



# Appendix T1

Social impact assessment



# Executive summary

This Social Impact Assessment for the Narrabri Gas Project Environmental Impact Statement was prepared in accordance with the Secretary's environmental assessment requirements. The purpose of the assessment was to:

- identify the project area and communities likely to be affected by the project
- understand the existing socio-cultural characteristics, conditions and dynamics of the communities within the project area to provide a practical basis on which to predict potential social impacts
- identify and evaluate potential impacts on people and communities in terms of their potential occurrence, magnitude, duration, and a sense of where they might occur
- develop mitigation and management strategies to avoid or minimise potential adverse impacts and maximise benefits to the stakeholders and communities.

The project would be situated within Narrabri Shire, surrounded by a wider region including the local government areas of Gunnedah, Uralla, Glen Innes Severn, Gwydir, Moree Plains, Walgett, Coonamble, Gilgandra, Warrumbungle and Liverpool Plains.

Narrabri Shire covers approximately 13,000 kilometres and is located in the Namoi Valley in North West NSW. Narrabri Shire lies about halfway between Brisbane and Sydney and is well serviced by road, rail and air infrastructure. Narrabri Shire had a population of 12,925 at the time of the 2011 ABS Census.

The major activity centres in Narrabri Shire are Narrabri and Wee Waa, which act as service centres for the surrounding agricultural region. Other regional centres in Narrabri Shire include Boggabri and the villages Baan Baa, Bellata, Edgeroi, Gwabegar and Pilliga.

Narrabri is the largest town in Narrabri Shire with a population of 7,392. Within Narrabri Shire, Narrabri is the centre for business, shopping, sports and entertainment, providing a range of social infrastructure and services. Narrabri Hospital is the main medical service centre in Narrabri Shire, while Narrabri hosts various educational facilities including three primary schools, one secondary school, a TAFE and Narrabri Community College.

Narrabri is known as the gateway to 'the Pilliga', an agglomeration of forested areas covering over 500,000 hectares, around Coonabarabran, Baradine and Narrabri. The Pilliga is known for its recreational features and land uses, such as bird watching and bushwalking. Yarrie Lake is a key visitor attraction in the vicinity of Narrabri and is highly valued by the local community.

The main employment industry in Narrabri Shire is agriculture and forestry (21.4 per cent), followed by retail trade (9.8 per cent), and health care and social assistance (9.6 per cent). Agriculture and forestry are also major employment industries in the wider region.

The Australian Bureau of Statistics (2011) put the unemployment rate in Narrabri Shire at 5.4 per cent, slightly lower than the NSW 5.9 per cent unemployment rate. Unemployment in the Indigenous population was five times higher than the Narrabri Shire average at 26.3 per cent. The median household income in the Narrabri LGA was \$982 per week, substantially lower than the NSW median of \$1,237.

The majority of houses in Narrabri are owned or being purchased, while about 30 per cent of houses are rented. Median house prices in Narrabri have increased steadily since 1999, reaching \$325,000 in 2013. The number of house sales has been roughly constant during the same period, with sales ranging between 107 and 163 per annum. Rental vacancies have been

historically low, fluctuating between zero per cent and two per cent between 2009 and 2012, before slightly increasing between two to four per cent through 2013.

Narrabri Shire also hosts a range of short-term accommodation facilities. The townships of Narrabri and Boggabri host large accommodation camps operated by the CIVEO Corporation. Both camps have a capacity for 500 persons. The camp in Narrabri has an existing approval to expand capacity to 900 persons. The two camps have alleviated some demand on short-term accommodation, by providing accommodation for fly-in fly-out and other non-resident workers.

Approximately 1,300 workers would be employed in the initial three to four years of the project, during peak construction. After the initial three to four years, the project workforce would reduce to about 345 workers to support the operation of the project and ongoing drilling. The majority of workers during the peak construction phase would be accommodated at workers' accommodation facilities in Narrabri. The ongoing workforce for the operation of the project would primarily comprise of new or existing residents occupying dwellings in Narrabri or the immediate region.

The key potential social impacts of the project would be the impact of the project workforce on community values and housing, and the impact of project infrastructure on landholders and recreational uses of the project area. The project also has the potential to bring a range of benefits including employment and additional income where agreed with affected landholders.

A range of policies, strategies and initiatives would be implemented to minimising negative social impacts, while maximise opportunities and benefits. These policies, strategies and initiatives include:

- a procurement policy directed at local businesses, suppliers and labour to enable them to participate in the project
- workforce management strategies to promote the health, safety and wellbeing of the project workforce, and their integration with the Narrabri community
- housing and accommodation strategies to monitor conditions and adapt as needed
- a Diversity and Equal Opportunity Policy to maximise employment
- adherence to the Agreed Principles of Land Access to minimise landholder impacts
- fair and reasonable compensation to landholders for work undertaken on their properties, where agreed.

The implementation of mitigation and management measures, and the design of the project, would be effective in preventing and minimising the potential adverse social impacts of the project. The residual environmental risks presented by the project would be low in most cases. Some limited direct impacts on land use, lifestyle and amenity, and the increase in the non-resident population of Narrabri, would persist during the project construction and operation although the potential adverse social impacts of this increase would be managed. Santos would monitor social impacts throughout the construction and operation of the project, and would implement the mitigation and management measures described above in a manner that is adaptive to changed conditions or emergent social impacts.

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# 1. Introduction

## 1.1 Overview

The Proponent is proposing to develop natural gas in the Gunnedah Basin in New South Wales (NSW), southwest of Narrabri (refer Figure 1-1).

The Narrabri Gas Project (the project) seeks to develop and operate a gas production field, requiring the installation of gas wells, gas and water gathering systems, and supporting infrastructure. The natural gas produced would be treated at a central gas processing facility on a local rural property (Leewood), approximately 25 kilometres south-west of Narrabri. The gas would then be piped via a high-pressure gas transmission pipeline to market. This pipeline would be part of a separate approvals process and is therefore not part of this development proposal.

The primary objective of the project is to commercialise natural gas to be made available to the NSW gas market and to support the energy security needs of NSW. Production of natural gas under the project would deliver economic, environmental and social benefits to the Narrabri region and the broader NSW community. The key benefits of the project can be summarised as follows:

- Development of a new source of gas supply into NSW would lead to an improvement in energy security and independence to the State. This would give NSW gas markets greater choice when entering into gas purchase arrangements. Potential would also exist for improved competition on price. Improved competition on price would have flow on benefits for NSW's economic efficiency, productivity and prosperity.
- The provision of a reduced greenhouse gas emission fuel source for power generation in NSW as compared to traditional power generation.
- Increased local production and regional economic development through employment and provision of services and infrastructure to the project.
- A Gas Community Benefit Fund would be established which would receive an estimated \$120 million through the life of the project.

## 1.2 Description of the project

The project would involve the construction and operation of a range of exploration and production activities and infrastructure including the continued use of some existing infrastructure. The key components of the project are presented in Table 1, and are shown on Figure 1-1.

Table 1 Key project components

Component	Infrastructure or activity
<b>Major facilities</b>	
Leewood	<ul style="list-style-type: none"> <li>• a central gas processing facility for the compression, dehydration and treatment of gas</li> <li>• a central water management facility including storage and treatment of produced water and brine</li> <li>• optional power generation for the project</li> <li>• a safety flare</li> <li>• treated water management infrastructure to facilitate the transfer of treated water for irrigation, dust suppression, construction and drilling activities</li> <li>• other supporting infrastructure including storage and utility buildings, staff amenities, equipment shelters, car parking, and diesel and chemical storage</li> <li>• continued use of existing facilities such as the brine and produced water ponds</li> <li>• operation of the facility</li> </ul>
Bibblewindi	<ul style="list-style-type: none"> <li>• in-field compression facility</li> <li>• a safety flare</li> <li>• supporting infrastructure including storage and utility areas, treated water holding tank, and a communications tower</li> <li>• upgrades and expansion to the staff amenities and car parking</li> <li>• produced water, brine and construction water storage, including recommissioning of two existing ponds</li> <li>• continued use of existing facilities such as the 5ML water balance tank</li> <li>• operation of the expanded facility</li> </ul>
Bibblewindi to Leewood infrastructure corridor	<ul style="list-style-type: none"> <li>• widening of the existing corridor to allow for construction and operation of an additional buried medium pressure gas pipeline, a water pipeline, underground (up to 132 kV) power, and buried communications transmission lines</li> </ul>
Leewood to Wilga Park underground power line	<ul style="list-style-type: none"> <li>• installation and operation of an underground power line (up to 132 kV) within the existing gas pipeline corridor</li> </ul>
<b>Gas field</b>	
Gas exploration, appraisal and production infrastructure	<ul style="list-style-type: none"> <li>• seismic geophysical survey</li> <li>• installation of up to 850 new wells on a maximum of 425 well pads <ul style="list-style-type: none"> <li>– new well types would include exploration, appraisal and production wells</li> <li>– includes well pad surface infrastructure</li> </ul> </li> <li>• installation of water and gas gathering lines and supporting infrastructure</li> <li>• construction of new access tracks where required</li> <li>• water balance tanks</li> <li>• communications towers</li> <li>• conversion or upgrade of existing exploration and appraisal wells to production in addition to the 850 new wells</li> </ul>

Component	Infrastructure or activity
Ancillary	<ul style="list-style-type: none"> <li>• upgrades to intersections on the Newell Highway</li> <li>• expansion of worker accommodation at Westport</li> <li>• a treated water pipeline and diffuser from Leewood to Bohena Creek</li> <li>• treated water irrigation infrastructure including: <ul style="list-style-type: none"> <li>– pipeline(s) from Leewood to the irrigation area(s)</li> <li>– treated water storage dam(s) offsite from Leewood</li> </ul> </li> <li>• operation of the irrigation scheme</li> </ul>

The project is expected to generate approximately 1,300 jobs during the construction phase and sustain around 200 jobs during the operational phase; the latter excluding an ongoing drilling workforce comprising approximately 100 jobs.

Subject to obtaining the required regulatory approvals, and a financial investment decision, construction of the project is expected to commence in early 2018, with first gas scheduled for 2019/2020. Progressive construction of the gas processing and water management facilities would take around three years and would be undertaken between approximately early/mid-2018 and early/mid-2021. The gas wells would be progressively drilled during the first 20 or so years of the project. For the purpose of impact assessment, a 25-year construction and operational period has been adopted.

### 1.3 Project location

The project would be located in north-western NSW, approximately 20 kilometres south-west of Narrabri, within the Narrabri local government area (LGA) (see Figure 1-1).

The project area covers about 950 square kilometres (95,000 hectares), and the project footprint would directly impact about one per cent of that area.

The project area contains a portion of the region known as ‘the Pilliga’, which is an agglomeration of forested area covering more than 500,000 hectares in north-western NSW around Coonabarabran, Baradine and Narrabri. Nearly half of the Pilliga is allocated to conservation, managed under the NSW *National Parks and Wildlife Act 1974*. The Pilliga has spiritual meaning and cultural significance for the Aboriginal people of the region.

Other parts of the Pilliga were dedicated as State forest, and set aside for the purpose of ‘forestry, recreation and mineral extraction, with a strategic aim to “provide for exploration, mining, petroleum production and extractive industry” under the *Brigalow and Nandewar Community Conservation Area Act 2005*. The parts of the project area on state land are located within this section of the Pilliga.

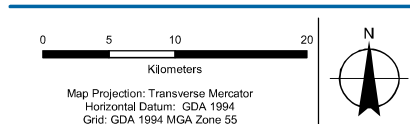
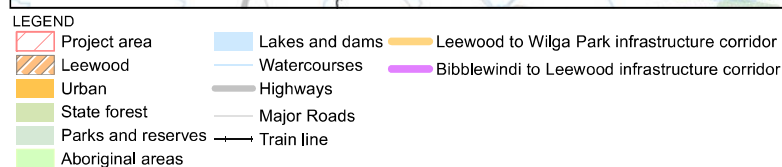
The semi-arid climate of the region and general unsuitability of the soils for agriculture have combined to protect the Pilliga from widespread clearing. Commercial timber harvesting activities in the Pilliga were preceded by unsuccessful attempts in the mid-1800s to establish a wool production industry. Resource exploration has been occurring in the area since the 1960s; initially for oil, but more recently for coal and gas.

The ecology of the Pilliga has been fragmented and otherwise impacted by commercial timber harvesting and related activities over the last century through:

- the establishment of more than 5,000 kilometres of roads, tracks and trails
- the introduction of pest species
- the occurrence of drought and wildfire.

The project area avoids the Pilliga National Park, Pilliga State Conservation Area, Pilliga Nature Reserve and Brigalow Park Nature Reserve. Brigalow State Conservation Area is within the project area but would be protected by a 50 metre surface exclusion zone.

Agriculture is a major land use within the Narrabri LGA; about half of the LGA is used for agriculture, split between cropping and grazing. Although the majority of the project area would be within State forests, much of the remaining area is situated on agricultural land that supports dry-land cropping and livestock. No agricultural land in the project area is mapped by the NSW Government to be biophysical strategic agricultural land (BSAL) and detailed soil analysis has established the absence of BSAL. This has been confirmed by the issuance of a BSAL Certificate for the project area by the NSW Government.



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Figure 1-1

## 1.4 Planning framework and structure of this report

### 1.4.1 Planning framework

The project is permissible with development consent under the *State Environmental Planning Policy (Mining, Petroleum and Extractive Industries) 2007*, and is identified as 'State significant development' under section 89C(2) of the *Environmental Planning and Assessment Act 1979* (EP&A Act) and the *State Environmental Planning Policy (State and Regional Development) 2011*.

The project is subject to the assessment and approval provisions of Division 4.1 of Part 4 of the EP&A Act. The Minister for Planning is the consent authority, who is able to delegate the consent authority function to the Planning Assessment Commission, the Secretary of the Department of Planning and Environment or to any other public authority.

This Social Impact Assessment (SIA) identifies the potential social issues associated with construction and operation of the Narrabri Gas Project and addresses the social component of the Secretary's Environmental Assessment Requirements for the project (refer to *General Requirements and Attachment 2 of the Secretary's Environmental Assessment Requirements*). The assessment will be used to support the EIS for the project. The requirements addressed in this report include, an assessment of the likely social impacts of the development, such as:

- Impacts on landholders
- Workforce impacts – training and draw of workforce from other industries
- Demand on social infrastructure
- Housing and accommodation impacts
- Impacts on community values, lifestyle and amenity

### 1.4.2 Secretary's Environmental Assessment Requirements

The Secretary's Environmental Assessment Requirements for the Narrabri Gas Project include the following requirements related to social impact assessment:

- an assessment of the likely social impacts of the development
- an assessment of the likely economic impacts of the development, paying particular attention to:
  - economic benefits of the project for the State and region
  - the demand for the provision of local infrastructure and services having regard to Narrabri Council's requirements as part of submissions to the Secretary's Environmental Assessment Requirements.

### 1.4.3 Structure of report

The report is structured as follows:

- **Chapter 1 – Introduction.** This chapter introduces the project and the proponent and describes the project area.
- **Chapter 2 – Methodology.** This chapter defines the study area assessed in this report and describes the steps undertaken in the assessment.



- **Chapter 3 – Legislative context.** This chapter outlines the relevant Commonwealth and State legislation relating to the assessment. Guidelines and assessment criteria (where applicable) relevant to the gasfield construction, operation and decommissioning are also identified.
- **Chapter 4 – Existing environment.** This chapter describes the existing environmental values of the study area relevant to the social aspects; including results of desktop assessments and field investigations (where applicable).
- **Chapter 5 – Workforce profile.** This chapter presents information on the workforce requirements for the project during construction and operations phases.
- **Chapter 6 - Impact assessment.** This chapter examines the potential environmental impacts associated with the construction and operation of the project.
- **Chapter 7 – Mitigation measures.** This chapter outlines the proposed mitigation strategies to be implemented during the life of the project to manage the potential environmental impacts.
- **Chapter 8 – Conclusion.** This chapter presents a conclusion to the report and presents the next steps in the advancement of the project.





## 2. Methodology

### 2.1 Purpose and key steps in the social impact assessment

This Social Impact Assessment (SIA) for the Narrabri Gas Project EIS was prepared in accordance with the project's environmental assessment requirements.

The purpose of the SIA was to:

- identify the project area and communities likely to be affected by the proposed development
- understand the existing socio-cultural characteristics, conditions and dynamics of the communities within the project area to provide a practical basis on which to predict potential social impacts
- identify and evaluate potential impacts on people and communities in terms of their potential occurrence, magnitude, duration, and a sense of where they might occur
- develop mitigation and management strategies to avoid or minimise potential adverse impacts and maximise benefits to the stakeholders and communities.

To achieve its purpose, the SIA methodology was developed based on the following requirements and principles:

- The Secretary's Environmental Assessment Requirements for the project
- The International Association for Impact Assessment's (IAIA), International Principles for Social Impact Assessment (IAIA 2003).

Key steps followed to identify and assess the social impacts were:

- scoping
- establishing a social baseline
- impact identification and assessment
- development of mitigation measures and management strategies.

Tasks undertaken to complete each step are detailed in Sections 2.2 to 2.5. All steps were underpinned by a stakeholder engagement process (refer to Section 2.6).

### 2.2 Scoping

Scope of the SIA was shaped by:

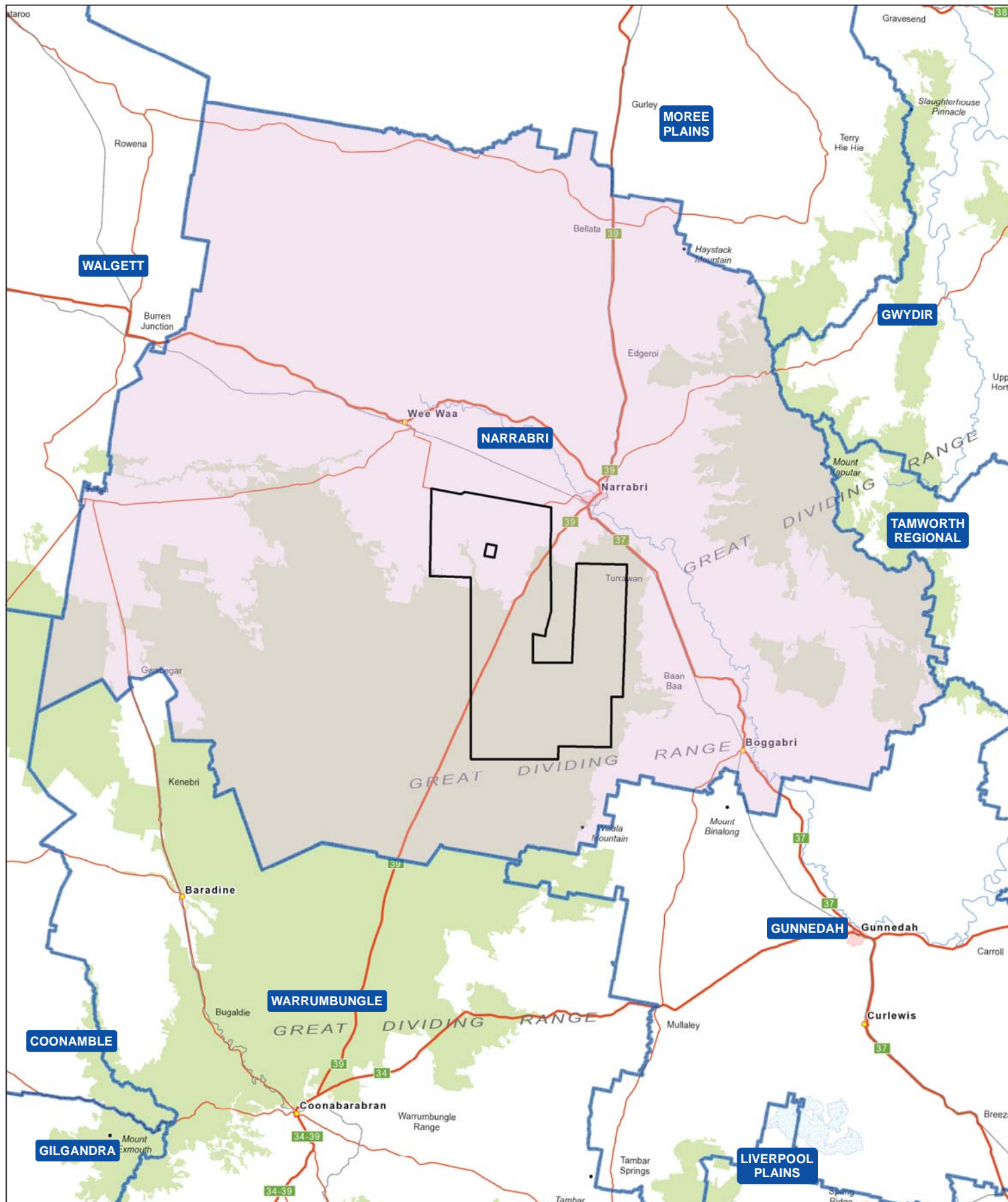
- the project description (as detailed in chapter 6 of the EIS)
- the Secretary's Environmental Assessment Requirements (refer to Section 1.4.2)
- the Study area identifying the geographical boundaries of the project's social and cultural area of influence
- preliminary identification of social issues in the study area.

With the exception of the project description, other aspects of SIA scoping are detailed in Sections 1.4.2 and 2.2.

### 2.2.1 Study area

Social impacts are often not contained within the immediate area of the project components, hence the study area for the SIA is determined on the basis of the project location and footprint and its social and cultural interactions with the surrounding communities. Generally, the area of social and cultural influence is determined by the project footprint and its interaction with the immediate neighbouring communities, interaction of project activities and workforce with nearest urban localities and interaction of project activities with the wider region. With this in mind the project study area for the SIA is defined as:

- **Local Study Area** – This includes the project footprint area (project area as shown in Figure 1-1). The area of land in the project area is approximately 95,000 hectares, of which approximately 64,000 hectares (65 per cent of the total project area) is located in the state forest, native forest and crown reserve, approximately 26,000 hectares (28 per cent of the total project area) is grazing and cropping land and the remaining 5,000 hectares (7 per cent of the total project area) is lakes, rivers, farm dams, quarry, urban/rural residential, travelling stock routes, tree corridor and infrastructure (roads, airstrip).
- **Regional Study Area** – This includes the communities in the immediate vicinity of the project area which would provide workforce, essential social infrastructure and services, resources and networks for the workforce and project. The regional study area is defined as the Narrabri Local Government Area (LGA) with focus on key urban locality of Narrabri (refer to Figure 2-1).
- **Wider area of influence** – it is envisaged that the project will be serviced by the wider region from a point of view of supply of workforce, goods and services. Consistent with the economic impact report (ACIL Allen Consulting, 2016) included in the Narrabri Gas Project EIS, the wider area of influence identified for the SIA includes the following LGAs (refer to Figure 2-2):
  - Gunnedah
  - Liverpool Plains
  - Tamworth
  - Uralla
  - Armidale Dumaresq
  - Glen Innes Severn
  - Inverell
  - Gwydir
  - Moree Plains
  - Walgett
  - Coonamble
  - Gilgandra
  - Warrumbungle
  - Dubbo.



**LEGEND**  
 Project area  
 Local Government Areas (LGA)  
 Narrabri LGA

0 5 10 20  
 Kilometers  
 Map Projection: Transverse Mercator  
 Horizontal Datum: GDA 1994  
 Grid: GDA 1994 MGA Zone 55



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Regional study area for the SIA

Figure 2-1





**LEGEND**

- Project area
- Local Government Areas (LGA)
- Narrabri LGA

0 20 40 80  
Kilometers

Map Projection: Transverse Mercator  
Horizontal Datum: GDA 1994  
Grid: GDA 1994 MGA Zone 55



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Wider area of influence for the SIA

Figure 2-2

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Data source: NSW Department of Lands: DTDB and DCD - 2012-13. Santos: Operational and Base Data - 2013. Geoscience Australia: Topographic Base Map - 2014. Created by: sfoddy

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## 2.2.2 Preliminary scoping of project related social issues

As part of the scoping stage a preliminary scoping of social issues was undertaken to develop an understanding of the range of issues that may need to be assessed, determine the scope of the social baseline and identify stakeholders for SIA related engagement. Identification of issues at this stage of the SIA did not mean that these impacts will necessarily occur as a result of the project, and also did not preclude the potential for additional issues to arise at the impact identification stage.

