Report

Arrow Surat Gas Project

Social Impact Assessment

30 NOVEMBER 2011

Prepared for

Coffey Environments

Level 2, 12 Creek Street
Brisbane, QLD, 4000

42626746

URS

Project Manager:	Chris Sunderland Associate Sociologist	**URS Australia Pty Ltd** **Level 17, 240 Queen Street** **Brisbane, QLD 4000** **GPO Box 302, QLD 4001Australia**
Principal-In-Charge:	Chris Pigott Senior Principal	**T: 61 7 3243 2111** **F: 61 7 3243 2199**
Reviewer:	Pat Vidler Senior Social Scientist	

Date:	**30 November 2011**
Reference:	42626746/SIA/1.0
Status:	Final

Document delivery

URS Australia provides this document in either printed format, electronic format or both. URS considers the printed version to be binding. The electronic format is provided for the client's convenience and URS requests that the client ensures the integrity of this electronic information is maintained. Storage of this electronic information should at a minimum comply with the requirements of the Commonwealth Electronic Transactions Act (ETA) 2000.

Where an electronic only version is provided to the client, a signed hard copy of this document is held on file by URS and a copy will be provided if requested.

Table of Contents

Table of Contents

Table of Contents

Table of Contents

Table of Contents

Table of Contents

Tables

Table of Contents

Table of Contents

Figures

Abbreviations

Abbreviation	Description
AADT	Average annual daily traffic
ABS	Australian Bureau of Statistics
ACCI	Australian Chamber of Commerce and Industry
AEC	AEC Economics
APLNG	Australia Pacific LNG
Arrow	Arrow Energy
ATEC	Australian Transport and Energy Corridor Ltd
BITRDLG	Bureau of Infrastructure, Transport and Regional Development and Local Government
CGPF1	Wandoan Central Gas Processing Facility -1
Coffey	Coffey Environments
CO_2	Carbon Dioxide
CQCHM	Central Queensland Cultural Heritage Management
CSG	Coal Seam Gas
CSIRO	The Commonwealth Scientific and Industrial Research Organisation
CWA	Country Women's Association
DEEDI	Department of Employment, Economic Development and Innovation
DERM	Department of Environment and Resource Management
DIDO	Drive in/drive out
DIP	Department of Infrastructure and Planning
DEEWR	Department of Education, Employment and Workplace Relations
DoC	Department of Communities
DSEWPC	Department of Sustainability, Environment, Water, Population and Communities
DTMR	Department of Transport and Main Roads
EDA	Economic Development Australia
EIS	Environmental Impact Statement
EMP	Environmental Management Plan
EP Act	Environment Protection Act 1994
EPBC Act	Environmental Protection and Biodiversity Conservation Act 1999
EPC	Engineering, Procurement and Construction
EPPA	Environment and Property Protection Association
ERAs	Environmentally Relevant Activities
ERM	Environmental Resource Management
ESQ	Energy Skills Queensland
FIFO	Fly in/fly out
FY	Financial Year
GLNG	Gladstone Liquefied Natural Gas
GRC	Goondiwindi Regional Council
GRP	Gross Regional Product
GSP	Gross State Product
HSD	Health Service District

Abbreviations

Abbreviation	Description
HSSE	Health, Safety, Security, Environment
IFM	Industry Funds Management
IPF	Integrated production facility
Dalby IPF1	Dalby Integrated Processing Facility-1
JTA	JTA Australia
Km	Kilometres
Km^2	Square kilometres
LGA	Local Government Area
LGAQ	Local Government Association Qld
LNG	Liquefied natural gas
LPG	Liquefied petroleum gas
MW	Megawatt
NGOs	Non-Government Organisations
OESR	Office of Economic and Statistical Research, Queensland Government
OH&S	Occupational Health & Safety
PA	Per annum
P & G Act	Petroleum and Gas (Production and Safety) Act 2004
PJ	Petajoules
PNG	Papua New Guinea
QCC	Queensland Conservation Council
QC-LNG	Queensland Curtis LNG
QFRS	Queensland Fire and Rescue Services
QG	Queensland Government
QGC	Queensland GAS Company Ltd
QH	Queensland Health
QR	Queensland Rail
QRC	Queensland Resources Council
RC	Regional Council
RDA	Regionally Development Australia
ROP	Resource operations plan
RSL	Returned and Services League of Australia
SBRPF	Surat Basic Regional Planning Framework
SD	Statistical Division
SEIFA	Socio-Economic Indices for Areas
SES	State Emergency Service
SGS	SGS Economics and Planning
SIA	Social Impact Assessment
SIMP	Social Impact Management Plan
SLA	Statistical Local Area
TWAF	Temporary worker accommodation facility
TAFE	Technical and Further Education

Abbreviations

Abbreviation	Description
TJ	Terajoule
TOR	Terms of Reference
TRC	Toowoomba Regional Council
URS	URS Australia Pty Ltd
UQ	University of Queensland
WDRC	Western Downs Regional Council
WRP	Water resource plan
WWW	World Wide Web

Executive Summary

URS has been contracted by Coffey Environments and Arrow Energy Pty Ltd to develop the Social Impact Assessment (SIA) technical report as a component of the Environmental Impact Statement (EIS) for the proposed Arrow Energy Pty Ltd (Arrow) Surat Gas Project (the Project). Coffey Environments are the lead consultants for the EIS which is being undertaken pursuant to the Queensland Environmental Protection Act 1994.

This SIA technical report includes the baseline study, impact assessment and social impact management plan (SIMP).

Project Description

Arrow Energy (Arrow) plans to expand its CSG operations through the proposed Surat Gas Project. The need for the Project arises from growing Australian domestic and export market gas demand. The Project development area extends from the township of Wandoan in the north towards Goondiwindi in the south, in an arc adjacent to Dalby (see Figure 1). Arrow holds petroleum tenures across this area and operates existing gas fields at Tipton West, Daandine, Stratheden and Kogan North near Dalby.

While a field development plan will be established for the Project using exploration and appraisal data, conceptually, the Project will involve the staged development of:

- Approximately 7,500 production wells producing on average approximately 970 Terajoules per day (TJ/d) of export and system gas and 80 TJ/d of domestic gas for 20 years;
- Associated gas and water gathering infrastructure;
- Eighteen facilities comprised of:
  - Six Field Compression Facilities;
  - Six Central Gas Processing Facilities (incorporating water transfer facilities);
  - Six Integrated Processing Facilities (incorporating water treatment and storage facilities). Compression, power generation and water treatment equipment will be ‘modular’ allowing facilities to be scaled up and down to cope appropriately with gas and water abstraction volumes through the different stages of the development’s life.
- Underground high-pressure gas pipeline infrastructure to link the facilities to the existing gas transmission network (and to each other where appropriate).

Project Study Area

Arrow’s Project development area is located approximately 160 km west of Brisbane in Queensland's Surat Basin. It extends from the township of Wandoan in the north towards Goondiwindi in the south, in an arc adjacent to Dalby. The total Project development area is approximately 8,600 km^2.

The defined study area for this SIA includes the land and communities within the Project development area, and the following towns, herein called the ‘communities of interest’ in the vicinity of the Project development area: Cecil Plains; Chinchilla; Dalby; Goondiwindi; Miles; Millmerran; Wandoan; and Toowoomba (including surrounding towns/localities within Toowoomba Regional Council).

The study area is located within the Darling Downs Statistical Division (SD) (the region) that includes the regional councils of Toowoomba, Goondiwindi and Western Downs.

Socio-economic Characteristics of the Study Area

Key characteristics of study area are as follows:

- The region has a long agricultural history, yet in recent years, has experienced rapid expansion of resource industries, including CSG, coal mining, power generation and underground coal gasification which are occurring across the region;
- The largest communities of interest are Toowoomba (106,743), Dalby, (11,097), Goondiwindi (6,593) and Chinchilla (4,445). Communities experiencing notable growth include Chinchilla, Toowoomba, and Goondiwindi. Smaller centres such as Millmerran, Wandoan and Miles have experienced relatively small changes in population in the past decade (ABS, 2010);
- The population's age distribution generally reflects that of the broader State of Queensland and the gender mix is generally evenly balanced (ABS, 2006);
- Most of the communities of interest have proportions of Indigenous populations consistent with or higher than the State as a whole. Dalby, Goondiwindi and Miles have significantly higher Indigenous populations (ABS, 2006);
- The region is experiencing some of the lowest unemployment rates in Australia (ABS, 2011);
- As at the 2006 census the largest industries of employment in the Darling Downs Region (the region) are agriculture, forestry and fishing (12 %); manufacturing (11 %); retail trade (12 %); and health care and social assistance (11 %) (ABS, 2006);
- Individual, family and household incomes in the communities of interest are below the State average, with the exception of Goondiwindi (ABS, 2011);
- The Darling Downs region has a higher proportion of disadvantaged people compared to the Queensland average (ABS, 2006);
- The number of residents with a year 12 qualification are well below the Queensland average for residents (ABS, 2006);
- Overall cost of living in communities such as Dalby and Chinchilla is less expensive compared to the average cost of living in Brisbane (OESR, 2011c);
- There have been sharp increases in demand for housing in some locations and this has impacted upon housing costs, particularly in Chinchilla, and to a lesser extent Dalby (DoC, 2011a);
- Median rental rates for 2 and 3 bedroom rentals are still significantly below the Queensland median however they have been increasing over recent years (DoC, 2011a);
- Toowoomba has a relatively high-level provision of community services and facilities for its size and location. Dalby, Chinchilla and Goondiwindi are service provider centres for the surrounding rural communities and have gaps in service provision; and
- Key service gaps identified in the region include specialist medical services, care for young people, children and the elderly, and counselling services.

Consultation indicated that the communities identify themselves as having a strong sense of identity and being cooperative, cohesive places. Community values vary across the Project development area and stakeholder groups; however, consistent positive values of the area that were expressed during consultation were:

- Relative proximity to services;
- Relaxed lifestyle;
- Safe and family friendly communities; and
- Rural outlook with open space and diverse recreation options.

Context

The Project development area overlays a significant portion of the Darling Downs Statistical Division (SD), and is likely to impact directly on at least eight townships and numerous landholders adjacent to the local townships. All the regional communities potentially affected by the Project owe their existence to supporting agricultural production with some processing of agricultural products (cotton gins and meatworks). All of the communities are undergoing change stimulated by the development of coal and gas resources. Some have been experiencing this change for some time (Dalby, Chinchilla, Millmerran) while some are on the cusp of significant change (Wandoan, Miles). These communities have displayed a high level of resilience, with prolonged periods of drought, substantial flooding and fluctuations in agricultural commodity prices. They have experienced population increases and declines but have managed to remain communities throughout.

The communities in the study area have experienced a mix of population movements over the recent past, with larger, more established communities seeing population stabilisation or moderate growth, and smaller communities generally experiencing population decline. This trend is common throughout Queensland and is evidence of the population drift to larger regional centres, capital cities and the coast. Areas subject to economic diversification (like power stations, coal projects and gas projects) have experienced moderate population growth to sustain increases or off-set declines in population respectively. This industry diversification is having impacts on community members in terms of the uncertainty of the ultimate character of their community that it implies. It is particularly stressful for those agricultural producers whose properties may be potentially impacted. However, evidence of other communities (i.e. Roma) having been subjected to economic diversification over a longer period have managed to maintain the integrity of their community. Notwithstanding, there has been a cultural shift from agriculture to a blend of industry/ agriculture, but it would appear that this blend is integral for the stabilisation and well-being of the community.

While resource developers are relative newcomers to the area in the overall history of the region, the uncertain environmental impacts are also attracting other activists to the area creating associations not previously seen. There are multiple agendas coalescing under the banner of opposition to gas development. This is also resulting in a fracturing of the traditional established community between those opposed to the gas developments (generally directly affected) and those in favour of the projects (generally not directly affected, or currently economically benefitting or employed by projects). The cumulative weight of several concurrent projects is amplifying this fracture, with national media contributing as well. The result is a significantly higher perceived impact than is anticipated for a single project in the region. Generally the employment and population stability potential are able to partially alleviate the potential impacts on the community as a whole, though not necessarily for those directly affected.

The nature of the resource industry development proposed requires skill sets not widely available in the community, indicating the requirement for a significant influx of population during the construction and operation stages of the projects proposed.

All communities desire improved social services and infrastructure, but are not convinced that they will benefit from the proposed project developments in a timeframe commensurate with the impacts that they will have to endure.

Impact Assessment

The impact assessment identified and assessed potential social impacts that may result from Project activities and subsequently analysed the nature of each impact. Significant positive impacts identified through this process included increased employment, enhanced worker skills, and additional business opportunities at both the regional and national level, for the duration of the Project.

Potential high negative impacts identified related to the affordability and availability of housing and accommodation; increased demand on medical and health facilities; resident concern about the potential for health, safety and environmental impacts; uncertainty for landholders and community; concerns about road safety due to increased traffic levels, and the impact of higher CSG wages on other employers (refer to Table 1). The communities affected, and their capacity and resilience to cope with these impacts is discussed in the SIA. Table 1 summarises potential impacts according to their impact significance – categorised as very high; high; medium or low.

In evaluating potential impacts, the SIA considered community perceptions, concerns and expectations of the Project. There was variation across the study area and between stakeholder interest groups on what issues were considered to be priority and in some instances there were contradictory views on potential impacts that may result from the Project. Consistent themes from consultation include:

Request for Project information – indicating community's desire to find out more about the Project, the CSG industry and its implication for them;

- Water related concerns – potential effects on properties, livelihoods and the environment from Project activities relating to water extraction and treatment;
- Business and employment opportunities;
- Landholder relations and land management;
- Effects on community infrastructure and services;
- Maintaining social cohesion and opportunities to enhance community vitality; and
- Effects on living costs, including housing affordability.

Table 1 below summarises the potential impacts from Project activities, according to the assessed significance of the impact – very high, high, medium or low.

Social Impact Management Plan

A draft social impact management plan (SIMP) was a Terms of Reference (TOR) requirement for the SIA. The SIMP is modelled on the DIP SIA Unit (now within DEEDI) Guideline to preparing a social impact management plan published in September 2010, and addresses medium to very high impacts identified in the SIA (though no potential impacts were considered as being of very high significance). The SIMP is intended to support ongoing management of the potential social impacts of the Project, including addressing stakeholder expectations and concerns. The SIMP attached in this document includes mitigation and monitoring measures.

Table 1 Potential Project Impacts by Significance

Potential and Perceived Positive Impacts	Potential and Perceived Negative Impacts
Very High Impact	
None identified	None identified
High Impact	
Increased local employment opportunities	Increased community concern and anxiety on health, safety and environmental effects of the Project.
Increased training and skill development opportunities for the local population	Increased house, land purchase and rental prices resulting in diminished levels of housing affordability
	Heightened road safety risk
	Local business difficulties faced by operating in changed environment (increased costs, competition and labour)
	Increased landholder and community uncertainty
	Increased demand on medical and health facilities
	Reduction in availability of accommodation for low income and vulnerable groups including Indigenous groups
Medium Impact	
Off-set population decline in smaller rural communities	Increased cost of services locally
Higher skilled workforce based locally	Loss of social connection to land/ agricultural production
Retention of younger population	Increased potential for social divide and social tension
Increased labour force participation and reduction in unemployment	High demand for hotel/motel/caravan park accommodation.
Increased local expenditure on goods and services through Project activities	Potential for increased community conflict if overseas workers are employed with the Project and move into the community
Increased local expenditure on goods and services by incoming workers and incoming residents	Increased demand on emergency services
Increased potential for local business expansion and business establishment in local area	
Increased participation and support in the community (e.g., volunteers, involvement in sport and social organisations, support for local events)	
Reduced vulnerability to impacts associated with agriculture (drought, etc.)	
Increased returns to existing residents through higher house, land and rental prices	
Low Impact	
Increase in resident population	Disruption to farm operations
Increase in families associated with operational workforce	Influx of young male dominated construction workforce
Increased range, diversity and lower cost of goods	Reduction/loss of farm income
	Change in character of towns and to rural amenity of area
	Increased demand on community support services

Potential and Perceived Positive Impacts	Potential and Perceived Negative Impacts
Low Impact	
	Increased demand on recreational facilities
	Increased demand on schools and childcare
	Increased demand on utilities
	Unable to attract and retain service provider workers (e.g. police, teachers, doctors) due to increased living costs
	Serviced land not available to meet demand
	Increased ambient noise impacting on amenity
	Reduced air quality
	Light pollution impacting on amenity Increased criminal activity and anti-social behaviour Loss of agricultural land affects food supply and security

The Project considered possible cumulative impacts to the study area from multiple projects planned in the region. It was found that multiple projects could magnify the significance of those positive and negative impacts described in Table 1 below. Impacts rated as low in this assessment were not evaluated as they are not likely to create noticeable impacts to the community; however, if these impacts were to transition to medium impacts or higher, the SIMP will consider them. This will occur through ongoing monitoring to identify additional or undervalued impacts, as well as through stakeholder input into the ongoing review and adaption of the SIMP throughout the life of the Project.

It is also important to note that low impacts may not be perceived as low to every individual in the community. The rating is based on the potential impact to the community, as every individual will experience and deal with impacts in their own way. Low ratings are not a dismissal by Arrow of the magnitude of the impact for some individuals. The ongoing SIMP process and the confidential landholder negotiations are means for Arrow to address all impacts (including those assessed as low) on the individuals in the community, and determine if undervalued or unforeseen impacts should be elevated to medium or higher, and incorporated in a management / monitoring plan in the future. All impacts will always be considered for further evaluation if enough evidence is collected to warrant such an occurrence.

1 Introduction

1.1 Project Description

1.1.1 Project Proponent

Arrow Energy Pty Ltd (Arrow) is an integrated energy company focused on the development of Coal Seam Gas (CSG) in eastern Australia. Arrow's domestic interests span gas field developments, pipeline assets, electricity generation and proposed liquefied natural gas (LNG) projects.

Within Australia, Arrow has interests in more than 65,000 km^2 of petroleum tenures, mostly within Queensland's Surat and Bowen basins. Elsewhere in Queensland, the company is a major participant in the Clarence-Moreton, Coastal Tertiary, Ipswich, Styx and Nagoorin Graben basins.

Arrow's Queensland petroleum tenures are located close to the State's three key energy markets: Townsville, Gladstone and Brisbane. The Moranbah Gas Project in the Bowen Basin and the Tipton West, Daandine, Kogan North and Stratheden projects in the Surat Basin near Dalby constitute Arrow's existing production operations. These operations currently account for approximately 20% of Queensland's overall gas production.

Arrow supplies gas to the Daandine, Braemar 1 and 2, Townsville and Swanbank E power stations which participate in the National Electricity Market. With Arrow's ownership of Braemar 2 and the commercial arrangements in place for Daandine and Townsville power stations Arrow has access to up to 600-MW of power generation capacity.

Arrow and its equity partner AGL Energy have access rights to the North Queensland Pipeline which supplies gas to Townsville from the Moranbah Gas Project. They also hold the pipeline licence for the proposed Central Queensland Gas Pipeline between Moranbah and Gladstone.

Arrow is currently proposing to develop the Arrow LNG Project, which is made up of the following aspects:

- Arrow LNG Plant – The proposed development of an LNG Plant on Curtis Island near Gladstone, and associated infrastructure, including the gas pipeline crossing of Port Curtis.
- Surat Gas Project – The upstream gas field development in the Surat Basin, subject of this assessment.
- Arrow Surat Pipeline Project – (Formerly the Surat Gladstone Pipeline), the 450 km transmission pipeline connects Arrow's Surat Basin coal seam gas developments to Gladstone.
- Bowen Gas Project – The upstream gas field development in the Bowen Basin.
- Arrow Bowen Pipeline – The transmission pipeline which connects Arrow's Bowen Basin coal seam gas developments to Gladstone.

1.1.2 Project Details

Arrow proposes expansion of its coal seam gas operations in the Surat Basin through the Surat Gas Project. The need for the project arises from the growing demand for gas in the domestic market and global demand and the associated expansion of LNG export markets.

The project development area covers approximately 8,600 km^2 and is located approximately 160 km west of Brisbane in Queensland's Surat Basin. The project development area extends from the township of Wandoan in the north towards Goondiwindi in the south, in an arc adjacent to Dalby. Townships within or in close proximity to the project development area include (but are not limited to) Wandoan, Chinchilla, Kogan, Dalby, Cecil Plains, Millmerran, Miles and Goondiwindi. Project

1 Introduction

infrastructure including coal seam gas production wells and production facilities (including both water treatment and power generation facilities where applicable) will be located throughout the project development area but not in towns. Facilities supporting the petroleum development activities such as depots, stores and offices may be located in or adjacent to towns.

The conceptual Surat Gas Project design presented in the environmental impact statement (EIS) is premised upon peak gas production from Arrow's Surat Basin gas fields of approximately 1,050 TJ/d. The peak gas production comprises 970 TJ/d for LNG production (including a 10% fuel gas requirement for facility operation) and a further 80 TJ/d for supply to the domestic gas market.

A project life of 35 years has been adopted for EIS purposes. Ramp-up to peak production is estimated to take between 4 and 5 years, and is planned to commence in 2014. Following ramp-up, gas production will be sustained at approximately 1,050 TJ/d for at least 20 years, after which production is expected to decline.

Infrastructure for the project is expected to comprise:

- Approximately 7,500 production wells drilled over the life of the project at a rate of approximately 400 wells drilled per year.
- Low pressure gas gathering lines to transport gas from the production wells to production facilities.
- Medium pressure gas pipelines to transport gas between field compression facilities and central gas processing and integrated processing facilities.
- High pressure gas pipelines to transport gas from central gas processing and integrated processing facilities to the sales gas pipeline.
- Water gathering lines (located in a common trench with the gas gathering lines) to transport coal seam water from production wells to transfer, treatment and storage facilities.
- Approximately 18 production facilities across the project development area are expected to comprise of 6 of each of the following:
  - Field compression facilities.
  - Central gas processing facilities.
  - Integrated processing facilities.
- A combination of gas powered electricity generation equipment that will be co-located with production facilities and/or electricity transmission infrastructure that may draw electricity from the grid (via third party substations).

Further detail regarding the function of each type of production facility is detailed below.

Field compression facilities will receive gas from production wells and are expected to provide 30 to 60 TJ/d of first stage gas compression. Compressed gas will be transported from field compression facilities in medium pressure gas pipelines to multi-stage compressors at central gas processing facilities and integrated processing facilities where the gas will be further compressed to transmission gas pipeline operating pressure and dehydrated to transmission gas pipeline quality. Coal seam water will bypass field compression facilities.

Central gas processing facilities will receive gas both directly from production wells and field compression facilities. Central gas processing facilities are expected to provide between 30 and 150 TJ/d of gas compression and dehydration. Coal seam water will bypass central gas processing facilities and be pumped to an integrated processing facility for treatment.

1 Introduction

Integrated processing facilities will receive gas from production wells and field compression facilities. Integrated processing facilities are expected to provide between 30 and 150 TJ/d of gas compression and dehydration. Coal seam water received at integrated processing facilities is expected to be predominantly treated using reverse osmosis and then balanced to ensure that it is suitable for the intended beneficial use. Coal seam water received from the field, treated water and brine concentrate will be stored in dams adjacent to integrated processing facilities.

It is envisaged that development of the Surat Gas Project will occur in five development regions: Wandoan, Chinchilla, Dalby, Kogan/Millmerran and Goondiwindi. Development of these regions will be staged to optimise production over the life of the project.

Arrow has established a framework to guide the selection of sites for production wells and production facilities and routes for gathering lines and pipelines. The framework will also be used to select sites for associated infrastructure such as access roads and construction camps. Environmental and social constraints to development that have been identified through the EIS process coupled with the application of appropriate environmental management controls will ensure that protection of environmental values (resources) is considered in project planning. This approach will maximise the opportunity to select appropriate site locations that minimise potential environmental and social impacts.

Arrow has identified 18 areas that are nominated for potential facility development to facilitate environmental impact assessment (and modelling). These are based on circles of approximately 12 km radius that signify areas where development of production facilities could potentially occur.

Arrow intends to pursue opportunities in the selection of equipment (including reserve osmosis units, gas powered engines, electrical generators and compressors) and the design of facilities that facilitates the cost effective and efficient scaling of facilities to meet field conditions. This flexibility will enable Arrow to better match infrastructure to coal seam gas production. It will also enable Arrow to investigate the merits of using template design principles for facility development, which may in turn generate further efficiencies as the gas reserves are better understood, design is finalised, or as field development progresses.

Arrow has defined five development regions for the Project (Figure 2) as:

- Wandoan (with Miles as the operational base);
- Chinchilla (with Miles as the operational base);
- Kogan / Millmerran (with Dalby and Millmerran as operational bases);
- Dalby (with Dalby as the operational base) and;
- Goondiwindi (with Millmerran as the operational base).

Development will involve the installation of approximately 400 wells per year (each with an anticipated life of 15-20 years) and development of approximately one facility per year from 2014 (with two facilities being built in some years and none in others). With ramp-up and ramp-down, the life of the Project is estimated at 35 years. The Project will provide approximately 65% of the necessary gas supply to two LNG trains at Arrow's proposed LNG plant on Curtis Island. The Arrow LNG Plant will also receive gas from Arrow's tenements in the Bowen Basin.

The location of facilities will be determined through on-going exploration and development and will be influenced by front end engineering design for the Project.

1 Introduction

Figure 1 indicates the stages of development from 2014 to 2030. Each parcel indicated on the map represents the development of approximately 100 wells. Production wells are planned on an 800 m grid spacing (though they may range between 700 m and 1,500 m). This equates to an indicative density of one well per 160 to 320 acres (65 to 130 ha). Production wells will be located greater than 200 m from any sensitive receptor.

Table 5-8 shows the development by year that is expected to occur in the vicinity of the major towns in the Project's development regions, including the establishment and operation of major construction camps. Following the development of the wells within a parcel, production is expected to continue for between 15 to 20 years for each well. As can be seen from the table, development of the Project will commence in the Wandoan/Miles area and the Dalby area in 2013-14, and in the Chinchilla and the Millmerran area around 2018-19. While the precise location of facilities has not been determined, it is Arrow's intention to co-locate construction camps at the site of one of these facilities in a region, indicating they will not be adjacent to a neighbouring community.

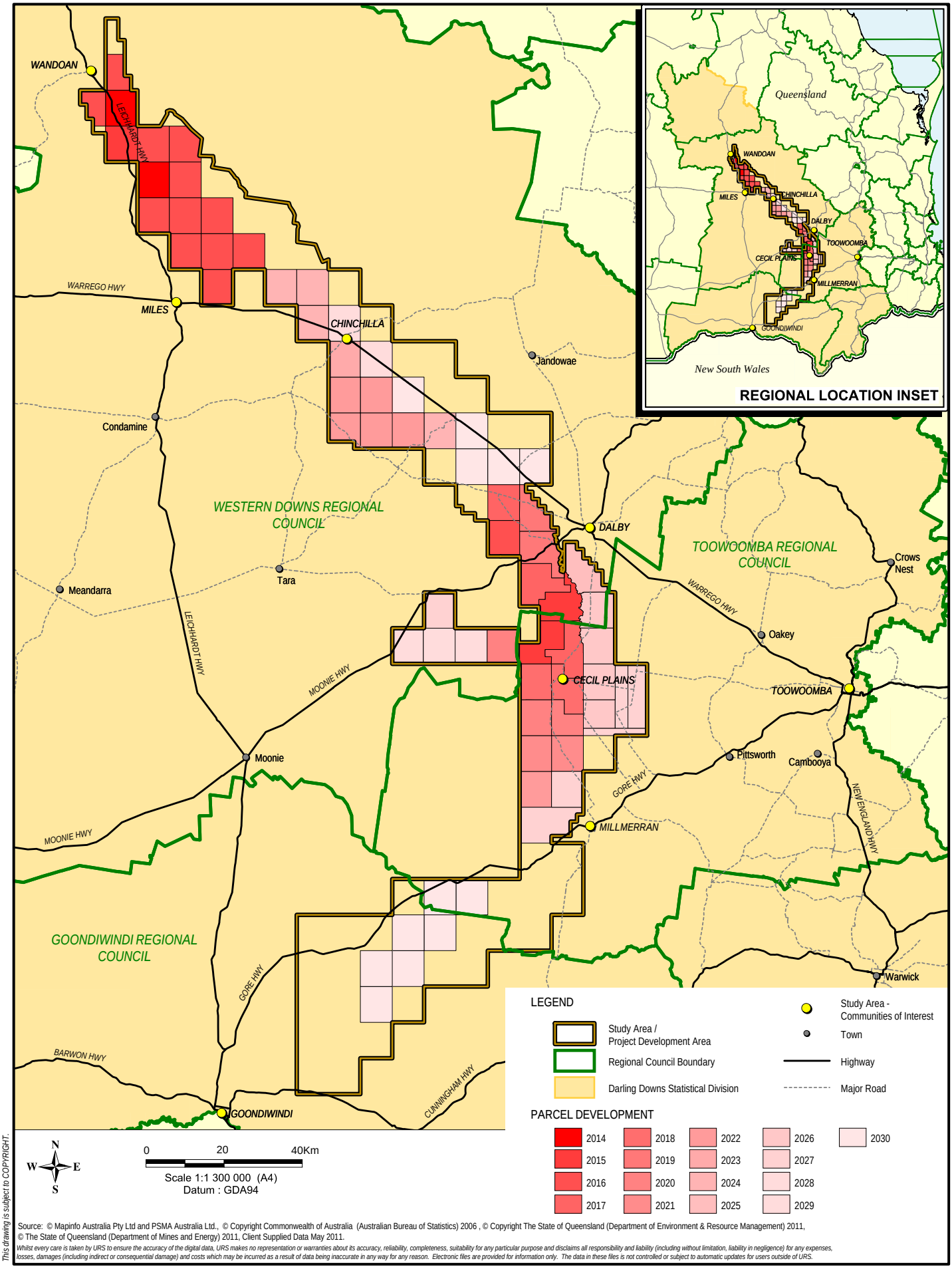
1.2 Study Area

The study area is located wholly within the Darling Downs Statistical Division (SD) that includes the regional councils of Toowoomba, Goondiwindi, Western Downs and Warwick, though does not encroach on the Warwick Regional Council area. The alignment of the Darling Downs Statistical Division with the study area and communities of interest is represented in Figure 1-1.

Figure 1-2 shows the location of the study area, including the project development area, the area of the Darling Downs Statistical Division, the communities of interest, and the five Project development regions.

1.3 Purpose

URS has been contracted by Coffey Environments to develop the SIA technical report component of the EIS for the proposed Arrow Surat Gas Project (the Project). Coffey Environments are the lead consultant for the EIS, which is being undertaken pursuant to the Environmental Protection Act 1994 (EP Act). Coffey Environments had carried out an initial social baseline study prior to the Shell/PetroChina acquisition of Arrow Energy in August 2010. Following the acquisition, the scope of the Project was revised, with an accelerated rate of project development expected. URS's role was to review and update the established social baseline with current data, following the Project hiatus that occurred during the acquisition. Based on the revised social baseline, URS was then required to conduct the SIA and develop the Social Impact Management Plan (SIMP). The SIA has been developed to the requirements of the terms of reference (TOR) for the EIS and the SIMP has been developed according to Queensland Government guidelines.



COFFEY ENVIRONMENTS

SURAT GAS PROJECT

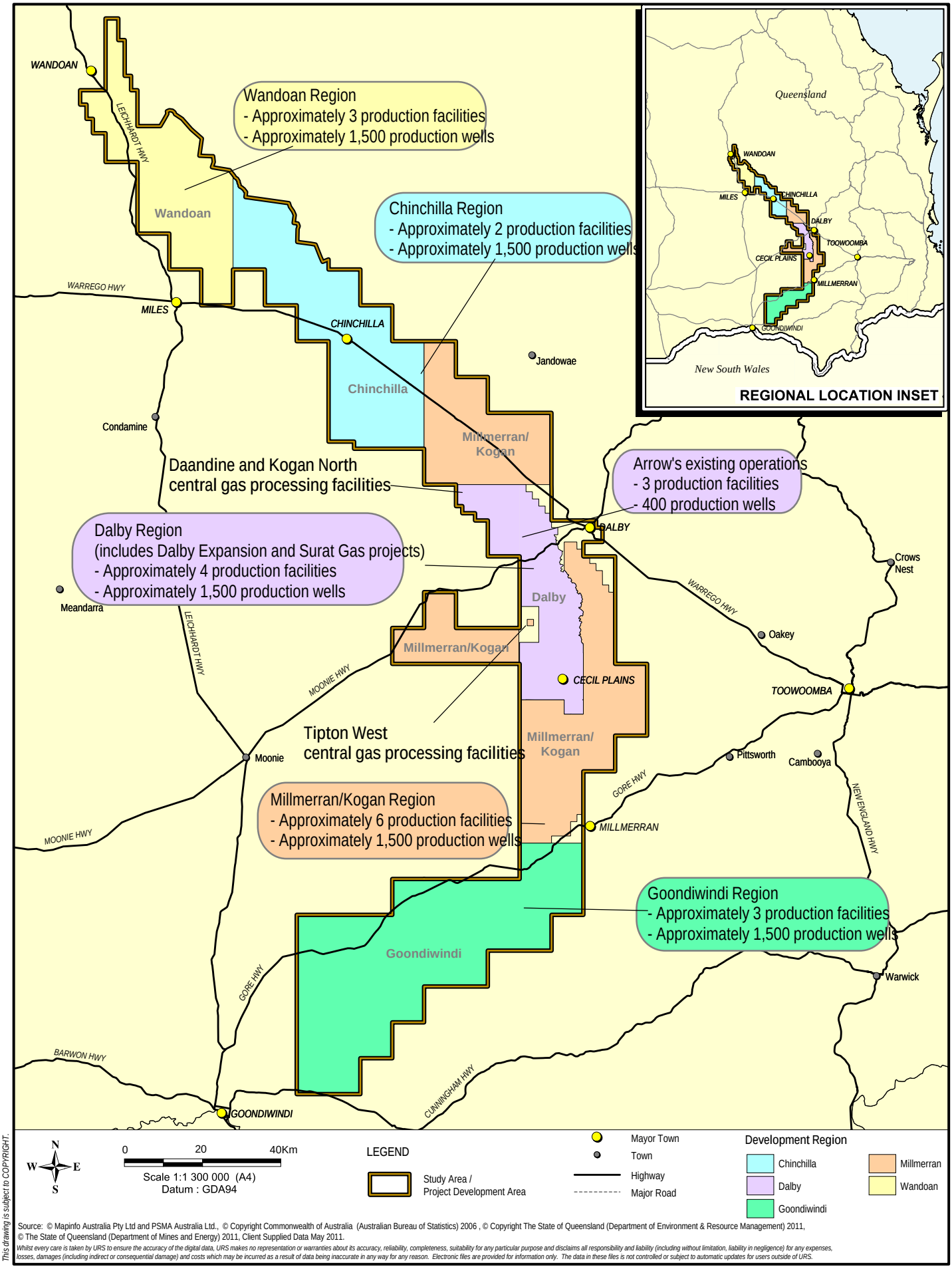
PROJECT STUDY AREA

URS

SOCIAL IMPACT ASSESSMENT

Figure: **1-1**

File No: **42626746-g-011.wor** Drawn: **LL** Approved: **LB** Date: **07-02-2012** Rev. **A** A4



Source: © Mapinfo Australia Pty Ltd and PSMA Australia Ltd., © Copyright Commonwealth of Australia (Australian Bureau of Statistics) 2006 , © Copyright The State of Queensland (Department of Environment & Resource Management) 2011, © The State of Queensland (Department of Mines and Energy) 2011, Client Supplied Data May 2011.

COFFEY ENVIRONMENTS

SURAT GAS PROJECT

SURAT GAS PROJECT
DEVELOPMENT REGIONS

URS

SOCIAL IMPACT ASSESSMENT

Figure: **1-2**

File No: **42626746-g-013.wor** Drawn: **VH** Approved: **LB** Date: **07-02-2012** Rev. **A** A4

2 Methodology

2.1 Baseline Assessment

2.1.1 Defined Study Area

This baseline report profiles the characteristics of the communities of interest to enable comparisons between each community of interest and the SD to be made, as seen in Table 2-1.

Table 2-1 SIA Study Area Geographic Breakdown

Statistical Division	Regional Council	Urban Centre / Locality
Darling Downs SD	Toowoomba	Toowoomba
		Cecil Plains
		Millmerran
	Western Downs	Dalby
		Miles
		Chinchilla
		Wandoan
	Goondiwindi	Goondiwindi

Note: Toowoomba, Western Downs and Goondiwindi regional councils have been calculated by accumulating the old local government areas, as defined by the Australian Bureau of Statistics (ABS).

Source: ABS, 2006

The urban centres / localities identified in Table 2 1 are the communities recognised as potentially affected by Project activities due to the communities' proximity to proposed Project infrastructure, or as potential sources of workers and accommodation for the operational workforce.

The ability to characterise and define these target areas relies on ABS data that uses a variety of geographic profiles to summarise census data in a meaningful way. A complication affecting the ability to clearly define regions relevant to this Project resulted from the reform process undertaken by local governments in Queensland that commenced in 2007 and ended at the local government elections on 15 March 2008 (two years after the last census data was collected in 2006). As a result of this reform process, the local government areas in Queensland were reduced from 157 to 73, and local governments relevant to the study area were amalgamated into regional councils. This created some challenges in compiling ABS data statistics relevant to the study area, and also in defining the boundaries of the quantitative survey sampling process.

Table 2-2 shows the eight communities of interest grouped by the local government area to which they belong.

2 Methodology

Table 2-2 Local Government Area Reforms and Communities of Interest

Current Local Government Area	Pre-2008 Reform Local Government Area	Communities of Interest
Toowoomba Regional Council	Camboya Shire Crow's Nest Shire Jondaryn Shire Millmerran Shire Pittsworth Shire City of Toowoomba	Cecil Plains Millmerran Toowoomba
Western Downs Regional Council	Chinchilla Shire Murilla Shire Tara Shire Wambo Shire Dalby Town Council Division 2 of Taroom Shire	Dalby Chinchilla Miles Wandoan
Goondiwindi Regional Council	Inglewood Shire Waggamba Shire Goondiwindi Town Council	Goondiwindi

Source: Arrow, 2010

2.1.2 Baseline Characterisation

Baseline characterisation is the detailed profiling of communities existing within the study area. The social baseline characterisation sets out the existing situation in the study area – providing a snapshot of the social conditions at that point in time.

The baseline characterisation investigated a range of community aspects, as outlined in the TOR for the Arrow Energy Surat Gas Project EIS. Factors included population, demographic and economic conditions and trends, political structures, social services, infrastructure and accommodation, land tenure and use, community organisations and events, cultural and heritage matters, and other factors which may influence the way local communities respond to potential changes brought about by the Project.

The baseline characterisation used both primary and secondary data sources. Primary data was sought through qualitative and quantitative research, stakeholder interviews and focus groups, and observation. Secondary data was sourced from the proponent, the ABS, the Queensland Government, historical literature, maps and spatial data, and other publicly available information obtained from the internet. Primary data collection activities sought to 'ground-truth' secondary data and collect additional primary data. Primary data was also sought to add weight to secondary data, primarily due to the time since the last official census in 2006. Triangulation of data from primary sources was determined to be the most effective means of confirming data, or providing alternative data.

Determining the existing social environment provides a baseline against which to measure social change and social performance in the future. Understanding the existing social environment enables the prediction of the capacity of local and regional populations to cope with the range of impacts the Project may bring, as well as their ability to take advantage of opportunities the Project may create.

2 Methodology

2.2 Workforce Assessment

Arrow has modelled workforce requirements and made a number of assumptions that this report used in assessing social impacts. URS reviewed and analysed Arrow's construction, operations and decommissioning workforce data, including:

- Workforce projections over the Project life;
- Source of the workforce;
- Workforce groupings and skill requirements; and
- Accommodation arrangements.

2.2.1 Workforce Projections

Construction workforce projections are based on the preliminary field development plan, and were estimated through consultation with Arrow and its contractors, and in consideration of the following assumptions:

- Downtime due to adverse weather conditions is estimated at 10% across construction of facilities only. Note that this has the effect of extending the duration of each task by 10%; however, for production well and gathering line installation, an estimation of 30% downtime has been assumed; and
- The construction crews' rosters have been developed to ensure a continuous work construction cycle.

Construction will commence in 2013, and operations will commence in 2014 when the first IPF and production wells are brought online (Table 5-9 indicates the staging of development and the communities in proximity to Project activities). The forecast operations workforce is based on the number of staff required to maintain and operate the gas processing facilities, production wells, and gas and water gathering systems.

Workforce projections include support staff based on-site, at bases in nearby towns to the facilities, and in Brisbane.

The size of the decommissioning workforce is a best estimate, as the decommissioning strategy has yet to be finalised.

2.2.2 Source of the Workforce

Arrow's preference is to source and accommodate their workforce locally (from within the study area) through its selection of staff and contractors; however, due to the high demand by Arrow and other CSG proponents in central Queensland, as well as low unemployment rates, Arrow recognises that they will likely need to source labour from further afield. Arrow's aim in this regard is to implement a hierarchy of preferred employment and contractor candidates based on the employees'/contractors' home or source location. The order of preference is as follows:

1. Local area (lives within the SIA study area – (see Figure 1);
2. Regional (lives within southern or central Queensland);
3. National (lives in Australia); and
4. International (lives outside Australia).

This report has used Arrow's estimations of the source locations of their workforce. Arrow aims to have 20% of construction-related positions sourced locally. Of this locally sourced workforce, 15% are

assumed to be existing residents and 5% will relocate to become local residents. For operational positions, 50% are expected to be existing residents of the study area and the remaining 50% will be sourced from outside the local area. This assumed workforce sourcing and movements is used as the basis for impact assessment for the SIA. Deviations to this assumption in the implementation of the Project will be captured in the management plans and consultation within the final social impact management plan (SIMP).

Arrow does not intend to establish drive in/drive out (DIDO) or fly in/fly out (FIFO) shifts for the operational workforce. It is assumed all operations workforce are expected to reside in the local area.

2.2.3 Workforce Accommodation Arrangements

The majority of the construction workforce is assumed to stay in temporary worker accommodation facilities (TWAFs) during work rosters. A TWAF site selection process has been proposed by Arrow and is discussed in Section 5.

The operational workforce sourced locally is assumed to have existing accommodation in the study area. It is assumed that operational workers sourced from outside the local area will relocate and purchase / rent / share housing in the local area.

2.3 Impact Assessment

The impact assessment phase consists of identification and assessment of the potential social impacts and a comprehensive analysis of the nature of each impact. The social impact identification and assessment has methodically considered the interaction of the project's activities with the people who may be affected (characterised through the social baseline).

An initial impact scoping assessment was undertaken to identify potential impacts (positive and negative) of the project. This was based on review of the baseline data and desktop analysis of likely impacts which could result from project activities, and an assessment of the current impacts (real and perceived) occurring throughout the study area due to other similar project developments. A detailed study was then carried out to ascertain the likely nature, magnitude, timing and duration of potential impacts, and the population segment that could be affected, including an assessment of the affected population's capacity to adapt.

In carrying out the assessment, URS reviewed stakeholder feedback and undertook targeted consultation with key stakeholders relevant to the SIA to understand the community's perception of likely impacts. Results from other EIS technical studies that included a potential human impact dimension were considered, including:

- Economic;
- Traffic;
- Noise;
- Groundwater
- Land use and farming; and
- Indigenous and non-Indigenous cultural heritage.

For the purposes of this study, potential impacts have been grouped in the following categories:

- Population and demographic profile;
- Employment, skills and business;

- Land use and property;
- Community values and lifestyles;
- Community infrastructure and services;
- Housing, and accommodation availability and affordability; and
- Health, safety and the environment.

The following criteria have been used to assess and understand the consequences of potential impacts:

- When the impact could occur;
- Frequency and duration of the impact;
- Magnitude of the impact;
- Geographic context and the communities affected;
- Ability of those affected to adapt to change; and
- Reversibility or minimisation of the impact.

The SIA has considered the significance of possible impacts based on the probability (or likelihood) of occurrence, and consequences of it occurring. Impacts have been ranked as low, medium, high, or very high significance (see Table 2-3).

Table 2-3 Significance of Impacts Guideline Table

Probability	Consequence				
	Insignificant	Minor	Moderate	Major	Severe
Likely	Low	Medium	High	Very High	Very High
Possible	Low	Low	Medium	High	Very High
Unlikely	Low	Low	Medium	High	Very High
Rare	Low	Low	Medium	High	Very High

Note: Adapted from the AS/NZ4360 environmental risk assessment standard

Source: URS, 2010

Areas of medium to very high significance are the focus for developing management strategies.

2.4 Mitigation and Management

Potential measures to avoid / minimise / mitigate negative impacts and enhance positive impacts have been developed to address impacts identified as medium, high or very high significance. These measures were identified through consultation with stakeholders, and through review of industry best practice.

A series of workshops were held with the proponent to understand the social initiatives already underway, and to discuss and agree on the mitigation measures that would be needed to address the impacts identified. These mitigation and management measures form the basis of the SIMP. The SIMP has been developed based on the Social Impact Assessment – Guideline to preparing a social impact management plan (DIP, 2010b), and in consultation with the social impact assessment unit (SIAU) now within the Department of Employment, Economic Development and Innovation (DEEDI).

Action plans to mitigate potential impacts will be developed and implemented in partnership with government, industry and community, and will be guided and supported by recently released policies and plans, such as the Major Resource Projects Housing Policy (DEEDI, 2011a), and Surat Basin Workforce Development Plan (Skills Queensland, 2011). The SIMP will consider requirements of any new plans and policies as they become available.

2.5 SIA Stakeholder Engagement

Stakeholder consultation carried out for the SIA investigated stakeholders' perceptions, concerns and aspirations relating to the project. It also assessed their opinions in regard to the ability of the proponent, and local or State government service providers, to manage the impacts and opportunities likely to result from the Project. Stakeholder perceptions have been obtained through qualitative, quantitative and participatory research methods. Stakeholder engagement has included:

- A series of focus groups to identify areas of concern and aspirations relating to the project;
- A detailed, statistically valid, quantitative telephone survey of the study area and communities of interest to quantify the weight, or level of importance, placed on identified issues or opportunities. The survey also sought to identify perceptions around CSG producers' ability to manage these impacts;
- Meetings and interviews with key stakeholders to understand the existing social baseline in the area and identify areas of concern and aspirations relating to the project; and
- Review and interpretation of other independent stakeholder analysis.

Focus Groups

Facilitated focus groups were held with stakeholders within the community, comprising landholders and interested parties, including:

- State government departments;
- Local governments;
- Indigenous groups;
- Emergency and health services;
- TAFE and training providers;
- Landcare and catchment groups;
- Service clubs (such as the Rotary Club and Lions Club);
- Chambers of commerce; and
- Tourist information centres.

Preliminary focus group discussions were conducted during the period 2–4 December 2009 in Toowoomba, Dalby (with some representation from Miles), Chinchilla, Millmerran and Goondiwindi. A total of 80 people attended. The towns of Cecil Plains and Wandoan were represented by their respective regional councils in focus group discussions held at other locations. These preliminary focus groups laid the foundation for initial consultation opinions.

The focus groups followed a structured research agenda designed to facilitate maximum contribution from participants. Separate sessions addressed specific areas of interest for each community or stakeholder group. Table 2-4 outlines the focus groups (including separate sessions) held in each location and the number of participants.

2 Methodology

Table 2-4 Focus Group Participation

Town	Focus Group	Number of Participants
Dalby	Community, education and health	10
	Environmental and landowners	5
	Business and industry	4
	Indigenous groups	7
Chinchilla	Community, education and health	7
	Environmental and landowners	6
	Business and industry	1
	Western Downs Regional Council	3
Toowoomba	Joint Government	6
	Business and industry	2
Millmerran	Community, education and health	11
	Business and industry	6
Goondiwindi	Community, education and health	6
	Environmental and landowners	12
	Local Government	4

Source: Arrow, 2011

The quantitative component of the study measured the extent to which perceptions were held across the community, the drivers behind these perceptions, the importance of the potential impacts to stakeholders, and their perceptions of the proponent's ability to management the impacts. The quantitative process also allows for accurate performance tracking over time. Coffey Environments used the PERIEX□ process for analysing quantitative perceptions data.

