

LOWER FITZROY RIVER INFRASTRUCTURE PROJECT

Appendix R

Social impact assessment report





Gladstone Area Water Board and SunWater
Lower Fitzroy River Infrastructure Project
Social Impact Assessment Report

September 2014

Executive summary

Project background

The Lower Fitzroy River Infrastructure Project (Project) is the construction and operation of a raised Eden Bann Weir and construction and operation of Rookwood Weir on the Fitzroy River, Central Queensland to facilitate capture and storage of all high priority unallocated water (nominally 76,000 ML/a) in the Fitzroy system. The development of weir infrastructure (and associated works), the resultant storage of water (inundation of the river bed and banks) and the transfer of water between storages through 'run of river' methods on the Fitzroy River comprise the scope of the Project.

Eden Bann Weir is an existing structure located at AMTD 141.2 km on the Fitzroy River, approximately 80 km upstream of Rockhampton. The current weir has a Full Supply Level (FSL) of 14.5 m (Stage 1). The Project proposes to raise the weir to a FSL of 18.2 m (Stage 2), with a subsequent addition of gates (Stage 3) which would raise the structure to FSL 20.2 m. The Rookwood Weir site is located at AMTD 265.3 km on the Fitzroy River, approximately 85 km south-west of Rockhampton. The Project proposes to construct a weir to a FSL 47 m (Stage 1). Addition of gates (Stage 2) would raise the structure to FSL 49.0 m.

The order in which the proposed infrastructure would be developed is dependent on the demand and the consequent storage capacity and yield resulting from a particular build / stage. Timing of the Project would be subject to external triggers such as consumer demand, drought conditions and or levels of service requirements.

Through environmental assessment and Business Case studies the development of one or more infrastructure options is being investigated based on the evaluation of engineering, social, environmental and financial feasibility. This report provides an assessment of the social impacts of the Project at the time the assessment was undertaken in 2009 and with relation to the existing conditions of the community. The findings of this Social Impact Assessment (SIA) will be used to inform an assessment of the potential environmental impacts associated with the proposed Project. This will in turn inform the Business Case.

Description of the local community

The local study area consists predominantly of large, rural agricultural (cattle grazing) land holdings. Settlement in the area is sparse and scattered. Landholdings comprise a mix of owner-occupied homesteads and non-resident landholders residing elsewhere in the region (e.g. Rockhampton and Yeppoon) yet travel regularly to their properties.

The majority of landholdings within the local study area are owner-operated. In addition to themselves working the property, many of the landholders employ contractors occasionally, or on a seasonal basis. All the respondents from the landholder surveys and the landholder interviews reported cattle breeding and/or fattening as the main activity taking place on their land. There is also some crop cultivation, and a small number have irrigation licences.

There is a mix of household types throughout the local study area. Five of the households were identified as family households with children and three were identified as family households with no children. There is also one single household in the area.

Apart from basic infrastructure and services such as utilities, roads and crossings, and police services and primary schools further afield, there are no community services or facilities available in the local study area. The roads and crossings over the Fitzroy, Mackenzie and Dawson rivers are particularly important to the local community, as they provide the only direct

access to Rockhampton for many residents. Residents in the local study area regularly travel to Rockhampton to access services. Regional area infrastructure comprises a major rail network, airport and port facilities that facilitate the movement of people and goods, primarily from mining associated activity.

Potential social impacts of the Project

The Project will cause social impacts during the planning stage, construction stage and operation stage. The impacts will be largely similar for both sites.

The most significant social impacts and benefits associated with the Project are:

- Increased water security

The most significant benefit of the Project will be the increase in availability and reliability of water. The Project will facilitate and enable development, thus benefiting the regional, state and national economies.

- Raised expectations of potential benefits

Consultation with landholders and local community members has revealed widespread aspirations for benefits from the Project (in particular construction of Rookwood Weir) to flow to the local community. These include aspirations for additional water entitlements and expectations that river crossings will be improved. While these aspirations in themselves do not constitute an impact, the way in which they are addressed by the Project will potentially affect the local community's perception about the Project and its proponents, either positive or negative depending on whether the Project meets their expectations or not.

- Workforce profile, local employment and business opportunities

In the context of the size of the regional economy, labour force and unemployment rates in the regional study area, it is anticipated that the Project will impact positively on regional employment and will provide employment opportunities to local communities. It is also likely there will be a demand for local businesses to service some requirements of the construction and operations activities as well as the needs of the temporary workforce.

- Traffic safety and transport impacts

During construction there will be some increases to traffic volumes near the weir sites, at river crossings and along construction access roads, particularly during mobilisation and demobilisation. Increased traffic volumes may increase the risk of accidents involving single vehicles, other road users or livestock.

Mitigation measures

In addition to mitigation measures included in the environmental management plan the following management plans and strategies apply to managing social impacts:

- Stakeholder Engagement Plan
- Land Acquisition Strategy
- Compensation Strategy
- Land Access Protocol
- Weed and Pest Management Plan
- Traffic Management Plan
- Construction Management Plan
- Procurement Plan.

Table of contents

Executive summary.....	i
1 Introduction.....	1-1
1.1 Project overview	1-1
1.2 Report context.....	1-3
1.3 Purpose and scope of the Social Impact Assessment	1-3
1.4 Approach and methodology	1-4
1.4.1 Overview	1-4
1.4.2 Scoping.....	1-5
1.4.2.1 Overview	1-5
1.4.2.2 Study areas	1-6
1.4.2.3 Stakeholders.....	1-9
1.4.2.4 Preliminary social impacts	1-11
1.4.3 Developing the social baseline.....	1-11
1.4.4 Identifying and assessing social impacts.....	1-11
1.4.5 Developing social impact management strategies	1-13
2 Local study area social baseline.....	2-1
2.1 Introduction.....	2-1
1.1 Property descriptions	2-1
2.2 Households.....	2-2
2.3 Length of stay in the area.....	2-2
2.4 Access to services and facilities	2-2
2.5 Summary and implications.....	2-3
3 Regional study area social baseline.....	3-1
3.1 Introduction.....	3-1
3.2 Community history.....	3-1
3.2.1 Early history	3-1
3.2.2 Development of Rockhampton City	3-1
3.2.3 Governance	3-2
3.3 Demographic profile	3-3
3.3.1 Introduction.....	3-3
3.3.2 Population.....	3-3
3.3.2.1 Estimated population.....	3-3
3.3.2.2 Population trends.....	3-5
3.3.2.3 Population projections	3-7
3.3.3 Age and gender distribution.....	3-8
3.3.4 Family composition.....	3-10
3.3.5 Indigenous population.....	3-10
3.3.6 Labour force and unemployment status	3-12

3.3.7	Industry and occupation.....	3-12
3.3.8	Temporary accommodation.....	3-15
3.4	Social infrastructure services and facilities.....	3-17
3.4.1	Overview.....	3-17
3.4.2	Utilities.....	3-17
3.4.3	Communications.....	3-17
3.4.4	Accommodation.....	3-18
3.4.5	Transport infrastructure.....	3-18
3.4.5.1	Rail network.....	3-18
3.4.5.2	Airport facilities.....	3-19
3.4.5.3	Port facilities.....	3-19
3.4.5.4	Road networks and river crossings.....	3-21
3.4.6	Health services and facilities.....	3-23
3.4.7	Emergency services.....	3-23
4	Potential social impacts.....	4-1
4.1	Overview.....	4-1
4.2	Rookwood Weir.....	4-2
4.2.1	Rookwood Weir planning phase impacts.....	4-2
4.2.1.1	Overview.....	4-2
4.2.1.2	Landholder uncertainty regarding the Project.....	4-3
4.2.1.3	Raised expectations for potential benefits.....	4-3
4.2.1.4	Disruption impacts on lifestyle and productivity.....	4-4
4.2.1.5	Increased risk of spread of weeds.....	4-4
4.2.2	Rookwood Weir planning phase mitigation measures.....	4-4
4.2.3	Rookwood Weir construction phase impacts.....	4-5
4.2.3.1	Overview.....	4-5
4.2.3.2	Workforce profile, local employment and business opportunities.....	4-6
4.2.3.3	Loss of land and access to land.....	4-7
4.2.3.4	Productivity impacts.....	4-7
4.2.3.5	Lifestyle impacts.....	4-8
4.2.3.6	Impacts on social infrastructure.....	4-8
4.2.3.7	Traffic safety and transport impacts.....	4-9
4.2.4	Rookwood Weir construction phase mitigation measures.....	4-9
4.2.5	Rookwood Weir operations phase impacts.....	4-10
4.2.5.1	Overview.....	4-10
4.2.5.2	Water security.....	4-11
4.2.5.3	Productivity impacts.....	4-12
4.2.5.4	4.2.5.5 Recreational use of the river.....	4-13
4.2.5.5	4.2.5.5 Water resources and flooding impacts.....	4-13
4.2.6	Rookwood Weir operations phase mitigation measures.....	4-14
4.3	Eden Bann Weir.....	4-14

4.3.1	Eden Bann Weir planning phase impacts	4-14
4.3.1.1	Overview	4-14
4.3.1.2	Landholder uncertainty regarding the Project	4-15
4.3.1.3	Disruptions to lifestyle and business	4-16
4.3.1.4	Increased risk of spread of weeds	4-16
4.3.2	Eden Bann Weir planning phase mitigation measures.....	4-16
4.3.3	Eden Bann Weir construction phase impacts	4-17
4.3.3.1	Overview	4-17
4.3.3.2	Employment opportunities and workforce profile.....	4-19
4.3.3.3	Loss of land and access to land	4-20
4.3.3.4	Productivity impacts	4-20
4.3.3.5	Lifestyle impacts	4-20
4.3.3.6	Impacts on social infrastructure.....	4-21
4.3.3.7	Traffic safety and transport impacts	4-21
4.3.4	Eden Bann Weir construction phase mitigation measures.....	4-21
4.3.5	Eden Bann Weir operations phase impacts	4-22
4.3.5.1	Overview	4-22
4.3.5.2	Water security	4-23
4.3.5.3	Productivity impacts	4-23
4.3.5.4	Recreational use of the river	4-25
4.3.5.5	Water resources and flooding impacts.....	4-25
4.3.6	Eden Bann Weir operations phase mitigation measures.....	4-25
4.4	Summary of potential social impacts	4-26
5	Social impact management and monitoring.....	5-1
5.1	Summary of impact mitigation measures.....	5-1
5.2	Management plans.....	5-2
5.3	Monitoring of potential social impacts	5-4
5.4	Residual impacts.....	5-5
6	References	6-1

Table index

Table 1-1	Preliminary scoping of social issues	1-11
Table 3-1	Estimated resident population in the regional study area (2006-2011)	3-3
Table 3-2	Full-time equivalent population estimates.....	3-4
Table 3-3	Estimated resident population and components of change in the regional study area (30 June 2010)	3-5
Table 3-4	Estimated resident population in the regional study area over time.....	3-6
Table 3-5	Population projections for the regional study area (2011-2031).....	3-7

Table 3-6	Family composition within the regional study area	3-11
Table 3-7	Number of persons by Indigenous status in the regional study area	3-11
Table 3-8	Unemployment and labour force status within the regional study area	3-12
Table 3-9	Non-resident workers on shift by accommodation type in the CHRC LGA	3-15
Table 3-10	Vacant and available WAV beds in the CHRC LGA	3-16
Table 3-11	Estimated vacancy rates for all types of residential rental accommodation in RRC LGA	3-16
Table 3-12	Tourist accommodation establishments in Rockhampton City	3-16
Table 3-13	Emergency services in proximity to the Project site.....	3-24
Table 4-1	Impact significance rating for Rookwood Weir planning phase.....	4-2
Table 4-2	Impact significance rating for Rookwood Weir construction phase.....	4-5
Table 4-3	Impact significance rating for Rookwood Weir operation phase	4-11
Table 4-4	Flood impact on land holdings pre and post-development.....	4-13
Table 4-5	Impact significance rating for Eden Bann Weir planning phase.....	4-14
Table 4-6	Impact significance rating for Eden Bann Weir construction phase.....	4-17
Table 4-7	Impact significance rating for Eden Bann Weir operation phase.....	4-23
Table 4-8	Summary of social impacts	4-26
Table 5-1	Summary of potential social impacts and corresponding management strategy.....	5-1
Table 5-2	Potential social impact management plans.....	5-2
Table 5-3	Monitoring strategies for potential social impacts.....	5-4
Table 5-4	Residual social impacts significance assessment.....	5-5