It was understood that issues identified may include both real and perceived issues, that is, impacts that may actually occur, or may be perceived to occur by stakeholders. Both types of impacts are important as each can influence the overall sense of wellbeing as well decisions made by, and choices perceived to be available to, stakeholders.

The scoping exercise was based on:

- review of the project description
- an EIS team environmental risk/scoping workshop held in December, 2013, which included contributions from the GHD EIS team and Santos approvals team
- review of relevant literature such as other SIA documents and research reports relevant to the project area and published in the period between 2010 – 2014; including:
  - The Regional Plan 2011-2015 Northern Inland NSW
  - The Narrabri Shire Community Strategic Plan Towards 2022
- regional knowledge of the Narrabri area shared by the Santos Narrabri Office team and GHD SIA team.

Issues identified through the initial scoping exercise are listed in Table 2.

Table 2 Preliminary scoping of project related social issues

Issue Category	Issues
<b>Issues in local study area</b>	
<i>Note</i>	<i>As defined in Section 2.2.1, the majority (approximately 70 per cent) of the local study area is located in the state forest and native forest and conservation areas, therefore the social issues identified below are generally limited to 30 per cent of the project area which is located in agriculture land and urban land type of land use.</i>
Property and livelihood	<ul style="list-style-type: none"><li>• Issues related to location of project infrastructure on the property – sites and places within the local study area important to landholders and their families, issues associated with clearing of agricultural land, crops or native vegetation and issues associated with the disruption to property infrastructure such as internal property roads, tracks, creek crossings, fences and water supplies (including reticulation systems for livestock water)</li><li>• Impeded access/severance - permanent or temporary changes to existing land use, such as changes to access to some parts of the property due to construction and location of project infrastructure</li><li>• Loss of agricultural productivity and therefore livelihood</li><li>• Potential competition for local labour required for the Narrabri Gas Project and other industries in the region and potential increase in the cost of labour impacting on viability of agricultural activities</li></ul>



Issue Category	Issues
	<ul style="list-style-type: none"> <li>• Potential spread of weeds and weed seeds (by vehicles and workers) into landholder properties during construction and operation (maintenance) which may affect grazing pastures and stock</li> <li>• Impact on property values</li> <li>• Financial gain from compensation agreements</li> </ul>
Lifestyle and amenity	<ul style="list-style-type: none"> <li>• Potential demand on time of the stakeholders and landholders to participate in project consultation activities (land access and acquisition activities, as well as the environmental approvals process)</li> <li>• Loss of privacy due to presence of project workforce during construction and occasionally during operation</li> <li>• Safety issues due to changes to traffic conditions on internal property roads and damage to internal roads or fences during construction</li> <li>• Emotional stress and anxiety associated with certainty and timeframes of the project development</li> <li>• Changes to quiet rural lifestyle</li> <li>• Changes to visual amenity, noise levels and air quality affecting residents and their businesses</li> </ul>
<b>Issues in regional study area and wider area of influence</b>	
Issues related to demographics, local businesses and employment	<ul style="list-style-type: none"> <li>• Temporary increase in population during construction phase due to presence of non-resident workforce in the region (fly-in fly-out [FIFO] and drive-in drive-out [DIDO] workers)</li> <li>• Temporary or permanent increase in population during the operations phase due to in-migration of workforce</li> <li>• Increase in local employment and business opportunities</li> <li>• Retention of younger local population within the region through potential employment and business development opportunities</li> <li>• Increased demand for labour, with consequent potential shortfalls in the labour market and competing demands from local business/industries and the project</li> <li>• Issues related to staff attraction and retention in local businesses due to workforce draw into the higher wage paying resource sector and higher cost of living in the region</li> <li>• Impacts on other local industries</li> </ul>
Issues related to workforce housing and accommodation	<ul style="list-style-type: none"> <li>• Increase in demand for short term and long term housing and accommodation</li> <li>• Consequent impacts on housing availability and affordability, with increased demand leading to decreased housing availability and increased housing rents and prices further leading to housing stress for vulnerable groups</li> </ul>

Issue Category	Issues
Issues related to infrastructure (including social infrastructure and services)	<ul style="list-style-type: none"> <li>Increased demand on existing social infrastructure services and facilities including medical health and emergency services due to increase in workforce related population</li> </ul>
Community values, lifestyle and amenity	<ul style="list-style-type: none"> <li>Perceived safety and security risks including traffic safety due to increase in traffic on the local road network and driver fatigue</li> <li>Impacts on the recreational values and use of the region</li> </ul>

## 2.3 Social baseline

### 2.3.1 Regional social baseline

As described in the study area (Section 2.2.1) the regional study area includes Narrabri LGA with focus on urban locality of Narrabri. The regional social baseline was developed using a combination of qualitative and quantitative information as well as a combination of primary and secondary data. Data and information was gathered from various sources as listed below:

- Australian Bureau of Statistics (ABS) Census 2011 data
- other SIAs relevant to the study area
- websites and publications of local governments in the regional study area, state agencies covering health, education, housing, communities and emergency services
- real estate websites
- media reports.

Where possible the regional baseline was supplemented with information from stakeholder consultations.

The regional baseline described the following community characteristics and issues (not particularly in this order):

- community lifestyle, values and aspirations
- demographic characteristics, including
  - Total population; population trends, growth and forecasts
  - Age and gender profile
  - Family composition
  - Cultural and ethnic composition
  - Employment and unemployment profile
  - Employment by industry and occupation profile
- housing availability, affordability and costs
- social and community infrastructure, including:
  - Health services and facilities
  - Community support services
  - Education and training facilities.

### 2.3.2 Wider area of influence social baseline

As described in the study area (Section 2.2.1) the wider area of influence includes 14 LGAs surrounding Narrabri. From the SIA perspective they are relevant from the point of view of workforce availability within the region and access to higher order social infrastructure services. References to the wider area of influence have been made in the regional baseline under employment profiling and social infrastructure (Sections 4.4.1 and 4.4.5).

## 2.4 Impact identification and assessment

The conceptual description of social impacts developed by van Schooten *et al.* (2003) was used for this SIA. Van Schooten *et al.* (2003) described a social impact as something that is actually experienced by humans in either a physical or perceptual sense and results directly from the social change processes that are invoked by a project. For example, population growth or the presence of construction and operation workers in the area, are social change processes that may lead to 'first order' social impacts experienced by the local community. It should be noted that perceived impacts are as important as actual (measurable) impacts as people may modify their behaviours or experience discomfort simply because of a perceived impact.

Given the potential nature of social impacts resulting from the Narrabri Gas Project during its construction and operational stages, relevant International Principles for Social Impact Assessment were adopted, as developed by the International Association of Impact Assessment (IAIA). These included the precautionary and uncertainty principles when predicting social impacts (IAIA, 2003). This means that even though some impacts have not been fully confirmed, they were still considered as part of the assessment.

The SIA is reflective of social conditions in the study area at the time when the social baseline was developed and empirical information was collected via SIA stakeholder consultations (February – August 2014). Where possible, references are made to past trends and deviations from those trends. It is acknowledged that the predicted social impacts and their assessment may change with changes in the socio-economic and political context, changes in the perception of the stakeholders, as more information about the project is known (during detailed design), with changes in natural gas from coal seam technology, and when the project is actually being constructed and operated.

Potential impacts and opportunities were identified through data triangulation, essentially meaning that multiple sources of information were used to identify the social impacts. Impact identification was informed by:

- targeted social impact assessment stakeholder consultations undertaken during the SIA process
- social baseline developed for the study area
- a desktop review of recent social impact assessment reports of similar projects and their impacts on communities similar to the study area
- other Narrabri Gas Project EIS technical studies namely the Agricultural Impact Statement (GHD 2016a), Landscape and Visual Impact Assessment (GHD 2016b), Noise and Vibration Impact Assessment (GHD 2015), Air Quality Impact Assessment (Air Environmental Consulting, 2015), Economic Impact Report (ACIL Allen Consulting, 2016), Traffic and Transport Impact Assessment (GHD 2016c), Aboriginal Cultural Heritage Assessment (Central Queensland Cultural Heritage Management, 2015) and Hazard and Risk Assessment (GHD 2016d).



Once the impacts were identified, they were categorised based on the type or nature of each impact, as follows:

- positive impact – where the impacted stakeholders would be ‘better off’ due to the proposed development
- neutral impacts – where there would be no change to the function of the stakeholder impacted
- negative impacts – where the impacted stakeholders would be ‘worse off’ due to the proposed development.

The negative impacts were further assessed to determine their impact significance. The significance of negative social impacts on social receptors, systems and resources was assessed using a consistent approach aligned with the whole of the EIS, where the impact significance was evaluated on a likelihood and consequence matrix. The likelihood and consequence criteria as applicable to the social context are detailed in Table 3 and Table 4. The impact significance matrix is shown in Table 5.

**Table 3** Likelihood criteria

Likelihood level	Description
Almost certain Common	Will occur, or is of a continuous nature, or the likelihood is unknown. There is likely to be an event at least once a year or greater (up to ten times per year). It often occurs in similar environments. The event is expected to occur in most circumstances.
Likely Has occurred in recent history	There is likely to be an event on average every one to five years. Likely to have been a similar incident occurring in similar environments. The event will probably occur in most circumstances.
Possible Could happen, has occurred in the past, but not common	The event could occur. There is likely to be an event on average every five to twenty years.
Unlikely Not likely or uncommon	The event could occur but is not expected. A rare occurrence (once per one hundred years).
Remote Rare or practically impossible	The event may occur only in exceptional circumstances. Very rare occurrence (once per one thousand years). Unlikely that it has occurred elsewhere; if it has occurred, it is regarded as extremely unique.

Table 4 Consequence criteria

Consequence category	Environmental description	Social/community/reputation description
Critical Severe, widespread long-term effect	Destruction of sensitive environmental features. Severe impact on ecosystem. Impacts are irreversible and /or widespread. Regulatory and high-level government intervention/action. Community outrage expected. Prosecution likely. Financial loss in excess of \$100 million.	Irreversible changes to social characteristics and values of the communities of interest or community has no capacity to adapt and cope with change.
Major Wider spread, moderate to long-term effect	Long-term impact of regional significance on sensitive environmental features (e.g. wetlands). Likely to result in regulatory intervention/action. Environmental harm either temporary or permanent, requiring immediate attention. Community outrage possible. Prosecution possible. Financial loss from \$50 million to \$100 million.	A long-term recoverable change to social characteristics and values of the communities of interest or community has limited capacity to adapt and cope with change. Long-term opportunities emanating from the project.
Moderate Localised, short-term to moderate effect	Short-term impact on sensitive environmental features. Triggers regulatory investigation. Significant changes that may be rehabilitated with difficulty. Repeated public concern. Financial loss from \$5 million to \$50 million.	Medium-term recoverable changes to social characteristics and values of the communities of interest or community has some capacity to adapt and cope with change. Medium term opportunities emanating from the project.
Minor Localised short-term effect	Impact of fauna, flora and /or habitat but no negative effects on ecosystem. Easily rehabilitated. Requires immediate regulator notification. Financial loss from \$500,000 to \$5 million.	A short-term recoverable change to social characteristics and values of the communities of interest or community has substantial capacity to adapt and cope with change. Short-term opportunities emanating from the project.
Negligible Minimal impact or no lasting effect	Negligible impact on fauna/flora, habitat, aquatic ecosystem or water resources. Impacts are local, temporary and reversible. Incident reporting according to routine protocols. Financial losses up to \$500,000.	Local, small-scale, easily reversible change on social characteristics or values of the communities of interest or communities can easily adapt or cope with change. Local small-scale opportunities emanating from the project that the community can readily pursue and capitalise on.

Table 5 Impact significance matrix

Consequence	Likelihood				
	Almost certain	Likely	Possible	Unlikely	Remote
<b>Critical</b>	Very High	Very High	High	High	Medium
<b>Major</b>	Very High	High	High	Medium	Medium
<b>Moderate</b>	High	Medium	Medium	Medium	Low
<b>Minor</b>	Medium	Medium	Low	Low	Very Low
<b>Negligible</b>	Medium	Low	Low	Very Low	Very Low

## 2.5 Impact management strategies

Management strategies are developed in response to the identified impacts, with emphasis on mitigating/managing impacts with higher order significance rating. At the first instance the mitigation/management strategies were developed using the following hierarchy:

- avoid impacts where possible through design control measures
- minimise impacts which cannot be avoided; for example, by altering the timing of the activity that may cause the impact, reducing the duration of an activity, or reducing the footprint
- manage impacts; by improving capacity/stock of impacted entities, rehabilitating disturbed areas through restoring pasture on completion of construction or management measures such as through workforce behaviour management
- offset or compensate impacts; for example, through compensation for land access.

It is acknowledged that social impacts arising from the project can change with changes to the socio-economic and political context of the region and changes in technology used for extraction of natural gas from coal seams. Given the 25-year assessment life span of the project, it is not possible to predict and manage social impacts over the entire life of the project, therefore the social impact management strategies, are based on 'adaptive' management principles, which allow ongoing monitoring of impacts and provide flexibility to accommodate changes to social impacts.

Following consideration of impact management strategies, residual impacts were determined and assessed using the risk assessment matrix, and where required, further management mechanisms were developed.

Key sources for information to develop impact management strategies included community and key stakeholder consultations, specialist technical advice from other EIS studies and workshops with Santos.

## 2.6 SIA related stakeholder engagement

In line with good practice, stakeholder engagement was integrated into the SIA process. SIA consultations with local and regional stakeholders were held between February and August 2014. Stakeholder engagement for the SIA was carried out in the form of one on one, face to face meetings or telephone interviews with key stakeholders.

A list of stakeholder consulted for the SIA and purpose of consultations is provided in Table 6.

Table 6 Stakeholder consulted during the SIA process

Organisation/groups	Timing	Purpose
Internal stakeholders – Santos Narrabri Stakeholder Engagement Team Santos Narrabri Office Manager Santos Narrabri Land Access Advisors	February, 2014	Background on Santos' existing stakeholder engagement, Santos social and environmental policies applicable to the project, impact management strategies and commitments in place
NSW Fire and Rescue Services	February, 2014	Baseline information, existing issues, potential impacts and management measures related to emergency services capacity and issues
Rural Fire Services	February, 2014	Baseline information, existing issues, potential impacts and management measures related to emergency services capacity and issues
NSW Ambulance Services (Narrabri)	February, 2014	Baseline information, existing issues, potential impacts and management measures related to emergency services capacity and issues
Narrabri Visitor Information Centre	February, 2014	Baseline information, existing issues, potential impacts and management measures related to recreational activities and tourism in the region
BEST Employment and Job Link (employment and training services)	February, 2014	Baseline information, existing issues, potential impacts and management measures related to local employment and training availability
NSW Business Chamber and Agribusiness Careers and Professionals	February, 2014	Baseline information, existing issues, potential impacts and management measures related to local employment and training availability
Local Doctor (G P)	February, 2014	Baseline information, existing issues, potential impacts and management measures related to health and medical services capacity and issues
Narrabri Shire Council	February, 2014 April, 2014 August, 2014	Baseline information, existing issues, potential impacts and management measures related to community values, aspirations, demographic change over time, housing issues and supply, workforce availability and training opportunities, local/regional economic development, other industries in the region, land and landholder issues
NSW Farmers Association	February, 2014	Baseline information, existing issues, potential impacts and management measures related to land and landholder issues and impacts on agriculture
Narrabri Aboriginal Land Council	February, 2014	Baseline information, existing issues, potential impacts and management measures related to local Indigenous community

Organisation/groups	Timing	Purpose
Real Estate Agency	February, 2014	Baseline information, existing issues, potential impacts and management measures related to housing availability and affordability
Narrabri Chamber of Commerce	February, 2014	Baseline information, existing issues, potential impacts and management measures related to local economic development and local employment, other industries in the region
Narrabri Community Health	February, 2014	Baseline information, existing issues, potential impacts and management measures related to health services capacity and issues
Narrabri TAFE	February, 2014	Baseline information, existing issues, potential impacts and management measures related to local training opportunities
Community group representative	February, 2014	Baseline information, existing issues, potential impacts and management measures community sentiment, community values and aspirations and impacts perceived by the community
Community Consultative Committee (CCC)	April, 2014	Presentation and discussion of potential social impacts of the project and management strategies related to community values, aspirations, demographic change over time, housing issues and supply, workforce availability and training opportunities, local/regional economic development, other industries in the region, land and landholder issues
Narrabri District Health Service	July, 2014	Baseline information, existing issues, potential impacts and management measures related to health and medical services
NSW Police (Narrabri)	July, 2014	Baseline information, existing issues, potential impacts and management measures related to security issues
Local Land Services	August, 2014	Baseline information, existing issues, potential impacts and management measures related to land and landholder issues and impacts on agriculture
Landholders	2014	Landholder perceptions were gathered through consultation with representatives such as NSW Farmers Association, CCC, Narrabri Shire Council, Santos Land Access Advisors and landholder consultations undertaken for EIS technical studies such as Agricultural Impact Statement (GHD 2016a) and CSG and Irrigated Agriculture Study undertaken by Santos.



### 3. Legislative context

The SIA has been undertaken as part of the EIS under Division 4.1 of Part 4 of the NSW *EP&A Act* (1979). In NSW the definition of environment under the *EP&A Act* (1979) includes “all aspects of the surroundings of humans, whether affecting any human as an individual or in his or her social groupings.” In addition, in NSW the Environmental Planning and Assessment Regulation (2000) clause 228 specifies a list of environmental issues to be assessed, some of which directly or indirectly include social aspects, such as:

- any environmental impact on a community
- any transformation of a locality
- any reduction of the aesthetic, recreational, scientific or other environmental quality or value of a locality
- any effect on a locality, place or building having aesthetic, anthropological, archaeological, architectural, cultural, historical, scientific or social significance or other special value for present or future generations
- any risk to the safety of the environment
- any reduction in the range of beneficial uses of the environment
- any pollution of the environment
- any environmental problems associated with the disposal of waste
- any increased demands on resources (natural or otherwise) that are, or are likely to become, in short supply
- any cumulative environmental effect with other existing or likely future activities (NSW Government, 2005).

The SIA has been developed based on this description of the environment and scoped based on the Secretary's Environmental Assessment Requirements.





## 4. Existing environment

### 4.1 Communities included in the study area

As defined in the regional study area in Section 2.2.1 this baseline describes community characteristics for the Narrabri LGA with a focus on the key urban locality of Narrabri Town, which is referred to in ABS Census data as Narrabri State Suburb (SSC). Where relevant, to provide appropriate socio-economic context the baseline presents and discusses population data (Section 4.4.1) and labour force, employment and unemployment data (Section 4.4.5) for LGAs included in the wider area of influence namely, Gunnedah, Liverpool Plains, Tamworth, Uralla, Armidale Dumaresq, Glen Innes Severn, Inverell, Gwydir, Moree Plains, Walgett, Coonamble, Gilgandra, Warrumbungle and Dubbo.

### 4.2 Overview of Narrabri LGA

The Narrabri Shire covers approximately 13,000 kilometres and is located in the Namoi Valley in North West NSW (Narrabri Shire Council 2011a). The Shire had a population of 12,925 persons at the time of the 2011 ABS Census (ABS Census 2011k). The major activity centres in the Narrabri LGA are Narrabri (SSC) and Wee Waa (SSC) which act as service centres for the surrounding agricultural region. The local government area also consists of the town of Boggabri and the villages of Baan Baa, Bellata, Edgeroi, Gwabegar and Pilliga (Narrabri Shire Council 2011a).

Narrabri Shire is located halfway between Brisbane and Sydney and is well serviced by road, rail and air. The town of Narrabri is positioned where the Newell and Kamilaroi Highways intersect. The Shire is serviced by passenger and freight rail, flight service between Sydney and Narrabri (this service is often interrupted) and an inland port (Narrabri Shire Council 2014).

The Shire is renowned for the production of some of the world's highest quality cotton, wheat, lamb and beef. The strategic location of the Narrabri LGA has driven the development of its agriculture industries and more recently growth in coal mining and gas exploration activity.

#### **Narrabri state suburb**

The town of Narrabri is the largest in the Narrabri Shire with 7,392 persons at the time of the 2011 ABS Census (ABS Census 2011l). The town is surrounded by agricultural land and has the Namoi River flowing through its centre (Narrabri Shire Council 2014).

Narrabri is the centre for business, shopping, sports and entertainment (Narrabri Shire Council 2014). Narrabri Hospital is the main medical service centre for Narrabri Shire as well as the wider area. The town also has three primary schools, one secondary school, a TAFE and Narrabri Community College, a variety of shops, a library, a swimming pool, a large number of ovals, sporting fields and recreational parks, a theatre and a skate park (Narrabri Shire Council 2014). Narrabri is also the transport hub of the Shire as it is situated at the junction of the Newell and Kamilaroi Highways, has freight and rail services to major cities, an inland port and an airport (Narrabri Shire Council 2014).

#### **Community values, identity and aspiration of the Narrabri LGA**

The values, identity and aspirations of the Narrabri LGA and Narrabri town are summarised in Table 7.

Table 7 Community values, identity and aspirations in Narrabri LGA

LGA / urban centre	Community values, identity and aspirations
Narrabri LGA	<ul style="list-style-type: none"> <li>• Protects past and existing industry, but promotes future and emerging industries</li> <li>• Is well governed and financially sustainable</li> <li>• Promotes and preserves culture and history</li> <li>• Is proud of its identity and its people</li> <li>• Is vibrant, safe and inviting</li> <li>• Is proactive, healthy and encourages participation in physical activity</li> <li>• Is accessible by all and promotes inclusivity</li> <li>• Has access to government services and opportunities</li> <li>• Wants the area to grow and develop, however not at the cost of community diversity or by displacing people who already live in the area</li> </ul>
Narrabri town	<ul style="list-style-type: none"> <li>• Has a strong sense of community?</li> <li>• Values the environment and recognises that it plays a key role in the identification of the region</li> <li>• Is the centre for business, shopping, sports and entertainment in the Narrabri LGA</li> </ul>

Source: Narrabri Shire Council 2014

### Community lifestyle and recreation

Narrabri Shire Council provides and maintains numerous leisure facilities across the LGA (Narrabri Shire Council 2014). These include libraries, swimming pools and the Narrabri Aquatic Centre Indoor Pool, the Crossing Theatre, equestrian activities, skate parks, sporting fields and ovals, and recreation reserves and parks featuring playgrounds, walking tracks, boat ramps, horse exercise areas and BBQ facilities (Narrabri Shire Council 2014). Table 17 provides more details on community, cultural and recreational facilities.

Key tourist sites and recreation opportunities within the wider area include the Pilliga Forest, Mount Kaputar National Park, Yarrie Lake, artesian bore baths, historical museums, Siding Spring Observatory, the CSIRO Australia Telescope, camping and farm holidays, and bushwalking and birdwatching (Narrabri Shire Council 2014). Local produce from the surrounding agricultural region is also a draw card.

### 4.3 Key existing opportunities and challenges in the study area

Based on a review of planning and policy documents Table 8 identifies the existing opportunities and challenges facing the town of Narrabri, wider Narrabri LGA and key industries in the region i.e. the extractive industry. The policies and plan reviewed were:

- Narrabri Shire Community Strategic Plan towards 2022 (Narrabri Shire Council 2012)
- Narrabri Shire Community Strategic Plan towards 2023 (Narrabri Shire Council 2013)
- Narrabri Shire Council Extractive Industries Policy 2013 (Narrabri Shire Council 2013a).