Quantitative survey

A quantitative investigation was undertaken in communities within and around the study area. A representative sample size was achieved at the 10% confidence level. The quantitative investigation allowed for the development of a range of social performance priority matrices which provided Arrow with a sound understanding of the priorities, at that point in time, of its social performance from the perspective of various stakeholder groups. International market research company, Synovate, conducted the quantitative investigation by telephone, interviewing more than 400 residents across the study area in December 2009. Synovate conducted the telephone surveys using a survey questionnaire compiled by Coffey Environments. The surveying was done in accordance with the Australian Market Research Society Quality Control Codes and Accreditation.

The final sample of 403 community residents comprised:

- 159 Toowoomba Region (including towns of Toowoomba, Millmerran and Cecil Plains) community residents;
- 113 Western Downs Region (including towns of Dalby, Chinchilla, Miles and Wandoan) community residents;
- 107 Goondiwindi Region (including towns of Goondiwindi and Inglewood) community residents; and

2 Methodology

- 24 interested and affected parties from the study area (as defined by the EP Act). Affected persons under the EP Act are landholders or owners of lands adjacent to the proposed development, or those with native title interests to the land (Section 38 EP ACT); interested persons are interested persons proposed by the proponent (Section 39 EP Act).

The questionnaire attributed an importance rating to each of the perceived impacts. This enabled the development of a range of priority matrices for different impacts, from the perspectives of a range of key stakeholders.

Statistical differences between comparative samples are noted in the body of the report. In addition, consideration was given to responses for specific stakeholder groups, including Indigenous representatives, farming and agricultural industry representatives, government agencies, and interested and affected parties within the study area. In some cases, such as interested and affected parties and Indigenous community members, the sample sizes were smaller, reflecting the lower populations in these groups. As such, the results do not have a 10% confidence interval.

Stakeholder Consultation

JTA Australia was engaged in September 2009 to facilitate consultation and provide engagement support for the development of Arrow's Surat Gas Project, including the EIS. There have been four consultation phases to date: Phase 1 (Sept – Dec 2009); Phase 2 (Jan – Jun 2010), Phase 3 (Jul – Dec 2010), Phase 4 (Jan – Jun 2011). The following summary presents consultation activities undertaken during these phases:

- Phase 1
  - One-on-one stakeholder briefings for MPs, Councillors and senior Government officers
  - Regional Government officer briefing, Toowoomba, 23/11/09
  - Community information sessions (Dalby, Chinchilla, Milmerran), 23-25/11/09, 67 attendees (though some attendees at each event did not register)
  - Community displays (Wandoan, Miles, Chinchilla, Dalby, Cecil Plains, Milmerran, Goondiwindi), 24/11 – 21/12/09
- Phase 2
  - One on one stakeholder briefings for MPs, Councillors and senior Government officers
  - Community feedback sessions (Wandoan, Miles, Chinchilla, Dalby (2), Cecil Plains, Milmerran, Goondiwindi), 15-18/6/10, 445 attendees
- Phase 3
  - Community information sessions (Wandoan, Miles, Chinchilla, Dalby, Cecil Plains, Milmerran, Goondiwindi, 22-26/11/10, 359 attendees
- Phase 4
  - Database updates
  - Water-specific workshops
  - Communication information sessions in seven towns
  - Informal community barbeque lunches
  - Visits to landholder properties
  - Freecall 1800 number

2 Methodology

- Project email
- Availability of Arrow technical experts at public events.

JTA has prepared a consultation report (JTA, 2011) which discusses outcomes and findings from Arrow's consultation program. This SIA study has drawn on JTA/Arrow's consultation program to identify stakeholder issues, concerns and aspirations.

In addition to Arrow's consultation (facilitated by JTA), URS conducted consultation with selected stakeholders to further develop the SIA.

Stakeholder groups consulted by both JTA and URS as part of the EIS program are listed in Table 2-5 below. Refer JTA Consultation Technical Report for further details.

Table 2-5 Stakeholder Groups

Group	Organisations	
	JTA Consultations	URS Consultations
Internal	Project staff Arrow executive and board Arrow management and employees Arrow joint venture partners	Project staff Arrow management and employees
Political	Local councillors Local State Members of Parliament Queensland Cabinet Local Federal Members Federal government ministers	**Local councillors** Western Downs Regional Council Goondiwindi Regional Council
Government agencies	**Local councils** Western Downs Regional Council Goondiwindi Regional Council Toowoomba Regional Council **Queensland Government agencies** Department of the Premier and Cabinet Department of Environment and Resource Management (DERM) Department of Employment, Economic Development and Innovation (DEEDI) Department of Transport and Main Roads Department of Health Department of Primary Industries and Fisheries Department of Communities Department of Education and Training **Government Owned Corporations** QR Limited Powerlink Queensland (Queensland Electricity Transmission Corporation Limited) Energex Ltd Sunwater Ltd. Emergency Services (police, ambulance, Qld Fire and Rescue Service, Rural Fire Service Qld, State Emergency Services) Commonwealth Government departments and agencies Department of Sustainability, Environment, Water,	**Local councils** Western Downs Regional Council Goondiwindi Regional Council Toowoomba Regional Council **Queensland Government agencies** Department of Employment, Economic Development and Innovation (DEEDI) Department of Communities Department of Health Department of Education Emergency Services Queensland

2 Methodology

Group	Organisations	
	JTA Consultations	URS Consultations
	Population and Communities (formerly Department of the Environment, Water, Heritage and the Arts	
Landholders and occupiers	Directly impacted by upcoming exploration and operational activities In the study area, but may not be impacted for some time	
Local industry and businesses	Chambers of Commerce (Toowoomba, Dalby, Millmerran, Border Rivers, Millmerran, Goondiwindi) Industry associations Australian Petroleum Production & Exploration Association Ltd (APPEA) Queensland Resources Council (QRC) Australian Chamber of Commerce and Industry (ACCI) Queensland Trucking Association Economic Development Australia (EDA) Queensland Conservation Council (QCC) Local Government Association Qld (LGAQ) Regional Development Australia (RDA) (i.e. previously Area Consultative Committees) Significant local business operators	RDA (i.e. previously Area Consultative Committees) *ad hoc* consultations with real estate agents Surat Basin Homes
Community service providers		Skills Centres Queensland – Dalby and Toowoomba Goondir Health Services St Vincent de Paul, Dalby
Agricultural	Qld Farmers Federation AgForce Queensland Growcom Qld Dairyfarmers' Organisation Forestry Plantations Qld Qld Cotton Corporation Darling Downs Cotton Growers Crop Management Services	
Environment	Environment and Property Protection Association (EPPA) Friends of Felton Condamine Alliance Greening Australia Murray Darling Basin Association Condamine Catchment Management World Wildlife Fund Australian Conservation Foundation Queensland Water and Landcarers Field Naturalists Basin Sustainability Alliance Border Rivers Catchment Management and Landcare Chinchilla Landcare Group Condamine Headwaters Landcare Group Millmerran Landcare Group Toowoomba Landcare Group Qld Murray Darling Committee Upper Dawson Branch Wildlife Preservation Society	

2 Methodology

Group	Organisations	
	JTA Consultations	URS Consultations
Communities	Dalby Cecil Plains Goondiwindi Millmerran Chinchilla Wandoan Miles	
Indigenous groups	Barunggam Bigambul People Iman People Wulli Wulli People Western Wakka Wakka People	Goondir Indigenous Services
Community and interest groups	Country Women's Association, unions, community development, parents and citizens, pastoral, education, farming, tourism and heritage groups, relevant sporting groups, general public, action groups (e.g. Coal 4 Breakfast), service groups, community health and emergency service providers, religious groups	
Schools	Bell State School Brigalow State School Burra Burri State School Cecil Plains State School Chinchilla Christian School Chinchilla State High School Chinchilla State School Dalby Christian School Dalby South State School Dalby State High School Dalby State School Goondiwindi State High School Goondiwindi State School Jandowae State School Jimbour State School Kaimkillenbun State School Kogan State School Lundavra State School Miles State High School Miles State School Millmerran State School Our Lady of the Southern Cross College Pittsworth State High School St Columba's Primary School St Joseph's Catholic School St Joseph's School St Mary's Parish Primary School Wandoan State School Warra State School	

2 Methodology

Group	Organisations	
	JTA Consultations	URS Consultations
Media	Print (*Dalby Herald, Surat Basin News, Chinchilla News, Toowoomba Chronicle, Goondiwindi Argus, Pittsworth Sentinel* and *Queensland Country Life*)) Broadcast (ABC Southern Queensland, 4AK/4WK, 4GR, Dalby FM 87.6, (Dalby community radio) Television	

Source: JTA, 2011; URS, 2011

Other Stakeholder Analysis

The SIA has drawn on the findings of various stakeholder consultation studies/programs such as the Surat Basin Regional Forum (Queensland Government, 2008); Surat Basin Scoping Study (CSIRO, 2008); Surat Basin Future Directions Statement (Queensland Government, 2008); and consultation from the Queensland Curtis LNG (QGC Ltd, 2009) EIS and Australia Pacific LNG Project EIS (Origin, 2010).

3

Social Baseline

3.1 Legislative and Policy Context

This section outlines the National, State and local legislation and policies relevant to the development of the Project. Commonwealth and State legislation relevant to the Project assessment is identified in Section 3.1.1. State and regional policy relevant to the Project is outlined in Section 3.1.2. The local government policies and strategies relevant to the social environment and the development goals of the three relevant Regional Councils are described in Section 3.1.3.

3.1.1 Relevant State and Commonwealth Legislation

The SIA is a component of the EIS, which is being prepared as a requirement for Queensland and Australian government approval of the proposed Project.

Queensland legislation applicable to the EIS is:

- *Petroleum and Gas (Production and Safety) Act 2004 (P & G Act)* – administered by the Department of Employment, Economic Development and Innovation (DEEDI) - Queensland Mines and Energy. *The P & G Act* provides the framework for accessing land to explore and develop petroleum and CSG resources. *The P & G Act* requires proponents to hold an authority to prospect prior to conducting exploration activities, and a petroleum lease prior to conducting gas production and associated activities. To construct and operate a gas pipeline outside a petroleum lease area, a proponent must hold a petroleum pipeline licence. The Project will encompass Arrow's existing Surat Basin petroleum leases as well as require the granting of new petroleum leases;
- *Environment Protection Act 1994 (EP Act)* – administered by the Department of Environment Resource Management (DERM). The *EP Act* is the principal legislation for environmental regulation of petroleum activities in Queensland. The operation of the Project may involve a number of activities described as Environmentally Relevant Activities (ERAs) under the *EP Act*, including petroleum activities, for which an environmental authority is required. A proponent must hold an environmental authority before a petroleum lease or petroleum pipeline license can be granted. Similarly, an environmental authority must be amended prior to undertaking any new ERAs on an existing petroleum lease. For projects of significant scale, preparing an EIS is generally considered the most appropriate assessment method to determine if an environmental authority should be granted. Arrow has elected to prepare a voluntary EIS under the *EP Act* to support the application for environmental authority(s) for the Project;
- *Sustainable Planning Act 2009* – administered by the Department of Infrastructure and Planning (DIP). The *Sustainable Planning Act* identifies 'assessable development' that requires development approval. However, Schedule 4 of the Sustainable Planning Regulation 2009 exempts petroleum activities from the types of assessable development listed in Schedule 3. This includes any development made assessable by a planning scheme; material changes of use for ERAs, land use and contaminated land; and operational works for vegetation clearing. These exemptions apply only for petroleum activities conducted within petroleum tenures. Approval for associated activities conducted outside the petroleum tenures, such as the establishment of construction camps, will require development approval. The Sustainable Planning Act identifies the code by which assessable development will be assessed. Often, this is other related legislation and the associated local government planning scheme;
- *Local Government Act 2009* – administered by the DIP. This is the principle legislation for local governments throughout Queensland. It provides councils with the flexibility to make choices

suiting their individual size, location and administrative circumstances and it has the checks and balances in place to improve transparency and accountability; and

- *Water Act 2000* and the *Water Safety (Supply and Reliability Act) 2008* – these acts have recently been strengthened with regard to regulating coal seam water.

The Commonwealth approvals process is triggered by a referral under the *Environmental Protection and Biodiversity Conservation Act 1999* (Commonwealth) *(EPBC Act).* The Department of Sustainability, Environment, Water, Population and Communities (DSEWPC) (formerly the Department of Environment, Water, Heritage and the Arts) is responsible for administering the Act. It provides a national framework for assessing actions (defined as 'controlled actions') likely to have an impact on a matter of national environmental significance.

Arrow referred the Project to the Australian Government on 27 January 2010. On 26 March 2010, the Australian Government declared the Project a controlled action due to its potential to significantly affect listed threatened species and ecological communities (Section 18 and 18A), and listed migratory species (Section 20 and 20A). Controlled actions require the Commonwealth Minister for Environment's approval prior to proceeding.

To minimise duplication of the EIS process, the EPBC Act contains provision for the Australian Government to accredit a State assessment process for the purposes of its own assessment. The Australian Government made the decision that the assessment would be completed under the accredited Queensland bilateral agreement. Therefore, the EIS prepared under the *EP Act* will address both Australian and Queensland government requirements.

Further details of these key legislative processes and the consequences for the Project are provided in the EIS. Information on additional State legislation that will require consideration is also addressed in the EIS.

3.1.2 State and Regional Plans and Policy

Queensland Government's Blueprint for Queensland's LNG Industry

Development of the Surat Basin is guided in part by the Queensland Government's *Blueprint for Queensland's LNG Industry* (DEEDI, 2009). The blueprint has been developed by the Queensland Government to outline the government's commitment to working with the LNG industry and local communities to ensure that the development of LNG resources in the State results in benefits for all Queenslanders and is delivered in a timely and well-coordinated manner.

The document sets out key initiatives for policy development, industry facilitation and individual project assistance, all of which are designed to facilitate the establishment of a viable LNG industry.

The blueprint also sets out the Government's intentions with regard to a number of issues associated with the development of LNG projects, some of which are particularly pertinent to the social environment and which include:

- Managing associated water;
- Protecting groundwater resources;
- Establishing a fair royalty regime;
- Managing cumulative impacts on communities;
- Promoting local business benefits;

- Planning for the future; and
- Assessing environmental impacts and managing our environment.

Surat Basin Future Directions Statement

The Surat Basin has emerged as a key area within the State for economic growth and development. At least four major developments utilising CSG are proposed in the region. Consequently, in March 2010, the Government launched the Surat Basin Future Directions Statement as a framework to shape the region to 2030. The statement identifies the major issues facing the region and provides an integrated approach to address those issues. The statement establishes clear mechanisms to coordinate the work of the Queensland Government and Surat Basin stakeholders.

The Statement identifies the opportunities and challenges that face the region as a result of the rapid growth of the resource industry, based on the experience gained from the development of the Bowen Basin and its service localities. It is expected that the key impacts will be similar in the Surat Basin and include:

- Significant pressure on social infrastructure, such as housing, education facilities, social support services and community facilities;
- Significant increased pressure on community members that are socially excluded or at risk of social exclusion;
- Impacts on amenity from increased development;
- Changes in community dynamics due to the predominance of single men during construction stages and shift workers;
- Significant pressure on economic infrastructure, including roads, rail, power, water and waste;
- Increased conflicts between different land uses;
- Road safety impacts due to increase in heavy and over-dimensional road traffic, and fatigue of DIDO workers; and
- Skills and labour shortages, impacting upon resource developments and agri-foods operations, as well as other businesses.

The statement highlights the need for coordination and collaboration on the following six key elements:

- Planning for growth;
- Planning and developing infrastructure;
- Liveable communities;
- Capturing economic opportunities;
- Skilled workforce; and
- Sustaining regional environments.

Surat Basin Regional Planning Framework

The *Surat Basin Regional Planning Framework* (SBRPF) identifies the strategies required for sustainable future growth and provides a preferred pattern of settlement as a guide for the location of future residential, service and industrial growth. The framework is a key initiative of the Surat Basin Future Directions Statement (DEEDI, 2011b). It was released in July 2011 following public consultation on a draft document released in November 2010.

3 Social Baseline

The SBRPF is a non-statutory planning instrument that will be used to inform the review and preparation of existing and future regional plans and planning policy, as well as the assessment of EIS for major projects.

The SBRPF includes strategic directions which establish the broad policy framework under a series of themes and planning principles. Themes include sustainability, strong communities, housing choice and affordability, strong economy, rural futures, resource sector growth, and infrastructure and servicing (DIP, 2010).

Surat Basin Workforce Development Plan

The Surat Basin Workforce Development Plan is a 'headline' initiative released by Skills Queensland in September 2011, under the auspices of the *Surat Basin Future Directions Statement*. The Queensland Government developed the plan in consultation with key stakeholders in industry, government and community, outlining objectives and key actions for ensuring the long term economic sustainability of the region, accounting for current and future workforce needs and mitigating the impact of rapid industry expansion on the communities of the Surat Basin.

Four key objectives of workforce development activities were identified. These are:

- Attract people to the Surat Basin;
- Retain people in the Surat Basin;
- Support regional businesses to capitalise on supply chain opportunities from the resources sector through workforce development; and
- Develop and implement education and training strategies to build the skill base of the people in the Surat Basin (Skills Queensland, 2011).

Sustainable Resources Communities Policy

The Sustainable Resources Community Policy focuses on communities that are being impacted by rapid development as a result of the resource industry. These impacts, primarily on community infrastructure and services and social structures, have the potential to change the landscape of existing communities throughout the State – in particular, the Bowen Basin, the Surat Basin and the North West Minerals Province.

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

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

Within each of these themes are a number of proposed initiatives. The initiatives complement the existing measures in place to support regional communities in priority resource development areas, including the appointment of a cross-departmental liaison officer in Emerald.

Major Resource Projects Housing Policy

The *Office of the Coordinator-General* also recently released the Major Resource Projects Housing Policy in August 2011 outlining seven core principles to support better planning for housing in resource communities (DEEDI, 2011a). These principles will guide the Proponent in considering the

impact of the Project's workforce accommodation on local and regional housing markets, and implementation measures will be addressed as part of an Integrated Housing Strategy. The policy's seven principles which must be considered are:

- Growth management and liveable resource communities;
- Environmental and Social Impact Assessment;
- Stakeholder engagement;
- Housing, planning, infrastructure and environmental sustainability;
- Project workforce accommodation;
- Housing market impacts; and

Queensland Regionalisation Strategy

The Queensland Regionalisation Strategy is a state government initiative to attract investment and people to regions by enhancing the economic development and liveability of regional communities (DLGP, 2011). The Strategy will be drafted after a period of public comment in 2011 on the consultation paper which outlines the local opportunities and proposed actions for economic growth at each of the regional levels. It is proposed that the Regionalisation Strategy will be interlinked with community plans. Regional communities will need additional provision of services, improved transport and communication links and other actions to promote their liveability. The state government will use the Regionalisation Strategy to collaborate with industry and community to align local and state government strategic planning, address priority skills development issues, support improved workforce planning and encourage workforce participation to maximise local employment benefits (DLGP, 2011).

3.1.3 Council Policies and Strategies

The development of the Surat Gas Project has the potential to influence and impact communities near its proposed activities. To understand the social and governance context, a number of local government policies and plans, which relate to the communities of the study area have been considered, and briefly described below.

DEEDI identified the top growth sectors in the Darling Downs region as energy (due to the Surat energy projects) and food processing. Through coal, CSG, ethanol and power station development, it has been predicted that the region has the potential to triple gross product over the next 22 years (TRC, 2010). Council and regional policies reflect this prediction and address the growth of the energy sector in parallel with traditional sectors across the region.

These policies and strategies serve to provide both local and wider context for the social and economic environment, the services and facilities provided, and the future direction of the area.

The Project is situated across the following three local government jurisdictions:

- Western Downs Regional Council;
- Goondiwindi Regional Council; and
- Toowoomba Regional Council.

The regional councils were formed in March 2008 upon the amalgamation of the following former shires and towns (note that only those former shires relevant to the Project have been listed and that the existing councils also include other former shires and towns which lie outside the defined communities of interest for the Project):

- Towns of Dalby and Chinchilla, formerly part of the Dalby Town and Chinchilla shires, now part of Western Downs Regional Council;
- Towns of Miles and Wandoan, formerly part of the Murilla Shire, now part of Western Downs Regional Council;
- Towns of Cecil Plains and Millmerran, formerly part of Millmerran Shire, now part of Toowoomba Regional Council;
- Town of Goondiwindi, formerly part of the Goondiwindi Town Council, now part of Goondiwindi Regional Council; and
- City of Toowoomba, formerly part of the City of Toowoomba Council, now part of Toowoomba Regional Council.

Most former town and shire plans and schemes have not yet been consolidated into amalgamated council plans at the point in time (June 2011). As a result, there are eleven individual planning schemes (from the former towns and shires) that continue to exist and that are considered for the Project (see Section 3.1.3– *Council Planning Schemes*).

The similarities between the council policies and strategies highlight great potential for the adoption of a regionalised approach to cooperation and resource sharing between local and State government, local communities and industry alike.

Council Plans

Toowoomba Regional Council

The Toowoomba Regional Council *Corporate Plan 2009–2014* (TRC, 2009) provides a clear framework for the newly amalgamated Toowoomba Regional Council's activities, short- and long-term planning, day-to-day operations and service delivery.

The council sees the region as combining "the best of city and country" and, in order to plan strategically for new growth, the plan assesses the local and regional issues of:

- Arts and cultural development;
- Disaster management;
- Economic development;
- Environmental management;
- Infrastructure development, maintenance and replacement;
- Public health;
- Population change and development;
- Community development and recreation; and
- Housing.

The *Strategic Directions Overview* (TRC, 2010a) was released in March 2010 and was undergoing community review and comment during the drafting of this report. This document reflects a desire to have a common starting point for all of council's forward-planning documents; one vision for the long-term future of the council area, with inter-linking goals, outcomes, strategies and actions to facilitate achievement of the vision.

The aspirations described in the strategic directions document aim to integrate Council's existing plans with new planning requirements to achieve a single vision for the future of the Toowoomba Regional Council local government area (LGA).

3 Social Baseline

Goondiwindi Regional Council

The Goondiwindi Regional Council's *Corporate Plan 2009–2014* (GRC, 2009a) identifies the emerging priorities and key strategies which it believes will direct future growth across the newly amalgamated region. The council's vision, to be a "vibrant, well planned and welcoming community with opportunity and lifestyle", is supported by the guiding principle of the Quadruple Bottom Line, which encompasses sustainable development across community, economy, environment and governance.

The development of the corporate plan requires the consideration of local and regional issues, described by Goondiwindi as including:

- The development of art and culture;
- Disaster management;
- Economic development;
- Regional cooperation;
- Environmental management;
- Asset infrastructure management;
- Public health management;
- Community development and community services; and
- Housing and population change.

The *Operational Plan 2009–2010* (GRC, 2009b) has been developed in accordance with the strategic goals and actions as outlined in the corporate plan. The plan prescribes the discrete activities for implementation across the region for the year under each of the guiding principles.

Western Downs Regional Council

The Western Downs Regional Council *Corporate Plan 2009–2014* (WDRC, 2009) identifies that the council is one of the top 20 largest regional councils in Queensland. The council has adopted the following principles to guide development and growth in the area:

- Invest in our people;
- Think regionally – deliver locally;
- Facilitate growth – manage impact;
- Excellence in affordable service delivery; and
- Consistent and informed decisions.

The priority issues identified by the council for consideration in the corporate plan include:

- People and communities;
- Growth and opportunity;
- Planning for liveability;
- Our environment;
- Utility services;
- Infrastructure;
- Empowering our team; and
- Business systems and technology.

The *Western Downs 2050 Community Plan* is intended to facilitate strategic and planned development of the region and form the basis for more detailed strategic and operational plans. The Community Plan has identified eight key themes through a community consultation process and review of existing information:

- Enriched communities;
- Healthy living;
- Effective and inclusive governance;
- Welcoming communities;
- Innovation and economic success;
- Balanced growth;
- Healthy natural environment; and
- Accessible and connected places.

The Community Plan will be implemented through a number of strategies and plans. Current strategies include the:

- Community facilities and services strategy;
- Health and well being strategy; and
- Sport and recreation plan.

Other strategies to support the Community Plan were being developed at the drafting of this report.

Council Planning Schemes

Localised planning schemes reflect community expectations and needs and provide an understanding of the core values of individual communities. Despite the amalgamation of the local councils in 2008, the local town planning schemes will remain in place until regional council area plans can be developed. There is currently now fixed timeline for the finalisation of the amalgamated regional council plans.

The schemes generally focus on maintaining the rural amenity of townships and protecting the environmental, historic and community values of towns, while improving the level of infrastructure and services. Presently, the former town and shire planning schemes direct the assessment of development approval applications. Of the eleven planning schemes that exist across the region, eight are directly relevant to the Project:

- Dalby Town;
- Chinchilla;
- Miles (Murilla Town Plan);
- Wandoan (Taroom Planning Scheme);
- Millmerran;
- Cecil Plains;
- Waggamba; and
- Goondiwindi.

The bulk of the Project development area is zoned rural under the various planning schemes. The rural zone primarily supports agricultural based activities, with the general aim of retaining viability for primary production where appropriate, and maintaining the natural environment and rural amenity. The Project development area also consists of rural residential zones that predominantly support rural residential development and generally consist of detached dwellings in a rural setting.

The planning schemes seek to protect existing industrial uses and contain any detrimental environmental effects within the industrial sites.

The strategic direction of local government planning is consistent throughout the Darling Downs region. Communities value their rural lifestyle and the local planning policies reflect this through the support for activities which protect and enhance the character of towns. The agricultural industry has shaped the character of many towns, and future economic activities based on existing industries and agricultural resources are encouraged. The diversification of industries consistent with town character is also desired. This is considered vital to communities and was highlighted during workshops held with communities in December 2009.

3.2 Study Area

The study area comprises the Project development area and the eight communities of interest (Cecil Plains, Millmerran, Toowoomba, Dalby, Chinchilla, Miles, Wandoan, and Goondiwindi). The study area sits within the Darling Downs Statistical Division (SD) and the regional councils of Toowoomba, Goondiwindi and Western Downs. The dominant industry within the Darling Downs SD is agriculture, which includes cropping, cattle and sheep grazing, intensive animal industries and timber milling. Mining is also a land use in the study area, with coal the predominant commodity being mined. Bentonite and gold are also mined though to a much lesser extent. Arrow was one of the early coal seam gas explorers in the Surat Basin, and commenced a pilot project at Tipton West in 2003 (http://www.arrowenergy.com.au/page/Our_Company/History).

The rapid expansion of the resource and energy industry has seen a change in land use across the Darling Downs, not only due to the development of the projects but also due to the increased residential and rural residential development to accommodate the growing population that has accompanied recent projects.

The bulk of the land within the study area is freehold, although there are areas of Crown land with a variety of tenures. Crown land tenures within the study area include lease land, reserves and unallocated crown land.

The townships in the study area are characterised by compact commercial areas usually oriented around a main street. Commercial areas are surrounded by residential development. All towns have an area designated for light and general industry. Residential zones are located in close proximity to commercial zones to provide efficient access to services and facilities. Residential developments across the region are generally detached, single-storey residences. The larger towns of Goondiwindi, Chinchilla and Dalby have encouraged development of low-level apartment blocks. All towns are surrounded by a mixture of irrigated and dry cropping, production forestry, and transport and/or communication zoning.

As populations increase, towns such as Chinchilla and Dalby have begun experiencing an increased rate of housing development, with a number of new residential subdivisions being developed. Residents and the Western Downs Regional Council have expressed a desire for resource development to be planned in consultation with the Council to ensure future demand for housing and commercial properties is considered (pers. comm., Western Downs Regional Council, 2011) (pers. comm., Surat Basin Developments, 2011) (*ad hoc* research, 2011).

3.2.1 Toowoomba Regional Council

Three of the communities of interest – Toowoomba, Millmerran and Cecil Plains – are part of Toowoomba Regional Council. Toowoomba Regional Council had an estimated population of 162,057

(OESR, 2011a) as at June 2010 and covered an area of 12,973 km^2. It is anticipated that the population of the council will increase, as evidenced by the South East Queensland Regional Plan (Queensland Government, 2009), which identifies development of the Surat Basin and other major infrastructure projects (such as the Gowrie-Grandchester rail corridor) as key growth drivers. The City of Toowoomba lies approximately 80 km east of the project development area and has the potential to provide human and capital resources from which the Arrow Project may draw its workforce and source goods and services. Toowoomba provides wide range of regional level social infrastructure. In addition to the city of Toowoomba, the council area includes two small communities of interest that lie near the project development area: Cecil Plains and Millmerran.

3.2.2 Western Downs Regional Council

The Western Downs Regional Council is centrally located within the study area. The Council covers an area of 38,039 km2 and includes four communities of interest to the Project: Chinchilla, Dalby, Miles and Wandoan. The council had an estimated population of 32,071 (OESR, 2011a) as at June 2010. The current development of CSG in the Western Downs has been focused around Dalby and has also moved northwest towards Chinchilla, Miles and Wandoan.

Residents of the Council area, in particular Dalby, have experienced the effects of the rapid growth of industry such as gas exploration, mining and power generation. These towns have seen significant increases in exploration activities and the construction of large projects such as coal and gas-fired power stations. Construction workers associated with large projects have generally been accommodated in temporary construction camps.

3.2.3 Goondiwindi Regional Council

Goondiwindi Regional Council covers an area of 19,292 km2. The Goondiwindi Regional Council had an estimated population of 11,413 (OESR, 2011a) as at June 2009. Goondiwindi is the administrative centre of the council area and is located to the south of the defined project development area. As the largest service centre along the border, Goondiwindi experiences pressure on services and facilities from surrounding towns in Queensland as well as from surrounding towns in New South Wales. The diversity of the agricultural industry and a particularly good growing season in 2009 saw the Goondiwindi region largely untouched by the global financial crisis.

Although the communities of interest each have common elements, there are differences in their baseline social characteristics that require examination to determine potential impacts.

3.3 History and Settlement

The study area has a long agricultural history. Towns such as Dalby, Chinchilla, Millmerran and Goondiwindi served as community hubs for the rural catchment area, as well as centres for administration and commerce. The agricultural sector has experienced a downturn over recent years, which may have stemmed from rising costs and falling profitability resulting from the drought (DIP, 2010). Resource development of the Surat Basin commenced in 1961 with the discovery of the Moonie Oil field. The region has experienced rapid expansion of resource industries, including CSG, coal mining and underground coal gasification. At the same time, a large number of proposed industrial and public infrastructure projects (such as power stations, gas pipelines, dams, water reticulation, and rail and power distribution networks) are also under consideration or are in advanced stages of planning (DIP (3), 2008).

3.4 People – Population, Demographic and Household Composition

The size, mobility or permanency of a population can have a significant influence on a community's ability to absorb a significant expansion or contraction of its base. Queensland has had record levels of population growth in recent years and is Australia's second fastest growing State after Western Australia.

3.4.1 Population of the Study Area

As at June 2010, Darling Downs SD had an estimated population of 241,537 – approximately 5% of the State's population. The gross product of the Darling Downs regional economy was estimated at $10.6 Billion in 2007–2008, representing almost 5% of Queensland's gross State product. Although the population and economy of the Darling Downs SD has been growing, the growth rate has been slower than the Queensland average over the past five years (BITRDLG, 2009).

Table 3-1shows the changes in the populations at the regional council area level. It can be seen that Toowoomba Regional Council has experienced the highest degree of growth (17.8%) over the period.

Table 3-1 Regional Councils – Population Change 2001–2010

Regional Council	2001 Population	2006 Population	2010 Population (a)	Population change 2001–2010	Annual Change
Goondiwindi	10,419	10,741	11,413	9.5%	1.1%
Toowoomba	137,593	151,297	162,057	17.8%	2.0%
Western Downs	29,277	30,180	32,071	9.5%	1.1%

Note: (a) Preliminary OESR 2010 population estimates

Source: OESR, 2011a

Table 3-2 details the population in each of the communities of interest at the time of the 2001 and 2006 censuses and the ABS population estimates for 2010. Communities experiencing notable growth include Chinchilla, Toowoomba, and Goondiwindi. Chinchilla in particular is experiencing very high rates of growth, growing by 31.7% over the period, with an average annual growth rate of 3.5%. The influx of new people to the area can be attributed to the expansion of the resource industries and major infrastructure development. Smaller centres such as Millmerran, Wandoan and Miles have experienced relatively small changes in population, while Cecil Plains has seen population decline.

This trend is expected to continue in the future, particularly with the growth of CSG and industrial development in the area. Toowoomba's population growth reflects its role as the major urban centre for the Darling Downs region and the region to the west of the Darling Downs.

3 Social Baseline

Table 3-2 Community Population Change

Community	2001 Population	2006 Population	2010 Population (a)	Population Change 2001–2010	Annual Change
Cecil Plains	281	236	241	-14.2%	-1.6%
Chinchilla	3,376	3,681	4,445	31.7%	3.5%
Dalby	9,731	9,776	11,097	14.0%	1.6%
Goondiwindi	5,491	5,630	6,593	20.1%	2.2%
Miles	1,196	1,164	1,259	5.3%	0.6%
Millmerran	1,250	1,223	1,348	7.8%	0.9%
Toowoomba*	89,338	95,265	106,743	19.5%	2.2%
Wandoan	396	386	420	6.1%	0.7%
Darling Downs SD	203,397	213,968	241,537	18.8%	2.1%
Queensland	3,655,139	3,904,532	4,513,850	23.5%	2.6%

Note: (a) - Preliminary OESR 2010 population estimates. * - Urban Centre/Locality

Source: ABS 2001; ABS 2006; OESR 2011

Goondiwindi has seen similar population growth to Toowoomba or Chinchilla, in contrast to other smaller communities within the study area which have begun to experience the effects of resource development (mining and coal seam gas production). Goondiwindi remains a town that is based largely on rural industries, the diversity of which has assisted in maintaining positive population growth. Resource and infrastructure development may moderate the population decline of smaller centres if people associated with this development and establish their homes in or close to the towns. It is not uncommon for small communities to express a strong desire for some population growth (in order to maintain critical thresholds for service delivery) even though they have limited capacity to deal with significant influxes or booms, such as those experienced during the construction periods for resource projects.

Table 3-3 shows that well over half the population in Cecil Plains, Chinchilla, Dalby, Miles, Millmerran and Wandoan resided in the same location for the five years to 2006. For Goondiwindi, this was true for slightly more than half of the population. In contrast, less than half of Toowoomba's population resided in the area for the five years to 2006, with the city's notable population increase over that period contributing to this finding.

Table 3-3 Proportion of Population Remaining in the Study Area between 2001 and 2006

Locality	Proportion of Population Remaining in the Area Between 2001 to 2006 (%)
Cecil Plains	64.7
Chinchilla	64.4
Dalby	57.6
Goondiwindi	51.5
Miles	62.6
Millmerran	63.0
Toowoomba	47.7
Wandoan	69.9
Darling Downs SD	53.6
Queensland	45.1

Source: ABS, 2006

3.4.2 Demographic

The diversity and demographic mix of a population contributes to a number of factors relating to community cohesion, as well as indicating a community's ability to adapt to change. Demographics considered in this context include gender, age and culture.

Gender

Table 3-4 shows the gender ratio in the study area identified in the 2006 census as fairly balanced, with females constituting approximately half of the population in each community in each age bracket. Notable exceptions of under-representation of females are evident in Chinchilla and Dalby in the 0–19 age group, Wandoan in the 20–54 age group and Cecil Plains in the 55 and over age group. Females are over-represented in Cecil Plains, Miles and Wandoan in the 0–19 year age group, in Miles and Toowoomba in the 20–54 age group, and in all communities of interest except Cecil Plains in the 55 and over age group (the latter being consistent with the trend in Australia for women to live longer than men).

3 Social Baseline

Table 3-4 Population by Age Group, percentage of total and percentage female in Study Area

Community	Aged 0–19 Years			Aged 20–54 Years			Aged 55 and Over		
	Number	% of Total Pop.	% Female	Number	% of Total Pop.	% Female	Number	% of Total Pop.	% Female
Cecil Plains	66	28%	55%	98	42%	48%	71	30%	47%
Chinchilla	947	26%	45%	1,615	44%	49%	1,120	30%	54%
Dalby	3,058	31%	48%	4,488	46%	51%	2,232	23%	53%
Goondiwindi	1,672	30%	49%	2,722	48%	50%	1,236	22%	54%
Miles	332	29%	52%	438	38%	53%	394	34%	55%
Millmerran	321	26%	50%	521	43%	51%	381	31%	54%
Toowoomba	27,505	29%	50%	43,895	46%	52%	23,865	25%	56%
Wandoan	113	29%	55%	164	43%	46%	108	28%	57%
Darling Downs SD	62,786	29%	49%	95,874	45%	51%	55,096	26%	53%
Queensland	1,076,835	28%	49%	1,907,251	49%	51%	920,445	24%	52%

Source: ABS, 2006

Age

Within the study area, the population's age distribution generally reflects that of the broader State of Queensland. The demographic composition of the study area suggests that younger families dominate the population, reflecting the interstate and overseas migration pattern for the State. Generally, the 0 14 and 35-44 age brackets are better represented than any other age bracket. Within the study area, the 15-19 and 20-24 age brackets are the least represented in the workforce. This may reflect the limited educational opportunities for this group within their respective localities or the offer of more attractive employment opportunities in South East Queensland or further north in the mining areas of the Bowen Basin, or elsewhere.

Millmerran's 15-19 and 20-24 age brackets are particularly poorly represented compared to the rest of the study area and the State. This may be attributed to the lack of educational opportunities in the town, with the local school offering classes from prep to year 10 only.

The over 55 cohort for the regional councils in the study area is 25% to 26% of the overall population, slightly higher than the State average (24% of Queensland's population is over 55). Within the potentially affected areas, Millmerran and Chinchilla had 28% and 29% respectively of the population over 55.

Table 3-5 shows the increased median age of persons across all the communities of interest from 2001 to 2006. Miles and Wandoan have particularly higher median ages (41 and 40 respectively) than the State median age of 36. Dalby, Goondiwindi and Toowoomba have lower median ages than the State.

3 Social Baseline

Table 3-5 Median Age of Persons 2001 and 2006

Locality	2001 Median Age of Persons	2006 Median Age of Persons
Cecil Plains	32	39
Chinchilla	37	39
Dalby	33	34
Goondiwindi	33	34
Miles	38	41
Millmerran	37	39
Toowoomba	33	35
Wandoan	35	40
Darling Downs SD	34	37
Queensland	35	36

Source: ABS, 2001; ABS, 2006

Cultural Diversity

Recognising cultural diversity in communities assists the development of Project mitigation strategies that encourage positive social values. Table 3-6 details the Indigenous population in the study area, as well as showing the relatively small proportion of the population born overseas.

Table 3-6 Proportion of Indigenous, Overseas Born, and Languages Other than English Spoken at Home

Community	Total Population	Indigenous Proportion of Total Population (%)	Proportion of Population Born Overseas %)	Proportion of Population Speaking Language Other than English at Home (%)
Cecil Plains	236	3.0	4.2	0.0
Chinchilla	3,681	3.5	5.1	1.7
Dalby	9,778	6.1	4.8	1.6
Goondiwindi	5,630	4.4	3.4	1.3
Miles	1,164	7.5	4.8	1.8
Millmerran	1,223	3.8	5.2	1.3
Toowoomba	95,265	2.9	13.9	4.4
Wandoan	386	1.0	2.0	0.0
Goondiwindi RC	10,116	3.7	4.3	-
Toowoomba RC	142,275	2.9	9.0	-
Western Downs RC	28,458	4.2	4.9	-
Darling Downs SD	231,599	3.1	8.2	3.3
Queensland (State)	3,904,532	3.3	17.9	8.2

Note: RC – regional council

Source: ABS, 2006.

While migrants from overseas are a significant contributor to traditional population growth in Queensland, the country of origin for most of the population in the study area is Australia. In the smaller regional towns, generally in excess of 90% of the population was born in Australia and speak only English, compared to 86% for the Queensland average.

The Darling Downs SD and each of the regional council areas demonstrate populations with a higher proportion born in Australia than the State as a whole. English is the primary language spoken at home in the study area.

Indigenous Australian Demographic

Australia's Indigenous population has had a challenging history of conflict and displacement within the Darling Downs. Queensland is home to almost half of Australia's Indigenous population (which equates to ~3.3% of the total Queensland population), and the communities in the study area, with the exception of Wandoan, have proportions of Indigenous populations consistent with or higher than the State as a whole. Dalby, Goondiwindi and Miles have proportionally significantly higher Indigenous populations than that of Queensland. However, the Indigenous population of the combined Western Downs, Toowoomba and Goondiwindi regional council areas was 5,681, or just 3.0% of the total population of the three regional councils.

The median age of the Indigenous population in Queensland is 20 years; this is significantly lower than that of the non-Indigenous population, which is 36 years. This lower average age is reflected across all of Australia's Indigenous population. Similar to the non-Indigenous population of the study area, the 0–14 age group is better represented than any other age group. The Indigenous population in the 15–19 age group is poorly represented in the study area, which may reflect a shift of this age population away from smaller towns to larger regional centres to pursue education or employment opportunities. Generally, the 55–65 years and over age group is the most poorly represented age group among the Indigenous population, reflecting broader issues associated with poor health and shorter life expectancy.

The gender ratio for the Indigenous population within the regional councils is 49% male and 51% female, which is comparable to the Australian average.

3.4.3 Household Structure and Composition

The nature of households – their size and profile – can be an indicator for potential social impact when, for example, historically family-oriented communities experience a net population increase due to the introduction of a project workforce that is unaccompanied by families.

Table 3-7 shows that in the Darling Downs SD married or de facto couples account for approximately four out of every five persons aged over 15 years living in the community, a trend which mirrors the State average. The proportion of couples is marginally higher in Goondiwindi, Chinchilla, Millmerran and Wandoan and slightly lower in Cecil Plains, Dalby and Miles.

3 Social Baseline

Table 3-7 Proportion of Population Over 15 years In A Registered or De Facto Marriage

Locality	Proportion of Population Over 15 years In A Registered or De Facto Marriage (%)
Cecil Plains	76.6
Chinchilla	80.0
Dalby	76.2
Goondiwindi	86.7
Miles	77.5
Millmerran	78.8
Wandoan	84.9
Toowoomba (Locality)	79.2
Darling Downs SD	77.9
Queensland (State Average)	79.3

Source: ABS, 2006

Table 3-8 shows the relatively high percentage of family-orientated households across the communities of interest, ranging from 59.6% in Miles to 67.6% in Dalby.

Table 3-8 Proportion of Family Households in the Study Area

Locality	Total Households	Proportion of Family Households (%)
Cecil Plains	100	63.6
Chinchilla	1,393	61.8
Dalby	3,433	67.6
Goondiwindi	1,942	64.4
Miles	453	59.6
Millmerran	481	64.4
Toowoomba	35,086	66.2
Wandoan	159	60.4
Darling Downs (SD)	55,952	69.6
Queensland (State)	1,011,982	67.1

Source: ABS, 2006.

Table 3-9 shows that the most common family compositions for all localities (in descending order) were a couple with no children, a couple with children under 15 years of age, and a couple with no children under 15 years of age.

Table 3-9 Family Composition and Average Household Size

Community	Average House-hold Size	Couple Family			Single Parent Family		Other Family
		No Children	Children Under 15	No Children Under 15	Children Under 15	No Children Under 15	
Cecil Plains	2.4	39.1	21.7	8.7	18.8	4.3	7.2
Chinchilla	2.4	46.3	31.9	7.3	6.6	5.9	1.9
Dalby	2.6	38.4	33.3	10.1	11.3	5.4	1.6
Goondiwindi	2.6	39.6	34.5	10.1	8.1	5.3	2.3
Miles	2.3	42.5	33.1	4.5	11.1	4.9	3.8
Millmerran	2.3	46.6	30.4	7.7	9.9	3.1	2.2
Toowoomba	2.5	44.4	32.9	11.9	1.2	7.4	2.3
Wandoan	2.2	45.5	36.6	7.8	10.0	0	0
Darling Downs SD	2.6	41.0	32.1	11.0	8.9	5.5	1.6
Queensland	2.6	39.1	31.2	12.1	9.5	6.4	1.7

Source: ABS, 2006.

3.4.4 Non-resident Workers

Non-resident workers are defined here as those people who are not usual residents of the local area where they work (DIP (3), 2008). Non-resident workforces play a small but significant role in the Surat Basin's current resources boom. As at June 2008, Western Downs Regional Council contained 1208 non-resident workers, and there are currently likely to be more, due to increased development activity since that count. Figures were not available for other parts of the Surat Gas Project study area; however, as a comparison, Roma Regional Council had 648 non-resident workers.

Characteristics of this population are:

- The duration of their stay in the area is extended and regular (e.g. they have a multiple day working shift before returning for a break at their place of usual residence);
- While living in the area, the worker stays in commercial accommodation (hotels, motels or caravan parks) or in TWAFs; and
- Non-resident workers are often categorised according to their means of travel between home and place of work, either FIFO or DIDO.

3.5 Economy, Employment and Enterprise

3.5.1 Economy

The Gross Regional Product (GRP) for the Darling Downs region was estimated at $10.6 Billion in 2007–2008 – almost 5% of Queensland's Gross State Product (GSP). The Darling Downs SD regional economy grew at an average annual rate of 7.8% in the four years to 2007–2008, lower than the State's average annual growth of 9.8% during the same period.

Darling Downs' five largest industries in terms of economic output (GRP) for the four years to 2007–2008 were:

- Agriculture (13.0%);
- Manufacturing (9.5%);
- Retail trade (7.7%);
- Construction (6.9%); and
- Health and Community Services (6.3%).

These five industries accounted for 43.5% of Darling Downs' GRP in the four years to 2007–2008. The electricity, gas and water industry accounted for 2.9% of Darling Downs' GRP for the same period, with mining accounting for 3.4% of Darling Downs' GRP. The growth of the energy and mining sectors in the Darling Downs is likely to elevate these industries' economic importance to the region in the future.

Although the communities of interest all have a common agricultural basis, the differences between the communities have the potential to affect their capacity to deal with introduced change. This includes managing boom-bust cycles sometimes attributable to resource development or the impacts of global or environmental conditions. This comparison is evident in the difference in GRP derivatives and performance in each regional council area, as detailed below.

The GRP for the Toowoomba Regional Council area for 2007–2008 was $6.6 Billion, an increase of 9.3% on the previous financial year. This represents 3.1% of the GSP of Queensland and is driven mainly by manufacturing (11.7%); health and community services (8.2%); and retail trade (6.9%). Electricity, gas and water supply contributed only 1.7% to the total GRP (TRC, 2009). From the previous year (2006–2007), the agriculture, forestry and fishing industry experienced the highest annual increase in GRP, rising 25.8%. Other sectors that experienced high levels of annual growth included wholesale trade (up 21.2%); cultural and recreational services (up 18.5%) and property and business services (up 18.5%). Toowoomba Regional Council's major employment industries were retail trade, manufacturing and healthcare and social assistance, each employing 12% of the workforce (TRC, 2009).

The GRP for the Western Downs Regional Council in 2006–2007 was $1.3 Billion, with the dominant sector of agriculture, forestry and fishing representing 22.6% of the total. Electricity, gas and water supply contributed approximately 3.2% to the total GRP, a contribution that is anticipated to increase in the future, continuing the trend (30.3% increase) from 2005–2006 (WDRC, 2009).

Goondiwindi and Western Downs regional councils both enjoy agriculture, forestry and fishing and retail trade as their two major employment industries, although the third largest employment industries differ. Goondiwindi Regional Council's third largest employment industry is healthcare and social assistance, while Western Downs Regional Council's is construction, which could be attributable to the construction of major projects.

3.5.2 Living Costs

The *Index of Retail Prices in Queensland Regional Centres – May 2010* survey (OESR, 2011b) provides a comparison of relative retail prices of goods and services in regional centres against the average for the Brisbane SD (Brisbane) as at May 2011. The survey gives an indication of relative differences in the cost of living for some of the communities of interest.

The items considered for this survey are:

- Food;

- Alcohol and tobacco;
- Clothing and footwear;
- Housing;
- Household content and services
- Health, education and communication
- Transportation
- Recreation
- Financial and insurance services.

The index is presented on the basis of Brisbane as the benchmark (Brisbane = 100).

Table 3-10 presents the relative costs of selected goods and service items for Chinchilla, Dalby and Toowoomba against the Brisbane average. It also compares the relative cost against Emerald, Moranbah and Roma, which are established towns that service the resource industry.