Figure index

Figure 1-1	Project location.....	1-2
Figure 1-2	Change process and social impacts	1-4
Figure 1-3	Social Impact Assessment methodology	1-5
Figure 1-4	Eden Bann Weir local study area.....	1-7
Figure 1-5	Rookwood Weir local study area.....	1-8
Figure 1-6	Regional study area.....	1-10
Figure 3-1	Estimated resident population in the regional study area over time.....	3-7
Figure 3-2	CHRC LGA and Queensland age and gender distribution (30 June 2011).....	3-8
Figure 3-3	RRC LGA and Queensland age and gender distribution (30 June 2011).....	3-9
Figure 3-4	Woorabinda LGA and Queensland age and gender (30 June 2011).....	3-10
Figure 3-5	Employment by industry in the regional study area	3-14
Figure 3-6	Proportion of employment by occupation in the regional study area	3-15

Figure 3-7	Rail network system.....	3-18
Figure 3-8	Airport and port locations.....	3-20
Figure 3-9	Road network and primary river crossings.....	3-22

Appendices

Appendix A – Social Impact Assessment significance assessment methodology

Acronyms

Acronyms	
ABS	Australian Bureau of Statistics
CHMP	Cultural Heritage Management Plan
DIP	Department of Infrastructure and Planning
EIA	Environmental Impact Assessment
EPBC	Environment Protection and Biodiversity Conservation Act 1999 (Cwlth)
EMP	Environmental Management Plan
IDAS	Integrated Development Assessment System
IPA	Integrated Planning Act 1997 (QLD)
LGA	Local Government Area
LFRIP	Lower Fitzroy Infrastructure Project
OHS	Occupational Health & Safety
PER	Public Environmental Report
PIFU	Planning, Information and Forecasting Unit
SD	Statistical Division
SED	State Electoral Division
SEIFA	Socio-Economic Indexes For Areas
SIA	Social Impact Assessment

1 Introduction

1.1 Project overview

The Lower Fitzroy River Infrastructure Project (Project) is the construction and operation of a raised Eden Bann Weir and construction and operation of Rookwood Weir on the Fitzroy River, Central Queensland to facilitate capture and storage of all high priority unallocated water (nominally 76,000 ML/a) in the Fitzroy system. The Fitzroy River forms at the confluence of the Mackenzie (flowing from the north) and Dawson (flowing from the south) Rivers flowing out into the Coral Sea (including the Great Barrier Reef World Heritage Area (GBRWHA) and Marine Park (GBRMP), some 300 km downstream. The Fitzroy River passes through the city of Rockhampton which lies approximately 59 km from the river mouth.

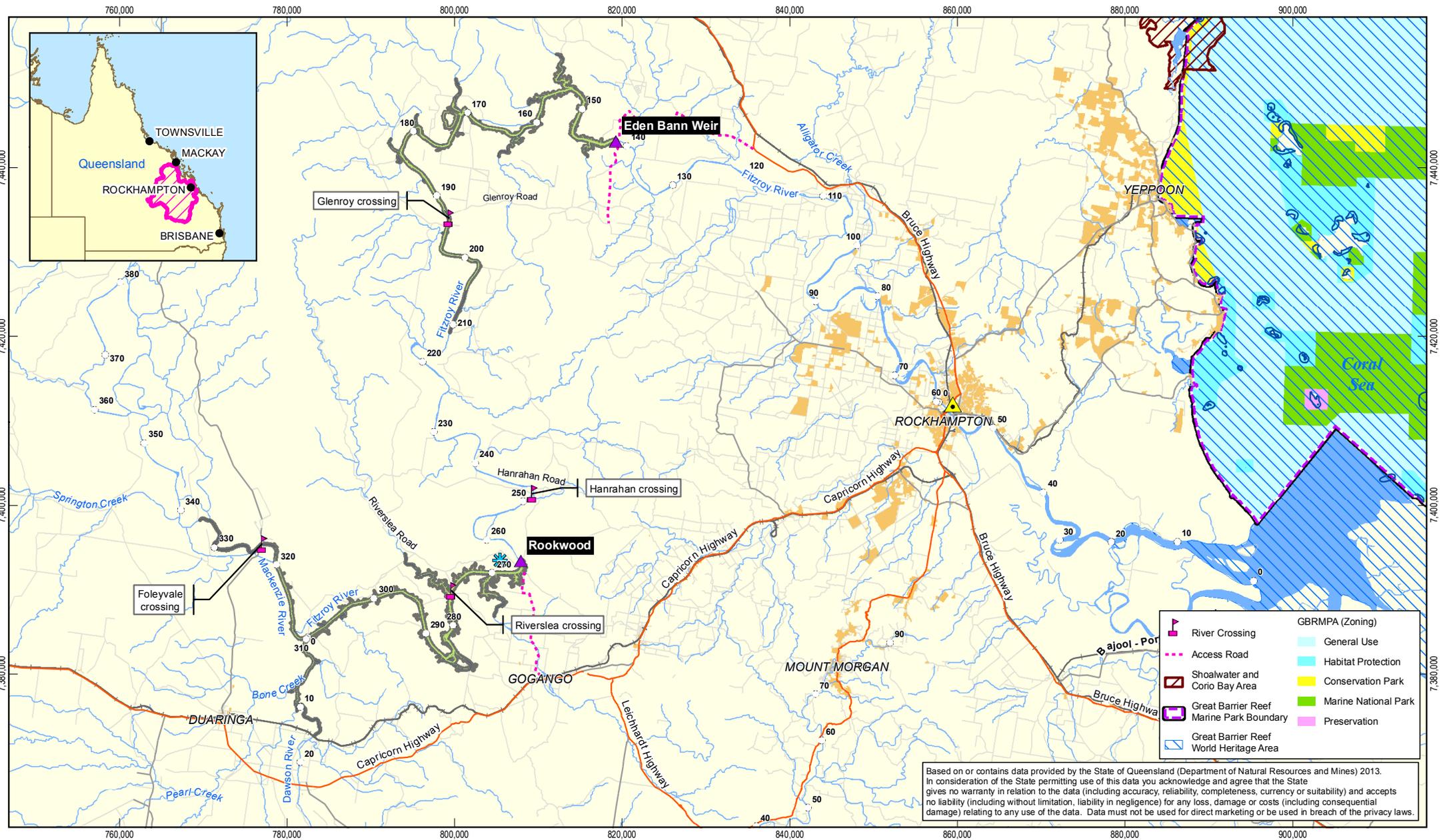
Key Project components include the following:

- Eden Bann Weir
 - Eden Bann Weir Stage 2 – a raise of the existing Eden Bann Weir to a full supply level (FSL) 18.2 m Australian Height Datum (AHD) and associated impoundment of the Fitzroy River.
 - Eden Bann Weir Stage 3 – the addition of 2 m high flap gates to achieve FSL 20.2 m AHD and associated impoundment of the Fitzroy River.
- Rookwood Weir
 - Rookwood Weir Stage 1 – a new build to FSL 45.5 m AHD, saddle dams and associated impoundment of the Fitzroy, Mackenzie and Dawson Rivers.
 - Rookwood Weir Stage 2 – the addition of 3.5 m high flap gates to achieve FSL 49.0 m AHD and associated impoundment of the Fitzroy, Mackenzie and Dawson Rivers.
 - Any combination of the above.
- Fish passage infrastructure and turtle passage infrastructure, namely fish locks and a turtle bypass, respectively, at each weir.

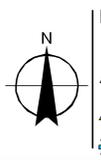
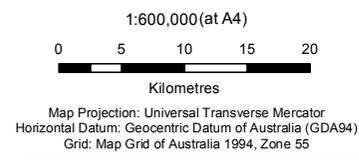
Other infrastructure components associated with the Project include:

- Upgrade to and construction of access roads (public and private) to and from the weir sites for construction and operations and upgrades to intersections.
- Construction of low level bridges in areas upstream of weir infrastructure impacted by the impoundments, specifically at Glenroy, Riverslea and Foleyvale crossings.
- Installation of culverts at Hanrahan Crossing downstream of Rookwood Weir to facilitate access during operation releases.
- Relocation of existing and/or installation of new gauging stations
- Removal and decommissioning of existing low level causeways and culverts at river crossings described above.
- Water supply for construction will be sourced directly from nearby rivers and creeks and will not require the construction of additional water supply infrastructure. Operational water will be provided through rainwater harvesting systems.

The location of Project components is shown on Figure 1-1.



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- LEGEND**
- AMTD (km)
 - Highway
 - ▭ Fitzroy Basin
 - Rookwood Weir Stage 2 impoundment
 - ▲ Weir Location
 - Major Road
 - Urbanised Area
 - Eden Bann Weir Stage 2 impoundment
 - ▲ Fitzroy Barrage
 - Streets (Local)
 - Rookwood Weir Stage 1 impoundment
 - ▲ Saddle dams
 - Access Road
 - Eden Bann Weir Stage 3 impoundment



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Lower Fitzroy River Infrastructure Project Revision | J
Date | 26 Sep 2014

Project locality plan **Figure 1-1**

Operationally the Project comprises the maintenance and management of the weir infrastructure, private access roads and impoundments, inclusive of a flood buffer. Water releases will be made through 'run of river' methods and no water distribution infrastructure is required. Water releases will be made to satisfy environmental and water security objectives in accordance with the *Water Resource (Fitzroy Basin) Plan 2011* (Fitzroy WRP). Operating regimes will be developed and implemented through the Fitzroy Basin Resource Operations Plan 2004 (Fitzroy ROP).

The development of weir infrastructure (and associated works), the resultant storage of water (inundation of the river bed and banks) and the transfer of water between storages through 'run of river' methods on the Fitzroy River comprise the scope of the Project. Abstraction, transmission and distribution to end users are not considered as part of the proposed Project and are subject to their own environmental investigations.

1.2 Report context

In accordance with the Program of Works Notification (No 3) 2007, the investigations and studies for the Project commenced in late 2008 with most technical studies and reporting being undertaken in 2009. At that time, the target completion date for final development of a Project Business Case was 2009- 2010. It was however acknowledged that this would be dependent on the urgency associated with drought conditions in the region.

Since 2009, central Queensland has experienced above average rainfalls and water supply infrastructure in the region has been operating at capacity, until recently (2014) when drier conditions have again been prevalent. This has resulted in extended Project timeframes. Furthermore, the State had commissioned a number of investigations and assessments prior to 2008 which were used as a basis for the current EIS. Consequently, the EIS reporting spans several changes of Government and subsequent reconfiguration of government departments. Names as applicable to the reference are therefore used and not referenced as 'former', 'prior' or 'the then'.

The Social Impact Assessment (SIA) commenced in 2009. Relevant and applicable updates have been made to the present (2013) (Section 1.4) as appropriate and necessary.

1.3 Purpose and scope of the Social Impact Assessment

The SIA undertaken as part of the Project was used to inform the EIS and addresses Section 6 of the Project terms of reference (ToR).

The purpose of the Project SIA was to:

- Identify the Project area and communities likely to be affected by the proposed development
- Understand existing socio-cultural characteristics, conditions and dynamics of the Project area and communities within, by means of relevant qualitative and quantitative data gathered from various secondary sources and stakeholder consultations
- 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
- Identify mitigation measures to avoid or minimise potential adverse impacts and maximise benefits
- Develop a list of commitments or management strategies to avoid or minimise potential adverse impacts and maximise benefits and provide a monitoring framework to validate the impact assessment and effectiveness of mitigation measures.

The scope of the SIA was informed by:

- The Project description and details
- The Project ToR (specifically Section 6)
- Determination of the study area through identification of geographical boundaries of the Project's social and cultural area of influence
- The identification of and consultation with relevant stakeholders
- The preliminary identification of social issues in the Project area.

Social impacts predicted strongly relate to the existing social, cultural, economic conditions and community concerns and aspirations at the time of the assessment. Social characteristics of the community, the region and wider area of influence are dynamic and changes in any of these characteristics can affect the scale and magnitude of the identified potential impacts and also create new impacts and benefits. Changes in Federal, State, regional and local policies and planning frameworks may also influence the context in which any SIA is undertaken.