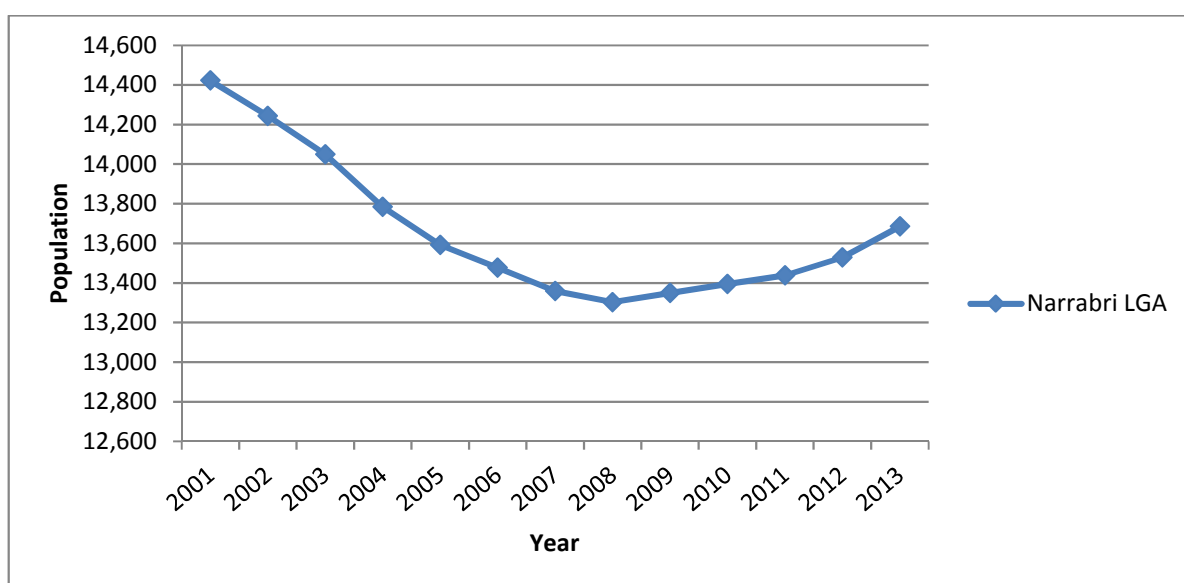
Table 8 Existing opportunities and challenges in the study area

Opportunities	Challenges
<b>Narrabri town and Narrabri LGA</b>	
<ul style="list-style-type: none"> <li>• Strong economic diversity-particularly with agriculture and mining industries</li> <li>• Industry attraction and support for growth</li> <li>• Resource sector expansion-rich resource area</li> <li>• Transport hub</li> <li>• Skilled, stable and qualified workforce</li> <li>• Community and residential development opportunities</li> </ul>	<ul style="list-style-type: none"> <li>• Shortfalls in some community facilities and services (e.g. sporting facilities, health services and specialist equipment, public transport)</li> <li>• Increased demand for all types of housing and for temporary accommodation</li> <li>• Affordability of housing and services</li> <li>• Managing cumulative impacts of resource projects on local community</li> <li>• Transient and non-resident population</li> <li>• May experience shortfalls in infrastructure provision including roads, water, waste, electricity and communications.</li> <li>• Impact of ongoing drought conditions amplifying other economic concerns</li> <li>• SIA consultations with key stakeholders revealed that community cohesion related to non-residential workforce living in camp style facilities is a challenge, with the community preferring locally based workforce</li> </ul>
<b>Extractive industries</b>	
<ul style="list-style-type: none"> <li>• Provision of energy</li> <li>• Direct and indirect employment leading to</li> <li>• Regional prosperity and wealth creation</li> <li>• Retention of young people and population growth in the shire</li> <li>• Improved infrastructure</li> <li>• Increased local expenditure on goods and services</li> <li>• Private sector funding for community development</li> <li>• Increased gross regional product</li> <li>• Increased gross state and national product</li> <li>• Tax revenue streams to government</li> </ul>	<ul style="list-style-type: none"> <li>• Impact on the natural landscape</li> <li>• Land use changes</li> <li>• Impact on community health</li> <li>• Impact on the availability of affordable housing</li> <li>• Result in other social impacts as mentioned above</li> </ul>

## 4.4 Demographic characteristics of the study area

### 4.4.1 Population

At the time of Census 2011 the estimated resident population of Narrabri LGA was 13,438 persons, which was a decrease of 39 persons since 2006 and 984 persons since 2001 (refer to Table 9). According to ABS estimates (as at April 2014), the Narrabri LGA had a resident population of 13,685 people. Figure 4-1 below shows that the population in the Shire declined from 2001 to 2008, but then began to recover from 2008 as a result of economic growth created primarily by the resources sector. The Shire currently supports a population growth of around 1.2 per cent over the previous year. Population growth for the period from 2008 to 2013 averaged 0.6 per cent per annum in the LGA representing a total population increase of 382 people over the five years (ACIL Allen Consulting, 2016 and ABS, 2014).



Source: Data for this graph was sourced from ABS 2014

Figure 4-1 Resident population in Narrabri LGA 2001 – 2013

At the time of the 2011 Census, 10.3 per cent of the Narrabri LGA population identified themselves as being of Aboriginal and/or Torres Strait Islander (Indigenous) origin or both, compared with 9.0 per cent at the time of the 2006 Census and 7.5 per cent at the time of the 2001 Census (ABS Census 2011r). The Narrabri LGA had a higher proportion of Indigenous population when compared to NSW. NSW also experienced increases in the Indigenous population with 2.5 per cent in 2011, 2.0 per cent in 2006 and 1.8 per cent in 2001 (ABS Census 2011t).

The populations of half of the LGAs which encompass the wider area of influence for the project generally showed decreases and half displayed increases from 2001 to 2011. Generally, the LGAs to the east of the regional study area experienced increases while the LGAs further west experienced decreases.

## Population of key urban centre in Narrabri LGA – Narrabri town

The key urban centre in the regional study area is the township of Narrabri (SSC). The population data for Narrabri town is shown in Table 9 for 2006 and 2011. Data for 2001 was not available at the state suburb level and has therefore not been included. In 2006, 7,419 people were usual residents in Narrabri (SSC) (ABS Census 2006). Of the total population, 9.2 per cent were Aboriginal and Torres Strait Islander people (ABS Census 2006). At the time of the 2011 Census, there were 7,392 people in Narrabri (SSC) with Aboriginal and Torres Strait Islander people making up 10.3 per cent of the population (ABS Census 2011). From 2006 to 2011 Narrabri's population decreased by 27 persons while the Aboriginal and Torres Strait Islander population increased by 81 persons.

### 4.4.2 Age and gender

According to Census 2011 data, the Narrabri LGA's age profile was characterised by the following features (refer to Figure 4-2):

- 21.6 per cent of persons were aged 0 to 14 years, 12 per cent were aged 15 to 24 years, 24.3 per cent were aged 25-44 years, 26.1 per cent were between 45 and 64 years, and 16 per cent were 65 years and over
- The median age was 39 years
- There were a higher proportion of people in the older age groups of 45 to 79 when compared with the State (incorporating the working age group of 45-64 years)
- There were a higher proportion of children in the 14 years and under age group in comparison to the NSW percentages
- 50.1 per cent of the population were male and 49.9 per cent were female
- The largest percentage of females was in the 0-4 years' age group (7.8 per cent) while the largest percentage of males were in the 10-14 years' age group (8.0 per cent).

The age and gender profile for Narrabri town also shows a high proportion of working age groups with 24.3 per cent in the age group of 25-44 years and 26.1 per cent in the age group of 45-64 years. The median age for Narrabri town was noted to be lower than the overall LGA at 38 years.

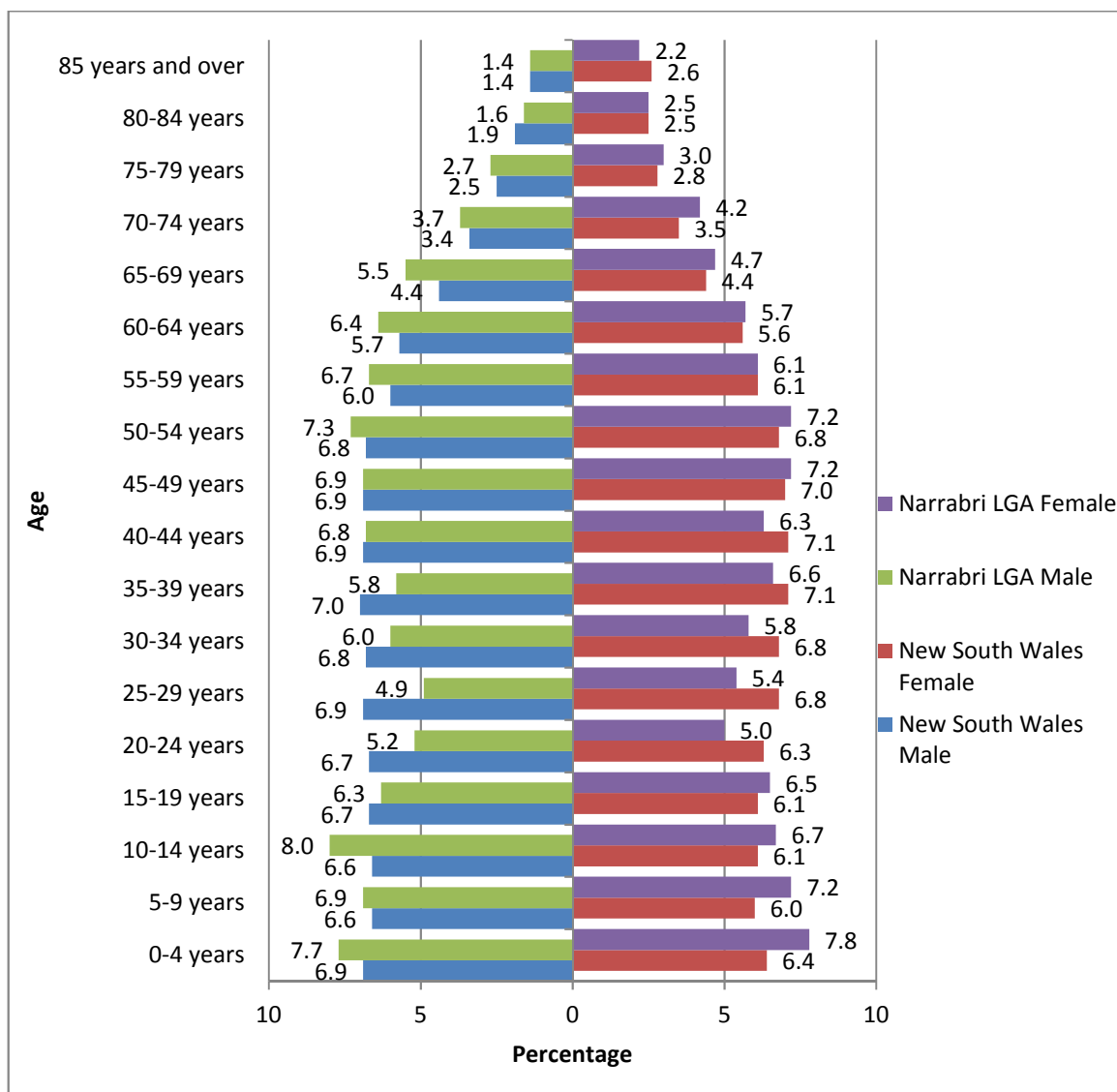
**Table 9** Estimated resident population in regional study area (2001, 2006 and 2011)

LGA / urban centre	Year					
	2001		2006		2011	
	Total	Indigenous	Total	Indigenous	Total	Indigenous
Narrabri town	n/a	n/a	7,419	680 (9.2%)	7,392	761 (10.3%)
Narrabri LGA	14,422	1,084 (7.5%)	13,477	1,215 (9.0%)	13,438	1,389 (10.3%)
Gunnedah LGA	12,306	1,063 (8.6%)	11,782	1,182 (10.0%)	12,519	1,364 (10.9%)
Tamworth Regional LGA	53,557	2,787 (5.2%)	54,887	3,739 (6.8%)	58,228	4,701 (8.1%)
Uralla LGA	6,052	294 (4.9%)	5,894	327 (5.5%)	6,241	355 (5.7%)

LGA / urban centre	Year					
	2001		2006		2011	
	Total	Indigenous	Total	Indigenous	Total	Indigenous
Armidale Dumaresq LGA	24,617	1,241 (5.0%)	24,146	1,238 (5.1%)	25,158	1,513 (6.0%) <sup>6</sup>
Glen Innes Severn LGA	8,818	368 (4.2%)	8,987	475 (5.3%)	8,911	484 (5.4%)
Inverell LGA	15,632	734 (4.7%)	15,845	836 (5.3%)	16,584	1,054 (6.4%)
Gwydir LGA	5,716	82 (1.4%)	5,428	141 (2.6%)	5,102	192 (3.8%)
Moree Plains LGA	16,108	2,807 (17.4%)	14,407	2,638 (18.3%)	14,043	2,782 (19.8%)
Walgett LGA	8,261	1,781 (21.6%)	7,129	1,963 (27.5%)	6,797	1,819 (26.8%)
Coonamble LGA	4,797	953 (19.9%)	4,305	1,093 (25.4%)	4,226	1,159 (27.4%)
Gilgandra LGA	4,761	451 (9.5%)	4,618	553 (12.0%)	4,515	528 (11.7%)
Dubbo LGA	38,445	3,399 (8.8%)	38,834	3,905 (10.1%)	40,246	5,021 (12.5%)
Warrumbungle Shire LGA	10,762	609 (5.7%)	10,034	747 (7.4%)	9,989	856 (8.6%)
Liverpool Plains LGA	7,977	736 (9.2%)	7,717	701 (9.1%)	7,761	810 (10.4%)
NSW State	6,530,349	119,865 (1.8%)	6,742,690	138,186 (2.0%)	7,218,529	172,313 (2.4%)

n/a – data for those categories was not available because that particular geographical division did not exist at the time.  
Source: ABS Census 2001 (a-k), 2006 (a-q) and 2011 (a-p)

Figure 4-2 Population by age group and gender – Narrabri LGA and NSW, 2011

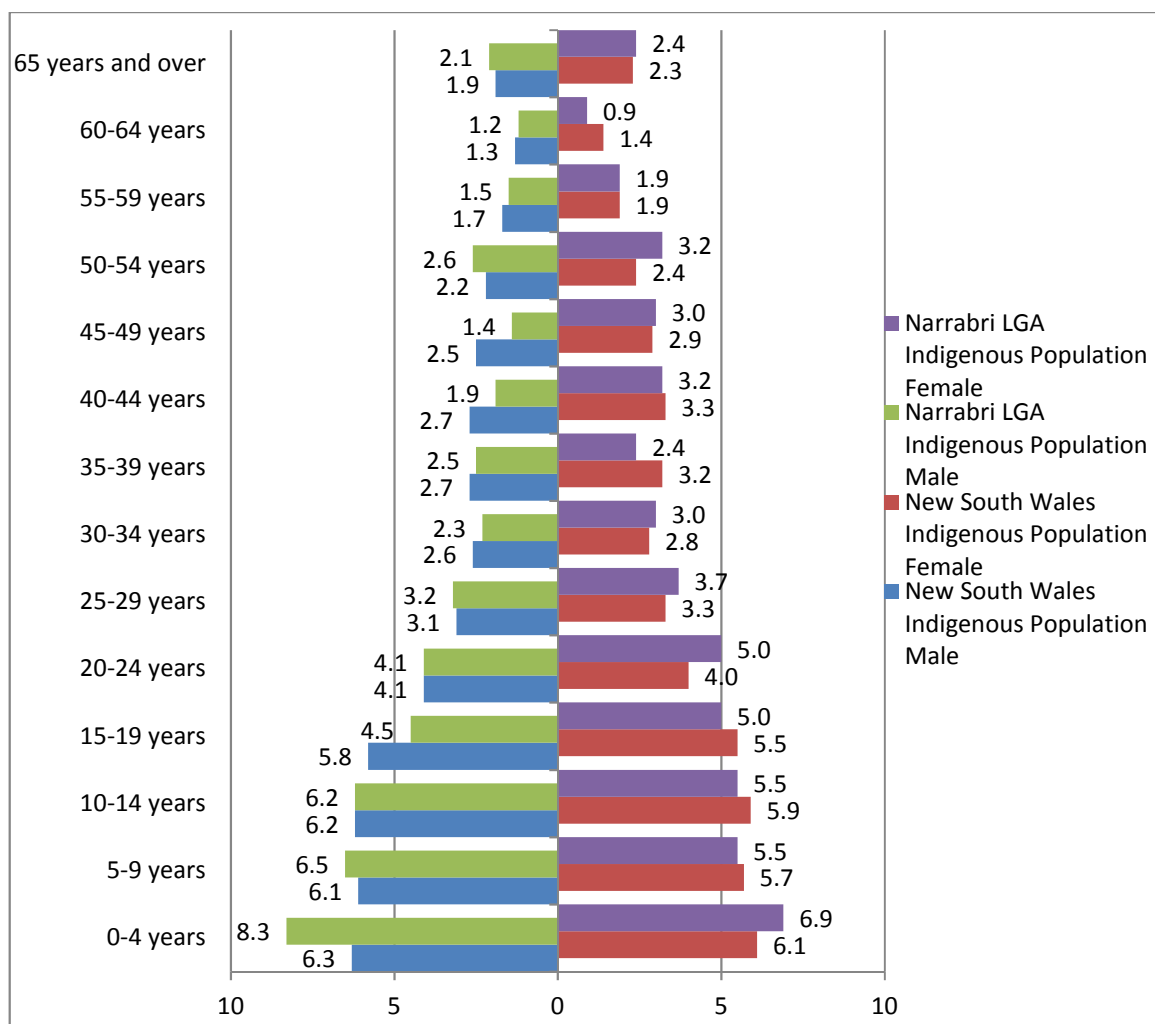


Source: ABS Census 2011 (aa) and (ac)

Figure 4-3 shows the age and gender profile of the Indigenous populations of Narrabri and NSW. The largest percentage of Indigenous males and females in Narrabri LGA and NSW were in the 0-4-year age group.

The Narrabri Indigenous age profile reflects the NSW percentages with a higher proportion of people in the younger age groups. The percentage of the population within each age group decreases as age increases. It should be noted that the Indigenous profile data only extends to 65 years and over while the population data for the entire LGA goes up to 85 years and over.

Figure 4-3 Indigenous population by age group and gender – Narrabri LGA and NSW, 2011



Source: ABS Census 2011 (aa) and (ac)

#### 4.4.3 Family composition and household structure

The family composition and household structure helps to understand the social fabric of the community. According to the Census 2011 data, 'couple family with children' and 'couple family without children' were equally dominant accounting for 41.7 and 41.6 per cent respectively of the total 3,435 families in the Narrabri LGA (refer Table 10). The proportion of 'one-parent family' was lowest with 15.3 per cent.



Table 10 Family composition in regional study area, 2011

LGA	Couple family without children		Couple family with children		One-parent family		Total
	No.	%	No.	%	No.	%	No.
Narrabri- all households	1,429	41.6	1,432	41.7	526	15.3	3,435
Narrabri- households with Indigenous persons	74	17.9	164	39.6	161	38.9	414
NSW	669,019	36.6	831,850	45.5	297,904	16.3	1,829,553

Note: Includes same-sex couple families

Source: ABS Census 2011k

Family composition data for Narrabri town was representative of the overall Narrabri LGA with 41.3 per cent of the families in the category of 'couple family with no children' followed by 'couple family with children' at 41.1 per cent. The Narrabri community had a smaller percentage of single parent families with 16.0 per cent.

The average household size in Narrabri LGA was 2.5 at the time of Census 2011 (ABS, 2011x) and the average Australian household size in 2011 was 2.6 (Australian Institute of Family Studies, 2011).

#### 4.4.4 Cultural and ethnic composition

An understanding of the cultural diversity in the population is necessary from the point of view of understanding community cohesion issues and need for special support services for people from different backgrounds.

As discussed in section 4.4.1 the Indigenous population of Narrabri LGA accounted for 10.7 per cent of the population in 2011 (ABS Census 2011k). This compared with 10.3 per cent of the population of Narrabri town (ABS Census 2011l). Table 11 shows the population in the Narrabri LGA in 2011 that were born in Australia or born overseas. In the Narrabri LGA 518 persons or 4.0 per cent of persons were born overseas which was significantly lower than the state which recorded 25.7 per cent.

Table 11 Country of birth of population in regional study area 2011

LGA	Born in Australia (a)		Total born overseas (a) (b)		Total persons
	No.	%	No.	%	No.
Narrabri	11,575	89.6	518	4.0	12,925
NSW	4,747,371	68.6	1,778,548	25.7	6,917,658

(a) Note – Percentages exclude non-respondents

(b) Includes 'Australian External Territories', 'Inadequately described', 'At sea'.

Source: ABS Census (2011aa; 2011ac)

#### 4.4.5 Labour force, employment and unemployment

As discussed in section 4.1, this section includes labour force data from LGAs that make up the wider area of influence for the project as it is envisaged that the project workforce may flow from the wider region (refer to section 2.2.1).

##### Unemployment

Unemployment data from ABS 2011 shows the unemployment rate of 5.4 per cent in Narrabri LGA, which is slightly lower than the unemployment rate of 5.9 per cent across NSW (refer Table 12). Unemployment of Indigenous Population in Narrabri LGA was almost five times the unemployment rate of the total population in Narrabri LGA. The Narrabri Indigenous Population exhibited an unemployment rate of 26.3 per cent being 103 persons in the total 392-person labour force while the Indigenous Population of NSW had a rate of 16.9 per cent being 9,538 persons of the total 56,348 Indigenous Labour force.

It should be noted that, as at 2012, there were a total of 1,503 businesses in Narrabri Shire (ABS 2012). Of these, the majority (900) were non-employing businesses; while 345 businesses employed 1-4 employees and 258 businesses employed 5 or more employees (ABS 2012).

Higher levels of unemployment were seen in Coonamble (8.1 per cent) and Walgett (8.0 per cent) compared to the rate recorded for NSW. The only LGAs that reported a lower unemployment rate than NSW were Uralla, Gwydir and Dubbo. For the Indigenous Populations of the LGAs in the wider area of influence, Inverell and Moree Plains experienced the most significant unemployment with 28.0 per cent and 28.7 per cent respectively. Uralla, Walgett and Liverpool Plains were the only LGAs that recorded lower percentages of unemployment for the Indigenous Population compared to NSW. The total unemployment for the wider area of influence showed a higher rate of unemployment than NSW for both the whole region and for the Indigenous Population.

Table 12 Labour force and unemployment in the Wider Area of Influence, 2011

LGA / urban centre	Unemployed (number)	Labour force (number)	Unemployment rate (%)
Narrabri LGA	336	6,172	5.4
Narrabri- Indigenous Population	103	392	26.3
Gunnedah LGA	332	5,558	6.0
Gunnedah- Indigenous Population	93	437	21.3
Tamworth Regional LGA	1,527	26,421	5.8
Tamworth Regional- Indigenous Population	284	1,477	19.2
Uralla LGA	144	2,878	5.0
Uralla- Indigenous Population	15	114	13.2
Armidale Dumaresq LGA	827	11,205	7.4
Armidale Dumaresq- Indigenous Population	88	396	22.2
Glen Innes Severn LGA	245	3,658	6.7
Glen Innes- Indigenous Population	36	141	25.5
Inverell LGA	496	6,833	7.3
Inverell- Indigenous Population	69	246	28.0
Gwydir LGA	107	2,135	5.0
Gwydir- Indigenous Population	11	54	20.4

LGA / urban centre	Unemployed (number)	Labour force (number)	Unemployment rate (%)
Moree Plains LGA	371	6,185	6.0
Moree Plains- Indigenous Population	212	739	28.7
Walgett LGA	201	2,518	8.0
Walgett- Indigenous Population	76	480	12.4
Coonamble LGA	142	1,750	8.1
Coonamble- Indigenous Population	85	338	25.1
Gilgandra LGA	122	1,954	6.2
Gilgandra- Indigenous Population	44	160	27.5
Dubbo LGA	941	19,338	4.9
Dubbo- Indigenous Population	308	1,669	18.5
Warrumbungle Shire LGA	277	3,896	7.1
Warrumbungle Shire- Indigenous Population	56	208	26.9
Liverpool Plains LGA	199	3,281	6.1
Liverpool Plains- Indigenous Population	38	235	16.2
<b>Total for wider area of influence</b>	<b>5,931</b>	<b>97,610</b>	<b>6.1</b>
<b>Total for wider area of influence- Indigenous Population</b>	<b>1,415</b>	<b>6,694</b>	<b>21.1</b>
NSW	196,525	3,334,858	5.9
NSW- Indigenous Population	9,538	56,348	16.9

Source: ABS Census 2011(a-k, m-p)

### Labour force by industry and occupation

Table 13 indicates the proportion of employment by industry in the regional study area, with the largest industries of employment for each locality indicated by the dark grey cells. As shown in the table main industries of employment in Narrabri LGA in 2011 were agriculture, forestry and fishing providing 21.4 per cent (1,250 persons), retail trade providing 9.8 per cent (570 persons) and health care and social assistance which accounted for 9.6 per cent (559 persons) of total employment. The high proportion of employment in agriculture, forestry and fishing is reflective of the Narrabri economy being largely driven by agriculture. A comparison of ABS Census data from 2006 and 2011 shows a reduction in the proportion of employment in agriculture, forestry and fishing and an increase in mining.