Table 3-10 Relative Costs of Goods and Services Compared to Brisbane

Community	Food	Housing	Health, Education and Communication	Transportation	All Items
Chinchilla	108	84	100	102	98
Dalby	106	85	99	97	96
Toowoomba	107	77	101	97	95
Comparative Centres					
Emerald	106	112	102	97	104
Moranbah	105	165	100	103	113
Roma	110	83	100	98	98
Brisbane	**100**	**100**	**100**	**100**	**100**

(Source: OESR, 2011b)

Results of the survey are as follows:

- Chinchilla, Dalby and Toowoomba are comparatively cheaper overall than Brisbane;
- Food costs are considerably higher in Chinchilla, Dalby and Toowoomba (respectively 8%, 6% and 7% higher than Brisbane);
- Housing costs are significantly lower than Brisbane (16%,15% and 23% cheaper than Brisbane)
- Transportation costs in Chinchilla were slightly higher than Brisbane;
- Compared to the 2006 Index of Retail Prices Survey, housing costs in Chinchilla have become more affordable compared to Brisbane in May 2010, while housing in Dalby have become more expensive; and
- Moranbah's housing prices were considerably higher (65%) than Brisbane and are an example of what can occur when demand outstrips supply in mining communities. In contrast, Roma is an example of a town experiencing growth that is better managing housing affordability.

An increase in the cost of living arising from development in the area was identified as a concern during stakeholder engagement.

3.5.3 Employment

Table 3-11 shows the size of the labour force in the communities of interest and the proportion that is unemployed. The region is experiencing some of the lowest unemployment rates in Australia.

Unemployment of those able to participate in the labour force is highest in Millmerran and lowest in Miles.

Table 3-11 Labour Force in the Communities of Interest

Locality	Labour Force	Proportion of Labour Force Unemployed and Looking for Work (%)
Cecil Plains	115	5.2
Chinchilla	1,745	4.1
Dalby	4,617	5.0
Goondiwindi	2,842	4.6
Miles	492	3.3
Millmerran	569	5.6
Toowoomba	45,020	4.9
Wandoan	190	4.7
Darling Downs SD	101,290	4.5
Queensland	1,915,949	4.7

Source: ABS, 2006.

Table 3-12 shows median weekly income figures. Household income considers the total number of income earners in the house, while family income considers the total income of family members living within the house.

Individual, family and household incomes in Goondiwindi are higher than in any other community of interest in the study area, yet these household and family income figures for Goondiwindi are only approximately on par with the figures for the State medians. Median incomes for individuals, households and families are lowest in Miles, Millmerran and Wandoan, consistently being well below the State median figures.

All towns except Goondiwindi fall below the State average income. Both Goondiwindi (highest income), and Wandoan and Millmerran (lowest income) have a large proportion of agriculture-based income, with the difference more likely to be attributed to a concentration of professional, technical and scientific services employees in Goondiwindi, and a larger (and hence more diverse) retail trade base. As a larger population centre, Goondiwindi also demonstrated greater workforce diversity, with a larger number of workers employed across occupational categories.

3 Social Baseline

Table 3-12 Median weekly Income in the Study Area

Locality	Median Individual Income ($/weekly)	Median Family Income ($/weekly)	Median Household Income ($/weekly)
Cecil Plains	466	949	850
Chinchilla	407	1,083	921
Dalby	453	1,073	940
Goondiwindi	501	1,147	1,034
Miles	386	918	626
Millmerran	393	911	719
Toowoomba	436	1,096	907
Wandoan	416	914	623
Darling Downs SD	420	875	1,059
Queensland	476	1,154	1,033

Source: ABS, 2006.

Table 3-13 shows the relative skew of workers across industries of employment between the various communities of interest in the study area. The largest industries of employment in the Darling Downs Region are agriculture, forestry and fishing (12%); manufacturing (11%); retail trade (12%); and health care and social assistance (11%).

Agriculture, forestry and fishing is the predominant industry in Goondiwindi and Western Downs Regional Council areas (consistent with Darling Downs SD more broadly), while in Toowoomba the predominant industries are healthcare and social assistance; manufacturing; and retail trade. This difference reflects Toowoomba's role as a regional service centre for social services and retail activity.

While the energy and mining industries are expanding in the study area, 2006 data indicates that neither are significant industries of employment for workers in these localities (Toowoomba and, to a lesser extent, Dalby are primary centres for employment).

Table 3-14 shows occupations of workers in the communities of interest. *Technicians and Trades Workers and Labourers* are the most common occupation categories.

3 Social Baseline

Table 3-13 Number of Employees within Industry Groups, by Location (highest in bold)

Industry	Cecil Plains	Chinchilla	Dalby	Wandoan	Goondiwindi	Miles	Millmerran	Toowoomba	Darling Downs SD
Agriculture, forestry and fishing	21	86	224	24	317	37	**75**	888	**11,745**
Mining	4	26	83	10	4	22	8	238	798
Manufacturing	**30**	105	496	21	119	34	35	4,918	10,253
Electricity, gas, water and waste services	3	37	87	7	20	0	30	394	956
Construction	3	**287**	390	0	267	33	58	3,150	7,134
Wholesale trade	4	48	255	0	102	16	23	1,636	3,597
Retail trade	6	248	**609**	**25**	**436**	54	44	5,412	11,320
Accommodation & food services	9	120	295	13	205	40	31	2,576	5,264
Transport, postal and warehousing	10	70	190	13	164	23	43	1,764	4,411
Information media and telecom's	0	15	23	0	18	0	0	561	884
Financial and insurance serv.	0	30	117	0	60	11	6	1,523	2,421
Rental, hiring and real estate serv.	0	20	51	7	37	0	0	682	1,192
Professional, scientific and technical services	0	53	180	0	107	0	12	1,767	3,274
Administrative and support services	0	20	80	4	37	0	4	937	1,752
Public admin and safety	6	67	243	**26**	139	57	42	3,020	6,244
Education and training	8	142	337	21	179	49	29	4,554	8,594
Health care and social assistance	5	**162**	366	9	227	**66**	54	**5,693**	10,397
Arts and recreation	0	12	37	0	15	8	0	415	717
Other services	0	74	218	4	186	13	21	1,865	3,688

Source: ABS, 2006.

3 Social Baseline

Table 3-14 Occupation of Workers (highest in bold)

Community	Managers	Professionals	Technicians and Trades Workers	Community and Personal Service Workers	Clerical and Administrative Workers	Sales Workers	Machinery Operators And Drivers	Labourers
Cecil Plains (L)	**13**	9	7	5	3	3	**38**	**32**
Chinchilla	175	190	**320**	161	170	160	149	**313**
Dalby	482	548	**778**	322	653	519	370	**656**
Goondiwindi	383	335	**426**	218	364	291	292	**368**
Miles	**81**	58	57	57	38	29	55	**83**
Millmerran	70	46	**96**	55	59	26	68	**104**
Toowoomba	4,288	**7,806**	**6,687**	4,083	6,204	4,751	2,622	5,777
Wandoan (L)	**32**	17	27	21	12	8	31	**36**
Darling Downs (SD)	15,955	13,874	14,067	8,214	12,241	8,951	7,311	14,736

Note: (L) locality

Source: ABS, 2006

Skills Shortage

Skill shortages exist when employers are unable to fill or have considerable difficulty in filling vacancies for an occupation, or if there are specialised skill needs in the occupation. The existing and future expansion of the CSG industry and other resource and infrastructure developments in the Surat Basin and nationally will require a large workforce. Australian Government statistics indicate that the labour market is tightening, with employers having greater difficulty recruiting the skilled workers they needed in 2010 than they did in 2009. The most difficult to fill vacancies in 2010 included resource professions (e.g. mining engineers), engineering professions and construction trades, which all experienced a tightening labour market.

A CSG industry planning workshop identified critical skills shortages affecting development of the industry – see Table 3-15.

Table 3-15 Critical Skills Shortages in CSG Industry

Vocational Occupations	Professional and Para-Professional Occupations
Drilling Assistants Production Technicians Maintenance Technicians Electrical and Instrumentation Technicians Logistics Technicians/ Administrators	Petroleum, Chemical and Mechanical Engineers Geologists and Geophysicists

Source: Energy Skills Queensland, 2011

The CSG/LNG industry and Energy Skills Queensland (ESQ) have formed the CSG/LNG Skills Taskforce to address skills shortages that will work with the Queensland Government and other key stakeholders to ensure the availability of a competent and sustainable workforce to support the current and future development of the CSG/LNG Industry (Energy Skills Queensland, 2011).

Indigenous Employment

Of the 3,290 Indigenous people aged 15 years and over across Toowoomba, Western Downs and Goondiwindi Regional councils, approximately 1,433 persons are employed.

Table 3-16 shows the number of Indigenous persons aged over 15 years in the populations and the extent of employment and unemployment. It can be seen that Indigenous unemployment is high in all the regional council areas, as compared to the State as a whole, and is particularly high in the Goondiwindi region (28.9%).

3 Social Baseline

Table 3-16 Indigenous Employment

Regional Councils	Number of Indigenous Residents Aged 15 Years +	Number of Persons Employed	Number of Persons Unemployed	Number of Persons in the Labour Force	Un-employment Rate*
Toowoomba	2,382	1,052	229	1,281	17.9%
Western Downs	681	287	70	358	19.6%
Goondiwindi	227	94	30	124	24.2%
Darling Downs SD	3,755	1,643	370	2,013	28.9%
Queensland	77,959	38,083	5,764	43,847	13.1%

Note: *Unemployment rate was calculated as the proportion of unemployed persons per the number of persons in the labour force. Employed persons are inclusive of CDEP participants.

Source: ABS, 2006

Census (2006) data reveals that the industries employing the highest percentage of Indigenous workers within these three council areas are the health care and social assistance services (208 people, or 14.9%) and the manufacturing industry (202 people, or 14.7%).

Labouring, community and personal service workers and technicians and trades workers are major occupations categories for most Indigenous workers, with 28.6% (412 of 1,439), 13.4% (194 of 1,439) and 13.2% (190 of 1,439) respectively. This is similar to the occupation distribution of the broader population across the three councils with management, labouring and tradespeople being the most represented (ABS, 2006).

3.5.4 Enterprise

Historically, the focus of local business and enterprise in the study area has been to support agricultural activities within the region. The total value of agricultural production in Darling Downs SD in 2005–06 was $1.95 billion, 22.4% of the total value of agricultural production in Queensland. Crops and livestock accounted for 48% and 47% respectively of the regions total value of agricultural production.

In 2008–09, there were 24,303 businesses in Darling Downs SD, 5.8% of all Queensland businesses. Of these businesses, 96% were small businesses. Businesses within the agriculture industry constituted 32.6% of the region's total number of businesses and businesses supporting the construction industry represented about 14% of all business (OESR (1)).

Table 3-17 lists businesses within the study area. Toowoomba is the major shopping precinct in the study area.

Table 3-17 Businesses in the Study Area

Business Type	Availability
Banking services	Bank branches exist in Chinchilla, Dalby, Goondiwindi, Miles, and Toowoomba. Banking services are available to Cecil Plains, Millmerran, and Wandoan at the local post office.
Cafes and restaurants	Dine-in and takeaway meals are available in all localities in the study area.
Grocery store	Supermarkets are established in all localities in the study area. These include fresh fruit and vegetables, newsagency, and a range of electrical goods.
Pharmacy	Pharmacies are established in all localities in the study area with the exception of Cecil Plains. The nearest pharmacy to Cecil Plains is 45 km north in Millmerran.
Retail	Small retail stores are established in all localities in the study area. Stores with an extensive range are established in Chinchilla, Dalby, Goondiwindi, Miles, and Toowoomba.
Service stations and mechanics	Service stations and mechanics are established in all localities in the study area.
Short-term accommodation	Short-term accommodation is available in all localities in the study area. These include hotels, motels, bed and breakfasts and caravan parks.

Source: Coffey, 2010

Tourism also plays a role in the economic enterprise profile of the study area. According to Toowoomba Regional Council (TRC, 2011), there were approximately 1,238,000 domestic overnight visitors to the Toowoomba region in the year to December 2010 representing an annual increase of 1.0% from the number of visitors in the year to December 2009. Tourism capacity in the TRC area grew marginally in the year to the December quarter 2010, with an annual increase of 0.8% in the number of bed spaces available. The total takings from accommodation in the Toowoomba Regional Council area were $6.7 million in the December Quarter 2010, representing an annual decrease of 11.7%.

Tourism Queensland (2010) indicated that for the Toowoomba region international visitors' length of stay continued to increase over the year to 30 June 2010, driven by education visitors staying longer. Intrastate holiday visitors stayed an average of 2.3 nights due to the short break nature of trips to the region while interstate holidaymakers enjoyed a slightly longer stay of 3.7 nights, which is about half the time spent by interstate visitors in Queensland overall, reiterating the short break trip nature of the region. Business visitors' average length of stay is higher than holiday and visiting friends and relatives' visitors, averaging 4.6 nights in region.

3.6 Housing and Accommodation

Increased population in an area creating housing demand that results in increased housing prices can make it particularly difficult for low-income earners to secure or maintain accommodation and for new industry to find appropriate housing for its workforce.

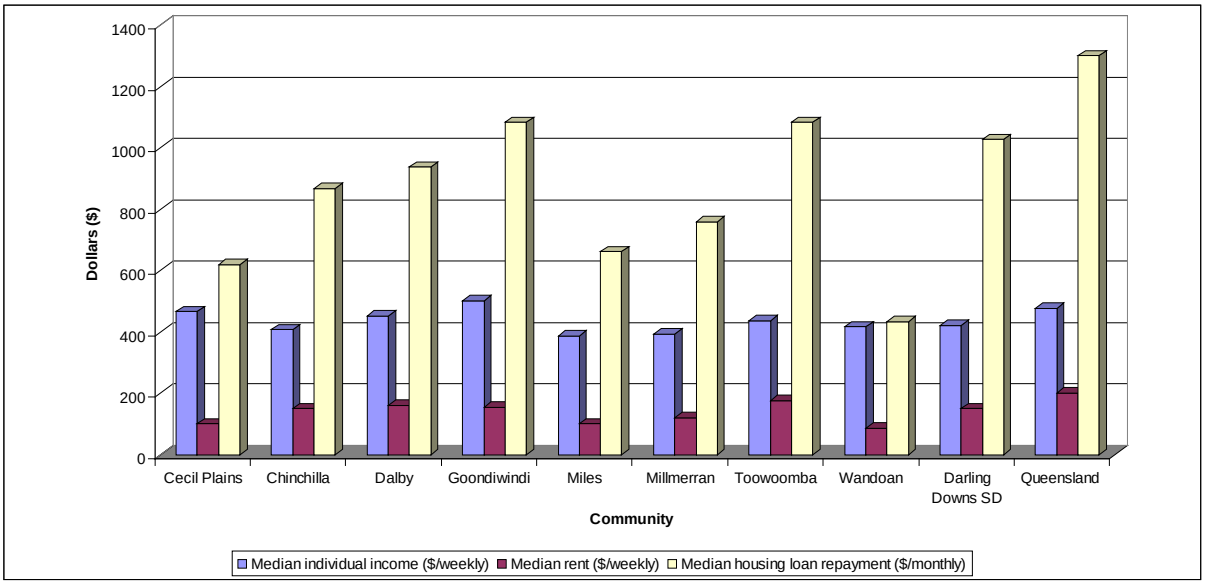
3.6.1 Housing Costs

Figure 3-1 shows the individual median income, median rents and monthly housing loan repayments in the communities of interest and the Queensland average. This data is taken from the 2006 census.

3 Social Baseline

Rents and housing costs were generally well below the State figures in most communities in the study area at the time of the 2006 census, and to a lesser extent individual incomes. In 2006 within the study area, more affordable housing costs were particularly evident in Wandoan, Cecil Plains and Miles, while housing costs in Toowoomba, Goondiwindi, Dalby and Chinchilla were slightly more expensive

Figure 3-1 Median Study Area Housing Costs, 2006 Census



Source: ABS, 2006

It needs to be noted that given the resource sector developments in the region, there has been a sharp increase in demand for housing in some locations and this has impacted upon housing costs. Table 3-18 presents updated median rental costs within the regional council areas based on analysis undertaken by the Department of Communities (2011). Rental rates for 2 and 3 bedroom rentals are still significantly below the Queensland average however they have been increasing over recent years.

The AEC Economic Impact Assessment Report (AEC, 2010) found significant variation in rental income in growing communities, such as Dalby and Chinchilla that have recently been host to other projects in the region. Here rents have increased by as much as 90% to 130% respectively and were, at the time of writing, as high as $300 per week – a significant increase to the relatively low base illustrated in the table below.

Table 3-18 Median Rental Costs for Regional Councils in the Study Area 2010

Regional Councils	3 Bedroom		2 Bedroom	
	Median Rent ($) Weekly	% Change Over Year	Median Rent ($) Weekly	% Change Over Year
Toowoomba	260	4	200	8.1
Western Downs	270	-3.6	190	-13.6
Goondiwindi	240	4.3	160	0
Queensland	330	0	300	0

Source: DoC, 2011a

3 Social Baseline

Toowoomba and Goondiwindi regional councils recorded some of the largest absolute increases in median house prices in the State ($16,500 and $23,000 respectively) over the year to December 2010 (DoC, 2011a). Table 3-19 shows median house prices for the regional councils within the study area against the Queensland median.

Table 3-19 Median Housing Costs in the Regional Councils of the Study Area 2010

Regional Council	Median Sales Dec Qtr 2010	% Change Over Year
Toowoomba	319,000	4.6%
Western Downs	286,000	2.1%
Goondiwindi	285,000	8.8%
Queensland	425,000	-1.6%

Source: DoC, 2011a

The most common tenure of the homes across the three regional councils is 'fully owned'. This proportion is greater than the overall average for Queensland, where the most prominent tenure type is 'being purchased'. 'Rented' is the second most common tenure across the study area's regional councils (ABS, 2006).

Housing Types

Table 3-20 shows that separate houses are the most common type of dwelling in the communities of interest and that higher density options for an increased population, should such be required, are presently limited within the area. The proportion of separate houses in these communities can be considered representative of the area's rural service orientation.

Table 3-20 Proportion of Houses, Flats, Units, and Apartments

Community	Number of Dwellings	Separate House (%)	Flat, Unit or Apartment (%)
Cecil Plains	98	100.0	0.0
Chinchilla	1,388	84.5	6.2
Dalby	3,427	89.0	7.8
Goondiwindi	1,941	77.8	17.7
Miles	457	85.3	3.9
Millmerran	480	89.2	3.8
Toowoomba	35,078	82.0	12.0
Wandoan	155	89.0	11.0
Darling Downs (SD)	89,802	86.6	7.6
Queensland (State)	1,391,777	79.5	11.2

Source: ABS, 2006.

Housing Availability

Toowoomba has a relatively large property market. Investigation using the online real estate website, (Realestate.com, 2011) showed over 2,687 properties listed for sale, with limited rental availability. This is attributed to the high growth rate (Toowoomba Regional Council is one of the top 10 fastest

growing councils in the State), and the large university student population which utilise the rental market. There has also been increased demand for rentals in Toowoomba following the Q1 2011 floods, as people from surrounding flood affected areas moved into the community. Chinchilla is also experiencing rapid residential growth. Consultation with realtors indicates that houses on the market are selling very quickly and that local real estate agencies struggle to meet buyers' demand for houses. Rental supply in Chinchilla is also limited. A search of the real estate search engine (Realestate.com, 2011) on 16 May 2011 indicated that 12 houses were available for rent in Chinchilla at that time (see Table 3-21).

Discussion with realtors and Western Downs Regional Council (WDRC) indicates that housing purchase and rental is being taken up by workers moving into the area for projects such as the QC LNG Project as well as workers from service industries. In Dalby there is currently a surplus of houses available for sale and rent, the result of an intensive building phase in 2009-2010 spurred on by speculative investors. As projects including QC LNG and AP LNG intensify development, much of the vacant housing is expected to be acquired in Dalby, reducing supply (*ad hoc* research, 2011).

The smaller communities of interest such as Wandoan, Miles, Millmerran and Cecil Plains have limited available supply of houses for rent or purchase (Realestate.com, 2011).

Table 3-21 Properties for Rent or Sale within the Communities of Interest, as at May 2011

Locality	Properties for Rent	Properties for Sale
Cecil Plains	1	29
Chinchilla	12	331
Dalby	134	620
Goondiwindi	7	413
Miles	8	113
Millmerran	1	208
Toowoomba	396	2687
Wandoan	1	10

Source: Realestate.com, 16 May 2011

In the 12 months ending 31 December 2009, there were 195 dwelling units in new residential buildings approved collectively in Chinchilla, Dalby, Goondiwindi and Millmerran. These approvals were valued at $46.6 Million and accounted for 0.7% of the total value of Queensland's new residential approvals over the period. Within the region, Dalby Statistical Local Area (SLA) and Chinchilla SLA recorded the largest values of new residential building approvals ($23.2 million and $14.0 million respectively). The total value of non-residential building approvals in the 12 months ending 31 December 2009 was $42.8 Million, or 0.5% of the value of these approvals in the State. The largest values of non-residential approvals were recorded in Dalby SLA ($13.5 million).

Toowoomba Regional Council is understood to have sufficient supply of residential designated land to meet demand (pers. comm., TRC, 2011). Western Downs Regional Council is experiencing high demand for residential land in Chinchilla and to a lesser extent Dalby. In Chinchilla much of the serviced residential land (as per planning scheme) has either been developed, is being developed or is subject to development application. Council is currently reviewing their planning scheme including the availability of residential land. The other communities of interest have a limited supply of serviced residential land.

Field investigations indicated that there is a robust residential construction sector which can and does service the communities of interest in this study (*ad hoc* research, study area residential construction, 2011).

3.6.2 Non-Resident Worker Accommodation and Short Term Accommodation

Non-resident workforces are important to consider in the SIA due to their accommodation requirements, potential use of community services and resources (e.g. water supply and sewage works) and differing relationships with resident communities.

A study by the Queensland Government found that in June 2008 Dalby Local Government Area (now part of Western Downs Regional Council) had 1,208 non-resident workers. Approximately 60% stayed in temporary worker accommodation facilities (TWAFs), the majority of these being in or near the towns of Dalby (491 workers), Chinchilla (318 workers) and Miles (228 workers). Another 171 people lived in TWAFs located on resource leases. The remainder of non-residents stayed in hotels/motels, caravan parks or had other arrangements (DIP (3), 2008). Table 3-22 summarises the accommodation arrangements for non-resident workers by local government area and for Surat Basin area.

The study did not discuss Goondiwindi or Toowoomba regional councils but did consider accommodation arrangements for non-residents in Roma LGA. A higher proportion of non-resident workers lived in TWAFs, mostly on the resource leases away from towns.

Table 3-22 Non-resident Workers Living in Roma and Western Downs Regional Councils as at 30 June 2008

Local Government Area	Non-resident Workers Living in TWAFs or Worker Camps		Non-resident Workers Living in Commercial Accommodation in Towns		Total Non-resident Workers
	Located in or Near to Towns	Located on Resource Leases or Private Land	Hotels/motels/other*	Caravan Parks	
Roma (R)	30	461	126	31	648
Dalby (R)	408	318	341	141	1,208
Surat Basin	438	779	467	172	1,856

Note: * other includes houses and flats leased from the private market for company accommodation.

* where TWAF accommodation is located on a mining lease or outside of designated localities. The non-resident worker occupants have been allocated to the nearest population centre.

R – Regional Council Area

Source: DIP (3), 2008.

Hotels and motels are experiencing high demand across most of the study area and are frequently booked out, particularly from Monday to Wednesday (pers. comm., study area motel managers, 2011). Commercial accommodation by non-resident workers constitutes a large portion of mid-week occupancies as shown in Table 3-23. At the time of the DIP survey in 2008, there was high occupancy by these workers, particularly Wandoan (90%) and Chinchilla (53%). The study notes *"these rates suggest that there is high demand and low supply of commercial accommodation in those centres" (DIP (3), 2008, p14*).

Table 3-23 Hotel/Motel Beds for Select Localities in the Surat Basin

Community	Capacity of no. of Hotels/Motels (beds)	Beds Occupied by Non-resident Workers (number)	Beds Occupied by Non-resident Workers (% of total)
Wandoan	20	18	90%
Chinchilla	190	101	53%
Dalby	400	130	33%
Miles	113	14	12%

Source: DIP (3), 2008

3.6.3 Provision of Low Cost, Social and Community Housing

As discussed in Section 3.6.1, demand for housing has increased, leading to rising house prices. As a result, low income groups have become particularly vulnerable to these increased housing costs, with some people who are unable / unwilling to pay higher prices moving to more affordable locations including Jandowie, Toowoomba and Oakey. This is understood to have occurred in Dalby in 2009-2010, with the same situation currently occurring in Chinchilla, and to a lesser extent Miles and Millmerran. Vacancy rates and prices have become more affordable again in Dalby due to increased housing supply created by housing developments fuelled by resource-driven speculation around 2006. This has resulted in some low income earners returning to the region (pers. comm. DoC, 2011).

Information from consultation with Indigenous organisations has indicated that Indigenous people in the private property market are having particular difficulty with the market changes. In some instances, multiple families are living in one house and splitting the cost of rent which has been a long term issue within the Indigenous community (*ad hoc* research, study area Indigenous organisations, 2011).

As at June 2008 there were 34 community and 12 local government housing providers in the South West Queensland Area Office region (which incorporates the Project study area) managing a total of 611 units of accommodation including long-term community housing and crisis accommodation. In addition, there were five housing-related services operating in the region. Table 3-24 shows the average allocation time (in months) for applicants on the housing register who had approved specific need status between March 2007 and March 2008. Average allocation time is the length of time between the application being lodged and the start date of a tenancy in public housing. Waiting times for public housing for 1 and 4 bedroom dwellings in Toowoomba and other areas in the study area are on par with the average waiting times across the State (DoC, 2011b).

Table 3-24 Average Allocation Time (months) for Selected Dwelling Types – Specific Needs

Area	Seniors Units	1 Bedroom	4 Bedroom
Toowoomba	-	8	9
South West Queensland Area Office - region balance	1	7	9
Queensland	6	8	10

Source: (DoC, 2011b).

Consultation indicates that there have been increased requests for housing assistance, including crisis housing and social housing. Requests are coming from long term residents as well as ‘out of towners’. Consultation has also indicated that Indigenous people from further west (such as Roma area) are

leaving those areas due to high rental costs, while some people from the east are coming to the area in search of jobs.

Department of Communities South West Region outlined that homelessness and risk of homelessness is a key issue for the region, with a particular priority being the need for additional houses for crisis accommodation (including for families) in Dalby (pers. comm. Department of Communities, 2011).

Table 3-25 Numbers of Homeless People and Proportions per 10,000 Population

Location	Total	Number Per 10,000
Toowoomba	530	46
Darling Downs SD Balance	623	63
Queensland	26,782	69

Source: Chamberlain, C and Mackenzie, D., (2009)

3.7 Education and Training

Education facilities available in the study area include child care centres, schools (offering prep to Year 12 in some places), university and TAFE as well as private training facilities. Toowoomba offers the greatest variety of schools, including boarding schools which some regional students attend. Students from the towns without senior classes who wish to continue their senior education must relocate to other towns or cites, like Toowoomba, which offer those facilities. As the largest town in the Western Downs region, Dalby is well-serviced with educational facilities that cater for all levels of education, including special, adult and vocational education.

Table 3-26 outlines the primary and secondary educational facilities available and current student enrolment numbers. Several of the State high schools in the Darling Downs region acknowledge the increasing enrolment demands and accept enrolments only in accordance with their enrolment management plans. The enrolment management plans define the geographic boundaries in which students must live to be accepted to the schools. Students who live outside the geographic boundaries are accepted only where the schools have capacity.

Table 3-26 Primary and Secondary School Services Available and Student Enrolment

Community	Type of Schooling Available (State and Private) and Student Enrolment			
	Child Care	Prep to Year 7	Prep to Year 10	Year 8 to Year 12
Cecil Plains			92	
Chinchilla	3	745		480
Dalby	3	2,060		1,030
Goondiwindi	4	950		485
Miles	1		395	
Millmerran		105	332	
Toowoomba	88	9,050		4,800
Wandoan			137	

Source: Education Queensland, 2010(b), SGS, 2011, Yellow Pages, 2011.

A Department of Education and Training (DET) representative advised that schools within the study area had spare capacity. Student/teacher ratios and number of classrooms were considered adequate

(pers. comm. Department of Education and Training, 2011). The representative also noted that schools in the study area had experienced minimal additional enrolments during previous periods of project construction activity in the area (pers. comm. Department of Education and Training, 2011). This corresponds with the understanding that project construction workforces are often FIFO/DIDO and are typically not accompanied by family.

A study of community services and facilities carried out for Western Downs Regional Council recommended that childcare facilities be developed or upgraded to meet existing needs and to cater for future anticipated growth at the following locations:

Dalby

- 4 new childcare centres in Dalby with 3 required as soon as possible.

Chinchilla

- 3 new primary schools with 1 required as soon as possible.

Miles/Wandoan

- 1 new childcare centre required as soon as possible (Western Downs 2050 Community Plan, Community Facilities and Services Strategy Draft Report, SGS Economics and Planning, March 2011).

Table 3-27 shows that a large proportion of the study area population older than 15 had completed a Year 10 equivalent education. However, the number of residents with a Year 12 qualification ranged widely between Wandoan (20.6%) at the lower end and Toowoomba (39.3%) at the higher end. These figures – particularly for Year 12 education – are well below the Queensland average for residents with a Year 10 qualification (76.4%) and Year 12 qualification (41.3%). This likely reflects the agricultural and rural focus of the study area and the lack of access some residents have to local education services. Schooling is available up to Year 10 in Cecil Plains, Miles, Millmerran and Wandoan.

Table 3-27 Proportion of Population with Year 10 and Year 12 Equivalent Qualifications

Community	Completed Year 10 (% of population)	Completed Year 12 (% of population)
Cecil Plains	66.5	23.1
Chinchilla	66.0	26.8
Dalby	68.9	29.2
Goondiwindi	71.2	34.7
Miles	62.8	27.7
Millmerran	66.5	23.1
Toowoomba	75.0	39.3
Wandoan	67.3	20.6
Darling Downs (SD)	72.9	34.3
Queensland (State)	76.4	41.3

Source: ABS, 2006.

3.7.1 Post School Education

At the time of the 2006 Census, in Darling Downs SD, there were 73,752 persons aged 15 years and over with a qualification, or 44.3% of the population in this age group. The proportion for Queensland

was 50.4%. Table 3-28 shows the number of persons in the region aged 15 years and above with a qualification.

Table 3-28 Level of Tertiary and Vocational Education (aged 15 years and over)

Location	Bachelor Degree or Higher[1]	Advanced Diploma and Diploma Level	Certificate Level[2]
Cecil Plains (L)	3	4	22
Chinchilla	195	117	546
Dalby	514	326	1,311
Goondiwindi	385	187	717
Miles	70	42	114
Millmerran	57	41	151
Toowoomba	9,939	4,775	12,818
Wandoan (L)	17	7	37
Darling Downs SD	17,348	9,677	28,174
Total	11,180	5,499	15,716

Note: [1] Includes bachelor degree, graduate diploma, graduate certificate and postgraduate degree.
[2] Includes Certificate, I, II, III and IV and Certificates not further defined responses.
(L) locality

Source: ABS, 2006

DET has identified study and work destinations for 2009 year 12 school leavers. The Project study area falls into the Darling Downs-South West Region for analysis. Year 12 graduates in this region had similar post-schooling destinations to other regional Queensland year 12 completers, which differed to State-wide results. Results are presented in Figure 3-2 below with key results of Darling Downs-South West Region year 12 graduates as follows:

- They were less likely than their counterparts State-wide to enter university, but were more likely to enter employment based training and more likely to enter employment with no further education and training.
- Those not studying were more likely to be working full-time than those from regional Queensland/Queensland (however the rate of graduates going straight to full time employment has been decreasing since 2008).

Those who were working were more likely to enter industries such as Construction and Agriculture, Forestry and Fishing than those from State-wide (Education Queensland, 2010).

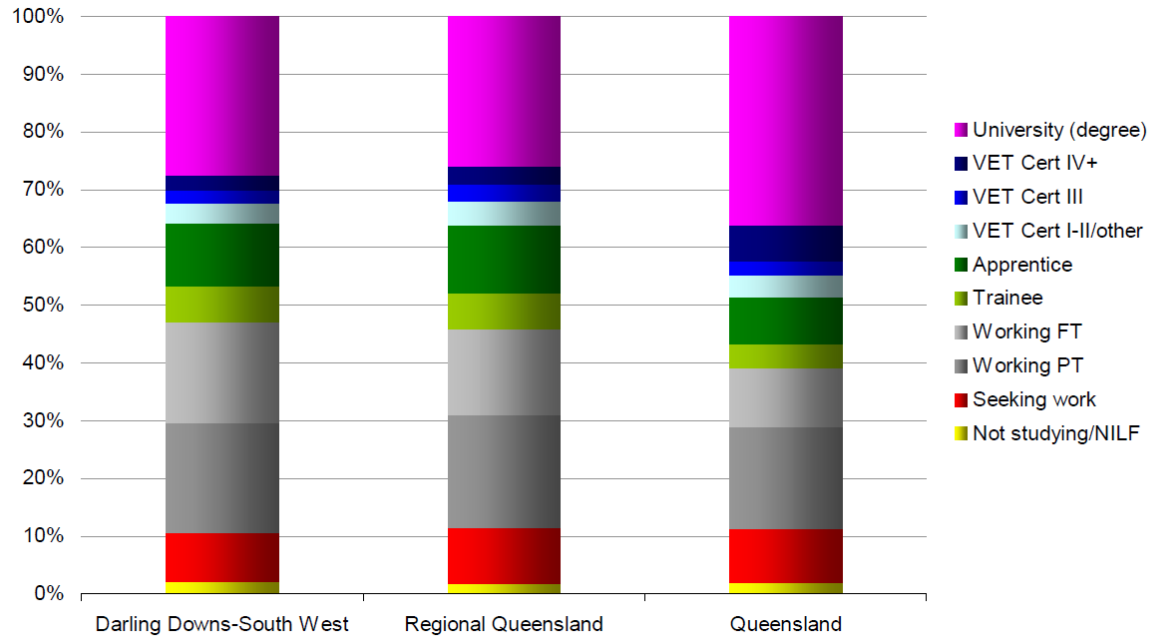


Figure 3-2 Main Destinations of Year 12 Completers, Darling Downs-South West Area Compared to Regional Queensland and Queensland, 2010

Source: Education Queensland, 2010

3.8 Health and Wellbeing

3.8.1 SEIFA Index for Socio-economic Disadvantage

Socio-Economic Indexes for Areas (SEIFA) is a summary measure of the social and economic conditions of geographic areas across Queensland; it is a ranking of comparative socio-economic disadvantage, with the base measure being 20% of the Queensland population falling within each quintile of disadvantage for the State.

A summary of the Social-Economic Index of Disadvantage for Darling Downs is presented in Table 3-29.The table shows the percentage of the population within the Darling Downs SD that falls within each quintile of disadvantage. It can be seen that the Darling Downs SD experiences a greater relative degree of disadvantage when compared to the State as a whole, with 26.4% of the Darling Downs SD population being in the most disadvantaged quintile (compared with the 20.0% for the State) while only 12.6% of the population of Darling Downs SD were in the least disadvantaged quintile. Queensland has 20.0% in each quintile.

Table 3-29 Socio-Economic Index of Disadvantage (percentage of population) for Darling Downs Statistical Division, 2006

Quintile 1 (most disadvantaged)	Quintile 2	Quintile 3	Quintile 4	Quintile 5 (least disadvantaged)
26.4%	28.7%	18.8%	13.4%	12.6%

3.8.2 Health Status – Key Indicators

Key health statistics are only available at the Queensland Government Darling Downs-West Moreton Health District Service level. This is a broad district that encompasses the study area, yet also includes areas to the east of the study area, these being the regions around Ipswich, Cherbourg, and Stanthorpe. The 2009-2010 *Darling Downs-West Moreton Health Service District Summary Report* (Queensland Health, 2010) provides information on key self-reported population health indicators for adults of the Darling Downs–West Moreton Health Service District (HSD). There was no significant difference in the other health indicators between Darling Downs-West Moreton HSD and the Queensland average.

Key indicators used to evaluate health status in the report were:

- Body mass index (BMI) based on height and weight;
- Blood pressure;
- Diabetes;
- Blood cholesterol;
- Physical activity;
- Fruit consumption;
- Smoking status;
- Vegetable consumption; and
- Sunburnt on previous weekend.

Key findings from the report were:

- The prevalence of overweight or obesity was 12.0% higher in Darling Downs–West Moreton HSD than in Queensland; and
- The prevalence of adults within the healthy weight range was 14.0% lower in Darling Downs–West HSD than in Queensland.

3.8.3 Health Facilities

The extent of health facilities in the study area varies. Toowoomba offers many of the health services available to a well-resourced hospital and operates as the primary regional health referral centre. Dalby Hospital is considered a key hospital for surrounding rural communities, and it's function as a regional health centre is expected to be outlined the Bowen, Galilee and Surat Basins Health Services Plan 2011-2021 (pers. comm. Queensland Health, 2011). At time of writing this report was yet to be released to the public. Table 3-30 shows the health services available in the area.

Dalby and Miles hospitals both had renovations around 2009-2010 and are considered well equipped, while the local availability of health services in other towns in the study area is more limited (pers. comm. Queensland Health, 2011).

3 Social Baseline

Table 3-30 Availability of Health Services in the Study Area

Community	Health Services Available
Cecil Plains	• Spiritus provides Remote Area Health Nurse services to the area. • Queensland Ambulance Service provides patient transport to Millmerran Health Service when required. • The town is 135 km from Toowoomba Hospital and 260 km from The Royal Brisbane and Women's Hospital.
Chinchilla	• Chinchilla Health Service provides general medicine with specialist obstetrics, gynaecology and surgical services. • Allied health clinics operate every 2 to 6 weeks providing physiotherapy, occupational therapy, dentistry, social work, speech pathology, and aged care assessment services. • The service is 170 km from Toowoomba Hospital and 288 km from The Royal Brisbane and Women's Hospital.
Dalby	• Dalby Health Service provides general medicine with visiting specialist obstetrics, gynaecology and surgical services. Community and mental health services are available. • The service is staffed with physiotherapists, occupational therapists, social workers, speech pathologists, and includes an aged care facility on-site. • The service is 85 km from Toowoomba Hospital and 211 km from The Royal Brisbane and Women's Hospital.
Goondiwindi	• Goondiwindi Health Service provides general medicine and surgical services with visiting specialist obstetrics, gynaecology and surgical services. Community, mental health, physiotherapy, occupational therapy, dentistry, social work and speech pathology services are available. • The services are 222 km from Toowoomba Hospital and 360 km from The Royal Brisbane and Women's Hospital.
Miles	• Miles Health Service provides general medicine with specialist visiting obstetrics, gynaecology and surgical services. Community and mental health services are available. Allied health clinics operate every 2 to 6 weeks providing physiotherapy, occupational therapy, podiatry and aged care assessment services. • The service operates an aged care facility. The service is 211 km from Toowoomba Hospital and 339 km from Rockhampton Hospital.
Millmerran	• Millmerran Health Service operates a 16 bed inpatient facility providing general medicine, pharmacy, community health, aged care, and visiting physiotherapy and podiatric services. • The service is 82 km from Toowoomba Hospital and 210 km from Rockhampton Hospital.
Toowoomba	• General medicine with specialist obstetrics, gynaecology and surgical services. Community, mental health and aged care services. Physiotherapy, occupational therapy, dentistry, social work and speech pathology services are available. • The service is 126 km from The Royal Brisbane and Women's Hospital.
Wandoan	• Wandoan Outpatients Clinic provides general medicine and Remote Area Health Nurse services. Allied health clinics operate every 2 to 6 weeks providing physiotherapy, occupational therapy, dentistry, social work, speech pathology and aged care assessment services. • The clinic is 270 km from Toowoomba Hospital and 330 km from Rockhampton Hospital.

Source: Department of Health, 2010a.

Queensland Health teams visit communities in the study area every four to six weeks to provide community outpatient services. Health (includes general health) and other health support services are considered in the study to be well represented however discussions with Councils during consultation

highlighted that there is a lack of doctors, medical specialists and dentists in the area. Mental health and health promotion was also considered to be lacking (SGS, 2011).

3.8.4 Indigenous Health

Queensland is home to approximately 28% of Australia's Indigenous population (ABS Census 2006). While over 90% of people in the communities of interest were born in Australia, there remains a notable difference between the life expectancy at birth of Queensland's Indigenous (male 68.3 years and female 73.6 years) and non-Indigenous population (male 78.7 years and female 82.6 years) (AG, 2009). Indigenous communities have higher rates of diabetes, kidney disease, sexually transmitted diseases and drug and alcohol abuse compared to the rest of the State (QH, 2003).

Areas with high Indigenous populations tend to have higher hospitalisation rates, reflecting poorer health and lower access to primary health care. Total Government expenditure on health care for Indigenous persons is estimated at around 20% higher than for their non-Indigenous counterparts.

Health issues within the Oakey Indigenous community (between Toowoomba and Dalby) include dental, hearing health, drugs and alcohol, child health, diabetes and sexual health. An Aboriginal health worker for the Goondir Health Services in Oakey identified accessibility to and knowledge of available services in Oakey and within Toowoomba as an issue that affected the health of the local Indigenous population (TRC, 2008).

3.8.5 Need for Assistance

The “need for assistance” indicator derived from the ABS Census data measures the number of people with a profound or severe disability. By definition, these are people who require help or assistance in one or more of the three core activity areas of self-care, mobility and communication because of a disability, and/or long-term health condition or old age. These indicators are used to plan and target the delivery of a range of services including health, aged care and community care.

The percentage of the population identified as requiring assistance in Darling Downs SD area was 10,034 persons (4.4%). This is higher than the State average of 3.8%.

3.9 Community Services and Facilities

Community services and facilities stimulate social participation which in turn strengthens community networks (Cox, 1995). The availability of community services in the study area provides insight into the ways networks can be fostered and strengthened. Community groups and recreational facilities such as sporting fields, art galleries, theatres and libraries similarly foster a community's social and cultural state. Enjoying activities away from work and household chores is important to developing a sense of well-being and community spirit through participation.

Table 3-31 details the community facilities, sporting and recreation groups available in the study area.

3 Social Baseline

Table 3-31 Community and Sporting Facilities and Recreation Groups in the Communities of Interest

Community	Community Facilities	Sporting Facilities	Groups
Cecil Plains	Community hall, municipal library, river reserves with boat ramp and BBQ facilities.	Golf course, tennis courts, swimming complex and cricket and football grounds.	Bowls, football, golf and tennis.
Chinchilla	Municipal library, community centre, art gallery, reserves with BBQ facilities.	Cricket and football grounds, indoor sports complex, golf course, tennis courts, rifle range, rodeo grounds and swimming complex.	Bowls, cricket, fishing, football, golf, gymnastics, horse riding, netball, sport shooting and tennis.
Dalby	Municipal library, community centre, art galleries, reserves with BBQ facilities.	Cricket and football grounds, indoor sports complex, golf course, horse racing track, large tennis complex, police citizens youth club and swimming complex. The town hosts an international tennis tournament each year.	Bowls, cricket, fishing, football, golf, gymnastics, horse riding, netball, sport shooting, and tennis.
Goondiwindi	Municipal library, community centre, art galleries, reserves with BBQ facilities.	Cricket and football grounds, indoor sports complex, golf course, tennis courts, and swimming complex. The town hosts a major regional triathlon each year.	Bowls, cricket, fishing, football, golf, gymnastics, horse riding, netball, recreational flying, sport shooting, triathlon, and tennis.
Miles	Municipal library, community centre, reserves with BBQ facilities.	Cricket and football grounds, indoor sports complex, golf course, tennis courts, and swimming complex.	Bowls, cricket, fishing, football, golf, gymnastics, horse riding, netball, sport shooting, and tennis.
Millmerran	Community and cultural centre, municipal Library, youth access centre, and well equipped reserves with BBQ and recreational fishing facilities.	Cricket and football grounds, indoor sports complex, golf course, tennis courts, and swimming complex.	Bowls, cricket, fishing, football, golf, gymnastics, horse riding, netball, sport shooting, and tennis.
Toowoomba	Municipal library, community centre, art galleries, reserves with BBQ facilities.	Cricket and football grounds, indoor sports complex, golf course, tennis courts, and swimming complex.	Bowls, cricket, fishing, football, golf, gymnastics, horse riding, netball, sport shooting, triathlon, and tennis.
Wandoan	Municipal library, community centre, art gallery, reserves with BBQ facilities.	Cricket and football grounds, tennis courts, and swimming pool.	Bowls, cricket, football, golf, gymnastics, horse riding, and tennis.

Source: SGS (a), 2011

Communities in the study area have access to a number of recreation, leisure and sporting groups. The study of community services and facilities in Western Downs Regional Council found that there was a lack of the following types of services and facilities:

- Young people and children;

- Specialist counselling; and
- Cultural diversity (SGS, 2011(a)).

The following facilities appear to be lacking in the study area:

- Youth centres; there is only one located in Dalby; and
- Aged care; limited in numbers, and is not being provided by the private sector (SGS, 2011(a)).

3.10 Community Voluntary Activity

A community's participation in volunteer activities is considered a measure of its social capital. Identifying volunteer activities in the communities of interest provides insight into the opportunities for social participation and of values of community ownership and assistance. Table 3-32 shows that the communities of interest all had higher rates of voluntary activity (as at the 2006 census) than the State average, in particular the smaller rural communities such as Wandoan, Cecil Plains and Miles

Table 3-32 Rate of Participation for Voluntary Activities within Communities of Interest

Community	% Volunteer Activity
Cecil Plains	23.93
Chinchilla	20.81
Dalby	16.83
Goondiwindi	18.38
Miles	23.97
Millmerran	18.58
Toowoomba	16.84
Wandoan	25.13
Darling Downs (SD)	18.40
Queensland (State)	14.55

Source: ABS, 2006.

Table 3-33 details volunteer activities and associations available in the communities of interest.

Table 3-33 Volunteer Activities/Associations in the Communities of Interest

Community	Volunteer Associations
Cecil Plains	Country Women's Association, Landcare, Lions Club, Meals on Wheels, P & C School Assoc., QLD Rural Fire Service, RSL, SES.
Chinchilla	Blue care, Country Women's Association, Landcare, Lions Club, Meals on Wheels, P & C School Assoc., QLD Rural Fire Service, RSL, SES, arts and crafts groups, APEX, Rotary.
Dalby	Blue care, Cancer Council, Country Women's Association, Landcare, Lions Club, Meals on Wheels, P & C School Assoc., QLD Rural Fire Service, P & C School Assoc., QLD Rural Fire Service, RSL, SES, APEX, Rotary, Police Citizens Youth Club, Salvation Army, Bungeeba Aboriginal Community Centre, Dalby Wambo Community Resource Centre, arts and crafts groups.
Goondiwindi	Blue Care, Country Women's Association, Landcare, Lions Club, Meals on Wheels, P & C School Assoc., QLD Rural Fire Service, RSL, SES, Police Citizens Youth Club, Golden Age Cultural Centre, arts and crafts groups, Goondiwindi Waggamba Community Cultural Centre, APEX, Rotary.
Miles	Blue Care, Country Women's Association, Landcare, Lions Club, Meals on Wheels, P & C School Assoc., QLD Rural Fire Service, RSL, APEX, SES, Murilla Fish Stocking Association, arts and crafts groups.
Millmerran	Blue Care, Country Women's Association, Landcare, Lions Club, Meals on Wheels, P & C School Assoc., QLD Rural Fire Service, RSL, SES, Rotary, APEX, arts and crafts groups.
Toowoomba	Blue Care, Careflight, Cerebral Palsy, Church groups, Country Women's Association Meals on Wheels, P & C School Assoc., QLD Rural Fire Service, RSL, SES, Police Citizens Youth Clubs, Salvation Army, arts and crafts groups
Wandoan	Apex, Country Women's Association, Landcare, Lions Club, Meals on Wheels, P & C School Assoc., QLD Rural Fire Service, RSL, SES, APEX, Senior Citizen Club, arts and crafts groups

Source: SGS (a), 2011

3.11 Community Events

Annual fairs and regular events are held to encourage community participation, celebrate local history, and encourage the local economy. The nature and themes of these events point to significant social and cultural values in terms of what they celebrate, and when and how they come together as a community. Table 3-34 details major annual events in the study area. The events listed reflect the strong emphasis on agricultural and local produce, local history and sport. These organised gatherings often provide the opportunity to share enthusiasm for agriculture, horticulture, art and crafts, and cookery. The communities in the study area have the opportunity to socialise through competition and attendance at regional agricultural shows. Community race days are also very important, but they are being restricted with limited funding from Racing Queensland.

