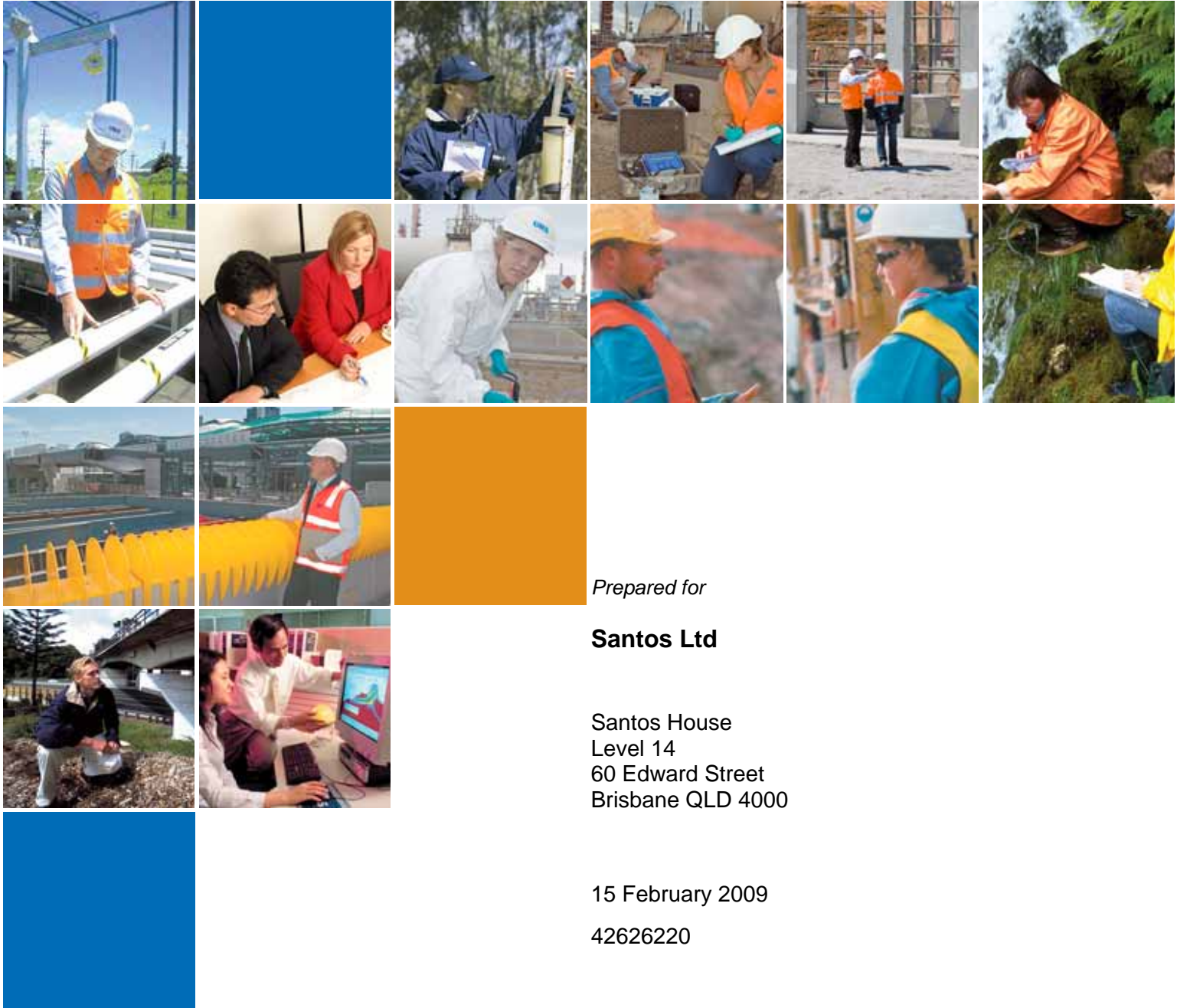


# FINAL REPORT

## Santos GLNG – Social Impact Statement



*Prepared for*

**Santos Ltd**

Santos House  
Level 14  
60 Edward Street  
Brisbane QLD 4000

15 February 2009

42626220


**URS**

Project Manager:

  
.....  
Chris Sunderland  
Sociologist and  
Consultation Specialist

URS Australia Pty Ltd  
Level 16, 240 Queen Street  
Brisbane, QLD 4000  
GPO Box 302, QLD 4001  
Australia  
Tel: 61 7 3243 2111  
Fax: 61 7 3243 2199

Project Director:

  
.....  
Chris Pigott  
Senior Principal

Date: 15 February 2009  
Reference: Social Impact Assessment  
Status: Final

## Table of Contents

<b>ES</b>	<b>Executive Summary .....</b>	<b>1</b>
ES 1	CSG Field .....	1
ES 2	Gas Transmission Pipeline .....	2
ES 3	LNG Facility .....	3
<b>1</b>	<b>Introduction.....</b>	<b>5</b>
1.1	Definitions.....	5
1.2	Study Areas .....	7
1.2.1	Coal Seam Gas (CSG) Field .....	7
1.2.2	Gas Transmission Pipeline .....	12
1.2.3	LNG Facility .....	14
1.3	Stakeholders.....	14
<b>2</b>	<b>Scope of the Project.....</b>	<b>17</b>
2.1	Methodology .....	17
2.2	SIA Indicator Selection .....	17
2.3	Key Assumptions.....	18
2.3.1	Accommodation assumptions.....	18
2.3.2	Workforce Assumptions.....	19
2.4	Social Baseline Study.....	21
2.4.1	Secondary Data Collection .....	21
2.4.2	Primary Data Collection and Consultation.....	22
2.5	Social Impact Determination and Assessment.....	23
2.5.1	Social Impact Assessment.....	23
2.5.2	Social Risk Assessment .....	23
2.5.3	Social Impact Management .....	24
2.6	Data Collection Management, Coordination and Limitations.....	24
2.7	Review of Existing Information.....	25
2.7.1	Consultation .....	25
<b>3</b>	<b>Data Sources.....</b>	<b>27</b>
3.1	Assessment Philosophies.....	27
3.2	Quantitative Data.....	27
3.2.1	Random and Rounding Errors.....	30
3.2.2	Additional Statistical Errors.....	30

## Table of Contents

3.3	<b>Council Amalgamation .....</b>	<b>30</b>
3.4	<b>Qualitative Data .....</b>	<b>31</b>
3.5	<b>Population Density.....</b>	<b>32</b>
<b>4</b>	<b>Existing Socioeconomic Environment .....</b>	<b>34</b>
4.1	<b>CSG Field Study Area.....</b>	<b>34</b>
4.1.1	Demographic Profile .....	36
4.1.2	Economic Profile.....	41
4.1.3	Educational Profile.....	46
4.2	<b>Reasonably Foreseeable Development Area .....</b>	<b>48</b>
4.2.1	Demographic Profile .....	48
4.2.2	Economic Profile.....	62
4.2.3	Educational Profile.....	65
4.2.4	Community Values, Vitality, Lifestyle and Wellbeing.....	69
4.3	<b>Gas Transmission Pipeline .....</b>	<b>71</b>
4.3.1	Demographic Profile .....	71
4.3.2	Economic Profile.....	76
4.3.3	Educational Profile.....	80
4.3.4	Community Values, Vitality, Lifestyle and Wellbeing.....	82
4.4	<b>LNG Facility .....</b>	<b>83</b>
4.4.1	Demographic Profile .....	83
4.4.2	Gladstone Regional Council .....	92
4.4.3	Economic Profile.....	103
4.4.4	Community Values, Vitality, Lifestyle and Well-being .....	109
<b>5</b>	<b>Facilities &amp; Services.....</b>	<b>115</b>
5.1	<b>CSG Field .....</b>	<b>115</b>
5.1.1	Community Medical and Health Facilities.....	115
5.1.2	State Emergency Services .....	119
5.1.3	Royal Flying Doctors Services.....	119
5.1.4	Queensland Ambulance Service (QAS).....	120
5.1.5	Fire and Police Services.....	120
5.1.6	Education and Training Facilities.....	121
5.1.7	Community Facilities and Services.....	122
5.1.8	Community Groups, Clubs and Societies.....	127

## Table of Contents

<b>5.2</b>	<b>Gas Transmission Pipeline .....</b>	<b>129</b>
5.2.1	Community Medical and Health Facilities.....	129
5.2.2	Emergency Services.....	132
5.2.3	Royal Flying Doctors Service (RFDS) .....	132
5.2.4	Queensland Ambulance Service (QAS) .....	132
5.2.5	Fire and Police Services .....	133
5.2.6	Education and Training Facilities.....	133
5.2.7	Community Facilities and Services.....	133
5.2.8	Community Groups, Clubs and Societies.....	136
<b>5.3</b>	<b>LNG Facility .....</b>	<b>138</b>
5.3.1	Community Medical and Health Facilities.....	138
5.3.2	Emergency Services.....	143
5.3.3	Education and Training Facilities.....	145
5.3.4	Community Facilities and Services.....	145
5.3.5	Community Groups, Clubs and Societies.....	152
<b>6</b>	<b>Indigenous .....</b>	<b>153</b>
<b>6.1</b>	<b>Introduction .....</b>	<b>153</b>
<b>6.2</b>	<b>Baseline.....</b>	<b>153</b>
6.2.1	CSG Field South.....	153
6.2.2	CSG Field North.....	165
6.2.3	LNG Facility Site .....	175
6.2.4	Summary.....	184
<b>6.3</b>	<b>Impacts.....</b>	<b>185</b>
<b>6.4</b>	<b>Mitigation Measures.....</b>	<b>186</b>
6.4.1	Pre-Construction.....	187
6.4.2	Construction and Operations .....	187
<b>7</b>	<b>Accommodation .....</b>	<b>188</b>
<b>7.1</b>	<b>Introduction .....</b>	<b>188</b>
<b>7.2</b>	<b>Methodology .....</b>	<b>188</b>
<b>7.3</b>	<b>Study Area Summaries.....</b>	<b>190</b>
7.3.1	CSG Field .....	190
7.3.2	Gas Transmission Pipeline.....	192
7.3.3	LNG Facility .....	193

## Table of Contents

<b>7.4</b>	<b>Conclusions and Key Findings</b> .....	<b>204</b>
7.4.1	CSG Field .....	204
7.4.2	Gas Transmission Pipeline .....	205
7.4.3	LNG Facility .....	205
7.4.4	Cumulative Impacts of Other Projects .....	207
7.4.5	Accommodation Strategy and Recommendations .....	208
<b>8</b>	<b>Project Workforce Requirements</b> .....	<b>213</b>
<b>8.1</b>	<b>Assumptions</b> .....	<b>213</b>
<b>8.2</b>	<b>CSG field</b> .....	<b>214</b>
8.2.1	Construction Workforce .....	215
8.2.2	Operational Workforce .....	216
8.2.3	CSG field Totals – Construction and Operations .....	219
<b>8.3</b>	<b>Gas Transmission Pipeline</b> .....	<b>220</b>
8.3.1	Construction Workforce .....	220
8.3.2	Operational Workforce .....	222
<b>8.4</b>	<b>LNG Facility</b> .....	<b>222</b>
8.4.1	Construction Workforce .....	223
8.4.2	Operational Workforce .....	229
<b>9</b>	<b>Potential Impacts and Mitigation Measures</b> .....	<b>231</b>
<b>9.1</b>	<b>CSG Field</b> .....	<b>231</b>
9.1.1	General Fields .....	231
9.1.2	Potential Impact on Demographic Profile .....	232
9.1.3	Potential Impact on Population and Employment .....	234
9.1.4	Additional Potential Impacts on Indigenous People .....	235
9.1.5	Potential Impact on Income and Cost of Living .....	236
9.1.6	Potential Impact on Housing and Accommodation .....	236
9.1.7	Potential Impact on Health .....	236
9.1.8	Potential Impact on Education and Training .....	237
9.1.9	Potential Impact on Emergency Services .....	238
9.1.10	Potential Impact on Community Facilities and Services .....	239
9.1.11	Potential Impact on Community Values, Lifestyle .....	239
9.1.12	Summary .....	239
9.1.13	RISQUE Assessment Impacts and Mitigation .....	245

## Table of Contents

9.1.14	Conclusions .....	263
<b>9.2</b>	<b>Gas transmission pipeline .....</b>	<b>275</b>
9.2.1	General Social Assessment.....	275
9.2.2	Potential Impact on Demographic Profile .....	276
9.2.3	Additional Potential Impacts on Indigenous People .....	276
9.2.4	Potential Impact on Employment.....	276
9.2.5	Potential Impact on Income and Affordability .....	277
9.2.6	Potential Impact on Housing and Accommodation.....	277
9.2.7	Potential Impact on Health.....	277
9.2.8	Potential Impact on Education and Training.....	277
9.2.9	Potential Impact on Emergency Services.....	277
9.2.10	Potential Impact on Community Facilities and Services.....	278
9.2.11	Potential Impact on Community Values, Lifestyle .....	278
9.2.12	Summary.....	278
9.2.13	Rail Option .....	281
9.2.14	RISQUE Assessment Impacts and Mitigation .....	281
9.2.15	Conclusions .....	290
<b>9.3</b>	<b>LNG Facility .....</b>	<b>295</b>
9.3.1	Potential Impact on Demographic Profile .....	295
9.3.2	Additional Potential Impacts on Indigenous People .....	297
9.3.3	Potential Impact on Employment.....	297
9.3.4	Potential Impact Income and Affordability .....	298
9.3.5	Potential Impact Housing and Accommodation.....	298
9.3.6	Potential Impact on Health.....	299
9.3.7	Potential Impact on Education and Training.....	300
9.3.8	Potential Impact on Emergency Services.....	300
9.3.9	Potential Impact on Community Facilities and Services.....	301
9.3.10	Potential Impact Community Values and Lifestyle .....	301
9.3.11	Potential Impact on Commercial and Recreational Fisheries.....	303
9.3.12	Summary.....	303
9.3.13	Barge Options.....	308
9.3.14	RISQUE Assessment Impacts and Mitigation .....	309
9.3.15	Conclusions .....	326

## Table of Contents

<b>10</b>	<b>Cumulative Impacts .....</b>	<b>336</b>
10.1	Introduction .....	336
10.2	Methodology .....	336
10.3	CSG Field .....	337
10.4	Gas Transmission Pipeline .....	339
10.5	LNG Facility .....	339
<b>11</b>	<b>References .....</b>	<b>345</b>



## Table of Contents

### Tables

Table 1-1	GLNG CSG fields and Area by Hectares.....	7
Table 1-2	CSG Field Local Government Areas.....	11
Table 1-3	Gas Transmission Pipeline Local Government Areas .....	13
Table 1-4	LNG Facility Local Government Areas.....	14
Table 1-5	Key Stakeholders .....	14
Table 2-1	Accommodation assumptions .....	19
Table 2-2	Percentage of Workforce Sourced Locally and Imported for Spatial and Temporal Project Boundaries .....	20
Table 2-3	Social Values and Management of Impacts.....	24
Table 3-1	Project Study Areas Relation to Statistical Division and Statistical Local Areas .....	28
Table 3-2	Potentially Affected Communities and their Statistical Local Area .....	29
Table 4-1	General Demographics Profile of LGAs – CSG field .....	37
Table 4-2	Historic Population Growth within the CSG Field.....	39
Table 4-3	CSG Field General Employment Characteristics.....	42
Table 4-4	CSG Field Employment by Industry 2006 – Part 1 .....	43
Table 4-5	CSG Field Employment by Industry 2006 – Part 2 .....	44
Table 4-6	CSG Field Employment by Industry 2006 – Part 3 .....	45
Table 4-7	CSG field Median Weekly Income .....	46
Table 4-8	CSG field Education Levels of Persons 15+ .....	47
Table 4-9	Population of Key Towns within the CSG field.....	48
Table 4-10	Estimated Resident Population by Local Government Area, Roma Regional Council and Taroom Shire Council, 2002, 2006, and 2007 (a) .....	49
Table 4-11	Roma Town Population and Average Annual Population Change (%) Compared to Queensland.....	50
Table 4-12	Roma Town and Queensland Population Projections 2006 - 2026 <sup>1</sup> .....	50
Table 4-13	Family Structure – CSG Field (Roma, Fairview and Arcadia Valley).....	53
Table 4-14	Roma Regional Council and Taroom Shire Council (old LGA) Population Turnover, 2006 .....	54
Table 4-15	Estimated resident population by major urban centre/locality, Roma Regional Council and Taroom Shire Council, 2007 .....	55
Table 4-16	Estimated resident population by age groups (years) by local government area, Roma Regional Council, 30 June 2007 .....	57
Table 4-17	Population by Age Group, Roma .....	59
Table 4-18	Number of Persons by Birthplace (a), Roma Regional Council, 2006.....	60
Table 4-19	Overseas-born Persons by Proficiency in Spoken English (a), Roma Regional Council, 2006 ....	61

## Table of Contents

Table 4-20	One-parent Families and Total Families (a), Roma Regional Council, 2006 .....	62
Table 4-21	Roma Regional Council General Employment Characteristics .....	63
Table 4-22	Roma Regional Council and Taroom Shire Council Median Weekly Income.....	63
Table 4-23	Number of Unemployed Persons, Persons in the Labour Force and Unemployment Rate (a), Roma Regional Council and Taroom Shire Council, 2006 .....	64
Table 4-24	School Students by Local Government Area (a), Roma Regional Council, 12 months ending 31 December 2006.....	65
Table 4-25	Roma Regional Council Education Levels of Persons 15+ .....	67
Table 4-26	Post-School Qualifications by Level of Education (a), Roma Regional Council, 2006.....	68
Table 4-27	Population of Key Towns within the CSG field .....	71
Table 4-28	Estimated Resident Population by Local Government Area, Banana Shire Council and Central Highlands Regional Council, 2002, 2006, and 2007 (a) .....	72
Table 4-29	Banana Shire Council, Central Highlands Regional Shire and Queensland Population Projections 2006 - 2026 <sup>1</sup> .....	73
Table 4-30	General Demographics Profile of LGAs.....	73
Table 4-31	Estimated Resident Population by Age Groups (Years) by Local Government Area, Banana Shire Council and Central Highlands Regional Council, 30 June 2007 .....	74
Table 4-32	Family Composition Along Gas Transmission Pipeline Route .....	75
Table 4-33	Gas transmission pipeline General Employment Characteristics.....	76
Table 4-34	Gas Transmission Pipeline Employment by Industry 2006 – Part 1.....	77
Table 4-35	Gas Transmission Pipeline Employment by Industry 2006 – Part 2.....	77
Table 4-36	Gas Transmission Pipeline Employment by Industry 2006 – Part 3.....	78
Table 4-37	Gas transmission pipeline Employment By Occupation 2006 .....	79
Table 4-38	Gas transmission pipeline Median Weekly Income .....	80
Table 4-39	Gas transmission pipeline Education Levels Of Persons 15+ .....	81
Table 4-40	Projected Population by Five-Year Age Group, Fitzroy SD, 2006 to 2031 (medium series).....	84
Table 4-41	Gladstone, Calliope and Queensland Population and Average Annual Population Change (%)...86	
Table 4-42	Gladstone, Calliope and Queensland Population Projections 2006 to 2026 <sup>1</sup> .....	86
Table 4-43	Family Structure - Gladstone and Calliope Shire.....	91
Table 4-44	Gladstone/Calliope Population Turnover, 2006.....	91
Table 4-45	Estimated Resident Population by Local Government Area, Gladstone Regional Council, 2002, 2006, and 2007 (a).....	92
Table 4-46	Estimated Resident Population by Major Urban Centre/Locality, Gladstone Regional Council, 2007 .....	94
Table 4-47	Estimated resident population by age groups (years) by local government area, Gladstone Regional Council, 30 June 2007 .....	95
Table 4-48	Number of Persons by Birthplace (a), Gladstone Regional Council, 2006.....	97

## Table of Contents

Table 4-49	Overseas-born Persons by Proficiency in Spoken English (a), Gladstone Regional Council, 2006 .....	98
Table 4-50	School Students by Local Government Area (a), Gladstone Regional Council, 12 months ending 31 December 2006.....	99
Table 4-51	Schools in the Gladstone area .....	99
Table 4-52	Post-School qualifications by level of education (a), Gladstone Regional Council, 2006.....	100
Table 4-53	Number of Unemployed Persons, Persons in the Labour Force and Unemployment Rate (a), Gladstone Regional Council, 2006.....	101
Table 4-54	Gladstone Area General Employment Characteristics .....	103
Table 4-55	Gladstone Area Employment Profile .....	104
Table 4-56	Gladstone Area Employment by Industry 2006 .....	106
Table 4-57	LNG Facility Employment By Occupation 2006 .....	108
Table 4-58	LNG Facility Median Weekly Income .....	109
Table 5-1	Medical and Health Facilities Field.....	115
Table 5-2	Flying Doctors Service Contact Details for Study Area.....	120
Table 5-3	Further Education Institutions .....	122
Table 5-4	CSG field - Community Facilities .....	124
Table 5-5	CSG field - Shopping Facilities .....	125
Table 5-6	CSG field - Cultural Facilities .....	125
Table 5-7	CSG field - Media.....	127
Table 5-8	CSG field - Representative associations and organisations.....	127
Table 5-9	Medical and Health Facilities Gas Transmission Pipeline .....	129
Table 5-10	Flying Doctors Service Contact Details for Study Area.....	132
Table 5-11	Further Education Institutions - Gas Transmission Pipeline .....	133
Table 5-12	Gas Transmission Pipeline - Community Facility.....	134
Table 5-13	Gas Transmission Pipeline - Shopping Facilities.....	135
Table 5-14	Gas Transmission Pipeline - Cultural Facilities.....	135
Table 5-15	Gas Transmission Pipeline - Media .....	136
Table 5-16	Representative Associations & Organisations .....	136
Table 5-17	Medical and Health Facilities - LNG Facility .....	138
Table 5-18	Gladstone and Rockhampton Hospital Snapshot December Quarter 2008 .....	142
Table 5-19	Emergency Department Attendances Gladstone and Rockhampton Hospitals December 2007 and 2008 .....	143
Table 5-20	Flying Doctors Service Contact Details for Study Area.....	144
Table 5-21	Further Education Institutions .....	145

## Table of Contents

Table 5-22	LNG Facility - Community Facilities .....	147
Table 5-23	LNG Facility - Shopping Facilities .....	148
Table 5-24	Cultural Facilities in the Study Area .....	150
Table 5-25	LNG Facility Media .....	151
Table 6-1	CSG Fields South - Aggregate Population .....	154
Table 6-2	Key labour force parameters for Indigenous and Non-Indigenous .....	159
Table 6-3	CSG Fields North - Aggregate Population .....	165
Table 6-4	Woorabinda population .....	165
Table 6-5	Key labour force parameters for Indigenous and Non-Indigenous .....	169
Table 6-6	Community Development Employment Program for Woorabinda .....	170
Table 6-7	CSG Field North - Indigenous Housing tenure (excluding Woorabinda) .....	173
Table 6-8	LNG Facility - Aggregate Population .....	176
Table 6-9	Key labour force parameters for Indigenous and Non-Indigenous .....	179
Table 6-10	Comparison of Indigenous Indicators across the Project Area .....	185
Table 6-11	Impacts Matrix for Indigenous Study Areas .....	185
Table 7-1	Accommodation assumptions .....	189
Table 7-2	Local Government relevant to project .....	190
Table 7-3	Population Centres in the CSG Field .....	191
Table 7-4	Estimated resident population by major urban centre/locality, Gladstone Regional Council, 2007 .....	193
Table 7-5	Higher Density Dwellings Proportions (2001–2006 Comparison) .....	195
Table 7-6	Caravans/Cabins Dwellings Proportions (2001–2006 Comparison) .....	195
Table 7-7	Estimated Dwelling Occupancy Rates (1996, 2001, 2006) .....	196
Table 7-8	Dwelling Ownership (2001 and 2006) .....	199
Table 7-9	Median House and Unit Prices (2007 & 2008) .....	201
Table 7-10	Median Rental Data (2003–2008) .....	203
Table 7-11	Residential Housing and Land Requirements for 2021 Generated by Operational Workforce ....	207
Table 8-1	Percentage of Workforce Sourced Locally and Imported for Spatial and Temporal Project Boundaries .....	213
Table 8-2	Estimated Total Operations Workforce by Area and Year .....	219
Table 8-3	Total CSG Field Study Area Workforce Numbers 2010 to 2034 .....	220
Table 8-4	Construction Workforce Table for LNG Facility .....	224
Table 8-5	Breakdown of Local & Imported Construction Workforce at Peak Periods - LNG facility .....	226
Table 8-6	LNG Facility Direct and Flow-on Construction Employment (six monthly averages) up to June 2022 .....	226

## Table of Contents

Table 8-7	Anticipated Population Increase in Gladstone Regional Council from Imported Flow-on Workforce during Construction up to June 2022 .....	227
Table 8-8	Bridge and Road Construction Workforce and Timeline.....	229
Table 8-9	LNG Facility Operational Workforce.....	229
Table 8-10	LNG Facility Direct and Flow-on Operations Employment for each Train .....	230
Table 8-11	Anticipated Population Increase in Gladstone Regional Council from Imported Operations and Flow-on Workforces for each Train .....	230
Table 9-1	Selected Medians and Averages for Roma .....	233
Table 9-2	Summary of Potential Social Impacts for the CSG Field .....	242
Table 9-3	CSG field Social Impacts RISQUE Assessment.....	245
Table 9-4	RISQUE Assessment Summary for Potential Social Impacts for the CSG Field .....	266
Table 9-5	Summary of Potential Impacts for the Gas Transmission Pipeline.....	279
Table 9-6	Gas Transmission Pipeline Potential Social Impacts RISQUE Assessment .....	282
Table 9-7	RISQUE Assessment Summary for Potential Social Impacts for the Gas Transmission Pipeline .....	291
Table 9-8	Summary of Potential Social Impacts for the LNG Facility .....	304
Table 9-9	LNG Facility Potential Social Impacts RISQUE Assessment .....	310
Table 9-10	RISQUE Assessment Summary for Social Impacts for the LNG Facility.....	328

### Figures

Figure 2-1	Harmonised Framework for Social Impact Assessment .....	18
Figure 2-2	Local to Imported workers Workforce for Construction and Operations in all Study Areas.....	21
Figure 4-1	Projected Population Annual Total, South West SD, 2006 to 2031 (medium series).....	40
Figure 4-2	Projected Population by Five-Year Group, South West SD, 2006 to 2031 (medium series) by Five-Year Interval .....	41
Figure 4-3	Roma Annual Population Growth.....	51
Figure 4-4	Annual Population Changes for Roma 1997 - 2007 .....	52
Figure 4-5	Population by age group and sex, Roma Regional Council and Queensland, June 2007 .....	58
Figure 4-6	Age Distribution, Roma, 2006 and 2026 .....	59
Figure 4-7	Project Population by Five-Year Age Group, Fitzroy SD, 2006 to 2031 (medium series) by Five-Year Intervals .....	85
Figure 4-8	Calliope Shire Annual Population Growth.....	87
Figure 4-9	Gladstone City Annual Population Growth.....	88
Figure 4-10	Queensland Annual Population Growth.....	88
Figure 4-11	Annual Population Changes for Calliope 1997 - 2007 .....	89

## Table of Contents

Figure 4-12	Annual Population Changes for Gladstone 1997 – 2007.....	89
Figure 4-13	Annual Population Changes for Queensland 1997 – 2007.....	90
Figure 4-14	Population by age group and sex, Gladstone Regional Council and Queensland, June 2007.....	96
Figure 5-1	Patient Activity of Roma Hospital, Surat Hospital, Injune Hospital and Wallumbilla Hospital .....	118
Figure 5-2	Patient Activity of Biloela Hospital, Moura Hospital, Springsure Hospital and Theodore Hospital .....	131
Figure 5-3	Patient Admittance for Gladstone and Rockhampton Hospitals 1993/1994 – 2004/2005.....	140
Figure 6-1	Project Area with Indigenous Areas defined.....	155
Figure 6-2	CSG Field South - Population Age Profile .....	156
Figure 6-3	CSG Field South - Indigenous Median Incomes.....	157
Figure 6-4	CSG Field South - Gross Weekly Household Income .....	157
Figure 6-5	CSG Field South - Industry of Employment.....	158
Figure 6-6	CSG Field South - Occupational Category .....	160
Figure 6-7	CSG Field South - Indigenous Housing Tenure .....	161
Figure 6-8	CSG Field South - Non-Indigenous Housing Tenure.....	161
Figure 6-9	CSG Field South - Housing Rental mode .....	162
Figure 6-10	CSG Field South - Highest Year of School completed .....	163
Figure 6-11	CSG Field North - Population Age Profile.....	166
Figure 6-12	CSG Field North - Indigenous Median Incomes .....	167
Figure 6-13	CSG field North - Gross Weekly Household Income .....	168
Figure 6-14	CSG Field North - Industry of Employment.....	171
Figure 6-15	CSG Field North - Occupational Category.....	172
Figure 6-16	CSG Field North - Non-Indigenous Housing Tenure .....	173
Figure 6-17	CSG Field North - Highest year of school completed .....	174
Figure 6-18	LNG Facility - Population Age Profile.....	176
Figure 6-19	LNG Facility - Indigenous Median Incomes .....	177
Figure 6-20	LNG Facility - Gross Weekly Household Income.....	178
Figure 6-21	LNG Facility - Industry of Employment .....	180
Figure 6-22	LNG Facility - Occupational Category.....	181
Figure 6-23	LNG Facility - Indigenous Housing Tenure .....	182
Figure 6-24	LNG Facility - Non-Indigenous Housing Tenure .....	182
Figure 6-25	LNG Facility - Housing Rental mode.....	183
Figure 6-26	LNG Facility - Highest Year of School Completed.....	184
Figure 7-1	Dwelling Tenure (2001).....	198

## Table of Contents

Figure 7-2	Dwelling Tenure (2006).....	198
Figure 7-3	Comparative Median Land Prices (Dec 2002 – Dec 2007) .....	202
Figure 8-1	Local to Imported Workers Workforce for Construction and Operations in all Study Areas .....	214
Figure 8-2	Estimated Roma Centre Operations Workforce by Percentage to 2014 .....	218
Figure 8-3	Estimated Roma, Fairview and Arcadia Valley CSG field Operations Workforces by Percentage to 2014 .....	219
Figure 8-4	Pipeline Construction Workforce Numbers by Skill Level Required .....	221
Figure 8-5	LNG Facility Construction Workforce .....	223
Figure 9-1	Components of Population Change .....	297
Figure 10-1	Cumulative Project Workforce in Relation to GLNG .....	341

### Appendices

A	Additional Census Limitations
B	Facilities and Services
C	Accommodation Technical Report
D	Local and Imported Worker Models

## Glossary, Acronyms and Abbreviations

Glossary, Acronyms and Abbreviations	
457 Visa	Temporary Business (Long Stay) - Standard Business Sponsorship (Subclass 457)
ABC	Australian Broadcast Corporation
ABS	Australian Bureau of Statistics
ASGC	Australian Standard Geographical Classifications
CAF	Construction Accommodation Facility (Curtis Island)
CD	Census Collection District
CQSS2	Central Queensland Strategy for Sustainability 2
CSG	Coal Seam Gas
DETA	Department of Education, Training and the Arts
DIDO	Drive-in drive-out
DIP	Department of Infrastructure and Planning
DJSI	Dow Jones Sustainability Index
EIS	Environmental Impact Statement
EMP	Environmental Management Plan
FIFO	Fly-in fly-out
GP	General practitioners
GAPDL	Gladstone Area Promotion and Development Limited
GGMIM	Gladstone Growth Management Initiatives Model
GLNG	Gladstone LNG Project
GRI	Global Reporting Initiative
IAIA	International Association for Impact Assessment
IAP2	International Association of Public Participation
IFC	International Finance Corporation
IPIECA	International Petroleum Industry Environmental Conservation Association
JTA	JTA Australia
LGA	Local Government Area
LNG	Liquefied Natural Gas
PIFU	Planning Information and Forecasting Unit
PUR1P	Place of Usual Residence One Year Ago
PUR5P	Place of Usual Residence Five Years Ago
QAS	Queensland Ambulance Service
QH	Queensland Health
RFDS	Royal Flying Doctors Service
RoW	Right of Way
S/T	State / Territory
SD	Statistical Division
SES	State Emergency Services
SIA	Social Impact Assessment
SLA	Statistical Local Area
sq km	per square kilometre
SSD	Statistical Subdivision
TAF/TAFs	Temporary Accommodation Facility / Temporary Accommodation Facilities
ToR	Terms of Reference



## Executive Summary

### ES Executive Summary

The social impact assessment (SIA) for the Gladstone Liquefied Natural Gas (GLNG) project was conducted over three distinct study areas:

- Coal seam gas (CSG) fields;
- Gas transmission pipeline route; and
- Liquefied natural gas (LNG) facility.

The SIA assessed the project in terms of the potential positive and negative impacts for landholders and the general public/community. An individual section within the social impact assessment (SIA) also examined the potential project impacts on the Indigenous population (see Section 6).

### ES 1 CSG Field

The CSG fields centre on Roma in the south and up to Emerald in the north. The following fields make up the CSG field.

#### GLNG CSG fields and Area by Hectares

Name of Field	Size (ha)
Roma	1,397,087
Fairview	116,062
Arcadia Valley	147,439
Denison	1,013,628
Mahalo	62,643
Comet	218,203
Scotia	75,350
Eastern Surat Basin	36,239
Roma Other	131,746
Non-Santos Operated CSG fields	727,764

The environmental impact statement (EIS) and this SIA assessed the following three CSG fields as the reasonably foreseeable development (RFD) fields:

- Roma CSG field;
- Arcadia Valley CSG field; and
- Fairview CSG field.

The other fields will be assessed individually as they are identified as ready to develop. There is also a field office for Roma town that will operate throughout the life of the project.

The majority of potential social impacts in the CSG field will be experienced by individual landholders with associated project infrastructure situated on their property. Santos has been negotiating with landholders in accordance with Queensland regulations and will continue to do so once project infrastructure locations are

## Executive Summary

determined. Part of the location process is directly associated with landholder negotiations to determine preferred locations and mitigation measures. This is an ongoing process that is anticipated to occur throughout the life of the project as new wells are located and drilled, and old wells are decommissioned.

Santos intends to house its construction and operations workforces in temporary accommodation facilities (TAFs) throughout the CSG field. These TAFs will be established within reasonable driving distance of active areas in order to situate workers as close to their work areas as possible. TAF locations will be determined through the landholder negotiation process as well unless situated on property owned by Santos. All CSG field workers will be housed in the TAFs for their work rotation. This will reduce road traffic and disturbances to the general public. Roma airport will likely be the central transportation point for workers entering and exiting the field area. Santos will establish an operations office in Roma ramping up to approximately 50 staff after the first five years of operations. These staff will have an impact on Roma since they will be permanently based in Roma. Most of the potential social impacts are anticipated to be positive for the area including:

- Increased economic and employment opportunity;
- Economic diversification;
- Population diversification; and
- Increased ability to attract and retain professionals.

The potential project impacts will remain consistent through construction and operations because these two phases occur simultaneously throughout the life of the project. Santos will implement policies for local hiring and procurement of goods whenever possible to maximise local benefits.

## ES 2 Gas Transmission Pipeline

The gas transmission pipeline will deliver CSG from the gas fields to the LNG facility in Gladstone. The route runs roughly north from the Fairview fields up to around the 25 km south of the Dawson Highway before turning east-north-east towards Gladstone. Approximately 50 km by road before Gladstone, the route turns north to bypass the city. It then turns to the coast and eventually crosses to Liard point on Curtis Island and over to the LNG facility site. There is also a potential for the pipeline to continue further north while by-passing Gladstone to the north of Mount Larcom before proceeding east to the coast.

Most of the route traverses through rural areas of Queensland before reaching the more urban areas in Gladstone Regional Council. The majority of potential social impacts occur to individual landholders along the right of way (RoW) for the pipeline during the construction phase of the project. Santos is addressing these potential impacts as part of the landholder negotiations process. Santos' proposed workforce housing demand cannot be supplied locally. As a result, the potential social impacts on the rest of the population are significantly reduced by Santos housing the entire construction workforce in a system of TAFs. Santos will establish three to four main TAFs (up to 600 people per facility) and two to three satellite TAFs (up to 400 people per facility) to house the construction workforce. These TAFs will be close to or adjacent to the RoW to minimise travel distances as well as interaction with the local population.

There is a potential for negative social interaction despite Santos' intentions to minimise negative social impacts. Santos will implement a zero tolerance policy for anti-social behaviour and negative social interaction in order to discourage such behaviour from Santos employees and contractors while on their work rotation. There is also the potential for positive social interaction and nominal economic opportunities from workers purchasing goods and services locally. This is likely to be low because the TAFs will be fully self sufficient

## Executive Summary

including catering and entertainment services. As a result, the potential social interaction from the project is anticipated to be low.

Traffic and temporary disruptions to normal routines are expected to be the most likely potential social impacts associated with the project. Alternative options to reduce road traffic are being explored including transporting the majority of the pipeline components from Gladstone to Moura by rail. Santos will also implement internal safe driver training programs throughout the route for all employees and contractors. Santos will also work with local road safe programs to increase traffic awareness during the construction phase of the project. Disruptions to the normal flow of traffic are anticipated, and mitigated using standard construction traffic controls (see Section 4 Traffic and Transport of the EIS).

During operations, the workforce is anticipated to be less than 20, and will not have a noticeable effect on the community.

### ES 3 LNG Facility

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

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

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

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

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

Key potential social impacts include:

- Change to the demographic profile of the Gladstone community;
- Employment opportunities and increased income benefits;

## Executive Summary

- Changes to availability and affordability of housing (rental and ownership);
- Impacts to health and education services; and
- Impacts to community values and lifestyle.

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

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

## 1.1 Definitions

**Community** – the general public or population of an area. A community is generally a physical area like a town or city, although it can also include an area that has the same composition but without the physical structures (proverbial community). Roma is a physical community. Arcadia Valley is a proverbial community. In consultation, the program would target the community (general public) in order to identify those who have an interest in the project, or who are directly or indirectly affected by the project (stakeholders). ‘Community’ can also be used to describe a collective of individuals, who do not necessarily hold any connection other than a shared interest or affiliation in a certain event, activity, lifestyle or workforce, like the farming community.

**Directly Impacted / Effected** – an individual, family, or organisation that will directly experience impacts derived from the project, either positive or negative.

**Interested Parties** – an individual, family, or organisation that may not be directly impacted by the project but is still interested. Many of these people have self identified in the consultation process and are included in project information releases as requested.

**Key stakeholders** – An individual or organisation with specific knowledge of a key area or service relevant to the project. Examples could be Gladstone Regional Council, Roma Neighbourhood Centre or AgForce.

**Landholder** – Individual or individuals named on the property deed or representing those named on the deed, as well as family members of those named on the deed who are living with them on the property.

**Local resident** – As part of Santos’ preference to utilise local skills and services, Santos will work with community groups and opinion leaders on a definition of local. This may include current location of residence, most frequent permanent residence over the past six months, or current registered address with government. The purpose of this is twofold: to address the preferred policy of hiring locals first when possible; and to attempt to limit an influx of people moving to the area in order to claim resident status when applying for positions with the project, if such migration is not preferred.

**Participation Rate** – The percentage of the population aged 15–64 who participate in the workforce and are considered employable at any time. Participation rate is calculated by dividing the total labour force by all persons aged between 15 and 64, as is expressed as a percentage.

**Pers. Comm.** – Refers to personal communications. When quoting a conversation, the source is cited in the form “Pers. Comm., O’Rourke, 2008” in parentheses. Where the interviewee asked not to be named in the report, or for that specific point not to be attributed to them, the source is cited as “Pers. Comm., 2008” in parentheses, in order that their identity be protected in accordance with their request.

**Preferred hiring hierarchy** – Santos’ preferred hiring hierarchy is as follows:

- Local;
- Regional;
- State;
- Australia; and
- International.

## Section 1

## Introduction

Due to the skill requirements and experience required to perform some positions during construction and operations, Santos is aware that not all skills will be accessible in the local area. It is Santos' policy to hire locally first, and Santos will follow this hierarchy when assessing applicants for positions in which they are qualified. Santos will consult with State and local government on appropriate definitions for these areas to attempt to minimise pre-emptive inflows of prospective workers to the local area in order to be considered local for employment opportunities. This has occurred in the past, and Santos takes the matter of reduced negative social impacts seriously.

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

**Stakeholder** – An individual or organisation with an interest in the project, or who is directly or indirectly affected by the project.

**Temporary Accommodation Facilities (TAFs)/Construction Accommodation Facility (CAF)** – This term encompasses temporary accommodation constructed for housing workers in self-contained facilities. These facilities will be produced in all three study areas to accommodate construction workers, and may be relocated as required throughout this phase, particularly in the CSG field and along the gas transmission pipeline route. The accommodation facility for Curtis Island will be referred to as the construction accommodation facility (CAF). The purpose of these facilities is to:

- Limit strain on local services;
- House workers in a central location;
- Minimise project footprint with accommodation scattered throughout the area;
- Reduce road traffic; and
- House workers closer to the construction sites.

During operations, only the CSG field will have temporary accommodation facilities as different areas of the field are developed and require workers accommodation. These are likely to be situated with construction accommodation facilities, but may require separate locations at certain periods in the field life. The size, location and duration of these facilities will be based on project requirements at the time, and may change throughout the project life. There are no plans for a permanent accommodation facility at this time, although the option could become more viable in the future, and Santos will consult with State and local government, as well as key stakeholders should the opportunity arise.

**Unemployment Rate** – This is the percentage of the total labour force not currently employed. In order to calculate the unemployment rate you need to know the total labour force and the number of persons employed. The unemployment rate is 100 (%) minus the percentage of persons employed.

## 1.2 Study Areas

The GLNG project was assessed as three separate study areas:

- Coal Seam Gas (CSG) field;
- Gas transmission pipeline; and
- Liquefied Natural Gas (LNG) Facility.

The assessment of social impacts (herein referred to as Social Impact Assessment or SIA) was undertaken on the basis of local government areas (LGAs) and statistical local areas (SLAs). There was significant overlap between the project areas and the local government areas/statistical local areas. In order to minimise overlap throughout the report, the baseline information in the overlapping areas were recorded in the study area most relevant. The impacts were assessed in the study areas where they occurred, therefore some potential impacts on LGAs are assessed for one or two of the study area components (e.g. Gladstone Regional Council is assessed for gas transmission pipeline and LNG facility impacts but the baseline data is in the LNG facility section).

### 1.2.1 Coal Seam Gas (CSG) Field

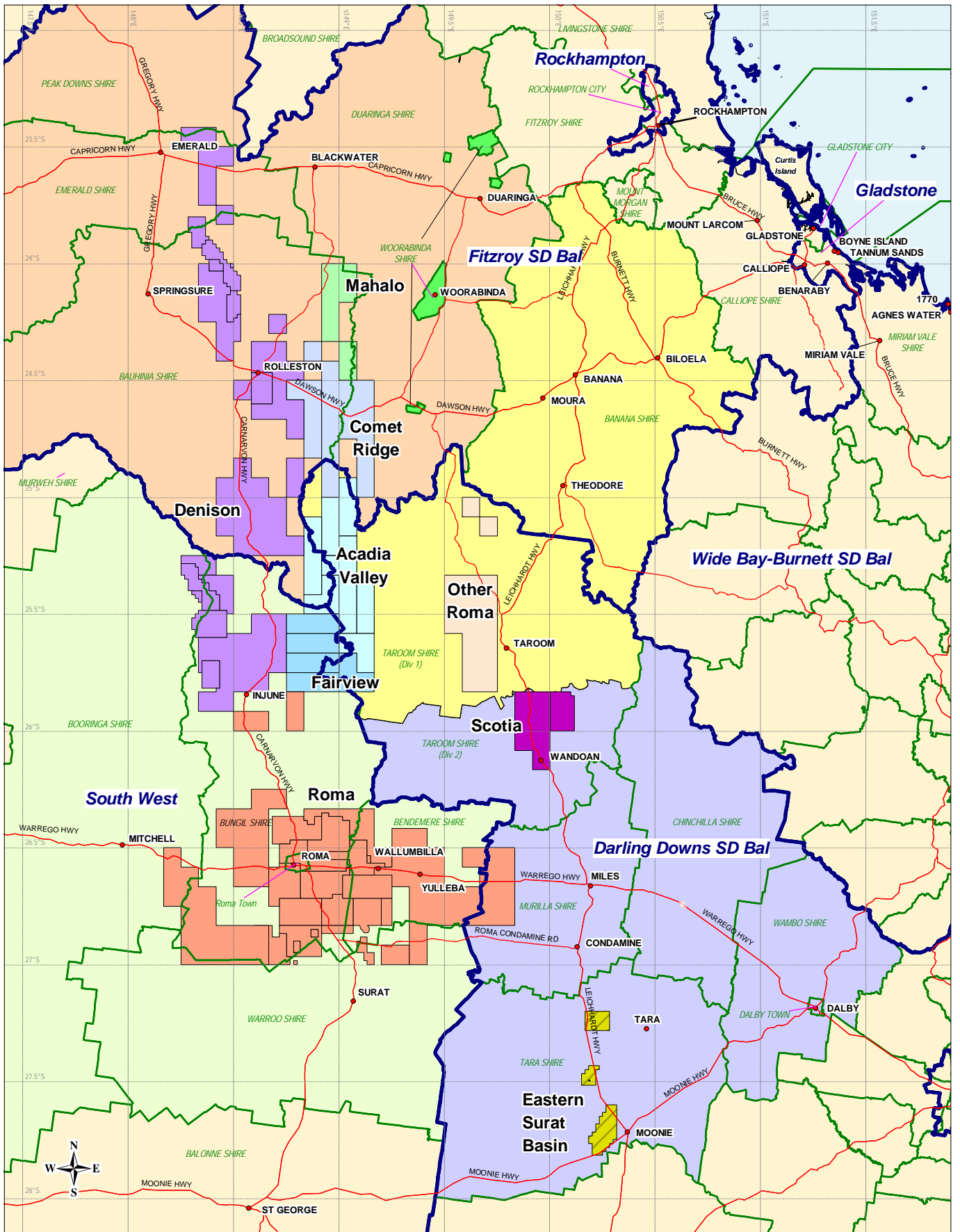
Due to the extent of the CSG field study area and the extended timeline for development, the Environmental Impact Statement (EIS) examined baseline parameters and potential impacts on two levels. The entire CSG field study area (covering an area over 22,000 km<sup>2</sup>; see Figure 1-1a) was examined at a high level to capture the general make-up and dynamics of the area. Following this, a more focussed baseline and impact assessment was conducted on the CSG fields scheduled for initial development (see yellow in Table 1-1).

**Table 1-1 GLNG CSG fields and Area by Hectares**

Name of Field	Size (ha)
Roma	1,397,087
Fairview	116,062
Arcadia Valley	147,439
Denison	1,013,628
Mahalo	62,643
Comet	218,203
Scotia	75,350
Eastern Surat Basin	36,239
Roma Other	131,746
Non-Santos Operated CSG fields	727,764

Note: Yellow denotes initial study areas





0 50 100km  
 Scale 1:2 500 000 (A4)

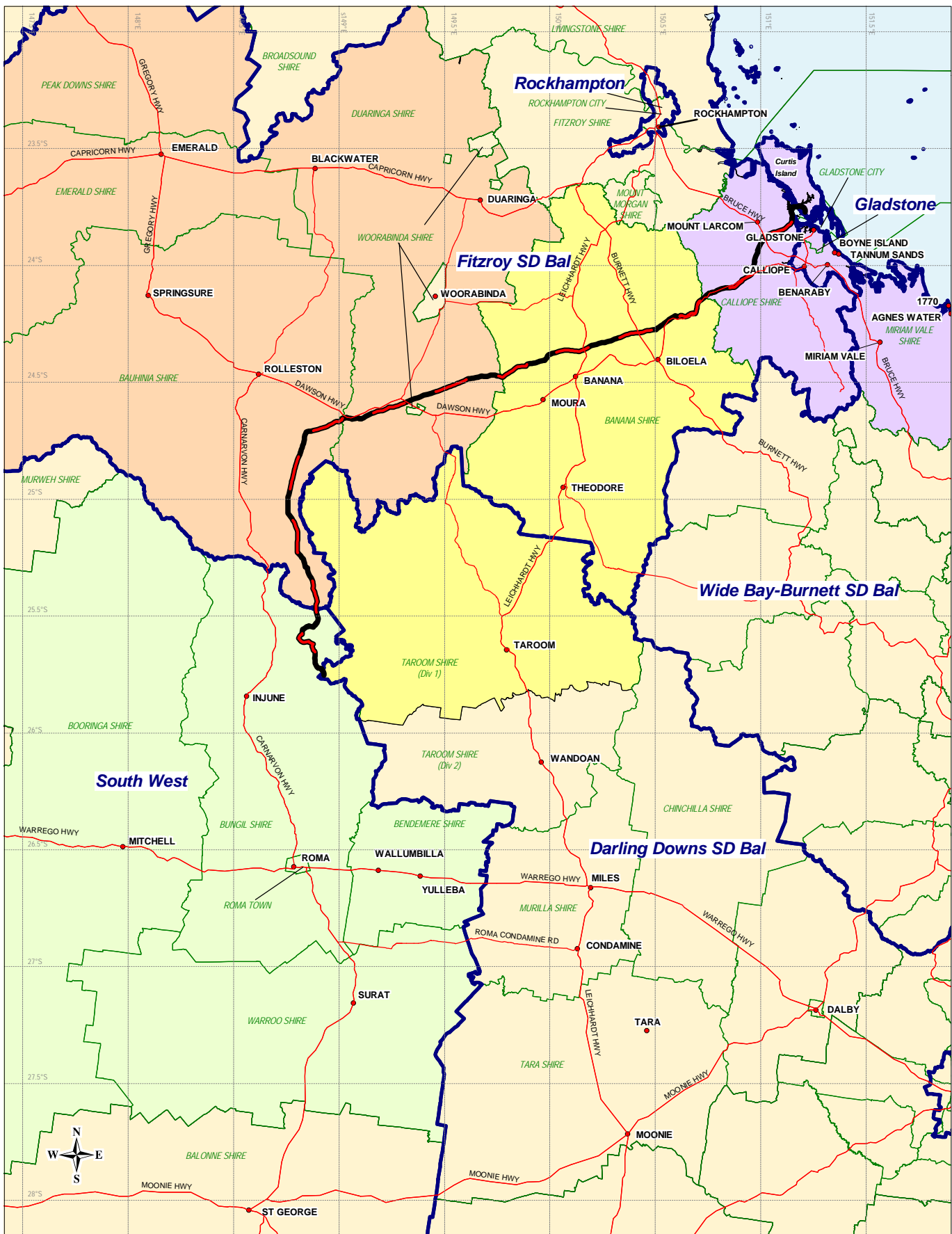
- Post March 2008 Dalby Regional Shire
- Post March 2008 Banana Shire
- Post March 2008 Central Highlands Regional Shire
- Post March 2008 Roma Regional Shire
- Statistical Sub Division Boundary
- Pre March 2008 Shire Boundary

Source: This map may contain data which is sourced and Copyright. Refer to Section 18.2 of the EIS for Ownership and Copyright.

Client   	Project <p style="text-align: center;"><b>GLADSTONE LNG PROJECT          SOCIAL AND COMMUNITY ASSESSMENT</b></p>	Title <p style="text-align: center;"><b>SIA STUDY AREAS          CSG FIELD</b></p>
Drawn: VH Job No: <b>4262 6220</b>	Approved: JB File No: 42626220-g-560.wor	Date: 11-02-2009 Figure: <b>1-1a</b>
		Rev:A A4

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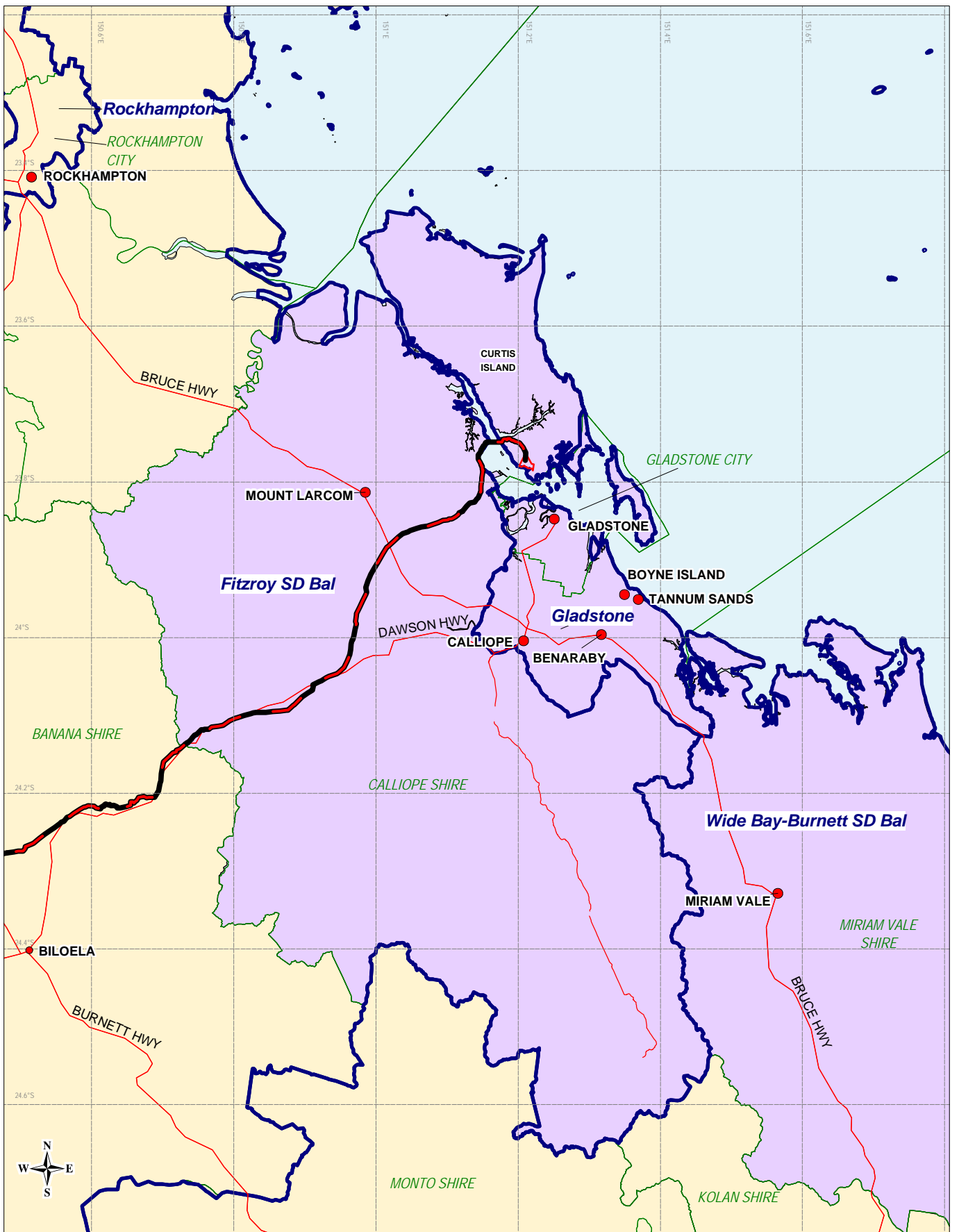
0 50 100km  
 Scale 1:2 500 000 (A4)

- Post March 2008 Calliope Shire
- Post March 2008 Banana Shire
- Post March 2008 Central Highlands Regional Shire
- Post March 2008 Roma Regional Shire
- Statistical Sub Division Boundary
- Pre March 2008 Shire Boundary
- Gas Transmission Pipeline

Source: This map may contain data which is sourced and Copyright. Refer to Section 18.2 of the EIS for Ownership and Copyright.

<p>Client</p>	<p>Project</p> <p style="text-align: center;"><b>GLADSTONE LNG PROJECT SOCIAL AND COMMUNITY ASSESSMENT</b></p>	<p>Title</p> <p style="text-align: center;"><b>SIA STUDY AREAS GAS TRANSMISSION PIPELINE</b></p>
<p>Drawn: VH</p> <p>Job No: <b>4262 6220</b></p>	<p>Approved: JB</p> <p>File No: 42626220-g-560.wor</p>	<p>Date: 11-02-2009</p> <p>Figure: <b>1-1b</b></p>
		<p>Rev:A</p> <p style="text-align: center;">A4</p>

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 Scale 1:750 000 (A4)  
 Datum: GDA 94

Post March 2008 Calliope Shire
  Statistical Sub Division Boundary  
 Pre March 2008 Shire Boundary  
 Gas Transmission Pipeline

Source: This map may contain data which is sourced and Copyright. Refer to Section 18.2 of the EIS for Ownership and Copyright.

Client  	Project <p style="text-align: center;"><b>GLADSTONE LNG PROJECT          SOCIAL AND COMMUNITY ASSESSMENT</b></p>	Title <p style="text-align: center;"><b>SIA STUDY AREAS          LNG FACILITY</b></p>
Drawn: VH      Approved: JB      Date: 11-02-2009		Figure: <b>1-1c</b>
Job No: <b>4262 6220</b> File No: 42626220-g-560.wor		
		Rev: A <b>A4</b>

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As the CSG fields of Roma, Fairview and Arcadia Valley are scheduled to be developed first, a more detailed assessment of the populations around them (see bold and blue in Table 1-1) was conducted. As other fields are scheduled for development, a more detailed analysis of the social environment for these areas will be conducted. The rationale behind focussing primarily on Roma Regional Council, and more specifically Roma town, is that:

- The majority of the three fields fall within Roma Regional Council or are accessible through Roma Regional Council;
- The majority of the population of Roma Regional Council is situated in Roma;
- Santos is currently using Roma as a regional hub;
- Roma is the central service hub for the region; and
- The populations in the neighbouring councils are not located immediately in the proposed fields (Roma, Fairview and Arcadia Valley) or do not have direct access to them via main roads.

**Table 1-2 CSG Field Local Government Areas**

Project Component	Statistical Division (SD)	New LGA (post-amalgamation)	Old LGA (pre-amalgamation)	Old LGA (not directly affected)	
CSG field	South West SD	<b>Roma Regional Council</b>	<b>Bendemere Shire Council</b>	-	
			<b>Booringa Shire Council</b>	-	
			<b>Bungil Shire Council</b>	-	
			<b>Warroo Shire Council</b>	-	
			<b>Roma Town Council</b>	-	
	Darling Downs SD	Dalby Regional Council	Murilla Shire Council	Wambo Shire Council	
			Tara Shire Council	Dalby Town Council	
			<b>Taroom (Division 2) Shire Council*</b>	Chinchilla Shire Council	
	Fitzroy SD	Central Highlands Regional Council	Banana Shire Council	<b>Taroom (Division 1) Shire Council*</b>	Banana Shire Council
			Bauhinia Shire Council	-	
			Duaringa Shire Council	-	
			Emerald Shire Council	-	
				Peak Downs Shire Council	-

\* Note: Taroom Shire Council is not split between division 1 and 2 in the old LGA data sets.

The use of the council information is for statistical purposes. From an impacts perspective, Roma Regional Council is the most accurate representation of the collective community within the study area. In this sense, Roma Regional Council is not just the local government area but also an entity itself, embodying the collective make up of the general area, including homesteads and communities.

The majority of potential effects will be on directly affected landholders with farms and homesteads throughout the area. Since Santos is negotiating directly with these landholders, and the details of these negotiations are

## Section 1

## Introduction

confidential, they are not included in the SIA. This is in accordance with Santos' landholder negotiation policy and is common practice in the industry. Information for the SIA is therefore collected from communities and the stakeholder engagement plan through various consultation events and methods. For the CSG field, the numbers are provided for negotiations taking place or agreements reached. For the gas transmission pipeline, information on directly affected landholders was collated by Santos and presented as numbers on deeds to avoid identification of individuals and family members. For the LNG Facility, no negotiations were conducted for the site, as it is Santos-owned property within the State Development Area, and is not inhabited by local residents. Individuals on the various islands near the site are not anticipated to be significantly directly affected by the project, based on the marine traffic and visual assessments conducted. Details of the stakeholder engagement plan can be found in the community consultation section of the EIS.

Roma will function as a central hub for CSG field development due to the availability of services; the existing infrastructure (including the airport and road links); the population size and stability; the proximity to the Roma, Fairview and Arcadia Valley fields (see Figure 1-1a); and the ability to build on the existing Santos operational base. For these reasons, the social assessment focuses on the Roma Regional Council and Roma town area. Other communities within the regional council area (like Injune) may also be used as satellite hubs at various stages of project development, and so are also included in the assessment.

The previous Taroom Shire Council information was also assessed, due to a portion of the Fairview and Arcadia Valley CSG fields being located within its boundary (see Figure 1-1a). The council amalgamations (see Section 3.3) saw the shire divided in two, with the northern section being absorbed into the Banana Shire Council, and the southern portion joining the Dalby Regional Council. The previous Taroom Shire will potentially see more development of the CSG field (including Fairview and Arcadia Valley fields) compared to other shires; however, the population is mainly focussed along the Leichhardt Highway, away from the initial development fields. The previous Taroom Shire was therefore assessed in more detail than the rest of the field areas, but not to the same level as Roma. Access to the Fairview and Arcadia Valley fields will be along the Carnarvon Highway, which also passes through Roma and Injune.

As seen in Figure 1-1a, Bauhinia and Duaringa Shires (former LGAs) include parts of Arcadia Valley field within their boundaries; however, the proportion of their total territory represented by the Arcadia Valley field is relatively small when compared to the size and population distribution of each shire, so these shires are not examined. Thus the Arcadia Valley population is included in the Roma Regional Council assessment due to the similarities and potential impacts that could occur to both areas. In addition, Santos has leases in the southeast end (top) of the valley which represent approximately one-third of the valley.

As seen in Figure 1-1a, the former Bauhinia and Duaringa shires include sections of Arcadia Valley within their boundaries; however, as these areas are relatively small when compared to the size and population distribution of the area, they are not examined for the CSG field baseline. They are, however, assessed in the gas transmission pipeline section (see Table 1-3). Additionally, Bungil Shire is not assessed in detail in the gas transmission pipeline section because it is already assessed in detail in the CSG field section (see Table 1-2) as part of the Roma Regional Council. All areas potentially impacted by the project were assessed in the impacts assessment section.

As other fields are scheduled for development, a more detailed analysis of the social environment for these areas will be conducted.

### 1.2.2 Gas Transmission Pipeline

For the purpose of the SIA, the term 'gas transmission pipeline' will refer to the gas transmission pipeline corridor. For a definition of the corridor, refer to the Project Description in Section 3 of the EIS. The pipeline

corridor and council boundaries are illustrated in Figure 1-1. Santos was still negotiating with individual landholders as of December 2008 with regard to direct impacts. As the nature of these negotiations is confidential, they are not included in this assessment; however, general community sentiments and general information collected by Santos land managers was included to better assess the project effects on the landholders. Santos has committed to ongoing communication with all stakeholders throughout all the project phases. Santos will continue to negotiate with affected landholders in accordance with Queensland legislation.

Gas transmission pipeline construction is not anticipated to have broad regional effects; therefore, the assessment presents high level data to better portray the rural nature of the area.

Table 1-3 outlines the areas included in the gas transmission pipeline assessment. To avoid duplication of information, the baseline assessment examined areas of the gas transmission pipeline that were not discussed in another component (see CSG field and LNG Facility in Sections 4 and 5). The areas in bold and blue in Table 1-3 are those assessed in the gas transmission pipeline baseline. All areas were considered in the impacts assessment.

**Table 1-3 Gas Transmission Pipeline Local Government Areas**

Project Component	Statistical Division (SD)	New LGA (post-amalgamation)	Old LGA (pre-amalgamation)	Old LGA (not directly affected)	
Pipeline	South West SD	Roma Regional Council	Bungil Shire Council	Bendemere Shire Council	
			-	Booringa Shire Council	
			-	Warroo Shire Council	
			-	Roma Town Council	
	Darling Downs SD	<b>Banana Shire Council</b>	Taroom (Division 1) Shire Council*	-	
	Fitzroy SD			<b>Banana Shire Council</b>	-
			<b>Central Highlands Regional Council</b>	<b>Bauhinia Shire Council</b>	Emerald Shire Council
				<b>Duaringa Shire Council</b>	Peak Downs Shire Council
			Gladstone Regional Council	Calliope Shire Council	Miriam Vale Shire Council
					Gladstone Calliope Aerodrome Board
					Gladstone City Council

\* Note: Taroom Shire Council is not split between division 1 and 2 in the old LGA data sets. Taroom Division 2 is now part of Dalby Regional Council.

The entire gas transmission pipeline corridor is examined when assessing impacts. Construction and operations are not anticipated to have broad regional effects; therefore, the baseline assessment presents high level data to better portray the rural nature of the area.

Woorabinda Shire has been assessed separately as part of the Indigenous sections.

## Section 1

## Introduction

### 1.2.3 LNG Facility

For the purposes of the SIA, the term LNG Facility refers to the proposed LNG Facility on Curtis Island and includes the LNG Facility infrastructure as well as the port facility. A potential bridge and connecting road between Friend Point on the mainland and Laird Point on Curtis Island is also considered.

The LNG Facility is located in the local government area (LGA) of Gladstone Regional Council, which formed after government amalgamations in March 2008 (see Table 1-4). The areas in bold and blue are assessed in the baseline and impacts assessment.

**Table 1-4 LNG Facility Local Government Areas**

Project Component	Statistical Division (SD)	New LGA (post – amalgamation)	Old LGA (pre – amalgamation)	Old LGA (not directly affected)
LNG Facility	Fitzroy SD	<b>Gladstone Regional Council</b>	<b>Gladstone City Council</b>	Miriam Vale Shire Council
			<b>Calliope Shire Council</b>	Gladstone Calliope Aerodrome Board

The LNG Facility section looks at the Gladstone Regional Council (with a more specific assessment of Gladstone City), as it is the principle centre and also the anticipated service and accommodation area for the project.

### 1.3 Stakeholders

A list of stakeholders and the methods of engagement can be found in the Consultation Section of the EIS and the Consultation technical report. Table 1-5 is a summary of the key stakeholder groups and individuals identified for the EIS through the consultation program. The SIA was influenced by consultation data collected throughout the project and made available to the SIA.

**Table 1-5 Key Stakeholders**

Key Stakeholder Category	Key Stakeholder Name
Elected representatives	Premier Deputy Premier Impacted Queensland Government Ministers Local federal members Local state members Local councillors
Government agencies	<ul style="list-style-type: none"> <li>• Queensland Government departments and agencies:</li> <li>• Environmental Protection Agency</li> </ul>
Government agencies	<ul style="list-style-type: none"> <li>• Queensland Transport</li> <li>• Department of Main Roads</li> <li>• Department of Employment and Industrial Relations</li> <li>• Department of Infrastructure and Planning</li> <li>• Department of Primary Industries and Fisheries</li> <li>• Department of Tourism, Regional Development and Industry</li> </ul>



Key Stakeholder Category	Key Stakeholder Name
	<ul style="list-style-type: none"> <li>• Department of Emergency Services</li> <li>• Queensland Fire and Rescue Service</li> <li>• Department of Natural Resources and Water</li> <li>• Queensland Police Service</li> <li>• Department of Local Government, Sport and Recreation</li> <li>• Department of Mines and Energy</li> <li>• Queensland Parks and Wildlife Service</li> <li>• Queensland Health</li> <li>• Queensland Rail</li> <li>• Department of Communities</li> <li>• Department of Education, Training and the Arts</li> <li>• Local governments (CEOs and senior officers):</li> <li>• Gladstone Regional Council</li> <li>• Banana Shire Council</li> <li>• Central Highlands Shire Council</li> <li>• Roma Regional Council</li> <li>• Dalby Regional Council</li> <li>• Federal government:</li> <li>• Department of the Environment, Water, Heritage and the Arts</li> <li>• Department of Climate Change</li> <li>• Regional agency forums</li> </ul>
Major infrastructure owners	Gladstone Ports Corporation Gladstone Area Water Board SunWater (Emerald) Airport and aerodrome proprietors
Other mining/exploration industry/ interests	X Strata Rio Tinto Origin/BG/Arrow Energy/Shell/Conoco Philips
Local industry and businesses  Local industry and businesses	AgForce Chambers of Commerce Gladstone Area Industry Network Gladstone Area Promotion & Development Limited Industry associations Peak business bodies Queensland Seafood Industry Association Queensland Farmers' Federation Significant local business operators and community progress associations Sunfish

## Section 1

## Introduction

Key Stakeholder Category	Key Stakeholder Name
Regional communities (directly impacted)	Arcadia Valley Biloela Curtis Island (South End) Gladstone Injune Moura Rolleston Roma and surrounds Wallumbilla
Regional communities (indirectly impacted)	Banana Calliope Dalby Emerald Rockhampton Springsure Taroom Theodore Toowoomba
Indigenous groups	Traditional owners Land councils Aboriginal corporations, including Kanolu Aboriginal Corporation; Central Highlands Aboriginal Corporation; and Roma Aboriginal Corporation.
Landholders	Potentially several hundred individual landholders and lessees within the project area
Community and interest groups	Area Consultative Committees and regional advisory committees Landcare groups, natural resource management groups and wildlife preservation groups Queensland Conservation Council Great Barrier Reef Marine Park Authority Recreational fishing groups Yacht and boating clubs Queensland Country Women's Association Senior citizen groups Gladstone Council of Clergy St Vincent de Paul Lifeline Lions and Rotary clubs Police and Citizens Youth Clubs Regional environment groups Community service groups and peak bodies
Media	Print Electronic

Source: Santos, 2008



## 2.1 Methodology

SIA is the systematic appraisal in advance of impacts on the day-to-day quality of life of persons and communities whose environment is affected by a proposed project or plan, in this case the GLNG Project. Typically, this involves the appraisal of significant changes in a range of social impact variables that are of concern to the people potentially affected. The approaches and methodologies used have their foundations in social science research, both quantitative and qualitative research methodologies. This section outlines the methodology used for the GLNG SIA and includes:

- SIA Indicator selection;
- Key assumptions;
- Baseline survey methodology; and
- Impact determination and analysis methodology.

## 2.2 SIA Indicator Selection

The selection of SIA indicators is important to guide both the data gathering for the social baseline assessment and subsequent analysis of that data for social impacts. Several factors informed the selection of SIA indicators for the GLNG SIA including; the final Terms of Reference (ToR) for the GLNG EIS; the Department of Tourism, Regional Development and Industry's (DTRDI) *Sustainable Resource Communities Policy: Social impact assessment in the mining and petroleum industries*; and a harmonised set of social impact variables synthesised from the following range of nationally and internationally recognised standards (see Figure 2-1) including:

- International Association for Impact Assessment (IAIA);
- International Finance Corporation (IFC);
- International Association for Public Participation (IAP2);
- Oxfam;
- Global Reporting Initiative (GRI);
- International Petroleum Industry Environmental Conservation Association (IPIECA); and
- Dow Jones Sustainability Index (DJSI).

Those variables and indicators highlighted in Figure 2-1 were included as part of the baseline survey, inclusive of community consultation.

The SIA also considered the Central Queensland Strategy for Sustainability 2 (CQSS2) when undertaking the impact assessment.

Section 2

Scope of the Project



Figure 2-1 Harmonised Framework for Social Impact Assessment

2.3 Key Assumptions

The following are some key assumptions used to guide the collection of data and assessment of potential social impacts and events.

2.3.1 Accommodation assumptions

A number of assumptions have been made to identify and assess housing demand and supply. The approximate breakdown of workers between resident and imported workers has been assumed as follows in Table 2-1. TAF refers to temporary accommodation facilities for workers.

Table 2-1 Accommodation assumptions

Phase	Source of labour		Type of accommodation	
	Local %	Imported workers' %	TAF/CAF %	Hotel/motel/rental/Purchase
<b>Construction</b>				
CSG fields	10%	90%	~ 90%	~ 10%
Gas transmission pipeline	< 5%	> 95%	~ 100%	
LNG Facility	35%	65%	~ 100%	
<b>Operation</b>				
CSG fields	50%	50%	100%	0%
CSG field Roma Office	50%	50%	0%	100%
Gas transmission pipeline	95%	5%	0%	100%
LNG Facility	60%	40%	0%	100%

Important additional assumptions include:

- LNG facility construction has been based on a “stick-built” approach, as opposed to a “modular” approach (refer to Project Description section of the EIS for further details). This has provided a more conservative estimate of construction workforce numbers, and will minimise the likelihood of underestimating potential workforce impacts; and
- Calculation of housing and land requirements for natural population growth and GLNG demand in Gladstone region is based on existing housing development patterns:
  - Housing mix– approximately 90% of the population are housed in single unit dwelling, 10% are housed in multiple unit housing; and
  - Development density – approximately 10 single unit dwellings per hectare (Ha), 15 multiple unit dwellings per hectare (Ha).

### 2.3.2 Workforce Assumptions

The project has been separated into spatial and temporal boundaries as the workforce make up and skills vary for each. The spatial boundaries are consistent throughout the assessment as follows:

- CSG field;
- Gas transmission pipeline; and
- LNG Facility.

Within each spatial boundary there are two temporal boundaries: Construction and Operations.

Within each sub-section of the project workforce requirements section, a table will display the workforce requirements throughout the project.

## Section 2

## Scope of the Project

Figure 2-2 presents the anticipated breakdown of workforce between local and imported workers for each area of the project and each phase of the project. Local refers to individuals living in the study area or within reasonable distance to the project. The definition of local varies between study areas, and is defined in each sub-section. An imported worker refers to individuals who do not live in the study area or within reasonable distance to the project. The imported workers' are expected to be fly-in fly-out (also known as FIFO).

Imported workers' will be housed in TAFs on or near site while on shift. In many instances locals will also be housed in TAFs because of the logistics and safety considerations of moving them to and from the work sites daily. This will be assessed on distance to site and accessibility once TAF locations are determined. TAF locations will be within reasonable distance to work sites to reduce travel to and from the work site as well as subsequent fatigue. The construction accommodation facility on Curtis Island for the construction of the LNG facility is referred to as CAF throughout the report. All over accommodation facilities for the project are referred to as TAFs.

**Table 2-2 Percentage of Workforce Sourced Locally and Imported for Spatial and Temporal Project Boundaries**

Worker Location	CSG Field		Gas Transmission Pipeline		LNG Facility	
	Const <sup>1</sup>	Oper <sup>2</sup>	Const <sup>1</sup>	Oper <sup>2</sup>	Const <sup>1</sup>	Oper <sup>3</sup>
<b>Local</b>	10% (5-15%)	50% (45-55%)	<5% (0-5%)	90% (85-100%)	35% (30-40%)	60% (50-70%)
<b>Imported workers</b>	90% (85-95%)	50% (45-55%)	~ 100% (95-100%)	10% (0-15%)	65% (60-70%)	40% (30-50%)

Note: <sup>1</sup> = Construction. <sup>2</sup> = Operations. The number is the anticipated percentage of local or imported (FIFO) workforce in that phase at that location. Number in brackets is anticipated range. The percentage of local employees will depend upon workforce availability. LNG Facility construction workforce demographics will be determined by Bechtel. <sup>3</sup> = All LNG operations workers (Local and Imported) will be housed in Gladstone.

Worker Location	CSG Field		Gas Transmission Pipeline		LNG Facility	
	Const <sup>1</sup>	Oper <sup>2</sup>	Const <sup>1</sup>	Oper <sup>2</sup>	Const <sup>1</sup>	Oper <sup>3</sup>
<b>Local</b>	10% (5-15%)	50% (45-55%)	<5% (0-5%)	90% (85-100%)	35% (30-40%)	60% (50-70%)
<b>Imported workers</b>	90% (85-95%)	50% (45-55%)	~ 100% (95-100%)	10% (0-15%)	65% (60-70%)	40% (30-50%)

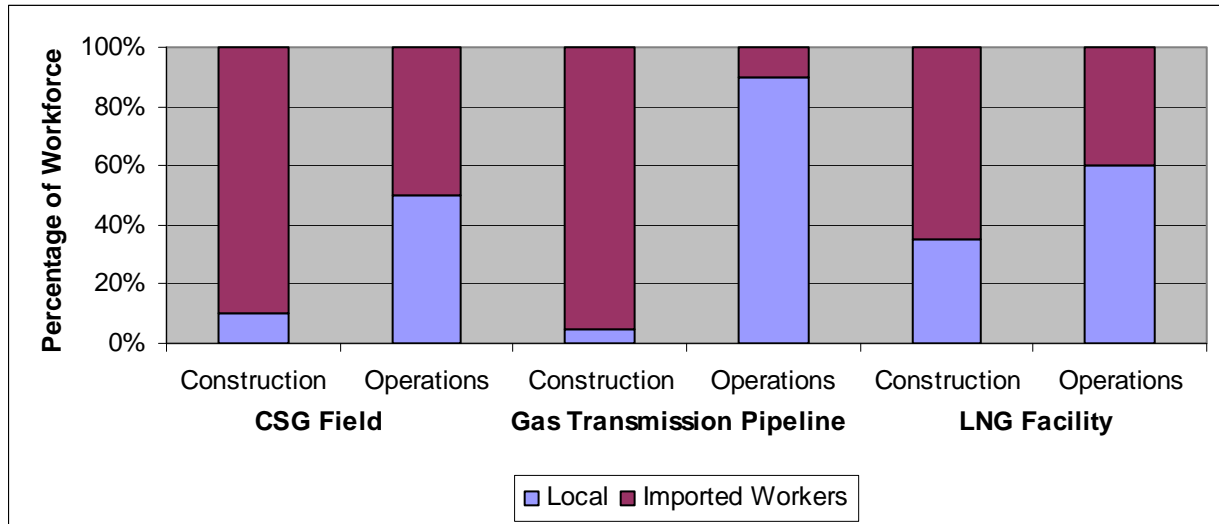
Note: <sup>1</sup> = Construction. <sup>2</sup> = Operations. The number is the anticipated percentage of local or imported (FIFO) workforce in that phase at that location. Number in brackets is anticipated range. The percentage of local employees will depend upon workforce availability. LNG Facility construction workforce demographics will be determined by Bechtel. <sup>3</sup> = All LNG operations workers (Local and Imported) will be housed in Gladstone.

Figure 2-2 illustrates the breakdown of local to imported workers assumptions. The construction phases for all three study areas will require more imported workers labour due to the size of the workforce required, the specialty skills and contractors, as well as the ability of the local workforce to meet demand. All areas will employ a higher percentage of locals during operations as the number of workers required is less and the duration of operations is longer term. The CSG field ratio remains lower because of the ability of the area population to meet demand.

## Scope of the Project

## Section 2

**Figure 2-2 Local to Imported workers Workforce for Construction and Operations in all Study Areas**



Santos would prefer to hire 100% local for all areas and phases of the project but is aware that the probability of this occurring is low due to labour market supply, individual preferences and local skills availability. The assumptions in Table 8-1 are based on predicted workforce availability in the various study areas, and the likely sourcing of some contractor workforces undertaking certain aspects of the project. Bechtel has been appointed the contractor for the LNG Facility so will be responsible for resourcing for this phase. Workforce demographics for this phase will therefore be determined by Bechtel.

Santos is committed to training locals and will work towards the highest feasible proportion of locals working in all areas and phases of the project. Some specialty skills and crews, particularly during construction, will be required and will need to be outsourced to sub-contractors. Sub-contractors will be encouraged to employ locally first where possible.

The following study area specific assumptions were used:

- The CSG field is assumed to be constructed in the same manner as existing Santos CSG operations in the area;
- The gas transmission pipeline is assumed to be one pipe in a single trench; and
- The LNG facility will be a “stick built” option (for more details see the Project Description of the EIS).

## 2.4 Social Baseline Study

### 2.4.1 Secondary Data Collection

Data sources for much of the project were from the local service providers and government agencies. Avenues for information sharing and means for providing the SIA with relevant local information and knowledge were established in the initial site assessments in July 2008. In addition to local information, data from the following sources were commonly used:

- Australian Bureau of Statistics (ABS);

## Section 2

## Scope of the Project

- Department of Infrastructure and Planning (DIP);
  - Planning Information and Forecasting Unit (PIFU);
- Department of Education, Training and the Arts (DETA);
- Queensland Health (QH); and
- Other relevant Environmental Impact Statements (EISs).

The report was compiled using information from the 2006 census as this was the most recent census data available. This data was presented under the old local government area (LGA) boundaries as this was the format available at the time. Following the council amalgamations in March 2008 (see Section 3.3) the ABS has been compiling data under the new LGAs. Select information under the new council boundaries has been released to date, and has replaced the old LGA data where possible to better reflect the current local governments. As a result, some information in the report is from the old LGAs, and some is from the newly amalgamated regional councils. Attempts to create data sets for the new LGAs with information from the old LGAs were generally not preferred as often there was no way to verify if the assumptions were correct; however, some tables were compiled with all the old LGAs for the new regional councils.

During the drafting of the SIA, the local government areas (LGAs) throughout Queensland were amalgamated, resulting in a new format of presenting local data (see Amalgamation Section 3.3). The amalgamation centralised local government into larger regional councils. As a result, much of the Australian Bureau of Statistics (ABS) data was still only available in the old LGAs at the time of this report. Some new regional council information was available, but due to the shape of the study areas in relation to the LGA boundaries, often a more accurate assessment was possible when looking at the old LGA data as opposed to the new regional council data (new LGAs).

The SIA team conducted an extensive desktop review of the existing information on the three study areas (project components). Data was frequently updated as it became available in order to ensure the most recent information was presented. Preference was placed on the inclusion of local data supplemented with interviews with various agencies and service providers to capture local perceptions as well as quantitative figures.

The project effects for the three study areas will be both unique in relation to the others and similar in some circumstances. For this reason much of the same baseline data was collected. Notable differences were discussed in relevant sections of the baseline and impact assessment

### 2.4.2 Primary Data Collection and Consultation

Stakeholder engagement and consultation sessions were conducted throughout the area by Santos in partnership with JTA and URS. Community site assessments for Roma and Gladstone were also conducted to gather local information and perceptions. Data captured from consultation was included in the baseline and helped form the basis for the impacts assessment. A detailed report on the consultation process can be found in the Consultation section (Section 10) of the EIS.

As part of the ongoing stakeholder consultation process information collected by Santos was fed into (and used to inform) the SIA. Consultation manager (Santos' consultation database) was a primary data source, along with regular project team briefings and updates. In addition, SIA specific consultation was conducted by the EIS social impact assessment team to collect and interpret data from the desktop review and site assessments. SIA consultation with local stakeholders included one-on-one and group interviews, formal and informal discussions, telephone conversations and e-mail correspondence. Lines of communication were established with the main

service providers through direct interviews and interagency meetings in order for information channels to be established for SIA data collection.

Site assessments for Roma and Gladstone were conducted in July, 2008. Data was shared amongst the EIS team in order to ensure stakeholder comments and relevant data were included in the report. Santos continued to collect SIA relevant data throughout the EIS, and THI collected supplementary data for the SIA in September and October. This approach was taken as recognition of the overlap between the three studies, and the conscious effort to minimise stakeholder fatigue from consultation, and duplication of information requests.

Santos is committed to ongoing consultation with all stakeholders in this project, and will continue to work with local and State agencies to address the real and perceived social effects of the project in the future, as well as with local stakeholders.

## 2.5 Social Impact Determination and Assessment

Two methodologies have been used to ensure all social impacts are captured for analysis:

- The analysis of social change indicators for positive or negative impacts; and
- Social risks identified through overall project risk assessment, the RISQUE approach.

In addition, two specialist studies were undertaken to address some key potential project issues, one a study on Indigenous peoples (see Section 6) and the other a study on accommodation (see Section 7). Social impacts identified from these studies have been captured in the SIA.

### 2.5.1 Social Impact Assessment

Positive and negative social impacts will typically be experienced by a community if the nature, magnitude, timing and duration of a social change are more than they are able and willing to manage. The effect of the project description on the social environment as described by the social baseline has been assessed in terms of some or all of the following change factors:

- The nature of the change (e.g. more people);
- The magnitude of the change; for example how many more people, ethnicity, gender, age, family status, or how many more jobs for different occupational groups;
- The time of the change, when will this happen – is it one off or periodic or other?
- The duration, how long will the effect occur?; and
- Where will it happen and what stakeholders will be affected?

Available quantitative and qualitative data has been used for this assessment.

### 2.5.2 Social Risk Assessment

The EIS has adopted the RISQUE approach to assess project risks and opportunities. A high level strategic risk assessment was conducted at an early stage in the project to ensure key project issues were identified and that the baseline and impact studies would consider these. As part of the SIA the results of the risk assessment were reviewed for any important social risks, with such risks assessed and impact management strategies proposed and fed back into the RISQUE process. Further details on the RISQUE process are contained in the Risk Management Report of the EIS (Section 10).



## Section 2

## Scope of the Project

### 2.5.3 Social Impact Management

Social impact management includes those actions proposed to:

- mitigate negative social impacts, that is to reduce the probability of them occurring, and if they do occur to minimise the effect; and
- Enhance positive social impacts, that is to develop strategies to maximise social benefits identified in the analysis.

A template has been prepared for the analysis of impacts and impact management strategies that capture all social impacts, including those from important changes to social impact variables, those identified through the RISQUE process and those derived from the specialist studies and other environmental studies. Table 2-3 shows the approach used.

**Table 2-3 Social Values and Management of Impacts**

Social Impact aspect / RISQUE event	Potential Social Impact (+ and -)	Project Phase	Inherent Risk rating	Social Impact Management Strategy	Residual risk	Objectives
		Construction /operation/ decommissioning	Low/medium/ high/extreme No rating would imply positive impact	Mitigation strategies for negative impacts. Enhancement strategies for positive impacts	Social risk remaining after mitigation actions	Objectives for controlling residual risk

The above approach will ensure that all social impacts and risks are carefully analysed and documented and that appropriate strategies are incorporated in the Project to manage both the impacts and risks and residual risks.

## 2.6 Data Collection Management, Coordination and Limitations

Data from four different teams have contributed to the SIA. All references to the activities undertaken henceforth will be referred to as conducted by Santos. The following is a breakdown of the activities undertaken for the SIA:

- The URS SIA team planned the SIA and undertook secondary data collection. This was supported by one site trip to Roma and Gladstone to gather local secondary data and undertake some primary data collection;
- JTA were commissioned by Santos in April 2007 to plan and execute a community engagement strategy. As part of this they established a community consultation database;
- THI were appointed by Santos to gather some secondary data for the SIA; and
- Santos GLNG staff undertook direct consultation with federal, state and local government elected representatives or their senior officials, landholders and indigenous communities. JTA was kept abreast of the outcomes of this consultation through regular contact with the responsible GLNG officers.

Coordination between the various teams was conducted by Santos. Regular meetings were conducted to coordinate activities, update other teams, identify gaps, and adapt the process as the project evolved.



Santos is limited to the information available at the time of the study including the local opinions and assessments derived from interviews with stakeholders. Santos used up-to-date ABS and generated materials from State departments throughout the report as it became available. The most recent local data available was requested during site assessments including the Inter-Agency Meeting in Gladstone on July 16, 2008. All data provided to the SIA by local stakeholders in response to that request was included in the SIA or referenced.

## 2.7 Review of Existing Information

As discussed, the project was separated into three main study areas (or project components) including:

- Coal Seam Gas (CSG) Field;
- Gas Transmission Pipeline; and
- Liquefied Natural Gas (LNG) Facility.

The SIA team conducted an extensive desktop review of the existing information on the three study areas. Data was frequently updated as it became available in order to ensure the most recent information was presented. Preference was placed on the inclusion of local data supplemented with interviews with various agencies and service providers to capture local perceptions as well as quantitative figures.

The project effects for the three study areas will be both unique in relation to the others and similar in some circumstances. For this reason much of the same baseline data was collected. Notable differences were discussed in relevant sections of the baseline and impact assessment.

### 2.7.1 Consultation

Santos developed and implemented a customised approach to stakeholder engagement to match the three very different components of the Project, i.e. the CSG fields, the gas transmission pipeline and the LNG facility. This involved tailoring messages and resource materials specific to the stakeholder groups within each of these components, as well as ensuring the right people with the appropriate level of expertise were on-hand to address issues.

Several key principles underpinned Santos' approach to community consultation and engagement. These included:

- Identification of stakeholders, opinion leaders, project champions and opponents early;
- Identification of new and emerging issues requiring analysis (hot topics);
- Provision of accurate and credible information to stakeholders and the broader community;
- Building and maintaining cooperative relationships with stakeholders and communities based on a spirit of openness and trust;
- Transparency, honesty and accountability; and
- Relevant, productive and effective consultation strategies and activities.

Santos used a variety of proven communication tools and activities to generate an increased awareness of the Project. The key activities included:

- Targeted stakeholder briefings;

## Section 2

## Scope of the Project

- Establishment and promotion of community involvement opportunities, including a 1800 freecall phone number, fax number, email address and freepost service for public enquiries;
- Production and distribution of targeted project materials, community newsletters, fact sheets, posters and flyers;
- Provision of field kits and information to EIS consultants and Santos land agents; and
- Promotion and delivery of community information sessions in key locations.

Embedded in all of the consultation activities was a process of feedback. Stakeholders provided a rich source of information which helped Santos to target the key areas of community concern. Issues and concerns raised by stakeholders at various consultation forums were fed back to the broader GLNG project team, and to the contracted professionals undertaking the various environmental studies. This process resulted in the commissioning of additional studies, issue specific workshops with the community, and analysis of mitigation options to address the concerns.

Environmental consultants URS were important partners with JTA in the delivery of consultation and engagement activities. A team of URS consultants worked closely with Santos and JTA in the planning and delivery of events.

Santos collated a list of opinion leaders and key stakeholders across the proposed project area. External stakeholders were classified by their geographical proximity to various sections of the project i.e. areas where coal seam gas is extracted, land across which the gas transmission pipeline may be built, and areas where the pipeline and gas facility may impact Gladstone and Curtis Island residents. The list has continued to grow as stakeholders have self-nominated through consultation activities.

The SIA conducted site assessments for Roma and Gladstone in July, 2008. Santos and JTA continued to collect SIA relevant data throughout the EIS. THI collected supplementary data for the SIA in September and October 2008. This approach was taken as recognition of the overlap between the three studies, and the conscious effort to minimise stakeholder fatigue from consultation, and duplication of information requests. Data was shared amongst the EIS team in order to ensure stakeholder comments and relevant data were included in the report.

Santos is committed to ongoing consultation with all stakeholders in this project, and will continue to work with local and State agencies to address the real and perceived social effects of the project in the future.

### 3.1 Assessment Philosophies

In SIA there are two leading assessment philosophies to consider:

- **Analytical Assessment:** Belief that social change is ubiquitous, but that the project alters the normal flow of social change. Impacts will vary in specificity, intensity, duration and a variety of other factors. The goal is to identify measure and understand the consequences (Burdge, 2004). This is primarily achieved through quantitative data; and
- **Participative Assessment:** Notion of understanding social change through experience. The focus is more on social action, with emphasis on helping the impacted population adjust to impending change (Bowles, 1981). Being sensitive to the existence of social impacts is seen as more important than actually being able to identify them. An important by-product for participants is an awareness and understanding of how their community works (Buchan, 2003). This is primarily achieved through consultation and qualitative data.

Both assessment methods have their pros and cons. The preferred approach is a combination of the two. One leads to effective public consultation, and the other provides evidence as to how the project will change the lives of individuals and the affected community. SIA provides both qualitative and quantitative evidence of changes in the community as a result of a proposed action (Burdge, 2004), in this case the project.

### 3.2 Quantitative Data

Statistical information collected for this assessment has largely been collected from the Australian Bureau of Statistics (ABS) 1996 to 2006 data. Where other data sources have been used, these sources have been referenced.

The ABS uses the Australian Standard Geographical Classifications (ASGC) to collect and disseminate a broad range of ABS social, demographic and economic statistics. There are 5 hierarchal levels within the ASGC from smallest to largest study area are:

- CD – Census Collection District;
- SLA – Statistical Local Area;
- SSD – Statistical Subdivision;
- SD – Statistical Division; and
- S/T – State / Territory.

The CDs aggregate to form SLAs, SLAs aggregate to form SSDs and so on with hierarchy. Since the GLNG project covers vast areas in the CSG field study area and gas transmission pipeline corridor, and will affect Gladstone City and surrounds (Gladstone Regional Council) as a whole, CDs were not looked at individually in this report. For the purposes of this assessment, Queensland (S/T) will be used for comparison against the SDs and SLAs that are intercepted by the GLNG Projects components.

The SLA is a general purpose spatial unit. It is the base spatial unit used to collect and disseminate statistics other than those collected from the Population Censuses. In non-census years, the SLA is the smallest unit defined in the ASGC. In census years, an SLA consists of one or more whole CDs. In aggregate, SLAs cover the whole of Australia without gaps or overlaps. SLAs are based on the boundaries of incorporated bodies of local government where these exist. These bodies are the Local Government Councils and the geographical areas which they administer are known as Local Government Areas (LGAs) (ABS, 2008).

## Section 3

## Data Sources

Statistical information is primarily presented from LGAs throughout the report. The LGAs provide more localised data and are recently updated to include 2008 data by the Planning Information and Forecasting Unit (PIFU) within the Department of Infrastructure and Planning (DIP), and ABS updates. All the SLAs used in this report fit within the LGA boundaries.

SDs have been used with the SLAs as the SDs are the largest and most stable spatial unit within the S/T. This approach was taken for the following reasons:

- The amalgamated boundaries in the three study areas are not significantly different to the old boundaries used in the previous census years (1996, 2001 and 2006), and therefore do not jeopardise the integrity of the data. It should be noted that Santos has not manipulated LGA data from past census' to match the new boundaries;
- The anticipated effects generally occur at specific points or areas and are not likely to be felt evenly across broader regions;
- Much of the relevant LGA data has been updated from the 2006 census; and
- The SLA data is more capable of capturing the rural and urban characteristics of the CSG field and Gas transmission pipeline as a whole, and the LNG Facility respectively.

**Table 3-1 Project Study Areas Relation to Statistical Division and Statistical Local Areas**

Statistical Division	Statistical Local Area	Study Area (Project Component)		
		CSG Field	Gas Transmission Pipeline Corridor	LNG Facility
<b>South West SD</b>		X	X	
	Warroo (S)	X		
	Bendemere (S)	X		
	Roma (S)	X		
	Booringa (S)	X		
	Bungil (S)	X	X	
<b>Darling Downs SD</b>		X		
	Murilla (S)	X		
	Tara (S)	X		
	Taroom (S)	X	X	
<b>Fitzroy SD</b>		X	X	X
	Bauhinia (S)	X	X	
	Woorabinda (S)	X	X	
	Duaringa (S)	X	X	
	Emerald (S)	X		
	Peak Downs (S)	X		
	Banana (S)		X	
	Calliope (S)		X	X
	Gladstone (C)		X	X
<b>Queensland</b>		X	X	X

Note: S – shire, C – city.

Figures 1-1a, 1-1b and 1-1c show the key components of the GLNG project, the CSG field, Gas transmission pipeline, and LNG Facility. Table 3-1 shows the SD and SLAs that are intercepted by each of the GLNG Project components. All components of the GLNG project fall within the Queensland S/T boundary.

**Table 3-2 Potentially Affected Communities and their Statistical Local Area**

Statistical Division	Statistical Local Area	Potentially Effected Communities (population)
<b>South West SD</b>		
	Warroo (S)	Surat (465)
	Bendemere (S)	Yuleba (280)
		Wallumbilla (302)
	Roma (S)	Roma (6,395)
	Booringa (S)	Mitchell (1,002)
	Bungil (S)	Injune (386)
<b>Darling Downs SD</b>		
	Murilla (S)	Miles (1,237)
	Tara (S)	Tara (870)
	Taroom (S)	Taroom (665)
		Wandoan (411)
<b>Fitzroy SD</b>		
	Bauhinia (S)	Rolleston (217 <sup>a</sup> )
		Springsure (879)
	Woorabinda (S)	Woorabinda (944)
	Duarlinga (S)	Blackwater (5,360)
	Emerald (S)	Emerald (11,772)
	Peak Downs (S)	N/A – field surrounds Emerald
	Banana (S)	Biloela (5,717)
		Moura (1,890)
		Theodore (474)
	Calliope (S)	Calliope (1,646)
		Mount Larcom (267)
		Yarwun/Targinnie (~750)
		Boyne Island (3,910)
		Tannum Sands (4,388)
	Gladstone (C)	Gladstone (30,731)

Note - \* short (less than 6 months), medium (6 months to a year), long (more than a year), life (life of the project) – life for the CSG field depends on when the specific CSG field is developed, and would be that date to the end of the project life.

<sup>a</sup> - taken from 2006 data. S – Shire; C - City.

Source: Population sourcing ABS, 2008, About Australia.com, Rolleston Coal Project EIS.

## Section 3

## Data Sources

Table 3-2 identifies the potentially affected communities within the SLAs. For the baseline, the primary focus was on the Roma area (Roma Regional Council) and Gladstone / Calliope Shire (Gladstone Regional Council) as they are the communities that will experience project effects throughout the duration of the project. High level assessments for the other communities are presented. When phases of the project move to areas that may potentially increase the effects on other communities, Santos will conduct a more thorough assessment at that time on those communities, as part of the Phase 2 (post EIS) impact assessment program, including the Environmental Management Plan (EMP) for the development of a specific CSG field (refer to Section 6.1 of the EIS for further details on this two-phased approach to impact assessment)..

### 3.2.1 Random and Rounding Errors

The Australian Bureau of Statistics (ABS) produces statistics from national censuses held every five years. The latest two census years were 2001 and 2006, and are examined in detail. Within these statistics, the ABS includes an introduced random error to prevent the identification of individuals. The total values as a whole may be affected, as could be the case with introduced random errors in cells within the ABS data tables throughout the document. Generally the values within a table or figure will remain consistent, but comparisons between figures and tables may not be. This is often the case when dealing with small population sets like those in the CSG field and Gas transmission pipeline, where individual identification can be more easily recognised. Data produced by the ABS was incorporated as is, and individual values were not modified for this report. The ABS believes that these random errors do not affect the overall information within the tables. In many cases to accommodate potential inconsistencies, this report looks at ranges and trends rather than actual values.

### 3.2.2 Additional Statistical Errors

It should be noted that due to different data sets used by ABS when compiling the data, some of the populations vary from table to table for the same year. This can be due to a number of reasons including whether the data was used from where the person was on the night of the census or where their normal place of residency was. Additionally random rounding errors may have been added which altered the total values, or tables may have been compiled at different times, and more accurate information became available at a later date. The exact values do not negatively affect the assessment so tables were left as they were from the ABS unless otherwise indicated.

## 3.3 Council Amalgamation

In addition to the statistical data from ABS, some data is available from the various shires and councils throughout the study areas. On the 15th March 2008, many of the councils throughout Queensland were amalgamated into larger regional councils (see Figure 3.1).

The following amalgamations occurred within the total project area:

- Roma Regional Council (Roma Regional Council, 2008):
  - Bendemere Shire Council;
  - Booringa Shire Council;
  - Bungil Shire Council;
  - Warroo Shire Council; and
  - Roma Town Council.
- Dalby Regional Council (Dalby Regional Council, 2008):
  - Chinchilla Shire Council;
  - Murilla Shire Council;
  - Tara Shire Council;
  - Wambo Shire Council;
  - Taroom (Division 2) Shire Council; and
  - Dalby Town Council.
- Central Highlands Regional Council (Central Highlands Regional Council, 2008):
  - Bauhinia Shire Council;
  - Duinga Shire Council;
  - Emerald Shire Council; and
  - Peak Downs Shire Council.
- Banana Shire Council (Banana Shire Council, 2008):
  - Banana Shire Council; and
  - Taroom (Division 1) Shire Council.
- Gladstone Regional Council (Gladstone Regional Council, 2008a):
  - Calliope Shire Council;
  - Gladstone City Council;
  - Miriam Vale Shire Council; and
  - Gladstone Calliope Aerodrome Board.

For the purpose of this report, high level SLA information from the South West is provided from the ABS data to reflect the rural setting throughout the CSG field study area and Gas transmission pipeline corridor. More detailed information is provided for the Gladstone Regional Council area and the Roma Regional Council area due to the project activity associated with these areas. Should the project focus shift to other areas in the development of the CSG field, further assessment of those areas may be required. This further assessment would likely occur through consultation with the local regional councils to determine what information should be assessed.

### 3.4 Qualitative Data

Information from community consultation and stakeholder interviews has been incorporated to capture social perceptions and perspectives. This information is important for understanding how the community perceives

## Section 3

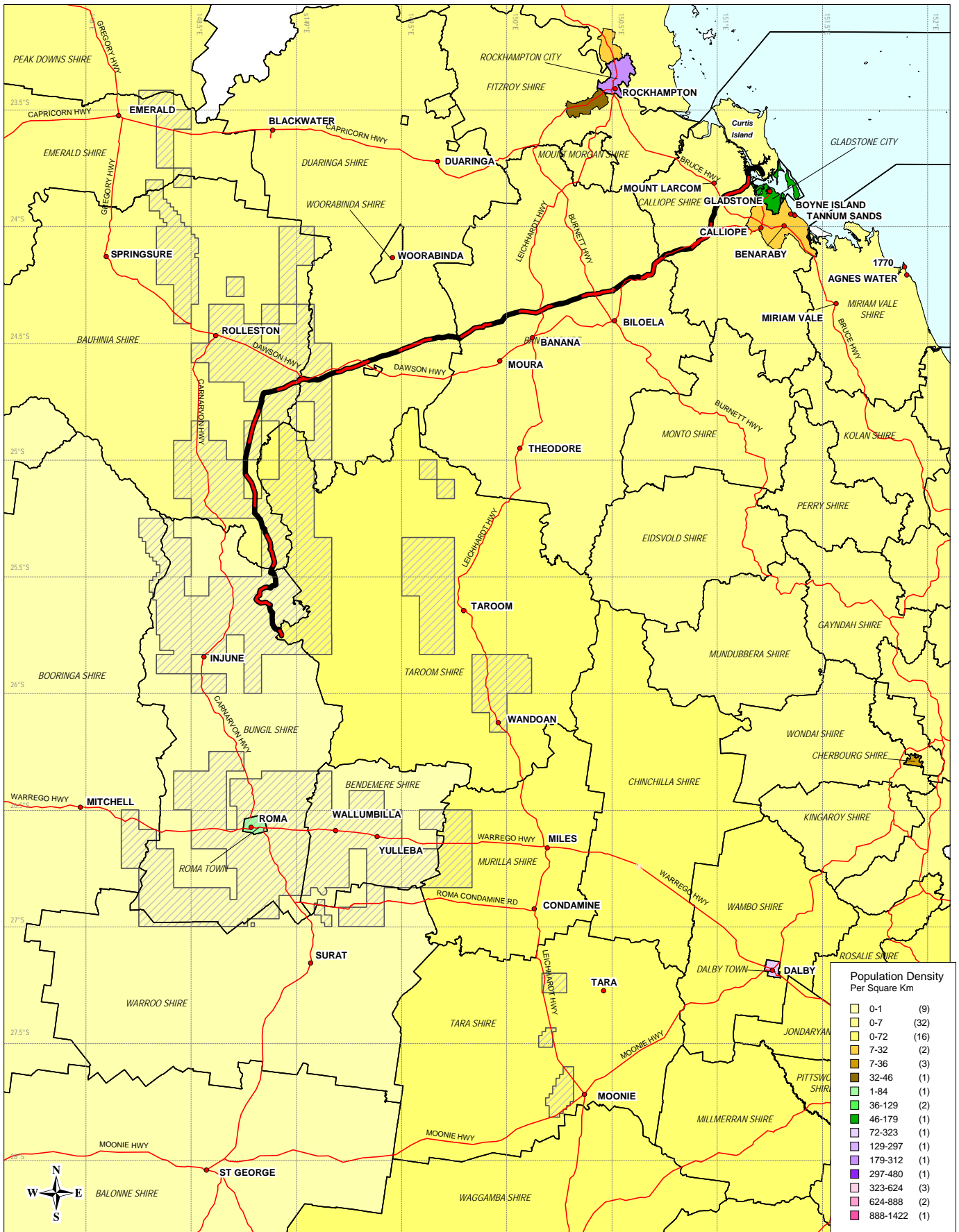
## Data Sources

itself, its relationships and potential effects from external influences, including this project. Data was collected in the various communities by Santos. A more thorough evaluation of the consultation process can be found in the consultation report. This qualitative data collection process does not end with the EIS submission. It is an ongoing process for Santos to maintain a positive relationship with stakeholders.

### 3.5 Population Density

Figure 3.2 is a conglomeration of maps produced by the ABS showing the population density. Unfortunately, a standardised version was not available, so the ranges for the various areas are not universal. The figure does however; illustrate the low population density throughout the entire project area. With the exception of the major population centres, the majority of the area is sparsely populated. This is a reflection of the rural nature of the area.







0 50 100km

Scale 1:2 500 000 (A4)  
Datum: GDA 95

Source: This map may contain data which is sourced and Copyright. Refer to Section 18.2 of the EIS for Ownership and Copyright.

Client  	Project <b>GLADSTONE LNG PROJECT SOCIAL AND COMMUNITY ASSESSMENT</b>	Title <b>POPULATION DENSITY</b>
	Drawn: VH    Approved: JB    Date: 11-02-2009 Job No: <b>4262 6220</b> File No: 42626220-g-562.wor	Figure : <b>3-2</b>

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## Section 4

## Existing Socioeconomic Environment

### 4.1 CSG Field Study Area

The CSG field examines the potentially affected area from the proposed CSG field development program. This covers a vast area of over 22,000 km<sup>2</sup>. Due to the size and scale of the proposed CSG fields, the baseline is divided into two sections: Overall field; and reasonably foreseeable development (RFD) area. For more information on the definition of the fields, see Section 1.1 (Study Areas).

The overall field examines the areas within the CSG field study area outlined in Figure 1-1a. The information is generally presented from the shire statistics, as the location of specific field infrastructure such as wells, roads, pipelines, evaporation ponds, pressure stations, etc. has not been determined. Additionally, the development of the CSG field study area will take place in stages over the life of the GLNG project, and the sequence of development and areas of focus will be determined by exploration (appraisal) drilling results, results from tapped wells, gas prices and other variables. The following recently amalgamated councils make up the overall CSG field study area (bold indicates councils with Santos CSG fields within their boundaries):

- **Roma Regional Council (Roma Regional Council, 2008):**
  - **Bendemere Shire Council;**
  - **Booringa Shire Council;**
  - **Bungil Shire Council;**
  - **Warroo Shire Council; and**
  - **Roma Town Council.**
- Dalby Regional Council (Dalby Regional Council, 2008):
  - Chinchilla Shire Council;
  - **Murilla Shire Council;**
  - **Tara Shire Council;**
  - Wambo Shire Council;
  - **Taroom (Division 2) Shire Council; and**
  - Dalby Town Council.
- **Central Highlands Regional Council (Central Highlands Regional Council, 2008):**
  - **Bauhinia Shire Council;**
  - **Duarlinga Shire Council;**
  - **Emerald Shire Council; and**
  - **Peak Downs Shire Council.**
- Banana Shire Council (Banana Shire Council, 2008):
  - Banana Shire Council; and
  - **Taroom (Division 1) Shire Council.**

## Existing Socioeconomic Environment

## Section 4

Santos has indicated that the CSG fields of Roma, Fairview and Arcadia Valley will be the first to be developed, so a more detailed examination was conducted for these areas. These CSG fields overlap the following former shires (new amalgamation in brackets):

- Bendemere Shire Council (Roma Regional Council);
- Booringa Shire Council (Roma Regional Council);
- Bungil Shire Council (Roma Regional Council);
- Warroo Shire Council (Roma Regional Council);
- Roma Town Council (Roma Regional Council);
- Murilla Shire Council (Dalby Regional Council);
- Bauhinia Shire Council (Central Highlands Regional Council);
- Duinga Shire Council (Central Highlands Regional Council); and
- Taroom (Division 1) Shire Council (Banana Shire Council).

The potentially affected areas within Murilla Shire, Bauhinia Shire and Duinga Shire are relatively small and located some distance from population centres, so they are not examined in more detail (see Figure 1-1a). Bauhinia and Duinga Shires are assessed in the gas transmission pipeline section, as much of the gas transmission pipeline corridor passes through these shires. Additionally, potentially affected landholders in these areas (including Murilla Shire) are dealing with similar issues as those in Roma Regional Council and will be reflected in the reasonably foreseeable development area section (see Section 4.2). Santos is currently negotiating with individual landholders, and the details of these negotiations are not available to the public through Santos. As a result, this report will focus on the population as a whole, assuming the landholder issues are being addressed by the Santos land negotiations teams, and the consultation program.

The more detailed baseline will therefore focus on Roma Regional Council (with additional focus on Roma town) and Taroom Shire. The vast majority of the Roma, Fairview and Arcadia Valley fields are within the former Bendemere (Shire), Bungil (Shire) and Roma (Town) boundaries, which are all now within Roma Regional Council as seen in Figure 1-1a. Taroom Shire was split between Banana Shire and Dalby Regional Council after the amalgamation, so it will be assessed using the old LGA data to better reflect the affected shire. It should be noted that none of Taroom Shire Division 2 (now Dalby Regional Council) has parts of the Roma, Fairview and Arcadia Valley fields within its boundaries; however, the entire shire will be assessed because a detailed separation of the two divisions was not available at the time of this report.

## Section 4

## Existing Socioeconomic Environment

### 4.1.1 Demographic Profile

Within the CSG field study area, the majority of the area is sparsely populated, as is seen in Figure 3-1 and Table 4.1. This is a rural region in central Queensland that is traditionally centred on agriculture and cattle. There are a few built-up areas throughout the region, with populations ranging from a few hundred to a few thousand, including:

- Surat in Warroo Shire (now Roma Regional Council);
- Yuleba and Wollambilla in Bendemere Shire (now Roma Regional Council);
- Roma in Roma Shire (now Roma Regional Council);
- Injune in Bungil Shire (now Roma Regional Council);
- Miles in Murilla Shire (now Dalby Regional Council);
- Taroom in Taroom Shire (now Banana Shire Council);
- Rolleston and Springsure in Bauhinia Shire (now Central Highlands Regional Council);
- Emerald in Emerald Shire (now Central Highlands Regional Council); and
- Woorabinda in Woorabinda Aboriginal Shire Council.

The assessment in Section 4.2 will examine those communities within the Roma Regional Council, and specifically Roma town as they are anticipated to experience the initial effects of development.

The high level assessment of the entire field is included in this section. As the project progresses into the other areas of the defined field, further assessment of those communities and councils may be required. For a more detailed analogy of the CSG field breakdown, see Section 1.1.

Table 4.1 provides an understanding of the populations of the CSG field and their proportion of the Statistical Division (SD) in which they are situated. Since none of the local government areas (LGAs) that make up the CSG field total a significant percentage of their SD, data on the SD as a whole was not seen as relevant to the project, with the exception of the South West SD.

An assessment of the Indigenous population is covered in Section 6.

As indicated in Figure 4.1 and Table 4.1, the populations in the CSG field are relatively small. The majority of the population resides throughout the area on homesteads and acreages, as well as a few small communities. This is a reflection of the rural nature of the area. There are several communities that act as service centres (including Roma, which is also a local government centre). For the majority of communities, however, the population is less than 500 residents. Additionally, the majority of the population is Australian born, with only a small percentage born overseas (see Table 4.1).

## Existing Socioeconomic Environment

## Section 4

Table 4-1 General Demographics Profile of LGAs – CSG field

Area*	2006 Population	% of Queensland	% of Statistical Division	Males		Females		Born overseas	
				No.	%	No.	%	No.	%
<b>South West SD</b>	24,779	< 1.0%	100.0%	12,646	51.0%	12,133	49.0%	993	4.0%
Warroo (S)	1,037	< 1.0%	4.2%	545	52.6%	492	47.4%	25	2.4%
Bendemere (S)	987	< 1.0%	4.0%	530	53.7%	457	46.3%	28	2.8%
Roma (C)	6,504	< 1.0%	26.2%	3,213	49.4%	3,291	50.6%	274	4.2%
Booringa (S)	1,706	< 1.0%	6.9%	866	50.8%	840	49.2%	65	3.8%
Bungil (S)	2,049	< 1.0%	8.3%	1,090	53.2%	959	46.8%	60	2.9%
<b>Darling Downs SD</b>	213,754	5.5%	100.0%	105,182	49.2%	108,572	50.8%	17,616	8.2%
Murilla (S)	2,689	< 1.0%	1.3%	1,363	50.7%	1,326	49.3%	126	4.7%
Tara (S)	3,676	< 1.0%	2.5%	1,934	52.6%	1,742	47.4%	250	6.8%
Taroom (S)	2,388	< 1.0%	1.1%	1,203	50.4%	1,185	49.6%	50	2.1%
<b>Fitzroy SD</b>	188,403	4.8%	100.0%	96,125	51.0%	92,278	49.0%	15,365	8.2%
Bauhinia (S)	2,190	< 1.0%	1.2%	1,211	55.3%	979	44.7%	85	3.9%
Duaringa (S)	6,744	< 1.0%	3.6%	3,722	55.2%	3,022	44.8%	435	6.5%
Emerald (S)	14,354	< 1.0%	7.6%	7,545	52.6%	6,809	47.4%	1,476	10.3%
Peak Downs (S)	3,188	< 1.0%	1.7%	1,767	55.4%	1,421	44.6%	216	6.8%
<b>Queensland</b>	3,904,534	100.0%	N/A	1,935,381	49.6%	1,969,153	50.4%	699,448	17.9%

\* SD = statistical division, S = shire and C = community.

Source: ABS Basic Community Profiles, 2006 census data

## Section 4

## Existing Socioeconomic Environment

In Table 4.1, with the exception of the shires in South West SD, the other areas assessed in the field represent a small portion of the SD's total population. The shires assessed represent the following portion of their SDs:

- South West SD: 49.6% of the population is in the assessment area;
- Darling Downs SD: 5.2% of the population is in the assessment area; and
- Fitzroy SD: 14.5% of the population is in the assessment area.

The populations of the key towns and their percentage of their respective Statistical Local Area (SLA) further highlight the rural environment in the field. Most communities represent a significant percentage of their SLA, and all SLAs but Roma range between 987–2,689 individuals (see Table 4.1). As an example, Bungil Shire covered an area of over 13,000 km<sup>2</sup> prior to amalgamation into Roma Regional Council. Bendemere Shire covered an area of approximately 4,000 km<sup>2</sup>.

As indicated in Figure 3.1 and Table 4.1, the populations in the CSG field study area are relatively small. The majority of the population resides throughout the area on homesteads and acreages, as well as a few small communities. This is a reflection of the rural nature of the area. There are several communities that act as service centres (including Roma, which is also a local government centre). For the majority of communities, however, the population is less than 500 residents. Additionally, the majority of the population is Australian, with only a small percentage born overseas (see Table 4.1).

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When looking at the historic population growth (or decline) throughout the CSG field for the last three censuses, it is clear that the population can experience dramatic shifts (see Table 4-2). In the South West SD, every shire experienced positive growth to 2001 and negative growth to 2006 or vice versa, except Bungil. Bungil Shire experienced marginal growth to 2001 and high growth to 2006. The lack of consistency can be said for every other shire examined in Table 4-2.

## Existing Socioeconomic Environment

## Section 4

Table 4-2 Historic Population Growth within the CSG Field

Area	1996 No.	2001 No.	2001 % change	2006 No.	2006 % change
South West SD	26,582	26,962	1.4%	26,108	-3.2%
Warroo (S)	996	1,068	7.2%	1,095	2.5%
Bendemere (S)	958	919	-4.1%	962	4.7%
Roma (S)	6,439	6,346	-1.4%	6,664	5.0%
Booringa (S)	1,850	1,996	7.9%	1,860	-6.8%
Bungil (S)	1,978	1,999	1.1%	2,242	12.2%
Darling Downs SD	193,618	203,397	5.1%	213,968	5.2%
Murilla (S)	2,790	2,691	-3.5%	2,758	2.5%
Tara (S)	3,504	3,813	8.8%	3,591	-5.8%
Taroom (S)	2,733	2,664	-2.5%	2,340	-12.2%
Fitzroy SD	180,195	182,169	1.1%	196,631	7.9%
Bauhinia (S)	2,543	2,575	1.3%	2,742	6.5%
Duaringa (S)	8,192	6,921	-15.5%	8,102	17.1%
Emerald (S)	13,312	14,249	7.0%	16,082	12.9%
Peak Downs (S)	3,172	3,299	4.0%	3,758	13.9%
Queensland	3,368,850	3,655,139	8.5%	4,046,880	10.7%

Note – No. = number

Source: ABS time series profiles 2006

The projected population of the South West Statistical Division (SD) was examined because it best reflects the southern portions of the gas field. Approximately 50.0% of the population resides in the Roma area, and this area is similar in structure to the rural nature of the surrounding areas. In terms of best representation of the southern fields as a whole, the South West SD information is the most accurate.

As can be seen in Table 4-2, the area population is relatively small given the geographical extent of the region. This reflects the rural environment, but it should be noted that much of the population lives in a few towns and small cities that act as government and services hubs for the surrounding area.

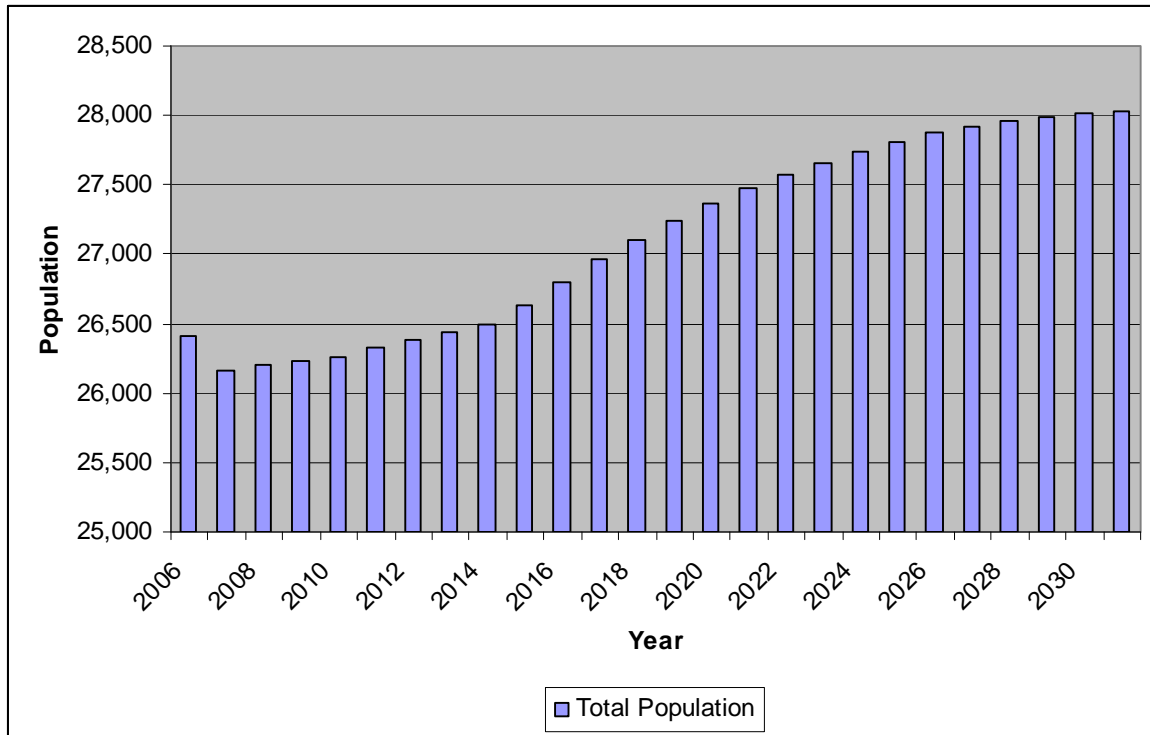
After a slight decrease in total population between 2006 and 2011, the population is projected to increase through to 2031. When the projected increases are examined year-to-year rather than every five, the projected population curve starts off shallow (increasing) until around 2016 to 2022 when it increases more rapidly before shallowing out again and almost levelling off by 2029 (see Figure 4-1).



## Section 4

## Existing Socioeconomic Environment

Figure 4-1 Projected Population Annual Total, South West SD, 2006 to 2031 (medium series)



Source: Queensland Government, Population Projections to 2056: Queensland and Statistical Divisions, 3rd edition, 2008

As seen in Figure 4-2, the population of the South West SD is anticipated to fluctuate significantly between age groupings. A consistent line from year to year would generally indicate a gradual ageing of the population. If the population was growing, this would coincide with an increasing regeneration rate, which would be reflected in the lower age groupings.

In the South West SD, the population fluctuates from age grouping to age grouping, and from year to year. With the exception of 2006, the other five year intervals see a gradual shift from 25-54 dominant age groups to 20-34. Informal research suggests this could be attributed to a number of factors, including the retirement of the baby-boomers, the pressures of the drought, and the reliance on government and service sectors for economic stability. The shift to a younger working force also sees a decline in the number of children, and an inference that many children may live outside the region during their secondary schooling.

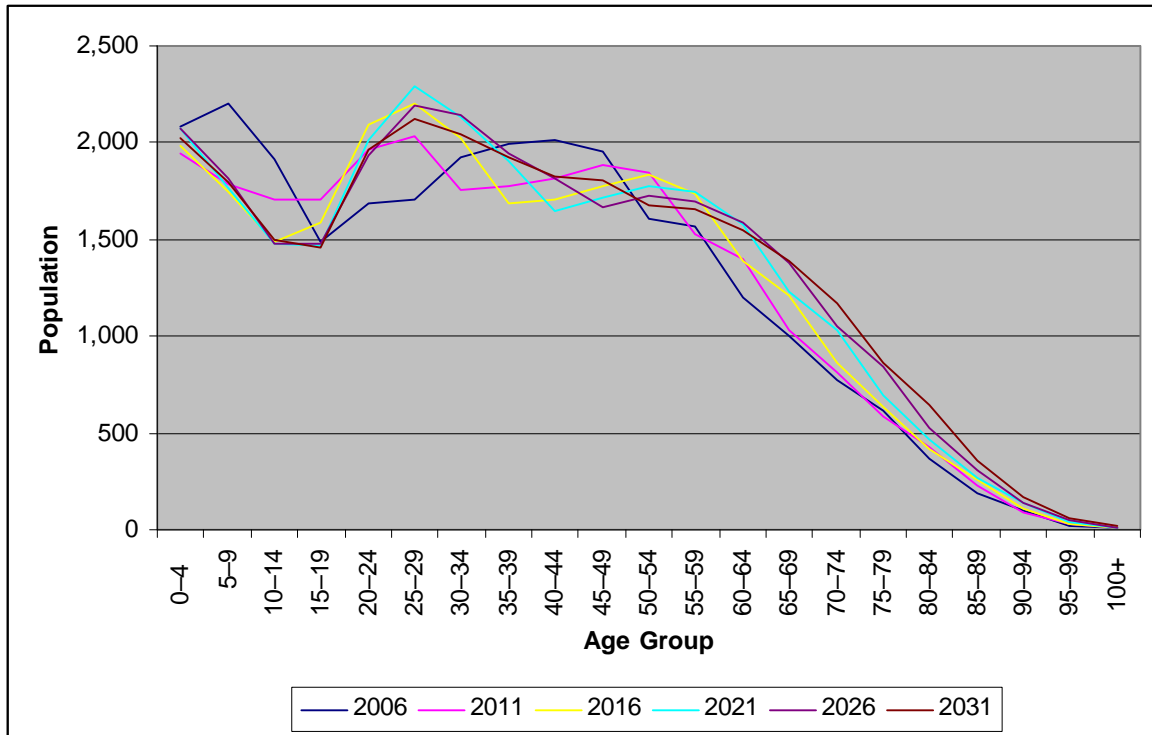
2006 reflects the drop in university-aged individuals in the community as many leave the region to attend tertiary education or seek employment.



Existing Socioeconomic Environment

Section 4

Figure 4-2 Projected Population by Five-Year Group, South West SD, 2006 to 2031 (medium series) by Five-Year Interval



Source: Queensland Government, Population Projections to 2056: Queensland and Statistical Divisions, 3rd edition, 2008.

Overall, the region is projected to experience a shift to a younger workforce, reflective of the government and social services in the area, particularly in the larger centres. The larger centres do also cater to the aged echelon of the community, which is why after 55 (see Table 4-1) the population increases a lot more consistently between five-year intervals. Many area residents, including farmers and the rural population, tend to retire in the larger area centres where health care and other services are more accessible.

4.1.2 Economic Profile

This section examines the economic profile in relation to the social environment. A full economic assessment of the project can be found in the Economic section of the EIS.

## Section 4

## Existing Socioeconomic Environment

Table 4-3 CSG Field General Employment Characteristics

	Total pop'n 2006	Persons 15+		Total labour force	Part. rate	Persons employed		Un- empl. rate
		No.	%*	No.	%	No.	%	%
<b>South West SD</b>	<b>24,779</b>	<b>18,913</b>	<b>76.3%</b>	<b>13,113</b>	<b>69.3%</b>	<b>12,720</b>	<b>97.0%</b>	<b>3.0%</b>
Warroo (S)	1,037	798	77.0%	589	73.8%	580	98.5%	1.5%
Bendemere (S)	987	776	78.6%	487	62.8%	470	96.5%	3.5%
Roma (S)	6,504	4,927	75.8%	3,492	70.9%	3,398	97.3%	2.7%
Booringa (S)	1,706	1,318	77.3%	856	64.9%	824	96.3%	3.7%
Bungil (S)	2,049	1,581	77.2%	1,251	79.1%	1,244	99.4%	0.6%
<b>Darling Downs SD</b>	<b>213,754</b>	<b>166,443</b>	<b>77.9%</b>	<b>101,290</b>	<b>60.9%</b>	<b>96,764</b>	<b>95.5%</b>	<b>4.5%</b>
Murilla (S)	2,689	2,072	77.1%	1,302	62.8%	1,271	97.6%	2.4%
Tara (S)	3,676	2,821	76.7%	1,570	55.7%	1,456	92.7%	7.3%
Taroom (S)	2,388	1,867	78.2%	1,357	72.7%	1,336	98.5%	1.5%
<b>Fitzroy SD</b>	<b>188,403</b>	<b>145,008</b>	<b>77.0%</b>	<b>91,753</b>	<b>63.3%</b>	<b>87,627</b>	<b>95.5%</b>	<b>4.5%</b>
Bauhinia (S)	2,190	1,688	77.1%	1,291	76.5%	1,265	98.0%	2.0%
Duaringa (S)	6,744	5,023	74.5%	3,671	73.1%	3,593	97.9%	2.1%
Emerald (S)	14,354	10,758	74.9%	7,813	72.6%	7,607	97.4%	2.6%
Peak Downs (S)	3,188	2,316	72.6%	1,664	71.8%	1,635	98.3%	1.7%
<b>Queensland</b>	<b>3,904,534</b>	<b>3,097,995</b>	<b>79.3%</b>	<b>1,915,947</b>	<b>61.8%</b>	<b>1,824,997</b>	<b>95.3%</b>	<b>4.7%</b>

Note: \* % of total population, based on place of usual residence. Part = participation, Un-empl = un-employment

Source: ABS Basic Community profiles, 2006 census data

As can be seen in Table 4-3, throughout the CSG field, unemployment is not a concern. All SLAs are below the Queensland average, and most are between 1.5% and 2.7%. Only two shires are above 3.0% unemployment. The shires with the higher unemployment rates also tended to have lower participation rates, indicative of the labour situation in farming regions, as well as those in the more labour intensive industries like mining and construction (see Table 4-4). Though these industries are increasingly opening up to female labourers, the majority are male and therefore there is a decreased level of opportunities for women in the workforce. Informal research also found that many mothers stay home with their children, as reflected in the day care usage in Section 5.1.7. Tables 4-4 to 4-6 show employment by industry throughout the CSG field study area.

## Existing Socioeconomic Environment

## Section 4

Table 4-4 CSG Field Employment by Industry 2006 – Part 1

Area	Total employment	Agriculture, forestry & fishing		Mining		Manufacturing		Electricity, gas, water & waste services		Construction		Wholesale trade		Retail trade	
	No.	No. employed	%*	No. employed	%*	No. employed	%*	No. employed	%*	No. employed	%*	No. employed	%*	No. employed	%*
<b>South West SD</b>	<b>13,345</b>	<b>3,248</b>	<b>24.3%</b>	<b>489</b>	<b>3.7%</b>	<b>774</b>	<b>5.8%</b>	<b>158</b>	<b>1.2%</b>	<b>788</b>	<b>5.9%</b>	<b>366</b>	<b>2.7%</b>	<b>1,256</b>	<b>9.4%</b>
Warroo (S)	610	325	53.3%	30	4.9%	22	3.6%	0	0.0%	16	2.6%	7	1.1%	17	2.8%
Bendemere (S)	456	200	43.9%	15	3.3%	15	3.3%	3	0.7%	37	8.1%	3	0.7%	20	4.4%
Roma (S)	3,417	113	3.3%	139	4.1%	234	6.8%	60	1.8%	240	7.0%	127	3.7%	469	13.7%
Booringa (S)	871	345	39.6%	10	1.1%	53	6.1%	4	0.5%	48	5.5%	23	2.6%	61	7.0%
Bungil (S)	1,396	506	36.2%	90	6.4%	87	6.2%	21	1.5%	89	6.4%	39	2.8%	85	6.1%
<b>Darling Downs SD</b>	<b>96,153</b>	<b>11,496</b>	<b>12.0%</b>	<b>760</b>	<b>0.8%</b>	<b>10,207</b>	<b>10.6%</b>	<b>938</b>	<b>1.0%</b>	<b>7,283</b>	<b>7.6%</b>	<b>3,562</b>	<b>3.7%</b>	<b>11,259</b>	<b>11.7%</b>
Murilla (S)	1,283	407	31.7%	34	2.7%	75	5.8%	7	0.5%	83	6.5%	37	2.9%	114	8.9%
Tara (S)	1,457	637	43.7%	17	1.2%	29	2.0%	7	0.5%	84	5.8%	39	2.7%	93	6.4%
Taroom (S)	1,304	707	54.2%	16	1.2%	28	2.1%	10	0.8%	40	3.1%	33	2.5%	61	4.7%
<b>Fitzroy SD</b>	<b>89,900</b>	<b>4,675</b>	<b>5.2%</b>	<b>6,252</b>	<b>7.0%</b>	<b>9,656</b>	<b>10.7%</b>	<b>2,039</b>	<b>2.3%</b>	<b>8,763</b>	<b>9.7%</b>	<b>2,804</b>	<b>3.1%</b>	<b>9,291</b>	<b>10.3%</b>
Bauhinia (S)	1,484	538	36.3%	149	10.0%	46	3.1%	9	0.6%	86	5.8%	37	2.5%	84	5.7%
Duaringa (S)	4,407	414	9.4%	1,323	30.0%	163	3.7%	12	0.3%	663	15.0%	98	2.2%	218	4.9%
Emerald (S)	8,145	564	6.9%	1,309	16.1%	412	5.1%	74	0.9%	897	11.0%	292	3.6%	858	10.5%
Peak Downs (S)	1,984	206	10.4%	784	39.5%	72	3.6%	7	0.4%	182	9.2%	33	1.7%	78	3.9%
<b>Queensland</b>	<b>1,840,887</b>	<b>63,224</b>	<b>3.4%</b>	<b>30,844</b>	<b>1.7%</b>	<b>181,677</b>	<b>9.9%</b>	<b>18,750</b>	<b>1.0%</b>	<b>166,477</b>	<b>9.0%</b>	<b>72,645</b>	<b>3.9%</b>	<b>213,637</b>	<b>11.6%</b>

\*% of total area employment, based on place of enumeration. Rows do not add up to 100% because 'Not stated' was not included

Source: ABS time series profiles, 2006 census data

## Section 4

## Existing Socioeconomic Environment

Table 4-5 CSG Field Employment by Industry 2006 – Part 2

Area	Accommodation & food services		Transport, postal & warehousing		Information media & telecommunications		Financial & insurance services		Rental, hiring & real estate services		Professional, scientific & technical services	
	No. employed	%*	No. employed	%*	No. employed	%*	No. employed	%*	No. employed	%*	No. employed	%*
<b>South West SD</b>	<b>677</b>	<b>5.1%</b>	<b>628</b>	<b>4.7%</b>	<b>92</b>	<b>0.7%</b>	<b>160</b>	<b>1.2%</b>	<b>100</b>	<b>0.7%</b>	<b>318</b>	<b>2.4%</b>
Warroo (S)	18	3.0%	22	3.6%	0	0.0%	0	0.0%	0	0.0%	5	0.8%
Bendemere (S)	14	3.1%	22	4.8%	4	0.9%	0	0.0%	0	0.0%	10	2.2%
Roma (S)	246	7.2%	190	5.6%	44	1.3%	72	2.1%	34	1.0%	128	3.7%
Booringa (S)	32	3.7%	30	3.4%	6	0.7%	8	0.9%	3	0.3%	5	0.6%
Bungil (S)	45	3.2%	65	4.7%	4	0.3%	12	0.9%	25	1.8%	19	1.4%
<b>Darling Downs SD</b>	<b>5,229</b>	<b>5.4%</b>	<b>4,352</b>	<b>4.5%</b>	<b>881</b>	<b>0.9%</b>	<b>2,391</b>	<b>2.5%</b>	<b>1,207</b>	<b>1.3%</b>	<b>3,301</b>	<b>3.4%</b>
Murilla (S)	50	3.9%	63	4.9%	4	0.3%	13	1.0%	9	0.7%	13	1.0%
Tara (S)	59	4.0%	60	4.1%	0	0.0%	6	0.4%	9	0.6%	12	0.8%
Taroom (S)	42	3.2%	44	3.4%	0	0.0%	8	0.6%	0	0.0%	12	0.9%
<b>Fitzroy SD</b>	<b>6,001</b>	<b>6.7%</b>	<b>5,230</b>	<b>5.8%</b>	<b>735</b>	<b>0.8%</b>	<b>1,460</b>	<b>1.6%</b>	<b>1,457</b>	<b>1.6%</b>	<b>3,277</b>	<b>3.6%</b>
Bauhinia (S)	68	4.6%	63	4.2%	4	0.3%	8	0.5%	9	0.6%	35	2.4%
Duaringa (S)	251	5.7%	278	6.3%	3	0.1%	21	0.5%	56	1.3%	98	2.2%
Emerald (S)	509	6.2%	351	4.3%	64	0.8%	150	1.8%	148	1.8%	311	3.8%
Peak Downs (S)	105	5.3%	51	2.6%	0	0.0%	12	0.6%	8	0.4%	40	2.0%
<b>Queensland</b>	<b>128,208</b>	<b>7.0%</b>	<b>93,075</b>	<b>5.1%</b>	<b>26,605</b>	<b>1.4%</b>	<b>52,919</b>	<b>2.9%</b>	<b>38,220</b>	<b>2.1%</b>	<b>103,778</b>	<b>5.6%</b>

\*% of total area employment, based on place of enumeration. Rows do not add up to 100% because 'Not stated' was not included

Source: ABS time series profiles, 2006 census data

## Existing Socioeconomic Environment

## Section 4

Table 4-6 CSG Field Employment by Industry 2006 – Part 3

Area	Administrative & support services		Public administration & safety		Education & training		Health care & social assistance		Arts & recreation services		Other services	
	No. employed	%*	No. employed	%*	No. employed	%*	No. employed	%*	No. employed	%*	No. employed	%*
<b>South West SD</b>	<b>177</b>	<b>1.3%</b>	<b>1,139</b>	<b>8.5%</b>	<b>904</b>	<b>6.8%</b>	<b>1,184</b>	<b>8.9%</b>	<b>71</b>	<b>0.5%</b>	<b>385</b>	<b>2.9%</b>
Warroo (S)	0	0.0%	57	9.3%	36	5.9%	34	5.6%	0	0.0%	9	1.5%
Bendemere (S)	0	0.0%	45	9.9%	23	5.0%	19	4.2%	0	0.0%	6	1.3%
Roma (S)	66	1.9%	332	9.7%	252	7.4%	403	11.8%	24	0.7%	160	4.7%
Booringa (S)	6	0.7%	85	9.8%	55	6.3%	60	6.9%	6	0.7%	17	2.0%
Bungil (S)	6	0.4%	55	3.9%	61	4.4%	86	6.2%	12	0.9%	28	2.0%
<b>Darling Downs SD</b>	<b>1,743</b>	<b>1.8%</b>	<b>6,123</b>	<b>6.4%</b>	<b>8,559</b>	<b>8.9%</b>	<b>10,336</b>	<b>10.7%</b>	<b>731</b>	<b>0.8%</b>	<b>3,651</b>	<b>3.8%</b>
Murilla (S)	14	1.1%	87	6.8%	96	7.5%	114	8.9%	5	0.4%	17	1.3%
Tara (S)	7	0.5%	105	7.2%	129	8.9%	84	5.8%	0	0.0%	33	2.3%
Taroom (S)	9	0.7%	99	7.6%	72	5.5%	73	5.6%	0	0.0%	22	1.7%
<b>Fitzroy SD</b>	<b>2,101</b>	<b>2.3%</b>	<b>4,900</b>	<b>5.5%</b>	<b>7,411</b>	<b>8.2%</b>	<b>7,705</b>	<b>8.6%</b>	<b>583</b>	<b>0.6%</b>	<b>3,357</b>	<b>3.7%</b>
Bauhinia (S)	14	0.9%	100	6.7%	72	4.9%	62	4.2%	3	0.2%	51	3.4%
Duaringa (S)	103	2.3%	115	2.6%	200	4.5%	112	2.5%	11	0.2%	149	3.4%
Emerald (S)	163	2.0%	419	5.1%	552	6.8%	430	5.3%	27	0.3%	416	5.1%
Peak Downs (S)	45	2.3%	82	4.1%	95	4.8%	55	2.8%	8	0.4%	71	3.6%
<b>Queensland</b>	<b>56,143</b>	<b>3.0%</b>	<b>122,997</b>	<b>6.7%</b>	<b>139,895</b>	<b>7.6%</b>	<b>188,558</b>	<b>10.2%</b>	<b>24,876</b>	<b>1.4%</b>	<b>68,886</b>	<b>3.7%</b>

\*% of total area employment, based on place of enumeration, Rows do not add up to 100% because 'Not stated' was not included

Source: ABS time series profiles, 2006 census data

## Section 4

## Existing Socioeconomic Environment

The agricultural dominance in most areas is reflected in the median weekly incomes. Areas with increased mining and oil and gas activity have higher incomes than those who rely more on agriculture. There is also indication from consultation that the income derived from agriculture is also declining in the area. The Land Use and Economics Sections provide more detail on the level of productivity in the various areas agricultural returns.