1.4 Approach and methodology

1.4.1 Overview

The International Association for Impact Assessment (IAIA) defines SIA as:

“the process of analysing, monitoring and managing the intended and unintended social consequences, both positive and negative, of planned interventions (policies, programs, plans, projects) and any social change processes invoked by these interventions. Its primary purpose is to bring about a more sustainable and equitable biophysical and human environment.” (IAIA 2003).

The SIA has been prepared in accordance with these principles. It seeks to identify and analyse social impacts of the Project and proposes mitigation, management and monitoring measures with the aim of increasing the social sustainability and equity of the Project. It is an *ex ante* (before the event) SIA as it seeks to predict social impacts that may occur as a result of the Project and focuses on *potential* (real and perceived) impacts.

The SIA methodology was based on the conceptual model developed by van Schooten et al. (2003) as shown in Figure 1-2. The basis for this conceptual model was that an intervention can cause a number of social or biophysical change processes which can, under certain circumstances, cause social impacts. A social impact refers to an impact that is experienced or felt by humans. A change process is, on the contrary, not experienced as such. For example, inundation of land is a biophysical change process that may, under certain circumstances, lead to social impacts such as loss of productive land, loss of income and loss of sense of home.

Figure 1-2 Change process and social impacts



As shown in Figure 1-3 the SIA methodology comprised of four main steps, namely:

- Scoping
- Developing a social baseline or community profile

- Identifying and assessing social impacts
- Developing a social impact management plan.

1.4.2 Scoping

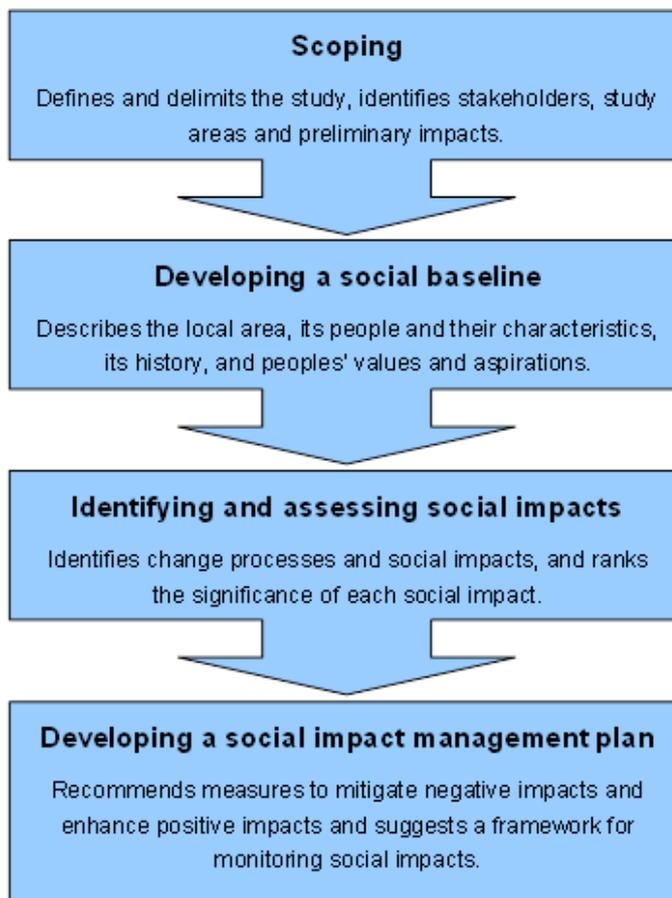
1.4.2.1 Overview

The scoping phase of the SIA involves:

- Confirming project methodology and timeframes
- Identifying relevant data sources
- Determining the Project study areas
- Identifying affected stakeholders
- Identifying preliminary social impacts to guide the research

Primary data sources for the scoping phase were previous studies on social impacts associated with water infrastructure in the area and in comparable areas.

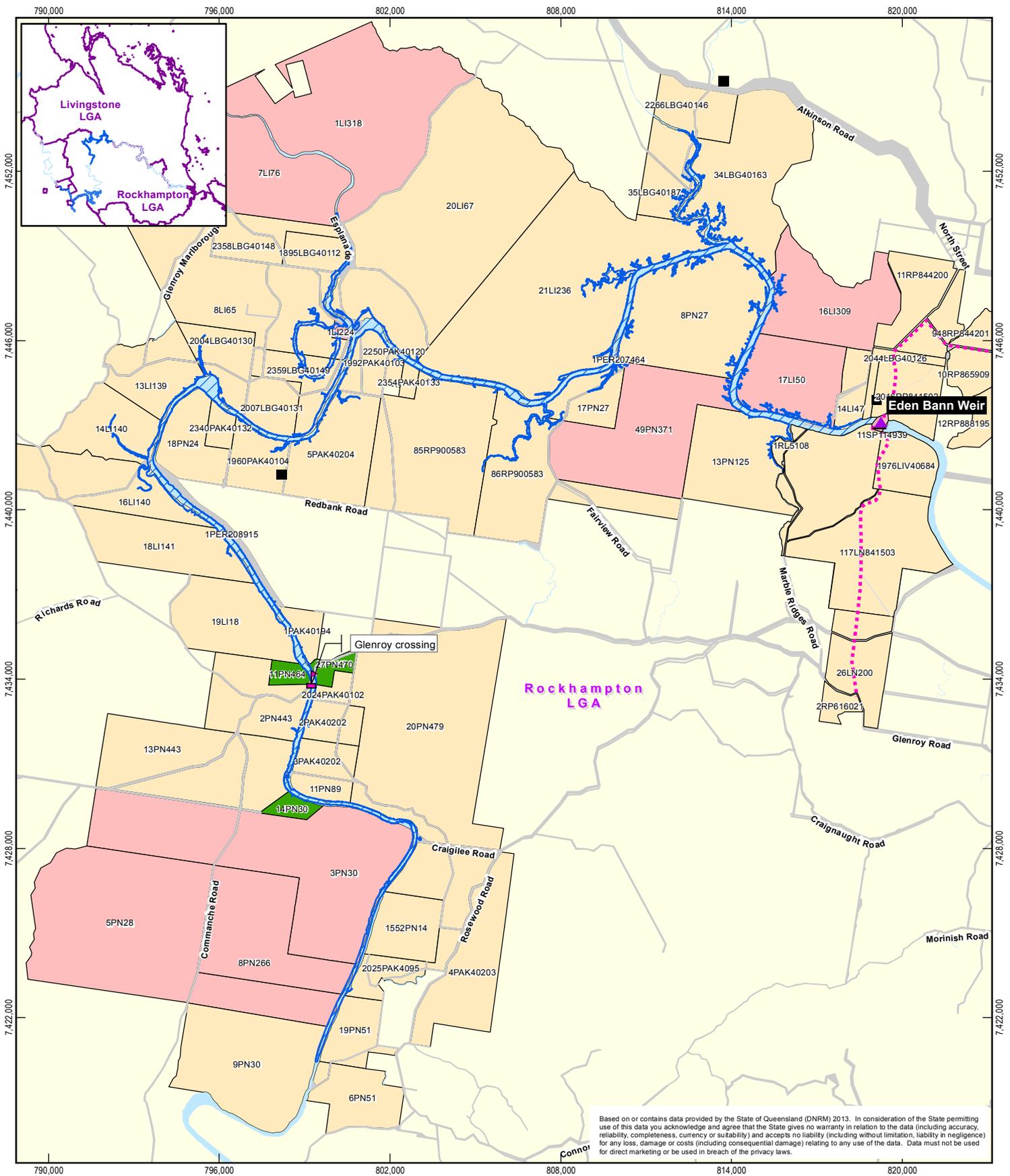
Figure 1-3 Social Impact Assessment methodology



1.4.2.2 Study areas

The SIA study area is defined in three parts:

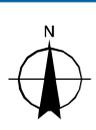
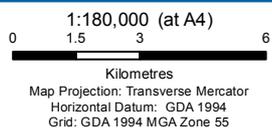
- Local study area – this includes the land (lots) affected by the Project footprint:
 - The local study area associated with the Eden Bann Weir (Figure 1-4) includes the weir site itself and properties upstream associated with the impoundment. Properties associated with the upgrade of Glenroy Crossing are included. The existing Eden Bann Weir (Stage 1) impacts on 11 landholders. Raising the weir to Stage 2 will impact on a total of 20 landholders. An additional five landholders will be impacted by a raise to Stage 3. The proposed new access road will traverse three landholdings (Chapter 5 Land)
 - The local study area associated with the proposed Rookwood Weir (Figure 1-5) includes the weir site itself and properties upstream associated with the impoundment. Properties associated with construction and upgrade of river crossings upstream (namely Riverslea and Foleyvale crossings) and downstream (Hanrahan Crossing) are included. Rookwood Weir Stage 1 will impact 26 landholders. Raising the weir to Stage 2 will impact an additional seven landholders (Chapter 5 Land). During construction indirect impacts (short-term, intermittent noise and dust generation and increased traffic) are predicted at Gogango and the township is included within the local study area.



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LEGEND

- Access Road
- Proposed Eden Bann
- Upper Impoundment Limit
- Local Government Area
- Reserve
- Minor Road/Road Easement
- Freehold
- Lands Lease
- Reserve
- Road Easement
- Waterway
- Weir Location
- Homestead
- River Crossing



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Eden Bann Weir local study area Figure 1-4

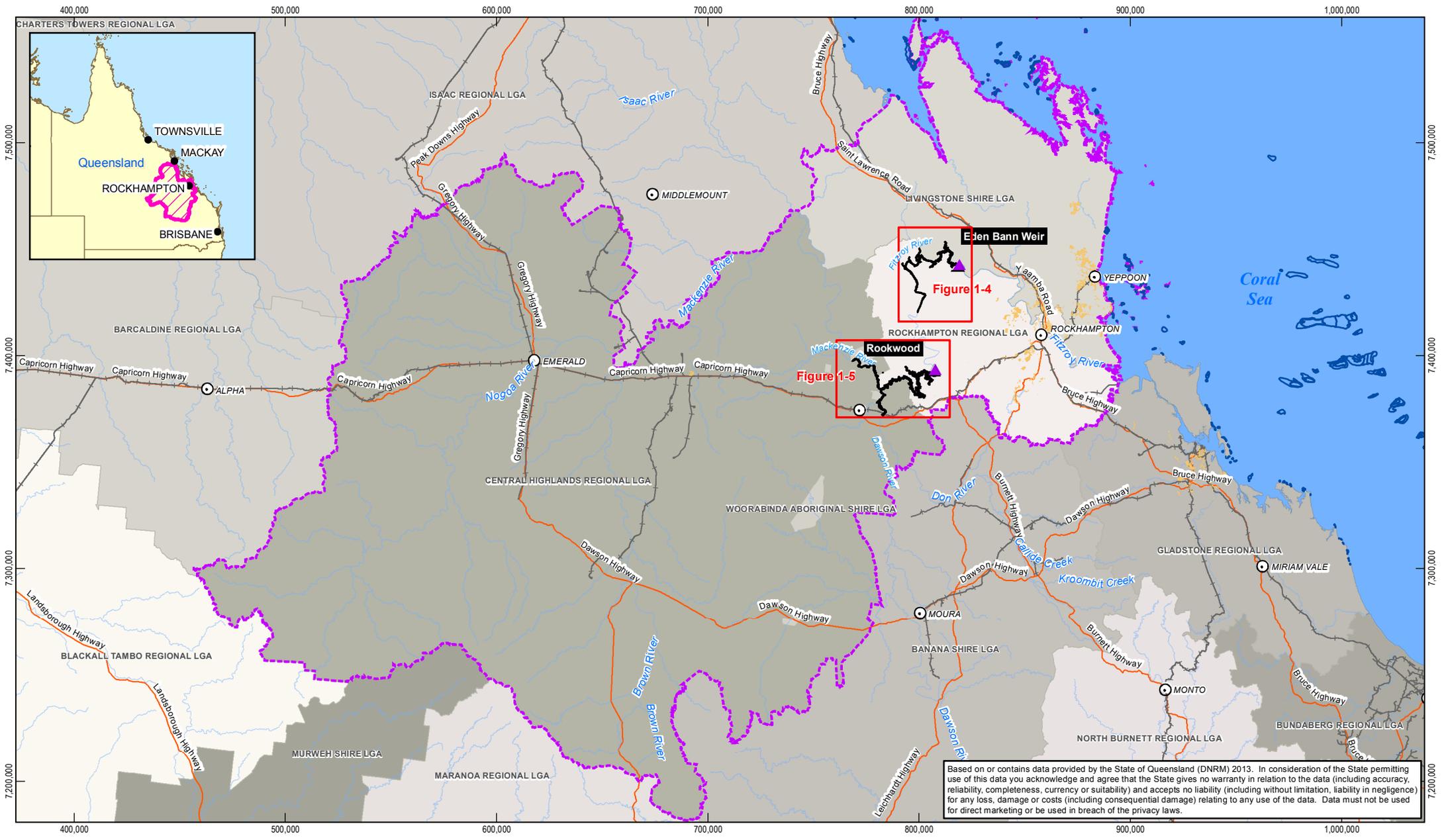
- Regional study area – this includes the communities in the immediate vicinity of the Project which would be affected by Project impacts and benefits and which would provide resources for the Project such as workforce and social infrastructure. The regional study area is shown in Figure 1-6 and consists of:
 - The Rockhampton Regional Council (RCC) (including Livingstone Shire Regional Council prior to de-amalgamation) local government area (LGA), Central Highlands Regional Council (CHRC) LGA and parts of Woorabinda Aboriginal Shire Council (Woorabinda) LGAs (Chapter 5 Land)
 - Gogango
 - Rockhampton City as the key regional centre.
- Wider area of influence – this includes communities more distant from the regional study area, but which may provide a broader context for the Project such as higher order social infrastructure services and source of labour and areas to which benefits would extend, including the Gladstone Regional Council LGA and the State of Queensland.