Table 3-34 Major Annual Events in the Study Area

Community	Major Annual Events
Cecil Plains	Ludwig Leichardt Festival, Cecil Plains Fishing Competition, Christmas Carnival.
Chinchilla	The Melon Festival and Arts in the Park Festival.
Dalby	Australian Cotton Week Festival, Pioneer Park Field Day, Stock Horse Show, Wings and Wheels Spectacular, Dalby Picnic Races, Women's satellite Tennis Tournament.
Goondiwindi	Hell of the West Triathlon, Gourmet in Gundy Festival, Christmas Mardi Gras.
Miles	Miles Annual Show, Beef, Bells & Bottle Tree Festival.
Millmerran	Millmerran Show, Hot Rod Show 'n Shine, BlueCare Bookfest, Christmas in the Bush, Rendezvous Sporting Shooters Event, Chisholm Trail, Australian Camp Oven Festival, Bush Food Festival.
Toowoomba	Shakespeare in the Park Festival, High Altitude Road Run, Queensland Outdoor Adventure and Motoring Expo, Easterfest, Heritage Gardenfest, Festival of Football Carnival, Agricultural Show"
Wandoan	Wandoan Show.

Source: SGS (a), 2011

3.12 Community Infrastructure

The following section describes major roads, rail networks and air services which exist in the study area.

3.12.1 Roads

Cardno Eppell Olsen (Cardno) has prepared the road impact assessment for the Surat Gas Project (Cardno, 2010). The following information is derived from that report. For further details, please refer to the Road Impact Assessment technical report.

The study area encompasses major road freight transport routes connecting Queensland and the southern states including the Warrego and Leichardt highways. There is also significant freight movement generated within the study area to move local agricultural produce. In recent years, the expansion of coal mining in the Surat Basin has resulted in increases in road freight transport as coal rail transport has reduced the capacity of the rail network to carry freight. The movement of freight through urban areas has been identified as an issue by community members in the region.

The quality and standard (i.e. sealed and unsealed) of the road network within the study area varies. The low density of population and development within the study area means that Councils have a high proportion of unsealed roads which are often adversely affected by heavy traffic and wet weather. Maintenance of key transport routes to standards that support current and expected traffic has been identified as an issue within the study area.

Within the study area, 61.0% (307 of 507) of accidents occurred in urban centres, with the majority of these occurring in Dalby.

3.12.2 Rail

Queensland Rail's Westlander service operates twice a week in each direction between Brisbane and Charleville. The service stops in Toowoomba, Dalby, Chinchilla and Miles. With this exception,

passenger rail services in the study area are extremely limited and in most centres consist of a bus-to-rail connection service. All other rail use in the region is related to the import and export of freight.

Both the Western and South Western railways converge at Toowoomba, where the railway line continues to Brisbane and the Acacia Ridge, Redbank and Mayne sidings, and to the Port of Brisbane. There is negligible growth capacity available for rail traffic to the Port of Brisbane due to the high level of utilisation of the network during peak periods and priority given to passenger services (Queensland Transport, 2003).

The Australian Transport and Energy Corridor Ltd (ATEC) has control of some 200 ha at Charlton (west of Toowoomba) for development of a major freight hub. A consortium, comprising ATEC, Industry Funds Management (IFM), Queensland Rail, Xstrata Coal and Anglo Coal, has been granted an exclusive mandate by the Queensland Government for the construction of Surat Basin Railway by 2013. The Surat Basin Railway will service the four billion tonnes of thermal coal in the Surat Coal Basin and is seeking its operations to coincide with the opening of the new Wiggins Island Coal Terminal at Gladstone. ATEC has also announced plans to build the Moree to Toowoomba Railway, to be known as the Border Railway, due for completion by 2014. The Border Railway will be incorporated into the nation-building Melbourne to Brisbane Inland Rail Link.

3.12.3 Airports

Toowoomba hosts the major airport in the study area with Qantas providing regular services between Brisbane and Toowoomba. However, Toowoomba's close proximity to Brisbane (20 minutes by air or two hours by road) means air services are not typically the preferred means of transporting persons or freight. This situation may change if regional growth justifies direct connections to final destinations (e.g. Sydney or Melbourne). Skytrans, a regional airline based in Cairns, does however provide passenger services from Toowoomba to more remote Queensland towns (e.g. Birdsville, Charleville, Thargomindah). The airport is also home to a number of charter operators.

All other communities of interest have small airstrips for aviation health services, recreation, and private or charter flights.

3.12.4 Power Generation

Historically, most electricity generation in Queensland has been carried out by coal-fired power stations. However, the Queensland Government's Queensland Gas Scheme has in recent years required electricity retailers and large electricity users in Queensland to source at least 13% of their electricity from gas-fired generation (DEEDI, 2009). The Queensland Government states that this target will be increased to 15% in 2010 and may increase to 18% by 2020.

The Queensland Gas Scheme has provided domestic market opportunities for Surat Basin CSG operators and prompted the development of a number of gas-fired power stations in the study area. These include:

- Braemar 1 Power Station, operated by ERM Power, a 450-MW open-cycle gas-fired power station that can operate as a peaking (i.e. during times of peak demand) or shoulder generator (ERM, 2008). Braemar 1 is located approximately 40 km southwest of Dalby and was commissioned in August 2006.
- Braemar 2 Power Station, operated by Arrow, a 450-MW open-cycle gas-fired power station located on an adjacent site to Braemar 1 Power Station.

- Daandine Power Station, operated by APA Group and owned by Arrow, a 33-MW gas-fired power station located at Kogan, 40 km west of Dalby. The power station commenced operation in 2006.
- Darling Downs Power Station, a 630-MW combined-cycle gas-fired power station. Construction of the Darling Downs Power Station began in August 2007, with commissioning occurring in the fourth quarter of 2009 and ramping up to full commercial operation in the first quarter of 2010. The power station is located approximately 40 km southwest of Dalby.
- Oakey Power Station, operated by Oakey Power Holdings, a 300-MW open-cycle dual-fuel gas-fired power station that operates as a peaking generator (ERM, 2008). The Oakey Power Station is approximately 20 km northwest of Toowoomba and was commissioned in 2000.

Both the Braemar 1 and 2 power stations and the Darling Downs Power Station are strategically located adjacent to the Queensland–New South Wales high voltage transmission Interconnector and Powerlink 320/274-kV substation. The interconnector enables power station operators to dispatch power to both Queensland and New South Wales markets.

Coal-fired power generation facilities in the study area and surrounds include:

- Millmerran Power Station, operated by InterGen, which is an 850-MW baseload power station (i.e. produces power all the time). The Millmerran Power Station is located approximately six kilometres south of Millmerran and was commissioned in 2003.
- The Kogan Creek Power Station, operated by CS Energy, is a 750-MW baseload power station. The Kogan Creek Power Station is located approximately 25 km from Chinchilla and was commissioned in 2007.

It was discussed in meetings with the Western Downs Regional Council that Chinchilla is serviced by two power lines. There are concerns among developers, council and the community that unless power supply to the town is improved, development and growth could be limited by access to electricity.

The expansion of coal mining and CSG industries and the associated construction of power generation facilities around the towns of Dalby and Chinchilla (and indeed Roma outside the study area) have created opportunities for local businesses. The development of the region's energy resources is likely to provide a significant flow-on effect to other sectors, particularly construction, infrastructure, transport and logistics.

Western Downs Regional Council is the distribution authority for a reticulated gas network located within the Dalby town boundary. The council has operated the franchise since 1975 and the operation includes the supply of natural and liquefied petroleum gas (LPG) to 2,500 consumers with 80% of the available area in the reticulated network.

3.12.5 Council Infrastructure

Water

Reflecting the rural nature and low population density, the level of infrastructure development by the regional councils varies within each council area. Generally the cities and larger towns within the regional council areas are well serviced.

Within the Toowoomba Regional Council area reticulated water is available in Toowoomba and the large towns, such as Millmerran. Water is sourced from three dams; Cressbrook, Cooby and Perseverance (TRC, 2009). Ongoing water restrictions led to an increase in residents sourcing

groundwater to supplement their own water requirements. Similarly, non-reticulated areas are reliant on groundwater and surface water. Despite the January 2011 floods, TRC area remains under restrictions to its water use, although these have eased in some areas (e.g. Toowoomba town). While many towns within Western Downs Regional Council have reticulated water, not all reticulated water supplies are potable. Non-potable water supplies are used for domestic sanitation and garden or irrigation purposes. Water for the region is sourced both from groundwater and watercourses including the Condamine River, Jandowae Creek, Cattle Creek, Koondai Creek, Dogwood Creek, Back Creek, Tara Lagoon and Cobble-Gun. Water is limited in Dalby and residents are urged to conserve water wherever possible. Water restrictions currently apply to residents (WDRC, 2011).

Within the Goondiwindi Regional Council area, reticulated water is available in Goondiwindi and larger towns such as Inglewood, with water sourced from the Macintyre River and groundwater. Non-reticulated areas are reliant on groundwater and surface water.

Waste management

While council-operated sewerage systems exist in the larger cities and towns, a number of smaller towns and settlements within the study area are not connected to council sewage systems. In these areas, individual property owners are responsible for the installation and maintenance of on-site sewerage treatment facilities.

Each regional council operates waste management facilities in various locations. Toowoomba Regional Council's waste facilities are located at Charlton, Jondaryan and Oakey. Western Downs Regional Council operates 23 waste management facilities within the districts of Dalby, Chinchilla and Tara. Goondiwindi Regional Council's waste facilities are located at Goondiwindi, Inglewood and Texas.

The Western Downs Regional Council stated in its September 2009 Newsletter (WDRC, 2009) that a major waste transfer facility would be constructed at Dalby, as the current Dalby facility reaches capacity and in anticipation of future waste disposal requirements in the area. The council estimated $4.6 Million would be spent during the 2009/2010 financial year in developing new waste management facilities in the region, with construction underway and due to be completed mid 2011 (WDRC, 2010).

Public Transport

Availability of public transport in the study area is limited, with a concentration of local services in Toowoomba. The low density development within the greater portion of the study area is generally not supportive of public transport and reinforces the dependency on private motor vehicles and appropriate road network connections for residents (Queensland Transport, 2003).

Greyhound operates coach services to communities in the study area along a network of routes that include Brisbane, Toowoomba and Rockhampton. Other services, available to varying degrees, include:

- Toowoomba Regional Council's urban bus services;
- Privately operated taxi services;
- School bus services; and
- Private community bus services (home and community care services).

3.13 Emergency Services

Emergency services for the study area generally consist of Queensland Police Service (QPS), Queensland Fire Service, Queensland Ambulance Service and State Emergency Services. The number of emergency personnel in each town in the region is based on population. Toowoomba, Goondiwindi and Dalby therefore have the highest level of emergency service personnel across all three disciplines.

3.13.1 Police

There are currently 63 police officers that service the Dalby police district, including Chinchilla, Millmerran and Cecil Plains (equating to one police officer for every 530 persons). The Warwick police district encompasses Goondiwindi and has 92 police officers (one police officer for every 534 persons) and the Toowoomba police district has 249 officers (one officer per 632 persons).

3.13.2 Fire service

The study area is covered by the south western region of the Queensland Fire Service. There are 100 full-time fire-fighters, 463 part-timers and 42 urban fire stations throughout the region. Cecil Plains and Chinchilla lie within 'Area 3', with a service centre located in Dalby. Goondiwindi is the ‘Area 4’ centre and encompasses Millmerran. The Toowoomba region, as the largest population hub in the south western region, has approximately 112 permanent and part-time staff (QFRS, 2010).

Queensland Fire and Rescue Services to the study area are managed from regional headquarters in Toowoomba. The service provides two officers focused on the rural communities of the study area. Volunteer rural fire-fighters and equipment are available in all the communities of interest.

3.13.3 State Emergency Service

The State Emergency Service has its regional base at Toowoomba and operational groups and units in Cecil Plains, Chinchilla, Millmerran, Dalby and Goondiwindi (SES, 2009).

3.13.4 Ambulance Service

The study area falls within the south western Ambulance region, which covers approximately 414,000 square kilometres and comprises 29 full-time ambulance stations and five facilities.

The Queensland Ambulance Service also has a presence in Millmerran and Chinchilla. Cecil Plains has fire service presence, but is serviced by the Queensland Ambulance Service based in Millmerran.

The Royal Flying Doctor Service has capacity to land in each community in the study area.

Arrow has committed to co-sponsoring with other CSG development companies, a helicopter medivac service in the region. Two helicopter and medical response teams will be based at Toowoomba and Roma. The medivac service will respond to medical related emergencies in the general community and attend to CSG work related emergencies.

3.14 Communication

Access to communication and technology is increasingly driving rural communities’ ability to react to change, to build community cohesion and remain in touch with global technology and trends.

3.14.1 Media

There are several local newspapers in the study area, with the Toowoomba Chronicle covering the bulk of the region. The Chronicle is published six days a week (Monday to Saturday). The communities of interest are kept informed of local news by the *Dalby Herald, Chinchilla News, Northern Downs News, Goondiwindi Argus and Goondiwindi Gazette*. Other newspapers in the region include *Crows Nest Crow Call, Border News* and the *Warwick Bush Telegraph*.

A total of 11 local radio stations are available across the region. These include the ABC regional radio network, ABC National radio network, and Triple J (ABC Youth network).

ABC TV is broadcast through the region and the area is also serviced by all the major television networks, (Seven, Nine, Ten and SBS) however the quality of reception varies throughout the region. A local news service is provided on Channel Nine via Toowoomba. Satellite television services are also available in the region, provided by Austar.

3.14.2 Networks

Telstra provides terrestrial services throughout the Darling Downs region, and Optus is available in Toowoomba, south and south-east of the city and along the New England Highway.

3.14.3 Internet Access

The internet is available in all centres, with local call rate access. An average of 45% of households in the communities of interest in the study area have internet at home, less at Cecil Plains (almost 39%) and more at Toowoomba (almost 57%) compared to the Queensland rate of 65.8% (see Table 3-35).

Most of the libraries in the region also offer a variety of computers available to students, staff and general public for a range of purposes. Wireless internet is available in Toowoomba.

Table 3-35 Proportion of Households with Internet

Community	Proportion of Households with Internet (%)
Cecil Plains	38.6
Chinchilla	42.9
Dalby	50.1
Goondiwindi	48.8
Miles	40.5
Millmerran	40.5
Toowoomba	56.7
Wandoan	41.9
Darling Downs (SD)	57.4
Queensland (State)	65.8

Source: ABS, 2006.

Broadband is available or used less in Goondiwindi and Western Downs, where dial-up usage is higher. Toowoomba regional council area has better access to broadband. This reflects the rural-urban difference between Goondiwindi and Western Downs and Toowoomba.

3.15 Cohesion and Crime

3.15.1 Cohesion

As discussed above, communities within the study area have historically been based on rural industries, with larger cities and towns including Toowoomba, Goondiwindi and Dalby providing a base for major businesses and services that support these industries. Yet as with other rural based communities, Darling Downs communities have experienced significant fluctuations in their prosperity over time, due to either economic or environmental variability, such as commodity prices, seasonal weather variations and drought.

Also discussed above, many of these communities have had, or continue to have, limited local access to social services. This can require residents to travel long distances to access specialist doctors, dentists, education and training, and government support agencies. The adversity often faced by these communities combined with the feeling of isolation from major services has created strong, proud communities that celebrate their successes and work together through the difficult times.

As a population grows and increases in diversity, feelings of cohesion and trust can dissipate. In particular, the introduction of large construction workforces in other regional centres around Australia has seen increases in local crime rates and increased policing and behavioural issues relating to drugs and alcohol. With the exception of the larger centres such as Toowoomba, the communities profiled here are likely to be susceptible to such changes.

3.15.2 Crime

The study area lies within Queensland Police's Southern Region, which includes the districts of Charleville, Roma, Dalby, Warwick, Toowoomba and Ipswich. The districts of Dalby, Toowoomba and Warwick are of particular relevance to the Project.

According to local police (pers. comm. Snr Const Peterson, 2010, Toowoomba police station), the Queensland Police Regional Comparison 2008/2009, and the Queensland Police District Crime report for 2008/2009, the most common offences to occur in the study area relate to traffic (including drink driving). The other most prevalent offences include those involving drugs, assault, fraud, unlawful use of a motor vehicle and sexual offences. However, relative to the rest of Queensland, many of these crimes occur less frequently on a per capita basis (Queensland Police 2009).

Table 3-36 shows offences reported per 100,000 population in the 2005/06 financial year and the 2008/09 financial year. Importantly, for the rarer crimes (e.g. homicide), one or two occurrences can make a significant difference to the figures for the year.

3 Social Baseline

Table 3-36 Offences per 100,000 Population in the Study Area

Type of Offence	Dalby District Offences per 100,000 Population			Toowoomba District Offences per 100,000 Population			Warwick District Offences per 100,000 Population			Queensland Offences per 100,000 Population		
	2008-09	2005-06	% change	2008-09	2005-06	% change	2008-09	2005-06	% change	2008-09	2005-06	% change
Homicide	0	3	-300%	1	2	-50%	0	2	-200%	1	1	0%
Other homicide	0	9	-900%	1	2	-50%	2	7	-500%	3	3	0%
Assault - total (excluding sexual)	503	405	+24%	397	376	+5%	431	455	-5%	449	491	-9%
Sexual offences	141	384	-64%	178	156	+14%	104	162	-35%	127	162	-22%
Robbery	18	12	+50%	28	25	12%	8	9	-12%	43	49	-13%
Other offences against the person	123	89	+38%	90	85	+6%	85	92	-8%	83	113	-27%
Unlawful entry	899	1,634	-45%	1,065	981	8%	615	636	-4%	1,010	1,241	-19%
Other Theft (excluding unlawful entry	1,187	1,858	-36%	1,429	1,570	-9%	1,109	1,187	-6%	1,869	2,304	-19%
Other property damage	743	940	-21%	868	867	0%	889	888	0%	975	1,126	-14%
Fraud	560	203	175%	311	457	-32%	435	197	+120%	405	619	-35%
Handling stolen goods	51	86	-40%	107	86	24%	59	85	-30%	109	139	-22%
Drug offences	1,019	1,520	-33%	754	982	-27%	1,300	1,233	+5%	1,026	1,197	-14%
Trespassing and vagrancy	75	49	+53%	60	51	+17%	120	112	+7%	90	90	0%
Traffic and related offences	1,163	1,158	+4%	679	987	-30%	1,105	969	+14%	958	1,106	-14%
Good order offences	896	786	+13%	1045	681	46%	1,233	1,113	+10%	1,154	893	29%

Source: QPS, 2009

3.16 Non-Indigenous History and Heritage

The Darling Downs has a long history of agriculture and farming that dates back to the mid nineteenth century.

European population migration to the region was significantly encouraged by the Queensland Government's subdivision of large pastoral holdings in 1859 (French and Waterson, 1982). The completion of a railway linking Toowoomba to Ipswich in 1867 instigated further expansion of the region's transport infrastructure and agricultural activity which has seen development of the region's modern day communities.

Although home to some of Queensland's most fertile agricultural land, the communities within the Darling Downs have weathered periods of drought and major flood. Through these periods, the members of these communities assert strong social connection and, as with many rural areas in Australia, express concern and offer assistance to each other during hardship. Dependence on favourable weather, quality and quantity of output, and prices is evident throughout the region. Resilient, sustainable farming and lifestyle practices have been adopted in attempt to counter the challenges of the natural environment (see Section 3.18).

Despite periods of drought, areas within the region contain high quality agricultural land and during prosperous seasons produce high-quality crop yields. The high agricultural value of the land is a focus of significant pride felt and expressed by local communities of the region. Some stakeholders also express anti-mining sentiment and have established "food not coal" campaign banners along roadways in the region.

Heritage listings within the study area are as follows:

National Heritage List

- Chinchilla Sands is one of the Australasia's most significant fossil sites

State Heritage List

- Chinchilla 'Digger' statue, Chinchilla War Memorial – unveiled in 1919, the memorial commemorates the contributions made by local residents during World War One;
- Boonarga Cactoblastis Memorial Hall – a timber hall built in Boonarga, 12 km east of Chinchilla to celebrate the role of the Cactoblastis moth in controlling the prickly pear outbreak in the 1920s and 1930s;
- Dalby swimming pool complex – constructed in 1936 it was the earliest Olympic size swimming pool built outside of Brisbane in Queensland;
- Dalby Town Council Chambers and Offices (former) – built in 1932, the chambers were the third built in Dalby; and
- St Johnson Anglican Church – constructed in 1923, the third church built on this site includes the pulpit and stain-glass windows from the 1876 church.

Planning Scheme Listings

- Cecil Plains has only one site (the Cecil Plains Railway Complex) recognised for its heritage or character value.

Further details are available in the non-Indigenous cultural heritage technical report.

3.17 Indigenous History and Heritage

This section provides a summary of the Indigenous heritage technical report. Refer to the technical report for further details.

Stone artefacts excavated 250 km north of the project development area boundary at Mt Moffat Station provide evidence of Indigenous activity in the Darling Downs region dating back 22,000 years. The Darling Downs is the historic home of a number of clans that include the Wakka Wakka language speakers around Toowoomba, Warwick (to the west of Dalby) and around the Bunya mountains. Kamilaroi language speakers have lived in the southern and western areas of the region. Turubul language speakers have lived along the eastern areas of the Darling Downs.

Connection to traditional lands and waters are still important themes when considering Indigenous connections to the study area.

According to the Queensland Indigenous Cultural Heritage Database, there are 398 recorded cultural heritage areas or objects in the study area (CQCHM, 2010). The majority of these records (75.0%) are in the region between Chinchilla and Dalby. This density of records does not necessarily reflect the density of Indigenous occupation, but rather, the density of recent developments that have undertaken cultural heritage surveys of the area.

The more significant gatherings of Indigenous populations are now based in Cherbourg Aboriginal community to the north and Roma to the north-west. Cherbourg has a population of 1,241 and approximately 9.0% of the population of Roma are Indigenous (585 of 6,504). There is also a large settlement of Indigenous persons in Oakey (approximately 7.7% of the local population), which is also serviced by Aboriginal health and support services.

Native title parties who have lodged claims across the study area include the Western Wakka Wakka, Barunggam, Iman and Bigambul people.

3.18 Importance of Water

The availability and accessibility of water and the livelihoods of rural communities are inextricably linked. Drought has a notable impact on the economy that can be felt at the social level.

Many agricultural producers have been affected by drought in the study area over the past decade, with follow-on effects for those in associated industries. Useable water is limited and competition for the resource is high. Communities' reliance on water for security is a key social indicator within the region. Access to water, both potable and non-potable, is a significant concern to livelihoods. Consequently, any impact of a project on access to and quality of water has the potential to cause individual hardship.

As a result of the extended periods of drought experienced in the region, the nature of farming in the area has been influenced. There has been a shift towards dry-cotton faming and hardier crops, from irrigated cropping and dairy farming.

The extent of drought's impact on farms can be reflected in rural debt. In 2007, the Rural Adjustment Authority commissioned a survey of rural debt across Queensland. The survey concluded that farms in the Goondiwindi and Western Downs regional council areas are among those most financially affected by the drought in Queensland (Stephens, no date). An outcome of financial pressure can be increased stress for farmers, their families, and community. Flow on effects can relate to demand for mental, emotional and physical health and education services.

3 Social Baseline

The periods of drought faced by the Darling Downs region has seen a variety of impacts and responses from the study area communities. Key impacts of extended periods of drought include:

- Farming families in the Millmerran region closing their farms and walking away as a result of poor crop yields and low prices. (This was reported by qualitative workshop attendees in December 2009); and
- In December 2009, it was reported that Dalby had 'run out of water'. It was reported on national media outlets that Dalby had one day of remaining water. The town had been on strict water restrictions (level five) prior to the announcement, and the town had been drawing water from bores as the weir was empty.

3.18.1 Drought Management

Within Queensland, the allocation and management of water is undertaken through a comprehensive water resource planning process. Water resource plans (WRP) strive to achieve a sustainable balance between meeting human needs and those of the environment (DERM, 2009). The objectives of WRPs are implemented through resource operations plans (ROP) which detail the practical business of sharing and managing water resources from day-to-day. The water resource planning process is given statutory power through the *Water Act 2000*.

As previously stated, the study area lies within two water resource planning catchments, the Condamine–Balonne and the Border Rivers. Relevant WRPs include:

- Border Rivers WRP finalised in December 2003 and amended in June 2007 to incorporate the supplementary water allocations with New South Wales. The Border Rivers ROP was finalised in March 2008; and
- The Condamine–Balonne WRP finalised in August 2004. The WRP is currently being amended to address resource management measures in the Central Condamine Alluvium Area. The Condamine–Balonne ROP was finalised in December 2008 (DERM, 2009).

Prior to the commencement of the water planning process, moratoriums were put in place prohibiting the capture and use of overland flow. The assessment of any new applications for water allocations were also placed on hold until completion of the planning process. This created a great deal of resentment and angst among the rural communities and the uncertainties of what may happen to their water rights added to the stress of managing their properties during one of the worst recorded droughts in history

While landholder and council water allocations are now regulated under the WRPs and ROPs, CSG activities are authorised under the *P & G Act*. The *P & G Act* provides exemption from the Water Act water allocation assessment requirements for water that is produced during petroleum operations (so long as the water is used for specific purposes). This exemption provided to the industry has also created a degree of resentment among some landholders who perceive that they have to undergo an assessment to access the same water. In practice, the underground water rights held by petroleum tenure holders relate to water drawn from coal seams, which the majority of landholders do not access for groundwater supplies (as of June 2010, there were approximately 70 registered bores in the Surat Gas Project development area that accessed the Walloon Coal Measures. Nevertheless, landholders have expressed great concern about the potential natural interconnection between coal seam and other groundwater aquifers and drawdown which could occur.

The combination of these environmental and political factors influences the local stakeholders and contributes to the high level of concern over water issues that participants expressed in the focus groups and the quantitative survey.

3.19 Summary

The Project development area overlays a significant portion of the Darling Downs Statistical Division, and is likely to impact directly on at least eight townships and numerous landholders adjacent to the local townships. All the regional communities potentially affected by the Project owe their existence to supporting agricultural production with some processing of agricultural products (cotton gins and meatworks). All of the communities are undergoing change stimulated by the development of coal and gas resources. Some have been experiencing this change for some time (Dalby, Chinchilla and Millmerran) while some are on the cusp of significant change (Wandoan and Miles). These communities have displayed a high level of resilience, with prolonged periods of drought, substantial flooding and fluctuations in agricultural commodity prices. They have experienced population increases and declines but have managed to remain communities throughout.

The communities in the study area have experienced a mix of population movements over the recent past, with larger, more established communities seeing population stabilisation or moderate growth, and smaller communities generally experiencing population decline. This trend is common throughout Queensland and is evidence of the population drift to larger regional centres, capital cities and the coast. Areas subject to economic diversification (like power stations, coal projects and gas projects) have experienced moderate population growth to sustain increases or off-set declines in population respectively.

This industry diversification is having significant impacts on community members in terms of the uncertainty of the ultimate character of their community. It is particularly stressful for those agricultural producers whose properties are potentially impacted significantly. However, light industrial development has been occurring in the region for several years with relatively low level impacts to the community, generally occurring over a long period of time, and thus less easily observed, though this is not always the case.

While resource developers are relative newcomers to the area in the overall history of the region, the uncertain environmental impacts are also attracting other activists to the area creating associations not previously seen. There are multiple agendas coalescing under the banner of opposition to gas development. This is also resulting in a fracturing of the traditional established community between those opposed to the gas developments (generally directly affected) and those in favour of the projects (generally not directly affected, or currently economically benefitting or employed by projects). The cumulative weight of several concurrent projects is amplifying this fracture, with national media contributing as well. The result is a significantly higher perceived impact than is anticipated for a single project in the region. Generally the employment and population stability potential are able to partially alleviate the potential impacts on the community as a whole, though not necessarily for those directly affected.

The nature of the resource industry development proposed requires skill sets not widely available in the community, indicating the requirement for a significant influx of population during the construction and operation stages of the projects proposed. All communities desire improved social services and infrastructure, but are not convinced that they will benefit from the proposed project developments in a timeframe commensurate with the impacts that they may have to endure.

4

Community and Stakeholder Engagement Analysis

Stakeholder consultation carried out in this study has investigated stakeholders' perceptions, concerns and aspirations relating to the Project, and canvassed their opinion on the ability of the proponent to manage the Project's potential impacts and opportunities.

Stakeholders' perceptions of the potential impacts from a project can differ markedly to the actual impacts that may eventuate; however, the communities' perception of the potential impacts is important to understand as these perceived impacts are often related to the values of the stakeholders Hence consultation and engagement is crucial for predicting potential impacts for the communities in question, particularly on attributes that communities value..

Therefore addressing 'perceived' impacts is equally as important to stakeholders, and thus the overall success of the Project, as addressing those impacts that have been shown (through scientific investigation) as 'likely to occur'.

4.1 Stakeholder Consultation Activities

The stakeholder consultation undertaken specific to the EIS has been a part of the broader Project consultation process. Arrow engaged JTA Australia (JTA) to support the overall Project community engagement process. URS and Coffey Environments have conducted targeted consultation activities to support the SIA.

Stakeholder perceptions have been obtained through qualitative, quantitative and participatory research methods. Stakeholder engagement has included:

- A series of focus groups to identify areas of concern and aspirations relating to the Project;
- A detailed, statistically valid, quantitative telephone survey of the study area and communities of interest to quantify the weight, or level of importance, placed on identified issues or opportunities. The survey also sought to identify perceptions around CSG producers' ability to manage these impacts;
- Meetings and interviews with key stakeholders to understand the existing social baseline in the area and to identify areas of concern and aspirations relating to the Project; and
- Review and interpretation of other independent stakeholder analysis.

In addition, a number of pamphlets/ information sheets were made available to stakeholders through the public information sessions and displays. These pamphlets covered a number of stakeholder interest areas related to the Arrow CSG fields and LNG plant operation and aimed to provide stakeholder's with an enhanced understanding of the Project and how they will interact with it. The pamphlets covered:

- Understanding Ground Water;
- Information for Landholders;
- The LNG Plant (including a summary of some of the Project benefits);
- Safety;
- Salt Management;
- Shipping (LNG Plant);
- Arrow Energy in the Community;
- Boating and Fishing (around the LNG Plant);
- The EIS process;
- Employment and Workforce;
- Arrow's Environmental Policy;

- Fraccing; and
- Glossary of Terms (to support stakeholder understanding)

Further details on community consultation methodology are included in Section 2.

4.2 Results of Consultation

In evaluating potential impacts, the SIA considered community perceptions, concerns and expectations of the Project. In general the community consultation process indicated that:

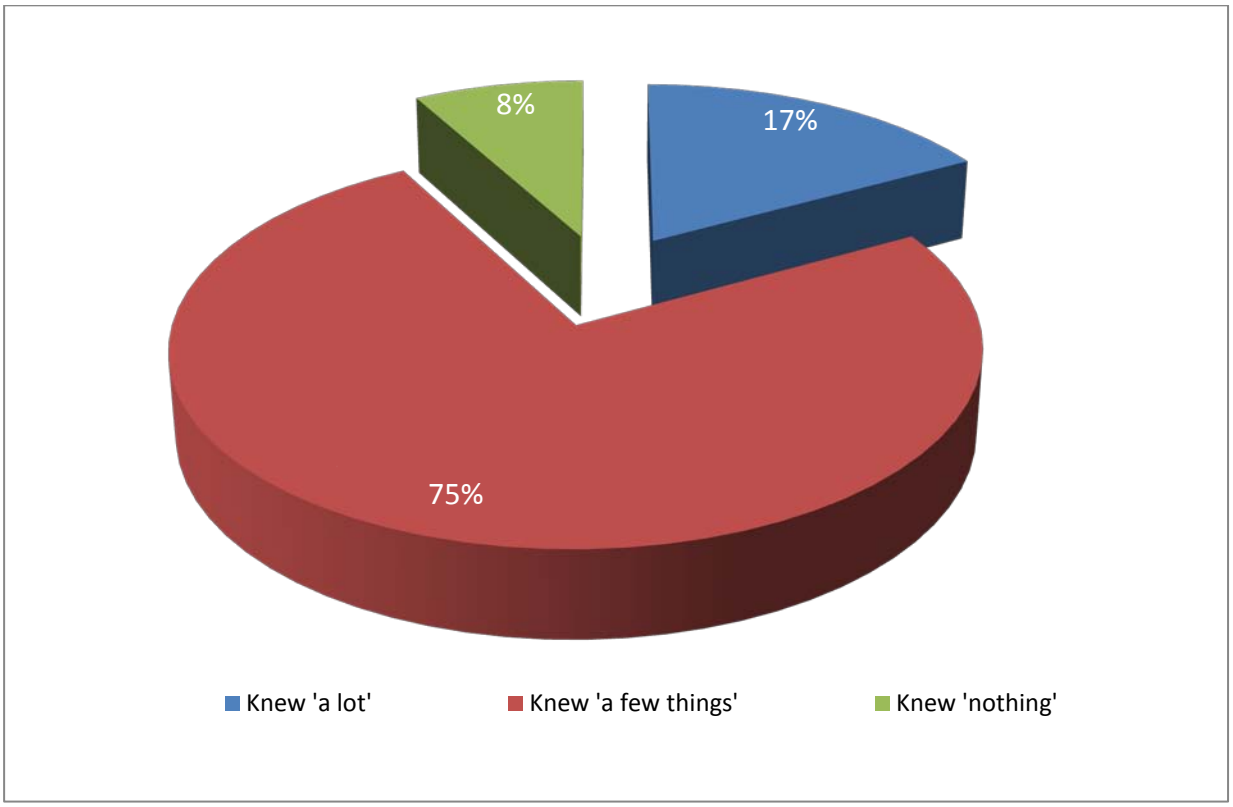
- The community has become increasingly informed and aware of the CSG industry and the Arrow Surat Gas Project;
- There are a number of key issues and concerns consistent to many stakeholders across the study area;
- There was variation across the study area and between stakeholder interest groups on the importance of some issues; and
- On some topics there were contradictory views on potential impacts from the Project.

4.2.1 Community Perceptions and Understanding of Issues

While the issues of concern have remained largely unchanged since the consultation process commenced in late 2009, the community has become increasingly informed and aware of the CSG industry and the Arrow Surat Gas Project, through Project consultation activities and through the media. Figure 4-1 shows survey respondents perceived understanding of the Project as at 2009.

As a result, the focus of these concerns has become more refined. Despite this increasing awareness, there remains a high level of confusion and misunderstanding amongst stakeholders.

4 Community and Stakeholder Engagement Analysis



Source: pers. com. Coffey Environments March 2011

Figure 4-1 Community Knowledge of the Project – 2009

4.2.2 Areas of Importance to Communities of Interest

The following section discusses matters that were consistently raised during consultation. The quantitative survey conducted in 2009 prioritised community values and perceptions and comments about the Project. It was found that priorities varied across the study area. Table 4-1 provides an indication of the priority values, perceptions and concerns at the time of the quantitative survey.

4 Community and Stakeholder Engagement Analysis

Table 4-1 Priority Community Values by Region

Values:	Western Downs Communities (Dalby; Chinchilla, Cecil Plains, Millmerran, Miles)	Goondiwindi	Toowoomba
Water (incl g/w)	✓	✓	✓
Housing & Living Costs	✓		
Relationships with Landholders	✓	✓	
Communication	✓	✓	
Community Services and Infrastructure	✓		
Amenity Issues			✓
Traffic	✓		✓
Community Integration	✓	✓	✓

Source: pers. com. Coffey Environments March 2011

Values of stakeholder groups were identified in the 2009 quantitative survey, where the survey respondent identified themselves according to a defined stakeholder interest e.g., the provision of community services or the use of water. Stakeholder values were also identified through targeted consultation where the stakeholder was known. Table 4-2 summarises the community values/perceptions and comments relating to the Project by category type that were identified by stakeholder group during the consultation. Stakeholders have also been grouped by stakeholder type/category. It should be noted that this table provides an indication only of stakeholder values, as not all stakeholders within a group may hold the same values. Individual stakeholders may also express a range of views, some of which are opposing, depending on the forum in which they are expressed.

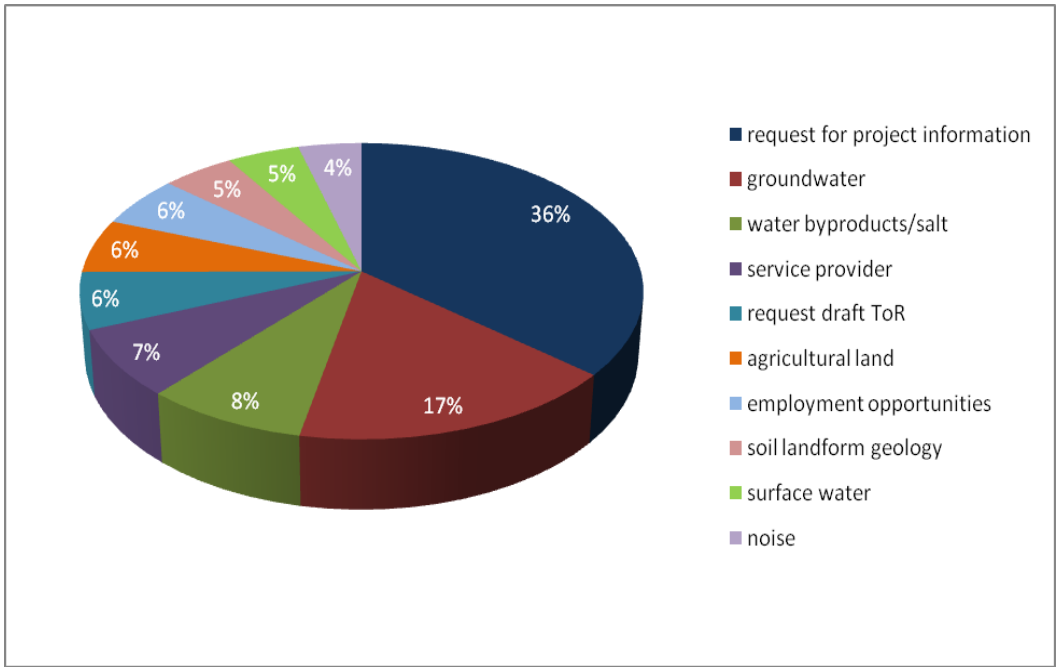
4 Community and Stakeholder Engagement Analysis

Table 4-2 Values/Perception and Comments relating to the Project Raised by Stakeholder Type

Community Value/ Perception/Comments Categories	Stakeholder Type		
	Land holders/Farmers	Council and State Service Providers	Business
Water	✓	✓	
Housing &Living Costs	✓	✓	✓
Relationships with Land Holders	✓		
Communication	✓	✓	✓
Community Services and Infrastructure	✓	✓	
Traffic	✓	✓	
Community Integration			
Local Employment and Business Impacts	✓	✓	✓

Source: pers. com. Coffey Environments March 2011

JTA identified the top 10 topics expressed in calls to the 1800 free call line, Project emails and letters from January to June 2010 (see Figure 4-2). It indicates that there was a significant need for further information at the time (36% of callers/correspondents) and that the priority issue concerned the protection of groundwater (17% of callers/correspondents).



Source: JTA, 2011

Figure 4-2 Top Ten Topics Received by 1800 Free Call Number, Project E-mail and Letters January - June 2010

Water

Availability of water is a continuing concern in the local and regional area and this was reflected in all forms of consultation. A summary of the consultation findings is as follows:

- Ensuring that Arrow responsibly managed water resources was rated as 'very important' by more than 92% of respondents in the quantitative survey;
- Agricultural and other stakeholders were the most concerned in the telephone survey, reflecting agriculture industry's dependence on a reliable and clean water resource;
- Stakeholders rated the perceived ability of the Project to appropriately manage water extraction and use, as 'very low'; and
- Concerns over water use and potential adverse effects on property and livelihoods were expressed in the focus groups and ongoing community information sessions held by JTA:
  - *"Water and salt are the biggest issues that need to be sorted out, and then you're onto a winner. If not, every company will suffer the backlash";*
  - *"If aquifers are destroyed, they are irreparable"*

Arrow has explained the Project's coal seam water management strategy including management of CSG water, brine and groundwater quality and supply in all the consultation sessions (except the telephone surveys). The strategy is also detailed in the EIS main report.

Community Integration

Consistent social themes that emerged in the 2009 focus groups, and ensuing consultation sessions were: managing the introduction of a potentially more diverse population into the region; and ensuring integration with the existing rural community. There was a strong desire to incorporate the Project workforce into communities in order to realise the economic and social benefits of having these workers located in the area.

Conversely however, there was concern expressed in some communities about the potential loss of "rural friendliness" that may occur by integrating temporary construction workers into towns.

Comments raised in consultation reflecting these viewpoints include:

- "Perhaps there is the possibility of an arrangement where people that come for construction get involved in things around town, bowls club etc. not just use us as a service"; and
- "In relation to construction camps Toowoomba Regional Council would prefer to have them in the community rather than tucked out in the edge. If there is no cohesiveness in the community, we tend to have problems. We would prefer them to be well located so that they can experience the local scene and perhaps think about moving into the area long term".

Arrow has in place a number of initiatives addressing worker-community interaction including:

- Brighter Futures program – a community investment program that has the potential for increasing worker participation in community events;
- Code of Conduct and *Constructive Community Engagement Policy* – addressing appropriate behaviour in communities; and
- *Sustainable Development Policy* – addressing Arrow's role in fostering a positive relationship in communities.

Arrow's management of this potential impact is discussed further in Section 6.

Cost of Living and Housing

Potential increases in the cost of living and a reduction in housing affordability were key issues raised by focus group sessions, and in targeted consultation with Western Downs Regional Council (WDRC), State government service providers and non-government service providers. Specific references were made in regard to increased housing costs in Dalby and Chinchilla (JTA, 2011).

Numerous stakeholders identified that high living costs may result in lower income groups moving out of the area, which has various social and economic implications. Queensland Health, Queensland Police and Education Queensland all noted that higher living costs, including higher housing costs were an impediment to attracting and retaining staff in rural areas.

Comments summarised from the qualitative workshops in relation to increased cost of living included:

"Two standards of earnings, those who earn a lot in the mines and the rest of the people"; and

"In Chinchilla a lack of housing increased rent prices. It caused problems for people who were living there" (pers. com. Coffey Environments March 2011).

Arrow has in place a number of initiatives to manage the Project's potential impact on cost of living and housing such as the Project's Housing and Accommodation and Strategy Plan. This plan addresses:

- Permanent housing requirement and delivery strategy;
- Temporary accommodation requirement and delivery strategy;
- Affordable housing and accommodation strategy; and
- Short-term housing and accommodation assessment.

Local Employment and Business Impacts

Employment and business development were identified as significant opportunities during consultation. The quantitative survey of community members found that 84% of respondents felt it was very important that Arrow employs local people and contracts local businesses (pers. com. Coffey Environments March 2011). Concerns raised included:

- The competition for labour and loss of workers (particularly from farming to higher paid Project jobs); and
- Increased costs for businesses.

The following quotes from consultation sessions are indicative of these issues:

- "There is a loss of qualified workers, especially engineers, is a big impact on smaller businesses in Millmerran. Apprentices have been affected as qualified people have left for more money and they have nobody to train them";
- "It is hard to get routine maintenance done because of a lack of qualified workers, same with builders or any kind of tradesmen. Especially plumbers and electricians, they have all gone to the mines"; and
- "Farmers are high on the list of people being poached because of their employability and experience with heavy machinery" (pers. com. Coffey Environments March 2011).

Section 6.0 details likely impacts from the Project and Arrow's planned management measures to maximise employment business opportunities and minimise negative impacts.

Social and Cultural Values

Coffey Environments (Focus groups conducted in December 2009 and previous studies (Schandl and Darbas (2008); Cotton Catchment Communities CRC (2009)) have identified that there is generally a strong community spirit amongst residents of the Surat Basin. Positive lifestyle elements reported included:

- The availability of most services, particularly in Toowoomba and Dalby;
- The short commuting times;
- Less pressured lifestyle than other areas of Queensland, particularly South East Queensland including Brisbane;
- Safe and family friendly communities;
- Rural culture; and
- Open space and diverse recreation options.

Traffic

The requirement to manage general traffic and heavy vehicle movements and routes was identified as an issue of primary concern during the research. In the quantitative survey, more than 70% of respondents identified that general traffic management was 'very important'.

When asked whether they believed that Arrow had the ability to manage general traffic and heavy vehicle traffic, responses were relatively evenly split between 'good', 'fair' and 'poor'. The increase in exploration and the development of resource projects was seen as having an impact on the quality and safety of roads in the region.

Concern over roads is evidenced by the following comments summarised from the qualitative workshops:

- *"People are dying getting to and from work because of the road networks and increase in volume of traffic"; and*
- *"An issue on the horizon is the possibility of increased traffic on already congested roads" (pers. com. Coffey Environments March 2011).*

Arrow has in place a number of initiatives addressing potential traffic impacts arising from the Project such as the Community Health and Safety Programme, Workforce Management Mechanisms and Workplace Health and Safety Policies.

Relationships with Land Holders

Consultation identified the high importance that the communities of interest, particularly Cecil Plains, place on Arrow maintaining relationships with local land users. Developing suitable protocols for negotiation, accessing land and forming long-term relationships with land users featured highly in discussions (JTA, 2011).

Assisting local agricultural activities through proactive weed and feral animal management is a key expectation for land holders. In the quantitative survey, 81% of respondents identified weed management as 'very important' (pers. com. Coffey Environments March 2011).

Arrow's *Sustainable Development Policy* identifies the importance of working with land holders. Initiatives in place by Arrow to build positive working relationships with landholders include: the implementation of a Land Management Policy; the adoption of a Land Access Compensation

Framework, including land access rules; the appointment of Land Liaison Officers; and the development of a *Constructive Community Engagement Policy.*

Communication

Open and honest communication is a significant value to the communities of interest. From the quantitative surveys conducted, *"greater communication and consultation (before and during project)"* ranked highly when participants were asked how Arrow could best manage adverse impacts. When participants were asked how Arrow could best enhance opportunities, *'communication, getting involved and interacting with community'* again ranked highly (pers. com. Coffey Environments March 2011).

A number of stakeholders in the focus groups expressed concerns about the need to improve communication and felt that greater information provision and dissemination was required.

The following comments illustrate the high value placed on good communication:

- *"They have the right to put them (wells) in on freehold land but their responsibility is to tell people what they are doing";*
- *"This is the first time I have been this close (to the Project). We would rather we have the opportunity to approach them rather than them chasing us"; and*
- *"I am concerned that they don't know much about it (CSG), which is a concern in itself" (pers. com. Coffey Environments March 2011*) (JTA, 2011).

It is important to note that since the Focus group sessions in 2009, Arrow has implemented an ongoing consultation program based on a comprehensive engagement strategy targeting all stakeholders. The *Constructive Community Engagement Policy* provides details on how workers and contractors are to engage with the community.

Community Services and Infrastructure

Council and State government service providers noted that growth in resident and non-resident population had the potential to affect provision of community services and facilities. The main concern was from cumulative projects rather than demand generated by this Project alone. Key areas of concern cited by Western Downs Regional Council and State government service providers were:

- Impact on capacity of general practitioners and medical specialists in Dalby and Chinchilla;
- Landfill needs from waste generated by TWAFs;
- Additional workload for police and ambulance services;
- Additional maintenance of recreational facilities due to use from construction workers in TWAFs; and
- Additional development of Council utilities to service additional population associated with the Project.

These service providers noted that limited information about prospective projects and the uncertainty of whether they would proceed make it difficult to plan in advance for adequate service provision. Western Downs Regional Council (WDRC) had particular issues about funding for additional services, particularly those required by the non-resident workforce who were not ratepayers. Section 6 of this report provides further detail on potential impacts on community services and facilities and management initiatives Arrow has in place that address these impacts for example the establishment of the Arrow Community Development Fund initiative.