Like Narrabri LGA, agriculture, forestry and fishing was the main industry of employment in Gunnedah, Uralla, Glen Innes Severn, Gwydir, Moree Plains, Walgett, Coonamble, Gilgandra, Warrumbungle Shire and Liverpool Plains LGAs. Tamworth Regional LGA, Dubbo LGA and NSW state varied slightly with health care and social assistance being the largest industries of employment. Education and training dominated the industry in Armidale Dumaresq LGA and retail trade was the main industry of employment in Inverell LGA.

Table 13 Proportion of employment by industry in the regional study area 2011

Source: ABS Census 2011 (q-aa, ac-ag)

	Narrabri LGA	Gunnedah LGA	Tamworth Regional	Uralla LGA	Armidale Dumaresq	Glen Innes Severn LGA	Inverell LGA	Gwydir LGA	Moree Plains IGA	Walgett LGA	Coonamble LGA	Gilgandra LGA	Dubbo LGA	Warrumbungle Shire	Liverpool Plains LGA	NSW
Agriculture, forestry and fishing	21.4	16.9	6.7	17.6	6.2	18.7	13.2	38.8	26.0	28.8	30.8	28.6	3.3	27.4	24.2	2.2
Mining	3.9	7.5	0.8	0.4	0.4	0.5	0.9	0.4	0.2	2.2	0.0	0.5	0.9	0.9	2.8	1.0
Manufacturing	4.9	7.0	9.3	4.5	2.8	4.7	10.0	3.2	4.5	2.6	1.2	2.1	6.8	3.4	6.2	8.4
Electricity, gas, water and waste services	1.2	1.3	1.1	0.7	0.7	1.1	1.3	1.0	1.0	0.9	1.4	1.4	1.5	1.3	1.2	1.1
Construction	5.9	5.2	7.5	7.4	5.8	6.1	6.7	3.6	5.6	3.8	5.8	4.8	7.4	4.2	5.2	7.3
Wholesale trade	3.6	2.7	3.5	2.0	2.3	2.7	3.3	3.0	3.1	1.9	2.9	1.9	4.1	2.5	3.8	4.4
Retail trade	9.8	9.9	11.5	9.5	12.4	10.8	13.9	7.1	9.5	6.9	7.4	9.2	12.5	9.7	8.6	10.3
Accommodation and food services	6.2	6.9	7.0	5.6	8.7	7.2	6.0	3.6	5.7	6.7	3.7	6.3	7.3	6.4	4.9	6.7
Transport, postal and warehousing	6.2	4.8	5.1	3.3	2.1	4.0	2.9	4.0	5.0	3.5	4.2	4.1	4.9	4.0	7.1	4.9
Information media and telecommunications	0.5	0.5	1.1	0.9	1.1	0.5	0.9	0.5	0.5	0.2	0.4	0.5	1.1	0.3	0.6	2.3
Financial and insurance services	1.4	1.3	2.4	1.8	2.8	1.2	1.4	1.5	2.0	0.7	0.5	1.0	2.4	0.7	1.1	5.0
Rental, hiring and real estate services	0.8	1.2	1.5	1.1	1.1	0.9	1.5	0.4	1.1	0.4	0.6	0.4	1.4	0.6	0.8	1.6
Professional, scientific and technical services	4.3	3.2	3.5	4.5	6.0	3.2	3.1	1.8	3.4	2.1	2.4	2.2	4.3	2.5	3.2	7.9
Administrative and support services	2.0	2.1	2.6	2.1	2.3	2.2	1.6	1.3	1.9	1.9	1.8	1.9	2.5	1.5	1.8	3.3
Public administration and safety	4.6	5.0	6.0	6.3	5.3	8.7	5.4	7.5	6.5	8.1	7.4	7.2	7.5	6.5	4.8	3.3
Education and training	6.2	7.7	8.7	13.9	20.7	7.2	8.2	7.5	8.2	10.6	10.2	8.3	9.3	9.9	6.8	7.9
Health care and social assistance	9.6	9.4	14.2	11.5	13.0	11.8	13.1	9.5	8.2	11.3	11.4	12.9	14.8	11.3	9.4	11.6
Arts and recreation services	0.6	0.7	1.0	1.1	1.1	1.1	0.6	0.7	0.3	1.5	1.1	0.8	1.6	1.4	1.0	1.5
Other services	4.2	4.4	4.4	3.7	3.6	5.3	3.8	2.5	4.6	2.6	3.2	4.0	4.7	3.0	3.4	3.7
Inadequately described / not stated	2.9	2.6	2.1	2.1	1.6	2.3	2.2	1.9	2.7	3.2	3.7	1.8	1.6	2.6	3.2	2.5

The main occupations in Narrabri LGA were managers (19.7 per cent), technicians and trades workers (14.3 per cent), labourers (12.2 per cent) and machinery operators and drivers (12.1 per cent) (refer to Table 14).

Narrabri, Gunnedah, Uralla, Glen Innes Severn, Inverell, Gwydir, Moree Plains, Walgett, Coonamble, Gilgandra, Warrumbungle Shire and Liverpool Plains LGAs all reported managers as the largest occupation group. Professionals were the largest occupation group in Tamworth, Armidale Dumaresq and Dubbo LGAs which is consistent with these LGAs having the largest populations of the LGAs within the wider area of influence.

Industry of employment and occupation data from Census 2011 for the key urban locality of Narrabri town shows the following breakdown for main industries of employment:

- Retail trade employing 11.9 per cent
- Agriculture, forestry and fishing employing 10.8 per cent
- Health care and social assistance employing 10.3 per cent of the working population.

The dominant occupation categories were technicians and trades workers (17.0 per cent), professionals (13.9 per cent) and managers (13.7 per cent) (ABS Census 2011 I, ab).

Cotton is the major agricultural industry in Narrabri Shire with a majority of production being based around Wee Waa. Two of the five largest individual exporters of cotton in Australia are based in the Narrabri Shire area (Narrabri Shire Council 2014). It should be noted that cotton is not produced within the footprint of the project. The wheat industry is also a large employer of the workforce and the area also produces beef cattle, sheep and wool (Narrabri Shire Council 2014). Narrabri Shire is a transport hub positioned at the crossroads of the Newell and Kamilaroi Highways and with an inland port and rail connections allowing transportation of products and supporting the continuation of the agricultural industry in the region (Narrabri Shire Council 2014).

While agriculture plays a vital role in the economy, the coal and gas industries are emerging within the Narrabri Shire. Coal deposits within the Narrabri Shire are estimated to contain around 12 per cent of reserves available in NSW (Narrabri Shire Council 2011a). Although gas exploration and production is not labour intensive it is a great asset to Narrabri Shire in attracting new businesses and broadening the economic base (Narrabri Shire Council 2014). A diverse range of ancillary businesses have relocated to Narrabri Shire take advantage of the growing resource industries. Narrabri Shire Council (2014) identified the following benefits seen by the Shire due to these emerging industries:

- Increased demand for all housing types
- Increased demand for temporary accommodation
- Increased demand for serviced industrial land close to the mines
- Increased use of air and rental car services
- Increased employment opportunities both within the resource industries and support businesses.

The economy of Narrabri Shire is in a positive position which is expected to further improve in the future as the economy diversifies and broadens from its agricultural base (Narrabri Shire Council 2007). The local governments are developing strategies to support economic diversification within the Shire to ensure the sustainability of towns during and at the completion of the mining activities in the region (Narrabri Shire Council 2007).

Table 14 Proportion of employment by occupation in the regional study area 2011

	Narrabri LGA	Gunnedah LGA	Tamworth Regional LGA	Uralla LGA	Armistead Dumaresq LGA	Glen Innes Severn LGA	Inverell LGA	Gwydir LGA	Moree Plains LGA	Walgett LGA	Coonamble LGA	Gilgandra LGA	Dubbo LGA	Warrumbungle Shire LGA	Liverpool Plains LGA	NSW
Managers	19.7	19.3	13.5	19.3	13.8	21.8	17.9	34.5	22.2	25.5	29.5	30.1	12.1	27.4	22.4	13.3
Technicians and Trades Workers	14.3	12.7	14.5	14.1	11.9	12.9	13.3	9.3	11.5	9.1	9.9	11.4	14.6	11.2	11.3	13.2
Labourers	12.2	13.3	13.8	12.7	9.7	13.8	15.6	13.4	12.1	14.2	13.9	12.8	10.8	13.4	15.5	8.7
Machinery Operators and Drivers	12.1	12.4	7.0	5.8	3.4	6.8	5.6	8.3	9.9	8.6	7.1	5.9	6.2	7.1	12.4	6.4
Professionals	12.0	12.7	16.8	16.5	24.8	12.7	14.0	10.5	13.3	12.7	10.8	12.7	17.9	13.6	10.9	22.7
Clerical and Administrative Workers	11.4	10.4	13.0	12.2	13.5	10.5	9.8	9.4	12.5	10.1	9.6	7.4	14.7	8.0	9.7	15.1
Sales Workers	8.4	8.8	10.0	7.4	10.7	9.1	11.3	5.5	7.9	5.0	5.0	6.4	11.2	7.1	7.0	9.3
Community and Personal Service Workers	7.8	9.0	9.8	10.9	10.8	10.4	11.0	7.9	8.3	12.7	1.8	12.2	11.0	10.3	8.9	9.5
Inadequately described / not stated	2.0	1.5	1.6	1.1	1.4	1.9	1.5	1.3	2.2	2.1	2.4	1.0	1.4	1.8	1.9	1.8

Source: ABS Census 2011 (q-aa, ac-ag)

## Income

Table 15 shows the gross weekly incomes for the Narrabri LGA and NSW in 2011 at an individual level.

The table shows that Narrabri LGA recorded the highest proportion of the population in the lowest income bracket of less than \$400 per week which reflected a similar pattern to the NSW data. The median weekly household income for Narrabri LGA is \$982 compared with \$1,237 for NSW (ABS Census 2011k). While the Indigenous Population of Narrabri LGA had the same general trends as Narrabri LGA there were 16.3 per cent more people in the lowest income bracket. The data indicates that the Indigenous persons living in the regional study area earn a lower income compared to the Non-Indigenous Population within the study area.

**Table 15 Gross individual income (weekly) in the regional study area 2011**

LGA/ urban centre	<\$400		\$400 - \$999		>\$1,000		Total
	No.	%	No.	%	No.	%	No.
Narrabri LGA	3,726	37.0	3,330	33.1	2,030	20.2	10,058
Narrabri- Indigenous	452	53.3	250	29.5	61	7.2	848
NSW	2,050,785	36.7	1,647,656	29.5	1,442,473	25.8	5,585,148
NSW- Indigenous	53,041	48.2	32,033	29.1	14,068	12.8	110,040

Source: ABS Census 2011 (aa) and (ac)

The income profile for Narrabri town reflected the LGA totals with more individuals in the lower income levels. Narrabri town recorded 34.3 per cent in the less than \$400 weekly income bracket (ABS Census 2011ab). Narrabri (SSC) recorded the highest percentage in the \$400-\$999 bracket with 34.9 per cent (ABS Census 2011ab).

### 4.4.6 Housing and accommodation

#### Housing types

The following Table 16 shows dwellings by tenure type for the Narrabri LGA and NSW, and the Indigenous populations of both in 2011. The data shows that the regional study area has a higher proportion of fully owned properties, with 36.7 per cent, when compared with the state average of 33.2 per cent.

The data for the Indigenous population of Narrabri shows that there were a higher proportion of properties being rented at 61.0 per cent compared with 30.0 per cent for the Narrabri LGA.

**Table 16 Dwellings by tenure type in the regional study area**

LGA	Fully Owned		Being Purchased (a)		Rented (b)		Total (c)
	No.	%	No.	%	No.	%	No.
Narrabri	1,757	36.7	1,342	28.1	1,434	30.0	4,783
Narrabri- Indigenous	71	13.1	110	20.2	332	61.0	544
NSW	820,006	33.2	824,292	33.4	743,050	30.1	2,471,296
NSW- Indigenous	9,863	13.1	19,211	26.0	41,631	56.3	73,910

(a) includes dwellings being purchased under a rent/buy scheme

(b) includes renting from a real estate agent, state or territory housing authority, renting from a person not in the same household, renting from housing co-operative/community/church group, other landlord type and landlord type not stated

(c) includes other tenure type and tenure type not stated

Source: ABS Census 2011 (k) and (aa)

## Housing and rental costs

The graph below (Figure 4-4) from Pricefinder (2014) presents the median house prices and number of sales in the suburbs of Narrabri from 1999 to 2013. Data from Pricefinder is only available at the city and suburb level.

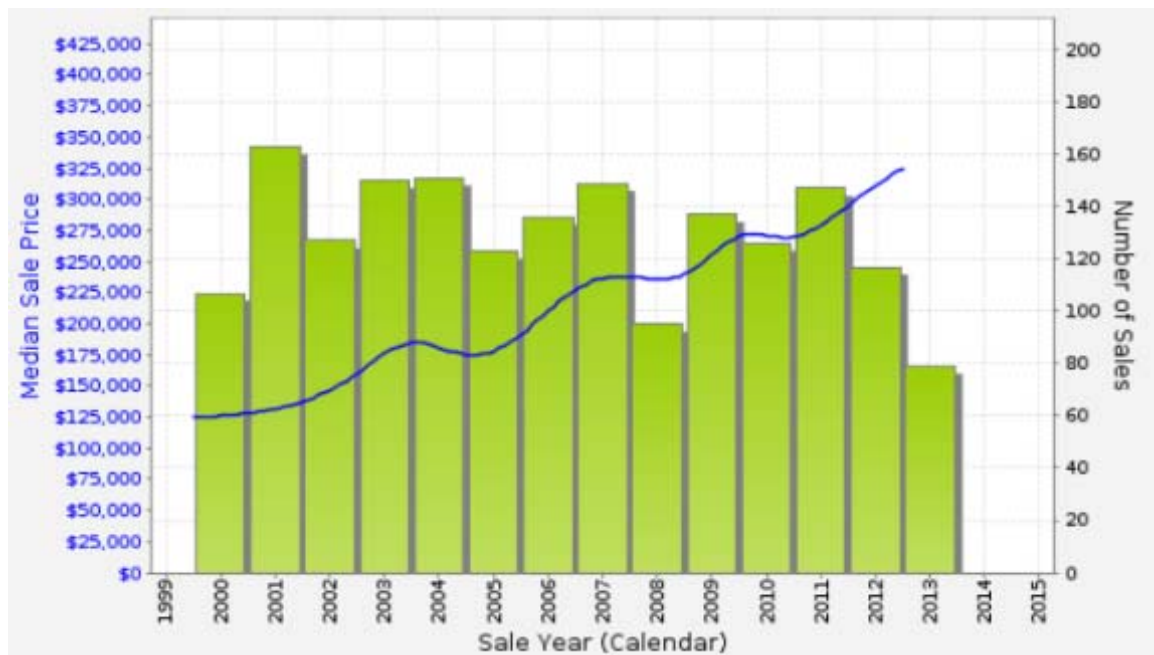
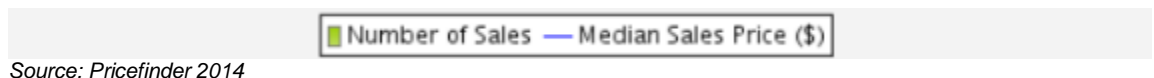


Figure 4-4 Median house sale prices in Narrabri Suburb (1999 – 2013)



Median house prices in Narrabri (refer to Figure 4-4) have been steadily increasing since 1999 to reach \$325,000 in 2013. The number of sales has remained fairly constant over the period ranging between 107 and 163 except for 2008 and 2013 with 95 and 79 sales respectively.

Rental vacancy rates for Narrabri from April 2009 to December 2013 are shown in Figure 4-5.

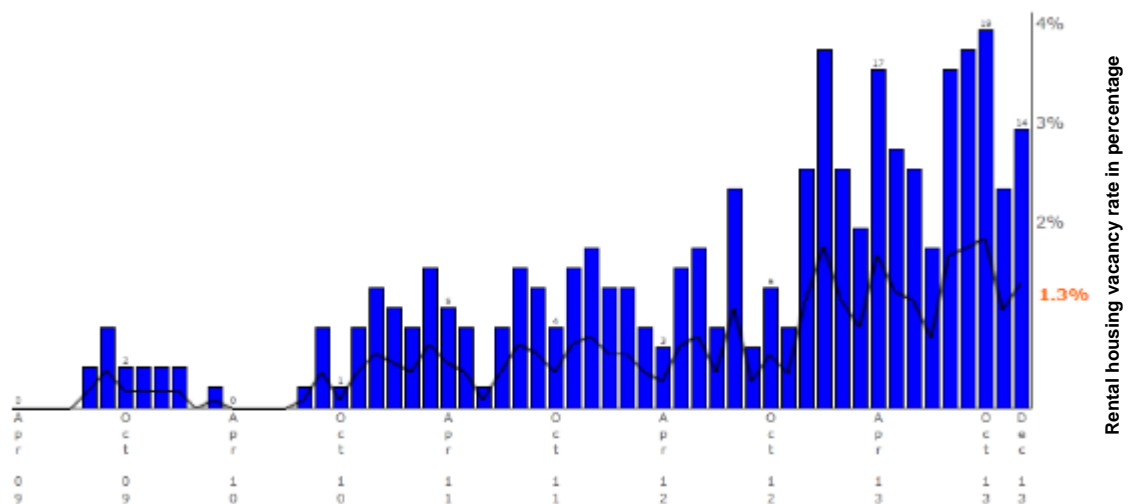


Figure 4-5 Rental vacancy rate for Narrabri, April 2009 – December 2013

Source: SQM Research 2014



Figure 4-5 shows that rental vacancy rates for the locality have remained quite low, and that they have fluctuated between 2009 and 2013 but have generally increased over the last 12 months. As at December 2013, Narrabri recorded 1.3 per cent (14 properties) of properties available for rent.

According to realestate.com.au (2014 a,b,c,d), Narrabri had 150 properties available for sale in January 2014 and 195 in September 2014, while there were 12 properties available for rent in January 2014 and 32 properties in September 2014.

### **Short term accommodation and camps**

Several forms of short term accommodation are available in the study area. As at 2011 there were 11 motels and four hotels listed for Narrabri town in the Narrabri Shire Accommodation guide with an average of 20 rooms (Narrabri Shire Council 2011b). There are five bed and breakfast accommodation and farm holidays located in the area (Narrabri Shire Council 2011b). There are three caravan / camping parks available in Narrabri and one serviced apartments listed in the guide (Narrabri Shire Council 2011b).

In terms of workforce accommodation, Narrabri has a 500 plus bed workforce accommodation village developed and operated by CIVEO (previously known as the MAC Camp). Combined with CIVEO's Boggabri Workforce Accommodation Village the region currently has over 1000 beds available for workforce (CIVEO, 2014). The CIVEO village in Narrabri may be expanded to a capacity of 900 plus beds to meet the potential future needs of the region.

### **Housing challenges and opportunities**

Future growth opportunities exist for the Narrabri Shire due to the emerging resource industries which have led to increased demand for all types of housing and increased demand for temporary accommodation (Narrabri Shire Council 2014). Caravan parks, hotels, motels and other forms of temporary accommodation in the region are often full. As Narrabri is situated on a direct corridor from Melbourne to Brisbane the town has a large tourism industry which requires the provision of temporary accommodation in order to attract tourism to other areas within the Shire (Narrabri Shire Council 2011a). SIA stakeholder consultations with representatives from real estate and Narrabri Shire Council have indicated that short term accommodation has an average occupancy of 80-90 per cent and that there is a need to add to the short term accommodation stock. The CIVEO workforce accommodation villages in Narrabri and Boggabri have a combined capacity of over a 1000 beds at present, and are approved for a combined capacity of over 1,500 beds. These facilities have offered a solution to short term accommodation. The location of these camps has provided additional opportunities for FIFO and non-resident workers and reduced the strain on other forms of temporary accommodation in the region.

Rental vacancy in town has been extremely low and existing house sales are limited (Narrabri Shire Council 2011a). Property values have been making steady gains over the last few years and a need for new affordable housing has been identified. Land for housing and development will need to be identified to create housing affordability and meet the demand which is expected to require up to 1,000 new dwellings by 2031 in the Shire (Narrabri Shire Council 2011a). The SIA stakeholder consultations revealed that the challenge with the existing housing stock is that it is an aging stock and new developments are required. There are three housing estates in Narrabri with a variety of vacant blocks from standard residential sizes to small acreages (Narrabri Shire Council 2014). There are also several areas surrounding the town which have been identified as vacant land for future residential development. Identifying land for future development must consider the ability of the area to provide for social services and facilities and the areas access to road, water, waste, electricity and communications connections.

#### 4.4.7 Social infrastructure

##### Existing social infrastructure

There is a range of social infrastructure servicing the Narrabri LGA including primary, secondary and tertiary educational facilities, excellent transport infrastructure, district and community hospitals and health services, and a considerable range of recreation facilities. Major facilities and services available in Narrabri LGA were identified from Council plans, reports and website and are presented in Table 17. LGAs within the wider area of influence have also been considered for higher order services such as health and education.