**Table 4-7 CSG field Median Weekly Income**

Area	Individuals 15+	Household
<b>South West SD</b>	<b>\$478</b>	<b>\$890</b>
Warroo (S)	\$413	\$747
Bendemere (S)	\$377	\$731
Roma (S)	\$545	\$1,047
Booringa (S)	\$380	\$666
Bungil (S)	\$546	\$1,062
<b>Darling Downs SD</b>	<b>\$420</b>	<b>\$875</b>
Murilla (S)	\$392	\$697
Tara (S)	\$327	\$623
Taroom (S)	\$442	\$810
<b>Fitzroy SD</b>	<b>\$481</b>	<b>\$1,067</b>
Bauhinia (S)	\$557	\$1,056
Duaringa (S)	\$755	\$1,782
Emerald (S)	\$610	\$1,446
Peak Downs (S)	\$664	\$1,850
<b>Queensland</b>	<b>\$476</b>	<b>\$1,033</b>

Source: ABS basic community profiles, 2006 census data

From south to north in the CSG field study area, the income increases significantly, particularly in Fitzroy SD. This is a result of the mining industry presence. In the rest of the SLAs, increased income from oil and gas employment will increase competition in the area if such jobs are desirable. This has already increased local incomes in Bungil Shire.

### 4.1.3 Educational Profile

As is reflected in the local industries, most advanced education in the CSG field is focussed around technical trades for specialised workers. This is true for farmers as it is for miners and drillers. The diploma or certificate may not be the same, but it is the required accreditation to work in that specific field or job. Table 4-8 outlines the education levels of people over 15 in the study area. Certificate III and IV are the most common level attained, and reflects the trades type activities predominant in the area.

## Existing Socioeconomic Environment

## Section 4

Table 4-8 CSG field Education Levels of Persons 15+

Area	Postgraduate Degree		Graduate Diploma and Graduate Certificate		Bachelor Degree		Advanced Diploma and Diploma		Certificate not further defined		Certificate III & IV		Certificate I & II		Total		Level of education inadequately described/not stated		Total
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.
<b>South West SD</b>	<b>115</b>	<b>1.5%</b>	<b>143</b>	<b>1.9%</b>	<b>1,275</b>	<b>17.0%</b>	<b>962</b>	<b>12.8%</b>	<b>249</b>	<b>3.3%</b>	<b>2,392</b>	<b>31.9%</b>	<b>275</b>	<b>3.7%</b>	<b>2,916</b>	<b>38.9%</b>	<b>2,083</b>	<b>27.8%</b>	<b>7,494</b>
Warroo (S)	0	0.0%	3	1.0%	62	21.1%	54	18.4%	17	5.8%	80	27.2%	7	2.4%	104	35.4%	71	24.1%	294
Bendemere (S)	7	2.6%	0	0.0%	31	11.6%	28	10.4%	9	3.4%	81	30.2%	12	4.5%	102	38.1%	100	37.3%	268
Roma (S)	45	2.2%	34	1.6%	391	18.8%	240	11.5%	50	2.4%	731	35.1%	87	4.2%	868	41.7%	505	24.2%	2,083
Booringa (S)	9	1.9%	6	1.3%	66	13.8%	59	12.3%	18	3.8%	160	33.3%	25	5.2%	203	42.3%	137	28.5%	480
Bungil (S)	12	2.1%	17	2.9%	104	18.0%	91	15.7%	20	3.5%	189	32.7%	19	3.3%	228	39.4%	126	21.8%	578
<b>Darling Downs SD</b>	<b>2,212</b>	<b>3.0%</b>	<b>1,737</b>	<b>2.4%</b>	<b>13,399</b>	<b>18.2%</b>	<b>9,677</b>	<b>13.1%</b>	<b>2,344</b>	<b>3.2%</b>	<b>23,560</b>	<b>31.9%</b>	<b>2,270</b>	<b>3.1%</b>	<b>28,174</b>	<b>38.2%</b>	<b>18,553</b>	<b>25.2%</b>	<b>73,752</b>
Murilla (S)	18	2.2%	19	2.4%	123	15.4%	114	14.2%	38	4.7%	226	28.2%	27	3.4%	291	36.3%	236	29.5%	801
Tara (S)	9	0.9%	8	0.8%	143	13.7%	118	11.3%	36	3.5%	344	33.0%	45	4.3%	415	39.8%	349	33.5%	1,042
Taroom (S)	3	0.5%	7	1.3%	103	18.7%	79	14.3%	19	3.4%	173	31.4%	18	3.3%	210	38.1%	149	27.0%	551
<b>Fitzroy SD</b>	<b>1,449</b>	<b>2.2%</b>	<b>1,270</b>	<b>1.9%</b>	<b>10,480</b>	<b>15.8%</b>	<b>6,550</b>	<b>9.9%</b>	<b>1,787</b>	<b>2.7%</b>	<b>24,462</b>	<b>36.8%</b>	<b>1,786</b>	<b>2.7%</b>	<b>28,035</b>	<b>42.2%</b>	<b>18,670</b>	<b>28.1%</b>	<b>66,454</b>
Bauhinia (S)	7	1.2%	9	1.5%	95	16.0%	85	14.4%	20	3.4%	217	36.7%	26	4.4%	263	44.4%	133	22.5%	592
Duaringa (S)	22	1.0%	22	1.0%	292	12.7%	191	8.3%	71	3.1%	926	40.3%	65	2.8%	1,062	46.2%	708	30.8%	2,297
Emerald (S)	90	1.7%	112	2.1%	860	16.4%	522	10.0%	147	2.8%	2,135	40.8%	159	3.0%	2,441	46.6%	1,209	23.1%	5,234
Peak Downs (S)	6	0.5%	9	0.8%	146	13.2%	111	10.0%	38	3.4%	489	44.1%	24	2.2%	551	49.7%	286	25.8%	1,109
<b>Queensland</b>	<b>-</b>	<b>3.9%</b>	<b>-</b>	<b>2.3%</b>	<b>-</b>	<b>19.8%</b>	<b>-</b>	<b>13.1%</b>	<b>-</b>	<b>3.0%</b>	<b>-</b>	<b>30.2%</b>	<b>-</b>	<b>2.3%</b>	<b>-</b>	<b>35.5%</b>	<b>-</b>	<b>25.4%</b>	<b>1,560,868</b>

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

## Section 4 Existing Socioeconomic Environment

### 4.2 Reasonably Foreseeable Development Area

The Reasonably foreseeable development area includes information from the old LGAs as well as the post amalgamation jurisdictions. This area primarily focuses on Roma Regional Council due to the relationship of the reasonably foreseeable development fields to the council (see Figure 1-1a). Due to the recent council amalgamations, as much data for the new Roma Regional Council was included as possible; however, this was limited to what had been released by ABS at the time this report was drafted. As a result, some information is presented in the old LGAs and some for Roma Regional Council as a whole. Additionally, for some components, the town of Roma was included as it is anticipated to experience the majority of the potential positive and negative community effects of the project being the primary service centre for the area.

Individual landholders directly affected by the project are not identified in the SIA due to the confidential negotiations they are engaged in with Santos.

#### 4.2.1 Demographic Profile

##### *Population*

The populations of key towns in the area highlight the rural make-up. This is particularly evident when you take into consideration the size of the community, and the percentage it represents of its SLA (LGA), as seen in Table 4-9. Surat makes up 42.0% of Warroo Shire, Yuleba and Wallumbilla make up 47.4% of Bendemere Shire, Injune makes up 28.3% of Bungil Shire, Miles makes up 48.3% of Murilla Shire, Taroom makes up 26.2% of Taroom Shire and Roma makes up 100.0% of Roma Town. Roma Town is located within Bungil Shire, and much of Bungil's population is located around Roma. Rolleston was included to highlight the distance between Arcadia Valley and the communities of Bauhinia Shire, which is why the three study CSG fields are assessed through Roma Regional Council and Taroom Shire Council data (see Figure 1-1a). Qualitative information from Arcadia Valley collected by JTA and Santos was included in the assessment.

**Table 4-9 Population of Key Towns within the CSG field**

Statistical Division	SLA	Town	Town Population (2006)	SLA Population	% of SLA
<b>South West</b>	Warroo	Surat	436	1,037	42.0%
	Bendemere	Yuleba	183	987	18.5%
		Wallumbilla	285	987	28.9%
	Bungil	Injune	579	2,049	28.3%
	Roma	Roma	6,504	6,504	100.0%
<b>Darling Downs</b>	Murilla	Miles	1,298	2,689	48.3%
	Taroom	Taroom	665	2,538	26.2%
<b>Fitzroy</b>	Bauhinia	Rolleston	217	2,190	9.9%

Source: ABS Basic Community Profiles, 2006 census data

As at 30 June 2007, the estimated resident population of Roma Regional Council was 13,074 persons, representing 0.3% of the State's population (see Table 4-10). The annual average rate of change in population in Roma Regional Council between 30 June 2002 and 30 June 2007 was 0.6 per cent, compared with 2.4% for



## Existing Socioeconomic Environment Section 4

the State (OESR, 2008a). There was no real population change between 2006 and 2007. For Taroom the change was a population decline for the same periods. Taroom better reflects the rural decline in this part of Queensland as a whole because Taroom Township is not a major area service centre, but rather a rural community. It is important to note that Taroom Township is not readily accessible to the proposed three development CSG fields, and will therefore not likely experience project effects during the development of those fields. It is worth pointing out Taroom's population though, as it highlights the rural composition for Taroom Shire, which has since been sub-divided into the Banana Shire Council and Dalby Regional Council (see Figure 1-1a).

**Table 4-10 Estimated Resident Population by Local Government Area, Roma Regional Council and Taroom Shire Council, 2002, 2006, and 2007 (a)**

Local government area	Estimated residential population at 30 June, 2007			Change	
	2002	2006	2007	2002 to 2007 (b)	2006 to 2007
	Number			%	%
Roma Regional Council	12,666	13,070	13,074	0.6	0.0
Taroom Shire	2,619	2,538	2,473	-1.1	-2.6
Queensland	3,714,798	4,090,908	4,181,431	2.4	2.2

(a) Figures may be different from those published in Australian Bureau of Statistics (ABS): *Population Estimates by Age and Sex, Australia and States* (Cat no. 3255.0.55.001). (b) Average annual growth rate. Note: Based on ASGC 2006. Data for Reformed Local Government Area(s) are based on concordant Statistical Local Area data (ASGC 2006). The concordance is population based and has been derived from Planning Information and Forecasting Unit within the Department of Infrastructure and Planning.

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

Population data from 1997 and 2000 - 2007 indicate a slight increase in population over time for Roma town, though 1997 saw a population decrease (see Table 4-11). Population growth has been relatively small, with the annual growth rate from 2003 – 2007 ranging from 0.1% to 1.3%. This five year period has an annual growth rate mean of 0.7%, which is less than the Queensland average of 2.4% for the same period.

Table 4-10 and Table 4-11 give an idea about the regional population trends as a whole. The region is decreasing in population slowly as people leave the rural lifestyle for the urban environment. This is an international phenomenon that is not unique to the region; however, the rate of rural decline for Roma Regional Council indicates there is more stability in the area than in others. The rate of rural decline is not large, but it is in decline, and many factors could be contributing including drought, technological advancements reducing the number of farming staff required, children leaving for higher education and not returning, etc.

## Section 4 Existing Socioeconomic Environment

**Table 4-11 Roma Town Population and Average Annual Population Change (%) Compared to Queensland**

Area	Year							
	1997	2001	2002pr	2003pr	2004pr	2005pr	2006pr	2007p
Roma	6,541 (-0.4%)	6,704 (1.3%)	6,723 (0.3%)	6,754 (0.5%)	6,795 (0.6%)	6,864 (1.0%)	6,955 (1.3%)	6,962 (0.1%)
QLD	3,394,671 (1.7%)	3,628,946 (1.9%)	3,714,937 (2.4%)	3,809,564 (2.5%)	3,901,811 (2.4%)	3,996,564 (2.4%)	4,091,546 (2.4%)	4,182,062 (2.2%)

Source: PIFU, Population and Housing Fact Sheet 2008 a, d. Note – p = preliminary, pr = preliminary rebased.

Roma town on the other hand is helping balance out the measured decrease in the regional population. From 1997 - 2007, the population of Roma increased by 421 persons or 6.4%. That is an average of approximately 38 people a year over the 11 year period (see Table 4-11). Roma is a stable community due to its services base for health, government, education and commerce. Increased opportunities in Roma are assisting in the marginal population growth; however, attraction and retention of skilled people to Roma is viewed by many as a serious concern based on several interviews during site assessments.

The projected population for Roma over the next 20 years (from 2006) will see a 5.3% increase (see Table 4-12) while Queensland will see a 36.5% increase in the same time. The increase in activity in the oil and gas sector, and particularly CSG, could see the Roma population increase at a higher rate once all the proposed projects in the area are made public for PIFU to assess. This will be reliant on a number of factors including recruitment policies of the various companies operating in the area, retention initiatives to attract and retain people to the area and services available in the community. Further detail as to how Santos can contribute to this can be found in Section 9 Potential Impacts and Mitigation Measures.

**Table 4-12 Roma Town and Queensland Population Projections 2006 - 2026<sup>1</sup>**

Area	Year				
	2006	2011	2016	2021	2026
Roma	6,955 (0.7%)	6,944 (0.0%)	7,013 (0.2%)	7,116 (0.3%)	7,326 (0.6%)
Queensland	4,091,546 (2.4%)	4,428,138 (1.6%)	4,823,408 (1.7%)	5,211,995 (1.6%)	5,583,956 (1.4%)

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

Note – <sup>1</sup> Average Annual Change over 5 years to 30 June; based on median series projections.

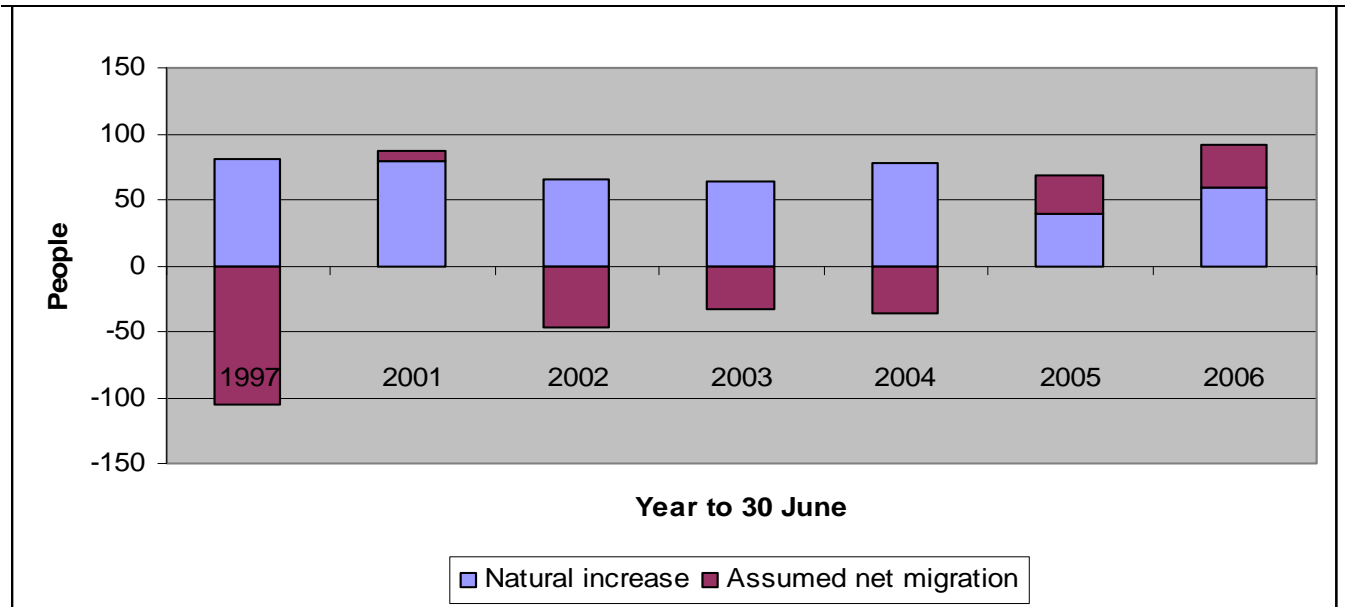
In Table 4-12, Roma's growth rate is projected to be negative for 2011 with the net loss of 11 people. This declining trend in population growth is already evident in the 2007 data (see Table 4-11) where population growth has slowed from the increasing trend from 2002 – 2006. Annual population changes for Roma were broken down by natural increase and assumed net migration to better understand the trends (see Figure 4-3). Although forecasted, development of the Field for this project will likely have an effect and will be discussed in Section 9.

The effect on Roma could be significant if the rural population continues to decline, since Roma is a service centre for the rural area. As identified in the tables and text above, this is not likely to occur at the current rate

## Existing Socioeconomic Environment Section 4

for a long time, though unforeseen variables in the future could potentially slow or speed the decline in rural population.

**Figure 4-3 Roma Annual Population Growth**



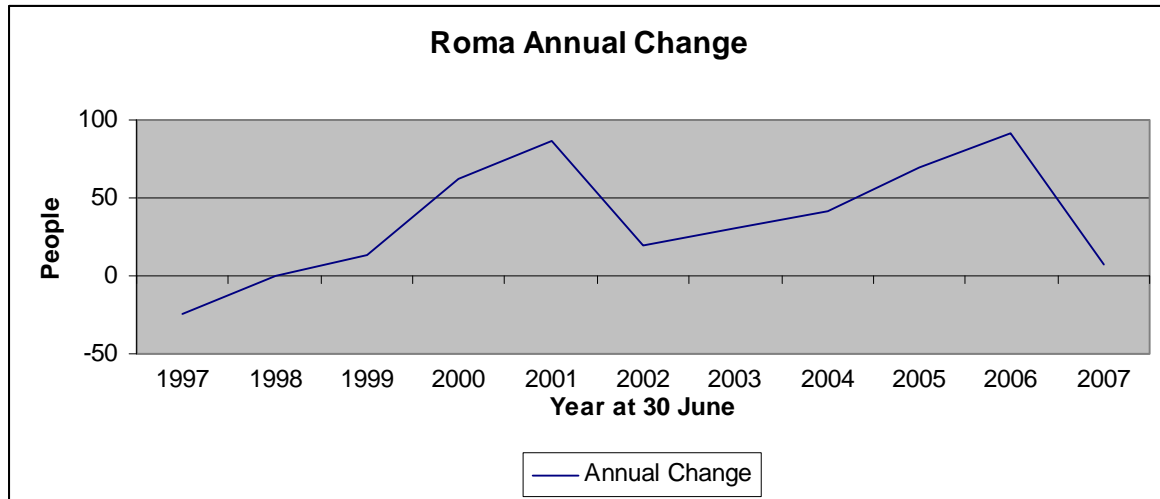
Source: PIFU, 2008d

With the exception of 2001, assumed net migration has been negative from 1997 – 2004. The years 2005 and 2006 saw an increase in assumed net migration which equated to a population increase of > 1.0% overall, which are the 5 year highs. Data on natural increase and assumed net migration for 2007 was not available at the time of this report to explain the sudden drop in population increase from 1.3% (2006) to 0.1% (2007) (PIFU, 2008d).

Informal field research found that the retention of staff, particularly in the government services, teachers, and health practitioners, was a significant contributor to the assumed net migration. Occasionally, large numbers of work rotation ends will coincide (generally three years for most government and teaching contracts) and Roma will experience a noticeable decrease in the number of residents. Many people interviewed in Roma for the SIA noted that attracting and retaining professionals to work and live in Roma is an on-going struggle every business and organisation has to deal with (pers. comm., D. Goddard, 2008) (pers. comm., J. Lines, 2008) (pers. comm., L Waldron and P Bacon, 2008) (pers. comm., M. Weathered, 2008).

## Section 4 Existing Socioeconomic Environment

Figure 4-4 Annual Population Changes for Roma 1997 - 2007



Source: PIFU, 2008d

Natural increases in Roma remained relatively constant, though 2005 saw a drop of approximately 45% from the 1997 – 2006 average (excluding 2005) (PIFU, 2008d). The annual population change figures tell us that Roma has experienced wide variations in the population from 1997 – 2007 (see Figure 4-4). Current PIFU data suggests Roma goes through a 5-year cycle where the population steadily increases before a dramatic drop in the population increase before rebounding. No specific events were mentioned during informal research to explain these specific years (2001-2002 and 2006-2007) of decline, though it is likely that the work rotation explanation is the most likely given the education department experienced a turnover recently of 17 teachers, which is not uncommon (pers. comm., Goddard, 2008). Additionally, the cycle of funding for State and local government programs can have an impact on staff turnover, staff positions, etc.

Table 4-13 shows information on the family structure for the CSG field area. Within the area the percentage of couple families with children under 15 is slightly higher than the Queensland average, while the percentage of couple families with no children under 15 is slightly less than Queensland, indicating the importance of the family unit with children within the social fabric of the area. For the area, with the exception of Roma Town, the proportion of one parent families with children is significantly lower than the Queensland average. Within Roma town this type of family unit is around twice as likely to occur, though still consistent with the State level.

## Existing Socioeconomic Environment Section 4

**Table 4-13 Family Structure – CSG Field (Roma, Fairview and Arcadia Valley)**

Area	Total H/H	Total Family H/H	Total Couple Families with Children	Couple Family with Children under 15	Couple Family no Children under 15	Total One-Parent Families with Children	One-Parent Family with Children under 15
	No.	%*	%*	%*	%*	%*	%*
Bendemere (S)	358	72%	31%	24%	7%	7%	3%
Booringa (S)	646	70%	31%	24%	7%	7%	4%
Bungil (S)	725	78%	39%	30%	9%	5%	3%
Roma (T)	2,323	73%	32%	25%	7%	13%	9%
Taroom (S)	904	72%	33%	26%	7%	5%	3%
<b>Total</b>	<b>4,956</b>	<b>73%</b>	<b>33%</b>	<b>26%</b>	<b>7%</b>	<b>9%</b>	<b>6%</b>
<b>Queensland</b>	<b>-</b>	<b>73%</b>	<b>32%</b>	<b>23%</b>	<b>9%</b>	<b>12%</b>	<b>7%</b>

Note – H/H = household

Source: ABS, 2006.

### Housing

A separate accommodation study was conducted for the project. A summary of the accommodation study can be found in Section 7 Appendix Z of the EIS. The accommodation study has assembled relevant information about the existing accommodation characteristics of the GLNG Project study area. An assessment of housing demand created by the project, proposed accommodation measures and the ensuing potential impacts are discussed. An accommodation strategy has been developed providing options on managing impacts associated with accommodation for the project.

Roma (within Roma Regional Council) is a focus for the CSG component of the study, as project related accommodation requirements will be most pronounced in this town. Roma (population 6,000) is the largest of the towns in Roma Regional Council and the CSG Field study area. The town has experienced moderate population growth, in part attributed to the developing CSG industry which has established regional offices in Roma.

The town has had an active property market, with a strong growth in median house prices and sales up to late 2008. The rental market is tight, with limited rental properties available and rents increasing steadily over the last five years. Roma's short term accommodation (hotels, motels, caravan parks) are regularly booked out.

### Population Turnover

Table 4-14 highlights the population turnover experienced by the shires of the new Roma Regional Council, and Taroom Shire Council between the 2001 and 2006 census. The population turnover is fairly normal for most of the old shires, including Taroom but Roma town saw a much larger population turnover. The value is derived by dividing the Population flow by a modified 2006 Census count. To be consistent with the calculation of arrivals

## Section 4 Existing Socioeconomic Environment

and departures the 2006 Census count used as the denominator when calculating population turnover is derived from people who answered the question 'where did the person usually live five years ago (at 8 August 2001)' on the 2006 Census form. This count excludes people aged 0-4 years and people who did not state where they lived five years ago. This count is different from that used in the column '2006 Census count' in many of the tables in this publication. Using data from the column '2006 Census count' as a denominator to calculate Population turnover will result in different proportions to those published here (ABS, 2008).

**Table 4-14 Roma Regional Council and Taroom Shire Council (old LGA) Population Turnover, 2006**

Area	2001 Census count	2006 Census count	Census count change	Arrivals	Departures	Net migration	Population flow	Population turnover
Bendemere (S)	924	989	65	215	271	-56	486	57.0
Booringa (S)	1,794	1,702	-92	407	484	-77	891	58.7
Bungil (S)	1,849	2,055	206	638	399	239	1,037	57.6
Roma (T)	6,067	6,505	438	1,719	2,276	-557	3,995	71.6
<b>Roma Regional Council</b>	<b>10,634</b>	<b>11,251</b>	<b>617</b>	<b>2,979</b>	<b>3,430</b>	<b>-451</b>	<b>6,409</b>	<b>-</b>
Taroom (S)	2,513	2,386	-127	429	620	-191	1,049	49.0
<b>Total</b>	<b>13,147</b>	<b>13,637</b>	<b>490</b>	<b>3,408</b>	<b>4,050</b>	<b>-642</b>	<b>7,458</b>	<b>-</b>

Source: ABS, 2008. Roma Regional Council values generated by combining shires that amalgamated to form Roma Regional Council and the Roma City.

Roma town experienced a large flow of people in and out of the area, particularly in the departures. Informal research indicated that many people in Roma are on temporary contracts with their employers and there is frequent turnover of staff, and subsequently their families as well. The industries that experience the largest staff turnover in Roma are the health, education, government agencies and police services. Many of these industries and services rotate staff in with incentives for future promotion within the organisation, which helps attract new staff. Retaining these people and their family's long term has been an ongoing issue for Roma. This conclusion corroborates the data on employment figures and informal field research into the make-up of the Roma community. Key opinion leaders, service providers and Roma residents indicated that staff attraction and retention are areas of concern in Roma during the 2008 site assessments. Taroom Shire experienced both a negative census change and a negative net migration with nearly 30% more people leaving than coming. The low population turnover figure indicates not much activity in the area during this period, particularly when compared to the shires that now make up Roma Regional Council.

Table 4-14 also highlights that for most of the shires, the flow of people is negative from the area. Census count change was the difference between the 2001 census count and the 2006 census count, whereas net migration is the arrivals minus the departures. For the shires of Bendemere, Roma and Taroom, the local population grew. For Bendemere the net migration reduced the growth, whereas in Taroom the net migration erased the local

## Existing Socioeconomic Environment Section 4

growth. Roma experienced a fairly large growth when considering the net loss in migration. Bungil shire actually decreased in size between the censuses, but was compensated by the net migration to give it a positive growth overall. Booringa experienced a decline in both the census count change, and the net migration.

Roma Regional Council saw a census count change of 617, a net migration of -451 and a population flow of 6,409 in an area with a population of 10,634 (though not amalgamated until 2008). This highlights the issues facing the council with regard to population movements, staff retention, and the international trend to a more urbanised society. Even though Roma is an urban environment, its size, location and populace indicate it is more associated with its rural surrounds than as an urban centre. The relative stability of Roma itself is more associated with its standing as an area service hub for government rather than anything else. Economic diversity is a potential solution to maintaining its sustainability as a regional centre. In this sense, the amalgamation into the Roma Regional Council could be a benefit to the other shires, as their population's struggle to balance or grow, but their services are partially or fully maintained by the relatively stable (and marginally growing) population in Roma.

### **Urban Centres and Localities**

In broad terms, an "Urban Centre" is a population cluster of 1,000 or more people while a "Locality" is a population cluster of between 200 and 999 people. For statistical purposes, people living in Urban Centres are classified as Urban while those in localities are classified as rural. Each Urban Centre/Locality has a clearly defined boundary and comprises one or more whole Census Collection Districts. At 30 June 2007 there were 5 urban centres and localities in the Roma Regional Council. There were 6,395 persons resident in the urban centre of Roma, followed by 1,002 persons in the Mitchell Locality. The urban centre of Roma had the highest population density in the region, with 554.6 persons per square kilometre (OESR, 2008a).

The population density outlined in Table 4-15 highlights the rural setting for much of Roma Regional Council. Roma is the regional hub and has the highest population and population density. Still, it is the 32nd largest community in Queensland, indicating its size when compared to the rest of Queensland. More importantly, the regional council as a whole has a very small population density, with 0.2 people per square kilometre (sq km), or 1 person per 5 sq km. This figure underscores the underlying principle that this report focuses on the community issues as a whole. The CSG fields of Roma, Fairview and Arcadia Valley cover an area of more than 20 000 sq km in a region that has an average of 0.2 people per sq km.

**Table 4-15 Estimated resident population by major urban centre/locality, Roma Regional Council and Taroom Shire Council, 2007**

Urban centre/locality	Estimated resident population as at 30 June 2007	Area	Population density	State rank (population size)
	number	sq km	per sq km	
Roma	6,395	11.5	554.6	32
Mitchell (L)	1,002	7.5	133.6	163
Surat (L)	465	4.5	103.0	260
Injune (L)	386	3.5	110.9	282



## Section 4 Existing Socioeconomic Environment

Urban centre/locality	Estimated resident population as at 30 June 2007	Area	Population density	State rank (population size)
	number	sq km	per sq km	
Wallumbilla (L)	302	4.7	64.8	319
<b>Roma Regional Council</b>	<b>13,074</b>	<b>58,834.5</b>	<b>0.2</b>	..
Taroom (L) (a)	665	2.9	229.8	215
Wandoan (L) (b)	411	1.4	289.5	272
<b>Taroom Shire</b>	<b>2,473</b>	<b>18,644.5</b>	<b>0.1</b>	..
<b>Queensland</b>	<b>4,091,546</b>	<b>1,734,174.0</b>	<b>2.4</b>	..

.. = not applicable L = Locality Note: Based on ASGC 2006. (a) Now Banana Shire Council. (b) Now Dalby Shire Council.

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

When comparing the values from Table 4-14 and Table 4-15, though the latter is an estimate, it still denotes a 13.9% increase in the Roma Regional Council population in the past 1.5 years following the 2006 census, and a 3.6% increase in Taroom Shires population. The exact explanation for the increase could not be determined, but research and interviews from stakeholders attribute it to many variables including school amalgamations in Roma, recent staff replenishments in education, skilled labour migration from overseas for Roma businesses (many on 457 Visas), and increased exploration in the oil and gas industry. Increased coal exploration around Wandoan may have contributed to the increase in Taroom Shire. This data contradicts that presented in the demographics section but was included because it highlights the potential for regional activities to impact population figures, especially with such small populations over such a wide area.

### Age Distribution

Table 4-16 shows the age distribution for the population of Roma Regional Council, Taroom Shire and Queensland. In Roma Regional Council in June 2007, 23.2% of persons were aged 0 to 14 years, 65.0% were aged 15 to 64 years and 11.8% were aged 65 years and over (OESR, 2008a). The regional council has a higher percentage of children (0 to 14 years) than Queensland, which could reflect the attractiveness of Roma as a place for raising younger children; however, the reduced number of children and young adults aged 15 to 24 years highlights the pressures to leave the area to attend private school, or pursue higher education or work opportunities available elsewhere. Regional schools outside of Roma predominantly offer P-10 curriculum contributing to outmigration of young people to seek further education. While a certain percentage will attend secondary schools in Roma, some parents send their children to boarding schools in Toowoomba and Brisbane. While precise numbers could not be determined, it is a commonly expressed view that many people in the area send their children away to private schools outside the study area. This is common in rural regions where the main centre does not have the same opportunities as the larger centres in the State. Retention of more of the age group 15 to 24 years through the provision of better and broader education and work opportunities was identified as a goal for the community by many people interviewed in Roma throughout the 2008 site assessments.



## Existing Socioeconomic Environment Section 4

**Table 4-16 Estimated resident population by age groups (years) by local government area, Roma Regional Council, 30 June 2007**

Local government area	Population by age									
	0-14		15-24		25-44		45-64		65+	
	number	%	number	%	number	%	number	%	number	%
Roma Regional Council	3,035	23.2	1,610	12.3	3,740	28.6	3,142	24.0	1,547	11.8
Taroom Shire	515	20.8	231	9.3	653	26.4	731	29.6	343	13.9
Queensland	844,941	20.2	592,761	14.2	1,188,308	28.4	1,043,912	25.0	511,509	12.2

Based on ASGC 2006. Data for Reformed Local Government Area(s) are based on concorded Statistical Local Area data (ASGC 2006). The concordance is population based and has been derived from Planning Information and Forecasting Unit within the Department of Infrastructure and Planning.

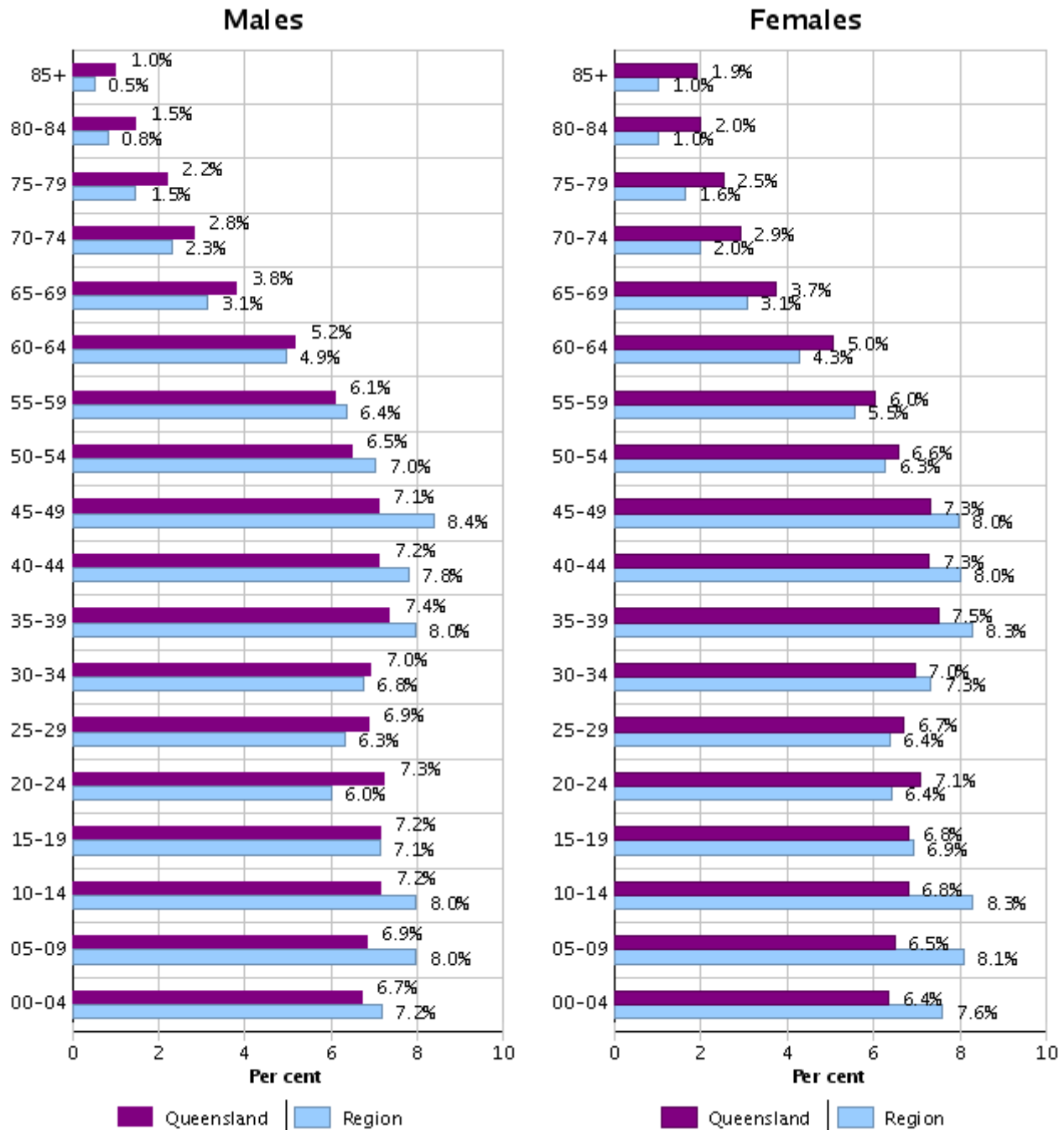
Source: Australian Bureau of Statistics, Population Estimates by Age and Sex, Australia and States (Cat. no. 3235.0.55.001)

Table 4-16 indicates that as people age they tend to leave the Roma area to retire. Roma has aged care facilities (Westhaven Nursing Care Unit and the proposed aged care unit at the Roma Hospital), but still experiences some loss as people move to the larger centres for medical services in retirement, or closer to the coast for a lifestyle choice. Taroom Shire is experiencing an ageing of the workforce as the younger generations are leaving the area for increased opportunities and many are not returning. As a result, Taroom's population distribution has shifted toward the 45+ cohort when compared to the Roma Regional Council population. This could be a sign of a region in decline, with a limited younger population available to replace the ageing workforce.

Figure 4-5 highlights the differences in age groups between Roma Regional Council and Queensland in June 2007.

## Section 4 Existing Socioeconomic Environment

Figure 4-5 Population by age group and sex, Roma Regional Council and Queensland, June 2007



Note: Based on ASGC 2006.

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

## Existing Socioeconomic Environment Section 4

For Roma Town, the greatest portion of the population in 2006 is in the 25-44 range. This range spans 20 years whereas the 0-14 spans 15 years, and is therefore the actual largest portion. This helps explain how the median age is 32 when 61.0% of the population is over 25 (see Table 4-17).

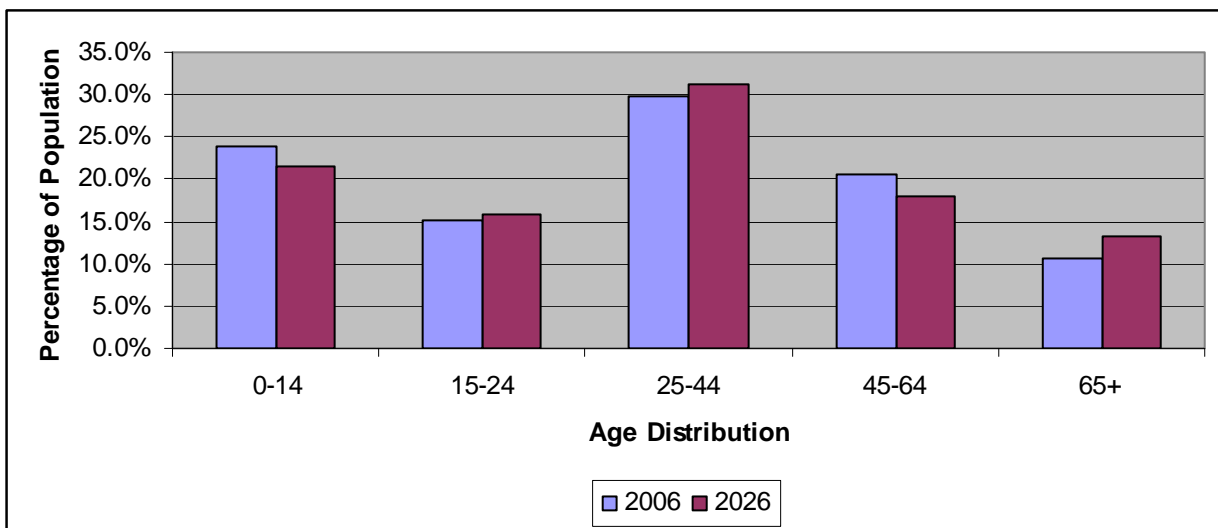
**Table 4-17 Population by Age Group, Roma**

Year	Age Group					Median Age
	0-14	15-24	25-44	45-64	65+	
2006	1,669 (24.0%)	1,048 (15.1%)	2,072 (29.8%)	1,425 (20.5%)	741 (10.7%)	32
2026 (medium series)	1,585 (21.6%)	1,161 (15.8%)	2,296 (31.3%)	1,312 (17.9%)	972 (13.3%)	32

Source: PIFU, 2008d

Figure 4-6 shows the changes projected from 2006 to 2026 in Roma. By 2026 the population will shift slightly with increases in the 15-24, 25-44 and 65+ age groups. The largest increase will be in the 65+ group. The decreases in the 0-14 and 45-64 age groups are likely to be offset with younger people in the other age groups since the median age remains at 32 (see Table 4-17). The main age cohort is the 25-44, suggesting that increased employment opportunities in the Roma area will result in this age grouping increasing by 2026.

**Figure 4-6 Age Distribution, Roma, 2006 and 2026**



Source: PIFU, 2008d

As can be seen from Table 4-16 and Table 4-17, as well as Figure 4-5 and Figure 4-6, Roma town has a fairly distinct make-up as compared to the rest of the regional council as a whole. Roma town as a community will better adapt and benefit from activity in the region than the smaller rural communities who are more susceptible to the boom/bust nature of the extractive industries, particularly after the recent effects of several years of drought. The current pressures on landholders, combined with the current uncertainty regarding gas exploration could further effect the age distribution in the regional council from that of Roma town.

## Section 4 Existing Socioeconomic Environment

### Overseas born persons

As can be seen in Table 4-18, at the time of the 2006 Census there were 439 persons in Roma Regional Council who stated that they were born overseas (3.6% of the total population) and 11,180 persons who stated that they were Australian-born (91.0% of the total population). In comparison 17.9% of the Queensland population were born overseas and 75.2% were Australian-born (OESR, 2008a). Though not shown in Table 4-18, 93.3% of the population of Taroom Shire was born in Australia, with a further 2.2% born overseas. Like Roma Regional Council, this typifies the area as a rural Australian area, with very few people from outside Australia populating the area. Most overseas born Australians reside on the coast or in the major cities, as is common with minority populations.

Informal field research identified several small visible minority communities in the Roma area, many of whom migrated to the area to fill skills shortages in the local labour market, including mechanics and fast food retailers. These communities have integrated into the community at different levels, but there was no mention or evidence of overt racism by the majority population. Many people in Roma Regional Council, and particularly Roma town have become accustomed to foreigners (primarily domestic but also international) as a result of the high turnover of staff in the healthcare, education and government services sectors. Most would prefer people to stay long term in Roma, but have become accustomed to the reality of the current labour market and international trend toward urban migration.

**Table 4-18 Number of Persons by Birthplace (a), Roma Regional Council, 2006**

Local government area	Born in Australia	Percent	Overseas born	Percent	Total persons (b)
	number	%	number	%	number
Roma Regional Council	11,180	91.0	439	3.6	12,281
Queensland	2,935,260	75.2	699,444	17.9	3,904,533
Region as % of Qld	0.4	..	0.1	..	0.3

.. = not applicable -- = nil or rounded to zero C = City S = Shire T = Town AC = Aboriginal Community IC = Indigenous Community (a) Based on place of usual residence. (b) Includes country of birth not stated. Note: Based on ASGC 2006. Data for Reformed Local Government Area(s) are based on concordance Statistical Local Area data (ASGC 2006). The concordance is population based and has been derived from Planning Information and Forecasting Unit within the Department of Infrastructure and Planning.

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

As is normal in rural areas predominantly inhabited by people of a similar ancestry, not all inhabitants are accepting of visible minorities, but informal research found efforts being made to change that perception. Additionally, efforts were made by many individuals interviewed to indicate that the increase in overseas residents is a relatively new phenomena and the community is coming around to the idea of different people. It was also noted that in a community like Roma, anyone who shares similar family/community values or participates in community events and sports more easily integrates into the community (pers. comm., M. Weathered, 2008).

## Existing Socioeconomic Environment Section 4

### Proficiency in Spoken English

At the time of the 2006 Census of Population and Housing in Roma Regional Council, there were 80 persons born overseas who stated that they spoke a language other than English at home (18.0% of the overseas-born population). In Queensland, 31.3% of the overseas-born population spoke a language other than English at home. Of the overseas-born persons in Roma Regional Council who stated that they spoke a language other than English, 12 persons stated that they spoke English not well or not at all. This was 2.7% of the overseas-born population of Roma Regional Council, compared with 5.1% in Queensland as a whole (OESR, 2008a). Another way to assess English proficiency is that of the 12,281 people living in Roma Regional Council, 0.1 % stated they spoke English not well or not at all. This is a notable reflection of the make-up of the current community, as well as highlighting the difficulty an individual or family with limited proficiency in English would have moving to the area.

Family networks for those individuals who have a difficulty communicating in English is important; however, so is a willingness by the community to accept these people. As discussed previously, many of the overseas born people in Roma migrated recently. This means they have not been in the community long, and is compounded by the fact that two groups of people currently reside in Roma: those who permanently reside in Roma; and those who temporarily live in Roma to fulfil a work contract. Due to this division of long-term involvement in the community, many of the recently migrated individuals may have a more difficult time integrating with the long-term residents because they have automatically been lumped in with the other temporary residents. Informal research found that the integration between the permanent residents and the temporary residents was generally weak, which may result as a decreased desire for the temporary residents to stay long term. Conversely, it is difficult for the long term residents to build relationships with the short term people and families because the relationship will potentially (more likely than not) be severed when the person leaves the area.

**Table 4-19 Overseas-born Persons by Proficiency in Spoken English (a), Roma Regional Council, 2006**

Local government area	Speaks other language and speaks English				
	Speaks English only	very well or well	not well or not at all	Total (b)	Total Persons (c)
	— number —				
Roma Regional Council	365	68	12	80	445
Taroom Shire Council	45	7	-	7	52
Queensland	476,791	180,936	35,676	218,958	699,445
Region as % of Qld	0.1	-	-	-	0.1

— = nil or rounded to zero C = City S = Shire T = Town AC = Aboriginal Community IC = Indigenous Community (a) Based on place of usual residence. (b) Includes proficiency in English not stated. (c) Persons born overseas. Excludes persons who did not state their country of birth. Note: Based on ASGC 2006. Data for Reformed Local Government Area(s) are based on concorded Statistical Local Area data (ASGC 2006). The concordance is population based and has been derived from Planning Information and Forecasting Unit within the Department of Infrastructure and Planning.

Source: Australian Bureau of Statistics, Census of Population and Housing, 2006, Basic Community Profile - B11

## Section 4 Existing Socioeconomic Environment

Taroom Shire Council figures for Table 4-19 indicate that an individual or family who did not speak English well nor did not speak English at all would have extreme difficulty associating with the local population. This is even more prevalent for Taroom than Roma, and likely better represents the rural population of Roma Regional Council (when not including Roma town).

### **One-parent families**

At the time of the 2006 Census of Population and Housing (see Table 4-20) there were 413 one-parent families in Roma Regional Council, 12.7% of all families. There were 43 one-parent families in Taroom Shire, 6.6 % of all families. In comparison, 15.9 % of Queensland families were one-parent families (OESR, 2008a).

This is a reflection of the higher regard for the family unit in rural Queensland, as compared to the rest of Queensland, and specifically the larger population centres. This has two issues: firstly in that it highlights the value family is given in rural Queensland, including Roma Regional Council but particularly in Taroom Shire Council and the rural areas of Roma Regional Council; and secondly those one-parent families may find it more difficult to cope in a community where such a lifestyle (whether by choice or not), is not seen as ideal, or even frowned upon. Services are available for such families (see Section 5 or Appendix B), but due to the size of the community and the bias towards the 'nuclear family', being a single parent can be difficult.

**Table 4-20 One-parent Families and Total Families (a), Roma Regional Council, 2006**

Local government area	One-parent families	Total families (b)	Proportion of all families
	— number —		%
Roma Regional Council	413	3,260	12.7
Taroom Shire Council	43	647	6.6 %
Queensland	164,219	1,032,034	15.9
Region as % of Qld	0.3	0.3	..

.. = not applicable — = nil or rounded to zero C = City S = Shire T = Town AC = Aboriginal Community IC = Indigenous Community (a) Based on place of usual residence. (b) Includes same-sex couple families. Note: Based on ASGC 2006. Data for Reformed Local Government Area(s) are based on concordant Statistical Local Area data (ASGC 2006). The concordance is population based and has been derived from Planning Information and Forecasting Unit within the Department of Infrastructure and Planning.

Source: Australian Bureau of Statistics, Census of Population and Housing, 2006, Basic Community Profile - B24

### **4.2.2 Economic Profile**

The economic assessment examines the economic profile in more detail; however some information has been added here to help contextualize the economic situation in the Roma area. A separate economic assessment has been included in the EIS. The economic profile of Taroom was not included because the information from Roma Regional Council was fairly reflective of the study area. Taroom's unemployment rate for the same period was ~2.0%.

It is important to note the employment rate of the CSG field study area, as it is indicative of the current economic situation. Even in the rural areas, the unemployment rate is very low. Informal field research indicated Roma's

## Existing Socioeconomic Environment Section 4

unemployment rate could be as low as 1.7% at the time of this report. Community interviews found that many businesses have difficulty recruiting and retaining staff because of the competition for skilled labour. As a result, some employers like the Holden dealership and the local McDonalds have recruited 457 Visa holders to fill employment vacancies. This has caused some issues in the community, as 457 Visa holders are getting paid more than locals for the same jobs (pers. comm., J Lines, 2008).

**Table 4-21 Roma Regional Council General Employment Characteristics**

Area	Persons 15+		Labour Force		Persons Employed		Unemployment Rate
	No.	%	No.	%	No.	%	%.
Warroo (S)	798	77.0%	589	73.8%	580	98.4%	1.6%
Bendemere (S)	776	78.6%	487	62.8%	470	96.5%	3.5%
Roma (S)	4,927	75.8%	3,492	70.9%	3,398	97.3%	2.7%
Booringa (S)	1,318	77.3%	856	64.9%	824	96.3%	3.7%
Bungil (S)	1,581	77.2%	1,251	79.1%	1,244	99.4%	0.6%

Source: ABS Basic Community profiles, 2006 census data

Table 4-22 shows the weekly incomes for the study area. The range is from \$377 in Bendemere to \$545/546 in Roma and Bungil Shire respectively. Roma has a larger economic base and increased competition to help drive incomes up; whereas Bungil Shire has the proximity to Roma as well as oil and gas industry jobs, including those at Spring Gully. For the rest of the areas, the wages are more reflective of the agricultural activities there, and the level of productivity.

**Table 4-22 Roma Regional Council and Taroom Shire Council Median Weekly Income**

Area	Individuals	Household
Warroo (S)	\$413	\$747
Bendemere (S)	\$377	\$731
Roma (S)	\$545	\$1,047
Booringa (S)	\$380	\$666
Bungil (S)	\$546	\$1,062
Taroom (S)	\$442	\$810
<b>Queensland</b>	<b>\$476</b>	<b>\$1,033</b>

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

### **Unemployment Rate and Labour Force**

At the time of the 2006 Census of Population and Housing in Roma Regional Council, there were 159 unemployed persons (see Table 4-23). With a labour force consisting of 6,675 persons, this corresponded to an unemployment rate of 2.4%. In Taroom Shire, there were 21 unemployed persons with a labour force consisting of 1,357 persons. This corresponded to an unemployment rate of 1.5%. The unemployment rate in Queensland as a whole was 4.7% (OESR, 2008a).

## Section 4 Existing Socioeconomic Environment

**Table 4-23 Number of Unemployed Persons, Persons in the Labour Force and Unemployment Rate (a), Roma Regional Council and Taroom Shire Council, 2006**

Local government area	Unemployed	Labour force	Unemployment rate
	— number —		%
Roma Regional Council	159	6 675	2.4
Taroom Shire Council	21	1,357	1.5
Queensland	90,950	1,915,947	4.7

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

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

Unemployment is quite low in the study area and is not a major concern for the communities. Roma town's unemployment rate was estimated at < 2 % by several stakeholders and businesses during the July 2008 site assessment (pers. comm., A. Cleland, 2008) (pers. comm., D. Newman, 2008) (pers. comm., B. Garvie, 2008) (pers. comm., J. Lines, 2008). The lower than average wages are generally compensated by the lower cost of living in the study area compared to the rest of Queensland (see Table 4-23). The cost of living in Roma town is higher than the surrounding area due to population size, access to services and community infrastructure. This is reflected in the higher wages for Roma, and Bungil Shire, which surrounds Roma town. The cost of living had traditionally been higher in Roma because it is the regional service centre. Additionally, Roma town's increased cost of living is generally associated with the subsidized services workforce, whose living expenses allowances have resulted in some prices (like real estate and rental properties) to be higher than surrounding areas (informal research, 2008). While unemployment is low, underemployment and the percentage of the community from low incomes experiencing higher cost of living (i.e. groceries, etc.) expressed financial hardship (informal consultation).

The CSG field study area is an agricultural region that has not experienced significant rural decline compared to other inland shires affected by the recent drought. Based on baseline data, informal research, discussions with key local stakeholders and field assessments, Roma has remained insulated as a result of the oil & gas industry and it's positioning as a service centre for the outlying area which has diversified the local economy. The population demographics and economic profile provide evidence that this is the case. Furthermore, Taroom's separation from the oil & gas industry around Roma is evident in its rural decline and drought affliction. It should be noted that mining includes oil & gas in the tables above, though there is mining activity in the area as well.

Roma has experienced an increase in tourism over the past decade as a result of local initiatives (pers. comm., B. Garvie, 2008). Due to the location and external variables like the price of petrol, tourism development has its challenges; however, 2007/08 was still a fairly good year (pers. comm., L Waldron and P Bacon, 2008).



## Existing Socioeconomic Environment Section 4

### 4.2.3 Educational Profile

#### School Students

In the 12 months ending 31 December 2006, for students attending a school in Roma Regional Council, 72.0% attended Government schools and 28.0% attended non-government schools. In Taroom, 90.9% attended Government schools and 9.1% attended non-government schools. The corresponding percentages for Queensland were 69.9% of school students attended government schools and 30.1% attended non-government schools (OESR, 2008a).

There were 986 students attending a government primary school (years 1 to 7) in Roma Regional Council and 414 students attending a non-government primary school. In secondary school (years 8 to 12) there were 436 government students and 206 non-government students. There were 217 students attending a government primary school (years 1 to 7) in Taroom Shire and 28 students attending a non-government primary school. In secondary school (years 8 to 12) there were 83 government students and 0 non-government students (OESR, 2008a).

**Table 4-24 School Students by Local Government Area (a), Roma Regional Council, 12 months ending 31 December 2006**

Local government area	Government school students			Non-government school students			Total school students
	Primary (Years 1-7)	Secondary (Years 8-12)	Total (b)	Primary (Years 1-7)	Secondary (Years 8-12)	Total (b)	
	— number —						
Roma Regional Council	986	436	1,598	414	206	620	2,218
Taroom Shire Council	217	83	331	28	-	33	364
Queensland	284,726	165,285	489,295	104,861	96,115	211,132	700,427

— = nil or rounded to zero C = City S = Shire T = Town AC = Aboriginal Community IC = Indigenous Community (a) Based on school location instead of student's place of usual residence. (b) Includes prep year and pre-school students, and ungraded and special school students. Note: Based on ASGC 2006. Data for Reformed Local Government Area(s) are based on concordant Statistical Local Area data (ASGC 2006). The concordance is population based and has been derived from Planning Information and Forecasting Unit within the Department of Infrastructure and Planning.

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

Roma Regional Council is slightly more reliant on Government schools than the state average. Taroom on the other hand, is almost entirely reliant on Government schools. The recent amalgamation of schools in Roma town in 2006 saw Roma Junior, Roma Middle and the TAFE senior campus become a single school. This amalgamation saw an impact on the recent trend of decreased local school enrolment, and was designed to bring more stability to the local schooling. This amalgamation of Government schools also resulted in a change at St. John's school to provide schooling to year 12 to compete with the Government school (pers. comm., D. Goddard, 2008).

## Section 4 Existing Socioeconomic Environment

For the most part, the educational profile of the area is lower than Queensland as a whole, but reflects the employment of the area. Many local jobs do not require advanced education or undergraduate degrees and this is reflected in Table 4-25. Most higher education in the study area was achieved at diploma and certificate level. It should also be noted that in rural areas, some people never receive formal training or education in a specific field but rather obtain on-the-job training. They may be skilled in their field, but they are not necessarily accredited. For employment in the CSG Field, experience in skills like welding, electrical, mechanical and drilling are all assets. Many positions will receive on-the-job training and therefore will not require specific skills or prior training. Some specific positions such as drill operators, welders and electricians will require accreditation.

## Existing Socioeconomic Environment

## Section 4

Table 4-25 Roma Regional Council Education Levels of Persons 15+

Area	Postgraduate Degree		Graduate Diploma / Graduate Certificate		Bachelor Degree		Advanced Diploma / Diploma		Certificate not further defined		Certificate III & IV		Certificate I & II		Total		Level of education inadequately described/not stated		Total
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	
Warroo (S)	0	0.0%	3	1.0%	62	21.1%	54	18.4%	17	5.8%	80	27.2%	7	2.4%	104	35.4%	71	24.1%	294
Bendemere (S)	7	2.6%	0	0.0%	31	11.6%	28	10.4%	9	3.4%	81	30.2%	12	4.5%	102	38.1%	100	37.3%	268
Roma (S)	45	2.2%	34	1.6%	391	18.8%	240	11.5%	50	2.4%	731	35.1%	87	4.2%	868	41.7%	505	24.2%	2,083
Booringa (S)	9	1.9%	6	1.3%	66	13.8%	59	12.3%	18	3.8%	160	33.3%	25	5.2%	203	42.3%	137	28.5%	480
Bungil (S)	12	2.1%	17	2.9%	104	18.0%	91	15.7%	20	3.5%	189	32.7%	19	3.3%	228	39.4%	126	21.8%	578
Taroom (S)	3	0.5%	7	1.3%	103	18.7%	79	14.3%	19	3.4%	173	31.4%	18	3.3%	210	38.1%	149	27.0%	551
<b>Queensland</b>	-	<b>3.9%</b>	-	<b>2.3%</b>	-	<b>19.8%</b>	-	<b>13.1%</b>	-	<b>3.0%</b>	-	<b>30.2%</b>	-	<b>2.3%</b>	-	<b>35.5%</b>	-	<b>25.4%</b>	-

Based on place of usual residence

Source: ABS basic community profiles, 2006 census data

## Section 4

## Existing Socioeconomic Environment

**Post School Qualification**

At the time of the 2006 Census of Population and Housing in Roma Regional Council, there were 3,703 persons aged 15 years and over with a qualification, 39.4% of the population in this age group. This percentage was less than that for Queensland (50.4%). In Roma Regional Council there were 787 persons with a bachelor degree or higher, 472 persons with an advanced diploma or diploma, and 1,505 persons with a certificate. Of persons aged 15 years and over with a qualification, 21.3% had bachelor degree or higher (26.0% in Queensland), 12.7% had an advanced diploma or diploma (13.1% in Queensland), and 40.6% had a certificate (35.5% in Queensland) (OESR, 2008a).

Roma Regional Council has a significant under representation in persons with a bachelor degree or higher, a marginal under representation of those with an advanced diploma or diploma, and a significant over representation of those with a certificate. This is mainly a reflection of the agricultural industry, where many professions do not require an advanced education. Also of note is that in the agricultural industry, and often in many rural positions, the individual is qualified in a specific skill, but has never been certified by a recognized institution. This is often referred to as on-the-job-training, but with a specific skill taught informally.

**Table 4-26 Post-School Qualifications by Level of Education (a), Roma Regional Council, 2006**

Local government area	Level of education			Persons with a qualification (d)		Total persons (e)
	Bachelor degree or higher (b)	Advanced diploma or diploma	Certificate (c)	Number	%	
	Number					Number
Roma Regional Council	787	472	1,505	3,703	39.4	9,392
Queensland	405,904	204,039	554,243	1,560,868	50	3,097,995
Region as % of Qld	0.2	0.2	0.3	0.2	..	0.3

.. = not applicable – = nil or rounded to zero C = City S = Shire T = Town AC = Aboriginal Community IC = Indigenous Community (a) Based on place of usual residence. (b) Includes bachelor degree, graduate diploma, graduate certificate and postgraduate degree. (c) Includes Certificate, I, II, III and IV and Certificates not further defined responses. (d) Persons aged 15 years and over, includes 'inadequately described' and 'not stated' level of education responses. (e) Persons aged 15 years and over. Note: Based on ASGC 2006. Data for Reformed Local Government Area(s) are based on concordant Statistical Local Area data (ASGC 2006). The concordance is population based and has been derived from Planning Information and Forecasting Unit within the Department of Infrastructure and Planning.

Source: Australian Bureau of Statistics, Census of Population and Housing, 2006, Basic Community Profile - B39

The level of bachelor degrees or higher, as well as the advanced diploma or diplomas is likely over represented in the short-term residents who are working for government services, the education system or the health services. This is likely because positions that require such accreditation must be received from a recognized institution. Training opportunities in Roma were seen as a means for retaining families in the area by offering spouses more opportunities (pers. comm., D Goddard, 2008) (pers. comm., J. Lines, 2008).

## Existing Socioeconomic Environment

## Section 4

### 4.2.4 Community Values, Vitality, Lifestyle and Wellbeing

The study area is predominantly made up of individual homesteads and farms, with small scattered communities along the major highways that crisscross the countryside. Many communities are little more than a collection of shops with the occasional school or government building. This reflects the rural make-up of the area, and the relatively sparse population in terms of total land area.

As can be expected, this area is typified as country Queensland. Life is a mix between farm isolation and local rural events which act to bring people together. In some areas the pattern of settlement is more dispersed, as is the case with Arcadia Valley, where the local population may not have an actual town site, but still considers itself as a community (informal research, 2008).

A closer inspection of Roma was conducted as it will likely experience social effects of the initial field developments.

#### **Roma**

Various famous explorers travelled through the Roma District in search of new lands in the mid 19th century. The explorer perhaps most credited with the initial exploration of the district is Sir Thomas Mitchell. It is Mitchell, in 1846, who described the land to the south west of present day Roma as 'a champagne region'.

With the coming of the railway, Roma was firmly established as a service centre for the surrounding district and as a premier inland town in the State (Roma Town Web Page, 2008). Near the turn of the previous century, oil was struck on Roma's Hospital Hill, making it the first oil strike in Australia. This history of oil and gas has also contributed to the development of Roma. In addition to oil and gas, Roma has a strong agricultural history, predominantly cattle, and is host to the areas premier sales yard.

Roma is now a service hub for the South West SD as well as the principal centre for the newly formed Roma Regional Council (March, 2008). Many government agencies and services have been established in Roma to service the entire South West Queensland. This has helped Roma become the most stable and largest community in the area.

Much like the rest of the study area, Roma prides itself on family values and the community spirit (informal field assessment, 2008). This is evident in the social events for the community, and the participation in sports and recreational activities. There are issues affecting Roma's social fabric however, including too few social events and difficulty for outsiders trying to integrate. An expansion of opportunities in the community was seen as a way to enhance the community (pers. comm., M. Weathered, 2008).

Most people interviewed felt Roma was best described as a family orientated community. People also indicated that due to the contracting arrangements of many of the governmental agencies and service providers, there are two sub-communities in Roma:

- The long-term residents; and
- The short-term residents.

This creates an interesting dynamic, in that there is a reduced level of social interaction between these groups as there is within. Informal research found that many new arrivals to the community found it difficult to integrate as a result, which often leads to a feeling of not belonging. This is likely an unintended trigger in many people not choosing to remain in Roma. The perspective of the long-term residents is, why make friends with people who are just going to leave in a few years? This is an understandable and logical reaction to the trend, but likely

## Section 4

# Existing Socioeconomic Environment

inhibits the ability of government agencies and service providers to attract and retain staff. The project may positively affect this relationship by better integrating short-term residents into the community with the project workforce. The project workforce could act as a bridge between the two sub-communities thus allowing for greater interaction.

The increase in skilled professionals in the area may help attract people to the area, and help retain them through increased opportunities and services. The staff attraction and retention issue is not just to fill employment vacancies in the area but also the issue of employment opportunities for spouses. Due to Roma's size, there are limited economic and employment opportunities in the community. As a result, many contract employees' spouses are not easily able to find employment, which results in social and family stress. This can lead to employees not extending their contracts. This problem was frequently mentioned during the community assessment, indicating its importance in the community, particularly in the government services and departments during the 2008 site assessments.

As a consequence, Roma is a very liveable community for the long-term residents, while at the same time it can be very difficult to settle into and integrate for the short-term residents. Recently, local businesses have been recruiting staff from outside the region, and country, including several 457 Visa holders and their families (pers. comm., B. Garvie, 2008) (pers. comm., D. Roche, 2008). This group also has some issues with integration. Not only is there reduced integration from them being lumped in with the short-term residents, but many speak English as a second language, and are visible minorities. Still, there is a strong sense of community in Roma, with the long-term residents making up the majority of the population. The changing national employment rates as a result of the economic slow down may result in an increase in the number of potential employees from outside the study area. This could change the recruitment and retention of staff in the future if jobs are scarcer and options limited.

For the most part, Roma could be described as a rural country town. Roma is more representative of its rural surrounds than similar sized communities closer to the coast. There is a much stronger linkage to its traditional roots than to its relatively slow urbanization. Roma is orientated towards families but a lack of employment opportunities for spouses is a major reason for people not staying (pers. comm., D. Goddard, 2008). For many in Roma the community image is of agriculture, though there are oil and gas ties from the oil activity. Since the oil infrastructure is not in plain sight or easily identifiable, many people are unaware of its presence unless there is infrastructure on their property.

As a regional services centre, Roma has a fairly well established services sector, particularly in proportion to the town population as well as that of the surrounding area. In this sense Roma could be regarded as overrepresented in terms of services compared to other similar sized communities in Queensland because it is a regional service centre. The proximity of the communities in the study area, and their access to Roma via main roads also enhances their services available. In this sense, the study area is fairly well situated to access a variety of State and local services. State and government services however are more generic by design and cover the standard service afforded to all Queensland residents. In this sense, people in Roma just have more direct access than most.

Social service providers and key stakeholders indicated that although Roma is well serviced in some areas, there is a lack of services in some key areas, including counselling (teen/youth, drug and alcohol, domestic violence, mental health), migrant integration, disabled/disadvantaged/elderly persons support and general youth services. The prevalence of drugs and alcohol was raised as a serious concern, particularly alcohol. Many of the ongoing social issues listed above have alcohol use as the "x factor" (pers. comm., Roma Neighbourhood Centre, 2008). Rural regional culture, agricultural industry and isolation are all contributing factors to the use and acceptance of alcohol in the community.

## Existing Socioeconomic Environment

## Section 4

There is also concern in the community as to the level of acceptance of the culture of alcohol in the community. This is evident in community social events like sports and recreational activities, local restaurants and pubs, the local night life, domestic use and recently the licensing of the local theatre. This has created a reduction in the number of family orientated areas and events, which could erode the social fabric and family direction of the community. Many people interviewed saw alcohol consumption as a problem in the area, but not any different to the outlying communities (Roma Field Assessment, 2008).

### 4.3 Gas Transmission Pipeline

The gas transmission pipeline corridor assessment focuses on the area as a whole for the social profile. Information on the specific landholders cannot be included in this report due to the confidentiality agreements Santos committed to in the discussions with individual landholders. Similar to the negotiations being conducted for the CSG field, Gas transmission pipeline negotiations are not assessed in this report. To meet the terms of reference, the report examines the area as a whole and assesses the impact on the community rather than the individual.

Individual landholders that are directly affected by the gas transmission pipeline are negotiated with by Santos. Santos has indentified approximately 110 private landholders directly affected by the gas transmission pipeline, with an additional 20 (approximately) that may be affected as a result of site alignment adjustments to be determined. Landholders were identified through land deeds and consultation with Santos Land agents throughout 2008. Once all potential affected landholders were identified, formal discussions with all affected landowners occurred in the last quarter of 2008 including individual land valuations. Santos is committed to on-going consultation with potentially affected landholders throughout the process, and has land agent offices at Injune, Moura and Biloela to accommodate.

#### 4.3.1 Demographic Profile

As can be seen in Table 4-27, the majority of the communities in the corridor are fairly small (<1,000), with the exception of Duaringa, Biloela and Moura. This is a reflection of the rural setting in the study area. Duaringa Shire is bisected by the proposed Gas transmission pipeline; however, the vast majority of the population, including Duaringa, is actually well north of the route, and uses the Capricorn Highway as the primary transportation route, whereas the pipeline generally parallels the Dawson Highway to the south. As such, potential project effects on the community of Duaringa or the majority of the shire are low. The proposed Gas transmission pipeline route is also approximately 100 km from Springsure making likely project effects on that community low as well.

**Table 4-27 Population of Key Towns within the CSG field**

Statistical Division	SLA	Town	Town Population (2006)	SLA Population	% of SLA
Fitzroy	Bauhinia (S)	Rolleston	217	2,190	9.9%
		Springsure	829	2,190	37.9%
	Duaringa (S)	Duaringa	6,744	14 523	46.4%
	Banana (S)	Biloela	5,371	13,361	40.2%
		Theodore	444	13,361	3.3%
		Moura	1,774	13,361	13.3%

Source: ABS Basic Community Profiles, 2006 census data



## Section 4

## Existing Socioeconomic Environment

Throughout the rest of the Gas transmission pipeline route, the majority of directly affected people are landholders and their families. These landholders are currently being negotiated with along the entire length of the Gas transmission pipeline to determine fair compensation, pipe alignment issues and timing to reduce the impact on their property and activities. The communities of Moura and Biloela are likely to experience some activity during the construction phase of the Gas transmission pipeline in terms of contractor and senior staff accommodation, so these communities have been included in the assessment. Due to the nature of this study area and the distribution of people throughout the area (agricultural properties and homesteads), more focus was given to the newly amalgamated (March, 2008) local governments data to reflect the broad area in which the pipeline traverses.

As at 30 June 2007, the estimated resident population of Banana Shire Council was 15,420 persons, representing 0.4 per cent of the State's population (see Table 4-28). The annual average rate of change in population in Banana Shire Council between 30 June 2002 and 30 June 2007 was -0.4 per cent, compared with 2.4 per cent for the State. Central Highlands Regional Council was 28,672 persons, representing 0.7 per cent of the State's population at the same time. The annual average rate of change in population in Central Highlands Regional Council between 30 June 2002 and 30 June 2007 was 2.3 per cent, compared with 2.4 per cent for the State. (OESR, 2008a).

**Table 4-28 Estimated Resident Population by Local Government Area, Banana Shire Council and Central Highlands Regional Council, 2002, 2006, and 2007 (a)**

Local government area	Estimated residential population at 30 June, 2007			Change	
	2002	2006	2007	2002 to 2007 (b)	2006 to 2007
	Number			%	%
Banana Shire Council	15,754	15,643	15,420	-0.4	-1.4
Central Highlands Regional Council	25,627	28,256	28,672	2.3	1.5
Queensland	3,714,798	4,090,908	4,181,431	2.4	2.2

(a) Figures may be different from those published in Australian Bureau of Statistics (ABS): *Population Estimates by Age and Sex, Australia and States* (Cat no. 3255.0.55.001). (b) Average annual growth rate. Note: Based on ASGC 2006. Data for Reformed Local Government Area(s) are based on concordant Statistical Local Area data (ASGC 2006). The concordance is population based and has been derived from Planning Information and Forecasting Unit within the Department of Infrastructure and Planning.

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

The projected population growth from 2006 to 2026 from PIFU is 5.5 % for Banana Shire Council and 52.4 % for Central Highlands Regional Council (see Table 4-29). Queensland as a whole is projected to grow by 36.5 % over the same period. These figures highlight the differences between the two councils, though the Central Highlands growth rate belies the likely growth around the proposed pipeline route. The majority of Central Highlands Regional Council projected population growth is likely to occur in the north of the council, as a result of increased coal activity in the Bowen Basin. This is evident by the current population density in the northern part of the region, as opposed to the southern part around the proposed Gas transmission pipeline route.

The relative lack of growth in Banana Shire Council is a reflection of the changing demographics in the traditional agricultural areas. Lack of alternate industries has left these areas susceptible to drought, and less



## Existing Socioeconomic Environment

## Section 4

insulated to economic downturn because of a lack of economic diversification. As a result, growth in Banana Shire Council is more a reflection of the slightly higher natural regeneration rate than migration to the area.

**Table 4-29 Banana Shire Council, Central Highlands Regional Shire and Queensland Population Projections 2006 - 2026<sup>1</sup>**

Area	Year				
	2006	2011	2016	2021	2026
Banana Shire Council	15,634 (1.2%)	15,830 (0.2%)	15,987 (0.2%)	16,182 (0.2%)	16,495 (0.4%)
Central Highlands Regional Shire	28,256 (2.7%)	32,359 (2.7%)	35,765 (2.0%)	39,264 (1.9%)	43,053 (1.9%)
Queensland	4,091,546 (2.4%)	4,428,138 (1.6%)	4,823,408 (1.7%)	5,211,995 (1.6%)	5,583,956 (1.4%)

Source: PIFU, Population and Housing Fact Sheet 2008 e, f

Note – <sup>1</sup> Average Annual Change over 5 years to 30 June; based on median series projections.

When the Banana Shire Council and Central Highlands Regional Council boundaries are assessed at their pre-amalgamation LGAs, the general demographic profile from the 2006 census highlights the population distribution. The gas transmission pipeline corridor passes through southern Bauhinia and Duaringa shires; whereas the majority of the population in these two shires are further north. Emerald Shire and Peak Downs Shire are well away from any gas transmission pipeline activities, and are accessed by a separate east-west highway system. They do have access via the Gregory Highway, but at a distance of over 250 km. For this reason, Emerald and Peak Downs will not be included in the gas transmission pipeline baseline as it is unlikely these areas will experience potential impacts from the project.

**Table 4-30 General Demographics Profile of LGAs**

Area*	2006 Population	Males		Females		Born O/S <sup>o</sup>	
		No.	%	No.	%	No.	%
Fitzroy SD	188,403	96,125	51.0%	92,278	49.0%	15,365	8.2%
Bauhinia (S)	2,190	1,211	55.3%	979	44.7%	85	3.9%
Duaringa (S)	6,744	3,722	55.2%	3,022	44.8%	435	6.5%
Emerald (S)	14,354	7,545	52.6%	6,809	47.4%	1,476	10.3%
Peak Downs (S)	3,188	1,767	55.4%	1,421	44.6%	216	6.8%
Banana (S)	13,361	6,962	52.1%	6,399	47.9%	859	6.4%
Queensland	3,904,534	1,935,381	49.6%	1,969,153	50.4%	17,616	8.2%

Source: ABS Basic Community Profiles, 2006 census data. Note: \*SD = statistical division, S = shire and C = community; Born O/S = born overseas.

The majority of Banana Shire's population is situated close to the gas transmission pipeline. As seen in Table 4-29, there are approximately 13,361 people living in the shire, with the majority within 25 km of the proposed route. The route purposely transects an area to the north of the Banana Shire population corridor along the Dawson Highway in this area to reduce the impact on the local population (see Figure 1-1b).

Throughout all the old shires that make up the gas transmission pipeline study area, all are over represented by the male population, and is a reflection of both the agriculturally dominated rural communities, and the mining

## Section 4

## Existing Socioeconomic Environment

dominated communities (see Table 4-30). There is a slightly reduced number of people born overseas compared to the rest of Queensland except in Bauhinia and Emerald; Bauhinia is much less and more reflective of the South West SD while Emerald has a lot of mining activity and associated industry.

In Banana Shire Council in June 2007, 23.9 % of persons were aged 0 to 14 years, 65.3 % were aged 15 to 64 years and 10.8 % were aged 65 years and over (see Table 4-31). In Central Highlands Regional Council at the same time, 24.7 % of persons were aged 0 to 14 years, 69.9 % were aged 15 to 64 years and 5.4 % were aged 65 years and over (OESR, 2008a). Banana Shire had more children and people aged 25-44 than Queensland as a whole as did Central Highlands Regional Council. Central Highlands Regional Council did have very few people over 65+ as a reflection of the mining industry predominance in the Bowen Basin.

**Table 4-31 Estimated Resident Population by Age Groups (Years) by Local Government Area, Banana Shire Council and Central Highlands Regional Council, 30 June 2007**

Local government area	Population by age									
	0-14		15-24		25-44		45-64		65+	
	number	%	number	%	number	%	number	%	number	%
Banana Shire Council	3,687	23.9	1,820	11.8	4,562	29.6	3,685	23.9	1,667	10.8
Central Highlands Regional Council	7,070	24.7	4,085	14.2	9,648	33.6	6,317	22.0	1,552	5.4
Queensland	844,941	20.2	592,761	14.2	1,188,308	28.4	1,043,912	25.0	511,509	12.2

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

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

Table 4-32 lists the family structure along the pipeline corridor. Total couple families with children are more common along the route than Queensland and the statistical divisions as a whole. This results in lower values in the other categories, and reflects the rural, family orientated lifestyle in these areas. The broader area was shown to illustrate the differences from shire to shire along the route.

## Existing Socioeconomic Environment

## Section 4

Table 4-32 Family Composition Along Gas Transmission Pipeline Route

Area	Total H/H		Total Family H/H		Total Couple Families with Children		Couple Family with Children under 15		Couple Family no Children under 15		Total One-Parent Families with Children		One-Parent Family with Children under 15		One-Parent Family no Children under 15		Other Family	
	No.	No.	%*	No.	%*	No.	%*	No.	%*	No.	%*	No.	%*	No.	%*	No.	%*	
Fitzroy SD	64,710	48,111	74%	22,346	35%	16,800	26%	5,546	9%	7,190	11%	4,741	7%	2,449	4%	659	1%	
Bauhinia (S)	800	569	71%	287	36%	227	28%	60	8%	49	6%	29	4%	20	3%	8	1%	
Duaringa (S)	2,091	1,607	77%	879	42%	703	34%	176	8%	147	7%	110	5%	37	2%	17	1%	
Emerald (S)	4,732	3,560	75%	1,885	40%	1,528	32%	357	8%	353	7%	225	5%	128	3%	45	1%	
Peak Downs (S)	928	755	81%	463	50%	392	42%	71	8%	40	4%	21	2%	19	2%	4	0%	
Banana (S)	4,716	3,508	74%	1,677	36%	1,322	28%	355	8%	389	8%	246	5%	143	3%	51	1%	
Queensland	1,391,635	1,011,981	73%	446,740	32%	321,584	23%	125,156	9%	164,219	12%	98,071	7%	66,148	5%	17,221	1%	

Note – H/H is households

Source – ABS 2006

## Section 4

## Existing Socioeconomic Environment

## 4.3.2 Economic Profile

The economic section of the EIS provides a more detailed economic assessment for the gas transmission pipeline; however some economic detail is included in the SIA to better contextualise the economic profile in relation to the social environment.

Throughout the potentially affected areas of the gas transmission pipeline corridor, the unemployment rate is less than half the State average. Participation rates ranged from 69.7 % to 76.5 %, well above the Queensland average of 61.8 %. The total labour force was lower than the Queensland average in all three shires, but the participation rate more than compensated for this as the persons employed averaged 97.8 % along the route and 95.3 % for the State.

**Table 4-33 Gas transmission pipeline General Employment Characteristics**

	Total population 2006	Persons 15+	Total labour force		Participation rate	Persons employed		Un-employment rate
			No.	%*		No.	%	
<b>Fitzroy SD</b>	<b>188,403</b>	<b>145,008</b>	<b>77.0%</b>	<b>91,753</b>	<b>63.3%</b>	<b>87,627</b>	<b>95.5%</b>	<b>4.5%</b>
Bauhinia (S)	2,190	1,688	77.1%	1,291	76.5%	1,265	98.0%	2.0%
Duaringa (S)	6,744	5,023	74.5%	3,671	73.1%	3,593	97.9%	2.1%
Banana (S)	13,361	10,131	75.8%	7,057	69.7%	6,889	97.6%	2.4%
<b>Queensland</b>	<b>3,904,534</b>	<b>3,097,995</b>	<b>79.3%</b>	<b>1,915,947</b>	<b>61.8%</b>	<b>1,824,997</b>	<b>95.3%</b>	<b>4.7%</b>

\* % of total population, based on place of usual residence

Source: ABS Basic Community profiles, 2006 census data

Tables 4-33, 4-34 and 4-35 show the employment by industry in the study area. The agriculture, forestry and fishing industry is the dominant industry in Bauhinia and the mining in Duaringa. Banana has a mix of agriculture, forestry and fishing, and mining. The fishing in the label is not an accurate label given the area, where most of the activity is generally agriculture, with some forestry. See the economic section for more details.

## Existing Socioeconomic Environment

## Section 4

Table 4-34 Gas Transmission Pipeline Employment by Industry 2006 – Part 1

Area	Total employment	Agriculture, forestry & fishing		Mining		Manufacturing		Electricity, gas, water & waste services		Construction		Wholesale trade		Retail trade	
	No.	No. employed	%*	No. employed	%*	No. employed	%*	No. employed	%*	No. employed	%*	No. employed	%*	No. employed	%*
Fitzroy SD	89,900	4,675	5.2%	6,252	7.0%	9,656	10.7%	2,039	2.3%	8,763	9.7%	2,804	3.1%	9,291	10.3%
Bauhinia (S)	1,484	538	36.3%	149	10.0%	46	3.1%	9	0.6%	86	5.8%	37	2.5%	84	5.7%
Duaringa (S)	4,407	414	9.4%	1,323	30.0%	163	3.7%	12	0.3%	663	15.0%	98	2.2%	218	4.9%
Banana (S)	7,551	1,159	15.3%	1,314	17.4%	570	7.5%	296	3.9%	682	9.0%	220	2.9%	583	7.7%
Queensland	1,840,887	63,224	3.4%	30,844	1.7%	181,677	9.9%	18,750	1.0%	166,477	9.0%	72,645	3.9%	213,637	11.6%

Table 4-35 Gas Transmission Pipeline Employment by Industry 2006 – Part 2

Area	Accommodation & food services		Transport, postal & warehousing		Information media & telecommunications		Financial & insurance services		Rental, hiring & real estate services		Professional, scientific & technical services	
	No. employed	%*	No. employed	%*	No. employed	%*	No. employed	%*	No. employed	%*	No. employed	%*
Fitzroy SD	6,001	6.7%	5,230	5.8%	735	0.8%	1,460	1.6%	1,457	1.6%	3,277	3.6%
Bauhinia (S)	68	4.6%	63	4.2%	4	0.3%	8	0.5%	9	0.6%	35	2.4%
Duaringa (S)	251	5.7%	278	6.3%	3	0.1%	21	0.5%	56	1.3%	98	2.2%
Banana (S)	366	4.8%	263	3.5%	31	0.4%	86	1.1%	83	1.1%	193	2.6%
Queensland	128,208	7.0%	93,075	5.1%	26,605	1.4%	52,919	2.9%	38,220	2.1%	103,778	5.6%

## Section 4

## Existing Socioeconomic Environment

Table 4-36 Gas Transmission Pipeline Employment by Industry 2006 – Part 3

Area	Administrative & support services		Public administration & safety		Education & training		Health care & social assistance		Arts & recreation services		Other services	
	No. employed	%*	No. employed	%*	No. employed	%*	No. employed	%*	No. employed	%*	No. employed	%*
Fitzroy SD	2,101	2.3%	4,900	5.5%	7,411	8.2%	7,705	8.6%	583	0.6%	3,357	3.7%
Bauhinia (S)	14	0.9%	100	6.7%	72	4.9%	62	4.2%	3	0.2%	51	3.4%
Duarinca (S)	103	2.3%	115	2.6%	200	4.5%	112	2.5%	11	0.2%	149	3.4%
Banana (S)	209	2.8%	255	3.4%	416	5.5%	431	5.7%	10	0.1%	205	2.7%
Queensland	56,143	3.0%	122,997	6.7%	139,895	7.6%	188,558	10.2%	24,876	1.4%	68,886	3.7%

\*% of total area employment, based on place of enumeration, Rows do not add up to 100% because 'Not stated' was not included

Source: ABS time series profiles, 2006 census data

## Existing Socioeconomic Environment

## Section 4

Table 4-37 Gas transmission pipeline Employment By Occupation 2006

Area	Managers		Professionals		Technicians and trades workers		Community and personal service workers		Clerical and administrative workers		Sales workers		Machinery operators and drivers		Labourers		Inadequately described/ Not stated		Total
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.
Fitzroy SD	10,436	11.9	11,502	13.1	16,233	18.5	6,954	7.9	11,142	12.7	7,643	8.7	10,388	11.9	11,739	13.4	1,593	1.8	87,630
Bauhinia (S)	467	36.9	74	5.8	125	9.9	50	3.9	105	8.3	35	2.8	186	14.7	198	15.6	26	2.1	1,266
Duarina (S)	475	13.2	265	7.4	684	19.0	160	4.5	315	8.8	159	4.4	958	26.6	500	13.9	79	2.2	3,595
Banana (S)	1,388	20.1	601	8.7	1,126	16.3	404	5.9	653	9.5	427	6.2	1,042	15.1	1,129	16.4	123	1.8	6,893
Queensland	-	12.4	-	17.1	-	15.4	-	9.1	-	14.8	-	10.4	-	7.2	-	11.9	-	1.8	-

Based on place of usual residence

Source: ABS basic community profiles, 2006 census data

## Section 4

## Existing Socioeconomic Environment

As is common in agricultural and mining areas, managers and machine operators are the predominant occupations as seen in Table 4-37. As a result, most other occupation types have reduced averages to compensate.

The median weekly income for individuals and households along the route also reflects the type of activity predominant in the area. Mining and forestry activities help bring up the averages. The lower cost of living when compared to the major centres and the coast indicates that though the averages are already higher than the Queensland average, the amount of money generated is actually even higher in these areas. In Duaringa the cost of living is higher than the other shires.

**Table 4-38 Gas transmission pipeline Median Weekly Income**

Area	Individuals 15+	Household
<b>Fitzroy SD</b>	\$481	\$1,067
Bauhinia (S)	\$557	\$1,056
Duaringa (S)	\$755	\$1,782
Banana (S)	\$528	\$1,143
<b>Queensland</b>	\$476	\$1,033

Source: ABS basic community profiles, 2006 census data

### 4.3.3 Educational Profile

The educational profile of the gas transmission pipeline was examined at a post-secondary level because the construction workforce is not anticipated to move to the area as they will be housed in TAFs along the route. As a result, there is little to no measurable population increase to occur in the study area as a result of the project. Education was examined as an indication of the potential for the project to employ locals for specific tasks like machine operators and labourers during construction. During operations the workforce will be less than 10 individuals inspecting and maintaining the gas transmission pipeline, so no effect on the local schools is anticipated.

Table 4-39 shows the level of education attained by persons over 15 years in the study area. The majority of people have Certificate III and IV, though a large portion did not adequately describe or did not state their level of education.



## Section 4

## Existing Socioeconomic Environment

Table 4-39 Gas transmission pipeline Education Levels Of Persons 15+

Area	Postgraduate Degree		Graduate Diploma and Graduate Certificate		Bachelor Degree		Advanced Diploma and Diploma		Certificate not further defined		Certificate III & IV		Certificate I & II		Total		Level of education inadequately described/not stated		Total
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	
<b>Fitzroy SD</b>	1,449	2.2%	1,270	1.9%	10,480	15.8%	6,550	9.9%	1,787	2.7%	24,462	36.8%	1,786	2.7%	28,035	42.2%	18,670	28.1%	66,454
Bauhinia (S)	7	1.2%	9	1.5%	95	16.0%	85	14.4%	20	3.4%	217	36.7%	26	4.4%	263	44.4%	133	22.5%	592
Duaringa (S)	22	1.0%	22	1.0%	292	12.7%	191	8.3%	71	3.1%	926	40.3%	65	2.8%	1,062	46.2%	708	30.8%	2,297
Banana (S)	57	1.4%	76	1.8%	647	15.6%	424	10.2%	139	3.4%	1,614	38.9%	115	2.8%	1,868	45.1%	1,072	25.9%	4,144
<b>Queensland</b>	-	3.9%	-	2.3%	-	19.8%	-	13.1%	-	3.0%	-	30.2%	-	2.3%	-	35.5%	-	25.4%	-

Based on place of usual residence

Source: ABS basic community profiles, 2006 census data

## Section 4 Existing Socioeconomic Environment

### 4.3.4 Community Values, Vitality, Lifestyle and Wellbeing

The gas transmission pipeline runs north from the Fairview CSG field through the Arcadia Valley, before turning east towards Gladstone and the coast. Much of the pipeline corridor intentionally bypasses populated areas and environmentally sensitive areas to minimise potential impacts. As a result, most of the population along the corridor will experience little to no direct impacts. There is some potential for minor disruptions to their daily lives as a result of construction activities including:

- Temporary traffic delays;
- Temporary restriction of access;
- Temporary increase in people in the general area; and
- Temporary increase in traffic.

As the length of the gas transmission pipeline is approximately 435 km, the assessment of community values, vitality, lifestyle and wellbeing for communities along the corridor is diverse. Starting from the CSG Field, for the most part the communities (both identifiable towns and areas of dispersed settlement such as the Arcadia Valley) tend to be more representative of the rural values associated with the CSG Field. For the last quarter of the corridor, there is a gradual transition from a rural community orientation to a more urban orientation as the Gas transmission pipeline nears the coast. Although the corridor remains within the former Calliope Shire (now Gladstone Regional Council), the properties become smaller and therefore more numerous in this area (see the Land Use chapter of the EIS for more detail on property size changes). This is a reflection of housing and property values in this area (which have rapidly increased in the first decade of the 21<sup>st</sup> century), as well as a more urbanised approach to planning, although the area is still considered predominantly rural in nature.

For the gas transmission pipeline corridor, the changes in land use along the corridor have an effect on the local setting. In the Fairview area, the industry is predominantly beef, similar to that in the CSG Field. The Arcadia Valley is predominantly cultivation, before returning to mainly beef closer to Rolleston. The Moura area is predominantly beef, although cotton is quite common as well. This is continued through to Gladstone Regional Council, where the area becomes more urban and properties smaller as previously discussed. The properties are smaller with good quality soils and are therefore able to sustain small herds and cotton cultivation. The abundance of cattle rather than cultivation along the corridor is a reflection of the soil quality in various locations, as well as the topography and access to irrigation.

Throughout the majority of the gas transmission pipeline corridor, the population is classified as rural, with strong ties to family, the land and the community. There are few physical communities along the corridor, with the majority focussed around Moura. The pipeline corridor around Moura was situated north of the Dawson Highway in order to avoid the population build up there. At the western end, Arcadia Valley does not have a physical community centre; however, there is a sense of community in the valley, with similar feelings toward industry and community shared throughout. This is a good reflection of the community bond shared by many people living in the rural regions of Queensland.

There are various levels of social infrastructure and services in the area, with the majority being located in the major centres. People from the more remote or smaller communities (as well as those on homesteads and farms) are generally required to travel to these centres for many services. This has always been required in the region, being a part of the social fabric of neighbours looking after neighbours and a general self/family reliance for many people isolated from communities. Access can be difficult for some, particularly the poor and elderly

## Section 4 Existing Socioeconomic Environment

with limited mobility or access to transportation. In the case of the elderly, the low numbers of people over 65 reflects the long-term trend of the elderly leaving the area for better access to services in the larger centres.

The area along the route has also experienced varying degrees of impact as a result of recent droughts up to present. This has resulted in many people leaving the area permanently, as well as children leaving for schooling or other opportunities outside the area and not returning. As a result, while much of Queensland is growing at a fairly reasonable pace, much of the gas transmission pipeline corridor populations are relatively stagnant or experiencing slight declines. Although the Central Highland area is projected to increase above the Queensland average to 2026, it is important to note that the majority of the population lives over 200 km north of the pipeline corridor and is not reflective of the population in the region adjacent to the gas transmission pipeline. The population adjacent to the pipeline corridor is experiencing more of the population changes associated with Banana Shire Council.

Many populations may be stagnant in number but experiencing the ageing of their residents. Thus, in the next few generations they could experience rapid population declines as people move to retire or pass away with no population inflow or natural increase. This is a reality of much of the rural landscape being badly affected by the drought, combined with a changing societal trend toward urbanisation. The areas with greater diversity of industries (like Moura, which has cotton, cattle and coal) tend to be better insulated from negative change than the areas with single industries.

### 4.4 LNG Facility

The LNG Facility has been assessed for Gladstone and area, including the former boundaries of Gladstone City, and Calliope Shire. The amalgamation of local government areas (LGAs) in March 2008 saw the following former government areas merged into the Gladstone Regional Council (GRC):

- Gladstone City;
- Calliope Shire;
- Miriam Vale Shire Council; and
- Gladstone Calliope Aerodrome Board.

The most recent, credible data was incorporated into this report at the time of writing. However, due to the amalgamation, some data sources were only available for the former LGAs. In these circumstances data from Gladstone City and Calliope were used as these are the areas where project effects will likely occur.

#### 4.4.1 Demographic Profile

The LNG Facility focuses on the area currently under the jurisdiction of the Gladstone Regional Council since the amalgamation. Due to the recent amalgamation, the data presented is primarily taken from PIFU figures as they are the most recent, and some recently released ABS statistics for the new regional council. The PIFU data is compiled from the former Gladstone City and Calliope Shire data sets. Information from the Fitzroy Statistical Division (SD) is included to develop an area profile, as some effects may require resources from the region.

#### **Population**

The population of the Fitzroy SD is projected to steadily increase, as is seen in Table 4-38. The projections suggest that the population will age in the area, and will be replenished by an equally increasing rate for

## Section 4 Existing Socioeconomic Environment

regeneration. Informal research suggests that the population projections reflect the current attraction of much of the population to the coast and the economic opportunity of the region.

**Table 4-40 Projected Population by Five-Year Age Group, Fitzroy SD, 2006 to 2031 (medium series)**

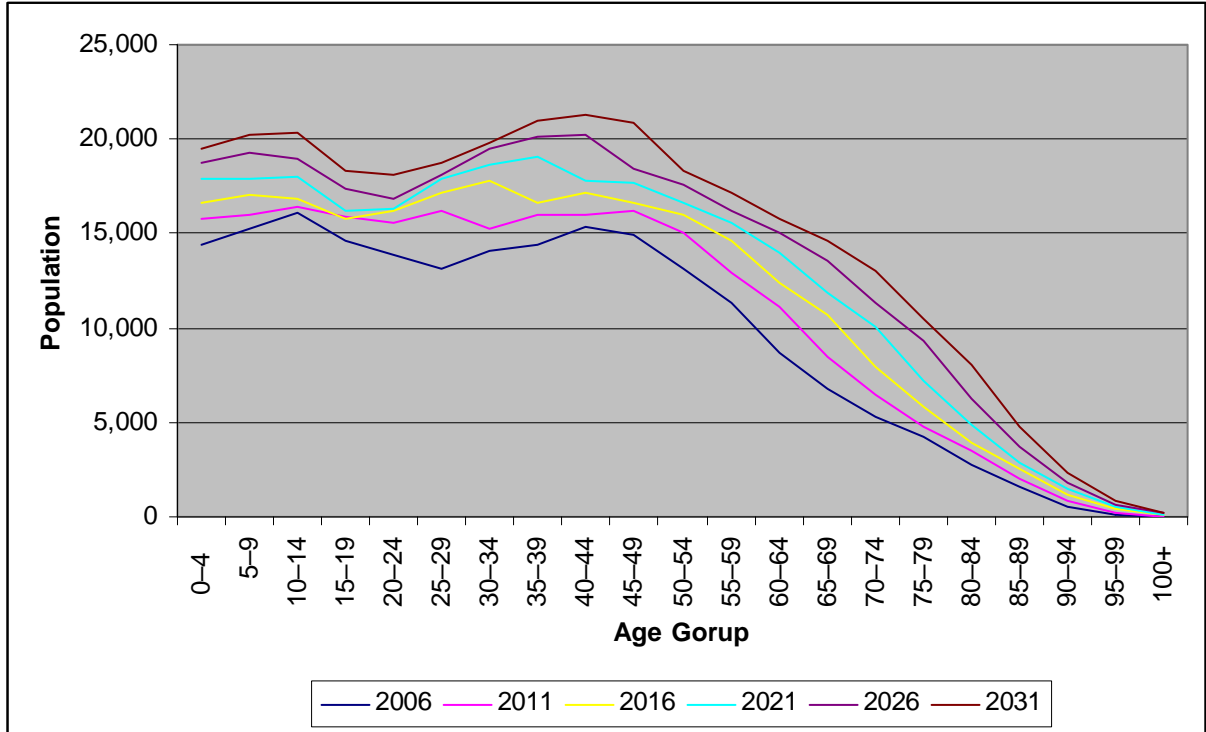
Age Group	Year					
	2006	2011	2016	2021	2026	2031
0-4	14,391	15,784	16,675	17,878	18,795	19,472
5-9	15,203	15,950	17,038	17,909	19,256	20,223
10-14	16,112	16,408	16,840	17,990	18,949	20,326
15-19	14,587	15,895	15,786	16,192	17,381	18,288
20-24	13,890	15,607	16,257	16,271	16,857	18,083
25-29	13,092	16,248	17,183	17,925	18,131	18,779
30-34	14,041	15,266	17,769	18,688	19,540	19,795
35-39	14,448	15,998	16,671	19,108	20,129	20,985
40-44	15,407	16,043	17,135	17,782	20,280	21,324
45-49	14,977	16,192	16,639	17,663	18,400	20,854
50-54	13,092	15,084	16,039	16,580	17,609	18,372
55-59	11,361	12,884	14,586	15,558	16,202	17,196
60-64	8,722	11,118	12,382	14,029	15,046	15,744
65-69	6,824	8,450	10,673	11,886	13,532	14,579
70-74	5,247	6,447	7,968	10,115	11,339	12,981
75-79	4,214	4,716	5,797	7,251	9,313	10,540
80-84	2,744	3,476	3,905	4,874	6,216	8,100
85-89	1,541	1,995	2,508	2,874	3,672	4,792
90-94	541	899	1,173	1,489	1,759	2,310
95-99	147	245	391	521	674	825
100+	22	47	77	121	168	226
<b>Total</b>	<b>200,604</b>	<b>224,753</b>	<b>243,492</b>	<b>262,703</b>	<b>283,248</b>	<b>303,793</b>

Source: Queensland Government, Population Projections to 2056: Queensland and Statistical Divisions, 3rd edition, 2008

From Figure 4-7 it is evident that a fairly consistent increase in population across all age groupings is projected to occur in the Fitzroy SD. The majority of the population is projected to remain in the 29-54 range, reflective of the industrialized economy in the SD, and the overall opportunities, particularly along the coastal corridor.

## Section 4 Existing Socioeconomic Environment

Figure 4-7 Project Population by Five-Year Age Group, Fitzroy SD, 2006 to 2031 (medium series) by Five-Year Intervals



Source: Queensland Government, Population Projections to 2056: Queensland and Statistical Divisions, 3rd edition, 2008

The populations of Gladstone City and Calliope Shire are examined in more detail since they are most likely to experience project effects as a result of the LNG Facility. Population data from 1997 and 2000 - 2007 indicate an increase in population over time for Calliope Shire, Gladstone City and Queensland as a whole (see Table 4-41).

Calliope Shire saw an annual growth rate from 2003 – 2007 ranging from 2.2% to 4.1%. This five year period has an annual growth rate mean of 3.3%, which is slightly more than the Queensland mean of 2.4% for the same period. Much of the growth in Calliope Shire has occurred in the communities of Tannum Sands and Boyne Island. From 1997 - 2007, the population of Calliope Shire increased by 4,215 persons or 30.2%.

Gladstone City saw an annual growth rate from 2003 – 2007 ranging from 2.3% to 3.8%. This five year period has an annual growth rate average of 3.0%, which is slightly more than the Queensland average of 2.4% for the same period. From 1997 - 2007, the population of Gladstone City increased by 5,273 persons or 19.8%. The population of Queensland increased by 787,391 persons or 23.2% for the same period.

## Section 4 Existing Socioeconomic Environment

**Table 4-41 Gladstone, Calliope and Queensland Population and Average Annual Population Change (%)**

Area	Year							
	1997	2001	2002pr	2003pr	2004pr	2005pr	2006pr	2007p
Calliope	13,951 (2.8 %)	15,054 (2.0%)	15,474 (2.8%)	15,958 (3.1%)	16,485 (3.3%)	16,855 (2.2%)	17,538 (4.1%)	18,166 (3.6%)
Gladstone	26,594 (0.1%)	26,831 (0.8%)	27,633 (3.0%)	28,445 (2.9%)	29,512 (3.8%)	30,187 (2.3%)	31,028 (2.8%)	31,867 (2.7%)
Queensland	3,394,671 (1.7%)	3,628,946 (1.9%)	3,714,937 (2.4%)	3,809,564 (2.5%)	3,901,811 (2.4%)	3,996,564 (2.4%)	4,091,546 (2.4%)	4,182,062 (2.2%)

Source: PIFU, Population and Housing Fact Sheet 2008 a, b, c. Note – p = preliminary, pr = preliminary rebased.

The population in the Calliope / Gladstone Area is projected to increase over the next 20 years (from 2006) as follows (see Table 4-42):

- Calliope Shire 2.0%;
- Gladstone City 1.8%; and
- Queensland 1.6%.

Gladstone and Calliope have seen a population increase greater than the average for Queensland for the same time period (see Table 4-41). For the most part this trend is anticipated to continue (see Table 4-42), with the exception of 2011.

The Department of Infrastructure and Planning has indicated that projects are generally taken into account for their population projections after the committed stage, when the prospect of the project advancing to development becomes more likely, otherwise they would constantly be over predicting based on potential projects (pers. comm., H. Norris, 2008). As such, there is a very real probability that the population projections for 2011 did not take in some or all of the proposed LNG projects for the Gladstone area. At the same time, because the projects are not anticipated to be constructed before then, the workforce for these projects would be categorized as construction, and thus not residing in the area, assuming FIFO (fly-in fly-out) and DIDO (drive-in drive-out) construction accommodation facilities (CAFs) will house much of the workforces (see Cumulative Effects Section of the EIS). Since PIFU does not release details of their predictions some assumptions about the values need to be made.

**Table 4-42 Gladstone, Calliope and Queensland Population Projections 2006 to 2026<sup>1</sup>**

Area	Year				
	2006	2011	2016	2021	2026
Calliope	17,538 (3.1%)	18,432 (1.0%)	20,701 (2.3%)	23,337 (2.4%)	26,211 (2.3%)
Gladstone	31,028 (2.9%)	31,089 (0.0%)	34,971 (2.4%)	39,505 (2.5%)	43,944 (2.2%)
Queensland	4,091,546 (2.4%)	4,428,138 (1.6%)	4,823,408 (1.7%)	5,211,995 (1.6%)	5,583,956 (1.4%)

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

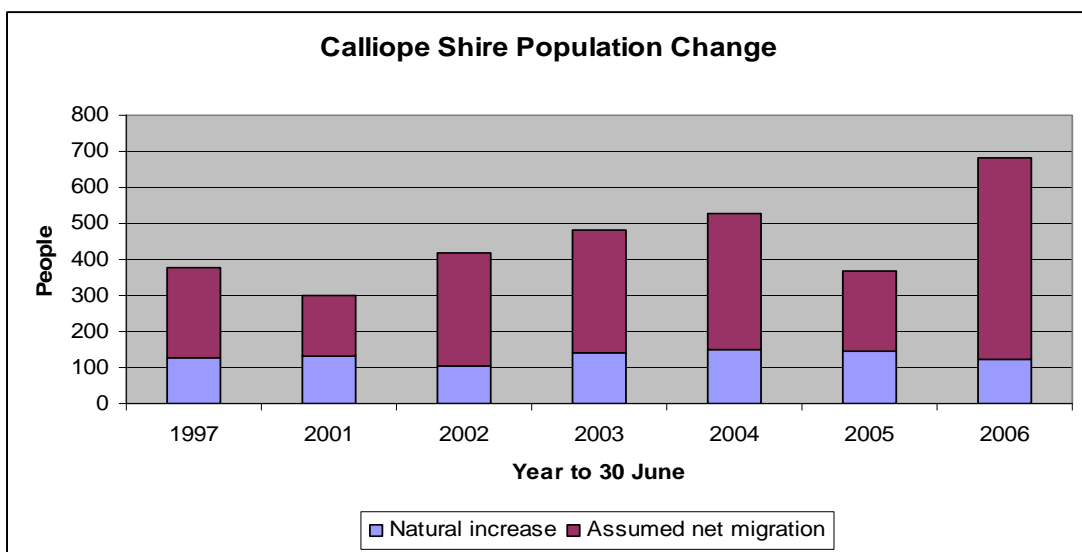
Note – <sup>1</sup> Average Annual Change over 5 years to 30 June; based on median series projections.

## Section 4 Existing Socioeconomic Environment

In Table 4-42 Calliope's growth rate is projected closer to 2.3% but the 1.0% growth rate projected for 2011 brings the average down. For Gladstone the 2011 projection is 0.0% which is well below the 1.8% mean up to 2026. The Queensland population projection at 2011 is right on the 1.6% projected mean for the series up to 2026 indicating the predicted slow down in Gladstone and Calliope in 2011 is a localized event (PIFU, 2008a,b,c). It is interesting to note that prior to the 2006 census, PIFU had the 2011 population projections for Calliope and Gladstone at 2.4% and 2.1% respectively.

Looking at Figure 4-8, it is clear that assumed net migration constitutes the majority of the population increase. Natural increases and assumed net migration were both positive, with the majority of the population change resulting from assumed net migration (PIFU, 2008b). Assumed net migration mirrored the increased construction activity in the Gladstone area.

**Figure 4-8 Calliope Shire Annual Population Growth**

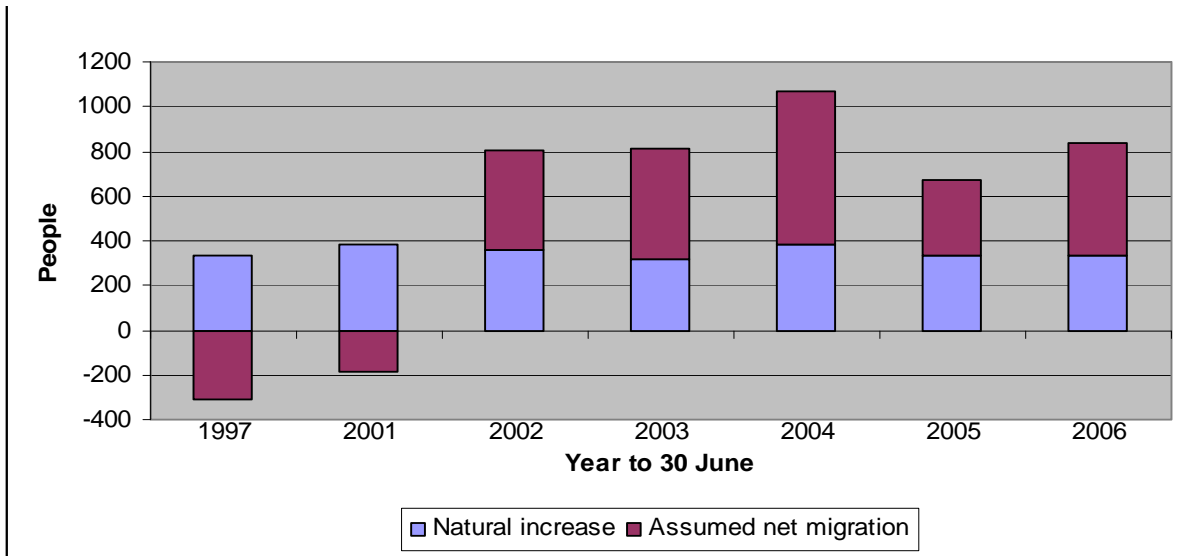


Source: PIFU, 2008b

Natural increases and assumed net migration were positive for Gladstone City, with the majority of the population change resulting from assumed net migration; however, from 1997 - 2001 assumed net migration was negative (see Figure 4-9) and in 1999 Gladstone City experienced a population decline of 0.2% though not recorded in the figures. Natural increase has remained relatively constant from 1997 - 2006, while net migration fluctuated from year to year (PIFU, 2008c).

## Section 4 Existing Socioeconomic Environment

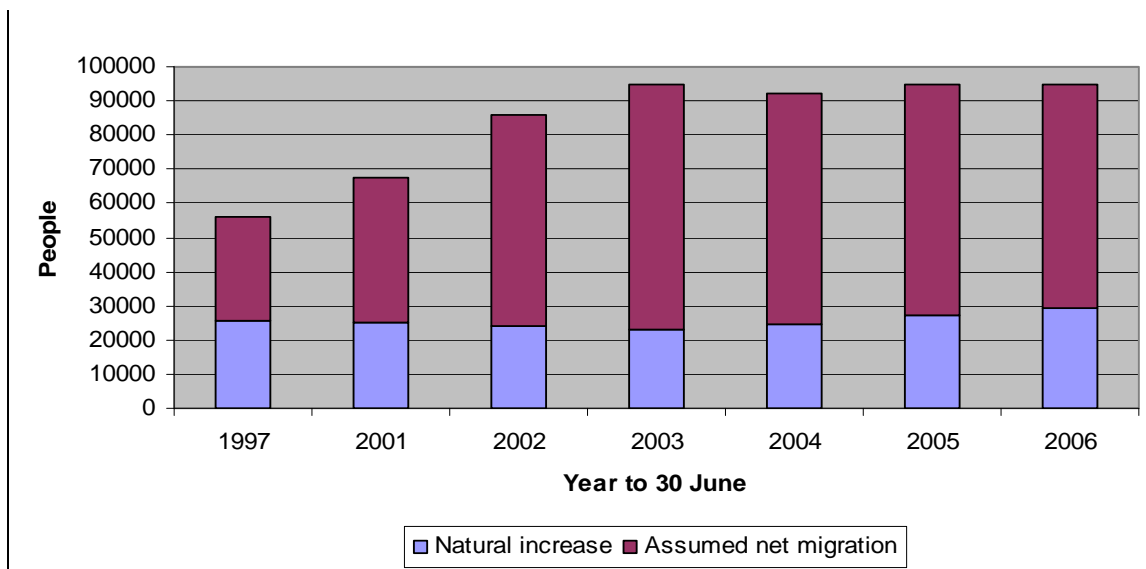
Figure 4-9 Gladstone City Annual Population Growth



Source: PIFU, 2008c

As illustrated in Figure 4-10, Queensland is experiencing a large increase in assumed net migration since the 1990's. This can be attributed to a number of variables including retirees moving into the state and the most recent resource boom. Although the population is projected to keep growing, the rate of growth is expected to decrease over time (see Table 4-42).

Figure 4-10 Queensland Annual Population Growth



Source: PIFU, 2008a

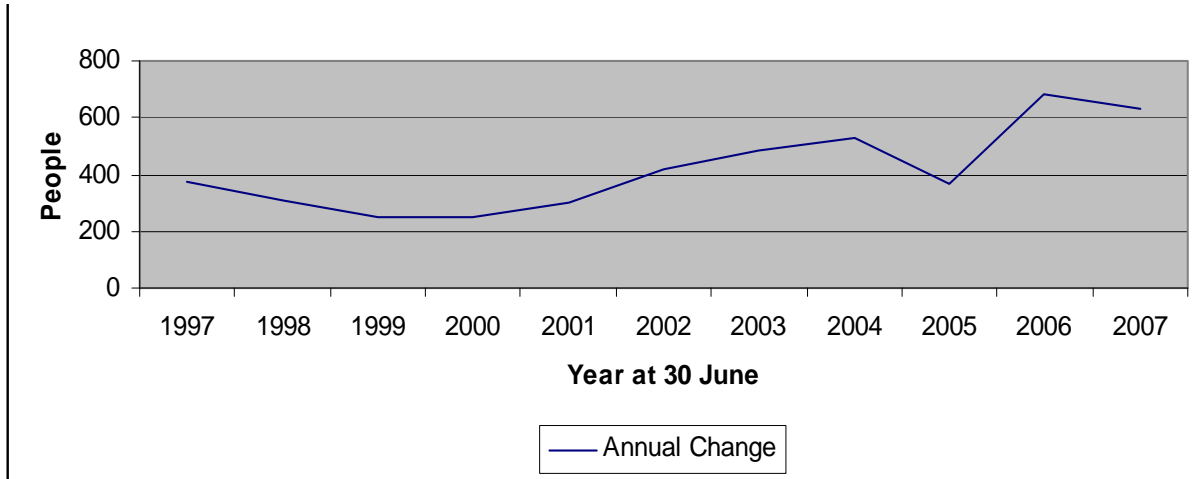
The annual population changes for Calliope have been positive for the entire 1997 – 2007 period recorded, though the degree of positive increase changed a lot, and ranged from ~210 to ~650 in that period (see Figure 4-11). The period from 2001 - 2005 marked the construction of the CAR Stage 1 expansion, and explains the



## Section 4 Existing Socioeconomic Environment

steady increase throughout followed by the sudden drop once construction was complete. The rebound after the post-construction drop is likely attributed to market prices as a result of the temporary increase in supply.

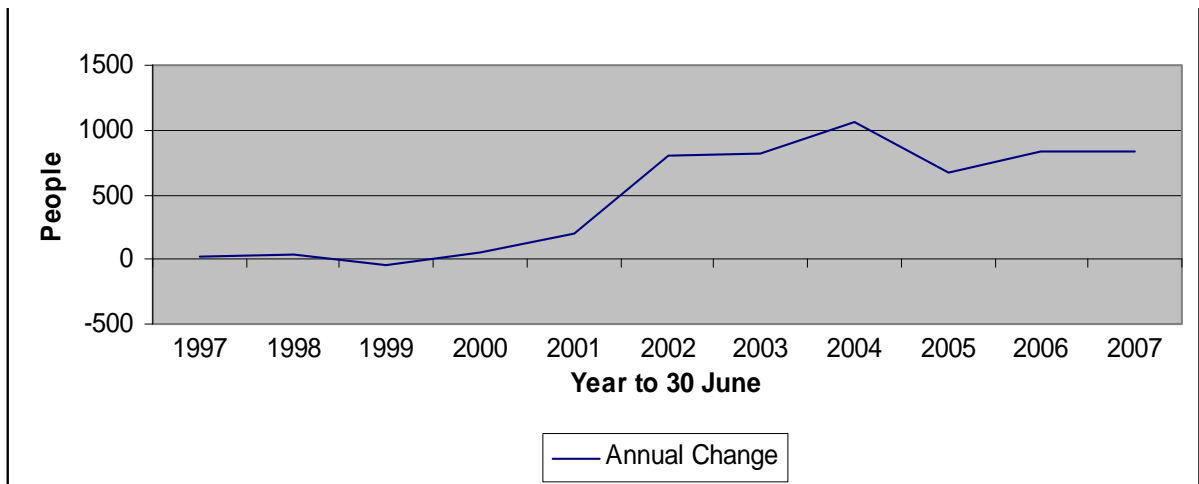
**Figure 4-11 Annual Population Changes for Calliope 1997 - 2007**



Source: PIFU, 2008b

Gladstone on the other hand experienced a more dramatic effect as a result of the CAR Stage 1 expansion (see Figure 4-12). Gladstone's population had reached a plateau prior to CAR Stage 1 construction, and then experienced a sudden influx of people to the community. Informal research indicated that the initial assessment that the local housing market could absorb the construction workforce was not completely accurate, and as a result housing prices soared. Additionally, stresses on social services occurred due to people in the lower socioeconomic bracket being forced out of the housing and rental market by increased demand. More information on accommodation can be found in Section 7.

**Figure 4-12 Annual Population Changes for Gladstone 1997 – 2007**

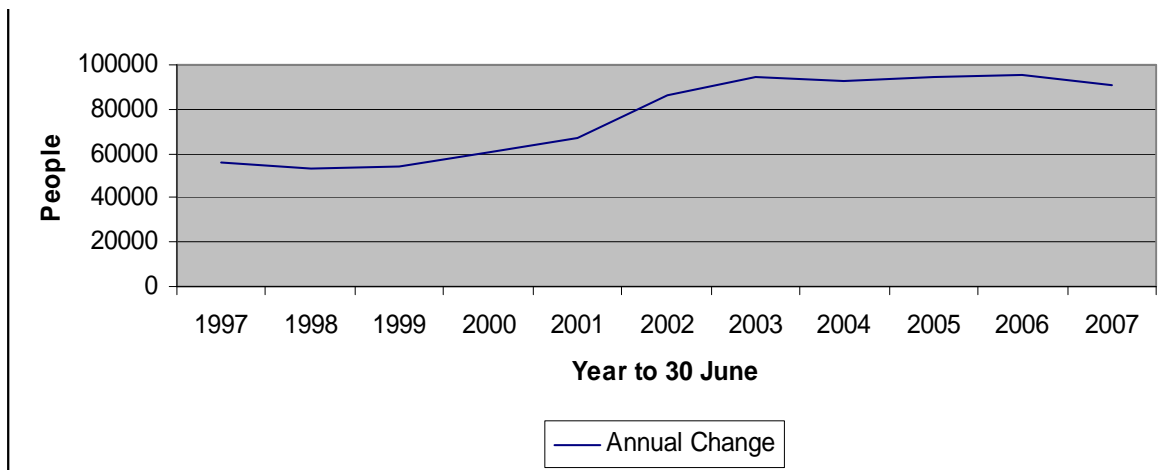


Source: PIFU, 2008c

## Section 4 Existing Socioeconomic Environment

Queensland also experienced a big population increase around the same time, due mainly to people moving from other States to retire. This increase was primarily experienced in the South East of Queensland, but some of this flow of people ended up in Gladstone and Calliope. For the most part, this influx of people settled along or near the coast, and in the major population centres like Brisbane; however, that state level increase would have had a cumulative effect on the Gladstone area CAR 1 increase that could not have been predicted by the EIS. This highlights the numerous variables that can contribute to or counteract the project effects that are outside the scope of the project.

**Figure 4-13 Annual Population Changes for Queensland 1997 – 2007**



Source: PIFU, 2008a

The current global economic crisis and interest rates have a large potential to influence local markets, which could then influence migration and settlement patterns. This does not mean projects should not be assessed because there are too many external variables that could affect the area, but merely highlights the fluidity of our society, and that the constant evolution and adapting of the system means that key decisions throughout the project can result in significant changes to the outcomes and designs. As such, projects must be designed to remain adaptive to the changing environment.

### **Family Structure**

The majority of households in Gladstone and Calliope consist of family units. There are a greater proportion of family households than the Queensland average. Couple families with children are the predominant family group form a much higher proportion of the family household make-up than the Queensland average.

## Section 4 Existing Socioeconomic Environment

**Table 4-43 Family Structure - Gladstone and Calliope Shire**

Area	Total H/H	Total Family H/H	Total Couple Families with Children	Couple Family no Children under 15	Total One-Parent Families with Children	One-Parent Family no Children under 15	
	No.	%*	%*	%*	%*	No.	%*
Calliope (S) – Pt A	4,525	83%	45%	11%	8%	117	3%
Calliope (S) – Pt B	934	79%	36%	8%	8%	26	3%
Gladstone (C)	10,049	75%	36%	9%	12%	385	4%
Queensland	-	73%	32%	9%	12%	-	-

Note – H/H = house hold

Source: ABS, 2006.

### Population Turnover

Table 4-44 highlights the population turnover in Gladstone City and Calliope Shire, as well as the shires of Fitzroy (Part A), Livingston (Part A) and Miriam Vale, and Rockhampton City for comparison. Gladstone and Rockhampton saw comparable population turnovers, with Gladstone experiencing slightly more activity, particularly in arrivals in proportion. The shires saw much more activity in comparison to their population sizes. The area as a whole experienced a relatively fluid population in terms of arrivals and departures, with net migration being positive for all except Calliope Shire (Part B). In terms of their census count change, all LGAs experienced positive growth, though Calliope Shire (Part B) was the smallest proportionally. This is likely due to the fact that Calliope Shire (Part B) is predominantly rural, and the trend for coast migration is for ocean front and urban. Informal research indicated that due to the housing prices in Gladstone city and Calliope Shire (Part A), Calliope Shire (Part B) too is starting to see increased housing costs as demand in the area increases. This is likely a spill over effect from the Gladstone markets.

**Table 4-44 Gladstone/Calliope Population Turnover, 2006**

Area	2001 Census count	2006 Census count	Census count change	Arrivals	Departures	Net migration	Population flow	Population turnover
Calliope (S) – Pt A	11,663	13,815	2,152	4,590	3,082	1,508	7,672	63.8
Gladstone (C)	25,522	29,084	3,562	7,142	6,275	867	13,417	54.6
Calliope (S) – Pt B	2,694	2,725	31	865	896	-31	1,761	73.7
<b>Others</b>								
Fitzroy (S) – Pt A	5,482	6,182	700	2,114	1,706	408	3,820	72.9

## Section 4 Existing Socioeconomic Environment

Area	2001 Census count	2006 Census count	Census count change	Arrivals	Departures	Net migration	Population flow	Population turnover
Livingstone (S) – Pt A	3,589	3,906	317	1,187	762	425	1,949	63.7
Rockhampton (C)	55,269	58,749	3,480	12,796	11,486	1,310	24,282	48.7
Miriam Vale (S)	4,276	5,129	853	1,771	1,311	460	3,082	71.0

Source: ABS, 2008

The Gladstone area as a whole is currently slated for major development, and based on the current situation, may not be capable of sustaining all the proposed projects at once. Historically, the community has experienced a boom and bust cycle as new industrial developments come to the city. The population has now reached a point where it is better able to absorb change, but large scale changes are very hard to plan for, particularly 50-100 % population increases.

### 4.4.2 Gladstone Regional Council

The Gladstone Regional Council is the local government body for the LNG Facility study area. More information on the amalgamation of the local government areas can be found in Section 3.3. Though the LNG Facility is located within the State Development Area, the potential project effects are anticipated to occur in the Gladstone Regional Council, and more specifically in the city of Gladstone.

#### Population

As of 30 June 2007, the estimated resident population for Gladstone Regional Council was 55,523 persons, representing 1.3% of the State's population. The annual average rate of change in population in Gladstone Regional Council between 30 June 2002 and 30 June 2007 was 3.1 per cent, compared with 2.4% for the State (OESR, 2008a). There has been a significant increase in the population of the region since 2002. As discussed above, this is predominantly attributed to the CAR Stage 1 expansion, as well as net migration of people seeking ocean accessible property and retirees.

**Table 4-45 Estimated Resident Population by Local Government Area, Gladstone Regional Council, 2002, 2006, and 2007 (a)**

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

## Section 4 Existing Socioeconomic Environment

	Estimated residential population at 30 June			Change	
Region as % of Qld	1.3	1.3	1.3	..	..

.. = not applicable C = City S = Shire T = Town AC = Aboriginal Community IC = Indigenous Community (a) Figures may be different from those published in Australian Bureau of Statistics (ABS): *Population Estimates by Age and Sex, Australia and States* (Cat no. 3255.0.55.001). (b) Average annual growth rate. (c) Based on percentage change in population. (d) Based on absolute number change in population. Note: Based on ASGC 2006. Data for Reformed Local Government Area(s) are based on concorded Statistical Local Area data (ASGC 2006). The concordance is population based and has been derived from Planning Information and Forecasting Unit within the Department of Infrastructure and Planning.

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

The continued population growth after CAR Stage 1 shows how Gladstone Regional Council was also experiencing a population boom not attributed to industry, but rather experienced by the State as a whole. Given Gladstone's proximity to Brisbane and the rest of South East Queensland, and the increased opportunity in the area as a result of industry, Gladstone has become a desirable destination for some people, particularly those seeking industrial employment.

For Gladstone city in particular, the population experienced a steady rapid increase since it transitioned to an industrial centre in the 1960's. Since then, Gladstone's population has expanded, and was estimated to grow well beyond its current size. In 1980, Ettershank and Morgan sourced Gladstone's population at 7,288 in 1960, 7,181 in 1961, and 26,250 in 1979. They quoted population estimates from the Queensland Co-ordinator General's Department giving estimates of 46,200 in 1985 and 62,500 in 1990 (Ettershank and Morgan, 1980). Obviously, these figures are a lot higher than actually occurred, but are representative of the rapid population increase in Gladstone at the time, and the potential for further expansion. Although not expressly stated, it is likely that the global financial slow down in the 1980s played a role in the stabilization of Gladstone's population at the time. It should also be noted that the population values for Gladstone did not indicate if construction workforces were included in the tally. Regardless, it does underline the population boom experiences of Gladstone's past.

Vulnerable groups in Gladstone were identified through consultation as Indigenous people, 'old long-timers' (those who have been in the community most of their lives and are now older) and those with disabilities. Gladstone is not a poor community, so those who find it difficult to work or are unable to work tend to be the most vulnerable. The youth too are vulnerable mainly due to low incomes (pers. comm., V. Laverick, 2008).

### **Urban Centres and Localities**

At 30 June 2007 there were 9 urban centres and localities in the Gladstone Regional Council. There were 30,731 persons resident in the urban centre of Gladstone, followed by 4,388 persons in the urban centre of Tannum Sands. The urban centre of Tannum Sands had the highest population density in the region, with 920.6 persons per sq km followed by the adjacent community of Boyne Island (OESR, 2008a). Gladstone city was third with 458.1 persons per sq km.

The population density of the urban centres and localities in the Gladstone Regional Council indicates the majority of the population could be classed as urban. 78.8% of the regional council's population resides in the communities in Table 4-46. This also belies the overall population density for the regional council, in that much of the rural area is far less densely populated than the 5.3 persons per sq km. Although categorized as urban, it should be noted that most of the population in the area resides in single detached dwellings, and

## Section 4 Existing Socioeconomic Environment

much of the core areas are two or three story buildings. The current community make-up is more akin to urban sprawl than population densification.

**Table 4-46 Estimated Resident Population by Major Urban Centre/Locality, Gladstone Regional Council, 2007**

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

.. = not applicable – = nil or rounded to zero L = Locality Note: Based on ASGC 2006.

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

As seen in Figure 1-1c, the communities highlighted in yellow are those that could potentially experience project effects, or are likely to experience project effects given their proximity to the project infrastructure, as well as their services capabilities (see Table 4-46). Most of the anticipated effects will occur in Gladstone city, with flow on effects potentially occurring throughout the immediate area. This will be addressed in the impacts section.

### Age distribution

As seen in Table 4-47, in Gladstone Regional Council in June 2007, 23.5% of persons were aged 0-14 years, 68.0% were aged 15-64 years and 8.4% were aged 65 years and over (OESR, 2008a). There are slightly more children aged 0-14 in Gladstone Regional Council than Queensland, indicating a natural regeneration rate amongst the local population. The population of children and young adults aged 15-24 is also high for a smaller community and not much lower than Queensland as a whole. This is a reflection of the economic opportunities in the area, as well as the educational opportunities. The 65+ demographic is undervalued, as many people still move to Rockhampton or the Brisbane area for aged care due to better access to medical services.

## Section 4 Existing Socioeconomic Environment

**Table 4-47 Estimated resident population by age groups (years) by local government area, Gladstone Regional Council, 30 June 2007**

Local government area	Population by age									
	0-14		15-24		25-44		45-64		65+	
	number	%	number	%	number	%	number	%	number	%
Gladstone Regional Council	13,057	23.5	7,339	13.2	16,314	29.4	14,127	25.4	4,686	8.4
Queensland	844,941	20.2	592,761	14.2	1,188,308	28.4	1,043,912	25.0	511,509	12.2
Region as % of Qld	1.5	..	1.2	..	1.4	..	1.4	..	0.9	..

.. = not applicable -- = nil or rounded to zero C = City S = Shire T = Town AC = Aboriginal Community IC = Indigenous Community Note: Based on ASGC 2006. Data for Reformed Local Government Area(s) are based on concoded Statistical Local Area data (ASGC 2006). The concordance is population based and has been derived from Planning Information and Forecasting Unit within the Department of Infrastructure and Planning.

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

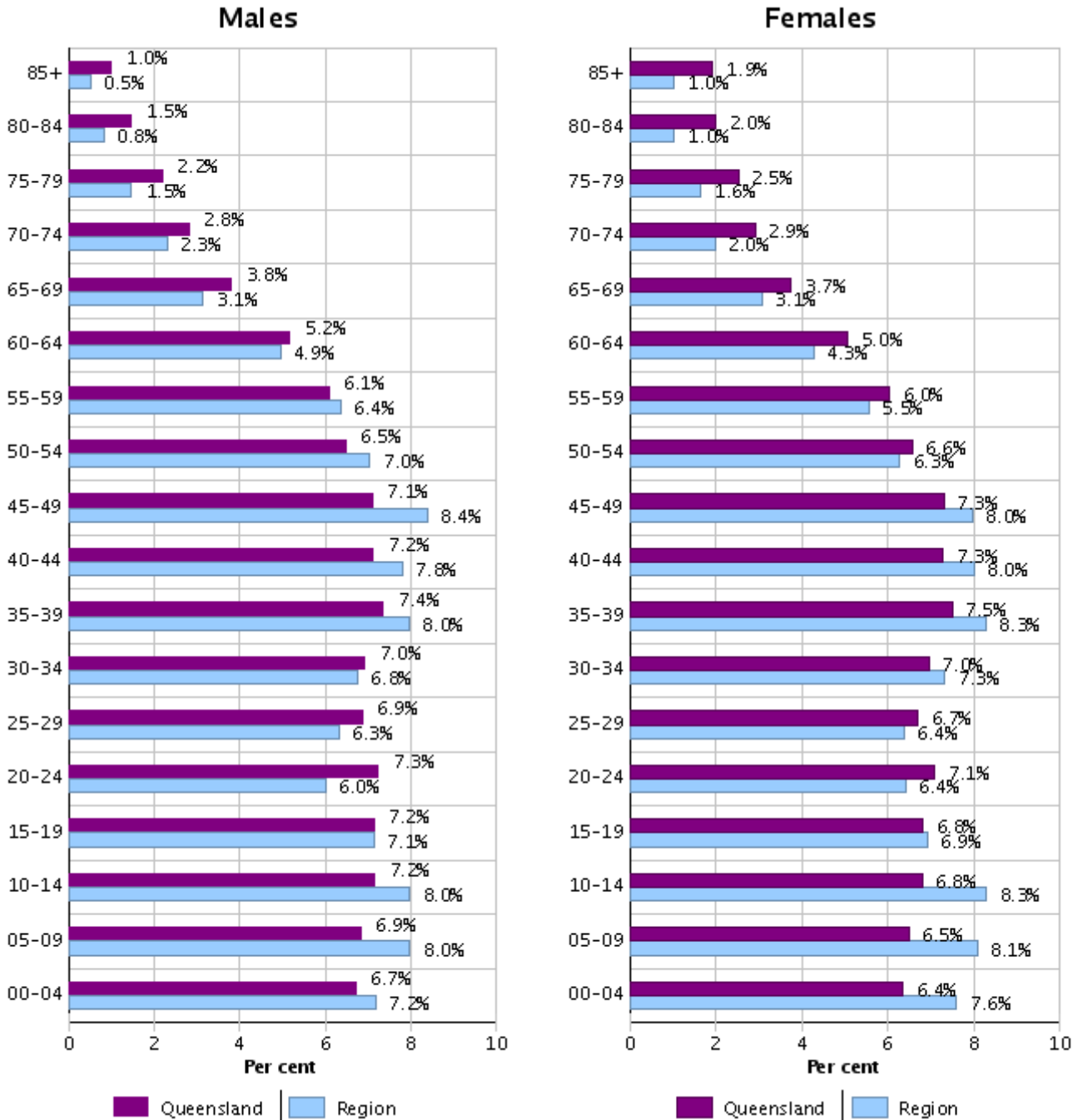
Informal research found that most of the retirees and in-migration to the area were under the age of 65 and looking for more affordable housing on or close to the beach, relative to the housing costs of South Eastern Queensland. As previously mentioned the housing boom experienced by Gladstone Regional Council has spread throughout the region and is now less likely to attract more outsiders for retirement (see the Accommodation Study for a more detailed assessment) as prices increased.

Both the 25-44 and 45-64 age groups are fairly representative of the Queensland population as a whole, and demonstrate a stable workforce. There are many working families in Gladstone, reflective of its industry reputation. Currently, Gladstone's stable working age population corresponds to the jobs and opportunities the area provides.

Figure 4-14 highlights the differences in age groups between Gladstone Regional Council and Queensland in June 2007 (OESR, 2008a). The population in Gladstone Regional Council has a lot more activity in the middle of the age ranges where the majority of the working aged individuals fall. This is highlighted in the more curvaceous figure, as opposed to Queensland as a whole, which is a lot more uniform throughout the various groups, with an expected decrease in numbers in the older age groupings.

## Section 4 Existing Socioeconomic Environment

Figure 4-14 Population by age group and sex, Gladstone Regional Council and Queensland, June 2007



Note: Based on ASGC 2006.

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



## Section 4 Existing Socioeconomic Environment

### Overseas Born Persons

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

**Table 4-48 Number of Persons by Birthplace (a), Gladstone Regional Council, 2006**

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

.. = not applicable – = nil or rounded to zero C = City S = Shire T = Town AC = Aboriginal Community IC = Indigenous Community (a) Based on place of usual residence. (b) Includes country of birth not stated. Note: Based on ASGC 2006. Data for Reformed Local Government Area(s) are based on concordant Statistical Local Area data (ASGC 2006). The concordance is population based and has been derived from Planning Information and Forecasting Unit within the Department of Infrastructure and Planning.

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

There are an increasing number of 457 Visa holders in Gladstone, and integrating them into the community is becoming a challenge (pers. comm., L. Arroyo, 2008). These individuals and families tend to have more difficulty integrating into the community, particularly if their spoken English and comprehension is weak. Efforts are being made in Gladstone to ease integration, and enhance multiculturalism, including the Multicultural Strategy for Gladstone 2007, which tracks and provides a strategy and measures success for six indicators: integration; liveability; health; education; community access; and industry/business. This strategy is a collaborative effort between the former Gladstone City Council and the Gladstone Multicultural Association.

### Proficiency in spoken English

At the time of the 2006 Census of Population and Housing in Gladstone Regional Council, there were 1,018 persons born overseas who stated that they spoke a language other than English at home (19.0% of the overseas-born population). In Queensland, 31.3% of the overseas-born population spoke a language other than English at home. Of the overseas-born persons in Gladstone Regional Council who stated that they spoke a language other than English, 95 persons stated that they spoke English not well or not at all. This was 1.8% of the overseas-born population of Gladstone Regional Council, compared with 5.1% in Queensland as a whole (OESR, 2008a).

## Section 4 Existing Socioeconomic Environment

**Table 4-49 Overseas-born Persons by Proficiency in Spoken English (a), Gladstone Regional Council, 2006**

Local government area	Speaks English only	Speaks other language and speaks		
		very well or well	not well or not at	Total (b)
	— number —			
Gladstone Regional Council	4,312	913	95	1,018
Queensland	476,791	180,936	35,676	218,958
Region as % of Qld	0.9	0.5	0.3	0.5

— = nil or rounded to zero C = City S = Shire T = Town AC = Aboriginal Community IC = Indigenous Community (a) Based on place of usual residence. (b) Includes proficiency in English not stated. (c) Persons born overseas. Excludes persons who did not state their country of birth. Note: Based on ASGC 2006. Data for Reformed Local Government Area(s) are based on concorded Statistical Local Area data (ASGC 2006). The concordance is population based and has been derived from Planning Information and Forecasting Unit within the Department of Infrastructure and Planning.

Source: Australian Bureau of Statistics, Census of Population and Housing, 2006, Basic Community Profile - B11

As discussed in the overseas born section, integration into the community is a priority for the council, and efforts are in place to achieve these goals and track the progress. As Gladstone's employment demand increases due to the number of proposed developments, there is a potential for more 457 Visa holders to move to the area to occupy these positions or those vacated by locals seeking other employment opportunities. Gladstone's local area multicultural program (LAMP) is already in place to assist, and may require additional resources if there is an increase in demand. LAMP is currently supported through a State and local partnership (pers. comm., L. Arroyo, 2008).

### School Students

In the 12 months ending 31 December 2006, for students attending a school in Gladstone Regional Council, 82.8% attended Government schools and 17.2% attended non-government schools. The corresponding percentages for Queensland were 69.9% of school students attended government schools and 30.1% attended non-government schools (see Table 4-50). There were 4,762 students attending a government primary school (years 1 to 7) in Gladstone Regional Council and 1,081 students attending a non-government primary school. In secondary school (years 8 to 12) there were 3,268 government students and 533 non-government students (OESR, 2008a).

Gladstone Regional Council has a total of 10,564 school students of which 3,801 could potentially graduate between 2007 and 2011. This shows a potential increase in the number of workers into the local workforce. Many will attend additional education facilities according to the current educational trends while others will be immediately available for the workforce. Quantifying this is difficult given that it is an individual preference; however, it is likely that increased economic opportunity may attract some to enter the workforce directly out of high school.

## Section 4 Existing Socioeconomic Environment

**Table 4-50 School Students by Local Government Area (a), Gladstone Regional Council, 12 months ending 31 December 2006**

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

— = nil or rounded to zero C = City S = Shire T = Town AC = Aboriginal Community IC = Indigenous Community (a) Based on school location instead of student's place of usual residence. (b) Includes prep year and pre-school students, and ungraded and special school students. Note: Based on ASGC 2006. Data for Reformed Local Government Area(s) are based on concorded Statistical Local Area data (ASGC 2006). The concordance is population based and has been derived from Planning Information and Forecasting Unit within the Department of Infrastructure and Planning.

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

When comparing the use of government versus non-government schools, it is evident that more people in Gladstone use government schools. This is more to do with the few non-government schools in the region. Informal research found that educational opportunity for school aged students was not a major concern, whereas more opportunities for post-secondary education were.

**Table 4-51 Schools in the Gladstone area**

Chanel College	Central Coast District Office	Clinton SS – Special Education Program	Clinton State School (SS)	Faith Baptist Christian School
Gladstone Central State School (SS)	Gladstone South State School (SS)	Gladstone State High School (SHS)	Gladstone SHS – Special Education Program	Gladstone South SS – Special Education Program
Gladstone West State School (SS)	Gladstone West SS – Special Education Program	Gladstone Schools Engineering Skills Centre	Kin Kora State School	Nagoorin State School
Rosella Park School	Skilling Solutions Qld.	St John the Baptist Catholic Primary School	Star of the Sea Catholic Primary School	Trinity College
Builyan State School	St Stephens Lutheran College	Toooloa State High School (SHS)	Toooloa SHS – Special Education Program	Ambrose State School
Benaraby State School	Boyne Island Environmental Education Centre	Boyne Island State School	Calliope State School	Kin Kora SS – Special Education Program
Mount Larcom State School	Tannum Sands State High School	Tannum Sands SHS – Special Education Program	Tannum Sands State School	Ubobo State School

## Section 4 Existing Socioeconomic Environment

Yarwun State School	Agnes Water State School	Toolooa SHS – Flexible Learning Centre	Tannum Sands SS – Special Education Program	Bororen State School
Miriam Vale State School	St Francis Catholic Primary School	Biloela State High School	Biloela SHS – Special Education Program	Capricornia School of Distance Education
Lowmead State School	Mount Murchison State School	Rosedale State School (SS)	Rosedale SS – Special Education Program	St. Ita's Regional Primary School
Toowoomba West Special School	Wartburg State School			

Source: Department of Education, Training and the Arts, 2008.

### Post School Qualification

In Gladstone Regional Council there were 3,210 persons with a bachelor degree or higher, 1,772 persons with an advanced diploma or diploma, and 8,839 persons with a certificate (see Table 4-52). Of persons aged 15 years and over with a qualification, 17.5% had bachelor degree or higher (26.0% in Queensland), 9.6% had an advanced diploma or diploma (13.1% in Queensland), and 48.1% had a certificate (35.5% in Queensland) (OESR, 2008a). This is a reflection of the types of jobs available in the community, and the level of qualification required to perform them. As discussed, Gladstone is an industrial based community, with much of its population involved in manufacturing and related occupations.