1.4.2.3 Stakeholders

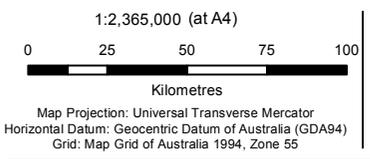
Stakeholders are groups and individuals that have an interest in or have the ability to impact or be impacted by the Project. Stakeholders were identified to help predict and assess possible social impacts and to provide information to the SIA processes. The stakeholder list was derived from desktop research and from consultation and engagement activities (refer to Chapter 1 Introduction).

As part of the scoping exercise a range of stakeholders were identified and included in the development of the SIA as follows:

- State agencies
 - Social Impact Assessment Unit (SIAU) (former), Department of State Development, Infrastructure and Planning
 - Department of Communities
- Regional councils
 - RRC
 - CHRC
 - Woorabinda
 - Gladstone Regional Council
- Community and conservation groups
- Community
 - Directly affected landholders
 - Other interested and affected parties.



Based on or contains data provided by the State of Queensland (DNRM) 2013. In consideration of the State permitting use of this data you acknowledge and agree that the State gives no warranty in relation to the data (including accuracy, reliability, completeness, currency or suitability) and accepts no liability (including without limitation, liability in negligence) for any loss, damage or costs (including consequential damage) relating to any use of the data. Data must not be used for direct marketing or be used in breach of the privacy laws.



- LEGEND**
- Weir
 - Location
 - Populated Places
 - Railway
 - Waterway (Major)
 - Highways (National)
 - Urbanised Area
 - Impoundment Area
 - Reef
 - Fitzroy Basin
 - Regional Study Area
 - Local Study Area



Gladstone Area Water Board, SunWater Job Number 41-20736
 Lower Fitzroy River Infrastructure Project Revision H
 Date 13 Feb 2015

Regional study area **Figure 1-6**

1.4.2.4 Preliminary social impacts

In order to identify and assess social impacts, an initial scoping of issues was undertaken to provide an understanding of the range of issues potentially applicable to the Project. The scoping exercise was informed by stakeholder consultations, consultations with other technical specialists involved in the EIS, research and review of relevant published data.

Identification of issues at this early stage of the SIA did not mean that these impacts would 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.

The outcome of the preliminary scoping is shown in Table 1-1. Issues identified may relate to construction or operation phases of the Project.

Table 1-1 Preliminary scoping of social issues

Issue category	Potential issues
Access	<ul style="list-style-type: none">• Loss of and/or disruption to access at a local and regional scale• Access impacts as a result of inundation and/or flooding• New and/or alternative access arrangements• Land access protocols during field surveys and site investigations
Landholder impacts	<ul style="list-style-type: none">• Compensation and/or acquisition related to Project impacts• Loss of viability of property and/or operation• Loss of stock water• Cattle bogging• Diminished access to property and/or facilities• Opportunities, such as ability to log forestry material
Water resources	<ul style="list-style-type: none">• Impacts on hydrology including changes in flow patterns and changes in flood regimes• Increased flood risk• Recreational use of the river and ponded areas• Impacts on water allocations (now and into the future)

1.4.3 Developing the social baseline

The profile of the community serves not only as a baseline against which social impacts and social change can be monitored, but also as a background indicating which impacts can be expected and how the community would respond to them. The profile of the community was developed including the history of the study area, a demographic analysis, a description the socio-economic profile of the area and an identification of community facilities and services. A profile of the directly affected landholders was also developed.

The key information sources used to develop the social baseline are data from the 2011 Census of Population and Housing, population projections from the Department of State Development, Infrastructure and Planning, a landholder survey, and reports and information from various other government departments, including local government.

1.4.4 Identifying and assessing social impacts

The following sources were utilised to identify and assess potential social impacts:

- Technical studies undertaken to inform the EIA, including flood modelling

- Consultation with key stakeholders, including:
 - Directly affected landholders (survey questionnaires and through discussion with Project appointed dedicated land liaison officers). All landholders were invited to participate in a survey questionnaire; 21 responses were obtained. In addition 14 landholders were interviewed in person or by telephone. Further Project appointed land liaison officers met with 52 landholders
 - Interested community members and community groups (Appendix F)
 - State government departments (including the (then) SIA Unit in the former Department of Infrastructure and Planning) (Appendix F)
- Previous relevant studies undertaken in the area
- Literature review.

It should be noted that any prediction of social impacts only identifies potential impacts. Whether the social impacts actually occur largely depends on how the affected stakeholder perceives or experiences social and biophysical change. By analysing a wide variety of sources this uncertainty in terms of prediction of impact can be reduced. Impacts were then categorised following a model which identifies seven impact categories (Vanclay 2002, van Schooten et al. 2003) as follows:

- Health and social wellbeing
- Quality of the living environment
- Economic and material wellbeing
- Cultural impacts
- Family and community impacts
- Institutional, legal, political and equity impact
- Gender relations impacts.

Impacts potentially occurring during planning and construction of the Project were separated from those potentially occurring during operation.

A systematic process was followed when assessing the significance of the identified potential impacts. The process for assessing the significance of potential social impacts is described in 4. The process employs a social impact significance matrix as the main tool for identifying the significance of the potential social impacts. The matrix analyses impacts in terms of the following characteristics:

- The stakeholders impacted
- The likelihood of the impact occurring
- The consequence of the impact on the affected stakeholders
- The status of the impact, that is whether it is positive or negative
- The duration of the impact
- The spatial extent of the impact
- The importance of the impact to stakeholders.

Section 4 presents the impact identification and significance assessment.

1.4.5 Developing social impact management strategies

The analysis of potential social impacts informed the identification of mitigation and monitoring strategies and the need for a negotiated compensation process, appropriate for the nature and scale of the identified social impacts. Mitigation and monitoring measures aimed to:

- Maximise potential positive social impacts
- Avoid significant adverse impacts in the first instance
- Minimise and manage significant adverse impacts, where they cannot be avoided

Section 4 presents management measures for each identified impact.

2 Local study area social baseline

2.1 Introduction

For the most part, the direct social impacts associated with the Project will be experienced by people owning or operating land adjacent to the Fitzroy, Dawson and Mackenzie Rivers within the Project footprint (weir sites, inundation zone upstream and release zone downstream) within the local study area.

The local study area comprises:

- The Eden Bann Weir site is owned and operated by SunWater. Raising Eden Bann Weir will directly impact properties on both sides of the development site and upstream. Inundation associated with the existing Eden Bann Weir (Stage 1) impacts 11 landholders (properties) across 33 lots. Raising the weir to Stage 2 will impact on 20 properties across 52 lots cumulatively. Adding gates as at Stage 3 will impact up to 25 properties across 62 lots cumulatively. The proposed right bank access road will traverse three freehold lots. Raising Eden Bann Weir to Stage 3 will not further impact this footprint. Land potentially impacted as a result of the upgrade of Glenroy Crossing (a local road) will impact on a single property across three lots.
- For the proposed Rookwood Weir, the site area itself is within the Fitzroy River on unallocated state land. Construction of the Rookwood Weir will directly impact properties on both sides of the development site and upstream. Inundation associated with Rookwood Weir Stage 1 impacts 26 landholders (properties) across 38 lots. Raising the weir to Stage 2 will cumulatively impact on 33 properties across 50 lots. Operational releases may impact on properties located downstream. Land potentially impacted as a result of the upgrade of Riverslea Crossing (a local road) will impact on a two lots. Land potentially impacted as a result of the upgrade to Foleyvale Crossing (a state controlled road) impacts two properties.

The local study area consists predominantly of large, rural agricultural (cattle grazing) land holdings. Settlement in the area is sparse and scattered. Figure 1-4 and Figure 1-5 show the location of homesteads mapped within the local study area along with property boundaries. An existing rural homestead is confirmed present in close proximity to Eden Bann Weir.

Landholdings comprise a mix of owner-occupied homesteads and non-resident landholders residing elsewhere in the region, for example Rockhampton and Yeppoon that travel regularly to their properties.

This section provides a brief profile of these landholders.¹

1.1 Property descriptions

Most of the landholdings within the local study area are owner-operated. Three properties have been identified as being owned by companies or individuals and managed by an employed property manager. In addition to themselves working the property, many of the landholders employ contractors occasionally, or on a seasonal basis.

The main activity occurring on the properties is cattle breeding and/or fattening. All the respondents from the landholder survey and the landholder interviews reported this as the main activity taking place on their land. All of the landholders also stated they are 'working the property'

¹ The profile has been compiled through a survey delivered to the landholders by land liaison officers and through interviews with a select number of landholders. Twenty-one surveys were wholly or partly completed and returned.

or described themselves as farmers when asked about occupation. There is also some crop cultivation, and a small number have irrigation licences.²

The most common usage of the river is for stock watering. One landholder stated he used water for domestic purposes as well as for stock water. Cattle generally access the water via hard stand areas or via pump/trough systems. Only one landholder has been identified as not using the river at all. It can therefore be assumed that virtually all of the properties have some kind of infrastructure for watering cattle.

2.2 Households

There is a mix of household types throughout the local study area. Five of the households identified as family households with children and three family households with no children. There is also one single household in the area.³ As with the population of the regional study area, the landholders have a relatively high median age.

2.3 Length of stay in the area

The landholders have generally owned and lived at their properties for 'a very long time'. When asked how long they have lived on their properties typical answers were 'decades', 'a long time', or even 'a lifetime'. In addition, some of these landholders belong to families with ties to the land dating back to the late 19th century. There are only a few landholders who have recently purchased their properties or recently moved to them to manage them.

2.4 Access to services and facilities

The landholders all travel to Rockhampton to access services. The frequency of their travels vary, with three landholders stating they travelled to Rockhampton more than once per week, and six stating they travelled weekly or monthly. One landholder stated he may travel to Rockhampton more than once per day.

The main crossing used for people living on the western side of the Fitzroy River in the Morinish area is the Glenroy Crossing. All landholders in the area reported that the Glenroy Crossing is constantly used. During periods that the Glenroy Crossing is not available for use, travel can take up to two additional hours. Those living north and east of the river do not cross it to travel to Rockhampton. However, these landholders still use the Glenroy Crossing, or internal property crossings, for other purposes. As at least three properties upstream of the Eden Bann Weir extend over both banks of the river, and the ability to cross the river is pivotal to managing these properties.

Further upstream the Riverslea Crossing is the most commonly used crossing, providing the only gazetted river crossing in the Gogango area. All landholders between Foleyvale and Weir Park use this to cross the river. When the crossing is inundated, people use boats to cross the river. Foleyvale Crossing and Boolburra Crossing are the other most commonly used crossings further to the west.