Table 17 Social infrastructure in regional study area

Social infrastructure	Narrabri LGA (and LGAs included in the wider area of influence where applicable)
Education facilities	<ul style="list-style-type: none"> <li>17 playgrounds, child care and pre-school services</li> <li>12 primary schools, including 2 in Narrabri town</li> <li>2 secondary schools- Narrabri and Wee Waa</li> <li>TAFE Narrabri runs courses in business, accounting, community services (including children's services, aged care and health support services), visual arts, construction, IT, engineering trades and agriculture as well as courses by distance education</li> <li>TAFE Tamworth is the largest campus of TAFE NSW and is home to the Tamworth Trade School specialising in trade training. Tamworth has special purpose facilities in arts, tourism and hospitality, nursing, welfare, computing, hairdressing and beauty, engineering, construction, bricklaying, transport, veterinary nursing, animal care, children's services, business and administration services, horticulture and aeroskills</li> <li>Gunnedah, Inverell, Moree TAFE campuses</li> <li>University of New England Access centre (Tamworth, Gunnedah, Inverell, Moree, Narrabri, Guyra)</li> <li>Narrabri Community College offers courses in business, management skills, computers, customer service, horticulture, aged care, children services, disability, health, work safety, chainsaw, chemical user, traffic control, OH&amp;S, manual handling, first aid, mental health, hospitality and forklift, as well as leisure courses in cake decorating, music, art and craft</li> <li>The Shire has within its boundaries three major research institutions: <ul style="list-style-type: none"> <li>CSIRO's Australian Cotton Research Institution</li> <li>CSIRO's Australia Telescope Compact Array, Paul Wild Observatory</li> <li>At the IA Watson Wheat Research Centre the University of Sydney operates a wheat breeding programme</li> </ul> </li> </ul>
Community, cultural and recreational facilities	<ul style="list-style-type: none"> <li>Narrabri Shire has three libraries- Wee Waa, Narrabri and Boggabri</li> <li>Well established sport, recreation and park facilities (includes Narrabri skate park, 27 sporting fields and ovals within the shire and several other recreation reserves, and parks featuring playgrounds, walking tracks, boat ramps, horse exercise areas, BBQ facilities)</li> <li>Equestrian activities (Narrabri hosting the largest pony club in the southern hemisphere)</li> <li>Swimming pools (Boggabri, Narrabri and Wee Waa) and the Narrabri Aquatic Centre Indoor Pool</li> <li>Federation Farm- 303 hectares of irrigation and dry land cropping commenced operation in 2000 owned by Narrabri Shire Council and share farmed by the schools of Narrabri Shire</li> <li>The Crossing Theatre- Cultural Centre and Conference Venue featuring 2 cinemas, an auditorium, commercial kitchen, function rooms</li> <li>Several caravan parks and camping grounds</li> </ul>

Social infrastructure	Narrabri LGA (and LGAs included in the wider area of influence where applicable)
Health and wellbeing facilities	<ul style="list-style-type: none"> <li>Hospitals in the three towns of Narrabri (district hospital), Wee Waa and Boggabri. The Narrabri hospital is a new, well equipped 38 bed facility with a number of supporting facilities including a theatre, pathology services, radiography, physio, ultrasounds and sufficient equipment to stabilise patient's surgery, obstetrics, accident/emergency</li> <li>NSW ambulance and air ambulance</li> <li>Medical Services- private doctor's surgeries, community health centres, pharmacies, dental surgeries, optometrists, physiotherapy, chiropractor, therapists, speech pathology, rehabilitation</li> <li>Narrabri District Health Service</li> <li>Tamworth Health Service provides higher order health services and is the key health facility servicing the area</li> <li>7 aged care services</li> <li>Large number of community services including disability services</li> </ul>
Other major facilities and services	<ul style="list-style-type: none"> <li>Aviation facilities- Narrabri Airport, Wee Waa Airport, Boggabri grass air strip which is used occasionally</li> <li>Emergency services - police, ambulance, NSW Air Ambulance, fire and rescue and SES in Narrabri, Boggabri and Wee Waa; and Narrabri Rural Fire District</li> <li>Passenger and freight rail</li> <li>Bus, coach and taxi services</li> <li>Local and state government offices</li> <li>Self-sufficient in terms of commercial and retail facilities and professional services</li> </ul>

Source: Narrabri Shire Council 2014 and Tamworth Regional Council 2014

### Challenges for social infrastructure provision in the Narrabri LGA

Based on the information stated in Table 17 and from the SIA stakeholder consultations with representatives from health, medical, emergency services and the shire council, the following priority areas and capacity issues for social infrastructure have been identified for Narrabri town:

- the Narrabri hospital and health services have sufficient capacity to cater to the growth in town, average occupancy in the hospital is 12-15 beds. Key challenges for medical and health services are to find locally based suitably skilled/qualified staff and availability of funding for training of existing staff. Unskilled positions at the hospital are more easily staffed by the local population
- consultations with the health/medical and other emergency services revealed that typically there is little demand for their services from the mining/resource industry workforce, for example the police services indicated that the workforce generally do not engage in criminal or anti-social activities
- demand for support services, infrastructure and housing availability and affordability are significant factors in the development of the mining industry within Narrabri town
- new housing development may require upgrades to infrastructure including roads, water, waste, and electricity connections
- growth may result in shortages in childcare services and require community infrastructure upgrades (Narrabri Shire Council 2011a)
- limited education and training programs to up-skill local people for employment in emerging industries

- consider need for targeted facilities and services catering for a range of non-resident populations (associated with mining, agricultural activities and seasonal workers, and tourists)
- consultations with emergency service providers revealed that while emergency services have the capacity to meet the needs of the region, at times particular incidences may attract more resources leading to shortfalls to cater to other parallel incidences. Access within the Pilliga forest was also identified as a challenge for all emergency services.

## 4.5 Key findings

The key findings of this social baseline report based on interpretation of the demographic characteristics of the regional study area are as follows:

- both Narrabri town and the wider Narrabri LGA have experienced a decline in population
- there were a higher proportion of Aboriginal and Torres Strait Islander persons in the town and LGA when compared to NSW
- there were a higher proportion of people in the older age groups of 45 to 79 when compared with the state (incorporating the working age group of 45-64 years) and a higher proportion of children in the 14 years and under age group in comparison to the NSW percentages
- the Indigenous unemployment rate was significantly higher than the State and almost five times the unemployment rate of the entire Narrabri Shire
- Narrabri town is the centre for business, shopping, sports and entertainment in the Shire
- there is a strong sense of community within the town
- Narrabri Shire is a transport hub with rail, road, air and port facilities. This strategic location has driven the development of its agricultural industries and more recently growth in coal mining and gas exploration activity
- the Shire has a diverse economy based on the agricultural industry and more recently mining related industries
- the emerging resource industries have resulted in an increased demand for all types of housing and temporary accommodation. The number of rental vacancies within the town is extremely low and existing house sales are limited. There is a need to deliver further housing developments on land lots identified for future growth, identify land for future housing to meet expected demand and create housing affordability
- potential impacts associated with growth in the mining industry including pressure on existing services and infrastructure. Recognised need to ensure sustainability of Narrabri town and other towns in the LGA during and at the completion of mining activities in the region.

The key findings of this social baseline report for the LGAs within the wider area of influence for the project are detailed below. As per Section 2.2.1 the wider area of influence was only considered in terms of population and labour force, employment and unemployment as it is expected that workforce flow between the areas will occur:

- half of the LGAs which encompass the wider area of influence for the project generally showed decreases in population and half displayed increases from 2001 to 2011
- a total of 5,931 persons were unemployed within the wider area of influence
- the total unemployment for the wider area of influence showed a higher rate of unemployment than NSW for both the whole region and for the Indigenous population

- like Narrabri LGA, agriculture, forestry and fishing was the main industry of employment in Gunnedah, Uralla, Glen Innes Severn, Gwydir, Moree Plains, Walgett, Coonamble, Gilgandra, Warrumbungle Shire and Liverpool Plains LGAs. Tamworth Regional LGA, Dubbo LGA and NSW state varied slightly with health care and social assistance being the largest industries of employment. Education and training dominated the industry in Armidale Dumaresq LGA and retail trade was the main industry of employment in Inverell LGA.

Narrabri, Gunnedah, Uralla, Glen Innes Severn, Inverell, Gwydir, Moree Plains, Walgett, Coonamble, Gilgandra, Warrumbungle Shire and Liverpool Plains LGAs all reported managers as the largest occupation group. Professionals were the largest occupation group in Tamworth, Armidale Dumaresq and Dubbo LGAs which is consistent with these LGAs having the largest populations of the LGAs within the wider area of influence.



## 5. Workforce profile

### 5.1 Peak construction workforce

#### 5.1.1 Peak construction workforce - numbers and skills requirement

Subject to obtaining the required regulatory approvals, and a financial investment decision, construction of the project is expected to commence in early-mid 2018, with first gas scheduled for 2019/2020. Construction of the gas processing, and water management facilities would take around three years and would be undertaken between approximately early/mid 2018 and early/mid 2021. The gas wells would be progressively drilled over approximately 20 years. For the purpose of impact assessment, a 25-year construction and operational period has been adopted.

The peak construction workforce is estimated to be around 1,300 full time equivalent (FTE) workers with the initial peak construction period expected to last for three to four years. An indicative breakdown of initial peak construction workforce by the month is provided in Figure 5-1.

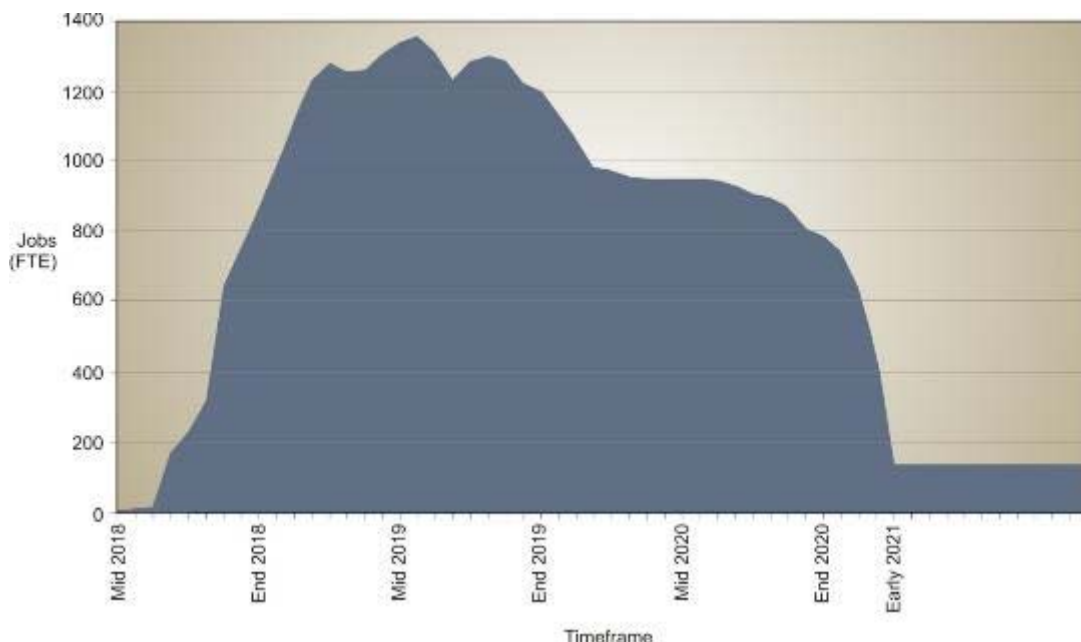


Figure 5-1 Total construction workforce over peak construction period and drilling program

The following construction activities are expected to occur over the initial three to four-year period:

- construction of the in-field gas compression station at Bibblewindi
- laying of the pipelines and power and communication cabling between Bibblewindi and Leewood
- construction of the Power Station (if required), water treatment plant and gas processing facility at Leewood
- expansion of the Westport driller's camp
- construction of well pads and drilling of wells (drilling of wells will continue beyond the initial 3-4 years)

- construction of access tracks, and gas and water gathering lines (drilling of wells will continue beyond the initial 3-4 years).

These activities may require the following skill sets:

tradesmen skills	• steel fixers
trades assistant	• drillers
welders	• construction/civil labour both skilled and unskilled
landing hand	• clerical and administration staff
drivers	• management staff
machinery operators	• supervisory staff
painters	• accounting staff
riggers	• engineers
concreters	• technicians/professionals in OHSE, environmental support, landholder support, etc.
scaffolders	
carpenters	

#### 5.1.2 Peak construction workforce – source, accommodation and transport

Based on availability of labour force and skills in the regional study area, Santos anticipates to source peak construction workforce as follows (refer to Table 18) recognising that this will be influenced by the eventual contractor engaged and their employment strategies.

**Table 18 Source of peak construction workforce**

Workforce numbers	Anticipated source
Peak general construction workers around 1,050 FTE	<ul style="list-style-type: none"> <li>• 10% (approximately 105 workers) from the regional study area within one hour of driving distance from project area (this will include LGAs like Narrabri, Gunnedah and Moree)</li> <li>• 20% (approximately 210 workers) from the wider area of influence including the surrounding 14 LGAs (refer to Section 2.2.1)</li> <li>• 65% (approximately 685 workers) from rest of the state of NSW</li> <li>• 5% (approximately 50 workers) from interstate</li> </ul>
Peak drilling and completions workers around 250 FTE	As drillers have a specialised skill set, it is anticipated that these workers would all travel from outside the regional study area, most likely interstate.

During peak construction it is expected that the workforce will be housed as follows:

- 25 per cent (approximately 260 workers) from the general peak construction workforce are expected to be rostered off at every given point in time. Based on a ratio of resident and non-resident workforce (see below) it is assumed that at every given point in time three percent of the resident workforce and 22 per cent of the non-resident workforce will be rostered off
- 10 per cent (approximately 105 workers) from the general construction workforce will be sourced from within the regional study area (within one hour driving distance from project) are expected to reside at their usual place of residence (home)



- 90 per cent (approximately 945 workers) from the general construction workforce are expected to be non-resident workers who will be housed in contractor workers' accommodation in Narrabri region, this may include a combination of existing worker's accommodation facilities (including Westport worker's accommodation) and proposed new worker's accommodation facilities. Accounting for those workers who will be off roster, it is anticipated that at peak construction the project may need to accommodate approximately 740 workers
- the drilling workforce will be housed in Westport worker's accommodation and existing worker's accommodation in Narrabri.

The camps would consist of demountable buildings and typically include: mess facilities, a canteen, an amenities building, a laundry, a medical/first aid room, a recreation/games/gym room, communications facilities and storage areas, vehicle maintenance and parking areas, fuel handling and storage areas, and facilities for the collection, treatment and disposal of wastes.

The resident local workforce will be expected to drive in private vehicles between their residence and work site. Non-resident workers will be bussed to the worker camp accommodation from Moree and Tamworth Airports and bussed to and from the worker camps and construction sites.

## 5.2 Ongoing construction workforce beyond initial 3-4 years

### 5.2.1 Ongoing construction workforce – numbers and skills required

After the initial 3-4 year construction of major infrastructure, the construction workforce will reduce to around 145 workers. The construction activities expected to occur over the longer term include:

- construction of well pads and drilling of wells
- construction of access tracks, and gas and water gathering lines.

These activities may require the following skill sets:

tradesmen skills	• drillers
trades assistant	• concreters
welders	• construction/civil labour both skilled and unskilled
landing hand	• engineers
drivers	• technicians/professionals in OHSE, environmental support, landholder support, etc.
machinery operators	
riggers	

### 5.2.2 Ongoing construction workforce – source, accommodation and transport

Santos anticipates to source ongoing construction workforce as follows (refer to Table 19) recognising that this will be influenced by the eventual contractor engaged and their employment strategies:

Table 19 Source of ongoing construction workforce

Workforce numbers	Anticipated source
Ongoing (beyond the first 3-4 years) general construction workers and drilling and completions workers around 145	<p>To source ongoing construction workforce, preference will be given to appropriately skilled workers residing in the regional study area within one hour of driving distance from project area (this will include LGAs like Narrabri and Gunnedah and Moree) and the wider area of influence including the surrounding 14 LGAs (refer to Section 2.2.1). In the absence regional workforce Santos will seek workers from rest of the state of NSW.</p> <p>Drillers have a specialised skill set, it is anticipated that these workers would all travel from outside the regional study area, most likely interstate.</p>

Based on the anticipated source of operations workforce, the following accommodation requirements are expected:

- non-resident on going general construction workforce will be housed in private workers' camp accommodation in Narrabri region, this may include a combination of existing facilities (including Westport worker's accommodation) and proposed new worker's accommodation facilities
- the drilling and completions workforce will be housed at Westport worker's accommodation and purpose built camps.

Ongoing general constructions and drilling workforce engaged beyond the initial 3-4 years will continue to be bussed to and from their accommodation and work site.

## 5.3 Operation workforce

### 5.3.1 Operations workforce - numbers and skills requirements

It is anticipated that around 200 FTE workers would be employed through the ongoing operation of the gas field. The following activities are expected to occur beyond the initial three to four-year peak construction period:

- ongoing construction of ongoing drilling, gas wells, well pads, access tracks, gas and water gathering lines (while these activities form part of ongoing project construction, only for the purpose of this SIA they have been considered part of operations phase to be able to account for the presence of total project workforce in the region and their accommodation requirements during this phase)
- operation and maintenance of the central gas processing plant, in field gas compression station, central water management facility, power plant (if constructed) or grid power, and water and gas gathering lines.

These activities may require the following skill sets:

- clerical and administration staff
- management staff
- supervisory staff
- accounting staff
- engineers

- technicians/professionals in OHSE, environmental support, landholder support, etc
- technician and tradesmen skills
- trades assistant
- welders
- leading hand
- drivers
- machinery operators
- riggers
- drillers.

### 5.3.2 Operations workforce – source, accommodation and transport

Based on availability of labour force and skills in the regional study area, Santos anticipates to source operations workforce as follows (refer to Table 20):

**Table 20 Source of workforce during operation phase**

Workforce numbers	Source
General operations workers 200 FTE	<ul style="list-style-type: none"> <li>• 25% (approximately 50 workers) existing Santos Narrabri operations team</li> <li>• 20% (approximately 40 workers) existing Narrabri residents or residents within 1 hour driving distance</li> <li>• 25% (approximately 50 workers) workers based in Sydney / Brisbane / Adelaide</li> <li>• 5% (approximately 10 workers) Fly-in-fly-out workers (FIFO)</li> <li>• 25% (approximately 50 workers) workers relocating to Narrabri from elsewhere</li> </ul>

The 200 FTE general operations workers required for the project would include a mix of existing roles already based in Narrabri, support roles based in Sydney/Brisbane/Adelaide and new roles that would be created over the life of the project. Generally, employees would be sought from the local area with training programs instigated where skills are not currently available. It is likely however that some specialist positions would remain FIFO although this is expected to be small (refer to Table 20).

Based on the anticipated source of operations workforce, the following accommodation requirements are expected:

- 45 per cent (approximately 90 workers) will already be residing in Narrabri and within one hour driving distance from Narrabri
- 25 per cent (approximately 50 workers) relocating to Narrabri are expected to rent or buy houses from the local Narrabri housing market
- 5 per cent (approximately 10 workers) workers are expected to be employed on a FIFO basis and will be accommodated in available short term accommodation facilities in Narrabri
- 25 per cent (approximately 50 workers) will be based in Sydney, Brisbane and Adelaide.

It is anticipated that the general operations workforce will travel from accommodation to their place of employment either at the operations centre, within the Narrabri town centre or to the gasfield in company or private vehicles.



## 6. Impact assessment

### 6.1 Introduction

This section identifies, describes and assesses the potential social impacts arising from the construction and operation of the project on the local and regional communities, with particular focus on stakeholders directly impacted by the impact. The impact assessment is carried out by determining the nature of impact and then applying the likelihood and consequences framework (refer to Section 2.4) to determine the significance of each impact. Mitigation measures and management strategies for the social impacts are described in Section 7.

### 6.2 Impacts on the local study area

#### 6.2.1 Impacts on landholders

The local study area includes a total of 255 land titles that are private landholders. Some titles are held by multiple individuals most commonly as part of a family arrangement. Impacts on the landholders have been identified and assessed based on the project construction and operations activities anticipated on private land. The assessment has taken into consideration the Field Development Protocol which will be implemented by Santos. The rules within the Field Development Protocol relevant to the social impact assessment are listed below (please note that this is not a comprehensive list of the contents of the Field Development Protocol):

- the Protocol would identify no go areas based on environmental and social sensitivities, and provide a hierarchy whereby certain gas field infrastructure could or could not be located. In addition, further stakeholder consultation would be undertaken during the detailed project design phase, to locate the gas field infrastructure in accordance with landholder requirements
- private land will be accessed as per the Agreed Principles of Land Access - Santos is a signatory to the Agreed Principles of Land Access signed on 28 March 2014 by Santos, AGL, NSW Farmers, Cotton Australia and the NSW Irrigators Council at NSW Parliament House. The Agreed Principles of Land Access are based on the values of respect, integrity and trust, they are listed below:
  - any landholder must be allowed to freely express their views on the type of drilling operations that should or should not take place on their land without criticism, pressure, harassment or intimidation. A landholder is at liberty to say “yes” or “no” to the conduct of operation on their land
  - gas companies confirm that they will respect the landholder’s wishes and not enter onto a landholder’s property to conduct drilling operations where that landholder has clearly expressed the view that operations on their property would be unwelcome and
  - the parties will uphold the Landholder’s decision to allow access for drilling operations and do not support attempts by third party groups to interfere with any agreed operations. The parties condemn bullying, harassment and intimidation in relation to agreed drilling operations (NSW Government, 2014).
- Santos will pay reasonable financial costs to landholders for legal advice on land access
- Santos will engage with landholders on an ongoing basis
- a Land Access Agreement with each landholder will be developed through a negotiation and compensation process as outlined in Santos Working with Landholders Fact Sheet

- a Compensation Plan and a Farm Management Plan will be developed as outlined in Santos Working with Landholders Fact Sheet
- noise criteria will be applicable at an occupied residence unless a written agreement is in place with the landholder
- Santos will maintain and repair internal property roads that maybe impacted by project activities.

As mentioned earlier in this section social impacts and impact significance on landholders as a collective group of stakeholders have been assessed in light of the above Protocol. Land access and related negotiations are a critical component of landholder impact mitigation strategies. Santos will continue to engage and negotiate with affected landholders throughout the EIS process and the detailed design phase in line with their *Landholder Engagement Policy*. Details of landholder negotiation for land access and compensation are considered confidential by Santos and are therefore not included in the SIA.

Information for this section was gathered from SIA consultations with the NSW Farmers Association, Narrabri Gas Project Community Consultative Committee (CCC), Santos land access advisors, and from the Agricultural Impact Statement prepared for the Narrabri Gas Project (GHD2016a).

The likely social issues impacting the landholders are discussed below.

#### **Benefits from compensation**

Santos' gas development activities are carried out in two main stages - exploration and production. Santos has a compensation plan in place for both stages, which would provide an additional income stream for landholders who agree to host gas field infrastructure. In the current context where the Narrabri region has had prolonged drought, the compensation may provide landholders/farmers in the project area with an additional income to support their dry land agriculture practices. Land access, compensation and negotiation processes will be carried out on a case by case basis in accordance with the Santos Compensation Plan and the Principles of Land Access.

#### **Land use changes**

The location of gas field infrastructure such as gas wells, gas and water gathering systems, and access tracks, may lead to temporary and permanent land use changes which may include agricultural land removed from production. The following land requirements are anticipated for the location of project infrastructure:

- a production well pad area of 1 hectare during construction, and one quarter of a hectare after partial rehabilitation; with the exception of those pads hosting infrastructure, as an example telecommunications equipment which would remain at 1 hectare
- wells pads are expected to be located a minimum of 750 metres apart
- length of access roads and gas and water gathering systems will depend on the location of wells and proximity to existing tracks
- access corridors (accommodating both access tracks and gathering lines) of a width up to 12 metres but average 10 metres during construction and seven metres during operations. If there are existing access tracks, the corridor would only need to accommodate gathering lines and would accordingly be narrower.

The impact of change in land use for each individual landholder will be realised once the final location of the wells and gas field infrastructure is determined. It is anticipated that land use changes may have some level of impact on access within property, property management and

productivity, which are discussed below and in the Agricultural Impact Statement (GHD 2016a). As part of Project design Santos will have in place a number of mechanisms such as landholder agreements and ongoing consultation with landholders to minimise land use impacts and locate project infrastructure in mutually agreed locations on the land.

### ***Impeded access, severance and productivity***

Construction activities may lead to temporary diminished access to some parts of the property, this may for example restrict access to paddocks for grazing. The operational activities will lead to loss of land where surface infrastructure is located. Given that the impacted area will be small, at the completion of production, surface infrastructure will be removed, the area rehabilitated and available for continued agricultural use, access will be sought in accordance with the *Agreed Principles of Land Access* and location of project infrastructure will be determined in negotiation with the landholder and that compensation will be paid, it is unlikely that the location of well infrastructure will impact on the productivity and livelihoods of the landholder. Impacts from impeded access and severance are further discussed in the Agricultural Impact Statement (GHD 2016a).