**Table 4-52 Post-School qualifications by level of education (a), Gladstone Regional Council, 2006**

Local government area	Level of education			Persons with a qualification (d)		Total persons (e)
	Bachelor degree or higher (b)	Advanced diploma or diploma	Certificate (c)	number	%	Number.
	number					
Gladstone Regional Council	3,210	1,772	8,839	18,377	47.6	38,594
Queensland	405,904	204,039	554,243	1,560,868	50	3,097,995
Region as % of Qld	0.8	0.9	1.6	1.2	..	1.2

.. = not applicable – = nil or rounded to zero C = City S = Shire T = Town AC = Aboriginal Community IC = Indigenous Community (a) Based on place of usual residence. (b) Includes bachelor degree, graduate diploma, graduate certificate and postgraduate degree. (c) Includes Certificate, I, II, III and IV and Certificates not further defined responses. (d) Persons aged 15 years and over, includes 'inadequately described' and 'not stated' level of education responses. (e) Persons aged 15 years and over. Note: Based on ASGC 2006. Data for Reformed Local Government Area(s) are based on concordant Statistical Local Area data (ASGC 2006). The concordance is population based and has been derived from Planning Information and Forecasting Unit within the Department of Infrastructure and Planning.

Source: Australian Bureau of Statistics, Census of Population and Housing, 2006, Basic Community Profile - B39

At the time of the 2006 Census of Population and Housing in Gladstone Regional Council, there were 18,377 persons aged 15 years and over with a qualification, 47.6% of the population in this age group. This percentage was less than that for Queensland (50.4%) (OESR, 2008a). Most positions in the region do not require higher

## Section 4 Existing Socioeconomic Environment

levels of education, though certification is closer to the Queensland average, as can be expected in industry jobs.

### Unemployment Rate and Labour Force

At the time of 2006 Census of Population and Housing in Gladstone Regional Council, there were 1,348 unemployed persons (see Table 4-53). With a labour force consisting of 25,190 persons, this corresponded to an unemployment rate of 5.4%. The unemployment rate in Queensland as a whole was 4.7% (OESR, 2008a).

Informal research identified a fair portion of the unemployed population to be area residents, not inclined to seek employment in the local industries as they developed. This group has self marginalized in a sense, though no additional data could be collected to substantiate.

**Table 4-53 Number of Unemployed Persons, Persons in the Labour Force and Unemployment Rate (a), Gladstone Regional Council, 2006**

Local government area	Unemployed	Labour force	Unemployment rate
	— number —		%
Gladstone Regional Council	1,348	25,190	5.4
Queensland	90,950	1,915,947	4.7
Region as % of Qld	1.5	1.3	..

.. = not applicable -- = nil or rounded to zero C = City S = Shire T = Town AC = Aboriginal Community IC = Indigenous Community (a) Based on place of usual residence. Note: Based on ASGC 2006. Data for Reformed Local Government Area(s) are based on concordant Statistical Local Area data (ASGC 2006). The concordance is population based and has been derived from Planning Information and Forecasting Unit within the Department of Infrastructure and Planning.

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

In a region like Gladstone, where there are a lot of high paying employment opportunities, it is often difficult for individuals and families to cope when they are not employed in industry. Not all people are suited to industrial work, and therefore some members of the community do not have access to the same salaries. Additionally, some people may experience ill effects from the pressures of development and may choose to opt out of the system as a whole. This was a suggested source of many of the unemployed in the area during the community assessment in 2008.

### Gladstone City - Workforce Migration

The Planning Information and Forecasting Unit (PIFU) updated their 2002 report on migration for the usual resident population of Gladstone City and Calliope Shire to include the 2006 Census results for migration between 2001 and 2006. The following section is based on their assessment.

Census data used in the report was derived from answers provided to question 10 on the census form "Where did this person live 5 years ago (at 8 August 2001)?" If the person was less than 5 years old, the answer was left blank. If the person had no usual address (NUA) five years ago, the answer should have been the address they were living at on 8 August 2001. When using Census information and particularly place of usual residence statistics (PUR5P), the quality of the data should be considered.

The 2006 census tables for PUR5P show that 2,195 usual residents of Gladstone City, or 8.2% of the total, stated that they lived at a different address 5 years ago but did not state that address or did not state whether

## Section 4 Existing Socioeconomic Environment

they were usually resident at a different address 5 years ago. In Calliope Shire, there were 929 usual residents in these categories, representing 6.1% of the total. When these “not stated” responses are applied to census characteristics such as age, income and labour force status, valid interpretation of the numbers in the tables can be difficult. In relation to the tables which accompany the report, “not stated/no usual address” responses in some categories represent a large proportion of the total and these numbers should be used with caution.

The 2001 to 2006 migration analysis by the Planning Information and Forecasting Unit (PIFU) is based on unpublished 2006 Census data obtained from the ABS. The data were customised for PIFU’s requirements to show intrastate and interstate inflows and outflows, overseas inflow (outflows overseas are not captured by the Census) and “not stated/no usual address”. In the tables which accompany the report, migration flows between 2001 and 2006 for Gladstone City and the adjoining local government area (LGA) of Calliope Shire are summarised for grouped ages, incomes, labour force status, and major occupation groups and industries. As net migration can be calculated only for intrastate and interstate movements, overseas inflows and not stated/NUA responses are excluded from totals (PIFU, 2008).

### Age

Net migration was largest in the younger working age group (25-44 years) with 457 persons in Gladstone City and 760 in Calliope Shire. There was a small net gain in the 5-14 years age group of 49 people and a large net loss of 314 usual residents in older age groups (45-64 and 65 years and over) in Gladstone. Hence the net inflow in the 25-44 years age group exceeded the total net migration (340 persons). In Calliope, the net migration in the 45-64 and 65 years and over age groups was 239 persons in total, with a total net migration of 1 163 persons. The net inflow in the 25-44 years age group accounted for 65.3% of total net migration. There was a large net gain in the 5-14 years age group of 417 people but a large net loss of 253 people in the 15-24 age group.

Of the net migration to Gladstone City, 329 people aged 25-44 years moved from interstate and only 128 came from intrastate. By contrast, most of the net migration to Calliope Shire in this age group was from intrastate (501 people). A total of 259 people were from interstate in the 25-44 years age group (PIFU, 2008).

### Weekly Individual Income

The only two individual income groups for which net migration to Gladstone was positive were the income groups between \$250 and \$1,999. Larger net numbers of migrants earning incomes in this range came from interstate (385) rather than intrastate (54). In total, 439 usual residents in the total net migration numbers received weekly income of \$250 to \$1,999 and most (265 people) received \$1,000 to \$1,999 weekly or \$52,000 to \$104,000 (rounded) annually. As the largest numbers of in-migrants were in the working age groups between 25 and 44 years, the distribution of incomes suggests that most people earning incomes in \$52,000 to \$104,000 annually are employed. In Calliope Shire there was a similar distribution of incomes. More than half (346 people or 54.4%) of the number of the total net migration numbers (636 people) received \$1,000 to \$1,999 weekly. In contrast to Gladstone’s usual residents, 220 people in Calliope (or 63.6% of the net inflow of 346 in this income group) came from intrastate (PIFU, 2008).

### Labour Force Status

The largest proportion of Gladstone’s labour force derived from net migration between 2001 and 2006 was employed. There were 471 people in this category and 402 of them came from interstate. Of those not in the labour force, there was a large net migration to other parts of Queensland between 2001 and 2006 (317 people) but only a net inflow of only 65 people from interstate. Only 37 in-migrants were unemployed. In Calliope



## Section 4 Existing Socioeconomic Environment

Shire, there was a large net migration of employed people (488), with the numbers from interstate (243) and intrastate (245) almost equal. Relatively few in-migrants were unemployed (34 people) or not in the labour force (85 people). In relation to net migration of people not in the labour force, Calliope experienced a small net outflow of 27 usual residents to elsewhere in Queensland and a net inflow of 112 residents from interstate (PIFU, 2008).

### Occupation

Net migration to Gladstone City was largest in the semi-skilled and unskilled occupation categories, with a net additional 187 machinery operators and drivers (or 41.2% of the total net migration) and 117 labourers (or 25.8% of the total) in the 2001 to 2006 period. Other well-represented occupations were professionals (108 people) and technical and tradespersons (99 people). Gladstone received most of its net inflow of workers from interstate (403 people or 88.8%) rather than intrastate (51 people or 11.2%). Of the significant occupation categories, the majority of the net migration into Gladstone city by labourers was from within the state whereas the majority of professionals migrated from interstate. The proportion of migrant "machine operators" was split roughly equally among interstate and intrastate.

In Calliope Shire, machinery operators and drivers and labourers contributed the largest numbers to net migration, with 151 and 117 people (28.0% and 21.7%) respectively. Calliope Shire's net migration numbers were large also in the managerial (116 people or 21.5%) and technical and tradespersons (75 people or 13.9%) occupation categories. Calliope shire experienced roughly equal proportions of net migrating workers from interstate (265 people or 49.1%) and intrastate (274 people or 50.9%). Both the significantly larger occupation categories of managers and technical and tradespersons also had roughly equal proportions of migrant workers from interstate and intrastate, however, more workers classified as machine operators migrated from intrastate (98 people or 18.2%) compared with interstate (53 people or 9.8%) (PIFU, 2008).

### Industry

In Gladstone, net migration inflow from interstate was much larger than intrastate migration (422 people or 89.4% and 50 people or 10.6% respectively). The manufacturing industry accounted for the largest numbers of in-migrants (306 people). Other large employers were construction (147 people and transport, postal and warehousing (135 people). The same three industries were the largest employers of in-migrants to Calliope Shire. Manufacturing accounted for 226 people; construction accounted for 126 people; and there were 52 people in transport, postal and warehousing. In total, Calliope shire experienced roughly equal proportions of net migration from intrastate, 253 persons (48.6%), and interstate, 268 persons (51.4%) (PIFU, 2008).

### 4.4.3 Economic Profile

The economic profile is discussed in more detail in the economics assessment of the EIS. Tables were added here to give a better understanding of the economic profile for the social aspects of the LNG Facility.

**Table 4-54 Gladstone Area General Employment Characteristics**

	Total population 2006	Persons 15+		Total labour force	Participation rate	Persons employed		Un-employment rate
		No.	%*	No.	%	No.	%	%
Fitzroy SD	188,403	145,008	77.0%	91,753	63.3%	87,627	95.5%	4.5%

## Section 4 Existing Socioeconomic Environment

	Total population 2006	Persons 15+		Total labour force	Participation rate	Persons employed		Un-employment rate
		No.	%*	No.	%	No.	%	%
Calliope (S) - Pt. A	13,817	10,325	74.7%	6,868	66.5%	6,581	95.8%	4.2%
Calliope (S) - Pt. B	2,725	2,105	77.2%	1,310	62.2%	1,243	94.9%	5.1%
Gladstone (City)	29,086	22,081	75.9%	14,923	67.6%	14,113	94.6%	5.4%
Queensland	3,904,534	3,097,995	79.3%	1,915,947	61.8%	1,824,997	95.3%	4.7%

% of total population, based on place of usual residence

Source: ABS Basic Community profiles, 2006 census data

As seen in Table 4-54, the region has fewer percentage of their population over 15 (in the working force), and a higher than average participation rate compared to the rest of Queensland. Gladstone has a relatively young working population, and as a result they have a large population of children. As much of the community receives high incomes from the local industries, the cost of living is slightly elevated. This can result in some people entering the workforce to help supplement family income which can increase the participation rate. Additionally, this may impact the elderly and lower income bracket. More details are discussed in the economics section of the EIS.

As seen in Table 4-55, females are under represented in the workforce compared to Queensland as a whole in the study area. All areas observed had a lower females employed rate, which is another reflection of the industrial based economy, which traditionally employs less females than males.

**Table 4-55 Gladstone Area Employment Profile**

	Labour force	Total employed	Females employed		Persons employed full time		Persons employed part time	
			No.	%*	No.	%*	No.	%*
<b>Fitzroy SD</b>	91,753	87,627	37,787	43%	59,347	68%	22,463	26%
Calliope (S) - Pt. A	6,868	6,581	2,667	41%	4,542	69%	1,634	25%
Calliope (S) - Pt. B	1,310	1,243	467	38%	884	71%	270	22%
Gladstone (City)	14,923	14,113	5,943	42%	9,704	69%	3,477	25%
<b>Queensland</b>	1,915,947	1,824,997	840,429	46%	1,180,891	65%	530,504	29%

\* % of total population, based on place of usual residence Source: ABS Basic Community profiles, 2006 census data

More people are employed full-time as opposed to part time when compared to Queensland, Calliope rural (Part B) has a higher percentage of persons employed, but fewer females employed proportionally. This is a reflection of the farming industry, where traditional female roles are not necessarily recorded as labour. Both the



## Section 4 Existing Socioeconomic Environment

SD and the SLAs have a higher percentage of persons full-time employed, which reduces the number of part-time employed.

Table 4-56 presents employment by industry for the Gladstone area. Manufacturing, transport and construction are the primary industries, well above the averages for both the SD and State. Electricity, gas, water and waste services are also well represented in the area, as can be expected in an area with a high level of industrial activity. Rural Calliope (Part B) also has a high level of agricultural, forestry and fishing activity, primarily agricultural. As discussed previously, this is likely a contributor to the low level of female employment identified in Table 4-55.

## Section 4

## Existing Socioeconomic Environment

Table 4-56 Gladstone Area Employment by Industry 2006

Area	Total employment	Agriculture, forestry & fishing		Mining		Manufacturing		Electricity, gas, water & waste services		Construction		Wholesale trade		Retail trade	
	No.	No. employed	%*	No. employed	%*	No. employed	%*	No. employed	%*	No. employed	%*	No. employed	%*	No. employed	%*
Fitzroy SD	89,900	4,675	5.2%	6,252	7.0%	9,656	10.7%	2,039	2.3%	8,763	9.7%	2,804	3.1%	9,291	10.3%
Calliope (S) - Pt. A	6,469	61	0.9%	123	1.9%	1,618	25.0%	135	2.1%	826	12.8%	140	2.2%	629	9.7%
Calliope (S) - Pt. B	1,276	197	15.4%	23	1.8%	195	15.3%	30	2.4%	127	10.0%	37	2.9%	82	6.4%
Gladstone (City)	14,288	53	0.4%	197	1.4%	2,805	19.6%	382	2.7%	1,692	11.8%	386	2.7%	1,557	10.9%
Queensland	1,840,887	63,224	3.4%	30,844	1.7%	181,677	9.9%	18,750	1.0%	166,477	9.0%	72,645	3.9%	213,637	11.6%

Area	Accommodation & food services		Transport, postal & warehousing		Information media & telecommunications		Financial & insurance services		Rental, hiring & real estate services		Professional, scientific & technical services	
	No. employed	%*	No. employed	%*	No. employed	%*	No. employed	%*	No. employed	%*	No. employed	%*
Fitzroy SD	6,001	6.7%	5,230	5.8%	735	0.8%	1,460	1.6%	1,457	1.6%	3,277	3.6%
Calliope (S) - Pt. A	365	5.6%	340	5.3%	36	0.6%	95	1.5%	136	2.1%	333	5.1%
Calliope (S) - Pt. B	126	9.9%	108	8.5%	4	0.3%	7	0.5%	9	0.7%	36	2.8%
Gladstone (City)	926	6.5%	1,153	8.1%	116	0.8%	199	1.4%	234	1.6%	749	5.2%
Queensland	128,208	7.0%	93,075	5.1%	26,605	1.4%	52,919	2.9%	38,220	2.1%	103,778	5.6%

## Section 4

## Existing Socioeconomic Environment

Area	Administrative & support services		Public administration & safety		Education & training		Health care & social assistance		Arts & recreation services		Other services	
	No. employed	%*	No. employed	%*	No. employed	%*	No. employed	%*	No. employed	%*	No. employed	%*
Fitzroy SD	2,101	2.3%	4,900	5.5%	7,411	8.2%	7,705	8.6%	583	0.6%	3,357	3.7%
Calliope (S) - Pt. A	148	2.3%	237	3.7%	453	7.0%	423	6.5%	40	0.6%	171	2.6%
Calliope (S) - Pt. B	20	1.6%	71	5.6%	85	6.7%	49	3.8%	7	0.5%	22	1.7%
Gladstone (City)	381	2.7%	562	3.9%	1,012	7.1%	934	6.5%	102	0.7%	456	3.2%
Queensland	56,143	3.0%	122,997	6.7%	139,895	7.6%	188,558	10.2%	24,876	1.4%	68,886	3.7%

\*% of total area employment, based on place of enumeration, Rows do not add up to 100% because 'Not stated' was not included

Source: ABS time series profiles, 2006 census data

Proportionally, the high level of industry related jobs for the Gladstone area has resulted in a lower amount of other jobs. This has resulted in part of the social fabric for the area being more representative of the rural, industrial make-up. There is a shortage of some key areas like arts and recreation services, and health care and social assistance. Public administration and safety is also underrepresented, possibly due to the centralised nature of the regional districts, since the regional service centre is Rockhampton. However, the whole of Fitzroy is still below the Queensland average. All of these industries contribute to the social fabric overrepresented by industry.

## Section 4

## Existing Socioeconomic Environment

Table 4-57 LNG Facility Employment By Occupation 2006

Area	Managers		Professionals		Technicians and trades workers		Community and personal service workers		Clerical and administrative workers	
	No.	%	No.	%	No.	%	No.	%	No.	%
<b>Fitzroy SD</b>	<b>10,436</b>	<b>11.9%</b>	<b>11,502</b>	<b>13.1%</b>	<b>16,233</b>	<b>18.5%</b>	<b>6,954</b>	<b>7.9%</b>	<b>11,142</b>	<b>12.7%</b>
Calliope (S) - Pt. A	620	9.4%	848	12.9%	1,474	22.4%	409	6.2%	789	12.0%
Calliope (S) - Pt. B	224	18.0%	85	6.8%	231	18.5%	96	7.7%	100	8.0%
Gladstone (City)	1,160	8.2%	1,866	13.2%	3,182	22.5%	1,027	7.3%	1,737	12.3%
<b>Queensland</b>	<b>225,693</b>	<b>12.4%</b>	<b>312,865</b>	<b>17.1%</b>	<b>280,342</b>	<b>15.4%</b>	<b>166,400</b>	<b>9.1%</b>	<b>269,198</b>	<b>14.8%</b>

Continued...

Area	Sales workers		Machinery operators and drivers		Labourers		Inadequately described/ Not stated		Total
	No.	%	No.	%	No.	%	No.	%	No.
Fitzroy SD	7,643	8.7%	10,388	11.9%	11,739	13.4%	1,593	1.8%	87,630
Calliope (S) - Pt. A	528	8.0%	956	14.5%	830	12.6%	131	2.0%	6,585
Calliope (S) - Pt. B	64	5.1%	210	16.9%	205	16.5%	31	2.5%	1,246
Gladstone (City)	1,280	9.1%	1,732	12.3%	1,851	13.1%	276	2.0%	14,111
<b>Queensland</b>	<b>189,038</b>	<b>10.4%</b>	<b>132,114</b>	<b>7.2%</b>	<b>217,251</b>	<b>11.9%</b>	<b>32,095</b>	<b>1.8%</b>	<b>1,824,996</b>

Based on place of usual residence. No. = number

Source: ABS basic community profiles, 2006 census data

## Existing Socioeconomic Environment Section 4

As can be expected, technicians and trades workers, and machinery operators and drivers are the majority employed by occupation compared to Queensland as a whole (see Table 4-57). Professionals and managers were underrepresented, though Calliope Pt B had a large number of agricultural managers.

**Table 4-58 LNG Facility Median Weekly Income**

Area	Individuals 15+	Household
<b>Fitzroy SD</b>	\$481	\$1,067
Calliope (S) - Pt. A	\$530	\$1,378
Calliope (S) - Pt. B	\$420	\$993
Gladstone (City)	\$534	\$1,189
<b>Queensland</b>	\$476	\$1,033

Source: ABS basic community profiles, 2006 census data

The median weekly incomes also reflect the industry base for Calliope Pt. A and Gladstone City. Incomes are lower in Calliope Pt. B where agriculture dominates the economy. Calliope Pt. A and Gladstone are slightly above the individual and household averages compared to Queensland as a whole.

### 4.4.4 Community Values, Vitality, Lifestyle and Well-being

Gladstone has reshaped itself into an industrial community since the 1960s, when the meat packing centre closed and industry established itself in the area. The population experienced steady growth since then, and has been an area of jobs and opportunities ever since (McDonald, 1988).

As Gladstone has grown, the perception within the community has shifted from a solely industrial based economy, to an increasing level of service provision as well. In some circles an attitude of having industrial security has emerged, and the community now expects more (pers. comm., V. Laverick, 2008). This was not a majority view; however, it was a common sentiment with some of the key opinion leaders of the community. Conversely however, Gladstone is at the cusp from large town to city. The population is growing, the economy is growing, but the services, entertainment, commercial centres and recreational services have not yet caught up. As a result, many people still travel outside the community to purchase goods, and for health care needs according to some people interviewed during the 2008 site assessments.

Gladstone is not a community struggling with economic uncertainty, population decline, or serious social dysfunction. This is evident in people's perception of the community, as well as what they want to see happen in Gladstone based on discussions during the July 2008 site assessment. Most people interviewed looked to strengthening the services and reaching out to those in need as priorities, not fixing serious social issues currently facing the community. This is not saying Gladstone is without social issues; however, it is a reflection of the sentiment in Gladstone that things are OK, but they have an opportunity to do better. The community is more focused on long-term community strengthening than short term planning. This is a reflection of a community expanding within its means, but aware there is more work to be done.

A workshop was held with the monthly interagency meeting attendees to gauge community values, vitality, lifestyle and well-being during the July 2008 site assessment. The following insight into Gladstone's social fabric was provided:

## Section 4

## Existing Socioeconomic Environment

***How do you see your community?***

- Housing is very stressed with both rental prices and availability;
- Lack of transportation services both inside and out of Gladstone (decreased accessibility);
- Lack of health services both primary and allied;
- There is a need for more opportunities for young, indigenous and disadvantaged people to get into industry and the business workforce;
- Generous community both in terms of cash donations and in kind assistance;
- There is reasonable social infrastructure but it could use some strengthening;
- There is a requirement for elderly services and support to help keep elderly people in the community; and
- Gaps between the have's and the have not's appears to be widening:
  - Young, indigenous and disadvantaged people do not benefit from industrial expansion. There needs to be better identification of employment opportunities for this group and ensure they receive training so they can move into operational positions.

For the most part, people were satisfied with the community but saw room for improvement. There was a strong sense of pride in the community, and the prospect that better targeting of employment opportunities for the disadvantaged and vulnerable groups could help alleviate some of the social issues.

In terms of potential fracture points for the community, housing and accommodation concerns were raised as a result of the nationwide increase in housing prices. Gladstone and area saw a dramatic increase in housing cost, which was exacerbated by industrial development in the area, which decreased supply as demand rose. Access to and from the business centre was also seen as an issue in terms of public transportation. The transportation issue is a further complication for some vulnerable groups who have difficulty accessing the area businesses, which means both increased transportation costs as well as decreased employment opportunities.

Health services were also seen as not keeping up with community expansion. This is a difficult situation because Rockhampton is the regional service centre and is approximately 100 km away along the Bruce Highway. Therefore from a state health perspective, regional services are provided through Rockhampton, but the perception in Gladstone is that this is to the detriment to Gladstone. Gladstone's population growth is also a contributor, as demand on health services increases at a higher rate than service expansion. Efforts have recently been undertaken to improve services at the Gladstone Hospital. Elective surgery waiting lists have been freed up with an 85 per cent increase in surgeries this year compared to the same period last year. The hospital says this is because of four new specialists introduced, a surgeon, physician, obstetrician and a paediatrician (ABC, 2008). Queensland Health Minister Stephen Robertson said the latest performance figures for the Rockhampton and Gladstone hospitals show the success of the Government's Health Action Plan. There has been a reduction in waiting lists in central Queensland, with Rockhampton and Gladstone having only one Category 1 patient each waiting more than a month for elective surgery. Gladstone's Category 2 waiting list fell from 12 to two over the over the past year. There was an increase in Rockhampton where 168 Category 2 patients had to wait more than three months and 81 Category 3 patients had to wait more than a year for surgery. Mr Robertson said the 1.4 per cent increase is partly due to efforts to cut waits for the most urgent patients. The number of patients at the Rockhampton Hospital fell 6 per cent over the past year, which Mr Robertson says may be due to the virulent flu season last year. Gladstone Hospital patients rose 6 per cent over the year (ABC, 2008).

## Existing Socioeconomic Environment **Section 4**

Similarly, concerns over air quality in Gladstone and its effects on local health sparked a comprehensive study on the matter, which concluded there was no noticeable increased health risks in Gladstone compared to the rest of Queensland (see Section 5.3.1 for a summary and conclusions of the interim report). Regardless, there are many in the community who believe the level of care available in the community is below a standard they feel is acceptable. Much of Queensland's health care has been under scrutiny due to waiting list figures (ABC, 2008), and many feel Gladstone is not an exception.

Elderly services are lacking or non-existent in the area, which results in people having to leave the area and subsequently their friends and family support network. This is seen by many in the community as an issue both in terms of the stresses placed on individuals and their families, but also in the loss to the community as a whole without this age demographic. The effects are evident in Figure 4-14 where the elderly are well underrepresented in the community when compared to Queensland as a whole.

The gap between the have's and the have not's was seen as a growing issue. As opportunities increased in Gladstone, four distinct classes were established. The industry sector pays high wages and employs a large number of the population. Regional council estimates figured approximately 50% of the workforce were employed by industry, government and professional services and grossed over \$80,000.00 per year.

The middle income earners were the service providers including nurses, teachers, social services, etc. This group made up roughly 25 % of the workforce and grossed approximately \$60,000.00 per year but were hard to attract and retain. This group often served a contract in Gladstone to gain better chances for employment in other centres like Brisbane.

The next group were the support staff for services and commerce and made up approximately 10 % of the population. This group earned approximately \$30,000.00 per year and was seen as being at the tipping point as the cost of living increased and housing and accommodation became less affordable. Although earning a fairly high wage compared to the rest of the State, this group was straddling the divide between have's and have not's due to Gladstone's economic prosperity. Many people in this group are youth or young adults, though there is also under educated and Indigenous adults within this group. This group is a reflection of the fact that moderate prosperity in a community with high industrial employment can often be seen as low wage earners both in community perceptions and economic reality as living costs increase. The fact that Gladstone is on the coast and is part of the national and international housing boom for coastal properties further exacerbates the issue.

The final group made up 5 % of the workforce, and generally required benefits to survive. This group was more likely to be locally born and raised, and was a mix between those choosing this lifestyle, and those unable to get out of it. There was also a high representation from the Indigenous population, elderly locals and people with disabilities. This group grossed less than \$15,000.00 per year (pers. comm., V. Laverick, 2008).

### ***What do you like about your community?***

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

## Section 4

## Existing Socioeconomic Environment

Although well beyond the point where everyone still knows each other, Gladstone is still at a point where the majority of people can associate with each other, and have similar beliefs and experiences. This is due in large part to the influence of local industry on the development and sustainability of the community. The vast majority of people are tied to local industry in some way, whether directly or indirectly employed, or servicing the community as a result of the population growth and relative economic stability.

Gladstone also still has the feel of a large town as opposed to a city of 30,731 people and a regional council of 55,523 as of June 30, 2007. A number of factors contribute to this, including personal choice and community composition, as well as urban sprawl as opposed to increasing population density, and council approval on housing types. As a result, Gladstone residents do not see themselves as a growing metropolis, but rather as a large town, ingrained with rural values.

### ***What don't you like about your community?***

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

There was special note given to the two mostly highly ranked by the group, which informal research found was fairly well reflected throughout the community, particularly the unfair distribution of government funding. There was a very strong perception that Gladstone contributed significantly to regional, State and Federal economies, yet Gladstone is often overlooked for government funding. While there was recognition that Gladstone was relatively well off compared to other communities, and thus did not have the same level of need, it did not mean there was no need to invest more in Gladstone. From a regional council (bureaucratic) perspective, government needed to provide proper funding and let the community identify how and what they could deliver with the allocated funds.

This feeling on funds distribution was comingled with a deep sense of resentment for the funding received by Rockhampton as the regional services centre. Many people interviewed could not see the rationale behind centralizing services, even more so in Rockhampton. Gladstone was perceived as the economic engine for the region, and as such has provided sufficient revenue to the government to warrant an expansion of services. Rockhampton was viewed as a government drain on the wealth generated by Gladstone by some; however the majority view was more that whatever Rockhampton has, Gladstone should have too during the site assessments in 2008.

As for training opportunities, the local TAFE and university were seen as limited in their capabilities and scope, and that the community was lacking in career and training diversity. Subsequent reports and interviews found that training and post-secondary education enrolment is in decline in the area, mainly due to limited opportunity and course options.

### ***What do you want to see happen in the community?***

- More opportunity for men (ranked number one);



## Existing Socioeconomic Environment **Section 4**

- More support for children (ranked number two);
- Local community to have a say in what they need (ranked number three);
- Careful management of job opportunities (ranked number four);
- Better integration of newcomers – “we want new residents to stay”;
- Improved infrastructure; and
- Greater control of their own destiny.

More opportunity for men recognised the need for better support services specifically for men, including shelters, counselling, health services, etc. (pers. comm., V. Laverick, 2008). This was also true for youth, where the group saw a serious lack of services targeting this group specifically. There was also need for a family outreach service so families can identify and receive support for their issues, rather than a generic government model that ‘dictates’ what support is required (pers. comm., Interagency Meeting, 2008).

The group recognised the need for the community to self identify the projects that require funding as they are aware of the emergent issues facing the community. They also saw a need for greater local benefit from industrial expansion, though the exact types and sources were not identified. A lot of focus was given to the construction component, which traditionally sees the greatest influx of people to the area. Focus needed to be given to employment opportunities to people who wished to stay in the area post construction.

There was a recognition of the gaps in the community that this exercise recognised as needing to be filled, as per the what do you want to see happen response. Infrastructure investment and development was identified as requiring strengthening, which was translated to mean financial support. There was also a need for more support for people migrating to the area, which in turn reflects a general recognition in the community that the future of Gladstone resides in net migration to the area, and the community’s ability to attract and retain those individuals and their families.

In terms of project impacts, there was recognition of both the positive and negative project impacts, and the effects those impacts would have on the community. As Gladstone has experienced much industrial, economic, and social growth in the past four decades, there is a realisation in the community that industrial growth is part of the character of the community. The focus of the community is on reducing the likelihood of a repeat of the negative social impacts from past projects, while enhancing the benefits to the community. Some of the potential positive impacts identified at the interagency meeting were:

- An increase in house values (positive for home owners);
- An increase in employment opportunities;
- An increase in economic activity;
- A more viable and economically diverse community (if managed well); and
- An increase in rates payers, which translates into more revenue for local services.

The main negative impacts raised were:

- The potential to corrode local infrastructure;
- The potential to have negative effects on local harmony; and

## Section 4

## Existing Socioeconomic Environment

- The potential bust after construction as the workforce becomes unemployed.

There was also a recognised need for the community as a whole to be looked after, not just components directly related to the project. The community is seen as an intricate social web, whereby strengthening some areas while ignoring others does not necessarily strengthen the community as a whole. The group would like to see proponents placing more focus on vulnerable areas, as well as areas related directly to the project.

Although emphasis was given to the use of more local sources of information, only qualitative data was provided to this assessment, and reference material over five years old.

## 5.1 CSG Field

For the facilities and services section, most of the focus is on the three CSG fields to be developed first. Data collection for the entire field would be too extensive and unnecessary given the unknown developmental timeline. Essentially, information provided could potentially become outdated prior to expansion of the field into the other areas, which would mean the baseline no longer resembled the various communities.

### 5.1.1 Community Medical and Health Facilities

There are four medical and health facilities in the field area:

- Roma Hospital Main referral hospital: The Royal Brisbane and Women's Hospital (479 km);
- Surat Hospital Main referral hospital: Roma Hospital (78 km);
- Injune Hospital Main referral hospital: Roma Hospital (90 km); and
- Wallumbilla Hospital Main referral hospital: Roma Hospital (40 km).

A description of the services provided indicates that the Roma hospital is the major service provider for the greater area; whereas the other hospitals are local service providers as seen in Table 5-1. The hospitals are mainly primary care facilities, with major surgeries and other medical emergencies being transferred to mainly Gladstone, Rockhampton or Brisbane. The hospitals have disaster plans for major emergencies to coordinate area resources to better deal with such emergencies.

**Table 5-1 Medical and Health Facilities Field**

Health Services District	Facility	Services	Description
South West	Roma Hospital	Hospital In Patient	Medical, Surgical, Accident and Emergency, Obstetrics and Gynaecology, Post-natal care, Palliative Care, Pharmacy
		Hospital Out Patient	Outpatients, Ante Natal Classes, Pharmacy, Accident and Emergency
		Visiting Specialist/Consultant Services	Flying Surgeon, Flying Obstetrics and Gynaecology, Physician, Dermatology, Ophthalmology, Psychiatry, Paediatrician, Oncologist, Neurologist, Dietician, Cardiology
		Clinics Available	Antenatal, Dental, Pre-Op, Immunisation, Audiometry, Fractures, General Practise, Obstetrics and Gynaecology, Surgery consultation, Paediatric clinic
		Allied Health Services	Occupational Therapy, Pathology, Radiography, Sonography, Speech Pathology, Physiotherapy, Social Work Service, Dietetics, Podiatry, Rehabilitation and Cardiac Rehabilitation
		Outreach Services	Flying Specialist Services; Surgeon (11 centres plus 24 hour emergency cover), Flying Obstetrician and Gynaecologist (28 centres and 24 hour emergency cover), Paediatrician
		Community-based Health Services	Indigenous Health, Alcohol and Other Drugs, Child and Family Health, Child and Youth and Adult Mental Health, Child Safety, Early Intervention Specialist service for children, Community Health Nursing, Health Promotion, Mental Health Promotion, Women's Health, Community Nutrition, Palliative Care, Health Lifestyle Coordination, Contenance Promotion, School-based Youth Health Service, Sexual Assault Service
		HACC Services	Community Options, Home Care, CACPS, Meals on Wheels, Home

## Section 5

## Facilities &amp; Services

Health Services District	Facility	Services	Description
South West	Roma Hospital	HACC Services	Maintenance, Blue Care, Day Respite, HACC Bus
		Residential Aged Care	Westhaven Nursing Care Unit
		Other Aged Services	ACAT, Community Aged Care Packages
	Surat Hospital	Hospital	Medical, Accident and Emergency, Outpatients, Pharmaceutical (Nurse) Ante and Post Natal
		Clinics Available	Dental, Women's Clinic
		Community Health	(Council funded Community Health Nurse)
		Outreach Allied Health Services Available	Occupational Therapy, Speech Pathology, Physiotherapy, Social Worker, Podiatry
		Outreach Services Available	Alcohol, Tobacco & Other Drugs, Child Health, Health Promotion, Mental Health, Women's Health, Young People at risk
		HACC Services	Community Options, Meals on Wheels, HACC bus, CACPS, Day Respite, Home Maintenance
		Other Aged Services	Community Aged Care
	Injune Hospital	Hospital	Accident & Emergency, Outpatients, Pharmaceutical (Emergency only), Long Stay/respice Care
		Clinics Available	Dental
		Allied Health Services Available	Physiotherapy, Podiatry, Occupational Therapy, Dietician, Speech Pathology
		Outreach Services Available	Child Health, Mental Health, Women's Health, Social Worker
		HACC Services	Meals on Wheels, Blue Care, St Lukes Nursing Service, HACC Bus, Home Care (domestic assistance)
		Other Aged Services	ACAT
	Wallumbilla Hospital	Hospital	Outpatients, Emergency Care and Primary Health Care
		Clinics Available	General Practitioner and Pathology twice weekly. School-based vaccination programs
		Outreach Allied Health Services Available	Occupational Therapy, Speech Pathology, Podiatry, Social Worker
		Outreach Services Available	Aboriginal Health, Alcohol Tobacco and Other Drugs, Domiciliary Care, Community Health Nurse, Child Health (visiting), Health Promotion, Mental Health, Women's Health Nurse, Young People at Risk
		HACC Services	Home and Community Care/Domiciliary Nursing Service, Meals on Wheels, CACPS, Personal Care, Home Help
Other Aged Services		ACAT, Community Aged Care, Mobile Respite Service	
Additional Services		Continence Nurse, Speech Pathologist, Aboriginal Health, Go Natural Health	

Source: Queensland Health: Queensland Health District Profiles, 2007

## Facilities & Services **Section 5**

The major hospital in the study area is the Roma hospital. It has a total of 40 beds with a current capacity of about 50-60% as of October 2008. There are sixty-five nurses and 4 doctors; however informal research suggests a staff shortage and a need for accommodation, especially for specialists on a rotating basis. There is also a need for a systematic policy for disaster services as a lack of coordination currently exists. In a case of emergency the surrounding hospitals may be called to send staff to the Roma hospital to assist (pers. comm., Roma Hospital, 2008) (THI, 2008). Roma Hospital's main referral hospital is the Royal Brisbane and Women's Hospital which is 479 km away (Queensland Health, 2008).

In addition to the Roma hospital, there are 39 other health care services and providers in the area ranging from dentists and medical centres, to aged care and community care services. There are four mental health service providers; however a gap was identified in the level of service for individuals under the age of 18, and the methods for transporting them to other service providers, mainly Toowoomba (pers. comm., THI, 2008). There are also health facilities for Indigenous health, counselling, physiotherapy, chemists, disability support and alternative medicines to name a few. As Roma is the area service centre, the community has a fairly broad array of health practitioners and service providers; however, staff attraction and retention were identified by many as an ongoing issue (pers. comm., L. Christie, 2008) (pers. comm., L Waldron and P Bacon, 2008) (pers. comm., M. Weathered, 2008). Queensland Health indicated that Roma was lacking a strategy to make it a more attractive destination for health care workers. This is mainly because there is not a regional incentive for people to work in the rural areas since the pay is the same as in the urban locals (pers. comm., L. Christie, 2008).

Although Roma has experienced some growth in population, with the exception of real estate prices, there have not been many changes – the real estate changes were attributed to a national phenomena as well as the effects of subsidised rents for some contract staff with government services (pers. comm., A. Cleland, 2008) (pers. comm., D. Newman, 2008). There were no noticeable changes in rates of substance abuse, sexual assaults or other violence, and no indication that oil & gas employees (FIFO) had a negative effect on community health (pers. comm., L. Christie, 2008).

In the Surat hospital, generally 4 of total 13 beds are currently used for long stay patients. There are 3 nurses on duty during a day shift. One doctor and approximately 25 nurses are employed at the hospital. In the case of an emergency, the hospital may call doctors from the Roma hospital or transfer the patients to Roma (pers. comm., Surat Hospital, 2008).

In addition, there are three health care services and providers, as well as 16 additional services offered from the Surat hospital. Services include a retirement village, community health centre, dentist, chemist, three therapy specialists, social worker, women's health, drug and alcohol services and young people at risk services. There is also a podiatry service and child and maternity health.

The Injune hospital currently has 10 beds; however 3 to 4 are generally used for long stay patients. During a normal shift, 2 nurses are on duty, and there are a total of 11 nurses on staff. In the case of an emergency, 1 doctor is available and 1 to 2 ambulance attendants. If the hospital could not handle the emergency, they would send the patients to the next hospital, which is Roma (with flying doctors or ambulance). The Injune hospital indicated that they have a minimal emergency handling capacity (pers. comm., Injune Hospital, 2008).

Injune also has five health care services and providers, as well as 11 additional services through the hospital. Services range from aged care to community care, as well as dentists, therapy specialists, dieticians, mental health services, women's health, social worker and alternative medicine. There is an emergency chemist available at the hospital. Informal research found that some residents were not happy with some services, or did not like the lack of options in the community, and subsequently travelled to Roma for some medical services. This was seen as normal for many rural communities with limited services or options for services.

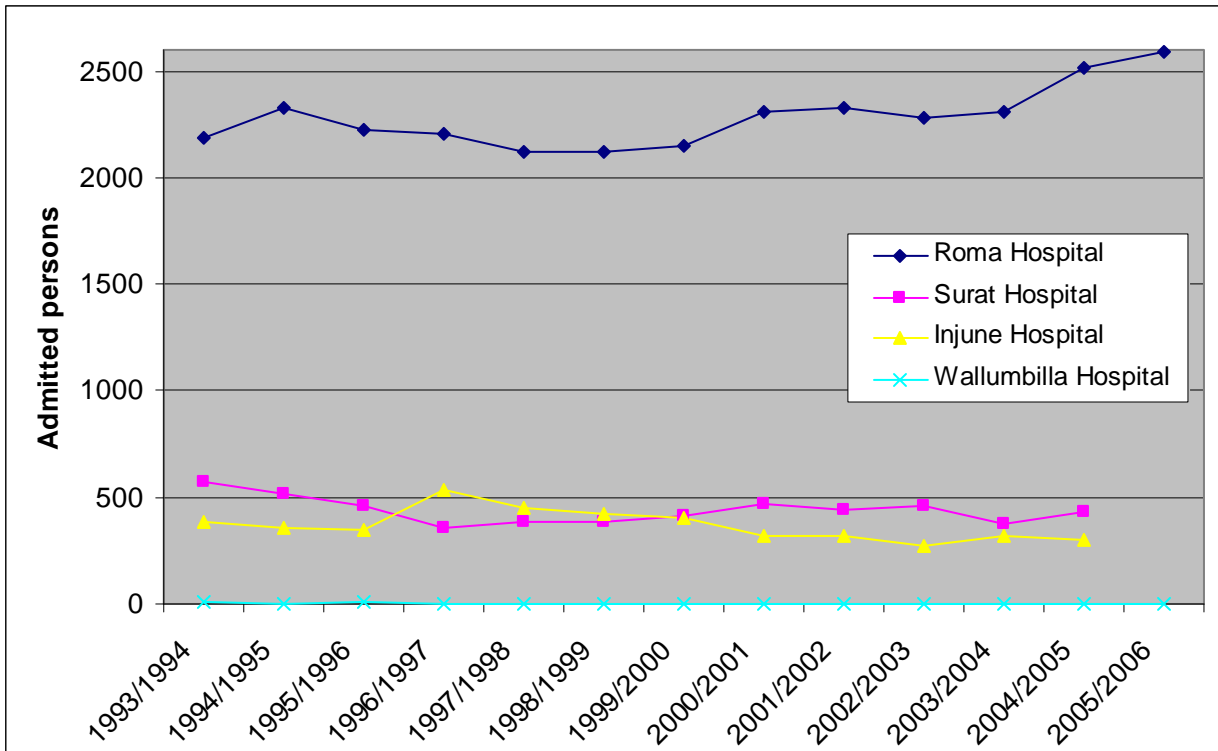
## Section 5

## Facilities &amp; Services

As the Wallumbilla Hospital only provides outpatients services, all emergency patients would be transferred to Roma (pers. comm., Wallumbilla Hospital, 2008).

Due to the small population numbers in the area, minor changes in the numbers of admitted and non-admitted activity can result in significant variances in use year to year as seen in Figure 5-1.

**Figure 5-1 Patient Activity of Roma Hospital, Surat Hospital, Injune Hospital and Wallumbilla Hospital**



Source: Queensland Health: Health Information Centre, March, 2008.

Roma experienced the most activity, as can be expected for the regional centre. Increases in use are in line with the steady minor population increase experienced in Roma town (see Figure 5-1). For the most part use has been fairly consistent, with an average of 2,281.5 admissions and 27,797.6 non-admissions occurring annually between 1993/1994 and 2005/2006. Since 2002/2003 the annual activity has been consistently above the average though Roma's population has been incrementally increasing since 2001. Since Roma's annual population changes have generally been <1.0 % during the same time period, the changes seen in the hospital use is within the expected variance.

As seen in Figure 5-1 Surat hospital experiences a lot less use than Roma. Due to the small population and use, the variances are a lot more wide-ranging as 10-20 additional or fewer admissions translated to a 5-20 % variance from the previous year.

Injune hospital has experienced similar use to that of Surat. The slightly higher values in Injune reflect the slightly higher population.

## Facilities & Services **Section 5**

Wallumbilla Hospital is the smallest of the group, and is primarily a health centre for minor injuries or to stabilize the more seriously injured prior to transportation to a larger hospital. No one has been admitted to the Wallumbilla hospital since 1998/1999.

The population size and subsequent hospital services are further reflected in the number of general practitioners (GPs) in the area (see Figure 5-1). As Roma is the regional hub, the majority of GPs in the area operate out of Roma. Given the size of Roma, the level of health services available reflects it being the regional centre, as it has more health services than comparably sized communities in Queensland.

There is a recognized need for counselling in Roma. This is true for all age groups, particularly those under 18 years. Support for mental health seems to be an area of concern for health and social service providers as well as some private citizens, as it was mentioned by several people. Additionally, the difficulty in attracting and retaining staff is resulting in staff 'burn-out' which in return reduces staff willingness to remain (pers. comm., M. Weathered, 2008). This can also lead to a close of service due to staffing issues. More support for migrant families might help to attract people to Roma and help relieve the pressures on staff.

For a listing of existing health infrastructure and services refer Appendix B, Table 5-2 CSG field – Health Infrastructure and Services.

### 5.1.2 State Emergency Services

The State Emergency Services (SES) is tasked with assisting people and communities in times of natural disasters and other emergency situations that affect portions or all of the community. The South Western Region Roma Downs Area is located in Roma. This regional office covers the following areas:

- Balonne SES Unit;
- Bendemere SES Unit;
- Booringa SES Unit;
- Bulloo SES Unit;
- Murweh SES Unit;
- Paroo SES Unit;
- Quilpie SES Unit;
- Roma/Bungil SES Unit;
- Tambo SES Unit;
- Taroom SES Unit; and
- Waroo SES Unit.

### 5.1.3 Royal Flying Doctors Services

The Royal Flying Doctors Service (RFDS) provides doctor services to remote locations throughout Queensland. The main office is in Brisbane at the Brisbane Airport, as well as eight bases throughout Queensland to service the area:

- Brisbane;

## Section 5

## Facilities & Services

- Bundaberg;
- Cairns;
- Charleville Base;
- Longreach Base;
- Mount Isa Base;
- Rockhampton Base; and
- Townsville.

Although there are several hospitals in the area, there are some locations, and certain serious injuries or ailments that do require use of the flying doctors services. Use of such services is already familiar practise in the area though the statistics for use was not available at the time of this report.

The flying doctors service can be accessed by dialling 000 or 112 on a mobile phone. There is a 24 hour centre in Charleville that can be called directly or there is HF Radio access. There is also a centre at Mt Isa that is contactable 24 hours. The centre in Rockhampton is only open business hours and can only be reached through 000 or 112 (pers. comm., Flying Doctors Service, 2008). Table 5-2 provides the contact details for the service.

**Table 5-2 Flying Doctors Service Contact Details for Study Area**

Centre	Direct Line	24 hour service	HF Radio Call Sign	HF Radio Number	HF Radio Number Evenings
Charleville	4654 1446	Yes	VJJ	4980 6845	4980 2020
Mt Isa	4743 2802	Yes	VJI	5110 6965	5110 2020
Rockhampton	000	No	None	-	-

Source: Pers. Comm., Flying Doctors Service, 2008.

### 5.1.4 Queensland Ambulance Service (QAS)

The regional office for the South Western Region's ambulance service is located in Toowoomba. The South Western Region services an area of approximately 414,000 km<sup>2</sup>, serving an estimated population of 265,487. The Region operates through 29 full time ambulance stations and 5 honorary facilities. The South Western Region's area encompasses Gatton in the east to Quilpie and Thargomindah in the West, and from Injune, Taroom and Crows Nest in the North to the New South Wales border. There are local ambulance committees in Roma, Injune, Oakey, Mitchell, Dalby, Charleville and Chinchilla in or adjacent to the study area (Department of Emergency Services, 2008).

### 5.1.5 Fire and Police Services

The Roma Regional Council area is covered by both the Rural Operations Roma Area Office and the Rural Operations Miles Area Office for rural fire services, whereas the Taroom Shire Council area is covered by the Rural Operations Miles Area Office and the Rural Operations Rockhampton Area Office. Fire services are integrated throughout Queensland to provide overlapping layers of protection throughout the study area and the State as a whole (Department of Emergency Services, 2008).



There is police cover throughout the study area, with a police station in all the communities assessed. The area police district Communication Centre is located in Roma, and dispatches police as required throughout the study area. Police have an internal process for assessing additional requirements for policing based on a number of factors including work load and population. Most police activity in the area deals with road violations along the highways. All the main communities in the study area are situated along or adjacent to the major highways.

### 5.1.6 Education and Training Facilities

A list of the various schools in the study area, and their 2007 enrolments can be found in Appendix B. The Roma junior, middle and senior campuses were recently combined into the Roma State College. There were a number of factors which contributed to this decision, including centralizing the services, reducing the number of school buildings, and making the school more attractive to new arrivals to the community. As a result, St. John's School expanded their services in order to meet the services of the State school (pers. comm., Education Queensland – Roma, 2008).

Over the period 2003 – 2008 there has been a decrease in enrolment in local schools as a result of many issues including drought; however, Roma generally has consistently solid levels of enrolment. Teacher retention has always been an issue in the area, with turn-over occurring every 2-3 years on average (pers. comm., Education Queensland – Roma, 2008).

There are many schools in the area that are susceptible to closure as a result of size and location. This has been an issue for these areas for many years, and has been further complicated by the ongoing drought occurring throughout most of the region. There is an internal mechanism to address this issue outlined below.

#### School Viability

The Queensland Government's Education Department has defined the following nine indicators for assessing the viability of specific schools.

- Occupancy Rate – a sustained low occupancy rate is a strong indicator of a change in the nature of the school's catchment;
- Resident Student Numbers – A decline in the number of resident students indicates a change in the nature of the catchment and a decline in the demand for the service in that location;
- Yield Rate per household – A low yield rate per household is an indicator of an ageing area, an area where there are significant changes in land use or market values preclude the presence of young families;
- Percentage of Resident Students Attending the Local School – This measure indicates the percentage of students from within catchment actually attending the school;
- Size of School Population – This indicator is useful in combination with the other indicators;
- Enrolment Projections – Low enrolments that are projected to continue over a number of future years are indicative of a declining demand and have implications for the sustained viability of the school;
- Per Student Cost – A high cost per student may be indicative of under utilization of resources, particularly in urban and provincial centres;
- Specific Educational Context – the capacity of a school to meet system and parental curricula and extra curricula expectations can be influenced by school size, net patronage and location; and

## Section 5

## Facilities & Services

- Community Service Obligations – The closure of a school can have significant impact upon a community's sustainability, particularly if the school is located in a service centre, is the focal point of community activity or is the only delivery point for a range of government services (Department of Education, Training and the Arts, 2008).

Education Queensland representatives note that adequate resources would be provided to meet any increased demand experienced by local schools (pers. comm., Eborn, 2006).

In addition to primary and secondary schools, Roma also has further educational institutions (see Table 5-3). These facilities are branch campuses of the Southern Queensland Institute of TAFE, and various learning centres.

**Table 5-3 Further Education Institutions**

Towns	Further Education Institutions and Training Facilities
Roma	Learning Network QLD – Roma branch (LNQ 2008)
	Southern Queensland Institute of TAFE – Roma Campus (TAFE 2008)
	Open Learning Centre – Roma (LNQ 2008)
Chinchilla/Dalby	Southern Queensland Institute of TAFE –Chinchilla and Dalby Campus (TAFE 2008)

Source: Department of Education, Training and Arts, 2008b, LNQ. 2007. TAFE 2008.

### 5.1.7 Community Facilities and Services

There are eight child care facilities in Roma, Injune and Surat within the study area (see Appendix B). These facilities have a combined capacity of 302, including 10 after school spots. Many facilities in Roma and Injune stated they did not have waiting lists, suggesting there is currently sufficient child care space in those communities. Surat however, is currently full and unable to accommodate additional demand at present. The recent issues surrounding the ABC centres throughout Australia will likely have an affect on childcare availability as some of these facilities may be forced to close. Details of which facilities and where was not known at the drafting of this report.

Roma has experienced an increase in demand on local facilities. This has been attributed to a few factors including marginal growth from trade's people coming to the area (mostly servicing the oil & gas industry) and a limited number of venues (pers. comm., L Waldron and P Bacon, 2008).

Informal research found many childcare services in the rural communities are finding it difficult to staff their facilities now that there are more stringent rules on who can provide care. Although the purpose of the changes was to ensure a standard of service was met throughout the State, an unintended effect has been that the smaller service centres are having difficulty finding qualified staff. As a result, some facilities could be forced to close if their qualified staff were to leave and not be replaced.

#### **Places of Worship**

There are several places of worship in the study area, of which all are of the Christian denomination. Increased use of the local churches was seen as a positive impact of the project (pers. comm., Spiritus, 2008); however, the lack of additional places of worship from other faiths could make movement to the area difficult for some. A list of the places of worship in the study area can be found in Appendix B.

### **Governmental Services**

As Roma is a regional services centre, there are many government services present in the study area (for a list see Appendix B). As discussed previously, the difficulty is in the attraction and retention of staff to these locations which makes the uninterrupted operating of these services difficult as was identified by all service providers interviewed during the 2008 site assessments. As a result, many staff have the potential to burn out from the work load which can result in high levels of turn over in staff.

The government agents in Injune and Surat act as a point of contact or liaison between private citizens and the various governmental departments. The regional offices for most governmental departments are located in Roma or Toowoomba, and the government agent puts people in contact with them.

The Roma Neighbourhood Centre and associated service providers provided the following list of social services considerations and an assessment of them in Roma:

- Health care professionals: there are currently shortages for doctors, dentists, psychologist and psychiatrist;
- Child care and family day care availability: most are currently at capacity;
- Child/youth assault and abuse counselling/services: there is prominent domestic violence issues across all racial and socioeconomic boundaries, including a high level of children under 14 being affected;
- Foster families: there is a shortage of families for registered foster care;
- Family carer support/aged care support: there are no networks present in the community, and limited support for carers;
- School class sizes: at or near capacity. There is difficulty dealing with troubled students;
- Teaching staff: difficult to attract and retain. Steady turn over of staff;
- Vacation/Holiday care: there is a lack of services available to the community;
- Transport – area cover: there is not a public system in the community for transport to and from school. Home and community care (HACC) bus service for disabled and an open pay service for the elderly. Many travel by taxi but it is costly and there are waiting periods;
- Youth mental health: there are youth suicide issues in the community and a lack of youth activities;
- Youth hostel: there is a Roma Rural Youth Hostel for children attending school but nothing else for those not attending school;
- Youth drop in centre: there are plans to develop a centre in Roma;
- Youth groups and activities: there is not a lot for youth to do;
- Peer mentoring program: this is being discussed as a way to reduce youth suicide;
- Single parent support: none present;
- Migrant services: there are migrants coming to Roma to work already but there are not any services specifically for them; and
- Additional services required: Indigenous, gay/lesbian, disability, mental health and rural outreach.

## Section 5

## Facilities & Services

Informal research and community interviews by URS and THI found that mental health issues, counselling services (particularly youth counselling), domestic violence and drug and alcohol abuse were the social services or issues of most concern in the community. These services and programs are at a limited capacity and are seen by many in the industry and community as underperforming or non-existent. Most other services are fairly well maintained due to the regional centre status in Roma, though better coordination of services may enhance this capacity. There is an opportunity for Santos to work with the various social service providers to prioritise the needs of the community, connect those needs to current service capacity and identify gaps in services that can then be more effectively addressed.

### Community Facilities

Table 5-4 lists the community facilities in the study area. The number of facilities and diversity reflect the size and role of the various communities. Roma is the central services centre in the area, and this is reflected in the community facilities there.

**Table 5-4 CSG field - Community Facilities**

Location	Facility
Injune	Injune RSL Memorial Hall
Roma	Roma Bungil Cultural Community Centre
	Roma Neighbourhood Centre - incl. Maranoa Online
	The Shed (Uniting Church Facilities)
	St Pauls Anglican Church Hall
	Community Youth Recreational Centre
	Roma Senior Citizens Inc.
	Girl Guides Hall
	Scout Hall
	Bassett Park Race Course
	Surat
The Shire Hall	
RSL Community Centre	
CWA Hall	

Source: THI, 2008.

Surat and Injune community facilities are centred on meeting halls. Surat also has an RSL community centre. Roma has many facilities associated with the various churches and social groups. With all the government departments and other service providers, use of the community facilities is good, though increased use would be welcomed.

### Shopping Facilities

Shopping facilities in the study area are fairly limited in terms of groceries as seen in Table 5-5. In the smaller communities in the area there are local grocery stores or convenience stores. Many people make regular trips to the area grocery stores, as well as to the other grocers in neighbouring communities like Dalby and Miles. This is largely a personal preference or related to a trip to these areas for another errand.

Table 5-5 CSG field - Shopping Facilities

Location	Venue	Name
Roma	Shopping Centre - major	Westland's Plaza
	Supermarket	Woolworth's
		IGA
Surat	Supermarket	Surat Foodmarket

Source: THI, 2008.

In addition to grocery stores, there are limited venues for clothes and other goods in the study area, predominantly in Roma (informal field research).

### Transport

The study area is bisected by the Carnarvon Highway (north to south) and the Warrego Highway (east to west), as well as numerous secondary roads to the numerous homesteads throughout the area. There is regular bus service along the highways, and train service out of Roma. There are also local airports in the communities of Roma, Injune and Surat. Roma airport has recently experienced a noticeable increase in the amount of use as a result of increased oil and gas activity in the area. As a result, move services have been scheduled to Roma, but vacancy on many flights is scarce.

There are also many service stations in the area due to the heavy reliance on the highways for local and regional transportation. Roma is situated at the intersection of the two main highways, which further increases Roma's role as a regional services centre.

A list of transportation services available in the study area can be found in Appendix B.

### Cultural Facilities

Cultural facilities play an integral part in the formation and maintenance of local culture. These venues also provide an essential meeting place for groups and individuals in the community. Table 5-6 lists the various cultural facilities in the study area.

Table 5-6 CSG field - Cultural Facilities

Location	Category	Name
Injune	Library	Injune Library
	Theatre/performing arts venue	Injune Memorial Hall
Surat	Library	Surat Library
	Museum	Cobb & Co Changing Station
	Art Gallery	Balonne River Gallery
	Cinema	The Astor Theatre
	Public art	Cobb & Co. Monument
	Public art	Mural on wall of Cob & Co Changing Station
Roma	Library	Surat Library
	Museum	The Big Rig (incl. Lenroy Slab Hut)
		Meadowbank Museum

## Section 5

## Facilities &amp; Services

Location	Category	Name
	Art Gallery	Roma Community Arts Centre
	Theatre/performing arts venue	Roma Bungil Cultural Community Centre
		Roma Community Art Centre (old theatre)
		Jubilee Hall
		Repertory House
		Edrine Keegan School of Ballet
	Cinema	Roma Cinema
	Public art	Three Dimensional Clay Mural
		Mural on toilet block

**Cultural Activities**

In rural communities throughout the area, there is reliance on cultural activities and social events to help maintain the social bonds and community values. There are generally several events a year scheduled to allow people to get together and interact. This is particularly important for the individuals and families living on the homesteads, as often they are some of the only times they have to integrate with the rest of the community. A list of the numerous monthly cultural activities in the area can be found in Appendix B.

The study areas has also placed much importance on the promotion of tourism in the area, particularly in the Roma Regional Council area, and are actively promoting their cultural events to attract tourist to the area (pers. comm., B. Garvie, 2008). This is a legacy of the old Roma town council who saw economic diversification as a means of helping weather the drought.

**Recreation Areas and Facilities**

In rural communities like those in the study area, sports and recreation are also seen as an integral part of maintaining social interaction and civic pride. These activities help maintain social activity, as well as help build community character. Appendix B provides a list of the recreational areas and facilities in the study area by community.

As can be seen from these tables, recreational activities are a major component of the local communities, and part of the social fabric of the community. Many people interviewed commented that if you liked participating in or watching sport you would fit right into the community.

**Sporting**

There are also several sport clubs in the study area, which is a further reflection of the level of sport and recreation activity undertaken in the communities. A list of the various sports clubs in the study area can be found in Appendix B.

As discussed previously, sport is a major component of the local community and a means of social gathering. Sport has thus been able to enhance civic pride in the community as well as provide a venue for new comers to the community to better integrate.

**Media**

There are several media outlets in the area as seen in Table 5-7. In addition to the local newspapers, all the major national papers are available in local stores. Many people prefer the local newspapers as a means of keeping up with local news and events.

**Table 5-7 CSG field - Media**

Medium	Services
Radio	4ZR AM
	ABC
	95.1FM Hot FM
	4RRR
Television	ABC
	Channel 7
	SBS
	Imparja (combination of channels 9&10)
Newspaper	Maranoa Town & Country Mail
	The Western Star
	Toowoomba Chronicle
	Queensland Country Life (also available on-line)

Source: THI, 2008.

**5.1.8 Community Groups, Clubs and Societies**

In addition to the sports and recreation culture in the communities, there is also a vibrant culture of community groups, clubs and societies. A list of the various groups in the study area can be found in Appendix B. This table provides a good indication of how diverse the social network is despite the smaller population and rural setting.

There are also several representative associations and organisations in the study area (see Table 5-8). These organisations further outline the commitment of many individuals and groups in the community to various social networks and activities. It is important to note that much of the work done for all the various groups, clubs and organisations is voluntary, and is a strong reflection of the efforts made to maintain community cohesion.

**Table 5-8 CSG field - Representative associations and organisations**

Location	Representative associations and organisations
Injune	Injune State School Parents & Citizens Assoc.
	Advance Injune
Roma	AgForce
	Rhealth
	Roma Chamber of Commerce
Surat	Surat & District Development Association Inc. (SDDA)
	Warro Retirement Village Inc.

## Section 5

## Facilities & Services

Source: THI, 2008.

There is an opportunity for Santos to help rekindle the business community organisations (particularly the Chamber of Commerce) by becoming a dedicated member and community partner. This will help community businesses identify business opportunities with Santos, discuss workforce issues, and develop collaborative plans to address the communities business and economic needs. Businessmen in the community have already expressed interest in Santos maintaining a business presence in the community (pers. comm., M. Hosking, 2008) (pers. comm., B. Garvie, 2008).



## 5.2 Gas Transmission Pipeline

The anticipated use of facilities and services along the proposed gas transmission pipeline route is expected to be low as a result of the types of work undertaken and the accommodating of the workforce in temporary accommodation facilities (TAFs) along the route as it is constructed. Some detail is provided in order to better understand the study area. Information was generally collected at a high level because of the anticipated use of local facilities and services by the project.

### 5.2.1 Community Medical and Health Facilities

There are five medical and health facilities in the surrounding area of the pipeline:

- Biloela Hospital                      Main referral hospital:    Rockhampton Hospital (150 km);
- Moura Hospital                      Main referral hospital:    Rockhampton Hospital (200 km);
- Theodore Hospital                  Main referral hospital:    Rockhampton Hospital (225 km);
- Springsure Hospital                Main referral hospital:    Richmond Health Centre (330 km); and
- Woorabinda Hospital              Main referral hospital:    Rockhampton Hospital (150 km).

Table 5-9 provides a summary of the hospital facilities in the study area and some key details.

**Table 5-9      Medical and Health Facilities Gas Transmission Pipeline**

Facility	Current used beds / # of total beds	Services	Description
Biloela Hospital	10/20	Hospital	Medical, Surgical, Paediatric, Obstetric, Accident and Emergency, Palliative Care, Radiography, Pharmacy.
		Specialist Services	Visiting: Ophthalmologist, General Surgery, Obstetric & Gyn, Mental Health, Drug and Alcohol, Orthopaedics.
		Clinics Available	Dental, Midwives, Antenatal Clinic weekly, Venesection Clinic - weekly, Women's health Clinic - second monthly, Red Cross Emergency Donor Panel - monthly.
		Allied Health Services	Physiotherapy, Speech and Occupational Therapy, Social Work.
		Outreach Services	Child Health, Community Health, Aboriginal Health, Dental & Allied Health.
		Other Aged Services	Long Stay & Respite Residential Care
Moura	2/10	Hospital	Medical, Surgical, Paediatric, A & E, Radiography, Pharmacy, Palliative Care.
		Specialist Services	Visiting: Obstetrics and Gynaecology, Mental Health, Drug and Alcohol, Child Health.
		Clinics Available	Visiting: Dental.
		Allied Health Services	Visiting: Physiotherapy, Speech and Occupational Therapists, Radiography.
		Other Aged Services	Respite Care.

## Section 5

## Facilities &amp; Services

Facility	Current used beds / # of total beds	Services	Description
Springsure	Acute beds: 4/10 Long care beds: 12/12	Hospital	Acute Medical, Accident and Emergency, Ante Natal Care/Post Natal Care, Allied Health Services, SHACC Services, Operational Services -Housekeeping; Food Services; Ward Services, Post Surgical, Outpatient Clinic, Post Acute Care (wound care etc), Palliative Care, Nuring Home Type Patients, Pharmacy, Immunisation Clinic, X-Ray Service, Administration Services.
Theodore	6/13	Hospital	Medical, Surgical, Paediatric, Obstetrics, Accident and Emergency, Palliative Care, Radiography, Pharmacy.
		Specialist Services	Visiting: Drug and Alcohol, Child Health.
		Clinics Available	Visiting: Dental.
		Allied Health Services	Visiting: Physiotherapy, Speech and Occupational Therapy, Radiography.
		Other Aged Services	Multipurpose Health Service, Respite Care and Community Care.
Woorabinda	3/8	Services	Emergency, acute inpatient, residential care, community health services, oral health services, hostel care

Source: Queensland Health: Queensland Health District Profiles, 2008

More detailed information on the bed capacity and the emergency handling capability was collected through phone interviews conducted in October 2008.

One of the major hospitals in the study area is the Biloela Hospital, which has 20 beds and a current capacity of 50%. There is a total staff of approximately 30 nurses. If the hospital could not manage the emergency, they would send the patients to:

- Moura;
- Mount Morgan; or
- Rockhampton (with flying doctors or ambulance).

A few incidents on mining sites in the last few years has resulted in Biloela Hospital staff travelling to site, as the situation warranted (pers. comm., Biloela Hospital, 2008).

In addition to the Biloela hospital, there are 23 other health care services and providers in the area ranging from dentists and mental health, to aged care and community care services.

The Moura Hospital has generally a total number of 10 beds; however there is access to four additional beds if necessary. Currently the Moura Hospital has a capacity of eight beds. Two medical superintendents are available for emergencies; however the hospital must access other hospitals in order to use some of their equipment (e.g. anaesthetic equipment). If the hospital reaches capacity they would send patients to Biloela hospital, which can be reached within 45 minutes by ambulance (pers. comm., Moura Hospital, 2008).

In addition, there are nine health care services and providers, and three support services offered from the Moura hospital. Services include a retirement village, community health centre, dentist, two chemists, therapy specialists, social worker and further care services.

The Theodore Hospital can provide a total of 13 beds though 6 beds are currently used. During a shift, two nurses are on duty. In the case of an emergency, the hospital could mobilise one medical superintendent, one

Facilities & Services Section 5

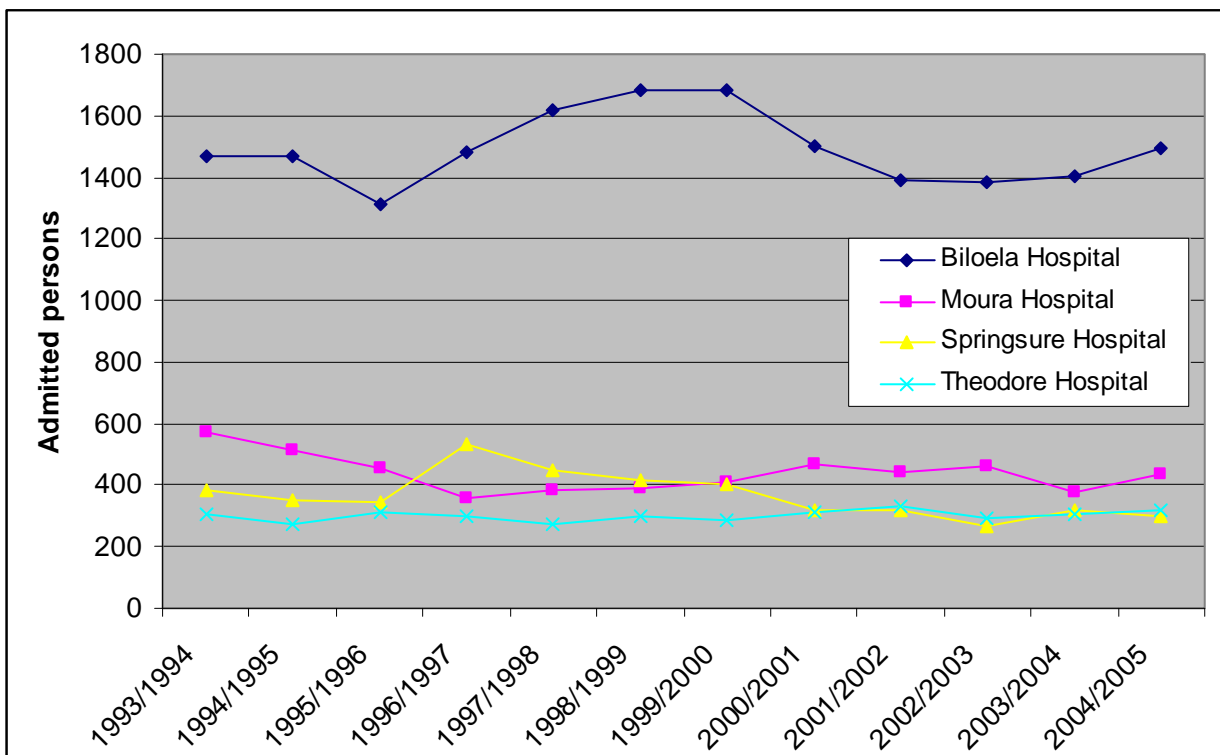
surgery assistant and ten nurses in an appropriate time. If they cannot manage with the number of patients or extent of the injuries, they would transfer them to Moura, Biloela or Rockhampton (pers. comm., Theodore Hospital, 2008).

The Springsure Hospital has 12 acute and 10 long stay beds; however there are 4 beds in use at the moment. During a shift, two to four nurses are on duty with the total number of nurses being approximately 30. In the case of an emergency, there is a doctor available in town. If more people are injured than can be treated, they would be transferred to the Emerald hospital (pers. comm., Springsure Hospital, 2008).

The smallest capacity hospital in the gas transmission pipeline area is the Woorabinda hospital. The hospital has eight beds. During a shift, there are one to three nurses on duty. The hospital is unable to maintain extended services or acute treatment. If the hospital reached full capacity they would transfer the patients to Blackwater, Emerald or Rockhampton using the flying doctors service or an ambulance (pers. comm., Woorabinda Hospital, 2008).

Figure 5-2 graphically illustrates the rates of use for the key hospitals in the study area.

**Figure 5-2 Patient Activity of Biloela Hospital, Moura Hospital, Springsure Hospital and Theodore Hospital**



Source: Queensland Health: Health Information Centre, February, 2008.

In addition to the area hospitals, there are several other health infrastructure services which can be found in Appendix B. The majority of services are available in Biloela as it is the major centre in the area; however, the smaller communities do have additional facilities as well.

It was indicated in informal research in the region that many people from the smaller communities tend to access services in the larger centres most of the time.

## Section 5

## Facilities & Services

### 5.2.2 Emergency Services

The State Emergency Services (SES) is tasked with assisting people and communities in times of natural disasters and other emergency situations that affect portions or all of the community. The Central Region Rockhampton Area office is located in Rockhampton. This regional office covers the following areas:

- Banana SES Unit;
- Bauhinia SES Unit;
- Duaringa SES Unit;
- Emerald SES Unit;
- Gladstone/Calliope SES Unit;
- Livingstone SES Unit;
- Miriam Vale SES Unit;
- Mount Morgan SES Unit;
- Rockhampton/Fitzroy SES Unit; and
- Woorabinda Community SES Unit.

### 5.2.3 Royal Flying Doctors Service (RFDS)

The RFDS is available to remote communities in the area. There are eight bases scattered throughout Queensland, with the closest being Brisbane, Bundaberg, Charleville and Rockhampton. Flying doctors and emergency evacuations are determined by the emergency dispatch, which then coordinate regional resources to deal with the evacuations. Medical emergencies requiring patient extraction, or situations where the TAF medical services cannot handle the emergency could require use of the RFDS or local ambulance services.

Access to the RFDS is done by dialling 000 or 112 on a mobile phone. There is a 24 hour centre in Mt Isa that can be called directly or there is HF Radio access. The centre in Rockhampton is only open business hours and can only be reached through 000 or 112 (pers. comm., Flying Doctors Service, 2008). The table below is the contact details for the service:

**Table 5-10 Flying Doctors Service Contact Details for Study Area**

Centre	Direct Line	24 hour service	HF Radio Call Sign	HF Radio Number	HF Radio Number Evenings
Mt Isa	4743 2802	Yes	VJI	5110 6965	5110 2020
Rockhampton	000	No	None	-	-

Source: Flying Doctors Service, 2008.

### 5.2.4 Queensland Ambulance Service (QAS)

The area covered by the Central Region ambulance extends from the Whitsunday Shire to the south of Miriam Vale and west to the South Australian border. The region covers approximately 440,000 km<sup>2</sup> and serves a regional population of approximately 320,000 people, with the majority of the population being based in the coastal cities of Mackay, Rockhampton and Gladstone. Central Queensland ambulance provides coverage to

## Facilities & Services Section 5

the people through 61 permanent and honorary ambulance stations based throughout the region. QAS Central Region also provides coverage to the industrial sector of the region through commercial contracts providing pre-hospital care on mine sites, major constructions sites, and other industrial complexes (Department of Emergency Services, 2008).

### 5.2.5 Fire and Police Services

The Central Region has 37 urban fire stations and an operational staff of 161 full time and 451 auxiliary fire-fighters. Auxiliary stations can be found in Biloela, Moura, Springsure, Thangool, Taroom, Wandoan and Theodore. The Region's Fire Communications Centre is in Rockhampton (Department of Emergency Services, 2008). The TAFE and work sites will have fire fighting equipment as part of the health and safety procedures; however, should a serious fire occur local authorities will be notified.

In the study area, the police operate from police stations in Biloela, Moura, Springsure, Theodore, Woorabinda and Duarina.

### 5.2.6 Education and Training Facilities

Appendix B provides a list of primary and secondary schools in the study area.

Education Queensland representatives note that adequate resources would be provided to meet any increased demand experienced by local schools (pers. comm., Eborn, 2006). Activities as a result of the gas transmission pipeline and not anticipated to increase the school aged population beyond the natural variation in school aged children per grade.

As seen in Table 5-11, Biloela has a TAFE which does focus on industrial trades and skills that could be useful during the gas transmission pipeline construction and operations.

**Table 5-11 Further Education Institutions - Gas Transmission Pipeline**

Towns	Further Education Institutions and Training Faculties
Biloela	Central Queensland Institute of TAFE –Callide Dawson (Biloela) Campus (TAFE 2008)

Source: Department of Education, Training and Arts, 2008b, LNQ. 2007. TAFE 2008.

### 5.2.7 Community Facilities and Services

#### **Child Care**

There are eleven child care facilities in five communities in the Central Queensland Region relevant to the project (see Appendix B). These facilities have a combined capacity of 383. There were spots available in all the communities and it was indicated that more capacity could occur in many places if required. Most places interviewed said that many area residents had at least one stay-at-home parent, which resulted in lower requirement for child care facilities.

#### **Places of Worship**

The gas transmission pipeline corridor has a number of places of worship along the route, all of which are of Christian denomination. A list of the places of worship along the route that may be accessed during the construction phase of the project can be found in Appendix B.

## Section 5

## Facilities & Services

It should be noted that increased use of local places of worship was seen as a positive; however, it is also noted that there are no local places of worship for other faiths identified along the route.

### **Governmental Services**

There are a range of government services available in the study area, with the majority in Biloela (see Appendix B). The level of services available reflects the size of the local population as well as the proximity to larger centres like Gladstone and Rockhampton, where additional services are available.

The government agents in Biloela and Moura act as a contact point or liaison between citizens and the various governmental agencies in the State. Services for specific government departments are operated out of the regional centres and are contactable through the local government agent.

### **Community Facilities**

The community facilities in the area are detailed in Table 5-12; however, a more thorough assessment of facilities was not undertaken due to the low anticipation that such services would be affected by the project.

**Table 5-12 Gas Transmission Pipeline - Community Facility**

Location	Venue	Name
Banana	Community Hall	Banana & District Community Hall
Biloela	Community Hall	Biloela Civic Centre
		Biloela Community Resource Centre
	Youth Centre	PCYC
	Scouts/guides hut	Girl Guides
		Scouts
Moura	Showground	Biloela Showground
	Community Hall	Moura Kianga Centre
	Youth Centre	Anglicare Impact Youth Centre
	Scouts/ guides hut	Moura Girl Guides
Rolleston	Community Hall	Rolleston Memorial Hall
Springsure	Community Hall	Springsure Memorial Hall
	Show Ground	Springsure Show Grounds - (camping; gas BBQ; basketball court, cricket pitch; multi-purpose oval; rugby league field, indoor cricket)

Source: THI, 2008

### **Shopping Facilities**

There are several grocery stores along the pipeline corridor as well as four larger outlets along the route (see Table 5-13). Within the smaller communities there is generally a small store and/or service station for general domestic goods.

## Facilities & Services Section 5

**Table 5-13 Gas Transmission Pipeline - Shopping Facilities**

Location		Name
Biloela	Shopping Centre - local	Biloela Shoppingworld
	Supermarket	5 Star Supermarket
		Woolworths
Moura	Supermarket	IGA

Source: THI, 2008

The lack of a variety of local shopping facilities is indicative of the local population size and economic situation, as well as the proximity to larger centres along the coast.

### **Transport**

The gas transmission pipeline corridor parallels the Dawson Highway for much of the route. The majority of communities along the route also use the highway as the major thoroughfare in the area. Appendix B provides a list of the types of transportation services available in the study area.

### **Cultural Facilities**

Along the pipeline corridor, cultural facilities are limited mainly to libraries, museums and a theatre as seen in Table 5-14. Biloela also has an art gallery as well, whereas Banana has a mobile library.

**Table 5-14 Gas Transmission Pipeline - Cultural Facilities**

Location	Type	Venue
Banana	Library	Mobile Library, weekly itinerary: Tuesdays Sutherland Hall: Week 1, 1.30 - 4.00pm, Week 2, 12.00 - 1.00pm then Banana School from 1.30 - 4.00pm
Biloela	Library	Biloela Library
	Museum	Queensland Heritage Park
	Art Gallery	Biloela Community Arts House
	Theatre/performing arts venue	Biloela Civic Centre
Moura	Library	Banana Shire Library Moura
	Museum	Moura Information Centre & Museum
	Theatre/performing arts venue	Art Gallery in Moura
Rolleston	Service Station	BP Australia
Springsure	Service Station	Springsure Roadhouse
		McGilvary Service Station [CHECK is this same as above]
		Castrol Australia Pty Ltd
		Caltex
	BP	
	Airport/ airfield	Springsure Airstrip

## Section 5

## Facilities & Services

Source: THI, 2008

In rural communities throughout the area, there is reliance on cultural activities and social events to help maintain the social bonds and community values. There are generally several events a year scheduled to allow people to get together and interact. This is particularly important for the individuals and families living on the homesteads, as often it is one of the only times they have to integrate with the rest of the community.

### **Recreation Areas and Facilities**

In rural communities like those in the study area, sports and recreation are also seen as an integral part of maintaining social interaction and civic pride. These activities help maintain social activity, as well as help build community character. Appendix B provides a list of the recreational areas and facilities in the study area by community.

### **Sporting**

There are also several sport clubs in the study area, which is a further reflection of the level of sport and recreation activity undertaken in the area. A list of the various sport clubs identified can be found in Appendix B.

### **Media**

Table 5-15 lists the media outlets in the study area. In addition to these local media providers, the area also receives television, national papers, and radio broadcasts.

**Table 5-15 Gas Transmission Pipeline - Media**

Media		
Biloela	Radio	Radio 4CC
	Newspaper	The Central Telegraph
Moura	Newspaper	Moura & District Messenger

Source: THI, 2008

### **5.2.8 Community Groups, Clubs and Societies**

In addition to the sports and recreation culture in the communities, there is also a vibrant culture of community groups, clubs and societies. A list of the various groups in the study area to illustrate how diverse the social network is despite the smaller population and rural setting can be found in Appendix B.

There are also several representative associations and organisations in the study area (see Table 5-16). These organisations further outline the commitment of many individuals and groups in the community to various social networks and activities. It is important to note that much of the work done for all the various groups, clubs and organisations is voluntary, and is a strong reflection of the efforts made to maintain community cohesion.

**Table 5-16 Representative Associations & Organisations**

Representative Associations & Organisations	
Banana	Banana State School P & C
	Banana and District Community Association Inc
	Banana Shire Resident & Ratepayers Association (Banana Branch)
Biloela	Qld. Country Women's Association



## Facilities &amp; Services Section 5

Representative Associations & Organisations	
	Phillipine/Thai Association Club
	Banana Shire Art Gallery Association Inc
	Banana Shire Community Arts Association Inc
	Biloela Arts Council Inc
	Callide Valley Indoor Bowls Association Inc.
	Callide Valley Native Fish Stocking Association Inc
	Magavalis Sports Club Inc
	Sporting Shooters Association of Australia
	Association of Civilian Widows Qld. Branch Inc
	Biloela Promotion Bureau Inc
	Cancer Council Queensland
	Endeavour-Biloela Branch (Yanci Yta Day Service)
	Enterprise Biloela Association Inc
	Qld Country Women's Association-Biloela
	Qld Rural Women's Network Inc
	Salvation Army Red Shield Appeal Committee-Biloela
	ST Vincent de Paul Centre
Moura Moura	Moura State Primary School P & C
	Moura & Districts Health Care Association Inc
	Australian Breastfeeding Association Moura
	Kianga Memorial Centre
	Moura Chamber of Commerce
	Agforce Queensland-Moura
	Moura Coal & Country Festival Committee
	Queensland Country Women's Association (QCWA) Moura
	Moura State Primary School P & C
Rolleston	Rolleston Campdraft Association
	Rolleston Painting Group
	Rolleston Potters
	Rolleston Potters & Tourism Association
Springsure	Springsure CWA
	Springsure Floral Group
	Springsure Lions Club
	Springsure P & A Society
	Springsure Academy of Dancing
	Springsure Arts Council
	Springsure Country Music Club
	Springsure Folk Art Group
	Springsure Progress & Tourism Assoc.
	Springsure Chamber of Commerce
	Springsure KG & Playground Association

## Section 5

## Facilities &amp; Services

Representative Associations & Organisations	
	Springsure Rural Traders
	Bauhinia Potters Group
	Buckland Quilters Club
	Orion Community
	Sporting Shooters Assoc. Of Australia
	Springsure CWA

Source: THI, 2008

### 5.3 LNG Facility

For the LNG Facility, primary focus will be on Gladstone city as this is the area population and services hub for Gladstone Regional Council, and thus the most likely area to experience project effects. Gladstone Regional Council as a whole will also be examined as the local government area administering the LNG Facility and associated infrastructure.

In addition to the desktop research and site assessment, a review of the Gladstone City Council Open Space and Recreation Plan (June 2006) and some follow up consultation was conducted to assess the recreational profile of the community.

#### 5.3.1 Community Medical and Health Facilities

Medical and health facilities present in a community help identify the level of service available to its residents. Gladstone has a fairly diverse medical and health services sector, and is in close proximity to its main referral hospital in Rockhampton, 110 km to the northwest. The main reason for admittance to Gladstone Hospital was child birth (vaginal delivery), followed by dental extractions and restorations, then same day colonoscopy and chest pain (Queensland Health District Profiles, 2007). Rockhampton was examined in this section as well as it is the main referral hospital for the Gladstone area.

**Table 5-17 Medical and Health Facilities - LNG Facility**

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

Source: Queensland Health: Queensland Health District Profiles, 2007

## Facilities & Services **Section 5**

Table 5-17 identifies the medical and health services offered in Gladstone and area. The Emergency Unit of the Gladstone Hospital provides 20 beds; however 70% are available on a short term call. During a dayshift, 6-7 nurses and 3-4 doctors are on duty. There are approximately 130 nurses of which 5-10 % are 457 Visa holders, 4 specialists (no 457 Visa holder), 9 junior doctors of which 90 % are 457 Visa holders, and 8 senior doctors of which 50 % are 457 Visa holders. If they could not handle an emergency case, the RFD would be able to transfer patients within 30 minutes to Rockhampton. The medical coordinator underlined the awareness of the projects from Santos and other companies in the area. They will also consider them for the future planning of the hospital (pers. comm., Gladstone Hospital, 2008).

Patient activity at Gladstone Hospital has seen a steady decline in recent years whereas Rockhampton Hospital has seen a steady incline since 2001/2002 (see Figure 5-3).

Informal research found that many people in Gladstone have chosen to use health care services in Rockhampton or Brisbane over those in Gladstone. Reasons varied, but the most common reasons given were not enough services in Gladstone for their personal preference, and services in Rockhampton or Brisbane were better. The choice to use services outside the area has many effects, including:

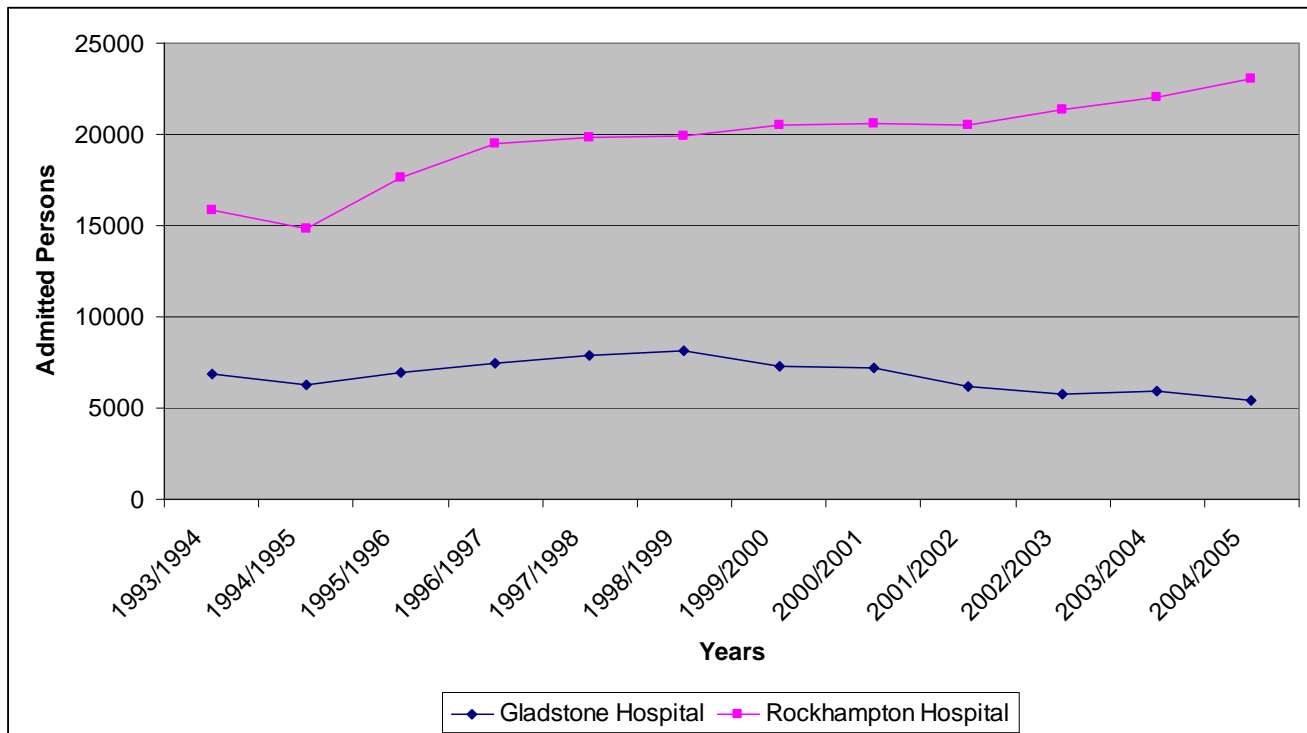
- Increased access locally for people in a lower socioeconomic background;
- Decreased waiting times for local services;
- Increased waiting times in Rockhampton and Brisbane; and
- Difficulty assessing effectiveness of local services.

Most often it was people with a higher socioeconomic background choosing to travel outside the area for medical services.

## Section 5

## Facilities &amp; Services

Figure 5-3 Patient Admittance for Gladstone and Rockhampton Hospitals 1993/1994 – 2004/2005



Source: Queensland Health: Health Information Centre, Gladstone, February 2008.

Concerns were expressed about difficulty getting onto waiting lists in Gladstone (THI, 2008); however, an improvement in emergency case timeframes has occurred since the site assessments in July and October 2008. Queensland Health Minister Stephen Robertson underlined a positive development in the health system of Central Queensland referring to the latest performance figures (November, 2008). Mr Robertson says the latest figures for the Rockhampton and Gladstone hospitals show the success of the Government's Health Action Plan. He says there has been a reduction in waiting lists in central Queensland, with Rockhampton and Gladstone having only one Category 1 patient each waiting more than a month for elective surgery. Gladstone's Category 2 waiting list fell from 12 to 2 over the past year, but there was an increase in Rockhampton where 168 Category 2 patients had to wait more than three months and 81 Category 3 patients had to wait more than a year for surgery. Mr Robertson says the 1.4 % increase is partly due to efforts to cut waits for the most urgent patients. The number of patients at the Rockhampton Hospital fell 6 % over the past year, which Mr Robertson says may be due to the virulent flu season last year. Gladstone Hospital patients rose 6 % over the year (ABC, 2008).

Community perceptions of the health issue are a lot higher than what the most recent data is suggesting. Informal research found that many people rated health care services and availability low in the Gladstone area, though this was more an assessment of what Gladstone should have as opposed to the level of service available. This was further complicated by the notion that many in Gladstone felt the Gladstone hospital should have the same services or better than the Rockhampton hospital. There is a perception that Gladstone residents should not have to travel to Rockhampton for medical services given the size of the community and the money generated by local industry; however, the fact that Rockhampton is the regional service centre and

its proximity to Gladstone are likely reasons why more emphasis is placed on Rockhampton services as opposed to Gladstone.

As a result, many people in the higher income bracket chose to seek health care services outside the area, with many travelling to Brisbane for their health care needs. This routine visit often also coincides with shopping in Brisbane as well, which results in fewer sales locally. Conversely, for vulnerable peoples, persons with disabilities and persons with financial difficulties, commuting to Rockhampton for health care services is very difficult and costly. Timing of visits is important due to transportation scheduling, and often people are not able to make the round trip in a single day, so they require overnight stay (THI, 2008). The implementation of a hospital shuttle from the Gladstone hospital to the Rockhampton hospital daily leaving early in the morning and returning in the early evening could help alleviate these stresses on the community's vulnerable groups.

The most recent hospital data available was up to the 2004/2005 year. The recent upgrades to the Gladstone Hospital at the end of 2008 will have an effect on health services in the area. Reports released at the end of 2008 found that waiting times had been significantly reduced (ABC, 2008). Figure 5-3 illustrates the level of demand on the hospitals in Gladstone and Rockhampton. It should be noted that for many routine admissions, people from Gladstone are required to travel to Rockhampton because the service is not available in Gladstone (pers. comm., V. Laverick, 2008).

Rockhampton hospital experiences approximately three times the patient activity of Gladstone Hospital as is seen in This is because Rockhampton is the regional services centre and not due to population. The population of Rockhampton Regional Council in 2006 was 101,170, from 94,356 in 2001, whereas the population of Gladstone Regional Council was 50,755 and 44,656 respectively (Department of Infrastructure and Planning, 2008).

Rockhampton Hospital's most requested service is admittance for renal dialysis (kidney) which was well over 50 % of the health episodes for 2005/2006 at 8 108. The next was injuries to those under 65 years with 798 followed by child birth (vaginal delivery) with 573.

The Clean and Healthy Air for Gladstone Project – Interim Report was produced in November, 2008. A Summary of the findings and conclusions are listed below. The report covers the majority of general health concerns in the area and how they fair to Queensland averages.

- Between 1999 and 2006, there was an average of 173 deaths per year from all causes in Gladstone. Each year and overall, rates of deaths in Gladstone from all causes were similar to rates of deaths in Queensland and Australia.
- For heart disease, and diabetes, rates of deaths in Gladstone were similar to rates in Queensland and Australia. For deaths due to respiratory diseases, the Gladstone rates were similar to the Queensland rate except in 2005 when the Gladstone rate was higher.
- Between 1999/2000 and 2006/2007, hospitalisations for the following conditions were in some years, but not consistently, greater than the Queensland rate:
  - Heart attack and abnormal heart rhythms
  - Chronic airways disease and respiratory tract infections
  - Diabetes
- Hospitalisations for the following conditions were similar to the Queensland rates:

## Section 5

## Facilities & Services

- Angina and heart failure
- Asthma
- Between 1999 and 2006, foetal deaths (stillbirths) and deaths due to congenital malformations and chromosomal abnormalities occurred at rates that were similar to or slightly lower than the Queensland rates.
- Between 1999/2000 and 2006/2007, cancers of the lung and major airways, prostate, liver, stomach and ovary, and acute myeloid leukaemia all occurred in Gladstone at rates that were similar to the Queensland rates.

### Conclusions:

- Overall, the health of the population of the Gladstone area as measured by these key health outcomes and presented in this Interim Summary Report, does not show consistent variation from Queensland as a whole.
- Deaths and cancers generally occurred at rates similar to the Queensland rates
- There were some fluctuations for some conditions in some years which indicated rates for hospitalisations higher than the Queensland rates. There was no consistent pattern in these fluctuations. Higher rates of hospitalisations do not necessarily indicate higher rates of disease as hospitalisations also reflect hospital access.
- The final health assessment report will include additional information from existing health datasets and include the analysis of the community survey.

The health assessment, by itself, cannot draw any conclusions about the contribution of air pollution to each condition; those questions will be considered in a process called Human Health Risk Assessment, once the data from the Environmental Protection Agency's program of enhanced air monitoring are available (Queensland Health, 2008).

The Queensland Health Quarterly public hospitals performance report (December quarter 2008) presents the following information on Gladstone and Rockhampton hospitals (see Table 5-18). The data shows the use of services in the last quarter of 2008.

**Table 5-18 Gladstone and Rockhampton Hospital Snapshot December Quarter 2008**

Hospital	People Treated in Emergency Departments	People Admitted to Hospital	Outpatient Services*	People Received Elective Surgery	Babies Born
Gladstone Hospital	5,912	1,522	7,008	140	135
Rockhampton Base Hospital	10,259	6,067	15,952	645	326

## Facilities & Services Section 5

**Note:** 2008/2009 data is preliminary and subject to change. # Gold Coast Hospital includes data for Robina Hospital. \*From the December 2008 Quarter, Dental occasions of service are excluded.

**Source:** Monthly Activity Collection, Queensland Health; HBCIS Elective Admissions Module; Queensland Health Emergency Department Data Collection; Surgery Connect.

Also within the Queensland Health Quarterly public hospitals performance reports (December quarter 2008) were the emergency department attendances (see Table 5-19). Data indicates a slight decline at the Gladstone hospital emergency department attendances while Rockhampton experienced an increase of 5.1% over the same period.

**Table 5-19 Emergency Department Attendances Gladstone and Rockhampton Hospitals December 2007 and 2008**

Hospital	December Quarter 2008	September Quarter 2008	December Quarter 2007	Variance December 2008 to December 2007
Gladstone Hospital	5,912	6,112	5,955	-0.7%
Rockhampton Base Hospital	10,259	9,757	9,761	5.1%

**Source:** Queensland Health Emergency Department Data Collection.

Gladstone Regional Council does have additional general practitioners and medical centres to accommodate the local population. A list of the various other health infrastructure and services available in the study area can be found in Appendix B.

There are many health services available in the area, but a general consensus exists that there is not a level capable of servicing the whole community. This is particularly true for dental services. THI acknowledged that dental services were identified as inadequate, but that a new dental service is proposed for development in 2009 which might help alleviate the current requirement for dental services. THI also reports a lack of mental health services, as there is a high demand for preventative, follow-up, clinical and therapeutic services. There is also limited access to disability services in the community.

### 5.3.2 Emergency Services

The police stations that cover the area of Gladstone Regional Council are located in Gladstone, Calliope, Mount Larcom and Tannum Sands.

The area, which is covered by the Central Region ambulance, extends along the coast line of Whitsunday Shire to the south of Miriam Vale and west to the South Australian border. The region covers approximately 440,000 km<sup>2</sup> and serves a regional population of approximately 320,000 people, with the majority of the population being based in the coastal cities of Mackay, Rockhampton and Gladstone. Central Queensland ambulance provides coverage to the people through 61 permanent and honorary ambulance stations based throughout the region. QAS Central Region also provides coverage to the industrial sector of the region through commercial contracts providing pre-hospital care on mine sites, major constructions sites, and other industrial complexes. Ambulance station in the Gladstone Regional Council can be found in Gladstone and Mount Larcom (Department of Emergency Services, 2008).

## Section 5

## Facilities & Services

The Central Region has 37 urban fire stations and an operational staff of 161 full time and 451 auxiliary fire-fighters. Gladstone runs a permanent station. Auxiliary stations can be found in Calliope and Miriam Vale. The Region's Fire Communications Centre is in Rockhampton (Department of Emergency Services, 2008).

### **State Emergency Services**

The State Emergency Services (SES) is tasked with assisting people and communities in times of natural disasters and other emergency situations that affect portions or all of the community. The Central Region Rockhampton Area is located in Rockhampton. This regional office covers the following areas:

- Banana SES Unit;
- Bauhinia SES Unit;
- Duinga SES Unit;
- Emerald SES Unit;
- Gladstone/Calliope SES Unit;
- Livingstone SES Unit;
- Miriam Vale SES Unit;
- Mount Morgan SES Unit;
- Rockhampton/Fitzroy SES Unit; and
- Woorabinda Community SES Unit.

State Emergency Services (SES) is active in the Gladstone area and runs 8 units in the area of Gladstone Regional Council. The flying doctors services are also available to remote communities and locations in the area. There are eight bases scattered throughout Queensland, with the closest being Brisbane, Bundaberg, Charleville and Rockhampton. Flying doctors and emergency evacuations are determined by the emergency dispatch, which then coordinate regional resources to deal with the situation.

### **Flying Doctors Service**

Access to the flying doctors service is achieved by dialling 000 or 112 on a mobile phone. There is a 24 hour centre in Mt Isa that can be called directly or there is HF Radio access. The centre in Rockhampton is only open business hours and can only be reached through 000 or 112 (pers. comm., Flying Doctors Service, 2008). The table below is the contact details for the service:

**Table 5-20 Flying Doctors Service Contact Details for Study Area**

Centre	Direct Line	24 hour service	HF Radio Call Sign	HF Radio Number	HF Radio Number Evenings
Mt Isa	4743 2802	Yes	VJI	5110 6965	5110 2020
Rockhampton	000	No	None	-	-



Source: Pers. Comm., Flying Doctors Service, 2008.

### 5.3.3 Education and Training Facilities

There are several primary and secondary schools in the study area as seen in Appendix B. There are 8 preschools and 11 primary schools as well as 4 high schools and 5 private schools in the area (Gladstone City Council, 2008).

Education Queensland representatives note that adequate resources would be provided to meet any increased demand experienced by local schools (pers. comm., Eborn, 2006).

**Table 5-21 Further Education Institutions**

Towns	Further Education Institutions and Training Faculties
Gladstone	Central Queensland University (CQU) - Gladstone Campus (Department of Education, Training and Arts, 2008b)
	Learning Network QLD –Gladstone branch (LNQ 2008)
	Central Queensland Institute (CQI) of TAFE – Gladstone Campus (TAFE, 2008).

Source: Department of Education, Training and Arts, 2008b, LNQ. 2007. TAFE 2008.

Some of the courses offered at both CQU and the CQI or TAFE are industrial specific. CQU provides a range of courses on campus as well as distance education. There are generally approximately 400 students on campus; however, there has been a steady decrease in enrolment recently due to increased opportunity at other universities or campuses as well as several other factors. The TAFE offers a number of courses for trades and skills training including engineering, building and construction, and sciences.

#### ***Training and Apprenticeships***

Gladstone Area Group Apprentices Ltd (GAGAL) works in conjunction with Industry and the Group Training Australia network to provide effective training to meet the growing demands of industry in the region. Their primary focus is the employment and training of apprentices and trainees (GAGAL, 2008).

The Gladstone Schools Engineering Skills Centre is a unique training and learning environment which mirrors the expectations, ethics, safety standards and discipline of the engineering and manufacturing workplace. Through theory and practical work, school-based students undertake certificates in Engineering (Manufacturing) and Automotive Maintenance and Service. The Centre develops broad skills, communication and teamwork, helping ensure graduates are prepared for Australian Apprenticeships (Department of Education, Employment and Workplace Relations, 2007).

### 5.3.4 Community Facilities and Services

Gladstone Regional Council has produced several booklets either independently or with local businesses and government to outline the various services in the community available to different groups, including:

- Seniors Information Booklet (March 2008);
- Youth and Community Services Reference Book (March 2008); and
- Gladstone Region Volunteer Organisation Information Directory (May 2008).

## Section 5

## Facilities & Services

These booklets provide comprehensive data about the types and diversity of services in the area, as well as better targeting of specific groups in the community. In addition, the Gladstone City Council's Open Space and Recreation Plan (June 2006) was considered in this section.

### **Childcare**

There are long waiting lists and a need for more child care facilities in the study area. During the site assessment in October 2008 it was indicated that there were 550 children on the waiting list for child care places including 170 4-year olds (see Appendix B) (THI, 2008).

The recent issues in the fourth quarter of 2008 surrounding the ABC centres throughout Australia will likely have an effect on childcare availability as some of these facilities may be forced to close. Details of which facilities might close and where were not known at the drafting of this report.

### **Places of Worship**

There are several places of worship and religious organisations in the study area, as seen in Appendix B. All the churches and religious groups identified are of the Christian denomination. This diversity in Christian faiths allows for better integration for individuals and families who are members of one of these churches. For people migrating to the area of a Christian faith not present in the community, or of a religious background other than Christian, integration could be more difficult. This is particularly relevant as the number of foreign migrants and 457 Visa holders come to the area for employment. Religious affiliation is a common bond for some to better integrate into the community through access to the social network associated with their religion. This is particularly true for families with language barriers inhibiting their integration.

In addition to the churches however, there are several cultural clubs active in the area to help form social networks within the community, these include the:

- Gladstone and District Filipino Australian Asn. Inc.;
- Gladstone and District Indian Community;
- Gladstone Multicultural Association Inc.; and
- Gladstone Multicultural Society Inc. (Gladstone Pocket Book, 2008).

Gladstone City Council also recognized the importance of multiculturalism in the community, and employed a Multicultural Community Relations Officer as part of the LAMP with the State Government's multiculturalism policy.

### **Governmental Services**

There are many government services available in the study area as seen in Appendix B; however, Rockhampton is the regional services centre, and most of the main regional offices are located there. Gladstone generally has satellite offices for State level departments. Gladstone is also the main centre for the Gladstone Regional Council, so most area services are based in Gladstone City, with satellite offices in the neighbouring communities within the regional council.

In addition to State and local government services, there are also several non-governmental organisations (NGOs) active in the community. These groups are an integral part of the service delivery network in the community.

### Community Facilities

There are several community facilities in the area; however, very limited facilities outside meeting halls and sports and recreation facilities. Although sports and recreation are a significant part of the community character, and contribute to the social fabric in the area, the absence of other cultural venues, including the arts and music can have an effect on the development of such scenes. In addition, limited venues inhibit exhibitions and events from outside the community from accessing the local area. The result is reduced opportunity in the community to explore various other forms of creative expression. Table 5-22 lists some of the community facilities identified in the study area.

**Table 5-22 LNG Facility - Community Facilities**

Location	Community Facility
Gladstone	Gladstone Thistle Pipe Band Centre
	CWA Centre
	Lifeline Centre
	Roseberry Community Services
	St. John's Ambulance Hut
Calliope	Calliope Community Hall
	CWA Hall
Mt Larcom	Mt Larcom Community Hall
	Community Hall
	CWA Hall
	RSL Hall
Boyne Island	Newly built Centre (complete with Library and Art Gallery)
Beneraby	Progress Hall
Yarwun	Yarwun Hall

Source: THI, 2008.

Additional facilities may exist but were not identified in any of the site assessments, interviews or literature reviewed.

### Shopping Facilities

A lack of shopping venues and variety of stores was identified by many people interviewed as a serious issue for Gladstone area residents (Gladstone Interagency Meeting, March 2008). This posed several problems in the community ranging from stress to financial impact to travel outside the area for some goods. Many people seeking health care outside the area tended to do most of their major shopping on the same visit in order to take advantage of the variety. This mainly occurred in the Brisbane area according to interviews during the 2008 site assessments and informal research. Groceries were mainly purchased in the community, but clothes and household goods were often sourced outside the community. This put local businesses in a difficult situation, in that they needed to increase their product range in order to keep business, which increased their risk. Having a local business and trying to compete with businesses with much larger markets in the larger cities is not an easy task, and as a result, many local businesses suffer from decreased use (informal research). Increasing supply and variety by the local business owners does not guarantee increased business.

## Section 5

## Facilities &amp; Services

This is a reflection of the size of Gladstone's population and the average standard of living which is slightly higher than the Queensland average. As such, many people have increased disposable income but few venues in which to spend their money. This is a difficult situation for potential businesses in that you have a group of people looking for venues to spend their money, but there is not a large enough population to support large retailers or numerous small businesses. For this reason many people in Gladstone travel outside the area for some of the shopping needs. Though anecdotal, it is complicated to assess the level of shopping venues and diversity available in the community as it is subjective to individual tastes and perspectives.

Table 5-23 lists the major shopping facilities in the study area, primarily focusing on grocery stores, shopping centres and large retail outlets. There are 14 community recreational areas and facilities. There are also 35 shopping centres or facilities.

**Table 5-23 LNG Facility - Shopping Facilities**

Location	Venue	Name	
Gladstone	Shopping Centre - major	Stockland Kin Kora SC (East and West of Dawson Hwy)	
	Shopping Centre - local	Centro Gladstone (including Valley Plaza)	
		Palms Shopping Fair	
		Nightowl SC	
		The Windmill SC	
		Centro Home Gladstone	
		Toolooa SC	
		Airport Village	
		Clinton Plaza	
		Garden Lovers Plaza	
		Avion SC (under construction)	
		Emmadale SC (constructed but unoccupied)	
		Sun Valley SC	
		Sun Valley Market Place SC	
		Supermarket	Foodworks
	Super IGA (Stephens)		
	Super IGA		
	Valley Asian Food		
	Woolworths		
	Multiples and anchor stores	Target Country	
		Kmart	
		Multiples and anchor stores	Big W
			Best and Less
			Crazy Clarke's
			Bunnings
			Harvey Norman
			Beds R Us
BCF (Boating Camping and Fishing)			
Calliope	Shopping Centre - local	Hazelbrook Village Shopping Town	
	Supermarket	New SC (adjoining Hazelbrook)	

Location	Venue	Name
		Super IGA
Boyne and Tannum Sands	Shopping Centre - local	Boyne Plaza
		Tannum Central Shopping Centre
		Tannum Arcade
	Supermarket	Tannum Supermarket
		Woolworths
		Boyne Island IGA Express
		Coles

Source: GPN EIS SIA, confirmed with the Gladstone city council, Gladstone Regional Council, 2008a and Yellow Pages 2008, THI, 2008.

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

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

There are also several small businesses in the study area ranging in services from groceries to dive gear, and from clothing stores to books. The central business district (CBD) in Gladstone has several local businesses and government services situated along the main roads but there is limited space, which also limits variety. Parking and public transportation access to the area also plays a role in business, which is reflected in the number of restaurants and food outlets in the CBD, as opposed to retail businesses. Much of the main shopping facilities are located in the malls closer to the residential suburbs expanding out from the CBD.

### **Transport**

As discussed previously, access to the area is limited via public transport and parking (pers. comm., Interagency Meeting, 2008). As a result, most people tend to stay away from the CBD unless they need something specific, or work there. A list of the transportation services available in the study area can be found in Appendix B.

Concern was expressed about the regional service centre being located in Rockhampton, but insufficient transportation services available to allow effective access to them from Gladstone Regional Council. This is particularly difficult for the vulnerable groups in the area, namely those with limited mobility or suffering financial difficulties.

## Section 5

## Facilities &amp; Services

**Cultural Facilities**

The Gladstone Entertainment Centre holds a range of concerts, performances and festivals from within and outside of the region. The Gladstone Regional Art Gallery and private galleries host notable art exhibitions and cultural activities throughout the year. Gladstone Cinema plays the latest movies on offer. Gladstone city library has got a home library service to residents who cannot get to Goondoon St (THI, 2008). Table 5-24 lists some of the cultural facilities identified by THI during their site assessments in 2008.

**Table 5-24 Cultural Facilities in the Study Area**

Location	Facility	Name
Gladstone	Library	Gladstone City Library (there is also a home library service to residents who cannot get to Goondoon St)
		Port Curtis Toy Library
	Museum	Gladstone Regional Art Gallery and Museum
		Maritime Museum
	Art Gallery	Gladstone Regional Art Gallery and Museum
	Theatre/performing arts venue	Gladstone Entertainment Centre
	Cinema	Cinema complex
		Gladstone Entertainment Centre
Public art	Main shopping area around Library	
	Spinnaker Park	
Calliope	Library	Calliope Library
Mt Larcom	Library	Mount Larcom Library (also provides Medicare, Centrelink, Postal service and State & local government services. There was mention of a rural transaction centre and this may be the term of art).
Boyne and Tannum Sand	Library	Boyne Island Library
		Once a month for two hours at Boyne Island Library
	Art Gallery	Within Boyne Island Library

Source: THI, 2008, GPN EIS SIA, confirmed with the Gladstone city council, Gladstone Regional Council, 2008a and Yellow Pages 2008.

There are also several cultural events that are scheduled throughout the year in the area including:

- Gladstone Harbour Festival;
- Brisbane to Gladstone Yacht Race;
- 1770 Commemorative Festival;
- Boyne-Tannum Hook – up;
- Agnes Water Triathlon;
- The Gladstone Multicultural Fair;
- Gladstone Seafood Festival; and

- Lion's Lake Awoonga Family Fishing Festival.

### **Recreation Areas and Facilities**

The Gladstone City Council's Open Space and Recreation Plan (June 2006) describes Gladstone as an area with a substantial quantity of open space, especially open space with utility, corridor and environmental values. However, the authors estimate that 54 hectares of sport and recreation open space will need to be acquired or developed to service the population growth in the next 20 years. A need to invest in sport and recreation clubs has been identified, as sport is struggling with low quality facilities and a high degree of competition for revenue and resources. There are 69.6 hectares of the area of Gladstone City Council covered by sporting facilities and 57.6 hectares are covered by recreation parks (Gladstone City Council, 2008).

This is a reflection of the sporting and recreation culture in the area, and the need to upgrade and maintain current facilities, as well as develop new facilities to keep up with local demand. A list of the various recreation area and facilities throughout the study area by community can be found in Appendix B.

### **Sporting**

Sport is a major component of local culture. Appendix B lists the various sports clubs and venues identified in the site assessment in July 2008, interviews and reviewed literature. As discussed over use and increased population are having an effect on the facilities with increased wear and maintenance costs, as well as increased competition for use.

### **Media**

There are two local radio stations and a local newspaper in the study area (see Table 5-25). In addition, all major national newspapers and many major international newspapers are available in the news stores in Gladstone. There is cable television access as well as free to air, with local news.

**Table 5-25 LNG Facility Media**

Radio
ABC Radio Capricornia 4RK FM 991
Hot AFM 93.5 and 927.4 CC AM
Newspaper
The Observer (two locations)

Source: THI, 2008.

The main source of local news and information is through The Observer has been a part of the Gladstone community since 1868. They service an area from the west to Biloela and south to Agnes Water and 1770 and are published six days a week from Monday to Saturday (Gladstone Observer, 2008).

### **Businesses**

Gladstone Area Promotion and Development Limited (GAPDL) provided a list of businesses registered in their business directory for Gladstone (refer to Appendix B for the listing). The number and variety of existing businesses and organisations indicate a vibrant business culture with a potential to grow.

## Section 5

## Facilities & Services

### 5.3.5 Community Groups, Clubs and Societies

Over 190 Community Groups, Clubs and Societies have been identified in the area of Gladstone (Gladstone Pocket Book, 2008). As community service clubs and sport clubs have already been mentioned in they are not included in this number. Appendix B shows a limited shortlist of additional clubs in the area.

It is important to note that many of these groups, clubs and societies rely on voluntary work to operate. Given the number and variety of such groups, clubs and societies active in the area, it is a testament to the commitment of many citizens to the vibrancy of the community.



## 6.1 Introduction

The Indigenous component of the SIA was assessed separately in order to fully assess the potential impacts on the traditional owners of the lands on which the project is situated. The entire Indigenous baseline and impacts assessment is within this section, and is an extension of the general SIA baselines for the general community in sections 4 and 5 as well as the impacts in Section 9.

## 6.2 Baseline

In considering the socio-economic status of Indigenous people within the project area, there are three natural 'catchments' that are apparent. These are shown in Figure 6-1 and have been established considering natural topographic boundaries (such as the Carnarvon Gorge and Great Dividing Range), the boundaries of Government administrative regions (for example, health services, employment and training services, Indigenous support), and the location of Santos Petroleum Leases (PLs) and Authority to Prospect (ATP) areas in the southern and northern parts of the project area (the Roma, Fairview and Arcadia Valley Gas Fields). The use of 'catchment' areas also recognises that the Indigenous population is characterised by considerable mobility, and allows a better reflection of the diversity within the Indigenous community.

The pre March 2008 amalgamation of local governments included within the 'catchment' areas are as follows:

### ***GSG Field South***

Balonne, Warroo, Booringa, Bungil, Bendemere, Roma, Murilla, Tara, Taroom, Chinchilla

### ***GSG Field North***

Bauhinia, Emerald, Peak Downs, Duinga, Woorabinda

### ***LNG Facility Site***

Banana, Monto, Calliope, Miriam Vale, Gladstone, Mount Morgan, Fitzroy, Livingstone, Rockhampton

The gas transmission pipeline to Gladstone is included within these areas. The western half of the pipeline is mainly within the CSG field North area, while the eastern half of the gas transmission pipeline is included within the LNG Facility site area.

Woorabinda is the only Deed of Grant in Trust (DOGIT) community in the project area, and is considered separately to the remainder of the Indigenous population living in rural towns due to the particular socioeconomic characteristics of DOGIT communities.

Data in the following tables and charts has been sourced from the Australian Bureau of Statistics Census 2006 Indigenous Community profiles (Cat. No. 2002.0 - 2006 Community Profile Series) unless otherwise indicated.

### 6.2.1 CSG Field South

The principal towns in this area include Roma, St George, Miles, Taroom and Chinchilla. The following profiles are based on the local government areas described in the previous section.

## Section 6

## Indigenous

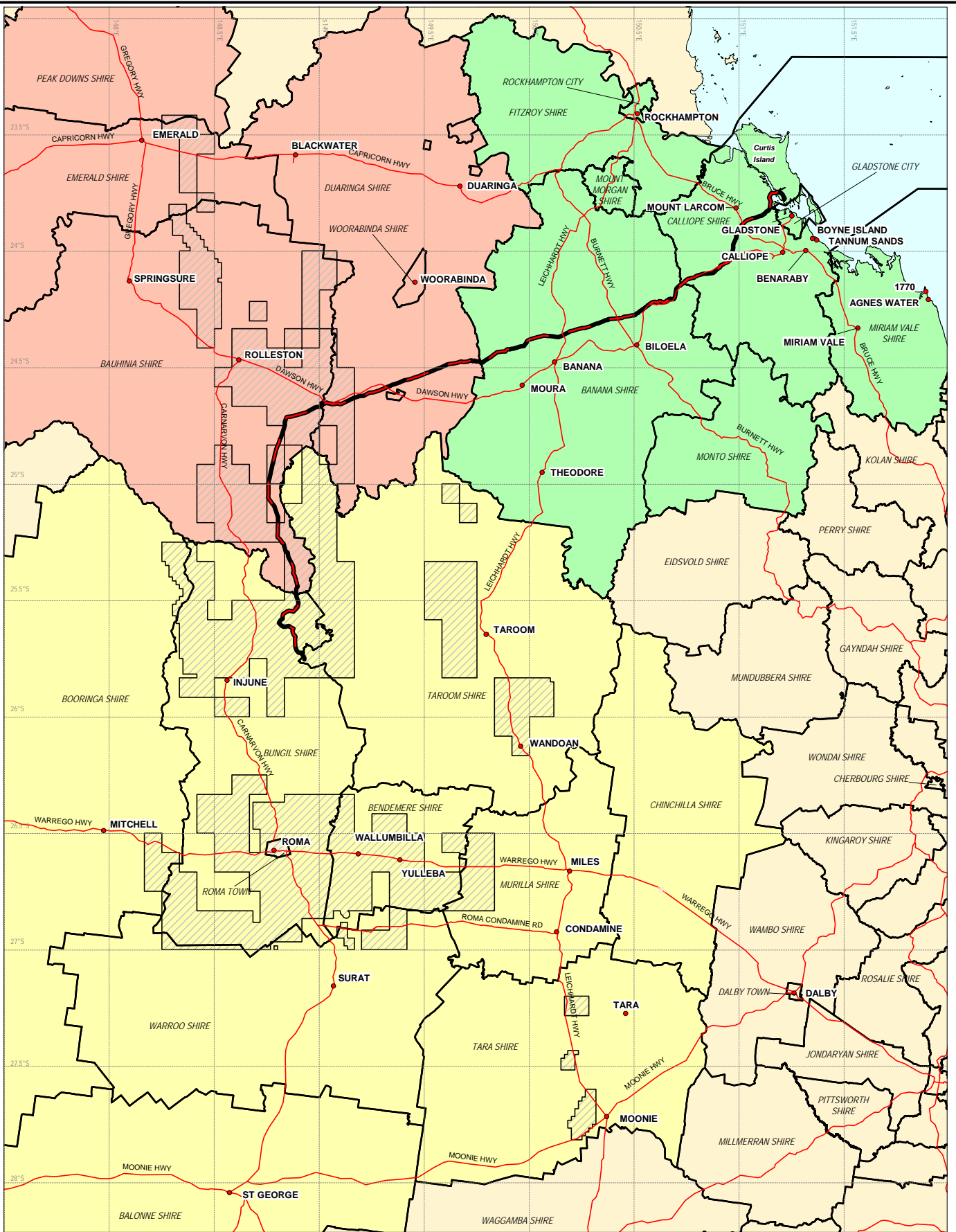
**Demographic Profile**

The 2006 Census information summarised in Table 6-1 indicates that there are 2,075 Indigenous people in the southern area, representing 1.6% of the Indigenous population in Queensland and 7% of the area's population (compared to Indigenous representation of 3.3% in the total Queensland population). The age profile of the Indigenous population, shown in Figure 6-2, is substantially younger than the non-Indigenous population which is consistent with the age profile for the whole of Queensland, and Indigenous females comprised 52% of the Indigenous population (compared to females comprising 49% of the non-Indigenous population). These figures are based on the place of usual residence for a person, and do not include persons with cultural links to the area but who do not reside in the area.

**Table 6-1 CSG Fields South - Aggregate Population**

	Indigenous			Non-Indigenous			Total		
	Males	Females	Persons	Males	Females	Persons	Males	Females	Persons
Total	991	1,084	2,075	14449	13695	28144	16166	15439	31605
% of Persons	48%	52%	7%	51%	49%	89%	51%	49%	100%


Source: ABS 2006 Census Indigenous Community Profiles. Does not include those whose status is not indicated



0 50 100km  
Scale 1:2 500 000 (A4)

LNG Facility Plant Area  
 CSG Field North  
 CSG Field South  
 Pre March 2008 Shire Boundary  
 Gas Transmission Pipeline  
 CSG Fields

Source: This map may contain data which is sourced and Copyright. Refer to Section 18.2 of the EIS for Ownership and Copyright.

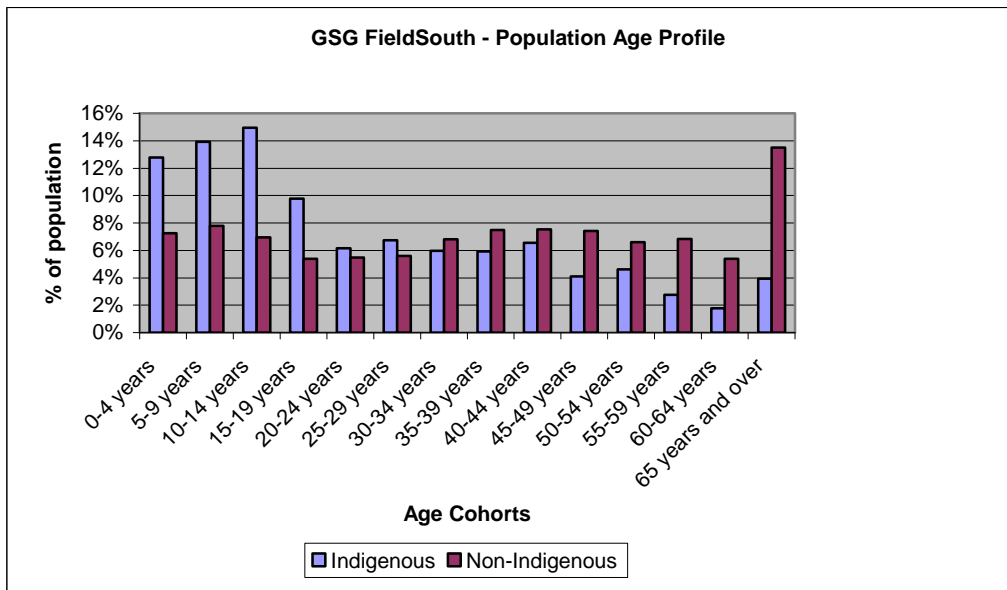
Client 	Project <b>GLADSTONE LNG PROJECT SOCIAL AND COMMUNITY ASSESSMENT</b>	Title <b>INDIGENOUS STUDY AREAS</b>
	Drawn: LL/CA    Approved: JB    Date: 11-02-2009 Job No: <b>4262 6220</b> File No: 42626220-g-563.wor	Figure: <b>6-1</b>

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## Section 6

## Indigenous

Figure 6-2 CSG Field South - Population Age Profile



Source: ABS 2006 Census Indigenous Community Profiles

### Economic Profile

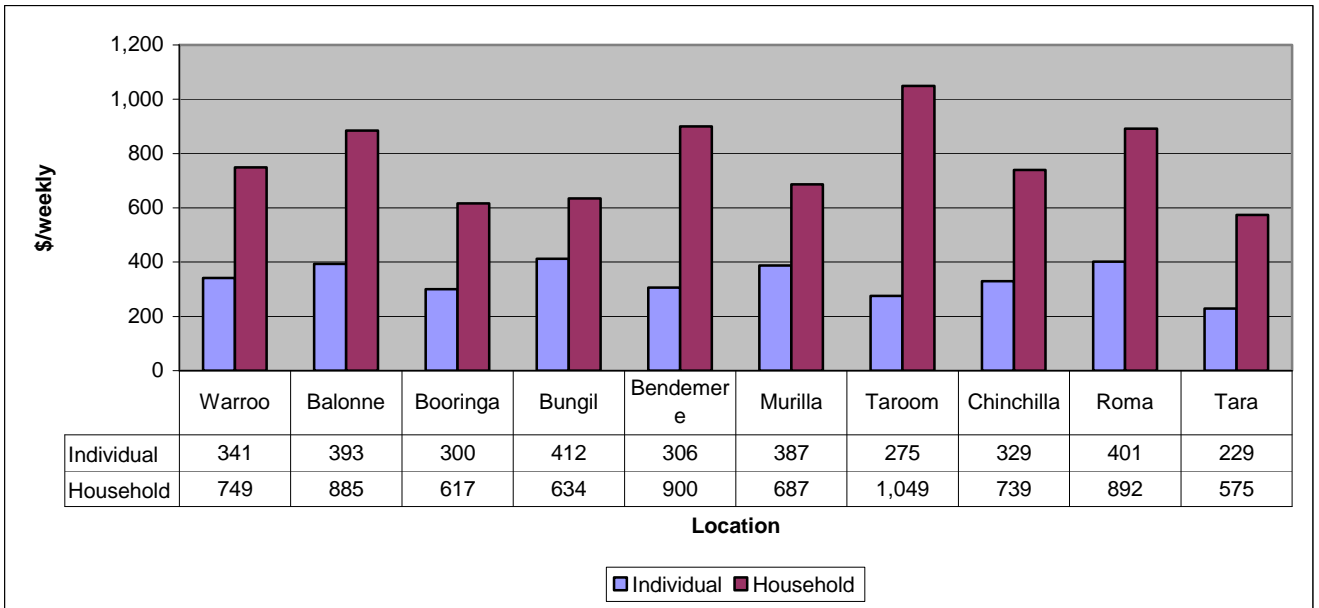
The economic profile for the Indigenous population of the southern area is based on a consideration of a number of indicators. These include individual and household income, labour force characteristics (unemployment and participation rates, key industries of employment and occupation categories, and workforce skills) and home ownership characteristics, which are described in the following sections.

### Income

Figure 6-3 shows Indigenous individual and household median weekly incomes. The median weekly individual incomes in the area range from \$300 - \$412 (compared to \$318 for an Indigenous individual in Queensland), while the median weekly household incomes range from \$575 to \$1,049 (compared to \$899 for an Indigenous household in Queensland). Taroom is the only local government area where the median Indigenous household income exceeded \$1,000.

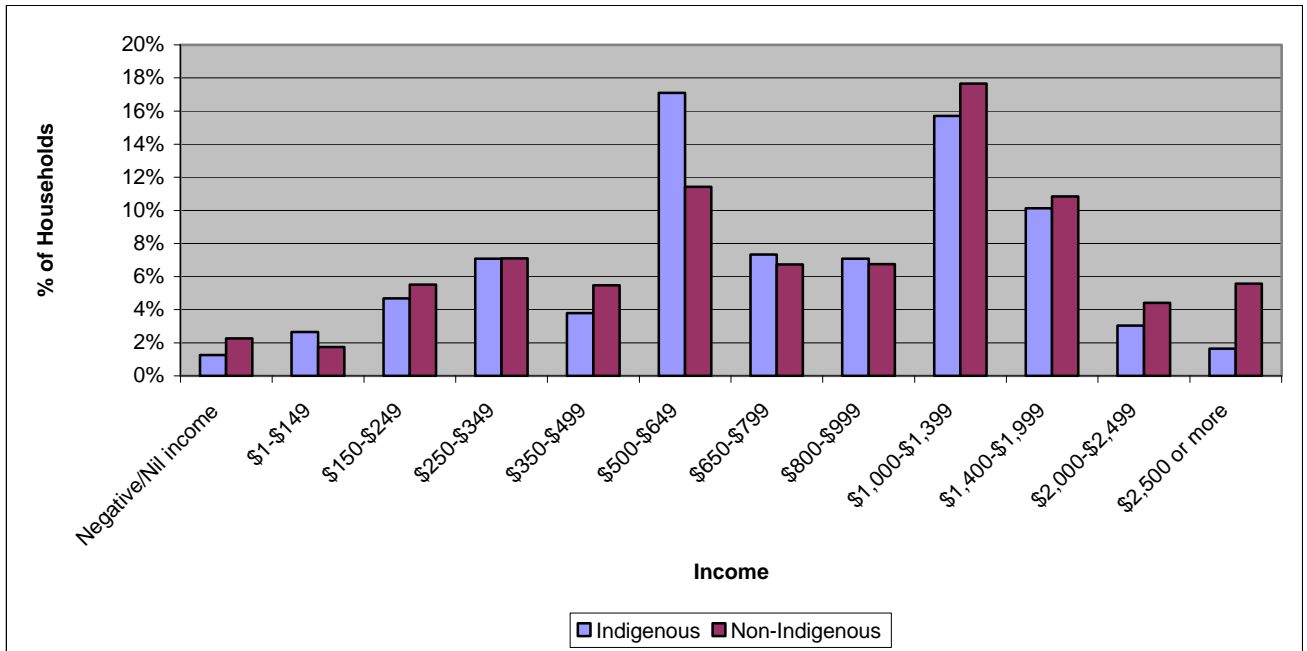
Gross weekly household incomes (see Figure 6-4) show that non-Indigenous households have a higher proportion of households in the upper income ranges (39% compared to 31% for gross weekly household incomes > \$1,000), however for the lower income ranges (gross weekly household income < \$500) there is a similar proportion of Indigenous and non-Indigenous households (20% and 22% of households respectively).

Figure 6-3 CSG Field South - Indigenous Median Incomes



Source: ABS 2006 Census Indigenous Community Profiles

Figure 6-4 CSG Field South - Gross Weekly Household Income



Source: ABS 2006 Census Indigenous Community Profiles

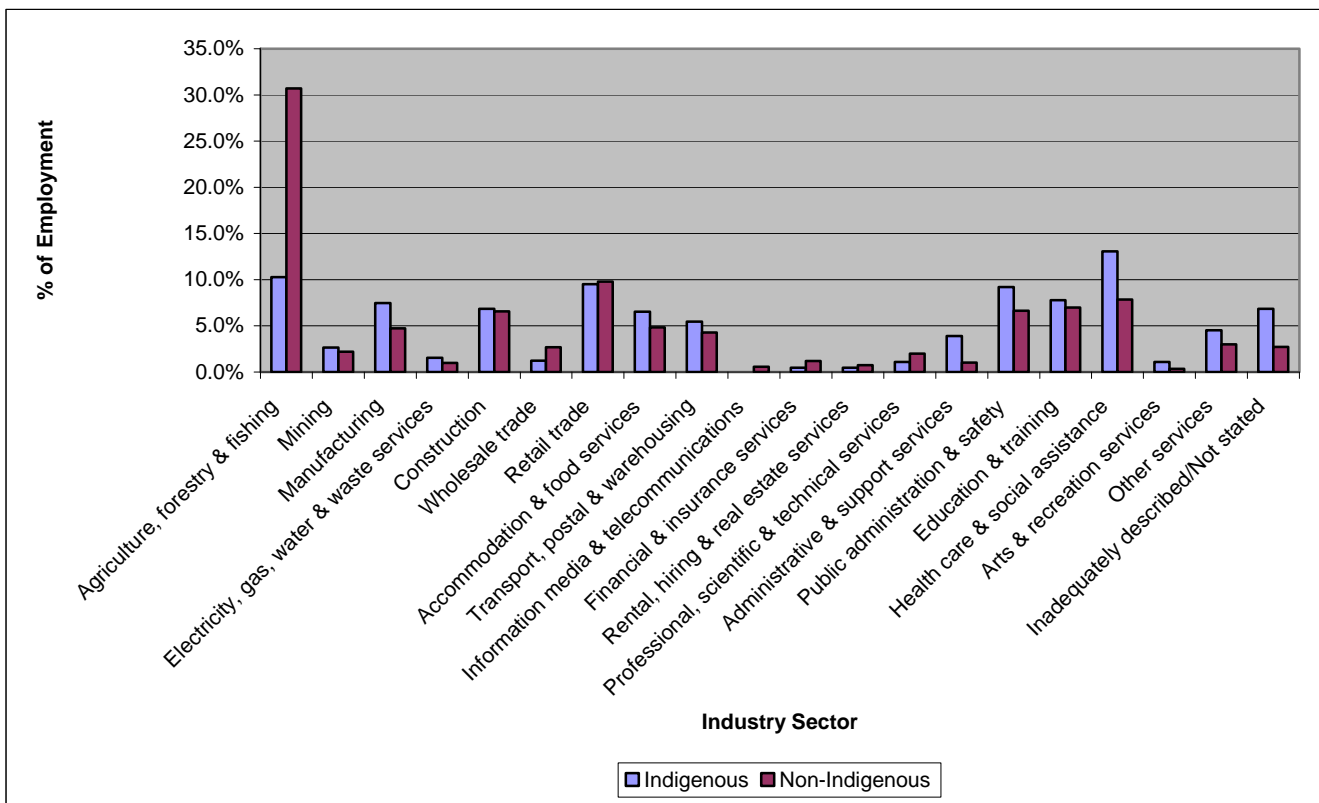
Section 6

Indigenous

Labour Force

Table 6-2 tabulates the key labour force parameters for both Indigenous and non-Indigenous people in the CSG field South area. They indicate that the Indigenous unemployment rate is 11% (compared to non-Indigenous rate of 3%); however, this is also likely to be understated because of the large Community Development Employment Program (CDEP) that operates in St George. The labour force participation rate for Indigenous persons is 58% (compared to the non-Indigenous rate of 70%) while the Indigenous labour force has 28% with qualifications (compared to the non-Indigenous level of 42%). The key industries employing Indigenous people in the area are agriculture, manufacturing, construction, retail, public administration, education and training, and health care and social assistance (see Figure 6-5).

Figure 6-5 CSG Field South - Industry of Employment



Source: ABS 2006 Census Indigenous Community Profiles

Table 6-2 Key labour force parameters for Indigenous and Non-Indigenous

GSG Field-South	Indigenous			Non-Indigenous		
	Males	Females	Persons	Males	Females	Persons
Persons aged 15 years and over	575	657	1232	11266	10693	21959
In the labour force(a):						
Employed	341	300	641	8451	6512	14963
Unemployed	36	43	79	237	190	427
Total labour force	377	343	720	8688	6702	15390
Not in the labour force	174	272	446	2362	3759	6121
Labour force status not stated	33	27	60	212	233	445
% Unemployment(b)	10%	13%	11%	3%	3%	3%
% Labour force participation(c)	66%	52%	58%	77%	63%	70%
% Employment to population(d)	59%	46%	52%	75%	61%	68%
Industry sector(a):						
Government	52	64	116	988	1189	2177
% of Total labour Force	14%	19%	16%	11%	18%	14%
Private	275	224	499	7354	5223	12577
% of Total labour Force	73%	65%	69%	85%	78%	82%
CDEP participants(e)	0	0	0	0	0	0
Self employed(f)	3	3	6	1203	579	1782
% of Total Labour Force			1%			12%
Non-school qualifications(a):						
Postgraduate Degree	3	0	3	45	68	113
Graduate Diploma and Graduate Certificate	0	8	8	45	98	143
Bachelor Degree	5	11	16	451	1070	1521
Advanced Diploma and Diploma	4	13	17	475	680	1155
Certificate Level	74	84	158	2403	1160	3563
% of Total Labour Force with Quals	23%	34%	28%	39%	46%	42%
% of Total Labour Force with No Quals	77%	66%	72%	61%	54%	58%

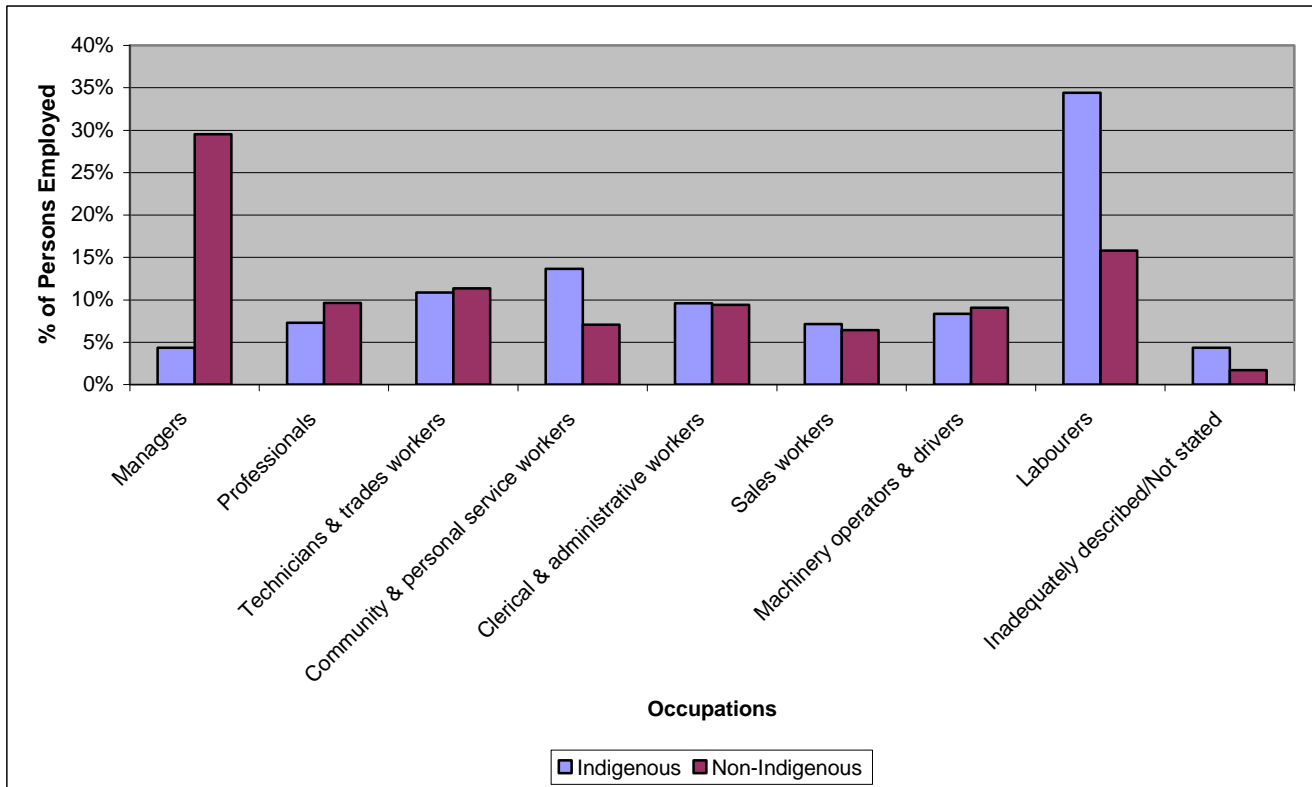
Source: ABS 2006 Census Indigenous Community Profiles

## Section 6

## Indigenous

As shown in Figure 6-6 the majority (35%) of Indigenous persons employed are in the labouring category. The proportion of Indigenous people employed in the management category is substantially less than non-Indigenous people, while the percentage working in the community and personal service area is approximate double that of non-Indigenous workers. The proportion of Indigenous people working in other occupational categories is reasonably similar to non-Indigenous people.

