Population increases will be greater than the employment numbers and will be determined by household sizes and household distribution
- The figures presented are approximate rather than exact numbers

The above analysis indicates that the demand for long term / permanent housing created by the project will be for 275 units of housing, taking account of both direct and flow-on employment effects during the operational phase. The type of housing required will be determined by household sizes and distribution.

The analysis also indicates that the housing demand for the temporary construction workforce will be approximately 1700, representing 1700 households, based on the assumption that each job recruited from outside the Gladstone region represents one unit of housing demand. As with the long term demand the type of housing required will be determined by household sizes and distribution.

The housing demand scenario for Stage 2 of the GPN project is very similar to Stage 1. Figure 6.2 illustrates the overall workforce associated with Stage 2, including direct and flow-on workforce projections. Also shown is the estimate of the numbers to be recruited externally, ie outside the Gladstone region.

Figure 6.2 – Stage 2 Combined Workforce and External Recruitment



Source: Queensland Office of Coordinator General, based on GPNL workforce forecasts

At the construction peak for Stage 2 it is estimated that approximately 1,460 units of temporary accommodation will be required – for both direct and flow-on workers recruited outside the Gladstone region. The operational staff will increase slightly during Stage 2, creating demand for about 65 additional units of permanent housing, to accommodate both direct and flow-on employment.

6.1.3 Cumulative Impacts on Housing Demand

The cumulative impacts on housing demand relate to demand generated by other new developments under construction at around the same time as the GPN project. This demand is in addition to both the organic growth taking place in the population and the direct and indirect employment (and therefore housing demand) associated with the GNP already referred to.

A number of industrial projects are under construction in the Gladstone / Calliope region at the present time. As reported by Gladstone Area Promotion and Development Ltd in its March 2006 Project Status Report, major industrial projects to the value of $487.65 million are currently being constructed, and others to the value of over $9 billion are under investigation. In addition, a significant number of infrastructure projects are either in construction or under investigation. These projects will have cumulative impacts on local demand for housing and may account for the existing shortage of rental housing and houses for sale in the region.

Projects currently under construction include those listed in Table 6.3:

Table 6.3

Company	Project	Construction Workforce	Completion
Air Liquide	Air separation plant	30 – 40	2006
Boyne Smelters	Hood replacement, S230	45 +	2006
Comalco	Refining centre of excellence	TBA	2006
Orica	Ammonium nitrate plant expansion	200	2006
Queensland Alumina	Environmental improvement program & rotary kiln demolition	50 +	2006 / 07
Transpacific Industries	TICOR waste management site	50	TBA

Source: Gladstone Area Promotion and Development Ltd, March 2006 Project Status Report

The recent history of Gladstone has seen expectations raised about very large projects, eg Aldoga Aluminium Smelter, LG Chem Chemical Plant, and the Stuart Shale Oil Project, only to have the projects collapse or be put on hold. There is now a degree of scepticism in the local community regarding talk of "big projects" and a pronounced "wait and see" attitude.

Consultation with Gladstone / Calliope stakeholders included questions about which projects are the most likely to proceed. The following short list represents a consensus of local opinion on this question:

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

Of these projects the CAR 2 is the largest, requiring a construction workforce of approximately 2000 over a similar timeframe to the GNP. The CAR 2 project represents a duplication of the Comalco Alumina Refinery Stage 1 project (CAR 1) in terms of the scale of plant to be constructed and the increase in production it will provide. The CAR 2 project will therefore be a similar construction task to CAR 1.

For the purposes of this study CAR 2 has been identified as the project that is most likely to proceed in the near future and therefore as the one against which to assess the likely cumulative impacts of another construction project taking place at the same time as the GPNL project. Because of the equivalence between the CAR 1 and 2 projects CAR 1 will be used as a “stand in” for CAR 2 to allow a case study analysis to be made.

6.1.4 Comparison with Comalco Aluminium Refinery Stage 1 (CAR 1)

Comalco Stage 1 details

The construction workforce for the CAR 1 project was around 1,750 at its peak in October 2003. The workforce was not consistently at this level but built up over approximately 18 months to a peak, and then declined back down from this point for the remaining 18 months of the three-year construction schedule.