² A definite number of irrigation licences has not been verified. It appears that the total number of irrigators in the local study area is very small, approximately half a dozen.

³ In four questionnaires, this question was left blank.

2.5 Summary and implications

The local study area is typically rural in nature. In summary, the population of the local study area is slightly older compared to the age profile of the regional study area and that of the State. The population in the local study area exhibit more traditional family patterns, with higher proportions of married people, compared to the regional study area and the remainder of the State.

Agriculture is by far the most common industry of employment in the local study area. The most common occupation was identified as 'manager', indicating a large number of self-employed farmers. Income levels are relatively similar to the regional and State study areas.

Unemployment is generally low, but the area contains some relatively socio-economically disadvantaged areas. Apart from basic infrastructure and services such as utilities, roads and crossings, police services and primary schools, there are no community services or facilities available in the local study area. The roads and crossings over the Fitzroy, Mackenzie and Dawson Rivers are particularly important to the community, as they provide the only direct access to Rockhampton for many residents. Residents in the local study area regularly travel to Rockhampton to access services.

3 Regional study area social baseline

3.1 Introduction

This section provides a profile of the regional study area, referenced and compared to the wider area of influence. The profile serves as a baseline to assist in identifying social impacts. The regional area profile contains the following elements:

- A description of the history of the community
- A demographic and socio-economic profile of the population
- A description of the values and aspirations of the community
- A review of the community services and facilities available in the area.

The main information sources for the community history include published literature and web-based reference materials. Data from the Australian Bureau of Statistics (ABS) 2011 Census of population and housing provided input for the demographic and socio-economic profile. A survey of the directly affected landholders was undertaken to provide a profile of this group. Main information sources for the services and facilities section were the websites of the RRC and various State government departments.

3.2 Community history

3.2.1 Early history

Ludwig Leichhardt's expedition in 1844-1845 is the earliest known European exploration of the Rockhampton area. Due to Leichhardt's accounts of the suitability of the area for grazing purposes, pastoralists took note of the area. In 1853, Charles and William Archer travelled through the area in search of pastoral land. The Archer brothers discovered and named the Fitzroy River in honour of Charles Fitzroy, the governor of New South Wales. When the pastoral districts of Leichhardt and Port Curtis were opened by the New South Wales government in 1853, substantial European settlement took place within a few years. Gracemere station, near today's Rockhampton, was established by the Archer brothers two years later, and pastoral land in the proposed Rookwood Weir and Eden Bann Weir areas, including the Morenish runs number 1, 2 and 3, was also taken up in 1855 (Cook et al 2007).

During the 1850s and 1860s tensions between graziers and Indigenous groups resulted in the region experiencing violent events. The Rockhampton region also experienced a gold rush in 1858, with significant numbers of prospectors moving to the area. For the pastoralists, focus shifted from sheep to beef during that time, laying the foundation for Rockhampton's current identity as the "beef capital of Australia". At this time, many of the still existing cattle properties were established, some of which have been occupied by the same families since the late nineteenth century (Cook et al 2007).

The township of Duaringa dates back to the 1870s when the railway from Rockhampton was extended west to Blackwater. The Duaringa shire was established in 1881 (Duaringa Shire n.d.a, n.d.b).

3.2.2 Development of Rockhampton City

The town of Rockhampton was officially proclaimed in 1860, at the site of a bar of rocks in the Fitzroy River. In 1902 the town was proclaimed "City of Rockhampton". The town was built on the wealth of gold rushes and cattle empires. Early discoveries of gold were at Canoona to the north,

with significant deposits later found at Mount Morgan. Rockhampton became a service town for the local area.

Transportation was a major focus in the development of Rockhampton. The original access across the Fitzroy River, between north and south Rockhampton, was via ferries and small punts. A bridge across the river was opened in 1881 and demolished in 1956 after the new Fitzroy River Bridge opened in 1952. Rockhampton's third road bridge, the Neville Hewitt Bridge, was opened in 1980.

In 1909, Rockhampton became the only provincial town in Queensland to have a street tramway. The steam trams provided passenger services along a number of routes (totaling 10 km of track) throughout South Rockhampton. The City Council replaced the tram system in 1939 with a bus network. Council operated bus services continued until 1995 when services were transferred to private enterprise.

An airport was first established in Rockhampton in 1930 as a facility for the Rockhampton Aero Club. In 1990 the new airport facilities were opened, with the Council assuming ownership of the airport in 1991 (Rockhampton City Council n.d.a).

Water supply services were instigated in Rockhampton in 1861 and upgraded in 1874. Further advances in water services were made in 1926 with the opening of the Mount Charlton pumping station, supplied by The Gap on the Fitzroy River. In an effort to provide a reliable source of water to the city and to effectively drought proof Rockhampton, the City Council commissioned the Fitzroy River Barrage in 1970. The Fitzroy Barrage had a capacity of 81,300 ML and ability to hold back a lake 60 km long. The new Glenmore Water Treatment Works was officially opened in 1971 (Rockhampton City Council n.d.b).

3.2.3 Governance

The Project is located primarily within the jurisdiction of the RRC LGA. Inundation zones extend to local government areas under the jurisdiction of the CHRC and Woorabinda.

Rockhampton's first council was elected in 1861, when Rockhampton's population was approximately 600. A ward system was introduced in 1864 with three wards, Fitzroy, Archer and Leichhardt, under the responsibilities of the Council. In 1919, Rockhampton was amalgamated with the town of North Rockhampton adding further ward responsibilities for the Council.

The Rockhampton area is now governed by the RRC, which was formed on March 15, 2008. The current council represents an amalgamation of the former Fitzroy Shire Council, Livingstone Shire Council, Mount Morgan Shire Council and Rockhampton City Council. The RRC consists of a publicly elected Mayor and ten Councillors who are elected from single-member divisions (RRC n.d.b).

Together with Bauhinia, Emerald and Peak Downs shires, Duaringa shire was amalgamated to form the CHRC in 2008. The council is governed by eight Councillors and a Mayor (CHRC n.d.)

Woorabinda was established in 1927 as a replacement for the Aboriginal camp in Taroom, central Queensland. Woorabinda is governed under a Deed of Grant in Trust, and was excised from Duaringa shire in 1986.

3.3 Demographic profile

3.3.1 Introduction

Data presented here is primarily sourced from the ABS 2011 Census. The data presented is based on a place of usual residence count, which identifies all the usual residents of the areas at the time of the Census (August 2010).

A limitation of this data is the small numbers in some of the tables and figures. In order to protect respondent anonymity ABS uses introduced random error on small numbers in census tables, which may distort some results. Results indicating very small numbers should be interpreted with this limitation in mind. For most of the figures and tables presented below, the categories do not sum to 100%. This is because there is a “not applicable” category for most indicators, which have mostly been excluded. This category consists of different groups, e.g. people under the age of 15 years in the case of marital status⁴.

Socio-economic and demographic indicators have been selected to provide a broad overview of the community. The selection is limited by the availability of census data tables for the selected area.

3.3.2 Population

3.3.2.1 Estimated population

Table 3-1 shows that the regional study area and Rockhampton City has experienced gradual increases in residential population from 2006 to 2011.

Table 3-1 Estimated resident population in the regional study area (2006-2011)

Local government area	Estimated resident population (as at 30 June)			Average annual growth rate	
	2006	2010pr	2011pr	2006-2011pr	2010-2011pr
	Number			%	
CHRC	28,256	29,296	29,533	0.9	0.8
RRC	107,517	111,939	112,383	0.9	0.4
Woorabinda	918	959	982	1.4	2.4
Regional study area totals	136,691	142,194	142,898	0.9	0.5
Rockhampton City	60,597	61,977	63,237	0.9	2.1
Queensland	4,090,908	4,424,158	4,474,098	1.8	1.1
Regional study area as % of Queensland	3.3	3.2	3.2

Pr = preliminary rebased

Source: Office of Economic and Statistical Research (OESR) (2013d, e, f, g)

Table 3-1 describes the resident populations within the regional study area as follows:

- The estimated resident population of CHRC LGA in 2011 was 29,533 persons, an increase of 237 persons or 0.8 % since 2010.

⁴ For a complete description of the not applicable category for each indicator, refer to the ABS Census Dictionary (ABS 2011a)

- The RRC LGA had an estimated resident population of 112,383 persons in 2011, an increase of 444 persons or 0.4 % since 2010. It is evident that growth is inside Rockhampton City as was outside the city in areas that still have a strong reliance on Rockhampton City for goods and services and as a base for the region (RRC 2012).
- The Woorabinda LGA experienced an increase of 23 persons or 2.4 % from 2010 (959 persons) to 2011 (982 persons).

In addition to the resident population, Census 2011 has also produced data on the full-time equivalent (FTE) population estimated for some LGAs. The FTE population measure is the sum of the estimated resident population and the number of non-resident workers on-shift for a given year (OESR, 2013b). Non-residential worker refers to people who are not residents of the local area where they regularly work (OESR, 2013b). The non-residential worker population is not accounted for in the population estimates from ABS as they do not meet the criteria for a 'usual resident'.

However, the non-residential worker population creates additional demand for goods, services and infrastructure while living in the area. The OESR has collated information on non-resident workers in specific LGAs and Statistical Local Areas located within the geographical boundaries of the Bowen Basin, which includes the CHRC LGA. The RRC LGA and the Woorabinda LGA are not part of the Bowen Basin and therefore, non-resident worker and FTE population data is currently not available. Due to Rockhampton's status as a base in the region, it is likely that there is a smaller non-resident workforce present as more people are living in Rockhampton but working elsewhere. As Woorabinda is a small Aboriginal community with a high unemployment rate, it is considered unlikely that the area will have a non-resident worker population.

From Table 3-2 it is evident that the CHRC LGA had a FTE residential population of 34,365 in 2011, being 4,835 persons more than the estimated resident population which was 29,530 persons. This increased to an FTE population of 35,710 in 2012, 5,585 persons more than the estimated resident population of 30,125 persons. This is a considerable difference in the population estimates and reinforces the importance of calculating the non-residential workers on-shift and the FTE population as infrastructure and development is often based on the residential population, without taking into consideration the non-resident worker population.

Table 3-2 Full-time equivalent population estimates

Local government area	2011			2012		
	Estimated resident population	Non-residential workers on-shift	FTE population estimate	Estimated resident population	Non-residential workers on shift	FTE population estimate
CHRH	29,530	4,835	34,365	30,125	5,585	35,710

Source: OESR (2013b)

Table 3-3 shows the estimated resident population and components of change in the CHRC LGA, RRC LGA and Woorabinda LGA at 30 June 2010. All areas recorded higher numbers of natural increase than migration and all experienced increases in the annual change. The high number of births in both the CHRC and RRC LGAs in 2010 is reflected in the 2011 age distribution data for the LGAs which shows a high proportion of persons within the 0-4 age cohort (refer to Section 3.3.3).

Table 3-3 Estimated resident population and components of change in the regional study area (30 June 2010)

Local government area	Natural increase (b)	Assumed net migration (c)	Estimated resident population	Annual change
CHRC	482	136	31,020	618
RRC	915	291	115,310	1,206
Woorabinda	37	-3	999	34
Regional study area totals	1,434	424	147,329	1,858
Queensland	39,804	40,862	4,505,433	80,666
Regional study area region as % of Queensland	3.6	1.0	3.3	2.3

Data in this table has yet to be rebased using Census 2011 information

Source: OESR (2013d, e, f, g)

3.3.2.2 Population trends

Table 3-4 and Figure 3-1 illustrates the estimated resident population from 2001 to 2011 in each LGA in the regional study area, Queensland. Both the CHRC and RRC LGAs experienced an increasing population between 2001 and 2011, which reflected the pattern experienced in Queensland.