**Figure 6-6 CSG Field South - Occupational Category**



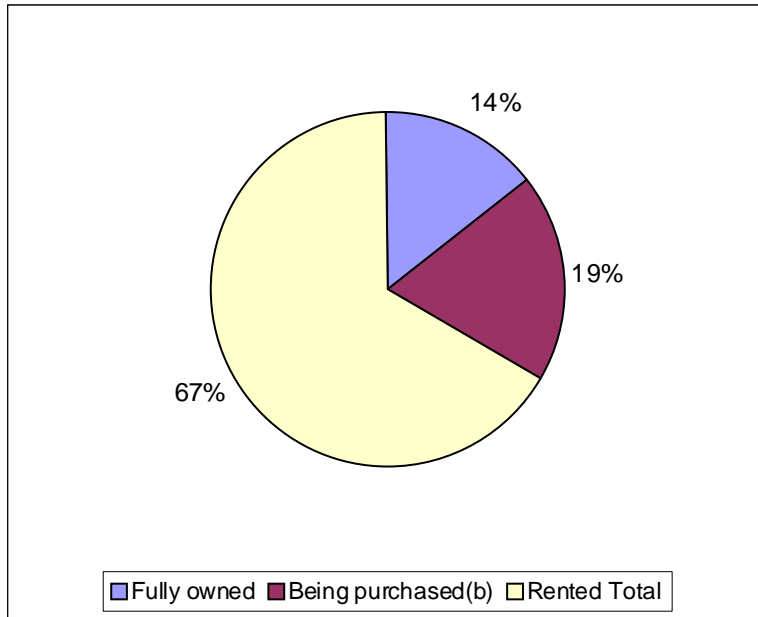
Source: ABS 2006 Census Indigenous Community Profiles

### Home Ownership

Home ownership is also an indicator of economic well-being, and is a major focus of Government policy at national and state levels with respect to Indigenous economic development. Figures 6-7 to 6-9 illustrate the prevailing situation in the CSG field South area. They show that 67% of Indigenous households are renting, compared with 29% for non-Indigenous households with Indigenous renters much more likely to depend on the State housing authority than non-Indigenous renters. Non-Indigenous people are also more likely to be living in accommodation supplied by their employer (either Government or private sector).

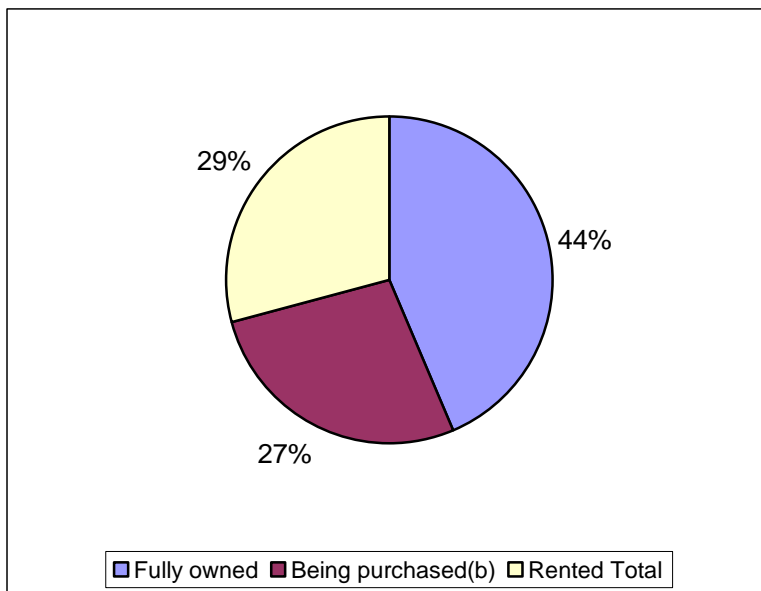


Figure 6-7 CSG Field South - Indigenous Housing Tenure



Source: ABS 2006 Census Indigenous Community Profiles

Figure 6-8 CSG Field South - Non-Indigenous Housing Tenure

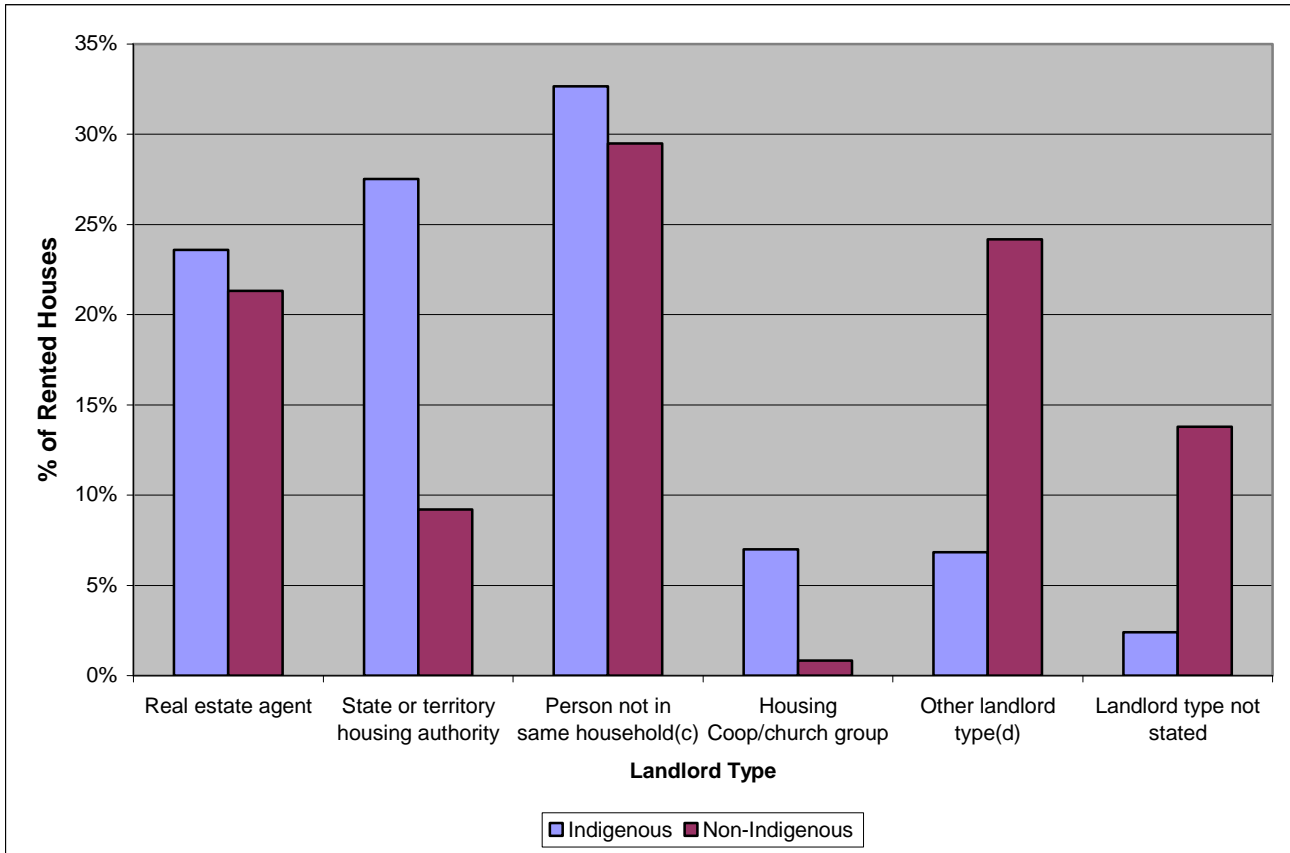


Source: ABS 2006 Census Indigenous Community Profiles

## Section 6

## Indigenous

Figure 6-9 CSG Field South - Housing Rental mode



Source: ABS 2006 Census Indigenous Community Profiles

### Educational Profile

Queensland Studies Authority sponsored educational testing in Queensland has indicated that:

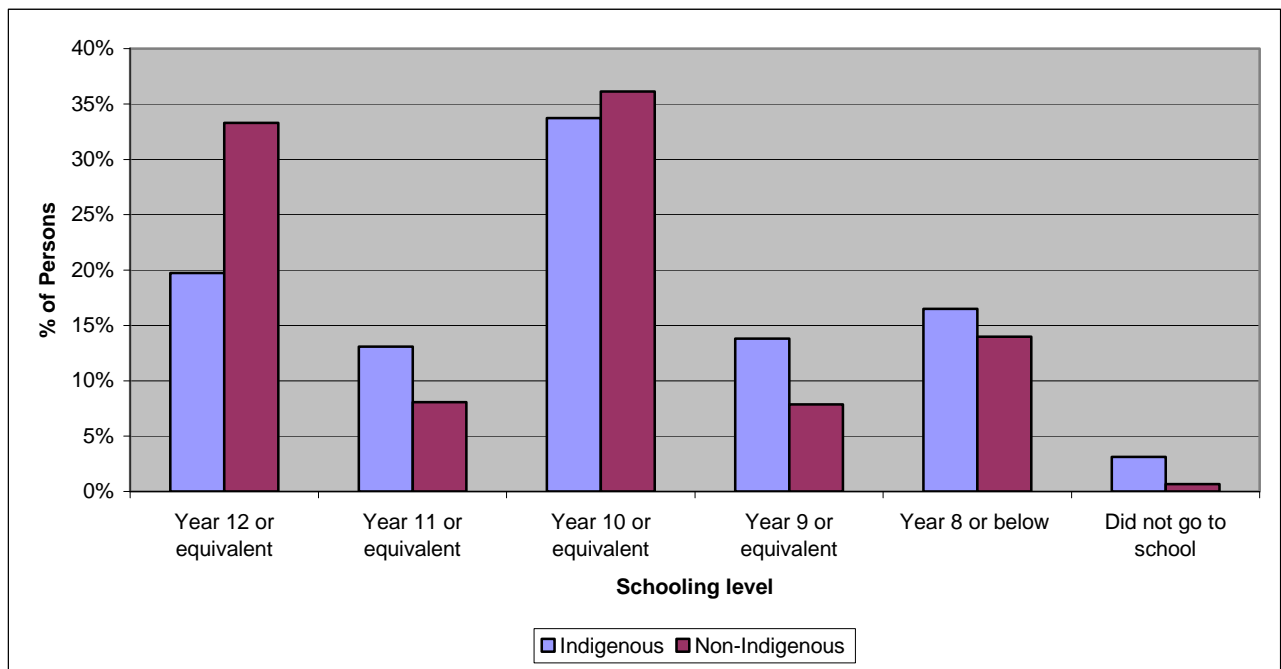
*A wide range of performance was apparent in all strands of Literacy and Numeracy in all year levels. Mean scale scores show a substantial increase from Year 3 to Year 5 to Year 7 for all groups of students, as would be expected. Across each strand of Literacy and Numeracy and across each year level, the following broad patterns of relative mean scale scores of groups are apparent:*

- *Indigenous students as a group performed lower than non-Indigenous students as a group;*
- *the largest difference between groups was between Indigenous students and non-Indigenous students;*
- *Indigenous student mean performance improved from Year 3 to Year 5 to Year 7 at about the same rate as for non-Indigenous students;*
- *the mean performances of Indigenous students in Years 5 and 7 were approximately equal to those of non-Indigenous students in Years 3 and 5 respectively;*
- *girls as a group performed better than boys as a group in Literacy;*

- boys as a group performed better than girls as a group in Numeracy;
- students from a language background other than English (LBOTE) as a group performed similarly to or lower than students from an English speaking background (ESB), except in Spelling and Writing; and
- students from rural schools as a group performed lower than students from urban schools as a group. A large component of rural group performance can be attributed to the higher proportion of Indigenous students in rural schools (Queensland Studies Authority, 2006).

Census data indicates that Indigenous people in the GSG Field South area are moderately less likely to have completed Year 12 than non-Indigenous people (Figure 6-10). The disparity in school leaving ages between Indigenous and non-Indigenous people was slightly less for the GSG Field North area and the Plant Site area, while Woorabinda has a substantially lower percentage of persons with a Grade 12 education than other Indigenous people in the project area.

**Figure 6-10 CSG Field South - Highest Year of School completed**



Source: ABS 2006 Census Indigenous Community Profiles

**Community Values, Vitality, Lifestyle and Wellbeing**

It is difficult to make any definitive comment in regard to these issues for the Indigenous population in the area. There are no defined Indigenous communities (such as the DOGIT community of Woorabinda) where the State Government monitors social indicators, and information would need to be gathered through a more intensive community consultation program. The following views, specifically related to health, indicate that the Indigenous community in the area is subject to a range of adverse factors that are detrimental to overall wellbeing.

## Section 6

## Indigenous

Local level Indigenous-specific health statistics are difficult to establish, however the *Health of Queenslanders 2006 – Report of the Chief Health Officer Queensland*, Section 1.4, makes the following general points in relation to the health of Aboriginal and Torres Strait Islander people:

*'Indigenous peoples are likely to be disadvantaged irrespective of where they live. In Queensland in 2001, 84 per cent of Indigenous peoples in major cities lived in areas of greatest socioeconomic disadvantage, compared with 11 per cent of the non-Indigenous population. More than 99 per cent of Indigenous peoples living outside major cities were in areas of greatest disadvantage. Socioeconomic disadvantage among Indigenous peoples is evident in a range of indicators across the life course including child protection orders, educational achievements, court appearances and employment with rates among Indigenous peoples up to 20 times higher than rates among non Indigenous people for some indicators.'*

Section 2.3 of the health report indicates that:

*In Queensland in 2004, on average, Indigenous men died 22.5 years younger and Indigenous women died 24.6 years younger compared with their non-Indigenous counterparts. This is consistent with lower life expectancy at birth of Indigenous peoples.*

The *Health Determinants Queensland 2004 Report* by Queensland Health makes the following general points in relation to Indigenous health:

*Population groups are not homogenous in regards to health issues. Thus, the key issues for population groups are interdependent. Prevalence of health outcomes and determinants are the result of complex interactions between the socio-demographic variables of the population. Key interactions are between: Indigenous status, socioeconomic disadvantage, and to a lesser extent rural or remote location; and between all populations and socioeconomic disadvantage. That is, older people who live in socioeconomically disadvantaged areas have greater health needs than those living in socioeconomically advantaged areas. A similar observation holds for Indigenous people, where the impact of Indigenous status, socioeconomic disadvantage, and rural and remote locations are interwoven. In addition, other interactions occur within district population groups. For example, Indigenous children and children from lower socioeconomic backgrounds are at greater risk of developing untoward health outcomes such as diabetes, than other children.*

For the Roma Health Service District, the Report indicated that:

*In general, socioeconomically disadvantaged people experience poorer health and shorter life expectancy than more socioeconomically advantaged people, for nearly all disease causes and populations studied. The major causes of death and illness for populations of high socioeconomic disadvantage compared to those of low socioeconomic disadvantage include higher rates of: diabetes, intentional and unintentional injuries and mental disorders. Health determinants of significant impact in this population include: diabetes management, harmful alcohol consumption, overweight and obesity, poor nutrition, physical inactivity, and risk and protective factors for mental health.*

*There is some evidence of socioeconomic disadvantage in populations within this district; and in particular Indigenous people are often disproportionately over-represented within this classification. While the instrument for measuring disadvantage lacks sensitivity in terms of pinpointing individual age groups, it would be expected that all age groups would be affected.*

Consultation with Indigenous health workers in Roma indicate that diabetes and renal failure, together with respiratory and cardio-vascular disease, are significant problems for the Indigenous population in the area.

### 6.2.2 CSG Field North

The principal towns in the area include Springsure, Emerald, Clermont, Blackwater and the DOGIT community of Woorabinda. The profile that follows is based on the 2006 Census information for the local government areas that incorporate the towns.

#### Demographic Profile

The 2006 Census information, summarised in Tables 6-3 and 6-4, indicates that there are 1,699 Indigenous people in the area, representing 1.3% of the Indigenous population in Queensland and 7% of the area's population (compared to Indigenous representation of 3.3% in the total Queensland population). About half of the Indigenous population reside in Woorabinda. The age profile of the Indigenous population, shown in Table 6-11, is substantially younger than the non-Indigenous population which is consistent with the age profile for the whole of Queensland, with Woorabinda having a slightly younger age profile when compared to the remainder of the Indigenous population in the area. Indigenous females comprised 52% of the Indigenous population (compared to females comprising 49% of the non-Indigenous population). These figures are based on the place of usual residence for a person, and do not include persons with cultural links to the area but who do not reside in the area.

**Table 6-3 CSG Fields North - Aggregate Population**

	Indigenous			Non-Indigenous			Total		
	Males	Females	Persons	Males	Females	Persons	Males	Females	Persons
Total	850	849	1,699	12,688	11,165	23,853	13,538	12,018	25,556
% of Persons	50%	50%	7%	53%	47%	93%	53%	47%	100%

Source: ABS 2006 Census Indigenous Community Profiles. Does not include those whose status is not indicated

**Table 6-4 Woorabinda population**

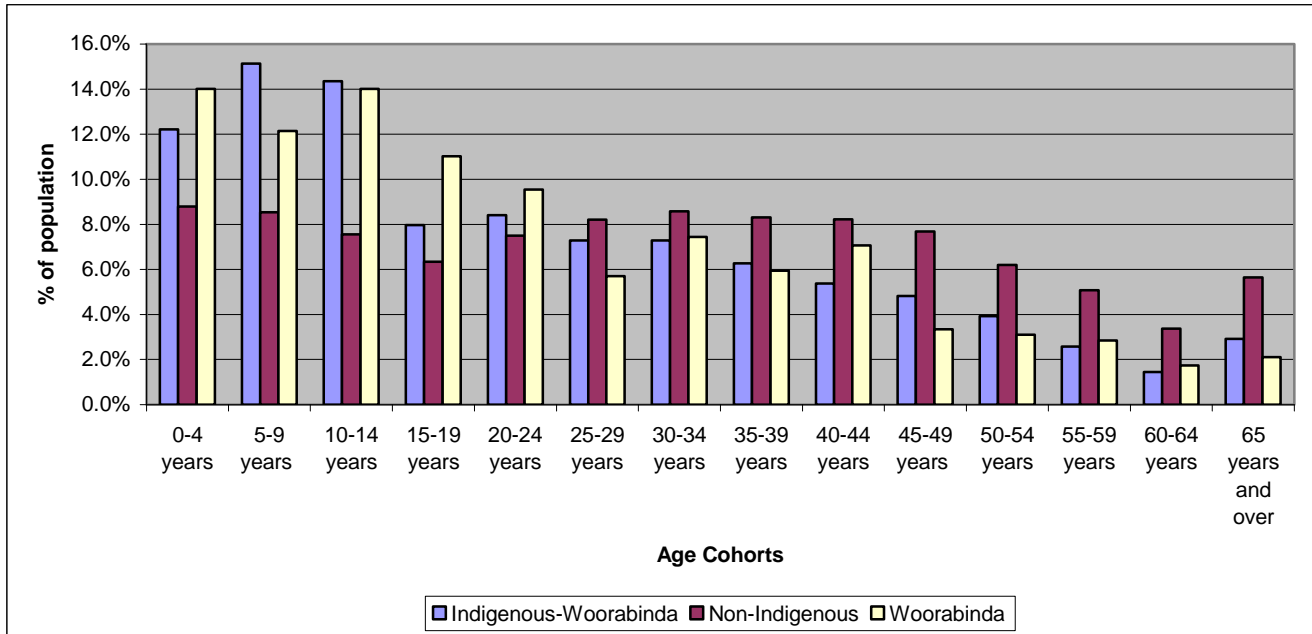
	Indigenous			Non-Indigenous			Total		
	Males	Females	Persons	Males	Females	Persons	Males	Females	Persons
Total	404	403	807	16	22	38	420	425	845

Source: ABS 2006 Census Indigenous Community Profiles. Does not include those whose status is not indicated

## Section 6

## Indigenous

Figure 6-11 CSG Field North - Population Age Profile



Source: ABS 2006 Census Indigenous Community Profiles

### Economic Profile

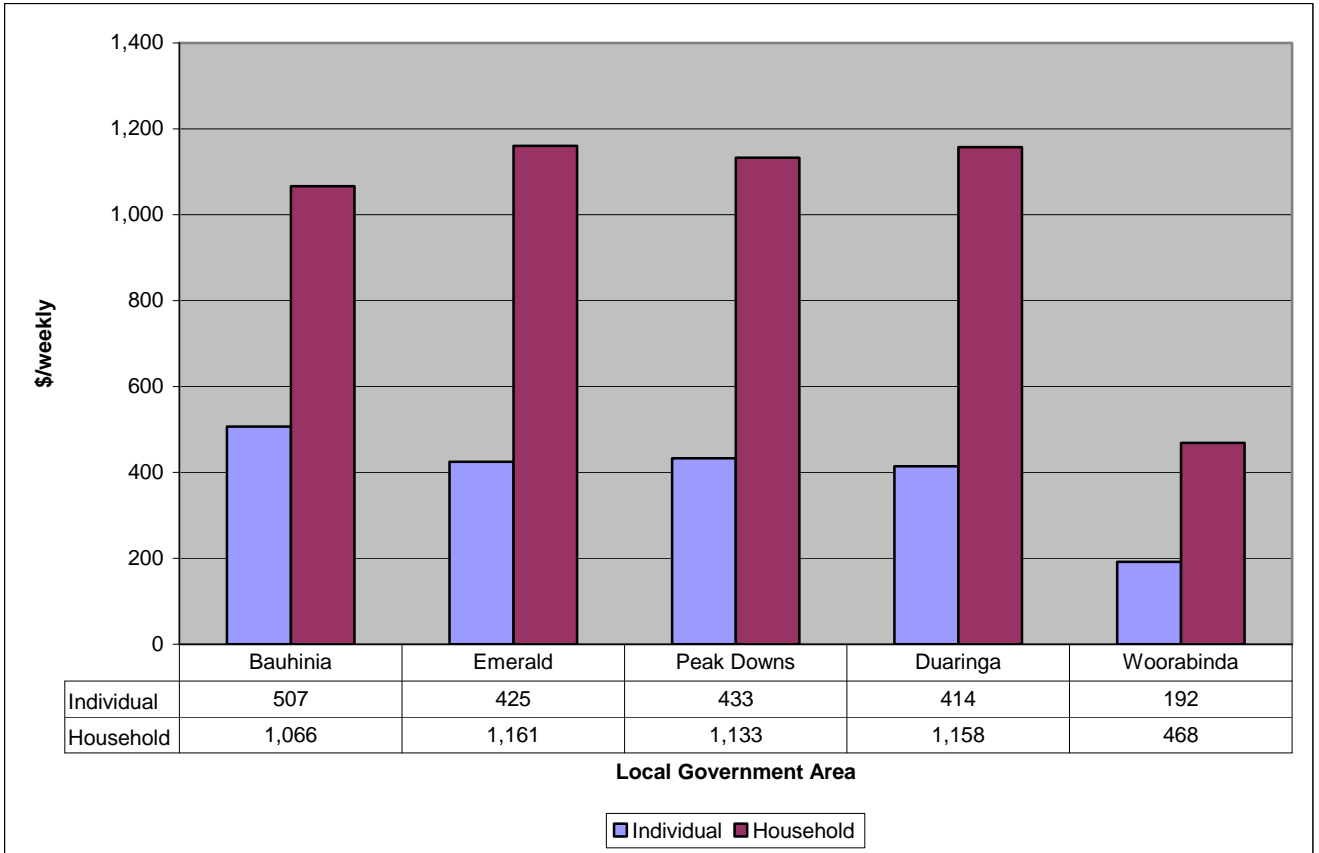
#### Income

Figure 6-12 shows that the median weekly individual incomes range from \$192 - \$507 (compared to \$318 for an Indigenous individual in Queensland). The median weekly household incomes range from \$468 to \$1,161 (compared to \$899 for an Indigenous household in Queensland). Gross weekly household incomes (see Figure 6-13) show that non-Indigenous households have a higher proportion of households in the upper income ranges (59% compared to 49% for gross weekly household incomes > \$1,000), however for the lower income ranges (gross weekly household income < \$500) the proportion of Indigenous households is higher than the non-Indigenous households (16% and 10% of households respectively).

Households and individuals in Woorabinda have substantially less income than other Indigenous households and individuals in the area

Except for Woorabinda, individuals and households in this area have higher levels of income than in the Gas Field-South area, with weekly household median income above \$1,000 and weekly individual median income above \$400 for all local government areas, probably reflecting the higher level of employment in mining (20%) and the lowest Indigenous unemployment rate (7%) across the project area.

Figure 6-12 CSG Field North - Indigenous Median Incomes

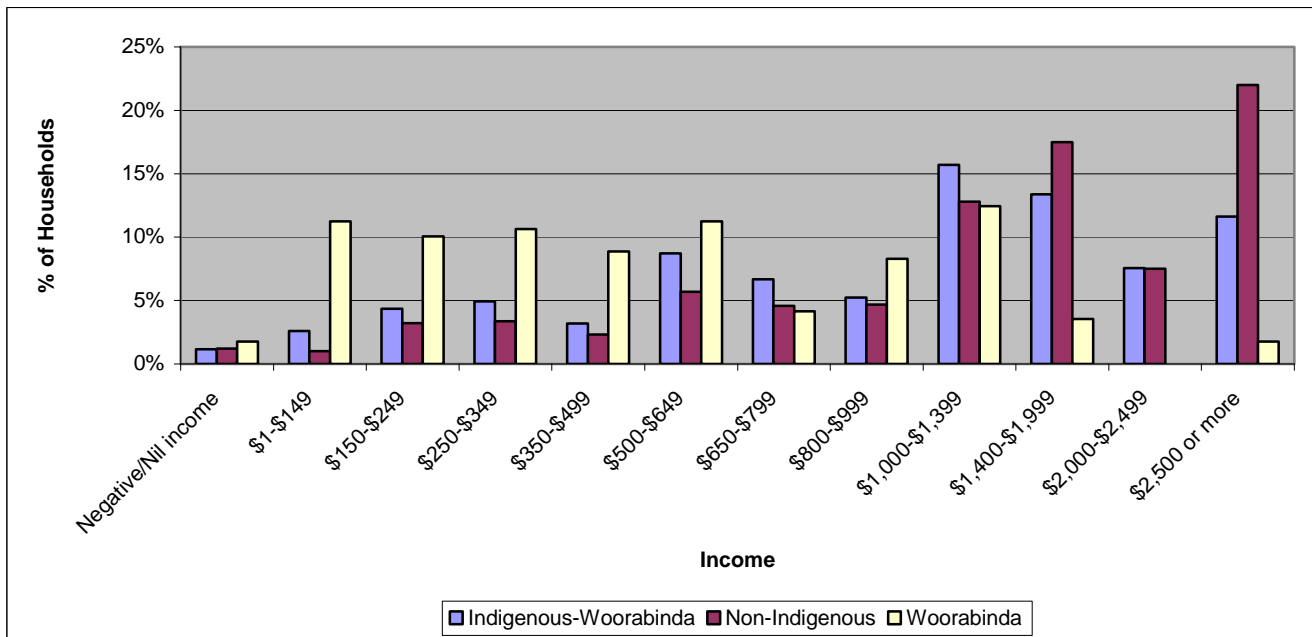


Source: ABS 2006 Census Indigenous Community Profiles

## Section 6

## Indigenous

Figure 6-13 CSG field North - Gross Weekly Household Income



Source: ABS 2006 Census Indigenous Community Profiles

### Labour Force

For the Local Government Areas excluding Woorabinda, Table 6-5 tabulates the key labour force indicators. The area has an Indigenous unemployment rate of 7% (compared to a non-Indigenous rate of 2%) with a labour force participation rate for Indigenous persons at 65% (compared to a rate for non-Indigenous persons of 78%). The Indigenous labour force has 30% with qualifications (compared to the non-Indigenous labour force level of 49%). Figures 6-14 and 6-15 indicate that key industries in the area employing Indigenous people are similar to the GSG Fields – South area, with mining also being a significant industry sector of employment, while the principal occupations in the GSG Fields North area, with the exception of Woorabinda, are also similar to the GSG Fields – South area.

Woorabinda is a community which is highly dependent on Community Development Employment Program (CDEP) employment. As shown in Table 6-6 if CDEP numbers are subtracted from the employment numbers, the effective unemployment rate for Woorabinda is 68%. Census data characterise Woorabinda as having almost total absence of employment in the productive sectors, with the main employment being in the service sectors of retail, public administration, education and training, and health care and social assistance. The CDEP however does run semi-commercial enterprises such as a pastoral operation and a furniture production facility that utilises locally sourced timber. In Woorabinda, approximately 58% of people are classified as labourers or community or personal service workers.



Table 6-5 Key labour force parameters for Indigenous and Non-Indigenous

Gas Fields-North(-Woorabinda)						
	Indigenous			Non-Indigenous		
	Males	Females	Persons	Males	Females	Persons
Persons aged 15 years and over	262	264	526	9608	8274	17882
	0	0	0	0	0	0
In the labour force(a):	0	0	0	0	0	0
Employed	184	133	317	8245	5425	13670
Unemployed	6	17	23	134	169	303
Total labour force	190	150	340	8379	5594	13973
Not in the labour force	58	109	167	1084	2562	3646
Labour force status not stated	9	13	22	146	117	263
% Unemployment(b)	3%	11%	7%	2%	3%	2%
% Labour force participation(c)	73%	57%	65%	87%	68%	78%
% Employment to population(d)	70%	50%	60%	86%	66%	76%
Industry sector(a):						
Government	30	22	52	697	929	1626
% of Total Labour Force	16%	15%	15%	8%	17%	12%
Private	148	106	254	7457	4441	11898
% of Total Labour Force	78%	71%	75%	89%	79%	85%
CDEP participants(e)	0	0	0	0	0	0
Self employed(f)	3	3	6	465	255	720
% of Total Labour Force			2%			5%
Non-school qualifications(a):						
Postgraduate Degree	0	0	0	66	63	129
Graduate Diploma and	0	0	0	0	0	0
Graduate Certificate	0	0	0	53	96	149
Bachelor Degree	3	6	9	483	924	1407
Advanced Diploma and Diploma	0	3	3	394	507	901
Certificate Level	60	29	89	3126	1084	4210
% of Total Labour Force with Quals	33%	25%	30%	49%	48%	49%
% of Total Labour Force with No Quals	67%	75%	70%	51%	52%	51%

Source: ABS 2006 Census Indigenous Community Profiles

## Section 6

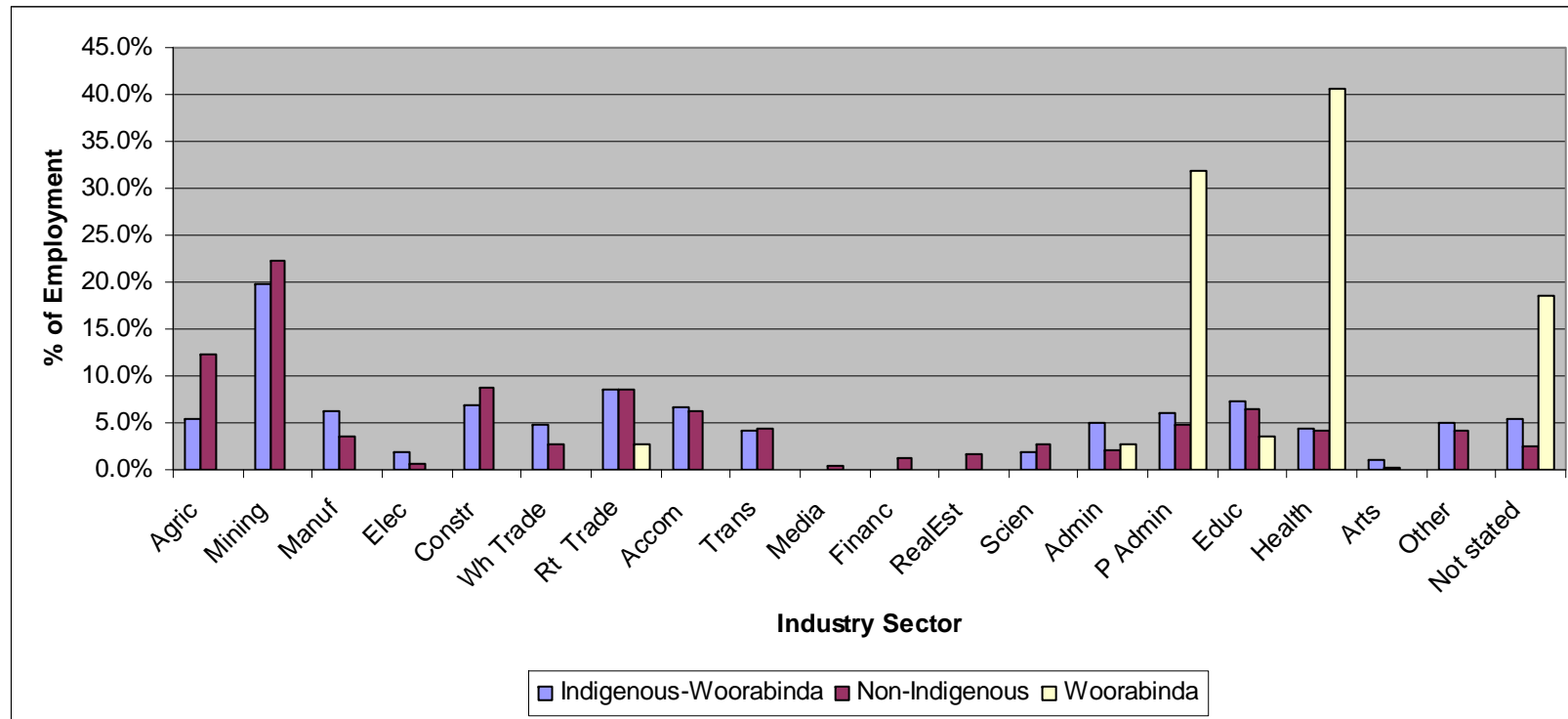
## Indigenous

Table 6-6 Community Development Employment Program for Woorabinda

<b>Woorabinda (CDEP added to unemployed)</b>			
	<i>Indigenous</i>		
	<i>Males</i>	<i>Females</i>	<i>Persons</i>
Persons aged 15 years and over	230	250	480
In the labour force(a):			
Employed	37	40	77
Unemployed	91	72	163
<i>Total labour force</i>	128	112	240
Not in the labour force	72	101	173
Labour force status not stated	29	38	67
% Unemployment(b)	71%	64%	68%
% Labour force participation(c)	56%	45%	50%
% Employment to population(d)	16%	16%	16%
Industry sector(a):			
Government	51	42	93
Private	51	50	101
CDEP participants(e)	0	0	0

Source: ABS 2006 Census Indigenous Community Profiles

Figure 6-14 CSG Field North - Industry of Employment

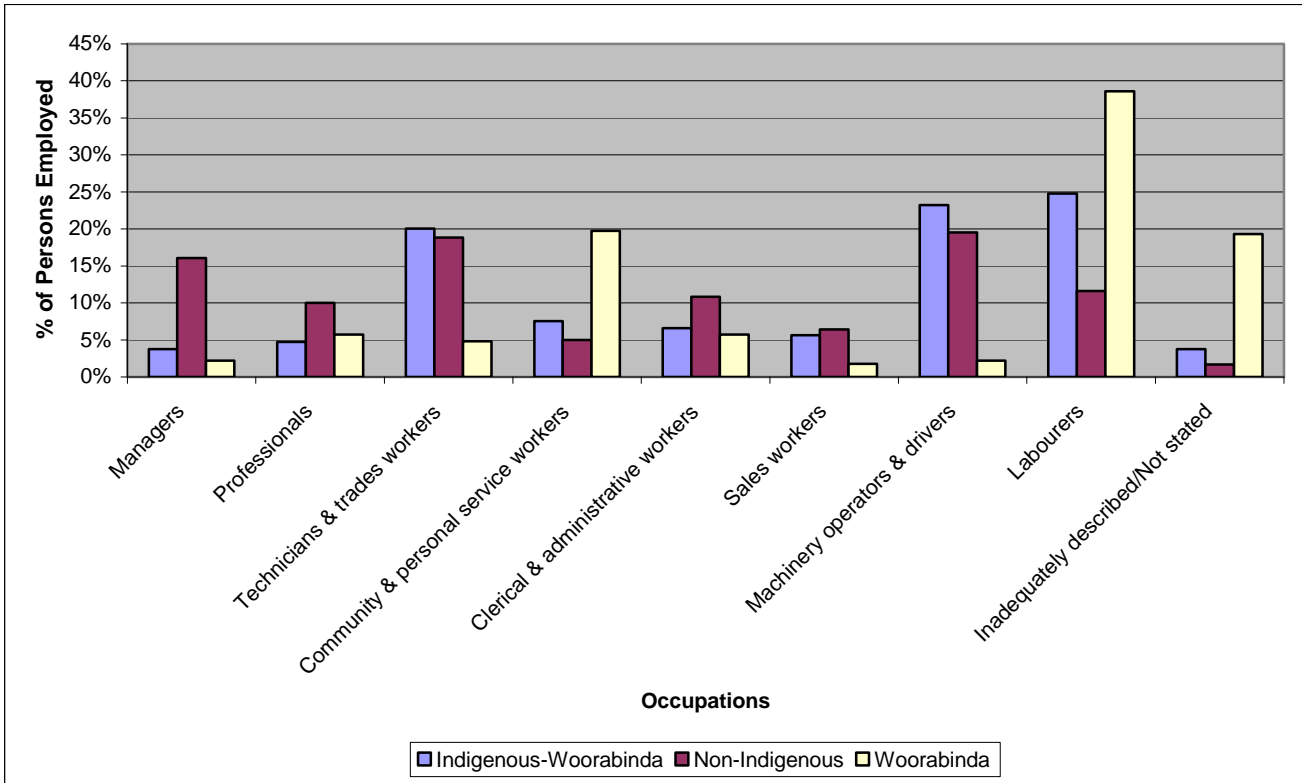


Note: Industry Sector full names as follows - Agriculture, forestry & fishing; Mining; Manufacturing; Electricity, gas, water & waste services; Construction; Wholesale trade; Retail trade; Accommodation & food services; Transport, postal & warehousing; Information media & telecommunications; Financial & insurance services; Rental, hiring & real estate services; Professional, scientific & technical services; Administrative & support services; Public administration & safety; Education & training; Health care & social assistance; Arts & recreation services; Other services; and Inadequately described/Not stated.  
 Source: ABS 2006 Census Indigenous Community Profiles

Section 6

Indigenous

Figure 6-15 CSG Field North - Occupational Category

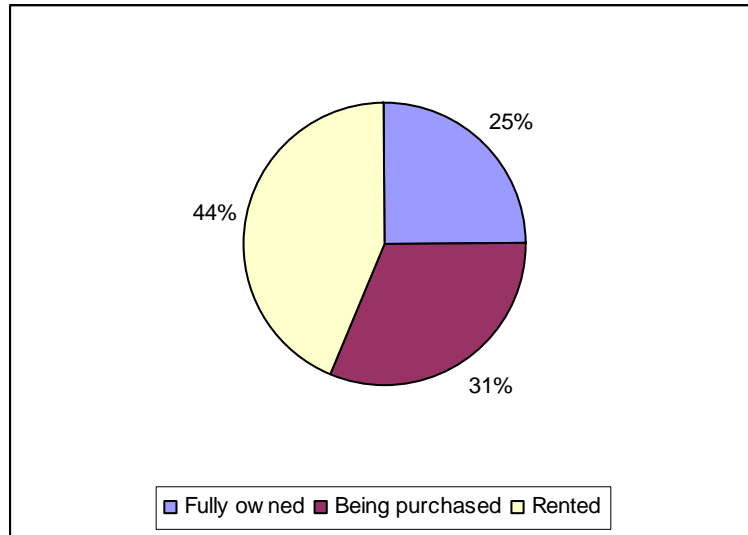


Source: ABS 2006 Census Indigenous Community Profiles

**Home Ownership**

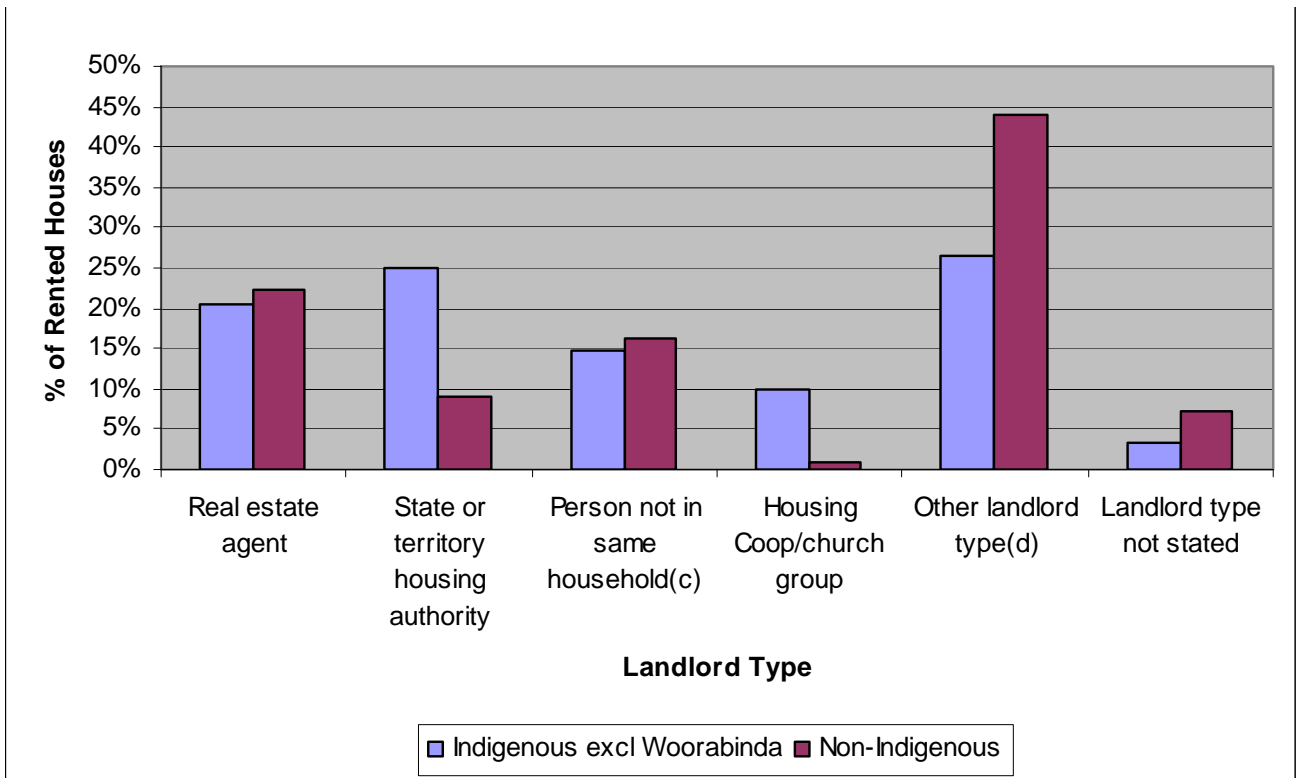
Figures 6-16 and 6-17 indicate that within the CSG fields North area 69% of Indigenous households (excluding Woorabinda households) are renting, compared with 44% for non-Indigenous households, with the proportion of Indigenous renters who depend on the State housing authority being about three times that of non-Indigenous renters. Non-Indigenous people are significantly more likely to be living in accommodation supplied by their employer (either Government or private sector). Indigenous residents of Woorabinda are almost totally dependent on Council housing.

Figure 6-16 CSG Field North - Non-Indigenous Housing Tenure



Source: ABS 2006 Census Indigenous Community Profiles

Table 6-7 CSG Field North - Indigenous Housing tenure (excluding Woorabinda)



Source: ABS 2006 Census Indigenous Community Profiles

## Section 6

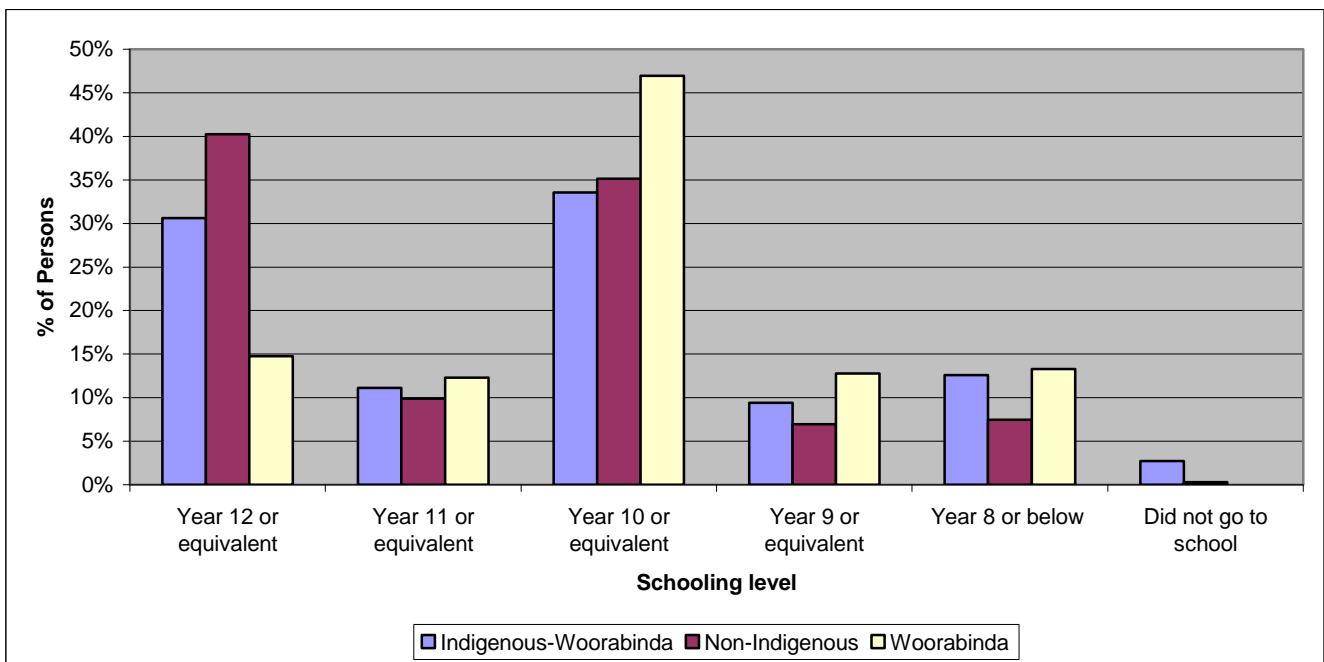
## Indigenous

Educational Profile

Figure 6-17 indicates that the disparity in the achievement of a Year 12 education level between Indigenous and non-Indigenous people was slightly less for the GSG Field North area when compared to the CSG field South area. Woorabinda has a substantially lower percentage of persons with a Year 12 education when compared to other Indigenous people in the project area.

The Woorabinda State Primary school reports that Year 2 Diagnostic Net testing results indicate that around 55% of year two students require additional assistance with reading, writing and numeracy (compared to Blackwater State School where the level was around 30%). School attendance in 2006 averaged 70% (compared to Blackwater State School-91%), which is around 20% less than the average for all Queensland State Schools. The school averages a 40% turnover of teaching staff each year, while at the end of 2006 there was a 75% turnover of staff (compared to Blackwater State School that retained 78% of staff). This is expected to occur again at the end of 2008 (Woorabinda State School, 2007).

**Figure 6-17 CSG Field North - Highest year of school completed**



Source: Woorabinda State School Annual Report, 2007.

### ***Community Values, Vitality, Lifestyle and Wellbeing***

The status of the Indigenous community assessed against these parameters is substantially similar to the GSG Field South area, with the exception of Woorabinda.

For the Central Highlands Health Service District, the Health Determinants Queensland 2004 Report indicated that:

*Due to the excess burden of disease in Indigenous peoples in Queensland in urban, rural and remote parts of the state, specific health gains can be made through targeted interventions in this district. Indigenous peoples in this HSD were more likely to live in areas of greater socioeconomic disadvantage than the non-Indigenous population. The major causes of death and illness for Indigenous peoples include: stroke, CHD, diabetes, suicide, unintentional injury and mental health. Health determinants of significant impact in this population include: poor diabetes management, overweight and obesity, poor nutrition, physical inactivity, harmful alcohol consumption, high blood pressure, poor blood cholesterol management, and risk and protective factors for mental health. In addition, rates of cervical cancer screening and asthma management are projected to be low in this population. Social determinants of health are of specific importance in this population, particularly sense of control, housing, employment and transport (Queensland Health, 2004).*

The Central Highlands report, in contrast to the Roma report, did not indicate that Indigenous people were disproportionately over-represented in the areas of socioeconomic disadvantage.

### **Woorabinda Services**

Services available in Woorabinda and managed by the Council include a Post Office and bank agency, a sporting complex that includes an indoor stadium and a six lane outdoor pool, a youth centre, and a store and takeaway food outlet owned and run by the State Government

The Woorabinda Health Service has a twelve bed clinic and provides services for accident and emergency, acute inpatient service, outpatient clinic, low risk midwifery, diabetes, sexual health, child & school health, aged care, oral health and mental health. A satellite renal unit is to be established on the Woorabinda site. The new unit will comprise two self care chairs, and is expected to relieve the current high activity levels of the Rockhampton Hospital Dialysis Unit

The State School (Pre School up to Year 7) has a total student enrolment of around 141 students taught in co-educational classes. It has a fully networked computer lab with internet consisting of 20 modern computers, and teachers have access to computers in the staff room linked to a colour laser printer. Each classroom has four networked computers.

### **6.2.3 LNG Facility Site**

The principal cities and towns in the area include Gladstone, Rockhampton, Biloela, Mt Morgan and Yeppoon.

### **Demographic Profile**

The 2006 Census information, summarised in Table 6-8 indicates that there are 7 328 Indigenous people in the area, representing 5.7% of the Indigenous population in Queensland and 5% of the area's population (compared to Indigenous representation of 3.3% in the total Queensland population). The age profile of the Indigenous population, shown in Figure 6-18 is substantially younger than the non-Indigenous population which is consistent with the Indigenous age profile for the whole of Queensland. These figures are based on the place of usual residence for a person, and do not include persons with cultural links to the area but who do not reside in the area. However there is likely to be a substantial number of Indigenous people living in the cities who do not have cultural links to the immediate plant site area.

Section 6

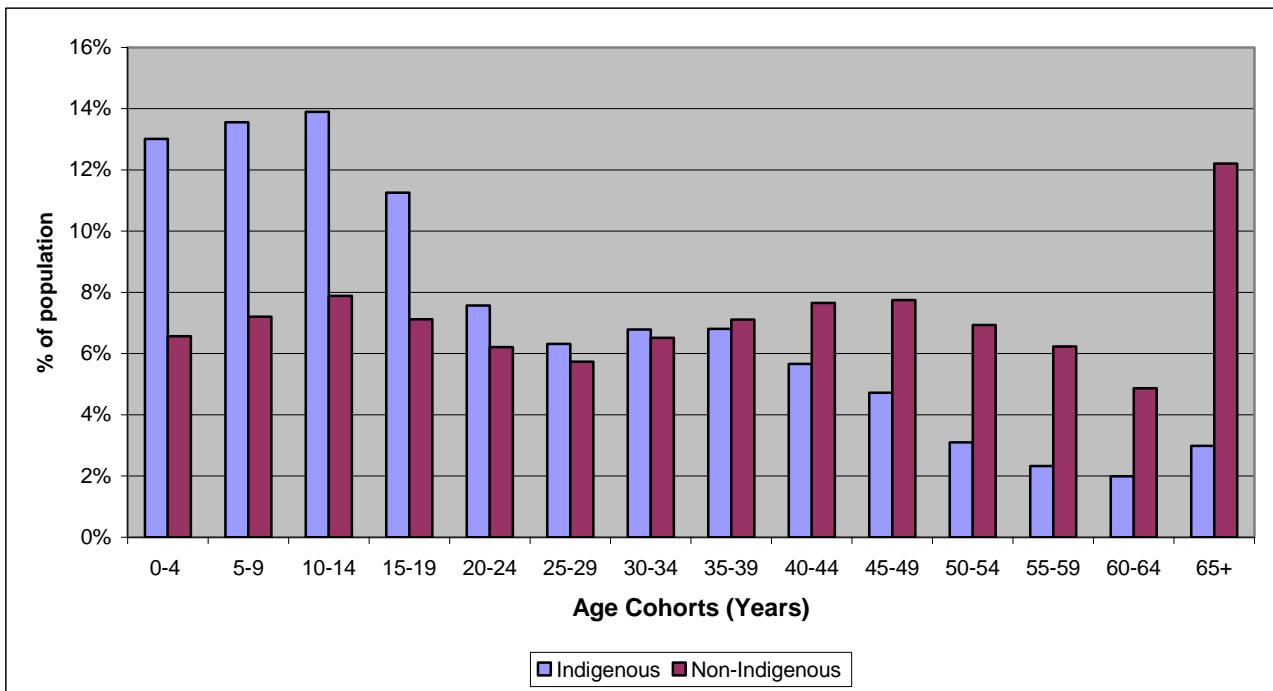
Indigenous

Table 6-8 LNG Facility - Aggregate Population

	Indigenous			Non-Indigenous			Total		
	Male s	Female s	Person s	Male s	Female s	Person s	Male s	Female s	Person s
Total	3,660	3,668	7,328	75,727	74,897	150,624	79,387	78,565,	157,952
% of Person s	50%	50%	5%	50%	50%	95%	50%	50%	100%

Source: ABS 2006 Census Indigenous Community Profiles. Does not include those whose status in not indicated

Figure 6-18 LNG Facility - Population Age Profile



Source: ABS 2006 Census Indigenous Community Profiles

**Economic Profile**

**Income**

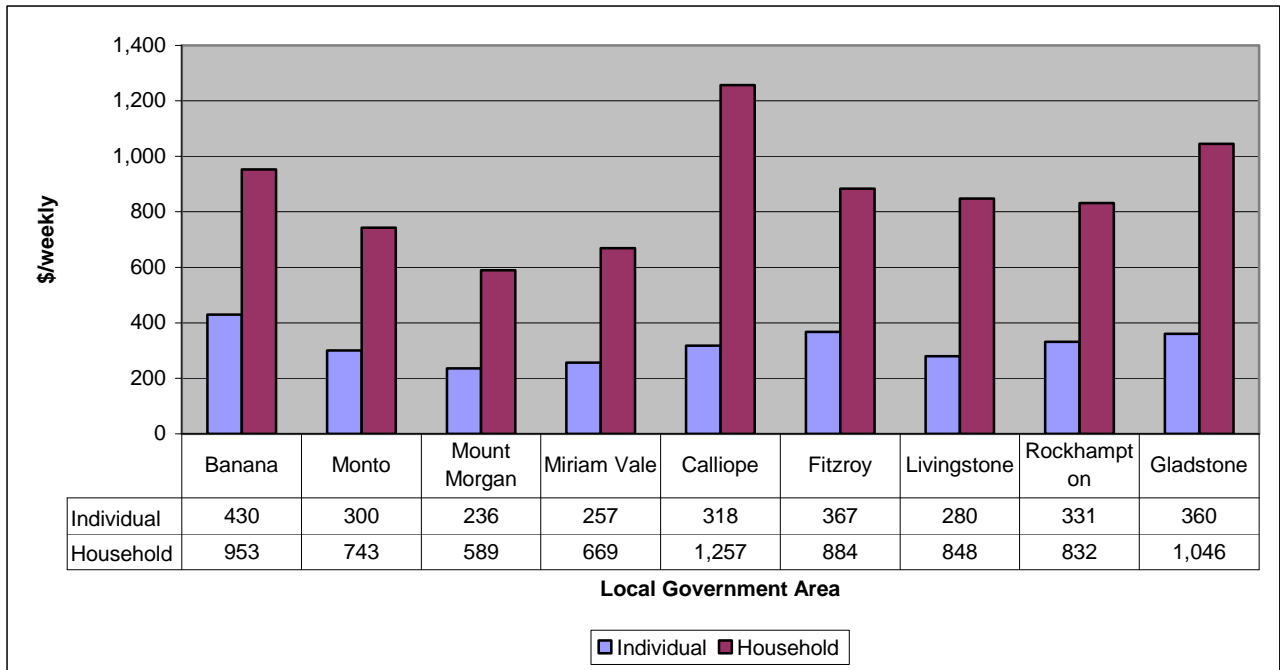
Figure 6-19 shows that the median weekly individual incomes range from \$236 - \$430 (compared to \$318 for an Indigenous individual in Queensland). The median weekly household incomes range from \$589 to \$1 257 (compared to \$899 for an Indigenous household in Queensland). Gross weekly household incomes (see Figure 6-20) show that non-Indigenous households have a higher proportion of households in the upper income ranges



Indigenous Section 6

(45% compared to 36% for gross weekly household incomes > \$1 000), however for the lower income ranges (gross weekly household income < \$500) the proportion of Indigenous and non-Indigenous households is equal at 20% each. Indigenous individuals and households in this area have higher levels of income than in the GSG Field South area, but incomes are lower than the GSG Field North area.

Figure 6-19 LNG Facility - Indigenous Median Incomes

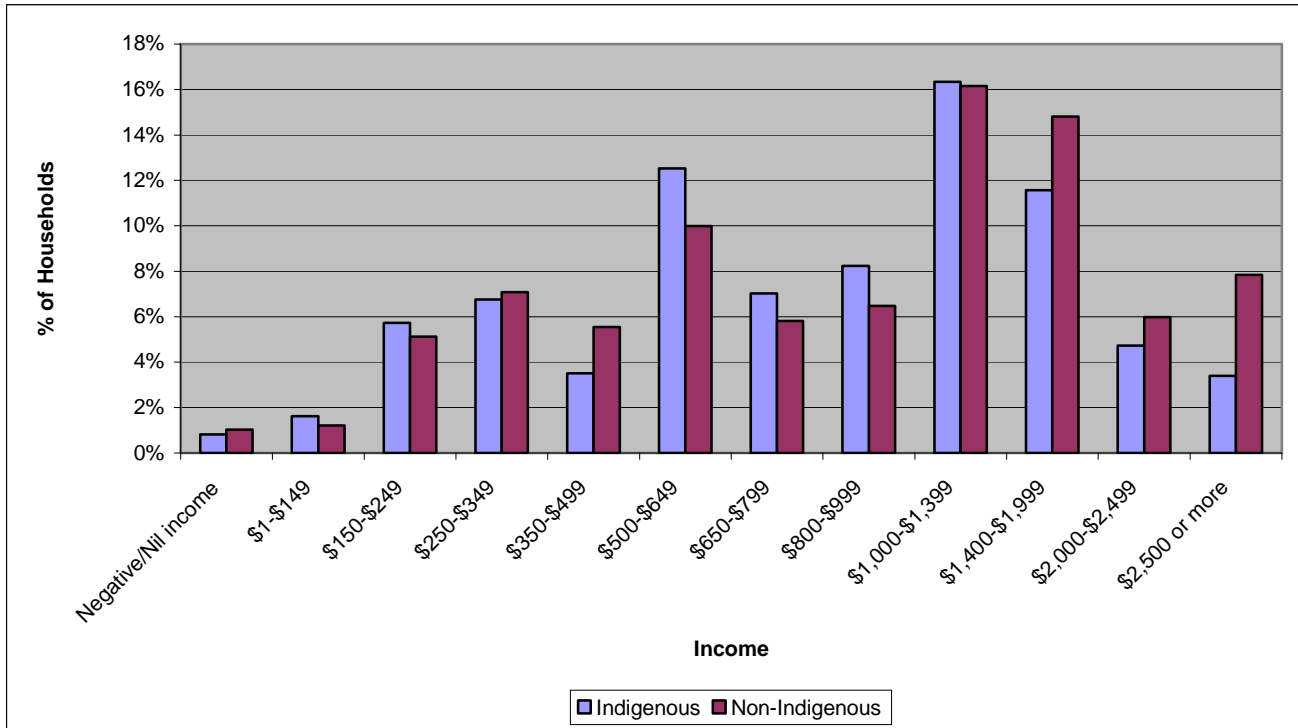


Source: ABS 2006 Census Indigenous Community Profiles

## Section 6

## Indigenous

Figure 6-20 LNG Facility - Gross Weekly Household Income



Source: ABS 2006 Census Indigenous Community Profiles

### Labour Force

Table 6-9 tabulates the key labour force indicators for the LNG Facility Site area. The Indigenous unemployment rate is 16% (compared to non-Indigenous rate of 5%) with the labour force participation rate for Indigenous persons at 53% (compared to non-Indigenous participation rate of 65%). For Gladstone city, the Indigenous unemployment rate was 20.5% and the participation rate was 63.8% (compared to rates for the non-Indigenous population of 5% and 71.6% respectively). The LNG Facility Site area figures may underestimate the level of Indigenous unemployment as at the 2006 Census there may have been a CDEP operating in the Rockhampton area.

The Indigenous labour force has 38% with qualifications (compared to non-Indigenous level of 54%). Figure 6-21 indicates that the key industries employing Indigenous people are mining, manufacturing, construction, retail trade, accommodation and food services, public administration, education and training, and health care and social assistance. The majority (22%) of Indigenous persons employed are in the labouring category (see Figure 6-22). The proportion of Indigenous people employed in the management category is substantially less than non-Indigenous people, while the percentage working in the community and personal service area is approximate double that of non-Indigenous workers.

Table 6-9 Key labour force parameters for Indigenous and Non-Indigenous

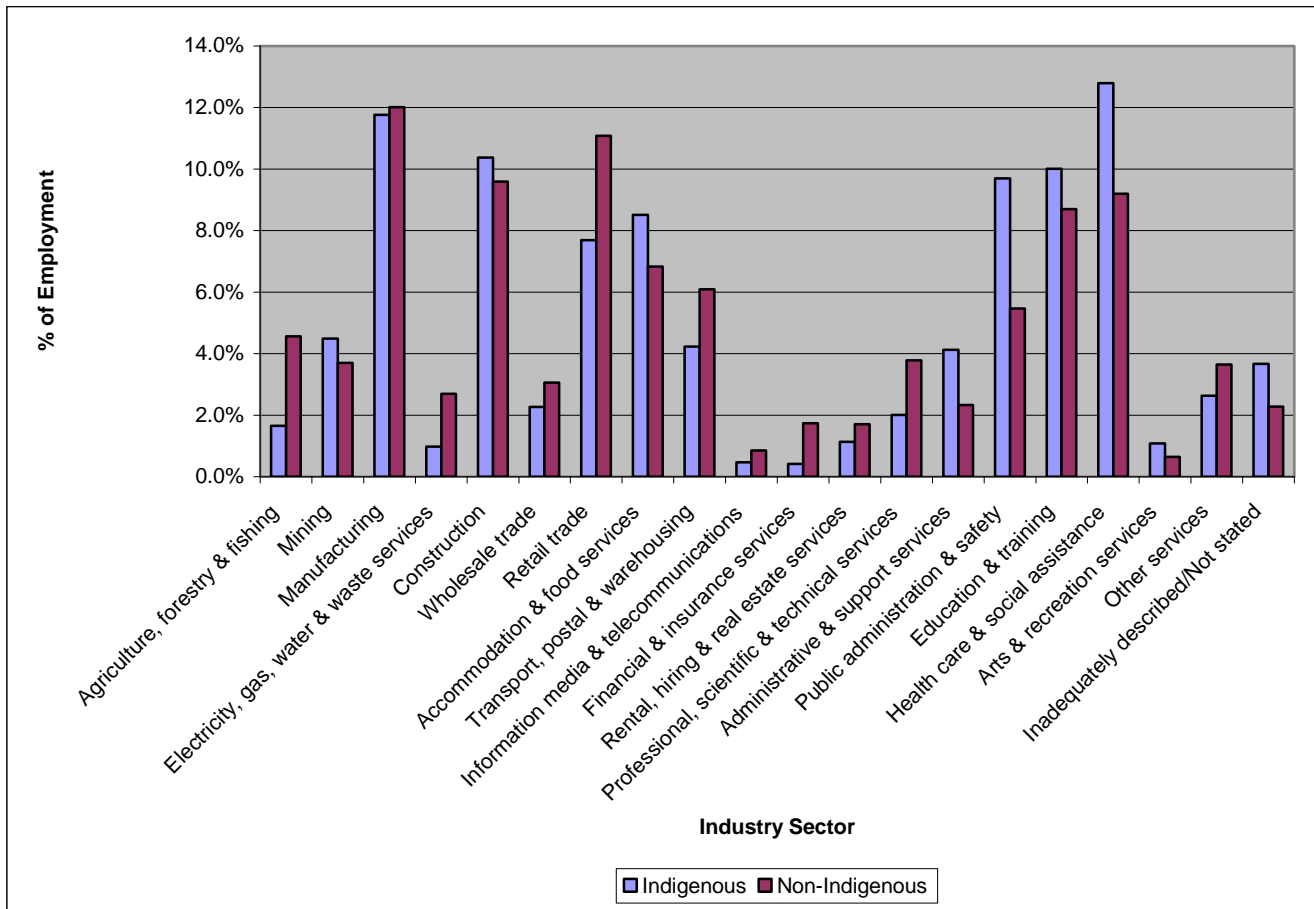
Plant Site	Indigenous			Non-Indigenous		
	Males	Females	Persons	Males	Females	Persons
Persons aged 15 years and over	2152	2205	4357	58907	59091	117998
	0	0	0	0	0	0
In the labour force(a):	0	0	0	0	0	0
Employed	1040	902	1942	41177	32013	73190
Unemployed	204	179	383	1765	1788	3553
Total labour force	1244	1081	2325	42942	33801	76743
Not in the labour force	780	1014	1794	14679	23828	38507
Labour force status not stated	127	113	240	1282	1464	2746
% Unemployment(b)	16%	17%	16%	4%	5%	5%
% Labour force participation(c)	58%	49%	53%	73%	57%	65%
% Employment to population(d)	48%	41%	45%	70%	54%	62%
Industry sector(a):						
Government	181	213	394	6444	6372	12816
% of Total labour Force	15%	20%	17%	15%	19%	17%
Private	826	671	1497	34266	25287	59553
% of Total labour Force	66%	62%	64%	80%	75%	78%
CDEP participants(e)	6	0	6	0	4	4
Self employed(f)	41	16	57	2660	1480	4140
% of Total Labour Force			2%			5%
Non-school qualifications(a):						
Postgraduate Degree	9	16	25	767	541	1308
Graduate Diploma and	0	0	0	0	0	0
Graduate Certificate	3	9	12	444	699	1143
Bachelor Degree	39	76	115	3643	5488	9131
Advanced Diploma and Diploma	37	69	106	2478	3265	5743
Certificate Level	342	284	626	17316	6536	23852
% of Total Labour Force with Qualifications	35%	42%	38%	57%	49%	54%
% of Total Labour Force with No Qualifications	65%	58%	62%	43%	51%	46%

Source: ABS 2006 Census Indigenous Community Profiles

Section 6

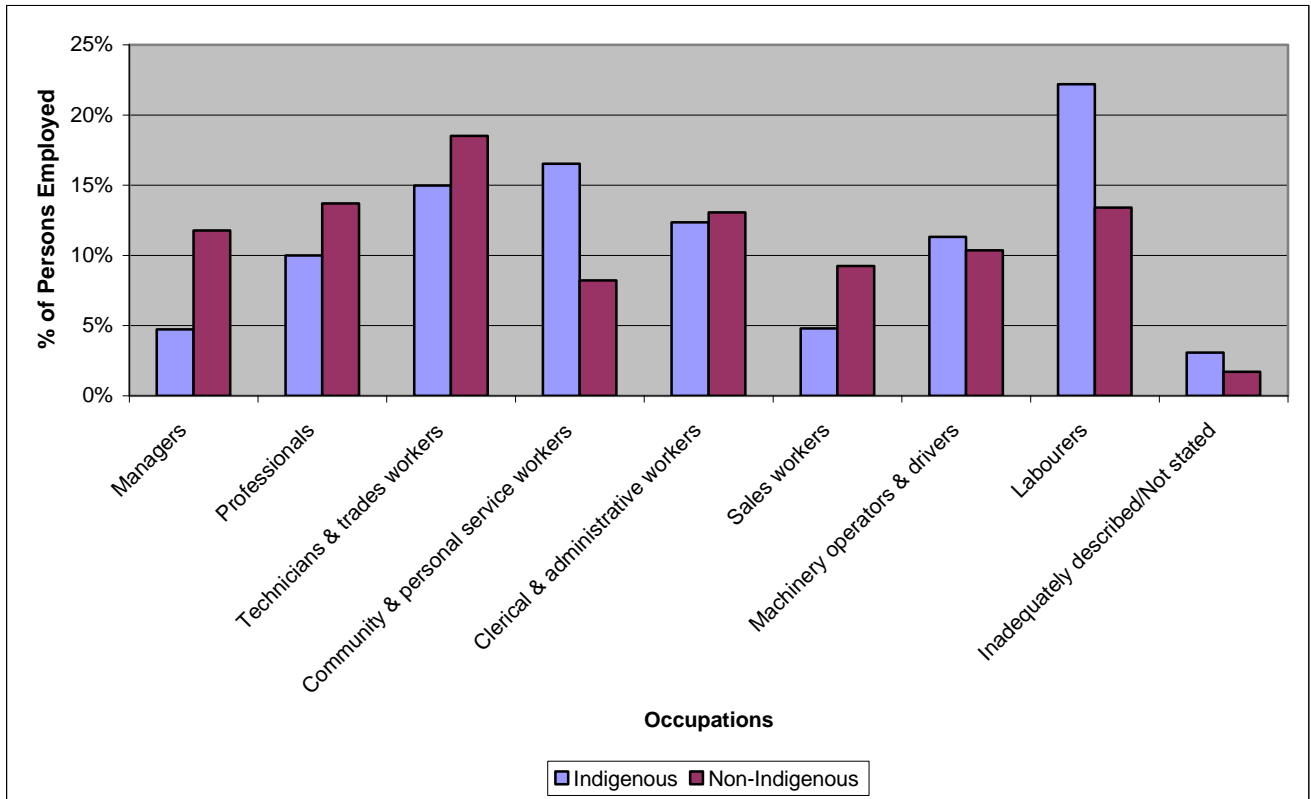
Indigenous

Figure 6-21 LNG Facility - Industry of Employment



Source: ABS 2006 Census Indigenous Community Profiles

Figure 6-22 LNG Facility - Occupational Category



Source: ABS 2006 Census Indigenous Community Profiles

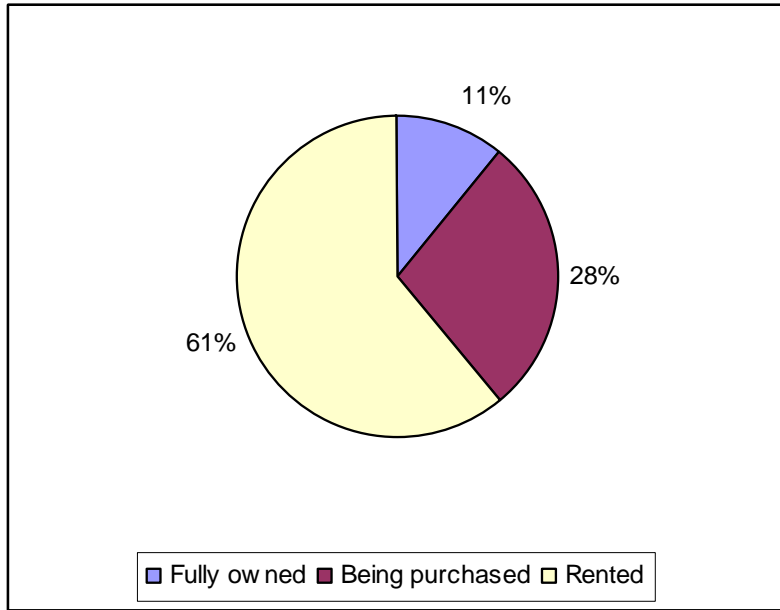
### Home Ownership

Figures 6-23, 6-24 and 6-25 show that 61% of Indigenous households in the LNG Facility Site area are renting, compared with 29% for non-Indigenous households, with rental dependence on the State and the private sector being reasonably similar for Indigenous and non-Indigenous people. The rates in Gladstone are similar to the rates in the LNG Facility Site area.

Section 6

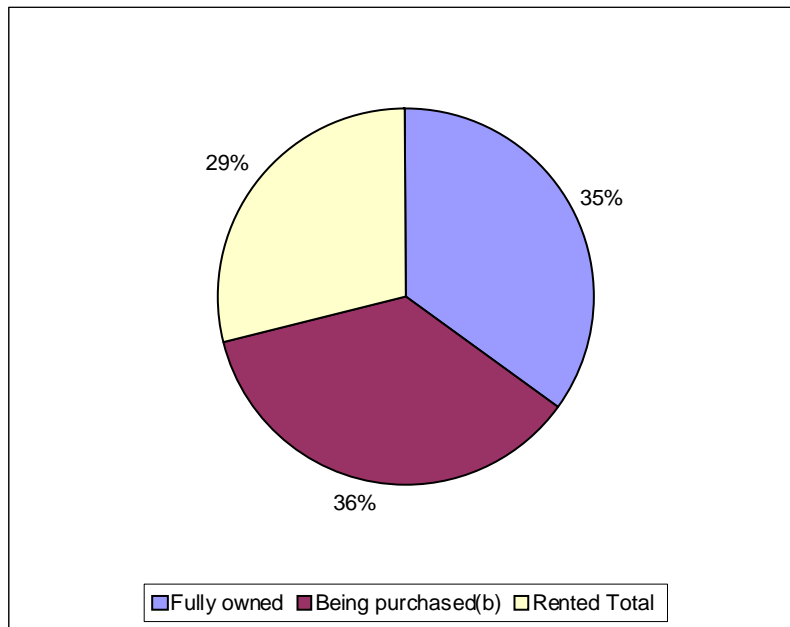
Indigenous

Figure 6-23 LNG Facility - Indigenous Housing Tenure



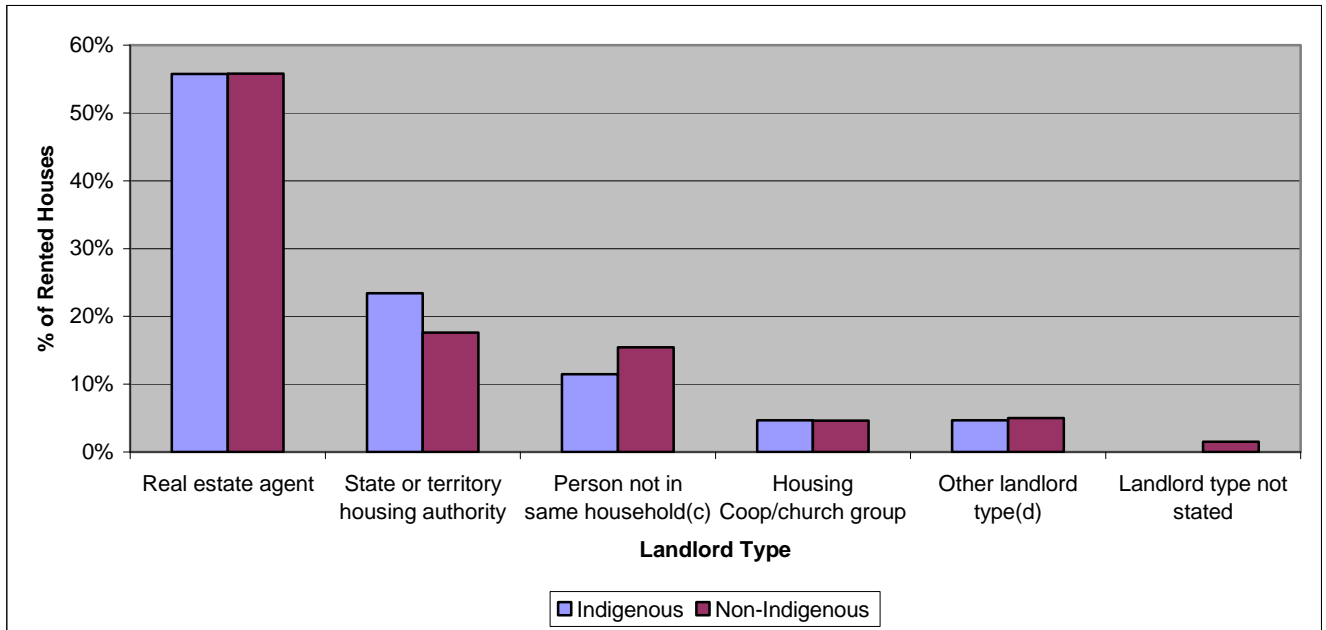
Source: ABS 2006 Census Indigenous Community Profiles

Figure 6-24 LNG Facility - Non-Indigenous Housing Tenure



Source: ABS 2006 Census Indigenous Community Profiles

Figure 6-25 LNG Facility - Housing Rental mode



Source: ABS 2006 Census Indigenous Community Profiles

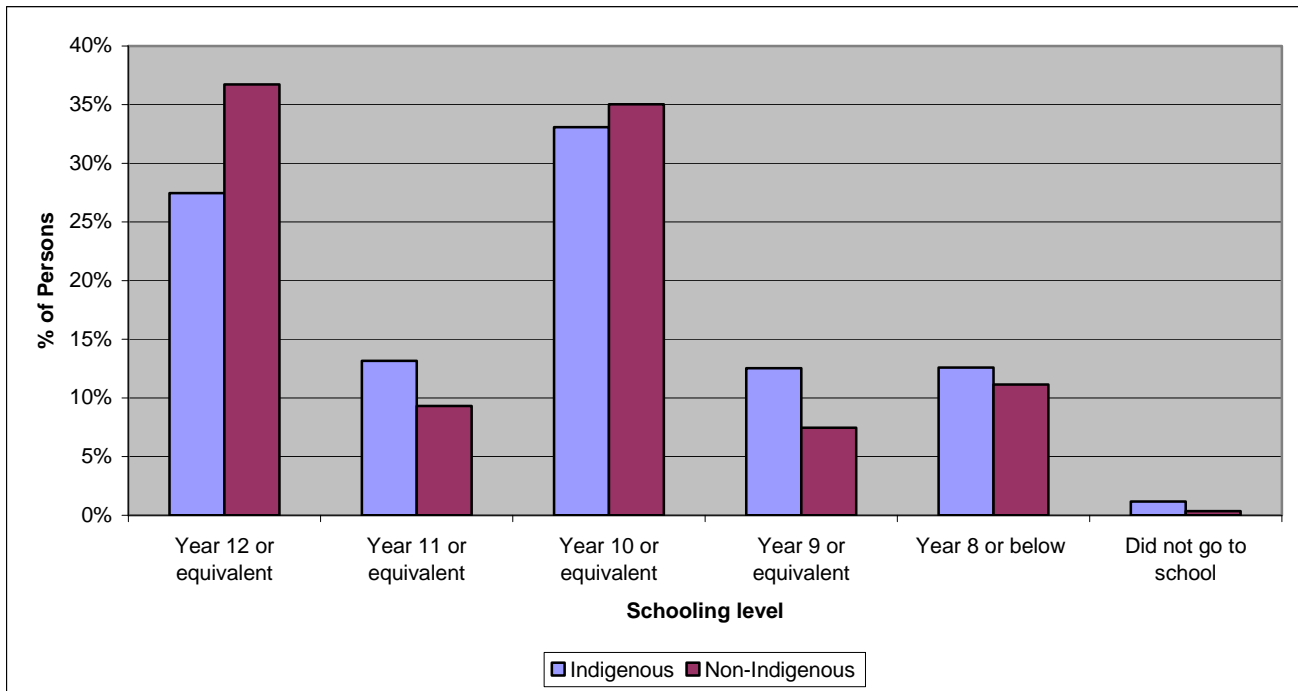
### ***Educational Profile***

Figure 6-26 shows the disparity in the attainment of Year 12 level education between Indigenous and non-Indigenous people was slightly less for the Plant Site area than the CSG field South area, although the difference was still around 10%.

## Section 6

## Indigenous

Figure 6-26 LNG Facility - Highest Year of School Completed



Source: ABS 2006 Census Indigenous Community Profiles

### Community Values, Vitality, Lifestyle and Wellbeing

For the Gladstone Health Service District (HSD) report (Queensland Health, 2004), the following is noted with respect to Indigenous people:

*Indigenous peoples in this HSD were more likely to live in areas of greater socioeconomic disadvantage than the non-Indigenous population. The major causes of death and illness for Indigenous peoples include: stroke, Chronic Heart Disease (CHD), diabetes, suicide, unintentional injury and mental health. Health determinants of significant impact in this population include: poor diabetes management, overweight and obesity, poor nutrition, physical inactivity, harmful alcohol consumption, high blood pressure, poor blood cholesterol management, and risk and protective factors for mental health. In addition, rates of cervical cancer screening and asthma management are projected to be low in this population. Social determinants of health are of specific importance in this population, particularly sense of control, housing, employment and transport.*

### 6.2.4 Summary

Table 6-10 presents a comparison of the available social indicators for the Indigenous population across the project area. Woorabinda, not unexpectedly, would rank the lowest of the four areas in terms of community wellbeing. Indigenous people in the remainder of the CSG field North area would rank the highest based on the indicators assessed, probably due to the proportion of the population working in the mining industry. While the plant site area has the highest percentage of people owning or buying a house, the unemployment rate is the highest in the project area (apart from the special case of Woorabinda).



Table 6-10 Comparison of Indigenous Indicators across the Project Area

Indicator	CSG Field South	CSG Field North (Woorabinda)	Woorabinda	LNG Facility
Population	2,075	892	807	7,328
% of Total Pop.	7%	3.5%	3.1%	5%
% of households with gross weekly income >\$1 000	31%	49%	18%	36%
% of households with gross weekly incomes <\$500	20%	16%	43%	20%
Unemployment	11%	7%	68%	16%
Participation rate	58%	65%	50%	53%
Households owning or buying	33%	31%	0%	39%
Households renting	67%	69%	100%	61%
Persons who have completed year 12	20%	31%	15%	27%

Source: ABS, 2006 compilation of several data sources

### 6.3 Impacts

Table 6-11 presents the potential social impacts to the Indigenous communities across the project areas. The impacts are discussed within the matrix for each phase of the project, including a pre-construction phase which includes the EIS process. Santos will examine the potential impacts from decommissioning and closure closer to the event, to better assess the potential impacts and suitable mitigation strategies.

Table 6-11 Impacts Matrix for Indigenous Study Areas

Spatial Boundary	Temporal Boundary		
	Pre-construction	Construction	Operations
CSG Field South	<p>Inter-family and inter-group stress induced by negotiations for ILUAs over the pipeline route and CHMPs over the gas fields, pipeline and LNG facility areas</p> <p>Anxiety concerning the protection of significant sites, even where these are not known with certainty</p>	<p>Potential impacts on cultural heritage to be managed through the CHMP negotiated</p> <p>Social friction due to the presence of a large number of construction workers, some with attitudes that are intolerant of Indigenous people</p> <p>Inability to secure employment opportunities due to lack of job readiness (addressed through Santos Aboriginal Engagement policy)</p> <p>Impaired ability to access private rental and home ownership market</p>	<p>Potential impacts on cultural heritage to be managed through the CHMP negotiated</p> <p>Inability to secure employment opportunities due to lack of job readiness (addressed through Santos Aboriginal Engagement policy)</p> <p>Impaired ability to access private rental and home ownership market</p>

## Section 6

## Indigenous

Spatial Boundary	Temporal Boundary		
	Pre-construction	Construction	Operations
CSG Field North	Inter-family and inter-group stress induced by negotiations for ILUAs over the pipeline route and CHMPs over the gas fields, pipeline and LNG facility areas Anxiety concerning the protection of significant sites, even where these are not known with certainty	Potential impacts on cultural heritage to be managed through the CHMP negotiated Social friction due to the presence of a large number of construction workers, some with attitudes that are intolerant of Indigenous people Inability to secure employment opportunities due to lack of job readiness (addressed through Santos Aboriginal Engagement policy)	Potential impacts on cultural heritage to be managed through the CHMP negotiated Inability to secure employment opportunities due to lack of job readiness (addressed through Santos Aboriginal Engagement policy)
LNG Facility	Inter-family and inter-group stress induced by negotiations for ILUAs over the pipeline route and CHMPs over the gas fields, pipeline and LNG facility areas Anxiety concerning the protection of significant sites, even where these are not known with certainty	Potential impacts on cultural heritage to be managed through the CHMP negotiated Social friction due to the presence of a large number of construction workers, some with attitudes that are intolerant of Indigenous people Inability to secure employment opportunities due to lack of job readiness (addressed through Santos Aboriginal Engagement policy) Impaired ability to access private rental and home ownership market	Inability to secure employment opportunities due to lack of job readiness (addressed through Santos Aboriginal Engagement policy) Impaired ability to access private rental and home ownership market

## 6.4 Mitigation Measures

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

- Effective integration of Aboriginal issues within all aspects of the Santos organisation;
- An established dialogue process with Aboriginal people that reduces risk to both the company and Aboriginal people; and
- Operations contributing to economic opportunity for Aboriginal peoples.

Within the AEP, the approach to cultural heritage impact management is based on a process of prior survey clearance, rather than continual intensive monitoring which is expensive and which has been found to not necessarily deliver effective protection of cultural heritage. In relation to Native Title, under the AEP Santos aims

to engage and negotiate with the native title parties with the aim of creating innovative solutions that account for Aboriginal priorities while preserving commercial objectives.

With regard to employment and training, the AEP strategy indicates that Santos will consider to:

- Use its funds to partner with Government to achieve significant employment outcomes, and to link with the Aboriginal Employment Covenant (AEC) program;
- Work in collaboration with contractors through the Santos Contractor Aboriginal Training and Employment Scheme (SCATES) which is being developed and which will apply nationally, and which is expected to be operational in Queensland by mid 2009;
- Support vocational and work readiness training linking to mainstream job vacancies with Santos and SCATES partners; and
- Provide on-going mentoring and other support to facilitate high levels of retention among the Aboriginal workforce.

Santos intends to extend the scope of the AEP in the medium term to include activity in the area of business development and environmental services.

#### 6.4.1 Pre-Construction

During the pre-construction stage of the project, Santos will manage any heightened level of anxiety amongst Aboriginal people through the provision of information on a timely basis and in an appropriate format. It will do this by implementing the following measures to address the identified potential impacts on Aboriginal people:

- Provide adequate resources to undertake negotiation for the ILUAs and CHMPs effectively and in an inclusive manner; and
- Establish a dialogue with Aboriginal groups covering potential issues of concern and development opportunities. This will be done through the implementation of a comprehensive and professional consultation program during the EIS process and which will continue on an on-going basis.

#### 6.4.2 Construction and Operations

During the construction and operations stages, Santos will manage the potential impacts through implementation of the following measures:

- Maintenance of consultation on issues of importance with Aboriginal people, centred on the effective implementation of the Santos AEP;
- Through its employee induction program, ensure that construction and operations workers attain a high level of awareness of the social environment in the project area, including issues of importance to Aboriginal residents and native title holders; and

The effective implementation of CHMPs and compliance with Santos standards and procedures (in particular EHS 11 Indigenous Cultural Heritage Management (for Australian Operations) Revision 3, and the Procedure for the management of Indigenous Cultural Heritage Sites (2007)).

## Section 7

## Accommodation

### 7.1 Introduction

This section discusses the key findings of an accommodation study (refer Appendix C for copy of full study report).

Department of Communities expressed interest in seeing housing and accommodation assessed as a likely issue for the project (pers. comm., E. Boardman, 2008). In addition, many individuals and organisations from private citizens to public officials indicated accommodation and housing were a concern with large projects (pers. comm., V. Laverick, 2008) (pers. comm., A. Kearns *et al*, 2008) (pers. comm., B. O'Rourke, 2008) (pers. comm., A. Cleland, 2008).

The accommodation study assembled relevant information about the housing situation in the GLNG study area, including characteristics of the existing housing market and expected demand from forecast natural population growth. The study then looked at the levels of housing demand that will be created by the GLNG project; the proposed accommodation measures; and potential impacts. An accommodation strategy provides recommendations for managing and minimising impacts associated with the project accommodation requirements.

### 7.2 Methodology

The purpose of the accommodation study was to describe the general accommodation characteristics of towns and centres within the CSG field, including:

- The nature of the housing and non-permanent accommodation stock;
- The supply of housing and accommodation stock; and
- The expected demand for further housing resulting from:
  - Natural growth in the populations within the study area;
  - The GLNG construction and operations workforces over the life of the project; and
  - Other major projects in the study area.

In order to achieve the purpose of the accommodation study, URS:

- Considered the terms of reference (ToR) and detailed project scope;
- Conducted a review of existing housing information, including housing studies from other projects in the area, studies for local government and data from the Department of Housing (DoH);
- Collected up-to-date statistical information from various government departments to create tailored socio-demographic study areas;
- Assessed housing market supply and demand, rental levels and availability, and housing affordability using various reports, interviews and focussed studies;
- Planned and carried out targeted stakeholder consultation, including local council staff, state government, community service providers and representatives of other industries likely to start projects during GLNG;
- Assessed the quantities of housing needed to accommodate the project workforce based on numbers from information provided by Santos and assumptions of procurement of those individuals;

## Accommodation Section 7

- Developed a housing needs model to estimate future accommodation requirements from natural growth (Gladstone region only);
- Quantified the scale of likely changes impacting on housing demand, including increases in population and workforce, timeframes and cumulative changes due to other approved or proposed developments;
- Calculated total housing requirements from natural growth and the GLNG project;
- Reviewed options for project housing/accommodation requirements based on Santos provided information;
- Assessed the potential housing-related impacts on the existing communities; and
- Recommended mitigation measures and monitoring/reporting programs where costs could not be offset by benefits.

### Assumptions

A number of assumptions have been made to identify and assess housing demand and supply. The assumed approximate breakdown of labour source between residents and imported workers' is described in Table 7-1, together with the assumed approximate breakdown of accommodation type for workers between a hotel/motel/rental and a temporary accommodation facility (TAF).

**Table 7-1 Accommodation assumptions**

Phase	Source of labour		Type of accommodation	
	Local %	Imported %	TAF %	Hotel/motel/rental
<b>Construction</b>				
CSG fields	10%	90%	~ 90%	~ 10%
Gas transmission pipeline	< 5%	> 95%	~ 100%	~ 0%
LNG Facility	35%	65%	~ 100%	~ 0%
<b>Operation</b>				
CSG fields	50%	50%	100%	0%
Gas transmission pipeline	95%	5%	0%	100%
LNG Facility	60%	40%	0%	100%

Important additional assumptions include:

- Construction of the LNG facility would be on a "stick-built" basis (i.e. all construction to occur on site), as opposed to modular whereby certain components of the facility are pre-assembled off-site.
- The calculation of housing and land requirements for natural population growth and GLNG demand in the Gladstone region is based on existing patterns for housing mix and development density:
  - Housing mix – approximately 90% of the population are housed in single unit dwellings, while 10% are housed in multiple unit dwellings.
  - Development density – there are approximately 10 single unit dwellings per hectare and 15 multiple unit dwellings per hectare.

## Section 7

## Accommodation

### Data Sources

A full list of information that was used in the study is contained in the Reference Section at the end of this report.

Key data used by this study includes:

- Housing and residential land supply data supplied by the Queensland Government's Planning Information and Forecasting Unit (PIFU);
- Census data from the Australian Bureau of Statistics (ABS);
- Rental data from the Rental Tenancy Authority of Queensland (RTA);
- Zoning data from local government authorities (predominantly from Roma Regional Council and Gladstone Regional Council); and
- Stakeholder consultation findings.

Data used has primarily been aggregated on a local government basis, using the recently gazetted Regional Council areas that resulted from the Queensland local government areas amalgamation reform in March 2008. As the CSG field, gas transmission pipeline and LNG facility have some common local government areas, some of this section discusses population statistics of the local government areas rather than discussing population statistics for the three project components (refer Table 7-2).

Where regional local government data has not been available, the study has combined data from the previous component shires to produce figures representing the regional council as a whole.

Regional councils have been referred to primarily because these represent the 'local' level at which most planning decisions are implemented, including decisions for the supply of housing and associated land. Local government areas also represent an effective 'community of interest'. Finally, most data collected by authorities tends to be no more detailed than at the local government level. Data does exist for some smaller areas; however, this is often sparse (which inherently makes it more difficult to compare across different data sets) and may not be verified by appropriate authorities (thereby making it difficult to use for planning purposes in a definitive and authoritative manner).

**Table 7-2 Local Government relevant to project**

Local Government Area	CSG Fields*	Gas Transmission Pipeline	LNG Facility
Roma Regional Council	X	X	
Banana Shire Council	X	X	
Central Highlands Regional Council	X	X	
Gladstone Regional Council		X	X

Note - \*This table only shows local government areas for the Arcadia Valley, Fairview and Roma CSG fields. Other local governments apply to other areas of the CSG study area.

## 7.3 Study Area Summaries

### 7.3.1 CSG Field

Table 7-3 lists towns in the CSG field. Traditionally, the towns have served as rural service centres; however, some have increasing significance now as service centres for the oil and gas industry. The proportion of

townsfolk employed in the resource sector is increasing as the area is explored for further oil and gas development.

Roma is the administrative hub for the newly formed Roma Regional Council and is a regional service centre for the south west Queensland area, providing an extensive range of retailing opportunities and community services, such as regional offices of State government agencies. Roma is also a centre for Santos and other oil and gas companies operating in the region.

**Table 7-3 Population Centres in the CSG Field**

CSG Field	Towns/Centres (Population of Urban Centre)
Roma	Roma (pop. 5,983)
Roma	Miles (pop. 1,164)
Roma	Mitchell (pop. 944)
Roma	Surat (pop. 436)
Roma	Wallumbilla (pop. 285)
Roma/Denison/Fairview/Arcadia Valley	Injune (pop. 362)
Roma/Scotia	Taroom (pop. 629)
Eastern Surat Basin	Tara (pop. 819)
Denison	Emerald (pop. 10,999)
Denison	Blackwater (pop. 5,031)
Denison	Springsure (pop. 829)
Denison	Rolleston (pop. 217)
Scotia	Wandoan (pop. 368)

Source: ABS (2006), Population of urban centre

### ***Existing Housing Characteristics***

A summary of the existing housing characteristics of the CSG field around Roma Township is as follows:

- The predominant housing type within the study area is a detached house (i.e. a house that stands alone). Semi-detached houses (i.e. houses that are attached to another building on one side) and apartments or units only represent a minor proportion of dwelling types. Household size is set to continue declining, keeping with a trend across Australia (Table 7-7);
- In Roma Regional Council, approximately 60% of dwellings are owner-occupied and approximately 37% are rented (Table 7-8);
- The property market is active, with 51 dwelling approvals in Roma Regional Council in 2007 and strong growth in median house prices over the last five years;
- The rental market is fairly tight, with limited rentals available and rents increasing steadily over the last five years (median rental price for a three bedroom house is currently \$300 per week) (Table 7-10);
- Roma Regional Council area is expected to grow by approximately 0.5% per annum over the next 25 years, representing an increase of 1,721 persons in that period or approximately 69 persons per annum. Based on an average occupancy of 2.6 persons per dwelling, this means an average of 26.5 additional



## Section 7

## Accommodation

dwellings will need to be constructed each year over the next 25 years. Recent dwelling approval figures indicate that the region has the capacity to meet expected base demand over the next 25 years. There is sufficient land available to accommodate for this growth.

- There are approximately 20 hotels/motels and four caravan parks in Roma. Motels are regularly full.

Discussions with some local real estate agents in Roma indicated that housing prices are relatively high in Roma, but are very high at present, approximately 30% above market. This was attributed to the national housing boom in the late 1990s and early 2000s but has stayed high mainly due to local owners' reluctance to bring the prices down. This is contrary to the current supply and demand balance, which is why they believe the current market is approximately 30% above where it should be (pers. comm., A. Cleland, 2008) (pers. comm., D. Newman, 2008).

Roma has seen some substantial increases in prices in certain areas including commercial and residential properties (~500%) with residential increasing by approximately 200% in the past 5 years. As discussed above, this was attributed to a national trend but it was noted that the increase in CSG activity in the area was likely to keep the prices elevated longer (pers. comm., B. Garvie, 2008). This increase in housing costs has put pressures and stresses on lower income earners, which also increases demands on community organisations like Spiritus (Anglican church) and other social services (pers. comm., D. Roche, 2008).

### 7.3.2 Gas Transmission Pipeline

Land use for the length of the gas transmission pipeline is dominated by agricultural uses, either for cultivation or for grazing purposes. Outside of the existing townships, the extent of the built environment is limited to farm buildings and homesteads.

The nearest towns (other than those near the start and end of the gas transmission pipeline route in the Roma and Gladstone regions, respectively) are Rolleston, Moura, Banana and Biloela. These towns act as key service centres for rural and mining activity in the surrounding regions and are expected to grow and continue to play a key economic role (and act as an inland place of residence) into the future.

The construction of the gas transmission pipeline primarily involves the use of short term TAFs and will not affect housing directly. A summary of the existing housing characteristics is as follows:

- The predominant housing type within the study area is a detached house;
- The average household size (i.e. number of occupants per dwelling) is set to continue declining, in keeping with a trend across Australia (Table 7-7);
- There is a higher proportion of rental properties in the Central Highlands Region (43%) and Banana Shire (38%) than Roma and Gladstone regional councils – reflecting a tendency for people to rent in more remote and less well serviced areas (Table 7-8);
- The property market is active, with 51 dwelling approvals in Roma Regional Council in 2007 and strong growth in median house prices over the last five years (Table 7-9);
- There is an active property market around some of the larger towns near the pipeline, such as Emerald and Biloela;
- There are hotel/motel accommodation options in most towns along the gas transmission pipeline; and
- There is a large TAF near Biloela that services the surrounding mines.



### 7.3.3 LNG Facility

The Gladstone Region (and the town of Gladstone specifically) represents one of the key regional centres along the Queensland Coast. Table 7-4 highlights relevant statistics about Gladstone city and the nearby smaller centres in the Gladstone Area (Gladstone Regional Council).

**Table 7-4 Estimated resident population by major urban centre/locality, Gladstone Regional Council, 2007**

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

.. = not applicable; - = nil or rounded to zero ; L = Locality. Note: Based on ASGC 2006.

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

#### **Gladstone**

The Central Queensland – A New Millennium Regional Plan (CQNMRP) recognises Gladstone as a regional centre. Gladstone has in the past been seen as a key centre for metals processing and as a major coal export centre. The centre is well serviced by rail, road, and air transport links and is increasingly becoming a focus for the processing and export of energy-related products and other material. Gladstone is one of the few areas for which the state government has defined and operates a special State Development Area for major industrial projects.

Gladstone City (population approximately 30,000) is situated on the southern side of Port Curtis and is approximately six kilometres from the plant site. Gladstone consists of a number of suburbs.

The Department of Housing indicated that past projects in Gladstone made decisions with regard to workforce housing that had strong negative impacts on the community, particularly those in the lower income brackets. The choice to utilise the local rental market resulted in a sharp decrease in supply, which led to rapid increases in rent as supply increased due to normal community demand combined with project demand. The result was both economic pressure and community dissatisfaction for those who did not own their home. This was compounded when it was discovered that many units rented for the project sat vacant because the project had rented more than it actually required (pers. comm., B. O'Rourke, 2008).

## Section 7

## Accommodation

Existing residential detached housing is concentrated in the suburbs of Clinton, New Auckland, South Gladstone and West Gladstone. Gladstone City includes higher density housing. The “Gladstone City Council Planning Scheme – Suburban Locality Plan 4” and “Plan 1” (see Appendix C) show existing residential areas and planned urban expansion areas. The southern area of Gladstone has been designated for significant urban growth, including the Kirkwood Road precinct. The Kirkwood Road South Structure Plan sets out 2,600 lots for development.

Further details outlining accommodation characteristics around the study area are discussed in the accommodation study (Appendix C).

A summary of the existing housing characteristics of the Gladstone region is as follows:

- The predominant housing type within the study area is a detached house. Semi-detached houses and apartments or units only represent a minor proportion of dwelling type; however, there are a number of higher density developments being constructed or proposed within the Gladstone CBD (Table 7-5);
- Approximately 70% of dwellings are owner-occupied (or being purchased by the occupier) and approximately 30% are rented (Table 5-8);
- The property market was strong from 2003–2008, characterised by high sales rates, high demand for housing stock and a strong increase in median house and land prices. Rental vacancy rates are understood to have been less than one percent and median rent prices have been steadily increasing over the last five years. There is scope for significant further increases in rent (Table 7-10);
- The property market has recently (2008) slowed, with a reduction in sales and increased listings. Median house and land prices have steadied or in some areas have dropped. In the longer term, the property market is expected to remain buoyant due to steady population growth that is expected to take up most available new and existing accommodation (sale and rental) in the local housing market.
- Based on the medium population growth scenario, Gladstone is expected to require a total of approximately 1,633 additional hectares of residential land over the next 25 years, which equates to a demand for approximately 65.3 hectares per annum (for 590 single dwelling houses and 98 multi-units per annum). Calculations are based on present development patterns favouring single dwelling development. Broad hectare residential land analysis predictions calculated until 2027 suggest that the existing land supply will be able to meet the region’s land needs in the period covered by the analysis.
- Approval rate figures for 2007 and 2008 suggest that the region has the capacity to meet the required approvals per annum to provide an adequate supply of dwellings to meet expected base demand over the next 25 years. There is an acknowledged shortage of skilled workers in the local building industry that may limit capacity to meet demand. Limited supply could also increase build times and costs;
- Lower income groups within the community have experienced difficulty in finding appropriate accommodation, due to limited vacancies and high costs. Previous large construction projects in the area have had a significant impact on housing availability and pricing in the region, with some people moving out of the area to more affordable locations;
- Demand for housing assistance is high;
- Hotel/motels and caravan parks are frequently booked out. For the June 2008 quarter, hotels in Gladstone Shire had a 71% occupancy rate;

## Accommodation Section 7

- There are currently no TAFs in the area; however, there have been a number of approvals and applications made for TAFs in Calliope Shire. Issues for TAFs are the provision of infrastructure and services.

**Table 7-5 Higher Density Dwellings Proportions (2001–2006 Comparison)**

Local Government Area	2001		2006	
	Proportion of Total Dwelling Stock (%)	Proportion of Total Population (%)	Proportion of Total Dwelling Stock (%)	Proportion of Total Population (%)
Roma Regional Council	4.4	3.2	6.2	3.9
Banana Shire Council	5.1	3.7	5.8	3.3
Central Highlands Regional Council	6.7	5.1	7.8	4.9
Gladstone Regional Council	8.7	6.1	9.5	5.8
Brisbane Statistical Division	17.1	12.0	19.0	12.9

Source: Australian Bureau of Statistics Census Data, Basic Community Profiles - 2001 and 2006.

**Table 7-6 Caravans/Cabins Dwellings Proportions (2001–2006 Comparison)**

Local Government Area	2001		2006	
	Proportion of Total Dwelling Stock (%)	Proportion of Total Population (%)	Proportion of Total Dwelling Stock (%)	Proportion of Total Population (%)
Roma Regional Council	3.4	2.8	1.0	0.7
Banana Shire Council	3.8	2.5	2.3	1.5
Central Highlands Regional Council	8.9	7.2	3.9	2.4
Gladstone Regional Council	3.8	2.7	2.4	1.5

Source: Australian Bureau of Statistics Census Data, Basic Community Profiles - 2001 and 2006.

## Section 7

## Accommodation

Table 7-7 Estimated Dwelling Occupancy Rates (1996, 2001, 2006)

	1996				2001				2006			
	Detached house	Semi-detached flats, etc	Other dwellings including caravans	All dwellings	Detached house	Semi-detached flats, etc	Other dwellings including caravans	All dwellings	Detached house	Semi-detached flats, etc	Other dwellings including caravans	All dwellings
Roma Town	2.7	1.8	1.7	2.6	2.7	1.5	1.9	2.5	2.8	1.1	1.8	2.7
Bendemere Shire	2.7	2.3	1.8	2.6	2.5	1.1	2.7	2.5	2.5	0.8	1	2.5
Booringa Shire	2.6	2.3	2	2.6	2.6	1.4	2	2.5	2.5	1.6	2	2.4
Bungil Shire	2.6	0.8	1.9	2.6	2.5	1.2	1.6	2.5	2.6	2.5	1.8	2.6
Warroo Shire	2.6	1.4	1.4	2.5	2.5	2.3	1.8	2.5	2.5	1.2	1.6	2.4
Roma Regional Council	2.7	1.7	1.8	2.6	2.6	1.5	2.0	2.5	2.6	1.4	1.6	2.5
Banana Shire	2.8	1.6	1.8	2.7	2.7	1.6	1.7	2.0	2.7	1.5	1.7	2.6
Taroom Shire	2.7	1.6	2.2	2.7	2.6	1.5	2.1	2.5	2.4	2.4	2	2.4
Bauhinia Shire	2.8	1.5	1.9	2.6	2.7	1.4	1.9	2.5	2.6	1.3	2.1	2.4
Burainga Shire	3.3	1.6	1.9	3.1	3	1.7	1.7	2.9	2.8	1.6	1.8	2.7
Emerald Shire	3.1	2	1.8	2.7	3	1.8	1.9	2.6	3	1.8	1.9	2.7
Peak Downs Shire	3.3	1.9	1.8	3.1	3.1	1.4	2.1	2.9	2.8	1.5	1.8	2.7
Central Highlands Regional Council	3.1	1.8	1.9	2.9	3.0	1.6	1.9	2.7	2.8	1.6	1.9	2.6
Gladstone City	3	1.7	1.8	2.8	2.9	1.6	1.6	2.6	2.8	1.7	1.8	2.6
Calliope Shire	3	1.8	1.9	2.8	2.9	1.8	1.8	2.8	2.9	1.8	1.9	2.8
Miriam Vale Shire	2.8	1.7	2.1	2.6	2.5	1.9	2	2.4	2.5	2	2.1	2.4
Gladstone Regional Council	2.9	1.7	1.9	2.7	2.8	1.8	1.8	2.6	2.7	1.8	1.9	2.6

## Section 7

## Accommodation

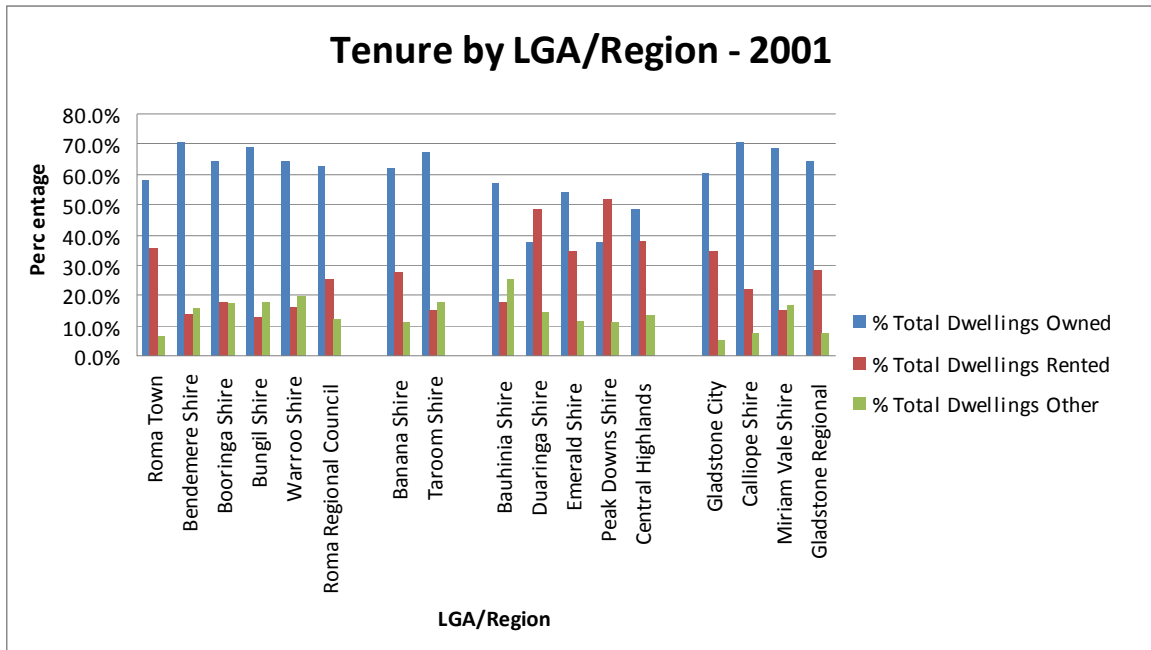
	1996				2001				2006			
	Detached house	Semi-detached flats, etc	Other dwellings including caravans	All dwellings	Detached house	Semi-detached flats, etc	Other dwellings including caravans	All dwellings	Detached house	Semi-detached flats, etc	Other dwellings including caravans	All dwellings
Brisbane Statistical Division					2.83	1.77	1.62	2.5	2.9	1.83	1.58	2.64
Queensland (State)					2.79	1.81	1.78	2.34	2.79	1.85	1.75	2.6

Source: PIFU, Population and Housing Fact Sheets for Local Government Areas (prior to March 2008), 2008 & ABS Census Community Profiles for Brisbane and Queensland 2001 & 2006

Section 7

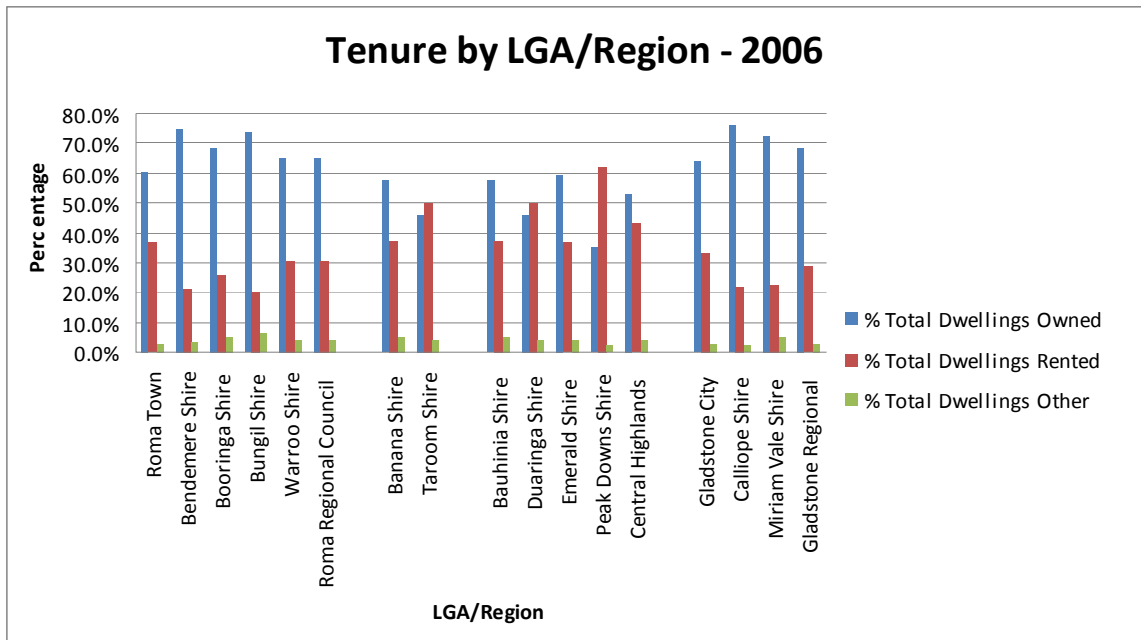
Accommodation

Figure 7-1 Dwelling Tenure (2001)



Source: ABS Census Data, Community Profiles, 2001

Figure 7-2 Dwelling Tenure (2006)



Source: ABS Census Data, Community Profiles, 2006

## Section 7

## Accommodation

Table 7-8 Dwelling Ownership (2001 and 2006)

Location	2001						2006					
	Owned		Rented		Other/ Not Stated		Owned		Rented		Other/ Not Stated	
	Total	% of Total Dwellings	Total	% of Total Dwellings	Total	% of Total Dwellings	Total	% of Total Dwellings	Total	% of Total Dwellings	Total	% of Total Dwellings
Roma Town	1,383	58.1%	844	35.4%	154	6.5%	1402	60.3%	855	36.8%	67	2.9%
Bendemere Shire	259	70.6%	50	13.6%	58	15.8%	269	74.9%	77	21.4%	13	3.6%
Booringa Shire	504	64.7%	139	17.8%	136	17.5%	441	68.5%	168	26.1%	35	5.4%
Bungil Shire	543	69.3%	100	12.8%	140	17.9%	532	73.5%	145	20.0%	47	6.5%
Warroo Shire	268	64.7%	66	15.9%	80	19.3%	259	65.2%	122	30.7%	16	4.0%
Roma Regional Council	2,957	62.6%	1,199	25.4%	568	12.0%	2903	65.3%	1,367	30.7%	178	4.0%
Banana Shire	3,046	61.9%	1,350	27.4%	524	10.7%	458	57.5%	299	37.5%	40	5.0%
Taroom Shire	690	67.1%	155	15.1%	183	17.8%	956	45.8%	1,051	50.4%	80	3.8%
Bauhinia Shire	544	57.1%	168	17.6%	240	25.2%	458	57.5%	299	37.5%	40	5.0%
Duaringa Shire	945	37.2%	1,223	48.2%	371	14.6%	956	45.8%	1,051	50.4%	80	3.8%
Emerald Shire	2,775	54.3%	1,759	34.4%	577	11.3%	2806	59.3%	1,742	36.8%	185	3.9%
Peak Downs Shire	375	37.4%	517	51.6%	110	11.0%	327	35.2%	578	622.3%	23	2.5%
Central Highlands Regional Council	4,639	48.3%	3,667	38.2%	1298	13.5%	4547	53.2%	3,669	42.9%	328	3.8%
Gladstone City	5,594	60.4%	3,376	34.3%	525	5.3%	6,403	63.7%	3,382	33.7%	263	2.6%
Calliope Shire	3,694	70.7%	1,144	21.9%	385	7.4%	4,144	75.9%	1,193	21.8%	125	2.3%
Miriam Vale Shire	1,349	68.4%	290	14.7%	334	16.9%	1,376	72.8%	421	22.3%	94	5.0%
Gladstone Regional Council	10,997	64.5%	4,810	28.2%	1,244	7.3%	11,923	68.5%	2,996	28.7%	482	2.8%

Source: ABS Census Data, Community Profiles, 2001 &amp; 2006

## Section 7

## Accommodation

Table 7-9 Median House and Unit Prices (2007 &amp; 2008)

Locations	Median Prices – Houses						Median Prices – Flats/Units					
	December Quarter 2007			March Quarter 2008			December Quarter 2007			March Quarter 2008		
	12 mths to end of Dec 2007	Change over 1 yr.	Change over 5 yrs.	12 mths to end of March 2008	Change over 1 yr.	Change over 5 yrs.	12 mths to end of Dec 2007	Change over 1 yr.	Change over 5 yrs.	12 mths to end of March 2008	Change over 1 yr.	Change over 5 yrs.
Roma (LGA)	\$250,000	22.0%	194.1%	\$255,000	16.7%	168.4%						
Banana Shire	\$273,000	20.0%	245.6%	\$275,000	15.5%	248.1%						
Duaranga (LGA)	\$242,5000	1.0%	491.5%	\$249,000	0.8%	398.0%						
Emerald (LGA)	\$350,000	7.7%	159.3%	\$345,000	1.5%	146.4%	\$275,000	1.9%		\$290,000	5.5%	
Peak Downs (LGA)	\$256,000			\$257,500	0.0%							
Gladstone (LGA)	\$343,000	33.6%	154.1%	\$355,000	28.6%	144.0%	\$235,000	40.7%	193.8%	\$279,000	48.0%	235.6%
Calliope (LGA) – Urban	\$375,000	23.0%	139.6%	\$393,500	19.2%	136.3%	\$278,000	40.8%	164.8%			
Calliope (LGA) – Rural	\$500,000	40.8%	150.0%	\$530,000	42.3%	152.4%						
Miriam Vale (LGA) – Urban	\$311,250	17.5%	110.3%	\$320,000	6.7%	116.2%	\$345,000	-32.0%	58.6%	\$320,000	-35.4%	42.2%
Miriam Vale (LGA) – Rural	\$320,000	16.4%	166.7%	\$338,000	22.9%	160.0%						
Mackay (LGA)	\$383,500	3.6%	170.1%	\$385,000	2.1%	156.7%	\$285,000	14.0%	137.5%	\$287,000	8.9%	139.2%
Rockhampton (LGA)	\$290,000	25.0%	163.6%	\$295,000	18.0%	156.5%	\$256,500	25.1%	143.1%	\$258,000	7.5%	128.3%
Brisbane (LGA)	\$445,000	16.3%	81.6%	\$470,000	20.5%	82.1%	\$350,000	12.9%	75.0%	\$367,000	14.7%	74.8%



## Section 7

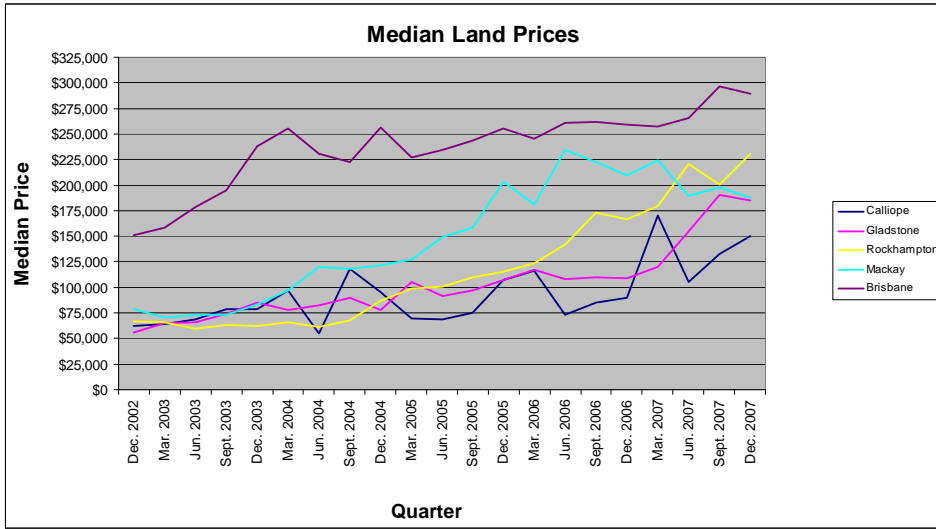
## Accommodation

Source: REIQ – Median House and Townhouse/Apartment Prices, Winter Edition – QLD Property & Lifestyle, 2008 (note: Roma and Banana Shire not considered to be significant townhouse and unit market area up until survey)

Section 7

Accommodation

Figure 7-3 Comparative Median Land Prices (Dec 2002 – Dec 2007)



## Section 7

## Accommodation

Table 7-10 Median Rental Data (2003–2008)

		Year	Roma	Emerald	Gladstone	Mackay	Rockhampton	Brisbane
Houses	2 Bedroom	2003	\$110	\$160	\$200	\$160	\$140	\$210
		2004	\$130		\$190	\$165	\$140	\$225
		2005						
		2006	\$140		\$160	\$225	\$165	\$260
		2007	\$185	\$250	\$220	\$260	\$225	\$285
		2008	\$200		\$260	\$300	\$230	\$320
	3 Bedroom	2003	\$140	\$220	\$220	\$185	\$160	\$225
		2004	\$165	\$240	\$220	\$207	\$165	\$240
		2005	\$185	\$280	\$200	\$250	\$175	\$260
		2006	\$210	\$340	\$225	\$310	\$210	\$280
		2007	\$250	\$360	\$280	\$350	\$250	\$315
		2008	\$260	\$360	\$300	\$360	\$270	\$350
	4 Bedroom	2003	\$160	\$270	\$280	\$235	\$200	\$265
		2004	\$170	\$300	\$270	\$270	\$195	\$300
		2005	\$220	\$340	\$250	\$300	\$230	\$330
		2006	\$250	\$400	\$280	\$390	\$270	\$370
		2007	\$270	\$450	\$330	\$420	\$310	\$410
		2008	\$300	\$450	\$360	\$450	\$320	\$410
Flats/Units	1 Bedroom	2003		\$110	\$120	\$100	\$80	\$155
		2004		\$110	\$140	\$110	\$95	\$170
		2005		\$180	\$110	\$130	\$95	\$185
		2006		\$150	\$155	\$170	\$110	\$200
		2007		\$200	\$123	\$200	\$150	\$230
		2008		\$280	\$125	\$220	\$160	\$250
	2 Bedroom	2003	\$95	\$155	\$165	\$130	\$120	\$200
		2004	\$110	\$165	\$165	\$140	\$125	\$220
		2005	\$120	\$190	\$145	\$165	\$130	\$240
		2006	\$120	\$200	\$165	\$200	\$150	\$260
		2007	\$150	\$240	\$190	\$250	\$180	\$300
		2008	\$160	\$250	\$220	\$270	\$200	\$340
	3 Bedroom	2003		\$180	\$220	\$175	\$160	\$240
		2004		\$200	\$220	\$195	\$165	\$260
		2005		\$230	\$190	\$225	\$180	\$280
		2006		\$300	\$220	\$290	\$200	\$310
		2007		\$320	\$250	\$350	\$220	\$350
		2008		\$345	\$320	\$410	\$260	\$380

## Section 7

## Accommodation

		Year	Roma	Emerald	Gladstone	Mackay	Rockhampton	Brisbane
Townhouses	2 Bedroom	2003						\$200
		2004						\$220
		2005						\$230
		2006			\$200			\$255
		2007			\$180			\$280
		2008						\$330
	3 Bedroom	2003						\$230
		2004				\$220		\$240
		2005				\$300		\$260
		2006			\$220			\$275
		2007				\$380		\$315
		2008				\$440		\$350

Note: Blanks denote a lack of sufficient data (i.e. insufficient rental bond lodgements) to provide a meaningful median figure

## 7.4 Conclusions and Key Findings

### 7.4.1 CSG Field

The GLNG project is expected to have minimal impact on the existing and forecast accommodation requirements of Roma and the surrounding region.

During construction, Santos has estimated that approximately 90% of imported construction workers will stay in TAFs, with the remaining 10% (around 37 workers) staying in rental or hotel accommodation in Roma and other nearby centres such as Chinchilla, Miles or even Toowoomba. This is likely to only have a negligible impact on the availability of rental accommodation, as the impact will be spread over a 25 year timeframe and the “maximum” impact is not expected before 2013 (i.e. four years from now). Other factors, such as rental costs, should not be adversely affected.

During operations, Santos has estimated that 50% of the workforce (in the order of 380 workers) will already reside in communities within the region (including communities from Toowoomba up to Emerald). Field workers will generally stay in TAFs during their shift operations. Administrative and managerial workers in the Roma office who do not live within daily commuting distance of Roma will stay in hotels/motels or company-provided accommodation. Staff will return home at the end of the shift roster. The other 50% of workers will operate on a Fly In, Fly Out (FIFO) or Drive In, Drive Out (DIDO) basis and will stay in TAFs during their roster, therefore not affecting residential accommodation in the local area. Again, there may be increased demand on hotel/motel accommodation if required by the imported workers workforce.

While most imported workers workers will be FIFO/DIDO workers, some may eventually move into the area with their families. The rate of this potential movement will be small and will be aligned with the availability of additional accommodation. In summary, it is expected that the overall impact of the GLNG project on residential accommodation within the CSG area will be minimal.

The increased demand on hotel/motel accommodation could be an issue, given that many hotels/motels are already frequently booked out. Hoteliers report that this is in part due to groups booking large quantities of rooms in advance. Sometimes the rooms are not required but groups do not cancel their bookings, meaning

## Section 7

## Accommodation

rooms are left unoccupied. The ability of the business sector to build and operate additional motel accommodation, given firm demand from the project workforce, is assessed as reasonably high.

### 7.4.2 Gas Transmission Pipeline

Almost all gas transmission pipeline construction workers will be accommodated in a series of self-sufficient TAFs erected along the gas transmission pipeline route. The proposed locations for the facilities have yet to be confirmed. There are a series of criteria on selecting appropriate sites to minimise impacts to surrounding residents and the environment.

There will be an ongoing operational workforce of 15-20 personnel. In summary, there will be a negligible impact on housing demand and supply associated with the gas transmission pipeline component of the project.

### 7.4.3 LNG Facility

Santos is proposing the entire construction workforce (both local and imported workers) stay at a construction accommodation facility (CAF) at the LNG Facility on Curtis Island during their 10 day work roster. Operational workforce will be required from project year four (2013). Around 40% (up to 100 workers) of the operational workforce will be sourced from outside of the local area and will relocate to the Gladstone region. These workers will require long term/permanent accommodation in the region. Members of the construction and operation workforce who are sourced locally and are residents of the area are assumed to have existing accommodation requirements.

#### **Construction**

The construction phase will have minimal impact on housing demand and supply, as all workers will be located on a CAF and the imported workforce will be on FIFO/DIDO work arrangements, returning to their homes at the end of the roster. This report has assumed that few families/partners of the imported workforce will accompany workers into the area. Based on this assumption, there will be limited impact on the housing demand and supply in the Gladstone region. However, if imported construction workers are accompanied by their families/partners, and they require accommodation, there could be increased pressure on housing supply, particularly the rental market.

#### Curtis Island CAF

Santos proposes to develop a CAF on Curtis Island within the LNG Facility. The CAF would have a capacity of around 2,000, which would enable the full workforce to stay on the island during their work roster. Reasons for this option include logistical and economic efficiency; minimising contact and disruption to the community; and health and safety improvements by minimising transportation requirements.

Discussion between the proponent and government, industry groups and the community shows there are a range of views on developing and using CAF for workforce accommodation. CAF-style accommodation is recognised by Gladstone Regional Council as being required in the region to meet workforce accommodation demand. Calliope Shire is seen as the favoured area for this style of development.

Santos is intending to obtain petroleum leases, a pipeline licence and a petroleum facilities licence. Each of these licences authorise the construction of the CAF, which is a *temporary* accommodation facility. In addition a D.A. addressing GSDA development scheme would need to be lodged to the coordinator general. Accommodation facilities are not identified in the scheme as suitable land use. As such a CAF falls under

## Section 7

## Accommodation

column 2c of Schedule 7 – “uses that are considered likely to compromise the purpose of the land use designation”

The CAF development will involve a lengthy fabrication and construction process which could be as long as 18 months if fabrication is limited to one supplier. Given the time involved in development applications, fabrication and erecting the CAF, Santos will need to commence arrangements for CAF development to be ready in time for commencing construction of the project.

There is no existing infrastructure or services (including power, water or telecommunications) on the proposed development site. Service provision will be a considerable logistical exercise due to the size of the CAF and location.

The current proposed CAF site is located on the LNG Facility site. Once LNG Facility construction is complete, some parts of the CAF may remain on site, such as lunch and canteen facilities, ablution blocks and some rooms. The majority of the facility will be decommissioned and removed off-site. Santos will liaise with government agencies and other stakeholders on post-use options.

Some potential workers may consider the requirement to stay at the CAF unreasonable and choose not to work on the Project, which could be an issue for the development given the existing skills shortage. However, CAF accommodation is becoming more accepted within the industry as a standard form of accommodation.

Part of the reasoning for a contained CAF on Curtis Island is to minimise disruption and interference to the resident community. CAF rules and procedures will be in place to deter workers staying at CAF going to South End or other communities during their roster.

Workers will be on a rotating *10 day on, 4 day off* shift which will result in a regular flow of workers to and from Gladstone. Workers will assemble at a location (away from urban areas) and then be shuttled by charter bus to and from a dock where the ferry takes workers to the project site. The proposed transport arrangements are intended to minimise traffic generated by the project and avert traffic congestion in the local area. The transport study within the EIS provides further details of this.

Most workers are expected to be on FIFO/DIDO arrangements and are not expected to stay in the Gladstone region during their rostered time off. However, some will likely stay during their time off and will likely seek short term accommodation options such as hotel/motels and caravan parks. There is a large tourist/short term accommodation stock in the Gladstone region (825 rooms/2384 bed spaces in Gladstone and Calliope Shires recorded in June 2008). Although high occupancy rates were recorded, there were 282 rooms and 328 on-site vans/cabins/sites available at any given time during the June quarter. Based on availability in the June 2008 quarter, a significant amount of accommodation demand generated by the project could be met by the holiday/short term accommodation stock.

### **Operations**

Operational workforce will be required from project year four (2013). Workers sourced from outside of the local area are expected to seek long term accommodation. The number of workers from outside of the local area (and requiring long term accommodation) will gradually increase and peak in 2021, when around 100 units of housing are required. Based on the existing housing patterns of the area, this equates to around 10.3 ha of land required (refer Table 7-11).

## Section 7

## Accommodation

**Table 7-11 Residential Housing and Land Requirements for 2021 Generated by Operational Workforce**

Accommodation Type	Total Number Units of Housing	Total Land Required
Residential - Single Unit Dwelling	90	9 ha (assumed density 10 dwellings per ha).
Residential - Multi Unit Dwelling	10	1.33 ha (assumed density 15 dwellings per ha).
Total	100	10.33 ha

#### 7.4.4 Cumulative Impacts of Other Projects

The Department of Housing, Department of Communities and various staff from the Gladstone Regional Council indicated cumulative housing impacts are important to assess and offered valuable insight into this process (pers. comm., B. O'Rourke, 2008) (pers. comm., E. Boardman) (pers. comm., V. Laverick, 2008) (pers. comm., A. Kearns *et al*, 2008). There are a number of key cumulative housing impact considerations that affect the project and others like it in the region. These include:

- Land for CAFs/TAFs;
- Land for permanent dwellings; and
- Effect on housing supply and prices.

These are discussed in more detail as follows.

##### **Land for CAFs/TAFs**

The cumulative impact of other projects which may also require such facilities can be considered in terms of multiples of the GLNG CAF/TAF requirements. If all CAFs/TAFs are expected to require an area equivalent to that required by GLNG, the overall area of land required could become significant. Additional CAFs/TAFs could be expected to not only have an impact on rural land uses in terms of directly using land that could be otherwise used for rural purposes but also in terms of possible impacts on the uses of adjoining rural land.

Cumulative impacts are expected to be experienced in relation to services and infrastructure required to service other residential land. Gladstone Regional Council has already shown that this is the case in relation to town water supplies. Noticeable cumulative impacts may also be experienced in relation to the local road networks, depending on the extent to which CAFs/TAFs are located within the same catchment that is serviced by any particular road.

The above comments are based on an assumption that all CAFs/TAFs would be independent of each other when considering the cumulative impacts of several projects. In reality, it is just as possible that projects will not just occur concurrently to each other and that projects may take place in a manner which will enable CAFs/TAFs to be used for more than one project over extended periods of time without the need to create new sites.

Detailed consideration of such impacts is best undertaken as part of a development application assessment as part of the Integrated Development Assessment System (IDAS) under the Integrated Planning Act 1997.

## Section 7

## Accommodation

### ***Land for Permanent Dwellings***

Cumulative impacts in the CSG Field area must be considered in terms of the type of activity that is expected to occur in this area. For the purposes of this assessment, it is assumed that the area is only likely to be used for other similar gas projects. This type of use, as typified by the subject project, is not expected to have a heavy long term housing demand. A number of additional projects will be constrained by the availability of sufficient gas fields. Economies of scale are also likely to be created with respect to workforces, especially if mergers or other partnerships are created to provide for more efficient extraction and maintenance methods. A similar situation is expected to apply to the Pipeline route.

The GLNG project represents a relatively small proportion of the residential housing demand for the Gladstone region as a whole (exclusive of the GLNG requirement). As in the case of TAF accommodation, permanent dwelling need should be considered in terms of multiples of the GLNG impacts.

Given that Gladstone has a large supply of residential land, the principal impact will be to use the existing supply of land more quickly than would otherwise be the case. Theoretically (and depending on the number of similar projects, i.e. in terms of impact on permanent residential demand), residential land may be fully utilised well before 2027 (when supply is expected to become critical, based on the region's 'own' growth needs).

### ***Effect on Housing Prices***

The issue is not likely to be the supply of land. This is a matter that can quite easily be dealt with through some additional strategic planning. A more critical consideration will be that of the region's capacity to develop the necessary land and build the needed dwellings. As is the case with GLNG, the impacts are only likely to be early in the course of the individual projects. Critical times can be expected where the phases of projects overlap in terms of maximum worker requirements. Such a situation can be expected to create short term stress on housing availability. The extent to which this stress is maintained is dependent on the time that it will take to meet the demand. Any extended period during which the demand is high and supply of dwellings is less than that which is required is likely to have an impact on prices. As soon as the demand is catered for, there are also likely to be periods of decreasing demand after the 'spikes'. This is likely to have a steadying or downward trending influence on housing availability and associated prices.

## **7.4.5 Accommodation Strategy and Recommendations**

### ***CSG Field***

The Roma, Fairview and Arcadia Valley CSG fields will primarily be affected by a large construction workforce and a small ongoing operational workforce.

The proposed locations for the TAFs have yet to be confirmed. Location criteria for accommodation facilities include:

- Reasonable proximity to CSG field;
- Appropriate standard of road access;
- Suitable distance from a watercourse;
- Minimal site works required; and
- Potential to access main electricity grid if required.



## Section 7

## Accommodation

Dependent on location, the TAFs may be totally self-sufficient, with their own water supply, temporary waste disposal system, food and gas (for cooking) supplies, and power.

Santos would lodge a development application to the respective Council for approval of the TAFs. The TAFs would likely be operated and managed by a contractor.

The operational workforce for the three fields is expected to reach a maximum of 285 persons by 2031 (with numbers gradually increasing to this level between the start of the project and 2031). Santos has estimated that approximately 50% (143 workers) will already reside within the local community and thus not require accommodation. The remainder of the workers will operate on a FIFO or DIDO basis and will stay in TAFs during their roster. Rosters will coincide with flight arrivals/departures to minimise workers requiring interim overnight stays while waiting for flights.

It has been noted that some companies/projects are advance booking hotel/motel accommodation that isn't required. URS suggest working with hotels in the area to develop a system which confirms hotel booking requirements, and allows hotel/motel units to be available for others if not needed for Santos.

### ***Gas Transmission Pipeline***

Almost all pipeline construction workers will be accommodated in TAFs, with some staying in motel accommodation at towns along the route. TAFs will be provided during the construction of the pipeline using a 'leap frog' process. A main TAF will be established with a typical 300 person capacity. As the line is constructed, smaller 'fly' TAFs will be located at the point where it becomes inefficient to travel back to the main TAF every day.

The proposed locations for the TAFs have yet to be confirmed. Location criteria for TAFs include those criteria detailed above.

The pipeline contractor will liaise with Council and other stakeholders to identify appropriate sites for development. Development applications will be lodged with the respective Councils for the TAFs.

Each TAF will be totally self-sufficient, with their own water supply, temporary waste disposal system, and food and gas (for cooking) supplies; however, the availability of local services and the capacity of these services will need to be considered. Land will be rehabilitated once the TAFs are decommissioned.

The ongoing operational workforce for the pipeline component is expected to be no more than four persons sourced from the existing community.

### ***LNG Facility***

All of the imported workforce is anticipated to be accommodated in the CAF on Curtis Island and therefore unlikely to move to Gladstone. During operations, the locally sourced workforce is assumed to have existing accommodation arrangements. Operational workers recruited from outside the area are expected to relocate to the area and seek long term accommodation. Some of the imported workers construction workers will be accompanied by family and partners. This group, though not directly associated with the GLNG project, will generate the largest demand for housing in the Gladstone area.

GLNG actions to meet accommodation requirements include:

- Develop a CAF for the construction workforce;

## Section 7

## Accommodation

- Stimulate construction of housing and short term accommodation such as hotels, motels and relocatable home parks;
- Consider acquiring or leasing property to accommodate some workers and their families; and
- Promote accommodation for families outside of the Gladstone region.

### CAF Design & Development

Planning for the CAF should commence as soon as possible. Santos will continue to liaise with relevant stakeholders regarding CAF development, including Gladstone Regional Council, DIP, DoH and GEIDB.

Project design (in particular, provision of services) should be further developed so that these details are available to be submitted with a development application.

A CAF is currently proposed on the plant site. Santos should consider liaising with key stakeholders to develop a CAF on Gladstone State Development Area (GSDA) land which could be used by other entities proposing industrial development on Curtis Island once Santos no longer requires the facility. Further details on decommissioning are discussed below.

The CAF will require a development application (code assessable) to be lodged with Gladstone Regional Council. Santos may consider seeking *preliminary approval* prior to a development approval to ascertain support for the CAF on Curtis Island. The development application will likely be referred to state regulatory agencies (including EPA, DNRW, DoH and QFRS) for comment. The approval process is expected to be at least six to nine months.

Santos should have alternative accommodation options available if the Curtis Island development is not supported by key stakeholders and/or the development application is not approved. Appendix C has discussed accommodation options.

The CAF will be designed to be safe as practicable and will meet *all* applicable Australian standards and regulations. These will be addressed when a DA is submitted to the Council. The environmental management plan (EMP) for the CAF will cover environmental factors during construction and operation, such as dust and noise control, and weed management around the site. The EMP will also cover safety aspects for construction, such as fire safety.

Santos will commence discussion with CAF building contractors well in advance of project commissioning. Fabrication and erection of a CAF may be as long as 28 months if using a single contractor. Timeframe may be shortened if multiple building contractors are used.

### CAF Operational Management

A management procedure that adheres to regulations and Australian standards will be developed for operational aspects of the CAF, detailing fire safety; disease vectors, vermin controls and weed management; waste management; food preparation and storage; and hygiene.

The management procedure will also cover logistical arrangements and safety protocols for transportation of all the employees to and from work. Employees will park at a designated location situated suitably away from existing residential areas, from which they will be transported by bus to the dock. A private ferry will then transport workers to a landing jetty on the Curtis Island plant site. Workers will be returned to the designated car park using the provided ferry and bus service. A development application will be prepared for the designated car park/muster area.

## Section 7

## Accommodation

A rotation schedule is proposed for all employees based on a 10 day work schedule with four days off. There will be a staggered rotation to minimise work disruption (Bechtel, 2008). This schedule and the transport arrangements will minimise disruption to local residents and lower the overall safety risk by minimising travel.

Management and maintenance of the facility would likely to be outsourced to a third party vendor and aspects such as catering, waste management, goods supply and the like may be separately contracted out.

Once construction of the plant has finished, some components of the CAF may remain, such as lunch and canteen facilities, ablution block and overnight rooms for operational staff. The majority of the CAF will be decommissioned. Santos will liaise with key stakeholders on post-use options, including relocating facilities for use by other industrial entities on the island or providing affordable housing/relocatable home park on the mainland.

### Residential Development

A small number of the operational workers will be recruited from outside of the local area and expected to move into the area on a long term basis, thus requiring residential accommodation. Accommodation requirements for this group begin around year four of the project. As discussed in Section 7.2, some of the imported workers construction workers will be accompanied by family and partners. This group will create the largest demand for housing in the Gladstone area. Given the existing tight rental and property market, additional housing may be required to meet demand.

Santos will liaise with the real estate industry, building industry, Council and other stakeholders so that they are aware of the likely demand and can plan for this. The local building industry may be able to increase capacity by sourcing workforce from outside of the region.

Supply of residential accommodation could include:

- Increased development of higher density multiple unit dwellings in the area, motels, hotels, and relocatable home parks. There is presently an increase in development of higher density dwellings in the Gladstone CBD; and
- Prefabrication of dwellings outside the region.

### Leasing or Acquisition of Property

Santos may consider securing leases over existing rental properties in the Gladstone region or acquiring properties outright to provide accommodation.

### Holiday/Short Term Accommodation

Santos will consider discussing forecast accommodation requirements with the hotel/motel industry in the Gladstone region so they are aware of the potential demand for rooms.

### Promotion of Accommodation Outside of the Gladstone Region

There are a number of benefits for families locating to towns outside of the Gladstone region, including greater supply of housing and lower rents, lifestyle choice, shopping, health services and educational choices. Suitable towns around the Gladstone region include:

## Section 7

## Accommodation

- Rockhampton and Gracemere – 1.5hrs/110km north;
- Biloela – 1.5hrs/120km west; and
- Bundaberg – 2.5hrs/185km south.

## Section 8

## Project Workforce Requirements

## 8.1 Assumptions

The project has been separated into spatial and temporal boundaries as the workforce make up and skills vary for each. The spatial boundaries are consistent throughout the assessment as follows:

- CSG Field;
- Gas Transmission Pipeline; and
- LNG Facility.