Peak accommodation requirements met directly by Comalco for this workforce were as follows:

Table 6.4

Accommodation Type	Units of Accommodation*	Number of Employees
Hotel rooms	107	107
Transit Accommodation (houses)	1	3
Flats/units	186	186
3 bedroom houses	124	124
4 bedroom houses	146	241
Total	**564**	**661**

*Source: derived from figures supplied by Comalco Ltd, *estimates only*

Total employees accommodated were 661 of which 217 (33%) were accompanied (by family members, de facto partners, etc). Single workers were generally accommodated in hotel / motel units and in flats / home units. Houses were allocated to families based on family size (3+ children = 4br house, 2 children = 3br house). Single employees were allocated to houses in the ratio of 2 per 3br house and 3 per 4br house.

CAR 1 was projected to result in an ongoing operational workforce of 425.

Analysis carried out in 2002 by the Department of State Development, using the Gladstone Growth Management Initiative Model, estimated that flow-on employment effects of the CAR 1 project would result in 478 additional temporary construction related jobs, and 431 additional long term jobs.

Some of the housing impacts of the CAR 1 project have been mentioned in earlier sections, and included:

- Increase in occupancy rates in motels/hotels and also increase in purchase and rental of existing properties during the first stage of the CAR project;
- Housing shortage, ie rental housing and dwellings for sale, hotel and motel accommodation during the peak construction period for the project.
- Increases in dwelling sale prices and rents which were also partly due to overall property price increases experienced across the state.

Within the wider community the following impacts were reported in during consultation with local stakeholders:

- Displacement of low income households, including young people
- People leaving town to live in lower cost locations, ie Bundaberg
- Higher usage of facilities & services – medical, schools, child care

Assessment of Future Housing Supply

This section brings together three critical elements of housing supply and demand, ie:

- The historic pattern of residential construction – steady rate level and high rate level.
- Demand based on organic population growth.
- Demand based on project related employment – direct and flow-on employment.

The section also provides information on the current skills shortage being experienced in the region, and the implications this may have for housing supply.

6.1.5 Housing Supply Based on Historic Rates of Residential Production

In Section 4.1, it was estimated that the local building 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 per annum) if required. This suggests that the level of housing demand related to organic population increase (approximately 400 dwellings per year) can be met by the local residential construction industry operating at its current level of activity, and that there will be an ability for the industry to ramp up production by about 50%, or an additional 200 dwellings per year, to meet additional demand.

Consideration of the dwelling approvals for 2003 to 2005 in Section 4.1, and assuming that these approvals were converted into completed dwellings after a 4 to 6 month lag, it can be seen that the local residential construction industry has been operating within the range 350 to 520 dwellings per year, ie:

- 2002 to 2003 = 437 dwellings
- 2003 to 2004 = 517 dwellings
- 2004 to 2005 = 345 dwellings
- 2005 to 2006 = 376 dwellings

The higher figures for 2002 to 2004 can reasonably be attributed to housing demand created by CAR 1, which had its peak construction period in 2003.

6.1.6 Capacity to Meet Anticipated Housing Demand

Capacity to meet anticipated permanent housing demand

An initial assessment of the ability of the Gladstone region's residential construction industry to meet expected demand can be made by comparing anticipated levels of housing production with housing demand arising from organic population growth (not related to the GPN project) and demand for permanent housing arising from the GPN project and its flow-on employment effects. This comparison is shown in Table 6.5.

Table 6.5 – Summary of Medium Term Housing Demand and Supply

Medium Term 2006 – 2011, Gladstone & Calliope		**2006-11**
Organic Housing Demand – Units of Housing	GNP Demand for Permanent Housing	Total
2,008	275	2,283
Housing Production	**Estimated Annual Production**	
Current rate 30/mth	360 pa	1,800
Peak rate 2003 42/mth	504 pa	2,500
Maximum Capacity 50/mth	600 pa	3,000

Source: PIFU 2005-2006, Master Builders Assoc, Rockhampton – see Section 4.1.2

Housing demand originating from organic population growth was estimated in Section 6.1.1 above at approximately 2,008 units of housing for the five years to 2011. As discussed in Section 6.1.2 above, demand for "permanent" housing related to the long term operational workforce is relatively small – amounting to 275 units over the same five-year period. Together these total 2,283 units of housing.

Three scenarios for rates of housing production are also shown in Table 6.5, along with estimates for total production at those rates over the five years to 2011. At the current level of production, ie 30/mth, the amount of housing delivered will fall well short of the required 2283. If production can be increased to the equivalent of the rate achieved at the recent peak of production in 2003 (just over 500 units of housing per annum) then sufficient new housing can be delivered to meet medium term demand for permanent accommodation.