Other issues which may contribute to reduction in productivity and livelihoods are:

- perception that property values may be impacted due to the presence of project activities and infrastructure and it may take longer for landholders to be able to sell their properties. According to a study conducted by Land and Property Information Division, Department of Finance and Services, NSW (NSW Government, 2014) CSG development in NSW has the potential to impact property values both positively and negatively, however there were a very small number of property sale transactions available to investigate in NSW which have limited the conclusions to be drawn from the study
- perception that the workforce requirement for the project could lead to a labour draw from the agriculture industry, which could potentially create shortfalls and increase the cost of farm labour
- time required by the landholders to engage with project staff and manage project activities on their property (land access, environmental approvals process) would reduce the time available for regular agricultural or property maintenance activities.

Productivity impacts on landholders have been further assessed in the Agricultural Impact Statement (GHD 2016a). The landholder compensation, consultation and negotiation will facilitate to address the potential productivity and economic viability impacts. Santos will also pay reasonable legal costs for landholders to get advice in relation to a land access agreement for activities on their property.

### ***Property management, damage to farm and property infrastructure***

Impeded access and severance during construction may lead to disruption in property management activities such as weed spraying, harvesting and livestock health treatment, potentially impacting the productivity and economic viability/livelihood of the landholders. Construction and operation activities may also result in damage to internal property roads, tracks and creek crossing, cutting or damage to fences, water supply systems such as irrigation systems and reticulation systems for livestock water. Movement of machinery and workers during construction may introduce new weeds or increase the growth of existing weeds through soil disturbance. The Farm Management Plan would document the nature and indicative timing of activities planned by both the landholder and Santos to ensure that coexistence of activities is managed effectively.

### *Impacts on lifestyle, values, and amenity*

By and large, landholders within the local study area enjoy a quiet rural lifestyle. Project construction activities have the potential to temporarily alter the living and working environment through generation of noise, dust, traffic and artificial light at night time. Various technical studies undertaken in the project EIS have assessed impacts on these amenities in relation to sensitive receptors (such as homes) on the properties where the project infrastructure may be located. It should be noted that project infrastructure such as wells, pipelines and access tracks will be located in consent with a landholder and at locations preferred by the landholder. Key findings from these studies are summarised below:

- Landscape and visual impact assessment (GHD 2016b) – Specific visual impacts on individual landholders are difficult to assess at this stage as the location of wells and project gas field infrastructure on private land is not known. Project infrastructure on private land will be constructed at distances from sensitive receptors as agreed with individual landholders and as suitable to the magnitude of impacts. During construction of wells and access tracks it is anticipated that visual impacts would be experienced depending on location, number and distance of wells in view. The overall impacts associated with the construction phase of the gas field infrastructure would be small and will take into consideration location, number and distance of wells in the 750 meter viewshed at a point in time.
- Construction of the gas field is expected occur during daylight hours (nominally between 5 am and 7 pm, however, this would be seasonally dependent). Drilling of wells is expected to be a 24-hour activity until drilling is complete. Management of night time lighting impacts associated with construction will be considered for work conducted outside of the recommended standard construction (during day light hours) and will be managed as per the standards of the Lighting Impact Guidelines and will be implemented as part of the Construction Management Plan and in negotiation with the concerned landholders.
- During operations the well pad would be normally rehabilitated back to approximately a quarter hectare. Visual impact management will take into consideration the proximity, final arrangement and the agreed mitigation measures put in place through consultation and construction management planning. The access tracks would be rehabilitated back to a corridor width of approximately seven metres wide for the operational phase of the project. The overall significance of impacts would depend on location, number and distance of wells in view.
- Noise and vibration impact assessment (GHD 2015) – The noise constraints associated with the construction and operational phases of the project are summarised in Table 21. These noise constraints will not be exceeded at an occupied residence unless a written agreement is in place with the landholder.



Table 21 Project related noise constraints

Time period		Construction noise (where written agreement is not in place)	Operational noise (where written agreement is not in place)
Day	7am to 6pm Monday to Friday and 8am to 1pm Saturday		35 dB(A) LAeq(15min)
	7am to 8am and 1pm to 6pm Saturday, 8am to 6pm Sunday and public holidays	35 dB(A) LAeq(15min)	35 dB(A) LAeq(15min)
Evening	6pm to 10pm	35 dB(A) LAeq(15min)	35 dB(A) LAeq(15min)
Night	10pm to 7am Monday to Saturday and 10pm to 8am Sunday and public holidays	35 dB(A) LAeq(15min) 45 dB(A) LAmax	35 dB(A) LAeq(15min) 45 dB(A) LAmax

- There is the potential for sleep disturbance impacts from the drilling activities where sensitive receivers are located within 1300 metres of the drilling rig. However, these impacts will be short term, temporary and occasional. A range of noise mitigation measures, strategies and work practices would be implemented to minimise the impacts. Potentially impacted residents surrounding the site would be notified of the nature of the works, expected noise levels, duration of works and grievance management mechanisms will be in place to raise noise complaints.
- Air quality impact assessment (Air Environmental Consulting 2015) – The air quality assessment found that emissions would be within relevant air quality criteria at around 30 metres from access track and pipeline trenching construction sites or around 60 metres from well pad construction sites. Where access track construction requires cut and fill earthworks, emissions may disperse further but were predicted to be within air quality criteria at around 140 metres from construction sites. All emissions associated with the project's construction and operational phases are predicted to be well below the air quality impact assessment criteria for the protection of human health and amenity at sensitive receiver areas in the region. Potential impacts associated with dust during construction or operation of the project from mobile or intermittent sources would be managed and mitigated in accordance with the project's Environmental Management Plan
- Traffic and transport impact assessment (GHD 2016c) - Increase in project related traffic on private roads within the property could potentially lead to damage of internal property roads and increase safety risk for the local road users. Santos will maintain the internal roads and access tracks impacted by project activities and other traffic management measures will also be implemented while using internal property roads. Landholders will be consulted to determine the best access routes within the property and grievance management mechanisms will be in place to raise traffic related complaints.

It is possible that individually dust, noise, light and visual impacts arising from the project may not be significant; however, there is the potential that cumulatively they could have an impact on the quality of life of the landholders. However, Santos is committed to consent; adhere with the noise criteria and appropriate compensation to each landholder, which when combined with other project mitigation measures will lead to net benefits to the landholders.

Landholders may experience temporary loss of privacy with the presence of project related workforce on their property and due to the time required to engage with project staff on matters related to land access and land management. Impact on the land, productivity and lifestyle may initially give a feeling of stress, uncertainty (related to project timing) and inability to plan for the future.

With Santos' commitment to the Agreed Principles of Land Access, ongoing engagement with landholders, Land Access Agreement consultation and negotiation, Compensation Plan, Stakeholder Engagement Strategy and sharing of up to date project information and environmental monitoring data, Santos will aim to maintain fairness, openness and consistency in its communication with landholders.

It is also understood that there may be potential lifestyle and amenity impacts on the neighbouring landholders. However, these landholders if impacted will be determined as sensitive receptors for noise, air quality, visual and traffic assessments and appropriate mitigation measures will be put in place to mitigate their impacts.

### 6.3 Impacts on the regional study area and wider area of influence

#### 6.3.1 Economic growth and regional development

The project will bring regional and community economic benefits through:

- Direct and indirect employment generation
- Business development through local purchasing and flow on benefits via supply chain revenues
- Payment of taxes and royalties
- Contribution to the Gas Community Benefit Fund.

#### *Regional economic benefits*

As assessed in the Economic Impact Report (ACIL Allen Consulting, 2016), it is estimated that over its productive life, the project will increase real economic output of:

- Narrabri by \$11.0 billion
- The areas surrounding Narrabri (wider area of influence) by \$572 million
- NSW by \$11.9 billion

Over the same period (productive life), the project is also projected to increase real income of:

- Narrabri by \$526 million
- The areas surrounding Narrabri (Narrabri surrounds as defined earlier in this report) by \$690 million
- NSW as a whole by \$6.0 billion.

#### *Employment opportunities*

Over the life of the project it is predicted that an average of over 512 FTE direct and indirect jobs will be created in NSW. More specifically, over the period FY2018 to FY2042 it is estimated that the project will increase employment (by place of residence) in:

- Narrabri region by an average of 127 FTE jobs
- Narrabri surrounds region by an average of 161 FTE jobs
- Rest of NSW by an average of 224 FTE jobs
- NSW as a whole by an average of 512 FTE jobs.

The average employment impacts will be variable from year-to-year as a result of capital expenditure fluctuations over the life of the project.

### ***Local business opportunities***

The project, in both the construction and operations phases, will purchase goods and services from Narrabri, Narrabri surrounds and the wider NSW economies. This increased demand for NSW production will provide a stimulus to businesses throughout the state.

The economic impact report (ACIL Allen Consulting, 2016) demonstrates that both employment and output impacts of the project are positive on most other industry sectors such as construction, utilities, trade, transport and services, mainly a result of demand from the project as well as demand from flow on benefits such as increased levels of income at the local, regional and state levels. Small negative impacts were shown to sectors such as agriculture and forestry, mining and manufacturing which are likely mainly due to the competition for labour and small increases in local costs.

### ***Gas Community Benefit Fund***

A Gas Community Benefit Fund would be established which would receive an estimated \$120 million through the life of the project. The NSW Government has committed that for every two dollars paid by a gas producer into an authorised Gas Community Benefit Fund, the company is entitled to claim a one dollar rebate on its gas royalties, up to a maximum of 10 per cent of the royalty due in each year.

It is envisaged that the fund will be directed to infrastructure and community facilities in and around Narrabri. The fund will stimulate local and regional businesses and support major projects and physical and community infrastructure in the local area.

Santos will continue to engage with Narrabri Council and the State Government to finalise the Gas Community Benefit Fund arrangements including administration and governance and the process for identifying projects.

### ***Competition for labour***

Competition for labour, particularly for skilled labour, can have a negative effect on other local industries. However, while the project will provide job opportunities for local and regional workers, the source of labour for the project is expected to be widely dispersed. As seen above, the project may compete with economic sectors such as agriculture and forestry, mining and manufacturing and construction for skilled and unskilled labour supply. According to the economic impact report (ACIL Allen Consulting, 2016) the mining sector may experience the largest reduction in output, because workers in the existing mining industry possess skills that match the needs of the project. The existing mining industry will therefore face strong competition for labour from the project.

In addition, peak levels of construction labour demand will be short lived (three to four years). According to the economic impact report (ACIL Allen Consulting, 2016) the much longer operations phase represents a relatively minor impact on the local labour supply, because of the large labour pool and high unemployment in Narrabri Shire and surrounding region. As per Local Government Area data sourced from Department of Employment Small Area Labour Markets and NSW data sourced from Australian Bureau of Statistics Catalogue 6202.0, the economic impact report (ACIL Allen Consulting, 2016) shows that in 2013 Narrabri Shire's workforce stood at 7,700 (with an unemployment rate of 5.5 per cent). When Narrabri and Narrabri surrounds are added together this rose to 123,750 jobs (with an unemployment rate of 6.5 per cent). The job opportunities created by the proposed project will be highly skilled and well paid, but they are of a low magnitude, particularly in the long lasting operations phase, and will therefore not cause a significant impact on local businesses access to skilled labour.

### 6.3.2 Demographic impacts

As stated in Section 5.1 it is expected that 90 per cent of the general peak construction workforce and all of the drilling workforce will be sourced from outside the Narrabri region and outside a one hour driving distance area. The non-resident workforce will be housed in existing and proposed private workers camp accommodation facilities in Narrabri.

It is expected that the peak construction workforce will remain in the region for two to three years (nominally from 2018 to 2021). It is therefore expected that the project will add a temporary population of approximately 1,195 workers into the region over that period.

Subject to other developments in the region, and the fact that workforce will be accommodated in existing and approved private workers camp accommodation facilities in Narrabri, the temporary increase of (predominantly single male) population may not be unusual or unprecedented for Narrabri community. Narrabri has a history of short term increase in population due to presence of construction workforce supporting major projects. The present day CIVEO workers camp in Narrabri has a capacity of 500 workers, which may be expanded to a capacity of 900 plus beds (refer to Section 4.4.6).

As stated in Section 5.3.1 during the operations phase it is expected that 50 workers may relocate into the Narrabri region from elsewhere. It is expected that these workers will relocate with their families. The average Australian family size according to Census 2011 was 2.6 (Refer to Section 4.4.3), it is therefore estimated that on an average the resident population of Narrabri could increase by 130 persons, which is an increase of 1.7 per cent of the total population of Narrabri town in 2011. This increase is expected to occur over a period of time from 2018 to 2021.

SIA consultations with Narrabri Shire Council, Narrabri Chamber of Commerce and community group representatives indicate that increase in resident population will be a positive outcome for the community. The community aspires that job opportunities with the project may also lead to retention or return of the region's youth back into Narrabri to pursue professional employment. Research on gas extraction and rural regeneration indicates that regions with natural gas from coal seam development in Australia have experienced a growing youth share of the population and, of particular note, a growing female youth share of the population. Gas regions have also shown a higher proportion of youth with university degrees and advanced technical training compared to other rural regions (Measham and Fleming 2014). Success stories of youth returning to Narrabri to work with Santos have also been documented.

In addition to the increase in resident population, the project will also contribute to non-resident population during the operations phase, this will include approximately ten FIFO workers, approximately 100 drilling and completions workers and a portion of the approximately 45 general construction workers (refer to Section 5.2). It is therefore anticipated that the project may have an estimated non-resident population of up to approximately 155 persons, which is significantly less than the non-resident population during peak construction.

### 6.3.3 Impacts on community values

Increase in temporary non-resident male population due to the presence of construction workforce can impact on community values. Consultations with the Narrabri Police and community members revealed that while there has been workforce behaviour related issues and workforce - community cohesion related issues experienced in the past, such issues are no longer prominent due to the workforce management measures implemented by resource companies. Similarly, Santos will implement a Workforce Management Plan and a Workforce Code of Conduct to manage workforce and community related impacts.

#### 6.3.4 Impacts on community and recreational assets/activities

Impacts of the project on other relevant industries such as agriculture and associated industries, mining, construction and other related sectors in the region have been assessed in the:

- Agricultural Impact Assessment (GHD 2016a)
- Economic Impact Report (ACIL Allen Consulting, 2016).

An industry that is considered relevant to be assessed from a social perspective is the tourism and recreational industry with specific reference to its interactions with the project area. Narrabri is the gateway to the Pilliga and it is understood that the majority of the project area will be located in the Pilliga Forest. Key tourist sites and activities considered within or near the project area include:

- Yarrie Lake flora and fauna reserve
- wildflowers (September)
- bird watching
- bushwalking
- boating
- camping
- day picnics and
- Siding Spring Observatory.

With the exception of Yarrie Lake, all other key visitor attractions fall outside the project area. The landscape elements of Yarrie Lake area are highly valued by the local community. It is highly unlikely that project activities will impede recreational activities in this area. The potential impacts that may be experienced by recreational users could include negligible visual impacts as Santos will as far as possible avoid project development in the Yarrie Lake reserve area; traffic impacts from shared access along Yarrie Lake Road and noise impacts during construction. It is anticipated that these impacts will be transient in nature, during which users of the state forest would be restricted for safety reasons and could also preform the recreation activities such as bush walking, reading and meditation at other locations within the state forest. There will be a surface infrastructure constraints zone of 200 metres around the Yarrie Lake reserve area. Detailed assessment of the visual, traffic and noise impacts have been undertaken in the following EIS studies:

- Visual and Landscape Impact Assessment (GHD 2016b)
- Noise and Vibration Impact Assessment (GHD 2015)
- Traffic and Transport Impact Assessment (GHD 2016c).

The Siding Spring Observatory is located approximately 78 km south west of the southernmost point of the Project area near Coonabarabran. The Observatory is an active research facility which is used by national and international scientists and researchers and attracts day time tourists/visitors. Some of the issues impacting the Siding Spring Observatory have been the bush fire from 2013 and lighting impacts on the dark sky from the resource and urban developments in the region (Australian Astronomical Observatory, 2014). Given the distance from the Project area and the nature of Project activities it is not anticipated that the project would have direct social impacts on the Observatory. Assessment of the potential lighting impacts and cultural heritage value are discussed in the following EIS studies:

- Visual and Landscape Impact Assessment (GHD 2016b)
- Historic Heritage Assessment (Aecom, 2015).

#### 6.3.5 Impact on social infrastructure

As seen in Section 6.3.2 it is anticipated that the project can result in demographic changes due to influx of workers. Increased populations of resident and non-resident workers can place pressure on social and community services and infrastructure. However, the workforce recruitment, accommodation and management strategies proposed by Santos will limit changes to populations in Narrabri. The SIA consultations with regional stakeholders identified emergency services, medical services and facilities and housing and accommodation as the key social infrastructure indicators that may be impacted by the project.

##### **Health and medical services**

During the construction phase it is expected that the non-resident workforce will generally be in good health condition when they arrive on roster and that they will address their health needs at their usual place of residence. However, in the case of emergency or accident they may need to access medical service in Narrabri. The additional population that is expected to move into the region as part of the project's operation workforce will access the local medical and health services. Consultations with medical practitioners and Narrabri District Health Services indicate that there is sufficient capacity with the local health services to cater for population growth in the region and that the project workforce is not likely to cause adverse impacts on their service capabilities.

##### **Emergency services – fire and rescue, ambulance and police**

The project will develop and implement safety protocols, incident management and emergency procedures. A Bushfire Management Plan and Emergency Response Plan will be in place. These plans will consider among other things first aid and basic medical services, fire prevention and firefighting equipment and security (GHD 2016d). When flares are constructed, a hazard area classification will be undertaken in accordance with the Australian Standard. Given the project location and potential location of workers' accommodation during construction and operations, it is anticipated that in an emergency outside the capabilities of the on-site emergency staff, the project could require services from both the NSW Fire and Rescue Services (Narrabri) and the Rural Fire Services. The need for such services is considered low. Consultations with both, NSW Fire and Rescue Services (Narrabri) and the Rural Fire Services indicate that they anticipate limited demand from the project and have the capacity to meet the needs of additional project workforce and activity. As a result, the fire services do not envisage impacts from the project that would impede their ability to service the existing local community.

Santos will have Health and Safety Plans in place for all aspects of construction and operation of the project. These plans will consider first aid and basic medical services and security. However, there will be instances where the project will have to rely on the local ambulance services for transporting patients to the hospital, police presence in the case of an incident at

the project site or workers camp. Consultations with local ambulance and police services indicate that with the range of project management plans and emergency response in place they anticipate minimal calls from the project sites or workforce and are currently capable to respond to the unlikely additional demand from the project. Although the project itself is unlikely to generate additional demand for police services, it is acknowledged that protest activities targeted towards natural gas from coal seam development in the region may require the additional attention of the police and rescue services.

#### 6.3.6 Impacts of housing and accommodation

As stated in Sections 5.1 and 5.2.25.2, the non-resident workers during the construction and operations phases will generally be housed in private workers accommodation in Narrabri region, Westport workers accommodation and purpose built camps.

A small number of FIFO operations workers may be accommodated in short term accommodation in Narrabri. As stated in Section 4.4.6, Narrabri has a number of hotels, motels, bed and breakfast, caravan parks and camping grounds with over 300 beds. The demand from a small number of FIFO workers is not likely to create a significant impact. Reliance on local accommodation will be where possible kept under control in order not to affect local tourism and trade, however positive contribution to local businesses can be expected.

For the operations phase it is anticipated that 50 workers may relocate into Narrabri town to pursue long term employment opportunities with the project. These workers are likely relocate into the region over a period of time from 2018 to 2021 and are expected to be accommodated in the open housing in Narrabri. As seen in Section 4.4.6, Narrabri has had a low rental vacancy rate (32 properties in September 2014), but has higher availability for purchase (195 properties in September 2014). Also consultations with the Narrabri Shire Council and real estate agents in Narrabri identified three new housing developments in town which are likely to increase housing availability for both rent and purchase. This increase in demand for housing may impact housing affordability in the region; however, it is not possible to predict such impacts on housing affordability.

#### 6.3.7 Traffic Safety Impacts

Project planning, construction and operational activities will generate traffic particularly impacting Newell Highway, Kamilaroi Highway, Tibbereena Street, Old Gunnedah Road, Mooloobar Street, Yarrie Lake Road and internal State Forest roads. Excess traffic generated by the project may potentially compromise the safety of other road users (especially private property owners, school buses and public transport) and increase waiting time at interchanges. Potential impacts, mitigation measures and monitoring related to traffic and transport generated from the project are discussed and addressed in the Traffic and Transport Impact Assessment (GHD 2016c).

The traffic impact assessment identified that more traffic impacts will be associated with the construction phase of the project than the operational phase. A number of mitigation measures to ensure that transport and traffic impacts arising from the construction are minimised. These measures will be incorporated through the development of the Traffic Management Plan.

Key initiatives that will be undertaken as part of the Traffic Management Plan include (GHD 2016c):

- implementation of a community information awareness program. This program will be initiated prior to construction commencing and throughout the entire construction period to ensure that local residents are aware of the construction activities, with particular regard to construction traffic issues
- consultation with Narrabri Shire Council, Roads and Maritime Services and NSW Police Force regarding school bus routes in and around the roads accessing the project
- intersection improvements to provide a safe access arrangement where considered appropriate
- provide appropriate traffic control and warning signs for areas identified where potential safety risk issues exist
- reviewing speed restrictions along transport routes and install specific warning signs at access roads to the construction corridor to warn road users of entering and exiting traffic
- provide advance notice of road/lane closures and advice on alternative routes
- manage the transportation of construction materials, using the NSW Police Force and pilots to maximise vehicle loads in order to minimise vehicle movements.

#### 6.3.8 Cumulative impacts

A number of existing and proposed resource extraction and infrastructure projects have been identified in the Narrabri and the surrounding region. It is possible that construction timing of some of these proposed projects may coincide with the construction of Narrabri Gas Project, which may potentially generate cumulative social impacts in the region. Some of the projects that have been considered for cumulative impact assessment are, Boggabri Mine, Watermark Coal Project, Vickery Coal Mine, Caroon Coal Mine and Werris Creek Mine.

Based on the impact assessment in Section 6.3 and inferring from the SIA stakeholder consultations with key stakeholders in Narrabri, it is anticipated that the project may contribute to the following cumulative social impacts in Narrabri and surrounding region:

- Competition for local skilled and unskilled labour particularly during the construction phase, when the demand for workforce will be higher compared to the operations phase. As discussed in 6.3.1, the project has the potential to compete with other industries especially mining projects in the region for skilled labour because of the requirement for similar skills. However, it is possible that to some extent the skill sets required for the construction of coal mines and gas facilities may be different. During the construction phase it is likely that the project may also compete for unskilled local labour, generating labour shortfalls for local business and other industries such as agriculture. Shortfalls in the availability of local workforce can in turn perpetuate the need for sourcing non-residential workforce.
- Cumulatively, the non-residential workforce and workers relocating into Narrabri region to pursue employment opportunities have the potential to place excessive demand on the existing private workers camp accommodation facilities, as well as open housing in Narrabri town. This may potentially lead to reduced availability and affordability of housing and accommodation in Narrabri.



## 6.4 Social impacts upon cessation of the development

At a regional level, significant financial contributions will be made to the Community Benefit Fund through the life of the Project with these benefits being applied across the local community in the areas of health, education, environment, economic development, heritage, sport, arts and culture. As the local communities would be involved in decisions around how the funds are utilised, it is likely that the benefits from the projects supported by the fund will extend well beyond the life of the project.

Local and regional communities that interact with the Project during operation are likely to experience changes upon closure of the Project. The level of change would depend on the socio-economic context at the time. There is the potential for social impacts to occur such as, impacts associated with loss of local and regional employment opportunities, loss of business opportunities, demographic and associated changes due to the possibility that workers and their families may leave the region to seek alternative employment opportunities.

Management considerations of social impacts after the life of the Project are outlined in Section 0.

## 6.5 Summary of Social Impacts and Significance Rating

Table 22 summarises the social impacts and assesses their significance rating as per the methodology outlined in Section 2.4.