4 Community and Stakeholder Engagement Analysis

During focus group sessions, participants were asked how the Project could manage potential impacts. Table 4-3 shows participant responses.

Table 4-3 Stakeholder Contributions on Managing Project Impacts

To Overcome Negative Impacts	To Enhance Opportunities
• Put things in place to manage water use, quality, re-use and discharge (38%) • Look after agricultural and farm lands (including weed management) (31%) • Provide greater communication and consultation before and during Project (29%) • Carry out traffic management and road infrastructure (20%) • Provide compensation for farmers/land owner rights and cooperation (15%) • Assist local employment and support local business (13%)	• Assist local economic growth, job creation and use local businesses (52%) • Communicate, get involved and interact with the local community (23%) • Provide more facilities and infrastructure (14%) • Ensure additional sources of water and water wastage are redirected (12%) – where? • Upgrade or up keep roads and railway (8%).

Note: The percentages in brackets indicate the portion of respondents who supported each view. The respondents were able to support more than one view resulting in total numbers not equalling 100%.

Source: pers. com. Coffey Environments March 2011

5

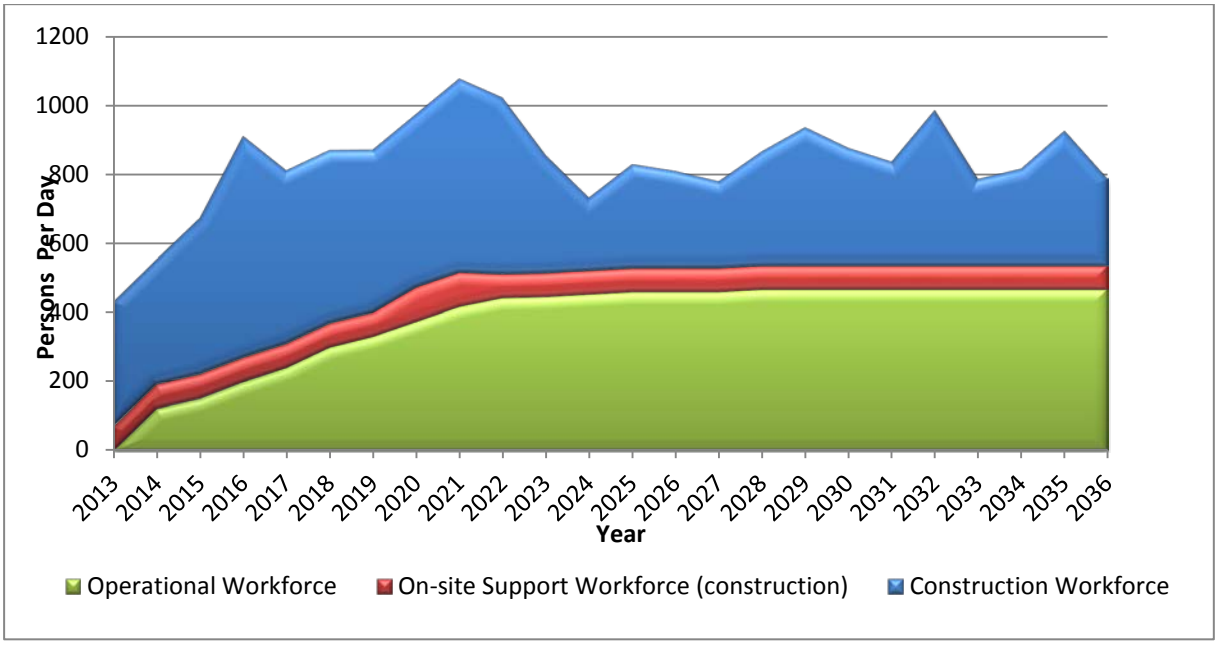
Project and Workforce Details

The following section outlines details of the Project and workforce during the construction, operation and decommissioning phases. The peak workforce is expected to occur in 2021, when approximately 1075 construction and operational workers are required. Smaller workforce peaks are expected to occur in years 2016, 2029, 2032 and 2035; with approximately 900 - 1000 personnel required during each of these peaks (refer Table 5-1).

Table 5-1 Peak Project Workforce Periods

Estimated Workforce	2016	2021	2029	2032	2035
Main construction workforce	640	560	400	450	390
Construction support	70	100	70	70	70
Total operational workforce	199	415	464	464	464
TOTAL	**909**	**1,075**	**934**	**984**	**924**

Figure 5-1 shows the workforce spread over the development period 2013 – 2036. Note that Brisbane based personnel are not shown here.



Source: Arrow, 2011

Figure 5-1 Forecast Project Workforce

5.1 Construction Workforce

Construction of the gas fields and compression facilities for the Project will commence in 2013 with all production facilities expected to be in operation by 2036.

The construction workforce groupings and their roles are as follows:

- Facilities construction labour: required to construct production facilities (i.e. field compression, integrated processing, and central gas processing facilities), associated local power generation facilities, and water treatment facilities;
- Well and gathering line installation and commissioning team (referred here as 'well installation and commissioning team') required to carry out:
  - Well site preparation;
  - Well drilling and completions (i.e. the completion of the subsurface aspects of the well and the deployment of down-hole equipment);
  - Surface equipment installation;
  - Connection of wells to gathering systems;
  - Installation of low pressure gas pipelines and water gathering systems and infield medium pressure gas pipelines; and
  - Support (i.e. administration, Project management, engineering, and HSSE).
- Earthworks crew: assumed to consist of a single earthmoving / site preparation team that is deployed to clear, grade, fence and excavate all roads, pads, facilities and dams required for the development of facilities (excluding wells and pipelines); and
- Camp operations staff: responsible for running the construction camps.

The expected skills required for the construction, commissioning and operational phases of a Project such as this are outlined in Table 5-2 below (data prepared by Energy Skills Queensland). The majority of jobs on the Project will be in vocational occupations with technical skills such as drilling, process plant operations and diesel fitting. Other vocational occupations such as logistics, transport, and warehousing will also be required in large numbers.

5 Project and Workforce Details

Table 5-2 Typical Occupation Requirements for Gas Field Development

COAL SEAM GAS FIELD – Core Staff		
Development Stage	Commissioning Stage	Operating Stage
Completion Engineers Control Room Technicians Cultural Heritage Coordinators Cultural Heritage Monitors Drilling Engineers E&I Technicians Elec/Instr/Control Engineers Environmental Advisors Field Delivery Supervisors Field Delivery Utilitymen Field Services Supervisors Field Services Utilitymen Maintenance Technicians (Mechanical) OHS Advisors Operations Superintendents Operations Supervisors Production Engineers Production Technicians Project Engineers Reservoir Engineers	E&I Technicians Electrical/Instr/Control Engineers Environmental Advisors Facility Engineers Logistics Supervisors Logistics Technicians Maintenance Technicians (Mechanical) OHS Advisors Operations Superintendents Operations Supervisors Production Technicians Project Engineers RO Technicians Utility men	Administrative Staff Area Managers Completion Engineers Control Room Technicians Cultural Heritage Coordinators E&I Technicians Electrical/Instr/Control Engineers Environmental Advisors Facility Engineers Licensed Electricians Logistics Supervisors Logistics Technicians Maintenance Planners Maintenance Superintendents Maintenance Supervisors Maintenance Technicians (Mechanical) OHS Advisors Operations Superintendents Operations Supervisors Production Engineers Reservoir Engineers RO Supervisor RO Technicians Maintenance Personnel

Source: Energy Skills Queensland, 2009

A peak construction workforce of approximately 710 personnel is expected to occur in 2016, when the Wandoan Central Gas Processing Facility-1 (Wandoan CGPF1) and Dalby Integrated Processing Facility-1 (Dalby IPF1) will be constructed concurrently. From 2016 to 2021, the construction workforce ranges from 250 to 500 personnel before tailing off, to between 220 and 400 personnel. Noteworthy points of interest in regards to the estimated Project workforce are as follows:

- Construction workforce will have multiple peaks associated with the construction of production facilities;
- The peak employment period for the construction workforce is from 2015–2016, when an additional 180–250 workers will be required for construction of the Wandoan CGPF1 and the Dalby IPF1;
- Production facilities construction management personnel have been calculated as a percentage (15%) of the production facilities construction workforce. The peak facilities construction management personnel workforce of 45 persons occurs in 2016;
- Well installation and commissioning team workforce numbers ramp up from 2013, peaking at around 370 workers per day in 2020. Workforce numbers vary with the schedule of production well development. The average is 250 persons across the entire construction period for this team;
- The well installation and commissioning team includes support staff. On average, 70 support staff will be based on-site (and will live locally). This peaks in 2020 with an estimated 100 on-site support staff;

- An additional 30–45 person team based in Brisbane will support the well installation and commissioning team;
- The earthworks crew are involved in upfront preparation works for facilities and infrastructure. A small crew of around 10 men per day is required up until 2021; and
- A steady commitment of camp operations staff will be required from 2013. Camp staff will gradually increase together with the number of camps operational, up to a rate of approximately 50 staff per day.

5.1.1 Source of Construction Workforce

Arrow's preference is to provide employment to people based locally (i.e. within or nearby to the study area) in the selection of staff and contractors. Arrow's hierarchy of preferred employment and contractor candidates is as follows:

- Local (lives within or nearby to the study area).
- Regional (lives within southern or central Queensland).
- National (lives in Australia).
- International (lives outside Australia).

Due to existing low unemployment rates and the high demand for workers by development projects across central Queensland, Arrow has estimated it will be able to source 20% of the construction workforce from towns in or near the study area. This study has assumed that of the 20% local workforce, 15% will be existing residents and 5% will relocate to the study area. This estimate is a scenario based on the information available at the writing of this report. Changes in this scenario should they occur will be captured in the ongoing SIMP monitoring and management strategies will be adapted accordingly. The majority of the construction workforce (80%) will be sourced from outside the study area on a FIFO or DIDO basis. Table 5-3 shows the source of the workforce.

5 Project and Workforce Details

Table 5-3 Number of Field Based Workers and Housing Requirements for the Surat Gas Project

Workforce Type and Likely Source	Level	Year				
		2016	2021	2029	2032	2035
Construction Workforce						
Main construction workforce		***640***	***560***	***400***	***450***	***390***
Existing resident (existing accommodation in the area)	15%	96	84	60	68	59
New resident (seeking accommodation in the area)	5%	32	28	20	23	20
Non-resident (camp based)	80%	512	448	320	360	312
Onsite Support Workforce (Construction)		***70***	***100***	***70***	***70***	***70***
Existing resident (existing accommodation in the area)	20%	14	20	14	14	14
New resident (seeking accommodation In the area)	80%	56	80	56	56	56
Operational Workforce						
Operational Support Staff at Depots		***125***	***200***	***200***	***200***	***200***
Existing resident (existing accommodation in the area)	50%	63	100	100	100	100
New resident (seeking accommodation In the area)	50%	63	100	100	100	100
Field and Facility Operations Workforce		***74***	***215***	***264***	***264***	***264***
Existing resident (existing accommodation in the area)	50%	37	108	132	132	132
New resident (seeking accommodation In the area)	50%	37	108	132	132	132
TOTAL WORKFORCE		909	1,075	934	984	924
New resident workers		188	316	308	311	308
Net additional housing requirements		188	128	0	0	0

Notes: It has been assumed that 20% of construction workers will be sourced from the local area as per the 'local' definition in the Project description, and 80% of construction workers will be sourced from outside the local area. Of the 20% local-sourced workforce, 15% will be existing residents and 5% will be new residents. This table includes field based workers – there are additional workers on the Project, such as Brisbane-based support staff. For assessment of new housing requirements, it has been assumed that existing residents do not require housing. New resident workers, being new to the area, will require accommodation. Net additional housing requirement is a conservative estimate based on the assumption that each new resident worker will require one unit of housing. However, actual number of new housing units may be lower as a proportion of the workforce will co-habit. This table has assumed that the proportion of existing residents vs. new residents vs. non-residents does not change during the development period. Arrow may acquire some housing in the area to accommodate Brisbane-based support staff visiting the Project. Alternatively, they may stay at worker camps or in hotel accommodation.

Source: Arrow, 2011

In Table 5-3 the new resident workers are the total from all the sub categories for construction and operations. The net additional housing requirement is calculated by assuming each new resident worker will require one housing unit. Once the peak workforce is achieved in 2021 the housing requirement will be less, as there are less workers and housing for the peak has already been acquired. Once peak has been achieved there is the potential for some market saturation to occur if workers leave the area and their housing unit is returned to the market. This will be monitored in the SIMP and aligned with the local and State housing and accommodation strategies for the region,

5.1.2 Construction Workforce Shifts

The construction workforce will typically work 10–12 hour shifts on a 21-day on, 7-days off roster. In periods of peak construction activity, shifts may extend to 12-hour shifts or 24-hour operations conducted in two or more shifts. Table 5-4 summarises shift details by construction activity.

Table 5-4 Construction Workforce Working Hours

Construction Activity	Working Hours
TWAFs (Construction camps)	4 weeks to install; 10 to 12 hour shifts, up to 7 days per week. An initial number of beds will likely be installed (e.g. 100), with the camp progressively expanded as the workforce grows.
Field compression, central gas processing and integrated processing facility construction	The construction workforce will work 10 to 12 hour shifts on a 21-days-on, 7-days-off roster. The final working hours will depend on negotiations with the construction contractor, workforce availability and workforce negotiations. In periods of peak activity, shifts may extend to 12-hour shifts or 24-hour operations conducted in two or more shifts.
Production well drilling	The following drill rig mobilisations are expected: Year 1: 4 drilling rigs and 2 rigs for well completion. Year 2: 8 drilling rigs and 4 rigs for well completion. Year 3 and onwards: 16 drilling rigs and 8 rigs for well completion. Drill rigs crews are expected to work 12 hour shifts (inclusive of travel), 7 days per week on a 21-days-on, 7-days-off roster (depending on the development plan).
Low and medium pressure gas pipeline and low pressure water pipeline installation	10 to 12 hour shifts during daylight hours, 7 days per week on a 21-days-on, 7-days-off roster (on continuous cycle).
High-pressure gas pipeline	The construction workforce will work 12 hour shifts (inclusive of travel), 7 days per week on a 21-days-on, 7-days-off roster (depending on the development plan). The final working hours will depend on negotiations with the construction contractor, workforce availability and workforce negotiations.

Source: Arrow, 2011

5.2 Operational Workforce

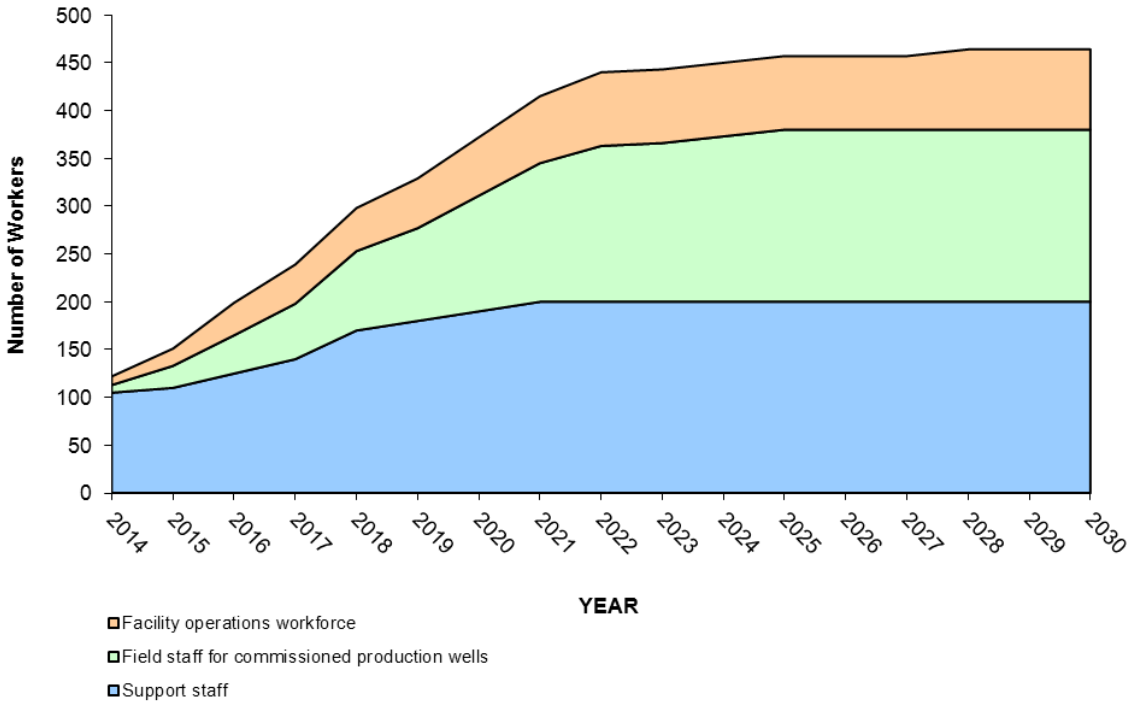
5.2.1 Existing Operational Workforce

As of February 2011, Arrow had an operational workforce of approximately 100 staff supporting the current field development and operating facilities in the Dalby region. Personnel are based at existing production facilities at Kogan North, Daandine, and Tipton West, and at Arrow's office and stores in

Dalby. The majority of these workers currently reside in Dalby, with a small contingent travelling from surrounding towns such as Chinchilla, Cecil Plains, Millmerran, Nanango and Toowoomba.

5.2.2 Forecast Surat Gas Project Operational Workforce

The forecasted operational workforce is expected to reach its peak of 464 personnel in 2028 and plateau from there. Figure 5-2 shows the estimated total operational workforce.



Source: Arrow, 2011

Figure 5-2 Total Estimated Field Staff for Surat Gas Operations

Operations roles will be in three areas:

- Support staff;
- Field staff for commissioned production wells; and
- Facility operations workforce.

Table 5-5 summarises role descriptions.

Table 5-5 Operations Staff Roles

Support Staff
• On-site-based staff: • (Centralised administration, stores, depots located in Dalby, Miles, and Millmerran) • Land access: Includes a land agent, cultural heritage agent and monitors, and an environmental agent. • General support: Construction superintendent, field engineer, quality assurance engineer. • OH&S support. • Earthworks: Earthworks supervision. • Pipelines: Pipeline supervision. • Drilling: Arrow supervision, geologist, site drilling and completions engineers. • Brisbane-based support staff: • Access: Land access, cultural heritage and environment managers. • Management and engineering: Project management, Project engineering, mechanical engineer, pipeline designer, cost controller, scheduler, GIS manager, and contract administrator.
Well Workover Crew and Well Operations Staff for Commissioned Production Wells
Well operators and workover crews develop and maintain the production wells, including recovering and redeploying down-hole equipment periodically over the life of a production well.
Facility Operations Workforce
Staff to operate and maintain central gas processing facility and integrated processing facility – including water treatment and power operation.

Source: Arrow, 2011

5.2.3 Source of Operational Workforce

Arrow has a strong desire to establish a local operations workforce. The hierarchy of preference for workers is the same as for the construction workforce:

- Local (i.e. lives within or nearby to the study area);
- Regional (lives within southern or central Queensland);
- National (lives in Australia); or
- International (lives outside Australia).

Given the workforce profile and worker availability in the study area, Arrow aims to fill approximately 50% of the new operations positions for the Project from towns in or around the study area. The remaining 50% of staff (around 230 workers) are expected to be recruited from further afield outside the study area and to relocate to towns in and around the Project area. Likely locations for where workers may choose to relocate are identified in Section 6.1. Arrow has no plans to establish FIFO or DIDO shift operations.

5.2.4 Operational Workforce Shifts

Operational workforce shifts are as follows:

- Support staff (administration, stores and engineering staff) will typically perform 8–10 hour shifts during daylight hours, typically five days per week;
- Staff at central gas processing and integrated processing facilities will typically work 10 hour shifts during daylight hours, five days per week; and

- Well operations staff will typically perform 8–10 hour shifts during daylight hours, typically five days per week. Well workover crews will work similar shifts when workovers are being carried out.

Staff will be on call to respond to emergency situations.

5.3 Decommissioning

Table 5-6 below provides a summary of the estimated decommissioning workforce responsible for wells and facilities including the anticipated source of each.

Table 5-6 Decommissioning Workforce Requirements for the Surat Gas Project

Activity Type	Size of Workforce	Source of Workforce	Accommodation
Decommissioning wells	Year 2030 to 2048: 2 by 8 person crews.	100% local area.	100% local.
Field compression facility decommissioning	Up to 25 persons for a period of 4 months.	• 90% local area. • 10% specialist skills from outside area.	• 90% local area. • 10% motels or similar.
Central gas processing facility decommissioning	Up to 50 persons for a period of 8 months.	• 90% local area. • 10% specialist skills from outside area.	• 90% local area. • 10% motels or similar.
Integrated processing facility decommissioning	Up to 80 persons for a period of 8 months.	• 90% local area. • 10% specialist skills from outside area.	• 90% local area. • 10% motels or similar.

Source: Arrow, 2011

5.4 Accommodation for Workers

The majority of the construction workers will stay in TWAFs (otherwise referred to as construction camps). A small subset of the construction workforce – the onsite support workforce (construction) and the operational workforce are expected to stay in the study area and travel to work.

5.4.1 Construction Workforce Accommodation

Five TWAFs will be constructed across the Project development area (Wandoan, Chinchilla, Millmerran, Dalby, and Goondiwindi) – each at the site of an integrated processing facility central to that development region.

Facilities construction labour and the well and gathering line installation and commissioning team will predominantly be based out of these TWAFs during work rosters. The TWAFs will also provide accommodation for visiting management personnel and consultants when there are beds available. During peak times, these visiting personnel will seek motel or similar accommodation.

TWAFs will be developed to accommodate:

- Peak facility construction labour workforce (nominally 140 workers for construction of one facility); and
- Total well and gathering line installation construction team (accommodation for approximately 368 workers across each of the five regions).

5 Project and Workforce Details

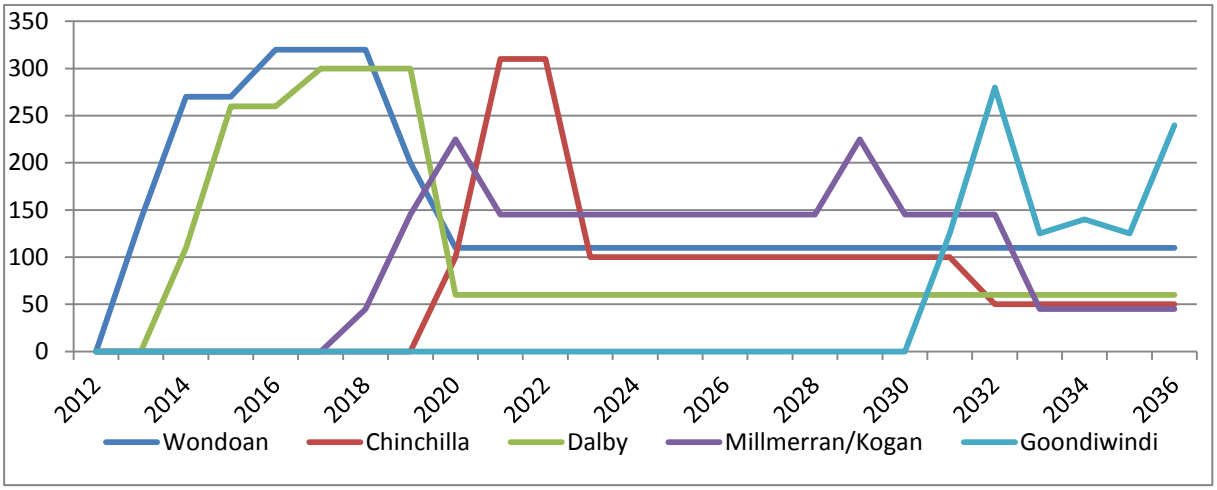
Occupancy rates of TWAFs will fluctuate according to the development schedule in each development region. Estimated TWAF sizes for each of the five regions are shown in Table 5-7 below, while Figure 5-3 shows the anticipated timing of when TWAFs are required.

Table 5-7 Estimated Temporary Accommodation Facility Sizes For Each Development

TWAF Location	Maximum Number of Beds Expected	Year(s) Maximum Number of Beds Expected to be Required
Wandoan	320	2016 to 2018
Chinchilla	310	2020 to 2022
Millmerran	275	2019 to 2020
Dalby	300	2015 to 2019
Goondiwindi	290	2030 to 2031

Source: Arrow, 2011

Table 5-7 shows the maximum beds expected to be required for each TWAF by proximity to the nearest major study community. After the maximum for each TWAF, it is expected that the numbers will reduce, and in some cases result in the closure of the TWAF. Project sequencing of the fields and well productivity will contribute to the longevity of the TWAFs; however, the maximum will be more aligned with infrastructure construction and field development than field development alone. As such the maximum bed timeline is not anticipated to change. If it should, the SIMP process will capture the change in Project development and consult with the appropriate stakeholders to determine what mitigation and management strategies may be needed.



Source: Arrow, 2011

Figure 5-3 TWAF Bed Requirements

Peak TWAF occupation occurs during construction of production facilities. Once these production facilities have been commissioned, TWAFs will be downsized to accommodate the smaller well installation crew. TWAFs will be decommissioned and removed, and the site reinstated once they are no longer required. If construction works (e.g. well development) are carried out in areas where the TWAFs have already been decommissioned, workers may stay in local town accommodation.

The location of integrated processing facilities and the co-located TWAFs will be progressively determined through Arrow's site selection process. In selecting sites, Arrow will consider:

- Regional council requirements;
- Arrow-owned land;
- Proximity to worksites (typical maximum travel distance of approximately 40 km to worksites);
- Local road infrastructure;
- Measures to minimise disturbance to local residences;
- Measures to minimise impacts on the environment; and
- Proximity to local infrastructure (water, power, sewerage and communications).

Construction camps are expected to take approximately four weeks to establish. Arrow expects to install an initial number of beds and then expand the camp as the workforce increases. The workforce developing TWAFs will initially stay in local hotel/motel accommodation until sufficient accommodation units at the TWAF are available for these workers. Construction camps will include:

- Individual sleeping quarters;
- Catering services, commercial kitchen and dining area;
- Recreation facilities such as a television room;
- En suite facilities; and
- Laundry facilities.

On-site support staff (construction) will live locally, travelling to site each day. Support staff recruited from outside of the local area (up to 80 workers anticipated in 2021) are expected to relocate and rent or purchase property in the local area (refer Table 5-3). Support staff who are existing residents of the local area are assumed to have existing accommodation arrangements.

5.4.2 Operational Workforce Accommodation

Arrow has estimated that 50% of the operational workforce will be sourced locally (i.e. from within or nearby the study area), while 50% will be sourced from outside the local area. Workers sourced locally are expected to have existing residences. Those sourced from outside the local area are expected to move to and rent or purchase housing in the study area. Based on these assumptions, approximately 232 workers would be moving into the area and seeking accommodation by 2029. The likely locations that this workforce will move to are discussed in Section 6.1.

5.5 Indicative Staging Development

Table 5-8 provides an indicative staging of the construction of Project facilities and the development of parcels in the field by their proximity to the five main neighbouring communities. This provides context for where most impacts are likely to occur and when.

Table 5-8 shows the development by year that is expected to occur in the vicinity of the major towns in the Project's development regions, including the establishment and operation of major construction camps. Following the development of the wells within a parcel, production is expected to continue for between 15 to 20 years for each well. As can be seen from the table, development of the Project will commence in the Wandoan/Miles area and the Dalby area in 2013-14, and in the Chinchilla and the Millmerran area around 2018-19. While the precise location of facilities has not been determined, it is Arrow's intention to co-locate construction camps at the site of one of these facilities in a region, indicating that they will not be in the vicinity of the regional.

5 Project and Workforce Details

Table 5-8 Indicative Staging - Construction of Facilities and Development of Parcels

Year	Community				
	Miles	Chinchilla	Dalby	Millmerran	Goondiwindi
2013	Establish 270 bed camp				
2014	Start development of 1 parcel Construct IPF		Establish 110 bed camp		
2015	Start development of 1 parcel		Expand camp to 260 beds Start development of 2 parcel Construct IPF2		
2016	Expand camp to 320 beds Start development of 12 parcel Construct CGPF1		Expand camp to 300 beds Start development of 1 parcel Construct IPF1		
2017	Construct CGPF2		Start development of 3 parcel		
2018			Construct FCF1	Establish 45 bed camp Start development of 2 parcel	
2019	Reduce camp to 200 beds	Establish 100 bed camp	Reduce camp to 60 beds Start development of 2 parcel Construct CGPF1	Expand camp to 145 beds Construct FCF2	
2020	Reduce camp to 110 beds	Expand camp to 310 beds	Start development of 1 parcel	Expand camp to 275 Start development of 2 parcel Construct IPF1	
2021		Construct IPF1		Reduce camp to 145 beds Start development of 2 parcel	
2022		Reduce camp to 100 beds Start development of 5 parcel Construct CGPF1		Start development of 1 parcel	
2023		Start development of 1 parcel			
2024		Start development of 4 parcel			
2025			Start development of 1 parcel Construct FCF3		
2026			Start development of 2 parcel	Start development of 2 parcel	
2027				Start development of 2 parcel	

5 Project and Workforce Details

Year	Community				
	Miles	Chinchilla	Dalby	Millmerran	Goondiwindi
2028			Start development of 1 parcel	Start development of 3 parcel Construct CGPF1	
2029		Start development of 2 parcel	Start development of 3 parcel Construct FCF4	Expand camp to 225 beds	
2030		Reduce camp to 50 beds Start development of 1 parcel	Start development of 4 parcel Construct FCF1 (Kogan)	Reduce camp to 145 beds Start development of 7 parcel	
2031				Reduce camp to 45 beds	Establish 290 bed camp Construct IPF1
2032					
2033					Reduce camp to 120 beds
2034					
2035					
	Approximate period for establishment and operation of the main construction camp in the vicinity of the location				

Note: Parcel = approximately 100 wells. Average well life anticipated is 15-20 years.

6 Potential Impacts and Mitigation

This section of the report discusses potential social impacts associated with the EIS / Project development, construction and operational phases of the Project, as well as its contribution to potential cumulative impacts stemming from other developments occurring in the region. Mitigation measures to avoid or minimise negative impacts and enhance positive impacts from the Project are also described. Decommissioning has limited analysis in the assessment because the details of the process are unclear, and the likelihood is extremely high that the situation will be significantly different at that time as compared to present. This is not only because of the likely natural changes to the region over the Project life, but also the cumulative impact of numerous large and small scale oil and gas developments in the region over the same or similar time frame.

Potential impacts are discussed below with respect to the following categories:

1. Population and demographic profile
2. Employment, skills and business;
3. Land use and property;
4. Community values and lifestyles;
5. Community infrastructure and services;
6. Housing and accommodation availability and affordability; and
7. Health, safety and environment.

Criteria used to assess the consequences of potential impacts include:

- Timing of the impact;
- Frequency and duration of the impact;
- Magnitude of the impact;
- Geographic extent and the communities affected;
- Resilience of those affected to adapt to change; and
- Reversibility or minimisation of the impact.

Using the above criteria, this study has assessed the significance of potential impacts based on the probability and consequence of them occurring. Impacts have been allocated as low, medium, high, or very high significance.

6.1 Key Observations and Impact Summary

6.1.1 Regional Context

The Project development area overlays a significant portion of the Darling Downs Statistical Division, and is likely to impact directly on at least eight townships and numerous landholders adjacent to the local townships. All the regional communities potentially affected by the Project owe their existence to supporting agricultural production with some processing of agricultural products (cotton gins and meatworks). All of the communities are undergoing change stimulated by the development of coal and gas resources. Some have been experiencing this change for some time (Dalby, Chinchilla, Millmerran) while some are on the cusp of significant change (Wandoan, Miles). These communities have displayed a high level of resilience through prolonged periods of drought, substantial flooding events and fluctuations in agricultural commodity prices.

The communities in the study area have experienced varied population movements over the recent past, with larger, more established communities seeing population stabilisation or moderate growth,

and smaller communities generally experiencing population decline. This trend is common throughout Queensland and is evidence of the population drift to larger regional centres, capital cities and the coast. Areas subject to economic diversification (like power stations, coal projects and gas projects) have experienced moderate population growth to sustain increases or off-set declines in population respectively.

This industry diversification is having significant impacts on community members in terms of the uncertainty of the ultimate character of their community that it implies. It is particularly stressful for those agricultural producers whose properties are potentially impacted significantly. However, light industrial development has been occurring in the region for several years with relatively low level impacts to the community, generally occurring over a long period of time, and thus less easily observed, though this is not always the case.

The nature of the resource industry development proposed requires skill sets not widely available in the community, indicating the requirement for a significant influx of population during the construction and operation stages of the projects proposed.

All communities desire improved social services and infrastructure, but are not convinced that they will benefit from the proposed project developments in a timeframe commensurate with the impacts that they will have to endure.

6.1.2 Sequencing

Preliminary field development will occur around the community of Dalby and Wandoan in the Western Downs Regional Council, with some of the Dalby area activity within the northwest corner of Toowoomba Regional Council. Initial project impacts will therefore occur in those areas as discussed in Section 5.5. This is an important consideration in understanding the assessment of impacts because the whole Project area is not anticipated to experience Project related impacts at the same time and for the same duration. As the Project evolves, impacts that may have been high or medium during the initial phases may have identified effective mitigation and management protocols that will reduce impacts to low in other areas as they are developed. Therefore, the measures identified within the SIA and SIMP will not be universally applied across the entire study area. Instead, the implementation of the adaptive SIMP for the Project will be aligned with the Project sequencing to enable lessons learned from initial developments to be adopted for the benefit of future impact areas. This will provide Arrow and impacted stakeholders the opportunity to discuss and enhance their knowledge of social impacts and learn from how the Project (and other projects) developed in other regions. Stakeholders could also potentially benefit from enhancements in technology and techniques to minimise impacts / disturbances to stakeholders and the environment. Arrow can also use the time between the EIS and actual development to consult with individual landholders to identify areas where infrastructure could be located on properties to reduce impacts and provide a more mutually beneficial outcome wherever possible.

6.1.3 Hierarchy of individual impacts

There is a significant difference between the impacts to individual property owners / landholders and the impacts to the general population / communities. This section will examine the impacts on landholders and how different land uses, property sizes and access to additional land can influence the level of a potential impact on that landholder.

6 Potential Impacts and Mitigation

Table 6-1 is a list of the different types of landholders and the level of impact that could occur based on their land use and property size.

Table 6-1 Hierarchy of Impacts by Land Use, Size, and Access to Additional Land

Level of Impact	Size of Property	Land Use
Higher Potential Impact	Small block	Any – multiple extractive industry leases
	Large block	Any – multiple extractive industry leases
	Small block	Any
	Large block	Cropping
		Grazing (limited access to other grazing land)
Lower Potential Impact		Grazing (access to other grazing land)

Note: this table is based on the average and can be significantly different for each individual landholder. This table also does not infer that lower potential impacts equates to no or low impact.

Small block = < 15 hectares.

Additionally, every person is different, and as such the effect of a potential impact can differ significantly from individual to individual. The same impact causation could occur to two different landholders with two completely different outcomes. For one it could be a non-issue provided certain agreed to provisions are met. For the other it could be seen as a violation of their rights and taken with extreme offence. This is an ongoing issue for the Project and is addressed through the following mechanisms:

- Land Liaison Officers;
- Stakeholder engagement plan;
- Community consultation plan; and
- Confidential landholder negotiations and compensation agreements (access agreements).

The first three mechanisms deal with how information is disseminated to the landholders and what information is disseminated. They are important in developing relationships, trust and mutual understanding. They are also a means of increasing landholder understanding of the Project and how it may impact them. The final mechanism addresses the need for confidential landholder negotiations to enable Arrow to deal with individuals based on their own property realities, particularly in the case of properties with more than two land uses, properties where a single project can render the property unusable for other purposes, and properties such as those growing crops where deviating from paths for seeding and harvesting can have significant financial ramifications.

Another factor that can significantly impact the relationship between the Project and the landholders is the financial position of the rural enterprise prior to the imposition of Project activities. As mentioned, the region has been affected by a prolonged drought, followed by recent flooding which can place significant emotional, physical and financial strain on landholders.

6.1.4 Legal Rights

While the rights to sub-surface minerals reside with the State, until a company applies for a license to explore for and eventually access those resources, most landholders experience little inconvenience with this situation. When companies exercise their right to explore for minerals, some landholders may experience a perception / feeling of injustice, as has been witnessed throughout the region on other projects. This is primarily due to the potential disruption of a land use from a project competing with and disrupting the existing land use. This feeling of injustice and powerlessness can be amplified by the following variables:

- The way a project deals with the landholder;
- The way the landholder deals with a project;
- The way the media represents the views in the community; and
- Political opportunism at the local, State and Federal levels.

The issue of legal rights is an important issue to consider in terms of project relationships with landholders and company reputation. While there is a land court to address unresolvable differences; a project's objective is to minimise the necessity to proceed to land court, and exhaust all reasonable avenues to reach an agreement before considering land court. The following lists some of the options to reduce the requirement to progress an impasse to land court:

- Increase landholder knowledge of a project's rights and the landholder rights – including through the DEEDI Land Access Code (DEEDI, 2010) and other industry and government information on legal rights and the industry;
- Effective, honest, transparent consultation;
- Participation in regional forums – enable broad discussions of legal rights and best practice models to be developed which can then be accessed by the landholder to increase their understanding of their rights and obligations;
- Identify businesses and materials available to assist landholders with legal rights and negotiations;
- Modify discussions to address the needs of both parties;
- Respect the reasonable needs of the landholder;
- Increase the access to information available to enable landholders to research their rights quickly and easily; and
- Confidential landholder negotiations and compensation agreements (access agreements).

Ultimately, the focus of a project is to develop with the minimal impact to the landholders in general. This can vary from property to property, and from individual to individual. An understanding of each party's rights is a key requirement to building the foundation for effective and honest negotiations. For more information on the consultation for the Project see Consultation Report (EIS Appendix B).

6.1.5 Landholder Negotiations

The impact on the individual landholder is primarily mediated through land access negotiations, the results of which are not available to the SIA as they are confidential. As such the mitigation implemented in many cases is captured in the deal struck between the landholder and the Project. This is why it is stated in the SIA that from a regional perspective the impact to a large property is likely to be low and therefore not further assessed. The reality is that the mitigation program for impacts on individual landholders (people and properties) is already implemented through the landholder negotiations.

It has been recognised that some landholders can adapt better than others to the change in their lives associated with the Project and other projects in the region as discussed above. This difference in ability to cope with change, and the reaction to change are considered in the landholder negotiations process, and confidentiality is maintained by the Project for the protection of the landholder. In order to assist in minimising stress and impact, Arrow have committed (through their Our Commitments to You publication) to an adoption of a standard approach to compensation and land access with all landholders. Furthermore, they have committed to engagement with landholders at least 6 to 12 months prior to production drilling.

6.1.6 Primary Impacts on Communities

The primary drivers of likely impacts on communities are:

- Increased resident population;
- Increased traffic;
- Increased local employment opportunities;
- Concern in relation to potential environmental impacts; and
- The presence of a transient construction workforce.

Proximity to the Project development areas, access to those areas, size of the community and proximity to social services and infrastructure are all factors in the likelihood of a primary impact on a community.

Increased Population

Increased population has both significant positives and potential negatives that need to be understood for impact evaluation and assessment. Potential positive impacts include:

- Increased number of rate payers to local government;
- Higher level of population stability and diversity within the region;
- Economic growth within the region through industry diversification; and
- Reduced vulnerability to impacts associated with a high level of dependence on agriculture, such as drought and low returns due to variations in agricultural commodity prices and currency exchange rates.

Potential real and perceived negative impacts include:

- Change in the community character;
- A lessening of the sense of community; and
- A lower level of community cohesion.

Examples of towns in Queensland, for example Roma, Clermont and Nebo indicate that increased extractive industry activity in the region does not always equate to a change in community character, whereas Emerald is an example of how significant community character change can occur when a cumulative impact is combined with a high level of change.

Traffic

Traffic impacts are a combination of perception issues relating to the ability of the roads and community to cope with the increased demand, and the increased potential for road incidents to occur based solely on the increased volume of traffic. It is important to acknowledge that the public road

network is accessible by everyone, including Project vehicles and is not exclusively for local traffic. Arrow recognises that the Project has the real potential to change the community status quo with regard to road use. Arrow has evaluated the road impacts from the Project on the capabilities of the roads and will implement enhancements and upgrades where appropriate to increase safety and reduce maintenance requirements. Arrow will work with emergency services providers including Queensland Police, Queensland Ambulance and other emergency services to enhance public awareness of Project activities resulting in changes to the traffic environment, and of the means to increase road safety. Arrow will also implement workforce guidelines on safe travel, behaviour based safety training and reporting mechanisms for the general public to identify unsafe practices and inform the Project of non-conformances. Arrow will action any reports to determine appropriate responses and possible changes to the procedures to reduce the likelihood of another occurrence.

6.1.7 Social Service and Infrastructure Use

The increased demand on, and use of, existing social services and infrastructure is frequently identified as a potential impact. Responsibility for funding and providing such services and infrastructure primarily resides with various levels of government. Each agency (like Queensland Health, Education Queensland, and Emergency Management Queensland) has its own planning mechanisms for identifying any upgrades or expansion of services required. Potential difficulties may arise should a rapid increase in resident population that was not forecast occur. Arrow will participate in regional planning forums to ensure that service providers are kept up to date with development plans and associated workforce projections.

It is important to note that the level of social services and infrastructure is intrinsically linked to the size of the community and its proximity to other communities. Larger communities are likely to have a higher standard and larger range of services due to their population base; however, project activities in proximity to larger communities can still have an impact. Regional centres often act as a major service hub for the delivery of outreach services over a much larger geographical area. Toowoomba is the regional service centre for the Project area, with Dalby being a sub-regional level service centre.

The smaller communities in the Project area have lower levels of services available, but are accustomed to seeking higher levels of service (e.g. specialist medical, dental or accounting services) through providers in Toowoomba. Most Government service providers have determined (through resources, funding and reasonable service requirements) that the proximity of these communities to the larger centres is sufficiently close to not warrant additional services in those communities. This is a historical reality for rural communities throughout Queensland including the Project area, and is a common feature of living in a small community.

The Project workforce is not anticipated to significantly increase the demand on social services, though it will examine opportunities to assist in social services and infrastructure delivery in the region through the SIMP and community development fund initiative.

6.1.8 Impact Management

The SIMP will provide a mechanism for managing the impacts of the Project. It will be developed in consultation with key stakeholders (see Section 7). The SIMP is designed to be adaptive and therefore have mechanisms to identify under assessed or emerging impacts and incorporate them into the management plan. The impact assessment identifies anticipated impacts based on the information available at the time of the assessment. The development of the SIMP as an adaptive management

plan enables the identification, monitoring, and management of impacts to occur throughout the life of the Project. This is particularly important in a region with more than one project influencing the demographic change occurring.

The Project's commitment to a SIMP throughout its life cycle will significantly enhance the ability of all parties to identify, monitor and manage social impacts. It also allows all parties to evaluate the effectiveness and necessity of some management strategies, and determine changes to enhance the value of the SIMP to the community and the Project. Arrow envisions local government as having a pivotal role in the success of the SIMP and will work with local governments in the Project area to continually enhance the SIMP.

6.2 Population and Demographic Profile

This section discusses potential changes to the demographic profile of the area that may occur – including any influence on population, gender and age distribution, and ethnicity.

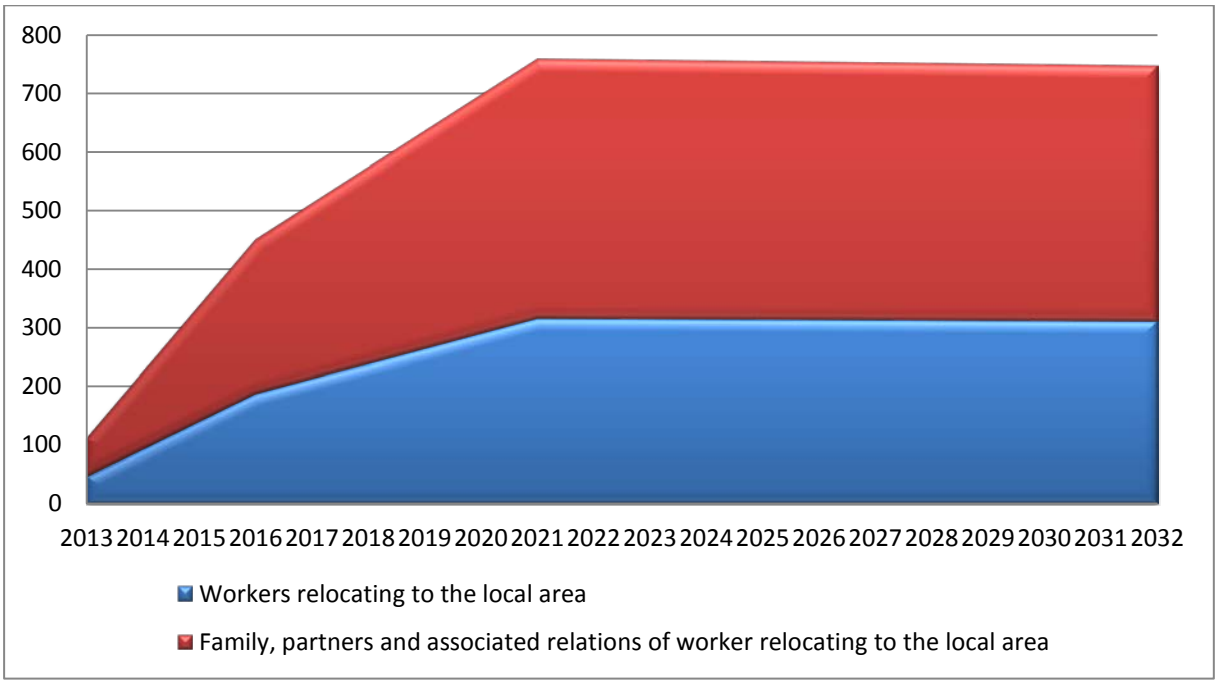
Associated impacts of these demographic changes are discussed separately within the following sections.

6.2.1 Population Change

As shown in Table 5-3, there will be approximately 909 construction and operational personnel working in the Project development area by 2016, and approximately 1,075 personnel by 2021. It is important to note that these workforce numbers are based on the values generated from the assumptions in Section 5.1.1 and Table 5-3. Workforce numbers are very likely to change between the assessment phase and operations; however, the values assessed and their rationale give context to the impacts assessment. Arrow expects that a significant portion of the workforce will be sourced from outside the local area, given the existing skills shortage within the area. Some of these workers directly employed for the Project will relocate to the study area. Based on the assumptions described in Section 3.4, it is expected that 316 workers will have relocated and become residents by 2021. It is important to note that this assumption is made on the basis of the information available at the drafting of this report and it is used for the purposes of identifying the potential changes for the impact assessment. The actual numbers of workers relocating to the area will be determined through the human resources (HR) department for the Project, and conveyed to the appropriate key stakeholders identified through the SIMP, which may be adjusted to address the change should it be required.

It is expected that their family, partner or relations will accompany some workers relocating to the area. This study has assumed that for every worker there will be an additional 1.4 persons accompanying that worker, based on the fact that the average Australian household consists of 2.4 persons. There is a potential that more workers with families will relocate than singles thus shifting the ratio from 2.4 to higher; however, several additional variables like difficulties in attracting workers has as much potential to return the ratio to the national average. The HR department for the Project can assist in the monitoring of this, and advise the key stakeholders associated with the ongoing SIMP implementation as required. Figure 6-1 presents the number of workers and their families/partners and other relations estimated to move into the study area. It is estimated that by 2021 there will be a total of 758 (316 workers and 442 partners/spouses/families) workers and family/partners/other relations, who will have moved into or in close proximity to the study area.

6 Potential Impacts and Mitigation



Source: Arrow, 2011

Figure 6-1 Number of Relocating Workers and Family/Partners/Other relations

There are many variables influencing where workers and their family/partners/relations will relocate to, including their work base, their need for particular community services, housing affordability and general cost of living, and the perceived lifestyle desirability of alternative residential locations. This study has considered the influence of these factors and estimated the indicative numbers and location destinations of these workers/families moving into the area, shown in Table 6-2 below

Chinchilla and Dalby are considered to be desirable locations, due to their vicinity to the Project worksites and the availability of services. Miles, while having fewer services than larger towns such as Dalby, is considered attractive due to its proximity to the northern parts of the Project development area, while Millmerran is also well located in relation to the development area.