Within each spatial boundary there are two temporal boundaries: Construction and Operations.

Within each sub-section of the project workforce requirements section, a table will display the workforce requirements throughout the project.

Table 8-1 presents the anticipated breakdown of workforce between local and imported workers for each area of the project and each phase of the project. Local refers to individuals living in the study area or within reasonable distance to the project. The definition of local varies between study areas, and is defined in each sub-section. An imported worker refers to individuals who do not live in the study area or within reasonable distance to the project. The imported workers are expected to be fly-in fly-out (also known as FIFO).

Imported workers' will be housed in temporary accommodation facilities (TAFs) on or near site while on shift for the CSG field and gas transmission pipeline, or the construction accommodation facility (CAF) on Curtis Island for the LNG facility. In many instances locals will also be housed in TAFs because of the logistics and safety considerations of moving them to and from the work sites daily. This will be assessed on distance to site and accessibility once TAF locations are determined. TAF locations will be within reasonable distance to work sites to reduce travel to and from the work site as well as subsequent fatigue.

**Table 8-1 Percentage of Workforce Sourced Locally and Imported for Spatial and Temporal Project Boundaries**

Worker Location	CSG Field		Gas Transmission Pipeline		LNG Facility	
	Const <sup>1</sup>	Oper <sup>2</sup>	Const <sup>1</sup>	Oper <sup>2</sup>	Const <sup>1</sup>	Oper <sup>3</sup>
<b>Local</b>	10% (5-15%)	50% (45-55%)	<5% (0-5%)	90% (85-100%)	35% (30-40%)	60% (50-70%)
<b>Imported workers</b>	90% (85-95%)	50% (45-55%)	~ 100% (95-100%)	10% (0-15%)	65% (60-70%)	40% (30-50%)

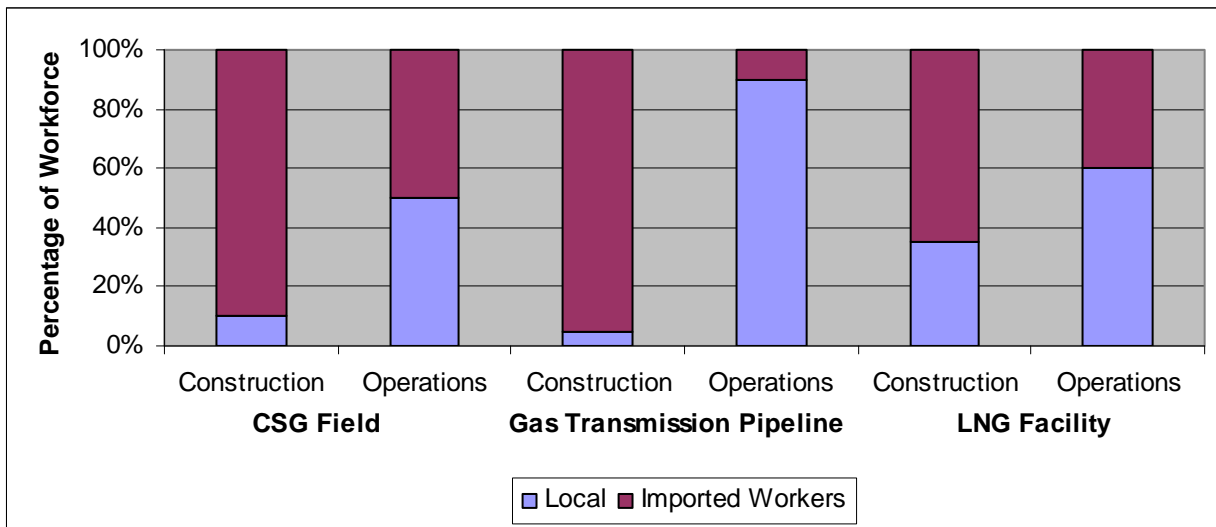
Note: <sup>1</sup> = Construction. <sup>2</sup> = Operations. The number is the anticipated percentage of local or imported (FIFO) workforce in that phase at that location. Number in brackets is anticipated range. The percentage of local employees will depend upon workforce availability. LNG Facility construction workforce demographics will be determined by Bechtel. <sup>3</sup> = All LNG operations workers (Local and Imported) will be housed in Gladstone.

Figure 8-1 illustrates the breakdown of local to imported workers assumptions. The construction phases for all three study areas will require more imported workers labour due to the size of the workforce required, the specialty skills and contractors, as well as the ability of the local workforce to meet demand. All areas will employ a higher percentage of locals during operations as the number of workers required is less and the duration of operations is longer term. The CSG field ratio remains lower because of the ability of the area population to meet demand.

## Section 8

## Project Workforce Requirements

Figure 8-1 Local to Imported Workers Workforce for Construction and Operations in all Study Areas



Santos would prefer to hire 100% local for all areas and phases of the project but is aware that this is highly unlikely due to labour market supply, individual preferences and local skills availability. The assumptions in Table 8-1 are based on predicted workforce availability in the various study areas, and the likely sourcing of some contractor workforces undertaking certain aspects of the project. Bechtel has been appointed the contractor for the LNG Facility so will be responsible for resourcing for this phase. Workforce demographics for this phase will therefore be determined by Bechtel.

Santos is committed to training locals and will work towards the highest feasible proportion of locals working in all areas and phases of the project. Some specialty skills and crews, particularly during construction, will be required and will need to be outsourced to sub-contractors. Sub-contractors will be encouraged to employ locally first where possible.

The potential social impacts were assessed based on the above assumptions and the following workforce data. Santos would prefer to hire locally for all phases and study areas of the project but is aware there is insufficient supply and appropriate skills available locally to achieve this. All assumptions with regard to the ratio of local to imported workers were based on the most recent market data and experiences of Santos.

## 8.2 CSG field

As part of the social assessment it was found that individuals living in Dalby and Roma regional councils tend not to differentiate if you live anywhere in that area. For that reason "local" in the study area has been defined as individuals living from Toowoomba west. Toowoomba was selected because it is the geographical divide between the coastal communities and the inland communities associated with the CSG field. For the Roma Centre workforce "local" has been defined as an individual living within 50 km of the town of Roma (i.e. within reasonable distance to commute to work daily).

The workforce numbers for all aspects of the CSG field, timelines and schedules are highly speculative at this stage. As more detailed development plans and operation strategies are prepared, more accurate assessments of the workforce requirements will be possible. Given the nature of oil & gas development, the details will be known when exploration wells identify productive areas, a field development plan is drafted and negotiations with landholders are conducted. Workforce number estimates are provided annually from 2010 to 2014 for each

## Section 8

# Project Workforce Requirements

CSG field. Due to the uncertainty in field development, an estimated workforce number is provided for each 5 year period after 2014.

### 8.2.1 Construction Workforce

During the construction of the CSG fields, it is anticipated that 90% of the workforce will be housed in the temporary accommodation facilities (TAFs) with the remainder in local communities. Those in the local communities are expected to be supervisors and some contractors, though the majority of contractors will also stay at a TAF while working at the site, as is common practice in the industry. The estimate of 90% is conservative to minimise the potential to underestimate the effects on local accommodation. An assessment of the accommodation can be found in Section 7 as well as in the Accommodation technical report.

The construction of the CSG fields is scheduled to occur in Roma, Fairview and Arcadia Valley between 2010 and 2034. The construction workforce will be primarily for compressor station installations, drilling and completions, and other construction which will include constructing the TAFs, water management facilities, in-field pipelines and other associated infrastructure.

#### **Compressor Station Installation**

The construction workforce required to install compressors throughout the CSG fields is anticipated to be approximately 15 to 60 workers covering installations at 2 – 4 sites simultaneously. The compressor station construction schedule is assumed as follows:

- 6 Main Compressor sites: 6 compressors at each site, making a total of 36 main compressors;
- 12 Nodal Compressor sites per Main compressor site: 2 compressors for each Nodal Compressor site, making a total of 144 Nodal Compressors;
- 1 Boost compressor site with 4 compressors; and
- 4 Storage compressor sites each with 4 compressors, making a total of 16 compressors.

The exact timing and location of the construction is currently unknown however, the following assumptions have been made:

- There will be 1 Main Compressor site with 12 Nodal Compressor sites installed every year from 2010 to 2015;
- There will be 1 Boost Compressor site installed in 2013; and
- There will be 1 Storage Compressor site installed every year from 2010 to 2013.

Based on these assumptions, there will be a construction workforce of approximately 15 to 60 workers building compressor stations from 2010 to 2015. It is assumed that approximately half of these workers will be in the fields at any given time, and they will all be housed in TAFs near or adjacent to the construction site they are working on while on their work rotation. Since all construction workers will be housed in the TAF, they are all categorised as FIFO employees, even if they permanently reside within the CSG field study area.

#### **Drilling and Completions**

The following drilling and completion requirements are estimated for 2010:

- 6 drilling rigs working 365 days per year with a total workforce of ~168 people (~28 people per rig);

## Section 8

## Project Workforce Requirements

- Four workover rigs working 365 days per year with a total workforce of ~76 people (~19 people per rig);
- Civil works to prepare and remediate the drill sites with a workforce of 22 people;
- A total of 266 workers conducting drilling and completion related activities in the CSG fields.
- Santos estimates a total of 1,200,000 work hours per year for drilling and completion related activities during this time.

The drilling and completion requirements for 2011 to 2014 are as follows:

- 2011: 180;
- 2012: 200;
- 2013: 80; and
- 2014: 130.

The following drilling and completion requirements are estimated for 2015 to 2034:

- 3 drilling rigs working 365 day per year with a total workforce of ~84 people (~28 people per rig);
- 3 workover rigs working 365 day per year with a total workforce of ~57 people (~19 people per rig);
- Civil works to prepare and remediate the drill sites with a workforce of 12 people;
- A total of 153 workers conducting drilling and completion related activities in the CSG fields.

Santos estimates a total of 670,000 work hours per year for drilling and completion related activities for the remainder of the project.

### 8.2.2 Operational Workforce

#### ***Santos Workforce***

It is assumed that the Roma Centre operation workforce will live locally. The field operation workforce will be housed in TAFs because of the large area of operations and the safety considerations and logistics of having workers scattered throughout the CSG fields. Exceptions may be made when the distance from the TAF to the work site is comparable to the distance between a worker's local community and the work site; however, this would need to be assessed on a case-by-case basis. At this time it assumed all operational workers will be housed in TAFs while on their work rotation.

For the purposes of this report, numbers provided are based on current workforce numbers in Santos' Fairview operation extrapolated for the number of operational wells required by Santos to extract gas to meet the demand of one LNG train. The following assumptions have been made:

- Figures include Santos operations manpower, contractors (TAF personnel, road maintenance contractors, episodic personnel that may be employed to assist with compressor overhauls, episodic plant shutdowns, etc.) and water management staff;
- Does not include personnel associated livestock management, gas injection or gas storage or any office or visitor personnel that could be expected to visit site;



## Section 8

## Project Workforce Requirements

- All field personnel will be FIFO/DIDO, therefore the number of personnel on site (in Roma, Fairview, and Arcadia Valley fields) at any time will typically be half of the workforce;
- Roma Centre personnel (see below) live in the town of Roma, are not Fly in Fly out;
- Assumes that while the number of drilled wells substantially increases from 2014 to 2034, many of the new wells will replace older wells hence the number of wells that Santos will need to operate will increase, but not at the rate of the number of wells drilled;
- Operations workforce will be on a 14 day on, 14 day off rotation and Roma Centre will be on a five days on, two days off standard work week;
- The numbers are highly sensitive to the rate of rate build in the asset areas and are subject to development plans, operation strategies, technologies employed, etc. and
- Details of well numbers can be found in the Project Description of the EIS.

### **Roma Centre**

The following employment opportunities are expected for the Roma Centre workforce by category and skill required:

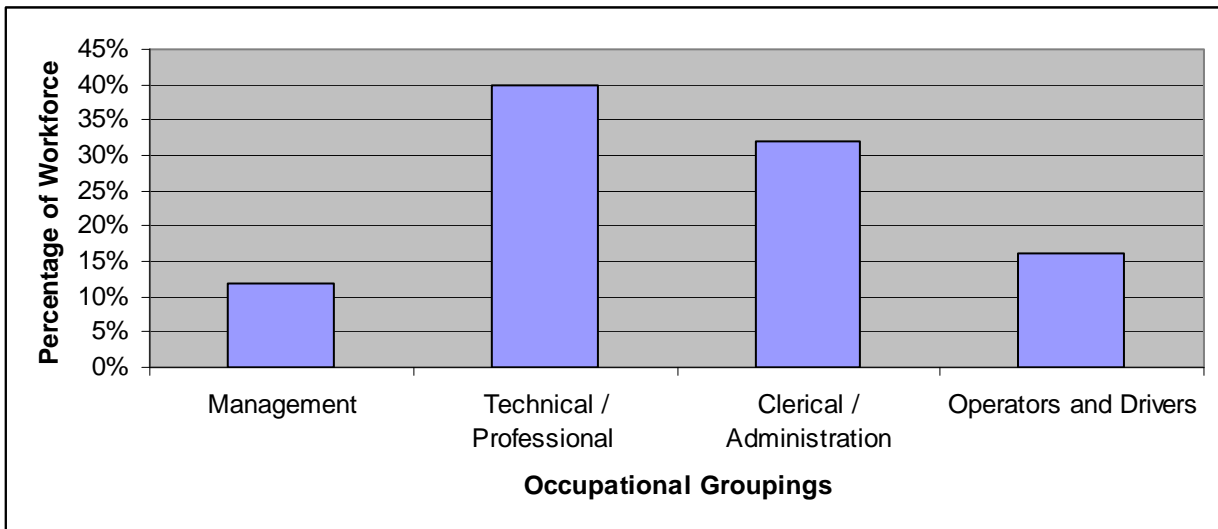
- Management – Supervisory;
- Technician / Professional – OHSE;
- Technician / Professional - Training;
- Technician / Professional - Environmental support;
- Technician / Professional - Landholder support;
- Operators and Drivers; and
- Clerical and Administration.
- Santos anticipates approximately 26 employees in 2010, increasing to 54 by 2014. The exact numbers for each position are not finalised. Figure 8-2 illustrates the percentage breakdown of Roma Centre staff anticipated by Santos.

Santos would prefer to hire all positions locally for the Roma Centre but since the unemployment rate is so low in Roma and there is a shortage of some skills locally, Santos assumes the ratio for local and imported workers required will be approximately 50:50. All Roma Centre staff are assumed to reside in Roma or Roma Regional Council, so 50% will have to relocate to the area.

## Section 8

## Project Workforce Requirements

Figure 8-2 Estimated Roma Centre Operations Workforce by Percentage to 2014



The proportions of the workforce by category will be determined based on the requirements at the time.

**CSG fields**

The following employment opportunities are expected for the Roma, Fairview and Arcadia Valley CSG field workforces by category and skill required:

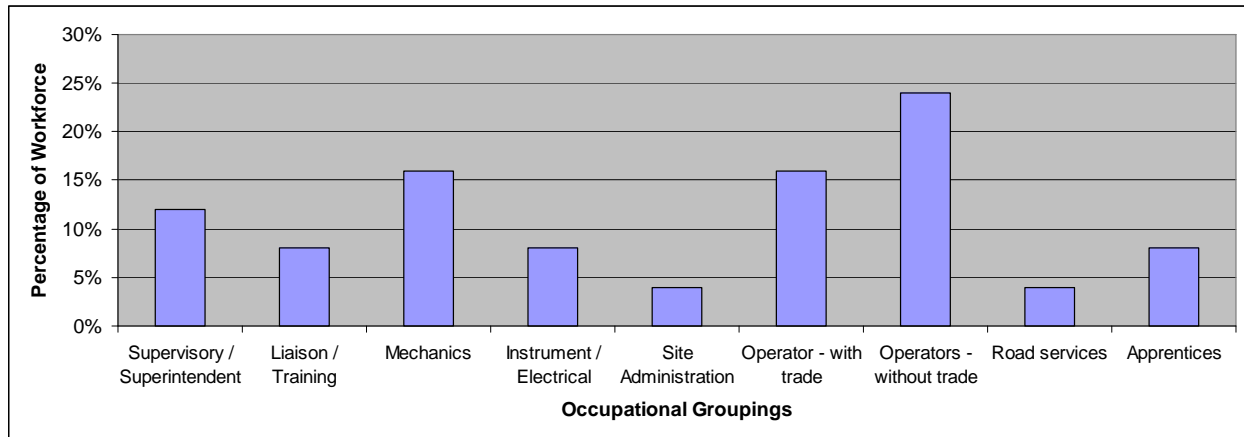
- Management – Supervisory / Superintendent;
- Technician and Trade - Training;
- Technician and Trade - Mechanics;
- Technician and Trade – Instrument / Electrical;
- Clerical and Administration;
- Technician and Trade – Operator with trade;
- Technician and Trade – Operator without trade;
- Technician and Trade – Road Services; and
- Apprentices – various.

The proportions of different skilled personnel required in each field will depend on development plans, operation strategies and technologies employed. The assumed proportions of various skills presented in Figure 8-3 are based on Santos experience in other oil & gas fields. Management positions are generally recruited from the technician and trades people.

Section 8

Project Workforce Requirements

Figure 8-3 Estimated Roma, Fairview and Arcadia Valley CSG field Operations Workforces by Percentage to 2014



The breakdown of workforce by percentage and occupational grouping gives an indication of what skills are required during operations. As discussed in the assumptions above, only about half of those listed will be in the fields at any given time as the rest will be on days off.

**Total Operations Workforce**

The total workforce was estimated using the assumptions listed above as seen in Table 8-2.

Table 8-2 Estimated Total Operations Workforce by Area and Year

Year	Roma Centre Office	Roma CSG Field	Fairview CSG Field	Arcadia Valley CSG Field	Total
2010 to 2014					
2010	29	62	137	20	248
2011	39	123	198	27	387
2012	45	185	258	19	507
2013	53	245	320	62	680
2014	57	245	320	62	684
Beyond 2014					
2019	59	252	335	82	728
2024	60	260	344	99	763
2029	62	266	339	99	766
2034	62	270	339	99	770

Note – Workforce numbers are estimates based on previous Santos experiences, and may change in the future.

**8.2.3 CSG field Totals – Construction and Operations**

Table 8-3 presents an estimate of the total construction and operation workforce in the three CSG fields and Roma Centre (CSG field Study Area) from 2010 to 2034. Estimates every five years are provided beyond 2014 due to the uncertainty of development plans and the associated workforce numbers. Note that this does not

## Section 8

## Project Workforce Requirements

equate to the workforce in the study area at any given time as the workers will be on different schedules and work rotations. In the CSG fields there will likely be approximately 50% of the workforce on site at any one time, with slightly more on week days, and slightly less on weekends.

**Table 8-3 Total CSG Field Study Area Workforce Numbers 2010 to 2034**

Area	2010	2011	2012	2013	2014	2019	2024	2029	2034
<b>Construction</b>									
Compressor Construction	20	50	60	20	15	0	0	0	0
Drilling	266	180	200	80	130	153	153	153	153
General Field Construction	500	700	700	700	600	31	31	31	31
<b>Operations</b>									
Roma Centre	29	39	45	53	57	59	60	62	62
Roma CSG field	62	123	185	245	245	252	260	266	270
Fairview CSG field	137	198	258	320	320	335	344	339	339
Arcadia Valley CSG field	20	27	19	62	62	82	99	99	99
<b>Total</b>	<b>1,034</b>	<b>1,317</b>	<b>1,467</b>	<b>1,480</b>	<b>1,429</b>	<b>912</b>	<b>947</b>	<b>950</b>	<b>954</b>

Note: Due to the inaccuracies of estimating workforce numbers beyond 2014, estimates every five years are provided for that timeframe. Numbers may change based on gas field productivity, emerging technologies, government regulations or several other potential variables and are therefore provided as an estimate based on the current information available.

Based on the workforce numbers and estimates presented above, there will be a peak workforce of approximately 1,500 workers employed in the study area in 2013, before the workforce drops down to approximately 925 for the remainder of the project. Although the numbers provided appear to be exact numbers (i.e. 1,480 as opposed to 1,500), they are actually estimated based on the values and assumptions discussed in detail in the SIA technical report, and are subject to change.

### 8.3 Gas Transmission Pipeline

The Gas transmission pipeline is exclusively a construction effort, with the operational workforce less than 10 individuals across the entire route.

#### 8.3.1 Construction Workforce

The term local for the gas transmission pipeline is anyone who resides in any of the regional councils in which the route traverses. Individuals from adjacent regional councils approximately 100 km from the route would also likely be considered local because of the country Queensland lifestyle they share. Closer to the coast, people from Rockhampton Regional Council and Gladstone Regional Council would also be considered local as the Gas transmission pipeline traverses Gladstone Regional Council to the LNG Facility and is close in proximity to Rockhampton Regional Council. As seen in Table 8-1, almost the entire construction workforce is anticipated to be imported workers because Santos will commission a contractor to build the pipeline, and these contractors generally already have specialty crews they use to undertake the work. In addition, unemployment is relatively low along the route and the population is not of sufficient size to meet the skill demands of the project. Construction is anticipated to commence in Gladstone and progress to Fairview in sequence along the route.

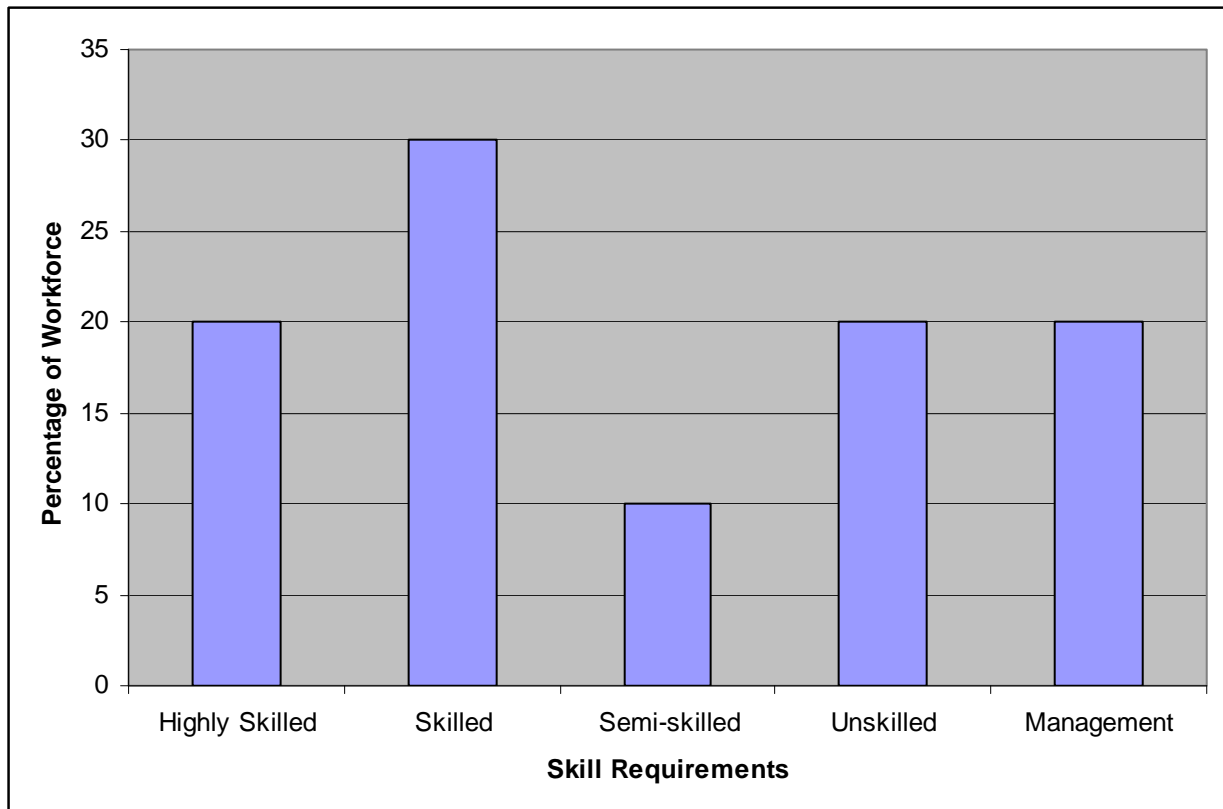
## Section 8

## Project Workforce Requirements

The construction workforce is anticipated to be approximately 1,000 individuals spread over two to three main construction temporary accommodation facilities (TAFs), and one or two satellite TAFs mid-way between the main facilities. These TAFs will move along the route as the pipeline is constructed. The pipeline construction is anticipated to occur over 18-24 months. Workforce rotations are anticipated to be four weeks on and one week off.

The construction workforce includes the workers required on the RoW to construct the pipeline itself as well as transportation and support staff. The breakdown of occupational groupings by percentage of the overall workforce is presented in Figure 8-4.

**Figure 8-4 Pipeline Construction Workforce Numbers by Skill Level Required**



Source: Santos

Some of the positions within each skill requirement are listed below as examples:

- Highly skilled:
  - Welders, electricians, x-ray technicians, etc.
- Skilled:
  - Plant equipment operators, haul truck drivers, etc.
- Semi-skilled:
  - Apprentices, traffic controllers, fork-lift operators, etc.

## Section 8

# Project Workforce Requirements

- Unskilled:
  - Cleaners, delivery drivers, general labourers, etc.
- Management/Office Staff:
  - Managers, engineers, professional staff, etc.

The workforce will need to be transported to site (likely FIFO and DIDO - bus) and will therefore be housed in the TAFs. Workers will likely be flown to Gladstone or Roma depending on which end of the RoW is being constructed at the time. Santos will transport workers to and from the TAFs. This will consist of four wheel drive (4WD) buses with a carrying capacity of 20 individuals. There is also the potential for workers to be transported via rail from Gladstone to Moura, though this option is still being explored (see Section 9.2.13).

### 8.3.2 Operational Workforce

The operational workforce for the pipeline is anticipated to be 15-20 individuals. To capture any variation, for much of the report the operational workforce is recorded and assessed at less than 20. This crew will be charged with operational activities and maintenance. In the unlikely circumstance of a major event, major works may be required; however major works to the pipeline and its infrastructure are not anticipated to occur. Such works would require contractors, and is not regarded as part of the operational workforce.

## 8.4 LNG Facility

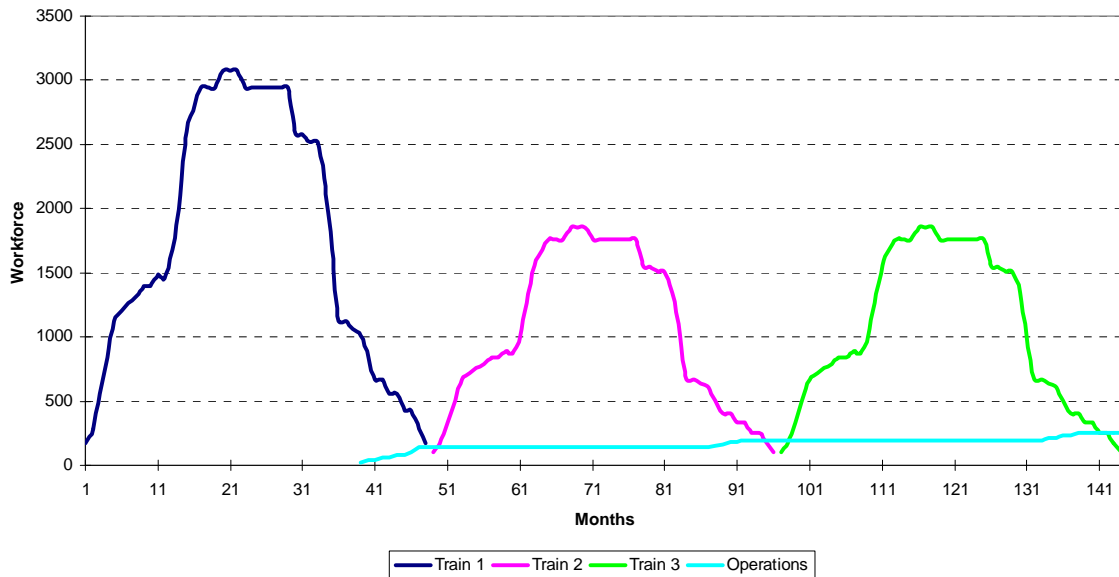
The definition of local in the LNG Facility study area is anyone from Gladstone Regional Council, and to a lesser extent Rockhampton Regional Council and Banana Shire Council. Discussed in the impacts assessment is a proposal by Santos to properly define what constitutes a local in terms of area of residence, area of rearing, place of birth, duration in the area, etc. This may include Santos and key stakeholders including the Department of Housing and the Department of Communities. This is important in terms of the potential for people from outside the area to take up residence (or a mailing address) in Gladstone in order to be considered as a local in the hiring policy. Though this is not seen as a likely major concern, it was raised by key stakeholders (pers. comm., B. O'Rourke, 2008). Santos will discuss reasonable definitions of the geographic labels for local and regional as part of their preferred hiring policy, which will include both general public as well as Indigenous traditional owners.

Figure 8-5 illustrates the conservative workforce requirements throughout the construction and operation phases of the LNG Facility. Information on the estimated numbers required for construction can be found in Table 8-4 and operations in Table 8-9.

## Section 8

## Project Workforce Requirements

Figure 8-5 LNG Facility Construction Workforce



The anticipated construction workforce would not exceed the numbers presented in Figure 8-5 and Table 8-4, and based on the Bechtel design, may be close to 25% less at peak. The workforce numbers provided below were assessed following feedback from the social services providers, Gladstone Regional Council administrators, Department of Communities and Department of Housing, who all expressed concern over historical social impacts associated with large construction workforces in Gladstone. The timing and sequence of construction for Trains 2 and 3 may change; however the peak workforce is not anticipated to exceed that of the Train 1 construction if Trains 2 and 3 are constructed simultaneously.

### 8.4.1 Construction Workforce

#### LNG Facility Construction

It is currently proposed that all workers will be housed in the CAF on Curtis Island for the construction phase of the LNG facility. The workforce has been split between local (those already living in the Gladstone Regional Council) and imported (those requiring to move or transported to the area for employment). The imported workforce will be entirely housed at the CAF and treated as a FIFO workforce. Since there is no perceived benefit for moving to the study area as a result, since they have no access to the community while on their work rotation, it is unlikely many will move to the area as a result of employment with GLNG directly. The accommodation study (Section 7 and Appendix C) examines the effects of 10% of the imported construction workforce migrating to Gladstone as a scenario as to what that might mean for the community.

For the purposes of this assessment it is assumed the workers will be on a 10 and 4 rotation, meaning 10 days on site, 4 days off. It is assumed that all construction workers on the island will have to stay on the island during their work rotation, including those locally employed.

Table 8-4 outlines the construction workforce schedule for the LNG Facility and two additional trains from 2010 - 2022. The estimates provided are conservative estimates in order to not under estimate the impacts. Santos anticipates the actual construction workforce to be closer to 2,000 workers at peak, as opposed to 3,080 assessed in the tables below. As stated above, the timing of construction of trains 2 and 3 is subject to change.

Section 8

Project Workforce Requirements

Table 8-4 Construction Workforce Table for LNG Facility

Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
Train 1	168	280	560	840	1,120	1,204	1,260	1,316	1,400	1,400	1,484	1,456	1,680	2,100	2,604	2,800	2,940	2,940	2,940	3,080	3,080	3,080
Train 2																						
Train 3																						

Month	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44
Train 1	2,940	2,940	2,940	2,940	2,940	2,940	2,940	2,576	2,576	2,520	2,520	2,240	1,680	1,120	1,120	1,064	1,008	840	672	672	560	560
Train 2																						
Train 3																						

Month	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69
Train 1	420	420	280	168																					
Train 2					101	168	336	504	672	722	756	790	840	840	890	874	1,008	1,260	1,562	1,680	1,764	1,764	1,764	1,848	1,848
Train 3																									

Month	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92
Train 1																							
Train 2	1,848	1,764	1,764	1,764	1,764	1,764	1,764	1,764	1,546	1,546	1,512	1,512	1,344	1,008	672	672	638	605	504	403	403	336	336
Train 3																							



Section 8

Project Workforce Requirements

Month	93	94	95	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	
Train 1																								
Train 2	252	252	168	101																				
Train 3					101	168	336	504	672	722	756	790	840	840	890	874	1,008	1,260	1,562	1,680	1,764	1,764	1,764	

Month	116	117	118	119	120	121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	
Train 1																						
Train 2																						
Train 3	1,848	1,848	1,848	1,764	1,764	1,764	1,764	1,764	1,764	1,764	1,546	1,546	1,512	1,512	1,344	1,008	672	672	638	605	504	

Month	137	138	139	140	141	142	143	144
Train 1								
Train 2								
Train 3	403	403	336	336	252	252	168	101

Source: Darwin LNG Project EIS

## Section 8

## Project Workforce Requirements

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

Approximately 65% of the construction workforce is expected to be sourced from outside of the local area due to the existing labour supply, particularly for skilled trade's people, and the demand by the project. Table 8-5 shows the breakdown of local and imported construction workers. Figure 8-5 shows the total construction workforce over time.

**Table 8-5 Breakdown of Local & Imported Construction Workforce at Peak Periods - LNG facility**

Project Year	Year 2 (train 1)	Year 6 (train 2)	Year 10 (train 3)
Nominal Year	2011	2015	2019
Local Workforce (35%)	1,080	646	646
Imported (65%)	2,000	1,201	1,201
<b>Total Construction Workforce</b>	<b>3,080</b>	<b>1,848</b>	<b>1,848</b>

A model was developed off of a flow-on workforce model from DIP for the Gladstone Pacific Nickel (GPN) project. This model was adapted for the GLNG project since it was the best model available. DIP no longer runs the model so assumptions were made based on the results from the GPN model. A full explanation of the model and the various other scenarios run can be found in Appendix D. The most likely scenario anticipated was a 35:65 ratio for local to imported workers respectively. Since the imported workforce will be exclusively housed in the CAF, the flow-on workforce was assumed to be generated from the employment opportunities created in the community. The imported flow-on workforce was assumed to be 10% of the total flow-on work generated with the remainder being filled locally (see Table 8-6). The imported workforce will be house in the CAF, while the imported flow-on will be the number of flow-on employment opportunities anticipated to be filled by someone required to move to the Gladstone area.

**Table 8-6 LNG Facility Direct and Flow-on Construction Employment (six monthly averages) up to June 2022**

Year	Half Year	Direct	Flow-on	Total	Recruitment		Imported Flow-on
					Local	Imported	
2010	Jun	168	21	189	77	111	2
2010	Dec	1260	154	1414	580	834	15
2011	Jun	1680	206	1886	773	1113	21
2011	Dec	2940	360	3300	1353	1947	36
2012	Jun	2940	360	3300	1353	1947	36
2012	Dec	2576	316	2892	1186	1706	32
2013	Jun	1120	137	1257	515	742	14
2013	Dec	560	69	629	258	371	7
2014	Jun	101	19	120	53	68	2
2014	Dec	756	146	902	396	506	15

## Project Workforce Requirements

## Section 8

Year	Half Year	Direct	Flow-on	Total	Recruitment		Imported Flow-on
					Local	Imported	
2015	Jun	1008	194	1202	527	675	19
2015	Dec	1764	340	2104	923	1181	34
2016	Jun	1764	340	2104	923	1181	34
2016	Dec	1546	298	1844	809	1035	30
2017	Jun	672	129	801	352	450	13
2017	Dec	336	65	401	176	225	6
2018	Jun	101	19	120	53	68	2
2018	Dec	756	146	902	396	506	15
2019	Jun	890	171	1061	466	596	17
2019	Dec	1764	340	2104	923	1181	34
2020	Jun	1764	340	2104	923	1181	34
2020	Dec	1764	340	2104	923	1181	34
2021	Jun	1008	194	1202	527	675	19
2021	Dec	403	78	481	211	270	8
2022	Jun	168	32	200	88	112	2

Table 8-7 shows the break down of flow-on workers by married status. Traditionally in Gladstone workers were broken down by the following categories and percentages to determine population estimates. The categories and percentages are based off the estimates used in the GPN model developed by DIP as follows:

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

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

**Table 8-7 Anticipated Population Increase in Gladstone Regional Council from Imported Flow-on Workforce during Construction up to June 2022**

Year	Half Year	Imported Flow-on	Associated Persons			Total Estimated Population Increase	Total Number of Children
			Single Status Worker	Workers Accompanied by Partner	Workers with Families		
2010	Jun	2	1	1	0	4	0
2010	Dec	15	4	9	2	28	1
2011	Jun	21	6	12	3	38	1
2011	Dec	36	10	21	6	66	1
2012	Jun	36	10	21	6	66	1

## Section 8

## Project Workforce Requirements

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

Additional scenarios are run through the model in Appendix D to illustrate the potential effects on the community and social services.

### **Bridge and Road Construction**

The bridge and road are planned to be constructed prior to the construction of the LNG Facility; however the bridge will not be completed until after the LNG Facility construction starts. This is why construction assessments for the LNG Facility assume the bridge will not be ready for construction. This will result in workers and material being ferried to Curtis Island to construct the LNG Facility, at least initially. Table 8-8 presents the workforce numbers required for each month of the proposed construction phase.

## Project Workforce Requirements

## Section 8

Table 8-8 Bridge and Road Construction Workforce and Timeline

Component	Month									
	1	2	3	4	5	6	7	8	9	10
Bridge	12	12	12	27	91	120	100	160	171	167
Road	0	0	0	0	0	0	20	20	40	40
Total	12	12	12	27	91	120	120	180	211	207

Continued...

Component	Month									
	11	12	13	14	15	16	17	18	19	20
Bridge	181	172	172	127	101	90	90	90	43	12
Road	40	40	40	40	45	45	45	45	45	25
Total	221	212	212	167	146	135	135	135	88	37

There will be approximately 75 staff required for the first half of construction to work on design and OH. These staff were not included in the workforce numbers because they are expected to be based out of Brisbane and therefore not relevant to the study areas. In the second half of construction this number is expected to be approximately 15 staff.

### 8.4.2 Operational Workforce

During operations it is anticipated that approximately 60% of the workforce will be locals and 40% will be imported; however, all employees will be full time residents of Gladstone and area with imported workers being encouraged to establish residences in Gladstone. There may be some technical experts required in the beginning to help run the plant, which may FIFO to Gladstone from national or international centres as required. Table 8-9 presents the anticipated operational workforce for the three trains of the LNG Facility.

Table 8-9 LNG Facility Operational Workforce

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

The LNG Facility will operate 24 hours a day, seven days a week. This will require four 20 person operation shifts for train 1. These shifts are likely to be 12 hour shifts, and may be on a four days on, four days off rotation. Should the bridge option not go ahead, these workers could be shifted to a two week on, two week off rotation. Rotation lengths are yet to be determined and may be altered to meet changing project needs and parameters. It is expected that maintenance and administration will work week days for eight hours with weekends off.

## Section 8

## Project Workforce Requirements

Additional trains may require additional staff, and will be assessed as required. The number of additional staff required for each additional train is not anticipated to be as many as for Train 1.

The same model for construction was used for operations with some minor alterations (see Table 8-10). The operations workforce was anticipated to be split 60:40 local to imported workers respectively; however, the entire workforce will be locally accommodated. The ratio of flow-on workers remains the same as the same as local and imported direct workers in this model. The total number of employment opportunities created as a result of employment at the LNG facility peaks at 388 once Train 3 is operational. Once again, the number of imported workers is further analysed to determine potential population increase (see Table 8-11).

**Table 8-10 LNG Facility Direct and Flow-on Operations Employment for each Train**

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

As seen in Table 8-11, the total estimated population increase ranges from 158 for Train 1 up to 283 for Train 3 by June 2022. These increases are anticipated to occur very close to the start of operations since the workforces will be required at the start of each Train's operations phase, Total units required at each Train start are anticipated to be the values in the imported workers column, which is within the normal range in the area. Santos will work with council and their employees to coordinate accommodation close to the beginning of operations for each Train.

**Table 8-11 Anticipated Population Increase in Gladstone Regional Council from Imported Operations and Flow-on Workforces for each Train**

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

## Potential Impacts and Mitigation Measures

## Section 9

### 9.1 CSG Field

The potential impacts associated from the project are assessed as the generic field (reasonably foreseeable development area), and Roma town. The generic field assessment (CSG field) examines the potential social impacts associated with various project components, though the exact impact on specific individual landholders or stakeholders is undeterminable because the project infrastructure and locations have not been finalised. The RISQUE assessment was conducted at the generic field level due to the ambiguity of where impacts might occur, and how they might affect people in that area. The generic field assessment recognises that the majority of potential social impacts associated with the project in the CSG field will have an impact of specific landholders, but will be largely unnoticed by the general public. In this sense the social impacts from a community perspective may be low or insignificant, but from an individual or small group perspective they could be major impacts to them. Landholder negotiations are a critical component of the CSG field mitigation strategy, and Santos has been negotiating with over one hundred landholders throughout the EIS process as part of that social and economic mitigation.

There is an additional impact on Roma town from the placement of Santos office staff for the CSG field in the community for the duration of the field operations. A more detailed assessment of the current social setting in Roma in 2008 was conducted to assess the effects of the Santos office in the community.

#### 9.1.1 General Fields

Within the CSG field the assessment of impacts on potentially directly affected people is problematic as the location of CSG wells and their associated infrastructure is not known with precision at this stage. Section 6.1 of the EIS outlines the tasks to be undertaken during the Phase 1 (EIS) and Phase 2 (post EIS) impact assessment program. During Phase 2, when more information will be known about the project footprint, Santos will identify directly affected landholders, including those residing on the land whether they are tenants or family members, as part of project landholder negotiations. At December 2008, Santos had agreements with 122 landholders (deed holders) across the entire CSG field study area (not including DOCE, Origin joint ventures, and council and government lands) as shown below:

- Fairview and Arcadia Valley: 30
- Comet Ridge to Wallumbilla Pipeline (CRWP): 15
- Denison: 7
- Roma Shallow Gas: 57
- ATP 631P (Roma area near Wallumbilla): 6
- Scotia: 7

Santos currently is consulting and negotiating with likely affected landholders in the CSG field study area. This dialogue will continue until the location of project infrastructure and an assessment of associated impacts are better defined through the process of CSG field development planning. Once CSG field plans and design details have been determined (based on exploration results) those not impacted directly will receive further information through general public consultation. Santos will negotiate land access agreements with those landholders directly or indirectly impacted.

The majority of potential effects from the field activities themselves will be experienced by directly affected landholders with rural holdings throughout the area. Since Santos is negotiating directly with these landholders,

## Section 9

# Potential Impacts and Mitigation Measures

and the details of these negotiations are confidential, they are not included in the social impact assessment (SIA). However, general community sentiments and information collected by Santos land managers has been included to better assess the project effects on the landholders. Information for the SIA was also collected from communities, and the stakeholder engagement plan through various consultation events and methods. Details of the stakeholder engagement plan can be found in the consultation section of the EIS.

There are several variables that have an on-going impact upon the socio-economic fabric of Roma and the other CSG field areas. These include climate variability and change (which influence the viability of the agricultural sector); the historical difficulties for rural centres in attracting and retaining staff in the service, education, health and government sectors; the movement of workers to higher paying jobs in other industry sectors, such as mining; and net migration from rural to urban environments.

Due to the current economic uncertainty, a prediction of the number of imported employees who may move to the study area over time would require too many unknown variables. This is because future markets (as well as individual choices and preferences) may move away from FIFO employment, or may gravitate further towards it. In order to address this issue with area communities, Santos will work closely with local governments to monitor the numbers of Santos employees and contractors' employees who decide to move to the study area. This will allow both Santos and the various communities to respond to their changing needs and service requirements as the project evolves. As a result, the impact assessment only assesses the Roma field office against the community baseline and assumes that in other areas Santos will perform the continued monitoring mentioned above.

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

### 9.1.2 Potential Impact on Demographic Profile

As Roma town is proposed as a regional hub for Santos field activities, providing an increase of approximately 50 long-term positions to the local workforce, the major impacts will occur through demographic change in the town. The 2007 population estimates for Roma Regional Council and Roma town were 13,074 and 6,962 respectively (ABS, 2008), with the area experiencing slow population growth. The PIFU medium series population projections for Roma town indicate a slight decline in population up to 2011, with marginal growth from 2011 to 2026 (approximately 0.4% every five years). Data from the six years up to 2007 saw an annual growth rate of 0.6% in Roma Regional Council and 0.7% in Roma town. From 1997 to 2007, there was an average annual increase of 38 people in Roma town (PIFU, 2008).

Table 9-1 lists some key medians and averages that characterise Roma's demographic profile.



## Potential Impacts and Mitigation Measures

## Section 9

**Table 9-1 Selected Medians and Averages for Roma**

Selected Medians and Averages	Values
Median age of persons (years) <sup>1</sup>	32
Median individual income (weekly) <sup>2</sup>	\$545
Median family income (weekly) <sup>3</sup>	\$1,188
Median household income (weekly) <sup>4</sup>	\$1,047
Average household size (persons) <sup>5</sup>	2.6

<sup>1</sup> excludes overseas visitors. <sup>2</sup> is applicable to persons aged 15 years and over. <sup>3</sup> is applicable to occupied private dwellings. It excludes families where at least one member aged 15 years and over did not state an income and families where at least one member aged 15 years and over was temporarily absent on Census Night. <sup>4</sup> is applicable to occupied private dwellings being purchased and includes dwellings being purchased under a rent/buy scheme. It excludes 'Visitors only' and 'Other not classifiable' households. <sup>5</sup> is applicable to the number of persons usually resident in occupied private dwellings. It includes partners, children, and co-tenants (in group households) who were temporarily absent on Census Night. A maximum of three temporary absentees can be counted in each household. It excludes 'Visitors only' and 'Other not classifiable' households.

Source: ABS, 2006

An examination of age cohorts indicates that Roma Regional Council has a young population, reflected in the median age of 32, with the town area having a younger age profile than the surrounding rural area. Since Roma is the regional service centre, the median incomes are reflective of the services sectors established in town (see Table 9-1). As such, this median age is not expected to be impacted significantly as it is anticipated that the project workforce will fit the same demographic.

In order to better assess the potential impact of the additional workforce on the community, two scenarios have been developed:

- Scenario 1 – 100% hiring from outside the community; and
- Scenario 2 – 100% hiring from inside the community.

It is worth noting that since Roma's median incomes are the highest in the area and similar to those throughout the State, a substantial increase in median incomes is not anticipated because of the relatively small percentage increase (1.5%) in the number of workers, notwithstanding that they will generally receive higher wages. Santos is proposing 54 positions in a regional council with 6,675 people in the labour force and an unemployment rate of 2.4% based on 2006 census data.

In Scenario 1, the population of Roma would increase each year by the following amount from 2010 to 2014, assuming each new hire had a family size of 2.6 as is currently the case in Roma (rounding all numbers up to nearest whole number):

- 2010: 23 people;
- 2011: 26 people;
- 2012: 16 people;
- 2013: 20 people; and
- 2014: 11 people.

Over seven years of hiring, Roma would experience a population increase of 141 people (including the 45 from 2008 and 2009), if all Roma office staff were hired from outside the community and were accompanied by an average size family of 2.6 people. Given that from 1997 to 2007 Roma grew annually by 38 people on average, this increase in population from the Santos workforce is approximately 50% of the normal community growth

## Section 9

# Potential Impacts and Mitigation Measures

rate; however, this is not anticipated to be a significant impact since it will increase the six year annual growth rate in Roma from 0.7% to approximately 1.0%, which is still within a manageable growth range for the community.

2010's growth was calculated assuming Santos' hiring targets for 2008 and 2009 were met prior to project approval for other Santos activities underway in the area. This scenario puts in perspective the scale of a population increase in Roma as a result of the project. It is unlikely that Santos would hire only imported workers, particularly with those skills already present in the community, and given Santos' commitment to employ locally first. This scenario could therefore only occur if nobody in Roma applied for a position with Santos at their Roma office.

In Scenario 2, there could be two extremes. In one instance, the movement of employees within the community could create new vacancies for other employees to be promoted or gain new skills. As people move, the gaps need to be filled. These vacancies could be filled by personnel from other regions. In this situation, Santos' use of local labour actually results in a net increase in the population as new employees take up roles in the Roma community. However, the negative aspect to this scenario is where those businesses losing staff to Santos cannot find adequate skills replacements, which may affect their ability to survive. The social impact under this scenario is a decrease in services available to the community.

### 9.1.3 Potential Impact on Population and Employment

Santos' policy aim is to employ locals wherever possible, and it will implement a 5 days on, two days off roster where possible to provide opportunities for locals, while monitoring any impact that this may have on existing local employers. The project expects to create 54 positions in Roma in the first five years. Santos has approximately ten employees in their Roma field office currently and intends to increase that number to 17 by the end of 2009. Based on anticipated workforce requirements for the Roma office, Santos will require additional staff of approximately eight people per year from January 2009 to December 2013, as well as an additional four in 2014, assuming the project is approved and starts by 2010. The employment opportunities and their required skills match those already available in the Roma community and surrounding area as follows (percentage of Roma workforce employed by industry with total number of individuals in brackets):

- Transport, postal and warehousing: 5.6% (190);
- Administrative and support services: 1.9% (66);
- Public administration and safety: 9.7% (332);
- Education and training: 7.4% (252); and
- Professional, scientific and technical services: 3.7% (128).

It should be noted that if Roma services and businesses that lost employees to Santos were successful in recruiting people from outside the area to fill their vacancies, the population would actually increase by a similar amount to Scenario 1. Area unemployment figures suggest that local businesses and services would likely have to recruit employees from outside the area to fill vacancies.

Based on the employment opportunities, it is likely that local businesses and government agencies would lose employees to Santos. The mobility of the local workforce was identified by numerous individuals and organisations interviewed in the site assessments (pers. comm., B. Garvie, 2008) (pers. comm., M. Hosking, 2008). Many government departments, local businesses and service providers identified the difficulty in attracting employees to Roma, as well as the difficulty in retaining them at the end of their contract. Additionally, it is normal to lose employees to other businesses and industry in Roma, which has prompted some employers to sponsor 457 Visa workers to fill positions. Some concern has been expressed by Roma stakeholders that

## Potential Impacts and Mitigation Measures

## Section 9

Santos may also sponsor 457 visa workers rather than employing locally; however, Santos policy would only countenance this for engaging people with skills not available locally.

Concern has also been expressed with regards to the CSG workforce having difficulty integrating into the community and the use of their disposable income (pers. comm., L Waldron and P Bacon, 2008). There is no evidence that oil & gas workers *per se* are an issue with some locals as much as new people in general (pers. comm., M. Hosking, 2008). For the most part the community consultation revealed that the increase in economic and employment opportunity would be welcomed in the area (informal research, 2008).

Santos will work with the business community as well as government and social service providers to develop strategies to address workforce movements in the community. This is not a new issue for Roma (pers. comm., B. Garvie, 2008) and is going to be an ongoing issue in Roma for the foreseeable future. Santos cannot say it will only hire from outside the area, nor would the community want that as a solution, but the very real potential for local employers to lose staff to the project is a legitimate concern. More over, there has been indication that many would prefer to see families move to Roma over a FIFO workforce (pers. comm., B. Garvie, 2008) (pers. comm., M. Weathered, 2008) (pers. comm., L Waldron and P Bacon, 2008), though a mix is most likely. Since the hiring schedule is for up to 54 full-time positions (37 of them directly GLNG project related) up to 2014, Santos will consider the possibility of only employing locals not on an active contract with an area employer. Such a decision would need to be considered in light of trade practices legislation and industrial relations laws. Since most contracts are approximately four years for government and social services employees, this would not preclude these individuals from potential employment with Santos (apart from those signing or renewing agreements in 2010). Alternatively, Santos could consider a partial contract payout (of say up to three months) to enable the employer to fund temporary assistance while recruitment is underway for a replacement.

The economic diversity associated with the project was seen as a positive for the community and area as a whole. Due to the constantly rotating contract workforce in Roma, particularly in the public sector, the local economy is perceived by some as quite fragile. An increase in long term employment and business opportunities has the potential to expand other industries as well as attract people to the area more long term to fill other roles like health care and education (pers. comm., B. Garvie, 2008).

There is concern with some social service providers in the community with regard to the effects of shift work on workers and their families (pers. comm., D. Roche, 2008). Shift work is an unavoidable situation for many employed in the CSG fields. Santos will explore shift work rotation options and services such as counselling for employees and their families.

The cumulative effect would see more people migrating around employment opportunities in the area. The unemployment rate in the area is already low compared to the rest of the State, suggesting there is a greater demand for skills than supply. Adding more demand without supply could prove problematic for some businesses. This is less of a concern for Santos because they can more easily recruit employees from outside the area. The recruitment of employees as discussed is an issue of great difficulty for many private and public companies/organisations. This ability to attract staff to the area ties into the second point, that Santos' remuneration packages makes it an even greater competitor to some businesses and organisations. For more information on cumulative effects see Section 10.

### 9.1.4 Additional Potential Impacts on Indigenous People

The complete Indigenous baseline and impacts are assessed in Section 6 because the Indigenous assessment boundaries did not align with the study area boundaries for the rest of the social assessment.

Potential social impacts on the Indigenous population can be found in Section 6.3.

## Section 9

# Potential Impacts and Mitigation Measures

### 9.1.5 Potential Impact on Income and Cost of Living

Overall, the cost of living in Roma is approximately 4.6% lower than Brisbane (OESR, 2006). This is influenced significantly by the cost of housing, which is 23% lower than Brisbane, while the index for groceries and tobacco is 1.6% higher than Brisbane. The project is not expected to alter this relativity, as there will be a modest increase in families, building up over a number of years. While living expenses are not expected to reduce the expanded size of the local market, both from locals and supply to TAFs, it may result in an enhanced selection of goods to purchase.

In addition to income and affordability is the potential for oil and gas activities to impact land values. Santos has commissioned a study to evaluate field development causing a decrease in local property values, and this is currently being undertaken in partnership with AgForce to assess this potential impact.

### 9.1.6 Potential Impact on Housing and Accommodation

The GLNG project is expected to have minimal impact on the existing and forecast accommodation requirements of Roma and the surrounding region. The majority of the construction workforce (90%) is expected to be sourced from outside of the local area. These workers will stay in Temporary Accommodation Facilities (TAFs) in the CSG Field during their roster and then leave the area to return home after their roster.

Local sourced construction workers are assumed to have existing accommodation arrangements.

During operations, Santos estimates that 50% of the workforce will already reside in communities within the region. Imported workers will stay in TAFs during their roster therefore not affecting residential accommodation in the local area.

Santos intends for its entire CSG field workforce housed in TAFs to remain isolated from the area communities, with limited interaction. This will reduce the potential for negative social impacts, as well as potential economic impacts. Santos will adopt local purchasing policies in order to enhance economic benefit to the area businesses. Santos will maintain ongoing dialogue with businesses and key stakeholders as to the level of interaction between the CSG field workforce and the communities as the project evolves and all parties become more accustomed to each other's presence.

There is a perceived increase in housing prices in the area as a result of oil & gas operations. Though many have indicated this is a result of national increases and local home owners, the perception does exist (pers. comm., A. Cleland, 2008) (pers. comm., D. Newman, 2008) (pers. comm., B. Garvie, 2008) (pers. comm., D. Roche, 2008). Santos has been made aware by several in the community directly involved in real estate as well as service providers of this perception, and will continue to work with them to discuss viable solutions to this and other community issues as the project evolves.

### 9.1.7 Potential Impact on Health

There is no expected negative impact on the health and social services in the community based on either scenario, because the anticipated size of the impact is within the manageable population growth for the community for Scenario 1, while Scenario 2 has no impact on population growth unless businesses and services who lost employees to Santos have to fill those vacancies with people from outside the study area. The likely scenario for employment by Santos for the Roma office is closer to somewhere in the middle of the two scenarios, although Santos would prefer to hire locally first. This will help with the attraction of people and families to Roma, as well as retaining them for longer than their temporary contract, which was a stated community objective by almost every person interviewed during the site assessment. Queensland Health identified the difficulty in attracting doctors and other health care providers to the area, and recognised project

## Potential Impacts and Mitigation Measures

## Section 9

as a potential attraction in the future. There was also discussion of the possibility of public/private partnerships to attract staff for health care, where the public sector offers the salary and the private sector offers incentives (pers. comm., L. Christie, 2008). Santos will explore this potential further with the Queensland Health Office in Roma as the project advances.

Santos will proactively work with state and local governments, peak industry bodies and the general public to understand where the needs are in relation to human service delivery, and how Santos could contribute to closing the gaps. Furthermore, the introduction of a large employer of 50+ people in the area who is likely to offer attractive remuneration packages, may help entice health care practitioners to move to the area. Currently, a lack of activities and opportunities for families and spouses was flagged by governmental and non-governmental organisations (NGOs) as a major factor in the difficulty with attracting people to the area and then retaining their services beyond their four year contract or less. A major oil and gas company with a 50+ employee field office in the community and a commitment to community enhancement may help attract skilled professionals and their families to come and settle in Roma.

As discussed above, Santos will explore different shift work rotations and counselling services in order to reduce the impact of shift work on people's health. Santos is aware of other partnership programs between industry and Queensland Health including the Pit Stop program in the area (pers. comm., L. Christie, 2008), and will explore opportunities for similar programs for Santos staff and contractors.

### 9.1.8 Potential Impact on Education and Training

Construction and operations workers moving into the area with school age children could increase demand for school places; however, the number of new students is likely to be minimal and manageable. An increase in local skills has been identified as a project benefit to the area (pers. comm., D. Roche, 2008). Santos will maintain contact with local educational institutions to monitor student enrolment patterns. Early notification for locals of business and employment opportunities was identified in consultation. This will also allow time for service providers to train locals for certain skill requirements, either in partnership with Santos or independently. Particular attention to children recently graduating from school, business owners and entry level / unemployed people being targeted for training, especially business training was encouraged by regional council staff (pers. comm., T. Klein and N. Ward, 2008).

Santos has designed an apprenticeship program which is focused on recruiting and retaining local potential human capital from a diverse talent pool and subsequently providing regional and corporate benefits. The successful Program is proposed to be implemented in Queensland, specifically in the Roma and Fairview districts with the continued primary goal of providing permanent jobs for fully-trained apprentices.

Benefits of the current program initiated in 2006 are considerable and include:

- Significant cost savings on - HR recruitment and induction processes and, work lost to contractors due to human capital constraints;
- Greater utilisation of resources as staff turnover decreases; and
- Enhanced professional reputation and competitive advantage resulting from public award associated recognition.

The apprenticeship will encompass nationally recognised and accredited training and on-the-job work over a period of up to four years via full-time, part-time or school-based means. Roma based and regionally established GoldenWest Employment Solutions (GW) has been sourced as a potential provider to oversee and manage the regional Program which will include providing hands-on and relevant ongoing support to

## Section 9

# Potential Impacts and Mitigation Measures

apprentices, conduct standard administrative and HR business in relation to management of apprentices, coordinate training through a supervised registered training organisation and provide regular workplace visits among other defined services. An internal Apprentice Manager has been appointed by Santos to support apprentices in their role and further develop relations with GW.

Santos has recognised the vast talent pool for sourcing apprentices and intends to employ high school students (school based apprentices), school leavers, mature age (mid career apprentices) and/or apprentices who have been unable to complete their trade. Apprentices training in key industries experiencing skill shortages will be given access to the Fast-Track Apprenticeship Program. It is intended that apprenticeship salaries are based at the same level as the Santos award. Santos proposes to extend this training/recruitment philosophy to Traineeships as the Company becomes the preferred employer within the Eastern Queensland region.

Where government rebates are applicable, Santos has recommended that the funds be reinvested in the region through either (i) a local community fund, (ii) the high schools from which apprentices are sourced or (iii) other apprenticeships/traineeships with a regional focus e.g. agriculture or horticulture.

Regional, community and business benefits include:

- Customer focus by quality staff reflecting the Santos work ethos;
- Enabling Production North to grow without human capital constraints;
- Increased business growth and profits; and
- Positive impact on local community through employment from abovementioned talent pool.

Santos is also considering:

- The Santos Apprenticeship Program is extended to Eastern Queensland;
- GW is utilised as the service provider;
- School leavers are targeted in the first instance to source initial apprentices;
- Option (iii) is utilised with regard to reinvesting government rebates are reinvested into local apprenticeships/traineeships; and
- Support is given to propose the introduction of Traineeships utilising a similar approach.

Roma Regional Council indicated that training opportunities in Roma would be a bonus, and programs targeting Indigenous people in particular because there is a higher propensity to want to remain in the community amongst the Indigenous population (pers. comm., T. Klein and N. Ward, 2008).

### 9.1.9 Potential Impact on Emergency Services

In the case of an emergency outside the capabilities of the on-site emergency staff, local emergency services may be required. This could include fire, police, ambulance or flying doctor. The need for such services is considered low though such a request could occur. Due to the on-site capabilities of the emergency services for the construction workforce, a request for local emergency services is considered a low likelihood. Should such services be requested, it is unlikely that the temporary use of those services would adversely affect the community.



## Potential Impacts and Mitigation Measures

## Section 9

Like health services on-site, the enhanced local capabilities from the construction workforce could be utilised in cases of emergencies for the general public. Santos will inform local emergency services in an area prior to undertaking construction activity as to the size of the workforce, on-site capabilities and emergency procedures.

### 9.1.10 Potential Impact on Community Facilities and Services

As Roma is relatively well provided with community facilities, the addition of an extra 150 residents is not expected to impose any unmanageable strain on the existing facilities. As the major base for Santos CSG operations, it is in Santos's interests to make a contribution to facility development to ensure that the quality of services and facilities is maintained, as it is a factor in attracting and retaining a skilled workforce to a regional location.

### 9.1.11 Potential Impact on Community Values, Lifestyle

From a demographic perspective, the development of the CSG field will enhance the socio-economic stability of the region by providing long term, remunerated employment in the immediate area. Without additional non-agricultural development in the area, current trends suggest Roma Regional Council (RRC) and other rural councils in the project area may eventually experience the rural decline that is evident in much of central Queensland.

The introduction of several TAFs to the area could establish another sub-community: FIFO workers. The dynamics of this sub-community and its relation to the other sub-communities in the study area (see Section 4.2.4) will be monitored by Santos and the regional councils as the project evolves.

The majority of potential effects from the field activities themselves will be experienced by directly affected landholders with farms and homesteads throughout the area. Since Santos is negotiating directly with these landholders, and the details of these negotiations are confidential, they are not included in the social impact assessment (SIA). Santos has ongoing dialogue and negotiations with likely affected landholders in the study area. This dialogue will continue until the location of project infrastructure and associated impacts are better defined. Once CSG field plans and design details have been determined (based on exploration results), those not impacted will become part of the general public consultation, while those directly or indirectly impacted will be negotiated with to reach a settlement.

In order to maximise local gains, Santos prefers to employ locally first when possible and will encourage their employees to move to (or stay in) the Roma Regional Council area if employed in the CSG field. Further dialogue between Santos, the Roma Regional Council and local service providers will help the community identify and monitor their ability to attract and retain skilled persons for the area, which was seen by many Roma residents and opinion leaders as the key to strengthening their community (pers. comm., M. Weathered, 2008) (pers. comm., L Waldron and P Bacon, 2008) (pers. comm., D Goddard, 2008).

Santos has implemented an apprenticeship program for the area and will continue to expand it as the project evolves. Roma has seen reductions in social vices as a result of past employment programs like the community jobs program (pers. comm., T. Klein and N. Ward, 2008) and Santos believes increased opportunity in the area will have a positive effect.

### 9.1.12 Summary

Table 9-2 is a summary of the social components and potential impacts discussed for the CSG field. Following the table is the RISQUE assessment of likely specific events and the anticipated impact from a social perspective.

## Section 9

# Potential Impacts and Mitigation Measures

Communities within the study area are briefly discussed as well as key project themes below.

### **Major regional activity centre - Roma**

Roma is the key activity centre in the study area with a population of approximately 6,800. Roma will maintain its role as the largest centre in the region under the new classification system, and continue to provide a wide range of services and facilities for the local community and surrounding districts. Roma will provide opportunities for future population growth in the region, likely to be associated with further development in the energy resource sector.

### **Major rural activity centres - Miles and St George**

Miles and St George, with populations of 1,400 and 2,900 respectively, provide a range of services to the local community and surrounding districts. These services include health, education, culture and entertainment. They are major administrative centres for a range of government services. The need to increase the level of services to both centres will depend on population, economic and industry growth.

### **District rural activity centres - Injune, Dirranbandi, Surat, Mitchell and Tara**

These centres provide essential services for the local community and surrounding districts and generally have populations between 300 and 2,000. Injune may experience growth due to nearby gas and energy developments and associated TAFs. Otherwise population growth in these centres is not anticipated. The draft regional plan recognises the need to maintain services in these towns.

### **Community activity centres - Yuleba, Wallumbilla, Dulacca, Mungallala, Drillham, Bollon, Condamine, Thallon, Moonie, Amby, Hebel, Glenmorgan, Mungindi and Jackson**

These centres provide essential services and social interaction for residents in rural and remote locations. They are characterised by low populations of generally fewer than 300 residents. Population growth in these centres is not anticipated; however the need to maintain services is recognised within the plan.

### **Key themes**

#### **Emerging opportunities**

The impacts of developing energy reserves in the Surat Basin are currently being felt by infrastructure providers and the region's communities. The draft regional plan strives to develop a culture of entrepreneurship to broaden the region's economic and social base. It also seeks to improve cooperation between resource companies, infrastructure providers and communities in planning for future infrastructure needs.

#### **Traditional strengths**

The traditional agriculture of the region is sheep and cattle grazing, dry land and irrigated cropping and timber production. These activities will continue but will be faced with labour supply challenges and increasing corporatisation. The draft regional plan supports these traditional industries by encouraging business, technology and infrastructure investment. Building the capacity of the industry to respond to new opportunities, manage the effects of climate fluctuations and add value to products is central to maintaining primary production as a key industry in the region.



## Potential Impacts and Mitigation Measures

## Section 9

### Lifestyle

The draft regional plan identifies rural culture and the relaxed lifestyle as major factors in residents' choices to live and work in study area. Services will need to be comparable with those on offer in other Queensland provincial centres to provide a viable alternative to metropolitan living.

## Section 9

## Potential Impacts and Mitigation Measures

Table 9-2 Summary of Potential Social Impacts for the CSG Field

Social Component	Nature of the Issue	Potential Severity of Impact	Santos Approach to Issue Management
CSG Field well and infrastructure location uncertainty	The precise location of wells and other infrastructure can not be determined until the required level of technical exploration is completed. This can induce uncertainty in landholders within the tenement areas who do not know whether they will be impacted directly or not, making it difficult to implement effective property management.	Moderate to high negative  Landholders are highly sensitised to access issues associated with the resource sector following the development in the Bowen Basin, as well as exploration activity in the Surat Basin. They perceive the industry as adopting a domineering rather than a partnership approach, and are readily supported by AgForce to press the issue with Government	Santos will implement a leading practice landholder consultation and engagement program to address landholder concerns in relation to ongoing CSG field development planning. This program will address issues relating to: <ul style="list-style-type: none"> <li>• Explanation of the CSG extraction process</li> <li>• Plain English interpretation of land access legislation and guidelines</li> <li>• Land access protocols acceptable to the landholder</li> <li>• Location of infrastructure</li> </ul> Land diminution and compensation negotiations
Local infrastructure capacity -Roma airport -Roma town water supply	The addition of a large number of FIFO workers transiting Roma airport may put a strain on the existing facilities.	Minor to moderate negative  The current Roma airport has a 1500 metre bitumen runway and can accommodate 50 seat	Through its ongoing consultation with the Roma Regional Council, Santos will monitor the passenger movements in and out of the Roma airport. Santos will collaboratively

## Potential Impacts and Mitigation Measures

## Section 9

Social Component	Nature of the Issue	Potential Severity of Impact	Santos Approach to Issue Management
	Depending on the location of gas wells, dewatering activity has the potential to impact negatively on existing bores supplying water to the Roma township area	<p>passenger aircraft and executive jets. With the size of the FIFO workforce it is unlikely that larger aircraft would be required.</p> <p>Moderate to high negative Any reduction in subsurface water sources may negatively impact the long term sustainability of the town's water supply.</p>	<p>develop strategies with local government and private airlines to address impacts that arise from an increased flow of workers in and out of the area.</p> <p>Santos will undertake a technical analysis of any potential interference with the town borefield as part of gas well location investigations, and will monitor groundwater usage and levels in the vicinity of town water supply bores</p>
Local Employment	In maximising local employment, Santos encourages the movement of workers (in excess of base turnover levels) from existing employers impacting negatively on local businesses.	<p>Moderate to high Recruitment of skilled and reliable staff is expensive in rural areas where relocation and other recruitment costs are an additional business expense. The ability of a large resource company to pay higher wages and provide better working conditions is immediately apparent to local businesses and be a source of grievance to the local community who have to pay more for services as a consequence.</p>	Santos will monitor recruitment from the local community, including information on previous place of employment. Should evidence emerge of negative impacts on local businesses, Santos will work with the Roma Regional Council and the identified businesses to develop measures to address worker transition impacts.
Accommodation availability	The increased demand for housing imposed by the Santos locally-based	<p>Low to moderate The build-up of the Roma based</p>	The majority of the construction and operations workforce will reside in Temporary

## Section 9

## Potential Impacts and Mitigation Measures

Social Component	Nature of the Issue	Potential Severity of Impact	Santos Approach to Issue Management
	workforce may raise the level of rents and price of housing making it less affordable to locals who are on minimum wages.	workforce will not be rapid, and there is a large amount of land surrounding the town available for domestic and commercial purposes.	Accommodation Facilities and so will not impose demand on Roma accommodation. Santos will maintain regular liaison with the Regional Council and local accommodation providers to remain abreast of any emerging issues.
Access to health services	Increased population will mean greater demand and less access to quality health services.	Low The majority of the workforce will be resident in TAFs away from Roma where they will have access to basic health care while on site. Requirements to visit health care providers in Roma will be limited, and able to be tracked by local service providers and Santos.	Santos will, through its community relations staff, monitor the satisfaction of the community with the provision of health services.

## Potential Impacts and Mitigation Measures

## Section 9

### 9.1.13 RISQUE Assessment Impacts and Mitigation

Table 9-3 was compiled for the CSG field based on interviews, field assessments, baseline data and professional knowledge of the project and study area. The events are described below in terms of their relevant potential social impacts.

The order of the events reflects their ranking in the RISQUE assessment as part of the EIS as a whole for the most part, though some were moved in order to better maintain flow for the reader. For an actual ranking of all events in the RISQUE assessment, refer to the risk assessment report in the EIS.

**Table 9-3 CSG field Social Impacts RISQUE Assessment**

Event Name	Phase	Inherent Risk			Residual Risk		
		Likelihood	Consequence	Risk	Likelihood	Consequence	Risk
Roma associated water	Construction	Likely	Moderate	High	Possible	Minor	Medium
	Operation	Possible	Moderate	High	Possible	Minor	Medium
	Decommission and Rehabilitation	Possible	Minor	Medium	Possible	Minor	Medium
Arcadia associated water	Construction	Possible	Moderate	High	Possible	Minor	Medium
	Operation	Unlikely	Moderate	Medium	Unlikely	Minor	Low
	Decommission and Rehabilitation	Unlikely	Minor	Low	Unlikely	Minor	Low
Increased road traffic/wear on infrastructure	Construction	Likely	Moderate	High	Possible	Minor	Low
	Operation	Possible	Insignificant	Low	Possible	Insignificant	Low
	Decommission and Rehabilitation	Likely	Moderate	High	Possible	Minor	Low
Fairview associated water	Construction	Possible	Minor	Medium	Possible	Minor	Medium
	Operation	Possible	Minor	Medium	Possible	Minor	Medium
	Decommission and Rehabilitation	Unlikely	Minor	Low	Unlikely	Minor	Low
Groundwater level interference perception	Construction	Likely	Moderate	High	Unlikely	Minor	Low
	Operation	Possible	Minor	Medium	Possible	Minor	Medium
	Decommission and Rehabilitation	Possible	Minor	Medium	Possible	Minor	Medium
Subsidence - Drilling activities	Construction	Rare	Insignificant	Low	Rare	Insignificant	Low
	Operation	Rare	Moderate	Medium	Rare	Minor	Low
	Decommission and Rehabilitation	Rare	Insignificant	Low	Rare	Insignificant	Low
Perception that Project will have a negative impact on the community	Construction	Unlikely	Minor	Low	Unlikely	Minor	Low
	Operation	Unlikely	Insignificant	Low	Unlikely	Insignificant	Low
	Decommission and Rehabilitation	Unlikely	Minor	Low	Unlikely	Minor	Low
Visual amenity	Construction	Unlikely	Minor	Low	Unlikely	Minor	Low
	Operation	Unlikely	Insignificant	Low	Unlikely	Insignificant	Low
	Decommission and Rehabilitation	Unlikely	Insignificant	Low	Unlikely	Insignificant	Low
Demand on local services and facilities	Construction	Possible	Moderate	High	Possible	Minor	Medium
	Operation	Unlikely	Minor	Low	Unlikely	Minor	Low
	Decommission and Rehabilitation	Possible	Minor	Medium	Possible	Minor	Medium
Activities interfere with landowner	Construction	Almost Certain	Minor	High	Possible	Minor	Medium
	Operation	Possible	Minor	Medium	Possible	Minor	Medium

## Section 9

## Potential Impacts and Mitigation Measures

Event Name	Phase	Inherent Risk			Residual Risk		
		Likelihood	Consequence	Risk	Likelihood	Consequence	Risk
activities	Decommission and Rehabilitation	Unlikely	Minor	Low	Unlikely	Minor	Low
Accommodation demand	Construction	Unlikely	Minor	Low	Unlikely	Minor	Low
	Operation	Rare	Insignificant	Low	Rare	Insignificant	Low
	Decommission and Rehabilitation	Unlikely	Minor	Low	Unlikely	Minor	Low
Local purchase policies	Construction	Possible	Minor	Medium	Possible	Minor	Medium
	Operation	Possible	Minor	Medium	Possible	Minor	Medium
	Decommission and Rehabilitation	Unlikely	Minor	Low	Unlikely	Minor	Low
Transition of workforce	Construction	Possible	Moderate	High	Possible	Minor	Medium
	Operation	Unlikely	Minor	Low	Unlikely	Minor	Low
	Decommission and Rehabilitation	Unlikely	Minor	Low	Unlikely	Minor	Low
Land disturbance	Construction	Likely	Minor	High	Unlikely	Minor	Low
	Operation	Unlikely	Insignificant	Low	Unlikely	Insignificant	Low
	Decommission and Rehabilitation	Rare	Insignificant	Low	Rare	Insignificant	Low
Fly in/out (FIFO/DIDO)	Construction	Likely	Insignificant	Medium	Likely	Insignificant	Medium
	Operation	Rare	Insignificant	Low	Rare	Insignificant	Low
	Decommission and Rehabilitation	Rare	Insignificant	Low	Rare	Insignificant	Low
Excessive noise	Construction	Possible	Minor	Medium	Unlikely	Minor	Low
	Operation	Unlikely	Minor	Low	Unlikely	Minor	Low
	Decommission and Rehabilitation	Unlikely	Insignificant	Low	Unlikely	Insignificant	Low
Weeds	Construction	Unlikely	Minor	Low	Unlikely	Minor	Low
	Operation	Unlikely	Moderate	Medium	Unlikely	Moderate	Medium
	Decommission and Rehabilitation	Rare	Insignificant	Low	Rare	Insignificant	Low

## 9.1.13.1 Roma CSG Field Associated Water

This event examines the storage of water and its real and perceived impact on residents. The social impact assessed the perceived reduction in land value and salinity concerns across the CSG field as a whole, as well as use of associated water. During construction and operations, it was anticipated that this impact could be high, mainly as a result of the consequence of the event on the landholder and property values and the fact that there will be associated water in most circumstances. It is likely that this will occur in construction, and possible in operations though the consequences are moderate as there will be some impact on the landholder that may require remediation. It is also important to consider that there were no recorded incidences of landholders suggesting they did not want access to associated water. Most expressed frustration at the current government regulations which act as disincentives for resource companies to manage the water more effectively. In this sense, associated water is apposite for many local residents and communities who have also expressed interest in associated water. During decommissioning and rehabilitation the likelihood of this impact to still occur is possible but the consequences are minor as the volume of water decreases, and known remediation options become more understood. In addition, Santos' policies and community engagement should address these issues throughout the process and provide feedback to the community on actions and results where applicable.

## Potential Impacts and Mitigation Measures

## Section 9

The associated water strategy in the EIS discusses the details of Santos' intended use of associated water. From a social perspective some of the real and perceived impacts from associated water are:

- More water for irrigation;
- High salinity causing soil damage;
- Increased or decreased land values;
- Change in land productivity (positive and negative);
- Change in flora and fauna patterns along creeks;
- Evaporation ponds dotted throughout the area;
- Increased water during floods;
- Reduced impact of droughts;
- Erosion; and
- Changes in the water tables.

Most of these impacts may occur; however, it's the magnitude and frequency of the occurrence that generally results in the perception issues. For example, some evaporation ponds will be required in certain areas but it is not Santos' intention to construct hundreds of ponds throughout the area. Similarly, there will inevitably be erosion issues in some areas due to associated water and Santos will adapt EMPs to address these issues. For Santos and the community, the issue is the ability to differentiate the isolated incidences from the norm. This requires a level of trust to be established where the community is comfortable with Santos' reputation and responses to these incidences so they do not become the norm.

### Mitigation

The use of associated water is already becoming an issue of debate among landholders, communities, stakeholders, NGOs, governments and the industry. Santos should develop a risk-based tool to help identify the most appropriate water management methods for the Roma, Fairview and Arcadia Valley CSG fields. This strategy must be consistent with EPA guidelines, and may require a larger forum (including industry competitors and key stakeholders) to develop a policy in the area. The associated water strategy (refer separate report in the EIS) addresses this in more detail.

In order to reduce incorrect perceptions while educating on the realities of associated water, Santos should continue their community consultation and stakeholder engagement, but focus more on project issues, in this case associated water. Santos will consult directly with councils to identify specific perceived and actual risks they have or have heard in the community in order to work with the community on these issues, rather than independently of the community.

Santos intends to develop a construction management plan, as part of their EMPs including engineering controls on design and maintenance. This will help avoid potential issues for landholders. If damage occurs to property from associated water, Santos will carry out rehabilitation at the earliest possible time to reduce the impact on the landholder.

Santos intends to develop a grievance mechanism to capture and address landholder comments and issues. Santos will make this process known to the community and easily accessible through a number of avenues

## Section 9

# Potential Impacts and Mitigation Measures

including telephone, fax, email, mail or personal delivery to the local Santos regional offices in Roma and Gladstone.

Santos is already working with an agricultural industry body (AgForce) to understand land diminution issues affecting land values. Furthermore, Santos will make the findings of this strategy accessible to directly affected landholders.

### Residual Impact

Based on the risk assessment, implementing the proposed mitigation measures is expected to result in impacts having a 'possible likelihood' with 'minor consequences'. This was cross referenced from the experiences in the Spring Gully field, where CSG is currently being extracted, and the associated water issues have been addressed through construction management, stakeholder engagement, and community education. There is a possibility of an impact occurring, but a heightened degree of knowledge and trust in the response. Ongoing water quality issues will need to be addressed on a case-by-case basis to determine the salinity, pH and other water quality measurements to determine the best course of action for that particular circumstance. Where land cannot be rehabilitated due to associated water, the landowner will be involved in discussions regarding compensation.

### Benefits

Assuming there is no issue with water quality, the potential benefits are:

- Increased water resources availability;
- Improvements to infrastructure;
- Irrigation schemes; and
- Diversification of rural industry.

#### 9.1.13.2 Arcadia Valley CSG Field Associated Water

The associated water impacts in Arcadia Valley are similar to those in the Roma field; however there are fewer landholders who may be affected due to the limited use of the valley under the petroleum lease, the fewer number of landholders, and the more difficult terrain to operate in.

Santos is less likely to develop associated infrastructure in the valley due to the cost and location, which further limits the likelihood of associated water related impacts occurring. Infrastructure developed will be smaller and the consequences are also reduced compared to Roma field. In Arcadia Valley, the perception is likely to remain the same as Roma, but the reality is a lot lower potential.

The mitigation will be the same for Arcadia Valley as for Roma. Once the mitigation is applied, the residual impact risk drops down. As the project progresses, and the technology and relationships advance, the risk decreases from an area wide concern to localised events should they occur at all.

Assuming there is no issue with water quality, the potential benefits are the same as Roma.

#### 9.1.13.3 Fairview CSG Field Associated Water



## Potential Impacts and Mitigation Measures

## Section 9

The associated water impacts in Fairview are similar to Roma, however there are fewer stakeholders potentially affected due to the limited use of the area under petroleum lease. There are also fewer numbers of landholders in this area than in Roma. In Fairview field, the soils are generally of poorer quality and are more erosive, which is a potential issue for uncontrolled/unmanaged discharge of associated water. Studies have found that the associated water quality is quite good in the area and is less likely to require infrastructure like evaporation ponds or treatment facilities. The creeks in the area are rock based, which means there is a reduced likelihood the associated water will erode the soils if discharged into the creeks. For these reasons, the impacts were assessed as medium during construction and operations and unlikely during decommissioning and rehabilitation.

The mitigation will be the same as for Roma and Arcadia Valley. Once the mitigation is applied, the residual impact risk is not anticipated to decrease because the likelihood and consequence remain the same. Essentially, the impact is still possible and the consequences will remain minor. The goal is to use the mitigation to ensure the likelihood and consequence does not increase throughout the project.

Assuming there is no issue with water quality, the potential benefits are the same as Roma and Arcadia Valley. Fairview has the potential to become a best practices model for social impacts due to the isolated area, fewer landholders and lessened potential for community impacts, which would allow for small scale trials to be implemented throughout the rest of the field if effective.

### 9.1.13.4 Increased Road Traffic / Wear on Infrastructure

From a social perspective, increased road traffic is a concern for road safety. Santos is already maintaining roads in the area, and this practice is expected to continue throughout the project. However, Santos will be developing sites in various areas throughout the fields where they may not currently be operating, as well as areas where very few people travel except local residents. Traffic is of concern mainly due to the relative minor use prior to the project in the area, which has resulted in the community being less prepared for increased traffic. This combined with the use of heavy vehicles for some aspects of the project will result in traffic patterns that differ from the norm in some parts, particularly along the dirt roads off the main highways. There has been concern expressed as to the potential for accidents occurring as a result of increased use. There is also concern with unlicensed minors driving themselves and their siblings to the bus (THI, 2008). This practice is illegal but does occur in the study area, and is a legitimate concern regardless. At a number of community information sessions, attendees expressed concerns over the amount of dust that could be generated as a result of increases in traffic movements, and how this would be managed. Santos will need to ensure that a dust suppression practice (such as wetting down unsealed roads) continues to be observed during field activities.

Higher levels of traffic movement will occur in construction, decommissioning and rehabilitation, when more workers and material will be required on sites. During operations traffic will generally be limited to operators going to site, and occasional equipment and supplies will be travelling to and from sites. The high risk rating is more a reflection of the change to the status quo in the area, than a reflection of the amount of traffic increasing in the study area.

#### Mitigation

Santos is developing a formal traffic management strategy as part of the EIS including identifying deficiencies, developing standards and working with stakeholders. This will require stakeholder engagement and negotiation on key traffic issues, as well as educating the local public to the programs and work Santos has already done and is committed to do in the future. Santos will adhere to current strategies with regard to road upgrades and adapt as required.

## Section 9

# Potential Impacts and Mitigation Measures

Santos will work with the Department of Main Roads and local councils to identify existing roads in need of repair/upgrade and areas where there will be a concentration of project traffic as well as developing a management plan to address the issues like road widening, speed limits, dust management and road safety.

Santos' construction management plan will need to address road infrastructure for temporary works.

Santos will develop controls and health and safety (H&S) training such as zero tolerance for alcohol/drugs use for their employees, or use existing controls within their corporation. Santos will also conduct road improvements to be carried out prior to the project commencing where possible, to limit congestion, including of their own project related traffic. Furthermore, Santos will observe the necessary protocols for reducing dust dispersion.

Finally, Santos will work with existing traffic programs underway in the study area, and help strengthen these programs where possible to remain consistent throughout the entire study area. This will include coordination with emergency services to offer assistance in cases of emergency.

It should also be noted that Santos employees require enhanced driver training to operate on Santos sites, including four wheel drive (4WD) training and defensive driving.

### Residual Impacts

As a result of these mitigation measures, the likelihood rating of an event occurring reduced to 'possible' across all three temporal boundaries. The consequences of the event occurring were also reduced, being minor in construction and decommissioning and rehabilitation and insignificant during operations. There is always the potential for an accident to occur, but the mitigation measures are anticipated to greatly reduce this.

### Benefits

As a result of road upgrades and maintenance in the study area from the project, the following potential benefits were identified:

- Improved road infrastructure;
- Increased spending in the local community will stimulate the economy;
- Improved local services; and
- Increased tourism opportunities as a result of improved vehicle access to local areas.

#### 9.1.13.5 Groundwater Level Interference Perception

Consultation identified that some landholders are concerned about interference to groundwater as a result of drilling activities. If there is any perceived interference with a landholder bore, Santos is required to conduct an investigation and report the findings to the EPA. If it is proven that there is an interference Santos will rectify the matter with the affected parties. There is a possibility of groundwater bore interference during the project, or any time thereafter. This section assesses the perception in the community that groundwater levels will be interfered with by the project.

Since much of the study area is reliant on the underground water for domestic uses as well as irrigation and agriculture, it is important that Santos explains this issue to the community. Not everyone in the Roma area is dependent on bores; however, groundwater is a sensitive issue, particularly in relation to the drought.

## Potential Impacts and Mitigation Measures

## Section 9

The perception during construction is likely to be presumed or discussed by landholders in the study area, and this will require localised mitigation. As the project advances the 'likelihood' rating is anticipated to drop to 'possible' for the perceived interference as people become more aware, and the consequences minor as construction mitigation is applied to future activities. Once decommissioning and rehabilitation occurs, the landholder concerns over the perceived impacts may be alleviated if groundwater levels have not changed. However, the potential in reality is still present if the likelihood and consequence did not decrease.

### Mitigation

Analytical groundwater modelling has been carried out as part of the EIS to determine if groundwater interference may occur. For more information on ground water analysis, findings and strategies see the ground water section of the EIS. Santos will implement a groundwater monitoring program to assess and address this issue as documented in that section.

Santos will continue to conduct consultation and water management workshops with local communities outlining their modelling results in regard to this particular issue.

### Residual Impacts

Based on the mitigation, the risk drops significantly as stakeholders are better informed, and more comfortable with the project. In addition, Santos policies to address the issue and mitigate where at fault, will provide landholders reassurance that effects on the groundwater are taken seriously by Santos. If groundwater interference does occur, and is proven to be a result of the project, the public reaction could be severe if they believe they have been misinformed or lied to in the past.

### Benefits

Discussion of the groundwater modelling results with the community will improve trust and transparency between Santos and the community on potential impacts and how Santos intends to manage these impacts.

#### 9.1.13.6 Subsidence – Drilling Activities

This section assesses the impact to land values, lifestyles and landholder stress from drilling activities causing subsidence in the CSG field. Subsidence is considered unlikely to occur and has therefore been assessed as a low risk rating; however, if it did occur, Santos would remediate and mitigate impacts. Research by Santos has indicated subsidence from drilling will not occur.

### Mitigation

Santos may conduct a desktop evaluation where required, of the likelihood and extent of subsidence to demonstrate to the public how low the risk is. This would occur during the drilling programs (construction) if there was evidence that drilling activities had caused subsidence elsewhere, either by Santos or others in similar geological environments. Santos will then communicate this risk to the community through the community consultation and stakeholder engagement program with specific focus on this project issue. Santos will also consult directly with other stakeholders such as local councils and state government to identify specific perceived and actual risks in order to better address stakeholder concerns.

## Section 9

# Potential Impacts and Mitigation Measures

### Residual

If potential subsidence issues are adequately managed and mitigated against, the consequence rating should be reduced to minor. Subsidence is a greater concern for cultivation than for grazing. Given that the majority of the area is used for cattle as opposed to cultivation, the impact of minor subsidence on local fields would likely have a minimal impact and may go unnoticed as level land is not required for grazing, though would still be investigated if evident subsidence did occur. Santos will consult landholders throughout the project and address their concerns with regard to subsidence should they arise.

#### 9.1.13.7 Perception that the Project will have a Negative Impact on the Community

Field assessments, interviews and background research suggest most people believe the project will not have a negative effect on the overall community. For most of the community, including service providers and businesses, they were focussed on the following matters:

- Attracting people to the area and retaining them;
- Employing locally when possible;
- Investing in the community, including buying locally; and
- Not poaching local skilled workers at the expense of the local businesses.

From an individual landholder perspective, potential impacts on their interests and activities are an issue. Some of these considerations such as project land requirements and location of infrastructure is yet to be confirmed as it is subject to continuing studies and results of exploration activity. Santos is continuing discussions with affected landholders to identify potential issues and how negative impacts can be alleviated or mitigated.

From the perspective of impacts to the general community around the field, the perceived community impact was assessed as 'low' risk. Ongoing community consultation and stakeholder engagement on project issues is likely to keep negative perception as low. Santos will consult with other stakeholders such as the local councils and community representative groups to identify specific perceived and actual risks to better tailor consultation to relevant community concerns.

There is an opportunity for Santos to develop collaborative relationships with local business, industry, government and the community to target its social investment where it is needed most. It is expected that by being proactive in this area, Santos can be seen as a responsible community partner, thereby improving its reputation and brand image.

### Benefits

As a result of effective communication, and a perception the project will benefit the community, the potential benefits are:

- Santos is considered a valued member of the community;
- Improved community wellbeing; and
- Less uncertainty, anxiety and stress about the future.

The CSG industry is likely to have an increasingly significant presence in the region. This has potential tourism opportunities, like the Big Rig in Roma. Additionally, there are several other opportunities resulting from the project including employment opportunities, economic growth through the utilisation of the local economy,

## Potential Impacts and Mitigation Measures

## Section 9

increased stature as a significant area, promoting increased services and facilities in the area, and helping to attract and retain skilled people to the area.

### 9.1.13.8 Visual Amenity

Potential impacts to visual amenity include the effect on landholders' properties aesthetic beauty (decreased enjoyment of property); the impact of oil & gas infrastructure on local vitality and the loss of business as a result of rural ascetic degradation. Given the proposed nature of the development, including well spacing, use of current infrastructure, upgrading and enhancement of local infrastructure, visual amenity is not anticipated to be a significant issue in the CSG fields. There are measures in place to avoid impacts on landholders including distances wells and compressor stations have to be from homes, as well as methods for disguising wells to look more like sheds. Evaporation ponds and holding ponds look similar to dams in the area. This would result in unobtrusive project infrastructure that would allow landholders to maintain their current lifestyle. At community consultation sessions, landholders expressed concern over the placement of infrastructure, particularly in respect of water storage ponds. It was the experience of some landholders that these ponds were not being placed in practical locations i.e., locations where the natural run off from the land would be captured. Doing so would result in the sustainable use of the infrastructure after Santos' use had expired. At these sessions, Santos made it clear that these types of issues can be negotiated. Further details on visual amenity are discussed in visual assessment in the EIS.

Santos will enhance the community consultation and stakeholder engagement program to focus on the visual impacts of the project to better inform the public about the visual impacts. Santos will also consult directly with local councils to identify specific real and perceived impacts to better address stakeholder concerns. Santos will provide site tours to existing areas of operation to show concerned and interested stakeholders the visual impact first hand. With these mitigation methods, based on the above measures, Santos can keep the risk of reduced visual amenity in the field low. Currently in the area many people are unaware of the oil industry infrastructure in plain sight because it has been a part of the landscape for decades, or it is not clear that it is actually oil infrastructure. This is likely to be the same for some components of the CSG field.

### 9.1.13.9 Demand on Local Services and Facilities

The project will result in increased use of local services including health, education, and social services and facilities. There is a potential for a high degree of use of local services and infrastructure during construction of the project as more people are required to develop the CSG field. Although the workforce is anticipated to be housed in TAFs during construction, there will be many contractors and other workers using local services from time to time. In addition, due to the proximity to some local communities, workers may require supplies at times from local services. As Roma is a regional service centre with a variety of services, it can better absorb some increases in use; however, there is still a potential during construction for a high risk as the project and community determine their parameters and capabilities respectively. During construction this drops off as the number of workers decreases, as well as the number of workers who are imported workers. Additionally, the community will have better adapted to the change and will be in a better position to deal with ongoing demand of some services. During decommissioning and rehabilitation, the likelihood will increase back to possible from increased workforce, but as in operations, the community will be better able to adapt to the ongoing demand.

#### Mitigation

In order to reduce the risk in operations, and keep the risk from increasing for the other temporal boundaries, Santos will put a stakeholder engagement and community consultation strategy in place to plan local services requirements with the community. This will include a policy on the procurement of local supplies as well as an inventory of self identified suppliers. Santos will reduce temporary accommodation facilities worker access to

## Section 9

# Potential Impacts and Mitigation Measures

community if it becomes an issue based on feedback from stakeholders and local council. It may also include liaison with service providers to outline likely service requirements so that providers can respond to demand in time.

Santos will develop and implement a targeted project sponsorship / community support program to enhance community services both directly affected by the project and general services. In addition, Santos will contribute to local wellbeing programs.

Santos will also develop a social monitoring and measuring program with the community to track positive and negative changes in the community as a result of the project. This will better help enhance the community as well as focus effective mitigation of negative impacts.

### Residual Impacts

As a result of the mitigation strategies, the residual impacts for construction are anticipated to decrease to medium as the community is better prepared to track and respond to changes as a result of the project. This means that impacts throughout the rest of the project are not anticipated to increase though they may still occur.

### Benefits

There are many potential benefits for the community, including:

- Increase labour supply and skilled labour brought into the area;
- Improved skill level;
- Local training provision and opportunities;
- Increased air services (already experienced);
- Diversification of industry which further insulates the community from the drought; and
- Increased incomes and economic activity.

#### 9.1.13.10 Activities Interfere with Landholder Activities

One of the main purposes of the landholder negotiations is to identify the potential areas where the project could interfere with landholder activities and mitigate or prevent this from occurring. Disruption to landholder activities will be most likely during the construction phase, and was assessed as 'high' risk. There will be less disruption to landholder activities during field operations as a result of less activity and better communications. During decommissioning there will be minimal interference with landholder's activities, and a general understanding would likely be in place after such a long interaction period.

Details on specific issues raised throughout the consultation process and Santos' responses can be found in the consultation section of the SIA.

### Mitigation

In order to reduce the impact during construction, Santos will improve the existing EMP to conduct pre-construction ground-truthing in order to flag sensitive areas and species, as well as areas of importance to the landholder. Santos will develop a construction and rehab plan with landholders to identify areas of importance and means to deal with unforeseen issues. Santos will also implement a grievance mechanism to



## Potential Impacts and Mitigation Measures

## Section 9

allow landholders a means for airing concerns and a transparent internal mechanism to respond to landholder issues in a fair and timely manner.

Santos will provide field staff with awareness training on stakeholder sensitivities and dispute resolution. This will include community education, the importance of locked gates and other appropriate security measures to reduce the potential for strained relations with landholders. Santos will ensure field staff are aware of the wash down requirements for vehicles and that such protocols are observed and executed.

Santos will conduct training and community liaison meetings, including mixed sessions with community members, field workers, farmers and other stakeholders on their policies and procedures in order to educate the public and solicit feedback on areas for improvement. Santos will continue to conduct community consultation in regard to the project's progress, and to give the public ongoing opportunities to discuss new and emerging project issues.

Santos is currently working with AgForce to understand land diminution issues affecting land values and will continue to do so. Santos will continue to inform landholders on the findings of this study.

### Residual Impacts

The mitigation measures are anticipated to decrease the construction impacts by reducing the likelihood of interference through better communications with landholders, and revised procedures built on findings from past experiences. In addition, the landholder will have a better understanding of the process, and how to deal with Santos, and what to do when issues arise, which should reduce friction between parties.

### Benefits

- Better communication between parties;
- Santos can have a better understanding of landholder needs and concerns;
- Improved cooperation in accessing landholder property;
- Enhancement of landholder properties through Santos upgrades to meet project requirements. This can include reseeded, better maintenance of property infrastructure, fencing, cattle guards, ponds, roads, and water to name a few; and
- Santos repairs on shared infrastructure if in the interest of both parties which the landholder may not have been able to afford.

#### 9.1.13.11 Associated Water Injection Perception

Associated water injection primarily deals with the issue of what to do with associated water. The injection option has been largely ruled out for most situations, though it could occur in some areas as an alternative solution to the issue of associated water. For the most part, the injection would deal with only small portions of the water extracted, as if injection was the best option, it would need to be stored on the surface until it could be injected, and water loss would occur due to evaporation. For more information on associated water injection, see the section on associated water in the EIS.

Since this is a very unlikely event with very prescriptive regulations, and is not confined to temporal boundaries, this perceived social impact will be assessed as a single issue. The injection will be of the brine from evaporation ponds or water treatment. The volume will be significantly reduced as a result of evaporation, and would be pumped into an aquifer not used due to already present high levels of salinity.

## Section 9

# Potential Impacts and Mitigation Measures

The perception that Santos would be contaminating the aquifers could be avoided through continued open and transparent communication with local stakeholders. Through such channels, as has been the case with the consultation for this EIS, it would be reiterated that Santos would observe all of the necessary legislative requirements in managing the water by-products.

### Mitigation

Santos will develop a risk-based tool to help identify the most appropriate water management methods for disposal in the Roma, Fairview and Arcadia Valley CSG fields. Santos will ensure that this strategy is consistent with EPA guidelines for water injection.

Santos will also complete an analytical groundwater model including a plan to implement a groundwater monitoring program. Santos will then conduct community consultation and an information campaign on groundwater injection to better inform the community of the intent, as well as the guidelines and monitoring program to ensure compliance.

### 9.1.13.12 Accommodation Demand

The social issue is that the community does not have enough accommodation supply for project demand, which disrupts normal accommodation in the community. There will be some impact on the communities in the study area, but not a lot is anticipated due to Santos developing their own TAFs in the CSG field. There would be the potential for sub-contractors staying in the local towns, but this is not anticipated to be a significant issue as the potential numbers are low, and sub-contractors would also stay at TAFs, as is common in other operating fields in the region. The majority of the workforce will be accommodated in the TAF on-site, with only a small number of administrative and management staff located in Roma and surrounding towns. The accommodation study discusses potential impacts of the workforce on housing in the CSG field region. Santos will consult council as to their perspective on housing some workers in or close to town when construction is close to the community.

It has been noted already in the Roma area that the project and other industry's use of local accommodation during the week days has had a positive effect on local businesses as these rooms were generally vacant in the past. As project work tends to occur during the week, and the sub-contractors and Santos staff leave the area on the weekends, the local accommodation businesses have experienced a noticeable increase in revenue (pers. comm., various Roma hotel/motel managers, 2008).

### Mitigation

Santos will focus community consultation and stakeholder engagement on accommodation issues to better inform the community of the pros and cons of utilising local accommodation, as well as the requirement for TAFs for most of the time due to logistics and safety – minimise commuting traffic daily and distances travelled. Santos will consult directly with service providers to identify specific real and perceived risks and explore the option of developing a system for booking and cancelling local accommodation rather than booking numerous rooms for months on end only to have them sit vacant but unusable by others. This may include means for accommodation service providers to rent out booked rooms if no one claims them before a certain time each day, either in person or by other means of communication.

As discussed, there is a higher potential for the use of local hotels and motels than permanent accommodation as a result of the project. Santos will liaise with local accommodation business owners in the area to determine an effective strategy for booking large blocks of rooms over extended periods of time to try to minimise the impact of tourism and general highway traffic use of local accommodation so as not to severely damage that business line. This may include booking several rooms over long periods of time, but allowing booked rooms to



## Potential Impacts and Mitigation Measures

## Section 9

be hired out if no one from Santos confirms the requirement before a certain time each night. In addition, such a strategy would need to coordinate with other oil & gas companies operating in the area, and could include allowing a certain percentage of rooms to be booked by all companies combined so there are still rooms available. Those rooms would require bookings after a certain time of day on a day-to-day basis.

### Residual Impacts

The residual impacts are anticipated to remain the same as a result of the mitigation, as the mitigation is designed to reduce the impacts potential to escalate. As the project advances, better controls and measures will be in place to deal with accommodation demand.

### Benefits

- Minor increase in local economic activity;
- Compensation revenues for landowners who have worker accommodation areas on their land; and
- Hotels have increased activity in the pre-construction stage, which is predominately during traditional off peak times.

### 9.1.13.13 Local Purchasing Policies

This is an interesting social risk, in that too little local purchasing is perceived as a lack of investment in the community, whereas too much is perceived as draining the community's supplies to the detriment of the average citizen. There will always be some in the community that see it as a negative or will link any price increase as a direct correlation to Santos and the project, or that Santos is not buying locally and the local population is not gaining from the project.

The real potential for this to become a negative issue is if policies are not in place to prevent the project demand from outstripping local supply, thus causing a local loss of service. In addition, public education on project demands, local capacity, and supply/demand sensitivity in rural areas will allow the public to formulate more educated opinions of the projects involvement in the local communities.

There is an opportunity for Santos to rekindle the business community organisations by becoming a dedicated member and community partner. This will help community businesses identify business opportunities with Santos, discuss workforce issues, and develop collaborative plans to address the communities business and economic needs. The business community in Roma has already expressed interest in Santos taking on such a role (pers. comm., B. Garvie, 2008) (pers. comm., M. Hosking, 2008). Through the consultation process, it was identified that some local businesses and independent contractors found it difficult to know how to register their interest with Santos. Some contractors did not operate computers and were unable to register their interest on Santos' website. There is also indication from consultation that the local services industries can stand to gain from the project if local procurement policies are introduced (pers. comm., B. Garvie, 2008).

### Mitigation

Santos will develop a local procurement policy to establish its intent and requirements for businesses to supply products and services. It will also assess the staffing and resourcing requirements to meet project demand without compromising or limiting impact on the delivery of services locally.

Santos will also need to review its processes for enabling businesses to register their interest via means other than the Internet.

## Section 9

## Potential Impacts and Mitigation Measures

Santos will reduce temporary accommodation facilities worker access to local communities if this becomes an issue as a result of worker use of local services.

### Residual Impacts

The impacts are not anticipated to change as a result of the mitigation as there is always a possibility of occurrence and the consequences will remain minor. What the mitigation does in this instance is better educate the population on the types of local investment occurring and why, as well as allowing local businesses an opportunity to profit from service delivery to the project while minimising residual impact on the community through decreased services to them.

### Benefits

- Increased community awareness of project benefits;
- Increased economic stimulation in the community;
- Positive perception of the project; and
- Increased economic and employment opportunity.

#### 9.1.13.14 Transition of Workforce

The transition of the workforce refers to workers moving from one industry to oil & gas in order to work for the project. The social impact for this event is similar to the procurement of local supplies and local purchasing policies but taken from a workforce perspective. The impact is the perception that there is no local workforce employed by the project or that the project is poaching local skilled labour to the detriment of local businesses. This has been flagged as a concern in the community (pers. comm., M. Hosking, 2008) (pers. comm., T. Klein and N. Ward, 2008). It is important to note that several business owners identified the poaching of skilled workers as an ongoing issue already in the study area, particularly in Roma, and that it is part of doing business there (pers. comm., B. Garvie, 2008). This occurs across all industries; however, Santos does not intend to recruit locally to the excessive detriment of local businesses. It is also important to note that Santos prefers to hire locally when possible in order to maximise local benefit from the project as well as minimise the costs of FIFO and DIDO transportation.

### Mitigation

Santos will develop and implement appropriate policies for workforce opportunities and strategies to reduce the impact on local businesses. Santos will also consult directly with local councils to identify specific perceived and actual risks, and possible mitigation and monitoring options to better assess the positive and negative changes in the community as a result of the project. This may become part of the social monitoring and measuring program for the project.

Santos will develop a local recruitment and training plan in order to improve local skill levels. Santos will also contribute to local wellbeing programs, as well as develop and implement a targeted project sponsorship / community support program. Santos may explore the option of evaluating subsidies for local businesses if the monitoring identifies this as a serious threat to the longevity of local businesses.

## Potential Impacts and Mitigation Measures

## Section 9

### Residual Impacts

The mitigation is anticipated to bring the consequence down during construction from moderate to minor as people are more aware of the pros and cons, and the steps Santos is taking to reduce negative impacts while trying to balance positive impacts for the community.

### Benefits

- The requirement to bring in workers from outside the region will increase labour supply by bringing in skilled labour;
- May attract people to the area;
- May help retain people by increasing employment options and economic diversity.

### 9.1.13.15 Land Disturbance

The social impact for this event is the stress on landholders and the damage to property resulting in economic loss. This risk is highest during construction due to the increase in activity on the landholder's property. As the project advances, better communications and relationships, as well as lessons learned and recorded into the EMPs should reduce the likelihood and consequences to a low risk. Practises to reduce this impact include the use of existing tracks or constructing new routes that are located in mutually beneficial areas. Also, better communication and the development of relationships over time will help reduce this impact.

### Mitigation

Santos has employed additional land agents to provide more personalised service to landholders directly affected by CSG field operations. These officers will assist in the enhancement of good relations and rapport to ensure emerging landholder issues are attended to promptly and satisfactorily. Santos will constantly improve existing EMP based on lessons learned. This will include pre-construction ground- truthing and planning by specialists, flagging sensitive areas/species and identifying special areas for landholders. Santos will clear the minimum amount of habitat possible and maintain riparian zones and connectivity with other habitat areas where possible, as well as strive to have a minimal impact on ground cover. Santos will also develop a rehabilitation plan to deal with land disturbances, both necessary and unintentional. In addition, Santos will consider an offset policy for landholders within current land clearance and development regulations.

Santos will train field staff to increase awareness of landholder concerns, and implement a grievance mechanism for landholders. Santos will consider the prospect of including landholder experiences, either through direct rendition or through testimonials, in order to provide staff with landholder perspectives on land disturbance events, and allow staff to see how events can be perceived by those impacted.

### Residual Impacts

As a result of the mitigation, the risk is dropped significantly. This is a result of the decrease in the likelihood of an occurrence as better communication and relationships are developed, and project staff are better aware of concerns and respect for landholder property. There will always be hearsay, and real past mistakes; however, this is an individual landholder event that requires the enhancement of relationships, and better transparency in order to build and maintain trust. Accidents do happen, but stronger relationships allow incidences to be mitigated and all parties to move on rather than dwell on perceived injustices. Santos' evolving EMPs and field staff training will also take lessons learned seriously to avoid or minimise replication of past mistakes.

## Section 9

## Potential Impacts and Mitigation Measures

### Benefits

- Land holder has choice in rehabilitation process; and
- Better relationships through better communications and transparency.

#### 9.1.13.16 FIFO/DIDO

The social impact for this event is similar to the procurement of local supplies and local purchasing policies in that it is a perception the project is not using the local workforce and inhibiting project workers from having to move to the area for employment. With the proposed schedule of two weeks on and two weeks off, or whatever work rotation is eventually used, the perception with FIFO and DIDO employees is that the community only sees them at the airport and thus does not gain economically from them in the community. Conversely, some people do not want these workers in the community due to real or perceived fears of social dysfunction as a result. Although issues with imported workers has occurred in the past, there is no evidence to suggest FIFO/DIDO workers social problems occur outside the normal community background levels, but rather are more distinguishable, and therefore easier to identify and remember. This is a minor issue compared to the perception of a lack of community investment or relationship from the project.

The use of FIFO/DIDO workers also has an impact on Santos staff in their home towns, particularly the stresses to workers, their families and their relationships being on a two week on and two week off work rotation. From Santos' perspective, the fewer FIFO/DIDO workers, the less cost they incur transporting them to and from the area. In this sense, Santos is of the same view as most of the public in terms of local hiring, but is inhibited by the reality that it is not always possible to hire only locals, particularly with some skills cannot be locally sourced.

### Mitigation

As part of the procurement of local services community consultation and stakeholder engagement plan, Santos will put in place to plan to assess local skills capacity and interest in employment with the project. Santos will also contribute to local wellbeing programs and assess the prospect of a local training provision to enhance local skills.

Santos will conduct a community consultation and awareness campaign to promote the project benefits to the community and identify the variables in the decision-making process to require FIFO/DIDO employment. The local employment interest and skills capability can be linked to the skills and positions required by the project.

Santos will develop and implement a targeted project sponsorship / community support program to enhance corporate investment in the community, and specific community events. THI found many people in the community were tired of every community event having to have some venue for alcohol, so Santos may consider sponsoring dry events as well to promote a healthier lifestyle and alternatives.

For FIFO/DIDO employees, Santos will develop a series of surveys for employees and their families to better understand the effects of their shift rotation on their lives. A specific monitoring and mitigation strategy will be developed including tailored counselling programs, support networks and rotation alternatives. Santos may also consider commissioning a video for workers and their families on what FIFO/DIDO work is, and what workers do when they leave home to their activities on site. This may give all parties a better understanding of what the workers do. Conversely, a similar video could be made by families while the worker is away on their shift, to give the workers and Santos a better understanding of life with FIFO/DIDO employees.

## Potential Impacts and Mitigation Measures

## Section 9

### Residual Impacts

The impact is unchanged by mitigation; however, the mitigation is designed to increase awareness and find practical solutions to the real and perceived issues as a result. The mitigation is more of a series of relationship building exercises as well as a means to better educate the community on project requirements versus local capacity.

### Benefits

- Reduces dependence on local skills already in demand in the local community;
- Increased coping skills for families new to the fly-in, fly-out way of life;
- Increase local labour supply;
- Improve skill level; and
- Increases awareness of the practical and logistical issues involved in sourcing employees in rural areas.

### 9.1.13.17 Excessive Noise

The noise assessment as well as evidence from similar activities to the project already occurring in the study area have indicated that project noise is only a medium social risk during construction, and low the rest of the time. The primary issue during construction is noise originating from drilling and the movement of machinery around the site. This noise would be localised and short in duration.

During operations the compressors are the major noise contributors; however, the compressors will be located 0.5 to 2 km away from sensitive noise areas based on local requirements, land cover and topography. Wells will be at least 300 m away from a house due to the noise from the pump on the well. During decommissioning and rehabilitation everything is shut down. At some community information sessions, local landholders expressed concerns over how often, and to what level of quality, is noise monitoring conducted on properties. Santos made it clear that noise monitoring was a key component of the EIS. More detailed information can be found in the Noise and Vibration chapter of the EIS.

### Mitigation

Santos will identify key noise sources as part of Phase 2 (post EIS) impact assessment ground-truthing for their EMPs. Santos will implement engineering solutions to suit local conditions and work with local stakeholders to reduce their presence at critical times. Santos negotiations with landholders will identify appropriate compensation and a grievance mechanism for landholders to document concern with Santos activities. Regular noise monitoring will be undertaken to ensure acceptable levels are maintained.

### Residual Impacts

As a result of the mitigation, the construction likelihood will decrease to an acceptable level as measures will be taken to muffle project noise, or better compensate or mitigate ongoing issues.

### Benefits

- Infrastructure will be located away from noise sensitive areas; and
- Review new/innovative technologies for infrastructure to be implemented in the field.

## Section 9

## Potential Impacts and Mitigation Measures

### 9.1.13.18 Weeds

Unlike the Gas transmission pipeline route, much of the CSG field area is unknown for weed locations though a weed study has occurred in some areas. In addition, travel in the area is less, so although the likelihood of weed spreading is less, the likelihood of an occurrence being noticed in a timely manner is less as it may be several months before the weeds are discovered and rehabilitation can occur. This is seen as a minor occurrence as it will be a localised, small infestation.

#### Mitigation

Santos will implement revised wash-down procedures if changing events warrants it. Santos will conduct training and community liaison meetings for field staff, including mixed sessions with community members, field workers, farmers and other stakeholders.

Santos will develop EMPs for pre-construction ground-truthing, identifying sensitive areas/species, implementing vegetation clearing procedures and early rehabilitation of affected areas. Santos has already produced a local weed identification guide and will continue to distribute this guide to landholders and other stakeholders in the area.

#### Residual Impacts

Unchanged impacts but an increased awareness for employees and area residents on the steps undertaken and the procedures to deal with weed identification and eradication.

#### Benefits

- Better community awareness; and
- Better weed control.

### 9.1.13.19 Poor Communication with Community

The current pre-approvals, pre-construction period sets the stage for the rest of the project. Since everything builds off of this period, assessing this across the temporal boundaries is not relevant, as it is a cumulative effect throughout the process. The issue is of trust and relationship building with the community, not necessarily winning popular support, though support is generally a good indicator of trust. This period is the foundation that will affect communication throughout the project.

There have been suggestions in the community from site assessments, interviews and general conversations that non-issues from the projects perspective are becoming issues in the community as they are not being dealt with. Industry as a whole is struggling to deal with one on one communication and keeping the same rapport and message across to the region. This is particularly the case with land holders (pers. comm., T. Klein and N. Ward, 2008). Santos has several land managers talking to landholders throughout the region. Better co-ordination between managers is very important to maintain fairness, openness and consistency of message. In addition, different areas have different issues and interest groups, and it is important to recognise their differences as much as their similarities.

Two issues that have surfaced already are issues in relation to indigenous cultural holders perceived to being given access by Santos to explore private landholder's property, and issues with women feeling marginalised by not being directly involved in the negotiation process. These issues were identified by both the SIA and THI

## Potential Impacts and Mitigation Measures

## Section 9

throughout 2008, and are just examples of how simple miscommunication or oversights can develop into larger issues if left unchecked. They also identify the importance of building trust and better relationships so mitigation of issues as they occur is easier and better understood.

The various community consultation and stakeholder engagement strategies discussed throughout this assessment are all designed to help build trust and develop relationships in order to offer a better understanding to the community, and means for two way communication of concerns, ideas, and suggestions. Santos will be a member of local communities for over 30 years, and is committed to being a good neighbour and helping to enhance the area in which they operate. Santos also recognises that a relationship requires more than one party, and requires the willingness of members of the community to work with them to make a better project, and a better community as well.

There is an opportunity for Santos to rekindle the business community organisations by becoming a dedicated member and community partner. This will help community businesses identify business opportunities with Santos, discuss workforce issues, and develop collaborative plans to address the communities business and economic needs.

There is an opportunity for Santos to develop collaborative relationships with local business, industry, government and the community to target its social investment where it is needed most. It is expected that by being proactive in this area, Santos can be seen as a responsible community partner, thereby improving its reputation and brand image.

### 9.1.14 Conclusions

There are several variables impacting the local population outside of the control of the project including:

- Climate variability and change (e.g. a possible increased prevalence of drought);
- The historical difficulty for rural centres to attract and retain staff in the service, education, health and government sectors;
- The loss of staff to higher paying jobs in other industries, often operating on FIFO and DIDO arrangements; and
- Well established trends to migrate from rural to urban environments.

From a demographics and population size standpoint, the development of the CSG field will help stabilise the region by providing high paying, long term employment in the immediate area. Without an increase in development in the area, current trends suggest Roma Regional Council (RRC) and other rural councils in the project area may eventually experience the rural decline that is plaguing much of central Queensland, and the world as a whole. Due to Roma being a services centre for the area, this rate of decline will be less but as the areas around Roma decline, the same outcome is likely inevitable without a project.

The majority of potential effects from the field activities themselves will be experienced by directly affected landholders with farms and homesteads throughout the area. Since Santos is negotiating directly with these landholders, and the details of these negotiations are confidential, they are not included in the social impact assessment (SIA). However, general community sentiments and information collected by Santos land managers has been included to better assess the project effects on the landholders. Information for the SIA was also collected from communities, and the stakeholder engagement plan through various consultation events and methods. Details of the stakeholder engagement plan can be found in the consultation section of the EIS.



## Section 9

# Potential Impacts and Mitigation Measures

Santos has ongoing dialogue and negotiations with likely affected landholders in the study area. This dialogue will continue until exact project infrastructure and associated impacts are better defined through well planning. Once CSG field plans and design details have been determined (based on exploration results) those not impacted will become part of the general public consultation, while those directly or indirectly impacted will be negotiated with to reach a settlement.

As Roma town is proposed as a regional hub for Santos field activities, there will be an anticipated increase in the number of people to the area, either directly employed by the project or indirectly. There is a strong potential for employment opportunities offered by Santos to become a negative drain on some local employers, particularly government and warehousing businesses. Baseline levels of worker movement from one industry or business to another is fairly common in Roma, and many people only stay in the community for a few years as part of their work contract according to several interviewees. These individuals and families are generally employed by government. Santos will need to work with local businesses and government to discuss options should the rate of worker migration to Santos exceed the baseline levels. In terms of attraction and retention of skilled people to the area, the project will have a positive effect as it provides a base of approximately 50 long-term, positions.

In order to maximise local gains Santos prefers to employ locally first when possible and will encourage their employees to move to, or stay in the Roma Regional Council area if employed in the CSG field. Further dialogue between Santos, the Roma Regional Council and local service providers will help the community identify and monitor their ability to attract and retain skilled persons for the area, which was seen by many Roma residents and opinion leaders as the key to strengthening their community.

From the RISQUE assessment, there were no extreme inherent risks identified, however the following high inherent risk events were identified:

- Associated water (Roma and Arcadia Valley fields);
- Increased road traffic/wear on infrastructure;
- Groundwater level interference perception;
- Demand on local services and facilities;
- Activities interfere with landholder activities;
- Potential land disturbances; and
- Transition of workforce from agriculture over to industry.

All the high inherent risk events occurred during the construction phase of the project. Associated water in the Roma Field was also high during operations because the consequences remained moderate. Traffic was also high at decommissioning and rehabilitation because of the number of workers increasing to dismantle the infrastructure and remediate some sites.

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



## Potential Impacts and Mitigation Measures

## Section 9

Effective communication, a social management plan, work force training and ongoing monitoring will help mitigate these high inherent risk events to an acceptable residual risk level. Santos will also highlight these risks to the community and solicit feedback on additional mitigation options in order to include local input into the process and enhance community understanding of the issues that may affect them as a result of the field development. There are opportunities with both the social services community as well as the business community to work collaboratively on issues facing the community and develop strategies to address these issues. Santos is committed to exploring these opportunities.

Table 9-4 summarises the RISQUE events, impacts, mitigation and residual risk as discussed above.

Section 9

Potential Impacts and Mitigation Measures

Table 9-4 RISQUE Assessment Summary for Potential Social Impacts for the CSG Field

RISQUE Event Number/Aspect	Potential Impact	Project Phase	Inherent Risk rating	Mitigation Strategy	Residual Risk Rating	Objective
Roma associated water	<p>Perceived reduction in land value and salinity concerns across the CSG Field as a whole, as well as use of associated water.</p> <p>From a social perspective some of the real and perceived impacts from associated water are:</p> <ul style="list-style-type: none"> <li>More water for irrigation;</li> <li>High salinity causing soil damage;</li> <li>Increased or decreased land values;</li> <li>Change in land productivity (positive and negative);</li> <li>Change in flora and fauna patterns along creeks;</li> <li>Evaporation ponds dotted throughout the area;</li> <li>Increased water during floods;</li> </ul>	Construction	High	<p>Disposal is to be in line with the EPA guidelines and may require a larger forum (including industry competitors and key stakeholders) to develop a policy in the area.</p> <p>Community consultation and stakeholder engagement.</p> <p>Development of a construction management plan as part of the EMP process including engineering controls on design and maintenance.</p> <p>If damage occurs to property from associated water, Santos will carry out rehabilitation works to the satisfaction of the landholder.</p> <p>Development of a grievance mechanism to capture and address land holder comments and issues.</p> <p>Continue working with the agricultural industry body AgForce, to understand land diminution issues affecting land values.</p>	Medium	To ensure Associated water disposal does not impact negativity on the local community.
		Operation	High		Medium	
		Decommissioning	Medium		Medium	

## Potential Impacts and Mitigation Measures

## Section 9

RISQUE Event Number/Aspect	Potential Impact	Project Phase	Inherent Risk rating	Mitigation Strategy	Residual Risk Rating	Objective
	Reduced impact of droughts; Erosion; and Changes in the water tables.					
Arcadia associated water	Same as Roma Associated Water, however there are fewer landholders who may be affected due to the limited use of the valley under the petroleum lease, the fewer number of landholders in the area and the more difficult terrain to operate in.	Construction	High	Same as Roma Associated Water.	Medium	Same as Roma Associated Water.
		Operation	Medium		Low	
		Decommissioning	Low		Low	
Increased road traffic/wear on infrastructure – fatality	Increased road traffic is a concern for road safety. Traffic is of concern mainly due to the relatively minor use prior to the project in the area, which has resulted in the community less prepared for increased traffic. During operations traffic will generally be	Construction	High	Develop a formal traffic management strategy; Develop standards and work with stakeholders. This will require stakeholder engagement and negotiation on key traffic issues, as well as educating the local public to the programs and work Santos has already done. Adhere to current strategies with regard to road upgrades and adapt as required.	Low	To encourage and facilitate traffic safety in communities impacted by the project.
		Operation	Low		Low	
		Decommissioning	High		Low	

Section 9

Potential Impacts and Mitigation Measures

RISQUE Event Number/Aspect	Potential Impact	Project Phase	Inherent Risk rating	Mitigation Strategy	Residual Risk Rating	Objective
	limited to operators going to site, and occasional equipment and supplies will be travelling to and from sites.					
Fairview associated water	Same as Roma Associated Water, however there are fewer stakeholders potentially affected due to the limited use of the area under petroleum lease as well as a fewer number of landholders in the area than in Roma.	Construction	Medium	Same as Roma Associated Water.	Medium	Same as Roma Associated Water.
		Operation	Medium		Medium	
		Decommissioning	Low		Low	
Groundwater level interference perception.	Perceived interference to groundwater as a result of drilling activities.	Construction	High	Host stakeholder consultation and information sessions outlining groundwater modelling results.	Low	To provide information to landholders so they are able to understand the impacts of the project on groundwater in the area.
		Operation	Medium		Medium	
		Decommissioning	Medium		Medium	
Subsidence - Drilling activities.	Impact to land values, lifestyles and landholder stress from drilling activities causing subsidence in the CSG Field	Construction	Low	Desktop evaluation where required, of the likelihood and extent of subsidence to demonstrate to the community how low the risk is. Communicate the risk to the community through the community consultation and	Low	To inform the community of the actual risks involved and that subsidence is not anticipated to occur from drilling activities.
		Operation	Medium		Low	
		Decommissioning	Low		Low	

## Potential Impacts and Mitigation Measures

## Section 9

RISQUE Event Number/Aspect	Potential Impact	Project Phase	Inherent Risk rating	Mitigation Strategy	Residual Risk Rating	Objective
				stakeholder engagement program. Consult directly with local councils and state government to identify specific perceived and actual risks in order to better address stakeholder concerns.		
Perception that Project will have a negative impact on the community	Field assessments, interviews and background research suggest most people believe the project will not have a negative effect on the overall community. However, from an individual landholder perspective, potential impacts on their interests and activities are an issue.	Construction	Low	Ongoing community consultation and stakeholder engagement on project issues.	Low	To ensure that the community perceives the project to be beneficial to the community.
		Operation	Low		Low	
		Decommissioning	Low		Low	
Visual amenity	The effect on landholders' properties including: aesthetic beauty (decreased enjoyment of property); the impact of oil & gas infrastructure on local	Construction	Low	Minimise impacts on landholders by implementing the following measures: distances wells and compressor stations have to be from homes; disguising wells to look more like sheds;	Low	To minimise the visual impact of the project on the surrounding landscape.
		Operation	Low		Low	
		Decommissioning	Low		Low	

Section 9

Potential Impacts and Mitigation Measures

RISQUE Event Number/Aspect	Potential Impact	Project Phase	Inherent Risk rating	Mitigation Strategy	Residual Risk Rating	Objective
	vitality; and the loss of business as a result of rural aesthetic degradation.			Evaporation ponds and holding ponds look similar to dams in the area; and Involvement of landholder in determining location of CSG field infrastructure.		
Demand on local services and facilities	Increased use of local services including health, education, and social services and facilities.	Construction	High	Liaise with state and local government, as well as local service providers, to monitor service supply and quality, and address negative impacts that can be attributed to the Project. Policy on the procurement of local supplies as well as an inventory of local suppliers.	Medium	To utilise local services and facilities without affecting the normal supply to the local community.
		Operation	Low		Low	
		Decommissioning	Medium		Medium	
Activities interfere with landowner activities	Potential areas where the project could interfere with landholder activities.	Construction	High	Improve the existing EMP to conduct pre-construction ground-truthing in order to flag sensitive areas and species, as well as areas of importance to the landholder. Develop a construction and rehabilitation plan with landholders to identify areas of importance and means to deal with unforeseen issues. Implement a grievance mechanism to allow landholders a means for airing concerns and a	Medium	To identify activities that may interfere with landowner activities and to communicate ways to resolve any interference.
		Operation	Medium		Medium	
		Decommissioning	Low		Low	

## Potential Impacts and Mitigation Measures

## Section 9

RISQUE Event Number/Aspect	Potential Impact	Project Phase	Inherent Risk rating	Mitigation Strategy	Residual Risk Rating	Objective
				transparent internal mechanism to respond to landholder issues in a fair and timely manner.		
Accommodation demand	Not have enough accommodation supply for project demand, which disrupts normal accommodation in the community	Construction	Low	Community consultation and stakeholder engagement on accommodation issues to better inform the community of the pros and cons of utilising local accommodation Develop project TAFs in the CSG Field. Consult directly with service providers. Explore the option of developing a system for booking and cancelling local accommodation rather than booking numerous rooms for months on end only to have them sit vacant but unusable by others.	Low	To minimise the project's impact on accommodation in the vicinity of the CSG fields.
		Operation	Low		Low	
		Decommissioning	Low		Low	
Local purchase policies	Too little local purchasing is perceived as a lack of investment in the community, whereas too much is perceived as draining the community's supplies to the detriment of the average citizen.	Construction	Medium	Community consultation and stakeholder engagement to plan local services requirements with business owners and local stakeholders. Develop a local procurement policy. Allow local businesses to bid	Medium	To show investment within the community without draining all of the local supplies.
		Operation	Medium		Medium	
		Decommissioning	Low		Low	

## Section 9

## Potential Impacts and Mitigation Measures

RISQUE Event Number/Aspect	Potential Impact	Project Phase	Inherent Risk rating	Mitigation Strategy	Residual Risk Rating	Objective
				on potential contracts, and assess the staffing and resourcing requirements to meet project demand without compromising or limiting impact on the delivery of services locally.		
Transition of workforce	Refers to workers moving from one industry to oil & gas in order to work for the project. Perception that there is no local workforce employed by the project or that the project is poaching local skilled labour to the detriment of local businesses.	Construction	Medium	Liaise with local business and industry to monitor workforce impacts and collaboratively develop strategies where negative impacts are identified.  Develop a local recruitment and training plan in order to improve local skill levels. Contribute to local wellbeing programs, as well as develop and implement a targeted project sponsorship / community support program.	Medium	To utilise local workers, however not at the detriment of local businesses.
		Operation	Low		Low	
		Decommissioning	Low		Low	
Land disturbance	Stress on landholders and the damage to property resulting in economic loss.	Construction	High	Improve existing EMP based on lessons learned.  Pre-construction ground-truthing and planning by specialists, flagging sensitive areas/species and identifying special areas for landholders.	Low	To minimise project impact on landholders properties.
		Operation	Low		Low	
		Decommissioning	Low		Low	
Fly in/out	Not utilising the local workforce and	Construction	Medium	Develop a plan to assess local skills capacity and	Medium	To utilise and up skill the local workforce, however, not at the
		Operation	Low		Low	



## Potential Impacts and Mitigation Measures

## Section 9

RISQUE Event Number/Aspect	Potential Impact	Project Phase	Inherent Risk rating	Mitigation Strategy	Residual Risk Rating	Objective
	<p>inhibiting project workers from having to move to the area for employment.</p> <p>Real or perceived fear of social dysfunction as a result of external workers in the community.</p> <p>Impact on Santos staff in their home towns, particularly the stresses to workers, their families and their relationships being on a two week on and two week off work rotation.</p>	Decommissioning	Low	<p>interest in employment with the project.</p> <p>Contribute to local wellbeing programs and assess the prospect of a local training provision to enhance local skills.</p> <p>Community consultation and awareness campaign to promote the project benefits to the community</p> <p>Develop and implement a targeted project sponsorship / community support program to enhance corporate investment in the community, and specific community events.</p> <p>Develop a series of surveys for employees and their families to better understand the effects of their shift rotation on their lives.</p> <p>Develop a monitoring and mitigation strategy including tailored counselling programs, support networks and rotation alternatives.</p> <p>Commissioning a video for workers and their families on what FIFO/DIDO work is, and what workers do when they</p>	Low	<p>detriment to local businesses.</p> <p>To understand and minimise the impact of workers from outside of the local area.</p>

## Section 9

## Potential Impacts and Mitigation Measures

RISQUE Event Number/Aspect	Potential Impact	Project Phase	Inherent Risk rating	Mitigation Strategy	Residual Risk Rating	Objective
				leave home to their activities on site.		
Excessive noise	Noise originating from drilling and the movement of machinery around the site impacting on local landholders	Construction	Medium	Identify key noise sources as part of Phase 2 ground-truthing for their EMPs. Implement engineering solutions to suit local conditions and work with local stakeholders to reduce their presence at critical times. Negotiations with landholders will identify appropriate compensation and a grievance mechanism for landholders to document concern with project activities.	Low	To minimise noise disturbance on local landholders.
		Operation	Low		Low	
		Decommissioning	Low		Low	
Weeds	Spreading weeds onto landholder's properties.	Construction	Low	Implement wash-down procedures. Conduct training and community liaison meetings for field staff, including mixed sessions with community members, field workers, farmers and other stakeholders.	Low	To minimise the spread of weeds and to educate the local community.
		Operation	Medium		Medium	
		Decommissioning	Low		Low	

## Potential Impacts and Mitigation Measures

## Section 9

### 9.2 Gas transmission pipeline

The majority of the potential gas transmission pipeline impacts will occur on the various individual properties along the route. Negotiations with landholders identified approximately 220 individuals named on 87 title deeds for properties along the gas transmission pipeline corridor, with approximately 120 additional family members residing on these properties (pers. comm., D. Wood, 2008). There were also 56 additional non-family workers identified on these properties. These workers often work on a seasonal basis. It should be noted that all landholders have not been interviewed to identify the total number of additional workers as there are still landholder negotiations continuing. There may also be minor revisions to the numbers identified should portions of the pipeline corridor change. The figures are based on estimations made from interviews with 95% of landholders directly affected by the proposed corridor. For the purposes of this assessment, it is estimated that there will be potential direct impacts on approximately 450 individuals along the 435km gas transmission pipeline corridor.

The assessment for the gas transmission pipeline also considered the population not directly affected by the proposed corridor, as the route passes close to several communities and homesteads between the CSG field and the LNG facility, and along the corridor goes near or under major roads used by the general public. As construction is short term, potential impacts are only expected to occur for brief periods of time. As such, many impacts are rated at a lower level than in the CSG field or at the LNG facility, due to the short duration that any one group or individual will be exposed to them for. Due to the size of the construction workforce and the duration of time they will be working in any given area (generally 2 months), there will be both positive and potentially negative impacts associated with the construction phase, particularly with accommodation. An assessment of accommodation for the gas transmission pipeline was conducted and presented in Section 7 and reflected in this section.

Santos will maintain a register of lessons learned while constructing the gas transmission pipeline which will be included in the EMP on an ongoing basis to ensure the plan evolves with the on-going construction process. This is intended to reduce the risk of repeating mistakes as well as making sure relevant information relayed to land managers by landholders is available to construction crews.

#### 9.2.1 General Social Assessment

The potential social impacts are anticipated to occur during construction and (to a lesser extent) decommissioning and rehabilitation. Previous pipeline construction in 1989 along much of the same corridor as the gas transmission pipeline was considered in the assessment, including the apparent absence of long-term or cumulative social effects as a result. During operations, the workforce is anticipated to be less than ten individuals throughout the entire corridor, and therefore is not expected to be noticed above the normal background movements in the area. Therefore, for the purposes of this assessment, the focus is on the construction phase unless otherwise stated.

For the construction phase, a large component of the mitigation proposed is an effective communication strategy for the local communities and landholders. This strategy will be designed to better inform the communities of the potential impacts or disruptions to their daily lives during times of activity, as well as the potential opportunities for employment and services. This should be conducted prior to construction as well as during construction, especially for the communities where construction will be passing through in a few months. This will allow people to better understand what is coming so they can plan around the activities as much as possible.

## Section 9

# Potential Impacts and Mitigation Measures

The general potential social impacts associated with construction are the inconvenience to people in the area and the effects on directly affected landholders. The former is an unavoidable impact that is not expected to be significant for the following reasons:

- The construction activities are anticipated to occur in a specific area for less than two months before moving to the next area;
- Much of the corridor is away from the general population centres;
- Much of the corridor is away from the major transportation corridors; and
- Construction management plans (including traffic control, noise and dust suppression where possible and scheduling certain events around community activities if possible) will be implemented to coordinate construction activities with daily community routines.

The latter is addressed in the landholder negotiations prior to construction. During construction, the environmental management plans (EMPs) are designed to minimise unforeseen effects on landholders. In circumstances where unforeseen effects occur, Santos will implement a grievance mechanism in order for complaints to be lodged and responded to in a reasonable manner.

### 9.2.2 Potential Impact on Demographic Profile

Based on the assertion that construction workers will be housed in TAFs (and therefore will not move into the communities along the corridor), there are no anticipated impacts on the study area's demographic profile.

There is no anticipated population increase associated with construction or operations. The construction workforce will be housed in TAFs and the construction activities are not in a specific area long enough to suggest people would migrate to the area.

During operations the workforce is not an issue as it is less than 20 workers across the entire route.

### 9.2.3 Additional Potential Impacts on Indigenous People

The complete Indigenous baseline and impacts are assessed in Section 6 because the Indigenous assessment boundaries did not align with the study area boundaries for the rest of the social assessment.

Potential social impacts on the Indigenous population can be found in Section 6.3.

### 9.2.4 Potential Impact on Employment

Santos' policy aim is to employ locals wherever possible. For the construction phase of the project, this will not always be possible, because there are specialty pipeline laying companies with existent crews that perform this sort of work. There may be opportunities for local employment for some components, like traffic controllers, graders, earth moving equipment operators, and general labourers. The exact numbers and types of employment opportunities for people in the corridor will be dependent on the selected contractor's requirements and in-house capabilities. Santos will encourage the selected contractor to employ locally whenever possible.

Unemployment levels for old shires within the councils were 0.6% to 3.7% in Roma Regional Council, 4.2% to 5.4% in the Gladstone area and 1.7% to 2.4% in the rural areas between (Bauhinia, Duinga and Banana) according to the most recent data available. This indicates a fairly strong employment rate for the rural areas (including Roma Regional Council, which is less reliant on employment opportunities associated with the gas transmission pipeline) and an employment opportunity for those unemployed in the Gladstone Regional Council. Since the potential local employment opportunities are anticipated to be minor, there is not likely to be a measurable impact on area employment figures associated with the gas transmission pipeline construction.

## Potential Impacts and Mitigation Measures

## Section 9

### 9.2.5 Potential Impact on Income and Affordability

Since the construction activities are not static and will only be active in a specific area for a short duration (most likely less than two months), there is not likely to be an impact on the cost of living. The level of incomes of locals who successfully sought employment with the construction crews would likely increase, as the construction salaries are anticipated to be at or above the average incomes in the corridor (with the exception of Duaringa, which is already well above neighbouring regions mainly due to coal mining activities in the area). This may have an impact in some communities; however, as discussed in Section 8, the number of local residents hired is anticipated to be low.

### 9.2.6 Potential Impact on Housing and Accommodation

The entire workforce will be accommodated in a series of TAFs. Locations for these facilities will be determined closer to construction. No significant impacts on local housing and accommodation are anticipated.

There may be occasions when senior project staff or some contractors are accommodated in local hotels or motels throughout the construction phase. This is not expected to be a common occurrence since the TAFs will be present as well.

### 9.2.7 Potential Impact on Health

The TAFs will be self sufficient, including health and emergency services, so the workforce is not anticipated to have an impact on these services. There is a potential for emergencies on the construction site that are beyond the capabilities of the on-site medical staff. In such circumstances, local services may be called upon. This potential reliance on local health services is assessed as low, and the effect of that use on the local health services is low as well.

The medical services for the pipeline construction crews are generally of a high industrial first aid standard.

Santos will inform health services in an area prior to undertaking construction activity as to the size of the workforce, on-site capabilities and emergency procedures.

### 9.2.8 Potential Impact on Education and Training

Education impacts are not anticipated because of the short duration of the construction in any specific area. Additionally, no training facilities will be developed for the gas transmission pipeline because of the short duration of construction. Operations workers will be trained by Santos to monitor the pipeline.

### 9.2.9 Potential Impact on Emergency Services

First-aid facilities will be available at the work site and at TAFs. The facilities will have the capacity to treat non-serious injuries and stabilise more serious injuries prior to transport to hospitals. Serious injuries would often be referred to larger hospitals including Gladstone, Rockhampton or Emerald hospitals. The workforce is not anticipated to have a significant demand on general health and medical services in the region.

This could include fire, police, ambulance or flying doctor. Due to the on-site capabilities of the emergency services for the construction workforce, a request for local emergency services is considered a low likelihood. Should such services be requested, it is unlikely that the temporary use of those services would adversely affect the community.

Santos will inform local emergency services in an area prior to undertaking construction activity as to the size of the workforce, on-site capabilities and emergency procedures.

## Section 9

# Potential Impacts and Mitigation Measures

### 9.2.10 Potential Impact on Community Facilities and Services

The TAFs will be self sufficient, including recreational facilities and full accommodation (including meals), so the workforce is not anticipated to have an impact on these services locally. Workers may occasionally venture into some of the area communities for the odd purchase, but this is not anticipated to negatively affect activities in the community. The economic activity associated with such activities will have a positive impact on local businesses, although this is not anticipated to be significant, due to the construction duration, workforce size and self contained TAFs.

Santos will explore the potential for procuring some supplies locally where possible in order to increase local economic and employment opportunities.

### 9.2.11 Potential Impact on Community Values, Lifestyle

There are minor to negligible impacts anticipated on the community values and lifestyle associated with the gas transmission pipeline construction due to the duration of construction, the small amount of time in any specific area, the housing of the workforce in TAFs and the minor local employment opportunities. Since the entire corridor is already predominantly similar manual/working industries, locals successfully securing employment opportunities with the project will not change community values or lifestyles.

### 9.2.12 Summary

Table 9-5 is a summary of the social components and potential impacts discussed for the gas transmission pipeline. Following the table is the RISQUE assessment of likely specific events and the anticipated impact from a social perspective.