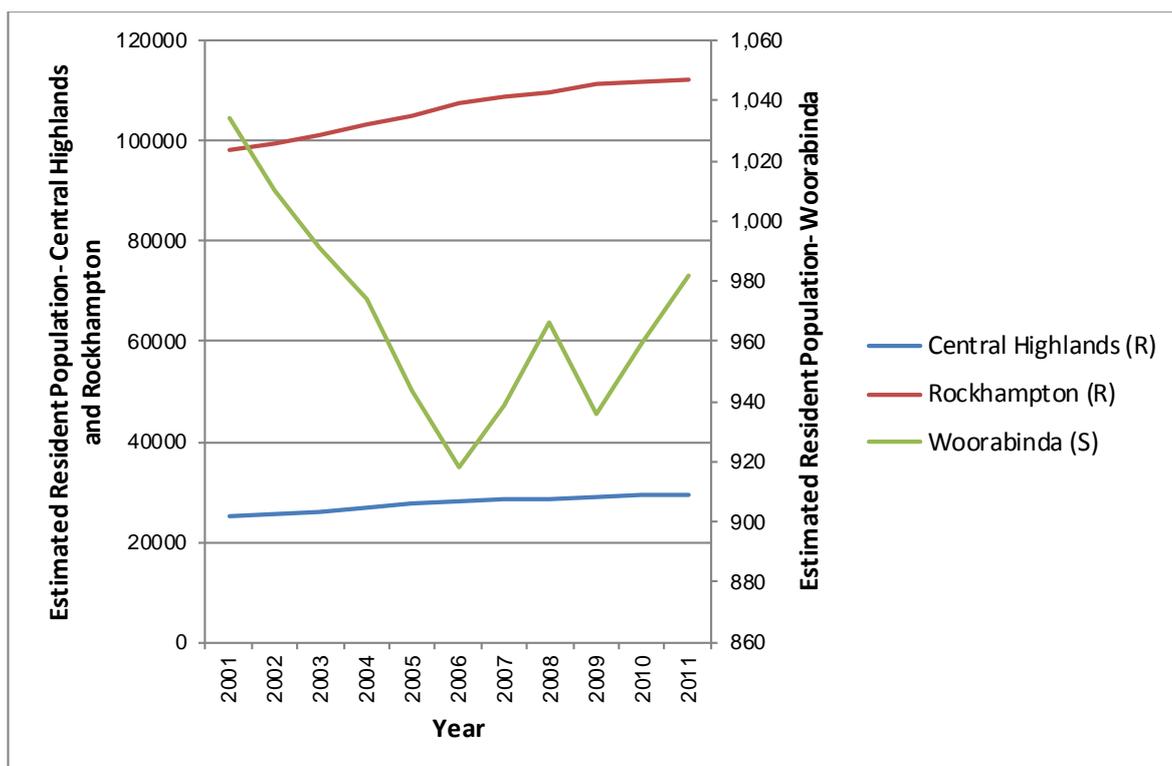
The CHRC LGA has received an additional 4,472 persons across the ten year period while RRC LGA has had an additional 14,158 persons. Woorabinda LGA experienced a decline in population from 2001 to 2006 (1,034 to 944 persons) then it gradually increased to 982 persons in 2011 (with the exception of 2009 when a decrease to 936 persons was experienced).

Table 3-4 Estimated resident population in the regional study area over time

LGA	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
CHRC	25,061	25,627	26,187	26,861	27,505	28,256	28,375	28,633	29,107	29,296	29,533
RRC	98,225	99,625	101,284	103,370	105,165	107,517	108,794	109,887	111,413	111,939	112,383
Woorabinda	1,034	1,010	991	974	944	918	939	966	936	959	982
Queensland	3,628,946	3,714,798	3,809,214	3,900,910	3,994,858	4,090,908	4,177,089	4,270,091	4,365,426	4,424,158	4,474,098

Source: OESR (2013c)

Figure 3-1 Estimated resident population in the regional study area over time



Source: OESR (2013d, e, f, g)

3.3.2.3 Population projections

As shown in Table 3-5, both RRC LGA (1.6 %) and Woorabinda LGA (1.7 %) have expected average annual growth rates (to 2031) similar to that experienced by Queensland (1.8 %). Comparatively, the CHRC LGA has a higher expected growth rate of 2.4 %.

The 2.4 % average annual growth rate anticipated for the CHRC LGA will result in an increase of approximately 18,881 persons between 2011 and 2031. This population growth is expected to be driven predominately by mining and associated industry and development.

The RRC LGA is expected to have an increase of 45,261 persons between 2011 and 2031. It is anticipated that Woorabinda LGA will grow by 381 persons between 2011 and 2031.

Table 3-5 Population projections for the regional study area (2011-2031)

Local government area	Projected population as at 30 June*					Average annual growth rate (%)
	2011	2016	2021	2026	2031	2011 to 2031
CHRC	31,861	36,256	40,880	45,685	50,742	2.4
RRC	117,612	127,915	138,933	150,450	162,873	1.6
Woorabinda	976	1,065	1,152	1,246	1,357	1.7
Regional study area totals	150,449	165,236	180,965	197,381	214,972	1.8
Rockhampton City	63,237	68,366	71,511	74,688	78,113	0.9
Queensland	4,611,491	5,092,858	5,588,617	6,090,548	6,592,857	1.8

Local government area	Projected population as at 30 June*					Average annual growth rate (%)
	2011	2016	2021	2026	2031	2011 to 2031
Regional study area region as % of Queensland	3.3	3.2	3.2	3.2	3.3	..

*Mediumseries projections

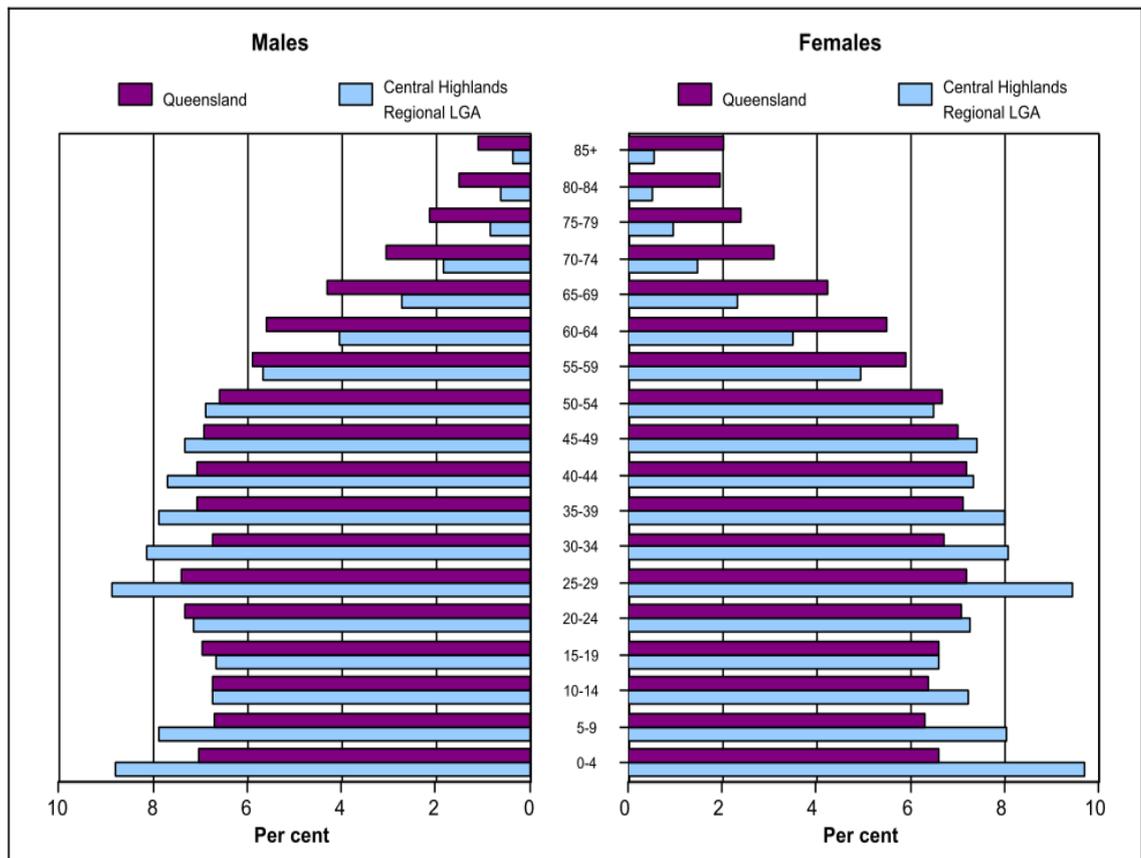
Source: OESR (2013d, e, f, g)

3.3.3 Age and gender distribution

As at 30 June 2011 (OESR, 2013a, d), the CHRC LGA age and gender profile was characterised by the following features as illustrated in Figure 3-2:

- The majority of persons (9,671 or 32.7 %) were recorded in the 25 to 44 age cohort
- 24.1 % of persons were aged 0 to 14 years, 13.8 % were aged 15 to 24 years, 23.2 % were aged between 45 and 64 years and 6.1 % were 65 years and over
- The ratio of males to females was 116.5 males per 100 females. The slightly higher proportion of males than females may be a result of the mining activity in the region which predominately attracts a male workforce
- The median age of males was 32.2 years while the median age of females was 31 years.

Figure 3-2 CHRC LGA and Queensland age and gender distribution (30 June 2011)

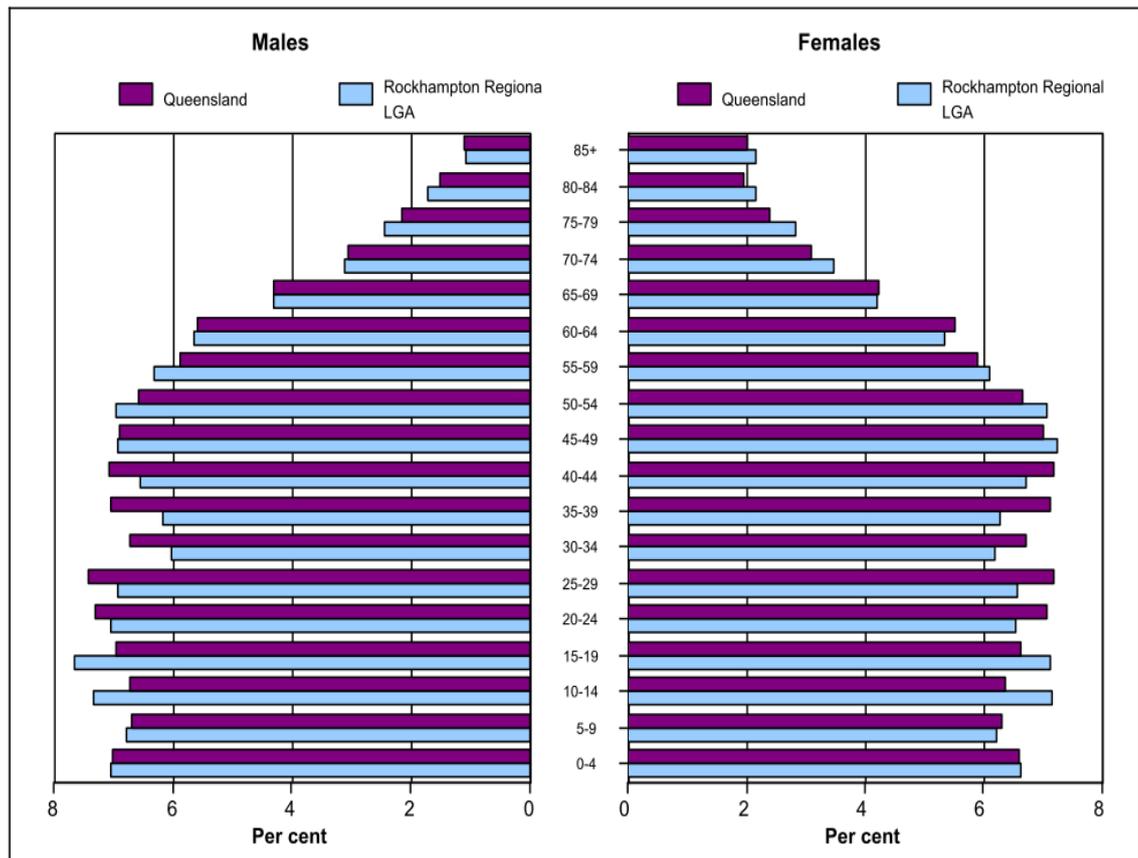


Source: OESR (2013d)

As at 30 June 2011 (OESR, 2013a, f), the RRC LGA age and gender profile was characterised by the following features as illustrated on Figure 3-3:

- The 25 to 44 and 45 to 64 year age cohorts constituted the majority of persons with 25.7 % and 25.8 % respectively
- 20.6 % of persons were aged 0 to 14, 14.2 % were aged 15 to 24, and 13.7 % were 65 years and over
- The percentages for each cohort generally reflects the patterns of Queensland
- The ratio of males to females was 101.3 males per 100 females
- The median age of males was 36 years while the median age of females was 37.9 years.