Toowoomba and surrounding areas are likely destinations due to the high level of services available in the city and a reasonable travel time to many worksites in the Project development area. Smaller localities such as Jandowae and Tara may attract people seeking a more rural outlook while being reasonably placed to access services and the development area.

Goondiwindi was considered too far from Project work areas in the early to intermediate schedule of development to attract many people; however, the town may experience more growth once there are Project work areas closer to the town. There is also the potential for people to move to well-established towns such as Kingaroy, Nanango and Warwick if shifts and rosters were conducive to travelling from these places; however proximity to the work site, access to the work site, proximity to larger centres and proximity to social services and infrastructure are all key factors influencing choice of residential locality to relocate to. Additionally, personal choice is a major factor, which applies different weights to numerous variables and is therefore impossible to predict. As a general rule however, the population is more likely to relocate to a larger centre (or the immediate area of a larger centre) than a smaller community.

6 Potential Impacts and Mitigation

Table 6-2 Possible Locations for New Resident Workforce and Families

Destination	Estimated % of new residents[4]	Estimated no. of new residents by 2021	Growth per annum (PA): 2013–2021	Estimated no. of dwellings required by 2021[1]	Estimated no. of dwellings required PA 2013–2021[1]
Chinchilla	20%	152	19	63	8
Dalby	20%	152	19	63	8
Goondiwindi	5%	38	5	16	2
Miles	20%	152	19	63	8
Millmerran	10%	76	9	32	4
Toowoomba	15%	114	14	47	6
Toowoomba local[2]	5%	38	5	16	2
Jandowae, Tara and small localities around Dalby/Chinchilla	5%	37	5	15	2
Total	100%	**758**	**95**	**315**	**39**

Notes to Table:

- [1] Assumes one dwelling required for each worker and their family/partner.
- [2] Includes locations within a 40 km radius of Toowoomba city.
- [3] There may be a small proportion of workers moving to these locations if shift arrangements were suitable.
- [4] Estimate only.

Based on the assumed distribution of new residents in the above table, the number of workers and their families/partners moving into the study area and surrounds is small and could be considered part of organic growth for towns and the region. In this case organic growth is considered to be anywhere within + or – 5% of the average annual population change rate. The + or – 5% change is defined by Burdge as the range before an impact becomes significant from a social impact perspective (Burdge, 2004). There is a high likelihood that the growth will not be evenly distributed per annum as indicated in Table 6-2 as the table illustrates anticipated growth in a specific area over a specific period of time, and takes into consideration the sequencing of field development for the Project. Should the rate of growth result in changes outside the + or – 5% threshold the SIMP will be adjusted to assist the community in the subsequent change in the impact if necessary.

Non-resident construction workers will work in the area and stay in TWAFs during their work roster and will return home between work rosters.

The implications of population growth in the area (associated with both resident and non-resident workers) include additional demand for services (such as education and health), additional accommodation/housing requirements, potential localised inflation (as demand exceeds supply for certain goods and services), and increased traffic. There will also be a range of potential benefits, including opportunities for local businesses, the potential for improved service quality and choice, and greater employment opportunities for residents. These impacts are discussed in further detail below.

The cumulative growth from other project workforces and the workforce for the service and other industries will be more acute. Appendix C lists 18 additional projects that are proposed to proceed in

Queensland in the near future. Based on the information available, these projects alone are anticipated to create in excess of 14,000 new direct jobs - this includes workforces located outside of the study area, including Gladstone and Brisbane (see Figure 6-2). There is potential for these numbers to be significantly higher when indirect and induced employment is factored in.

6.2.2 Demographic Change

The construction workforce will typically be younger than the average age of the existing population of the Darling Downs SD region, which is 37 (ABS, 2006) (see Section 3.4.2). The construction workforce will also likely be comprised of a significantly higher proportion of males when compared to the existing gender profile of most regional communities.

The population growth anticipated as a result of the operational workforce (primarily being people of working age, accompanied by partners or young families) is expected to provide greater balance to the existing demographic profile, which exhibits a trend to growth in the older age groups. As a balanced population growth is desired by the communities of interest in order to ensure sustainability of services and lifestyle, the operational workforce demographic profile can be considered a benefit. Training and long-term employment prospects could also mean that more of the younger local residents will stay in the area, rather than move away.

There is also likely to be greater ethnic diversity within the workforce compared to the existing profile of the communities of interest, particularly if some of the Project construction workforce is sourced from overseas.

Businesses in the development area that may lose workers to this Project or other developments may source workers from outside the local area if they are unable to find local workers. In some cases, businesses that have difficulty attracting workers may source foreign workers through the Australian Government's 457 (skilled visa) scheme. This has occurred recently in towns that have experienced employee shortages.

6.2.3 Potential Impacts to Population and Demographics Profile

A summary of potential impacts to the communities of interest's population and demographic profile that may result from Project activities is as follows:

- Approximately 1,075 Project personnel will be working in the Project development area by 2021, including residents and people from outside of the local area. As part of this, it is estimated that by 2021 there will be a total of 758 workers and families/partners who will have moved into or around the Project development area. Likely destinations for people to relocate to are Chinchilla, Dalby, Miles, Toowoomba and surrounding locales. As such, it is likely that there will be an increase in the resident regional population. However the impact of a population increase itself has been assessed as low and could be considered a benefit. This is because the population increase will likely be dispersed spatially and temporally, with actual increases to the resident population of individual towns being fairly low on a year-by-year basis. The population increases experienced by the towns will act to off-set the long-term trend of population decline experienced within the region, and this positive effect has been assessed as a medium positive impact; and
- The construction phase of the Project will likely involve an influx of young, single males which could alter the existing demographic make-up of the communities over the short term. The operational

workforce will be of working age, some accompanied by partners or young families. The impact of these demographic changes has been assessed as low.

A summary of these impacts and their relative significance is presented in Table 6-3 below.

Table 6-3 Population and Demographic Profile Impacts Summary

Potential Impact	Phase	Positive / Negative	Likelihood	Consequence:	Significance
Changes to Population and Demographic Profile					
Off-set population decline in smaller rural communities	C,O	Positive	Possible	Moderate	Medium
Higher skilled resident workforce	C,O	Positive	Possible	Moderate	Medium
Retention of younger population	C,O	Positive	Possible	Moderate	Medium
Increase in resident population	C,O	Positive	Almost Certain	Insignificant	Low
Increase in families associated with operational workforce	C,O	Positive	Possible	Minor	Low
Influx of young male dominated construction workforce	C	Negative	Likely	Insignificant	Low

6.2.4 Mitigation Enhancement

Population growth, or arresting population decline in smaller towns, is an articulated objective for many of the communities of interest. In order to support these growth objectives, Arrow has adopted the following enhancement strategies:

- Hierarchy of preferred employment – preference for local applicants, particularly for operations positions, and expectation that non-local employees will relocate to the Project area for work;
- No plans to establish FIFO or DIDO operations;
- Shift hours (8 – 10 hour days, 5 days per week) for operational staff to encourage people to live locally and engage in community life; and
- Depots located in towns.

In addition, Arrow are committed to working with other industries, government, and service providers to plan and share information relating to preferred growth patterns and managing potential impacts associated with population growth resulting from Project activities.

Mitigation measures to address potential impacts associated with population and demographic change (e.g. housing demand, impacts on community services and infrastructure, changing community values and lifestyle) are addressed separately in this document, see Sections 6.5 - 6.7.

6.3 Employment Skills and Business

6.3.1 Potential Impacts on Employment, Training and Skills Development

There will be a significant ramp up of workers required on the Project from inception (2013) to 2021, when a peak of approximately 1,075 personnel is required. The peaks in workforce are attributed to occasions when construction of a number of production facilities are scheduled simultaneously, and is compounded by the requirement for a large operational workforce that will be required by this time. Combined with the workforce requirements of other projects in the region (refer Appendix C), this is likely to place significant pressure on the labour market, both locally and regionally.

The significant workforce requirements from this Project and other projects occurring will ensure that the region continues to experience low levels of unemployment. Given the limited availability of local workers, as well as the requirement for specialised labour inputs during construction, the Project has assumed that, on an on-going basis, 80% of construction workers (568 personnel) will be drawn from other parts of Australia and possibly overseas. The Surat Gas Project consequently will have local and regional benefits during construction by contributing to higher levels of employment, individual and household incomes, and business turnover in the regional area. Fifty percent (50%) of the operational workforce is expected to be sourced from the local area. The remainder will be recruited from outside the local area and are expected to become residents, thus contributing to the local economy.

The Project will provide long-term employment security and a wider range of employment occupations for local workers, both through the construction and operation phases. At least 142 construction positions are expected to be accepted by locals, and the Project will create approximately 460 jobs in the operation phase. These long-term employment prospects may provide an incentive and opportunity for younger local residents to remain in or return to their home communities that are local to the Project development area

The Project workforce is also likely to receive higher income levels relative to workers in other industries in the area (e.g. agriculture). This is due to the higher skill levels required for some construction and operations positions and the likely significant demand and limited supply of personnel with those skills. There is also potential for the disparity between existing income levels and future income levels for those employed by the Project to further increase, as concurrent projects in the area compete for workers through higher wages and better conditions. While benefiting those workers employed, local businesses may struggle to retain staff and have difficulties in hiring staff. This will be most pronounced in local areas during the construction phase of the Project when a peak workforce is required by the Project. A similar situation has occurred in Bowen Basin and North West Queensland resource areas, which are experiencing a shortage of workers due to the demands of resource developments.

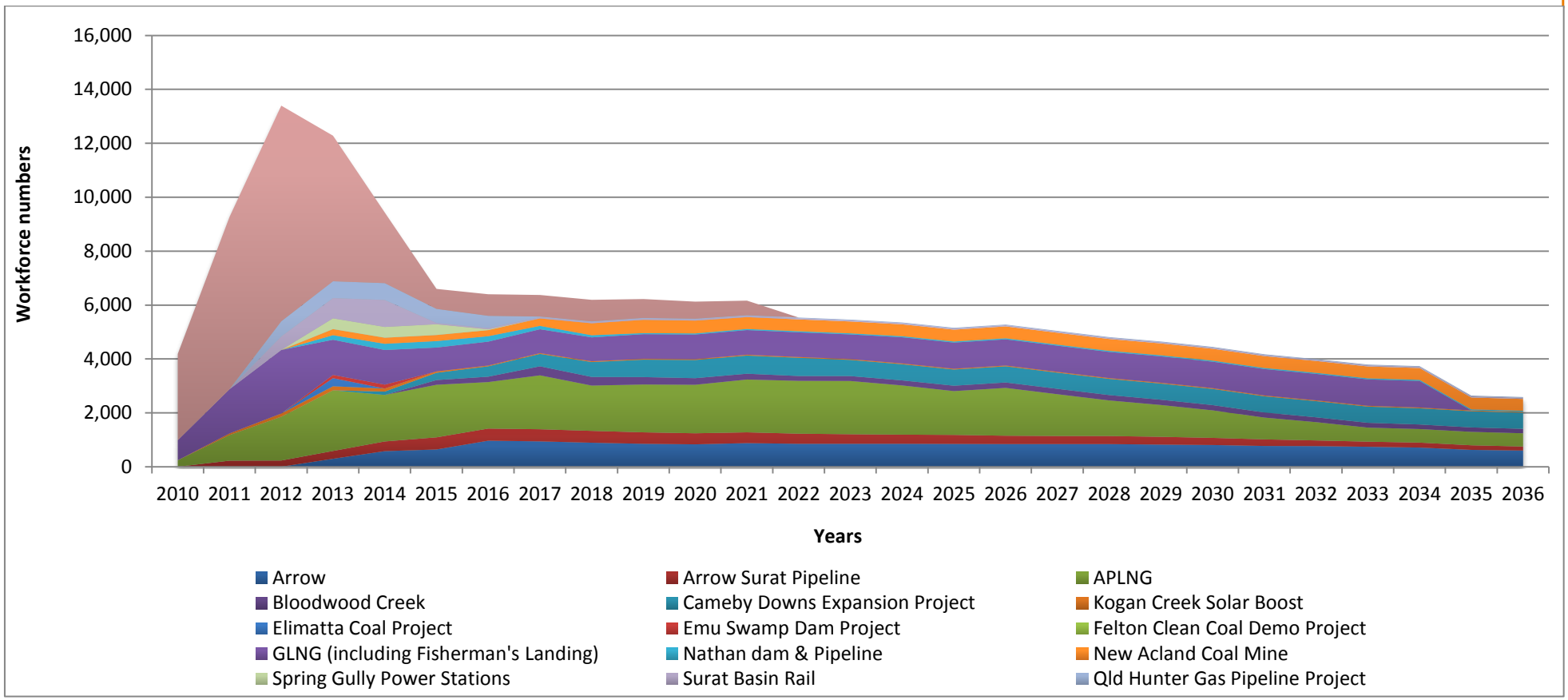
Skills Queensland has released the *Surat Basin Workforce Development Plan* which emphasises the need to increase workforce participation to meet the demand for labour and capture the benefits of economic growth. Workforce development strategies need to develop the existing workforce, attract and retain workers to the region and improve the skills base of the region (Skills Queensland, 2011). The Project provides an opportunity to increase workforce participation, including in those sectors of the community (such as Indigenous people) that are under-represented in the workforce.

When all the projects documented in Appendix C are taken into consideration, the demand for labour in the region is substantial. Based on current estimates and currently available data, there will be a

peak workforce in excess of 14,000 engaged in all proposed projects within the Surat Basin region that are known at the time of writing (see Figure 6-2). When this is combined with other projects in Queensland and interstate, the demand for skilled labour is likely to exceed supply (DEEWR, 2010). However, this pressure of demand over supply is likely to reduce after 2012, where a significant decline in demand for workers across all the projects is expected.

This situation will be exacerbated by the already low unemployment levels across resource regions and Australia more broadly. In recognition of these skills shortages, and the working environment, workers in the extractive industry are already paid more than equivalent workers in other industries. As labour shortages intensify, it could be expected that wages would increase further and that competing industries would find it harder to meet increasing labour costs and retain skilled employees (McDonald, 10 May 2010).

6 Potential Impacts and Mitigation



Source: pers. com. Coffey Environments March 2011

Figure 6-2 Cumulative Workforce Estimation

An industry planning workshop identified priority jobs with critical skills shortages requiring immediate attention to mitigate the risks to LNG project development (Energy Skills Queensland, 2011). These were:

- Vocational positions: drilling assistants; production technicians; maintenance technicians; electrical and instrumentation technicians; logistics technicians/administrators
- Para-professional positions: petroleum chemical and mechanical engineers; geologists and geophysicists

The Surat Basin Regional Planning Framework (SBRPF) notes that the size and skills composition of the workforce required to support resource development across the region will vary markedly at different stages of development (DLGP, 2011b). This will require careful planning and management, ongoing training, and a flexible workforce arrangement.

6.3.2 Potential Impacts to Business

There are significant opportunities from this Project and the other developments to diversify the economy of the area by expanding existing businesses and establishing new businesses. Businesses that previously only serviced the agricultural industry may be able to diversify into servicing the resource sector should they be able to meet industry tender requirements such as safety management and quality management plans, insurances and demonstrated capacity. This will reduce the potential for local economic shocks and downturns, particularly in times of drought.

A significant proportion of workers relocating to the area are likely to be accompanied by partners/spouses who will likely have skills that are in demand locally – for example, child care, health workers, etc. This could provide an opportunity for local businesses to engage persons with these skills to expand their services or fill gaps in the workforce.

There is also a risk that some businesses may be unable to adapt to the changed market conditions. Should businesses be compelled to increase staff wages to compete for scarce labour, or commercial property rent and acquisition costs increase, the profit margins of local businesses, particularly smaller businesses, may experience downward pressure. This could lead to substantial adjustment or even closure in some cases

There is also a risk that community expectations for economic growth in smaller towns may not be met, as a large portion of expenditure from wages and from Project procurement is made in major centres (i.e. the home location of the workforce or where the business supply chains are based). Arrow has established a Business Vendor Register which is available to interested suppliers, sub-contractors and service providers. Successful construction contractors will be given details of prequalified Australian and local area suppliers, sub-contractors and service providers on this register. During the detailed Project planning phase Arrow's contracting and procurement department will also proactively engage with the local business community to ensure opportunities to supply goods and services are effectively communicated. They will also organise business-specific information sessions to assist local businesses to meet tender requirements.

Economic and employment impacts from the Project are discussed in further detail in the Economic Impact Assessment report.

6.3.3 Impact Summary and Mitigation/Enhancement

The Project is expected to have a high positive impact on employment, skills and business. Impacts are summarised below:

- High levels of local employment retained and long-term employment security and a wider range of employment occupations for local workers provided;
- Increased aggregate income in the local area;
- Increased workforce participation in underemployed and disadvantaged groups;
- Regional and national economic benefits – increased employment and higher business turnover and opportunities;
- Attraction of highly skilled workers to reside in the local area;
- The provision of skill development and training through apprenticeships, scholarships, vocational training, support for work readiness programs and pre-trade training;
- Diversification and strengthening of the local economy;
- Increased labour costs for other industries and businesses not servicing the Project;
- Pressure on small businesses due to increased business costs, such as labour and commercial premises; and
- Entry of market-dominant businesses potentially threatening viability of smaller businesses.

A summary of these impacts and their relative significance is presented in Table 6-4 below

Table 6-4 Employment Skills and Business Impacts Summary

Potential Impact	Phase	Positive / Negative	Likelihood	Consequence	Significance
Increased local employment opportunities	C,O	Positive	Likely	Moderate	High
Increased training and skill development opportunities for the local population	C,O	Positive	Almost Certain	Moderate	High
Local business difficulties faced by operating in changed environment (increased costs, competition, and labour)	C,O	Negative	Possible	Major	High
Increased labour force participation and reduction in unemployment	C,O	Positive	Possible	Moderate	Medium
Increased local expenditure on goods and services through Project activities	C,O	Positive	Likely	Moderate	Medium
Increased local expenditure on goods and services by incoming workers and residents	C,O	Positive	Possible	Moderate	Medium
Increased potential for local business expansion / business establishment in local area	C,O	Positive	Likely	Minor	Medium
Increased range, diversity, lower cost of goods	C,O	Positive	Possible	Minor	Low

Mitigation

Employment and Training

Arrow's intention is to provide local employment through its selection of staff and contractors. Arrow will implement a hierarchy of preferred employment and contractor candidates based on the employees'/contractors' home or source location. Refer Section 5.

Arrow will remain open to consideration of any potential opportunities to encourage workers to relocate with their family to the region, thereby reducing the potential for workers to choose to drive in and out of the area each week for work, returning to their home residences on the weekend. This will be done in conjunction with local governments in the Project area.

Arrow has in place a number of training and skill development programs for its workers and the community through apprenticeships, scholarships, vocational training, support for work readiness programs and pre-trade training. These include but are not limited to, the following:

- Vocational/Trade Training – for job roles in the vocational/trade area, Arrow provides the opportunity to gain nationally recognised qualifications;
- Specialist Training – each employee is provided specialist training in their area of expertise to ensure they keep up to date with developments;
- Graduate Development Program – this program aims to provide a planned development path for newly degree-qualified employees that allows them to become professionals in their chosen disciplines;
- Scholarships – Arrow offers four year scholarships for first-year university students who want to pursue a career in the CSG industry;
- Vacation Employment – specifically designed for undergraduates in their penultimate year of study, this program provides 12 weeks' paid employment within the company; and
- School-based Training – Arrow has programs for year 11 and 12 students in Dalby and Moranbah who want to gain vocational qualifications at the Certificate II level.

To attract and develop a skilled workforce, Arrow will also consider:

- Working further with Energy Skills Queensland, Manufacturing Skills Queensland and Construction Skills Queensland to prepare workforce development strategies addressing skilled labour issues;
- Partnering and participating in existing employment and training programs developed by the State and federal government, such as:
  - Critical Skills Investment Fund;
  - Productivity Places Program; and
- Working with local employment and training organisations to identify workers within the region who have the ability to obtain qualifications through Recognition of Prior Learning (RPL) to improve employment opportunities.

Arrow's Brighter Futures community program (which has Education as one of three focus areas) may also consider the following initiatives, which would assist in increasing worker participation:

- Supporting training programs that focus on basic skills development, improving literacy and numeracy skills, and helping people who otherwise are not participating in the workforce to become 'work ready', such as:
  - Indigenous Cadetship Support;

  - Indigenous Employment Program;
  - Skilling Queenslanders for Work Initiative; and
- Identifying target regions (e.g. Wide Bay Burnett) with higher unemployment and compatible skill sets for employment attraction to the Surat Basin.

An equal opportunity policy ensuring non-discrimination in recruitment based on ethnicity, gender or disability should be developed. Consideration will be given to supporting local Indigenous employment programs that assist Indigenous residents to join the workforce.

Local and Regional Business

Arrow's approach to maximising local and regional business benefits involves developing the capability and capacity of businesses and identifying early opportunities for industry participation.

As indicated earlier in this section, Arrow has developed a Business Vendor Register. Local businesses are invited to apply to become registered vendors by submitting to an Arrow review of their technical ability; experience with health and safety; quality and insurance coverage.

Arrow may consider further advancing local and regional business opportunities by developing a local procurement strategy. Components of the strategy may include:

- Programs to enhance competitiveness and capabilities of local companies;
- Identifying gaps within the supply chains which could be filled by local and regional businesses; and
- Working with State Government local business development programs including the Industry Capability Network and the Major Project Supplier Program.

6.4 Land Use and Property

Social impacts may be imposed through changes to land use as a result of Project activities and the activities of other (cumulative) projects in the region.

Current exploratory drilling and the proposed siting of Project wells and infrastructure have caused some anxiety and concern to affected landholders. This has been expressed in consultation forums with comments made concerning the Project's potential effect on farming operations, possible environmental and health impacts, and the level of compensation proposed.

Agricultural output (and hence farming livelihoods) may be negatively affected if large and productive farming areas are lost to CSG use, or if the Project results in significant disruption to farming activities which reduces farming efficiency and productivity. Alternatively, depending on individual farm business circumstances, the introduction of CSG wells with regular land rental payments could provide a regular supplementary income source to farmers and thereby improve livelihoods,

Employment and economic diversification can also increase resilience to the peaks and troughs associated with agriculture-based economies, such as drought. There is the potential for a perception of loss of social connection to land and/ or agricultural production as people diversify into other industries of employment, the productivity of the landholdings is reduced, or through the in-migration of people pursuing employment in new industries. However, this tends to be a perception in the early stages of a project, and may or may not be realised as the Project's activities commence. People who move to rural areas tend to have similar rural values to the existing population. The impact may be magnified if land holders move out of agriculture entirely and are not replaced.

6 Potential Impacts and Mitigation

There was some concern among landholders that there may be a reduction in property values, or properties may be harder to sell if they were in CSG development areas. It is likely that impacts experienced by the individual landholders will vary, and will be dependent on the type rural enterprise land use. For example, pastoralists may experience less impact to the viability of their properties than do irrigators and other farmers, given that any physical disturbance to their operations will likely be easier to manage.

There will be approximately 7,500 wells over the whole development area (approximately 8,600 km2). Production wells are planned on an 800 m grid spacing, (though they may range between 700 m and 1,500 m). This equates to an indicative density of one well per 65 to 130 hectares. Gathering lines will transport gas and water from the wells to gas compression and water treatment facilities. Pipes will be buried at a minimum 750 mm under the surface to enable continued cropping use of the land in question. The period during which installation of these facilities and lines occurs will be when maximum disruption to property operations potentially occurs.

Predominant land uses within the study area are cropping and grazing. Two reports have been prepared for the EIS that identify good quality agricultural land within the Project Development area; Agriculture and Geology, Soils and Landform Impact Assessment. Arrow have committed to locating wells and infrastructure at least 200 m away from homes, in consultation with landholders.

While well sites, access tracks and other infrastructure will alienate agricultural land, the effects on farm operations will vary depending on the particular property circumstances. A completed well site will cover a 10 m by 10 m area and is fenced off to exclude stock and un-authorised access (refer Table 6-5). Average well life is 15 to 20 years. Arrow may acquire properties where larger infrastructure, such as integrated processing facilities, is to be located.

Table 6-5 Land Requirements

Infrastructure	Approximate Land Requirement
Completed well site	10 m by 10 m
Field compression facility	100 m by 50 m
Central gas processing facility	600 m by 250 m
Integrated processing facility	800 m by 250 m and 1 to 2 km^2 for dams
Electricity Facility Type	**Approximate Land Requirement**
Sub station	200 m by 150 m

Source: Arrow, 2011

The location of wells and gathering lines has the potential to disrupt or impede some agricultural activities, such as cropping which could impact on farming livelihoods by lowering productivity and farming efficiency. Arrow intends to properly address concerns regarding development on intensely farmed agricultural areas prior to commencement of construction activities. Arrow has formed the Intensively Farmed Land Committee which provides a forum for Arrow and its landholders on intensively farmed land, to identify and openly discuss issues and opportunities relating to the construction and operation of coal seam gas infrastructure and development of Arrow's coal seam gas resources in intensively farmed land within the Surat Basin. Arrow will consult with landholders regarding the appropriate siting of infrastructure away from prime agricultural land and to minimise

disruption to farm operations. For more information on the potential impacts on landholders please refer to the Agricultural Report (EIS Appendix F).

New laws governing land access, the Land Access Code (DEEDI, 2010) set best practice guidance related to communications between landholders and resource companies and outline mandatory conditions that must be complied with by resource companies undertaking activities on private land.

Some sections of the community are concerned about the extent of good quality agricultural land that is being taken up by numerous resource and industrial developments (CSIRO, 2011). This concern is being picked up by local, State and Federal politicians (and NGOs) and debated in the political arena, which cannot be controlled by Arrow. The issue is a major concern for many in the region and the rest of the country, particularly from a cumulative perspective of numerous gas producing fields in the region. Different approaches to address the project and cumulative effects are being explored including industry and regional consultative committees, working groups and State / local government initiatives. Arrow will continue to track this discussion in the community and adapt strategies to evolve the Project with the messages and sentiment in the community.

Impacts on properties relating to noise, air and light emissions have been assessed through the 'noise and vibration' and 'air quality' impact assessments, and will be managed through the Environmental Management Plan.

6.4.1 Impact Summary and Mitigation/Enhancement

Social impacts identified in relation to land use and property include disruption to farming activities (in some cases where significant impacts may occur, such as the siting of an IPF, properties may be acquired on a voluntary negotiated basis) and stress to landholders from dealing with Project activities occurring on their property. Increased uncertainty for landholders and community was rated as a moderate impact, partly due to the time that will elapse between when there is an indication that the property may be subject to gas well development and when it actually occurs during the Project life.

A summary of impacts and their relative significance is presented in Table 6-6 below

Table 6-6 Land Use and Property Impacts Summary

Potential Impact	Phase	Positive / Negative	Likelihood	Consequence:	Significance
Increased landholder and community uncertainty	C,O	Negative	Likely	Moderate	High
Reduced vulnerability to impacts associated with agriculture (drought, weather)	C, O	Positive	Likely	Moderate	Medium
Loss of social connection to land/ agricultural production	PC, C	Negative	Possible	Moderate	Medium
Loss of agricultural land affects food supply and security	C,O	Negative	Rare	Insignificant	Low
Reduction/loss of farm income	C,O	Negative	Possible	Minor	Low
Disruption to farm operations	C,O	Negative	Possible	Minor	Low

Arrow will manage potential impacts on land use and property through the following measures:

- Continued regular consultation with landholders to identify issues and opportunities including forums such as the Arrow Intensively Farmed Land Committee which provides a means for identifying issues in a timely manner, provide feedback and give informed consideration to procedural and systemic improvements, opportunities and initiatives.
- Engaging with landholders at least six to 12 months prior to production drilling.
- Consultation with landholders on the appropriate siting of wells and Project infrastructure to minimise disruption to farming activities. Commitment has also been given to locate the wells and infrastructure away from homes (minimum 200m).
- Gaining land access in accordance with the Department of Employment, Economic Development and Innovation's Land Access Code November 2010, in accordance with Section 24A of the Petroleum and Gas (Production and Safety) Act 2004.
- Arrow have committed to adopting a standard approach to compensation and land access. This will be facilitated by ensuring adherence to the policies such as 'Arrow Energy land access rules' as published on the Arrow website and through the May 2011 consultation in the Project development area.
- Development of a comprehensive environmental/land management procedure and working with property owners to minimise impact on farming operations. Commitments have been made that no dams for coal seam gas water or brine will be constructed on intensively farmed areas.
- Development of a robust groundwater monitoring regime and providing updates to the community on the results of groundwater monitoring over the Project life.
- Develop appropriate mitigation measures for managing potential impacts to agricultural land and water sources after Project completion.

6.5 Community Values and Lifestyles

The baseline has identified the values that the communities of interest hold in regard to living within the study area. The communities are regarded as possessing a strong sense of identity and being cooperative, collaborative and welcoming places, with a range of positive lifestyle elements in the region including:

- The availability of most services, particularly in Toowoomba and Dalby;
- Low commuting times;
- Less pressured lifestyle than in larger centres;
- Safe and family friendly communities;
- Rural character; and
- Open space and diverse recreation options.

During consultation stakeholders have expressed a range of possible impacts on community values and lifestyles as discussed below.

Community Cohesiveness

Stakeholder feedback inferred the area offered a good quality of life and a participative community that readily volunteered and was willing to accept people into the community. However, there were concerns that an influx of people into the community could disrupt this community spirit and create an 'us and them' (i.e., 'us' being local residents and 'them' being Project-employees) division in the area.

6 Potential Impacts and Mitigation

A common theme throughout consultation has been that people wanted growth and progress within their communities, but not at the expense of their existing lifestyles. Some stakeholders expressed a desire that new industries and workers within those industries conform to existing residents' lifestyles and cultures and, by doing so, enhance the way of life valued by existing residents.

Another concern expressed in smaller towns in the study area relates to the potential loss of "rural friendliness" that could occur by integrating construction workers into towns (as opposed to TWAFs). Communities acknowledge the dilemma between wanting greater interaction and participation in their communities, and the challenges that a temporary and substantially male–dominated construction workforce will bring. There is a perception among some local residents that unsociable behaviour results from a male dominated demographic during construction (DIP, 2010a), however substantive evidence for this is rarely available. To manage this risk, all personnel engaged to work on the Surat Gas Project, either as direct employees of Arrow Energy or as employees of Arrow's contractors will be required to adhere to a Code of Conduct.

The likelihood of these concerns materialising is assessed as being low. While there will be a large cumulative influx of non-resident workers into the area (predominantly during construction), there will be limited interaction between many workers and the general community as many will be operating from remote sites and staying at self-contained TWAFs). Few non-resident workers are likely to participate in community activities outside of their work shifts due to the length of shifts and the isolation and recreation facilities available at TWAFs. Communities in the study area have experienced influxes of non-resident workers on resource projects in the past, and could be expected to have developed a degree of resilience to their presence. Some residents have commented that these new developments, which bring new people to the area, actually invigorate the town with 'new ideas' (DIP, 2010).

Affordability and Income Disparity

Communities have identified the relatively low cost of living as a positive lifestyle attribute, and potential increases in the cost of living were raised as a concern. Higher wages have the potential to result in localised inflation, particularly where housing and accommodation are in short supply as has been the experience in other resource communities across Queensland, including in the Bowen Basin.

However, new businesses and services may enter the area benefiting local residents by providing a greater range and diversity, as well as competition in the supply of goods and services which may tend to limit price rises.

Communities have identified that this Project and other developments could lead to significant income disparity between small town residents which could be a source of conflict. However the high demand for labour should counteract this to some extent as it could be expected that most, if not all, local residents who meet employment criteria could be employed.

Rural Character

Residents consider the current rural character of the area as a lifestyle attribute that is highly valued, and desire that it be retained. There is some concern that the advent of CSG extraction over extensive areas may somehow detract from that rural character, though in what specific ways has not been articulated to any significant extent. Workers in high visibility clothing are sometimes cited as

evidence of this change in character; however Council workers as well as other construction workers have been attired in this clothing for safety reasons for many years now. However many towns that have been subject to the effects of the resource extraction industries (e.g. Nebo, Clermont, Biloela, Roma) have not lost their essential rural character to any great extent. While there will be some changes to individual properties, particularly in the vicinity of processing facilities, the area of land alienated and the continued operation of agricultural production will act to ensure the maintenance of rural character.

Communities have also expressed a concern in regard to additional traffic generated by the Project. While additional vehicle movements may be observed on low volume roads, the Project is not anticipated to have any significant impact on traffic flows. This is addressed in further detail in Section 6.6.7 and in the stand-alone Road Impact Assessment report.

6.5.1 Impact Summary

Potential impacts (actual or perceived) to community values and lifestyles from the Project include:

- Loss of 'rural friendliness;
- Loss of rural amenity;
- Higher traffic incident rates and associated dust and noise generated by increased traffic.

A summary of all impacts and their relative significance is presented in Table 6-7 below

Table 6-7 Community Values and Lifestyles Impacts Summary

Potential Impact	Phase	Positive / Negative	Likelihood	Consequence:	Significance
Increased participation and support in the community (e.g. volunteers, involvement in sport and social organisations, support for local events)	C,O	Positive	Likely	Minor	Medium
Increased potential for social divide and social tension	C,O	Negative	Possible	Moderate	Medium
Potential for increased community conflict if overseas workers are employed with the Project and move into the community	C,O	Negative	Possible	Moderate	Medium
Change in character of towns and to rural amenity of area	C,O	Negative	Possible	Minor	Low
Increased criminal activity and anti-social behaviour	C,O	Negative	Unlikely	Minor	Low

6.5.2 Mitigation Enhancement

Arrow will consider a range of measures to maintain and enhance community values and lifestyles through continued community liaison and consideration of the following:

- Apply a minimum siting distance of infrastructure from sensitive receptors (e.g. minimum 200 m setback of wells from houses);
- Siting and screening of Project infrastructure to minimise visual amenity impacts, including locating infrastructure away from public view;
- Implementation of environmental management plans that address potential impacts relating to dust and noise generation;
- Implementation of traffic management plans developed in consultation with stakeholders such as police and councils;
- Develop a road asset management strategy to address impacts on local road infrastructure; and
- Arrow's Code of Conduct will include documented disciplinary procedures for inappropriate behaviour of employees. Arrow will have a zero tolerance of alcohol and drugs as a means of minimising the potential for unacceptable behaviour. Random workplace drug and alcohol testing will be undertaken and disciplinary action taken in the event of breaches.

6.6 Community Infrastructure and Services

Given that the Project workforce requirements will increase communities of interests' population, the Project has the potential to impact on the following community infrastructure and services:

- Community support services and facilities;
- Emergency services;
- Recreation;
- Medical and health facilities;
- Schools and childcare;
- Utilities; and
- Roads.

Project construction and operations is expected to create additional demands on utilities such water, power and roads, however this will vary from place to place as the proponent will be self-sufficient in the provision of some utilities.

A small portion of the construction workforce, and around half of the operations workforce, and their families are expected to move into the area which will place additional demands on services. Using the assumption that each worker will be accompanied by 1.4 people, this represents a potential increase in population of 758 people as a result of the Project by 2021 (refer Section 6.1for details).

The demographic of workers relocating into the area is expected to be predominately those people who are in the earlier years of their working life, and are of childbearing age. This, combined with the rural and semi-urban lifestyles available throughout the region is expected to attract a high proportion of young families. This will result in, amongst other things, increased demand for child care services, school and medical facilities which could ensure that population thresholds for the continued provision of services at their existing or higher levels of service are maintained.

Services for the non-resident workforce will largely be catered for by the proponent at the TWAFs; however there may be some need to use health services in the area and workers may choose to use recreational options in the community over facilities provided in TWAFs.

Multiple projects occurring will exacerbate the impacts on community infrastructure and services. This requires coordinated planning between services providers and project proponents.

A common theme identified in consultation with service providers was that the cost and limited availability of housing was already occurring and acting as an impediment to attracting and retaining staff in the region (pers. comm. Queensland Police Service, Queensland Health, Department of Education and Training; 2011).

6.6.1 Community Support Services

Section 3.9 outlined community support services available in the area. Toowoomba is a regional hub for the Darling Downs region and is a base for many of the support networks and is capable and resourced to deliver community support services. The other communities of interest in this study have a range and varying levels of community support services.

The Darling Downs region has had a higher level (than the State average) of disadvantaged people requiring community services (refer Table 3-30), and it is understood that that previous and current resource developments would have influenced demand for services (pers. comm. Queensland Health, 2011). Multiple projects being developed in the region (including this Project) are likely to bring about additional requirements for services, with a focus on the following service types.

- Housing support (financial support in making payments, increased demand for crisis and social housing);
- Emergency financial assistance;
- Family support, counselling and relationship services; and
- Ethnic/multicultural services.

These are discussed in detail below.

Housing, Homelessness and Financial Assistance

Housing assistance services are currently experiencing increased levels of requests to assist in making housing/rental payments; and to provide social and crisis accommodation. Demand on these services will continue and potentially increase if the Project influences increased property / rental prices and reduces housing availability, in the area. Particular periods of pressure will be during peak worker influx for the Project from 2013-2021. Low income sectors of the community, including the unemployed, pensioners, those with disabilities, single parent families and Indigenous people are most likely to require this assistance. Section 6.7 provides further details of housing affordability and availability.

There has been an observed increase in homelessness in the area (including families with children), with people moving from local towns to Toowoomba in search of affordable housing (pers. comm., Department of Communities, 2011). If the Project maintains or exacerbates housing costs, the need for homelessness assistance services will be maintained or possibly increased. Toowoomba is a key area for providing homelessness services.

Dalby has been highlighted by Department of Communities as an area of particular need in terms of additional affordable housing stock, as well as housing stock for crisis accommodation, including for families (pers. comm., Department of Communities, 2011). The town of Chinchilla is also already experiencing housing pressure from population increases resulting from the resources boom, and has been identified by the Department of Communities as a high priority location for additional affordable housing stock.

Given that population increase is anticipated for the towns of Dalby, Chinchilla, Miles and Toowoomba (see Section 6.1.3); it is likely that as a result of the Project increased housing pressure will be experienced in these towns. This will likely increase demand on the existing housing support and homelessness services, and also services offering financial assistance in these towns.

There is also likely to be an increase in requests for financial assistance if the Project creates inflationary pressures on living costs.

Family Support, Counselling and Relationship Services

With new families moving into the area (particularly the towns of Dalby, Chinchilla and Toowoomba), it is likely that family support services will experience additional demand proportional to the need experienced in the broader population. Toowoomba appears to have the capacity to cater for additional demand, given that it is a relatively well serviced regional centre (pers. comm., Department of Communities, May 2011). However, given existing service constraints in the towns of Dalby and Chinchilla, these localities may need additional service responses. Mental health services have been noted by Western Downs Regional Council as being under-resourced within their region.

The Department of Communities, in partnership with QGC, is currently building a new multi-tenant facility in Chinchilla (pers. comm., Department of Communities, May 2011) and the existing family support service will operate from this hub. The development of this hub represents an opportunity for a collaborative approach to planning and delivering family, community and individual support services in the Chinchilla district.

The towns of Chinchilla and Dalby have also been identified as having a high priority need for additional youth services and facilities (WDRC Community Plan (SGS, 2011(a)). If additional families move to the area as a result of the Project, this may increase demand for improved service responses aimed at youth support and development. A mobile youth service may be an appropriate model of delivery for the region.

6.6.2 Emergency Services

The Project is expected to create additional demands on emergency services; however the impact is anticipated to be low given Arrow's emergency service planning provisions, which are outlined in Arrow's Emergency Management Plan Demands on services will include police escorts for the transport of wide loads, ambulance and medical treatment in the event of an accident on-site, and fire services in the event of a fire. There may be an increased incidence of road accidents associated with additional vehicle movements, to which all emergency providers may have to respond. These impacts will be mitigated through the Emergency Management Plan. There should not be a noticeable increase in demand for emergency services from the additional workforce and families moving into the area as a result of the Arrow Project.

Arrow will develop services and procedures to respond to emergencies. These include:

- First aid facilities and medics available to treat workers in the event of an accident; and
- Fire response capabilities.

Arrow will work with emergency service providers to develop an emergency response management plan to address potential emergency situations.

6.6.3 Recreational Facilities

The construction phase of the Project is unlikely to place significant additional demand on recreational facilities in the area. Although this was cited as a concern by Western Downs Regional Council (WDRC) (refer Section 4), this study considers that the TWAFs where construction workers will stay will be largely self-sufficient and include a range of sporting and entertainment options for workers. There are estimated to be 758 workers and family members moving into the area by 2021. Most of these workers are predicted to move into towns which have a reasonable provision of services such as Chinchilla, Dalby, Miles and Toowoomba (refer Section 6.1). As such this Project is expected to have a low impact on recreational services.

6.6.4 Medical and Health Facilities

The extent of health facilities in the study area varies. Toowoomba as the regional hub for Darling Downs region is well resourced. Dalby is considered as a health service centre for surrounding towns in the area (refer Section 3.8.3). It is likely that medical and health services in the study area will experience increased demand, from Project workers and their families' particularly general practitioner services. An increased demand on these services and facilities will have a medium level social impact in towns such as Chinchilla, Dalby, Miles and Millmerran as it will compound the current existing shortage of services. This is likely to result in longer waiting periods, with some people having to travel to other service providers in the area (likely Toowoomba) if they wish to be seen earlier by a health practitioner. This increased demand on health services has been raised in consultation as a concern (refer Section 4). Queensland Health representatives have noted that uncertainty over how many people are expected to move into the area and where they go makes it difficult to plan for health services (pers. comm. Queensland Health, 2011).

The Project may be able to alleviate some of these impacts by:

- Timely provision of information to Queensland Health and other health service representatives on expected workforce numbers, known number of associated family members moving to the area and the location of these workers and family; and
- Having a health professional visit the area to conduct 'fitness for work' assessments rather than go through the town GPs. This was identified in consultation as taking a fair portion of town GPs' time (pers. comm. Western Downs Regional Council, 2011).

6.6.5 Schools and Childcare

Some workers relocating into the area will bring their family with them, including children of school age or requiring childcare. Discussion with DET representatives indicated that schools in the study area currently have capacity to handle additional students and are able to respond fairly quickly if additional teachers or class rooms are required (pers. comm. DET, 2011).

As noted in Section 3.7, there is understood to be an existing shortage of childcare services, in particular in Dalby, Chinchilla and Miles. Increased numbers of children requiring childcare in these areas could further strain the capacity of childcare, however the impact from this Project is considered to be low, given that the annual growth in these towns is not anticipated to be significant (i.e. greater than 5% per annum) (see section 6.2

Arrow will provide Department of Education and Training and Department of Communities with future resident workforce predictions and, if known, the number of children moving into the area with these

workers. This will assist these education and childcare providers in planning and providing for any additional facilities and services.

6.6.6 Utilities

Some of the Project facilities such as TWAFs and the processing facilities may access local utilities including potable water supply, waste disposal facilities, sewerage and power. Other facilities will have their own stand-alone utilities. Western Downs Regional Council has raised some concern over the capacity of existing utilities to handle additional demands, in particular:

- Waste disposal facilities;
- Electricity transmission lines (Chinchilla specific); and
- Potable water supply.

Arrow's site selection process for facilities considers the availability and capacity of existing utilities. Arrow will consult with local councils and other utility providers during the TWAF siting and design process to understand existing capacity and to minimise adverse impact on these utilities. Arrow will meet statutory requirements for developer contributions and head works charges for infrastructure, as required. Given that head works charges are legislated within the Sustainable Planning Act 2009 and that Project facilities are able to incorporate stand-alone utilities if required, the Project's impact on community utilities is estimated to be low.

6.6.7 Roads

Road safety concerns resulting from the additional traffic generated by the Project were raised frequently during consultation (refer Section 4). A summary of findings from the Road Impact Assessment technical report is as follows:

- The Surat Gas Project will generate traffic on both the State-controlled and Council-controlled road network;
- Project's operational impacts are likely to be broadly classified as significant for the following key Project road sections:
  - Leichhardt Highway from Wandoan to Miles;
  - Warrego Highway from Miles to Warra;
  - Moonie Highway in proximity to Dalby;
  - Dalby Cecil Plains Road; and
  - Millmerran Cecil Plains Road.
- The highest percentage increases in annual average daily traffic over the Project life are expected to occur on the Dalby-Cecil Plains Rd just to the south of Dalby, and Millmerran - Cecil Plains Rd between Cecil Plains and Millmerran. Both these sections of road are expected to experience an increase of annual average daily traffic of 20-100%.

A road asset management strategy will be developed to address the management of Project impacts on local road infrastructure. Potential social impacts include:

- Increased risk of vehicle accidents;
- Increased pavement wear from traffic necessitating additional maintenance expenditure;
- Reduced amenity from increased traffic, vehicle noise and dust generated by Project vehicles; and

- Improved road infrastructure (through earlier treatment of 'black spot' areas) reducing the likelihood of accidents.

A traffic management strategy will be prepared to address managing the potential impacts of additional traffic on local roads. Any potential road upgrades would be considered of benefit to the community.

6.6.8 Impact Summary

The Project is anticipated to have a medium impact on the following facilities:

- Health facilities and services - through longer waiting periods, and some people having to travel to other service providers in the area (likely Toowoomba); and
- Roads – risk of vehicle accidents, additional maintenance requirements and reduced amenity.

A summary of all impacts and their relative significance is presented in Table 6-8 below.

Table 6-8 Community Infrastructure and Services Impacts Summary

Potential Impact	Phase	Positive / Negative	Likelihood	Consequence:	Significance
Increased demand on medical and health facilities	C, O	Negative	Likely	Moderate	High
Heightened road safety risk	C,O	Negative	Possible	Major	High
Increased demand on emergency services	C, O	Negative	Possible	Moderate	Medium
Increased demand on community support services	C, O	Negative	Possible	Minor	Low
Increased demand on recreational facilities	C, O	Negative	Possible	Insignificant	Low
Increased demand on schools and childcare	C, O	Negative	Possible	Insignificant	Low
Increased demand on utilities	C, O	Negative.	Possible	Minor	Low
Unable to attract and retain service provider workers (e.g. police, teachers, doctors) due to increased living costs (especially housing)	C, O	Negative	Possible	Minor	Low

6.6.9 Mitigation/Enhancement

As part of Arrow's Brighter Futures program, Arrow has partnered with other companies working in the region to provide a medivac service to respond to Project related, and also community, emergency situations. As such, a helicopter with doctor and medics will be based at Roma and another at Toowoomba.

Other mitigation and enhancement measures to be considered by Arrow to address the potential impacts to community infrastructure and services are as follows:

- Development of services and procedures to respond to emergencies. This includes:
  - First aid facilities and medics available to treat workers in the event of an accident;
  - Discuss with local fire authorities the potential for specialist training and equipment; and
  - Working with emergency service providers to develop an emergency response management plan addressing how to deal with emergency situations.
- Employing health professionals as part of the Project staff including:
  - Having a nurse/medic available to Project workers rather than workers being referred to a local doctor. The resident health professional may be able to attend community clinics when not required by the Project thus enhancing the communities access to health professionals; and
  - Having a health professional visit the area to conduct 'fitness for work' assessments rather than relying on local GPs.
- Providing Department of Education and Training and Department of Communities (DoC) with future resident workforce predictions and, if known a register of children moving into the area with these workers. This will assist these education providers in planning and providing for any additional facilities and services;
- Working with the relevant agencies to determine the adequacy of existing youth and family support services and the most appropriate mechanism for addressing shortages;
- Consideration for the availability and capacity of existing utilities during site selection for Project facilities and infrastructure. Consideration may include consultation with the relevant regional council and other utility providers as well as consideration for installing stand-alone utilities as required, to minimise demand on existing community utilities;

A road asset management strategy will be developed as part of the Environmental Management Plan, and ongoing consultation will occur with all levels of Queensland Police Service regarding vehicle movements and coordination of efforts where possible.

6.7 Housing and Accommodation Availability and Affordability

6.7.1 Accommodation Demand

As discussed in Section 5.4, accommodation for Project workers will include temporary accommodation facilities (TWAFs) and housing within the community.

The majority of the main construction workforce will be sourced from outside the local area. They will be based in TWAFs during their roster and return to their home residences outside of the local area at the end of their shifts. As such this portion of the workforce will have a low/insignificant impact on housing availability and affordability. Existing resident construction and operational workforce personnel are assumed to already have residences in the area and will not influence housing availability and affordability.