The Queensland Master Builders Association (Rockhampton) estimates that annual housing production in the Gladstone / Calliope region could expand to 600 units of housing per annum. This rate of production would be dependent on attracting builders and trade staff from Rockhampton and surrounding areas, and on the availability of skilled labour in an environment of skilled labour shortage. At this rate of production, a total of approximately 3,000 units of housing might be delivered, providing some new housing that would help meet temporary construction related demand and take pressure off the local rental market.

However, it may be unrealistic to assume the rate of 600 units of housing per annum could be maintained over a five year period. Taking a more conservative approach, there is an historical rate of 500 units of housing per annum that has been achieved in recent times and it is this rate have been used in estimates of future performance. On this basis for, it can be concluded that over a five year period production would exceed demand by approximately 200 units of housing. While this level of production will provide enough permanent housing, it is not enough to cover demand for temporary accommodation, but it can assist.

Capacity to meet anticipated construction demand

In Section 6.1.2, an estimate of demand for short-term housing for the Stage 1 construction workforce was made, based on the number of construction jobs created both directly and indirectly by the GNP, and the assumption that one job equates to demand for one unit of housing. The peak demand has been estimated to be 1,700 units of accommodation, equivalent to the number of construction jobs to be filled by workers imported from outside the Gladstone / Calliope region. The corresponding peak demand for short-term accommodation in Stage 2 is approximately 1,450.

Referring back to the outline of the construction workforce numbers over time in Section 6.1.2, the nature of demand for construction-related short-term housing (for Stage 1) has the following characteristics, ie:

- Construction takes place over a three year timeframe (Dec 2007 – Sept 2010).
- The construction workforce builds steadily to a peak point in April 2009 then declines steadily to the end of the construction phase for Stage 1 of the GNP.
- 600 to 1000 units of housing are needed for 2.5 years (June 2008 to Dec 2010).
- 1100 to 1,200 units of housing are needed for 1 year (Dec 2008 to Dec 2009).
- An additional 500 units are needed to meet construction peak demand of 1,700 are required for a 6 month period.

This profile of short-term housing demand will be similar for the construction of Stage 2.

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

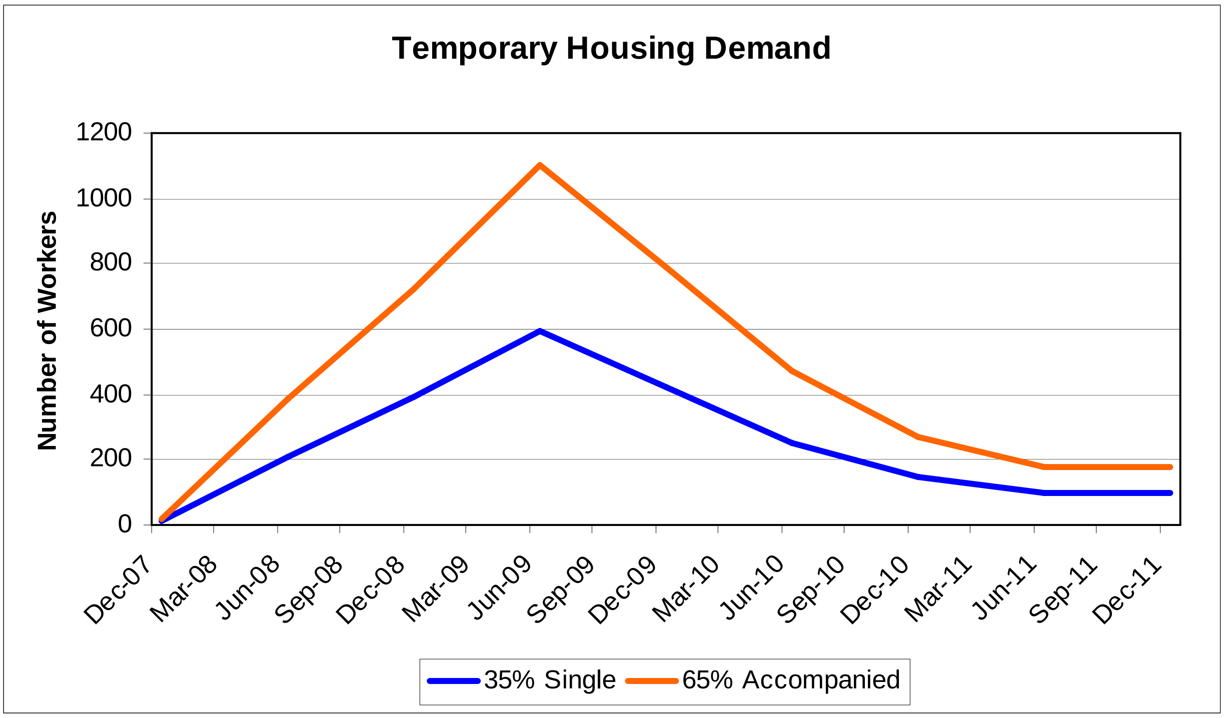
Demographic analysis carried out by the PIFU using 1996 and 2001 census data for the Gladstone region found that recently-arrived workers in the building and construction industry were not primarily young single people (see Section 3.1.2). Only 30% to 35% were living alone or sharing with unrelated individuals or in non-private accommodation (ie motel/hotel). The remaining 60% to 65% lived with a married or de facto partner and/or other family members.[26] The study found that a significant proportion were workers were aged in the 35 years to 54 years age groupings.