Figure 3-3 RRC LGA and Queensland age and gender distribution (30 June 2011)



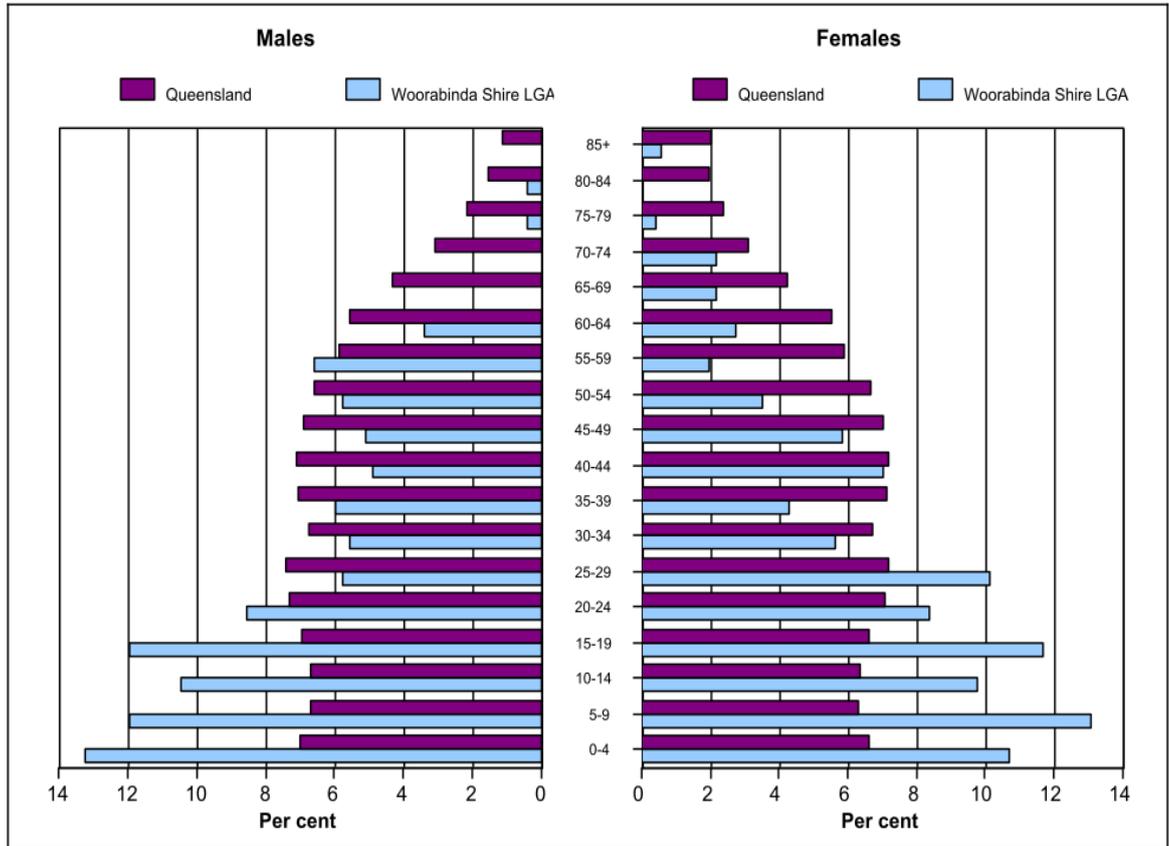
Source: OESR (2013f)

As at 30 June 2011 (OESR, 2013a, g), the Woorabinda LGA age and gender profile was characterised by the following features as illustrated on Figure 3-4:

- The majority of the population of Woorabinda sits within the 0 to 14 years age bracket (34.5 % and 339 persons)
- 20.3 % of persons were aged between 15 and 24 years, 24.7 % were between 25 and 44 years, 17.3 % were aged 45 to 64, and 3.2 % were aged 65 years and over
- No males in the 65 to 69, 70 to 74, or 85 and over categories and minimal numbers for both males and females over 65 years possibly due to the lower life expectancy age for Indigenous people

- Male population of 447 persons and female population of 498 persons (Woorabinda, 2011)
- Ratio of males to females: 91.4 males per 100 females
- The median age of males was 21.5 years while the median age of females was 22.6 years.

Figure 3-4 Woorabinda LGA and Queensland age and gender (30 June 2011)



Source: OESR (2013g)

3.3.4 Family composition

As shown in Table 3-6, RRC LGA contained the largest number of families (28,537) followed by the CHRC LGA (6,962) and Woorabinda LGA (197). Both the CHRC and RRC LGAs recorded a higher percentage of couple families with children (52.9 % and 41.5 %, respectively), while Woorabinda LGA recorded the highest proportion of one-parent families (45.7 %).

3.3.5 Indigenous population

The cultural diversity in the community composition of the LGAs includes people of Aboriginal and Torres Strait Islander communities. Table 3-7 shows the Indigenous population for the regional study area in 2011. At the time of the 2011 Census, 3.6 % of the CHRC LGA was identified as being of Aboriginal and/or Torres Strait Islander origin or both. RRC LGA identified 5.5 % and Woorabinda LGA 92.8 %. Woorabinda is an Aboriginal community situated on the traditional lands of the Wadja Wadja / Yungulu Aboriginal people thus accounting for the large Indigenous population (Woorabinda 2011). RRC LGA also had a slightly higher percentage of Aboriginal and/or Torres Strait Islander population (5.5 %) than the recorded State percentage (3.6 %). The CHRC LGA had the same percentage as Queensland (3.6 %). Rockhampton City data generally reflected the wider RRC LGA data.

Table 3-6 Family composition within the regional study area

Local government area	Couple family with no children		Couple family with children		One-parent family		Total
	Number	%	Number	%	Number	%	Number
CHRC	2,565	36.8	3,685	52.9	639	9.2	6,962
RRC	11,449	40.1	11,833	41.5	4,847	17.0	28,537
Woorabinda	22	11.2	75	38.1	90	45.7	197
Regional study area totals	14,036	39.3	15,593	43.7	5,576	15.6	35,696
Rockhampton City	5,648	37.0	6,300	41.3	3,025	19.8	15,258
Queensland	453,102	39.5	491,200	42.8	184,547	16.1	1,148,179
Regional study area region as % of Queensland	3.1	..	3.2	..	3.0	..	3.1

Source: OESR (2013d, e, f, g)

Table 3-7 Number of persons by Indigenous status in the regional study area

Local government area	Indigenous persons					Non-Indigenous persons		Total persons
	Aboriginal	Torres Strait Islander	Both*	Total		Number	%	Number
	Number				%			
CHRC	922	53	45	1,020	3.6	25,322	88.2	28,715
RRC	5,161	454	382	5,997	5.5	96,168	88.0	109,338
Woorabinda	833	0	44	877	92.8	51	5.4	945
Regional study area totals	6,916	507	471	7,894	5.7	121,541	87.4	138,998
Rockhampton City	3,272	290	275	3,837	6.4	52,267	86.8	60,215
Queensland	122,896	20,094	12,834	155,824	3.6	3,952,707	91.2	4,332,740
Regional study area region as % of Queensland	5.6	2.5	3.7	5.1	..	3.1	..	3.2

*persons who are of both Aboriginal and Torres Strait Islander origin

Source: OESR (2013d, e, f, g)

3.3.6 Labour force and unemployment status

Unemployment data from the OESR shows a varied unemployment rate for the three LGAs within the regional study area as detailed on Table 3-8.

Table 3-8 Unemployment and labour force status within the regional study area

Local government area	Unemployed*	Labour force*	Unemployment rate* (%)
CHRC	405	19,475	2.1
RRC	3,582	62,540	5.7
Woorabinda	243	359	67.7
Regional study area totals	4,230	82,374	5.1
Rockhampton City	2,910	37,888	7.7
Queensland	139,800	2,480,000	5.6
Regional study area region as % of Queensland	3.0	3.3	..

*September quarter 2012

Source: OESR (2013d, e, f, g)

In the September quarter of 2012 RRC LGA had an unemployment rate of 5.7 %, which is fairly consistent with the Queensland rate of 5.6 %. The CHRC LGA recorded the lowest unemployment rate at 2.1 % and 405 persons. The rate of unemployment of 67.6 % in Woorabinda LGA is significantly higher than both the other regions and the Queensland rate.

The lower unemployment rate in the CHRC LGA is largely attributed to employment opportunities in the mining sector and associated industries. At the time of the Census, mining was the largest industry of employment for the region.

The RRC LGA reflected the Queensland unemployment rate while Rockhampton City was higher with 7.7 %. For the Project, the higher unemployment rate in Rockhampton means there is a high likelihood that the Project will be able to source its workforce from within the regional study area.

3.3.7 Industry and occupation

As Figure 3-5 shows, in 2011 the largest industry of employment for the CHRC LGA was mining, contributing a total of 3,974 persons or 26.0 % of the employed labour force. Other large industries included agriculture, forestry and fishing (11.0 %) and construction (7.9 %).

In RRC LGA, the main industries of employment were health care and social assistance which accounted for 12.8 % of the total employment, followed by retail trade (10.9 %), and education and training (9.0 %).

The main industries of employment for Rockhampton City were health care and social assistance (14.3 %), retail trade (11.3 %), education and training (9.2 %) and manufacturing (8.6 %) (OESR 2013b). This presents some similarities to the employment trends of the RRC LGA.

The largest industry of employment within the Woorabinda LGA was health care and social assistance contributing a total of 66 persons or 31.9 % of the employed labour force. Public administration and safety (20.3 % or 42 persons), and education and training (15.5 % or 32 persons) were other industries with relatively large numbers of employed persons in the region. Within the Woorabinda LGA nine of the listed industries appeared as zero per cent including retail, manufacturing, and accommodation and food services. The absence of these industries along with

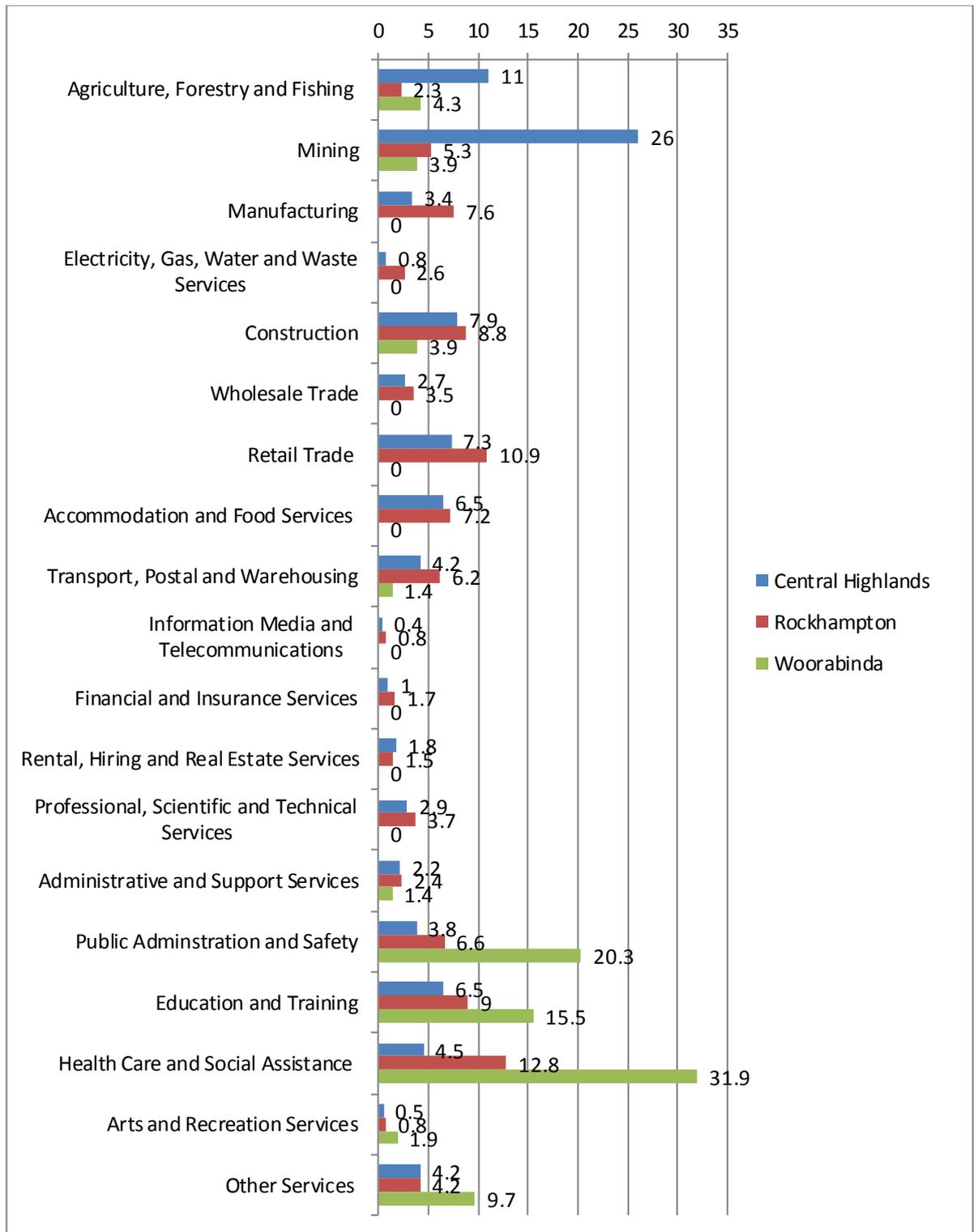
the largest industries being health care and social assistance, public administration and safety, and education and training could be due to Woorabinda being a small community with a high Indigenous population.