A proportion of the construction and operational workforce is expected to relocate to the area and require housing. This includes:

- Construction workforce (5%);
- On-site support staff (construction) (80%); and
- Field and facility operations workforce (50%).

6 Potential Impacts and Mitigation

This study estimates 316 workers will relocate for their work by 2021, and based on the assumption that each worker will require their own unit of housing, as a conservative estimate, this means 316 houses will be required by 2021 (refer Table 5-3).

Section 6.1 demonstrates that a conservative estimated average of 39 houses will be required per annum from 2013-2021 to meet the predicted peak workforce relocating to the study area. The first ramp up from 2013-2016 will see a significant ramp up in workers, and will require a higher rate of housing than this estimated average of 39 houses per annum, to meet the number of new resident workers. More refined assessment of average annual housing demand between the years 2013-2016 and 2017-2021 has been carried out and results are shown in Table 6-4 below. As can be seen approximately 47 houses will be required each year from 2013-2016. In the period 2017-2021, around 26 houses will be required each year to accommodate workers relocating to the area.

Table 6-9 Average Rate of Housing Required Per Annum by Development Period

Development Period	Total Number of Houses Required Per Annum
2013- 2016	47
2017-2021	26
2021-2036	0

As shown in Section 6.2, housing demand will be distributed across the study area and surrounding towns, with key growth expected in Chinchilla; Dalby; Miles; and Toowoomba and surrounding locale. As shown in Section 3.6.1, Toowoomba has a large property market and should easily cater for the amount of housing required. Dalby currently has a good supply of housing (134 properties for rent and 620 properties for sale as at May 2011–refer Table 3-32), and is expected to have sufficient supply for Project needs.

In Chinchilla and Miles there is currently limited housing available, particularly in Chinchilla. Housing demand from the Project, in combination with the cumulative demand from other projects in the region has the potential to cause a shortage of housing in these locations, which is considered as an impact of high significance. However, dwelling activity rates indicate there is an active building industry that has the capacity to supply housing to meet the forecast increase in demand. There were 234 dwelling approvals in WDRC in the year ending March 2011 (OESR, 2011c),

It is possible that residential house purchase and rental prices could increase in some locations associated with increased demand from this Project and other developments including the APLNG and QC LNG projects. Increased prices may also be a result of opportunistic property owners seeking capital gain, as is understood to have occurred in Dalby in recent years (pers. comm. Dalby Real Estate, 2011).

Increased prices would reduce housing affordability, particularly in areas experiencing significant price increases such as Chinchilla. Low income earners, disadvantaged groups, renters, and others who are entering the market at this time would be particularly affected and this is discussed further below. Housing affordability has also been asserted by numerous State government agencies as an impediment to attracting and retaining staff in the region. On the other hand, increased residential housing and land prices will also have a positive impact on some sections of the community,

particularly those who own houses, as they will experience increased returns if they were to sell, or opportunity to leverage increased rents on their rental properties.

Housing types that will likely be in demand from Project workers include one or two bed units, preferred by singles, and three and four bedroom houses for families. With the exception of Toowoomba there is a limited number of one/two bedroom units in the study area. Hence increased demand for these smaller housing types (in towns outside of Toowoomba), could drive the price up for this type of housing. Notably, it is these smaller housing types which are often utilised by low income earners. Impacts on low income earners and disadvantaged groups are discussed in further detail below.

There will also be increased demand for hotel/motel accommodation. During the very early stages of construction prior to the availability of TWAFs, some construction personnel (e.g. earthworks, TWAF erecting crews) will be accommodated in hotel and motel accommodation across the region. Visiting staff (e.g. managers from Brisbane) will also stay in hotel accommodation from time to time. Demand for accommodation from the Project will further restrict hotel and motel availability, which could increase the price of hotel/motel stays. Conversely, increased hotel/motel accommodation requirements make for good business for existing businesses and present new development opportunities.

6.7.2 Housing Impacts for Low Income and Disadvantaged Groups

Increased housing rental costs in some areas may have particular impacts on low income groups. As has previously occurred in the area, increased demand may encourage landlords to increase rent prices, which will advantage high income workers in securing tenancies rather than those on low incomes. Also, given that there is more affordable housing supply and a higher degree of rental availability in some areas (e.g. Toowoomba), a further impact may be, increased movements of people to areas of more affordable housing with in the region.

Existing limits on supply and high costs of housing could also act as a barrier to house purchase by existing community residents desirous of entering the housing market, thereby inducing them to leave the community and move to areas where there is better housing affordability. It could also lead to an increase in requests for social housing assistance made to the Department of Housing. Vulnerable groups affected by changes of this nature include pensioners, those with disabilities who require particular housing types, and Indigenous people.

During the construction phase, with a higher number of workers coming into the areas, the market for accommodation may become constrained. This has been assessed as a low impact because the construction phase is dispersed both spatially and temporally, and lasts only a finite period of time at any one location.

6.7.3 Impact Summary

A summary of the potential impacts to housing and accommodation availability and/or affordability is as follows:

- Demand for housing associated with this Project and other developments has the potential to affect housing supply. In terms of addressing residential land supply, the Surat Basin Regional Planning Framework (SBRPF) is a regional planning exercise that has recently been undertaken

(DLGP, 2011b). The SBRPF is a non-statutory planning instrument that provides a foundation for land-use planning that is to be undertaken at the local government level within the region. As such, based on up-to-date population projections, residential land within the towns of the region will be allocated (where possible) to cater for expected residential demand. In terms of housing construction, there is an active building industry within the region that has the capacity to supply housing to meet demand;

- Project workforce may drive house prices up, affecting housing affordability, particularly in towns such as Chinchilla, Wandoan and Miles which are already experiencing pressures on house prices. Low income earners and disadvantaged groups could be particularly affected.

A summary of all impacts and their relative significance is presented in Table 6-10 below.

Table 6-10 Housing and Accommodation Impacts Summary

Potential Impact	Phase	Positive / Negative	Likelihood	Consequence:	Significance
Increased house, land purchase and rental prices resulting in diminished levels of housing affordability	C,O	Negative	Possible	Major	High
Reduction in availability of accommodation for low income and vulnerable groups including Indigenous groups	C,O	Negative	Possible	Major	High
Increased returns to existing residents through higher house, land and rental prices	C,O	Positive	Possible	Moderate	Medium
High demand for hotel/motel/caravan park accommodation.	C	Negative	Possible	Moderate	Medium
Serviced land not available to meet demand	C,O	Negative	Unlikely	Minor	Low

6.7.4 Mitigation/Enhancement

Housing affordability is a complex issue that requires coordinated responses. The Queensland Government is currently leading a response for the Surat Basin as part of the *Surat Basin Future Directions Statement (2010*). Growth Management Queensland has recently released a *Draft Resource Town Housing Affordability Strategy* (DIP, 2010a). The draft strategy is based on four goals, these being:

1. Diversity – choice of dwelling type and tenure is available to consumers to meet the needs of different household types and to meet changing lifecycle needs and economic circumstances;
2. Design – housing designs and materials incorporate universality, energy efficiency and resource conservation to promote long-term living affordability;
3. Affordability – housing affordability is optimised through targeted housing supply and demand actions; and

4. Responsiveness – residential development responds effectively to changing housing needs associated with population and resource sector growth.

The draft strategy's principles and actions are located within three broad focus areas as outlined below:

1. Optimising timely housing supply;
2. Responding to demand factors; and
3. Coordinated governance for effective outcomes.

The Office of The Coordinator-General also recently released the Major Resource Projects Housing Policy in August 2011 outlining seven core principles to support better planning for housing in resource communities (DEEDI, 2011a). These principles will guide the Proponent in considering the impact of the Project's workforce accommodation on local and regional housing markets, and implementation measures will be addressed as part of an Integrated Housing Strategy. The policy's seven principles to be considered are:

1. Growth management and liveable resource communities;
2. Environmental and Social Impact Assessment;
3. Stakeholder engagement;
4. Housing, planning, infrastructure and environmental sustainability;
5. Project workforce accommodation;
6. Housing market impacts; and
7. Cumulative impacts (DEEDI, 2011a).

Key implications of these actions for resource project proponents are that:

- Where adverse housing impacts occur, government, industry and the community work together to put in place suitable mitigation strategies;
- Social Impact Management Plans identify and assess housing impacts, develop or contribute to effective mitigation strategies and provide an effective mechanism for communication about accommodation and housing market impacts; and
- Resource companies participate in a regional representative body to monitor cumulative impacts of growth, housing supply and demand trends and provide strategic advice on housing market issues to enhance responsiveness to demand/supply issues (DIP (2), 2010).

Also, at the local level, the Western Downs Regional Council is preparing a housing affordability strategy (pers. comm. WDRC, May 2011). At the time of writing, this strategy had not been finalised and a version is not available for draft release. Particularly in terms of cumulative impacts, it will be crucial that Arrow works with the state and local governments to assist in the implementation of their housing affordability strategies. More specifically, Arrow's role in assisting housing supply and affordability is discussed below.

Arrow will participate in discussions with State government, councils, the building industry and other project proponents to foster an understanding of cumulative housing demands. These discussions should assist in planning for a sustained supply of housing, with Council better able to plan for land and infrastructure requirements, and giving developers time to secure finance, gain development approvals and build suitable housing. Arrow will support the intent of the Surat Basin Regional Planning Framework and work with key stakeholders, such as the Surat Basin Engagement Committee, to ensure that developable land is brought to market to meet demand.

Information such as workforce projections, and expected housing demands are likely to be required of Arrow at these discussions. Expected housing demands may be informed by the known or predicted number of workers who will be relocating to the area and the likely type of accommodation required (i.e. if a worker is bringing family, they are likely to require a 3–4 bedroom house whereas, single workers may only require a single bedroom unit)By providing builders, developers and Council with a better understanding of the type of housing required, they may be able to provide a better diversity of housing in the area, including more affordable housing options such as single and two bedroom units.

Consultation suggests that many of the existing resource companies and their subcontractors have not made firm plans on housing arrangements for their workers. This has resulted in an acute and last minute demand for housing which absorbs supply and raises prices (pers. comm. Surat Basin Developments, May 2011). Arrow's aim is to forward plan for any required provision of housing (e.g. housing provided for managers) to avoid similar issues.
There is an active building and development industry in the area which has capacity to supply additional housing requirements provided there is sufficient lead time and financial certainty to develop. Consultation indicates that it takes about three years from submitting a development application for land development through to 'turnkey' housing. A constraint to initiating property development is the high up-front costs, uncertainty of demand and lack of commitment from resource development companies that they will acquire housing. Arrow and other companies could assist this when entering into head leasing arrangements for company housing as well as workers' housing.

Arrow may wish to consider purchasing homes and then making them available to workers on a rent to buy scheme – where workers rent a house at market conditions, then have the option to purchase the property at market price minus the rent paid to date.

The construction workforce will stay in high quality TWAFs, which will act to limit short to medium term housing shortage inflating housing costs. The Project will consider the appropriate siting of TWAFs to avoid pressure on community services and infrastructure.

Visiting workers will stay in TWAFs in preference to hotel/motel accommodation wherever possible. It is common practice for companies to reserve hotel rooms in advance. In some cases these rooms are not required and remain vacant and not available to others seeking accommodation. Arrow will aim to avoid the practice of pre-booking accommodation for long periods without a demonstrable need.

6.8 Health, Safety and Environment

Consultation has identified that there is significant concern amongst the community regarding potential impacts that the Project may cause to human health, safety and the environment. Areas of concern identified include:

- Increased levels of crime and antisocial behaviour;
- Contamination of water supply;
- Traffic safety and potential for traffic accidents;
- Air quality; and
- Accidents resulting from spill, fire or explosion.

These topics have been addressed in detail in the relevant technical study reports, and this section brings together the findings in respect to the social impacts associated with these topics.

6 Potential Impacts and Mitigation

The Project will result in increased traffic movements. Factors such as the increased volume of traffic, use of degraded roads, potential longer duration trip times, and fatigued workers driving will increase the likelihood of traffic accidents. Section 6.5.7 provides details on which roads are anticipated to experience additional traffic volume.

The air quality and noise and vibration impact assessment reports have assessed potential air quality, noise and vibration impacts that may result from the construction, operation and decommissioning activities associated with the Project. Based on the conceptual Project description, these studies have confirmed that the Project can be developed to meet the statutory guidelines for air quality and noise and vibration limits from sensitive receptors. These limits are set by DERM and are intended to ensure that sensitive receptors are not adversely affected. Within this study, these impacts have been assessed as low impacts. This is due to the fact that, although on an individual level to individual landholders, such impacts can be experienced as high level impacts, these impacts will be dealt with through negotiated processes between the Proponent and the landholder, outside of the EIS process.

In addition to the statutory requirements, Arrow has made a commitment that wells and infrastructure will be located in consultation with local landholders and that a minimum distance of 200 m between wells/infrastructure and sensitive receptors is achieved.

Concern has been raised in community consultation regarding potential impact of CSG operations on groundwater. The groundwater impact assessment study considers the potential impacts from Project activities on groundwater aquifers in detail and is provided as an attachment to this EIS. Arrow's coal seam water management strategy is also provided as part of the EIS main report. The strategy includes details on management of coal seam water and the range of potential beneficial uses. The aquatic ecology and groundwater impact assessment reports also contain analyses on the potential impacts that coal seam water extraction may have on spring-fed aquifers and the ecosystems they support.

Potential for an incident to occur (e.g. gas leak, chemical spill, fire) and any impacts on workers and the broader community are discussed in the preliminary Hazard and Risk technical report.

A summary of all impacts and their relative significance is presented in Table 6-11 below.

Table 6-11 Health, Safety and Environment Impacts Summary

Potential Impact	Phase	Positive / Negative	Likelihood	Consequence:	Significance
Increased community anxiety on health, safety and environment effects of Project	C,O	Negative	Likely	Moderate	High
Heightened road safety risk	C,O	Negative	Possible	Major	High
Increased ambient noise impacting on amenity	C,O	Negative	Possible	Minor	Low
Reduced air quality	C,O	Negative	Unlikely	Minor	Low
Light pollution impacting on amenity	C,O	Negative	Unlikely	Minor	Low

6.8.1 Mitigation/Enhancement

Management and mitigation measures will be developed to safeguard the health and safety of the community. These include:

- A code of conduct, disciplinary procedures, and a policy on appropriate worker behaviour and interaction with the public;
- A range of measures to minimise road accidents such as:
  - Commuter buses for workers travelling between the worksite and TWAFs;
  - Commuter buses for workers travelling between worksite and home locations (e.g. Toowoomba, Dalby, Chinchilla); and
  - Improved road infrastructure such as turning lanes to minimise accidents occurring.
- A medivac service available to respond to emergencies in the community (refer Section 6.5);
- Minimum setback distances from all sensitive receptors and adequate security measures on all facilities;
- A published emergency response plan addressing how Arrow will respond and manage emergencies; and
- Provide opportunities for disadvantaged sectors of the community through the Arrow Brighter Futures community program including:
  - Indigenous Cadetship Support;
  - Indigenous Employment Program; and
  - Skilling Queenslanders for Work Initiative.

Arrow will continue to provide regular and ongoing consultation to address community's issues and concerns and has in place a complaints management system to address community grievances.

Arrow may also wish to consider a participatory water monitoring program, whereby communities are involved in sampling and monitoring water quality.

6.9 Overview of Social Impact and Mitigation

Significant positive impacts identified that may result from the Surat Gas Project include employment, worker skills, and business opportunities. These impacts are anticipated to have benefits regionally and nationally for the duration of the Project.

Significant adverse impacts related to affordability and availability of housing and accommodation. Impacts are likely to be limited to a number of towns within the study area and would be mainly felt by low income and disadvantaged sections of the community.

Table 6-12 below provides a summary of the potential impacts (including impact significance) from the Project.

Details of mitigation measures aimed at addressing the identified potential impacts are provided in the SIMP (Section 7).

Table 6-12 Impact Assessment Summary

Potential Impact	Phase	Pos/Neg	Likelihood	Consequence	Significance
Changes to Population and Demographic Profile					
Off-set population decline in smaller rural communities	C,O	Positive	Possible	Moderate	Medium
Higher skilled resident workforce	C,O	Positive	Possible	Moderate	Medium
Retention of younger population	C,O	Positive	Possible	Moderate	Medium
Increase in resident population	C,O	Positive	Almost Certain	Insignificant	Low
Increase in families associated with operational workforce	C,O	Positive	Possible	Minor	Low
Influx of young male dominated construction workforce	C	Negative	Likely	Insignificant	Low
Impacts on Employment, Skills and Business					
Increased local employment opportunities	C,O	Positive	Likely	Moderate	High
Increased training and skill development opportunities for the local population	C,O	Positive	Almost Certain	Moderate	High
Local business difficulties faced by operating in changed environment (increased costs, competition, and labour)	C,O	Negative	Possible	Major	High
Increased labour force participation and reduction in unemployment	C,O	Positive	Possible	Moderate	Medium
Increased local expenditure on goods and services through Project activities	C,O	Positive	Likely	Moderate	Medium
Increased local expenditure on goods and services by incoming workers and residents	C,O	Positive	Possible	Moderate	Medium

6 Potential Impacts and Mitigation

Potential Impact	Phase	Pos/Neg	Likelihood	Consequence	Significance
Increased potential for local business expansion / business establishment in local area	C,O	Positive	Likely	Minor	Medium
Increased range, diversity, lower cost of goods	C,O	Positive	Possible	Minor	Low
Impacts on Land Use and Property					
Increased landholder and community uncertainty	C,O	Negative	Likely	Moderate	High
Reduced vulnerability to impacts associated with agriculture (drought, pests)	C, O	Positive	Likely	Moderate	Medium
Loss of social connection to land/ agricultural production	PC, C	Negative	Possible	Moderate	Medium
Loss of agricultural land affects food supply and security	C,O	Negative	Rare	Insignificant	Low
Reduction/loss of farm income	C,O	Negative	Possible	Minor	Low
Disruption to farm operations	C,O	Negative	Possible	Minor	Low
Impacts on Community Values and Lifestyles					
Increased participation and support in the community (e.g. volunteers, involvement in sport and social organisations, support for local events)	C,O	Positive	Likely	Minor	Medium
Increased potential for social divide and social tension	C,O	Negative	Possible	Moderate	Medium
Potential for increased community conflict if overseas workers are employed with the Project and move into the community	C,O	Negative	Possible	Moderate	Medium
Change in character of towns and to rural amenity of area	C,O	Negative	Possible	Minor	Low
Increased criminal activity and anti-social behaviour	C,O	Negative	Unlikely	Minor	Low
Impacts to Community Infrastructure and Services					
Increased demand on medical and health facilities	C, O	Negative	Likely	Moderate	High
Heightened road safety risk	C,O	Negative	Possible	Major	High
Increased demand on emergency services	C, O	Negative	Possible	Moderate	Medium
Increased demand on community support services	C, O	Negative	Possible	Minor	Low
Increased demand on recreational facilities	C, O	Negative	Possible	Insignificant	Low
Increased demand on schools and childcare	C, O	Negative	Possible	Insignificant	Low
Increased demand on utilities	C, O	Negative.	Possible	Minor	Low

Potential Impact	Phase	Pos/Neg	Likelihood	Consequence	Significance
Unable to attract and retain service provider workers (e.g. police, teachers, doctors) due to increased living costs (especially housing)	C, O	Negative	Possible	Minor	Low
Impacts on Housing and Accommodation Availability and Affordability					
Increased house, land purchase and rental prices resulting in diminished levels of housing affordability	C,O	Negative	Possible	Major	High
Reduction in availability of accommodation for low income and vulnerable groups including Indigenous groups	C,O	Negative	Possible	Major	High
Increased returns to existing residents through higher house, land and rental prices	C,O	Positive	Possible	Moderate	Medium
High demand for hotel/motel/caravan park accommodation.	C	Negative	Possible	Moderate	Medium
Serviced land not available to meet demand	C,O	Negative	Unlikely	Minor	Low
Impacts on Health, Safety and Environment					
Increased community anxiety on health, safety and environment effects of Project	C,O	Negative	Likely	Moderate	High
Heightened road safety risk	C,O	Negative	Possible	Major	High
Increased ambient noise impacting on amenity	C,O	Negative	Possible	Minor	Low
Reduced air quality	C,O	Negative	Unlikely	Minor	Low
Light pollution impacting on amenity	C,O	Negative	Unlikely	Minor	Low

6.9.1 Cumulative Impacts

Cumulative impacts for communities are inherently difficult to identify or assess because they are based on assumptions of assessments made by other projects which may be impossible to ascertain. The cumulative effect of more than one CSG project in the Surat Basin is likely to manifest as an amplification or exacerbation of the Project impacts assessed in the SIA. Further, existing operations in the region have already produced a cumulative impact, such as increased demand on social infrastructure and housing in Chinchilla, and must be considered as part of the baseline for the proposed Project. Therefore, the purpose of this social cumulative assessment is to list potential key considerations in the Project regional area outlined throughout the thematic categories of the SIA, and identify specific planning and consultation mechanisms for mitigating cumulative impacts.

Table 6 13 below lists key considerations in each thematic category assessed in the SIA.

6 Potential Impacts and Mitigation

Table 6-13 Key considerations for the regional area regarding cumulative impacts

Impact theme	Key considerations
Population and Demographic Profile	• Increased population growth from other project workforces and the workforce for the service and other industries • Increased cultural diversity • Decreased median age • Reversal of population decline
Employment, Skills and Business	• Increased pressure on local and regional labour markets • Continuation of low regional unemployment • Increased levels of employment • Increased individual and household incomes • Increased regional business turnover • Increased difficulty for local businesses to attract and retain staff • Demand for skilled labour likely to exceed supply nationally
Land Use and Property	• Loss of large and productive farming areas to CSG use • Reduction in farming efficiency and productivity • Improvement to farmers' livelihoods through supplementary income • Heightened landholder anxiety
Community Values and Lifestyle	• Potential for conflict within communities • Increased income disparity • Loss of rural character • Increased cost of living
Community Infrastructure and Services	• Increased demand on community infrastructure and services • Need for additional services for disadvantaged and marginalised groups • Increased cost of living • Increased difficulty in planning for health services • Decreased capacity of existing utilities to meet further demand • Reduced road amenity
Housing and Accommodation Availability and Affordability	• Increased residential house purchase and rental prices • Reduction in housing affordability • Increased demand for hotel/motel accommodation • Increased movements of people to areas of more affordable housing
Health, Safety and Environment	• Increased volume of traffic • Increased likelihood of traffic accidents • Heightened concern of potential impact of CSG on groundwater

The cumulative impacts assessment assumes all projects listed in Appendix C will continue as scheduled.

The key to managing cumulative impacts is to have various projects' proponents considering more than their own project in the development and implementation of their strategies, policies and programs. This is best achieved through a high level, strategic forum which will enable key stakeholders to better understand the requirements and outcomes of multiple projects. There are several opportunities available to achieve this, such as through membership of regional community consultative committees, and Arrow will explore opportunities for effective cumulative impacts

management in consultation with the DEEDI SIA Unit, State and local governments, industry and communities. Through early engagement with key stakeholders, Arrow can supply vital information on workforce projections and housing requirements which can inform better planning for infrastructure and services. The SIMP includes a number of planning and consultation mechanisms which Arrow will consider in mitigating potential cumulative impacts of the Project.

Arrow will continue to monitor and engage in cumulative focussed forums in the region to update SIMP strategies and action plans.

6.10 Post-Project Residual Impacts

There is likely to be minimal post-project residual impacts on the social environment based on the project description, design, and a gradual project closure. The most likely potential impacts are environmental, with some potential for subsequent social implications, like changes to aquifers, vegetation and land use. Gradual project ramp-down and decommissioning should render the affected project area fairly similar to pre-project appearance and quality. This would be insured by the environmental bond issued to ensure funding is available to assist in decommissioning and rehabilitation post-project if Arrow was financially incapable of fulfilling those obligations. It can also be assumed that evolutions in project understanding of the study area environment and technology would be adapting to changing conditions throughout the project and any long-term post-project negatives had been identified and mitigated. However, immitigable impacts to aquifers and agricultural land use could have significant post-project residual impacts to the project area. Information available and initiatives from industry and government indicate that this will be monitored closely and actions will be taken if these impacts manifest. It can be assumed that appropriate measures will be implemented to protect long-term aquifer viability for agriculture and community uses, and as a result the socioeconomic impacts as well. Effective consultation and presentation of the facts will be a key means for management of social impacts from environmental issues.

Socioeconomic impacts are more likely to occur post-project if the decommissioning and closure phase is rapid and/or unexpected. In these cases there is a potential for higher post-project residual impacts if workers leave the region en masse and this pulls others from the region as well. This could result in a drop in housing prices as supply exceeds demand from workers and their families leaving, though there are numerous variables that would need to be considered in predicting housing market trends 20+ years from 2011, and this would be extremely speculative.

Regardless, rapid project ramp-down has the potential to increase the potential for post-project residual impacts and will be considered through the ongoing SIMP management process closer to the time of decommissioning. Arrow will draw on the experiences of the decommissioning of the early project well sites to strengthen the management plans and SIMP for the whole project and to identify ways to minimise potential residual impacts in consultation with key stakeholders. Arrow will also draw on the lessons learned from other projects in the Surat (and throughout Australia) to identify opportunities to reduce or eliminate potential post-project negative residual impacts and enhance positive impacts.

There is also a potential for communities in the project area to revert back to population stagnation or population decline trends post-project. This is hard to qualify other than it is a continuation of the current trend, in which case the project was a temporary reversal of the trend. However, there is also evidence that some retired workers from the various projects will remain in the area, and will not be

affected by changes in employment trends as they are already out of the market. This may help prolong the population levels in the region. Regardless, it is unlikely that communities will disappear given the road transportation networks through the area, the supply requirements for agricultural industries, the agricultural industries themselves, and the desire of many people in the region to maintain their rural lifestyle and culture. As discussed in the Regional Context in Section 6.1.1, the region is very resilient to hardships and change, and is likely to maintain those traits beyond the project.

The project infrastructure is already planned to be removed with wells capped below the surface and a plaque left to indicate what it was and when it was capped. There will be no evaporation ponds, and compressor stations and other infrastructure would be dismantled and the site rehabilitated. Access roads will be decommissioned and removed unless otherwise agreed to be left behind with councils and/or individual landholders. The individual landholder agreements will dictate the post-project rehabilitation and this will be communicated to landholders and the general population.

Social infrastructure developed by the project throughout construction and operational phases would remain, as will the enhanced skills base from employees. This will leave post-project positive impacts in the study area communities beyond the life of the project. Arrow will work with key stakeholders to identify means to maintain such infrastructure in a sustainable manner after the project in order to keep them as positive community assets.

The Queensland Government and the CSG industry are working together on a number of cumulative issues including groundwater, traffic and other environmental studies. It can be reasonably assumed that this will continue throughout the life of the project, and that this can be used as a means of identifying issues as they develop and modifying mitigation and management strategies for individual projects to adapt to these changes on an ongoing basis. This is the essence of the adaptive management nature of the SIMP. The SIMP will consider additional strategies to assist in post-project residual impacts management closer to project closure, when more details of the reality of the situation are known.

7

Social Impact Management Plan

A draft social impact management plan (SIMP) was stipulated in the Terms of Reference for the Surat Gas Project EIS as a requirement for the SIA. The SIMP is modelled on the DIP SIA Unit Guideline to preparing a social impact management plan published in September 2010, and addresses medium to high impacts identified in the SIA.

The SIMP is intended to support ongoing management of the potential social impacts of the Project. In recognition of the changing nature of impacts over the life of the Project, the SIMP should be adaptive and reassessed at regular intervals. Benchmarks should be established and monitored continuously throughout implementation and the management plan adapted as required. A comprehensive review of the SIMP should be undertaken following each release of new census data (5 yearly) and monitored in conjunction with biennial Surat Basin non-resident workforce updates (produced by the Office of Economic and Statistical Research (OESR)) to proactively identify any sudden or unexpected changes in the social environment or impacts.

The SIMP is based on a three stage approach:

- **Stage 1**: Develop the draft SIMP based on the SIA analysis and conclusions;
- **Stage 2**: Consult key stakeholders on the details of the SIMP, roles and responsibilities, benchmarks, reporting, monitoring and program evaluation; and
- **Stage 3**: SIMP implementation.

This draft SIMP submitted with the Project EIS is within Stage 1. Submission of the draft SIMP does not necessarily signify completion of Stage 1. Further consultation with the DIP SIA Unit and local governments may be required to refine the template prior to expansion of the various components.

7.1 Project Summary

7.1.1 Project Proponent

Arrow is an integrated energy company with interests in coal seam gas field developments, pipeline infrastructure, electricity generation and a proposed liquefied natural gas (LNG) projects.

Arrow has interests in more than 65,000 km^2 of petroleum tenures, mostly within Queensland's Surat and Bowen basins. Elsewhere in Queensland, the company has interests in the Clarence-Moreton, Coastal Tertiary, Ipswich, Styx and Nagoorin Graben basins.

Arrow's petroleum tenures are located close to Queensland's three key energy markets; Townsville, Gladstone and Brisbane. The Moranbah Gas Project in the Bowen Basin and the Tipton West, Daandine, Kogan North and Stratheden projects in the Surat Basin near Dalby comprise Arrow's existing coal seam gas production operations. These existing operations currently account for approximately 20% of Queensland's overall domestic gas production.

Arrow supplies gas to the Daandine, Braemar 1 and 2, Townsville and Swanbank E power stations which participate in the National Electricity Market. With Arrow's ownership of Braemar 2 and the commercial arrangements in place for Daandine and Townsville power stations Arrow has access to up to 600 MW of power generation capacity.

Arrow and its equity partner AGL Energy have access rights to the North Queensland Pipeline which supplies gas to Townsville from the Moranbah Gas Project. They also hold the pipeline licence for the proposed Central Queensland Gas Pipeline between Moranbah and Gladstone.

7 Social Impact Management Plan

Arrow is currently proposing to develop the Arrow LNG Project, which is made up of the following aspects:

- Arrow LNG Plant – The proposed development of an LNG Plant on Curtis Island near Gladstone, and associated infrastructure, including the gas pipeline crossing of Port Curtis.
- Surat Gas Project – The upstream gas field development in the Surat Basin, subject of this assessment.
- Arrow Surat Pipeline Project – (Formerly the Surat Gladstone Pipeline), the 450 km transmission pipeline connects Arrow's Surat Basin coal seam gas developments to Gladstone.
- Bowen Gas Project – The upstream gas field development in the Bowen Basin.
- Arrow Bowen Pipeline – The transmission pipeline which connects Arrow's Bowen Basin coal seam gas developments to Gladstone.

7.1.2 Project Description

Arrow proposes expansion of its coal seam gas operations in the Surat Basin through the Surat Gas Project. The need for the project arises from the growing demand for gas in the domestic market and global demand and the associated expansion of LNG export markets.

The Project development area extends from the township of Wandoan in the north towards Goondiwindi in the south, in an arc adjacent to Dalby. Townships within or in close proximity to the project development area include (but are not limited to) Wandoan, Chinchilla, Kogan, Dalby, Cecil Plains, Millmerran, Miles and Goondiwindi. Arrow holds petroleum tenures across this area and operates existing gas fields at Tipton West, Daandine, Stratheden and Kogan North near Dalby.

While a field development plan will be established for the Project using exploration and appraisal data, conceptually, the Project will involve the staged development of:

- Approximately 7,500 production wells producing approximately 1,050 TJ/d. The peak gas production comprises 970 TJ/d for LNG production (including a 10% fuel gas requirement for facility operation) and a further 80 TJ/d for supply to the domestic gas market;
- Associated gas and water gathering infrastructure;
- Eighteen facilities comprised of:
  - Six Field Compression Facilities;
  - Six Central Gas Processing Facilities (incorporating water transfer facilities);
  - Six Integrated Processing Facilities (incorporating water treatment and storage facilities).

Compression, power generation and water treatment equipment will be 'modular' allowing facilities to be scaled up and down to cope appropriately with gas and water abstraction volumes through the different stages of the development's life.

- Underground high-pressure gas pipeline infrastructure to link the facilities to the existing gas transmission network (and to each other where appropriate).

7.1.3 Social and Cultural Area of Influence

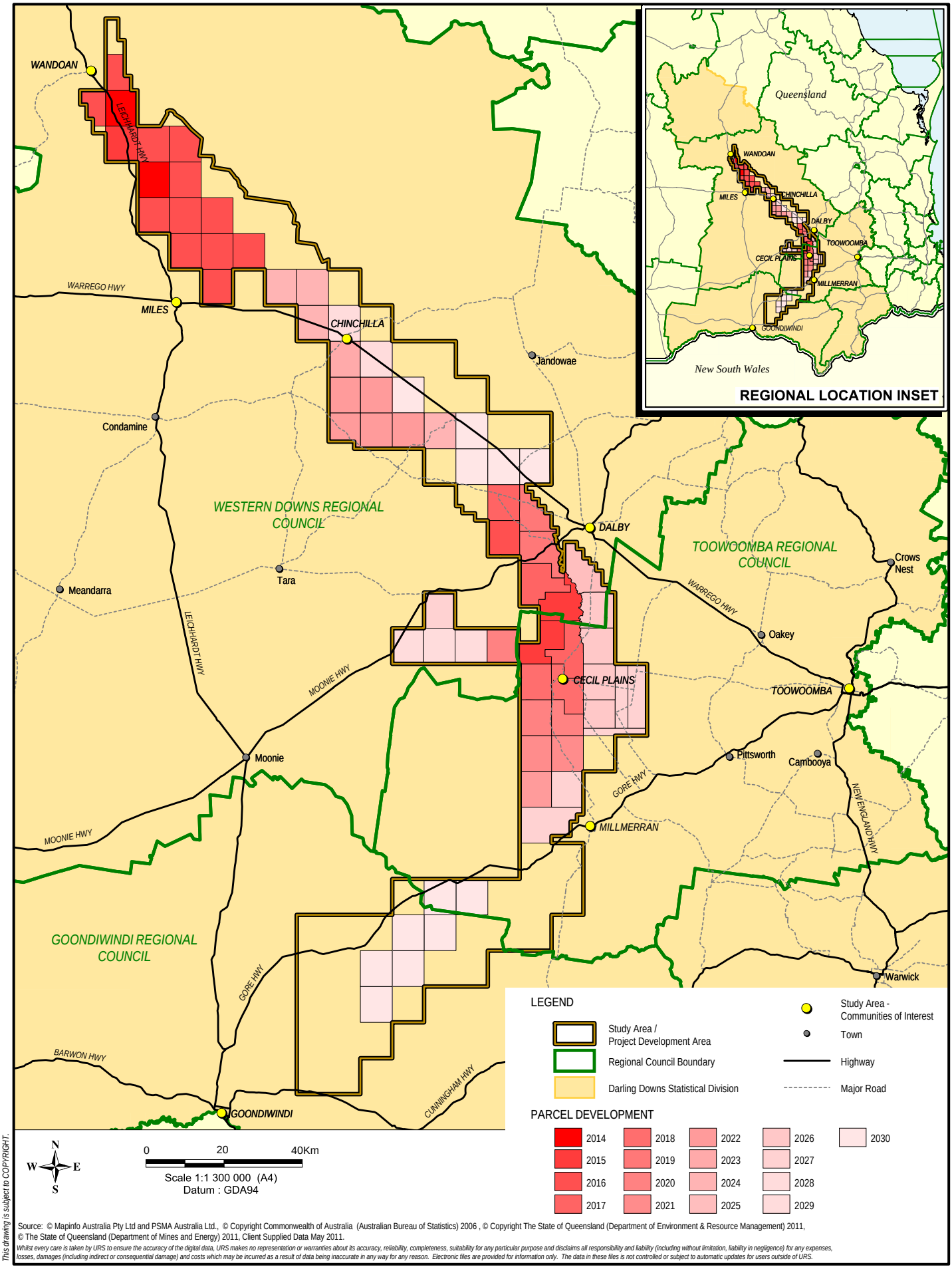
Arrow's Project development area is located approximately 160 km west of Brisbane in Queensland's Surat Basin. It extends from the township of Wandoan in the north towards Goondiwindi in the south, in an arc adjacent to Dalby. The total Project development area is approximately 8,600 km^2.

7 Social Impact Management Plan

The social impact assessment (SIA) study area (the study area) includes the land and communities within the Project development area and a number of towns in its vicinity. These towns herein, called the 'communities of interest', are:

- Cecil Plains;
- Chinchilla;
- Dalby;
- Goondiwindi;
- Miles;
- Millmerran;
- Wandoan; and
- Toowoomba city and surrounding towns/localities within Toowoomba Regional Council.

The study area is located in the Darling Downs Statistical Division (SD) that includes the regional councils of Toowoomba, Goondiwindi and Western Downs. Figure 7-1 shows the location of the study area, including the Project development area and the communities of interest.



COFFEY ENVIRONMENTS

SURAT GAS PROJECT

PROJECT STUDY AREA

7.1.4 Baseline Summary

The following is a summary of the key characteristics and social issues identified within the study area during the baseline assessment.

History and Settlement

The study area has a long agricultural history, yet in recent years, the region has experienced rapid expansion of resource industries, including CSG, coal mining and underground coal gasification. These are occurring across the region.

People – Population, Demographic and Household Composition

A summary of key population, demographic and household characteristics is presented in Table 7-1 below:

Table 7-1 Selected Population, Demographic and Household Characteristics - 2010

Selected characteristics	Cecil Plains	Chinchilla	Dalby	Goondiwindi	Miles	Millmerran	Toowoomba	Wandoan	Darling Downs (SD)	Queensland
2010 population [(a)]	241	4,445	11,097	1,259	6,593	1,348	106,743	420	241,537	4,513,850
Annual pop. change 2001-2010	(1.6%)	3.5%	1.6%	2.2%	0.6%	0.9%	2.2%	0.7%	2.1%	2.6%
Median age of persons	39	39	34	34	41	39	35	40	37	36
Indigenous % of pop.	3%	3.5%	6.1%	4.4%	7.5%	3.8%	2.9%	1%	3.1%	3.3%
Average household size	2.4	2.4	2.6	2.6	2.3	2.3	2.5	2.2	2.6	2.6
% of families that are couples with no children	39%	46%	38%	40%	43%	47%	44%	46%	41%	39%
% of families that are single parents with children aged 15 or below	19%	7%	11%	8%	11%	10%	1%	10%	9%	10%

Note: (a) Preliminary OESR 2010 population estimates

Source: OESR 2011; ABS 2006

Economy, Employment and Enterprise

- CSG production in the Darling Downs region commenced in 2006.
- An increase in the cost of living (including housing costs) arising from development in the area has been identified as a key concern in Project stakeholder engagement;

7 Social Impact Management Plan

- The Darling Downs region has experienced significant fluctuations in prosperity over time, due to either economic or environmental variability, such as commodity prices, seasonal weather variations and drought;
- Indigenous unemployment is high in all the regional council areas, as compared to the State, and is particularly high in the Goondiwindi region (28.9%) (ABS, 2006);

Critical skills shortages for the CSG industry have been identified in the areas of:

- Drilling Assistants;
- Production Technicians;
- Maintenance Technicians;
- Electrical and Instrumentation Technicians;
- Logistics Technicians/ Administrators;
- Petroleum, Chemical and Mechanical Engineers; and
- Geologists and Geophysicists (Energy Skills Queensland, 2011).

Additional summary data is presented in Table 7-2 below.

As can be seen, Miles, Millmerran and Wandoan experience the lowest median incomes within the region, while Goondiwindi experiences the highest median incomes. Across the Darling Downs Statistical Division as a whole, Agriculture, Forestry and Fishing and Retail work are the most common industries of employment, while managers are the most common occupational category (due to the number of agricultural enterprises with owners categorising their occupation as managers). Within the region, Millmerran has the highest unemployment rate, whilst Miles has the lowest.

7 Social Impact Management Plan

Table 7-2 Summary Economic Data for the Study Area

Selected data	Cecil Plains	Chinchilla	Dalby	Goondiwindi	Miles	Millmerran	Toowoomba	Wandoan	Darling Downs (SD)	Queensland
Median Individual Income ($/weekly)	466	407	453	501	386	393	436	416	420	476
Median Household Income ($/weekly)	850	921	940	1,034	626	719	907	623	1,059	1,033
Median Family Income ($/weekly)	949	1,083	1,073	1,147	918	911	1,096	914	875	1,154
Most common industries of employment (% of employed persons aged 15+)	Manufacturing.: 30% Agric., forestry & fishing: 19%	Construct: 18% Retail trade: 15%	Retail trade: 14% Manufacturing: 30%	Retail trade: 17% Agric., forestry & fishing: 12%	Health care & social assist.: 14% Retail trade and Public admin & safety: both 12%	Agric., forestry and fishing: 15% Construct: 11%	Health care & social assist.: 14% Retail trade: 13%	Public admin & safety: 14% Retail trade: 14%	Agric., forestry & fishing: 12% Retail trade: 12%	Manufacturing.: 14% Construct: 14%

7 Social Impact Management Plan

Selected data	Cecil Plains	Chinchilla	Dalby	Goondiwindi	Miles	Millmerran	Toowoomba	Wandoan	Darling Downs (SD)	Queensland
Most common occupation categories (% of emp. persons aged 15+)	Machinery operators & drivers: 35% Labourers: 29%	Tech. and trades: 20% Labourers: 19%	Tech. & trades: 18% Clerical & Admin.; and Labourers: both 15%	Tech. & trades: 16% Managers; Clerical & Admin.; and Labourers: all 14%	Managers: 18% Labourers: 18%	Labourers: 20% Tech. & trades: 18%	Professionals: 18% Tech. & trades: 16%	Labourers: 20% Machinery operators & drivers; and Managers: both 17%	Managers: 17% Professionals; Tech. & trades; and Labourers: all 15%	Professionals: 17%; Tech. & trades; and Clerical & Admin.: both 15%
Total Labour Force (No.)	115	1,745	4,617	2,842	492	569	45,020	190	101,290	1,915,949
% of labour force unemployed	5.2	4.1	5	4.6	3.3	5.6	4.9	4.7	4.5	4.7

Source: ABS 2006

Housing and Accommodation

There have been sharp increases in demand for housing in some locations within the study area and this has impacted upon housing costs, particularly in Chinchilla, and to a lesser extent Dalby. Table 7-3 below shows that median rental rates for 2 and 3 bedroom rentals are still significantly below the Queensland median however they have been increasing over recent years.

Table 7-3 Median Rental Costs for Regional Councils in the Study Area 2010

Regional Councils	3 Bedroom		2 Bedroom	
	Median Rent ($) weekly	% Change over year	Median Rent ($)	% Change over year
Toowoomba	260	4	200	8.1
Western Downs	270	-3.6	190	-13.6
Goondiwindi	240	4.3	160	0
Queensland	330	0	300	0

Source: DoC, 2011a

Table 7-4 shows median house prices for the regional councils within the study area against the Queensland median.

Table 7-4 Median Housing Costs in the Regional Councils of the Study Area 2010

Regional Council	Median Sales Dec Qtr 2010 ($)	% Change over year
Toowoomba	319,000	4.6
Western Downs	286,000	2.1
Goondiwindi	285,000	8.8
Queensland	425,000	-1.6

Source: DoC, 2011a

In Chinchilla much of the serviced, zoned residential land has either been developed, is being developed or is subject to development application; in addition, the capacity of the power supply is a potential limitation for growth in Chinchilla.

In June 2008 Dalby Local Government Area (now Western Downs Regional Council) had 1208 non-resident workers. 60% of these people stayed in temporary accommodation facilities (TWAFs), the majority of these being in or near the towns of Dalby (491 workers), Chinchilla (318) and Miles (228). Another 171 people lived in TWAFs located on resource leases. The remainder of non-residents stayed in hotels/motels, caravan parks or had other arrangements (DIP (3), 2008).

Hotels and motels are experiencing high demand across most of the study area and are frequently booked out, particularly from Monday to Wednesday.

Increased housing demand is putting pressure on the more vulnerable sections of the community.

Education and Training

Summary points relating to education and training within the study area are as follows:

- A large proportion of the study area population over 15 years of age have completed a year 10 equivalent education. However, the number of residents with a year 12 qualification ranged widely between Wandoan (20.6%) at the lower end and Toowoomba (39.3%) at the higher end. These figures – particularly for year 12 education – are well below the Queensland average for residents with a year 10 qualification (76.4%) and year 12 qualification (41.3%) (ABS, 2006);
- Year 12 graduates in the region exhibit similar patterns of behaviour as do other regional Queenslanders, with less entering University and more likely to enter employment based training, than those living in the city (Education Queensland, 2010); and
- Education facilities available in the study area include child care centres, schools (offering prep to year 12 in some places), university and TAFE as well as private training facilities. Consultation indicates that schools in the district have spare capacity to cope with potential additional demand.

Table 7-5 outlines the number of child care, primary and secondary educational facilities available as well as current student enrolment numbers for the schools.

Table 7-5 Child Care, Primary and Secondary School Services Available and School Enrolment Numbers

Community of interest	No. of child care facilities	Student enrolment numbers by school type		
		Prep to Year 7	Prep to Year 10	Year 8 to Year 12
Cecil Plains	1	0	92	0
Chinchilla	3	745	0	480
Dalby	3	2060	0	1,030
Goondiwindi	4	950	0	485
Miles	1	0	395	0
Millmerran	2	105	332	0
Toowoomba	88	9,050	0	4,800
Wandoan	1	0	137	0

Source: Department of Education, 2010(b), SGS, 2011(a), Yellow Pages(a).

Health and Wellbeing

Socio-Economic Indexes for Areas (SEIFA) is a summary measure of the social and economic conditions of geographic areas across Queensland; it is a ranking of comparative socio-economic disadvantage, with the base measure being 20% of the Queensland population falling within each quintile of disadvantage for the State as a whole. Using this measure, the Darling Downs SD experiences a greater degree of disadvantage than does the State as a whole, as can be seen from Table 7-6 below. Of the Darling Downs SD population, 26.4% are within the most disadvantaged quintile (compared with the 20% for the State) while only 12.6% of the population of Darling Downs S.D. were in the least disadvantaged quintile (ABS, 2006).

Table 7-6 Socio-Economic Index of Disadvantage (Percentage of Population) for Darling Downs SD, 2006

Quintile 1 (most disadvantaged)	Quintile 2	Quintile 3	Quintile 4	Quintile 5 (least disadvantaged)
26.4%	28.7%	18.8%	13.4%	12.6%

Source: ABS, 2006

Key health statistics are only available at the Queensland Government Darling Downs-West Moreton Health District Service level. This is a broad district that encompasses the study area, yet also includes areas to the east of the study area, these being the regions around Ipswich, Cherbourg, and Stanthorpe. There is no significant difference in health indicators between Darling Downs-West Moreton Health Service District (HSD) and the Queensland average (Queensland Health, 2010). Toowoomba offers many of the health services available to a well-resourced hospital and operates as the primary regional health referral centre, and Dalby Hospital is considered as a key hospital provider to surrounding rural communities.

The “need for assistance” indicator derived from the ABS Census data measures the number of people with a profound or severe disability. The percentage of the population identified as requiring assistance in Darling Downs SD area was 10,034 persons (4.4%). This is higher than the State average of 3.8% (ABS, 2006).

Community Services and Facilities

Toowoomba appears to be relatively well serviced, with no major service gaps identified through the consultation carried out as part of the SIA process. In general, Toowoomba acts as a hub for community services, with more remote areas, where possible, accessed through outreach services. Outside of Toowoomba, there is limited local access to social services, as well as a lack of doctors, medical specialists and dentists. Mental health services and health promotion are also considered to be lacking.

Key service gaps identified within the Western Downs Regional Council area are for the following service types:

- Youth support, and child and family support
- Aged care;
- Specialist counselling; and
- Cultural diversity (SGS, 2011(a)).

Community Infrastructure

In recent years, the expansion of coal mining in the Surat Basin has resulted in increases in road freight transport as rail coal transport has reduced the capacity of the rail network to carry freight; the movement of freight though urban areas has been identified as an issue for the region.

Emergency Services

Emergency services for the study area generally consist of the Queensland Police Service, Queensland Fire Service, Queensland Ambulance Service and State Emergency Services. The number of emergency personnel in each town in the region is based on population. Toowoomba,

Goondiwindi and Dalby therefore have the highest level of emergency service personnel across all three disciplines.