Figure 6.3, shows the temporary construction workforce over time (approx 3.5 yrs) broken down into the two categories, ie 35% living alone, etc, and the 65% living with partners and other family. Overlaid on

[26] PIFU, Gladstone/Calliope: Workforce Data Analysis, May 2002 & Feb 2003

this is an amount of permanent dwellings that GPN may acquire to eventually house its long term operational workforce.

Figure 6.3 – Components of Temporary Accommodation Demand



Source: Queensland Office of Coordinator General, based on GPNL workforce forecasts, PIFU Workforce Data Analysis Reports 2002 & 2003, includes construction and operational staff

Assumptions

- Based on outputs from the QLD Office of the Coordinator General employment forecasting model
- Operational staff do not become significant until after Dec 2009 so have negligible influence on peak demand during Stage 1 construction phase (Dec '08 to Dec '09)
- Operational staff numbers could not be disaggregated due to the complex assumptions used in the employment forecasting model used by the QLD Office of the Coordinator General
- Each job represents one household and therefore demand for one unit of housing

The figures presented are approximate rather than exact numbers

Figure 6.3 indicates the potential number of workers that could be accommodated in workers camps (35%), and the numbers that will potentially have partners and other family members with them who would not be accommodated in workers camps.

Analysis, of the existing rental and real estate sales markets, indicates that the major proportion of short-term accommodation for the GNP construction phase cannot be readily supplied by the local permanent housing markets, or via existing short-term housing sources such as hotels, motels and caravan parks.

In order to avoid major disruption to the local housing / accommodation markets, a large part of the supply of short-term accommodation will need to be met from some new form of accommodation not already present in the Gladstone region, or from neighbouring areas.

The most important neighbouring area that could provide accommodation is Rockhampton, approximately one hour by road from the construction site. While some construction staff may choose to commute from Rockhampton, this cannot be considered an ideal solution to the short-term accommodation requirement. However some commuting could be expected particularly if buses were provided to transport those commuting from this area to the construction site.

One of the main solutions adopted in other parts of Queensland to providing short-term accommodation has been to construct temporary workers camps to accommodate part of the construction workforce. This kind of solution would form part of a multi-faceted approach to securing the full amount of short-term accommodation required.

The elements of a multi-faceted approach may include:

- A workers camp;
- Fly-in-fly-out and/or drive-in-drive-out arrangements combined with a workers camp;
- Securing a proportion of rental accommodation; and
- Securing a proportion of new residential production

Additional strategies for the provision of short-term rental accommodation may include workers camps with larger housing units that could accommodate an accompanied worker for short periods of time or the provision of shared permanent dwellings for single workers under GPNL management.

Analysis in the earlier part of this section, dealing with capacity to meet demand for permanent housing, outlined the capacity of the regional residential construction industry to produce new housing. This suggested that there may be potential to stimulate higher rates of dwelling construction that would produce a slight excess of housing, above the demand created by organic population growth and the permanent housing needs of the GNP.

If GPNL were to stimulate the higher rates of production this would have the potential to generate approximately 300 additional dwellings in the next three years. These dwellings could be used temporarily for imported construction workers until operational staffing begins to build up in early 2010.

GPNL may also be able to secure an amount of rental housing from the existing market; however the availability of rental housing was tight mid-2006 and is expected to remain so. Securing a large number of rental dwellings, e.g.600, does not seem a viable strategy within the Gladstone region housing market. Assuming this number of dwellings could be leased with the help of a tenancy management agent, the potential flow-on impacts upon the broader housing market may be and could lead to distortions within that market (i.e. housing shortages, large price and rent increases, and dislocation of lower income households).