## Potential Impacts and Mitigation Measures

## Section 9

Table 9-5 Summary of Potential Impacts for the Gas Transmission Pipeline

Social Component	Potential Impact	Project Phase	Inherent Risk rating	Mitigation Strategy	Residual Risk Rating	Objective
Demographic Profile	No anticipated impact since workforce will be housed in TAF	Construction	Low	Prioritise local employment over non-local employment where possible and practical.	Low	To reduce likelihood of altering existing community profile. .
		Operation	Low		Low	
		Decommissioning	Low		Low	
Employment	Opportunity to reduce unemployment rate, particularly around the Gladstone end. Provide employment opportunities locally.	Construction	Medium (positive)	Hire local where possible or practical.	Medium (positive)	To assist in improving local and regional employment opportunities and develop the skill level of the local community.
		Operation	Low		Low	
		Decommissioning	Low		Low	
Income and Affordability	Increase in weekly incomes; Increase in cost of living.	Construction	Low	Local employment priority where possible	Low	To maximise income generation opportunities and limit increases in cost of living.
		Operation	Low		Low	
		Decommissioning	Low		Low	
Housing and Accommodation	Some management and contractors may be temporarily housed in local hotels and motels.	Construction	Low	Majority of construction workers to stay in TAF. Use of local accommodation limited to hotels and motels for small number of senior staff and contractors as required. Coordinate use with accommodation owners when possible.	Low	Maintain housing affordability and availability.
		Operation	Low		Low	
		Decommissioning	Low		Low	
Health	Health services unable to cope with additional demand.	Construction	Low	Inform local health services prior to commencing activity in the area.	Low	To minimise any impacts on the surrounding area and maintain or temporarily improve health facilities.
		Operation	Low		Low	
		Decommissioning	Low		Low	

## Section 9

## Potential Impacts and Mitigation Measures

Social Component	Potential Impact	Project Phase	Inherent Risk rating	Mitigation Strategy	Residual Risk Rating	Objective
Education and Training	Limited availability/insufficient education and training facilities/ vacancies.	Construction	Low	Liaison with Education Queensland. Development of skills training program (refer to employment aspect).	Low	Maximise education opportunities.
		Operation	Low		Low	
		Decommissioning	Low		Low	
Emergency Services	Emergency services unable to cope with additional demand.	Construction	Low	Inform local emergency services prior to commencing activity in the area	Low	To minimise any impacts on the surrounding area and maintain or temporarily improve emergency services.
		Operation	Low		Low	
		Decommissioning	Low		Low	
Strain on local facilities and services	No anticipated impact since workforce will be housed in TAF. Minimal use of local services, likely to the economic benefit of business owners.	Construction	Low	May explore the potential to procure some supplies locally if possible.	Low	To utilise local services and facilities without affecting the normal supply to the local community.
		Operation	Low		Low	
		Decommissioning	Low		Low	
Community Values, Lifestyle	Reduction/loss of community values and lifestyle. Project does not meet community expectations.	Construction	Low	Becoming an active member of community, supporting events promoting those community values during construction phase.	Low	Santos behaviour and actions meet the expectations of the community.
		Operation	Low		Low	
		Decommissioning	Low		Low	



## Potential Impacts and Mitigation Measures

## Section 9

### 9.2.13 Rail Option

Santos is considering transporting gas transmission pipeline materials from Gladstone port to a warehouse facility in Moura (to be determined) in order to reduce the risk of road accidents. Moura was chosen as the end point for the rail option because it is the farthest rail point from Gladstone along the pipeline route. This option is primarily addressed in the Traffic and Transport chapter of the EIC (Section 4) and Appendix J of the EIS and in the Project Description chapter of the EIS (Section 3).

From a social perspective, this option will reduce the negative social impacts associated with increased traffic and safety risks from the transportation of materials between Gladstone and Moura. In addition, there would also be two to three pipe laydown areas between Gladstone and Moura. These laydown areas would likely be adjacent or close to the rail line. There would also be additional laydown areas along the gas transmission pipeline route.

There is a potential for direct and flow-on employment associated with this option, though the numbers are anticipated to be minimal.

- Potential employment opportunities with Gladstone Port Corporation: likely less than 10;
- Potential employment opportunities with Queensland Rail: likely less than 10;
- Potential employment opportunities with Santos at Moura warehouse: likely 25-50; and
- Potential employment opportunities with Santos for the pipeline laydown areas: around 60-100 jobs (based on 6 to 10 potential laydown areas requiring a maximum of 10 people per site).

Based on the potential employment opportunities for this option, it is unlikely that there would be measurable social impacts associated with this option. There will likely be increased activities around the community of Moura as a result of this option but these are anticipated to be manageable. Santos is proposing to build their Moura warehouse on a Brownfield site on the outskirts of town to minimise disturbance to the local population and avoid Greenfield areas.

Prior to the first quarter of 2009 Moura and area were experiencing the mining boom in the Bowen Basin; however, the changing economic situation has had an impact on the area. The area has experienced increased unemployment rates (though unemployment levels in the Moura area have been below the Queensland average for many years). The employment opportunities associated with the rail option for Moura and area are therefore a positive social impact, and could help stabilise the local economy during the gas transmission pipeline construction phase. As a result, sourcing workers locally for the Moura warehouse may be more plausible than it was 6 months to a year prior to submission of this report. As with other components of this project, Santos would prefer to hire locally whenever possible. Employment opportunities associated with the rail option are anticipated to last 12 to 24 months. In addition, there may also be a potential to transport workers from Gladstone via the rail to Moura. Santos will continue to explore these opportunities in order to reduce risks associated with the movement of workers and materials to employees, contractors and the general public.

Santos will continue to consult with Banana Shire Council and Gladstone Regional Council on the project components as they evolve.

### 9.2.14 RISQUE Assessment Impacts and Mitigation

Table 9-6 was compiled for the gas transmission pipeline based on interviews, field assessments, baseline data and professional knowledge of the project and study area. The events are described below in terms of their relevant potential social impacts.

## Section 9

## Potential Impacts and Mitigation Measures

The order of the events reflects their ranking in the RISQUE assessment as part of the EIS as a whole for the most part, though some were moved in order to better maintain flow for the reader. For an actual ranking of all events in the RISQUE assessment, see the risk assessment report in the EIS.

**Table 9-6 Gas Transmission Pipeline Potential Social Impacts RISQUE Assessment**

Event Name	Phase	Inherent Risk			Residual Risk		
		Likelihood	Consequence	Risk	Likelihood	Consequence	Risk
Increased road traffic/wear on infrastructure	Construction	Likely	Moderate	High	Possible	Minor	Medium
	Operation	Rare	Insignificant	Low	Rare	Insignificant	Low
	Decommission and Rehabilitation	Possible	Minor	Medium	Possible	Minor	Medium
Visual amenity	Construction	Unlikely	Minor	Low	Unlikely	Minor	Low
	Operation	Rare	Insignificant	Low	Rare	Insignificant	Low
	Decommission and Rehabilitation	Unlikely	Minor	Low	Unlikely	Minor	Low
Local purchase policies	Construction	Possible	Minor	Medium	Possible	Minor	Medium
	Operation	Possible	Minor	Medium	Possible	Minor	Medium
	Decommission and Rehabilitation	Unlikely	Minor	Low	Unlikely	Minor	Low
Weeds	Construction	Rare	Minor	Low	Rare	Minor	Low
	Operation	Rare	Insignificant	Low	Rare	Insignificant	Low
	Decommission and Rehabilitation	Rare	Minor	Low	Rare	Minor	Low
Fly in/out (FIFO/DIDO) - Perception not supporting local community	Construction	Likely	Insignificant	Medium	Possible	Insignificant	Low
	Operation	Rare	Insignificant	Low	Rare	Insignificant	Low
	Decommission and Rehabilitation	Rare	Insignificant	Low	Rare	Insignificant	Low
Activities interfere with landowner activities	Construction	Likely	Minor	High	Unlikely	Minor	Low
	Operation	Rare	Insignificant	Low	Rare	Insignificant	Low
	Decommission and Rehabilitation	Unlikely	Minor	Low	Unlikely	Minor	Low
Demand on local services and facilities	Construction	Rare	Insignificant	Low	Rare	Insignificant	Low
	Operation	Rare	Minor	Low	Rare	Minor	Low
	Decommission and Rehabilitation	Rare	Insignificant	Low	Rare	Insignificant	Low
Perception that Project will have a negative impact on the community	Construction	Unlikely	Minor	Low	Unlikely	Minor	Low
	Operation	Unlikely	Insignificant	Low	Unlikely	Insignificant	Low
	Decommission and Rehabilitation	Unlikely	Minor	Low	Unlikely	Minor	Low
Accommodation demands increased	Construction	Rare	Insignificant	Low	Rare	Insignificant	Low
	Operation	Rare	Insignificant	Low	Rare	Insignificant	Low
	Decommission	Rare	Insignificant	Low	Rare	Insignificant	Low

## Potential Impacts and Mitigation Measures

## Section 9

Event Name	Phase	Inherent Risk			Residual Risk		
		Likelihood	Consequence	Risk	Likelihood	Consequence	Risk
	and Rehabilitation			High			High
Construction workforce harms community	Construction	Rare	Major	High	Rare	Moderate	Medium
	Operation	Rare	Insignificant	Low	Rare	Insignificant	Low
	Decommission and Rehabilitation	Rare	Major	High	Rare	Moderate	Medium

### 9.2.14.1 Increased Road Traffic / Wear on Infrastructure

There is a real concern that road traffic will increase during construction as a result of the need to bring all pipe and other material into site. For more information on the traffic impacts, see the Traffic section of the EIS. From a social impact perspective, this event examines the stress and disruption to lifestyle and work activities the increased traffic and wear on infrastructure has during the life of the Gas transmission pipeline.

During construction, the community and users of local highways will likely experience a disruption to their daily activities as workers and material are trucked into temporary accommodation facilities and marshalling yards respectively. In addition, construction workers will be moving throughout the immediate area along the route as it is being constructed carrying out routine tasks. This will be a noticeable occurrence in most areas along the route where the construction is near transportation corridors like highways, railways and minor roads. It will also be a fairly localised event, as once the pipe is laid and the disturbed land is rehabilitated, very little additional work will occur in that area unless further rehabilitation is required.

When the work is occurring in the various areas along the route, there will be some disruption to traffic which will require local remediation including traffic controls, monitoring, changes to routes and/or driving patterns, reduced speed areas, and increased vehicles on the road ways. Since it is likely that most goods and workers will be coming into the area via Gladstone, people living at the Gladstone Regional Council end of the route will experience increased traffic volume throughout the construction phase; however, the main disturbance will occur where the actual pipe is being constructed and placed in the ground, which will shift along the route from the CSG field area to Gladstone over the duration of construction.

During operations road use will not be an issue due to the very small numbers of people required, and subsequent reduced traffic requirements.

During decommissioning and rehabilitation there will be increased road traffic as more vehicles are required to transport workers and material along the route. The pipeline will most likely stay in the ground and therefore will not require as much equipment to be transported as what was required during construction. Limited excavation is expected to be required along the route and some transport will be required to truck slurry to be injected underneath roads and railway lines so it does not subside. All associated transport signage will be removed unless otherwise stated by landholders or local and State government.

#### Mitigation

A formal traffic management strategy will be developed to identify deficiencies and develop standards for transportation. The strategy will address requirements to upgrade roads (including current country roads), working with existing traffic programs, undertaking additional studies to identify existing roads in need of repair/upgrade, areas where there will be a concentration of traffic and developing a management plan

## Section 9

# Potential Impacts and Mitigation Measures

developed to address the issue (e.g. road widening, dust management, etc.). The construction management plan will also include temporary works relating to roads and transport. Road improvements will be carried out prior to the project commencing. Additional controls include training programs and H&S policies (e.g. zero alcohol/drugs tolerance, etc.) as well as a comprehensive stakeholder engagement process to increase communication and reduce potential concerns.

### Residual Impacts

With the mitigation, the residual risk will be reduced to medium, as local residents will be more aware of the level of disturbance and the tools and techniques employed for the safety of workers as well as the general public. Due to the real risk associated with the movement of workers and materials along road networks, it is unlikely that a lower risk can be achieved. It should be noted that Santos requires enhanced driver training for all employees and sub-consultants operating at Santos sites, including 4WD training.

### Benefits

- Enhanced road infrastructure; and
- Higher road safety awareness locally.

#### 9.2.14.2 Visual Amenity

The pipeline installation program will have a low impact on the visual amenity as the pipeline will be underground, follow an existing pipeline easement (the QCP easement) for the majority of its length, avoid heavily vegetated areas wherever possible and will be largely hidden from sight. Impacts will be of short duration during the construction phase. There has been some concern expressed from local stakeholders, particularly in the Arcadia Valley area with regard to the impact on eco-tourism. These have been addressed by Santos and more detail can be found in the consultation report within the EIS. The visual amenity study assesses the likely visual impacts that will occur along the gas transmission pipeline corridor and their duration in more detail.

### Mitigation

Santos will continue its community consultation plan and focussed stakeholder engagement process to concentrate on project issues including visual amenity. Santos will consult directly with local councils to identify specific perceived and actual risks. A site tour to existing areas may be initiated as required to increase understanding of the issues in the community, as well as the short term and long term visual impacts of pipeline installation.

#### 9.2.14.3 Local Purchasing Policies

The local purchasing policies relevant to the gas transmission pipeline corridor have been identified as medium risk because of the perception of a lack of project use of local supplies, and the duration of activities in any given area along the route. Since the project will cover the entire route during construction, it is highly probable that resourcing local suppliers for major components is not practical, as this would require either the supplier to supply a vast area or several suppliers over the construction period as construction moved into their area. As a result, some local supplies may be purchased, but it is very likely the majority of major supplies would be sourced from a single source for the duration of construction. During operations, not many supplies would be required, meaning large contracts would not be made available to local suppliers of goods or services. As such, local gain from local purchasing policies would come from workforce requirements for food and fuel primarily, and occasionally equipment or materials required at short notice due to breakage or under supply.

## Potential Impacts and Mitigation Measures

## Section 9

There is a real potential for this to become a negative issue if policies are not put in place to prevent the project demand from outstripping local supply, thus causing a local loss of service. This could occur in some of the smaller communities if workers start using local services rather than commute back to the TAF or supply yard if available locally. For local businesses this is generally viewed as a positive; however, Santos will aim to keep the interaction to a level where the project is purchasing locally and using local services without consuming all the supply to the detriment of the rest of the community. Since the workers will not be in any one area for long periods of time, it is not possible for local businesses to over stock in anticipation, and would not be encouraged as there is no way to determine how much use will occur by workers.

In addition, public information sessions on project demands, local capacity, and supply/demand sensitivity in rural areas will allow the public to formulate more informed opinions of the projects involvement in the local communities, and better position themselves or their businesses to benefit from the project.

### Mitigation

Santos will develop a local procurement policy to establish its intent and requirements for businesses to supply products and services. It will also assess the staffing and resourcing requirements to meet project demand without compromising or limiting impact on the delivery of services locally. This will help people understand the project demands and local ability to meet such demand, as well as what might be required for local businesses to bid on components of the project.

### Residual Impacts

The impacts are not anticipated to change as a result of the mitigation as there is always a possibility of occurrence and the consequences will remain minor. What the mitigation does in this instance is better inform the population on the types of local investment occurring and why, as well as allowing local businesses an opportunity to profit from service delivery to the project while minimising residual impact on the community through decreased services to them.

### Benefits

- Increased community awareness of project benefits;
- Increased economic stimulation in the community;
- Positive perception of the project; and
- Increased economic and employment opportunity.

#### 9.2.14.4 Weeds

The spread of weeds along the route from project activities has the potential to affect farming activity and threaten productivity in affected areas. This could cause stress for farmers and also result in reduced property values.

A high priority will be placed on using available wash down facilities and developing system controls and wash down procedures to reduce the potential spread of weeds. These facilities will remain accessible to the community after Santos activities have finished. The system will be audited for compliance and will aim to enhance weed awareness for the area. Santos will conduct training and community liaison meetings, including mixed sessions with community members, field workers, farmers etc. A grievance mechanism will also be implemented as part of this program.

## Section 9

# Potential Impacts and Mitigation Measures

Santos already has a thorough weed management plan, including a weed identification handbook accessible to the local landholders. Santos will maintain this management plan, and update as required to minimise the potential spread of weeds by Santos or their contractors. Due to these procedures, and their ability to be adapted and modified to the current situation, this risk is seen as low.

### 9.2.14.5 FIFO/DIDO

The social impact for this event is similar to the procurement of local supplies and local purchasing policies in that it is creating a perception that the project is not using the local workforce and inhibiting project workers from having to move to the area for employment. The perception with FIFO and DIDO employees is that the community only sees them at the airport and thus does not gain economically from them in the community. Conversely, some people do not want these workers in the community due to real or perceived fears of social dysfunction as a result. Although issues with imported workers have occurred in the past, there is no evidence to suggest FIFO/DIDO workers social problems occur outside the normal community background levels, but rather are more distinguishable, and therefore easier to identify and remember. This is a minor issue compared to the perception of a lack of community investment or relationship from the project.

The use of FIFO/DIDO workers also has an impact on Santos staff in their home towns, particularly the stresses to workers, their families and their relationships being on work rotations. From Santos' perspective, the fewer FIFO/DIDO workers, the less cost it incurs transporting them to and from the area; however, for the construction of the gas transmission pipeline, the use of FIFO/DIDO workers is unavoidable, as most of the workforce required are a specialty crew specifically for pipeline construction and will almost certainly need to be sourced from outside the study area. In this sense, Santos is of the same view as most of the public in terms of local hiring, but is inhibited by the reality that it is not always possible to hire only locals, particularly when some skills cannot be locally sourced. There is a real perception potential that people will feel Santos is not investing anything into the local communities during the construction stage.

### Mitigation

A targeted education and awareness program will be developed to promote local events and services to help enhance the community as a whole. Community consultation and stakeholder engagement plans will be implemented to focus on project issues and better educate the community on the project requirements and demands. Santos expects these may include a desire for local procurement policies and limited temporary accommodation facilities for workers to access in the community. Santos will consult directly with service providers to identify specific perceived and actual risks to better inform them of what realistic opportunities are available to local individuals and businesses during construction. During the other phases there is no real identified issue because the required maintenance workforce is very small and will be sourced locally or will move to the area in order to work.

## Potential Impacts and Mitigation Measures

## Section 9

### Residual Impacts

The mitigation is anticipated to give the public the information necessary to enable them to understand the project requirements. This will provide the community with more realistic expectations and to better identify and take advantage of local opportunities from the project.

#### 9.2.14.6 Activities Interfere with Landholder Activities

For the gas transmission pipeline it is important to understand the duration of time for construction and that it is a linear process. The TAFs are anticipated to move approximately 100 km every month along the pipeline route as the pipe is laid and covered. Santos is already negotiating with landholders along the route in order to reach agreement on access and use of land for construction, as well as ongoing maintenance issues. Some interference with landholder activities may occur; however, the negotiations will have addressed key concerns and required mitigation. During construction, there is the potential for incidents to occur from time to time, with the potential to cause loss of income or land value. This could place increased stress on communities. Santos is currently studying the potential impacts on land values in conjunction with AgForce, and will use the results to influence future negotiations.

### Mitigation

Key mitigation strategies will aim to improve the existing EMP by initiating pre-construction ground-truthing, flagging sensitive areas/species, conducting awareness training, and developing a construction and rehabilitation plan.

An effective community consultation and awareness campaign will also assist to focus on project issues specifically related to local procurement, and planning services requirements. This process will include:

- Establishing a grievance mechanism;
- Community education (e.g. the Dial Before You Dig education campaign);
- A detailed description of the agreed upon do's and don'ts for each property along the route (compiled through the negotiation process) for Santos employees and sub-contractors;
- Security measures such as locked gates; and
- A site tour to existing areas to improve stakeholders understanding of key issues.

Landholder negotiations will be central to reducing this impact.

### Residual Impacts

The mitigation measures should reduce the risk of interference to landholder activities through better understanding of landholder needs, more open communications, and a means for landholders to voice their concerns. It is very important that information collected by Santos land managers during the negotiation process is relayed to the construction crews so that promises are kept, and residual damage to landholder property is avoided or minimised. All relevant, non-confidential information from landholder negotiations and consultation should be included in the EMP to reflect "no-go" areas, soil mixing and storage, and other issues raised by landholders that Santos should do or not do on their properties.



## Section 9

# Potential Impacts and Mitigation Measures

### 9.2.14.7 Demand on Local Services and Facilities

Due to the isolation from the general public throughout much of the pipeline corridor route, as well as the relatively short duration of construction and small operations numbers, this is a relatively low impact situation from a social perspective.

The pipeline safety and medical crew are well prepared and equipped to handle medical incidents and emergencies. Pipeline workers will have their own medical supplies and access to a paramedic and four wheel drive ambulance, however they may need to use the local hospital in an emergency. Conversely, the local population may gain from the medical services available at the construction sites along the corridor in the event of an emergency.

Santos will monitor use of local services and issues from the community and may implement access restrictions for some or all construction crews to local communities as a result. This would be on a case by case basis and is not seen as a pre-emptive precaution needing to be taken at this time.

### 9.2.14.8 Perception that Project will have a Negative Impact on the Community

Current consultation and stakeholder engagement feedback has indicated that the majority of the community does not see the project as having a negative impact. The issues are generally seen as individual landholder issues, which are being addressed through the landholder negotiations. As such, the risk is assessed as low through all phases of the project. The mitigation proposed is to help keep the impact low, and the community informed about the project details relevant to them.

#### Mitigation

Santos will continue with their community consultation and stakeholder engagement program that focuses on project issues and concerns. As part of this program, Santos will consult directly with local councils and community representative groups to discuss perceived and actual risks from the Gas transmission pipeline construction, as well as operations, and decommissioning and rehabilitation.

Santos will also identify and contribute to local wellbeing programs along the route. This may include local training provisions and means to bring in skilled labour. Specific events and social services may also be targeted to help enhance the general wellbeing of the community.

#### Benefits

- Attraction of skilled workers into the area;
- Increase labour supply;
- Improve skill level;
- Compensation;
- Emergency services will often be more capable of handling emergencies at the temporary accommodation facilities for the Gas transmission pipeline than the local medical services;
- Other industries could access through the same area to minimise impacts;
- Improved infrastructure – i.e. access roads; and
- Temporary work for labourers.



## Potential Impacts and Mitigation Measures

## Section 9

### 9.2.14.9 Poor Communication with Community

Santos currently has a community consultation and stakeholder engagement program in place along the route. The results up to the drafting of this report indicated that the communication is effective. Santos will maintain this program and update the community throughout the project to better inform them of the project as it evolves. For more information on the community consultation efforts along the gas transmission pipeline route, refer to the consultation section of the EIS.

### 9.2.14.10 Development Caused Decrease in Property Values

Santos has commissioned a study into the potential for the project to have an impact on property values with AgForce and URS. Santos land managers will consider the findings of this study in their negotiations with landholders.

### 9.2.14.11 Unauthorised Access – Vandalism / Accidental Damage

For accidental damage Santos will roll out a communication package in regards to “dial before you dig”. There is no evidence of vandalism on past pipelines, and Santos will appropriately protect surface infrastructure within reason to help minimise the potential for vandalism. In the case of vandalism or accidental damage, Santos will provide landholders and local services with an emergency contact number to report any incidents.

### 9.2.14.12 Accommodation Demands Increase

Most workers will be housed in temporary accommodation facilities with limited access to the community; however, some senior staff and contractors may stay in hotel/motel accommodation at towns along the route. This will create a small increase in demand for local accommodation, though a high degree of impact is not anticipated. Santos will implement an effective community consultation strategy and company policies to be developed and implemented to assist in planning local service requirements and use local procurement where possible. Further restrictions may be placed on temporary accommodation facilities workers to reduce access to the community if appropriate. The risk is assessed at low, and should remain low with the communications and procurement strategy. Should the situation change, Santos will adapt the strategy to reflect the changes (refer to Section 7 “Accommodation” of this report for further details).

### 9.2.14.13 Construction Workforce Harms Community

There were concerns raised throughout the consultation process that the construction workforce had the potential to harm the community through anti-social behaviour. Although this event is unlikely, Santos is aware that such an event could have serious backlash from the community. During operations this is reduced since the crews will be ‘predominately’ local, and therefore not perceived as outsiders. Santos takes this matter seriously and will ensure strategies are in place to minimise this risk.

#### Mitigation

Santos HR Policies and Code of Ethics aim to provide a sound basis for behavioural standards that are expected of their workforce. This will be complemented by a social monitoring and measuring program, grievance mechanism and community consultation strategy that will focus on project issues by consulting directly with service providers to identify specific perceived and actual risks. A targeted project sponsorship/ community support program will also be developed and implemented, along with a strategic recruitment plan.

## Section 9

# Potential Impacts and Mitigation Measures

### Residual Impact

With the mitigation the likelihood remains the same but the consequences are reduced due to a better understanding of the situation within the community and a better means for Santos to prevent any unfortunate event resulting in harm to the community from the project workforce.

### 9.2.15 Conclusions

For the most part, many of the potential social impacts would occur during construction and to a lesser extent decommissioning and rehabilitation. Previous pipeline construction in 1989 along the same route for much of the proposed gas transmission pipeline was considered in the assessment, including the absence of long-term or cumulative social effects. During operations the workforce is anticipated to be less than 10 individuals along the entire route, and therefore is not expected to be noticed above the normal background movements in the area. A large component of the mitigation proposed is an effective communication strategy for the local communities and landholders to better inform them of the potential impacts or disruptions to their daily lives during times of activity, as well as the potential opportunities for employment and services.

The RISQUE assessment did not identify any risks as extreme, and the following potential inherent risks as high:

- Increased road traffic/wear on infrastructure;
- Activities interfere with landholder activities; and
- Construction workforce harms the community.

All of these potential inherent risks occur during construction, with the potential inherent risk that someone from the workforce harms the community also being high during decommissioning. This is primarily because the workforce will be seen as imported workers, and any incident will be seen as imported workers adversely impacting on the local population. Effective communication with local stakeholders, worker force training programs and a social management plan will help mitigate these risks. Santos is assessing transportation alternatives including an option to transport workers and/or materials from Gladstone to Moura by rail to reduce traffic and the potential for vehicular accidents. The primary driver for transportation alternatives for Santos is public and worker safety.

The construction workforce relocates along the pipeline route regularly for the duration of construction, making long term programs for the local community difficult, as what is classed as 'the local community' often changes monthly. Santos will document incidences and adapt strategies and policies accordingly to reduce the risk of repeating mistakes and non-conformities. This will include monitoring and grievance mechanisms for potentially dissatisfied stakeholders.

Table 9-7 summarises the RISQUE events, impacts, mitigation and residual risk as discussed above.

## Potential Impacts and Mitigation Measures

## Section 9

**Table 9-7 RISQUE Assessment Summary for Potential Social Impacts for the Gas Transmission Pipeline**

RISQUE Event Number/Aspect	Potential Impact	Project Phase	Inherent Risk rating	Mitigation Strategy	Residual Risk Rating	Objective
Increased road traffic/wear on infrastructure	Stress and disruption to lifestyle and work activities due to the increased traffic and wear on infrastructure.	Construction	High	<p>Develop a formal traffic management strategy to identify deficiencies and develop standards for transportation. The strategy will address requirements to upgrade roads (including current country roads), working with existing traffic programs, undertaking additional studies to identify existing roads in need of repair/upgrade and areas where there will be a concentration of traffic, and developing a management plan developed to address the issue.</p> <p>Local remediation, including traffic controls, monitoring, changes to routes and/or driving patterns, reduced speed areas, and increased vehicles on the roadways.</p>	Medium	To reduce the impact of increased traffic volumes in the local area.
		Operation	Low		Low	
		Decommissioning	Medium		Medium	
Visual amenity	The gas transmission pipeline will largely be hidden. However, there are concerns in the Arcadia Valley area with regard to the impact on eco-tourism.	Construction	Low	<p>Community consultation plan and focussed stakeholder engagement process to concentrate on project issues including visual amenity.</p> <p>Consult directly with local councils.</p> <p>A site tour to existing areas may be initiated as required to increase understanding of the issues in the community,</p>	Low	To minimise the visual impact of the gas transmission pipeline on the surrounding landscape.
		Operation	Low		Low	
		Decommissioning	Low		Low	
Local purchase policies	Perception of a lack of project use of local supplies.	Construction	Medium	<p>Stakeholder engagement and community consultation strategy in place to plan local services requirements with the community.</p> <p>Liaison with service providers to outline likely service requirements so that providers can respond to demand in time.</p> <p>Policy on the procurement of local supplies as well as an inventory of local suppliers.</p>	Medium	To utilise local services and facilities without affecting the normal supply to the local community.
		Operation	Medium		Medium	
		Decommissioning	Low		Low	

Section 9

Potential Impacts and Mitigation Measures

RISQUE Event Number/Aspect	Potential Impact	Project Phase	Inherent Risk rating	Mitigation Strategy	Residual Risk Rating	Objective
Weeds	Spreading weeds onto landholder's properties.	Construction	Low	Implement wash-down procedures. Conduct training and community liaison meetings for field staff, including mixed sessions with community members, field workers, farmers and other stakeholders.	Low	To minimise the spread of weeds and to educate the local community.
		Operation	Low		Low	
		Decommissioning	Low		Low	
Fly in/out (FIFO/DIDO) – Perception of not supporting local community	Not utilising the local workforce and inhibiting project workers from having to move to the area for employment. Real or perceived fear of social dysfunction as a result of external workers in the community. Impact on Santos staff in their home towns, particularly the stresses to workers, their families and their relationships being on a two week on and two week off work rotation.	Construction	Medium	Develop a plan to assess local skills capacity and interest in employment with the project. Contribute to local wellbeing programs and assess the prospect of a local training provision to enhance local skills. Community consultation and ongoing community engagement and consultation activities to promote the project benefits to the community Develop a targeted education and awareness program to promote local events and services. Develop a series of surveys for employees and their families to better understand the effects of their shift rotation on their lives. Develop a monitoring and mitigation strategy, including tailored counselling programs, support networks and rotation alternatives. Commissioning a video for workers and their families on what FIFO/DIDO work is, and what workers do when they leave home to their activities on site.	Low	To utilise and up-skill the local workforce (however, not at the detriment of local businesses). To understand and minimise the impact of workers from outside of the local area.
		Operation	Low		Low	
		Decommissioning	Low		Low	
Activities interfere with	Potential areas where the project could	Construction	High	Improve the existing EMP to conduct pre-construction ground-truthing in order to flag sensitive areas and	Low	To identify activities that may
		Operation	Low		Low	

Potential Impacts and Mitigation Measures

Section 9

RISQUE Event Number/Aspect	Potential Impact	Project Phase	Inherent Risk rating	Mitigation Strategy	Residual Risk Rating	Objective
landowner activities	interfere with landholder activities.	Decommissioning	Low	species, as well as areas of importance to the landholder. Effective community consultation and ongoing community engagement and consultation activities will also assist to focus on project issues specifically related to local procurement, planning services requirements. This process will include: Establishing a grievance mechanism; Community education (e.g. the Dial Before You Dig education campaign); A detailed description of the agreed upon do's and don'ts for each property along the route (compiled through the negotiation process) for Santos workers and sub-contractors; Security measures such as locked gates; and A site tour to existing areas to improve understanding of key issues.	Low	interfere with landowner activities and to communicate ways to resolve any interference.
Demand on local services and facilities	Increased use of local services including health, education, and social services and facilities.	Construction	Low	The gas transmission pipeline safety and medical crew are well prepared and equipped to handle medical incidents and emergencies. Pipeline workers will have their own medical supplies and access to a paramedic and four wheel drive ambulance; however, they may need to use the local hospital in an emergency. Monitor use of local services and issues from the community and may implement access restrictions for some or all construction crews to local communities as a result.	Low	To utilise local services and facilities without affecting the normal supply to the local community.
		Operation	Low		Low	
		Decommissioning	Low		Low	
Perception that Project will have	The issues are generally seen as	Construction	Low	Community consultation and stakeholder engagement program that focuses on project issues and concerns.	Low	To minimise any negative
		Operation	Low		Low	

**Section 9**

**Potential Impacts and Mitigation Measures**

RISQUE Event Number/Aspect	Potential Impact	Project Phase	Inherent Risk rating	Mitigation Strategy	Residual Risk Rating	Objective
a negative impact on the community.	individual landholder issues.	Decommissioning	Low	Consult directly with local councils and community representative groups. Identify and contribute to local wellbeing programs along the gas transmission pipeline corridor.	Low	perceptions of the project.
Accommodation demands increased	Not enough accommodation supply for project demand, which disrupts normal accommodation in the community	Construction	Low	Community consultation strategy and company policies to be developed and implemented to help plan local services requirements and use local suppliers where possible.	Low	To minimise the project's impact on accommodation in the vicinity of the gas transmission pipeline.
		Operation	Low		Low	
		Decommissioning	Low		Low	
Construction workforce harms community	Concerns that the construction workforce will harm the community.	Construction	High	Santos HR Policies and Code of Ethics aim to provide a sound basis for behavioural standards that are expected of their workforce.	Medium	To eliminate the possibility of project employees causing harm to the community.
		Operation	Low		Low	
		Decommissioning	High	Complemented by a social monitoring and measuring program, grievance mechanism and community consultation strategy that will focus on project issues by consulting directly with service providers to identify specific perceived and actual risks.	Medium	

## Potential Impacts and Mitigation Measures

## Section 9

### 9.3 LNG Facility

For the LNG Facility, the whole of the Gladstone Regional Council was considered with the majority of focus toward the community of Gladstone. Although there is a community located on Curtis Island at South End, and several private residences situated mainly around the north end of the island, these individuals were assessed with the rest of the area population due to the geographical isolation of the project from these individuals and communities. Although they share Curtis Island, they do not have direct access to the project area due to an absence of roads. As the project is located in the State Development Area, there are no directly affected individuals on the site. There are residents on the neighbouring islands, including Tide Island, who may be affected by marine traffic and other low level off-site impacts (such as visual amenity), however these are anticipated to be minimal based on the visual assessment and the marine traffic assessment.

For the Gladstone Regional Council area, Santos will consult with area stakeholders for input into the development of a social management plan. The plan will use the SIA as a foundation. Santos will monitor social impacts associated with the project and work with local services and stakeholders to develop practical solutions. Unforeseen impacts will be identified through Santos' established consultation network and mitigated. This social management plan will allow Santos to mitigate negative social impacts, enhance positive impacts and update the management strategy as the project evolves.

#### 9.3.1 Potential Impact on Demographic Profile

##### 9.3.1.1 Population Increase

###### Construction Phase

The main demographic influence from the Project will be during the construction phase. As seen in Table 8-6, as many as 2,040 (1,940 in table though peak is not captured and is anticipated to be 2,040) construction workers are anticipated to be imported from outside of the local Gladstone region. Based on high employment rates of skilled workers in the region, a significant proportion of workers will be from outside of the Fitzroy Statistical Division, however given the recent economic down-turn in the mining industry, there may now be more workers available within the region. The imported workers are not anticipated to increase the Gladstone population significantly because Santos is planning to house the entire workforce in the Curtis Island CAF (see Section 8.4.1)

Previous demographic analysis indicates that workers from outside of the region are predominantly from other areas within Queensland, however a small proportion is likely to come from other states/territories or overseas (URS, 2007). As can be seen in Table 8-7, the total estimated population increase is manageable for the community.

Traditionally in Gladstone large scale projects like this have resulted in significant population increases during the construction phase; however, no project has proposed having the workers housed in a CAF that is geographically isolated from the community and only accessible by boat. Furthermore, Santos' plan to house all construction workers in the CAF (including locals) for their entire on-site work rotation means that the only benefit to being local to the area is a shorter commute at the start and end of your work rotation. There is very little incentive to relocate to Gladstone for the GLNG project construction because you are not able to see your family while on your on-site work rotation anyway.

Although it is assumed that construction workers are not likely to move to Gladstone during construction, Santos ran a scenario of 10% per annum for the first 4 years of the project as well as the no increase scenario in Section 7 and Appendix C. This is because of the lengthy construction period, and the likelihood that some

## Section 9

# Potential Impacts and Mitigation Measures

workers will be accompanied by their partners and/or family. This study has assumed that as many as 360 construction workers will be accompanied (PIFU, 2003).

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

The effect on vulnerable groups identified in Section 4.4.1 is both an increase in employment opportunity, as well as a potential increase in the cost of living. For those able to seek employment opportunities the population increase could be of benefit; however, for those who cannot, the increase in prosperity of others may result in a perceived decrease in affluence. This perception becomes reality if the costs of living increase throughout the community while their income remains constant. In order to reduce this risk, Santos is proposing placing the construction workforce on Curtis Island to reduce the impact both socially and economically on the community, Santos will also continue to work with social services providers in the community to monitor the population effects relating to the project.

### Operational Phase

Approximately 10% (maximum 25 workers) are estimated be sourced from outside of the local area. Some of these workers will be accompanied by their family / partner. The additional population associated with project operations is minimal in relation to the overall population.

The GLNG workforce plus workforce associated with other projects in the area could have a significant cumulative effect on the area's population, however this is difficult to quantify.

#### **9.3.1.2 Age Profile and Male-Female Ratio**

The existing age profile in Gladstone shows a predominance of residents in the 30-65 year age range, reflecting the prevalence of a young-middle aged working population. The GLNG workforce is likely to be similar to this age profile. There is anecdotal evidence that construction workforce often comprises younger workers, who are suited to the FIFO/DIDO working arrangements, however this is not substantiated.

The construction workforce is expected to be predominantly male, which could increase the ratio of male to females in the area during the construction period. Potential implications of increased numbers of males are discussed further in this study.

#### **9.3.1.3 Migration and Mobility**

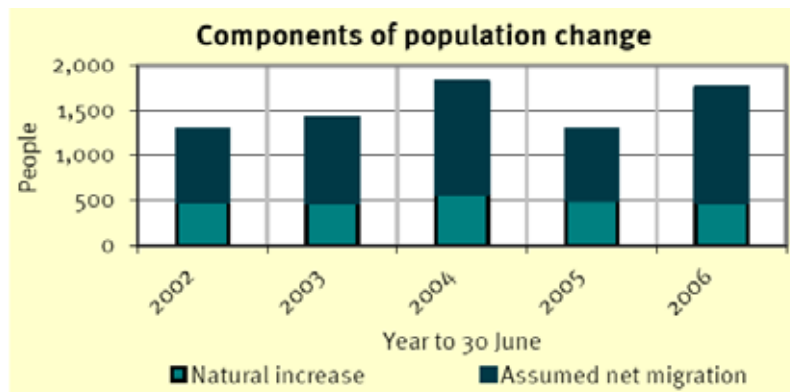
Over recent years, population growth in Gladstone has largely been the result of migration into the area rather than natural increase (refer Figure 9-1). Workers and others associated with the Project moving into Gladstone will further contribute to the number of migrants moving into the area.



## Potential Impacts and Mitigation Measures

## Section 9

Figure 9-1 Components of Population Change



Source: PIFU, 2008

Data on length of residency shows that there are a high proportion of residents who have moved to Gladstone within the last year or within the last five years. Gladstone has a significantly higher proportion of 'new' residents than the Queensland average. The project will substantially increase the number of new residents to the area, which has implications on the provision and capacity of a range of social services. This is discussed later within the section.

If the project resulted in an increase in the number of 457 Visa holders in the community, either directly or indirectly employed, Santos will work with the LAMP to help integrate these individuals and families into the community. Data indicates that in the past Gladstone has experienced 7% of the workforce having 457 Visas, and in some instances upwards of 22% (pers. comm., L. Arroyo, 2008). Although it is Santos' preference to hire locally and regionally first, Santos will use established local services to assist in community integration programs should this be required.

### 9.3.2 Additional Potential Impacts on Indigenous People

The complete Indigenous baseline and impacts are assessed in Section 6 because the Indigenous assessment boundaries did not align with the study area boundaries for the rest of the social assessment.

Potential social impacts on the Indigenous population can be found in Section 6.3.

### 9.3.3 Potential Impact on Employment

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

The range of workers required, including low and semi skilled workers will provide opportunities for unemployed workers to gain employment. Workers have the opportunity to develop skills with the available training courses provided.

A large percentage of Gladstone's residents work outside of the local area. The opportunity for longer term, suitable employment may attract some residents to return to working in the local area. The Project will also generate a range of flow on employment opportunities within local businesses and supporting industries.

## Section 9

# Potential Impacts and Mitigation Measures

### 9.3.4 Potential Impact Income and Affordability

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

Major developments in areas where there are constraints on capacity or supply of goods and services has the potential to impact on affordability for residents in the area. Gladstone is well serviced by a retail sector and is unlikely to experience retail supply shortages that could inflate the prices of goods. The cost of food, alcohol and tobacco is slightly above that in Brisbane. Impacts on housing affordability are discussed below.

### 9.3.5 Potential Impact Housing and Accommodation

As discussed in Section 7, the Gladstone region has experienced a strong property market and a tight rental market in recent years. Previous large construction projects in the area have had a significant impact on housing availability and pricing in the region, which has had serious impacts on low income and marginalised members of the community. Potential impacts on housing and accommodation during construction and operation are discussed below.

#### **Construction**

Increased demand for accommodation could further disadvantage low income and marginalised groups, who already have difficulty finding affordable accommodation. To avoid impacting residents housing situation and disrupting the housing market, Santos proposes to develop a construction accommodation facility (CAF) on Curtis Island within the LNG Facility site. The CAF would have a capacity of around 2,000, which would enable the entire workforce to stay on the island during their work roster.

Accommodating the construction workforce in a CAF is designed to off-set the risk of raising rental and property prices and availability. The CAF will also minimise contact and disruption to the community.

There is likely to be some increased demand for short term accommodation (hotels, motels, caravan parks) from workers who intend to stay in the area when off their roster. There should be sufficient supply of short term accommodation during these instances.

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

This study has assumed that there will be few or no families/partners of imported construction workers moving into the Gladstone area as the imported workers will be on FIFO/DIDO work arrangements and staying in a CAF during their roster. However if families/partners of construction workers do move into the Gladstone region, there could be significant implications on the housing market, in particular the supply and cost of rental accommodation.

#### **Operation**

Locally sourced operational workers are expected to already have accommodation arrangements and will not significantly affect housing availability and demand. Up to 100 operational workers recruited from outside of the local area will relocate into Gladstone and require long term accommodation. Based on development trends and movement patterns, Gladstone and the coastal locations such as Boyne Island and Tannum Sands are

## Potential Impacts and Mitigation Measures

## Section 9

likely to be areas experiencing accommodation demand. Land supply and building industry capacity is sufficient to meet any accommodation demands that cannot be met by the existing housing market.

Cumulative impacts of workers entering the Gladstone area for the multiple planned projects could have some impact on housing availability and affordability, however this is difficult to quantify without project specific workforce details, sourcing and timeline data.

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

- Developing a CAF to off-set demand for residential housing in Gladstone;
- Liaise with government, tourism and development industry to stimulate construction of housing and short term accommodation such as hotels, motels and relocatable home parks;
- Consider acquiring or leasing property to accommodate some workers and their families; and
- Promote accommodation for families outside of the Gladstone region.

Further details are provided in Section 7 of this report.

### 9.3.6 Potential Impact on Health

Members of the Gladstone community have been vocal in their concerns over air quality in Gladstone. The Queensland government released an air quality report and health assessment in late 2008 that found Gladstone air quality is not significantly different to any other city in Queensland. The report did not draw any conclusions about the effects of air pollution in the city:

*“The health assessment, by itself, cannot draw any conclusions about the contribution of air pollution to each condition; those questions will be considered in a process called Human Health Risk Assessment, once the data from the Environmental Protection Agency’s program of enhanced air monitoring are available” (Queensland Health, 2008).*

Ongoing studies and information releases are scheduled throughout 2009. Consultation indicates that the community still has concerns regarding air quality, particularly the impact additional industry such as the GLNG project may have.

A health risk assessment was considered for potential releases of hazardous or toxic material from the LNG facility. This LNG facility is not expected to release significant amounts of hazardous or toxic materials. Known major emissions of VOCs such as methane are not considered to be toxic. On this basis, a health risk assessment has not been conducted. Section 8.8.3.1 of the EIS provides further details.

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

The Department of Infrastructure and Planning indicated that they had attempted a model to assess the impact of major projects in Gladstone on the social infrastructure (health and education in particular). They found that apart from raw data (school enrolments, hospital admissions, etc.) there was not any statistical data base upon which to either gauge potential or measure actual impacts due to a project. They were also unaware of any multiplier available to estimate the increment in demand based on population increase (pers. comm., J. Beeson, 2008).

## Section 9

# Potential Impacts and Mitigation Measures

### 9.3.6.1 Potential Impact on Health Services

The additional population associated with the Project will create additional demand to existing health services. The main difficulty associated with the increased demand is a shortage of nurses and doctors and some specialised medical practitioners such as physicians.

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

A first-aid facility (including a trained first-aider) will be located at the LNG facility, which can treat non-serious injuries and stabilise more serious injuries prior to transport to hospital.

### 9.3.7 Potential Impact on Education and Training

A community survey commissioned by QAL found that "maintaining education services" was a priority issue for respondents (Media Link, 2008). Based on enrolment rates for 2008, most schools have adequate ability to handle additional students. The education system has an internal mechanism for assessing their own capabilities for the year and would generally prefer some advanced warning if a significant enrolment increase is likely.

Few school age children are likely to arrive in the area during the construction phase as the majority of construction workers will be unaccompanied FIFO/DIDO workers. A small number of construction workers are anticipated to move into the area accompanied with school age children, requiring school services.

Operational workers moving into the area with school age children will also create demand for school places, however the number of new students is likely to minimal and manageable. Santos will liaise with Education Queensland where possible to discuss how many workers accompanied with children will require enrolment.

#### 9.3.7.1 Tertiary Education and Skills Development

There was a need for more apprenticeship type programs for Gladstone expressed through consultation (pers. comm., V. Laverick, 2008). Further education institutions in the area including TAFE and Central Queensland University operate in the Gladstone. Santos will move to improve local skill levels through investment in skills development and training in the community, likely through the local university and TAFE, including apprenticeship programs. Santos is currently developing specific programs for the project to be implemented for construction. Santos will explore the options of partnerships with government agencies such as Department of Education, Training and the Arts (DETA) and local economic groups such as chamber of commerce for increased employment opportunities in the area, both with existing programs as well as options for new or additional programs.

### 9.3.8 Potential Impact on Emergency Services

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

- Developing emergency response plans and management plans for the Project; and
- Additional requirements to adequately respond to potential emergencies characteristic to the Projects' operation.

## Potential Impacts and Mitigation Measures

## Section 9

### 9.3.9 Potential Impact on Community Facilities and Services

The construction workforce is likely to place limited demand or impact on Gladstone's facilities and services as workers will stay in the CAF on Curtis Island, which are fully self-contained. The majority of the FIFO/DIDO workforce is likely to vacate Gladstone outside of their roster, and not utilise these services. The Gladstone City Council's Open Space and Recreation Plan (June 2006) describes Gladstone as an area with a substantial quantity of open space, especially open space with utility, corridor and environmental values. However, the authors estimate that 54 hectares of sport and recreation open space will need to be acquired or developed to service the population growth in the next 20 years. A need to invest in sport and recreation clubs has been identified, as sport is struggling with low quality facilities and a high degree of competition for revenue and resources. There are 69.6 hectares of the area of Gladstone City Council covered by sporting facilities and 57.6 hectares are covered by recreation parks (Gladstone City Council, 2008).

As part of the Open Space and Recreation Plan (Gladstone City Council, 2008), a survey was conducted of almost all households in Gladstone as well as consultation with targeted groups. There was relatively low turnout which the report concluded could have been attributed to the timing just prior to Christmas, lack of interest/motivation or that general community recreation needs are relatively satisfied.

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

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

As an active member of the Gladstone community, Santos will continue to liaise with the Gladstone Regional Council and interest groups to support community facilities and services.

### 9.3.10 Potential Impact Community Values and Lifestyle

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

#### 9.3.10.1 Protection of the Environment

Particular environmental concerns related to protection of air quality. Emissions to air during construction of the LNG facility will be primarily dust, with some minor sources of combustion pollutants such as NO<sub>x</sub> due to diesel and petrol vehicles operating on site. The impacts of construction activities will be managed through the Construction Environmental Management Plan. This will include strategies to prevent or minimise dust emissions during construction activities, an outline of methods to monitor the effects of construction activities and mitigate any adverse off-site impacts. Key pollutant emissions during operations include SO<sub>2</sub>, NO<sub>x</sub>, CO, CH<sub>4</sub> and PM<sub>10s</sub>. Chapter 8.8 of the EIS provides further details of potential impacts on air quality and proposed mitigation and management measures.

Other environmental issues have been assessed in the issue specific sections of chapter 8 of the EIS.

## Section 9

# Potential Impacts and Mitigation Measures

### 9.3.10.2 Safety Risks

Consultation has identified community concern about potential safety risks including the possibility of a gas leak explosion at the LNG facility; increased risk of ship collisions and other catastrophic risks. This was raised as a particular concern by residents at South End, which is located east of the LNG facility on Curtis Island. A comprehensive hazard and risk assessment has been carried out to identify potential risk hazards and provide risk management measures. The report has identified that there is an extremely low probability of catastrophic life threatening events occurring due to emergency management measures in place. The Hazard and Risk Assessment (Section 10) of the EIS provides further details.

### 9.3.10.3 Anti-Social Behaviour (including Violence)

There was concern that the Project workforce may bring about anti-social behaviour to the community including drug and alcohol abuse. This was raised as a particular issue for some South End residents who were concerned workers staying at the CAF on Curtis Island 'boozing up' in the settlement. Potential for increased violence and criminal activity were also raised as concerns. Santos will not tolerate any such behaviour and has mitigation measures in place including:

- Dismissal and disciplinary actions for anti-social behaviour;
- No access road to the South End community from the site and restrictions on accessing the township during work roster; and
- Close liaison with the community, police and other stakeholders to monitor and manage anti-social behaviour;

### 9.3.10.4 Visual Amenity and Noise Issues

During consultation, there were community queries about visual and noise impacts including whether South End residents could see and hear the flame stack (and the LNG facility generally). Curtis Island was identified by the community as an important natural area, in particular for its visual amenity values. The visual impact assessment carried out as part of the EIS concludes that there will be minimal visual impact from the development due to the siting of the LNG facility. Direct views of the facility from Gladstone are buffered by the surrounding topography of the area.

### 9.3.10.5 Lifestyle and Community Character

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

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

The key impacts of a potential bridge to Curtis Island would be the potential for increased access to Curtis Island which is presently only accessible by barge, charter boat or private marine vessels. This would have the potential to change the dynamics and relaxed lifestyle of the area. As Santos is not solely responsible for the bridge, community consultation to-date has centred on possibilities only. Santos has conducted the EIS on the assumption that there will be a bridge; however the need for such a bridge is still being assessed by stakeholder agencies. Some local residents on Curtis Island expressed interest in being allowed access to the bridge, but



## Potential Impacts and Mitigation Measures

## Section 9

the general consensus was that public access should be prohibited. As decisions about the bridge and its access become clearer, Santos will continue to inform the community through a variety of public information forums.

### 9.3.11 Potential Impact on Commercial and Recreational Fisheries

Commercial catch data available from the DPI&F is represented in 30 nautical mile grids and therefore includes offshore catch data as well as inshore catch information from within Port Curtis. Available commercial catch data includes Gladstone Port, Calliope River estuary, Boyne River estuary, inshore and offshore Curtis and Facing Island and The Narrows. Recreational and commercial fishing is popular in the area, with a high participation rate within Port Curtis (Connolly *et al.*, 2006) as evidenced by the long term establishment of a number of recreational fishing clubs, such as the Yaralla Fishing Club (mainly fishing in offshore waters of the Capricorn Bunker Group) and the Wanderer's Fishing Club (operating mainly in inshore locations within Port Curtis). Reported catches of mud crabs in the Port Curtis region have dramatically increased from 17 tonnes in 1960 to approximately 143 tonnes in 2002, possibly a result of increased fishing effort and more accurate reporting of catch data. This mud crab fishery is thought to be one of the largest in Queensland with about eight [commercial] fishers operating in the harbour between the Narrows and Auckland Creek (pers. comm., S. Platt, QBFP Gladstone). Ongoing consultation is proposed prior to the EIS submission now that a preferred dredge material disposal area is identified. This may result in some commercial and recreational fishers self identifying as users of the proposed project impact areas.

### 9.3.12 Summary

Table 9-8 is a summary of the social components and potential impacts discussed for the LNG Facility. Following the table is the RISQUE assessment of likely specific events and the anticipated impact from a social perspective.

## Section 9

## Potential Impacts and Mitigation Measures

Table 9-8 Summary of Potential Social Impacts for the LNG Facility

Social Component	Potential Impact	Project Phase	Inherent Risk rating	Mitigation Strategy	Residual Risk Rating	Objective
Demographic Profile	Significant increase in population, change in male-female ratio, age, family structure and other factors affecting existing community characteristics	Construction	High	Prioritise local employment over non-local employment where possible and practical.	Medium	To reduce likelihood of altering existing community profile. .
		Operation	Low		Low	
		Decommissioning	Low		Low	
Employment	Opportunity to reduce unemployment rate. Potential to increase the local skills capacity. Providing local based employment for residents who previously travelled outside of the area for work.	Construction	Low	Hire local first if possible or practical. Improve local skill levels through investment in skills development and training in the community, likely through the local university and TAFE, including apprenticeship programs. Explore options for partnerships with government agencies such as DETA and local economic groups such as chamber of commerce for increased employment opportunities in the area, both with existing programs as well as options for new or additional programs.	Low	To assist in improving local and regional employment opportunities and develop the skill level of the local community.
		Operation	Low		Low	
		Decommissioning	Low		Low	
Income and Affordability	Increase in weekly incomes; Increase in cost of living.	Construction.	Low	Local employment priority;	Low	To maximise income generation opportunities and limit increases in cost of living.
		Operation.	Low		Low	
		Decommissioning.	Low		Low	



Potential Impacts and Mitigation Measures

Section 9

Social Component	Potential Impact	Project Phase	Inherent Risk rating	Mitigation Strategy	Residual Risk Rating	Objective
Housing and Accommodation	Increased cost of housing and limiting availability. Impact acute to low income and disadvantaged groups in community	Construction	High	Majority of construction workers to stay in CAF; Non-local workers predominantly FIFO/DIDO; Liaison with relevant stakeholders to stimulate construction of housing and accommodation; Acquisition/leasing of some properties for workers and families; Accommodation for families outside of Gladstone	Medium	Maintain housing affordability and availability.
		Operation	Low		Low.	
		Decommissioning	Low		Low.	
Health	Perception of community that the air quality is causing health issues is higher than actual based on the recent reports, but an issue regardless for the project to address. Health services unable to cope with additional demand.	Construction	High	Community consultation and stakeholder engagement program to focus on project issues in relation to air quality and green house gas (GHG) emissions. Consult directly with Gladstone Regional Council to identify specific perceived and actual risks, and help educate the public on the facts of the project and the baseline conditions in Gladstone area. Develop a community awareness programs on air quality and the project. Communicate the NPI website to community groups and stakeholders to	Medium	To minimise any air quality impacts on the surrounding area and maintain or improve health facilities.
		Operation	Low		Low	
		Decommissioning	Low		Low	

## Section 9

## Potential Impacts and Mitigation Measures

Social Component	Potential Impact	Project Phase	Inherent Risk rating	Mitigation Strategy	Residual Risk Rating	Objective
				increase awareness in the community. Integrate the Gladstone air quality assessment with GLNG project to enable stakeholders a more integrated summary of results within a more consistent format if required.		
Education and Training	Limited availability/insufficient education and training facilities/ vacancies.	Construction	Low	Liaison with Education Queensland. Development of skills training program (refer to employment aspect).	Low	Maximise education opportunities.
		Operation	Low		Low	
		Decommissioning	Low		Low	
Strain on local facilities and services	Based on the number of construction workers required to build the LNG facility, the requirement to house and feed them, and the materials required for construction, it is anticipated that the project may put a strain on local facilities and services.	Construction	Extreme	Consult with Gladstone Regional Council and the interagency group in regards to local services utilised and service requirements. Provide an opportunity for local services to expand their services in order to capitalise from the project. Programs and agreements may be required to reduce the potential for lost or strained local services in order to accommodate the project. Develop and implement a community consultation and stakeholder engagement program with specific focus	Low	To utilise local services and facilities without affecting the normal supply to the local community.
		Operation	Low		Low	
		Decommissioning	Medium		Low	

## Potential Impacts and Mitigation Measures

## Section 9

Social Component	Potential Impact	Project Phase	Inherent Risk rating	Mitigation Strategy	Residual Risk Rating	Objective
				<p>on project issues relating to local facilities and services usage by the project, and the pros and cons of each.</p> <p>Consult directly with Gladstone Regional Council and key stakeholders to identify specific perceived and actual risks, and realistic mitigation or enhancement opportunities.</p> <p>Develop procurement policies and communicate those policies to the community as well as local service providers to increase local knowledge of the projects demands and requirements.</p> <p>House construction workforce in CAF on Curtis Island in isolation from the general public.</p>		
Community Values, Lifestyle	Reduction/loss of community values and lifestyle. Project does not meet community expectations.	Construction	Medium	Continue consultation to identify community values and issues;	Low	GLNG active contributes to the communities identified values. Santos behaviour and actions meet the expectations of the community.
		Operation	Medium		Low	
		Decommissioning	Low	Becoming an active member of community, supporting events promoting those community values.	Low	

## Section 9

# Potential Impacts and Mitigation Measures

### 9.3.13 Barge Options

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

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

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

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

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

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

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

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

## Potential Impacts and Mitigation Measures

## Section 9

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

### 9.3.14 RISQUE Assessment Impacts and Mitigation

Table 9-9 was compiled for the LNG Facility based on interviews, field assessments, baseline data and professional knowledge of the project and study area. The events are described below in terms of their relevant potential social impacts.

The order of the events reflects their ranking in the RISQUE assessment as part of the EIS as a whole for the most part, though some were moved in order to better maintain flow for the reader. For an actual ranking of all events in the RISQUE assessment, see the risk assessment report in the EIS.

## Section 9

## Potential Impacts and Mitigation Measures

Table 9-9 LNG Facility Potential Social Impacts RISQUE Assessment

Event Name	Phase	Inherent Impacts			Residual Impacts		
		Likelihood	Consequence	Risk	Likelihood	Consequence	Risk
Dredge material placement	Construction	Almost Certain	Minor	High	Possible	Minor	Medium
	Operation	Unlikely	Minor	Low	Unlikely	Minor	Low
	Decommission and Rehabilitation	Rare	Insignificant	Low	Rare	Insignificant	Low
High demand for skills	Construction	Possible	Minor	Medium	Unlikely	Insignificant	Low
	Operation	Unlikely	Insignificant	Low	Unlikely	Insignificant	Low
	Decommission and Rehabilitation	Possible	Insignificant	Low	Unlikely	Insignificant	Low
Visual impact	Construction	Rare	Insignificant	Low	Rare	Insignificant	Low
	Operation	Rare	Minor	Low	Rare	Minor	Low
	Decommission and Rehabilitation	Rare	Insignificant	Low	Rare	Insignificant	Low
Unplanned Habitat Fragmentation	Construction	Unlikely	Minor	Low	Unlikely	Minor	Low
	Operation	Rare	Insignificant	Low	Rare	Insignificant	Low
	Decommission and Rehabilitation	Unlikely	Insignificant	Low	Unlikely	Insignificant	Low
Excessive Air and GHG emissions	Construction	Unlikely	Major	High	Unlikely	Moderate	Medium
	Operation	Unlikely	Minor	Low	Unlikely	Minor	Low
	Decommission and Rehabilitation	Unlikely	Insignificant	Low	Unlikely	Insignificant	Low
Perception that Project will have a negative impact on the community	Construction	Unlikely	Moderate	Medium	Unlikely	Minor	Low
	Operation	Unlikely	Minor	Low	Unlikely	Minor	Low
	Decommission and Rehabilitation	Unlikely	Minor	Low	Unlikely	Minor	Low
Strain on local facilities and services	Construction	Almost Certain	Major	Extreme	Unlikely	Minor	Low
	Operation	Unlikely	Minor	Low	Unlikely	Minor	Low
	Decommission and Rehabilitation	Unlikely	Moderate	Medium	Unlikely	Minor	Low
Flaring-visible emissions	Construction	Rare	Insignificant	Low	Rare	Insignificant	Low
	Operation	Rare	Insignificant	Low	Rare	Insignificant	Low
	Decommission and Rehabilitation	N/A	N/A		N/A	N/A	
Increased traffic – disruption of social movement, visual impact.	Construction	Almost certain	Moderate	Extreme	Possible	Minor	Medium
	Operation	Possible	Insignificant	Low	Possible	Insignificant	Low
	Decommission and Rehabilitation	Unlikely	Insignificant	Low	Unlikely	Insignificant	Low
Imported workers harm community	Construction	Rare	Major	High	Rare	Moderate	Medium
	Operation	Rare	Insignificant	Low	Rare	Insignificant	Low
	Decommission and Rehabilitation	Rare	Major	High	Rare	Moderate	Medium
Transition of workforce over to industry (LNG Facility)	Construction	Possible	Minor	Medium	Unlikely	Minor	Low
	Operation	Unlikely	Insignificant	Low	Unlikely	Insignificant	Low
	Decommission and Rehabilitation	Unlikely	Minor	Low	Unlikely	Minor	Low

## Potential Impacts and Mitigation Measures

## Section 9

### 9.3.14.1 Dredge Material Placement

There are several social related impacts being assessed for the dredge material placement facility, including:

- The potential disruption or interference to commercial and recreational fishers;
- The potential disruption to recreational users and activities; and
- The potential impact on residents on Tide Island and Curtis Island.

Santos has not been able to inform the public of their preferred option for dredge material placement prior to submission of the EIS because the selected Laird Point site had not been identified during the public consultation phase.

The community has not been informed of the steps that resulted in the decision for the Laird Point site. This may cause debate in the community that could potentially result in division between stakeholders. Santos is aware of the potential; however, until more research and discussions were made on other potential options, Santos was not in a position to present the preferred site option to the community. Additionally, because Santos was not the sole organisation examining potential site options, more time was necessary to assess all parties' perspectives and concerns. Santos will undertake community consultation on the dredge material placement facility as part of its community information strategies which will be developed to collect and address community concerns as part of the EMP.

A stakeholder in the consultation program identified Laird Point as an area where beautification work had been conducted along the southern bank at the mouth of Graham Creek, and that this individual had personally funded these works. This included planting trees and supplying picnic benches, tables and barbecues. The comments were specifically directed at the potential bridge location; however, the information illustrates the attachment some in the community have to the area, as well as the recreational value. Based on the information provided from the community through consultation, there is a local attachment to Curtis Island, but this specific area (Laird Point) was not identified by anyone else as having social, economic, commercial or recreational significance. Therefore, the social impact is considered low. As part of Santos's ongoing consultation, the value of the Laird Point site to this stakeholder and any others using this area for recreation and leisure can be determined. Santos will work with stakeholders to take full inventory of the infrastructure present at the site, its proximity to the proposed dredge material site, and the visual impact of the site from various positions around Laird Point, including this recreational area. Santos will also consult with State and local officials as to reasonable mitigation measures should the recreational value of the area be significantly disrupted or destroyed by the dredge material location.

To some in the community this site does hold meaning and significance. There was indication from the above mentioned stakeholder that private funding to enhance the aesthetics of the area from a recreational use perspective has occurred. As part of the ongoing consultation, efforts will be made to consult with the above mentioned stakeholder, and any others who identify themselves later during the dredge material site location consultation program.

The consultation program did not identify commercial or recreational fishing uses at Laird Point specifically as a common use area. Consultation with local stakeholders did identify use in the general area, though the extent of that use, specific areas used and numbers of users was not indicated. Based on data available, the impact on fishing is likely to be on access to the area while dredge material disposal is occurring. In terms of mud crabs and baseline nutrient runoff from the land into the bay, there could be impacts; however the extent to which mud crabs inhabit the area and the relationship between the mud crabs and the site is unknown. Based on research and communications with stakeholders a number of marine fish are targeted in the area including whiting,

## Section 9

# Potential Impacts and Mitigation Measures

flathead, salmon, banana prawns, barramundi, pony fish and herring. Further information on recreational and commercial fishing in the general area can be found in the Fish and Fisheries Section of the Marine Flora and Fauna Section of the EIS.

The primary potential social impact is likely to be the reaction to the selected site once this is made public. The identification of the site may result in an increase in stakeholders claiming to have some form of attachment to the area. This will need to be assessed as it occurs, as it is not practical to ask the area residents to identify areas of significance from Gladstone to The Narrows on the mainland, and then The Narrows to the LNG site on Curtis Island in order to have an inventory of these sites. Furthermore, often it takes the identification of the specific site to trigger people's assessment of the significance of the site. Santos will inform the community of the dredge program through the EIS public review process, and will incorporate a consultation strategy within the dredge material EMP.

The dredge material contains silt and salt water, along with the potential for acid sulphate soils, which will be appropriately managed in the EMP. There is a potential that placement of dredge material could cause disruption or interference to fishing and recreational activities in the area, though none have currently been identified in the consultation process at this specific site. This potential interruption will primarily occur during construction when the bulk of the dredge material will be extracted. The direct impacts will be associated with the presence of dredge and associated barges, transfer pipes and other equipment as well as associated restrictions on surrounding navigation. The indirect impact is the temporary effect on water quality from the dredging process and disposal. The public comment period may identify additional users of the area, in which case Santos will assess and consider such comments.

During operations, maintenance may be required or the site may be built upon depending on other projects and the results of the proposed expansion of the State Development Area (SDA). It should be noted that much of Gladstone around the Calliope River up to Fisherman's Landing is reclaimed land that was built from dredge material. Disposal of dredge material is not a new concept in the area, and several options remain open for disposal.

### Mitigation

Santos will conduct ongoing community consultation sessions to provide information on the decision to select the Laird Point placement facility. The focus will be on project issues relating to dredge material placement, logistics, economics and disruption to marine traffic plus any other issues of concern as raised during the consultation program. Santos will also consult directly to State and Gladstone Regional Council on the site location and alternatives if required. Additionally, Santos will consult with residents on local islands, as well as business owners and recreational users of the area.

Since there is a potential loss of access or use of the area by area residents, ongoing consultation and an information campaign will allow stakeholders to identify themselves and their use of the area. The information campaign proposed for the mitigation is anticipated to provide the community with the tools to better understand the rationale used by Santos in selecting the dredge material placement location. Santos can then focus more direct consultation towards key stakeholders with ongoing concerns, as well as those directly or indirectly affected by the placement of dredge material at the Laird Point site.

### Benefits

Once the placement facility is rehabilitated there is an opportunity for it to be used beneficially as industrial or buffer land, and this will be investigated in consultation with relevant stakeholders as part of the decommissioning and rehabilitation planning phase.



## Potential Impacts and Mitigation Measures

## Section 9

### 9.3.14.2 High Demand for Skills

The high demand for skilled persons for the LNG Facility presents both positive and negative impacts for the community. On the positive side it may attract residents currently working outside of the local area back to Gladstone. It also has the potential to increase the local skills capacity by helping locals upgrade their current levels through project work and training. On the negative side it has the potential to reduce the worker numbers in other industries as the project drains local resources.

In addition, the current economic uncertainty, recent job losses in mining and other industries, requirements for workers with specialised skills not present in Gladstone could result in a number of people from outside the area moving to Gladstone area in search of employment. This scenario has occurred in the past, and had a negative effect on the community in terms of a flow on effect on other social components like housing, services and cost of living. The primary issue arisen from this past experience was the impact on housing and accommodation from the influx of people to the area. This was a positive for people who owned property as their property values increased, but a negative for renters as rent increased as supply dropped. This was further compounded by some company policies to purchase or lease numerous units and houses even when not required, which left little to no housing options for the general public, particularly the less fortunate and vulnerable groups. This is addressed in more detail in the accommodation section.

There are a lot of potential variables that could occur to make the high demand for skills an issue during construction; however, given the number of workers required and the anticipated numbers available locally based on a previous LNG facility construction labour study (undertaken as part of Santos' dual pre-FEED process), this risk is considered medium (since it is possible but the consequences are minor) as they are not anticipated to be more than a minor change to individual businesses. Santos has proposed a number of mitigation measures to minimise it becoming an issue.

During operations the demand will be lower as specific skills will be required to operate the LNG Facility. This will also be the case for decommissioning though there is a slightly higher likelihood from operations due to the increased number of workers required during decommissioning, and their skills requirements more akin to construction skills.

#### Mitigation

Santos will increase labour supply by bringing in skilled labour as required, though Santos' policy will still be to hire local first if possible or practical. Santos will move to improve local skill levels through investment in skills development and training in the community, likely through the local university and TAFE, including apprenticeship programs. Santos is currently developing specific programs for the project to be implemented for construction. Santos will explore the options of partnerships with government agencies such as DETA and local economic groups such as chamber of commerce for increased employment opportunities in the area, both with existing programs as well as options for new or additional programs.

Santos will contribute to local wellbeing programs in order to help strengthen programs directly related to the project. Santos may be required to evaluate the option of subsidies for some businesses or programs to reduce local negative impacts while using local skills during specific times in the project, though this will be assessed on a case-by-case basis and is not anticipated to be required.

Santos will watch the markets, population movements, and trends to reassess as the project evolves. Santos will also work with local and State government to assess changing trends and potential impacts throughout the project

## Section 9

# Potential Impacts and Mitigation Measures

Santos will maintain the community consultation plan to promote the project. The objective is to better explain why and how to the community, address potential and real negative impacts, and enhance and promote positive impacts associated with the project.

### Residual Impacts

As it is difficult to assess the residual effects for this, and the mitigation is intended to keep the risk low, it is not likely to become an issue for the community under the current circumstances. It is important to reiterate that there are many known and unknown variables that could change the situation, most of all the current international economic slowdown which began in October, 2008 and was ongoing at the issuing of this report. As discussed, Santos will monitor the situation and work with local stakeholders and government to adapt the strategy to deal with unforeseen changes as a result of the economic uncertainty.

Based on the mitigation it is anticipated that as a result the risk will be low through all phases of the project.

### Benefits

- New jobs;
- New skills;
- Training;
- Business multiplier affects;
- Increased incomes; and
- Increased spending in area.

#### 9.3.14.3 Visual Impact

The plant will have little visual impact on the community as the LNG facility is largely hidden from view from the mainland due to the contour of the island. People might be able to see construction trucks and be aware of activity in the vicinity of the plant and may be able to see the plant stack, or flare and some visual impact at night though it will be over four kilometres away from Gladstone, and partially obscured by topography on Curtis Island. The visual assessment provides images of the project from various locations around the Gladstone area. Based on this assessment, the visual impact of the LNG Facility is not seen as a social impact outside a few individuals. The focus is therefore on presenting the results of the visual assessment to make the public more aware of how the project will appear once complete.

The visual assessment also shows the likely visual impact from Curtis Island (South End) and some of the smaller islands like Tide Island as there are resident populations at these locations. These vantage points will also see portions of the stacks and visible light at night. For more information on the visual assessment see Section 8.12 of the EIS.

### Mitigation

Santos has taken stakeholder comments on the visual amenity into consideration in the design of the LNG Facility. The community will be kept informed of the Project through community awareness programs (e.g. community consultation, awareness campaign, etc.) and an artist impression of the proposed facility. Visual impacts will be reduced by minimising the cut required for the plant footprint, minor re-location of facilities, re-designing the stack (for reduced height) and lighting controls.

## Potential Impacts and Mitigation Measures

## Section 9

### 9.3.14.4 Unplanned Habitat Fragmentation

The LNG facility area will need to be cleared of vegetation for construction. During consultation, clearing has been raised as a concern from the community, many of whom are quite attached to Curtis Island and feel that the island represents a “green” area compared to the surrounding industry.

The potential for unplanned habitat fragmentation is seen as a low risk, predominantly because Santos will implement EMPs to avoid where possible (and mitigate where necessary) such an occurrence. Santos will take immediate corrective actions to mitigate should unplanned habitat fragmentation occur. The EMPs for the LNG Facility will be available for public comment as part of the EIS. This will allow the public to see the processes in place to reduce the risk, as well as the mitigation strategies, should an unplanned event occur.

#### Mitigation

Concise and clear documentation, with specific accountabilities will aim to alleviate the potential for unplanned habitat clearance. This will focus on improving the existing EMP by initiating pre-construction ground-truthing, flagging sensitive areas/species, conducting awareness training, and developing a construction and rehabilitation plan. The plan will include the requirement to clear a minimum amount of habitat possible, to maintain riparian zones and connectivity with other habitat areas, as well as maintaining ground cover. There is also scope to consider an offset policy for unplanned clearances.

In order to allow public voice in Santos’ activities on the site, Santos will establish a grievance mechanism that will be implemented to monitor the effectiveness of the plan.

Santos will also minimise the impact on local flora on Curtis Island in the development of the LNG Facility through implementation of the EMPs.

### 9.3.14.5 Excessive Air and GHG Emissions

Recently, members of the Gladstone community have been vocal in concern over air quality which has made several headlines in 2008 and was expressed in community consultation for the project. Ongoing studies and information releases are scheduled throughout 2009. Consultation indicates that the community still has concerns regarding air quality, particular the impact of additional industry such as the GLNG project on air quality.

This is compounded by a claim that Curtis Island is the lungs of the community because it is green. The perception of community that the air quality is causing health issues is higher than actually is the case, based on the recent reports, but an issue regardless for the project to address.

#### Mitigation

Santos will implement a community consultation and stakeholder engagement program to focus on project issues in relation to air quality and greenhouse gas (GHG) emissions. Santos will consult directly with Gladstone Regional Council to identify specific perceived and actual risks, and help educate the public on the facts of the project and the baseline conditions in the Gladstone area.

Santos will conduct community awareness programs on air quality impacts of the project. As part of this, Santos will communicate the NPI website to community groups and stakeholders to increase awareness in the community. Santos will also integrate the Gladstone air quality assessment with the GLNG project to enable stakeholders a more integrated summary of results within a more consistent format if required.

## Section 9

# Potential Impacts and Mitigation Measures

Detailed air quality modelling has been carried out as part of the EIS, and this information will be made public. Santos will continue to monitor air quality and emissions as part of its air quality program.

### Residual Impacts

This impact will remain low as a result of the mitigations proposed, and the EMPs implemented.

### Benefits

- Enhanced database of air quality in the community;
- Continual monitoring of project emissions;
- Enhanced relationship of the project to local air quality;
- Transparency and relationship building for Santos with the community; and
- Cleaner energy.

### 9.3.14.6 Perception that the Project will have a Negative Impact on the Community

Based on information in the media and interviews with local stakeholders, many people in the community are more focussed on the broader issues such as air quality and the Gladstone State Development Area (GSDA) expansion, than they are the GLNG project specifically. Most people who have an opinion on the GSDA are more focussed on what is happening on Curtis Island and not actually the project specifics. For the people that were objecting to industry establishing on the island – if they had to choose what would go there – they preferred to have an LNG facility for the most part (THI, 2008).

In addition, events addressed in this section like workforce demand and safety concerns, service demands and capacity, accommodation and traffic can add to the perception that the Project will have a negative impact on the community. The other side of the argument is the economic benefits associated with the project, as well as the flow-on work as a result. This is assessed in more detail in the economics section of the EIS, and in this section the focus is on the potential negative social impacts.

The community has a connection with Curtis Island in terms of recreation and aesthetics. Many look out to Curtis Island and see a green island where much of the cityscape around Gladstone is dominated by industry. Based on the visual impact modelling however, the effect on the visual amenity in the area is minimal due to site placement and island contours. In this sense, the visual impact is minimal. The LNG facility may have some effect on recreation activities including cruising/leisure boating and recreational fishing. The LNG facility will not be publicly accessible and there will be an exclusion zone around the port which will limit fishing and other boating activities. Other port related activities such as ship movements may also have some affect on recreation activities.

Gladstone is perceived as an industry city both locally and throughout Queensland. The addition of the LNG industry to the area will not alter this perception, though it may further solidify Gladstone as an industry community, to the potential detriment of other industries and occupations like the arts and tourism. Conversely, there is a potential for the increase in population to include individuals from these industries and occupations to the benefit of the community. The most likely industry to experience potential negative effects associated with Gladstone being perceived strictly as an industry community is the tourism industry; however, many Gladstone tourism operators and strategies embrace the realities of the community as part of the tourism draw. There are industry site tours for many industries in Gladstone including the Queensland Alumina Refinery, Gladstone Ports Corporation, Tondoon Botanic Gardens, NRG Gladstone Power Station, Boyne Smelters Limited and Rio

## Potential Impacts and Mitigation Measures

## Section 9

Tinto Alcan Yarwun Refinery (Gladstone Information Centre, 2008). Tourism is not a large industry in Gladstone compared to the other industries and employment types (see Economics section of EIS), with Fitzroy attracting 7% of international tourists and 6% of domestic tourists. Local tourism businesses use the industry presence in Gladstone as part of the tourism draw.

Several LNG facilities are currently proposed to be constructed in Gladstone around the same time. During decommissioning there is a potential that the public may perceive that the loss of industry and how it will impact on the city in the future if several LNG facilities are built and decommissioned at the same time. This is based on the assumption that if all the LNG facilities are being built at the same time there is a possibility that they may all go through decommissioning at the same time as well, presuming they all have approximately 30 year life spans. This is not necessarily the case, and is very difficult to predict because there is no indication of how many projects will submit EISs of those known or rumoured to be looking to the Gladstone area for establishing their LNG facilities. In addition, other unknown considerations include:

- how many will be approved;
- how much gas reserves they will have access to; or
- how long their fields will produce.

The potential for the project to be perceived negatively is seen as a low risk based on the baseline circumstances and history of Gladstone. The community is anticipated to become accustomed to this industry in the same way it has to the other industries already existent in the community, mainly because it is an industrial community. Not all area residents and organisations would agree with that assessment, but from a general community perspective, there is evidence that some in the community see Gladstone as not requiring additional industrial growth; however, there are others who identify the project as a transitional greener energy through the consultation process. The potential for a negative perception therefore shifts to individual incidences that may influence public opinion as opposed to the project itself.

### Mitigation

Santos will continue with the current community consultation and stakeholder engagement program, with special focus on project issues and community responses in order to better address real and perceived community issues with the project. Santos will also continue to consult directly with Gladstone Regional Council and key stakeholders to identify specific perceived and actual risks in order to adapt and evolve community information material to address specific issues.

Santos will also conduct a consultation campaign in order to build a stronger image and presence in the community so people are more aware of Santos' activities, and what it offers the community. This may include enhancing community awareness of tools like the National Pollutant Inventory (NPI) website so the community better understands the project and its environmental impact, as well as Santos measures to reduce or mitigate the impacts. Santos will explore the option with the community of integrating the Gladstone air quality assessment with the GLNG project in order to make the two reports findings formatted in a similar way to help ease reading and understanding.

Santos will work with the Gladstone Regional Council and the community to develop a quantifiable social monitoring and measuring program to help track positive and negative changes in the community. This assessment process will evaluate changes to the baseline social objectives over time, and where possible, attribute any variance to project impacts. With that said, it is important to note that a community's wellbeing is subject to a range of external influences beyond the control of specific projects. The value in this exercise will be

## Section 9

# Potential Impacts and Mitigation Measures

to determine where the greatest needs are, to ensure a focussed, equitable and community acceptable social program is undertaken.

In order to help enhance the community through project and non-project related areas, Santos will develop a targeted community development plan. The objective of this plan would be to demonstrate Santos' commitment to long term sustainable relationships with the community.

### Residual Impacts

The residual impacts are anticipated to be low as the public is more aware of the relationship between the community and Santos, and Santos' role and contribution to the local economy, services, and programs. Based on the proposed mitigation measures identified here, and the mitigation measures proposed for some of the other sub-issues identified, it is anticipated that the risk will be low as it is for many other operating industries in Gladstone. The issue is with public perception, and maintaining an open relationship with the community is seen as imperative to establishing and maintaining trust.

### Benefits

- Enhanced community understanding of the project and the industry;
- Better community understanding of Santos' contributions to the community;
- Ongoing dialogue between Santos and key stakeholders in the community; and
- Support or sponsorship for local programs and services.

#### 9.3.14.7 Strain on Local Facilities and Services

It is anticipated that there will be an extreme inherent risk that the project will put a strain on local facilities and services based on the number of construction workers required to build the LNG Facility, the requirement to house and feed them, and the materials required for construction (see Section 8 Project Workforce Requirements for more details). This is based on the information presented in the accommodation section (Section 7) including local housing supply and demand, as well as the numbers of workers, and their potential families identified in the workforce section (Section 8). Although Gladstone and area have a large network of service providers already operating, many have indicated that they are already strained, or would be if they experienced significant increases in use. This could be anywhere from a 10% increase in use to a 100% increase based on the service.

Most increases would likely be from either worker families, like day care and health services, or locals being negatively impacted by increased housing costs associated with increased demand. It is difficult to predict the exact extent of the impact without knowing the exact ratios of local to imported construction workers, as well as the ratio of single to family accompanied imported workers. However, there is enough data to suggest that based on the workforce size, and data from PIFU on traditional construction workforce make ups in Gladstone, there is significant potential (without adoption of proposed mitigation measures) for a negative impact on local facilities and services (see accommodation and workforce sections) from potential increased demand.

During operations this will not be an issue as the operations workforce is much smaller and will easily be absorbed into the normal range of migration to the area.

During decommissioning there could be an issue again as more workers are required than during operations; however, both the lessons learned from construction, and the anticipated reduced workforce compared to construction indicate this is unlikely to occur, but will have a moderate consequence if it does.



## Potential Impacts and Mitigation Measures

## Section 9

### Mitigation

In order to reduce the impact on local services from the project, Santos will consult with the Gladstone Regional Council and the interagency government groups in regards to local services utilised and service requirements. As more information is available as to the likely make up of the construction workforce, Santos will update the key stakeholders in order to better prepare. This will also provide an opportunity for local service providers to expand their services in order to capitalise from the project. In this sense, Santos will work with such service providers to ensure this offering of services does not come at the detriment to the community's services. Programs and agreements may be required to reduce the potential for lost or strained local services in order to accommodate the project. This can then be carried into the operations and eventual decommissioning phases of the project.

Santos will work with social service providers to develop a list of community priorities, cross reference that list to current service capacity, and identify gaps in local services. Santos and the community service providers can then develop a collaborative strategy to address the gaps and deliver important community services more efficiently in the community. This will require the commitment of Santos and the social service providers in the community, and a willingness by all participants to fairly and accurately assess the real social issues facing the community. Issues already identified included more support for men, and more support for children (5 to 15 years), as well as careful management of job opportunities (Gladstone Interagency Meeting, March 2008).

Santos will develop and implement a community consultation and stakeholder engagement program with specific focus on project issues relating to local facilities and services usage by the project, and the pros and cons of each. Santos will consult directly with the Gladstone Regional Council and key stakeholders to identify specific perceived and actual risks, and realistic mitigation or enhancement opportunities. Additionally, social monitoring and measurement indicators will be developed with the community (including State representative if relevant) to track changes in the community and determine appropriate courses of action. This will also help the community and service providers differentiate between natural changes and project related changes.

Santos will develop procurement policies and communicate those policies to the community as well as local service providers to increase local knowledge of the projects demands and requirements. Santos will plan local services requirements, and may reduce temporary accommodation facilities workers access to the community if required.

Santos will work with State and local representatives on the definition of local, in order to better categorise potential workers. This is intended to make it clearer to potential employees what constitutes a local, which might help reduce the potential for people to move to the area prior to obtaining an employment contract in order to be considered a local, and thus more likely to be employed. This scenario has occurred in Gladstone's recent past, and had negative effects on the local housing and rental market. This is not something Santos wants to repeat, and will work with State and local stakeholders to develop a solution tailored specifically to Gladstone Regional Council based on local knowledge and experiences, and group collaboration on a realistic plan to mitigate or avoid this scenario.

Santos believes the best place to house the majority of construction workers is in a CAF on Curtis Island. This is based on the construction workforce numbers, particularly around the peak, the difficult environment created from the international economic situation, and the other projects being proposed for Gladstone area over the same timeframe (see cumulative effects section). The primary reason is that there are too many variables

## Section 9

# Potential Impacts and Mitigation Measures

outside the control of Santos that could negatively impact the community from having the workforce on the mainland. The current global economic crisis has compounded this by increasing the number of unemployed skilled labourers throughout Queensland and Australia as a whole, who may be inclined to seek employment from the project, as well as the potential for even more unemployed individuals should the economic crisis continue. This could result in an influx of people to the area beyond the means of the community as experienced in the past, and this is something Santos wants to avoid. Removing the workforce from accessing the area reduces the potential use of local services by reducing demand, as well as the need to move to Gladstone for employment right away. Over time people and/or their families may decide to move to the area. The objective is to avoid having too large of a number of people make that decision at the start and overwhelming the community.

From Santos' perspective, having the CAF on Curtis Island makes sense financially, and from a health and safety perspective as it reduces the transportation of all workers on and off the island on a daily basis. Although some workers will be moving on and off the island daily as per their shift rotations, moving the entire workforce off the island daily would be very difficult from a logistical standpoint, and would increase the potential for accidents. From a financial perspective, having the CAF at the site on Curtis Island would mean less movement of people, and shorter commuting distances which would reduce costs. It also allows more control of workers movements and activities.

Santos is currently looking at several work rotation schedules including 10 days on and 4 days off as well as two weeks on and two weeks off. The rotation will depend on preference, economics, access, and safety concerns. The 10 days on and 4 days off formula is considered more conducive to family life since workers are off at regular intervals over a two week schedule. This is less disruptive than schedules not conducive to weekly schedules because the days off constantly change, which makes participation in regular events difficult. Santos will consider recommendations from stakeholders and workers in developing a work rotation for construction, as well as with sub-contractors. It should be noted that those recommendations would be part of a larger decision making process including economics, logistics, practicality and viability.

### Residual Impacts

It is anticipated that the risk will drop to low for all phases as the community better understands the steps and measures undertaken to accommodate their concerns and the uncontrollable variables. Santos has committed to providing the community with the rationale for their decisions, and will maintain transparency throughout the project. The placement of the CAF on Curtis Island will reduce some potential economic benefits from the project in the local area; however, as discussed, due to the uncertainty as a result of the current economic crisis, Santos is not prepared to risk serious social impacts in the community by having the CAF on the mainland and particularly near the population centres in the area. Santos will pursue discussions with local businesses and organisations towards identifying and exploiting more economic opportunities for local businesses and service providers.

### Benefits

- Increased activity in the local economy;
- Increased employment opportunity; and
- Increased business opportunity.

#### 9.3.14.8 Flaring Visible Emissions



## Potential Impacts and Mitigation Measures

## Section 9

The plant will include a flare, designed as a safety mechanism that burns additional gasses. The flare is essentially a safety switch for the LNG Facility. The flare is a controlled release of gas when equipment shuts down or fails. This is done in order to prevent the build up or release of gases in the facility. It is anticipated that flaring will occur an average of less than five times per annum, based on other operating LNG facilities, though this number could increase or decrease depending on the facility. Regardless, the impact of the flare itself is not a social issue, but rather the implications and reactions of the event itself.

This is likely to be an issue for the first few occurrences, when residents are not yet aware or used to the flaring event. As this is not a dangerous event for the public or the workers on site, this event has low risk throughout all phases of the project. Upon decommissioning, the event will no longer occur at all.

### Mitigation

In order to better prepare the local population for flaring events, the community will be informed about flaring. Santos may arrange to have a public announcement of the flare so the community can understand what it is, especially for South End residents, who will need to be advised about what the flare is and what it means to their safety on the island. This is because they would perceive the greatest harm to themselves and their community if they mistook the flare for an explosion. As they are on an island, evacuation scares could occur, therefore Santos will take steps to ensure people are aware of flaring, and what it entails.

Santos may also consider firing off controlled flaring at a set time during the earliest opportunity in order to show the community en-masse what the flaring looks and sounds like, and that it is not an explosion or sign of a disaster at the LNG Facility. This education plan is designed to limit the potential for area residents to call 000 after a flaring event to report a perceived explosion at the LNG Facility, or instil panic in the community.

### Residual Impacts

The mitigation is designed to reduce the potential for over reaction to the flaring, or misinformation as to why it occurs. For this reason the risk is likely to remain low.

### Benefits

- Increased community understanding of the project; and
- Safe release of CSG into the atmosphere.

#### 9.3.14.9 Increased Traffic (including Marine)

Gladstone Regional Council identified increased traffic as a potential impact on infrastructure and social (pers. comm., A. Kearns *et al*, 2008). The impact of past large construction projects in Gladstone were a lot larger than anticipated which resulted in traffic congestion and frustration. Given the size of the community and the more rural than urban social fabric, people were not used to such an increase in traffic, and not overly understanding (pers. comm., R. Peroz, 2008).

The social impacts assessed are a disruption to social movement as well as a visual impact. This is predominantly for construction, as workforce numbers for operations and decommissioning are not anticipated to be outside background norms (see section 8 Project Workforce Requirements). The most pressing concern is that increased traffic also increases the potential for accidents. This is the case for air traffic, road traffic and water traffic, though the likelihood of an air accident is still extremely low as per aviation safety provisions.

Increased traffic from the project is likely to create some disruption to the Gladstone community. Key issues relating to increased traffic include:

## Section 9

# Potential Impacts and Mitigation Measures

- Increased volume of vehicles on roads;
- Safety and increased potential for accidents;
- Increased commute times for some with delays anticipated; and
- Noise.

Increased traffic on the roads can result in delays that the local population is unaccustomed to, since Gladstone is a relatively small city (population ~30,000) with only minor traffic congestion. This dramatic, short-term increase in traffic has occurred in the last 10 years with other major construction projects in the Gladstone area. Although not a significant issue when compared to traffic issues in other cities, community consultation indicates that it is of relative concern to the specific impacted area as it is outside their norm.

Conversely, the increased traffic can result in improved infrastructure as Santos will need to upgrade or build some roads as well as build some car parks for workers at transportation collection points. Santos intends to transport their workforce to and from site, and as a result will require workers to assemble at special built collection points or local transportation hubs to facilitate the process. This will help reduce the number of vehicles on the road as well as provide a place for workers to park without disrupting local parking requirements and businesses.

There is also a potential for increased marine traffic to affect movement around Port Curtis. There will be frequent ferries transporting construction workers to and from Curtis Island and barges to transport materials which may affect other marine users during construction. This impact is anticipated to be an interruption rather than a direct impact since the consultation program did not identify anyone using specific areas likely to be used by project marine traffic. During operation there will be LNG vessels entering port which may restrict recreational boating and commercial fishing activities. More details on the anticipated traffic impacts from the project can be found in the traffic section of the EIS.

### Mitigation

Santos will develop a formal traffic management strategy which may include components to identify deficiencies and develop standards. Santos will continue with stakeholder engagement plans to include a component on the anticipated project effects on traffic patterns. Santos will work with State and local government on strategies required to upgrade roads including current rural roads. Santos will develop studies to be carried out to identify existing roads in need of repair/upgrade, areas where there will be a concentration of traffic and develop a management plan to address the issues, including road widening and dust management. A construction management plan for temporary works will also be developed.

Santos will maintain dialogue with the infrastructure services group with Gladstone Regional Council as the details of the construction phase are developed and finalised to better enable both parties to plan and coordinate activities.

In order to help monitor the effects of traffic disruptions on the population, Santos will work with key stakeholders to develop a social monitoring and measuring program. This will coincide with other social monitoring and measurement programs. The goal will be to collect information on the positive and negative attributes of changed traffic on the community, and if possible, the role of the project on the change. Santos will also coordinate traffic strategies with State and local government, as well as local NGOs specialising in traffic safety and awareness.

Santos will build or lease private parking lots at transportation assembly points in order to provide an area for workers to park, while minimising the impact on area parking limitations and congestion.

## Potential Impacts and Mitigation Measures

## Section 9

Santos is anticipating two barge locations to ferry workers to the island, and will set up bussing points around the area so no private vehicles can access the ferry sites. Appropriate safety and security programs will be developed for these sites. To avoid localised traffic congestion on the roads, Santos intends to build car parks out of town and bus the workers to the ferry sites. If many workers are found to live in neighbouring communities like Rockhampton, bus services from there may also be implemented to reduce highway traffic and potential accidents. This will be examined on a case by case basis.

Santos will develop a formal marine safety strategy with MSQ (refer to the traffic section in the EIS).

Santos will develop a community consultation and stakeholder engagement plan to focus on project issues relating to traffic changes for the area. Santos will consult directly with service providers to identify specific perceived and actual risks, as well as potential opportunities for businesses and employment.

### Residual Impacts

The mitigation is anticipated to reduce the construction residual risk to medium, while maintaining the operations and decommissioning residual risks at low. The construction risk is medium because there will be an increase in local traffic during construction; however it will be better understood what improvements are occurring, and what efforts Santos is making to minimise the impact on the community.

### Benefits

- Increased economic opportunities;
- Increased employment opportunities;
- Increased business opportunities;
- Improved infrastructure;
- New infrastructure; and
- Additional flights.

### 9.3.14.10 Imported Workers Harm Community

This event is not anticipated to occur; however Santos is aware that any event involving Santos imported workers harming the community will have major consequences. This is a potential issue for construction and decommissioning when imported workers will be required for some components of the project. Santos would prefer to hire all workers locally, but is aware this will not be possible for all positions across all project phases due to numbers of skilled workers required, as well as specific skills required for certain tasks.

### Mitigation

In order to reduce both the likelihood of the event occurring, as well as the consequences should an event occur, Santos will develop or implement existing company human resources (HR) policies and the Santos code of ethics with regard to workers behaviour.

Santos will develop a community consultation and stakeholder engagement plan to focus on project issues related to imported workers. Santos will consult directly with service providers to identify specific perceived and actual risks, and develop a grievance mechanism to be implemented prior to construction so locals can report bad behaviour. Santos will develop a fair system to assess accusations and measures to deal with workers found to be causing problems.

## Section 9

# Potential Impacts and Mitigation Measures

By having the main CAF for workers on Curtis Island as the preferred Santos option, Santos can reduce CAF workers access to the community, which will reduce the likelihood of an event occurring. Santos will work with local stakeholders to develop a social monitoring and measuring program to track workers impacts on the community, both positive and negative. In addition, Santos will develop and implement a targeted project sponsorship / community support program to assist key social services focused towards various social issues like assault and battery, spousal and child abuse, and men's and women's shelters.

### Residual Impacts

Santos is aware of the gravity of any worker (local or imported workers) causing harm to the community and takes the matter very seriously. With the mitigation, it is anticipated the community will be more likely to categorise any incident as an individual issue rather than a company culture; however, Santos will adapt plans constantly to reduce the likelihood of more events occurring. As a result, though the risk is reduced to a medium risk with mitigation, Santos will still treat it as a high risk and make efforts to have no events occur throughout the life of the project.

### Benefits

- Increased awareness with workers in regards to domestic assault; and
- Increased community awareness of Santos' policies and programs form community enhancement.

#### 9.3.14.11 Transition of Workforce to Industry

This effect looks at the social impact of workforce transition to the project industry. This is not anticipated to be an issue given the high level of industry employment opportunities and jobs already present in Gladstone and area. During construction the most workers will be required. Some specialty skills will be required, though most will be standard industrial construction jobs like steel fabrication and welding. Gladstone has had many large industrial construction and maintenance projects occur over the last decade, and as such have a highly skilled labour force available in the area. In addition, there have been ongoing construction opportunities, which mean there are many construction workers already in the area. Santos would prefer to hire these individuals over those outside the area; however Santos is aware this may not be possible for all positions. Regardless, there is a possibility that some of the local workforce will transition over to the project, but the vast majority are anticipated to already be based in other similar industries in Gladstone including construction.

During operations, the workforce is much reduced, and though all the employees, or at least the vast majority will be based in Gladstone, some will need to relocate from other locations. Of those based in Gladstone, they will need to transfer from another industry or profession as the skills required to operate the LNG Facility are highly specialised. Training of locals is an option, as is direct recruitment for some of the more non specialised / non trade skills. This impact is still seen as low since the number of workers required is not outside the means of the community. For decommissioning, the numbers are less than construction, and will be similar jobs to construction work.

### Mitigation

Santos will contribute to local wellbeing programs in order to enhance programs for those who may be indirectly or directly impacted by the transition of some of the local workforce. In order to increase the potential employability of local labourers and trades people, Santos will develop a local training provision, which may consider the evaluation of subsidies for potentially seriously impacted businesses, though this is not anticipated to occur as a result of the project alone. Santos will also develop a recruitment plan taking into consideration the potential impact the plan may have on community businesses.

## Potential Impacts and Mitigation Measures

## Section 9

Santos will develop and implement a community consultation program for aiding the transition for prospective employees as well as reducing the impact on local businesses. Santos will consult directly with Gladstone Regional Council to identify specific perceived and actual risks, as well as to better assess the actual project effects on the community versus other variables like employment rates, economic conditions and other projects in the area.

Santos will initially reduce temporary accommodation facilities workers access to the community, and will reassess this policy with the community throughout the construction phase (there will not be CAFs established for the operational workforce).

Santos will also develop and implement a targeted project sponsorship / community support program for services in Gladstone. This may include services directly, indirectly or not impacted by the project in order to enhance community services.

### Residual Impact

The mitigation is anticipated to be sufficient in keeping the potential impacts low throughout all phases of the project.

### Benefits

- People who are from Gladstone but have moved elsewhere could return;
- People in Gladstone employed in FIFO positions outside the area may stay in the area;
- Increased local skills capacity;
- Increase labour supply; and
- Increased economic diversification which reduces the likelihood of single events causing major economic disruption in the community.

### 9.3.14.12 Poor Communication with Community

This risk is not a phase by phase risk like the others assessed here, since it is more a matter of building a reputation and then working to maintain and improve it throughout the life of the project.

Santos has been consulting with several key stakeholders in Gladstone throughout 2008 in order to gauge community sentiments and concerns, educate interested parties on the project details, and solicit feedback. As a result, Santos has built a relationship with many groups and organisations in the community. For more details on the consultation program in Gladstone and surrounding area, see the consultation section in the EIS.

For the most part, the project has not elicited much local attention due to other issues in the community including the expansion of the GSDA, the air quality assessment, and local health care capabilities. As a result, many of Santos' consultation efforts in the community have taken a back stage to other issues. For the most part Santos' consultation has been targeted at specific stakeholders and local groups, and has therefore not mass targeted the community as a whole.

In order to reduce the potential for poor communication with the local community, Santos has relocated its community consultation representative from Brisbane to Gladstone in order to be constantly accessible in the community. This will also increase the potential information gathering capacity for Santos locally, which can better and more rapidly address issues as they arise. This can also help Santos standardise the messages

## Section 9

# Potential Impacts and Mitigation Measures

being distributed in the community in order to remain consistent, which will help build trust through transparency.

### 9.3.15 Conclusions

Based on the RISQUE assessment, it is during the construction phase that the highest risk events occur. This is a result of the high number of workers required to build the project, and the likelihood that many will need to be sourced from outside the community.

For most potential impacts, an ongoing and tailored consultation and engagement program with key stakeholders will help minimise impacts or enhance opportunities. Gladstone has experienced construction booms in the past, and it is important for Santos that the lessons learned from those experiences be relayed by the community, so Santos can develop policies and strategies to reduce the risk or better mitigate.

The extreme inherent risks to the social environment as a result of the project are:

- Strain on local facilities and services; and
- Increased traffic.

The strain on local facilities and services, as well as some of the increased traffic can be mitigated by situating the CAF for construction workers on site on Curtis Island, remote from the general population. This decision weighed the economic gains against the potential negative social impacts, as well as community feedback on past issues with large construction projects in the area. By removing the workers from directly accessing the local community, the risk will reduce considerably. In return, Santos will explore options with the community to try to increase economic gains through local procurement plans and other services. Santos will also reassess the strains on services and facilities throughout the construction phase and mitigate appropriately with input from those affected and key stakeholders providing services in the areas impacted.

Some increased traffic is unavoidable due to the requirement to transport workers, supplies and equipment to and from the project site. Santos will take appropriate measures to address these issues, and consult with State agencies, local government, and key stakeholders throughout the construction phase. This includes the option to barge workers should a bridge to Curtis Island not be constructed (see Section 9.3.13). Traffic management strategies are discussed in more detail in the Traffic assessment in the EIS (Section 4 and Appendix J).

The dredge material placement facility site selection process was extended, and the result of numerous discussions with key stakeholders and assessments. Santos has not been able to present the preferred site prior to EIS submission to the community as a result of ongoing discussions and changes to the plan. As a result, a consultation component within the EMP may be required. Santos will monitor community reaction carefully and modify their consultation plan accordingly to address concerns and questions.

Excessive air and greenhouse gas (GHG) emissions were assessed as a high inherent risk, predominantly due to the recent media coverage of the Gladstone Air Quality Report and the public's concern over air quality. The LNG Facility will emit GHG, and it will add to the mix in Gladstone, but Santos will conduct ongoing monitoring as part of the Air Quality Strategy. Increasing information for area residents and maintaining an ongoing monitoring program while remaining transparent on emissions will help Santos reduce the consequences to a medium risk.

Imported workers harming the community were also identified as a high inherent risk. In this case it is likely that the imported workers status could become more of a topic of debate than the event itself because the imported worker is not seen as a local. Santos takes this matter extremely seriously, and will develop and implement policies in order to protect the community and their employees. The reality is that though any harm to the

## Potential Impacts and Mitigation Measures

## Section 9

community by any worker is unacceptable, community perception is far harsher if the event is perpetrated by an imported worker. Due to this differentiation, there will always be an enhanced risk.

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

Table 9-10 summarises the RISQUE events, impacts, mitigation and residual risk as discussed above.



## Section 9

## Potential Impacts and Mitigation Measures

Table 9-10 RISQUE Assessment Summary for Social Impacts for the LNG Facility

RISQUE Event Number/ Aspect	Potential Impact	Project Phase	Inherent Risk rating	Mitigation Strategy	Residual Risk Rating	Objective
Dredge material disposal	Potential for community fragmentation as a result of the dredge material disposal plan. Potential disruption or interference to commercial and recreational fishers. Potential disruption for recreational users and activities. Potential impact on residents on Tide Island and Curtis Island.	Construction	High	Conduct community consultation sessions to provide information on the decision to opt for the Laird Point placement site, as well as the options dismissed or still under consideration. Consult with residents on local islands, as well as business owners and recreational users of the area. Continue to work with the Gladstone Port Corporation to identify existing and potential alternative disposal site locations. Develop an appropriate dredge management plan.	Medium	To communicate plans to deal with dredge material and to minimise disruption to surrounding residents and commercial operations.
		Operation	Low		Low	
		Decommissioning	Low		Low	
High demand for skills	Potential to increase the local skills capacity by helping locals upgrade their current levels through project work and training. A number of people from outside the area might move into the Gladstone area in search of employment.	Construction	Medium	Hire local first if possible or practical. Improve local skill levels through investment in skills development and training in the community, likely through the local university and TAFE, including apprenticeship programs. Explore options for partnerships with government agencies such as DETA and local economic	Low	To assist in improving the skill level of the local community.
		Operation	Low		Low	
		Decommissioning	Low		Low	



Potential Impacts and Mitigation Measures

Section 9

RISQUE Event Number/ Aspect	Potential Impact	Project Phase	Inherent Risk rating	Mitigation Strategy	Residual Risk Rating	Objective
				groups such as chamber of commerce for increased employment opportunities in the area, both with existing programs as well as options for new or additional programs.		
Visual impact	Potential to see the plant stack, or flare and some light pollution at night visible from Gladstone.	Construction	Low	Incorporation of stakeholder comments on the visual amenity into consideration for the design of the LNG Facility.	Low	To minimise the visual impact of the LNG facility on the surrounding landscape.
		Operation	Low		Low	
		Decommissioning	Low		Low	
Unplanned Habitat Fragmentation	Concerns regarding clearing of Curtis Island.	Construction	Low	Concise and clear documentation will aim to alleviate the potential for unplanned habitat clearance. The plan will include the requirement to clear a minimum amount of habitat possible, to maintain riparian zones and connectivity with other habitat areas, as well as maintaining ground cover. There is also scope to consider an offset policy for unplanned clearances.	Low	To minimise the amount of unplanned habitat clearance.
		Operation	Low		Low	
		Decommissioning	Low		Low	
Excessive Air and GHG emissions	Perception of community that the air quality is causing health issues is higher than actual based on	Construction	High	Community consultation and stakeholder engagement program to focus on project issues in relation to air quality and green house gas (GHG)	Medium	To minimise any air quality impacts on the surrounding area.
		Operation	Low		Low	
		Decommissioning	Low		Low	

## Section 9

## Potential Impacts and Mitigation Measures

RISQUE Event Number/ Aspect	Potential Impact	Project Phase	Inherent Risk rating	Mitigation Strategy	Residual Risk Rating	Objective
	the recent reports, but an issue regardless for the project to address.			emissions. Consult directly with Gladstone Regional Council to identify specific perceived and actual risks, and help educate the public on the facts of the project and the baseline conditions in Gladstone area. Develop a community awareness programs on air quality and the project. Communicate the NPI website to community groups and stakeholders to increase awareness in the community. Integrate the Gladstone air quality assessment with GLNG project to enable stakeholders a more integrated summary of results within a more consistent format if required.		
Perception that Project will have a negative impact on the community	Many people in the community are relatively unaware of the project, and are more focussed on other issues in the community like air quality and the State Development Area –	Construction	Medium	Community consultation and stakeholder engagement program, with special focus on project issues and community responses in order to better address real and perceived community issues with the project. Consult directly with Gladstone	Low	To minimise any negative perceptions of the project.
		Operation	Low		Low	
		Decommissioning	Low		Low	

## Potential Impacts and Mitigation Measures

## Section 9

RISQUE Event Number/ Aspect	Potential Impact	Project Phase	Inherent Risk rating	Mitigation Strategy	Residual Risk Rating	Objective
	Gladstone (SDAG) expansion.			Regional Council and key stakeholders to identify specific perceived and actual risks in order to adapt and evolve community information material to address specific issues.		
Strain on local facilities and services	Based on the number of construction workers required to build the LNG Facility, the requirement to house and feed them, and the materials required for construction, it is anticipated that the project may put a strain on local facilities and services.	Construction	Extreme	Consult with Gladstone Regional Council and the interagency group in regards to local services utilised and service requirements. Provide an opportunity for local services to expand their services in order to capitalise from the project. Programs and agreements may be required to reduce the potential for lost or strained local services in order to accommodate the project. Develop and implement a community consultation and stakeholder engagement program with specific focus on project issues relating to local facilities and services usage by the project, and the pros and cons of each. Consult directly with Gladstone Regional Council and key	Low	To utilise local services and facilities without affecting the normal supply to the local community.
		Operation	Low		Low	
		Decommissioning	Medium		Low	

Section 9

Potential Impacts and Mitigation Measures

RISQUE Event Number/ Aspect	Potential Impact	Project Phase	Inherent Risk rating	Mitigation Strategy	Residual Risk Rating	Objective
				<p>stakeholders to identify specific perceived and actual risks, and realistic mitigation or enhancement opportunities.</p> <p>Develop procurement policies and communicate those policies to the community as well as local service providers to increase local knowledge of the projects demands and requirements.</p> <p>House construction workforce in CAF on Curtis Island in isolation from the general public.</p>		
Flaring-visible emissions	Flaring is likely to occur on average less than five times per annum. The first couple of occurrences are likely to cause concern in the community until they are use to the flaring.	Construction	Low	<p>Community will be informed about flaring.</p> <p>Public announcement of the flare so the community can understand what it is, especially for South End residents.</p> <p>Consider firing off a controlled flaring at a set time, in order to show the community en masse what the flaring looks and sounds like.</p>	Low	To educate the community of the importance of flaring at the LNG facility.
		Operation	Low		Low	
		Decommissioning	Low		Low	
Increased traffic (including marine) – disruption of social	Key issues relating to increased traffic include: Increased volume of	Construction	Extreme	Develop a formal traffic management strategy which may include components to identify deficiencies and develop standards.	Medium	To reduce the impact of increased traffic volumes in the local area.
		Operation	Low		Low	
		Decommissioning	Low		Low	

## Potential Impacts and Mitigation Measures

## Section 9

RISQUE Event Number/ Aspect	Potential Impact	Project Phase	Inherent Risk rating	Mitigation Strategy	Residual Risk Rating	Objective
movement, visual impact.	vehicles on roads; Safety and increased potential for accidents; Increased commute times for some with delays anticipated; and Noise.			<p>Continue with stakeholder engagement plans to include a component on the anticipated project effects on traffic patterns.</p> <p>Work with State and local government on strategies required to upgrade roads including current country roads.</p> <p>Develop studies to be carried out to identify existing roads in need of repair/upgrade, areas where there will be a concentration of traffic and develop a management plan to address the issues, including road widening and dust management.</p> <p>Develop a social monitoring and measuring program to monitor the effects of traffic disruptions on the population.</p> <p>Build or lease private parking lots at transportation assembly points in order to provide an area for workers to park, while minimising the impact on area parking limitations and congestion.</p> <p>Build car parks out of town and bus the workers to the ferry sites.</p>		

## Section 9

## Potential Impacts and Mitigation Measures

RISQUE Event Number/ Aspect	Potential Impact	Project Phase	Inherent Risk rating	Mitigation Strategy	Residual Risk Rating	Objective
				Develop a formal marine safety strategy with MSQ. Develop a community consultation and stakeholder engagement plan to focus on project issues relating to traffic changes for the area.		
Imported workers harm community	Concerns that imported workers may harm the community.	Construction	High	Santos HR Policies and Code of Ethics aim to provide a sound basis for behavioural standards that are expected of their workforce. Complemented by a social monitoring and measuring program, grievance mechanism and community consultation strategy that will focus on project issues by consulting directly with service providers to identify specific perceived and actual risks. A targeted project sponsorship / community support program will also be developed and implemented, along with a strategic recruitment plan.	Medium	To eliminate project employees causing harm to the community.
		Operation	Low		Low	
		Decommissioning	High		Medium	
Transition of workforce over to industry (LNG Facility)	There is a possibility that some of the local workforce will transition over to the project, but	Construction	Medium	Contribute to local wellbeing programs in order to enhance programs for those who may be indirectly or directly impacted by	Low	
		Operation	Low		Low	
		Decommissioning	Low		Low	

## Potential Impacts and Mitigation Measures

## Section 9

RISQUE Event Number/ Aspect	Potential Impact	Project Phase	Inherent Risk rating	Mitigation Strategy	Residual Risk Rating	Objective
	the vast majority are anticipated to already be based in other similar industries in Gladstone including construction.			<p>the transition of some of the local workforce.</p> <p>Develop a local training provision, which may consider the evaluation of subsidies for potentially seriously impacted businesses.</p> <p>Develop a community consultation to develop and implement appropriate policies for aiding the transition for prospective employees as well as reducing the impact on local businesses.</p> <p>Consult directly with Gladstone Regional Council to identify specific perceived and actual risks, as well as to better assess the actual project effects on the community versus other variables like employment rates, economic conditions and other projects in the area.</p> <p>Develop and implement a targeted project sponsorship / community support program for services in Gladstone.</p>		

## Section 10

## Cumulative Impacts

### 10.1 Introduction

Many in government, particularly in Gladstone and area felt cumulative effects assessment were important for the project (pers. comm., E. Boardman, 2008) (pers. comm., A. Kearns *et al*, 2008) (pers. comm., V. Laverlick, 2008). Cumulative impacts include the impacts of existing industry, those of the GLNG Project, and those of other developments that are proposed to be developed in the same timeframe as the GLNG Project. Cumulative impacts result when the effects of an action are added to or interact with other effects in a particular place and within a particular time. The cumulative impacts of an action can be viewed as the total effects on a resource, ecosystem, or human community of that action. The basic idea behind cumulative impacts assessment is that if proposed actions are evaluated singly, the big picture (i.e. the additive result of many actions, each exerting its beneficial or adverse environmental influence over time) will be missed.

The cumulative effects assessment was based on the information available at the time of drafting this report. Projects that had submitted EISs for review were primarily assessed, as the details of the project were available; however, some proposed projects were also considered in order to better gauge the potential changes Gladstone could experience in the near future. The data presented is based on the information and assumptions presented by third parties. The report assumes the information is relevant, up to date and accurate.

The main focus is on the construction phase of the project, when most of the activity for all three project components occurs. Operational activities are much smaller and the workforce is more likely to be comprised of local residents, or require relocation to the area from elsewhere. In addition, several significant events can occur between EIS submission and operations that could completely change the economic and social landscape, as is evident with the current global economic slowdown. As such, most of the cumulative effects assessment focussed on the construction phases for the three study areas. Decommissioning and Closure is not assessed as it is too distant to assess.

### 10.2 Methodology

In order to analyse the cumulative impacts of the GLNG Project in combination with other expected future growth, the extent and location of growth from the other relevant projects must be predicted. Cumulative impacts are calculated based on estimations of single-project effects, first-order interactions among projects, shared project features, and an estimation of the impacts of existing projects.

The methodology used to determine the cumulative impacts of the GLNG Project included the following tasks:

- Identify the environmental and community resources to be considered in the cumulative impact analysis;
- Define the geographic boundaries for each resource to be addressed in the cumulative impact analysis;
- Describe the current status of each resource;
- Identify the direct and indirect impacts of the GLNG Project that may contribute to cumulative impacts;
- Identify other known projects with potential to contribute to the cumulative impacts;
- Assess the potential cumulative impacts;
- Report the results of the cumulative impact analysis;
- Assess the need for mitigation and / or actions to address cumulative impacts.



A comprehensive SIA has been performed to investigate the cumulative social impacts on the community, brought about by the GLNG Project together with other concurrent existing projects or proposed projects. This assessment specifically examined the following:

- Population increase in the area due to the influx of construction and operational workforces and the resulting implications for the provision of government and other services;
- Accommodation availability for all the project's workforce (both construction and operation) and the potential cumulative impact on the housing and rental market (see Section 7: Accommodation and Appendix C);
- The proposed long-term and post use of any worker's temporary accommodation facilities constructed for the project;
- The demographic profile of the region and the associated sufficiency of current infrastructure and services; and
- Development of a community consultation management plan that promotes an active role for impacted communities.

Santos has committed to an ongoing community consultation program throughout all phases of the project, and will attempt to coordinate efforts with other industries where applicable to reduce consultation fatigue and enhance community understanding.

### 10.3 CSG Field

There is discussion of several proposed projects throughout the CSG field, but none have publicly published an EIS so it is difficult to accurately assess the potential cumulative effects associated with these projects. Due to the nature of the petroleum leases as sole ownership or joint ventures for each company, there will not be a situation where competing companies have infrastructure on the same lease. However, it does mean that areas where shared infrastructure could prove more sustainable may not occur. Santos will continue to work with regulators, relevant government agencies, landholders and other key stakeholders to determine more efficient strategies.

The primary cumulative social effect of the CSG field development program will be the effect on landholders. The stresses and other issues of land negotiations are proving difficult for some landholders and their families based on consultation records and feedback. Not all petroleum leases are aligned with surface property boundaries, and in fact many large properties can have several different petroleum leases underneath. The potential for numerous companies approaching the same landholders to develop is possible, and the cumulative effects of these negotiations could have negative effects on individual landholders and their families. Santos will continue to consult landholders while working with government and other industry groups to determine policies and strategies to limit such occurrences, as well as the resultant stresses.

Another emotional social impact from the cumulative effects of other projects in the study area is the negative publicity from one project becoming an industry standard in the public's opinion. In other words, the public not wanting to differentiate one company's activities from the next or being able to differentiate with the information available. This is already evident, with stakeholders at public events and community meetings confusing statements from different companies, as well as past and current practices. The CSG industry is in its infancy in the area, and all the experiences throughout the region have the potential to spread throughout. This is particularly true for errors and failures, which are generally topics more frequently discussed in conversation. As such, Santos, and the other industry players in the area, should consider making a concerted effort to promote the positive attributes of the industry, work together on best practices, and lessons learned from past mistakes

## Section 10

## Cumulative Impacts

and setbacks. There are obviously some intellectual property issues and competition concerns that will need to be addressed, but for many potential positive and negative impacts the issues and mitigations or enhancements will be similar and public knowledge. For example, a joint effort by industry to develop a landholder package with all the information they need to know or access if a company wants to develop on their property should be considered. Although it is tempting to develop such material in-house by each company, a joint effort would likely result in more information available, better lessons learned, better acceptance by the community, and a reduced risk that the information provided was of lesser quality than that of a competitor.

From a population change and community demographics perspective, the cumulative effects of several companies operating in the area at once are low. This is because most projects will likely build TAFs for their construction and operations workforces, as is standard procedure in the industry. These TAFs will likely be assembled and dismantled throughout the field as new areas are developed. There is not a plan to keep TAFs on a permanent basis for most of the field. There could be long term TAFs near Roma and Arcadia Valley, though this has yet to be determined. Santos will work with local councils and stakeholders to address concerns regarding TAFs throughout the project. With regards to the operating of the TAF, a sub-contractor will be hired to run the facility. Should other industries require the same service after the project, it is the option of the sub-contractor as to whether they provide their services to others in the area.

Worker and family inflow to the community will occur at various rates over time, with the majority of people moving to specific areas as the fields develop. For example, hypothetically five to ten workers and their families may move to the Injune area in 2010 as part of the construction and operations phases, while Scotia field may not develop until 2012, and Denison Trough field not until 2015. As such, population increases can happen throughout the life of the project in different areas. All of the potential population increases are anticipated to occur within the normal range for the area, and the demographic profile of the area is similar to the assumed single and family worker profile. The positive impacts would be:

- Population growth at a sustainable rate for the area;
- An increased ability to attract and retain skilled people to the area;
- Increased economic diversification;
- Increased employment and business opportunities;
- Increased disposable income in the area; and
- Increased local skills capacity.

There is a potential for increased strain on local services, though this is more likely in the smaller communities than in the larger centres like Roma. Increased use from several companies' employees and their families would result in each company (including Santos) assessing their company's role in the issue and making efforts to mitigate. From a Regional Council perspective, it would be prudent to work with these companies to develop a formula for assessing their impact on the community. This could take the form of an evolving register of workers and families in the area, their area of residence, and ages to assess what proportion of change is more likely from which company. This could also help local businesses and service providers plan for future needs as part of their internal planning process. The details of such a plan would need to be discussed by Santos, local government, the Department of Communities, other oil and gas companies operating in the area and key stakeholders.

## 10.4 Gas Transmission Pipeline

There are other projects planned along the pipeline corridor. These projects have potentially significant cumulative impacts for landholders affected by more than one project. Santos will continue to assess and monitor potential projects in the area and work with key stakeholders to address issues. There will be minimal impacts to the general community from cumulative development. The construction workforce will be largely sourced from outside of the local area. The workforce will mostly utilise facilities and services provided at the TAFs.

TAFs built for the project will be moved along the corridor as it advances and will be dismantled by the sub-contractor operating the facilities after construction is complete. The operational workforce is anticipated to be around 15-20 workers, and will not have a measurable cumulative effect on the community, regardless of what other developments occur in the area at the time.

## 10.5 LNG Facility

In addition to the GLNG Project, there are a number of other major projects at various stages of development within the Gladstone region. Some of the environmental, economic and social impacts associated with these projects may add to the impacts of the GLNG Project.

This section looks at a number of industrial projects located within the Gladstone Region which, together with the GLNG Project, have the potential to cumulatively impact on the surrounding environment. A list of these projects is provided below:

- Gladstone LNG Project – Arrow Energy and LNG Ltd;
- Central Queensland Gas Pipeline – AGL and Arrow Energy;
- Wiggins Island Coal Terminal – Gladstone Ports Corporation and Qld Rail;
- Gladstone Pacific Nickel Refinery – Gladstone Pacific Nickel;
- Sun LNG Project – Sunshine Gas and Sojitz Group;
- Queensland Curtis LNG Project – QGC Ltd and BG Group;
- Yarwun Alumina Refinery Expansion – Rio Tinto;
- Boyne Smelter – Boyne Smelters; and
- Gladstone Fitzroy Pipeline Project – Gladstone Area Water Board.

Along with these major projects that are occurring in the Gladstone Region, there has been substantial activity in the coal, transport and agricultural sectors as a consequence of improved export demands, increased production and better seasonal conditions. Impacts of this increased economic activity have affected the local, regional and state economies.

As the fourth quarter 2008 economic downturn continues, changes to these industries may occur as demand changes, but prediction of the long term trends and effects is well beyond the scope of this project. Several projects have been put on hold, or are being reassessed at the drafting of this report, making the assessment of the potential cumulative effects tenuous. Santos will continue to monitor project updates in the area as a result as part of their ongoing assessment of the area.

The Gladstone Region has experienced significant industrial growth over the past decades. There are over \$100 billion worth of projects currently operating or in early stages of development. These industrial operations

## Section 10

## Cumulative Impacts

provide significant local employment both directly and indirectly through support industries and flow on employment and business opportunities.

Industrial development has been attracted to the Gladstone region for numerous reasons including the following:

- Abundant sources of natural resources including coal, gas and water in the region;
- A naturally deep harbour and well developed port facilities;
- Rail linkages to national transportation including inland resource regions;
- Consistent weather patterns;
- Large stocks of industrial land reserved for future industrial expansion;
- Short sailing times to the Asia Pacific region (10-12 days); and
- An available trade-skilled workforce, with a level of experience in site construction and plant maintenance.

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

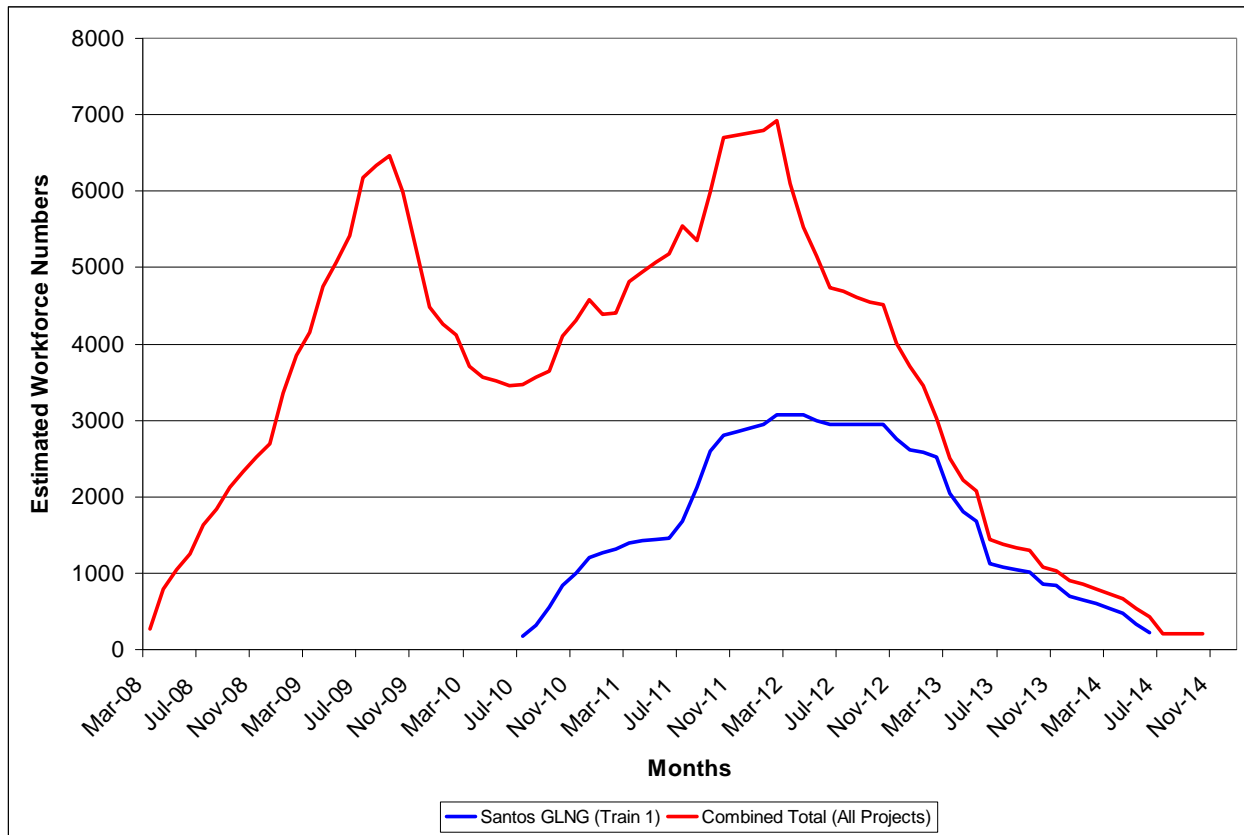
- Increased population growth and accommodation demand;
- Increased demand for community services and facilities;
- Increased need to attract key occupations to assist in the provision of services and facilities;
- Changes to the lifestyle qualities of the area.
- Increased demand for a greater range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

For this assessment nine industrial projects in various stages of planning and construction in the region were considered (listed above). Figure 10-1 shows the cumulative total number of workers required to construct or operate these projects with the GLNG Project.

## Cumulative Impacts

## Section 10

Figure 10-1 Cumulative Project Workforce in Relation to GLNG



Another project Santos is aware of is the Hummock Hill Island Development approximately 30 km south of Gladstone in the former Miriam Vale Shire area (now part of Gladstone Regional Council). This is a proposed 1,163 ha residential development proposing 2,300 tourist and 1,600 residents (at 100% capacity) with full development of the Island achieved over a period of 16 to 20 years (DIP, 2008). The development is expected to have a long-term staged construction anticipated to begin within 12 months of approvals. Initial construction will start with basic infrastructure including the bridge. The EIS is still active and was considered in the cumulative effects assessment. Based on the information available and discussions with key project staff, the cumulative effects of the project are minimal, given the different skill requirements, timelines, and long construction timeline. Given the current project status and the timelines to construct, residential housing would likely be available during the operations phase of the GLNG Project, with construction phases for the two projects coinciding. Some issues with specific labour and equipment requirements may occur, like with earth movers for example, but this is not anticipated to cause any significant negative social impacts, and may prolong business and employment opportunities in the area for construction workers, or attract new workers to construction.

Based on the size and timing of the various workforces in Figure 10-1, the current economic uncertainty (which could affect projects going ahead, unemployment rates, housing and rental prices and vacancies) and the desire to minimise potentially adverse social impacts on the community, Santos has determined that the CAF for construction of the LNG Facility is best situated on Curtis Island, within the project footprint. The exact location is not yet determined, but likely on the eventual site of Train 2 or 3. This will keep the majority of workers out of the community, and therefore not reliant on local services and housing.

## Section 10

## Cumulative Impacts

The placement of the CAF on Curtis Island will reduce the potential economic gains from workers in the community (see economic assessment in the EIS). The potential social impacts and the concerns raised through consultation (past projects in the area's construction workforce effects on the community) and the numerous social and economic variables outside the control of Santos (other project accommodation decisions, economic uncertainty, various market volatility, etc.) were determined to outweigh the potential economic opportunities. Santos is unable to determine where other projects under review or very likely to develop in the study area will house their workforces, particularly their construction workforces. Santos determined the potential negative risk to the housing market in Gladstone was too high to use local housing and land options based on the limited data available on other companies' intentions for workforce locations, and the limited land availability and housing if all the projects went ahead. In addition, there is much economic uncertainty from the rapidly changing economic situation around the world, and the current volatility in commodity markets for industries already established in Gladstone, as well as those proposing projects in the area, and the potential for countless large scale changes in the local, regional, national and international economies. Santos has determined these unknown, and potentially disastrous variables made the potential risk to the community too high to house their construction workforce in the community, or adjacent on the mainland.

In order to promote economic activities in the area during construction, Santos will explore several options with the community including 10 days on, 4 days off work rotations in order to allow workers 4 days to spend in the area (or elsewhere if they chose). The 10 and 4 schedule is also seen as a preferred option from a social perspective because it is an easier schedule to work around for families as it matches the fortnight calendar (14 days = 2 weeks). This allows families and individuals to better schedule their lives because the worker is consistently off on the same days every other week.

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

The CAF will be dismantled by the sub-contractor operating it once construction of the LNG Facility and all additional LNG Trains are complete. There could be an option to use the CAF for other industries or for other business uses after construction but that will need to be discussed with Santos, the sub-contractor and local government closer to the date. Any CAF purchased or leased in the community will be evaluated by Santos to determine if the property will be:

- Sold to the worker occupying the residence;
- Sold on the open market;
- Sold or transferred to regional council, State government, private business or a local service provider; or
- Maintained as a CAF by Santos.



There is no cumulative effect anticipated at this point since Santos does not intend to purchase or develop significant properties in the Gladstone area for the construction phase of the project (see Section 7: Accommodation).

The GLNG workforce model estimated that there would not be a large influx of people to Gladstone during construction because there was very little benefit to workers relocating to Gladstone. This was based on the policy to house all construction workers in the CAF on Curtis Island for the duration of their on-site work rotation. However, what the model cannot calculate is the number of people who choose to relocate to Gladstone regardless. This is further complicated from a cumulative effects standpoint because the employment potential the burgeoning LNG industry in Gladstone may generate could cause an influx into the area in anticipation of thousands of employment opportunities across several projects. The trend in rising unemployment since the fourth quarter of 2008 could further exacerbate the situation by creating a scenario where hundreds of unemployed individuals throughout Queensland (and the rest of Australia) are desperate to find employment and Gladstone becomes an employment opportunity haven. This could result in hundreds flocking to Gladstone in hopes of finding employment.

It is important to note that as more projects develop in the Gladstone area while construction of the LNG facility is underway, the potential ratio between local and imported workers required is likely to move toward more imported workers. This is because increased demand for local workers skills by other projects will decrease local supply; however, since many of the proposed projects would require similar skilled workers at different times, there is also the potential for workers to be employed at several construction projects throughout the year without significant disruption to project timelines. This is because some skill requirements are for specific tasks at specific times, and then they are no longer required, in which case they can be used by other projects in the area. In this case it might be required for some of the construction projects to coordinate their activities with other projects to maximise efficiency of labour. Santos will consider this option should the demand for skilled labour become an issue as a result of numerous large scale construction projects occurring at the same time in Gladstone. Appendix D examines other scenarios for the local to imported worker ratios for construction of the LNG facility.

During operations the workforce and their families could also have a cumulative effect, but not likely outside the anticipated growth from PIFU projections (see Section 3), with Gladstone projected to grow by approximately 1,000 people per annum based on trends over the last 5 years. The workforce and potential family members would fit into the current mainly working aged male population demographic, though an amplification of this demographic is not necessarily ideal for the community. Developments like Hummock Hill Island Development could help alleviate housing requirements and enhance tourism, whereas the other heavy industry projects listed would likely amplify the current demographic. All the heavy industry projects would provide high paying jobs which would add to or maintain the current salary profile of the area which is already high from current industrial activity.

During decommissioning and closure the increased workforce may have an effect on the community but it is too distant to determine to what extent. Assessments of the decommissioning and reclamation phase will have to occur closer to the date due to the rate of population increase projected by PIFU up to 2026, and the numerous other potential variables that may influence Gladstone and area over the next 30-40 years. It should be noted however that several LNG Facilities closing at or around the same time could have profound negative effects on the community and local economy. Santos will work with various levels of government and other LNG operators in the area to develop strategies to address timing of closures should the other parties agree to discuss. This proposed strategy session would require other such facilities to be approved and built in the area, and planned to close at the same or similar times. Santos can therefore commit to prospect that such a meeting be required, in which case Santos will participate.

## Section 10

## Cumulative Impacts

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



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- 2008c Pharmacies for Gladstone and area;
- 2008d Child care facilities for Gladstone and area; and

## Section 11

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### Informal Research

Informal research is interviews and conversations conducted during the site assessment in 2008 that revealed theories or opinions on issues that could not be verified, but were corroborated by more than one other individual. It also included observations made by unqualified individuals or organisations to offer expert opinion that was corroborated by an expert in that field at a later date. Industry experiences and observations both in Australia and internationally that are applicable or where similar patterns were observed in the study area is also included under informal research.

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## A.1 ABS Quality Statement

### **Quality Statement - Place of Usual Residence Five Years Ago (PUR5P)**

There are many aspects which can affect the quality of census data; the following information should be considered when viewing data on Place of Usual Residence Five Years Ago (PUR5P).

This data was captured as check box responses for most persons (that is those persons whose address was the same as five years ago or one year ago or who were overseas five years ago). Around 31% of persons had their written "elsewhere" address information coded. (In addition a further 7% were same as their usual address or their address one year ago and that address was coded from written "elsewhere" address information). Sample checks of the data are undertaken of both processes to ensure an acceptable level of quality.

The non-response rate for 2006 was 7.4% compared with 4.9% for 2001. Part of this non-response is attributable to the 4.1% of persons in dwellings which were occupied on census night but did not return a census form. Persons are imputed into these dwellings together with some demographic characteristics. However the values for PUR5P remain not stated. In 2001, 2.1% of persons were imputed into dwellings for which no form was received.

In 2006, a change was made to the way SLA codes were obtained from the "elsewhere" address information for both PUR1P (Place of Usual Residence One Year Ago) and PUR5P. In 2001, SLA codes were initially obtained by using locality information and if this was not successful then lower level street information was used. In 2006, SLA codes were obtained in the first instance by using street name rather than the less reliable locality name. This more precise matching process should produce better quality PUR1P and PUR5P codes for 2006.

The ABS aims to produce high quality data from the census. To achieve this, extensive effort is put into census form design, collection procedures, and processing procedures.

There are four principal sources of error in census data: respondent error, processing error, partial response and undercount. Quality management of the census program aims to reduce error as much as possible, and to provide a measure of the remaining error to data users, to allow them to use the data in an informed way.

When completing their census form, some people do not answer all the questions which apply to them. In these instances, a 'not stated' code is allocated during processing, with the exception of non-response to age, sex, marital status and place of usual residence. These variables are needed for population estimates, so they are imputed using other information on the census form, as well as information from the previous census.

The processing of information from census forms are now mostly automated, using scanning, Intelligent Character Recognition and other automatic processes. Quality assurance procedures are used during census processing to ensure processing errors are kept at an acceptable level. Sample checking is undertaken during coding operations, and corrections are made where necessary.

The census form may be completed by one household member on behalf of others. Incorrect answers can be introduced to the census form if the respondent does not understand the question or does not know the correct information about other household members. Many of these errors remain in the final data (ABS, 2008).

## Facilities and Services

## Appendix B

# FINAL REPORT

## GLNG SIA

### Facilities and Services

*Prepared for*

**Santos Ltd**


Level 14  
60 Edward Street  
BRISBANE QLD 4000

13 March 2009

42626223




Project Manager:

  
.....  
Chris Sunderland  
Sociologist

URS Australia Pty Ltd  
Level 16, 240 Queen Street  
Brisbane, QLD 4000  
GPO Box 302, QLD 4001  
Australia  
Tel: 61 7 3243 2111  
Fax: 61 7 3243 2199

Project Director:

  
.....  
Chris Pigott  
Senior Principal

Date: 13 March 2009  
Reference: Appendix B  
Status: Final

## Table of Contents

<b>Introduction</b> .....	<b>1</b>
<b>B.2 Education and Training Facilities</b> .....	<b>10</b>
<b>B.3 Child Services</b> .....	<b>14</b>
<b>B.4 Places of Worship</b> .....	<b>17</b>
<b>B.6 Transport</b> .....	<b>25</b>
<b>B.7 CSG Area Field Monthly Cultural Activities</b> .....	<b>28</b>
<b>B.8 Recreation Areas and Facilities</b> .....	<b>30</b>
<b>B.9 Sports Clubs</b> .....	<b>40</b>
<b>B.10 Community Groups, Clubs and Societies</b> .....	<b>46</b>
<b>B.11 Gladstone Area Businesses</b> .....	<b>49</b>

## Tables, Figures, Drawings, Appendices

### Tables

Table 1	CSG Field - Health Infrastructure and Services
Table 2	Gas Transmission Pipeline - Health Infrastructures and Services
Table 3	LNG - Health Infrastructure and Services
Table 4	Primary and Secondary Schools Field
Table 5	Primary and Secondary Schools Gas Transmission Pipeline
Table 6	Primary and Secondary Schools LNG Facility
Table 7	CSG Field - Childcare
Table 8	Childcare - Gas Transmission Pipeline
Table 9	Child Care Facilities for Gladstone and Area-Gas Transmission Pipeline and LNG Facility
Table 10	CSG Field Worship Places
Table 11	Places of Worship - Gas Transmission Pipeline
Table 12	Places of Worship and Religious Groups in the LNG Facility Study Area
Table 13	CSG Field - Governmental Services
Table 14	Gas Transmission Pipeline - Governmental Services
Table 15	Community Services Groups for Gladstone Regional Council
Table 16	CSG – Transport
Table 17	Gas Transmission Pipeline – Transport
Table 18	Transportation Services in the Study Area
Table 19	Monthly CSG Field - Cultural Activities
Table 20	Recreation Areas and Facilities in Injune
Table 21	Recreation Areas and Facilities in Roma
Table 22	Recreation Areas and Facilities in Surat
Table 23	Recreation Areas and Facilities in Banana
Table 24	Recreation Areas and Facilities in Biloela
Table 25	Recreation Areas and Facilities in Moura
Table 26	Recreation Areas and Facilities in Rolleston
Table 27	Recreation Areas and Facilities in Springsure
Table 28	Recreation Areas and Facilities in Gladstone
Table 29	Recreation Areas and Facilities in Calliope
Table 30	Recreation Areas and Facilities in Mt Larcom
Table 31	Recreation Areas and Facilities in Boyne and Tannum
Table 32	Recreation Areas and Facilities in Benaraby

## Tables, Figures, Drawings, Appendices

Table 33	Recreation Areas and Facilities in Yarwun
Table 34	CSG Field - Sport Clubs
Table 35	Gas Transmission Pipeline Sport Clubs
Table 36	LNG Facility Sporting
Table 37	CSG Field - Community Groups, Clubs and Societies
Table 38	Community Groups, Clubs and Societies
Table 39	LNG Facility – Community Groups, Clubs and Societies in Gladstone
Table 40	Gladstone Area Businesses

## Facilities and Services

### B.1 Health Infrastructure and Services

#### CSG Area

**Table 1 CSG Field - Health Infrastructure and Services**

Community	Service	Name
Roma	Nursing home	Westhaven Nursing Home
	Residential Care	Aged Care Assessment team
		Home & Community Care
	Retirement community/independent living	Rotary Pinnaroo Aged Care Facility
		Vincentian Village
		Boonagil Independent Units
	Respite Care	BlueCare Nursing
	Community Health centre (including child health centre)	Roma Community Child Health Services
		Young People's Health
		Roma Community Health Service
		Women's Health (Roma Hospital)
	Medical Centres & GPs	Roma Clinic (3 doctors)
		Maranoa Medical Centre (6 doctors - all hours)
		Diagnostic Imaging Centre
	Dentists	Maranoa Dental Pty Ltd
	Chemist	Amcal Chemist
		Guardian Pharmacy
	Pathology Labs	Sullivan Nicolaides Pathology
	Optometrist and opticians	Chas Sankey Fraser
	Hearing Centre	King Hearing Centre
	Physiotherapy	Roma Therapy Centre
	Counselling Services	Working Against Abuse Service - healthy relationships
		Debbie Garrett - Counselling
		Margaret Lumsden - Psychologist
	Chiropractor	Western Chiropractic
	Podiatry	Roma Therapy Centre
	Indigenous Health	Roma Aboriginal Health Service - Charleville Western Areas Aboriginal & Torres Strait Islander Corporation for Health (C.W.A.A.T.S.I.C.H.)
	Home and Community Care	Roma Community Care - BlueCare
		Spiritus Community Care Roma - health care packages including community options, community aged care, extended aged care at home, Department of Veteran Affairs; respite; and fee for service throughout Roma



## Facilities and Services

Community	Service	Name
	Alternative medicine	Mind Body and Soul
		Take Kare Centre
		Naturopath
	Mental health services	Spiritus Social Services Roma - Youth & Foster Carer support; Mental Health, Mentoring
		Centacare Counselling
		Margaret Lumsden - Psychologist
		Mental Health
	Disability Support and Respite Care	Spiritus Social Service Enable Lifestyle Support - Disability Support & Respite Care
	Child and maternity health	Roma Hospital
	Home care support	Home and Community Care
Injune	Residential Care	Blue Care
	Retirement community/independent living	Mount Hutton Retirement Village
	Home and Community Care (HACC) Services	Meals on Wheels, Blue Care, HACC bus, St Lukes Nursing Service, Home Care (domestic assistance)
	Dentists	Allied Health Service - Dental Clinic - Injune Hospital
	Chemist	Pharmaceutical dispensary (emergency only) - Injune Hospital
	Social Worker	Outreach Services - Social Worker - Injune Hospital
	Physiotherapy	Allied Health Service - Physiotherapy - Injune Hospital
	Women's Health	Outreach Services - Women's Health - Injune Hospital
	Speech Therapy	Allied Health Service - Speech Pathology - Injune Hospital
	Podiatry	Allied Health Service - Podiatry - Injune Hospital
	Alternative medicine	Maranoa Health Enhancement Program
		Bowen therapy
	Occupational Therapy	Allied Health Service - Occupational Therapy - Injune Hospital
	Mental health services	Outreach Services - Mental Health - Injune Hospital
	Dietician	Allied Health Service - Dietician - Injune Hospital
	Child and maternity health	Outreach Services - Child Health - Injune Hospital
Surat	Retirement Village/Independent Living	Warroona Retirement Village
	Respite Care	Day respite - Surat Hospital
	Community Health centre (including child health centre)	Community Health Nurse - Surat Hospital
		RSL Community Centre
	Dentists	Dental Clinic - Surat Hospital
	Chemist	Pharmaceutical dispatch - Surat Hospital
	Home and Community Care (HACC) Services	Community Options, Meals on Wheels, HACC bus, CACPS, Day Respite, Home Maintenance
	Occupational Therapy	Outreach Allied Health Service - Surat Hospital
	Physiotherapy	Outreach Allied Health Service - Surat Hospital
	Speech Therapy	Outreach Allied Health Service - Surat Hospital

## Facilities and Services

Community	Service	Name
	Podiatry	Outreach Allied Health Service - Surat Hospital
	Social Worker	Outreach Allied Health Service - Surat Hospital
	Alcohol, Tobacco and other drug services	Outreach Service - Surat Hospital
	Mental health services	Outreach Service - Surat Hospital
	Women's Health	Women's Clinic - Surat Hospital
		Outreach Service - Surat Hospital
	Child and maternity health	Ante and Post Natal Nurse - Surat Hospital
		Outreach Service - Surat Hospital
	Young People at Risk	Outreach Service - Surat Hospital

Source: THI, 2008.