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Table 22 Social Impact Significance Rating

Impact description	Project phase	Nature of impact	Likelihood	Consequence	Significance rating
<b>Impacts on landholder</b>					
Landholders who agree to host gas field infrastructure will benefit from an additional income stream in the form of compensation provided by Santos	Construction and Operations	Positive	-	-	-
Potential changes to land use due to location of wells, flow lines and access tracks on private land. Santos will not place infrastructure on land in the absence of an agreement. After the initial construction phase Santos will as far as possible restore the original land use.	Construction and Operations	Negative	Likely	Minor	Medium
<p>Potential for reduced productivity of land and associated livelihoods due to:</p> <ul style="list-style-type: none"> <li>• Temporary diminished access to parts of property and severance which may potentially impede property management and grazing activities, lead to perceived impact on value of land. Project infrastructure will be located on land in agreement with the landholders to minimise impacts on the management of property</li> <li>• Increased labour cost for agricultural activities due to competition for labour</li> <li>• Demand on time of landholders to engage in project consultations and negotiations distracting them from livelihoods activities</li> </ul>	Construction and Operations	Negative	Possible	Minor	Low

Impact description	Project phase	Nature of impact	Likelihood	Consequence	Significance rating
Effective management of lifestyle and amenity of landholders hosting project infrastructure through adequate compensation and adherence to noise management criteria	Construction	Negative <sup>1</sup>	Possible	Minor	Low
	Operations	Positive <sup>2</sup>	Almost certain	Minor	Medium
Changes to lifestyle and amenity of neighbouring landholders	Construction	Negative	Possible	Minor	Low
	Operations		Unlikely	Negligible	Very low
Potential additional demand on time of landholders hosting project infrastructure, loss of privacy due to presence of workforce on property and uncertainty about the project. Santos will place infrastructure on land only where there is a written agreement with the landholder, develop a Farm Management Plan with each individual landholder, have compensation arrangements in place and provide reasonable costs for legal advice for land access agreements.	Pre-construction	Negative	Likely	Minor	Medium
<b>Economic growth and regional development</b>					
Economic benefits through increase real economic output, real income, payment of taxes and royalties	Construction and Operations	Positive	-	-	-
Increased local and regional employment opportunities in Narrabri and surrounding region	Construction and Operations	Positive	-	-	-

<sup>1</sup> Pre-mitigation assessment indicates that it is possible that amenity and lifestyle maybe impacted if considered in isolation of project commitments such as principles of land access, noise criteria, negotiation and compensation

<sup>2</sup> Residual assessment indicates that lifestyle and amenity will be effectively managed through project field development plan and commitments which will provide net benefits

Impact description	Project phase	Nature of impact	Likelihood	Consequence	Significance rating
Increased opportunities for local business development	Construction and Operations	Positive	-	-	-
Potential competition for skilled labour with other industries in the region, potentially creating labour shortfalls and increased labour costs	Construction and Operations	Negative	Possible	Minor	Low
<b>Demographic impacts</b>					
Permanent increase in resident population by 1.7 per cent of Narrabri town population as recorded in 2011 Census	Operation	Positive	-	-	-
<b>Community values</b>					
Potential impact on community values due to the presence of non-resident single male workforce	Construction	Negative	Possible	Minor	Low
<b>Impacts on recreational activities</b>					
Temporary amenity impacts on recreational activities/users at Yarrie Lake reserve area due to noise and minor dust and visual impacts of construction activities and impacts from shared access with construction traffic. Santos will have in place a 200 metre surface infrastructure constraints zone around Yarrie Lake. Users of the area will be able to pursue similar activities in other parts of the state forest	Construction	Negative	Possible	Minor	Low

Impact description	Project phase	Nature of impact	Likelihood	Consequence	Significance rating
<b>Impact on social infrastructure</b>					
Minor increase in demand on health and medical services and other emergency services like fire and rescue, police and ambulance may be anticipated, however these services in Narrabri have the capacity to address the minor increase in demand from Narrabri Gas Project and do not expect that the project will impact on the provision of services for local community	Construction and Operations	Negative	Remote	Negligible	Very low
<b>Impact on housing and accommodation</b>					
The influx of non-resident workforce during construction and potential relocation of 50 operational workers to Narrabri will increase demand for private workers accommodation camps in the region and open housing in Narrabri town, potentially impacting housing availability and affordability.	Construction and Operations	Negative	Almost certain	Minor	Medium
<b>Traffic safety impacts</b>					
Potential impact on traffic safety of other road users due to increase in project related traffic along Newell Highway, Kamilaroi Highway, Tibbereena Street, Old Gunnedah Road, Mooloolbar Street, Yarrie Lake Road and internal property roads.	Construction	Negative	Possible	Moderate	Medium

## 7. Mitigation and management strategies

### 7.1 Introduction

Santos is committed to maximising potential benefits/opportunities and reducing potential negative impacts associated with the project. A range of mitigation measures and management strategies have been developed and will be implemented to address direct social impacts arising from the project. The management strategies will primarily focus on the social impacts with a higher significance rating or having the potential to be high significance if appropriate management strategies are not in place. The management strategies developed for the project are based on Santos' standards and practices, existing industry practices and feedback from various stakeholders during the social impact assessment consultations.

While the overall responsibility for development, implementation and monitoring of the social impact management strategies will remain with Santos, some responsibilities will be devolved to relevant construction and operations contractors, which will become part of the contractor's terms and conditions of engagement.

Due to the proposed life of the project (i.e. 25 years), it is expected that the associated social impacts may vary over time, subject to changes outside the control of Santos. Social impacts will be monitored on an ongoing basis through the grievance mechanisms and continued stakeholder engagement. Subsequently, the management strategies proposed are adaptive and will be reviewed and updated as required. Based on the Secretary's environmental assessment requirements, Santos will monitor and review impacts and management strategies at suitable regular intervals and report them through Santos' Annual Sustainability Reporting processes.

The impact management and monitoring strategies detailed in the following sections of the social impact assessment will be finalised subject to a review by the relevant stakeholders during the EIS public consultation process.

### 7.2 Regional and local employment and business development opportunities

The project is committed to continuing to support local vendors providing good and services wherever practicable. A procurement and contracts officer is employed locally who works closely with local businesses to assist them to become compliant with the levels required for environment, health and safety under the contractor and supplier management standards. Local business and contractor forums are also held annually to promote local vendor participation in project activities and it is envisaged that this will continue.

### 7.3 Opportunities for Indigenous participation

To encourage Indigenous participation in the development of Santos projects and operations, a *Diversity and Equal Opportunity Policy* would be implemented to maximise Aboriginal employment including for contractors (refer to Appendix A of this report). The policy outlines capacity building strategies for Aboriginal peoples including specific employment, training and procurement initiatives to:

- increase the number of Aboriginal employees within Santos and service providers
- develop partnerships with Aboriginal peoples, government and community organisations in the delivery of Aboriginal employment and training outcomes
- create, where possible, enterprise development and procurement opportunities within Santos projects and operations for Aboriginal companies

- facilitate the development of the community to build capacity which is aligned with Santos operations and activities.

## 7.4 Stakeholder engagement, complaints and dispute resolution

A Community Engagement Plan, including complaints and dispute resolution, would be implemented to provide timely and accessible information and to seek feedback from stakeholders regarding the project. The plan will also guide the community engagement process for the project. Santos' primary approach to stakeholder engagement and conflict management is open and proactive communications with all stakeholders. As part of this approach Santos maintains:

- An office and project information centre at 125 Maitland Street, Narrabri, which members of the public can visit and request information about the proposed activity. The office is attended from 9am to 5pm Monday to Friday.
- A project specific website (<https://www.narrabrigasproject.com.au/>) which will be regularly updated with project information and progress
- A project webpage within Santos' website (<http://www.santos.com/our-activities/eastern-australia/new-south-wales/narrabri-gas-project.aspx>) with links to activities in NSW and provides a range of useful information for stakeholders. The website is regularly updated with general project information, photos and frequently asked questions
- A free information and enquiries line at 1800 071 278
- Project email address at [energy.nsw@santos.com](mailto:energy.nsw@santos.com)
- Regular project and activity updates through monthly media advertisements in the local Narrabri Courier newspaper, project factsheets, community information sessions through landholder information forums, aboriginal stakeholder information forums, community Information forums, community site tours
- Monthly updates and feedback through the CCC meetings.

The 1800 information line is available 24 hours per day, seven days per week and is provided on all project communication materials including community updates, fact sheets and stakeholder and community letters. Santos aims to respond to all enquiries or complaints received via the information line within two business days.

Santos has a documented *Complaint Management Procedure* that is communicated to all relevant staff members. All community enquiries and complaints will be available on Santos website and will be responded to promptly in accordance with the complaint management protocol. This procedure involves the following steps:

- capture enquiry or complaint and record details, including time and date the call/email is received, contact name, phone number, and nature of enquiry/complaint and the response provided
- assess and investigate enquiry/complaint by the relevant business unit and escalate if unable to be resolved
- where a complaint involves a reportable incident, notify the NSW Office of Coal Seam Gas and/or the NSW Environmental Protection Agency as required by the relevant petroleum lease/licence or environmental protection licence
- where possible, provide the enquirer/complainant a timeframe for responding to them or resolving the issue, and keep them updated on progress
- close out complaint/enquiry and record all communication actions and responses.

To manage enquiries or complaints received, Santos maintains a database of:

- all project related concerns or complaints received from individual members of the community or representative bodies
- the response provided or action taken
- a system to track notes on progress to resolution.

## 7.5 Landholder impact mitigation strategies

As mentioned in Section 6.2.1 as part of project development Santos will have in place a Field Development Protocol which will play an important role in avoiding and minimising impacts on landholders. The Field Development Protocol have been considered in the impact assessment and hence are not listed here as mitigation measures. Negotiation with landholders would occur in accordance with the *Agreed Principles of Land Access*. A *Landholder Engagement Policy* would be implemented to facilitate ongoing consultation with landholders regarding the project.

Measures to manage noise, dust, traffic and visual amenity impacts to landholders and their properties are discussed in detail within the respective technical studies as appended to the EIS, which are listed in Sections 6.2.1 and 7.9.

## 7.6 Workforce management strategies

A number of workforce management strategies would be implemented to promote the health, safety and wellbeing of the project workforce. Santos' overall approach to workforce management includes:

- behaviour management at all times during the course of work
- worker health, safety and wellbeing (including work related social activities)
- a recruitment, training and development plan for a sustainable skilled workforce.

All of the above aspects of workforce management will be implemented in accordance with:

- *Project Human Resources Plan*
- *Project Workforce Management Plan*
- *Santos Environment, Health and Safety Policy* (refer to Appendix C of this report)
- *Santos Environment, Health and Safety Management System Guide*
- *Santos Diversity and Equal Opportunity Policy* (refer to Appendix A of this report)
- *Project Training Matrix* for project construction team, project direct hire personnel and contractors. All training will be carried out in accordance with the processes and procedures outlined in the Human Resources Plan. Records of this training will be maintained by the Project Construction Manager or as delegated. The training may include (but not limited to):
  - Induction training
  - Management and supervisor coaching
  - Task specific training
  - Other specialised training requirements identified by the various Managers.



The above plans will include (but not be limited to) details of the following:

- project workforce numbers, project timing, rosters and travel arrangements
- opportunities for flexible and family friendly rosters
- engagement with Indigenous and Non-Indigenous local recruitment agencies to maximise local employment on the project
- a Workers Health and Safety Management Plan including first aid and occupational therapy services for workforce on site
- access to confidential counselling and guidance for employees and their families, relating to personal or work related issues
- a workers' Code of Conduct will be applicable to all construction and operations employees, contractors, subcontractors and consultants working on the project, at all times when on duty and/or attending work related functions. The Code of Conduct will be linked to employee contract conditions and will require employees to:
  - Comply with relevant State, Territory and Commonwealth law
  - Abstain from illegal drug use
  - Maintain behavioural standards at all times including the prohibition of alcohol and drugs ('zero tolerance' for drug and alcohol abuse) whilst working and limiting its use at other times in a manner that is consistent with maintaining appropriate standards of behaviour. This will be monitored through mandatory drug and alcohol testing
  - Workforce behavioural standards will be incorporated into employment conditions. Clear consequences for workers not adhering to behavioural standards will be set out, including dismissal for serious non-conformances or repeated offences
  - Be respectful of the communities within which they work and visit and refrain from behaviour which could be harmful and/or result in negative impacts on the communities in which they work
  - Use work vehicles appropriately and in accordance with the company's policies regarding transportation to and from the site
- workers' induction and education programs that include education and awareness on:
  - Workers Code of Conduct
  - Workers Health and Safety Management Plan to encourage workers to access health services at early signs of illness, fatigue management, education on financial planning and investment
- programs that address needs of the workforce that may choose to move residence to Narrabri. These programs will include workforce integration and cohesion programs through increased support and partnership with local community organisations
- training and Up-skilling – There are adequate and relevant training opportunities available and accessible for potential workforce in the region. Appropriate training for technical skills is available at Tamworth TAFE. In addition, federal and state government programs are available to assist with fees and other expenses. To provide long term career pathways for locals and ensure that an appropriately skilled workforce is employed, Santos would provide scholarships and develop suitable, scholarships, training and apprenticeship programs in consultation with local TAFE and other training institutions.

## 7.7 Workforce accommodation and housing strategies

Project workforce requirements and corresponding accommodation and housing arrangements anticipated for the project are stated in Table 23.

Table 23 Workforce requirements and corresponding accommodation and housing arrangements

Workforce numbers	Source	Accommodation and housing
<b>Initial 3-4 years (peak construction)</b>		
General construction workers 1,050 FTE	<ul style="list-style-type: none"> <li>10% (approximately 105 workers) from the regional study area within one hour of driving distance from the project area (this will include LGAs like Narrabri and Gunnedah and Moree)</li> <li>20% (approximately 210 workers) from the wider area of influence including the surrounding 14 LGAs (refer to Section 2.2.1)</li> <li>65% (approximately 685 workers) from rest of the state of NSW</li> <li>5% (approximately 50 workers) from interstate</li> </ul>	<ul style="list-style-type: none"> <li>10 per cent (approximately 105 workers) general construction workforce sourced from within one hour driving distance will reside at their usual place of residence (home)</li> <li>90 per cent (approximately 945 workers) non-resident general construction workforce will be housed in private workers' camp accommodation in Narrabri and surrounds. This may include a combination of existing facilities and proposed new workers' accommodation facilities.</li> <li>It is anticipated that of the total general construction workforce 25 per cent will be off roster. In proportion to the resident (10%) and non-resident (90%) workforce it is predicted that at every given point in time three per cent of resident workforce will be off roster and 22 per cent of the non-resident workforce will be off roster. It is therefore estimated that the project will need to accommodate approximately 740 general construction workers at peak.</li> </ul>
Drilling and completions workers 250 FTE	It is anticipated that 100% of the drilling workforce will be sourced from interstate (mainly Queensland)	All of the drilling and completions workforce will be housed at the Westport Drilling Camp, which will be expanded by Santos to meet the project needs.

Workforce numbers	Source	Accommodation and housing
<b>Beyond initial 3-4 years (operation and ongoing construction)</b>		
General operations workers 200 FTE	<ul style="list-style-type: none"> <li>• 25% (approximately 50 workers) existing Santos Narrabri operations team</li> <li>• 20% (approximately 40 workers) existing Narrabri residents or residents within 1 hour driving distance</li> <li>• 25% (approximately 50 workers) workers relocating to Narrabri from elsewhere</li> <li>• 5% (approximately 10 workers) Fly-in-fly-out workers (FIFO)</li> <li>• 25% (approximately 50 workers) workers based in Sydney / Brisbane / Adelaide</li> </ul>	<ul style="list-style-type: none"> <li>• 45 per cent (approximately 90 workers) will already be residing in Narrabri and within one hour driving distance from Narrabri</li> <li>• 25 per cent (approximately 50 workers) relocating to Narrabri are expected to rent or buy houses from the local Narrabri housing market</li> <li>• 5 per cent (approximately 10 workers) workers are expected to be employed on a FIFO basis and will be accommodated in available short term accommodation facilities in and around Narrabri</li> <li>• 25 per cent (approximately 50 workers) will be based in Sydney, Brisbane and Adelaide.</li> </ul>
General construction workers 45 FTE	To source ongoing construction workforce, Santos will give preference to workers already residing in the regional study area within one hour of driving distance from project area (this will include LGAs like Narrabri, Gunnedah and Moree) and the wider area of influence including the surrounding 14 LGAs (refer to Section 2.2.1). In the absence of a regional workforce, Santos will seek workers from the rest of the state of NSW.	<ul style="list-style-type: none"> <li>• Non-resident on going general construction workforce will be housed in private workers' camp accommodation in Narrabri, this may include a combination of existing facilities and proposed new workers' accommodation facilities</li> </ul>
Drilling and completions workers 100 FTE	It is anticipated that the drilling workforce would be sourced from NSW and interstate.	<ul style="list-style-type: none"> <li>• All of the drilling and completions workforce will be housed at the Westport Drilling Camp, which will be expanded during construction phase by Santos to meet project needs.</li> </ul>

To measure and manage potential direct or cumulative impacts on availability of private workers' camp accommodation and availability and affordability of private housing in Narrabri, Santos will implement construction workforce housing and accommodation strategies that monitor and adapt to requirements as needed. The following management measures will be included in the strategies:

- monitor regional housing conditions through consultations with key housing stakeholders in Narrabri, CCC and industry networks
- monitor availability of private camp accommodation through early engagement with accommodation providers

- implement an approach to accommodation management that is transparent and flexible to changing housing conditions during project planning phase through to the commencement of construction.

## 7.8 Gas Community Benefit Fund and community sponsorships

A Gas Community Benefit Fund would be established which would receive an estimated \$120 million through the life of the project. The NSW Government has committed that for every two dollars paid by a gas producer into an authorised Gas Community Benefit Fund, the company is entitled to claim a one dollar rebate on its gas royalties, up to a maximum of 10 per cent of the royalty due in each year.

Santos will continue to work in partnership with local communities and invest in social infrastructure and economic development opportunities that address impacts created by the project and/or leave a positive legacy for the local communities with these benefits being applied across the local community in the areas of health, education, environment, economic development, heritage and sport, arts and culture (also refer to Section 6.3.1). Santos will continue to engage with Narrabri Council and the State Government to finalise the Gas Community Benefit Fund arrangements including administration and governance and the process for identifying projects.

In addition to generating local employment, business and training opportunities, Santos will participate in community events and activities and will provide support through community sponsorships. Sponsorship investment initiatives will contribute through:

- supporting natural environment initiatives that protect and enhance land and water, this will include supporting activities such as research and educational programs, sustainable agricultural projects, water preservation projects, land conservation, disaster preparedness, community clean ups, reforestation and cultural heritage.\
- providing a range of training and employment opportunities for young people and regional communities this will include activities such as traineeships, apprenticeships, regional skills training programs, rural leadership programs, partnerships with charities focused on young people
- helping local towns to be healthier and more vibrant and enriching the lives of those who live there, including support for activities such as arts and community festivals, health charities and events.

Santos has developed an eligibility and non-eligibility criteria for the sponsorship investment which will be available on Santos' website. Santos would report on its community investment initiatives and outcomes as part of the annual Sustainability Report.

## 7.9 Other EIS management plans/strategies relevant to social impacts

Management of social impacts, especially those that relate to environment and amenity have been identified and addressed in other technical studies undertaken as part of the EIS. Table 24 presents a list of technical studies undertaken to assess impacts and present mitigation measures. As part of these (refer to Table 24) a number of impact management plans and strategies have been recommended which will be developed upon project approval.

Table 24 Other EIS management plans/strategies relevant to social impacts

Other EIS technical studies and management plans	Relevance to social impacts
Agricultural Impact Statement (GHD 2016a)	The agricultural impact statement outlines a range of mitigation measures to minimise impacts on agricultural activities of landholders and their livelihoods related to agriculture.
Noise and Vibration Impact Assessment (GHD 2015)	The noise and vibration impact assessment addresses noise impacts associated with construction noise from the project. A number of compliance and mitigation measures and suitable buffer distance are recommended to minimise impacts on landholders, neighbours, recreational users and other sensitive receptors. Along with a range of technical measures and compliance measures the assessment also includes ongoing consultation and negotiation with landholders as a tool to identify suitable impact management strategies. A Noise and Vibration Management Plan will be developed in consideration of the noise impact assessment as well as in compliance with the Environmental Protection Licence requirements.
Visual Impact Assessment (GHD 2016b)	<p>The visual impact assessment suggests the following key strategies to manage visual including night time lighting impacts on landholders and other sensitive receptors:</p> <p>Avoid - Avoid developments in sensitive or prominent landscapes, and avoid insensitive or visually intrusive designs.</p> <p>Minimise – Reduction of adverse effects that cannot be eliminated by avoidance by limiting exposure of the receptor. e.g. by installing screening between the location(s) of likely receptors and the source of the impact.</p> <p>Offset - The provision of alternative or compensatory measures where appropriate and feasible (e.g. offset planting either on or off site).</p> <p>These measures will be executed via the Construction Management Plan. Community consultations will also be undertaken to notify receptors of potential work to be undertaken and expected impact.</p>

Other EIS technical studies and management plans	Relevance to social impacts
Traffic and Transport Impact Assessment (GHD 2016c)	The Construction Traffic Management Plan and Road Use Management Plan will be developed to address traffic safety issues impacting other road users.
Cultural Heritage Management Plan (Central Queensland Cultural Heritage Management, 2015)	The Cultural Heritage Management Plan has been developed as part of the EIS. The plan identifies areas/zones where potential for the discovery of objects may be more significant with varying levels of control based on the likelihood of discovery.
Hazard and Risk Assessment (GHD 2016d)	As part of the project hazard and risk assessment a site specific Bushfire Management Plan would be prepared in conjunction with landholders and the NSW Rural Fire Service, with components under Santos control implemented for the study area to mitigate this risk. The plan will include preparedness procedure, identification of asset protection zones, procedure to respond to a formal bushfire warning issues by emergency services.
	<p>An Emergency Response Plan will be developed upon project approval, which will be based on the hierarchy of</p> <ol style="list-style-type: none"> <li>1. Protection of human life</li> <li>2. Protection of the environment</li> <li>3. Protection and preservation of plant, product and equipment.</li> </ol> <p>The plan will include best practice risk management, actions to meet statutory or legislative requirements where appropriate, an education program for all staff and contractors, emergency response protocols, communication and reporting protocols (internal and external), equipment installation use and maintenance guidelines. As part of developing this plan Santos will engage with Narrabri Police and Fire and Rescue Services.</p>

## 7.10 Management of social impacts beyond the life of the project

Prediction and management of social impacts associated with the cessation of the project will be assessed and addressed as part of the closure planning process, which will include appropriate stakeholder engagement to inform the process.

The Community Benefit Fund, as described in section 7.8 will provide sustained benefits for the community beyond the life of the project through investment in community development initiatives and infrastructure projects. As the local communities and stakeholders will be involved in decisions on how the funds are spent, the Community Benefit Fund is expected to provide lasting benefits to the community.

## 7.11 Residual Impacts

Table 25 summarises the potential social impacts arising from the project and reassess their significance rating against the proposed mitigation and management strategies to derive the expected residual impacts.