6.1.7 The current skills shortage

The most recent information on the state of employment demand and supply in the Gladstone region has resulted from a questionnaire survey of local businesses carried by Gladstone Area Promotion and Development Limited (GAPDL), called the 2006 Skills Survey. The current situation in the region is described by GAPDL as a "skills shortage"[27]. In the words of the survey report:

"A shortage of skills has long been perceived as one of the most serious issues currently facing Gladstone Region business and industry. A lack of available personnel with the right skills may threaten the economic viability and growth of our region. Whilst this is also a state and national issue, the shortage of skills may particularly affect this region due to its high concentration of industry and remoteness from a capital city." (p2)

The GAPDL based its findings on a sample of 256 regional businesses in all sectors, and came to a number of important conclusions including:

- In general a high level of specialist skills is required in the Gladstone region workforce
- Half of all businesses in the Gladstone Region have a great deal of difficulty in attracting the staff they need
- The reasons for this difficulty fall largely into three main categories:
  1. Inability to offer competitive salaries
  2. Lack of available qualified, experienced people
  3. Difficulty in encouraging people to relocate to a regional area

Table 6.6 summarises the responses the survey question which asked about the degree of difficulty businesses have in finding the staff they need. A total of 26% of businesses surveyed indicated they have at least some degree of difficulty in attracting staff, with 47% having a great deal of difficulty or finding it impossible to do so. Only around a quarter of respondents were not having difficulty at all.

Table 6.6 – Difficulty in Attracting Staff

Degree of Difficulty	Number of responses	%
Not at all	67	26%
Some	67	26%
A great deal	92	36%
Impossible	27	11%
Total	**253**	**100%**

[27] GAPDL, Gladstone Region Skills Survey, released 17 May 2006

Source: GAPDL, Gladstone Region Skills Survey, 2006

Businesses were also asked to list any services, professions or trades for which it is difficult to find skilled staff. Those results are shown in Table 6.8 which lists the number of responses against the trade, service or profession. Looking at the shaded rows in the table it is clear that the building trades are an area of skills presenting recruitment difficulties for a large number of businesses. A second skills area of interest is the industrial engineering and fabrication sector where engineers, boiler makers, machinists, fitters and turners, and welders are also difficult to recruit. Some businesses reported skills shortages in more than one trade or profession.

Table 6.7 - Professions or trades reporting recruitment difficulty

Profession or Trade	**Number of Businesses**
Admin/Sales/Management	25
Automotive - Mechanics; diesel fitters; auto electricians	34
Hospitality/Bar/Wait Staff	11
Boilermakers	9
Building Trades	15
Chefs/cooks/bakers/kitchen hands	18
Cleaners	7
Drafts People	4
Education Professionals/child care workers	12
Electrician/electrical technicians	15
Engineering	23
Finance/Insurance	11
Hairdressers/Beauty	7
Health professionals	13
ICT	2
Machinery Operators/drivers/riggers/scaffolders	16
Machinists/fitters/turners	21
Plumbers	6
Real Estate Sales/property managers	7
Solicitors/lawyers/legal paraprofessionals	3
Technicians/technical sales and support	5
Welders	4
Other	20
Total	**288**

Source: GAPDL, Gladstone Region Skills Survey, 2006

The shortage in skilled construction trades indicated in Table 6.8 has implications for the residential construction industry and the recruitment prospects for the GNP construction workforce. It indicates that there are existing shortages in skilled construction trades that will inhibit the ability of the regional residential construction sector to expand so as to increase output to meet the demands of the GNP. The ability to expand further to create new housing for other major industrial projects in the region will present further challenges. However, should these projects not coincide but follow one after the other, there are opportunities for synergies.

GPNL will maintain a working relationship with other industrial proponents in the region and will explore opportunities for cooperation in the timing and requirements of their respective projects.

The residential construction industry will be under pressure because it may not be able to offer the high wages paid to the industrial construction workforce. In a situation where more than one major project is under construction at the same time the competition between projects to attract skilled staff may have the effect of pushing wages higher. In these circumstances the residential construction industry may find it difficult to expand, or to expand without significantly increasing its costs.

6.2 Housing Demand and Supply - Summary and Conclusions

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 rent) in the local housing market.

Availability of land for residential development is not a constraint as there is a large quantity of existing approved land. 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 medium term organic growth (5 year) and the increase in permanent employment directly and indirectly created by the GNP, 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 achieved by the local building industry in 2003. An increase to a higher rate, eg 600 units of housing per annum would be beneficial as it would generate enough additional housing over time to assist the GPN project 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 increase in permanent housing in the Gladstone region will not be enough to meet the temporary housing needed for the construction workforce. In fact it can only be expected to make a small (although important) contribution. The demand for temporary accommodation will need to be met by a multifaceted approach including potentially the development of new temporary accommodation such as workers camps, and use of existing rental housing.