### Gas Transmission Pipeline Area

**Table 2 Gas Transmission Pipeline - Health Infrastructures and Services**

Location	Health Infrastructure / Service	Name
Biloela	Nursing home	Wahroonga Retirement Village
		Retirement community/independent living
		RSL Retirement Units
		Home & Community Health (HACC)
	Respite Care	Callide Valley Respite Services (Home & Centre base)
		Endeavour Foundation
		Biloela Respite
	Community Health centre (including child health centre)	Oxley Clinic
		Child Health Services
		Griffith Oxley Clinic
		Community Health Nursing
		Community School Based Youth Health Nursing
	GP	Dr. Richard Tan's Surgery
	Nurses	Callide Valley Blue Care Blue Nursing
		Community Health Visiting Services
	Dentist	Smile Central
		Biloela Dental Clinic
	Alternative health	Massage Clinic
	Chemist	Amcal Pharmacy
		Biloela Family Pharmacy
Britnell's Pharmacy		
Mental health services	Dementia management & care	
	Biloela Hospital	
Moura	Retirement community/independent living	Moura Retirement Village

## Facilities and Services

Location	Health Infrastructure / Service	Name
		Blue Care, Meals on Wheels
	Respite Care	Blue Care Moura
	Community Health centre (including child health centre)	Moura Dawson Medical Centre
	GP	Dr. Chris Homan
	Nurses	Youth Health Nurse
		Blue Care Moura
	Dentist	Moura Dental Clinic
	Chemist	Moura Pharmacy
		Moura Hospital Pharmacy
	Mental health services	Moura Hospital (visiting facility at the hospital)
Occupational Therapy	Moura Hospital (visiting facility at the hospital)	
Rolleston	Community Health centre (including child health centre)	Rolleston Rural Transaction Centre - Dr John McCormick visits periodically from Springsure
	GP	Dr John McCormick visits from Springsure
Springsure	Nursing home	Springsure Hospital and multi-purpose health service dealing with acute in-patient, medical, restricted midwifery care and 24-hour A&E service; residential and aged care; primary health care; HACC; and, a Health Advisory Network.
	Retirement community/independent living	Springsure & District Aged Care and Meals on Wheels
		Springsure Home Nursing and HACC
		Springsure St Vincent de Paul Welfare
	Community Health centre (including child health centre)	Springsure Hospital and multi-purpose health service dealing with acute in-patient, medical, restricted midwifery care and 24-hour A&E service; residential and aged care; primary health care; HACC; and, a Health Advisory Network.
	GP	Drs John Lock and Louise Russell
Dr John McCormick		
Chemist	Springsure Pharmacy	

Source: THI, 2008

### LNG Area

**Table 3 LNG - Health Infrastructure and Services**

Location	Service	Name
Gladstone	Community Health centre (including child health centre)	Gladstone Community Health Services (including home and community care unit)
		Nhulundu Wooribah Indigenous Health and Aged Care
		Women's Health Centre
	Medical Centres & GPs	Central Queensland Eye Centre
		Dermatix Laser and Skin Care Centre

## Facilities and Services

Location	Service	Name
		Central Queensland Medical Imaging Pty Ltd X-Ray
		Gladstone Central Medical Centre
		Gladstone Medical Centre
		Gladstone Valley Medical Centre
		Harbour City Family Practice
		Port Curtis Medical Centre
		Sea View Health Care
		Windmill Medical Centre
		The Bulk Billing Surgery
		Hillcrest Specialist Centre (4 doctors identified below)
		Doable Diabetes
		Gladstone Podiatry and Footwear
		Gladstone City Heart Surgery
		Skin Cancer Clinic/ Mole Scans
		Beryl Turner
		Dr Abeyasundara, general Surgeon
		Martin Glenn
		Dr Adam Bush
		Dr. Les Diefenbach (Harbour City Family Practice)
		Kamlesh Kumar
		Andrew Ganter
		John Paul Ganter
		J. Hough
		Dr TB Lynch
		Dr. Colan McGree
		Robin Mawer
		Bruce Walters
		Christian Tabinga
	Dentists	Barry St Dental Centre
		Dr. Ron Petherick
		Alan Strutton
		Dr Bruce Malcolm, Windmill Centre
		Dr. Mark Lipton, Orthodontist
		Ian Young, Oral and Maxillofacial Surgeon
		Dr. Michael Hargreaves
		Tony Beck
		One Dental Group
		Dr. David Fortier, One Dental Group
		Optima Dental care
		Scott K Petrie

## Facilities and Services

Location	Service	Name
		Gladstone South Dental Health Centre
		Gladstone Dental Health Service (Queensland Oral Health Service)
		Fanelli Dental
		Gladstone West PS, School Dental Clinic
	Chemist	Clinton Healthcare Pharmacy
		Doug Shewan
		Soul Pattinson Chemist
		Terry White
		Terry White
		Amcal
		Toolooa Pharmacy
		Priceline Pharmacy
	Pathology Labs	QML Path Labs/ Robin Mawer
		MI Pathology
		Sullivan Nicholaides
		Sullivan Nicholaides
		Sullivan Nicholaides
	Occupational Health	Occupational Medical Service (Dr. Beryl Turner)
	Optometrist and opticians	Judith Cooper, Optometrist
		Gladstone Optical
		Gladstone Optical
		Bright Eyes Sunglasses
		OPSM
	Physiotherapy	Shayne Podbury
		Darryl Hughes
		Physionow!
		Gladstone Community Health Service
	Occupational Therapy	Gladstone Community Health Service
		Physionow!
	Speech Therapy	Gladstone Community Health Service
	Chiropractor	Central Queensland Chiropractic Centre (incl. John Owen)
		Gladstone Chiropractic Clinic
		Jean-Pierre and Sebastian Selsis
Trevor Langton		
Podiatry	Gladstone Community Health Service	
Indigenous Health	Gladstone Community Health Service	
Home and Community Care	Gladstone Community Health Service	
Community Health	Gladstone Community Health Service	
Social work	Gladstone Community Health Service	
Alcohol, Tobacco and other drug services	Gladstone Community Health Service	

## Facilities and Services

Location	Service	Name
	Alternative medicine	CQ Natural Health Centre
		Lia's Natural Medicine Clinic
	Mental health services	Gladstone Community Health Service
		The Haven
	Child and maternity health	Gladstone Community Health Service
Home care support	Home care	
Calliope	Medical centre (including 24 hours)	Calliope Medical Centre
	Chemist	Calliope Pharmacy
	GP	Dr Sherafati
Boyne and Tannum Sands	Community Health centre (including child health centre)	Boyne Valley Primary Health (Community Health Centre) - at the end of a long unmade road
	Medical centre (including 24 hours)	Australian Radiological Clinics
		Boyne Medical family Doctors
		Garnet Street Medical Centre
		Medical Centre (Drs Nejad, Wijewardhana, Eskandari, and Pussella)
		Tara Place Family Practice
		BITS Medical Centre
	GP/medical practitioner	Dr. Gaston Boulanger
		Dr. Les Diefenbach
		Dr. Nicola Kelly
	Physiotherapist	Physioshop
		Gladstone and Tannum Physio and Fitness
	Chiropractor	Boyne Tannum Chiropractic / Acupuncture Centre (Dr Johan Becker)
	Alternative medicine	Remedial Massage
	Pathology Laboratory	Alongside Tara Place Family Practice
		Queensland Medical Lab
	Dentist	Dr. Kylie Archer
		Dr. Christine Cheah, Tannum Dental Surgery
		Dr Christian Thomsen
Chemist	Boyne Tannum Discount Drug Store	
	Healthcare Chemist	
Optometrist and opticians	Boyne Optical	
	Tannum Eye Care	

Source: THI, 2008.

## Facilities and Services

### B.2 Education and Training Facilities

#### CSG Area

**Table 4 Primary and Secondary Schools Field**

Community	Primary and Special Education Schools		Secondary, Joint Primary and Secondary and Special Education Schools	
	Name	Enrolments 2007	Name	Enrolments 2007
Surat	Glenmorgan State School (Grades PY – 7)	23	Surat State School (Grades PY-10)	92
	Teelba State School (Grades PY – 7)	13		
Yuleba	Yuleba State School (Grades PY – 7)	36		
Wallumbilla			Wallumbilla State School (Grades PY-10)	93
Roma	Bymont East State School (Grades PY – 7)	16	Roma State College - Middle Campus (Grades 04-09)	472
	Muckadilla State School (Grades PY – 7)	8	Roma State College - Senior Campus (Grades 10-12) (and Roma State College - Special Education Program (Grades OP-12))	181
	Roma State College - Junior Campus (Grades PY-03)	315	St John's School (Non-State) (Roma) (Grade P-12)	577
Injune	Arcadia Valley State School (Grades PY – 7)	10	Injune State School (Grades PY – 10)	74

Note PY = preparatory year

Source: Department of Education, Training and the Arts, 2008

## Facilities and Services

Gas Transmission Pipeline Area

**Table 5 Primary and Secondary Schools Gas Transmission Pipeline**

Community	Primary and Special Education Schools		Secondary, Joint Primary and Secondary and Special Education Schools	
	Name	Enrolments 2007	Name	Enrolments 2007
Rolleston	Rolleston State School (Grades PY-07)	65		
Springsure	Lochington State School (Grades PY-07)	6	Springsure State School (Grades PY-10)	132
	Orion State School (Grades PY-07)	12		
	Our Lady of The Sacred Heart School (Non-State school) (Grades PY-07)	58		
	Tresswell State School (Grades PY-07)	12		
Woorabinda	Woorabinda State School (Grades PY-07)	139	Wadja Wadja High School (Grades 08-12)	101
Duarina	Duarina State School (Grades PY-07)	50	Blackwater State High School (Grades 08-12)	363
	Bauhinia State School (Grades PY-07)	20		
	Blackwater North State School and Blackwater North SS Special Education Program (Grades PY-07)	431		
Duarina	Blackwater State School (Grades PY-07)	261		
	Bluff State School (Grades PY-07)	44		
	Dingo State School (Grades PY-07)	34		



## Facilities and Services

Community	Primary and Special Education Schools		Secondary, Joint Primary and Secondary and Special Education Schools	
	Name	Enrolments 2007	Name	Enrolments 2007
Biloela	Biloela State School and Biloela SS - Special Education Program (Grades PY-07)	432	Biloela State High School (Grades 08-12)	576
	Goovigen State School (Grades PY-07) 4996 5191	24		
	Jambin State School (Grades PY-07)	62		
	Mount Murchison State School (Grades PY-07)	26		
	Prospect Creek State School (Grades PY-07)	27		
	Redeemer Lutheran Primary School (Non-State School) (Grades OP-07)	165		
	St Joseph's Catholic School (Non-State School) (Grades OP-07)	206		
	Thangool State School (Non-State School) (Grades OP-07)	168		
Theodore			Theodore State School (Grades PY-10)	188
Moura	Banana State School (Grades PY-07)	57	Moura State High School (Grades 08-12)	154
	Bauhinia State School (Grades PY-07)	20		
	Moura State School and Moura SS - Special Education Program (Grades PY-07)	284		

## Facilities and Services

Source: Education Queensland, 2008

### LNG Area

**Table 6 Primary and Secondary Schools LNG Facility**

Communities	Primary and Special Education Schools		Secondary, Joint Primary and Secondary and Special Education Schools	
	Name	Enrolments 2007	Name	Enrolments 2007
Calliope	Calliope State School (Grades PY-07) 4975 8333	429		
Mount Larcom			Mount Larcom State School (Grades PY-10)	115
Yarwun	Yarwun State School (Grades PY-07)	49		
Boyne	Boyne Island State School (Grades PY-07)	323		
Tannum Sands	Tannum Sands State School and Tannum Sands SS - Special Ed. Program (Grades PY-07)	634	Tannum Sands State High School and Tannum Sands SHS - Special Education Program (Grades 08-12)	1052
	St Francis Catholic Primary School (Grades OP-07)	237		
Gladstone	Benaraby State School (Grades PY-07)	142	Chanel College (Non-State School) (Grades 08-12)	458
	Builyan State School (Grades PY-07)	13	Faith Baptist Christian School (Non-State School) (Grades OP-12)	80
	Nagoorin State School (Grades PY-07) 49	7	Gladstone State High School and Gladstone SHS - Special Education Program (Grades 08-12)	1072
	Ubobo State School (Grades PY-07)	26	Miriam Vale State School (Grades PY-10)	119
	Agnes Water State School (Grades PY-07)	267	St Stephens Lutheran College (Non-State School) (Grades OP-12)	166
	Ambrose State School (Grades PY-07)	55	Toolooa State High School (Grades 08-12)	965
	Bororen State School (Grades PY-07)	46	Trinity College (Non-State School) (Grades OP-12)	176
	Clinton State School and Clinton SS - Special Education Program (Grades PY-07)	688		
Gladstone Central State School (Grades PY-07)	305			

## Facilities and Services

Communities	Primary and Special Education Schools		Secondary, Joint Primary and Secondary and Special Education Schools	
	Name	Enrolments 2007	Name	Enrolments 2007
	Rosella LNG Facility School (Grades PS-PS)	61		
	Gladstone South State School (Grades PY-07)	325		
	Gladstone West State School and Gladstone West SS - Special Education Program (Grades PY-07)	729		
	Kin Kora State School (Grades PY-07)	765		
	St John the Baptist Catholic Primary School (Non-State School) (Grades OP-07)	455		
	Star of the Sea Catholic Primary School (Non-State School) (Grades OP-07)	332		

Source: Department of Education, Training and the Arts, 2008.

### B.3 Child Services

#### CSG Area

**Table 7 CSG Field - Childcare**

Location	Name	Details	Capacity	Current Capacity*
Surat	Surat Children's Centre	Limited Hours Care	14	100%
Roma	A.B.C. Developmental Learning Centre - Roma	long day care	64 + 10 after school spots	~ 95%
	Baby Bears Early Learning Centre	long day care	60	~ 95%
	Roma Kindergarten and Day Care	Kindergarten	40	~ 95%
	Bounce After School Care	School Age Care	50	50%
	Maranoa Kindergarten	Kindergarten	44	100%

## Facilities and Services

Location	Name	Details	Capacity	Current Capacity*
Injune	Injune Child Care and Family Support Hub	Child Care and Family Support	N/A	N/A
	Injune Children's Centre	long day care	20	40-50%

Note: \* Percentage provided through personal communication with the facility

Source – Department of Communities, 2008. Data verified through Pers. Comm., with the various service providers

### Gas Transmission Pipeline Area

**Table 8 Childcare - Gas Transmission Pipeline**

Location	Name	Details	Capacity	Current Capacity*
Springsure	C&K Springsure Community Kindergarten	Kindergarten	20	90%
Woorabinda	Undoonoo Day Care Centre	long day care	62	80%
Biloela	Biloela Child Care Centre	long day care	42	95%
	Biloela Community Preschool and Kindergarten	Kindergarten	25	100%
	Biloela Early Learning Centre and Child Care	long day care	62	~ 95%
	Biloela PCYC School Age Care	School Age Care	70	70%
	C&k Coo-Inda Community Kindergarten	Kindergarten	22	100%
Theodore	Theodore Early Childhood Centre	Limited Hours Care	16	75%
	Theodore Early Childhood Centre	Mothering Group	N/A	~10 families per week
Moura	Moura Child Care Centre	Limited Hours Care	21	100%
	Moura Community Kindergarten	Kindergarten	25	N/A

Note - \* Percentage provided through personal communication with the facility

Source – Department of Communities, 2008.

### LNG Area

**Table 9 Child Care Facilities for Gladstone and Area-Gas Transmission Pipeline and LNG Facility**

Name	Type of Care	Licensed Capacity	Current Capacity (%)*
ABC Developmental Learning Centres, 11 Beak Street	Long Day Care	70	N/A
ABC Developmental Learning Centres - Gladstone South Centre,	Long Day Care	98	~ 95%

## Facilities and Services

Name	Type of Care	Licensed Capacity	Current Capacity (%)*
123 Toolooa St			
ABC Developmental Learning Centres- Gladstone South Centre <a href="#">ABC Ballantine St</a>	Long Day Care	75	N/A
ABC Kin Kora	Long Day Care	74	~ 95%
Birralee Kindergarten	Kindergarten	44	100%
ABC Tannum	Long Day Care	74	
C&K Gladstone Kindergarten	Kindergarten	25	90%
Gladstone PCYC After School Care	School Age Care	70	80 - 90%
Kookaburra Creek Kindergarten	Kindergarten	25	80 - 90%
Kolyangarra Kindergarten & Preschool Association	Kindergarten	25	100%
Port City Kids Early Learning Centre 1&2	Long Day Care	132	100%
Rainbow Valle Early Learning Centre	Long Day Care	75	100%
Saint Stephen's Lutheran College After School Care	Before and After School Care	15	40%
St John's Outside After School Hours Care	School Age Care	45	70%
Star of the Sea After School Hours Care	School Age Care	Not known	
Stepping Stones Child Care Centre	Long Day Care	57	98%
Salvation Army Gladstone Family Day Care	Family Day Care	50 cares working at home, 460 children enrolled at the moment	98%
Boyne Island Childcare and Kindergarten	Long Day Care	74	76%
Calliope Kindergarten and Preschool	Kindergarten	20	100%
Star Kids Calliope	Long Day Care	75	60-70%

Source: Department of Communities 2008, Yellow Pages 2008d, GPN EIS SIA Rev L, pers. comm., 2008. Note: \* Percentage provided through personal communication with the facility

## Facilities and Services

### B.4 Places of Worship

#### CSG Area

**Table 10 CSG Field Worship Places**

Location	
Surat	Surat Catholic Church
	St John's Anglican
	St Stephen's Presbyterian Church
Roma	All Saints Catholic Church
	St Paul's Anglican Church
	Roma Uniting Church
	Lutheran Church
	Roma Assembly of God
	Roma Christian Outreach Centre
	Church of Christ
	Presbyterian Church of Queensland
	Salvation Army
	Seventh-day Adventist
	Maranoa Revival Fellowship
Jehovah Witness Hall	
Injune	Injune Combined Churches
	Kingdom Hall of Jehovah's Witnesses

Source - Yellow Pages and Local Council Websites and THI, 2008.

#### Gas Transmission Pipeline Area

**Table 11 Places of Worship - Gas Transmission Pipeline**

Location	
Woorabinda	Anglican Church
Biloela	Anglican Church
	Assemblies Of God-
	Lutheran Church
	Presbyterian Church Of Queensland
	Uniting Church In Australia
Moura	Anglican Church
	Assemblies Of God-
	Baptist Union Of Queensland
	Uniting Church In Australia
Rolleston	Assemblies Of God
	All Saints Church

## Facilities and Services

Springsure	Springsure Catholic Church
	Anglican Church
	Assembly of God
	Springsure Presbyterian Church

Source - yellow pages and local council websites

### LNG Area

**Table 12 Places of Worship and Religious Groups in the LNG Facility Study Area**

Location	Name
Calliope	Calliope Union Church (shared with Presbyterians and Anglicans)
	St Patrick's Catholic Church and Centre
Mount Larcom	Our Lady of Mt. Carmel
	Mt. Larcom All Saints Anglican Church
	Christian Fellowship Hall
Boyne Island	Assemblies of God (mobile religious organisation caring for the community)
	Anglican Church of Australia
	St Mark's
Tannum Sands	St Francis Catholic Church
	Tannum Sands Uniting Church
	Jehovah's of Witnesses
Benaraby	Presbyterian Church
Gladstone	Apostolic Church of QLD
	Anglican Church of Australia
	Assemblies of God
	Baptist Church
	Catholic Church
	Christian Outreach Centre
	Church Of The Nazarene
	Churches of Christ
	Diocese of Rockhampton
	Faith Baptist Church
	Gladstone Catholic Church, Our Lady Star of the Sea
	Jehovah's of Witnesses
	Kingdom Hall Jehovah Witness
	Lifestyle Church
	Living World Fellowship
	Lutheran Church
Mission to Seafarers	
New Apostolic Church	
Our Lady Star of the Sea Parish	

## Facilities and Services

Location	Name
Gladstone	Port City Christian Church
	Presbyterian Church of Queensland
	Salvation Army
	Seventh-Day Adventist Church
	Shining Light Baptist
	Sisters of Mercy
	St Andrews Presbyterian Church
	St Saviour's Church
	St. Peters
	The Church of Jesus Christ of the Latter-Day Saints
	The Gospel Chapel
	Uniting Church in Australia

Source: Gladstone Pocket Book, 2008. July Site Assessment, 2008. THI, 2008.

### Government Services

**Table 13 CSG Field - Governmental Services**

Location	Service	Name
Roma	Centrelink	Centrelink
	Medicare	Medicare Claiming Facility - Amcal Chemist
	RACQ	RACQ
	Government Offices	Bungil Shire Council Offices
		Roma Regional Council Offices
		Qld Health - Primary Health Care Unit Roma
		Dept Child Safety - Child Safety Service Centre
		Dept Corrective Service (Probation & Parole)
		Roma Youth Justice Service
		Dept Primary Industries & Fisheries
		Dept Main Roads
		Dept Main Roads - Road Tek Asset Services
		Dept Natural Resources & Water
		Dept Disability Services
		Qld Parks & Wildlife Service
		Qld Transport
		Dept Education, Training & the Arts
		Dept Employment & Industrial Relations
		QRAA (formerly QLD Rural Adjustment Authority)
		Education Queensland - Darling Downs South West Regional (Roma District Office)
Dept Tourism, Regional Development & Industry		



## Facilities and Services

		Maranoa-Balonne Landcare & Catchment Centre
	Welfare Services	Roma Community Legal Service
		Roma Neighbourhood Centre - Community Support Service; Emergency Relief; Employability; Fair Go For Families; Family Support Service; Home & Community Care; HACC Bus; Housing roma; Tenancy Advice & Advocacy Service; Working Against Abuse Service
		Housing Roma - crisis accommodation
	Indigenous Services	Indigenous Coordination Centre
		Roma Aboriginal Corporation
		Maruma-li Mari Outreach Service
		ATSI Legal Service
		Western Indigenous Children Agency (WICA)
	Employment Services	GoldenWest employment solutions
		Jobfind Centre
		Max Employment - finding jobs, changing lives
		CRS Australia - Rehabilitation, Employment & Independence
	Electorate Offices	Hon Bruce Scott MP
		Howard Hobbs M.P. Member for Warrego
Injune	Government Offices	Council Administration Centre
		QGAP office (Qld Government Agent Program)
		Dept Natural Resources & Water - Forest Products
Surat	Centrelink	Surat Rural Transaction Centre
	Medicare	Surat Rural Transaction Centre
	Government Offices	Surat Council Administration Centre (Old Warroo Council chambers)
		QGAP (Qld Government Agent Program)
		Surat Rural Transaction Centre

Source: THI, 2008.

### Gas Transmission Pipeline Area

**Table 14 Gas Transmission Pipeline - Governmental Services**

Location	Name	Service
Banana	Medicare	C/O Australia Post
	Government Offices	C/O Australia Post (Payment of Rates)
Biloela	Centrelink	Centrelink
	Medicare	Biloela Family Pharmacy
	RACQ	Biloela RACQ/CV Towing
	Government Offices	Government Agency
		Department of Primary Industries & Fisheries, Research Station
		Biloela Shire Chambers
		Regional Arts Development Fund, Arts Queensland, Banana Shire Council
Electorate Offices	Jeff Seeney Office	

## Facilities and Services

		Veterans' Welfare Service
		Community Resource Centre
		Community Health Social Work plus Community Indigenous Health
		Anglicare Central Queensland-Callide Dawson
	Welfare Services	Banana Shire Support Centre
	Employment Services	Community Employment Options
Moura	Centrelink	Centrelink Rural & Remote Centre Access
	Medicare	Medicare at Moura Pharmacy
	Government Offices	Banana Shire Council
		Government Agency, QGAP Moura
	Welfare Services	Moura Hospital & Community Welfare Service
		St. Vincent De Paul
		Anglicare ( family & adolescent support, emergency relief, family daycare)
Moura Miners Auxiliary Inc		
Rolleston	Centrelink	Rolleston Rural Transaction Centre
	Medicare	Rolleston Rural Transaction Centre
	RACQ	Rolleston Motors
	Government Offices	Bauhinia Shire Council Office
Springsure	Medicare	Springsure Pharmacy
	Welfare Services	Springsure St Vincent De Paul Welfare

Source: THI, 2008

### LNG Area

**Table 15 Community Services Groups for Gladstone Regional Council**

Location	Service	Name
Gladstone	Centrelink	Centrelink
	Medicare	Centrelink
	RACQ	RACQ
	Government Offices	Australian Maritime Safety Authority
		Environmental Protection Agency
		Queensland Department of Parks and Wildlife
		Australian Technical College, Gladstone Region
		Central Queensland Ports Authority
		Dept. of Child Safety (Service Centre)
		Department of Communities Gladstone Youth Justice Service
		Department of Corrective Services
		Department of Employment and training
		CRS Australia (Rehabilitation)
Gladstone Area Water Board		

## Facilities and Services

Location	Service	Name	
		Gladstone Regional Council	
		Queensland Dept. of Housing	
		Gladstone Port Authority	
		Gladstone Magistrates Courts (Courthouse)	
		Public Trustee of Queensland	
		Queensland Transport (Customer Service Centre)	
		Gladstone Dept of Tourism, Regional Development and Industry	
		Children's Resource and Advisory Service	
		Early Childhood Network	
		Multicultural Family Support	
		Post Natal Disorders Support Group / Young Parents Programme / Family Nutrition Programme	
		Family Outreach Service	
		Queensland Department of Communities	
		Gladstone Youth Justice Service	
		AQIS Australian Quarantine and Inspection Service	
		Australian Customs Service	
		Education Queensland	
		Welfare Services	Australian Red Cross
			Blue nurses
			Blue nurses based at Hibiscus Gardens Hostel
		Central Queensland Volunteering	
		Centrecare for Personal Support	
		Community Advisory Centre	
		Continence Service	
		CQ Home Assist Secure	
		Disability Services Queensland	
		Dispute Resolution Centre	
		Endeavour Foundation	
		Epilepsy Action	
		Epilepsy Queensland Inc Gladstone Branch	
		Family Law Reform & Assistance Assoc Inc	
		Flexi Respite	
		Friends of Bindaree	
		Gamblers Anonymous	
	Gambling Help Services-Relationships Australia Qld		
	Gehgre Aboriginal & Torres Strait Islanders Corporation		
	Gladstone Aquatic Therapy Service		
	Gladstone Area Autism Support Group		
	Gladstone Carers Support Group		
	Gladstone Central Committee on the Ageing		

## Facilities and Services

Location	Service	Name
		Gladstone common Equity Housing Ltd
		Gladstone Community Linking Agency Inc
		Gladstone Multiple Birth Association Inc
		Global Care Gladstone
		Grow
		Guide Dogs Queensland
		Hibiscus Gardens Hostel
		Home & Community Care (HACC) Home Care Services
		Immigration Advice – CQ community Legal Centre Inc
		Individual Funding Packages
		Jigsaw Qld Inc
		Kidney Health Australia Formerly Australian Kidney Foundation
		Legacy Gladstone
		Legal Aid Qld Advice Service
		Leukaemia Foundation of Qld – Gladstone & District Branch
		Lifeline Central Qld – Gladstone
		Local Area Multicultural Partnership Program (LAMP)
		Mainstay Respite Care
		Meals on Wheels
		Meals on Wheels – Boyne Tannum
		Medicare – Health Insurance Commission
		Mental Health Service
		Nhulundu Wooribah
		Ozcare
		Ozcare Domestic & Family Violence Counselling and Support Service
		Ozcare Domestic and Family Violence court Support Service
		Parent-to-Parent
		Police Citizens Youth Club – PCYC – Gladstone
		Port Curtis Day Respite Association Inc
		Queensland Cancer Fund Gladstone Branch
		Queensland Cancer Fund – Cancer Helpline
		Queensland Deaf Society
		Queensland Youth Housing Hotline
		Red Cross Australia – Gladstone Branch
		Reflux Infants Support Association Inc
		Relationships Australia – Gladstone
		Relationships Australia Qld – Rockhampton
		Roseberry Community Services Inc – Branchout
		Roseberry Community Service Inc – Roseberry House
		Roseberry Community Services Inc – Youth and Family support Service

## Facilities and Services

Location	Service	Name
		Royal Queensland Bush Children's Health Scheme
		RSL Homecare
		Senior Citizens Homes Society – Gladstone Inc
		Seniors Enquiry Line
		Sexual Assault Support and Prevention Program
		Society of St Vincent De Paul
		Technical Aid to the Disabled (TADQ)
		The Missions to Seafarers Gladstone Inc
		The Salvation Army – Welfare
		The Salvation Army Red Shield Family Store
		Victims Counselling Support Services – Relationships Australia
		Victims of Crime Assistance Link
		Vietnam Veterans Counselling Services
		Volunteering Queensland Inc
		Wageline
		Women's Health Centre & Sexual Assault Service
		Women's Shelter – Louise Lodge Ozcare
	Employment Services	Adeco Temporary and Permanent Recruitment
		Austin's Maintenance
		Baraka Training and Management P/L
		Buderoo Employment and Training Agency
		Callide Dawson Group Training
		Community Employment Options Inc.
		Derridale Human Resources
		Drake
		Gladstone Area Group Apprentices
		Gladstone Region Enterprise Centre
		Manpower
		Minniecon and Burke Park Lane
		MJ Recruitment Parksville
		Nghuluin
		People Resourcing
		Downing Teal Human Resources Consultancy
NEATO Employment Services		
Calliope	Government Offices	Former Calliope Shire Council Offices (relatively new building now part of Gladstone Regional Council)
Mt. Larcom	Centrelink	Part of Library
	Medicare	Part of Library

Source: Site Assessment, 2008. THI, 2008. Gladstone Pocket Book, 2008.

## Facilities and Services

### B.6 Transport

#### CAG Area

**Table 16** CSG – Transport

Location	Services	
Injune	Bus services	Injune Daily Express - Transport service to and from Roma every week day
		HACC Bus
	Service Station	Injune Roadhouse
		Injune Petroleum
Airport/ airfield	The Injune Airport	
Roma	Train Station	Roma Train Station
	Bus services	J&D Bus Liners
		Stonestreets Coaches
		KW & L Jump School Bus Operators
	Taxi	Taxi-Roma Cabs
		Roma Taxi
	Service Station	BP Service Station
		BP Roma Truck Stop
		Ampol Western Highway Service Station
		Cochranes Mobil Service Station Cnr Quintin & Bowen Sts
Caltex Roma Service Station		
Shell Petrol Station		
Airport/ airfield	Roma Aerodrome	
Surat	Service Station	Surat Caltex Service Station
	Airport/ airfield	Surat Aerodrome

Source: THI, 2008.

#### Gas Transmission Pipeline Area

**Table 17** Gas Transmission Pipeline – Transport

Location		Name
Banana	Service Station	Choice Petroleum, Banana Truck stop
Biloela	Train Station	Biloela Railway Station (freight only)
	Service Station	Boomerang Service Station
		BP
		BP Orbit
		BP Shell Space
		Mobil Biloela
Woolworths Plus Petrol		
Airport/airfield	Thangool Airport	

## Facilities and Services

Location		Name
	Bus	Biloela to Maryborough: Weekly Weds & Fri departing 4.30 am & arriving at Maryborough Transit Centre at 11.00am. Return departs Maryborough Transit Centre 2.35pm & arrives Biloela 9.05pm
		Rockhampton to Miles Via Biloela: Weekly Tue, Thurs, Sun departing R/Hampton 6.30 am & arriving Biloela at 8.30am. Return from Miles to R/Hampton via Biloela departs Mon, Wed, Fri, at 5.45pm & arrives Biloela at 7.45pm
Moura	Train Station	Moura Railway Station (freight only)
	Service Station	BP Moura
		Mobil Moura
	Airport/airfield	Moura Airstrip (non commercial)
	Bus	Service to Toowoomba, Sun, Tues & Thurs, departs Moura Mobil Service Station 9.45am arrives Greyhound Terminal at 4.45pm. Returns Mon, Weds & Fri, departs Greyhound Terminal 9.30am arrives Moura Service Station 4.15pm
Service to Rockhampton, Mon, Wed, & Fri, departs Moura Mobil Service Centre 4.15pm arrives George St 7.45pm. Returns Sun, Tues & Thurs, departs George St 6.30am arrives Moura Mobil Service Station 9.45am		
Car Service	Moura Taxi service	
Rolleston	Service Station	BP Australia
Springsure	Service Station	Springsure Roadhouse
		McGilvary Service Station [CHECK is this same as above]
		Castrol Australia Pty Ltd
		Caltex
		BP
	Airport/ airfield	Springsure Airstrip

Source: THI, 2008

### LNG Area

**Table 18 Transportation Services in the Study Area**

Location	Services	Name
Gladstone	Train Station	Gladstone Railway Station
	Bus station and depot	Bus stops in Philip St (could hardly be called a bus station)
		Bus depot and office for buslink
Bus services	<p><u>Route 1/2 - City Loop</u>: serving the Railway Station, schools and colleges, Stockland's SC, and the hospitals. <u>Route 1</u> has one service in the morning leaving Philip St at 7.30 a.m. and one service in the afternoon leaving Stockland's SC at 2.50 p.m. <u>Route 2</u>: has one service in the morning leaving Breslin St at 7.30 a.m. and one in the afternoon leaving Auckland St at 3.10 p.m.</p>	

## Facilities and Services

Location	Services	Name
		<p><u>Route 3 - Valley to South Gladstone</u>: operating between the Star of the Sea (Valley SC Tank St), Barney Point, the TAFE and Toolooa High School. There are 5 services departing from The Valley between 8.52 a.m. and 2.06 p.m. (M-F) that immediately return to the Valley</p>
		<p><u>Route 4: Valley to Kin Kora Centre (Stockland SC)</u>: operating between the Valley SC, the Marina, the hospitals, and the Stockland's SC (West Gladstone). There are five services departing from the Valley between 9.25 a.m. and 2.40 p.m. (M-F) and four</p>
		<p><u>Route 5 - Kin Kora Centre (Stockland SC) to Carinya Park, Clinton</u>: there are five services leaving Kin Kora at between 08.30 a.m. and 2.28 p.m. (M-F) that then make the return trip to the Kin Kora SC</p>
		<p><u>Route 6 - Kin Kora SC (Stockland's SC) to Seaview Heights</u>: linking the shopping centre to Clinton. There are four bus services leaving Kin Kora Centre between 8.30 a.m. and 2.29 p.m. (M-F) that then make the return trip to the Kin Kora SC.</p>
		<p><u>Route 7 - Kin Kora Centre to Toolooa Estate</u> serving Sun Valley and Telina. There are five services leaving Kin Kora Centre between 9.01 a.m. and 1.55 p.m. (M-F) that then make the return trip to the Kin Kora SC.</p>
		<p><u>Route 8 - Kin Kora Centre to Toolooa Estate</u> via the Valley and the city. There are four services leaving Kin Kora Centre between 9.10 a.m. and 1.38 p.m. (M-F) that then return to the Kin Kora SC.</p>
		<p><u>Route 9 - Toolooa Fair to Boyne Island and Tannum Sands via the Valley</u>: the morning service leaves Toolooa at 7.15 a.m. (via Benaraby) and returns from Tannum Sands High at 9.02 a.m. for Kin Kora SC. There are four other services leaving Kin Kora SC between 8.25 a.m. and 2.00 p.m. that return from Tannum Sands High to the Kin Kora Centre</p>
		<p><u>Route 10 - Gladstone Railway Station to the Marina</u>: there is one service leaving the Railway Station at 8.37 a.m. that returns to the Valley.</p>
	Taxi	Blue and White Taxis
	Transport interchange	Gladstone Coach Terminal
	Car parks	Public car parks
		Public car parks
		Marina
	Bike racks	Marina
		Gladstone library
	Service Station	Choice Petroleum
		Choice Petroleum
		Caltex Petrol Station
		Shell PFS
		Mobile PFS



## Facilities and Services

Location	Services	Name
		Mobile PFS
		BP PFS
	Airport	Gladstone Airport
Calliope	Service Station	Caltex PFS
		Choice PFS
Mt Larcom	Train Station	No train station, but freight trains frequently pass along the line
	Service Station	Choice PFS (plus toilets and snacks)
Boyne and Tannum Sand	Service Station	Shell PFS
		Central Queensland PFS
		BP PFS
		Typhoon Eco-car Wash
	Bus service	Route 9 - Toolooa Fair to Boyne Island and Tannum Sands via the Valley: the morning service leaves Toolooa at 7.15 a.m. (via Benaraby) and returns from Tannum Sands High at 9.02 a.m. for Kin Kora SC. There are four other services leaving Kin Kora SC between 8.25 a.m. and 2.00.p.m that returns from Tannum Sands High to the Kin Kora Centre.
Benaraby	Service Station	Caltex PFS
		Benaraby General Store
		Shell PFS
	Bus service	Route 9 - Toolooa Fair to Boyne Island and Tannum Sands via the Valley: the morning service leaves Toolooa at 7.15 a.m. (via Benaraby) and returns from Tannum Sands High at 9.02 a.m. for Kin Kora SC.

Source: THI, 2008.

## B.7 CSG Area Field Monthly Cultural Activities

### CSG Field

**Table 19 Monthly CSG Field - Cultural Activities**

Festival and Events		
Roma	January	Oz Day Bash at the Bungil
	April	Trap Nationals (Gun Club)
		Easter in the Country
	August	Roma & District Show
	September	Santos Food and Fire Fest
	October	Something Out of the Box
		Stock Up for Hope Dinner
		Lions Convention Dinner
	Nov	Roma Cup (14-16 Nov)
	Dec	Christmas Street Part

## Facilities and Services

Injune	April	Injune Art Exhibition
		Injune Golden Bit Campdraft
	June	Injune in June
	Aug	Eumamurrin Campdraft
	Oct	Injune Hospital Auxiliary Garden Competition and Fete
		Ding Dong Dell's Team Relay for Life' - fund raising for Cancer
		Resourceful Women - naturally
		Injune Memorial Hall 50th Year Anniversary Morning Tea Celebration
	Nov	AgForce Qld Meeting
		Santos Injune Cup Races
Dec	Advance Injune Meeting	
	Injune Ballet Group Concert	
Surat	Jan	Surat Fishing & restocking Club 'Carp Busters'
	March	Surat Rodeo
		Centenary Cup
		Surat Bowls Club Cancer Fundraising Day
	April	Anzac Day Dinner
		Anzac Day Ceremony
		Red Bull Dust Country Music Concert
		Surat Clay Target Club Two Day Annual Shoot
	May	Surat Cobb & Co. Campdraft
		Australia's Biggest Morning Tea
		Mad Hatters Luncheon
	August	Surat Clay Target Shoot
	September	Surat Races
		The Mad Hatters Luncheon
		Surat Encouragement Campdraft
	October	Surat Tennis Club - Business Challenge
	November	Melbourne Cup Luncheon
		Begonia Sport Club Melbourne Cup Luncheon
		Bowls/Cricket Challenge
		Student Council Open Golf Day
		Race & Rodeo Christmas Party
	December	Ambulance Carnival
	No Date	Mad Hatters Luncheon
		Bowls/Cricket Challenge

Source: THI, 2008.

## Facilities and Services

### B.8 Recreation Areas and Facilities

#### CSG Area

**Table 20 Recreation Areas and Facilities in Injune**

Recreation - Sports Infrastructure	Venue
Bowls Club	Injune Bowls Club
BMX track	BMX Track
Aquatic Centre	Injune Pool
Sports ground/complex/stadium	Injune Tennis Courts & Clubhouse
	Racecourse, Camp draft and Pony Club
Showground	Rodeo & Cutting Grounds
Playing fields/ovals	Cricket Ground
	Reg Harland Oval
Recreation - Parklands	
Parks and gardens	Possum Park
	Gwydia Laycock Park
	Henricks Park
	Lions Park

Source: THI, 2008.

**Table 21 Recreation Areas and Facilities in Roma**

Recreation - Sports Infrastructure	Venue
Bowls Club	Roma Bowls Club (Boyce Ward Park)
Skate Park	Skate & Bike Park
BMX track	BMX Track
Aquatic Centre	Denise Spenser Memorial Pool
Sports ground/complex/stadium	Golf Course
	Roma-Bungil Shooting Complex
	Roma International Motor Speedway
	Ironbark Raceway Complex (Motocross & Drag racing)
	Community Youth Recreation Centre
	Allan F Warner Memorial Grounds (Polocrosse)
Indoor sports / recreation centre (including indoor cricket)	Roma All Sports Centre - indoor cricket, squash, outdoor tennis courts
Gym	Roma Health & Fitness
Playing fields/ovals	Noel Kerr Oval
	Football field
	Soccer pitches
	Athletic track
	Softball/baseball diamond

## Facilities and Services

	Cricket pitch
	Cities Rigby League Football grounds
Walking tracks	Adundadoo Pathway
	Hospital Hill Historic Walk
Cycle track	Adundadoo Pathway
Recreation - Parklands	
Parks and gardens	Apex Park
	Cultural Centre Gardens
	Bush Gardens & Railway Dam
	Lions Park
	Rotary Rest Area
	Neighbourhood Park
	Campbell Park (Lookout) and Lake Neverfill
	Shady's Lagoon
	Adundadoo Pathway & Park

Source: THI, 2008.

**Table 22 Recreation Areas and Facilities in Surat**

Recreation - Sports Infrastructure	
Bowls Club	Bowls Club
Skate Park	Surat Skate Park
BMX track	BMX Track
Aquatic Centre	Waroo Shire Council Swimming Pool - 25m outdoor
Sports ground/complex/stadium	Surat Golf Club
Tennis Courts	Tennis Courts
Showground	Surat Showgrounds - Surat Rodeo Assoc.; Surat Clay Target Club inc.; Surat Pony Club
Playing fields/ovals	A.G. Nason Park - Rugby League Field & Cricket Pitch
Walking tracks	along edge of Balonne River (currently under construction)
Recreation - Parklands	
Parks and gardens	Surat Memorial Park & Cenotaph
	Lions Park
	A.G. Nason Park
	Aboriginal Bush Garden

Source: THI, 2008.

## Facilities and Services

Gas Transmission Pipeline Area

**Table 23 Recreation Areas and Facilities in Banana**

Recreation - Sports Infrastructure	
Sports ground/complex	Banana Sports Ground
Recreation - Parklands	
Parks and gardens	Banana Highway Park

Source: THI, 2008

**Table 24 Recreation Areas and Facilities in Biloela**

Recreation - Sports Infrastructure	
Bowls Club	Biloela Bowls Club
Skate Park	Skate bowl
Aquatic Centre	Biloela Aquatic Centre
Sports ground/complex	Magavalis Sports Complex
Indoor sports/recreation centre	Karate
	Jujitsu
	Aerobics
	Kindygyim
	Latin Dancing
	Indoor Bowls
Gymnasium	Biloela PCYC Bodyshop
	PCYC Gymnasium
	Upstairs on Callide
Recreation - Parklands	
Parks and gardens	Recreation Reserve
	Peter Veneris Park
	Lions Park
	Tom Dawson Park
	Melton Park
	Kothmann Court Park

Source: THI

**Table 25 Recreation Areas and Facilities in Moura**

Recreation - Sports Infrastructure	
Bowls Club	Moura Bowls Club
Skate Park	Moura Skate Park
Swimming Pool	Memorial Swimming Pool

## Facilities and Services

Indoor sports/recreation centre	Shotokan Karate International Australia
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Source: THI

**Table 26 Recreation Areas and Facilities in Rolleston**

Recreation - Sports Infrastructure	
Racecourse	Rolleston Racecourse
Swimming Pool	Rolleston Swimming Pool
Sports ground/complex	Rolleston Cricket Club
	Rolleston State School - cricket pitch; volleyball court; netball court; tennis court; and multi-use oval.
	Rolleston Tennis Facility (also netball court and handball wall)
	Rolleston Sports Ground
Parks and gardens	Rolleston Beazley Park
	Rolleston campdraft Association (Rolleston Sports Ground)
	Rolleston Cricket Club

Source: THI, 2008

**Table 27 Recreation Areas and Facilities in Springsure**

Recreation - Sports Infrastructure	
Bowls Club	Springsure Bowling Club
Racecourse	Springsure Racecourse
Swimming Pool	Springsure Swimming Pool
Sports ground/complex	Our Lady of Sacred Heart School (basketball court, tennis court, multi-use oval, netball court, cricket pitch and baseball net)
	Orion Community (tennis courts)
	Springsure Football/ Rugby League Club - Rugby League field and cricket pitch
	Springsure Gun Club - shooting range; camping facilities
	Springsure Pony Club - including camping facilities
	Springsure Show Grounds - (basketball court, cricket pitch; multi-purpose oval; rugby league field, indoor cricket)
	Springsure State School - (basketball court; tennis court; multi-use oval; netball court; soccer field and touch football field)
	Springsure Tennis Club - has lights, BBQ
	Tresswell State School - swimming pool; tennis court; and cricket pitch
Indoor sports/recreation centre	Springsure Community Gym
	Springsure Academy of Dancing
	Springsure Show Grounds - (indoor cricket)
Gold Course	Springsure Golf Course

## Facilities and Services

Recreation - Parklands	
Parks and gardens	Rich Memorial Park (picnicking; wood BBQ; walking path; playground)
	Lions Park
	Springsure Park (walking path, BBQ, playground)

Source: THI, 2008

### LNG Area

**Table 28 Recreation Areas and Facilities in Gladstone**

Recreation - Sports Infrastructure	Venue
Bowls Club	Alumina Bowls Club
	Gladstone Bowls Club
	Bowls Club
Skate Park	Skate park
	Sun Valley Park
BMX track	Bmx Bowl
Aquatic Centre	The John Dahl Pool (25 metre outdoor)
	Swimming Pool (50 metre (outdoor unheated) and 25 metre indoor heated)
	Gladstone Aquatic Centre
Sports ground/complex/stadium	Wolves Soccer Ground
	Rugby League Ground
	Ferguson Park Racecourse
	Palm Drive Junior Sporting Complex
	Hockey Ground
	Meteors Sports Ground
	Gladstone Golf Course
	Billaroy Park
	Kevin Broome Basketball stadium
	Speedway arena
	Gladstone and District Leagues Club stadium
	Rigby Park Hockey Field
	Golf Range
	Warren Dinte Diamond, Memorial Park Reserve
	Soft Ball, Memorial Park Reserve
Netball Courts, Memorial Park Reserve	
Tennis Courts, Rigby Park	

## Facilities and Services

Recreation - Sports Infrastructure	Venue
Indoor sports / recreation centre (including indoor cricket)	East Coast Indoor Archery & Takeaway Café
	Gladstone Sea Urchins / Kubbie House (indoor play area and café)
	Multi-purpose sports hall
	Boxing, Multi-purpose sports hall
	Line Dancing, Multi-purpose sports hall
	Lavers Squash Centre
	Tenpin Bowling Alley
Gym	Yaralla Fitness Centre
	Figures
	Multi-purpose sports hall, Memorial Park Reserve
	Curves
	Gladstone Lifestyle Centre
Boat ramp/jetty/marina	Gladstone Marina (seemed to be between 100-120 berths)
	Boat ramp
	Boat ramp
	Boat ramp
	Jetties
Playing fields/ovals	Clinton Oval
	Sports Area
	Sun Valley Park Cricket Oval
Walking tracks	Scenic walk (path of 111 steps) - a community employment project
	Fun and Fitness Trail
	Spinnaker Park
Cycle track	Clinton Industrial Estate to Lake Callemondah
Botanic gardens	Tondoon Botanic Gardens
Conservation Park/environmental centre	Reg Tanna Flora & Fauna Reserve
Beaches and foreshore	Barney Point Park
	Friend Park
Parks and gardens	Blain Park
	Maroona Park
	Sun Valley Park
	Tigalee Park
	Berly Park
	United Park
	Toonee Park
	Bulgwyn Park
	Webb Park
	Carramar Park
	Albion Park



## Facilities and Services

Recreation - Sports Infrastructure	Venue
Parks and gardens	William Miskin Pk
	Boowan Park
	Spinnaker Park
	Memorial Park Reserve
	James Cook Park
	Happy Valley Lakes
	Anzac Park
	Apex Park
	Toolooa Park
	Lions Park
	Rigby Park
	Beaumont Park
	Ben Lexen Park
	Carinya Park
	Fairway Park
	Hector Johnson Park
	Coase Park
	Derribong Park
	Tobruk Memorial Park
	Illoura Park
	Hidden Valley Park
	Kooyong Park
	Billaroy Park
	Cypress Way Park
	Bradford Park
	Briffney Park
	Cum Way Gardens
Kaleentha Park	
Lorikeet Park	
Coon St Park	
Goonanaga Park	
Oxley Park	
Marten Place	
Rotary Park	
Archer Park	
Kathleen Shanahan Park	
Pluto Play	
Lady Nelson Park	
Clinton Park	
Playground	Barney Point Park

## Facilities and Services

Recreation - Sports Infrastructure	Venue
	Marina
	Carramar Park
	Lions Park
	Kooyong Park
	Goonanaga Park
	James Cook Park
	Derribong
	United Park
	Pluto Play
	Maroona Park
	Archer Park
BBQ area	Marina
	Barney Point Park
	Tondoon Botanic Gardens
	Lions Park
	Reg Tana Park
	Spinnaker Park
Caravan park	Kin Kora Village Tourist and Residential Home Park
	Gladstone City Caravan Park
	Caravan Park
	Barney Beach Seabreeze Caravan Park
Entertainment Centre	Entertainment Centre
	Nautilus Gaming Lounge
Nightclubs	Bojangles Brasserie and Bar
	The Office (427 Nightclub)
	Players Nightclub
Tourist Information Centre	Gladstone Region Information Centre
Lookout points	Auckland Lookout
	Radar Hill
	South Biondello
	Round Hill
	Lookout
	Queensland Alumina Plant Visitors' Viewpoint

Source: Site Assessment July, 2008. Gladstone Pocket Book, 2008. THI, 2008.

**Table 29 Recreation Areas and Facilities in Calliope**

Recreation - Sports Infrastructure	
Bowls Club	Calliope Bowls Club
Skate Park	Calliope Skate Bowl
Swimming Pool	Calliope Pool (25 metres, outdoor)

## Facilities and Services

Sports ground/complex	Soccer and AFL
	Rodeo and pony riding
Basketball courts	Bunting Park
Racecourse	Calliope Racecourse
Golf Course	Calliope Golf Course
Recreation - Parklands	
Parks and gardens	Bunting Park
	Jaycees Park
	Hazelbrook Park
Recreation - Park Facilities	
Playground	Bunting Park
	Jaycees Park
	Hazelbrook Park

Source: Site Assessment July, 2008. Gladstone Pocket Book, 2008. THI, 2008.

**Table 30 Recreation Areas and Facilities in Mt Larcom**

Recreation - Sports Infrastructure	
Bowls Club	Mt Larcom Bowls Club (in excellent condition having had funding from Queensland State Department for Local Government, Sport and Recreation)
Swimming Pool	Mt Larcom Swimming Pool (25 m. outdoor with shaded stand)
Sports ground/complex	Tennis Courts (in poor state)
Basketball courts	Basketball courts (in poor state)
Beach volleyball court	Beach volleyball court (in poor state)
Playing fields	Playing Fields
Recreation - Parklands	
Parks and gardens	Pincham Park
	Mt Larcom Memorial Garden
	Bi-centennial Park
Recreation - Park Facilities	
Playground	Pincham Park

Source: THI, 2008.

**Table 31 Recreation Areas and Facilities in Boyne and Tannum**

Recreation - Sports Infrastructure	
Bowls Club	Boyne Tannum Bowls Club
Skate Park	Bray Park (Skate Park)
Swimming Pool	Tannum Sands Public Pool
Sports ground/complex	Sports Fields
	Dennis Park Sports Complex
Playing fields	Bill Vloedmans Soccer Field and Oval

## Facilities and Services

Indoor sports/recreation centre	Tannam Indoor Sports Centre
	Power House Fitness Centre
	Tannum Indoor Sports Centre
Tennis courts	Tannum Sands Tennis Association
Golf Course	Boyne Tannum Golf Club
	Golf Driving Range
Boat ramp/jetty/marina	Bray Park boat ramp
Recreation - Parklands	
Botanic gardens	Canoe Point Botanic Reserve and wetlands
Conservation Park/environmental centre	Boyne Island Conservation Park
Parks and gardens	Colyer Park
	Stirling Park
	Lions Park
	Kirrang Park
	Malpas Pk
	Bray Park
	Wyndham Park
	Canoe Point Environmental Park and Canoe Point Botanic Reserve
	Baade Park
	Curlew Park
	Apex Park
	Millennium Espl.
	Peters Park
	Recreation Reserve
	Cashin Park
Garnet Park	
Ibis Park	
Sandpiper Pk	
Recreation - Park Facilities	
Playground	Apex Park
	Millennium Park
	Canoe Pt Botanic Reserve
	Garnet Park
	Wyndham Park
	Curlew Pk
Recreation - Tourist Facilities	
Attractions	Gaming centre
Information Centre	Gladstone Regional Information Centre
Caravan park	Boyne Island Caravan Park
	Tannum Beach Caravan Village

## Facilities and Services

Accommodation	Tannum Sands Hotel / Motel
	A Beach 'N Reef Motel
	Boyne Island Motel & Villas
	Tannum on the Beach Hotel
	Palm Valley Motel & self-cont'd holiday units
	Reef Adventureland Motor Inn

Source: Site Assessment July, 2008. Gladstone Pocket Book, 2008. THI, 2008.

**Table 32 Recreation Areas and Facilities in Benaraby**

Recreation - Parklands	
Parks and gardens	Pershhouse Park
	Coggil Park
	Narbi Park
	Pioneer Parklands

Source: THI, 2008.

**Table 33 Recreation Areas and Facilities in Yarwun**

Recreation - Sports Infrastructure	
Skate Park	Skate bowl
Sports ground/complex	Yarwun cricket pitch
	Yarwun tennis courts
	Yarwun basketball court

Source: THI, 2008.

## B.9 Sports Clubs

### CSG Fields

**Table 34 CSG Field - Sport Clubs**

Location	Club
Injune	Injune Eagles - cricket team
	Injune Pony Club Inc.
Roma	Roma Rugby Union Club (Echidnas)

## Facilities and Services

Location	Club
	Wattles Rugby League Football Club
	Roma & District Junior Soccer Assn
	Roma & District Tennis Club Inc
	Roma Polocrosse Club
	Roma Turf Club
	Roma Roos Roma Soccer Club
	Roma Bowls Club
	Roma Pony Club
	Colts Cricket Club
	Roma Gun Club
	Cities Rugby League Football Club
	Roma Rugby Union Club (Echidnas)
	Surat
Surat Golf Course Inc.	
Surat Tennis Club	
Surat Ladies Bowls Club	
Surat Mens Bowls Club	
Surat Clay Target Club	
Surat Darts Club	
Surat Diggers Race Club	
Surat Fishing & Restocking Club	
Surat Pony Club	
Surat State School Amateur Swimming Club	
Surat Tennis Club	

Source: THI, 2008.

### Gas Transmission Pipeline Area

**Table 35 Gas Transmission Pipeline Sport Clubs**

Community	Sports Club
Biloela	Biloela Golf Club
	Biloela Inline Hockey Club
	Clay Target Shoot Club
	Orcas Swim School
	Callide Valley Radio Control Car Club
	Panther's Rugby League Club
	Biloela Rugby Union Club
	Biloela Touch Football Association
Biloela	Callide Valley Tennis Association
	Biloela Cricket Association

## Facilities and Services

Community	Sports Club
Community	Biloela Valley's Football Association
	Twin Valleys Motorcycle Club
	South Pacific Taekwon-do
	Biloela Hack & Pony Club
	Biloela Rifle Club
	Biloela Shotokan Karate Club
	Biloela Dirt Riders Inc.
	Biloela indoor Bowls Club
	Biloela Athletics Club & Little Athletics Centre
	Biloela Netball Association Inc
	PCYC
	Callide United Football Club
	Callide Dawson Pistol Club Inc
	Callide Valley District Darts Association
	St, Josephs Indoor Bowls
Moura	Aerobics Fun & Fitness
	Dawson River Cutting Club Inc
	Dawson Valley Rugby Union Club Inc.
	Moura & District Golf Club Inc
	Moura Amateur Swimming Club Inc
	Moura Darts Club
	Moura Cricket Club Inc
	Moura Gliding Club
	Moura Hack & Pony Club
	Moura Little Athletics Association Inc
	Moura Mad Dogs Triathlon Club
	Moura Rangers Soccer Association Inc
	Moura Rugby League Football Club Inc
	Moura Squash Club Inc
	Moura Tennis Club
	Moura Junior Cricket Association Inc
	Moura Karate Club
Moura Junior Rugby League Inc	
Rolleston	Rolleston Cricket Club
	Rolleston Pony Club
	Rolleston Swimming Club
	Rolleston Tennis Club
Springsure	Springsure Bowls Club
	Springsure Country Golf Club
Springsure	Springsure Gun Club

## Facilities and Services

Community	Sports Club
	Springsure Jockey Club
	Springsure Racing Club
	Springsure Junior Rugby League
	Springsure Karate Club
	Springsure Pony Club
	Springsure Rugby League Club
	Springsure Rugby League Football Club
	Springsure Swimming Club
	Springsure Tennis Club
	Springsure Working Horse Assoc.
	Springsure Community Gym
	Springsure Cricket Club
	St Patrick's Race Club

Source: THI, 2008

### LNG Area

**Table 36 LNG Facility Sporting**

Location	Sport	Clubs and Venues
Calliope	Cricket	CALLIOPE & DISTRICT CRICKET CLUB
	Horse Riding	CALLIOPE COUNTRY CLUB
		CALLIOPE HACK & PONY CLUB INC
		CALLIOPE JOCKEY CLUB
		CALLIOPE POLOCROSSE CLUB INC
	Bowls - outside and indoor	CALLIOPE INDOOR BOWLS
		CALLIOPE CENTRAL BOWLS CLUB INC
		CALLIOPE CENTRAL LADIES BOWLING CLUB INC
	Rugby League	CALLIOPE JUNIOR RUGBY LEAGUE FOOTBALL CLUB INC
		CALLIOPE RUGBY LEAGUE FOOTBALL CLUB INC
Soccer	CALLIOPE JUNIOR SOCCER CLUB INC	
Swimming	CALLIOPE COMMUNITY SWIMMING POOL	
Mount Larcom	Fishing	MOUNT LARCOM & DISTRICT FISHING CLUB INC
	Swimming	MOUNT LARCOM SWIMMING POOL
Yarwun	Tennis	MOUNT LARCOM & DISTRICT TENNIS ASSOCIATION INC
Boyne Island	Athletics	BOYNE TANNUM LITTLE ATHLETICS
	Australian Rules	BITS SAINTS AUSTRALIAN RULES FOOTBALL CLUB
	Cricket	BITS CRICKET CLUB INC
	Golf	BITS GOLF CLUB INC
		BITS JUNIOR GOLF CLUB
	BITS LADIES GOLF CLUB	



## Facilities and Services

Location	Sport	Clubs and Venues
	Bowls - outside and indoor	BOYNE TANNUM BOWLS CLUB
		BOYNE TANNUM LADIES BOWLING CLUB
	Netball	CURTIS COAST DOLPHINS NETBALL ASSOC
	Rugby League	TANNUM BOYNE SEAGULLS JRLFC
		TANNUM SANDS RUGBY LEAGUE INC
	Soccer	BOYNE TANNUM FOOTBALL CLUB
	Swimming	BOYNE TANNUM SWIM CLUB
Touch football	BITS TOUCH	
Tannum Sands	Golf	BOYNE TANNUM VETERAN GOLFERS
	Hockey	CROCS HOCKEY CLUB INCORPORATED
	Bowls - outside and indoor	TANNUM SANDS INDOOR BOWLS CLUB
	Canoe	CANOE POINT OUTRIGGERS CLUB INC
	Surf life saving	TANNUM SANDS SURF LIFE SAVING CLUB
	Tennis	TANNUM SANDS TENNIS ASSOCIATION
Gladstone	Archery	GLADSTONE BOWHUNTERS ASSOCIATION INC.
	Athletics and Running	GLADSTONE ATHLETICS CLUB INC
		GLADSTONE HASH HOUSE HARRIERS
		GLADSTONE ROAD RUNNERS CLUB
	Australian Football	GLADSTONE AUSTRALIAN FOOTBALL CLUB
	Basketball	GLADSTONE AMATEUR BASKETBALL ASSOCIATION INC- GABA INC
		LIONS BASKETBALL CLUB
		YARALLA DEVILS BASKETBALL CLUB
	BMX	GLADSTONE HARBOUR CITY BMX CLUB
	Boxing	BOXING CLUB - PCYC
	Cricket	GLADSTONE CRICKET INCORPORATED
		GLEN CRICKET CLUB
		YARALLA CRICKET CLUB
	Croquet	GLADSTONE CROQUET CLUB INC
	Fishing	GLADSTONE SPORTSFISHING CLUB INC
	Sailing	GLADSTONE YACHT CLUB
		PORT CURTIS SAILING CLUB
	Fishing	YARALLA DEEP SEA FISHING CLUB
	Golf	GLADSTONE GOLF CLUB
		WOLVES GOLF DRIVING RANGE
	Shooting	GLADSTONE CLAY TARGET CLUB
		GLADSTONE DISTRICT PISTOL CLUB INC
	Gymnastics	GLADSTONE GYMNASTIC CLUB INC
	Hockey	GLADSTONE & DISTRICT HOCKEY ASSOC
		METEORS HOCKEY CLUB
		SPARKS HOCKEY CLUB INC
		YARALLA HOCKEY CLUB
Horse Riding	CURTIS & DISTRICT TRAIL RIDING CLUB INC	

## Facilities and Services

Location	Sport	Clubs and Venues
Gladstone		GLADSTONE HACK & PONY CLUB INC
	Darts	GLADSTONE & DISTRICT DARTS ASSOCIATION INC
	Karting	GLADSTONE FORMULA K KART CLUB
	Bowls - outside and indoor	GLADSTONE BOWLS CLUB INC
		GLADSTONE BOWLS CLUB INC - LADIES DIVISION
		PORT CURTIS BOWLS PAST PRESIDENTS ASSOCIATION
		PORT CURTIS DIVISION LADIES BOWLING ASSOCIATION INC
	Martial Arts	ENABLING ARTS DOJO - ZEN CHI RYO GLADSTONE
		GLADSTONE JUDO CLUB
		SHOTOKAN KARATE INTERNATIONAL AUSTRALIA-GLADSTONE DOJO
		SILAT LANGKAH BARU
	Dirt bikes	GLADSTONE DISTRICT DIRTRIDERS CLUB
		CQ MINIMOTO INC
	Netball	DEVILS NETBALL CLUB INC
		GLADSTONE NETBALL ASSOC INC
		YARALLA DYNAMICS NETBALL CLUB
	Rugby League	GLADSTONE & DISTRICT JUNIOR RUGBY LEAGUE
		GLADSTONE & DISTRICT RUGBY LEAGUE INC
		PAST BROTHERS JUNIOR RUGBY LEAGUE FOOTBALL CLUB
		VALLEYS RUGBY LEAGUE FOOTBALL CLUB
	Rugby Union	GLADSTONE RUGBY UNION FOOTBALL CLUB
	Ski	GLADSTONE SKI & BAREFOOT CLUB INC
	Soccer	CENTRAL SOCCER CLUB
		CLINTON JUNIOR SOCCER CLUB
		CLINTON SENIOR SOCCER CLUB INC
		FOOTBALL GLADSTONE INC (SOCCER)
		GLADSTONE UNITED SOCCER CLUB
		METEORS JUNIOR SOCCER CLUB INC
		WOLVES SOCCER CLUB INC
		YARALLA JUNIOR SOCCER CLUB
		YARALLA SENIOR FOOTBALL CLUB
	Softball	GLADSTONE SOFTBALL ASSOCIATION
		SOUTHS SPORTS CLUB
	Squash	VALLEY SQUASH CLUB
	Swimming	DISCOVERY COAST SWIM CENTRE
		GLADSTONE AQUATIC CENTRE
		GLADSTONE GROPER'S MASTERS SWIMMING CLUB INC
		GLADSTONE SOUTH AMATEUR SWIMMING CLUB INC
		GLADSTONE SWIMMING CLUB
		WESTERN SUBURBS SWIMMING CLUB
	Tennis	GLADSTONE DISTRICT TENNIS ASSOC INC
		GLADSTONE JUNIOR TENNIS ASSOC INC

## Facilities and Services

Location	Sport	Clubs and Venues
	Tenpin Bowling	GLADSTONE JUNIOR TENPIN BOWLERS
		GLADSTONE TENPIN BOWLING ASSOC INC
	Touch football	GLADSTONE TOUCH ASSOCIATION
	Volleyball	GLADSTONE VOLLEYBALL ASSOCIATION

Source: Gladstone/Calliope/Miriam Vale Shire Councils, 2008.

## B.10 Community Groups, Clubs and Societies

### CSG Area

**Table 37 CSG Field - Community Groups, Clubs and Societies**

Community Groups, Clubs, Societies	
Roma	Roma Community Garden
	CWA Hall
	Apex Club of Roma Inc.
	Roma Lion's Club
	Rotary Club of Roma
	Zonta Club of Roma
	Roma & District Lapidary & Mineral Club
	Roma & District Local & Family History
	Roma Masons
	South West Family Centre
	Maranoa Club Inc.
	Royal Qld Regiment - A company 25th/29th Battalion
	Injune
Injune Pony Club Inc.	
Injune Ballet Group	
Bonnie Doon Masonic Lodge	
Surat	Surat Shutterbugs
	Bauhinia Crafts Inc.
	Surat Local Ambulance Committee
	St John's Anglican Guild
	St Stephen's Presbyterian Guild
	Surat Day Care Parent Committee
	Surat Hospital Auxiliary
	Surat Playgroup Association
	Surat Youth & Supporters Group
	Surat Pottery Club
	Surat Campdraft & Rodeo Association Inc.
	RSL Sub-Branch

## Facilities and Services

	RSL Ladies Auxilliray
	Surat State School Parent & Citizens Association
	Warroo Masonic Lodge
	Warroo Shire Youth Council
	Christian Fellowship Group
	Lions Club
	CWA Surat

Source: THI, 2008.

### Gas Transmission Pipeline Area

**Table 38 Community Groups, Clubs and Societies**

Location	Name
Biloela	Callide Dawson Model Aero Club
	Biloela Area Visual Arts (BAVA)
	Biloela Embroidery Group
	Biloela Garden Lovers
	Biloela Scout Group
	Biloela Girl Guides & Brownie Support Group Inc
	Flying Arts
	Biloela & Area Handicraft Cultural Group
	Biloela & District Band
	Callide Valley Landcare Group
	Biloela Probus Inc
	Banana Shire Historical Society Inc
	Biloela ANZAC Memorial Club
	Biloela Snappers
	Callide Dawson Machinery Preservation Club Inc, Qld, Heritage Park
	Biloela Horticultural Society
	Callide Dawson Woodworkers Club Inc
	Callide Valley Agricultural & Pastoral Society Inc
	Callide Valley Doll Collectors Club
	Callide Valley Rock & Gem Club
	Central Queensland Goat Breeders
	Biloela Eisteddfod Society Inc
	Biloela Patchwork Club Inc
	Biloela Potters
	Apex Club of Biloela Inc
	Grevillea Masonic Lodge
Lions Club of Callide Valley	
Quota Club of Biloela Inc	

## Facilities and Services

Location	Name
	Rotary Club of Biloela Inc
Moura	Recreation Reserve Committee
	Dawson Valley Garden Lovers
	Moura Folk Art
	Moura Coal & Country Historical Society
	Moura Choral Society
	Moura Ballet & Dance Appreciation Group Inc
	Moura Campdraft Committee Inc
	Lions Club of Moura Inc
	Apex Club of Moura Inc
	Rotary Club of Moura
	Moura RSL Service & Citizen Club Inc

Source: THI, 2008

### LNG Area

**Table 39 LNG Facility – Community Groups, Clubs and Societies in Gladstone**

Location	Clubs and Societies
Gladstone	Gladstone Thistle Pipe Band
	Gladstone Senior Citizen's Club
	Gladstone Area Christian Solos
	Port Curtis Masonic Lodge
	Gladstone Show Society
	Gladstone City heart Association Inc
	Gladstone Eisteddfod Association
	Gladstone Municipal Band
	Genealogical Society
	Gladstone Music Society
	Gladstone Lions Club
	Gladstone Rotary Club (Several branches - Gladstone South, Port Curtis, Gladstone Midday, Gladstone Sunrise)
	Conservation Volunteers
	AWU - FIMEE
	Relationships Auckland
	CWA
	Branchout Roseberry Community Services Inc
Roseberry Community Services Inc	
Lifeline Family Outreach Service	
Royal Antediluvian Order of Buffaloes	
Calliope	Calliope Country Club

## Facilities and Services

Location	Clubs and Societies
	CWA
	Emmanuel Crossroad Missions
Mt. Larcom	Mt. Larcom CWA Branch
Boyne and Tannum Sands	CWA
	Boyne Tannum Country Club
Beranaby	Progress Association

Source: Gladstone Pocket Book, 2008. Site Assessment, 2008. THI, 2008

### B.11 Gladstone Area Businesses

**Table 40 Gladstone Area Businesses**

Business Name	Business Name	Business Name
Actest	Aggreko Generator Rentals	Andersons Auto City Pty Ltd
Anglicare Central Queensland Limited	Apprentice Careers & Employment (MRAEL Ltd)	Auckland Street Office National
AusIndustry	Australian Building Management Pty Ltd	Avis Gladstone
Banana Shire Council	Bank of Queensland	Baraka Training & Management
Be-Cool Mobile Coolroom Hire	Bendigo Bank Ltd	Benn Real Estate Pty Ltd
Berg Engineering (Gladstone) Pty Ltd	Bill Robertson Toyota	BMD Constructions
BMD Consulting Pty Ltd	Boyne Smelters Limited (BSL)	Boyne Tannum Hookup Association Inc.
Boyne Tannum Rentals	BTABC - Boyne Tannum Arts, Business Community Inc.	Budget Rent-A-Car
Bush 2 Beach Gifts	Buslink QLD Pty Ltd	Busy at Work Apprenticeships Services
Calliope Real Estate	Caltex Boyne River	Capricorn Survey Group
Cavalier Homes Gladstone Pty Ltd	Cedar Galleries (QLD) Pty Ltd	Cement Australia (Queensland) Pty Ltd
Central Telegraph Pty Ltd	Chanel College	Chris Trevor & Associates Lawyers
Citimark Properties	Clinton State School Parents & Citizens Association	Clyde Babcock - Hitachi (Australia) Pty Ltd
Coastline Newspapers Pty Ltd	Coconet International	Commerce Queensland
Community Employment Options Inc.	Connell Wagner Pty Ltd	Cooper McKenzie Marketing Pty Ltd
Coral Coast Gamefishing	Corporate Express Australia Ltd	CQ Communications
CS Energy - Callide Power Station	Dawson Valley Development Association Inc (DVDA)	Department of Tourism, Regional Development & Industry
Diamond Locksmiths	Discovery Coast Tourism & Commerce Inc (DCTC)	Downing Teal Pty Ltd
Dreamtilt	Eagle Engineering Pty Ltd	Elders Hartley Insurance
Elders Real Estate - Gladstone	Enterprise Biloela Association Inc.	Ergon Energy Capricornia Region
Europcar	Everything Uniform	Ezi Communications
Fanelli Dental	Fellowes & Partners	Foreman Projects Pty Ltd
Fredriksen Maclean & Associates	GHD Pty Ltd	Gift Xpress Qld

## Facilities and Services

Business Name	Business Name	Business Name
Surveyors		
Gladstone Aquatic Therapy Association Inc.	Gladstone Area Group Apprentices Ltd (GAGAL)	Gladstone Area Promotion and Development Limited (GAPDL)
Gladstone Area Water Board (GAWB) LAKE AWOONGA	Gladstone Central Shopping Centre (Celtic Pacific Properties Pty Ltd)	Gladstone Entertainment Centre
Gladstone Festivals & Events Association	Gladstone Home Loans	Gladstone Job Skills Inc
Gladstone News	Gladstone Pacific Nickel Ltd	Gladstone Ports Corporation (GPA)
Gladstone Printing Services	Gladstone RACQ Service Centre	Gladstone Regional Council
Gladstone Superwash	Gladstone Training Pty Ltd	Gladstone T-Shirts
Golding Contractors	Gourmet HR	Graph -Mac Solutions/1770 images.com.au
Grevells Homemakers	GTC Financial	Harcourts Agnes Water - 1770
Harvey World Travel	Hatch Associates Pty Ltd	Herron Todd White (Central Queensland) Pty Ltd
Homemakers Gladstone	Hot FM & Sea FM Radio	Hot Print Design
Individual Home Loans	Innov8 Marketing	Jemena Asset Management
John Logan & Associates Valuer	Jones Flint & Pike Pty Ltd	Kingfisher Blue Pty Ltd
KP Migration Services	Last Wave Watersports	Lattitude Developments Pty Ltd
Layher Pty Ltd	Learning Network Queensland	Liz Cunningham (MP)
LJ Hooker Boyne Tannum	LJ Hooker Gladstone	Macdonald & Michel Solicitors
Maunsell Australia Pty Ltd	McConaghy Shopping Centres Pty Ltd (Biloela Shoppingworld)	McCosker Contracting Pty Ltd
McNee North Surveys Pty Ltd	Michael D Sheehan Valuer	Mini Excavations
Miriam Vale "Star" Roadhouse	Miriam Vale Foodstore & Newsagency	Miriam Vale Garage - Shell - The Big Crab
Miriam Vale Post Office & Gift Shoppe	Ned's Gas Service	Netpulse Pty Ltd
Nixon Communications (Nixon Controls)	North Burnett Regional Economic Development Council	NRG Gladstone Operating Services Pty Ltd
Opus Qantec McWilliam Pty Ltd.	Orica Australia Pty Ltd	Pats Tackleworld Gladstone
Peter Robinson Pty Ltd	PFT United Caterers (Pengelly Family Trust)	PRD Nationwide Agnes Water
Prime Group Australasia	Prime Radio (Gladstone) Pty Ltd - 4CC	Qantaslink
QER Pty Ltd	QLD Property Centre Pty Ltd	Queensland Alumina Limited (QAL)
Raine & Horne Gladstone	Ray White Real Estate Gladstone	Re/Max Gold
Reef City Ford	Regional Insurance Brokers (CQ) Pty Ltd	Rex Silver Insurance Brokers
Rio Tinto Aluminium Limited Yarwun	Rodds Bay Maritime	Schools & Industry Network - Gladstone Region Inc. (SAIN)
SIRVA Pty Ltd (Allied Pickfords)	Sothertons (Gladstone) Services Pty Ltd	St Stephens Lutheran College
Stockland Gladstone Centre Management	Storage Choice	Sunsuper
Tannum Sands State High School	The Coastal Rag	The GAIP Trust
The Gladstone Observer	The Grand Hotel	The Rock Building Society Ltd
The Shed Company - Gladstone	Think Office Technology	Toms Discount House - Retravision
Tony Goodwin & Company	Toooloa State High School	Tourism Queensland

## Facilities and Services

Business Name	Business Name	Business Name
Town of 1770 Golf Course & Driving Range	Turkey Beach Real Estate	Ubobo Progress Association Inc
UDIA - Urban Development Institute of Australia - Gladstone Branch	Urbex Pty Ltd (BMD Group)	Vink Publishing
Walz Construction Company Pty Ltd	Wise Gas & Gear	-

Source: GAPDL, 2008



# Accommodation Technical Report

## Appendix C

# FINAL REPORT

## GLNG Accommodation Study

*Prepared for*

**Santos Ltd**

Level 14  
60 Edward Street  
BRISBANE QLD 4000

17 December 2008

42626223

The logo for URS, consisting of the letters 'URS' in a bold, blue, sans-serif font.

Project Manager:



.....  
Chris Sunderland

Sociologist

URS Australia Pty Ltd

Level 16, 240 Queen Street  
Brisbane, QLD 4000  
GPO Box 302, QLD 4001  
Australia  
T: 61 7 3243 2111  
F: 61 7 3243 2199

Project Director:



.....  
Jim Barker

Associate Environmental  
Scientist

Author:



.....  
Lucas Batton

Senior Social  
Scientist/Planner

Date: 17 December 2008  
Reference: GLNG Accommodation Study  
Status: Final

# Table of Contents

<b>1</b>	<b>Introduction .....</b>	<b>1</b>
1.1	<b>Description of the Project .....</b>	<b>1</b>
1.2	<b>Accommodation Study Terms of Reference .....</b>	<b>1</b>
<b>2</b>	<b>Methodology .....</b>	<b>2</b>
2.1.1	Purpose of Accommodation Study .....	2
2.1.2	Study Area .....	2
2.1.3	Study Process.....	3
2.1.4	Data Sources .....	5
<b>3</b>	<b>Description of Project Areas .....</b>	<b>7</b>
3.1.1	CSG Field Study Area .....	7
3.1.2	Gas Transmission Pipeline Corridor.....	8
3.1.3	LNG Facility Area.....	9
<b>4</b>	<b>Demographic Profile .....</b>	<b>12</b>
4.1	<b>Significant Population Statistics and their Relevance to the Accommodation Study .....</b>	<b>12</b>
4.2	<b>Estimated Resident Population .....</b>	<b>13</b>
4.2.1	CSG Fields (Roma, Arcadia Valley, Fairview).....	13
4.2.2	Gas Transmission Pipeline Corridor.....	13
4.2.3	LNG Facility Study Area .....	13
<b>5</b>	<b>Existing Housing/Accommodation Characteristics .....</b>	<b>14</b>
5.1	<b>Dwelling Structure .....</b>	<b>14</b>
5.2	<b>Occupancy Rates .....</b>	<b>15</b>
5.3	<b>Household Tenure Type .....</b>	<b>18</b>
5.4	<b>CSG Field Study Area .....</b>	<b>20</b>
5.4.1	Approval and Construction of Dwellings.....	20
5.4.2	Forecast Land and Housing Requirements .....	20
5.4.3	Median House Prices and Sales .....	20
5.4.4	Rental Accommodation .....	20
5.4.5	Summary .....	21
5.5	<b>Gas Transmission Pipeline Corridor.....</b>	<b>25</b>
5.5.1	Summary .....	25
5.6	<b>LNG Facility Study Area .....</b>	<b>25</b>

## Table of Contents

5.6.1	Subdivision of Land .....	25
5.6.2	Forecast Land and Housing Requirements .....	26
5.6.3	Approval and Construction of Dwellings .....	27
5.6.4	Median House Prices and Sales .....	28
5.6.5	Median Land Prices .....	29
5.6.6	Rental Accommodation .....	30
5.6.7	Summary .....	33
<b>6</b>	<b>GLNG Workforce and Accommodation Details .....</b>	<b>35</b>
6.1	CSG Field Study Area .....	35
6.2	Gas Transmission Pipeline Corridor .....	37
6.3	LNG Facility Study Area .....	39
6.3.1	Workforce .....	39
6.3.2	Construction Workforce Accommodation .....	40
6.3.3	Operational Workforce Accommodation .....	43
6.4	Potential Bridge and Access Road .....	45
<b>7</b>	<b>Assessment of Housing Demand and Supply .....</b>	<b>46</b>
7.1	CSG Field Study Area .....	46
7.2	Gas Transmission Pipeline Corridor .....	46
7.3	LNG Facility Study Area .....	47
7.3.1	Construction .....	47
7.3.2	Operations .....	48
<b>8</b>	<b>Cumulative Impacts of Other Projects .....</b>	<b>50</b>
8.1	Land for TAFs .....	50
8.2	Land for Permanent Dwellings .....	50
8.3	Effect on Housing Prices .....	51
<b>9</b>	<b>GLNG Accommodation Strategy and Recommendations .....</b>	<b>52</b>
9.1	CSG Field .....	52
9.2	Gas Transmission Pipeline .....	53
9.3	LNG Facility .....	53
9.3.1	CAFs .....	54
9.3.2	Residential Development .....	55
9.3.3	Rental Property Leasing or Acquisition of Property .....	55
9.3.4	Holiday/Short Term Accommodation .....	55

## Table of Contents

9.3.5	Promotion of Accommodation Outside of the Gladstone Region.....	55
<b>10</b>	<b>Glossary and Abbreviations.....</b>	<b>56</b>
10.1	Abbreviations .....	56
10.2	Glossary .....	57
<b>11</b>	<b>References .....</b>	<b>58</b>

## Tables, Figures, Appendices

### Tables

Table 2-1	Accommodation Assumptions.....	5
Table 3-1	Population Centres around the CSG Field Study Area.....	7
Table 3-2	Estimated resident population by major urban centre/locality, Gladstone Regional Council, 2007 .	9
Table 4-1	Local Government Relevant to Project .....	12
Table 4-2	Projected Resident Population (2006–2031) .....	13
Table 5-1	Higher Density Dwellings Proportions (2001–2006 Comparison) .....	14
Table 5-2	Caravans/Cabins Dwellings Proportions (2001–2006 Comparison) .....	15
Table 5-3	Estimated Dwelling Occupancy Rates (1996, 2001, 2006) .....	16
Table 5-4	Dwelling Ownership (2001 and 2006 ).....	19
Table 5-5	Median House and Unit Prices (2007 and 2008).....	22
Table 5-6	Median Rental Data (2003–2008).....	24
Table 5-7	Residential Land Availability and Dwelling Yield (Gladstone Region) .....	27
Table 5-8	New Dwelling Approvals – Gladstone Regional Council .....	28
Table 5-9	Median Land Prices .....	30
Table 5-10	Hotel/Motel Accommodation in Gladstone Region – June Quarter 2008 .....	31
Table 5-11	Caravan and Mobile Home Parks in Gladstone Region – June Quarter 2008.....	32
Table 5-12	Recent TAF Approvals and Applications .....	33
Table 6-1	Source of Workforce Assumptions.....	35
Table 6-2	Breakdown of Local and Imported Construction Workforce at Peak Periods – LNG Facility .....	39
Table 6-3	Calliope Shire Council Development Assessment Requirements for TAF .....	43
Table 6-4	Residential Housing Required for Newly Arrived Operational Workforce.....	45
Table 7-1	Residential Housing and Land Requirements for 2021 Generated by Operational Workforce .....	49

### Figures

Figure 5-1	Dwelling Tenure (2001).....	17
Figure 5-2	Dwelling Tenure (2006).....	17
Figure 5-3	Comparative Median Land Prices (Dec. 2002 – Dec. 2007) .....	23
Figure 6-1	CSG Field Study Area Construction Workforce.....	36
Figure 6-2	CSG Fields Operational Workforce.....	37
Figure 6-3	Construction and Operation Workforce - LNG Facility.....	39
Figure 6-4	Estimated Timeframe for CAF Development .....	42

## Tables, Figures, Appendices

Figure 6-5 Construction Workforce for Potential Bridge and Access Road .....45

### Appendices

- A Gladstone City Council Planning Scheme
- B Gladstone Housing Modelling
- C Curtis Island TAF



This accommodation study forms part of the environmental impact statement (EIS) for the GLNG project proposed by Santos. Key aspects of the accommodation study will be included in the social impact assessment (SIA) section of the EIS as well as in the SIA technical report.

The accommodation study has assembled relevant information about housing within the GLNG project study area, including characteristics of the existing housing market and expected demand from forecast natural population growth (i.e. excluding the GLNG project). The study then looks at the levels of housing demand that will be created by the GLNG project, the proposed accommodation measures and potential impacts. An accommodation strategy provides details for managing and minimising impacts associated with the project accommodation requirements.

There are expected to be low levels of impact on housing around the coal seam gas (CSG) field and gas transmission pipeline areas, and the level of detail in the baseline and impacts for these study areas reflects this. Mitigation and monitoring also acknowledge the low probability of a measurable impact and recommend options to monitor and address impacts as a precaution.

## 1.1 Description of the Project

Santos is proposing to develop its CSG resources in the Surat and Bowen Basins in central west Queensland as feed gas for a LNG liquefaction and export facility on Curtis Island, off the coast of Gladstone. The project comprises three main components:

- The CSG exploration and development area (the CSG field study area). Roma, Arcadia Valley and Fairview CSG fields are the priority development areas considered in this report;
- A LNG liquefaction and export facility (the LNG Facility) on Curtis Island, near Gladstone, Central Queensland; and
- A 435km gas transmission pipeline (the gas transmission pipeline) from the CSG fields to the LNG Facility;

## 1.2 Accommodation Study Terms of Reference

The terms of reference (ToR) set by the Office of the Coordinator General outline the requirements of the EIS. Aspects relevant to this study are set out in Section 2.5.4 of the ToR and include:

- The estimated number of people to be employed;
- The estimated housing needs of workers and their accompanying family/partners;
- Details of any proposed temporary accommodation facilities (TAFs), including size, location, management;
- Information on design and management of TAFs, and approvals required for establishment of TAFs; and
- Ability/usefulness of utilising existing residential and tourist accommodation for temporary workforce requirements.

### 2.1.1 Purpose of Accommodation Study

The accommodation study responds to the ToR as outlined in Section 1.2. The purpose of the accommodation study has been to describe the general accommodation characteristics of towns and centres within the CSG field, gas transmission pipeline and LNG Facility study areas, including:

- The nature of the housing and non-permanent accommodation stock;
- The supply of housing and accommodation stock; and
- The expected demand for further housing resulting from:
  - Natural growth in the populations within the study areas;
  - Expected demand resulting from the GLNG construction and operations workforces over the life of the project; and
  - Expected demand resulting from other major projects in the study area.

The accommodation study also considers the factors other than those associated with increases in local workforces that may affect housing in the project area. An analysis is then provided which considers the capacity of the study areas to cater for increased housing demand and compares the differences in this capacity as affected by the project or otherwise.

The accommodation study considers the broader policy frameworks which either affect the housing situation in the project area or which could be used to better manage the supply of housing, and the role that the proponent (Santos) and other major projects could play within such frameworks. The study includes a proposed housing strategy and recommendations for Santos to address housing needs.

### 2.1.2 Study Area

#### **CSG Field**

The study focuses on the accommodation needs associated with the Roma, Fairview and Arcadia Valley CSG field developments. It is these three areas that are proposed to be developed in the short term. Housing needs for other field developments associated with this project are discussed in general terms, as limited information on workforce requirements are available at this time.

The community of Roma and the Roma Regional Council are the primary study areas for the housing analysis of the CSG field for the following reasons:

- Largest community in the local area;
- Site of Santos regional office and activity hub for the LNG industry;
- Most probable location for suppliers and other services; and
- Most probable location for inflow workers to reside.

Santos has assumed that the majority of construction workers for the CSG field will be situated in Temporary Accommodation Facilities (TAFs), as will the operational workers. Given the relatively small size of the construction and operational workforce, Roma and the surrounding area are not anticipated to experience a

large impact on housing. However, this assessment nonetheless considered Roma, as there will likely be some (if minimal) impact on housing.

The level of detail in the baseline and impacts for this study area reflects the low level of impact anticipated. Mitigation and monitoring also acknowledge the low probability of a measurable impact and recommend options to monitor and address impacts as a precaution.

### ***Gas Transmission Pipeline***

The gas transmission pipeline corridor will pass through several areas in central Queensland; however, there are no anticipated significant housing impacts, as almost 100% of construction workers will be accommodated in self sufficient TAFs. The operational workforce is anticipated to be around six personnel, who will be based at three-four centres along the pipeline corridor, therefore this is not expected to present any significant impacts to housing.

Impacts on landowners, as well as social and economic impacts, are assessed separately in the EIS.

### ***LNG Facility***

The City of Gladstone and the newly formed Gladstone Regional Council are the main focus of analysis for the LNG Facility component of this study. The housing catchment area for this part of the project is referred to as the Gladstone region.

The analysis of housing impacts in Gladstone constitutes the majority of the overall accommodation study for the project, as the area has the largest population, the most significant industry and employment base, and a high level of lifestyle attributes and services which maintain it as a desirable place of residence for an increasing number of people.

### **2.1.3 Study Process**

In order to achieve the purpose of the Accommodation Study, URS:

- Considered the terms of reference (ToR) and detailed project scope;
- Conducted a review of existing housing information, including housing studies from other projects in the area, and studies for local government and the Department of Housing (DoH);
- Collected up-to-date statistical information from various government departments to create tailored socio-demographic study areas. Information was also derived from the Social Impact Assessment (SIA) of the project;
- Assessed housing market supply and demand, rental levels and availability, and housing affordability using various reports, interviews and focussed studies;
- Planned and carried out targeted stakeholder consultation, including local council staff, state government, community service providers and representatives of other industries likely to start projects during GLNG;
- Quantified the scale of likely changes impacting on housing demand, including increases in population and workforce, timeframes and cumulative changes due to other approved or proposed developments;
- Developed a housing needs model to estimate future accommodation requirements from natural growth (Gladstone region only);

- Assessed the quantities of housing needed to accommodate the project workforce, based on numbers from Santos and assumptions of procurement of those individuals;
- Calculated total housing requirements from natural growth and the GLNG project;
- Reviewed options for project housing and accommodation requirements based on information provided by Santos;
- Assessed the potential housing related impacts on the existing communities; and
- Recommended mitigation measures and monitoring/reporting programs (where costs could not be offset by benefits).

### **Assumptions**

A number of assumptions have been made to identify and assess housing demand and supply. These assumptions are summarised below, with further rationale provided within the main body of the document.

The approximate breakdown of local and imported workers<sup>1</sup> is assumed to be as follows:

- During CSG construction – 10% local / 90% imported;
- During CSG operations – 50% local / 50% imported;
- During gas transmission pipeline construction – less than 5% local / 95%+ imported;
- During gas transmission pipeline operation – 90% local / 10% imported;
- During LNG Facility construction phase – 35% local / 65% imported;
- During LNG Facility operations – 60% local / 40% imported.

Accommodation arrangements for project components have been assumed as follows:

- CSG Field construction – 90% of construction workers will be located in TAFs, 10% in hotel/motels or rentals;
- CSG Field operation – All workers will stay at TAFs during their work roster;
- Gas transmission pipeline construction – Approximately 100% stay at TAFs during roster;
- Gas transmission pipeline operation – 95%+ of workers are local and have existing accommodation in the area;
- LNG Facility construction – 100% of workforce located at a construction accommodation facility (CAF)<sup>2</sup> on Curtis Island;
- LNG Facility operation – externally recruited workforce (40% of operational workforce) will seek long term accommodation in the area; locally recruited workers will already have housing in the region.

<sup>1</sup> 'Local' refers to workers who live in the region. 'Imported' refers to those workers who reside outside of the region.

<sup>2</sup> The accommodation facility for construction of the LNG facility is referred to as construction accommodation facility (CAF) in this document.

Table 2-1 summarises these assumptions.

**Table 2-1 Accommodation Assumptions**

Phase	Source of labour		Type of accommodation	
	Local	Imported	TAF/CAF	Residential/Short Term Accommodation
<b>CONSTRUCTION</b>				
CSG	10%	90%	90%	10%
Gas transmission pipeline	< 5%	> 95%	~100%	
LNG Facility	35%	65%	~100%	
<b>OPERATION</b>				
CSG	50%	50%	100%	0%
Gas transmission pipeline	95%	5%	0%	100%
LNG Facility	60%	40%	0%	100%

Important additional assumptions include:

- All local workers are assumed to have existing accommodation arrangements and will not
- The LNG facility will be “stick built” rather than “modular” construction;
- Calculation of housing and land requirements for natural population growth and GLNG demand in Gladstone region is based on existing housing development patterns:
  - Housing mix – approximately 90% of the population are housed in single unit dwellings; 10% are housed in multiple unit dwellings;
  - Development density – there are approximately 10 single unit dwellings per hectare or 15 multiple unit dwellings per hectare.

#### 2.1.4 Data Sources

A full list of information that was used in the study is contained in the “reference” section at the end of this report.

Key data used by this study includes:

- Housing and residential land supply data supplied by the Queensland Government’s Planning Information and Forecasting Unit (PIFU);
- Census data from the Australian Bureau of Statistics (ABS);
- Rental data from the Rental Tenancy Authority of Queensland (RTA);
- Zoning data from local government authorities (predominantly from Roma Regional Council and Gladstone Regional Council); and
- Stakeholder consultation findings.

Data used has primarily been aggregated on a local government basis, using the recently gazetted Regional Council areas that resulted from the Queensland local government areas amalgamation reform in March 2008. Where regional local government data has not been available, the study has used data from the previous component shires and combined these to represent figures for the regional council as a whole.

Regional councils have been referred to primarily because these represent the 'local' level at which most planning decisions are implemented. This includes decisions for the supply of housing and associated land. Local government areas also represent an effective 'community of interest'. Finally, most data collected by authorities tends to be no more detailed than at the local government level. Data does exist for some smaller areas; however, this may not be verified by appropriate authorities (thereby making it difficult to use for planning purposes in a definitive and authoritative manner), and is often sparse (making it inherently more difficult to compare across different data sets).

## Description of Project Areas

## Section 3

### 3.1.1 CSG Field Study Area

The CSG field study area is located within the Surat and Bowen Basins and covers a large area extending from around Roma and as far north as Emerald. The field is broken into nine areas – Denison, Mahalo, Comet, Arcadia Valley, Fairview, Roma, Roma (other), Scotia and Eastern Surat Basin. The three priority areas for field development are the Roma, Fairview and Arcadia Valley fields as it is these fields that are proposed to be developed in the short term. Development of other CSG files will be dependent on the outcome of appraisal drilling programs.

Much of the affected land is rural in nature. There are numerous existing gas fields and exploratory wells in the area, as well as coal fields. Population is predominantly centred in small towns in the area. Table 3-1 lists towns around the CSG field study area and Figure shows their location. The towns have traditionally served as rural service centres; however, some have increasing significance now as service centres for the oil and gas industry. The proportion of jobs in the resource sector is increasing as the area is explored for further oil and gas development. A few towns of relevance to the accommodation study are discussed below. Other towns in the area are described in Section 8.13 (Land Use) of the EIS.

**Table 3-1 Population Centres around the CSG Field Study Area**

Field	Towns/Centres (Population of Urban Centre)
Roma	Roma (pop. 5,983)
Roma	Miles (pop. 1,164)
Roma	Mitchell (pop. 944)
Roma	Surat (pop. 436)
Roma	Wallumbilla (pop. 285)
Roma/Denison/Fairview/Arcadia Valley	Injune (pop. 362)
Roma/Scotia	Taroom (pop. 629)
Eastern Surat Basin	Tara (pop. 819)
Denison	Emerald (pop. 10,999)
Denison	Blackwater (pop. 5,031)
Denison	Springsure (pop. 829)
Denison	Rolleston (pop. 217)
Scotia	Wandoan (pop. 368)

Source: ABS (2006)

#### **Roma**

Roma is centrally located in the Roma CSG Field, approximately 100 km south of the Fairview and Arcadia Valley CSG fields. The town has a population of approximately 6,000 people and has a range of facilities and services available which can be significant in sustaining a large growing community.

Roma is the administrative hub for the newly formed Roma Regional Council and is a regional service centre for the south west Queensland area, providing an extensive range of retailing opportunities and community services (such as regional offices of State government agencies). Roma is also a centre for Santos and other oil and gas companies operating in the region.

## Description of Project Areas

## Section 3

The draft *Maranoa and Districts Regional Plan* describes Roma as a major regional centre for government, financial and banking service providers as well as a key point for several resource development companies to coordinate their regional operations.

### **Injune**

Injune is the closest community to the Fairview and Arcadia Valley CSG fields. The town has fewer than 400 people and its surrounds are dominated by agricultural uses, ranging from small holdings to large scale intensive modern farms.

### **Springsure**

Springsure is mid-way between Rolleston and Emerald, and has a population of around 800. The town has several hotels and motels, which are frequently used by oil and gas companies operating within the area. The area is well serviced, with a state school up to Year 10, two convenience supermarkets, an ambulance station, Queensland Government offices and the former Bauhinia Shire Council offices.

### **Temporary Accommodation Facilities (TAFs)**

There are a number of TAF's servicing the oil and gas industry within the area. Santos has two TAFs – Fairview and the recently constructed Springwater TAF. Both facilities are located in the Fairview CSG field and provide accommodation for workers operating in the existing Santos CSG fields, as well as workers carrying out exploration activities. Fairview and Springwater TAF each have a capacity of 80–100 people. Santos reports that these TAF's are regularly full.

## **3.1.2 Gas Transmission Pipeline Corridor**

Land use along the length of the gas transmission pipeline corridor is dominated by agricultural activities (either cultivation or grazing). Outside of the existing townships, the extent of the built environment is limited to farm buildings and homesteads.

The nearest towns (other than those near the start and end of the gas transmission pipeline route in the Roma and Gladstone regions, respectively) are Rolleston, Moura, Banana and Biloela. These towns act as key service centres for rural and mining activity in the surrounding regions and are expected to grow and continue to play a key economic role and act as an inland place of residence into the future. Figure 2 shows towns in the area of the gas transmission pipeline corridor.

For much of the route, the gas transmission pipeline corridor is adjacent to the major inland road transport route of the Dawson Highway.

### **Rolleston**

Rolleston lies at the intersection of the Dawson Highway and the Carnarvon Development Road. The town is approximately 40km North West of the gas transmission pipeline corridor. It has a small population of about 100 persons. The township contains a post office, a garage, a convenience shop, a rural produce shop, an auto electrician and a hotel. There are few houses.

### **Moura**

Moura (population 1,770) is located on the Dawson Highway south of the gas transmission pipeline corridor. The town services the Dawson Coalfields. There are two large TAFs located at the edge of town. The TAFs



## Description of Project Areas

## Section 3

cater for contractors working on the mines and have a capacity of approximately 1,000 beds. The TAF occupants utilise the town's retail outlets and provide a valuable source of revenue for the local economy.

### **Banana**

Banana (population 630) is located at the intersection of the Leichhardt Highway and the Dawson Highway 15km south of the gas transmission pipeline corridor. A service station/store provides limited services.

### **Biloela**

Biloela (population around 5370) services nearby mines (including Callide and Dawson), surrounding rural industry and the Callide power stations. Biloela is the administrative centre for Banana Shire. The town includes a shopping centre, banks, a hospital, and health care and government services. There are a range of hotels/caravan park options available.

### **3.1.3 LNG Facility Area**

The Gladstone Region (and the town of Gladstone specifically) represents one of the key regional centres along the Queensland coast. Table 3-2 highlights Gladstone city and the nearby smaller centres in the Gladstone area (Gladstone Regional Council). Figure 3 shows the location of towns around the LNG facility.

**Table 3-2 Estimated resident population by major urban centre/locality, Gladstone Regional Council, 2007**

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

.. = not applicable; L = Locality; C = City. Note: Based on ASGC 2006.

Source: ABS, Regional Population Growth (Cat no. 3218.0) and unpublished data

## Description of Project Areas

## Section 3

### **Gladstone**

The *Central Queensland – A New Millennium Regional Plan* (CQNMRP) recognises Gladstone as a regional centre. Gladstone has in the past been seen as a key centre for metals processing and as a major coal export centre. The centre is well serviced by rail, road and air transport links and is increasingly becoming a focus for the processing and export of energy related products and other material. Gladstone is one of the few areas for which the state government has defined and operates a special State Development Area for major industrial projects.

Gladstone is also recognised as a node for access to the Great Barrier Reef and as a key centre for leisure such as sailing and other marine-based activities, as well as a base for access to the hinterland. The region is serviced by the full range of tertiary, secondary and primary school facilities and also continues to be a place of choice for retirees.

Gladstone City (population approximately 31,000) is situated on the southern side of Port Curtis and is approximately five km from the LNG Facility site. Gladstone consists of a number of suburbs.

Existing residential detached housing (i.e. standalone houses) is concentrated in the suburbs of Clinton, New Auckand, South Gladstone, and West Gladstone. Gladstone City includes higher density housing. The *Gladstone City Council Planning Scheme – Plan 1 and Plan 3* (Appendix A) show existing residential areas and planned urban expansion areas. The southern area of Gladstone has been designated for significant urban growth, including the Kirkwood Road precinct. The Kirkwood Road South Structure Plan sets out 2,600 lots for development.

### **Boyne Island and Tannum Sands**

Boyne Island (population 3,900) and Tannum Sands (population 4,400) are seaside communities located south of Gladstone. Both communities have experienced significant growth, triggered in part by residents seeking an alternative to Gladstone, investment interest and holiday accommodation development.

There are a number of coastal settlements further south, including Agnes Water and Seventeen - Seventy, which have also experienced significant urban growth in recent years. It is understood that some people working in Gladstone reside in these areas.

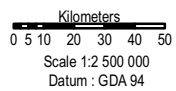
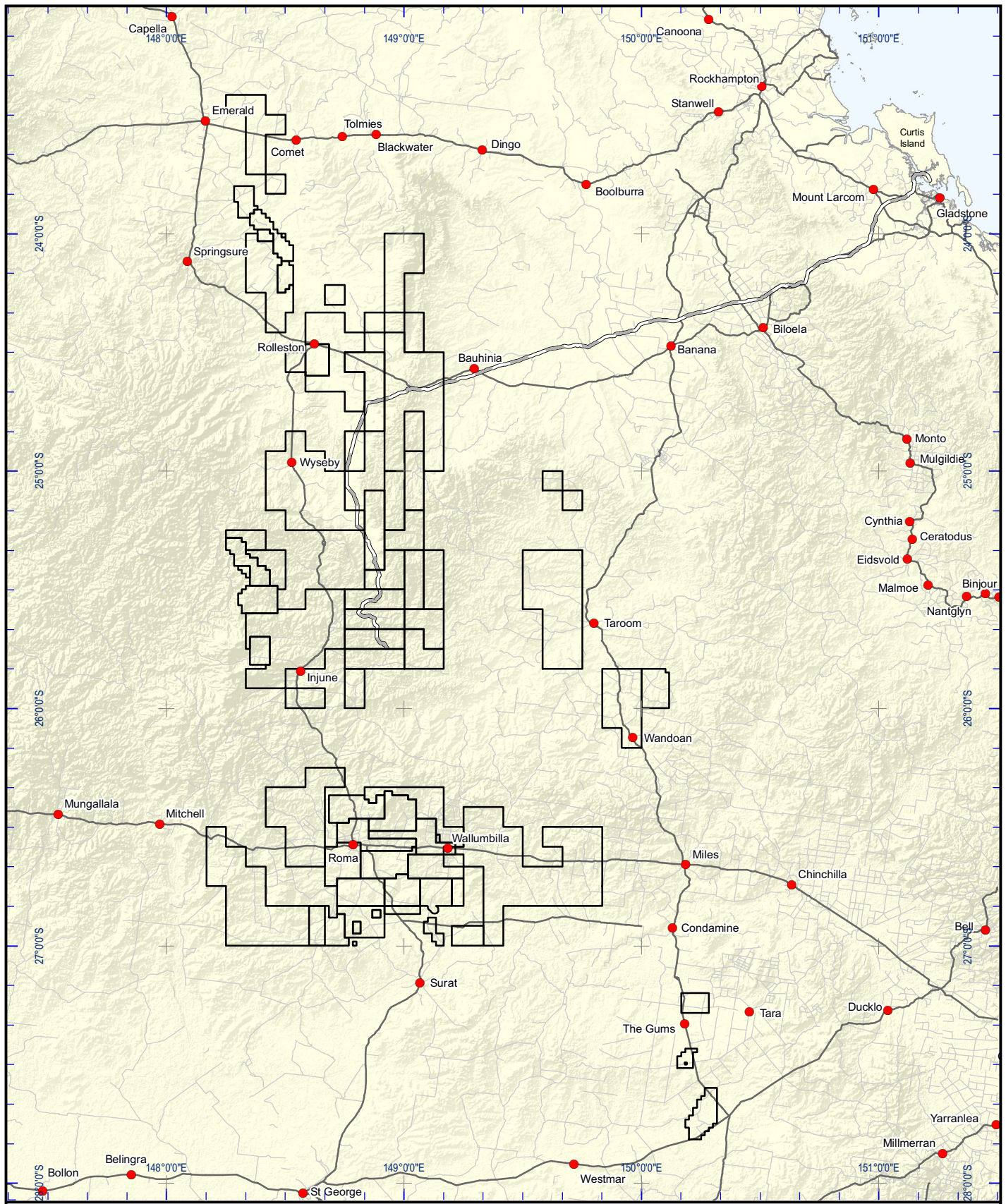
### **Calliope**

There are a number of rural-based settlements around the LNG Facility study area, including Calliope, Yarwun and Mount Larcom. Calliope township is the most developed of the rural-based settlements and there has been a notable increase in higher density residential development in the township.

### **South End**



The small settlement of South End is located at the southern end of Curtis Island, approximately 8.5km from the proposed LNG facility site. There are approximately 20 permanent residents and 90 seasonal residents located at South End. A barge from Gladstone provides a regular service to the community. A number of other islands within Port Curtis also have small communities.





- Towns
- Major Roads
- Minor Roads
- CSG Fields
- Gas Transmission Pipeline

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Drawn: MG Job No.: <b>4262 6220</b>	Approved: JB Date: 20-03-2009 File No.: 42626220-g-721.mxd	Figure: 1  Rev. B A4

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Client



Project

**GLADSTONE LNG PROJECT  
ACCOMMODATION STUDY**

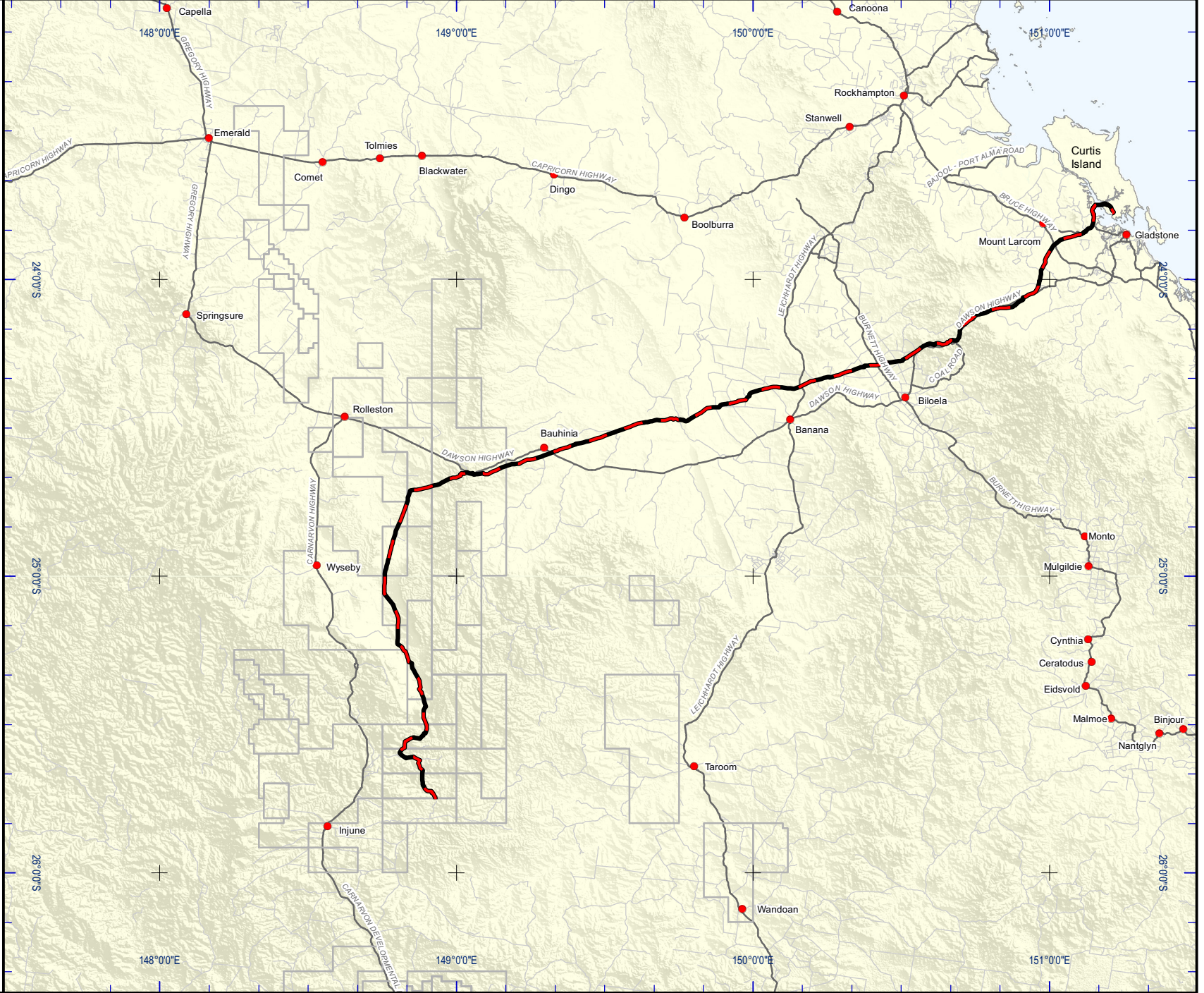
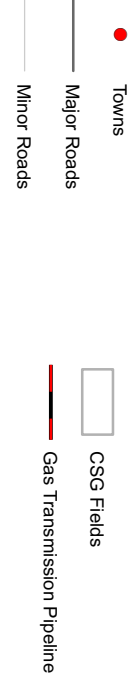
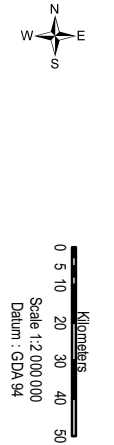
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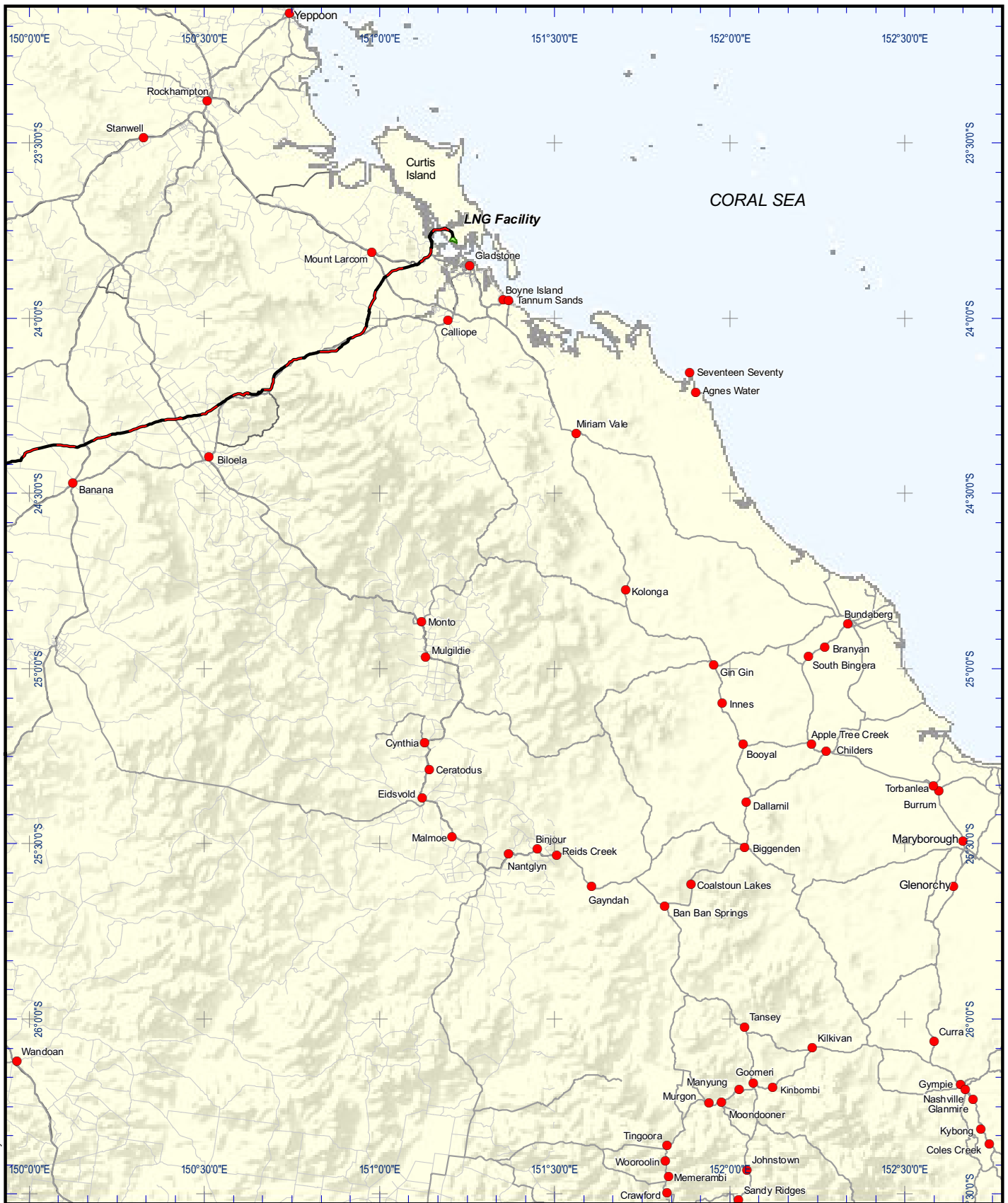
**ACCOMMODATION STUDY  
GAS TRANSMISSION PIPELINE**

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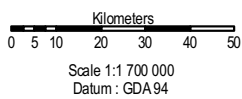
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- Towns
- LNG Facility
- Gas Transmission Pipeline
- Major Roads
- Minor Roads

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<p>Client</p>	<p>Project</p> <p style="text-align: center;"><b>GLADSTONE LNG PROJECT ACCOMMODATION STUDY</b></p>	<p>Title</p> <p style="text-align: center;"><b>ACCOMMODATION STUDY LNG FACILITY</b></p>										
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## 4.1 Significant Population Statistics and their Relevance to the Accommodation Study

A detailed assessment of population demographics and impacts on society as a whole is provided in the SIA chapter of the EIS report. The accommodation study is based on information collected and estimated as part of the detailed SIA.

The CSG field study area, gas transmission pipeline corridor and LNG Facility study area have some common local government areas (refer Table 4-1). To avoid overlap, some of this section discusses population statistics of the local government areas rather than discussing population statistics for the three project components.

**Table 4-1 Local Government Relevant to Project**

Local Government Area	CSG <sup>3</sup>	Gas Transmission Pipeline	LNG Facility
Roma Regional Council	X	X	
Banana Shire Council	X	X	
Central Highlands Regional Council	X	X	
Gladstone Regional Council		X	X

For the purposes of the ToR and the Accommodation Study as a whole, housing demand is primarily considered in terms of broad population increases as expressed in terms of total estimated populations. Occupancy rates are also considered in order to deduce estimated household and dwelling sizes. This information is then used to estimate the need for additional dwellings based on a range of dwelling type scenarios.

In general, overall population estimates provide a basis upon which to estimate housing need in terms of overall yield figures and the capacity to provide for the required yield. Fluctuations in incomes, other economic and social conditions, and the availability of labour and materials to service growth will largely influence the rate at which changes in growth can be accommodated. In this regard, such changes may increase or retard the rate at which housing change is likely to take place.

<sup>3</sup> This table only shows local government areas for the Roma, Fairview and Arcadia Valley CSG fields. Other local governments apply to other areas of the CSG field study area.

## 4.2 Estimated Resident Population

Table 4-2 provides a summary of the projected estimated resident populations for local government areas affected by the GLNG project, as provided by the Planning and Information Forecasting Unit (PIFU) for state planning purposes. Projections are presented in terms of Low, Medium, and High growth scenarios.

**Table 4-2 Projected Resident Population (2006–2031<sup>4</sup>)**

Location	PIFU Growth Scenario	Year						Total Pop. Change	% Compound Growth p.a.
		2006	2011	2016	2021	2026	2031		
Roma Regional Council	Low	13070	13309	13390	13718	13851	13741	671	0.20%
	Medium	13070	13521	13918	14438	14714	14791	1721	0.50%
	High	13070	13808	14594	15457	16076	16521	3451	0.94%
Banana Shire	Low	15634	15545	15466	15421	15404	15404	-230	-0.06%
	Medium	15634	15830	15987	16182	16495	16882	1248	0.31%
	High	15634	16102	16658	17251	18004	18928	3294	0.77%
Central Highlands Regional Council	Low	28256	31784	34564	37319	40262	43112	14856	1.70%
	Medium	28256	32359	35765	39264	43053	46872	18616	2.05%
	High	28256	33123	37553	42266	47467	52889	24633	2.54%
Gladstone Regional Council	Low	53941	61971	68472	75099	82478	90060	36119	2.07%
	Medium	53941	63120	70927	79102	88265	98041	44100	2.42%
	High	53941	65029	75427	86965	100137	114525	60584	3.06%

Source: PIFU, 2008.

### 4.2.1 CSG Fields (Roma, Arcadia Valley, Fairview)

The medium projections predict the Roma Regional Council area is only expected to experience a modest increase in population over the forecast period (2006–2031) of 1,721 people. This represents an increase of only 69 people per annum or an annual growth rate of 0.5%. This is less than one-third of the estimated state average of 1.7% per annum for the same period. Banana Shire and Central Highlands Regional Council are discussed below.

### 4.2.2 Gas Transmission Pipeline Corridor

Similar to the Roma Region, the medium growth projection predicts the Banana Shire to have a small annual growth rate, being approximately 0.3% per annum. This represents an average increase of no more than 50 people per year.

The Central Highlands Regional Council is expected to have a moderate population of increase from 28,256 people in 2006 to 46,872 in 2031. This represents an annual growth rate of 2.0% over the projection period, which equates to approximately 745 persons per year.

### 4.2.3 LNG Facility Study Area

Under a moderate growth scenario during the period up to 2031, the population of Gladstone Regional Council is estimated to increase to 98,041 people from the figure of 53,941 during 2006. This represents an increase of 2.4% p.a., which equates to 1,764 people per year over the region as a whole. Much of this population increase is expected to occur in existing residential areas and those identified by council as future urban growth areas. Under a high growth scenario for the same period, population is projected to increase to 114,525 – an increase of 3.0% p.a. (or 2,423 people per year).

<sup>4</sup> Source: Planning and Information Forecasting Unit, The State of Queensland (Dept. Infrastructure and Planning), 2008.

# Existing Housing/Accommodation Characteristics

## Section 5

### 5.1 Dwelling Structure

The predominant housing type within the Project study area is the detached house. ABS Census figures indicate that the proportion of people that lived in detached dwellings within the regional council areas increased from an average of 89.4% of the total population (i.e. within the Roma Regional Council, Banana Shire, Central Highlands Regional Council and Gladstone Regional Council areas collectively) in 2001 to 93.1% of the total population in 2006. This represents an increase from 72.4% of the total dwelling stock in 2001 to 89.2% in 2006.

Higher density dwelling types (i.e. semi-detached dwellings and apartments or units) only represented a minor proportion of dwelling types for the regional local government areas, as shown in Table 5-1.

**Table 5-1 Higher Density Dwellings Proportions (2001–2006 Comparison<sup>5</sup>)**

Local Government Area	2001		2006	
	Proportion of Total Dwelling Stock (%)	Proportion of Total Population (%)	Proportion of Total Dwelling Stock (%)	Proportion of Total Population (%)
Roma Regional Council	4.4	3.2	6.2	3.9
Banana Shire Council	5.1	3.7	5.8	3.3
Central Highlands Regional Council	6.7	5.1	7.8	4.9
Gladstone Regional Council	8.7	6.1	9.5	5.8
Brisbane Statistical Division	17.1	12.0	19.0	12.9

Table 5-1 demonstrates that higher density living options traditionally have not formed a large part of the housing choice that is either desired or made available in the areas affected by the GLNG project. The figures reflect a general trend whereby regional areas have long had a tendency to focus on single dwelling construction due to public perceptions and desires to have 'space' around them; the view that adequate land has always been available; and the fact that the servicing requirements (i.e. substantially represented by the provision of water, sewerage, and roads) have always been relatively small in scale and easy to manage.

In comparison, the Brisbane Statistical Division (being a highly urbanised area) has a much higher proportion of higher density dwelling types and has tended to increase both the proportion of dwelling stock that caters for this type of dwelling and the proportion of people that it accommodates.

Recently there has been increased interest in higher density development in Gladstone, with several large multi-unit developments currently under construction or being proposed. These include:

- 63 managed apartments on Bramstom Street (under construction);
- A 40 unit apartment development in Lord Street, Gladstone (under construction);
- 34 units in Oaka Lane (under construction);

<sup>5</sup> Source: Australian Bureau of Statistics Census Data, Basic Community Profiles - 2001 and 2006.



## Existing Housing/Accommodation Characteristics

## Section 5

- 12 residential units and 48 serviced units in Auckland Street (Bluechip) (approved);
- A 74 residential unit development in Glenlyon Road, Stokeston (approved);
- A 48 residential unit development in Glenlyon Road;
- Grand Hotel – 96 unit residential tower (proposed); and
- 19 residential units and 46 motel units, corner Goondoon and Lord Streets (proposed).

(Lanzon, R., 2008).

Caravans and cabins are sometimes considered to be a key interim option for accommodation, especially where itinerant work crews are considered. Table 5-2 shows that caravans and cabins played a decreasing role in their contribution towards the total dwelling stock over the period 2001–2006.

The Central Highlands Regional Council had 7.2% living in caravans and cabins in 2001. This figure was higher than the proportion that lived in higher density dwelling types, being 5.1% for the same period. The proportion of people that were accommodated in caravans and cabins dropped in 2006 to 2.4% in the region. Caravans and cabins are important in providing affordable housing options for lower income groups.

**Table 5-2 Caravans/Cabins Dwellings Proportions (2001–2006 Comparison<sup>6</sup>)**

Local Government Area	2001		2006	
	Proportion of Total Dwelling Stock (%)	Proportion of Total Population (%)	Proportion of Total Dwelling Stock (%)	Proportion of Total Population (%)
Roma Regional Council	3.4	2.8	1.0	0.7
Banana Shire Council	3.8	2.5	2.3	1.5
Central Highlands Regional Council	8.9	7.2	3.9	2.4
Gladstone Regional Council	3.8	2.7	2.4	1.5

## 5.2 Occupancy Rates

Occupancy rates can provide an indication of household sizes in different areas. This figure can then be useful in making assumptions about the number of household dwellings that may be required for an estimated population at a given occupancy rate.

Table 5-3 provides a summary of the changes in the occupancy rate for different dwelling types within the areas to be affected by the project over the three census periods of 1996, 2001, and 2006. The table shows that households in the regional council areas likely to be affected by the project have been declining. This is in keeping with a trend across Queensland and Australia as a whole.

<sup>6</sup> Source: Australian Bureau of Statistics Census Data, Basic Community Profiles – 2001 and 2006.

## Existing Housing/Accommodation Characteristics

## Section 5

Table 5-3 Estimated Dwelling Occupancy Rates (1996, 2001, 2006<sup>7</sup>)

	1996				2001				2006			
	Detached House	Semi-detached, flats, etc	Other dwellings incl. caravans	All dwellings	Detached House	Semi-detached, flats, etc	Other dwellings incl. caravans	All dwellings	Detached House	Semi-detached, flats, etc	Other dwellings incl. caravans	All dwellings
Roma Town	2.7	1.8	1.7	2.6	2.7	1.5	1.9	2.5	2.8	1.1	1.8	2.7
Bendemere Shire	2.7	2.3	1.8	2.6	2.5	1.1	2.7	2.5	2.5	0.8	1	2.5
Booringa Shire	2.6	2.3	2	2.6	2.6	1.4	2	2.5	2.5	1.6	2	2.4
Bungil Shire	2.7	0.8	1.9	2.6	2.5	1.2	1.6	2.5	2.6	2.5	1.8	2.6
Warroo Shire	2.6	1.4	1.4	2.5	2.5	2.3	1.8	2.5	2.5	1.2	1.6	2.4
<b>Roma Regional Council</b>	<b>2.7</b>	<b>1.7</b>	<b>1.8</b>	<b>2.6</b>	<b>2.6</b>	<b>1.5</b>	<b>2.0</b>	<b>2.5</b>	<b>2.6</b>	<b>1.4</b>	<b>1.6</b>	<b>2.5</b>
Banana Shire	2.8	1.6	1.8	2.7	2.7	1.6	1.7	2.6	2.7	1.5	1.7	2.6
Taroom Shire	2.7	1.6	2.2	2.7	2.6	1.5	2.1	2.5	2.4	2.4	2	2.4
Bauhinia Shire	2.8	1.5	1.9	2.6	2.7	1.4	1.9	2.5	2.6	1.3	2.1	2.4
Duaringa Shire	3.3	1.6	1.9	3.1	3	1.7	1.7	2.9	2.8	1.6	1.8	2.7
Emerald Shire	3.1	2	1.8	2.7	3	1.8	1.9	2.6	3	1.8	1.9	2.7
Peak Downs Shire	3.3	1.9	1.8	3.1	3.1	1.4	2.1	2.9	2.8	1.5	1.8	2.7
<b>Central Highlands Regional Council</b>	<b>3.1</b>	<b>1.8</b>	<b>1.9</b>	<b>2.9</b>	<b>3.0</b>	<b>1.6</b>	<b>1.9</b>	<b>2.7</b>	<b>2.8</b>	<b>1.6</b>	<b>1.9</b>	<b>2.6</b>
Gladstone City	3	1.7	1.8	2.8	2.9	1.6	1.6	2.6	2.8	1.7	1.8	2.6
Calliope Shire	3	1.8	1.9	2.8	2.9	1.8	1.8	2.8	2.9	1.8	1.9	2.8
Miriam Vale Shire	2.8	1.7	2.1	2.6	2.5	1.9	2	2.4	2.5	2	2.1	2.4
<b>Gladstone Regional Council</b>	<b>2.9</b>	<b>1.7</b>	<b>1.9</b>	<b>2.7</b>	<b>2.8</b>	<b>1.8</b>	<b>1.8</b>	<b>2.6</b>	<b>2.7</b>	<b>1.8</b>	<b>1.9</b>	<b>2.6</b>
Brsibane Statistical Division					2.83	1.77	1.62	2.5	2.9	1.83	1.58	2.64
Queensland (State)					2.79	1.81	1.78	2.34	2.79	1.85	1.75	2.6

<sup>7</sup> Source: PIFU, Population and Housing Fact Sheets for Local Government Areas (prior to March 2008), 2008 & ABS Census Community Profiles for Brisbane and Queensland 2001 & 2006.

# Existing Housing/Accommodation Characteristics

## Section 5

Figure 5-1 Dwelling Tenure (2001<sup>8</sup>)

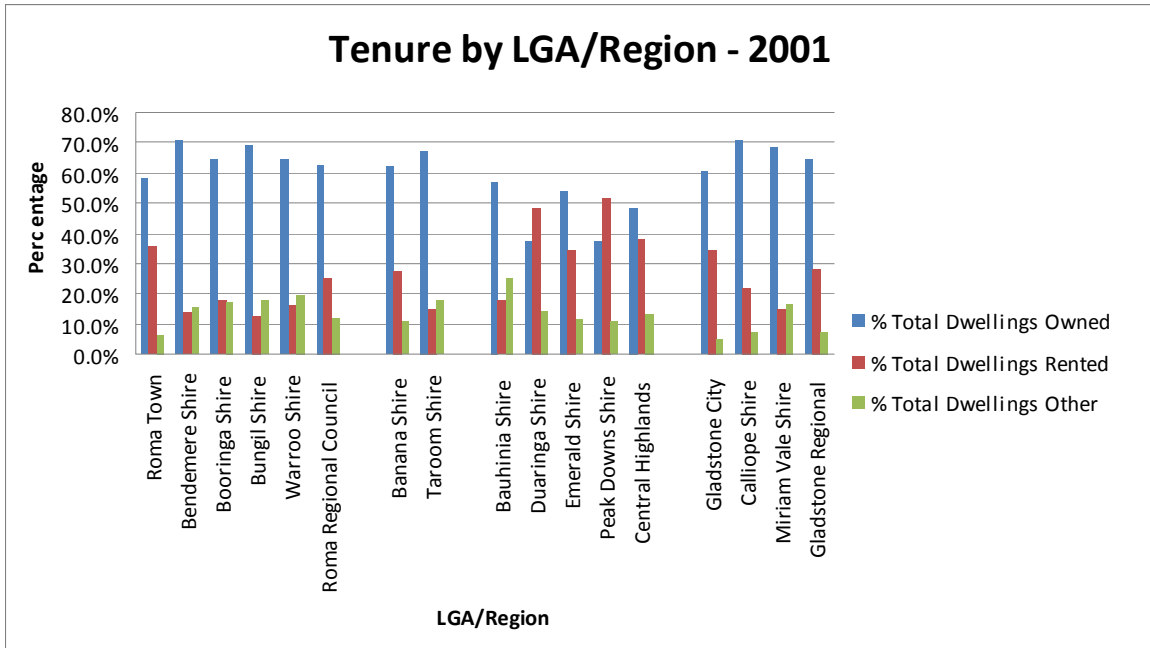
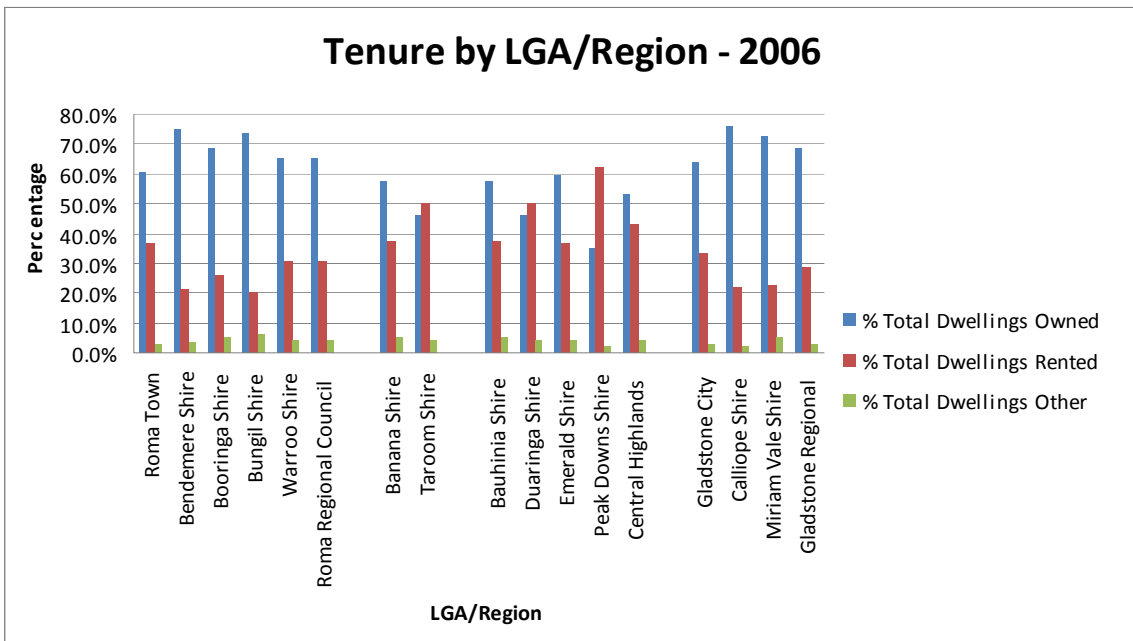


Figure 5-2 Dwelling Tenure (2006<sup>9</sup>)



<sup>8</sup> ABS Census Data, Community Profiles, 2001.

<sup>9</sup> ABS Census Data, Community Profiles, 2006.

## Existing Housing/Accommodation Characteristics

### Section 5

### 5.3 Household Tenure Type

Figure 5-1 and Figure 5-2 provide an overview of dwelling ownership in the region versus those properties that are rented. Ownership, in the figures, is taken to include those properties that were in the process of being purchased.

The raw ownership data in Table 5-4 and Figure 5-2 shows that almost 43% of properties were rented in the Central Highlands Region and almost 38% in the Banana Shire during 2006. This compares with only 29% in the Gladstone Regional Council area and 31% in the Roma Regional Council area.

Dwelling ownership by occupants was greatest in the Gladstone Region, with approximately 69% of dwellings owner-occupied, whereas the Roma Region had 65% owner-occupied, and Central Highlands Region had 53% during the 2006 Census.

Compared to the 2001 Census, ownership by occupants increased in Roma and the Gladstone regions and declined in the Central Highlands Region and Banana Shires by the 2006 Census.

The figures in Table 5-4 show an increasing tendency for people to want to purchase homes in the Roma and Gladstone regions, with a corresponding decreasing tendency to want to do so in the comparatively more remote and less well-serviced areas through the Central Highlands and Banana Shire regions.

## Existing Housing/Accommodation Characteristics

## Section 5

Table 5-4 Dwelling Ownership (2001 and 2006<sup>10</sup>)

Location	2001						2006					
	Owned		Rented		Other/Not Stated		Owned		Rented		Other/Not Stated	
	Total	% of Total Dwellings	Total	% of Total Dwellings	Total	% of Total Dwellings	Total	% of Total Dwellings	Total	% of Total Dwellings	Total	% of Total Dwellings
Roma Town	1,383	58.1%	844	35.4%	154	6.5%	1402	60.3%	855	36.8%	67	2.9%
Bendemere Shire	259	70.6%	50	13.6%	58	15.8%	269	74.9%	77	21.4%	13	3.6%
Booringa Shire	504	64.7%	139	17.8%	136	17.5%	441	68.5%	168	26.1%	35	5.4%
Bungil Shire	543	69.3%	100	12.8%	140	17.9%	532	73.5%	145	20.0%	47	6.5%
Warroo Shire	268	64.7%	66	15.9%	80	19.3%	259	65.2%	122	30.7%	16	4.0%
<b>Roma Regional Council</b>	<b>2,957</b>	<b>62.6%</b>	<b>1199</b>	<b>25.4%</b>	<b>568</b>	<b>12.0%</b>	<b>2903</b>	<b>65.3%</b>	<b>1367</b>	<b>30.7%</b>	<b>178</b>	<b>4.0%</b>
Banana Shire	3,046	61.9%	1350	27.4%	524	10.7%	458	57.5%	299	37.5%	40	5.0%
Taroom Shire	690	67.1%	155	15.1%	183	17.8%	956	45.8%	1051	50.4%	80	3.8%
Bahinia Shire	544	57.1%	168	17.6%	240	25.2%	458	57.5%	299	37.5%	40	5.0%
Duaringa Shire	945	37.2%	1223	48.2%	371	14.6%	956	45.8%	1051	50.4%	80	3.8%
Emerald Shire	2,775	54.3%	1759	34.4%	577	11.3%	2806	59.3%	1741	36.8%	185	3.9%
Peak Downs Shire	375	37.4%	517	51.6%	110	11.0%	327	35.2%	578	62.3%	23	2.5%
<b>Central Highlands Regional Council</b>	<b>4,639</b>	<b>48.3%</b>	<b>3667</b>	<b>38.2%</b>	<b>1298</b>	<b>13.5%</b>	<b>4547</b>	<b>53.2%</b>	<b>3669</b>	<b>42.9%</b>	<b>328</b>	<b>3.8%</b>
Gladstone City	5,954	60.4%	3376	34.3%	525	5.3%	6403	63.7%	3382	33.7%	263	2.6%
Calliope Shire	3,694	70.7%	1144	21.9%	385	7.4%	4144	75.9%	1193	21.8%	125	2.3%
Miriam Vale Shire	1,349	68.4%	290	14.7%	334	16.9%	1376	72.8%	421	22.3%	94	5.0%
<b>Gladstone Regional Council</b>	<b>10,997</b>	<b>64.5%</b>	<b>4810</b>	<b>28.2%</b>	<b>1244</b>	<b>7.3%</b>	<b>11923</b>	<b>68.5%</b>	<b>4996</b>	<b>28.7%</b>	<b>482</b>	<b>2.8%</b>

<sup>10</sup> ABS Census Data, Community Profiles, 2001 and 2006.

## Existing Housing/Accommodation Characteristics

## Section 5

### 5.4 CSG Field Study Area

#### 5.4.1 Approval and Construction of Dwellings

Dwelling activity decreased in Roma Regional Council in the year ending June 2008, with 36 approvals, all of them for separate houses. In 2007, there were 51 dwelling approvals, which is the highest number of approvals recorded since 2002.