Table 25 Significance rating of residual social impacts

Impact description	Project phase	Nature of impact	Impact significance rating	Mitigation/management strategies	Likelihood	Consequence	Residual impact rating
<b>Impacts on landholder</b>							
Potential changes to land use due to location of wells, flow lines and access tracks on private land. Santos will not place infrastructure on land in the absence of an agreement. After the initial construction phase Santos will as far as possible restore the original land use.	Construction and Operations	Negative	Medium	<p>Agreed Principles of Land Access</p> <p>Santos will pay reasonable financial costs for legal advice on land access</p> <p>Landholder negotiation and compensation process as outlined in Santos Working with Landholders Fact Sheet</p> <p>Mitigation measures and management strategies as outlined in the Agricultural Impact Assessment (GHD 2016a)</p>	Likely	Minor	Medium
<p>Potential for reduced productivity of land and associated livelihoods due to:</p> <ul style="list-style-type: none"> <li>• Temporary diminished access to parts of property and severance which may potentially impede property management and grazing activities, lead to perceived impact on value of land. Project infrastructure will be located on land in agreement with the landholders to minimise impacts on the management of property</li> <li>• Increased labour cost for agricultural activities due to competition for labour</li> </ul>	Construction and Operations	Negative	Low	<p>Agreed Principles of Land Access</p> <p>Santos will pay reasonable financial costs for legal advice on land access</p> <p>Farm Management Plan</p> <p>Landholder negotiation and compensation process as outlined in Santos Working with Landholders Fact Sheet</p> <p>Mitigation measures and management strategies as outlined in the Agricultural Impact Assessment (GHD 2016a)</p>	Possible	Minor	Low



Impact description	Project phase	Nature of impact	Impact significance rating	Mitigation/management strategies	Likelihood	Consequence	Residual impact rating
<ul style="list-style-type: none"> <li>Demand on time of landholders to engage in project consultations and negotiations distracting them from livelihoods activities</li> </ul>							
Effective management of lifestyle and amenity of landholders hosting project infrastructure through adequate compensation and adherence to noise management criteria	Construction Operations	Negative <sup>3</sup> Positive <sup>4</sup> (residual)	Low -	<p>Agreed Principles of Land Access</p> <p>Landholder negotiation and compensation process as outlined in Santos Working with Landholders Fact Sheet</p> <p>Additional income and compensation</p> <p>Mitigation measures and management strategies as outlined in the -</p> <ul style="list-style-type: none"> <li>Noise and Vibration Impact Assessment (GHD 2015)</li> <li>Air Quality Impact Assessment (Air Environmental Consulting 2015)</li> <li>Landscape and Visual Impact Assessment (GHD 2016b)</li> <li>Traffic and Transport Impact Assessment (GHD 2016c)</li> </ul> <p>Chapter 31 of this EIS</p>	Almost certain Almost certain	Minor (positive) Moderate (positive)	Medium (positive) High (positive)

<sup>3</sup> Pre-mitigation assessment indicates that it is possible that amenity and lifestyle maybe impacted if considered in isolation of project commitments such as principles of land access, noise criteria, negotiation and compensation

<sup>4</sup> Residual assessment indicates that lifestyle and amenity will be effectively managed through project field development plan and commitments which will provide net benefits

Impact description	Project phase	Nature of impact	Impact significance rating	Mitigation/management strategies	Likelihood	Consequence	Residual impact rating
Effective management of lifestyle and amenity of landholders hosting project infrastructure through adequate compensation and adherence to noise management criteria	Construction	Negative <sup>5</sup>	Low	Agreed Principles of Land Access	Almost certain	Minor (positive)	Medium (positive)
	Operations	Positive <sup>6</sup> (residual)	-	Landholder negotiation and compensation process as outlined in Santos Working with Landholders Fact Sheet  Additional income and compensation  Mitigation measures and management strategies as outlined in the - <ul style="list-style-type: none"> <li>Noise and Vibration Impact Assessment (GHD 2015)</li> <li>Air Quality Impact Assessment (Air Environmental Consulting 2015)</li> <li>Landscape and Visual Impact Assessment (GHD 2016b)</li> <li>Traffic and Transport Impact Assessment (GHD 2016c)</li> <li>Chapter 31 of this EIS</li> </ul>	Almost certain	Moderate (positive)	High (positive)

<sup>5</sup> Pre-mitigation assessment indicates that it is possible that amenity and lifestyle maybe impacted if considered in isolation of project commitments such as principles of land access, noise criteria, negotiation and compensation

<sup>6</sup> Residual assessment indicates that lifestyle and amenity will be effectively managed through project field development plan and commitments which will provide net benefits

Impact description	Project phase	Nature of impact	Impact significance rating	Mitigation/management strategies	Likelihood	Consequence	Residual impact rating
Potential additional demand on time of landholders hosting project infrastructure, loss of privacy due to presence of workforce on property and uncertainty about the project.	Pre-construction	Negative	Medium	Agreed Principles of Land Access  Santos will pay reasonable financial costs for legal advice on land access  Landholder negotiation and compensation process as outlined in Santos Working with Landholders Fact Sheet  Ongoing engagement with landholders	Possible	Minor	Low
Landholders who agree to host gas field infrastructure will benefit from an additional income stream in the form of compensation provided by Santos.	Construction and Operations	Positive	-	-	-	-	-
<b>Economic growth and regional development</b>							
Economic benefits through increase real economic output, real income, payment of taxes and royalties	Construction and Operations	Positive	-	-	-	-	-
Increased local and regional employment opportunities in Narrabri and surrounding region	Construction and Operations	Positive	-	-	-	-	-
Increased opportunities for local business development	Construction and Operations	Positive	-	-	-	-	-

Impact description	Project phase	Nature of impact	Impact significance rating	Mitigation/management strategies	Likelihood	Consequence	Residual impact rating
Potential competition for skilled labour with other industries in the region, potentially creating labour shortfalls and increased labour costs	Construction and Operations	Negative	Low	<p>Santos will have in place training, up-skilling, apprentice and traineeship programs to up-skills labour in the region</p> <p>Santos' workforce sourcing will include workers from wider regional area and the State and where required interstate to minimise shortfalls in specific skills</p>	Possible	Negligible	Low
<b>Demographic impacts</b>							
Permanent increase in resident population by 1.7 per cent of Narrabri town population as recorded in 2011 Census	Operation	Positive	-	-	-	-	-
<b>Community values</b>							
Impact of community values due to the presence of non-resident single male workforce	Construction	Negative	Low	<p>Santos' workforce behaviour management measures will extend to all direct and contracted staff at all times when on duty, this will be implemented via:</p> <ul style="list-style-type: none"> <li><i>Project Workforce Management Plan</i></li> <li><i>Santos Code of conduct</i></li> </ul>	Unlikely	Negligible	Very low
<b>Impacts on recreational activities</b>							
Temporary amenity impacts on recreational activities/users at Yarrie Lake reserve area due to noise and minor dust and visual impacts of construction activities and impacts from shared access with construction traffic. Users of the area will be able to	Construction	Negative	Low	<p>Santos will have a 200 metres 'no go' zone around the Yarrie Lake. In addition, design measures and mitigation measures suggested in the in the following EIS studies will be implemented through the Construction Management Plan:</p>	Unlikely	Negligible	Very low

Impact description	Project phase	Nature of impact	Impact significance rating	Mitigation/management strategies	Likelihood	Consequence	Residual impact rating
peruse similar activities in other parts of the state forest				<ul style="list-style-type: none"> <li>Noise and Vibration Impact Assessment (GHD 2015)</li> <li>Air Quality Impact Assessment (Air Environmental Consulting 2015)</li> <li>Landscape and Visual Impact Assessment (GHD 2016b)</li> <li>Traffic and Transport Impact Assessment (GHD 2016c)</li> </ul>			
<b>Impact on social infrastructure</b>							
Minor increase in demand on health and medical services and other emergency services like fire and rescue, police and ambulance may be anticipated, however these services in Narrabri have the capacity to address minor increase in demand from the project and do not expect that the project will impact on the provision of services for local community	Construction and Operations	Negative	Very low	<p>Santos will engage with service providers on an ongoing basis through various forums initiated by Santos to monitor change in demand on services from the project</p> <p>In consultation with key stakeholders Santos will invest in community infrastructure services through the Gas Community Benefit Fund.</p>	Remote	Negligible	Very low

#### Impact on housing and accommodation

Impact description	Project phase	Nature of impact	Impact significance rating	Mitigation/management strategies	Likelihood	Consequence	Residual impact rating
The influx of non-resident workforce during construction and potential relocation of 50 operations workers to Narrabri town will increase demand for private workers accommodation camps in the region and open housing in Narrabri town, potentially impacting housing availability and affordability.	Construction and Operations	Negative	Medium	<p>Santos will engage with the Narrabri Shire Council and service providers on an ongoing basis to monitor change in demand on housing and accommodation from the project.</p> <p>Implement an approach to accommodation management that is transparent and flexible to changing housing conditions during project planning phase through to the commencement of construction</p> <p>In consultation with key stakeholders Santos will invest in community infrastructure services through the Gas Community Benefit Fund.</p>	Almost certain	Negligible	Medium
<b>Traffic safety impacts</b>							
Potential impact on traffic safety of other road users due to increase in project related traffic along Newell Highway, Kamilaroi Highway, Tibbereena Street, Old Gunnedah Road, Mooloobar Street, Yarrie Lake Road and internal property roads	Construction	Negative	Medium	Mitigation measures to minimise traffic related impacts will be implemented through the Traffic Management Plan.	Possible	Minor	Low

## 8. Conclusion

This report has assessed the social impacts arising from the construction and operations of the proposed Narrabri Gas Project. For the purpose of assessing social impacts the following three tiers of study area were determined:

- Local study area – to assess impacts with the project footprint, this included assessing impacts on the landholders within the project footprint area.
- Regional study area – to assess impacts experienced on Narrabri township and LGA as the project workforce will mainly be located in Narrabri.
- Wider area of influence – to assess impacts experienced by the LGAs surrounding Narrabri, with particular reference to impacts associated with economic development and workforce flows within the wider region.

The social impact assessment has identified both social benefits and impacts to the community. In conclusion this chapter only highlights the key social benefits and impacts expected from the construction and operation of the project.

### 8.1 Key social benefits

The key social benefits anticipated are as follows:

- An additional income stream in the form of compensation provided by Santos to landholders who agree to host gas field infrastructure.
- Regional economic benefits created through increased employment and business development opportunities in the form of increased real economic output during (FY2018 to FY2040) for:
  - Narrabri by \$11.0 billion
  - The areas surrounding Narrabri (wider area of influence) by \$572 million
  - NSW by \$11.9 billion.
- Increased real income over the period of FY2018 to FY2042, for:
  - Narrabri by \$526 million
  - The areas surrounding Narrabri (Narrabri surrounds as defined earlier in this report) by \$690 million
  - NSW as a whole by \$6.0 billion.
- Over the life of the project it is predicted that an average of over 512 FTE direct and indirect jobs will be created in NSW. More specifically, over the period FY2018 to FY2042 it is estimated that the project will increase employment (by place of residence) in:
  - Narrabri region by an average of 127 FTE jobs
  - Narrabri surrounds region by an average of 161 FTE jobs
  - Rest of NSW by an average of 224 FTE jobs
  - NSW as a whole by an average of 512 FTE jobs.
- The project, in both the construction and operations phases, will purchase goods and services from Narrabri, Narrabri surrounds and the wider NSW economies. This increased demand for production will provide a stimulus to businesses throughout the region and state.

- A Gas Community Benefit Fund would be established which would receive an estimated \$120 million through the life of the project. The NSW Government has committed that for every two dollars paid by a gas producer into an authorised Gas Community Benefit Fund, the company is entitled to claim a one dollar rebate on its gas royalties, up to a maximum of 10 per cent of the royalty due in each year.
- The project workforce, especially during the long term operations phase will contribute to the resident population in Narrabri, potentially increasing the town's population by 1.7 per cent. Job opportunities created by the project may also contribute to retention of younger generation in the town.

## 8.2 Key social impacts

The key social impacts anticipated from the construction and operations of the proposed project are as follows:

### *Impacts on landholders*

The location of wells, transmission lines and access tracks on private land may impact land use of each property, impede access to parts of property, severance, which may alter property management practices and potentially impact land productivity and livelihoods of the landholder

Construction and operations activities may also lead to diminished amenity through loss of privacy due to the presence of project workforce, demand on time to engage with project related land access activities, impacts on rural lifestyle through noise, night time lights and dust impacts.

The consequence and significance of impacts on landholders will be realised on a case by case basis once the location of gas field infrastructure is determined in agreement with each individual landholder.

### *Economic impacts*

Job opportunities generated by the project may lead to competition for labour, particularly skilled labour which could generate labour shortfalls and increase the cost of labour in sectors such as agriculture and forestry, mining and manufacturing and construction for skilled and unskilled labour supply.

### *Impacts of recreational assets and activities*

Temporary amenity impacts on recreational activities/users at Yarrie Lake reserve area may be expected due to noise and minor dust and visual impacts from construction of gas field infrastructure and impacts from shared access with construction traffic. Santos will have in place a 200 metre infrastructure constraints zone around Yarrie Lake and it is expected that users of the area will be able to peruse similar recreational activities in other parts of the state forest.

### *Impacts on social infrastructure*

Minor increase in demand on health and medical services and other emergency services like fire and rescue, police and ambulance may be anticipated, however these services in Narrabri have additional capacity to address minor increase in demand from the Project and do not expect that the project will access to services for the local community.



### ***Housing and accommodation impacts***

The influx of non-resident workforce during construction and potential relocation of 50 workers to Narrabri town during operations will increase demand for private workers' accommodation camps in the region and open housing in Narrabri town, potentially impacting housing availability and affordability.

### ***Traffic safety impacts***

Project planning, construction and operational activities will generate traffic particularly impacting Newell Highway, Kamilaroi Highway, Tibbereena Street, Old Gunnedah Road, Mooloobar Street, Yarrie Lake Road and internal State Forest roads. Excess traffic generated by the project may potentially compromise the safety of other road users (especially private property owners, school buses and public transport) and increase waiting time at interchanges.

## **8.3 Key social impact management mitigation measures and strategies**

Santos is committed to maximising potential benefits/opportunities and reducing potential negative impacts associated with the project. A range of mitigation measures and management strategies have been developed and will be implemented to address direct social impacts arising from the project. Key social impact management strategies are summarised in Table 26 below, each strategy or impact mitigation measure often has crossovers with more than one impact. .

Table 26 Social impacts and mitigation/management matrix

Impacts	Impacts on landholders	Economic growth and regional development	Demographic impacts	Impacts on community values	Impacts on recreational assets and activities	Impacts on social infrastructure	Impacts on housing and accommodation availability and affordability	Traffic safety impacts
<b>Mitigation/management strategies</b>								
Procurement and Logistics Values and Policies give preference to local content		X						
Recruitment policy Santos will maximise local employment		X	X	X			X	
Diversity and Equal Opportunity Policy		X						
Community Engagement Plan	X							
Complaint Management Procedure	X			X	X	X	X	X
Land Access Agreement consultation and negotiation protocols	X							
Compensation Plan	X							
Farm Management Plan	X							
Project Human Resources Plan		X		X				
Project Workforce Management Plan and Santos Code of Conduct		X		X				

Impacts	Impacts on landholders	Economic growth and regional development	Demographic impacts	Impacts on community values	Impacts on recreational assets and activities	Impacts on social infrastructure	Impacts on housing and accommodation availability and affordability	Traffic safety impacts
Santos Environment, Health and Safety Policy		X		X				X
Santos Environment, Health and Safety Management System Guide								
Project Training Matrix		X						
Transparent and flexible approach to accommodation and housing, ongoing monitoring housing demand and engagement with key stakeholders							X	
Gas Community Benefit Fund		X				X		
Mitigation measures included in other EIS technical studies such as noise, air, visual and agricultural studies	X	X			X			X



## 9. References

- ABS 2001 (a), *Census QuickStats Armidale Dumaresq LGA*. Accessed at [http://www.censusdata.abs.gov.au/census\\_services/getproduct/census/2001/quickstat/LGA10110?opendocument&navpos=220](http://www.censusdata.abs.gov.au/census_services/getproduct/census/2001/quickstat/LGA10110?opendocument&navpos=220). Accessed on 28 July 2014.
- ABS 2001 (b), *Census QuickStats Gunnedah LGA*. Accessed at [http://www.censusdata.abs.gov.au/census\\_services/getproduct/census/2001/quickstat/LGA13550?opendocument&navpos=220](http://www.censusdata.abs.gov.au/census_services/getproduct/census/2001/quickstat/LGA13550?opendocument&navpos=220). Accessed on 28 July 2014.
- ABS 2001 (c), *Census QuickStats Guyra LGA*. Accessed at [http://www.censusdata.abs.gov.au/census\\_services/getproduct/census/2001/quickstat/LGA13650?opendocument&navpos=220](http://www.censusdata.abs.gov.au/census_services/getproduct/census/2001/quickstat/LGA13650?opendocument&navpos=220). Accessed on 28 July 2014.
- ABS 2001 (d), *Census QuickStats Inverell LGA*. Accessed at [http://www.censusdata.abs.gov.au/census\\_services/getproduct/census/2001/quickstat/LGA14200?opendocument&navpos=220](http://www.censusdata.abs.gov.au/census_services/getproduct/census/2001/quickstat/LGA14200?opendocument&navpos=220). Accessed on 28 July 2014.
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## Appendices

# Appendix A – Diversity and Equal Opportunity Policy

# Diversity and Equal Opportunity



## Policy

### Our Commitment

Santos is committed to providing an inclusive workplace and organisation culture that embraces diversity.

### Our Actions

We will:

1. not discriminate on the basis of gender, religion, race, national or ethnic origin, cultural background, social group, disability, sexual orientation, marital status, age or political opinion
2. recruit and promote on the basis of skills, experience, competence and performance
3. promote diversity in our workforce, including the representation of women and Aboriginal and Torres Strait Islander peoples
4. encourage a culture that does not tolerate discrimination, harassment, bullying or victimisation.
5. set measurable objectives for achieving gender diversity and annually assess the company's performance against those objectives
6. report publicly on our performance against gender diversity objectives

### Governance

The People & Remuneration Committee is responsible for reviewing the effectiveness of this policy including setting measurable objectives for achieving gender diversity and assessing annually the objectives and the company's progress in achieving them.

This Policy will be reviewed at appropriate intervals and revised when necessary to keep it current.

Kevin Gallagher

**Managing Director & CEO**

#### Status: APPROVED

Document Owner:	Angus Jaffray, Executive Vice President, Strategy & Corporate Services		
Approved by:	The Board	Version:	1

# Appendix B - Santos Working with Landholders Fact Sheet

# The Narrabri Gas Project

## Working with landholders

**Santos**  
We have the energy.

Santos respects landholders and has a long history of working with landholders in regional areas.

The Narrabri Gas Project area includes both State owned land and private land mostly in and around the Pilliga. We have been very clear about our commitment to drill wells on private land only when the landholder agrees to work with us and a land access agreement is in place.

In our more advanced Queensland operations, we have voluntary land access agreements with over 300 landholders, demonstrating agriculture activities and natural gas development can exist side by side.

In New South Wales we have a compensation framework in place that provides an income stream for landholders who host our exploration and drilling activities. The framework features a land-value based payment to compensate for the amount of land utilised by Santos' surface facilities and a fee for service to the landholder. In exchange for the fee for service, the landholder signs a Services Agreement and agrees to assist with general monitoring and upkeep of the sites located on their land. A land access agreement is also negotiated.

We work with landholders involved in all stages of our activities to ensure they are comfortable with how we work on their land in consideration of their lifestyle and business interests.



### When entering into a Land Access Agreement and Services Agreement with a landholder, Santos will:

- + Be honest and transparent
- + Pay reasonable legal costs incurred by the landholder to finalise an agreement
- + Conduct our operations to the highest health and safety standards
- + Carry out a plan to minimise noise, dust and light from our activities
- + Monitor the landholder's water bore by measuring water levels and quality
- + Rehabilitate the land progressively during our operations

### Project overview

The Narrabri Gas Project could supply up to half of the natural gas used by NSW homes, small businesses, major industries and electricity generators every day

Operations will be focussed on land in and around the Pilliga, near Narrabri

The Project will create over 1,200 jobs during construction and bring substantial economic benefits to Narrabri and the region, while delivering a clean, reliable source of energy to NSW

## Working with Santos

- + A member of our Land Access team will be in contact to ask if you are interested in working with us
- + If you would like to find out more, we'll arrange to meet with you and provide information and answer questions you may have
- + Following the initial meeting, if you would like to progress further, a scout of your property is arranged to determine if there are any ecological or cultural heritage impediments to the proposed site
- + We then work with you to prepare an agreed checklist containing details to be considered prior to undertaking proposed activities on your property. This may include infrastructure locations, agreed access routes, hours of operation and timing of agricultural activities like cropping which we consider when planning our activities
- + These details are documented in a Farm Management Plan
- + A Land Access Agreement and Services Agreement are prepared and compensation amounts finalised
- + We encourage landholders to have the documents reviewed and Santos will pay reasonable legal costs on the landholder's behalf to finalise an agreement
- + When the agreement is signed compensation for the first year is paid
- + Fourteen days before work is scheduled to commence we will contact you to advise details. At this time neighbours will also be notified of impending work
- + The infrastructure on your property will be regularly monitored and a member of our Land Access team will maintain regular contact with you

## Compensation

### Exploration and appraisal

Exploration and appraisal is carried out to gather additional information on geology and natural gas composition. It involves the drilling of core holes and pilot wells.

### Exploration and appraisal compensation

In these examples, calculations are based on land valued at \$1,000 per hectare, with facilities over one hectare of land (an average well site).

#### Year One

- + Santos pays 120% of the land value of the area used for our facilities
- + The land value is based on the landholder's rates notice
- + \$30,000 fee for service per landholder per annum, paid in a lump sum

#### Compensation:

\$1,200 for land utilised + \$30,000 fee for service  
Total: **\$31,200** for Year One

#### Year Two onwards

- + Santos pays 60% of the land value of the area used for our facilities
- + The land value is based on the landholder's rates notice
- + \$30,000 fee for service (paid at \$2,500 per month)

#### Compensation:

\$600 for land utilised + \$30,000 fee for service  
Total: **\$30,600** for Year Two and each year following for as long as activities remain on the land

## Production

The production stage follows exploration and appraisal. During this stage production and transmission of gas occurs. If production facilities are located on your land, a different form of agreement will be entered into, as a typical production well has a life span of 20–30 years.

### Production compensation

Calculations are again based on land valued at \$1,000 per hectare, with facilities over one hectare of land (an average well site).

#### Year One

- + Santos pays 120% of the land value of the area used for our facilities
- + The land value is based on the landholder's rates notice
- + \$30,000 fee for service per landholder per annum, paid in a lump sum

#### Compensation:

\$1,200 for land utilised + \$30,000 fee for service  
Total: **\$31,200** for Year One

#### Year Two onwards

Rather than receiving a land value based payment, landholders involved in the longer term production phase will share in a Landholders Incentive Fund.

- + The Fund will be equivalent to 5% of Santos' statutory annual royalty payment
- + Landholders will receive a share of the Fund proportionate to the amount of their land being utilised by Santos
- + A landholder with 2–3 production wells on their property would receive approximately \$50,000 per year (inclusive of the \$30,000 annual fee for service)

## About Santos

An Australian energy pioneer since 1954, Santos is one of Australia's largest domestic gas producers with more than 3,000 employees and a long history of safe, responsible operations.

## For more information

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Telephone: 02 6792 9035  
Open Monday to Friday  
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Gunnedah  
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Open Monday to Friday  
from 9.00am to 5.00pm



# Appendix C - Santos Environment, Health and Safety Policy

# Environment, Health and Safety



## Policy

### Our Commitment

Santos is committed to a workplace where we all go home without injury or illness and manage the impact of our operations on the environment.

### Our Actions

We will:

1. implement a structured and systematic approach to environmental, health and safety management and monitor its effectiveness
2. include environmental, health and safety considerations in business planning and decision-making processes
3. understand and manage the impact of our operations on the environment
4. comply with all relevant environmental, health and safety laws
5. promote a strong and consistent safety culture across all aspects of business
6. work pro-actively and collaboratively with our stakeholders and the communities in which we operate
7. set, measure and review objectives and targets which drive continuous improvement
8. report publicly on our environmental, health and safety performance

### Governance

The Environment Health Safety & Sustainability Committee is responsible for reviewing the effectiveness of this policy.

This Policy will be reviewed at appropriate intervals and revised when necessary to keep it current.

Kevin Gallagher

**Managing Director & CEO**

#### Status: APPROVED

Document Owner:	Naomi James, Executive Vice President, EHS & Governance		
Approved by:	The Board	Version:	1



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