Due to the demographic characteristics of the likely construction workforce it is estimated that approximately 35% of the imported construction workforce may be single or unaccompanied and willing to live in a workers camp. The remaining 65% (approx) may require dwellings suitable for couples or larger family households. Securing enough short-term housing for this component of the construction workforce will be challenging within the Gladstone / Calliope area. It should be noted however that this assessment has been based on the information available and it is unclear as to the number of privately rented properties within the Gladstone / Calliope area, since records of these properties are not kept by the Queensland Residential Tenancies Authority who manages rental bonds on behalf of landlords.

These comments relate to Stage 1 of the GPN project, but similar comments will apply to Stage 2.

7.1 Housing Strategy Aims

The housing strategy for Stages 1 and 2 of 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 workforce.
- To stimulate the creation of new housing that will add to the permanent housing stock of the Gladstone / Calliope area.
- To address concerns related to the impact of a large transient workforce during the construction period of the GNP onto various stakeholders, including the lower income households.

In addressing project related housing associated with the GNP, GPNL aims to address the key issues of concern in relation to housing (provision of both short-term and permanent housing to meet the need of the project workforce and flow-on employment) and potential impacts on the broader community. The aims recognise the need for a comprehensive approach to meeting housing requirements.

7.2 Housing Strategy Rationale

The strategy will be multi-layered and require active engagement with the local residential development industry and private rental management agents. Existing rental properties and hotel/motel type accommodation will be utilised but are expected to meet only part of the housing requirement. Construction of new housing will also be necessary. Rather than attempt direct provision of housing, the strategy intends to stimulate the private sector to generate construction of new accommodation. A range of incentives will be discussed with the interested developers and investors.

The housing strategy must meet the needs of the short term high demand period of project construction as well as the long term operational period. In the long term, the new housing required is what will be needed for the operational workforce plus any other population growth resulting indirectly from the project.

The key elements of the housing strategy include:

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

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

By way of comparison, it is instructive to note some of the strategies adopted by Comalco for the CAR 1 construction project. These included:

- Rental properties were secured under a head lease arrangement (with Bechtel) – estimated at approximately 190 flats and units and 270 houses.[28]
- Partnered with local builders to stimulate development of new housing on a 3-year leaseback arrangement, the main partnership resulted in one hundred 4-bedroom new homes
- Use of hotel / motel accommodation – approximately 140.
- Some personnel were placed in shared accommodation with more than one person being accommodated in each house: e.g. 2 people in a 3-bedroom house and 3 persons in a 4-bedroom house.

7.3 Housing Strategy Actions

In providing project related housing for the GNP, GPNL will:

- Stimulate construction of new dwellings.
- Stimulate construction of multi-unit flats, motels and hotels.
- Coordinate leasing of existing rental properties.
- Develop a workers village in Calliope Shire.

7.3.1 New Dwellings

Of particular importance will be actions to stimulate an increase in the rate of dwelling construction in order to house temporary construction workers accompanied by spouses and families, estimated to number from 200 to 800 during the course of the construction phases (Section 6.1.6).

As discussed in Section 6.1.6, the rate of residential construction will need to increase substantially to generate enough new dwellings to satisfy demand from organic population growth and the long term operational workforce associated with the GNP. For additional housing to be built above this level, special arrangements with residential construction contractors will be required in an environment where there will be competition for skilled labour.

GPNL is considering strategies such as forming alliances with regional builders and also with housing contractors / manufacturers outside the region to stimulate a much higher rate of housing production.

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[28] Housing Action Plan for Gladstone/Calliope, Qld Depts of Housing & State Development, Nov 2002, p23; and figures derived from information supplied by Comalco Ltd.

Options such as prefabrication of dwellings outside the region may be one solution. Preliminary discussions with a number of developers with existing projects in Gladstone and Calliope Shire has highlighted that developers working in the region have the capability and commercial arrangements with building companies in place, to enable rapid acceleration of the rate of building in the region. Arrangements also include those with building companies located outside of the region in areas where building rates have reduced in recent times.

Preliminary discussions have highlighted that developers have previously utilised modular construction of dwellings outside of the region to assist with reducing the time required to construct, and that further developments of this option are continuing.