#### 5.4.2 Forecast Land and Housing Requirements

As shown in Table 4-2, Roma Regional Council area is expected to grow by approximately 0.5% per annum over the next 25 years, from an estimated resident population of 13,070 persons in 2006 to 14,791 persons in 2031<sup>11</sup>. This represents an increase of 1,721 persons in total over the next 25 years, or approximately 69 persons per year. Based on an average dwelling occupancy of 2.6 persons per dwelling, this represents an average of an additional 26.5 dwellings that need to be constructed each year over the next 25 years, without the influence of the GLNG project.

Dwelling approval figures for 2007 and 2008 (discussed above) indicate that the region has the capacity to meet expected base demand over the next 25 years. There is sufficient land suitable for residential development available to accommodate this growth.

#### 5.4.3 Median House Prices and Sales

Recent median house and unit price data for 2007 and 2008 has been collated from the Real Estate Institute of Queensland (REIQ) and is provided in Table 5-5. This table shows that there has been very strong growth in median house prices in areas around the CSG fields over the last five years. In most centres, growth has been close to double that of the Brisbane area; however, growth has recently slowed in the current economic climate.

Based on March 2008 statistics, median house price increases have been greatest in the Banana Shire and the previous Duaringa Shire, where the increases have been 241% and 398% over the past five years. According to the REIQ figures, Brisbane has only seen an 82% increase over the same period.

Over 200 house and land properties were listed as "for sale" in the Roma area (realestate.com, 7/12/2008). Agents note that there has been a slowdown in sales in the property market. New properties coming onto the market are adding to properties already on the market, causing a 'glut' of houses for sale (pers. comm., 2008).

#### 5.4.4 Rental Accommodation

##### ***Private Rental***

Based on the 2006 census, around 900 dwellings were recorded as being rented in Roma shire. Discussion with real estate agents indicates that Roma consistently has a low vacancy rate. A search of rental listings on realestate.com website and discussion with real estate agents indicated only around 20–30 properties were available (realestate.com, 7/12/2008). Agents were not aware of a noticeable demand from CSG companies seeking rental accommodation (pers. comm., 2008).

A register of median rental prices is maintained by the Queensland Rental Tenancy Authority, and Table 5-6 shows the increasing median rent costs per week between 2003 and 2008 for Roma (CSG Field Area) and

<sup>11</sup> Source: PIFU, Local Government Area Estimated Resident Population Projections 2006–2031, Internet Publication, 2008

## Existing Housing/Accommodation Characteristics

### Section 5

Emerald (main centre for Central Highlands Regional Council – gas transmission pipeline corridor), as well as other regional centres.

The table shows that rents have generally been increasing steadily over the period 2003–2008. Roma has not experienced as sharp an increase in median rent prices for a three-bedroom house as has been the case in Emerald in the Central Highlands Region. In Emerald, rental prices have reached levels that are comparable to Brisbane, Mackay and Rockhampton.

#### ***Hotel and Motel Accommodation***

There are approximately 20 hotel/motel options in Roma. Hotel/motels are regularly full during the week, often occupied by workers and contractors in the CSG and mining industry.

#### ***Caravan Parks***

There are four caravan and camping parks in Roma.

### **5.4.5 Summary**

A summary of the existing housing characteristics of the CSG Field study area around Roma is as follows:

- The predominant housing type within the study area is the detached house. Semi-detached dwellings and apartments or units only represented a minor proportion of dwelling type;
- Household size is set to continue declining, keeping with a trend across Australia;
- In Roma Regional Council, 65% of dwellings are owner-occupied and approximately 30% are rented;
- The property market is active, with 51 dwelling approvals in Roma Regional Council in 2007 and strong growth in median house prices over the last five years;
- The rental market is fairly tight, with limited rental properties available and rents increasing steadily over the last five years (the median rental price for a three-bedroom house is currently \$300 per week);
- Roma Regional Council area is expected to grow by approximately 0.5% per annum over the next 25 years, representing an increase of 1,721 persons in total over the next 25 years, or approximately 69 persons per year. Based on an average dwelling occupancy of 2.6 persons per dwelling, this represents an average of an additional 26.5 dwellings that will need to be constructed each year over the next 25 years. Recent dwelling approval figures indicate that the region has the capacity to meet expected base demand over the next 25 years. There is sufficient land available to accommodate for this growth; and
- There are approximately 20 hotel/motels and four caravan parks in Roma. Motels are regularly booked out.

## Existing Housing/Accommodation Characteristics

## Section 5

Table 5-5 Median House and Unit Prices (2007 and 2008<sup>12</sup>)

Locations	Median Prices - Houses						Median Prices - Flats/Units					
	December Quarter 2007			March Quarter 2008			December Quarter 2007			March Quarter 2008		
	12 mths to end of Dec. 2007	Change over 1 yr.	Change over 5 yrs.	12 mths to end of Mar. 2008	Change over 1 yr.	Change over 5 yrs.	12 mths to end of Dec. 2007	Change over 1 yr.	Change over 5 yrs.	12 mths to end of Mar. 2008	Change over 1 yr.	Change over 5 yrs.
Roma (LGA)	\$250,000	22.0%	194.1%	\$255,000	16.7%	168.4%						
Banana Shire	\$273,000	20.0%	245.6%	\$275,000	15.5%	248.1%						
Duaringa (LGA)	\$242,500	1.0%	491.5%	\$249,000	0.8%	398.0%						
Emerald (LGA)	\$350,000	7.7%	159.3%	\$345,000	1.5%	146.4%	\$275,000	1.9%		\$290,000	5.5%	
Peak Downs (LGA)	\$256,000			\$257,500	0.0%							
Gladstone (LGA)	\$343,000	33.6%	154.1%	\$355,000	28.6%	144.0%	\$235,000	40.7%	193.8%	\$279,000	48.0%	235.6%
Calliope (LGA) - Urban	\$375,000	23.0%	139.6%	\$393,500	19.2%	136.3%	\$278,000	40.8%	164.8%			
Calliope (LGA) - Rural	\$500,000	40.8%	150.0%	\$530,000	42.3%	152.4%						
Miriam Vale (LGA) - Urban	\$311,250	17.5%	110.3%	\$320,000	6.7%	116.2%	\$345,000	-32.0%	58.6%	\$320,000	-35.4%	42.2%
Miriam Vale (LGA) - Rural	\$320,000	16.4%	166.7%	\$338,000	22.9%	160.0%						
Mackay (LGA)	\$383,500	3.6%	170.1%	385,000	2.1%	156.7%	\$285,000	14.0%	137.5%	\$287,000	8.9%	139.2%
Rockhampton (LGA)	\$290,000	25.0%	163.6%	295,000	18.0%	156.5%	\$256,500	25.1%	143.1%	\$258,000	7.5%	128.3%
Brisbane (LGA)	\$445,000	16.3%	81.6%	470,000	20.5%	82.1%	\$350,000	12.9%	75.0%	\$367,000	14.7%	74.8%

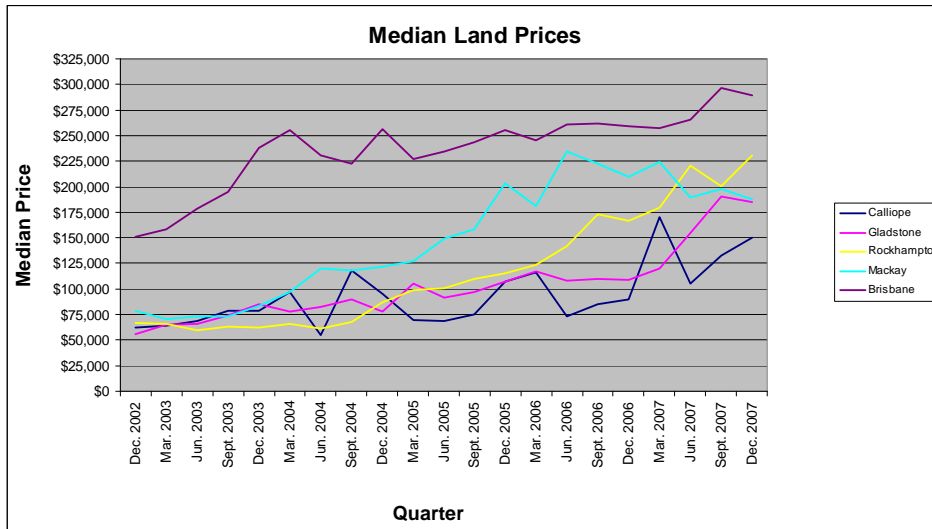
<sup>12</sup> Source: REIQ – Median House and Townhouse/Apartment Prices, Winter Edition – QLD Property & Lifestyle, 2008 (Note: Roma and Banana Shire were not considered to be significant townhouse and unit market areas up until survey).



# Existing Housing/Accommodation Characteristics

## Section 5

Figure 5-3 Comparative Median Land Prices (Dec. 2002 – Dec. 2007)



# Existing Housing/Accommodation Characteristics

## Section 5

Table 5-6 Median Rental Data (2003–2008<sup>13</sup>)

Dwelling Category	No. Bedrooms	Year	Roma	Emerald	Gladstone	Mackay	Rockhampton	Brisbane
Houses	2 Bedroom	2003	\$110	\$160	\$200	\$160	\$140	\$210
		2004	\$130		\$190	\$165	\$140	\$225
		2005			\$170	\$200	\$150	\$240
		2006	\$140		\$160	\$255	\$165	\$260
		2007	\$185	\$250	\$220	\$260	\$225	\$285
		2008	\$200		\$260	\$300	\$230	\$320
	3 Bedroom	2003	\$140	\$220	\$220	\$185	\$160	\$225
		2004	\$165	\$240	\$220	\$207	\$165	\$240
		2005	\$185	\$280	\$200	\$250	\$175	\$260
		2006	\$210	\$340	\$225	\$310	\$210	\$280
		2007	\$250	\$360	\$280	\$350	\$250	\$315
		2008	\$260	\$360	\$300	\$360	\$270	\$350
	4 Bedroom	2003	\$160	\$270	\$280	\$235	\$200	\$265
		2004	\$170	\$300	\$270	\$270	\$195	\$285
		2005	\$220	\$340	\$250	\$300	\$230	\$300
		2006	\$250	\$400	\$280	\$390	\$270	\$330
		2007	\$270	\$450	\$330	\$420	\$310	\$370
		2008	\$300	\$450	\$360	\$450	\$320	\$410
Flats/Units	1 Bedroom	2003		\$110	\$120	\$100	\$80	\$155
		2004		\$110	\$140	\$110	\$95	\$170
		2005		\$180	\$110	\$130	\$95	\$185
		2006		\$150	\$155	\$170	\$110	\$200
		2007		\$200	\$123	\$200	\$150	\$230
		2008		\$280	\$125	\$220	\$160	\$250
	2 Bedroom	2003	\$95	\$155	\$165	\$130	\$120	\$200
		2004	\$110	\$165	\$165	\$140	\$125	\$220
		2005	\$120	\$190	\$145	\$165	\$130	\$240
		2006	\$120	\$200	\$165	\$200	\$150	\$260
		2007	\$150	\$240	\$190	\$250	\$180	\$300
		2008	\$160	\$250	\$220	\$270	\$200	\$340
	3 Bedroom	2003		\$180	\$220	\$175	\$160	\$240
		2004		\$200	\$220	\$195	\$165	\$260
		2005		\$230	\$190	\$225	\$180	\$280
		2006		\$300	\$220	\$290	\$200	\$310
		2007		\$320	\$250	\$350	\$220	\$350
		2008		\$345	\$320	\$410	\$260	\$380
Town Houses	2 Bedroom	2003						\$200
		2004						\$220
		2005						\$230
		2006			\$200			\$255
		2007			\$180			\$280
		2008						\$330
	3 Bedroom	2003						\$230
		2004				\$220		\$240
		2005				\$300		\$260
		2006			\$220			\$275
		2007				\$380		\$315
		2008				\$440		\$350

<sup>13</sup> Blanks denote lack of sufficient data (i.e. insufficient rental bond lodgements) to provide a meaningful median figure.

## Existing Housing/Accommodation Characteristics

## Section 5

### 5.5 Gas Transmission Pipeline Corridor

The gas transmission pipeline corridor runs near a number of towns as discussed in Section 3.1.2. The construction of the gas transmission pipeline primarily involves the use of short-medium term TAFs and will not affect housing directly. As such, this report only briefly touches on housing characteristics of the gas transmission pipeline corridor.

#### 5.5.1 Summary

- The predominant housing type within the corridor is the detached house;
- Household size is set to continue declining, in keeping with a trend across Australia;
- There are a higher proportion of rental properties in Central Highlands Region (43%) and Banana Shire (38%) than Roma and Gladstone regional councils – reflecting a tendency for people to rent in more remote and less well-serviced areas;
- The property market is active, with 51 dwelling approvals in Roma Regional Council in 2007 and strong growth in median house prices over the last five years;
- There is an active property market around some of the larger towns near the gas transmission pipeline corridor, such as Emerald and Biloela;
- There are hotel/motel accommodation options in most towns along the gas transmission pipeline corridor; and
- There is a large TAF nearby Biloela which provides accommodation for workers at the numerous surrounding mines.

### 5.6 LNG Facility Study Area

#### 5.6.1 Subdivision of Land

The supply of land for residential development has fluctuated over time. PIFU residential land monitoring figures for the previous Calliope and Gladstone local government areas show that a total of 319 residential lots were sealed (i.e. approved with title plans prepared) for the two areas combined in 2007, with 416 sealed in 2006. In 2003, 1152 were approved.

*The Gladstone Market Report* (Property Research, 2008) and the GEIDB presentation (GEIDB, 2007) note from real estate anecdotes that fewer than 30 blocks of serviced residential land are for sale. “[A] total of 29 vacant land sites and 218 house and land properties were listed as ‘for sale’ on realestate.com [assumed survey carried out prior to April 2008]”.

A Broadhectare Residential Land Analysis for the Gladstone region prepared by PIFU and summarised in Table 5-7 shows that there is at least 2,316 hectares of residential land available over the next 10 years. Of this, 1,329 hectares is urban residential land. A further 987 hectares is allocated for rural residential development purposes (which is likely to yield a significantly lower number of lots per hectare – approximately 0.5 to 2 lots per hectare).

There is significant lead-in time for lot development. The typical residential subdivision takes approximately 12 months for approvals and 12 months for civil works, plan registration and sale (GEIDB, 2007).

## Existing Housing/Accommodation Characteristics

### Section 5

#### 5.6.2 Forecast Land and Housing Requirements

The Medium Estimated Resident Population Growth projection published by PIFU in 2008 shows that the Gladstone Regional Council area is expected to grow from 53,941 persons in 2006 to 98,041 persons in 2031 (refer Table 4-2). The projected population growth represents strong growth and will provide significant challenges for local and regional planning authorities.

As part of this study, a housing needs model was developed to assist in identifying likely housing needs for the population growth expected in Gladstone over the next 25 years. The model uses PIFU growth scenarios and basic assumptions regarding housing density, dwelling occupancy rates and distributions of people in multi-unit development and single dwelling houses. Appendix B-1 provides overall summarised figures for the Medium growth scenario provided by PIFU for the Gladstone Region.

The most significant aspect of an analysis of Gladstone's future housing needs is the ongoing requirement for significant amounts of land to cater for the expected growth. Appendix B-1 shows that, based on the Medium Growth Scenario, Gladstone is expected to require a total of approximately 1,633 hectares of residential land (not taking into consideration land requirements from the GLNG Project). This is based on present development patterns which include:

- A propensity towards single dwelling house development and limited, low-rise multi-unit development (based on past ABS data showing approximately 90% of the population are housed in single dwelling houses vs. 10% of the population in multi unit dwellings); and
- Dwelling density of 10 single dwelling houses per hectare or 15 multi unit dwellings per hectare.

This equates to an average demand of 65.3 hectares per annum over the next 25 years for 590 single dwelling houses and 98 multi-units per year.

Based on the broad hectare residential land analysis projections up until 2027, the existing land supply is likely to adequately meet the region's needs in the period covered by the projection.

# Existing Housing/Accommodation Characteristics

## Section 5

**Table 5-7 Residential Land Availability and Dwelling Yield (Gladstone Region)<sup>14</sup>**

	Timeframe					Total
	0-2 years	2-5 years	5-10 years	10+ years	Not Specified	
<b>Land Availability (ha.)</b>						
<b>Calliope</b>						
Urban Residential	166	69	411	4	4	654
Low Density Residential	252	545	186	0	1204	2187
<b>Total Residential</b>	<b>418</b>	<b>614</b>	<b>597</b>	<b>4</b>	<b>1208</b>	<b>2841</b>
<b>Gladstone</b>						
Urban Residential	183	424	76	0	2	685
Low Density Residential	4	0	0	0	0	4
<b>Total Residential</b>	<b>187</b>	<b>424</b>	<b>76</b>	<b>0</b>	<b>2</b>	<b>689</b>
<b>Combined (Gladstone &amp; Calliope)</b>						
Urban Residential	349	493	487	4	6	1339
Low Density Residential	256	545	186	0	1204	2191
<b>Total Residential</b>	<b>605</b>	<b>1038</b>	<b>673</b>	<b>4</b>	<b>1210</b>	<b>3530</b>
<b>Dwelling Yield (all dwellings)</b>						
<b>Calliope</b>						
Urban Residential	1072	457	3024	49	48	4650
Low Density Residential	259	407	20	0	896	1582
<b>Total Residential</b>	<b>1331</b>	<b>864</b>	<b>3044</b>	<b>49</b>	<b>944</b>	<b>6232</b>
<b>Gladstone</b>						
Urban Residential	1310	3434	842	0	21	5607
Low Density Residential	4	6	0	0	0	10
<b>Total Residential</b>	<b>1314</b>	<b>3440</b>	<b>842</b>	<b>0</b>	<b>21</b>	<b>5617</b>
<b>Combined</b>						
Urban Residential	2382	3891	3866	49	69	10257
Low Density Residential	263	413	20	0	896	1592
<b>Total Residential</b>	<b>2645</b>	<b>4304</b>	<b>3886</b>	<b>49</b>	<b>965</b>	<b>11849</b>

### 5.6.3 Approval and Construction of Dwellings

New Dwelling Activity<sup>15</sup> statistics prepared by PIFU show that the Gladstone Development Region (i.e. the previous Calliope and Gladstone City Councils combined) were expected to have a total of 627 new house approvals and 88 other approvals (i.e. total of 715 new dwellings) for 2008. In 2007, there were a combined total of 702 new dwelling approvals issued for the Gladstone Region (refer Table 5-8). The figures for 2007 and 2008 suggest that the region has the capacity to meet the required “approval rate” per annum to provide an adequate supply of dwellings to meet expected base demand over the next 25 years.

<sup>14</sup> Source: PIFU Broadhectare Study 2008 – Calliope and Gladstone Broadhectare Study 2008 – Gladstone City, Unpublished, 2008.

<sup>15</sup> Source: PIFU Population and Housing Fact Sheet – Gladstone Development Region, August 2008.

## Existing Housing/Accommodation Characteristics

## Section 5

**Table 5-8 New Dwelling Approvals – Gladstone Regional Council**

### New dwelling activity

(includes ABS revisions from 2000-01)

Year to June	New dwelling approvals		
	Houses	Other	Total
2002	443	38	481
2003	595	104	699
2004	430	149	579
2005	370	148	518
2006	478	63	541
2007	589	113	702
2008	627	88	715
Sep Qtr 2007	185	40	225
Dec Qtr 2007	163	4	167
Mar Qtr 2008	131	8	139
Jun Qtr 2008	148	36	184

The Gladstone region has an active residential construction sector. A survey (Property Research, 2008) of 16 local builders indicates that there is a current shortage of labour within the building industry. The shortage of building labour (particularly the skilled trades) has led to an increase in build times. Ultimately, ability to meet demand for construction of dwellings may be limited by the capacity of the local building industry. Increasing the capacity of the building industry could be achieved “*through the emergence of new building companies with their own tradespeople from other areas or an increase in local wages sufficient enough to attract subcontractors from other locations*” (Property Research, 2008).

### 5.6.4 Median House Prices and Sales

The price of all residential properties has risen steadily over the last 10 years, with a strong surge in median prices since 2002. For the 12 months to the end of March 2008, median house prices and median unit prices for Gladstone Shire have increased by 27% and 48%, respectively. In Calliope Shire, median house prices and unit prices have increased over the last 12 months by 19% and 41%, respectively. Table 5-9 shows median house and unit prices for the Local Government Areas (LGAs).

Statistics released by REIQ for the June 2008 quarter show an increase in median house prices for population centres around Gladstone as follows:

- Gladstone – \$394,000 (2.2% growth);
- Calliope – \$394,500 (8.2% growth); and
- Boyne Island – \$435,000 (0.5% growth).

The median house price in Tannum Sands dropped 7.5% over the June quarter, to \$465,000. The strong growth in Gladstone is likely to have been a result of a number of major projects being approved for the area and a

## Existing Housing/Accommodation Characteristics

## Section 5

market realisation that an increase in demand can be expected, coupled with the positive geographic and lifestyle attributes that Gladstone continues to offer. Increasing prices have also been attributed by some to the escalating building costs, and strong investor activity spurring prices (Property Research, 2008). Previous price increases are also likely to have been a result of readily available credit (i.e. affordable interest rates) and growth in the employment sector, including in regional areas such as Gladstone and its surrounds.

Residential property activity has been high in the Gladstone area over the last few years, with high demand for property from residents and investors. However, Heron Todd White (2008b) believe that Gladstone has passed the peak of the residential property cycle and is now in the declining market stage, with reduced new house construction and demand, declining house sales, and a significant number of listings. The volume of sales has reduced dramatically in the June 2008 quarter, with 135 total sales, down seven sales from the same time last year (Heron Todd White 2008(a)). Over 200 house and land properties were listed as “for sale” in the Gladstone Area (realestate.com, 7/12/2008).

### 5.6.5 Median Land Prices

Table 5-9 shows housing land prices for the Gladstone and Calliope<sup>16</sup> areas. A comparison is also provided with the Rockhampton, Mackay and Brisbane areas. Extended time series data was not available for the Roma and Central Highlands Regions<sup>17</sup>.

Table 5-9 and Figure 5-3 show that there has generally been an irregular net growth in median land prices in Gladstone and Calliope up until 2007 (Calliope has increased from \$62,000 in December 2002 to \$150,000 in December 2007, while Gladstone has seen an increase from \$55,900 to \$185,000 for the same period). Similar patterns have been experienced in Rockhampton and Brisbane, but not in Mackay (where there has been a noticeable downturn in the median land value).

The value of the median land price in Gladstone and Calliope has been steadily increasing, notwithstanding recent declines in the number of sales (i.e. notably towards the end of 2007, when a Federal election took place and when interests were increased for home loans and the like). This can be clearly seen in Figure 5-3, which plots the actual median land values and number of sales.

<sup>16</sup> As known prior to amalgamation in March 2008.

<sup>17</sup> PIFU collects land median sale prices for those areas which have had strong demand in the past or which have had other strong economic activity taking place with the areas.

# Existing Housing/Accommodation Characteristics

## Section 5

Table 5-9 Median Land Prices<sup>18</sup>

Quarter	Calliope		Gladstone		Rockhampton		Mackay		Brisbane	
	Value	Sales (No.)	Value	Sales (No.)	Value	Sales (No.)	Value	Sales (No.)	Value	Sales (No.)
Dec. 2002	\$62,000	87	\$55,900	65	\$66,398	44	\$79,051	109	\$150,624	830
Mar. 2003	\$64,000	20	\$64,900	69	\$65,512	61	\$70,761	179	\$158,520	1009
Jun. 2003	\$69,000	10	\$66,000	39	\$59,441	41	\$72,888	141	\$178,222	988
Sept. 2003	\$79,000	40	\$73,900	48	\$63,506	51	\$72,928	241	\$195,360	884
Dec. 2003	\$79,000	23	\$85,000	83	\$62,476	55	\$83,088	165	\$238,128	521
Mar. 2004	\$97,000	34	\$78,000	34	\$66,313	74	\$97,256	143	\$255,129	428
Jun. 2004	\$55,000	10	\$82,500	38	\$61,508	49	\$119,650	136	\$231,013	563
Sept. 2004	\$118,000	10	\$89,500	46	\$67,993	74	\$117,884	141	\$222,901	508
Dec. 2004	\$95,000	4	\$78,000	18	\$86,669	54	\$121,550	85	\$256,284	298
Mar. 2005	\$70,000	33	\$105,000	84	\$98,500	109	\$127,613	206	\$227,309	664
Jun. 2005	\$69,000	25	\$91,900	62	\$100,255	100	\$149,488	112	\$234,000	741
Sept. 2005	\$75,000	28	\$97,500	41	\$110,028	90	\$158,009	127	\$243,742	667
Dec. 2005	\$107,000	19	\$107,500	47	\$114,963	102	\$203,156	86	\$255,816	473
Mar. 2006	\$116,000	51	\$117,500	56	\$123,777	68	\$181,289	70	\$245,399	649
Jun. 2006	\$73,500	48	\$107,900	71	\$141,572	53	\$234,816	53	\$260,712	588
Sept. 2006	\$85,000	47	\$110,000	94	\$172,615	87	\$222,596	73	\$261,603	592
Dec. 2006	\$90,000	29	\$108,900	93	\$167,006	52	\$209,779	52	\$259,131	560
Mar. 2007	\$170,000	30	\$120,000	111	\$179,000	49	\$224,547	53	\$257,173	833
Jun. 2007	\$105,000	70	\$155,000	61	\$220,792	36	\$189,262	42	\$265,338	852
Sept. 2007	\$133,000	49	\$190,000	63	\$200,906	16	\$197,390	61	\$296,851	620
Dec. 2007	\$150,000	18	\$185,000	39	\$230,905	19	\$187,964	56	\$289,109	392

### 5.6.6 Rental Accommodation

#### *Private Rental and Public Housing*

2006 census data shows that there are around 4,800 rented dwellings recorded. Discussion with property managers and council indicates that rental properties are in short supply, with the vacancy rate reportedly less than one percent (agent pers. comm., 2008; GEIDB, 2007). A search of realestate.com showed around 110 advertised 'for rent' (realestate.com, 7/12/2008). It has been suggested that current construction projects in the area are bringing new people to town and increasing demand for rental accommodation.

Gladstone has not experienced as sharp an increase in median rent prices for a three-bedroom house as other areas in the region. Given that Gladstone is well-situated on the coast and is a well-serviced town, it is likely that there is still scope for significant rent rises, based on figures for other centres of a comparable size and the rental housing market in Queensland overall.

Interestingly, Table 5-6 shows that the median rental price for a three-bedroom flat in Gladstone (\$320 per week in 2008) is greater than that for a three-bedroom house. This may be because of proximity advantages that exist with flats usually being located closer to CBD services, jobs and other services than some houses, which may be located on the outskirts of urban areas, and a resultant premium that some people may be prepared to pay for such benefits.

A key indicator of housing affordability is the proportion of income spent on accommodation. Appendix B.1 and B.2 show the percentage of households in Gladstone and Calliope Shires where accommodation accounts for 30% or more of gross income. This is considered a threshold level for high housing costs.

<sup>18</sup> Source: Planning and Information Forecasting Unit, Raw data used in Total Residential Land Activity Fact Sheet Sheets, September 2008.



## Existing Housing/Accommodation Characteristics

### Section 5

Council, Department of Housing and community groups noted that vulnerable groups within the community have difficulty in finding appropriate accommodation due to limited vacancies and high costs; however, the situation isn't as bad as it has previously been (pers. comm., B. O'Rourke, 2008; V. Laverick, 2008).

There are five crisis houses and a men's and women's shelter in the community. The Department of Housing (DoH) has around 750 units in the Gladstone area. Demand for housing assistance is high, with around 25–30 applicants a month. Currently there are 167 people on a waiting list for 28 low income housing units managed by Roseberry Management (pers. comm., B. O'Rourke, 2008; V. Laverick, 2008) (URS, 2006).

Council, Department of Housing and community groups noted that previous large construction projects in the area had a significant impact on housing availability and pricing in the region. The CAR 1 construction phase resulted in a jump in rents and house prices and decreased availability, which forced some low income households out of the area to lower cost areas (pers. comm., B. O'Rourke, 2008; V. Laverick, 2008).

### **Hotel and Motel Accommodation**

A range of hotel and motel 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.

Based on ABS data for tourist accommodation, there are currently 32 establishments (with five or more rooms) within the Gladstone Region (June, 2008). The combined number of rooms in these establishments is 825 rooms. Gladstone shire by itself has 598 rooms available, with a relatively high room occupancy rate of 71%, or approximately 425 rooms occupied on any single night. The 227 rooms available in Calliope Shire by itself have a lower occupancy rate, with around 120 rooms occupied on any given night (ABS, 2008). Occupancy rates are understood to be lower in the summer period, which is outside of the main tourist season. The average length of stay is almost two (1.8) days in Gladstone and almost three (2.7) in Calliope (refer Table 5-10).

**Table 5-10 Hotel/Motel Accommodation in Gladstone Region – June Quarter 2008**

	Establishments	Rooms	Bed Spaces	Room Occupancy Rate	Average length stay (nights)
Calliope Shire	9	227	751	52%	2.7
Gladstone Shire	23	598	1633	70.6%	1.8
<b>Total</b>	<b>32</b>	<b>825</b>	<b>2384</b>	<b>NA</b>	<b>NA</b>

Source: ABS, 2008 – 8635.3.55.001 – Tourist Accommodation, Small Area Data, Queensland, Jun 2008

A number of motel and hotel developments are being constructed or have been lodged as development applications with council. These developments, if brought to fruition, would increase the pool of short term accommodation.

### **Caravan Parks**

There are 12 caravan parks listed in the greater Gladstone area (GAPDL, 2008); however, the ABS data indicates that there are only seven. ABS data for the June 2008 quarter shows a total combined capacity of 800 sites. Gladstone recorded a high occupancy rate (79%) during the June 2008 quarter (refer Table 5-11).

Demand for caravan park style accommodation is seasonal, with the winter months being the period of highest demand. During the summer months, occupancy is much lower. The parks contain a large number of long term

## Existing Housing/Accommodation Characteristics

## Section 5

residents, which reduces the capacity of all the parks to operate as temporary accommodation for workers and the seasonal tourist influx (URS, 2006).

**Table 5-11 Caravan and Mobile Home Parks in Gladstone Region – June Quarter 2008**

	Establishments	On-site vans	Cabins, flats units and villas	Other powered/unpowered Sites	Total capacity	Site Occupancy Rate
Calliope	4	35	68	450	553	49.6%
Gladstone	3	45	65	137	247	79%
<b>Total</b>	<b>7</b>	<b>80</b>	<b>133</b>		<b>800</b>	<b>NA</b>
Roma	2					

### TAFs/CAFs

Currently there are no operational TAFs in the area. TAFs for previous projects such as the CAR1 project have been decommissioned. There have been several applications with Council for TAFs recently and one development has recently been approved (refer Table 5-12).

Gladstone Regional Council approved a TAF development in Calliope Shire in October 2008 for 240 units, and an operational works application for the development is expected to be submitted to council in December 2008. This is the first stage of the development run by The Maroon Group (TMG), which plans a 3,000 unit complex on the site at 101 Calliope Road (TMG, 28/11/2008). Council has granted preliminary approval for 2,025 units on the site. Council concerns about capacity of potable water and disposal of effluent prevented it from giving complete approval for the project (ABC 10/10/2008).

There are a number of other applications with council for TAF-style accommodation, as detailed in Table 5-12 below. Combined, these applications amount to almost 600 proposed units of accommodation. MAC Services Group had a contract with Rio Tinto Alcan to construct a 300-room TAF near Calliope for the Yarwun 2 project; however, the development has been cancelled. The first rooms were due to be completed by January 2009 (Mining News, 2008).

An issue for TAFs is the provision of infrastructure and services. Potential sites are often located a significant distance from services or the existing services do not have capacity to cater for such increased use, meaning that TAFs have to provide independent infrastructure to service the site.

## Existing Housing/Accommodation Characteristics

## Section 5

Table 5-12 Recent TAF Approvals and Applications<sup>19</sup>

Project	Details	Notes
101 Calliope River Road Accommodation Units	Development approval issued for 240 accommodation units 6/10/2008 on a 33ha site (Stage 1). Operational works application to be lodged shortly.	Primary issue is water availability. Approval limited to 240 units based on existing capacity.
101 Calliope River Road Accommodation (continued)	Preliminary approval for remaining 2,025 units. Application to be submitted at a later stage.	As discussed above, issues for further unit development dependent on sourcing water.
Stowe Road – Lot 13 RP616937	300 units. Operational works application lodged.	
(BSL) Dahl Road	Application for 450 units submitted 17/4/2008. <b>Withdrawn</b>	Will connect to sewer on Dahl Rd. and water on Old Tannum Sands Rd.
Awonga Dam Road – Lot 2 RP615267	Application for 140 unit development recently submitted in November 2008.	

### 5.6.7 Summary

A summary of the existing housing characteristics of the Gladstone region is as follows:

- The predominant housing type within the study area is the detached house. Semi-detached dwellings and apartments or units only represent a minor proportion of dwelling type; however, there are a number of higher density developments being constructed or proposed within the Gladstone CBD;
- Approximately 70% of dwellings are owned by the occupier / being purchased vs. 30% rented in Gladstone region;
- Gladstone region has had a strong property market for the last five years, characterised by high sales rates, high demand for housing stock and a strong increase in median house and land prices. Rental vacancy rates are understood to have been less than one percent and median rent prices have been steadily rising over the last five years. There is scope for significant further increases in rent;
- The property market has recently (2008) slowed, with a reduction in sales and increased listings. Median house and land prices have steadied or in some areas have dropped. In the longer term, the property market is expected to remain buoyant due to steady population growth that is expected to take up most available new and existing accommodation (sale and rent) in the local housing market;
- Based on the medium population growth scenario, Gladstone is expected to require a total of approximately 1,633 hectares of residential land over the next 25 years, which equates to a demand of 65.3 hectares per annum for 590 single dwelling houses and 98 multi-units per year. Calculations are based on present development patterns favouring single dwelling development. Based on the broad hectare residential land analysis projections until 2027, the existing land supply is likely to adequately meet the region's needs during the projected period;
- Approval rate figures for 2007 and 2008 suggest that the region has the capacity to meet the required approvals per annum to provide an adequate supply of dwellings to meet expected base demand over the

<sup>19</sup> Source: Gladstone Regional Council representative 2/12/2008

## Existing Housing/Accommodation Characteristics

### Section 5

next 25 years. There is an acknowledged shortage of skilled workers in the local building industry that may limit capacity to meet demand. Limited supply could also increase build times and costs;

- Lower income groups within the community have experienced difficulty in finding appropriate accommodation due to limited vacancies and high costs. Previous large construction projects in the area have had a significant impact on housing availability and pricing in the region, with some moving out of the area to more affordable locations;
- Demand for housing assistance is high;
- Hotel/motels and caravan parks are frequently booked out; and
- There are currently no TAFs in the area; however, there have been a number of approvals and applications made for TAFs in Calliope Shire. Issues for TAFs are the provision of infrastructure and services.

Santos has provided estimates for the projected workforces that are expected to be involved in construction and ongoing operational activities for the different project areas over the expected life of the project. A more detailed analysis of the workforce population has been provided in the SIA which forms an appendix to the EIS.

Table 6-1 presents the anticipated breakdown between local and imported workers for each area of the project. 'Local' refers to individuals living in the study area or within reasonable distance from the project. 'Imported' refers to workers brought in from outside of the region.

Santos' recruitment policy is to maximise local employment for all phases of the project. Limitations to local employment include limited labour supply, particularly in the skilled and trades occupations. This current skills shortage in the region is discussed in the SIA technical report. Santos is committed to training locals and will work towards the highest feasible proportion of locals working in all areas and phases of the project.

Some specialty skills and crews, particularly during construction, will be required and will need to be outsourced to sub-contractors. Sub-contractors will also be encouraged to employ locally first where possible.

**Table 6-1 Source of Workforce Assumptions**

Worker Location	CSG Fields		Gas Transmission Pipeline		LNG Facility	
	Construction	Operations	Construction	Operations	Construction	Operations
Local workforce	10% (5–15%)	50% (45–55%)	<5% (0–5%)	90% (85–95%)	35% (30–40%)	60% (55–65%)
Imported workforce	90% (85–95%)	50% (45–55%)	~100% (95–100)	10% (5–15%)	65% (60–70%)	40% (35–45%)

Housing/accommodation demand can be considered in a number of different ways. The GLNG project will have both temporary workforces associated with the construction phases of the project and a permanent operational workforce. These two workforces will be opposite to each other, insofar as the construction workforce is expected to build up early in the life of the project to a peak and then rapidly decline to zero once construction is complete. The operational workforce will gradually build up as more and more of the project "comes on line", building to its expected peak level and then remaining fairly constant for the life of the project (assuming that operational workforce requirements will remain the same over time).

Competition for specialist labour, the offer of high incomes, and an increasing propensity for people to be prepared to travel has also led to an increase in the prevalence of "Fly In, Fly Out" (FIFO) and "Drive In, Drive Out" (DIDO) arrangements for employees. This has had a significant bearing on the relationship between the choice of a worksite and that of a home.

The variation in job permanency and FIFO/DIDO opportunities has a significant bearing on the style of housing that can realistically be considered as a means of accommodating the different workforces.

## 6.1 CSG Field Study Area

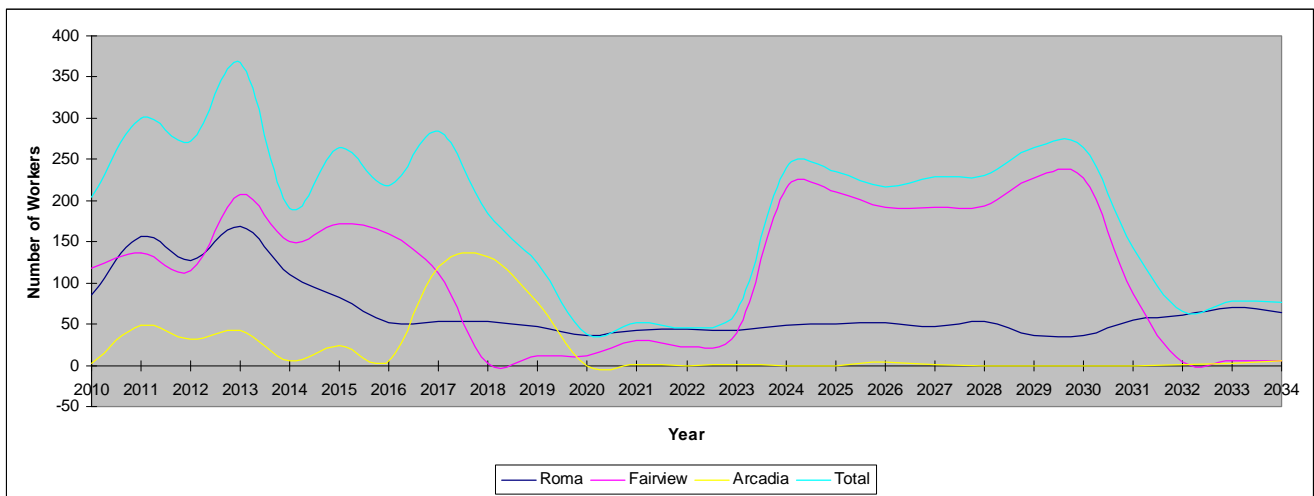
### **Construction Workforce**

Figure 6-1 depicts in chart form the forecast workforce populations for the Roma, Arcadia Valley and Fairview CSG fields and for these three areas as a whole. There are two distinct peak periods. The first is between 2008 and 2020. The second is between 2023 and 2033. Workforce projections for other fields within the GLNG project will be developed once appraisal programs of those fields are completed and CSG outputs determined.

## GLNG Workforce and Accommodation Details

## Section 6

Figure 6-1 CSG Field Study Area Construction Workforce



Workforce details are broken down as follows:

- Construction workforce for the CSG Field study area is likely to reach a maximum of 368 personnel in 2013, decline to approximately 39 in 2020, and then increase again to 264 in 2030;
- Approximately 10% of the CSG construction workforce (36 workers) will be sourced from the local area and approximately 90% of the CSG construction workforce (331 workers) will be from outside of the local area;
- Workers will be on a *two week on, four day off* roster, with most workers (both local and imported) staying at the TAF during the roster; and
- Some resident workers may return home daily. Approximately 33 imported (10%) will stay in rental or hotel accommodation in Roma and other nearby centres such as Chinchilla, Miles or even Toowoomba.

### Operational Workforce

Figure 6-2 depicts in chart form the increase of the operational workforce for the CSG Fields up to year 2034. Workforce details are broken down as follows:

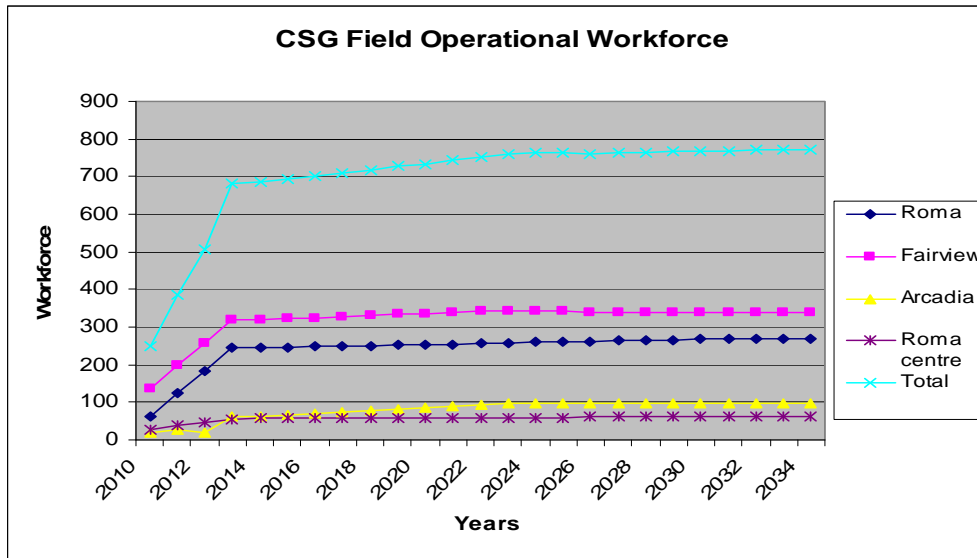
- The operational workforce for Roma, Fairview and Arcadia Valley CSG fields is expected to increase sharply up until about 2014/2015 and then increase at a less rapid rate thereafter to a peak of approximately 770 persons during 2032;
- Approximately 50% (380 workers) of the operational workforce will be sourced from within the local region while the other half of the workforce will come from outside the area on a FIFO/DIDO arrangement. Local workers are expected to have existing accommodation in the area. Some FIFO/DIDO workers may move into the local area to become residents over time; and
- Field workers will be on a *two week on, four day off* roster and the majority of workers (both local and non-imported) will stay at the TAF during their roster;
- Santos anticipates approximately 26 employees from Roma Centre in 2010, increasing to 54 by 2014. This workforce is shown as *Roma Centre* in Figure 6-2. The exact numbers for each position are not finalised. It has been assumed the ratio for local and imported workers required will be approximately 50:50. All Roma

## GLNG Workforce and Accommodation Details

## Section 6

Centre staff are assumed to reside in Roma or Roma Regional Council, so 50% (27 workers) will relocate to the area.

**Figure 6-2 CSG Fields Operational Workforce**



### Families and Partners

Few families/partners of the imported workforce are expected to move into the area, given that most workers will be FIFO/DIDO and on long roster rotations. However, some long term workers may bring their families into the area and become residents themselves. Local workforce and their families are assumed to have existing accommodation in the area.

## 6.2 Gas Transmission Pipeline Corridor

### Construction Workforce

A construction workforce of up to approximately 1,000 is anticipated during the construction of the gas transmission pipeline. They are expected to work 10 hours per day, 7 days per week with no night-time construction activity. Crews would typically work for four weeks followed by four weeks off on a rostered system.

Due to the mainly rural nature of the region and the limited number of townships along the proposed gas transmission pipeline route, existing accommodation is not readily available. Hence dedicated workers' accommodation facilities will be required.

It is estimated that the pipeline construction will last approximately 21 months (start Q2 2011 and end Q1 2013). The first three months will involve mainly clear and grade activities, mobilisation and construction ramp-up. The main construction activities would take approximately 15 months with the last 3 months involving construction ramp-down, rehabilitation and commissioning. During the ramp-up and ramp-down periods the workforce will be approximately 500 but will increase to 1,000 during the main 15 month construction period.

The workforce will be accommodated in a series of main and satellite accommodation facilities. There will be three main accommodation facilities located roughly equidistant along the pipeline. Facilities 1 and 2 will operate for half of the time and then facilities 2 and 3 will operate for the other half. There will be up to 500 workers accommodated in the two main accommodation facilities. In addition, two smaller satellite accommodation



## GLNG Workforce and Accommodation Details

## Section 6

facilities will be located between the main facilities. They will operate one at a time and will accommodate up to 100 workers (note: the accommodation facilities will rarely be at full capacity, which allows workers to move between accommodation facilities as required during the project).

An additional 100-person accommodation facility will be provided near Friend Point for the pipeline crossing from Friend Point to Laird Point.

The exact locations of the accommodation facilities will be determined during the detailed construction planning phase. Santos will work closely with relevant government authorities in regard to this issue. Site selection criteria to be used in selecting the locations include:

- Satisfies requirements of the relevant local government planning schemes;
- Appropriate standard of road access;
- Suitable distance away from a watercourse;
- Minimal site works required; and
- Potential to access main electricity grid if required.

Key components of the workers accommodation facilities will include:

- Air conditioned demountable style accommodation units;
- Ablution units;
- Dining and cook houses;
- Offices;
- Cold room;
- Fuel storage area;
- Vehicle / equipment wash down facility;
- Level earthwork pads; and
- Fencing and access roads.

Potable water for accommodation requirements will be sourced from local potable water supplies. All necessary permits will be sought from the relevant authority for the supply of water.

Sewage wastes will be treated in a mobile package sewage treatment plants. Treated plant effluent will be disposed of by irrigation in accordance with the relevant authority requirements.

A DA would need to be lodged with relevant regional Council for the development. TAFs are considered code assessable development under Bauhinia, Banana and Calliope planning schemes. The facilities would be designed to be safe as practicable and will meet all applicable Australian standards and regulations. These will be addressed when a development application (DA) is submitted to the Council.

### **Operational Workforce**

There will be 15 - 20 personnel required for operational and routine maintenance/surveillance activities. This will consist of 6 – 8 field-based maintenance and surveillance personnel, 4 panel operators, and the remainder being supervisors, engineers and managers. Most personnel will be located in Gladstone although there may be up to six located in towns along the pipeline route.



# GLNG Workforce and Accommodation Details

## Section 6

### Families and Partners

No families/dependents associated with the construction workforce are anticipated to move into the area.

## 6.3 LNG Facility Study Area

### 6.3.1 Workforce

#### Construction Workforce

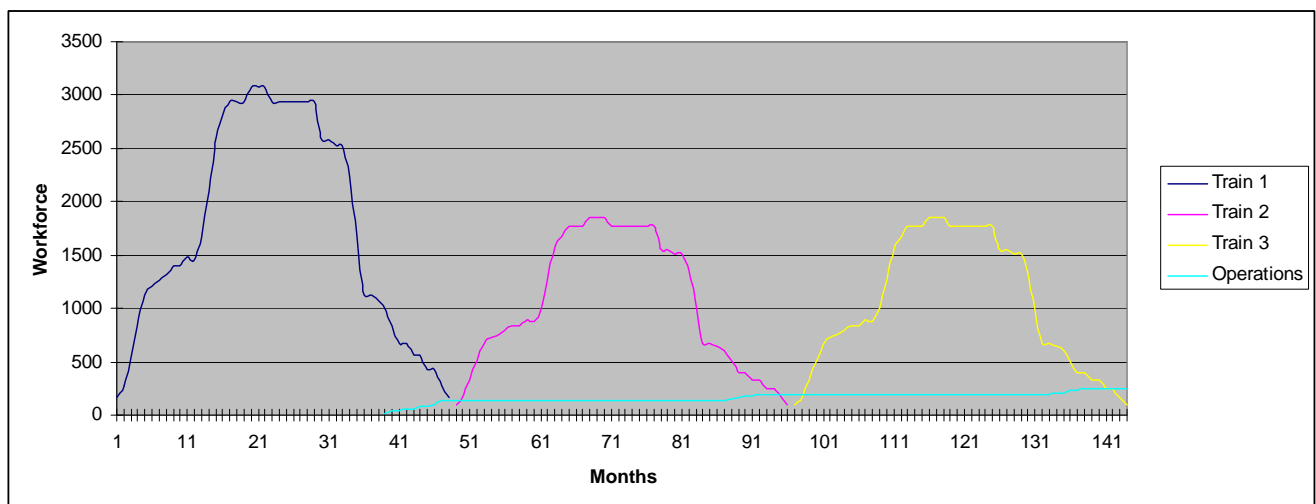
Three distinct phases are associated with construction of the three trains at the LNG Facility on Curtis Island. There will be up to 3,080 construction workers involved during construction of the first train (peaking year two). Phases 2 and 3 are both expected to have up to a maximum of 1,840 construction workers at their respective peaks (years six and ten). Construction activity for each train is expected to be completed 48 months after initial commencement (refer Figure 6-3).

Approximately 65% of the construction workforce is expected to be sourced from outside of the local area, due to the existing labour shortage, particularly for skilled trades people. Imported workers will be on FIFO/DIDO work arrangements. Table 6-2 shows the breakdown of local and imported construction workers. Figure 6-3 shows in chart form the total construction workforce over time.

**Table 6-2 Breakdown of Local and Imported Construction Workforce at Peak Periods – LNG Facility**

Project Year	Year 2 (train 1)	Year 6 (train 2)	Year 10 (train 3)
Nominal Year	2011	2015	2019
Local Workforce (35%)	1080	646	646
Imported Workforce (65%)	2000	1201	1201
<b>Total Construction Workforce</b>	<b>3080</b>	<b>1848</b>	<b>1848</b>

**Figure 6-3 Construction and Operation Workforce - LNG Facility**



## GLNG Workforce and Accommodation Details

## Section 6

### Operational Workforce

Operations will commence from year four (nominally 2014) with an initial workforce of 140. The workforce will gradually increase to a peak of 250 workers at peak capacity. Santos expects that at least 60% of the operational workforce will be recruited from the local area. The operational workforce recruited from outside of the area (40%/100 workers) are expected to move into the Gladstone region on a long term/permanent basis.

Project Year	Year 4	Year 8	Year 12
Nominal Year	2013	2017	2021
Local Workforce (60%)	84	120	150
Imported/New resident (40%)	56	80	100
<b>Total Construction Workforce</b>	<b>140</b>	<b>200</b>	<b>250</b>

### Families and Partners of the Workforce

This study has assumed that few of the imported construction workforce will be accompanied by their partners or families. Imported workers will be on FIFO/DIDO work arrangements, and will usually return home to their families (outside of the local area) at the end of their work roster. As workers will be located in a construction accommodation facility (CAF) during their work roster, there is reduced incentive for families/partners to move to accompany workers into the area.

It is acknowledged however, that long term employment opportunities in the Gladstone region may attract some families/partners of imported construction workers into the area. This group has potential to significantly affect the housing market. In a scenario where 10% of imported workforce were accompanied, around 200 units of accommodation would be required in construction year two, to meet the needs of this group. This would have significant implications on the already limited supply of rental housing and inflate housing prices.

Some of the operational workforce moving into the area will be accompanied by their partners and families. Based on 100 construction workers moving into the area, there may be up to 100 families accompanying these workers, moving into the local area.

### 6.3.2 Construction Workforce Accommodation

A number of options were considered for providing accommodation for the LNG Facility construction workforce, including:

- CAF development on the Curtis Island LNG Facility site to accommodate the majority of the construction workforce;
- CAF development (single or multiple CAFs) on the mainland accommodating the majority of the construction workforce;
- Split between CAF on the Curtis Island LNG Facility site and CAF on the mainland;
- Utilising existing housing (through rental and/or purchase) and hotels, and developing additional accommodation as required; and

## GLNG Workforce and Accommodation Details

## Section 6

- Accommodating workforce on a former passenger liner within Port Curtis or seaward from the LNG Facility (Float-tel).

### **CAF Curtis Island**

Santos' favoured option is to develop a CAF on Curtis Island within the LNG Facility area. The CAF will have a capacity of around 2,000, sufficient to accommodate 100% of the rostered on construction workforce. Both the local and imported construction workforce will stay at the CAF during their work roster.

Reasons for accommodating the majority of the construction workforce at the site on Curtis Island include logistical and economic efficiency; minimising contact and disruption to the community; and improving health and safety by minimising transportation requirements.

Workers will stay at the CAF for the 10 day working roster and then be transported back to a designated point in Gladstone by ferry and charter bus for their four days off.

Workers would be housed in modular structures, catering for one worker per unit. Some units may be designed to allow for workers and their partner if they are working on-site also. Each unit would include a private toilet, shower and sink (Maunsell, 2008b). Standalone ablution facilities will also be constructed. Water supply, waste and sewerage management are discussed below.

There would be a mess hall featuring kitchen/cafeteria, dining hall and break area. The kitchen would be designed to the relevant standards set out by the *Health Act 1911*. The dining hall would have a capacity of 500 persons (Maunsell, 2008b), allowing capacity for non-TAF-based workers to utilise the facility during lunch roster. Break rooms would include several refrigerators, microwaves and other cooking appliances to allow workers to prepare their own meals.

Indoor and outdoor recreation facilities will be provided for workers and could include a pool, volleyball and basketball court, billiards room, television, reading and eating area, etc. Internet, phone, printing and fax facilities should be provided (Maunsell, 2008b).

Appendix 3 shows two potential layouts of a CAF. The CAF would provide "*accommodations including housing, dining, logistics, and recreation facilities for the residents*". The TAF will also provide essential services such as "*water supply, sanitation and waste management. Other general facilities will include an administration office, contractor construction office trailers, vehicle parking and service areas*" (Maunsell, 2008b).

Provision of essential services are summarised below:

- Potable water may be sourced by a number of methods such as modular desalination unit, treated groundwater, or bulk water delivery via bladders from the mainland. Water would be stored at a bulk storage reservoir and connect across the site and TAF via a water pipeline distribution system. Reuse and recycling of water will be considered where possible (Maunsell, 2008b). Water on-site would meet required standards set out in regulations;
- Power would supplied by an on-site generator. Backup facilities would be installed;
- Sewerage would be treated using either portable packaged sewerage system or on-site lagoons/septic fields, or be transported to an offsite treatment facility (Maunsell, 2008b);
- Waste would be appropriately separated and stored on-site before being collected and taken back to the mainland by ferry to a suitable waste facility.

# GLNG Workforce and Accommodation Details

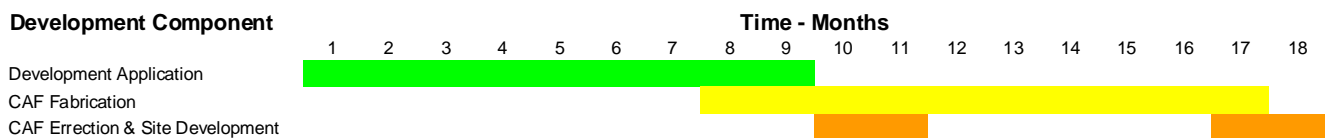
## Section 6

The facilities would be designed to be safe as practicable and will meet all applicable Australian standards and regulations. These will be addressed when a development application (DA) is submitted. A management procedure that adheres to regulations and Australian standards will be developed for operational aspects of the CAF, detailing fire safety; disease vectors, vermin controls and weed management; waste management; food preparation and storage; and hygiene. The Environmental Management Plan (EMP) for the CAF will cover the above aspects and other factors such as dust and noise control around the site.

It is likely that the CAF will be outsourced to a contractor to build, and there are several contractors who specialise in CAF development. Management and maintenance of the facility would likely to be outsourced to a third party vendor and aspects such as catering, waste management, goods supply etc. may be separately contracted out. Detail on personnel required to service and maintain the CAF would be provided when preparing a DA for the development.

Figure 6-4 provides an estimation of the time required to develop a CAF from approvals through to turn-key development. This is indicative only. Approval and construction times are dependent on a range of site and project specific factors. The figure indicates that a significant lead-in time (over two years) is required for a CAF to be ready for use.

**Figure 6-4 Estimated Timeframe for CAF Development<sup>20</sup>**



A D.A. addressing GSDA development scheme would need to be lodged to the coordinator general. Accommodation facilities are not identified in the scheme as suitable land use. As such a CAF falls under column 2c of Schedule 7 – “uses that are considered likely to compromise the purpose of the land use designation”.

Other assessable components of a CAF development such as building and operational workers would be assessed under the Calliope Planning Scheme. The scheme designates TAF development as “Workers Accommodation – Residential Temporary”, which means the use of premises comprising any group of dwelling units and rooming units for the purpose of accommodation of a temporary nature for employees, and their families or dependants, of major industrial projects.

The CAF development requires a code assessable DA. Table 6-3 shows the applicable codes for assessment within the planning scheme and the likely State Planning Policies (SPPs) that would also need to be addressed. Based on the size, location and operational requirements of the CAF (e.g. on-site septic system, self-sufficient water supply etc.), the DA would likely be referred to state government agencies for assessment.

Integrated Development Assessment System (IDAS) timeframes and recent DAs of other CAFs indicate that the DA would take at least six to nine months from submission to decision stage. Alternative development sites

<sup>20</sup> Estimate only. DA timeframe will vary depending on a number of factors, including the complexity of the DA; the number of referral agencies involved; the level of detail involved in any information request; and the proponent’s response to an information request. TAF fabrication time is based on construction of 200 rooms per month. Fabrication could commence during application stage if Santos is confident of a suitable development approval. For this figure – SPQ (single person quarter) refers to TAF (temporary accommodation facility)

## GLNG Workforce and Accommodation Details

## Section 6

would require a similar DA process if they were located in the rural zone in Calliope Shire. TAF development in Gladstone City is unlikely to have support of the council (discussed below).

**Table 6-3 Calliope Shire Council Development Assessment Requirements for TAF**

Area/Zone	Assessment Level	Applicable Codes	Overlay Codes	SPP
Rural locality/rural zone	Carrying out building work not associated with a material change of use; Carrying out operational work not associated with reconfiguring a lot- Code	- Gladstone State Development Area Locality Code Relocatable Home & Caravan Park Code; - Rural Locality Code; - Environment & Infrastructure Code; - Reconfiguration of Lot Code; - Environmental and Infrastructure Code; - Op. Works (Earthworks).	- Bushfire Management; - Coastal Management and Biodiversity; - Acid Sulfate Soils.	1/92; 2/02; 1/03

(Source: Calliope Shire Council, 2008)

MAC Pty Ltd, a leading TAF construction and operational management company, can fabricate around 110 rooms per month, but also utilises outside suppliers when demand exceeds production capacity (MAC, 2008). Other TAF construction companies quote similar construction capacities. Based on a production rate of 110 rooms per month, fabrication of 2000 CAF units would take around 18 months. A production rate of 200 rooms per month would take around 10 months.

Site development and CAF installation could take three to four months, given the logistical arrangements required on Curtis Island. Some site works for the CAF could commence as part of the LNG Facility site development, which would reduce the overall timeframe of the CAF development.

### 6.3.3 Operational Workforce Accommodation

It is assumed that the locally recruited operational workforce will have existing accommodation arrangements in the region. The workforce recruited from outside of the local area will move in permanently or on a long term basis and will seek residential accommodation.

## GLNG Workforce and Accommodation Details

## Section 6

Table 6-4 shows the amount of residential accommodation required.

GLNG Workforce and Accommodation Details

Section 6

Table 6-4 Residential Housing Required for Newly Arrived Operational Workforce

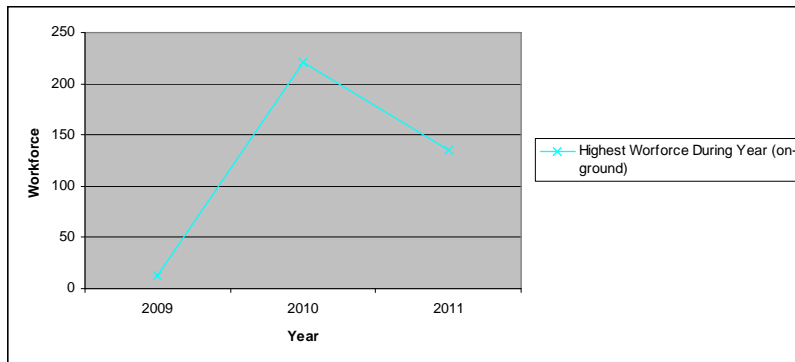
	Project Year/Nominal Year													
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Additional housing units required	0	0	0	56	56	56	56	80	80	80	80	100	100	100

6.4 Potential Bridge and Access Road

A concept design has been prepared for a potential road and road bridge providing access to Curtis Island between Friend Point on the mainland and Laird Point on Curtis Island. The potential bridge and access road is the base case considered in this EIS for access to the LNG facility on Curtis Island. However, it is possible that the road and bridge may not be built (regulatory agencies are still in the process of assessing this option).

Construction of the bridge and road would commence prior to construction of the LNG facility and take around three years to build. The on-ground workforce would peak at around 220 workers during year two of construction. The majority of the workforce are expected to be contractors from outside of the local area. The workforce would likely stay in a TAF during their work roster.

Figure 6-5 Construction Workforce for Potential Bridge and Access Road



## Assessment of Housing Demand and Supply

## Section 7

### 7.1 CSG Field Study Area

The GLNG project is expected to have minimal impact on the existing and forecast accommodation requirements of Roma and the surrounding region.

During construction, Santos has estimated that approximately 90% of imported construction workers will stay in TAFs, with the remaining 10% (around 37 workers) staying in rental or hotel accommodation in Roma and other nearby centres such as Chinchilla, Miles or even Toowoomba. This is likely to only have a negligible impact on the availability of rental accommodation, as the impact will be spread over a 25 year timeframe and the "maximum" impact is not expected before 2013 (i.e. four years from now). Other factors (such as rental costs) should not be adversely affected.

During operations, Santos has estimated that 50% of the workforce (in the order of 380 workers) will already reside in communities within the region (including communities from Toowoomba to Emerald). Field workers will generally stay at TAFs during their shift operations.

50% of field workers will operate on a FIFO or DIDO basis and will stay in TAFs during their roster, therefore not affecting residential accommodation in the local area. Again, there may be increased demand on hotel/motel accommodation if required by the imported workforce.

Approximately 50% (27 staff) are expected to relocate to the Roma area to work in administrative and managerial roles based out of Roma. There is sufficient land available for residential development to meet this demand should existing housing stock not be available.

While most imported workers will be DIDO/FIFO workers, some may eventually move into the area with their families. The rate of this potential movement will be small and will be aligned with the availability of additional accommodation. In summary, it is expected that the overall impact of the GLNG project on residential accommodation within the CSG field study area will be minimal.

The increased demand on hotel/motel accommodation could be an issue, given that many hotels/motels are already frequently booked out. Hoteliers report that this is in part due to groups booking large quantities of rooms in advance. Sometimes the rooms are not required but groups do not cancel their bookings, meaning rooms are left unoccupied. The ability of the business sector to build and operate additional motel accommodation, given firm demand from the project workforce, is assessed as reasonably high.

### 7.2 Gas Transmission Pipeline Corridor

Almost all gas transmission pipeline construction workers will be accommodated in a series of self sufficient TAFs erected along the gas transmission pipeline route, thus having minimal or no impact on accommodation in the area. There are a series of criteria on selecting appropriate sites to minimise impacts to surrounding residents and the environment.

The ongoing operational workforce for the gas transmission pipeline component is expected to be around 15-20 persons involved in maintenance work along the gas transmission pipeline route. In summary, there will be a negligible impact on housing demand and supply associated with the gas transmission pipeline component of the project.



## Assessment of Housing Demand and Supply

## Section 7

### 7.3 LNG Facility Study Area

#### 7.3.1 Construction

The construction phase will have minimal impact on housing demand and supply, as all workers will be located on a CAF and the imported workforce will be on FIFO/DIDO work arrangements, returning to their homes at the end of the roster. Few families/partners of the imported workforce are expected to accompany workers into the area.

There may be some increased demand for short term accommodation (i.e. hotels, motels, units etc.) for those workers who opt to stay in the area when their roster finishes. There is sufficient supply and availability of hotels to accommodate for this demand.

The following section assesses feasibility of the proposed CAF.

#### **CAF**

As discussed in 6.3.2, Santos proposes to develop a CAF on Curtis Island within the LNG Facility site. The CAF would have a capacity of around 2000, which would enable the full workforce to stay on the island during their work roster. Reasons for this option include logistical and economic efficiency; minimising contact and disruption to the community; and health and safety improvements by minimising transportation requirements.

Discussion between the proponent and government, industry groups and the community shows there are a range of views on developing and using CAF for workforce accommodation. CAF-style accommodation is recognised by Gladstone Regional Council as being required in the region to meet workforce accommodation demand. Calliope Shire<sup>21</sup> is seen as the favoured area for this style of development. CAF facilities within Gladstone City<sup>22</sup> have not had the support of the Council.

Previous discussion with the Department of State Development/Department of Infrastructure and Planning (DIP) has indicated that the department may support the development of a workforce accommodation facility on Curtis Island as a sequential land use option. Post-construction, the facility could be handed over for management by another entity, including use for other industrial development in the Curtis Island GSDA precinct (URS, 2007).

The GEIDB<sup>23</sup> is generally supportive of the creation of a workforce accommodation facility located within Gladstone and in reasonable proximity to the development site. Establishing a facility on Curtis Island was not considered to be a preferred option, due to a perceived lack of infrastructure and services, and potential difficulties in gaining development consent from the EPA (URS, 2007).

The CAF would require assessment under the GSDA development scheme and Calliope planning scheme and would likely be referred to State government agencies for assessment. The location and size of the development, regulatory approval process, and stakeholder attitudes to such a development are likely to entail a lengthy application process period of a minimum six to nine months.

The CAF development will involve a lengthy fabrication and construction process. As discussed in Section 6.3.2 this could be as long as 18 months if fabrication is limited to one supplier. Given the time involved in

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<sup>21</sup> Calliope Shire is within Gladstone Regional Council. Prior to council amalgamations in March 2007, Calliope Shire Council was a local government area (LGA).

<sup>22</sup> Gladstone Shire is within Gladstone Regional Council. Prior to council amalgamations in March 2007, Gladstone was an LGA.

<sup>23</sup> The Gladstone Economic and Industry Development Board (GEIDB) is the Queensland Government authority dedicated to facilitating investment attraction and project and infrastructure development for the Gladstone State Development Area (GSDA).

## Assessment of Housing Demand and Supply

## Section 7

development applications, fabrication and erecting the CAF, Santos will need to commence arrangements for CAF development to be ready in time for commencing construction of the project.

There is no existing infrastructure or services (including power, water or telecommunications) on the proposed development site. Section 6.3.2 provides initial details of the proposed provision of services, and further details will be provided when a DA is lodged for the CAF. Service provision will be a considerable logistical exercise due to the size of the CAF and location.

The current proposed CAF site is located on the LNG Facility site. Once LNG Facility construction is complete, some parts of the CAF may remain on site, such as lunch and canteen facilities, ablution blocks and some rooms. The majority of the facility will be decommissioned and removed off-site. Santos will liaise with government agencies and other stakeholders on post-use options. Previous discussions with DIP has indicated that the facility could be handed over for management by another entity, including use for other industrial developments in the Curtis Island GSDA precinct (URS, 2007). The facility would likely need to be relocated off Santos land if used by another entity.

Some potential workers may consider the requirement to stay at the CAF unreasonable and choose not to work on the Project, which could be an issue for the development given the existing skills shortage. However, CAF accommodation is becoming more accepted within the industry as a standard form of accommodation.

The CAF could be managed by an independent contractor specialising in operating and managing CAFs. The contractor would be responsible for ensuring the CAF meets the necessary legislative requirements and standards regarding health and safety and environmental management. CAFs provide local economic opportunities to service the needs of the CAF and the workers. Compared to a CAF located on the mainland, a CAF on Curtis Island will reduce some local economic opportunities. Local procurement policies are proposed to maximise local economic benefit.

Part of the reasoning for a contained CAF on Curtis Island is to minimise disruption and interference to the resident community. CAF rules and procedures will be in place to deter workers staying at CAF going to South End or other communities during their roster.

As discussed in Section 6.3, workers will be on a rotating *10 day on, 4 day off* shift which will result in a regular flow of workers to and from Gladstone. Workers will assemble at a location (away from urban areas) and then be shuttled by charter bus to and from a dock where the ferry takes workers to the project site. The proposed transport arrangements are intended to minimise traffic generated by the project and avert traffic congestion in the local area. The transport study within the EIS provides further details of this.

Most workers are expected to be on FIFO/DIDO arrangements and are not expected to stay in the Gladstone region during their rostered time off. However, some will likely stay during their time off and will likely seek short term accommodation options such as hotel/motels and caravan parks. As discussed in Section 5.6.6, there is a large tourist/short term accommodation stock in the Gladstone region (825 rooms/2384 bed spaces in Gladstone and Calliope Shires recorded in June 2008). Although high occupancy rates were recorded, there were 282 rooms and 328 on-site vans/cabins/sites available at any given time during the June quarter. Based on availability in the June 2008 quarter, a significant amount of accommodation demand generated by the project could be met by the holiday/short term accommodation stock.

### 7.3.2 Operations

Operational workforce will be required from project year four (2013). Workers sourced from outside of the local area are expected to seek long term accommodation. The number of workers from outside of the local area (and requiring long term accommodation) will gradually increase and peak in 2021, when around 100 units of

## Assessment of Housing Demand and Supply

## Section 7

housing are required. Based on the existing housing patterns of the area, this equates to around 10.3 ha of land required (refer Table 7-1).

The housing model (Appendix 1) indicates that there is likely to be a demand of at least 1643.33 ha (1633 ha base growth plus 10.33ha GLNG-generated) over the next 25 years. Predictions up until 2027 suggest that the existing land supply is likely to adequately meet the region's needs during the period covered by the analysis<sup>24</sup>.

Housing requirements for these workers will have minimal impact on supply and demand of existing housing stock in the area; however it is acknowledged that Gladstone already has a tight rental market, which could be affected. There is sufficient land stock available and the local building industry has capacity over the long term to meet demand for any new housing generated operational workforce.

**Table 7-1 Residential Housing and Land Requirements for 2021 Generated by Operational Workforce**

Accommodation Type	Total Number Units of Housing	Total Land Required
Residential - Single Unit Dwelling	90	9 ha (assumed density 10 dwellings per ha).
Residential - Multi Unit Dwelling	10	1.33 ha (assumed density 15 dwellings per ha).
Total	100	10.33 ha

<sup>24</sup> The Broadhectare Residential Land Analysis for the Gladstone region predicts that there is at least 2316 hectares of residential land available over the next 10 years.

## Cumulative Impacts of Other Projects

## Section 8

There are a number of key cumulative housing impact considerations that affect the project and others like it in the region. These include:

- Land for TAFs;
- Land for permanent dwellings; and
- Effect on housing supply and prices.

These are discussed in more detail as follows.

### 8.1 Land for TAFs

The cumulative impact of other projects which may also require such facilities can be considered in terms of multiples of the GLNG TAF requirements. In this regard, if every TAF is expected to require an equivalent area to that of the GLNG requirement, the overall area of land required could become significant. Additional TAFs could be expected to not only impact on rural land uses in terms of directly using land that could be otherwise used for rural purposes but also in terms of possible impacts on adjoining rural land uses.

Cumulative impacts are expected to be experienced in relation to services and infrastructure that are required to service other residential land. Gladstone Regional Council has already shown that this is the case in relation to town water supplies. Noticeable cumulative impacts may also be experienced in relation to the local road networks, depending on the extent to which TAFs are located within the same catchment that is serviced by any particular road.

The above comments are based on an assumption that all TAFs would be independent of each other when considering the cumulative impacts of several projects. In reality, it is feasible that projects will not just occur concurrently to each other and that projects may take place in a manner which will enable TAFs to be used for more than one project over extended periods of time without the need to create new sites.

Detailed consideration of such impacts is best undertaken as part of a development application assessment as part of IDAS under the Integrated Planning Act 1997.

### 8.2 Land for Permanent Dwellings

Cumulative impacts within the CSG Field study area must be considered in terms of the type of activity that is expected to occur in this area. For the purposes of this assessment, it is assumed that the area is only likely to be used for other similar CSG exploration and development projects. This type of use, as typified by the GLNG Project, is not expected to create a heavy long term housing demand. A number of additional projects will be constrained by the availability of sufficient gas fields. This is also likely to result in economies of scale being created with respect to workforces, especially if mergers or other partnerships are created to provide for more efficient extraction and maintenance methods. A similar situation is expected to apply to the gas transmission pipeline development.

Appendix B shows that the GLNG project represents a relatively small proportion of the residential housing demand for the Gladstone region as a whole (exclusive of the GLNG requirement). As in the case of TAF accommodation, permanent dwelling needs should be considered in terms of multiples of the GLNG impacts.

Given that Gladstone has a large supply of residential land, the principal impact will be in developing the existing supply of land more quickly than would otherwise be the case. Theoretically, and depending on the number of similar projects (i.e. in terms of impact on permanent residential demand), residential land may be

## Cumulative Impacts of Other Projects

## Section 8

fully utilised well before 2027 (when supply is expected to become critical, based on the region's 'own' growth needs).

### 8.3 Effect on Housing Prices

The issue of GLNG's impact on housing prices is not likely to be related to the supply of land. This is a matter that can be managed through some additional strategic planning. A more critical consideration will be that of the region's capacity to develop the necessary land and build the needed dwellings. As is the case with GLNG, the impacts are only likely to be felt early in the course of the individual projects. Critical times can be expected where the phases of projects overlap in terms of maximum worker requirements. Such a situation can be expected to create short term stress on housing availability. The extent to which this stress is maintained is dependent on the time that it will take to meet the demand. Any extended period during which the demand is high and supply of dwellings is less than that which is required is likely to have an impact on prices. As soon as the demand is catered for, there are also likely to be periods of decreasing demand after the 'spikes'. This is likely to have a steady or downward trending influence on housing availability and associated prices.

# GLNG Accommodation Strategy and Recommendations

## Section 9

The housing strategy for GLNG aims to address the key issues in relation to provision of project workforce accommodation requirements, and to minimise any potential impacts on the broader community. These key issues include:

- Minimising impacts on existing housing supply and affordability;
- Minimising impacts to the community, including low income households;
- Providing adequate accommodation for the project's construction and operational workforce;
- Considering accommodation requirements in relation to other planned developments in the area;
- Engaging in sustainable urban development that is consistent with strategic plans, policies and community expectations;
- Creation of new and diverse accommodation that will add to the permanent housing stock; and
- Addressing concerns relating to the impact of a large transient workforce on various stakeholders including lower income households during the GLNG construction period.

Aspects of the strategy relevant to the CSG field, gas transmission pipeline and LNG Facility are discussed below.

### 9.1 CSG Field

The Roma, Fairview and Arcadia Valley fields will primarily be affected by a large construction workforce and a small ongoing operational workforce.

The majority of construction workers (around 90%) are expected to be accommodated in TAFs near the field development, with the remaining 10% (approximately 37 workers) expected to be housed in the local community. These workers will either stay in motel accommodation or in rental properties under a long term lease by Santos.

The proposed locations of the TAFs have yet to be confirmed. Location criteria for TAFs include:

- Reasonable proximity to CSG fields;
- Appropriate standard of road access;
- Suitable distance away from watercourses;
- Minimal site works required; and
- Potential to access main electricity grid if required.

Dependent on location, the TAFs may be totally self-sufficient, with their own water supply, temporary waste disposal system, food and gas (for cooking) supplies, and power.

Santos would lodge a development application to the respective Council for approval of the TAF. The TAF would likely be operated and managed by a contractor.

The operational workforce for the three CSG fields is expected to reach a maximum of up to 770 persons by 2031 (with numbers gradually increasing to this level between the start of the project and 2031). Santos has estimated that approximately 50% (380 workers) will already reside within communities in the local region and

# GLNG Accommodation Strategy and Recommendations

## Section 9

thus not require accommodation. The remainder of the workforce will operate on a FIFO or DIDO basis and will stay in TAFs during their roster. Rosters will coincide with flight arrivals/departures to minimise workers requiring interim overnight stays while waiting for flights.

It has been noted that some companies/projects are advance booking hotel/motel accommodation which isn't required. It is recommended that Santos work with hotels in the area to develop a system which confirms hotel booking requirements, and allows hotel/motel units to be available for others if not needed for Santos.

### 9.2 Gas Transmission Pipeline

Almost all gas transmission pipeline construction workers will be accommodated in TAFs, with some staying in motel accommodation at towns along the route. TAFs will be provided during the construction of the gas transmission pipeline using a 'leap frog' process. A main TAF with a typical 300 person capacity will be established, and as the transmission pipeline is constructed smaller 'fly' TAF will be located at the point where it becomes inefficient to travel back to the main TAF every day.

The proposed locations for the TAFs have yet to be confirmed. Location criteria include:

- Appropriate standard of road access;
- Suitable distance away from a watercourse;
- Minimal site works required; and
- Potential to access main electricity grid if required.

The gas transmission pipeline contractor will liaise with local authorities and other stakeholders to identify appropriate sites for development. Development applications will be lodged with the respective Councils for the TAFs as required.

Each TAF will be totally self-sufficient with their own water supply, temporary waste disposal system, and food and gas (for cooking) supplies; however, the availability of local services and the capacity of these services will need to be considered. Land will be rehabilitated and remediated once the TAFs are decommissioned.

Most of the ongoing operational workforce for the gas transmission pipeline is expected to be sourced from the existing community.

### 9.3 LNG Facility

Most of the non-local workforce will be accommodated in the TAF on Curtis Island. During operation, approximately 60% of the workforce are expected to be sourced locally and are assumed to have existing accommodation arrangements. Members of the operational workforce recruited from outside the area are expected to require long term accommodation. GLNG actions to meet accommodation requirements include:

- Developing a TAF for the construction workforce;
- Stimulating construction of housing and short term accommodation such as hotels, motels and relocatable home parks;
- Considering acquisition or rental property leasing to accommodate some workers and their families; and
- Promoting accommodation for families outside of the Gladstone region.



# GLNG Accommodation Strategy and Recommendations

## Section 9

### 9.3.1 CAFs

Santos favours developing a CAF with a capacity of around 2000 persons on the LNG Facility site at Curtis Island. The CAF would accommodate the entire construction workforce.

#### **CAF Design and Development**

Planning for the CAF should commence as soon as possible. Santos will continue to liaise with relevant stakeholders (including Gladstone Regional Council, DIP, DoH and GEIDB) regarding TAF development.

Project design (in particular provision of services) should be further developed so that these details are available to be submitted with a development application.

The CAF is currently proposed on the LNG Facility site. Santos should consider liaising with key stakeholders to develop a CAF on GSDA land which could be used by other entities proposing industrial development on Curtis Island once Santos no longer requires the facility. Further details on decommissioning are discussed below.

The TAF will require a development application to be assessed by Gladstone Regional Council, DIP and other state agencies. Santos may consider seeking *preliminary approval* prior to a development approval to ascertain support for the TAF on Curtis Island. The development application will likely be referred to state regulatory agencies (including EPA, DNRW, DoH and QFRS) for comment. The approval process is expected to be at least six to nine months.

Santos should have alternative accommodation options available if the Curtis Island development is not supported by key stakeholders and/or the development application is not approved. Section 6.3 has discussed accommodation options.

The TAF will be designed to be as safe as practicable and will meet all applicable Australian standards and regulations. These will be addressed when a DA is submitted to the Council. The EMP for the TAF will cover environmental factors during construction and operation, such as dust and noise control, and weed management around the site. The EMP will also cover safety aspects for construction such as fire safety.

Santos will commence discussion with TAF building contractors well in advance of project commissioning. Fabrication and erection of the TAF may take as long as 28 months if utilising a single contractor. This timeframe may be shortened if multiple building contractors are engaged.

#### **TAF Operational Management**

A management procedure that adheres to regulations and Australian standards will be developed for operational aspects of the TAF, detailing fire safety; disease vectors, vermin controls and weed management; waste management; food preparation and storage; and hygiene.

The management procedure will also cover logistical arrangements and safety protocols for transportation of all the employees to and from work. Employees will park at a designated location suitably situated away from existing residential areas, from which point they will be transported by bus to the dock. A private ferry will then transport workers to a landing jetty on the Curtis Island LNG Facility site. Workers will be returned to the designated car park using the provided ferry and bus service. A development application will be prepared for the designated car park/muster area.

A rotation schedule is proposed for all employees, based on a 10 day work schedule with four days off. There will be a staggered rotation to minimise work disruption (Bechtel, 2008). This schedule and transport arrangements will minimise disruption to local residents and lower the overall safety risk by minimising travel.



## GLNG Accommodation Strategy and Recommendations

### Section 9

Management and maintenance of the facility would likely be outsourced to a third party vendor, and aspects such as catering, waste management, goods supply and the like may be separately contracted out.

Once construction of the LNG Facility has finished, some components of the TAF may remain, such as lunch and canteen facilities, ablution block and overnight rooms for operational staff. The majority of the TAF will be decommissioned. Santos will liaise with key stakeholders on post-use options including relocating facilities for use by other industrial entities on the island or providing affordable housing/relocatable home parks on the mainland.

#### 9.3.2 Residential Development

Operational workers recruited from outside of the local area are expected to reside in the area on a permanent basis, thus requiring long term residential accommodation. Accommodation requirements for this group begin around year four of the project.

Santos will liaise with the real estate industry, building industry, Council and other stakeholders so that they are aware of the likely demand and can plan for this. The local building industry may be able to increase capacity by sourcing workforce from outside of the region.

Supply of residential accommodation could include:

- Increase development of higher density multiple unit dwellings in the area, motels, hotels, and relocatable home parks. There is presently an increase in development of higher density dwellings in the Gladstone CBD; and
- Prefabrication of dwellings outside the region;

#### 9.3.3 Rental Property Leasing or Acquisition of Property

Santos may consider securing leases over existing rental properties in the Gladstone region or acquiring properties to provide accommodation.

#### 9.3.4 Holiday/Short Term Accommodation

Santos will consider discussing forecast accommodation requirements with the hotel/motel industry in the Gladstone region so they are aware of potential demand for rooms.

#### 9.3.5 Promotion of Accommodation Outside of the Gladstone Region

There are a number of benefits for families locating to towns outside of the Gladstone region, including greater supply of housing and lower rents, lifestyle choice, shopping, health services and educational choices. Suitable towns around the Gladstone region include:

- Rockhampton and Gracemere – 1.5hrs/110km north;
- Biloela – 1.5hrs/120km west; and
- Bundaberg – 2.5hrs/185km south.

## 10.1 Abbreviations

Abbreviation	Meaning
ABS	Australian Bureau of Statistics
CAF	Construction Accommodation Facility
CAR1	Comalco Aluminium Refinery Phase 1.
CBD	Central Business District
CQNM RP	Central Queensland – A new Millennium Regional Plan
CSG	Coal Seam Gas
D.A.	Development Application
DIP	Department of Infrastructure and Planning
DNRW	Department of Natural Resources and Water
DoC	Department of Communities
DoH	Department of Housing
EIS	Environmental Impact Statement
EPA	Environmental Protection Agency
FIFO/DIDO	Fly In-Fly Out/Drive In – Drive Out workforce
GEIDB	Gladstone Economic Industry Development Board
GLNG	Gladstone Liquid Natural Gas
GSDA	Gladstone State Development Area
IDAS	Integrated Development Assessment System
IPA	Integrated Planning Act 1997
LGA	Local Government Area
LNG	Liquid Natural Gas
MAC	Mining Accommodation Centre Services Pty Ltd
PIFU	Planning Information Forecasting Unit
Pop	Population
QFRS	Queensland Fire and Rescue Service
REIQ	Real Estate Institute of Queensland
RTA	Rental Tenancies Authority
SIA	Social Impact Assessment
SPP	State Planning Policy
TAF	Temporary Accommodation Facility
TMG	The Maroon Group Pty Ltd
ToR	Terms of Reference

## 10.2 Glossary

TAF – A term used to describe a particular type of non-private accommodation, usually provided to accommodate unaccompanied mining non-resident company workers and associated contractors. Most TAF accommodation centres are a form of hostel that typically consists of demountable dwellings (often referred to derogatively as ‘dongas’) arranged in a large TAF, although some establishments also contain permanent and semi-permanent dwellings. TAF accommodation is arranged with common messing, laundry and entertainment facilities and rooms that are cleaned and serviced by the operator. Occupants of TAFs are usually provided with all meals. Description based on Bowen Basin Population Report (DIP, 2007) for single person quarter accommodation.

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**Gladstone City Council Planning Scheme**

**Appendix A**

# Gladstone Housing Modelling

# Appendix B

## B.1 Natural Forecast Population Growth and Housing Demand

HOUSING DEVELOPMENT NEEDS		Year																										
MODEL - GLADSTONE		2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	
Base Population Estimates																												
PIFU Estimates	Low Growth Scenario	53941	55459.11	57019.95	58624.71	60274.64	61971	63219.84	64493.85	65733.53	67119.41	68472	69746.88	71049.57	72374.55	73724.16	75099	76520	77967.86	78443.16	80946.36	82478	83941.53	85431.03	86946.98	88469.79	90000	
	Medium Growth Scenario	53941	55663.25	57440.5	59274.49	61167.03	63120	64609.43	66134.01	67694.56	69291.93	70927	72491.45	74090.4	75724.62	77394.89	79102	80855.15	82647.16	84478.87	86351.19	88265	90138.92	92052.63	94006.97	96002.8	98041	
	High Growth Scenario	53941	55995.95	58129.18	60343.69	62642.55	65029	66987.08	69004.11	71081.88	73222.22	75427	77605.12	79846.14	82151.87	84524.18	86965	89452.92	92012.01	94644.32	97351.93	100137	102862.2	105661.5	108537	111490.8	114526	
Chosen Scenario Pop. Projections		53941	55663.25	57440.5	59274.49	61167.03	63120	64609.43	66134.01	67694.56	69291.93	70927	72491.45	74090.4	75724.62	77394.89	79102	80855.15	82647.16	84478.87	86351.19	88265	90138.92	92052.63	94006.97	96002.8	98041	
Chosen Scenario: <b>Medium</b>																												
GLNG Workforce																												
Total Estimated Resident Pop.		53941	55663	57440	59423	61475	63414	64775	66277	67933	69522	71081	72670	74365	75991	77585	79228	80981	82773	84605	86477	88381	90285	92178	94133	96129	98167	
Estimated Household Occupancy		2.7																										
Estimated Household Occupancy		1.8																										
Housing Dwelling Demand																												
Pop. Expected to Require Multi-Unit		10%																										
Pop. Expected to Require Single		90%																										
Base Pop.		5394	5566	5744	5927	6117	6312	6481	6613	6769	6929	7093	7249	7409	7572	7739	7910	8086	8265	8448	8635	8827	9014	9205	9401	9600	9804	
Pop. Expected to Reside in Multi-Unit Development			172	178	183	189	195	149	152	156	160	164	168	172	175	179	183	187	191	197	191	197	191	195	200	204		
Base Pop.		48547	50097	51698	53347	55050	56808	58148	59521	60923	62363	63834	65242	66681	68152	69655	71192	72770	74382	76031	77716	79439	81125	82847	84606	86403	88237	
Pop. Expected to Reside in Single Dwelling Houses			1550	1600	1651	1703	1758	1340	1372	1404	1438	1472	1408	1439	1471	1503	1536	1578	1613	1649	1685	1722	1687	1722	1759	1796	1834	
Base Pop.																												
Housing Land Demand																												
Multi - Unit Development		15																										
Single Dwelling Development		10																										
Assumed Population Density (persons per hectare)		27																										
Base Pop. Land Requirement (Ha) - includes existing stock		199.8	206.2	212.7	219.5	226.6	233.8	239.3	244.9	250.7	256.6	262.7	268.5	274.4	280.5	286.6	293.0	299.5	306.1	312.8	319.8	326.9	333.8	340.8	348.2	355.6	363.1	
Base Change on Previous Yr.		6.36	6.58	6.79	7.01	7.23	5.52	5.65	5.78	5.92	6.06	5.79	5.92	6.05	6.19	6.32	6.49	6.64	6.78	6.93	7.09	6.94	7.09	7.24	7.39	7.55		
Land Required for Multi-Unit Development		6.36	12.96	19.75	26.76	34.00	39.51	45.16	50.94	56.86	62.91	68.71	74.63	80.68	86.87	93.19	99.68	106.30	113.10	120.04	127.13	134.07	141.15	148.39	155.78	163.33		
Base Pop. Land Requirement (Ha) - includes existing stock		1788.0	1855.4	1914.7	1975.8	2038.9	2104.0	2153.6	2204.5	2256.6	2309.7	2364.2	2416.4	2469.7	2524.2	2579.8	2636.7	2695.2	2754.8	2816.0	2878.4	2942.2	3004.6	3068.4	3133.6	3200.1	3268.0	
Base Change on Previous Yr.		57.4	59.2	61.1	63.1	65.1	49.6	50.8	52.0	53.2	54.5	52.1	53.3	54.5	55.7	56.9	58.4	59.7	61.1	62.4	63.8	62.5	63.8	65.1	66.5	67.9		
Land Required for Single Dwelling Houses		57.4	116.6	177.8	240.9	306.0	355.6	406.4	458.5	511.7	566.2	619.3	671.6	726.1	781.8	838.7	897.1	956.6	1017.9	1080.3	1144.1	1206.6	1270.4	1335.5	1402.1	1470.0		
Base Pop. Land Requirement (Ha) - includes existing stock																												
Base Change on Previous Yr.		64	130	198	268	340	395	452	509	569	629	687	746	807	869	932	997	1063	1131	1200	1271	1341	1412	1484	1558	1633		
Total Cumulative Land Required by		1633																										
Single Dwelling																												
Average No. Dwellings Required Annually		590																										
GLNG Residential Land		0.70%																										

Gladstone Housing Modelling

Appendix B

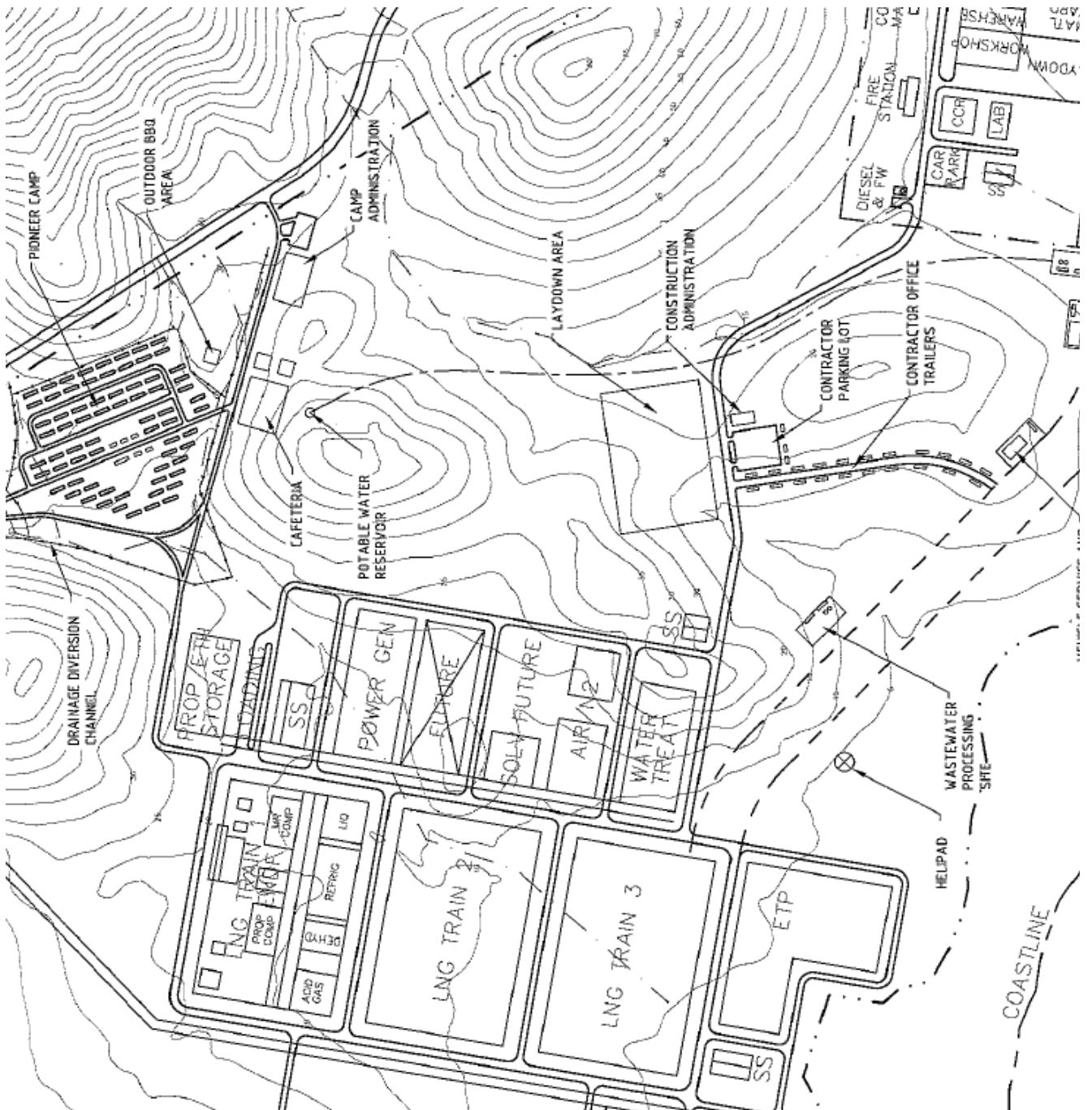
B.2 GLNG Generated Housing Demand

	GLNG Requirements																			
Year	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Nominal Year	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
SPQ Accommodation	1484	3080	2940	1120	890	1848	1764	638	890	1848	1764	638	0							
Non Resident	965	2002	1911	728	579	1201	1147	415	579	1201	1147	415	0							
Family/Partners of Non Resident Construction Force Requiring Housing	96	200	191	73	174	360	344	124	174	360	344	124	0	0	0	0	0	0	0	0
Newly arrived operational workforce requiring housing.	0	0	0	6	6	6	6	10	10	10	10	14	14	14	14	14	14	14	14	14
Total Residential Housing Required	96	200	191	79	200	366	350	134	184	370	354	138	14	14	14	14	14	14	14	14
Multi Unit Dwelling Split	10	20	19	8	20	37	35	13	18	37	35	14	1	1	1	1	1	1	1	1
Single Unit Housing Split	86	180	172	71	180	329	315	121	166	333	319	124	13	13	13	13	13	13	13	13

Land Required			
Assumed Dwelling Density (dwellings per hectare)	Multi Unit Dwellings	15	2.466667
	Single Dwelling Development	10	33.3
	Total		35.76667

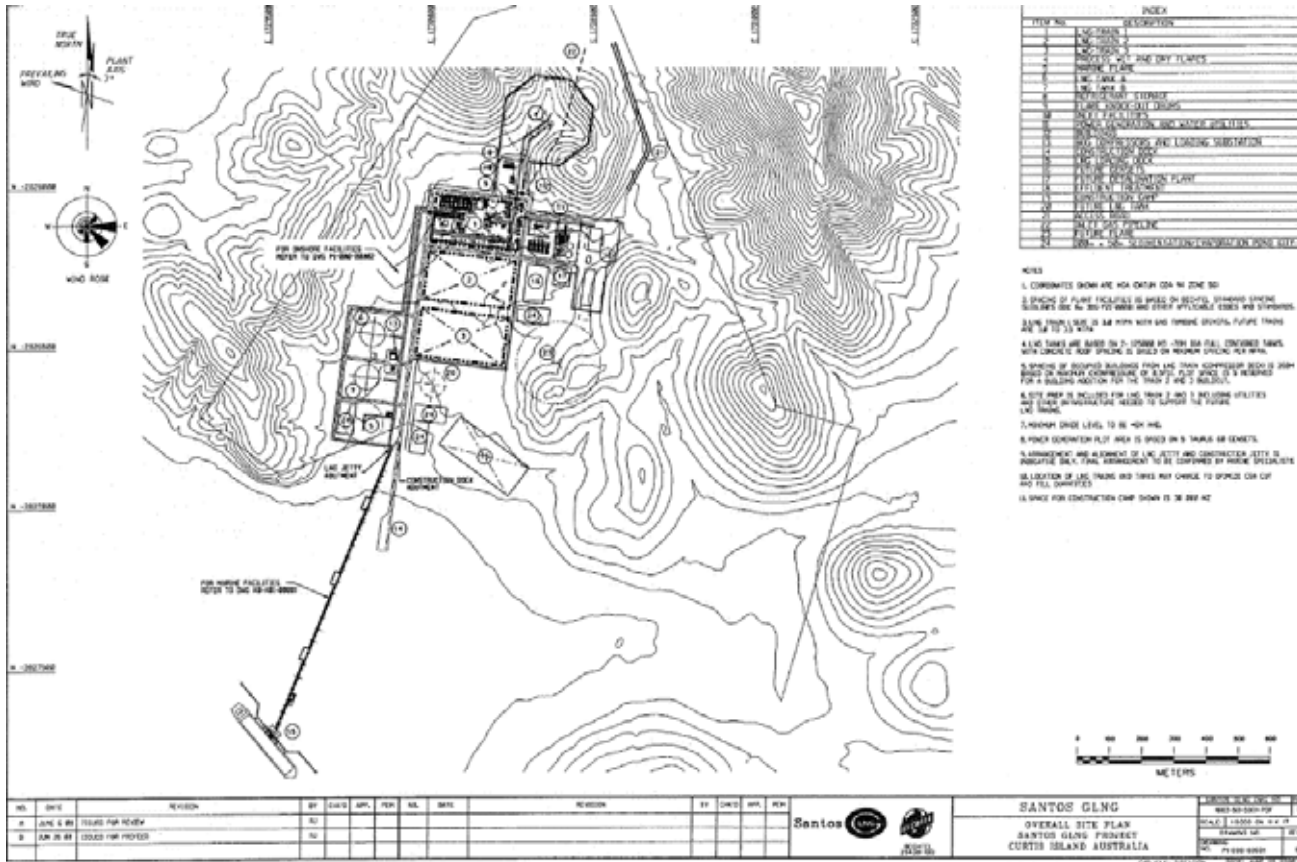


C.1 Curtis Island TAF Layout – C3MR Plan



(Source: Document Number C3MR (2008) Gladstone LNG Pre-FEED Study – LNG Pioneer Camp Early Input Report)

C.2 Proposed TAF Location Curtis Island- Cascade Optimal Process Design



## Local and Imported Worker Models

## Appendix D

# FINAL REPORT

## Local and Imported Worker Models

*Prepared for*

**Santos Ltd**

Level 14  
60 Edward Street  
BRISBANE QLD 4000

13 March 2009

42626223

The logo for URS, consisting of the letters 'URS' in a bold, blue, sans-serif font.

Project Manager:



.....  
Chris Sunderland  
Sociologist and  
Consultation Specialist

URS Australia Pty Ltd  
Level 16, 240 Queen Street  
Brisbane, QLD 4000  
GPO Box 302, QLD 4001  
Australia  
T: 61 7 3243 2111  
F: 61 7 3243 2199

Project Director:



.....  
Chris Pigott  
Senior Principal

Date: 13 March 2009  
Reference: Appendix D  
Status: Final

## Table of Contents

<b>1</b>	<b>Methodology and Assumptions .....</b>	<b>1</b>
1.1	Introduction .....	1
1.2	Methodology .....	1
1.3	Assumptions .....	1
1.4	Limitations .....	3
<b>2</b>	<b>Models Assumptions and Rationale .....</b>	<b>5</b>
2.1	Construction - Local to Imported Model .....	5
2.2	Construction - Local and Imported Model with Imported Flow-on .....	6
2.3	Construction - Anticipated Population Increase Model .....	7
2.4	Operations - Local to Imported Model .....	8
2.5	Operations - Anticipated Population Increase Model .....	9
<b>3</b>	<b>Models Used in the EIS and SIA .....</b>	<b>10</b>
3.1	Construction .....	10
3.2	Operations .....	12
<b>4</b>	<b>Scenarios .....</b>	<b>13</b>
4.1	Construction .....	13
4.2	Operations .....	20
4.2.1	Scenario 1: 50:50 Local to Imported Workforce .....	20
4.2.2	Scenario 2: 60:40 Local to Imported Workforce .....	20
4.2.3	Scenario 3: 90:10 Local to Imported Workforce .....	21
4.3	Conclusion .....	21

## 1.1 Introduction

The SIA used a ratio of 35:65 for local to imported workers for the construction of the LNG facility based on past project experience in the area and past models from the Department of Infrastructure and Planning (DIP). The SIA analysis was therefore centred on that assumption; however, Santos' plan to house the entire construction workforce (including locals) in the construction accommodation facility (CAF) on Curtis Island (within the LNG facility footprint) significantly changes the likelihood of who will move to the area. The models used were altered to capture the percentage of the flow-on employment opportunities generated that would require workers from outside the area during construction. This was done because there is very little incentive for workers from outside the Gladstone Regional Council area to move to Gladstone for employment because workers will be required to stay in the CAF during their on-site work rotation and therefore will not be able to return home daily. Whether residing in Gladstone, Rockhampton or Brisbane, workers would have the same level of exposure to their friends and family.

During operations a ratio of 60:40 for local to imported workers was used. The operations workforce is anticipated to all live in Gladstone, so imported workers would require local accommodation. Further details are presented in the relevant sections for construction and operations within this report.

This study explains the assumptions and rationale behind the local to imported workforce models, as well as the flow-on workforce models, and some alternative scenarios.

## 1.2 Methodology

The models developed for the GLNG EIS and SIA technical report were based on the Gladstone Growth Management Initiatives Model (GGMIM) developed for the Gladstone Pacific Nickel (GPN) Environmental Impact Statement (EIS). Consultation with the DIP determined that this model was no longer available (pers. comm., J. Beeson, 2008); however, in the absence of a new model, this model was deemed the best model to predict flow-on and imported workforces for Gladstone. Therefore, a series of assumptions and calculations were conducted to replicate the GGMIM for the GLNG EIS. This report outlines the assumptions and findings.

## 1.3 Assumptions

Assumptions are presented in the model section where they occurred to better enable the reader to understand the assumption and rationale.

In the GGMIM the construction and operations workforces were combined in the table to produce the findings. In the GLNG model they were separated because of the two fundamental differences:

- The construction workforce will be housed in the CAF on Curtis Island and therefore will have minimal direct access to Gladstone; and
- The operations workforce will be required to reside in Gladstone and therefore require local accommodation for imported workers and flow-on service providers and businesses.

The calculations used in the GGMIM for flow-on workers differed from strictly construction to construction and operations and these differences are reflected in the GLNG models for construction and operations. Santos has assumed that the data from these models will provide a valid representation of workforce multiplier effects.

It is important to note that the GPN EIS assumed that workers would be accommodated locally and not housed in a CAF isolated from the rest of the population as is the case with the GLNG EIS.

## Section 1

## Methodology and Assumptions

Table 1-1 shows the model used in the GPN EIS based off of the GGMIM:

**Table 1-1 GPN Direct and Imported Employment (six-monthly averages)**

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

Source: GGMIM, 2006

Table 1-2 shows the anticipated population increase in Gladstone/Calliope from the direct and indirect workforce from the GPN project. Once again it is important to note that the projected increase in population is a result of 100% of the workforce and flow-on workforce being required to be accommodated locally. It is also important to note that since the population increase is directly related to imported workers the value in the 'total estimate population increase' column is not compounding. In other words, the increases are as follows:

- Dec-07: 55;
- Jun-08: 1,028 (1,028 + 55 = 1,083);
- Dec-08: 953 (953 + 1,083 = 2,036);
- Jun-09: 1065 (1065 + 2,036 = 3,101);
- Dec-09: -888 (-888 + 3,101 = 2,213), etc.

However, because there is no way to determine if the skill requirements remain constant, it was assumed that the total estimated population increase could potentially be that value for each six month interval. In other words, the project may not require cement crews anymore, but they would still need to import workers for iron working, etc. the following six month interval.



# Methodology and Assumptions

## Section 1

**Table 1-2 Anticipated Population Increase in Gladstone/Calliope from Direct and Indirect Workforce**

Six months to	Imported Workers	Associated Persons			Total Estimated Population Increase
		Single Status Workers	Workers Accompanied by Partner	Workers with Families	
Dec-07	30	8	17	5	55
Jun-08	593	160	338	95	1,083
Dec-08	1115	301	635	179	2,036
Jun-09	1698	458	968	272	3,101
Dec-09	1212	327	691	194	2,213
Jun-10	723	195	412	116	1,321
Dec-10	414	112	236	66	756
Jun-11	275	74	157	44	502
Dec-11	275	74	157	44	502
Jun-12	275	74	157	44	502
Dec-12	308	83	176	49	562
Jun-13	694	187	396	111	1,268
Dec-13	982	265	560	157	1,793
Jun-14	1459	394	832	233	2,664
Dec-14	1138	307	649	182	2,078
Jun-15	688	186	392	110	1,256
Dec-15	409	110	233	65	745
Jun-16	340	92	194	53	618

Note: Imported workers data cover both the construction and operation phases of the GPN.

Source: GPN Limited data, GGMIM results.

## 1.4 Limitations

The inherent risk in the model is that it is a replication of the same prediction model applied to Gladstone for a different purpose and at a different time. Assumptions are required to explain unknown formulae and further assumptions made to differentiate the GLNG project's use of an isolated CAF to house workers versus use of local accommodation in the previous GGMIM. Further discussion of assumptions and limitations are presented in Section 2.

There following are significant influences to the ratio of local to imported workers:

- Increased unemployment in Gladstone due to lay-offs and redundancies;
- Increased unemployment in Queensland due to lay-offs and redundancies resulting in people moving to Gladstone in anticipation of employment opportunities; and
- Changes to local skill levels since the 2006 census.

## Section 1

## Methodology and Assumptions

In addition, the model assumes what people would do, but cannot predict the complexity of individual human behaviour and the pre-determinants of that behaviour. The following are some other influences to the choice of people to move to Gladstone which the model cannot assess:

- Personal preference;
- Other family influences;
- Uncertainty about employment potential outside the area; and
- Increased labour supply due to economic uncertainty and lay-offs.

## Models Assumptions and Rationale

## Section 2

### 2.1 Construction - Local to Imported Model

The basic model for the local to imported worker requirements was based on the model created by DIP for the GPN project. Although DIP no longer uses this model, it is Gladstone specific, and some additional assumptions were made in order to generate a similar model for GLNG. Table 2-1 is a sample model used in the GLNG EIS and SIA, as well as throughout this report.

**Table 2-1 Sample Local to Imported Worker Model**

Phase	Year	Half Year	Potential Employment			Recruitment	
			Direct	Flow-On	Total	Local	Imported Workers
Construction	2010	June	A	B1	C	D	E
Construction and Operations	2014	June	A	B2	C	D	E

#### **Potential Employment - Direct**

The values for direct employment were provided by Santos as a conservative estimate of the LNG facility construction workforce. A conservative estimate was used in order to avoid an underestimation of the workforce numbers; however, Santos expects the workforce to be fewer than the numbers used throughout the EIS and technical reports.

#### **Potential Employment – Flow-on**

For the GGMIM, an estimate of flow-on workers was conducted using a formula not available to Santos. In order to determine this formula for the GLNG model, the flow-on value in the GPN table (Table 1-1) was calculated against the direct employment value to determine a percentage (flow-on as a percentage of direct employment). These values were then averaged for the two different phases because the values were noticeably different between just construction and construction and operations occurring simultaneously. The averages were rounded to the nearest 5 or 0 in order to give a value. The results were as follows:

- Flow-on B1 = 35% of direct employment, or  $\text{Direct} \times 0.35$ ; and
- Flow-on B2 = 55% of direct employment, or  $\text{Direct} \times 0.55$ .

Although this did not directly replicate the table presented in the GPN report (see Table 1-1), it was assumed that the more precise flow-on calculations from the GGMIM were derived from information not available to Santos. As such, directly transferring the 'flow-on as a percentage of direct' calculations from half year to half year from the GGMIM to the GLNG model was not possible. Although the flow-on multiplier would be expected to be lower for GLNG because the construction workforce will be housed in the CAF on Curtis Island, it was left consistent with the GGMIM to predict the number of flow-on employment opportunities that could be generated. In order to assess what was expected to occur with GLNG, a further calculation was added and discussed in Section 2.2.

#### **Potential Employment - Total**

This value was calculated by adding the direct and flow-on employment values.

## Section 2

## Models Assumptions and Rationale

### **Recruitment**

This is calculated by predicting a ratio between locally sourced workers (local) and externally sourced workers (imported workers) to fill employment vacancies. There were three different ratios (scenarios) considered based on the GGMIM findings, past experiences and other possibilities:

- 50:50 = 50% are sourced locally and 50% are sourced externally;
- 35:65 = 35% are sourced locally and 65% are sourced externally; and
- 10:90 = 10% are sourced locally and 90% are sourced externally.

Based on DIP findings and past experience in the Gladstone area, the 35:65 local to imported worker was assumed to be the most likely. This assumes that if 100 construction jobs are created in Gladstone at any given time, 35 can be expected to be filled by locals, and 65 would need to be sourced outside the community. Since the GGMIM was developed prior to the March 2008 council amalgamations, it was assumed local in that case meant Gladstone city; however, based on the size of Gladstone city in proportion to Gladstone Regional Council in terms of population and skill sets, it was assumed this ratio would increase for locally sourced workers but not significantly now that the Gladstone Regional Council is considered locally sourced.

The SIA examines the 35:65 ratio but all three are run in this report to provide an indication of what the different ratios might look like (see Section 4).

### **Recruitment – Local**

The calculation for this value changes depending on the scenario that is being calculated. For the various scenarios the calculation is as follows:

- 50:50 = Potential employment total multiplied by 50%, or potential employment total multiplied by 0.50;
- 35:65 = Potential employment total multiplied by 35%, or potential employment total multiplied by 0.35;
- 10:90 = Potential employment total multiplied by 10%, or potential employment total multiplied by 0.10.

### **Recruitment – Imported Workers**

The calculation for this value changes depending on the scenario that is being calculated as well, and is the inverse of the ratio used to calculate the local recruitment. For the various scenarios the calculation is as follows:

- 50:50 = Potential employment total multiplied by 50%, or potential employment total multiplied by 0.50;
- 35:65 = Potential employment total multiplied by 65%, or potential employment total multiplied by 0.65;
- 10:90 = Potential employment total multiplied by 90%, or potential employment total multiplied by 0.90.

## 2.2 Construction - Local and Imported Model with Imported Flow-on

In the EIS and SIA technical report the following model was used. The calculations are the same as the above model; however an additional column was added to separate the anticipate flow-on workforce to be imported. This was done because of the assumption that the imported workers in the CAF would not move to Gladstone because they would be on the CAF and not have access to the community until their days off, which would be no different to if they remained where they were sourced from. Under this assumption, the flow-on workforce would only be generated from the increased local employment. Since Gladstone already has a well established

## Models Assumptions and Rationale

## Section 2

service sector, and most of the flow-on work could be filled locally, the imported flow-on column was assumed to be 10% of all flow-on work generated. Therefore the calculation of this column was as follows:

- Imported flow-on = Flow-on multiplied by 10%, or B multiplied by 0.10

Table 2-2 is the sample table used in the EIS and SIA for the GLNG project.

**Table 2-2 Local and Imported Model with Imported Flow-on**

Phase	Year	Half Year	Potential Employment			Recruitment		Imported Flow-on
			Direct	Flow-On	Total	Local	Imported Workers	
Construction	2010	June	A	B1	C	D	E	F
Construction and Operations	2014	June	A	B2	C	D	E	F

### 2.3 Construction - Anticipated Population Increase Model

Once the flow-on workforce anticipated to move to the community was determined, the breakdown of workers by marital status was conducted to predict total estimated population increase, and the number of children. This was calculated using the averages calculated from the same GGMIM. The following percentages were used for the GLNG model:

- Single status workers = 27% of all workers;
- Workers with partners = 57% of all workers; and
- Workers with families = 16% of all workers.

It was assumed that this was the case for direct employees and flow-on workers from the values attained from the GGMIM model from the GPN EIS.

It should be noted that all values were rounded to the nearest whole number to replicate individuals and therefore the tables may not add up to the totals in the GLNG models. The tables were not altered to adjust for this and were instead left as they were after the rounding.

**Table 2-3 Anticipated Population Increase in Gladstone Regional Council from Imported Flow-on Workforce during Construction**

Phase	Year	Half Year	Imported Flow-on	Associated Persons			Total	Children
				Single	Couples	Family		
Construction	2010	June	F	G	H	I	J	K
Construction and Operations	2014	June	F	G	H	I	J	K

The following calculations were conducted for this table:

- F = F from previous table (Flow-on workforce multiplied by 10%);

## Section 2

## Models Assumptions and Rationale

- $G = F$  multiplied by 27%;
- $H = F$  multiplied by 57%;
- $I = F$  multiplied by 16%;
- $J = (G \text{ multiplied by } 1.0) + (H \text{ multiplied by } 2.0) + (I \text{ multiplied by } 2.6)$ ; and
- $K = (I \text{ multiplied by } 2.6) \text{ multiplied by } 23\%$ .

The calculation for F is straightforward and was discussed previously.

The calculations for G, H, and I were based on the averages derived from the GGMIM and were consistent throughout the entire project.

The calculation for J required G, H and I to be multiplied by their respective multipliers as follows:

- $G =$  single, or 1.0 person;
- $H =$  couple, or 2.0 people; and
- $I =$  family, or 2.6 people based on the average family size.

The calculation for K required determining what percentage of the total family value ( $I$  multiplied by 2.6) were children, which is 23%.

This table therefore provides both the total anticipated population increase, as well as the total number of children the imported flow-on workforce is anticipated to have.

### 2.4 Operations - Local to Imported Model

For operations, the same models were used with two exceptions:

- The intervals changed because operations workforce numbers changed for the operational phase for each of the three Trains; and
- All operations employees would be housed in Gladstone, and therefore all imported workers would require local accommodation (rentals or purchases).

**Table 2-4 LNG Facility Direct and Flow-on Operations Employment for each Train**

Year	Half Year	Direct	Flow-on	Total	Recruitment	
					Local	Imported
2014	June	A	B	C	D	E
2018	June	A	B	C	D	E
2022	June	A	B	C	D	E

In this case flow-on was calculated as Direct multiplied by 55% because operations coincided with construction. For Train 3 this was kept constant as well because there was no evidence available to state otherwise ( $A$  multiplied by 0.55).

## Models Assumptions and Rationale

## Section 2

### 2.5 Operations - Anticipated Population Increase Model

Values for Table 2-5 were calculated the same way they were for construction except imported workers includes direct and flow-on imported workers as discussed previously.

**Table 2-5 Anticipated Population Increase in Gladstone Regional Council from Imported Operations and Flow-on Workforces during Operations for each Train**

Year	Half Year	Imported Workers	Associated Persons			Total Estimated Population Increase	Total Number of Children
			Single Status Worker	Workers Accompanied by Partner	Workers with Families		
2014	June	E	F	G	H	I	J
2018	June	E	F	G	H	I	J
2022	June	E	F	G	H	I	J

## Section 3

## Models Used in the EIS and SIA

## 3.1 Construction

The following models and explanations are used in the EIS and SIA technical report for GLNG. The most likely scenario anticipated was 35:65 for local to imported workers respectively. The flow-on workforce was assumed to be generated from the employment opportunities created in the community since the imported workforce will be exclusively housed in the CAF. The imported flow-on workforce was assumed to be 10% of the total flow-on work generated with the remainder being filled locally (see Table 3-1).

**Table 3-1 LNG Facility Direct and Flow-on Construction Employment (six monthly averages) up to June 2022**

Year	Half Year	Direct	Flow-on	Total	Recruitment		Imported Flow-on
					Local	Imported	
2010	Jun	168	21	189	77	111	2
2010	Dec	1260	154	1414	580	834	15
2011	Jun	1680	206	1886	773	1113	21
2011	Dec	2940	360	3300	1353	1947	36
2012	Jun	2940	360	3300	1353	1947	36
2012	Dec	2576	316	2892	1186	1706	32
2013	Jun	1120	137	1257	515	742	14
2013	Dec	560	69	629	258	371	7
2014	Jun	101	19	120	53	68	2
2014	Dec	756	146	902	396	506	15
2015	Jun	1008	194	1202	527	675	19
2015	Dec	1764	340	2104	923	1181	34
2016	Jun	1764	340	2104	923	1181	34
2016	Dec	1546	298	1844	809	1035	30
2017	Jun	672	129	801	352	450	13
2017	Dec	336	65	401	176	225	6
2018	Jun	101	19	120	53	68	2
2018	Dec	756	146	902	396	506	15
2019	Jun	890	171	1061	466	596	17
2019	Dec	1764	340	2104	923	1181	34
2020	Jun	1764	340	2104	923	1181	34
2020	Dec	1764	340	2104	923	1181	34
2021	Jun	1008	194	1202	527	675	19
2021	Dec	403	78	481	211	270	8
2022	Jun	168	32	200	88	112	2

The imported workforce will be housed in the CAF, while the imported flow-on will be the number of flow-on employment opportunities anticipated to be filled by someone required to move to the Gladstone area.



## Models Used in the EIS and SIA

## Section 3

Table 3-2 shows the break down of flow-on workers by married status. Traditionally in Gladstone workers were broken down by the following categories and percentages to determine population estimates. The categories and percentages are based off the estimates used in the GPN model developed by DIP as follows:

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

The singles were therefore counted as one new person, the workers accompanied with partners were considered two people, and the workers with families were 2.6 people based on the average family size.

**Table 3-2 Anticipated Population Increase in Gladstone Regional Council from Imported Flow-on Workforce during Construction up to June 2022**

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

## Section 3

## Models Used in the EIS and SIA

Only the imported flow-on workers were assessed because they are anticipated to increase the local population. Additional scenarios are run through the model in Appendix D to illustrate the potential effects on the community and social services.

### 3.2 Operations

The same model for construction was used for operations with some minor alterations (see Table 3-3). The operations workforce was anticipated to be split 60:40 local to imported workers respectively; however, the entire workforce will be locally accommodated. The ratio of flow-on workers remains the same as the same as local and imported direct workers in this model. The total number of employment opportunities created as a result of employment at the LNG facility peaks at 388 once Train 3 is operational. Once again, the number of imported workers is further analysed to determine potential population increase (see Table 3-4).

**Table 3-3 LNG Facility Direct and Flow-on Operations Employment for each Train**

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

As seen in Table 3-4, the total estimated population increase ranges from 158 for Train 1 up to 283 for Train 3 by June 2022. These increases are anticipated to occur very close to the start of operations since the workforces will be required at the start of each Train's operations phase, Total units required at each Train start are anticipated to be the values in the imported workers column, which is within the normal range in the area. Santos will work with council and their employees to coordinate accommodation close to the beginning of operations for each Train.

**Table 3-4 Anticipated Population Increase in Gladstone Regional Council from Imported Construction and Flow-on Workforces during Operations for each Train**

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

## 4.1 Construction

The following are the raw data tables for the following construction scenarios:

- 50:50 Local to imported workers;
- 35:65 Local to imported workers (as used in the EIS and SIA technical report);
- 10:90 Local to imported workers;

Additionally, scenarios were run for 10% of all imported workers moving to Gladstone (direct and flow-on) for the three scenarios above.

Section 4

Scenarios

Table 4-1 50:50 Local to Imported Split Model and Flow-On Status Model

Phase	Year	Half Year	Direct	Flow-on	Total	Recruitment		Imported Flow-on	Year	Half Year	Imported Flow On	Associated Persons				Children
						Local	Imported					Single	Couple	Family	Total	
Construction	2010	Jun	168	29	197	110	87	3	2010	Jun	3	1	2	0	5	0
	2010	Dec	1260	221	1481	828	652	22	2010	Dec	22	6	13	4	40	1
	2011	Jun	1680	294	1974	1105	869	29	2011	Jun	29	8	17	5	54	1
	2011	Dec	2940	515	3455	1933	1521	51	2011	Dec	51	14	29	8	94	2
	2012	Jun	2940	515	3455	1933	1521	51	2012	Jun	51	14	29	8	94	2
	2012	Dec	2576	451	3027	1694	1333	45	2012	Dec	45	12	26	7	82	2
	2013	Jun	1120	196	1316	736	580	20	2013	Jun	20	5	11	3	36	1
	2013	Dec	560	98	658	368	290	10	2013	Dec	10	3	6	2	18	0
Train 2	2014	Jun	101	28	129	75	53	3	2014	Jun	3	1	2	0	5	0
	2014	Dec	756	208	964	565	399	21	2014	Dec	21	6	12	3	38	1
	2015	Jun	1008	277	1285	753	532	28	2015	Jun	28	7	16	4	51	1
	2015	Dec	1764	485	2249	1319	931	49	2015	Dec	49	13	28	8	89	2
	2016	Jun	1764	485	2249	1319	931	49	2016	Jun	49	13	28	8	89	2
	2016	Dec	1546	425	1971	1156	816	43	2016	Dec	43	11	24	7	78	2
	2017	Jun	672	185	857	502	354	18	2017	Jun	18	5	11	3	34	1
	2017	Dec	336	92	428	251	177	9	2017	Dec	9	2	5	1	17	0
Train 3	2018	Jun	101	28	129	75	53	3	2018	Jun	3	1	2	0	5	0
	2018	Dec	756	208	964	565	399	21	2018	Dec	21	6	12	3	38	1
	2019	Jun	890	245	1135	665	469	24	2019	Jun	24	7	14	4	45	1
	2019	Dec	1764	485	2249	1319	931	49	2019	Dec	49	13	28	8	89	2
	2020	Jun	1764	485	2249	1319	931	49	2020	Jun	49	13	28	8	89	2
	2020	Dec	1764	485	2249	1319	931	49	2020	Dec	49	13	28	8	89	2
	2021	Jun	1008	277	1285	753	532	28	2021	Jun	28	7	16	4	51	1
	2021	Dec	403	111	514	301	213	11	2021	Dec	11	3	6	2	20	0
2022	Jun	168	46	214	126	89	5	2022	Jun	5	1	3	1	8	0	

Table 4-2 35:65 Local to Imported Split Model and Flow-On Status Model

Phase	Year	Half Year	Direct	Flow-on	Recruitment			Associated Persons								
					Total	Local	Imported	Imported Flow-on	Year	Half Year	Imported Flow On	Single	Couple	Family	Total	Children
Construction	2010	Jun	168	21	189	77	111	2	2010	Jun	2	1	1	0	4	0
	2010	Dec	1260	154	1414	580	834	15	2010	Dec	15	4	9	2	28	1
	2011	Jun	1680	206	1886	773	1113	21	2011	Jun	21	6	12	3	38	1
	2011	Dec	2940	360	3300	1353	1947	36	2011	Dec	36	10	21	6	66	1
	2012	Jun	2940	360	3300	1353	1947	36	2012	Jun	36	10	21	6	66	1
	2012	Dec	2576	316	2892	1186	1706	32	2012	Dec	32	9	18	5	58	1
Train 2	2013	Jun	1120	137	1257	515	742	14	2013	Jun	14	4	8	2	25	1
	2013	Dec	560	69	629	258	371	7	2013	Dec	7	2	4	1	13	0
	2014	Jun	101	19	120	53	68	2	2014	Jun	2	1	1	0	4	0
	2014	Dec	756	146	902	396	506	15	2014	Dec	15	4	8	2	27	1
	2015	Jun	1008	194	1202	527	675	19	2015	Jun	19	5	11	3	35	1
	2015	Dec	1764	340	2104	923	1181	34	2015	Dec	34	9	19	5	62	1
	2016	Jun	1764	340	2104	923	1181	34	2016	Jun	34	9	19	5	62	1
	2016	Dec	1546	298	1844	809	1035	30	2016	Dec	30	8	17	5	54	1
	2017	Jun	672	129	801	352	450	13	2017	Jun	13	3	7	2	24	0
	2017	Dec	336	65	401	176	225	6	2017	Dec	6	2	4	1	12	0
Train 3	2018	Jun	101	19	120	53	68	2	2018	Jun	2	1	1	0	4	0
	2018	Dec	756	146	902	396	506	15	2018	Dec	15	4	8	2	27	1
	2019	Jun	890	171	1061	466	596	17	2019	Jun	17	5	10	3	31	1
	2019	Dec	1764	340	2104	923	1181	34	2019	Dec	34	9	19	5	62	1
	2020	Jun	1764	340	2104	923	1181	34	2020	Jun	34	9	19	5	62	1
	2020	Dec	1764	340	2104	923	1181	34	2020	Dec	34	9	19	5	62	1
	2021	Jun	1008	194	1202	527	675	19	2021	Jun	19	5	11	3	35	1
	2021	Dec	403	78	481	211	270	8	2021	Dec	8	2	4	1	14	0
	2022	Jun	168	32	200	88	112	3	2022	Jun	3	1	2	1	6	0

Section 4

Scenarios

Table 4-3 10:90 Local to Imported Split Model and Flow-On Status Model

Phase	Year	Half Year	Recruitment					Associated Persons								
			Direct	Flow-on	Total	Local	Imported	Imported Flow-on	Imported Flow On	Single	Couple	Family	Total	Children		
Construction	2010	Jun	168	6	174	22	152	1	2010	Jun	1	0	0	0	1	0
	2010	Dec	1260	44	1304	166	1138	4	2010	Dec	4	1	3	1	8	0
	2011	Jun	1680	59	1739	221	1518	6	2011	Jun	6	2	3	1	11	0
	2011	Dec	2940	103	3043	387	2656	10	2011	Dec	10	3	6	2	19	0
	2012	Jun	2940	103	3043	387	2656	10	2012	Jun	10	3	6	2	19	0
	2012	Dec	2576	90	2666	339	2327	9	2012	Dec	9	2	5	1	16	0
Train 2	2013	Jun	1120	39	1159	147	1012	4	2013	Jun	4	1	2	1	7	0
	2013	Dec	560	20	580	74	506	2	2013	Dec	2	1	1	0	4	0
	2014	Jun	101	4	105	13	91	0	2014	Jun	0	0	0	0	1	0
	2014	Dec	756	26	782	99	683	3	2014	Dec	3	1	2	0	5	0
	2015	Jun	1008	35	1043	133	911	4	2015	Jun	4	1	2	1	6	0
	2015	Dec	1764	62	1826	232	1594	6	2015	Dec	6	2	4	1	11	0
	2016	Jun	1764	62	1826	232	1594	6	2016	Jun	6	2	4	1	11	0
	2016	Dec	1546	54	1600	203	1397	5	2016	Dec	5	1	3	1	10	0
	2017	Jun	672	24	696	88	607	2	2017	Jun	2	1	1	0	4	0
	2017	Dec	336	12	348	44	304	1	2017	Dec	1	0	1	0	2	0
Train 3	2018	Jun	101	4	105	13	91	0	2018	Jun	0	0	0	0	1	0
	2018	Dec	756	26	782	99	683	3	2018	Dec	3	1	2	0	5	0
	2019	Jun	890	31	921	117	804	3	2019	Jun	3	1	2	0	6	0
	2019	Dec	1764	62	1826	232	1594	6	2019	Dec	6	2	4	1	11	0
	2020	Jun	1764	62	1826	232	1594	6	2020	Jun	6	2	4	1	11	0
	2020	Dec	1764	62	1826	232	1594	6	2020	Dec	6	2	4	1	11	0
	2021	Jun	1008	35	1043	133	911	4	2021	Jun	4	1	2	1	6	0
	2021	Dec	403	14	417	53	364	1	2021	Dec	1	0	1	0	3	0
	2022	Jun	168	6	174	22	152	1	2022	Jun	1	0	0	0	1	0

Table 4-4 50:50 Local to Imported Split Model and Flow-On Status Model with 10% Imported Workers

Phase	Year	Half Year	Direct	Flow-on	Recruitment			Imported 10%	Year	Half Year	Imported 10%	Associated Persons				
					Total	Local	Imported					Single	Couple	Family	Total	Children
Construction	2010	Jun	168	29	197	110	87	9	2010	Jun	9	2	5	1	16	0
	2010	Dec	1260	221	1481	828	652	65	2010	Dec	65	18	37	10	119	2
	2011	Jun	1680	294	1974	1105	869	87	2011	Jun	87	23	50	14	159	3
	2011	Dec	2940	515	3455	1933	1521	152	2011	Dec	152	41	87	24	278	6
	2012	Jun	2940	515	3455	1933	1521	152	2012	Jun	152	41	87	24	278	6
	2012	Dec	2576	451	3027	1694	1333	133	2012	Dec	133	36	76	21	243	5
Train 2	2013	Jun	1120	196	1316	736	580	58	2013	Jun	58	16	33	9	106	2
	2013	Dec	560	98	658	368	290	29	2013	Dec	29	8	17	5	53	1
	2014	Jun	101	28	129	75	53	5	2014	Jun	5	1	3	1	10	0
	2014	Dec	756	208	964	565	399	40	2014	Dec	40	11	23	6	73	1
	2015	Jun	1008	277	1285	753	532	53	2015	Jun	53	14	30	9	97	2
	2015	Dec	1764	485	2249	1319	931	93	2015	Dec	93	25	53	15	170	3
	2016	Jun	1764	485	2249	1319	931	93	2016	Jun	93	25	53	15	170	3
	2016	Dec	1546	425	1971	1156	816	82	2016	Dec	82	22	46	13	149	3
	2017	Jun	672	185	857	502	354	35	2017	Jun	35	10	20	6	65	1
	2017	Dec	336	92	428	251	177	18	2017	Dec	18	5	10	3	32	1
Train 3	2018	Jun	101	28	129	75	53	5	2018	Jun	5	1	3	1	10	0
	2018	Dec	756	208	964	565	399	40	2018	Dec	40	11	23	6	73	1
	2019	Jun	890	245	1135	665	469	47	2019	Jun	47	13	27	8	86	2
	2019	Dec	1764	485	2249	1319	931	93	2019	Dec	93	25	53	15	170	3
	2020	Jun	1764	485	2249	1319	931	93	2020	Jun	93	25	53	15	170	3
	2020	Dec	1764	485	2249	1319	931	93	2020	Dec	93	25	53	15	170	3
	2021	Jun	1008	277	1285	753	532	53	2021	Jun	53	14	30	9	97	2
	2021	Dec	403	111	514	301	213	21	2021	Dec	21	6	12	3	39	1
	2022	Jun	168	46	214	126	89	9	2022	Jun	9	2	5	1	16	0

Section 4

Scenarios

Table 4-5 35:65 Local to Imported Split Model and Flow-On Status Model with 10% Imported Workers

	Year	Half Year	Recruitment					Associated Persons								
			Direct	Flow-on	Total	Local	Imported	Imported 10%	Single	Couple	Family	Total	Children			
Construction	2010	Jun	168	21	189	77	111	11	2010	Jun	11	3	6	2	20	0
	2010	Dec	1260	154	1414	580	834	83	2010	Dec	83	23	48	13	152	3
	2011	Jun	1680	206	1886	773	1113	111	2011	Jun	111	30	63	18	203	4
	2011	Dec	2940	360	3300	1353	1947	195	2011	Dec	195	53	111	31	356	7
	2012	Jun	2940	360	3300	1353	1947	195	2012	Jun	195	53	111	31	356	7
	2012	Dec	2576	316	2892	1186	1706	171	2012	Dec	171	46	97	27	312	6
	2013	Jun	1120	137	1257	515	742	74	2013	Jun	74	20	42	12	135	3
Train 2	2013	Dec	560	69	629	258	371	37	2013	Dec	37	10	21	6	68	1
	2014	Jun	101	19	120	53	68	7	2014	Jun	7	2	4	1	12	0
	2014	Dec	756	146	902	396	506	51	2014	Dec	51	14	29	8	92	2
	2015	Jun	1008	194	1202	527	675	67	2015	Jun	67	18	38	11	123	2
	2015	Dec	1764	340	2104	923	1181	118	2015	Dec	118	32	67	19	216	4
	2016	Jun	1764	340	2104	923	1181	118	2016	Jun	118	32	67	19	216	4
	2016	Dec	1546	298	1844	809	1035	103	2016	Dec	103	28	59	17	189	4
Train 3	2017	Jun	672	129	801	352	450	45	2017	Jun	45	12	26	7	82	2
	2017	Dec	336	65	401	176	225	22	2017	Dec	22	6	13	4	41	1
	2018	Jun	101	19	120	53	68	7	2018	Jun	7	2	4	1	12	0
	2018	Dec	756	146	902	396	506	51	2018	Dec	51	14	29	8	92	2
	2019	Jun	890	171	1061	466	596	60	2019	Jun	60	16	34	10	109	2
	2019	Dec	1764	340	2104	923	1181	118	2019	Dec	118	32	67	19	216	4
	2020	Jun	1764	340	2104	923	1181	118	2020	Jun	118	32	67	19	216	4
	2020	Dec	1764	340	2104	923	1181	118	2020	Dec	118	32	67	19	216	4
	2021	Jun	1008	194	1202	527	675	67	2021	Jun	67	18	38	11	123	2
	2021	Dec	403	78	481	211	270	27	2021	Dec	27	7	15	4	49	1
2022	Jun	168	32	200	88	112	11	2022	Jun	11	3	6	2	21	0	



**Table 4-6 10:90 Local to Imported Split Model and Flow-On Status Model with 10% Imported Workers**

	Year	Half Year	Direct	Flow-on	Recruitment			Associated Persons								
					Total	Local	Imported	Imported 10%	Year	Half Year	Imported 10%	Single	Couple	Family	Total	Children
Construction	2010	Jun	168	6	174	22	152	15	2010	Jun	15	4	9	2	28	1
	2010	Dec	1260	44	1304	166	1138	114	2010	Dec	114	31	65	18	208	4
	2011	Jun	1680	59	1739	221	1518	152	2011	Jun	152	41	87	24	277	6
	2011	Dec	2940	103	3043	387	2656	266	2011	Dec	266	72	151	43	485	10
	2012	Jun	2940	103	3043	387	2656	266	2012	Jun	266	72	151	43	485	10
	2012	Dec	2576	90	2666	339	2327	233	2012	Dec	233	63	133	37	425	9
Train 2	2013	Jun	1120	39	1159	147	1012	101	2013	Jun	101	27	58	16	185	4
	2013	Dec	560	20	580	74	506	51	2013	Dec	51	14	29	8	92	2
	2014	Jun	101	4	105	13	91	9	2014	Jun	9	2	5	1	17	0
	2014	Dec	756	26	782	99	683	68	2014	Dec	68	18	39	11	125	3
	2015	Jun	1008	35	1043	133	911	91	2015	Jun	91	25	52	15	166	3
	2015	Dec	1764	62	1826	232	1594	159	2015	Dec	159	43	91	26	291	6
	2016	Jun	1764	62	1826	232	1594	159	2016	Jun	159	43	91	26	291	6
	2016	Dec	1546	54	1600	203	1397	140	2016	Dec	140	38	80	22	255	5
Train 3	2017	Jun	672	24	696	88	607	61	2017	Jun	61	16	35	10	111	2
	2017	Dec	336	12	348	44	304	30	2017	Dec	30	8	17	5	55	1
	2018	Jun	101	4	105	13	91	9	2018	Jun	9	2	5	1	17	0
	2018	Dec	756	26	782	99	683	68	2018	Dec	68	18	39	11	125	3
	2019	Jun	890	31	921	117	804	80	2019	Jun	80	22	46	13	147	3
	2019	Dec	1764	62	1826	232	1594	159	2019	Dec	159	43	91	26	291	6
	2020	Jun	1764	62	1826	232	1594	159	2020	Jun	159	43	91	26	291	6
	2020	Dec	1764	62	1826	232	1594	159	2020	Dec	159	43	91	26	291	6
	2021	Jun	1008	35	1043	133	911	91	2021	Jun	91	25	52	15	166	3
	2021	Dec	403	14	417	53	364	36	2021	Dec	36	10	21	6	66	1
2022	Jun	168	6	174	22	152	15	2022	Jun	15	4	9	2	28	1	

**Section 4**

**Scenarios**

**4.2 Operations**

The following are the raw tables for the following operations scenarios:

- 50:50 Local to imported workers;
- 60:40 Local to imported workers (as used in the EIS and SIA technical report); and
- 90:10 Local to imported workers.

For all operations scenarios it was assumed all employees would be required to reside in Gladstone.

**4.2.1 Scenario 1: 50:50 Local to Imported Workforce**

Year	Half Year	Direct	Flow-on	Total	Recruitment		Direct Local	Direct Imported
					Local	Imported		
2014	June	140	77	217	109	109	70	70
2018	June	195	107	302	151	151	98	98
2022	June	250	138	388	194	194	125	125

Year	Half Year	Imported	Associated Persons			Total	Children
			Single	Couple	Family		
2014	June	109	29	62	17	198	10
2018	June	151	41	86	24	276	14
2022	June	194	52	110	31	354	19

**4.2.2 Scenario 2: 60:40 Local to Imported Workforce**

Year	Half Year	Direct	Flow-on	Total	Recruitment		Direct Local	Direct Imported
					Local	Imported		
2014	June	140	77	217	130	87	84	56
2018	June	195	107	302	181	121	117	78
2022	June	250	138	388	233	155	150	100

Year	Half Year	Imported	Associated Persons			Total	Children
			Single	Couple	Family		
2014	June	87	23	49	14	158	8
2018	June	121	33	69	19	221	12
2022	June	155	42	88	25	283	15

### 4.2.3 Scenario 3: 90:10 Local to Imported Workforce

Year	Half Year	Direct	Flow-on	Total	Recruitment		Direct Local	Direct Imported
					Local	Imported		
2014	June	140	77	217	195	22	126	14
2018	June	195	107	302	272	30	176	20
2022	June	250	138	388	349	39	225	25

Year	Half Year	Imported	Associated Persons			Total	Children
			Single	Couple	Family		
2014	June	22	6	12	3	40	2
2018	June	30	8	17	5	55	3
2022	June	39	10	22	6	71	4

## 4.3 Conclusion

As discussed, the purpose of this model was to enable Santos to assess the potential flow-on and imported workforces generated during the different phases of the GLNG project. This was done by creating a series of assumptions based on an earlier model (GGMIM, 2006) which no longer existed but was the best model available. The most likely scenario was used in the SIA; however, several additional scenarios were run in order to show a range of potential outcomes.

The values generated from the models give an indication of what would occur should the entire construction workforce be housed in the CAF on Curtis Island and isolated from the general population. The values assume that because there is very little incentive to relocate to Gladstone based on the CAF policy that this will be the case. Since predicting human nature is beyond the capabilities of these models, the accommodation assessment (Section 7 of the SIA and Appendix C of the SIA) assesses the effects of a 10% influx of imported workers regardless in order to capture what that influx might look like.

As a result of the rapidly changing economic situation throughout Australia and the world due to the global recession, the level of certainty for any workforce model based on recent past experiences has decreased. Too many internal and external variables have the potential to alter the predictions, particularly if unemployment continues to rise and people become desperate for work. This scenario has occurred in the past during the Great Depression of the 1930s, and resulted in a complete societal change well beyond the scope of this report.