Cohesion and Crime

The study area lies within Queensland Police's Southern Region, which includes the districts of Charleville, Roma, Dalby, Warwick, Toowoomba and Ipswich. The districts of Dalby, Toowoomba and Warwick are of particular relevance to the Project. Relative to the rest of Queensland, many crimes committed in these regions, occur less frequently on a per capita basis (Queensland Police 2009). The most common offences to occur in the study area relate to traffic (inclusive of drink driving) (pers. comm., Snr Const Peterson, 2010, Toowoomba police station).

7.1.5 Project Monitoring Process

The Proponent will implement a social impact monitoring process that will monitor impacts as well as the effectiveness of management strategies throughout the construction and operational stages of the Project.

7.1.6 Stakeholder Engagement

The stakeholder engagement undertaken specific to the EIS has been a part of the broader Arrow Energy Surat Gas Project (the Project) consultation process. Engagement activities have included:

- A series of focus groups to identify areas of concern and aspirations relating to the Project;
- A detailed, statistically valid, quantitative telephone survey of the study area and communities of interest to quantify the weight, or level of importance, placed on identified issues or opportunities. The survey also sought to identify perceptions around CSG producers' ability to manage these impacts;
- Meetings and interviews with key stakeholders to understand the existing social baseline in the area and identify areas of concern and aspirations relating to the Project;
- Review and interpretation of other independent stakeholder analysis; and
- Biannual consultation in towns within the Project development area; Wandoan, Chinchilla, Millmerran, Dalby, Cecil Plains and Goondiwindi. This consultation involved key Arrow personnel (senior management) and comprised presentations to the general community followed by one-on-one discussions where the community was able to ask specific questions directly to Arrow.

In evaluating potential impacts, the SIA considered stakeholder perceptions, concerns and expectations of the Project. It is evident that the community has become increasingly informed and aware of the CSG industry and the Project. Key issues and concerns raised within the consultation process that were consistent across the study area are as follows:

- Impacts relating to groundwater, water and associated effects on water security, property and livelihoods;
- Salt creation and salt management;
- Impact on good quality and intensively farmed agricultural land;
- Impacts to housing and living costs;
- Maintaining good relationships with land holders;
- Providing open and honest communication;
- Impacts on community services and infrastructure (particularly health services);

- Road safety and increased traffic concerns;
- Maximising integration of the workforce into the community;
- Local employment and business opportunities

There was variation across the study area and between stakeholder interest groups on the importance of some issues. On some topics, there were contradictory views on Project impacts.

7.1.7 Proposed Workforce Profile

Construction of the gas fields and compression facilities for the Project will commence in 2013 and continue through to 2036. The peak workforce requirement for both operations and construction occurs in 2021 where approximately 1075 personnel will be required, as shown in Figure 7-2.

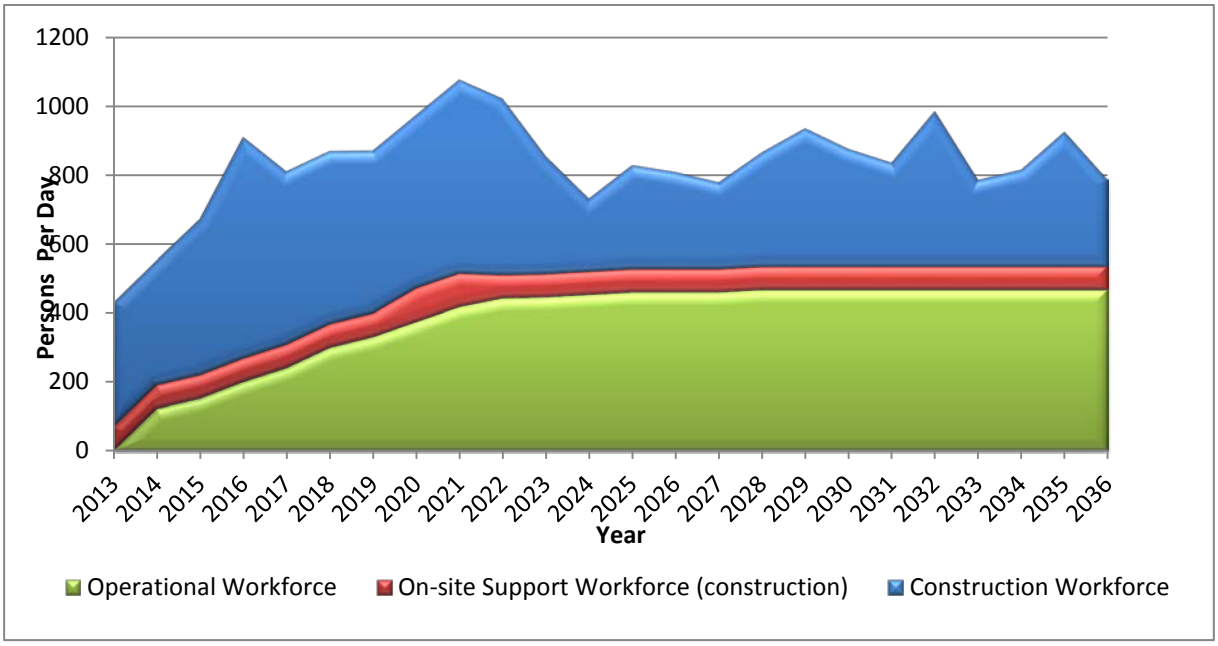


Figure 7-2 Forecast Project Workforce

The majority of jobs on the Project will be in vocational occupations with technical skills such as drilling, process plant operations and diesel fitting. Other vocational occupations such as logistics, transport, warehousing will also be required in large numbers. The construction workforce will typically work 10-12 hour shifts on a 21-day on, 7-days off roster.

Arrow has a preference to provide employment to people based locally (i.e. living within the study area) through its selection of staff and contractors. However due to existing low unemployment rates and the high demand for workers by development projects across central Queensland, this may not be realistic for the majority of its human resource requirements.

Table 7-7 shows the likely sources of the workforce for construction and operation, and the likely additional housing requirements. For construction Arrow will aim to source 20% of the workforce locally. The SIA has assumed that of this 20%: 75% (15 of 20%) will be existing residents; and 25% (5 of 20%) will relocate to the local area. The majority of the construction workforce (80%) will be sourced from outside of the local area and will stay in temporary accommodation facilities (TWAFs). Five TWAFs will be constructed across the Project development area at the site of an integrated

processing facility central to each development region; Wandoan, Chinchilla, Millmerran, Dalby, Goondiwindi. Additional mobile drilling camps may be established as required.

Table 7-7 Number of Field Based Workers and Housing Requirements for Surat Gas Project

Workforce Type and Likely Source	Level	Year				
		2016	2021	2029	2032	2035
Construction Workforce						
Main construction workforce	N/A	640	560	400	450	390
Existing resident (existing accommodation in the area)	15%	96	84	60	68	59
New resident (seeking accommodation in the area)	5%	32	28	20	23	20
Non-resident (camp based)	80%	512	448	320	360	312
Onsite Support Workforce (Construction)	**N/A**	**70**	**100**	**70**	**70**	**70**
Existing resident (existing accommodation in the area)	20%	14	20	14	14	14
New resident (seeking accommodation In the area)	80%	56	80	56	56	56
Operational Workforce						
Operational Support Staff at Depots	**N/A**	**125**	**200**	**200**	**200**	**200**
Existing resident (existing accommodation in the area)	50%	63	100	100	100	100
New resident (seeking accommodation In the area)	50%	63	100	100	100	100
Field and Facility Operations Workforce	**N/A**	**74**	**215**	**264**	**264**	**264**
Existing resident (existing accommodation in the area)	50%	37	108	132	132	132
New resident (seeking accommodation In the area)	50%	37	108	132	132	132
TOTAL WORKFORCE	**N/A**	**909**	**1,075**	**934**	**984**	**924**
Net change in new resident workers	N/A	188	316	308	311	308
Net additional housing requirements	N/A	188	128	0	0	0

Note: N/A – not applicable

Source: Arrow, 2011

For the operations workforce, Arrow aims to fill approximately 50% of the new operations positions for the Project from within or nearby the study area. The remaining 50% of staff (around 230 workers) are expected to be recruited from outside of the study area and relocate to towns in and around the study area. The company has no plans to establish fly-in/fly out or drive-in/drive-out shift operations, though cumulative impacts from multiple projects in the region may require additional options to be explored in the future. This is not a current strategy direction for the Project on its own.

Operational workforce shifts are as follows:

- Support staff (administration, stores and engineering staff) will typically perform 8-10 hour shifts during daylight hours, typically five days per week;

- Staff at central gas processing and integrated processing facilities will typically work 10 hour shifts during daylight hours, five days per week;
- Well operations staff will typically perform 8-10 hour shifts during daylight hours, typically five days per week. Well workover crews will work similar shifts when workovers are being carried out.

7.1.8 Existing Social Management Commitments and Activities

Arrow Energy takes a proactive approach to enhancing communities rather than just the management of potential adverse social impacts. Arrow's principles (Arrow, 2011) on social responsibility include the following:

- Community Wellbeing - "Arrow is committed to protecting and promoting the social and environmental values of communities in which we live and work"
- Community Investment – "Our long term success is closely linked to the social wellbeing of the communities where we work"
- Community Engagement – "Arrow is committed to keeping the community informed about our existing and proposed coal seam gas activities"
- Indigenous Relations – "Managing relationships with Aboriginal communities holding traditional connections or historical links to areas where we operate is as important to Arrow as managing our operations"
- Local Business Development – "Arrow strives to use local suppliers who adhere to our OH&S, Cultural Heritage, Native Title and Environment policies"
- Local Recruitment – "For the Surat Gas Project, Arrow Energy plans to prioritise recruitment from the local area, with all operational staff based in the region"
- Health and Safety – "Arrow employees are continually striving for zero harm in the workplace"
- Education and Training – "Arrow strives to develop the knowledge and skills base of staff through the delivery of a variety of training and development programs".

A summary of Arrow's existing and planned initiatives for social management are shown in Table 7-8.

7.1.9 Potential Contribution to Regional Development

Arrow will work with the Western Downs, Toowoomba and Goondiwindi regional councils to identify and contribute (where possible and appropriate) to regional development that is supported by the relevant plans developed under the *Sustainable Planning Act 2009* or the *Local Government Act 2009*, predominantly through Community Plans or similar. Action plans and other mitigation and enhancement measures identified through finalisation of the SIMP will align (where possible and appropriate) with State government regional planning strategies such as the *Major Resource Projects Housing Policy* (DEEDI, 2011a), the *Surat Basin Workforce Development Plan* (Skills Queensland, 2011) and the *Queensland Regionalisation Strategy* (when released).

7 Social Impact Management Plan

Table 7-8 Summary of Arrow Initiatives for Social Management

Area	Arrow Initiatives
Stakeholder engagement	Ongoing stakeholder engagement program; Stakeholder engagement program to incorporate development of SIMP; Stakeholder committees (e.g. Intensively Farmed Land Committee).
Grievance management	Complaints Management System – records and tracks grievances; Land Liaison Officers; 1800 free-call number – to register grievances.
Landholder relations	*Sustainable Development* and *Constructive Community Engagement* Policies – set out protocols for fostering positive relationships with landholders and the wider community; Land access rules.
Regional social planning	Participants in regional bodies including – Surat Basin Engagement Committee; and Industry taskforce on skill development and workforce availability.
Employment and training	Preferential local employment; Various vocational and specialist training programs; traineeships; graduate development program; school based training programs.
Local Business development	Australian Industry Participation (AIP) Plans; Business vendor register (including use of Industry Capability Network); Local supplier information sessions – communicate opportunities to supply goods and services and provide assistance on meeting Arrow tender requirements.
Indigenous participation	Indigenous Participation Policy – identifies strategies relating to Indigenous employment and enterprise opportunities.
Community Investment	Brighter Futures Program – community investment program – focussing on health and safety; education; environment
Workforce Behaviour	Code of Conduct and disciplinary procedures

Source: Arrow, 2011

7.2 Impact Assessment

Criteria were established through the impact assessment process to assess the consequence of the potential impacts (refer Section 6.0). This then allowed the significance of potential impacts to be determined, based on the likelihood of the potential impact actually occurring and the associated consequences. The significance of each potential impact was rated as of being of very high, high, medium or low significance.

Table 7-9 shows the significant potential impacts which acquired a rating through the significance assessment process as being of medium, high or very high (however, no potential impacts were found to be of very high significance).

7 Social Impact Management Plan

Table 7-9 Potential Impacts Identified as Medium or Above Significance

Potential Impact	Phase	Pos/Neg	Likelihood	Consequence	Significance
Changes to Population and Demographic Profile					
Off-set population decline in smaller rural communities	C,O	Positive	Possible	Moderate	Medium
Higher skilled resident workforce	C,O	Positive	Possible	Moderate	Medium
Retention of younger population	C,O	Positive	Possible	Moderate	Medium
Impacts on Employment, Skills and Business					
Increased local employment opportunities	C,O	Positive	Likely	Moderate	High
Increased training and skill development opportunities for the local population	C,O	Positive	Almost Certain	Moderate	High
Local business difficulties faced by operating in changed environment (increased costs, competition, and labour)	C,O	Negative	Possible	Major	High
Increased labour force participation and reduction in unemployment	C,O	Positive	Possible	Moderate	Medium
Increased local expenditure on goods and services through Project activities	C,O	Positive	Likely	Moderate	Medium
Increased local expenditure on goods and services by incoming workers and residents	C,O	Positive	Possible	Moderate	Medium
Increased potential for local business expansion / business establishment in local area	C,O	Positive	Likely	Minor	Medium
Impacts on Land Use and Property					
Increased landholder and community uncertainty	C,O	Negative	Likely	Moderate	High
Reduced vulnerability to impacts associated with agriculture (drought, pests)	C, O	Positive	Likely	Moderate	Medium
Loss of social connection to land/ agricultural production	PC, C	Negative	Possible	Moderate	Medium
Impacts on Community Values and Lifestyles					
Increased participation and support in the community (e.g. volunteers, involvement in sport and social organisations, support for local events)	C,O	Positive	Likely	Minor	Medium
Increased potential for social divide and social tension	C,O	Negative	Possible	Moderate	Medium

Potential Impact	Phase	Pos/Neg	Likelihood	Consequence	Significance
Potential for increased community conflict if overseas workers are employed with the Project and move into the community	C,O	Negative	Possible	Moderate	Medium
Impacts to Community Infrastructure and Services					
Increased demand on medical and health facilities	C, O	Negative	Likely	Moderate	High
Heightened road safety risk	C,O	Negative	Possible	Major	High
Increased demand on emergency services	C, O	Negative	Possible	Moderate	Medium
Impacts on Housing and Accommodation Availability and Affordability					
Increased house, land purchase and rental prices resulting in diminished levels of housing affordability	C,O	Negative	Possible	Major	High
Reduction in availability of accommodation for low income and vulnerable groups including Indigenous groups	C,O	Negative	Possible	Major	High
Increased returns to existing residents through higher house, land and rental prices	C,O	Positive	Possible	Moderate	Medium
High demand for hotel/motel/caravan park accommodation.	C	Negative	Possible	Moderate	Medium
Impacts on Health, Safety and Environment					
Increased community anxiety on health, safety and environment effects of Project	C,O	Negative	Likely	Moderate	High
Heightened road safety risk	C,O	Negative	Possible	Major	High

7.3 Impact Mitigation and Management

Table 7-10 below outlines mitigation (for negative impacts) and enhancement (for positive impacts) measures for addressing those potential impacts considered as medium, high or very high significance. Social mitigation and enhancement activities have been split into the following themes:

- Population and demographic change;
- Employment, skills and business;
- Land use and property;
- Community values and lifestyles
- Community infrastructure and services;
- Housing and accommodation availability and affordability; and
- Health, safety and environment.

7 Social Impact Management Plan

The responsible parties for mitigation/enhancement have been categorised as Arrow; or Arrow and Contractor. Phases for implementation of mitigation/enhancement measures are project planning (i.e. prior to construction); construction; or operations. Note that mitigations, which are occurring through all phases of the Project, are defined as “ongoing” in the table.

The tables below also include a monitoring component. The “Indicators/target measures” column provides targets/outcomes to assess progress in implementing the mitigation measure. The “Verification” column identifies who is responsible for monitoring the indicators/target measures; the timing for monitoring and where it is to be documented (e.g. Contractor monthly accommodation audit).

7.3.1 Regional Community Consultative Committee

Arrow proposes to establish and contribute to a regional community consultative committee (RCCC) with membership extended to key stakeholders from State and local government, community and business organisations, service providers, industry peak bodies and other resource companies, in order to effectively and proactively plan for and respond to challenges resulting from cumulative impacts of the Project. The RCCC will provide oversight of implementation of the social impact mitigation/enhancement and management strategies outlined within the final SIMP. Following consultation on the draft SIMP, Arrow will define the terms of reference and its resourcing commitments for the RCCC, and propose any alternative models to its structure as agreed upon through consultation. Options include linkages with other planning and consultation mechanisms being established across the Surat Basin and CSG industry leadership groups.

7 Social Impact Management Plan

Table 7-10 Impact Mitigation and Management Measures

Population and Demographic Change						
Impact and Mitigation					Monitoring & Verification	
Impact	Neg/Pos impact	Mitigation / Enhancement	Responsibility	Timeframe	Indicator/ target measures	Verification
Off-set population decline in smaller rural communities	Pos	Continue to provide state and local government departments responsible for educational, health and other social infrastructure with forecasts of workforce numbers and projected families to assist in their future service planning. This information will be provided in an agreed format that will allow these departments to plan for cumulative population change	Arrow	Construction and Operation	Annual meetings held with government and service providers	Meeting records and minutes
		Encourage local population growth where it is desired, and planned for, enforcing the expectation that non-local operations employees will relocate to the project area as there are no plans to establish FIFO or DIDO operations.	Arrow	Ongoing	Annual employment database review	SIMP annual reporting
		Consider flexible shift hours and rosters to encourage participation of under-employed sectors (e.g. family-friendly shift arrangements for locally-based operational workforce)	Arrow	Operation	Industrial awards and site agreements	SIMP monitoring

7 Social Impact Management Plan

Population and Demographic Change						
Impact and Mitigation					Monitoring & Verification	
Impact	Neg/Pos impact	Mitigation / Enhancement	Responsibility	Timeframe	Indicator/ target measures	Verification
		Make available information and Australian cultural awareness briefing for overseas workers and their families on undertaking day to day activities, for example provide advice on banking and shopping.	Arrow	Ongoing	Australian cultural awareness briefing available	SIMP annual reporting
		Opportunities provided for qualified females and people from other underrepresented groups	Arrow and Contractors	Ongoing	Demonstrations of policy in place	Bi-annual workforce review
Higher skilled resident workforce	Pos	Implement an Operational Workforce Policy preferring local residence for operational staff	Arrow	Operation	% of operational workers on DIDO/FIFO roster arrangement	Annual workforce review
Retention of younger population	Pos	Training and employment program for local school leavers	Arrow	Construction and Operation	• Number of local school leavers employed with the Project • Number of local apprenticeships • Annual number of local residents in receipt of training support	• HR records • RCCC progress report

7 Social Impact Management Plan

Employment, Skills and Business						
Impact and Mitigation					Monitoring & Verification	
Impact	Neg/Pos impact	Mitigation / Enhancement	Responsibility	Phase	Indicator/ target measures	Verification
Increased local employment opportunities	Pos	Implement hierarchy of preferred employment for employees and contractors based on home or source location. Highest preference is living within Project study area	Arrow and Contractors	Construction, Operation	• 20% construction workforce sourced from local area;	Annual Workforce planning review
					• 50% operational workforce sourced from local area; and	Annual Workforce planning review
					• Balance of operational workforce relocates to the local area.	Annual Workforce planning review
Increased training and skill development opportunities for the local population	Pos	Liaise with local employment and education/training organisations (e.g. SQIT) on training and skill development programs, to identify workers within the region who have the ability to obtain qualifications based on Recognition of Prior Learning.	Arrow	Planning	Training and skill development programs implemented in partnership with education/training institutions	Annual training program review
		Implement training and skill development programs including: apprenticeships, scholarships, vocational training, support for work readiness programs and pre-trade training	Arrow and Contractors	Construction and Operation	• Number of apprenticeships, scholarships awarded yearly;	Annual training program review
					• Number of positions for vocational training, pre-trade training and support for work programs.	• Annual training program review • RCCC progress report

7 Social Impact Management Plan

Employment, Skills and Business						
Impact and Mitigation					Monitoring & Verification	
Impact	Neg/Pos impact	Mitigation / Enhancement	Responsibility	Phase	Indicator/ target measures	Verification
		Identify the range of skills required for the labour force and undertake a gap analysis against skills availability. Where gaps exist, in consultation with the Energy Skills Queensland, Manufacturing Skills Queensland and Construction Skills Queensland, identify the method or strategy through which these skills will be filled (e.g. DIDO; training)	Arrow	Planning	• Gap analysis conducted • Consultation with Energy Skills Queensland, Manufacturing Skills Queensland and Construction Skills Queensland	Annual Workforce planning review
		Undertake regular review of labour requirements and current skills sets to ensure that training strategies meet these needs	Arrow	Construction and Operation	Review of training strategy for adequacy carried out	Annual training program review
		Participation in existing employment and training programs developed by the State and federal government (e.g. Critical Skills Investment Fund, Productivity Places Program; Indigenous Cadetship Support; Indigenous Employment Program; Skilling Queenslanders for Work Initiative)	Arrow and Contractors	Construction and Operation	Number of trainees under Arrow facilitated programs	Annual training program review
		Arrow will work with Skills Queensland to deliver work readiness and skills development training programs for vulnerable local people such as the long term unemployed or under skilled, in order to assist them to gain employment,	Arrow and Contractors	Construction and Operation	Documented involvement with Skills Queensland	Annual training program review
		Notify local people of employment opportunities through recruitment websites; local advertising; local recruitment agencies;	Arrow and Contractors	Ongoing	• Number of positions advertised locally	Annual Workforce planning review

7 Social Impact Management Plan

Employment, Skills and Business						
Impact and Mitigation					Monitoring & Verification	
Impact	Neg/Pos impact	Mitigation / Enhancement	Responsibility	Phase	Indicator/ target measures	Verification
		information sessions				
		Develop an Indigenous participation policy (IPP) and implementation plan which identifies strategies relating to Indigenous employment and enterprise opportunities	Arrow and Contractors	Construction and Operation	•Arrow has IPP • Refer KPIs within IPP	• Annual training program review • Progress report updates to RCCC
Local business difficulties faced by operating in changed environment (increased costs, competition and labour)	Neg	Provide industry support organisations with the information they require to assist local businesses improve their skills base and respond to Project needs	Arrow	Ongoing	Information provided to organisations in response to request	SIMP annual reporting
		Collaborate with the existing job referral service set up by other proponents to make available information on positions vacant in local businesses with similar trade/skills requirements. This will allow applicants to choose between industry and non-industry jobs.	Arrow	Ongoing	Arrangements made for referral service	• 6 monthly RCCC reporting •SIMP annual reporting
Increased labour force participation and reduction in unemployment	Pos	Provide medium and long term contract position opportunities	Arrow and Contractors	Construction, Operation	• 380 - medium term contract positions	Workforce planning review
					• 200 - long term contract positions	Annual Workforce planning review
		Facilitate opportunities for workers to transition to other Project phases (e.g. facility construction to facility operation)	Arrow and Contractors	Construction, Operation	Employment opportunities communicated to workers	Annual Workforce planning review

7 Social Impact Management Plan

Employment, Skills and Business						
Impact and Mitigation					Monitoring & Verification	
Impact	Neg/Pos impact	Mitigation / Enhancement	Responsibility	Phase	Indicator/ target measures	Verification
		Consider flexible shift hours and rosters to encourage participation of under-employed sectors (e.g. family-friendly shift arrangements for locally-based operational workforce)	Arrow and Contractors	Planning	Alternative shift options available	Annual Workforce planning review
		Continue to ensure that equal opportunity policies are in place addressing ethnicity, gender or disability should be developed	Arrow and Contractors	Construction, Operation	•Number of female workers	Annual Workforce planning review
					•Number of Indigenous workers	Annual Workforce planning review
Increased local expenditure on goods and services through Project activities and by incoming workers and residents	Pos	Develop a Local Industry Participation Plan (LIPP) in consultation with DEEDI and consistent with the Australian Industry Participation (AIP) Plan.	Arrow and Contractors	Construction and Operation	• LIPP implemented • refer KPIs within LIPP	6 monthly progress reports of LIPP

7 Social Impact Management Plan

Employment, Skills and Business						
Impact and Mitigation					Monitoring & Verification	
Impact	Neg/Pos impact	Mitigation / Enhancement	Responsibility	Phase	Indicator/ target measures	Verification
Increased potential for local business expansion / business establishment in local area	Pos	Continue to use Industry Capability Network (ICN) database for potential suppliers in the area	Arrow	Construction and Operation	•Number of local contracts awarded • Value of contracts awarded to local suppliers	Annual review of contracts database
		Develop and maintain the Arrow Business Vendor Register	Arrow	Construction and Operation	Number of local contracts awarded through business vendor register	Annual review of contracts database
		Organise local supplier information sessions to inform business of Arrow's development plans, tender opportunities for local business; and how to complete tender requirements	Arrow	Ongoing	Number of information sessions held	SIMP annual reporting

7 Social Impact Management Plan

Land Use and Property						
Impact and Mitigation					Monitoring & Verification	
Impact	Neg/Pos impact	Mitigation / Enhancement	Responsibility	Phase	Indicator/ target measures	Verification
Increased landholder and community uncertainty	Neg	Close engagement with landholders to minimise impacts on their land and existing agricultural activities.	Arrow	Ongoing	• Number of complaints from landholders; • Number of successful land access agreements	• Annual stakeholder management review • Review of community issues and attitudes.
		Prior to initial activities, communicate with landholders at least three months before any activities take place on private property	Arrow and Contractors	Construction	Number of successful agreements	Annual stakeholder management review
		All Project personnel access land only in accordance with accepted Land access Code and protocols.	Arrow and Contractors	Ongoing	• Access in accordance with land access agreements • No grievances	Quarterly review of landholder liaison database
		Ongoing provisions of Community Officers, Land Liaison Officers and the 1800 free call number, for people to ask questions or raise concerns about Arrow's activities	Arrow	Ongoing	Number of calls received on 1800 number	Quarterly review of landholder liaison database
		Develop and implement a compensation framework which is consistent for all landholders and which seeks to 'add value' rather than just compensating for impacts (a nil sum game).	Arrow	Ongoing	Annual stakeholder management review	Time taken to reach agreement

7 Social Impact Management Plan

Land Use and Property						
Impact and Mitigation					Monitoring & Verification	
Impact	Neg/Pos impact	Mitigation / Enhancement	Responsibility	Phase	Indicator/ target measures	Verification
Reduced vulnerability to impacts associated with agriculture (drought)	Pos	Continue regular consultation with landholders through mechanisms such as the Intensively Farmed Land Committee	Arrow	Ongoing	Annual stakeholder management review	SIMP annual reporting
Loss of social connection to land/ agricultural production	Neg	Close engagement with landholders to minimise impacts on their land and existing agricultural activities.	Arrow	Ongoing	• Number of complaints from landholders; • Number of successful land access agreements	• Annual stakeholder management review • Review of community issues and attitudes.
		Continue regular consultation with landholders through mechanisms such as the Intensively Farmed Land Committee	Arrow	Ongoing	Annual stakeholder management review	SIMP annual reporting

7 Social Impact Management Plan

Community Values and Lifestyles						
Impact and Mitigation					Monitoring & Verification	
Impact	Neg/Pos impact	Mitigation / Enhancement	Responsibility	Phase	Indicator/ target measures	Verification
Increased participation and support in community (e.g. volunteers, involvement in sport and social organisations, support for local events)	Pos	Consult with Councils and RCCC for their views on which social, community or recreational infrastructure in Western Downs region is being directly impacted by the project and to what extent. Liaise with the relevant body to coordinate efforts across all proponents and identify opportunities that may potentially ease or mitigate impacts	Arrow	Construction and Operation	Impacts on social infrastructure assessed and mitigations identified	SIMP annual Reporting
		Expand the opportunities available for the region under the Brighter Futures program and the Social Investment Plan.	Arrow	Construction and Operation	Plan in place for supporting community events / services / organisations	Annual review of Brighter Futures program
		Encourage resident employees and contractors to integrate and become involved in local community (e.g. volunteer work, participation in clubs and organisations).	Arrow and Contractors	Operation	Number of workers known to participate in community activities.	SIMP annual reporting
Increased potential for social divide and social tension	Neg	Ensure that all direct employees and contractors adhere to the Code of Conduct and that disciplinary procedures for inappropriate behaviour of employees will be documented.	Arrow and Contractor	Construction and Operation	Feedback from stakeholders	SIMP annual reporting

7 Social Impact Management Plan

Community Infrastructure and Services						
Impact and Mitigation					Monitoring & Verification	
Impact	Neg/Pos impact	Mitigation / Enhancement	Responsibility	Timeframe	Indicator/ target measures	Verification
Increased demand on emergency services	Neg	In accordance with project requirements, an emergency management plan will be developed that will cover joint emergency response planning in collaboration with emergency service providers.	Arrow and Contractor	Ongoing	Emergency response procedures developed	Annual review of Emergency response procedures
		Ongoing provision of a medivac service to respond to various community or Project related emergency situations.	Arrow and Contractor	Ongoing	Number of medivac call-outs	Annual SIMP reporting
Heightened road safety risk	Neg	Traffic management plans developed including: • Preferred routes for travel and measures to reduce risk of accidents; • Road safety awareness initiatives for Project personnel and local residents; • Procedure for notifying council and road authorities for any disruptions/road closures; • Road management strategy to manage any increased road maintenance requirements imposed by the Project.	Arrow	Construction and Operation	Development of traffic management plans	Compliance with traffic management plans
		Ongoing consultation with all levels of Queensland Police Service regarding vehicle movement.	Arrow	Construction	Internal documentation of consultation with all levels of Queensland Police Service	SIMP annual reporting
Increased demand on medical and health facilities	Neg	Provide medical assistance with opportunities to extend to wider communities where possible.	Arrow	Construction	Documented consultation with State and local authorities	Annual SIMP reporting

7 Social Impact Management Plan

Housing and Accommodation Availability and Affordability						
Impact and Mitigation					Monitoring & Verification	
Impact	Neg/Pos impact	Mitigation / Enhancement	Responsibility	Phase	Indicator/ target measures	Verification
Increased house, land purchase and rental prices resulting in diminished levels of housing affordability	Neg	Provision of high quality TWAF accommodation for all non-resident construction workforce	Arrow	Construction	% non-resident construction workforce in TWAF	Monthly accommodation audit
		Prior to decommissioning consider use of TWAF during operational phase to ease housing demand in towns	Arrow	Operation	Documented review of housing requirements for operations workers Documented review of workforce requirements	SIMP annual reporting
		Continue to collaborate with other proponents in the region and identify opportunities to share temporary accommodation where possible for the construction and maintenance workforces	Arrow	Ongoing	Discussions held on TWAF requirements with other proponents	SIMP annual reporting
		Encourage workers relocating to the area to move to towns better suited to growth by: •providing accommodation advice services for workers and their families •providing work shuttle buses between work site and towns with an employment pool (e.g. Toowoomba, Dalby, Cherbourg).	Arrow	Ongoing	Shuttle bus service in operation	SIMP annual reporting

7 Social Impact Management Plan

Housing and Accommodation Availability and Affordability						
Impact and Mitigation					Monitoring & Verification	
Impact	Neg/Pos impact	Mitigation / Enhancement	Responsibility	Phase	Indicator/ target measures	Verification
		Develop an Integrated Housing Strategy (IHS) that considers: • Continued participation in initiatives set out in the Major Resource Projects Housing Policy; Draft Resource Town Housing Affordability Strategy; and the proposed Western Downs Regional Council housing affordability strategy and implementation of the Surat Basin Future Directions Statement (2010); • Support the intent of the Surat Basin Regional Planning Framework and work with State government, Councils, ULDA, building industry, realtors and other project proponents to identify co-operative strategies that address cumulative housing impacts and to ensure that developable land is brought to market to meet demand; • Providing incentives to private investors and developers of accommodation such as through head leasing agreements, rental guarantees; • Contributing to a Government sponsored community and affordable housing initiative; and • Housing 'rent to buy scheme' option for workers.	Arrow	Ongoing	IHS developed	Annual review of IHS document

7 Social Impact Management Plan

Housing and Accommodation Availability and Affordability						
Impact and Mitigation					Monitoring & Verification	
Impact	Neg/Pos impact	Mitigation / Enhancement	Responsibility	Phase	Indicator/ target measures	Verification
Reduction in availability of accommodation of low income and vulnerable groups	Neg	Support government reviews on housing availability and affordability, and impacts on low income groups	Arrow	Ongoing	Participation made to review	SIMP 6 monthly reporting
High demand for hotel/motel/caravan park accommodation	Neg	Visiting workers will stay in TWAFs in preference to hotel/motel accommodation where possible.	Arrow	Ongoing	% of non-resident workforce in TWAF	Monthly accommodation audit
		Avoid reserving hotel/motel accommodation for long blocks of time without a demonstrable need preference	Arrow	Ongoing	% of non-resident workforce in TWAF	Monthly accommodation audit
		Inform the tourist body and other peak business bodies of anticipated time frames for peak temporary accommodation demand	Arrow and Contractors	Ongoing	Tourist bodies advised in advance of increased demand	SIMP annual reporting

7 Social Impact Management Plan

Health, Safety and Environment						
Impact and Mitigation					Monitoring & Verification	
Impact	Neg/Pos impact	Mitigation / Enhancement	Responsibility	Timeframe	Indicator/ target measures	Verification
Increased community anxiety on health, safety and environment effects of Project	Neg	In accordance with project requirements, an Emergency Management Plan will be maintained that will cover joint emergency response planning in collaboration with emergency service providers.	Arrow and Contractor	Ongoing	Emergency Response Procedures maintained	Bi-annual review of Emergency Response Procedures
		Maintain the grievance process (Complaint Management System) for community to register complaint/issue/comment/suggestion	Arrow (develop) Arrow and Contractor (implement)	Construction and Operation	• Number of recorded issues / grievances / comments • Report status of grievances	SIMP annual reporting
		Continue to implement a robust community engagement program and other measures to notify community of Project activities and to identify and address community issues	Arrow	Ongoing	Consultation program developed	Quarterly review of consultation program
		Implementation of Environmental Management Plans that address potential impacts relating to groundwater, water management, salt management, dust and noise generation.	Arrow and Contractor	Ongoing	• Number of recorded issues / grievances / comments • Report status of grievances	EMP annual reporting (or at frequency agreed in each specific plan)
		Arrow will publicly release information on how environmental impacts are being offset by the project.	Arrow	Ongoing	Information program developed	Bi-annual review of information program
		Ensure progress of workplace health and safety is communicated to the public and the RCCC as part of Arrow's annual sustainability reporting	Arrow	Ongoing	Monitoring results provided	Annual sustainability reporting

7 Social Impact Management Plan

Health, Safety and Environment						
Impact and Mitigation					Monitoring & Verification	
Impact	Neg/Pos impact	Mitigation / Enhancement	Responsibility	Timeframe	Indicator/ target measures	Verification
		Land Liaison Officers and Community Officers are available to discuss landholder and residents' concerns	Arrow	Ongoing	Number of complaints	Annual review of consultation database

7.3.2 Reporting

Reporting to stakeholders

The Proponent will report the findings of the monitoring strategy as part of their Project annual reporting through the SIMP, Communications and Community Engagement Plan and Community Consultation Program. The Proponent and the councils will determine the most appropriate reporting mechanism as part of Stage 2 of the SIMP development process.

Reporting to the Social Impacts Assessment Unit

As per the draft SIMP Guidelines, the Proponent will report on the monitoring program to the Social Impact Assessment Unit of the Department of Infrastructure and Planning on an annual basis during construction.

The Proponent will report on the operational impacts of the Project to the Social Impact Assessment Unit of the Department of Infrastructure and Planning every three years.

- As per the draft SIMP Guidelines, reports prepared for the Social Impact Assessment Unit will include:
- An overview of the effectiveness of implementation;
- An assessment of progress against nominated performance indicators;
- An explanation of why any actions were not undertaken as planned and if required; and
- Recommendations to improve future performance.

7.3.3 External Review

The Proponent will agree to an external review of the SIMP when requested by the Social Impact Assessment Unit of the Department of Infrastructure and Planning. Details of the review will be determined at a later date.

7.3.4 Amendment and Termination

Amendments and updates to the SIMP will be considered as part of the SIMP internal SIMP Review, which will be timed with the Reporting to the SIA Unit and councils, and will consider findings of the external reviews.

7.4 Communications and Community Engagement

The Proponent has an existing stakeholder engagement program. The consultation program will be expanded to:

- Introduce or provide further discussion of the proposed SIMP to stakeholders and seek feedback;
- Report the findings of the SIMP monitoring strategy;
- Develop a dispute resolution mechanism that addresses the requirements of Section E of the Guideline to Preparing a Social Impact Management Plan (DIP, 2010b).

A list of stakeholder groups and their interests are shown in Table 7-11 below.

7 Social Impact Management Plan

Table 7-11 Stakeholder Groups for SIMP

Stakeholder Group	Stakeholders
Community	Landholders will be directly impacted by the Project Residents in surrounding towns
Regional Committees	Surat Basin Engagement Committee Regional Development Australia
Regional Councils	Western Downs Regional Council Toowoomba Regional Council Goondiwindi Regional Council
Queensland Government	Department of Infrastructure and Planning (Social Impact Assessment Unit) Department of Employment, Economic Development and Innovation; Department of Communities; Department of Education and Training; Queensland Police; Department of Transport and Main Roads; Department of Environment and Resource Management; and Queensland Health.
Service providers in the study area	For example, health, education, training, emergency services.
Businesses in the study area	Local Chambers of Commerce Local progress associations Advance Western Downs economic development group
Interest groups	For example, environmental groups, industry groups, conservation societies

Note: This list will continually evolve throughout the Project and is not the final stakeholder list.

8

References

ABS, 2003. 2001 Community Profile Series, Australia, 2001, cat. No. 2001.0. Australian Bureau of Statistics, Canberra, ACT.

ABS, 2006. Statistical areas. Australian Bureau of Statistics, Canberra, ACT.

ABS, 2007. *2006 Community Profile Series*, *Australia, 2006*, cat. No. 2001.0. Australian Bureau of Statistics, Canberra, ACT.

ABS, 2009. Regional Population Growth, Australia, 2007-08, cat. No. 3218.0. Australian Bureau of Statistics, Canberra, ACT.

AG, 2010. *The 2010 Intergenerational Report*. A WWW publication accessed on 28 February 2010 at http://www.treasury.gov.au/igr/igr2010/ . Australian Government, Canberra, ACT.

BITRDLG, 2009. *BITRE Industry Structure Database*. A WWW publication accessed on 28 February 2010 at http://www.bitre.gov.au/info.aspx?ResourceId=709&NodeId=111 . Bureau of Infrastructure, Transport, Regional Development and Local Government, Canberra, ACT.

Coffey Environments. Brisbane, Queensland. Information comprising unpublished reports, memos, data and personal accounts. March 2011.

Cotton Catchment Communities CRC, 2009. *Measuring Community Wellbeing in 'Cotton Communities': The Socio-Economic Impact of the Australian Cotton Industry on Selected Regional Communities (Report II of the Study). Prepared by Judith Stubbs & Associates for Cotton Catchment Communities CRC. March 2009.*

Cox, E. 1995. *A Truly Civil Society*. ABC Books, Sydney, NSW.

DEEDI, 2009. *Blueprint for Queensland's LNG Industry*, Department of Employment, Economic Development and Innovation, accessed on 1 June 2011 at http://www.industry.qld.gov.au/documents/LNG/Blueprint_for_Queenslands_LNG_Industry.pdf

DEEDI, 2011a. *Major Resource Project Housing Policy*, Office of The Coordinator-General. A WWW publication accessed on 28 September 2011 at http://www.deedi.qld.gov.au/cg/resources/Major-Resource-Projects-Housing-Policy.pdf

DEEDI, 2011b. *Surat Basin Future Directions Statement*, A WWW publication accessed on 30 November 2011 at http://203.210.126.185/dsdweb/v4/apps/web/secure/docs/4547.pdf. Department of Employment, Economic Development and Innovation.

DIP, 2008. *Surat Basin population report*. A WWW publication accessed on 24 March 2011 at http://www.dip.qld.gov.au/publications/planning-information-and-forecasting-research.html. Department of Infrastructure and Planning, QLD

DIP, 2010a. *Draft Resource Town Housing Affordability Strategy*. A WWW publication accessed on 21 March 2011 at http://www.dlgp.qld.gov.au/resources/plan/surat-basin-regional/draft-planning-framework.pdf. Department of Infrastructure and Planning, QLD

DIP, 2010b. *Social Impact Assessment – Guideline to preparing a social impact management plan,* September 2010

DLGP, 2011a. *Queensland Regionalisation Strategy For Public Consultation Strengthening Queensland's Regions*, Growth Management Queensland. A WWW publication accessed on 28 September 2011 at http://www.dlgp.qld.gov.au/resources/plan/qrs/qld-regionalisation-strategy.pdf

8 References

DLGP, 2011b. *Surat Basin Regional Planning Framework,* Department of Local Government and Planning, accessed 29 September 2011 at http://www.waytogrow.qld.gov.au/u/lib/planning-framework.pdf

DoC, 2011a. *Queensland Housing Market Report December quarter 2010*. A WWW publication accessed on 21 March 2011 at http://www.public-housing.qld.gov.au/partnerships/pdf/market-report-dec10.pdf

DoC, 2011b. Regional Housing Profile – South West Queensland – June 2008 A WWW publication accessed on 21 March 2011 at http://www.public-housing.qld.gov.au/partnerships/affordable/package.htm

Education Queensland, 2010. *Next Step 2010 – Darling Downs-South West Regional Report*. A WWW publication accessed on 25 March 2011 at http://education.qld.gov.au/nextstep/2010regions.html

Energy Skills Queensland, 2011. *CSG-LNG Workforce Planning Flyer*. A WWW publication accessed on 30 March 2011 at http://www.energyskillsqld.com.au/esq-publications/workforce-planning-for-the-csg-lng-industry

French, M. And Waterson, D., 1982. *The Darling Downs: a pictorial history, 1850-1950.* Darling Downs Institute Press, Toowoomba.

GRC, 2009a. *Corporate Plan (2009–2014*) Goondiwindi Regional Council, accessed on 1 June 2011 at http://issuu.com/goondiwindiregionalcouncil/docs/grc_corporate_plan_09-14_-_full_doc_-_new_cover?viewMode=magazine&mode=embed

GRC, 2009b. *Operational Plan (2009–2010)* Goondiwindi Regional Council, accessed on 1 June 2011 at http://issuu.com/goondiwindiregionalcouncil/docs/operational_plan_2010?viewMode=magazine&mode=embed

JTA Australia, 2011. *Consultation Report Surat Gas Project*, Working draft February 2011

Moore, S. Undated. *2007 Rural Debt in Queensland Survey*. A WWW publication accessed on 28 February 2010 at http://www.mshl.com.au/debtsurvey/Documents.asp .

OESR, 2010. Australian Bureau of Statistics, Regional Population Growth, Cat. no. 3218.0 (2001 to 2010). A WWW publication accessed on 1 June 2011 at http://www.oesr.qld.gov.au/subjects/demography/population-estimates/tables/erp-lga-reformed-qld/index.php

OESR, 2011a. *Estimated resident population by local government area, Queensland, 2000 to 2010*, Queensland Treasury, Office of Economic and Statistical Research, accessed on 1 June 2011 at http://www.oesr.qld.gov.au/subjects/demography/population-estimates/tables/erp-lga-reformed-qld/index.php

OESR, 2011b. *Index of Retail Prices in Queensland Regional Centres – May 2010*, Queensland Treasury. A WWW publication accessed on 17 August 2011 at http://www.oesr.qld.gov.au/products/publications/index-retail-prices-qld-reg-centres/index-retail-prices-reg-centres-201005.pdf

OESR, 2011c. Queensland Regional Profiles – Darling Downs Statistical Division. A WWW publication accessed on 25 March 2011 at http://statistics.oesr.qld.gov.au/qld-regional-profiles?region-type=SD_06&region-ids=4644 .

8 References

Origin Energy, 2010. Australia Pacific LNG Project, Volume 5, Attachment 43: Bergent Community Values Research – Gas Fields, Summary of stakeholder interview results, accessed on 1 June 2011 at http://www.aplng.com.au/eis

Personal Communication, 2011. Department of Communities (DoC).

Personal Communication, 2010. Snr Constable Peterson, Toowoomba Police Station.

QG, 2010a. Health Services Directory. A WWW publication accessed on 1 March 2010 at http://www.health.qld.gov.au/healthservices/byfacility.asp . Department of Health, QLD.

QG, 2010b. Education Services Directory. A WWW publication accessed on 1 March 2010 at http://education.qld.gov.au/directory/phone/ . Department of Education, QLD.

Queensland Health, 2010. *Self Reported Health Status 2010: Darling Downs-West Moreton HSD Summary Report*. Queensland Health: Brisbane.

Santos, 2010. Moonie Field – Activities. Accessed August 2010 at http://www.santos.com/ activities-browser/production-processing/moonie-.aspx

SGS, 2011. *Western Downs Community Plan - Community Facilities and Services Report*. A WWW publication accessed on 18 May at http://www.wdrc.qld.gov.au/web/guest/draft-documents

Shell. 2009. Shell Australia LNG Project Initial Advice Statement. Shell CSG (Australia) Pty Ltd, VIC.

Skills Queensland, 2011. *Surat Basin Workforce Development Plan*, Skills Queensland. accessed on 27 September 2011 at http://www.skills.qld.gov.au/suratworkforceplan.aspx

Toowoomba Regional Council, 2009. *Corporate Plan 2009–2014* accessed on 1 June 2011 at http://www.toowoombarc.qld.gov.au/docs/doc_download/2403-corporate-plan-2009-2014.html

Toowoomba Regional Council, 2010a. *Strategic Directions Overview* , accessed on 1 June 2011 at http://www.toowoombarc.qld.gov.au/docs/doc_download/2871-strategic-directions-overview.html

Toowoomba Regional Council, 2010b. *Toowoomba Regional Council Economic Brief May 2011* accessed on 17 June 2011 at http://www.toowoombarc.qld.gov.au/docs/doc_download/4168-toowoomba-regional-council-economic-brief-may-2011.html

Tourism Queensland, 2010. *Toowoomba and Golden West Regional Snapshot Year Ended June 2010*. Accessed on 17 June 2011 at http://www.tq.com.au/fms/tq_corporate/research/destinationsresearch/south_east_qld_country/toowoomba/10%20June%20Regional%20Snapshot%20Toowoomba.pdf

WDRC, 2009. *Corporate Plan 2009–2014,* accessed on 1 June 2011 at http://www.wdrc.qld.gov.au/web/guest/council/wdrc_corporate_plan.shtml

WDRC, 2011. Water Restrictions, accessed on 1 June at http://www.wdrc.qld.gov.au/web/guest/services/water_restrictions.shtml

Whitlock, G. and Carter, D., 2001. *Images of Australia*. University of Queensland Press, St. Lucia, QLD.

Yellow Pages, 2011. Accessed on 1 March 2011 at http://www.yellowpages.com.au/search/listings?clue=child+care+centres&locationClue=Goondiwindi+QLD&x=32&y=16

9

Limitations

URS Australia Pty Ltd (URS) has prepared this report in accordance with the usual care and thoroughness of the consulting profession for the use of Arrow Energy and only those third parties who have been authorised in writing by URS to rely on the report. It is based on generally accepted practices and standards at the time it was prepared. No other warranty, expressed or implied, is made as to the professional advice included in this report. It is prepared in accordance with the scope of work and for the purpose outlined in the Proposal dated 24 January 2011.

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

This report was prepared between March and October 2011 and is based on the information provided for the baseline report and consultation summaries at the time of preparation. URS disclaims responsibility for any changes that may have occurred after this time.

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

URS Australia Pty Ltd
Level 17, 240 Queen Street
Brisbane, QLD 4000
GPO Box 302, QLD 4001Australia

T: 61 7 3243 2111
F: 61 7 3243 2199

www.ap.urscorp.com