A number of opportunities to stimulate residential development have been identified that will assist GPNL in securing the employee housing it needs. These opportunities offer the prospect of contributing to a lasting legacy of needed student and industry housing and tourist accommodation to support a diversification of the local economies of Gladstone and Calliope. The identified opportunities include:

- Approved developments of houses in Gladstone and Calliope Shire;
- Approved developments of townhouses and unit style accommodation in Gladstone as an alternative to the single house residential type that dominates Gladstone and Calliope Shire.
- The Central Queensland University (CQU) owns a large site in the Gladstone CBD that is being considered for student housing.
- There are a number of hotel / motel expansions, and two new motels approved for development in the Gladstone CBD.
- Two motels are approved for development in Calliope.
- A relocatable home park and adjacent residential housing development has been approved for the town of Calliope.

Intervention by GPNL to stimulate progress with potential developments will be considered. In most cases some form of secured leasing arrangement will be required including a firm commitment from GPNL. Preliminary discussions with developers have indicated that this type of arrangement would be appropriate for ensuring that development proceeds.

Other strategies for stimulating the construction of new dwellings, such as assistance with securing residential properties for the operational phase workforce, will also be considered by GPNL.

Houses

A number of approved house developments have been identified through preliminary discussions with developers and real estate agents.

The Calliope Shire is experiencing a very high level of growth in residential developments. In the town of Calliope alone as of September 2006, about 300 to 400 housing lots were approved but not built on.

Furthermore 400 to 500 lots were being assessed through the shire's approval process. Other significant approved house developments are located in the Boyne Island / Tannum Sands region.

In the town of Mt Larcom, a developer is preparing an application to develop a large parcel of land as a multiple type residential estate and has earmarked a portion of the land for potential development of workers village style accommodation (refer to Section 7.3.4).

Townhouse and Unit Accommodation

A number of approved developments of townhouse and unit accommodation have been identified through preliminary discussions with developers and real estate agents. This type of housing is not currently common in the region, but research undertaken by developers has indicated that the demographics of the region supports this style of development. For the GNP, this style of accommodation can service the needs of individuals and workers with accompanying families.

Synergy with University Housing

CQU has an immediate need for accommodation in the Gladstone area to house students for short durations. An initial discussion with CQU has indicated agreement on complementary needs for accommodation of students and short term industry workforce (construction and major plant shutdowns). GPNL will progress this housing option by initiating further discussions with CQU and other major industries in the Gladstone region, focusing on provision of a multi-user permanent village for short-term accommodation. Options for intervention by GPNL to stimulate this development include securing a number of accommodation units for lease over the term of construction demand.

Relocatable Home Park

GPNL has consulted with the current owner of an approved relocatable home park in Calliope. The approved development is designed to cater for permanent residents. Relocatable homes are of a modular design and are planned to be constructed in a factory on the park site. Each home will be purchased and owned by individuals, who generally require a permanent home but can regularly be absent for significant periods. GPNL potentially has the option of securing short-term rental arrangement for homes in the park to service construction workforce requirements.

7.3.2 Rental Property Leasing

GPNL will provide resources to identify and secure leases over existing rental properties in Gladstone and Calliope Shire during the period prior to the commencement of construction and during construction. A co-ordinated approach to securing rental properties and efficient transport of workers to the project sites will be implemented.

7.3.3 Regional Accommodation

There are a number of benefits for families locating in the Rockhampton area, including lower rents, greater availability of employment for spouses, social and recreational opportunities, shopping, heath services and educational choices.

The town of Gracemere in the Fitzroy Shire, located south of Rockhampton and about a one-hour drive time from the proposed refinery site, is well serviced due to its proximity to Rockhampton and has local schools. Gracemere is currently experiencing a high level of growth in residential developments. As of September 2006, about 400 residential lots were under construction and in excess of 1,000 lots were being assessed through the shire's approval process. GPNL will consider the option of providing a transport service to / from the project sites and Gracemere during the construction phase to promote Gracemere and surrounds as an option for workforce housing.

7.3.4 Workers Village

GPNL is proposing to use a workers village, which is assessed as being essential to ensure that accommodation is provided for the construction workforce peaks for single / unaccompanied workers. As outlined in Section 4.2.5, Calliope Shire Council is willing to consider the establishment of a workers village under certain conditions. Potential locations for a workers village have been identified and discussed with Calliope Shire Council. These locations include:

- The site investigated for a construction workers' village for the previously proposed Aldoga Aluminium Smelter project on the 'Carrara' property near Calliope (Lot 5 RP616418) or alternatively in combination with adjacent Calliope Shire land fronting the Bruce Highway (Lot 17 CTN1285). Water and sewerage services will need to be provided by GPNL and appropriate arrangements made with the Department of Main Roads (DMR) and CSC for a sealed access road from the Bruce Highway. GPNL has had preliminary discussions with a representative of the owners of the 'Carrara' property and CSC.
- An alternative location on the 'Carrara' property (parts of Lot 6 RP616418 and Lot 260 SP183065). Similarly to the previous mentioned location, water and sewerage services and road access from the Bruce Highway would need to be provided by GPNL.
- A large section of land on the outskirts of Mt Larcom (Lot 2 RP612512 and Lot 2 RP886953) on Wilmott Road, currently being considered by a developer for mixed residential, commercial, light industrial and motor-home park development. Water and sewerage services and access for the motor-home park would be utilised for the workers' village. GPNL has had preliminary discussions with the developer about this option.
- A location in the vicinity of Yarwun (specific sites currently not identified). Water and sewerage services and road upgrades would be provided by GPNL.

- A location in Calliope town known as Pound Reserve (Lot 70 CTN1991). Water and sewerage services and road upgradings would be provided by GPNL. GPNL has had preliminary discussions with officers from CSC about locating a workers' village in Calliope town.
- A location in the GSDA e.g. the 'Euroa' homestead lot, to utilise the existing Aldoga sewerage treatment plant (not currently being used). Initial discussions with CG have commenced to determine if this is a viable option.

GPNL will also consider the use of fly in/fly out arrangements in conjunction with a workers village. Entitlements to periodic airfares home to visit family will also be considered in conjunction with these arrangements. This approach may provide a partial solution to the difficulty in generating appropriate accommodation for the large number of workers with spouses and family who wish to move into the region during the construction period. Encouraging workers to come unaccompanied and stay in a workers village during their weekly roster may help to reduce the demand for family housing.

7.3.5 Mitigation Initiatives

Displacement of Low Income Households

Consultation with the Gladstone City Council's Tenant Advice and Advocacy Service has highlighted the impacts of a large construction project on housing availability and pricing in the region. The recent experience of the CAR 1 construction saw rents and house prices increase and the displacement of low income households. For some it meant moving to Rockhampton, Bundaberg or other lower cost areas.

In recognition that some low-income households may be displaced as a result of demand pressures within the local rental housing market resulting from the GNP, GPNL will consider providing financial support to the Gladstone and Calliope Councils to fund, or help fund, proposed initiatives by the Gladstone and Calliope based housing agencies to assist low-income households seeking accommodation assistance.

GPNL is planning to develop a workers' village for many of the construction personnel to reduce the project's impact on the local housing market. This village, coupled with the other strategies identified for housing requirements, will mitigate the GNP's impact on low-income households.

Potential Cumulative Impacts

This housing study has made the assessment that there will not be enough resources available in the Gladstone region housing market to meet the needs of the GNP. This conclusion means that additional resources will need to be introduced from outside the region.

The prospect of another major construction project, or a medium sized project, occurring at the same time as the GNP would cause additional housing demands. Due to the scale of the GNP, the constraints of the local housing market, and the context of a mining boom in Central Queensland competing for skilled labour and other resources, there are potential impacts if another sizable industrial construction project takes place at the same time as the GNP.

The preferred way to avoid such a conflict is to ensure coordination in the timing of major projects in the coming years where possible. There are advantages for all parties in achieving coordination, in the ability to rationally plan for and utilise temporary housing assets, and in avoiding negative social impacts on the existing communities in Gladstone and Calliope.

In discussions with developers, GPNL is encouraging consideration of a permanent village for short-term accommodation in the Gladstone and Calliope region to service project construction for the GNP and other major projects and industry major shutdown periods, for which significant temporary workforce is required. This style of accommodation could also service student and tourist accommodation needs.

Modularisation

One major potential mitigation initiative that GPNL is considering, is the modularisation of plant for Stage 1 and 2 construction of the refinery. Pre-assembled modules would be constructed outside of the region and imported through the Port of Gladstone. The construction workforce required to assemble modules on-site would be significantly less than required otherwise. An initial engineering study of project modularisation undertaken by GPNL has indicated that the peak construction workforce can potentially be reduced from 2,600 to 1,500. This has the potential to significantly mitigate potential housing and other social impacts.

Adverse impacts from more than one major project being constructed simultaneously would be mitigated if all projects utilised the modular approach. To this end, GPNL is consulting with CoG, CQPA and other industries in the area in regard to a common user port facility for large modules. This would be the subject of a separate approval process.

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