As shown in Figure 3-6, an overview of the occupation of employed persons in the CHRC LGA corresponds with the main industries of employment in the area. As mining is the predominant employer, the primary occupation of the persons employed are machinery operators and drivers (19.9 % of total employed), technicians and trades workers (18.8 % of total employed) and managers (14.6 % of total employed).

The connection between the largest industry of employment and the largest occupation group was not as evident in the RRC LGA. The largest industry was health care and social assistance while the main occupation group was technicians and trade workers (17.4 %). The inconsistency could be the result of a workforce where persons would be residing in the Rockhampton region but working as technicians and trades persons elsewhere. Labourers (21.0 %) and technicians and trade workers (16.9 %) were the leading occupation groups in Rockhampton City, reflecting similar patterns to the greater Rockhampton region.

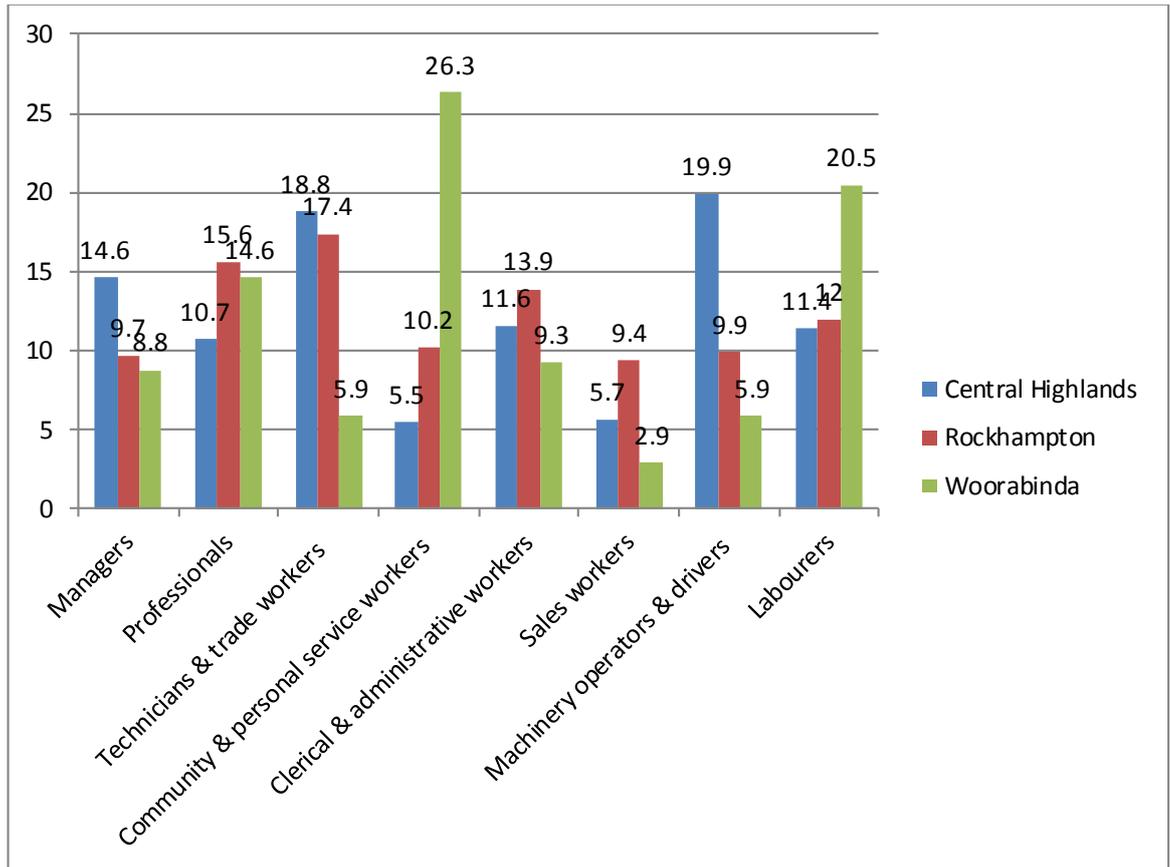
For the Woorabinda LGA the link between the main industry of employment in the region, being health care and social assistance, and the largest occupation group of employment was evident. Community and personal service workers were the largest occupation group of employment with 54 persons or 26.3 % of the employed labour force.

Figure 3-5 Employment by industry in the regional study area



Source: OESR (2013d, e, f, g)

Figure 3-6 Proportion of employment by occupation in the regional study area



Source: OESR (2013d, e, f, g)

3.3.8 Temporary accommodation

The OESR has collated information on worker accommodation villages (WAVs) in specific LGAs and Statistical Local Areas located within the geographical boundaries of the Bowen Basin, which includes the CHRC LGA. The RRC LGA and the Woorabinda LGA are not part of the Bowen Basin and WAV data is currently not available.

In the CHRC LGA WAVs provided around 88 % of accommodation for non-resident workers in June 2012, with 22,150 non-resident workers counted in 69 WAVs across the Bowen Basin. Two new WAVs opened in the CHRC LGA 2011-12, increasing capacity in the region. Table 3-9 illustrates the number of non-resident workers on-shift by accommodation. It is evident that WAVs (4,450 persons) were the primary accommodation type in the CHRC LGA followed by hotels/motels (1,020 persons), and caravan parks/other (115 persons).

Table 3-9 Non-resident workers on shift by accommodation type in the CHRC LGA

Local government area	Workers accommodation villages	Hotels/motels	Caravan parks/ other	Total non-resident workers on shift
CHRC	4,450	1,020	115	5,585
Bowen Basin total	22,150	2,035	845	25,035

As at June 2012

Source: OESR (2013b)

Not all WAV beds are occupied by non-resident workers at any given point in time, due to shift patterns and tenancy arrangements. Table 3-10 shows that 9 % of the WAV beds within the CHRC LGA are vacant and available.

Table 3-10 Vacant and available WAV beds in the CHRC LGA

Local government area	Occupied by non-resident workers	Vacant and available	Balance	Total WAV beds	Vacant and available beds (%)
Central Highlands (R)	4,450	510	905	5,860	9
Bowen Basin Total	22,150	1,890	3,525	27,565	7

As at June 2012

Source: OESR (2013b)

Table 3-11 indicates the estimated vacancy rate for all types of residential rental accommodation in RRC LGA for 2008-2009 and 2009-2010. Table 3-11 indicates that the vacancy rate has increased over the period. As the Project's workforce will be based in Rockhampton, this data indicates that there will most likely be sufficient accommodation available.

Table 3-11 Estimated vacancy rates for all types of residential rental accommodation in RRC LGA

Local government area	Estimated vacancy rate for all types of residential rental accommodation	
	2008-09	2009-10
Rockhampton (R)	3.2%	4.6%

Source: OESR (2013h)

Table 3-12 supports the vacancy rate data as it indicates that Rockhampton has a reasonable number of tourist accommodation establishments, despite some minor decreases in numbers over the five year period. Other ABS data suggests that Rockhampton and the wider Central Queensland region has experienced high occupancy rates, of around 70-75 %, in hotels, motels and serviced apartments in the September quarter of 2012 (Butler, 2013). The high tourism occupancy rate has been attributed to mining in the region and indicates that while Rockhampton has experienced higher than normal occupancy rates there are still vacancies. For the Project this means that accommodation will not be an issue, as even at the busiest times there is still tourist accommodation available within Rockhampton.

Table 3-12 Tourist accommodation establishments in Rockhampton City

Accommodation establishments	2006	2007	2008	2009	2010
Hotels, motels, serviced apartments – 5 to 14 rooms	-	18	18	16	17
Hotel, motels, serviced apartments – 15 or more rooms	-	47	47	48	47
Hotel, motels, serviced apartments – Total – 5 or more rooms	-	65	65	64	64
Hotels – 15 or more rooms	-	8	7	6	6

Accommodation establishments	2006	2007	2008	2009	2010
Motels – 15 or more rooms	-	36	36	36	35
Serviced apartments – 15 or more rooms	-	3	4	6	6
Caravan parks	-	15	15	15	15
Holiday flats and units	-	0	0	0	0
Visitor hostels	-	5	4	4	4

As at 30 June 2010

Source: ABS (2011)

3.4 Social infrastructure services and facilities

3.4.1 Overview

Rockhampton is the regional centre in close proximity to the Project site. To access most types of services, residents in the local and regional study areas travel to Rockhampton.

The following section outlines community services and facilities available in close proximity to the Project site and mainly in Rockhampton where most of the Project workforce will be based.

3.4.2 Utilities

Some of Queensland's largest power stations are located in and around the regional study area. These include the Stanwell, NRG Gladstone and Callide power stations, which produce the majority of the State's power. Stanwell currently has a water allocation from the Fitzroy River (supplied through releases from the existing Eden Bann Weir owned and operated by SunWater Limited). The Gladstone Area Water Board supply bulk water to the NRG Gladstone and Callide power stations from Awoonga Dam. Ergon Energy is the major distributor of energy in the region.

Fitzroy River Water (a business unit of RRC) supplies water and sewerage services in the Rockhampton area and bulk water to the former Fitzroy Shire and de-amalgamated Livingstone Shire. Raw water from the Fitzroy River (via the Rockhampton Barrage) is treated at Rockhampton's Glenmore Water Treatment Plant and pumped to the various reservoirs located around the City and Gracemere. Bulk water is supplied to the Capricorn Coast (Livingstone Shire) via the Rockhampton to Yeppoon pipeline supplementing supplies from Water Park Creek. The plant has the capacity to treat 120 ML of water per day (with maximum demand recorded in 2002/2003 of 114 ML per day).

The Commercial Services Department of the CHRC is responsible for the management and maintenance of water and sewerage infrastructure in the region. Woorabinda Council staff manage and maintain the water treatment plant and reservoirs that supply the town.

3.4.3 Communications

There are various forms of mass media and communications services available throughout the regional study area. These include:

- Five free to air television networks
- Numerous AM and FM radio stations

- Newspapers including The Rockhampton Morning Bulletin and Rockhampton Fitzroy News. Local residents have indicated that Queensland Country Life is the most read newspaper in the local study area
- Post offices, including several post offices in the city of Rockhampton, a post office in Marlborough, Duaringa and a community postal agency in Westwood
- Telecommunications such as internet connection, telephone and mobile phone connections. The local study area is however not covered in full by mobile phone and internet services.

3.4.4 Accommodation

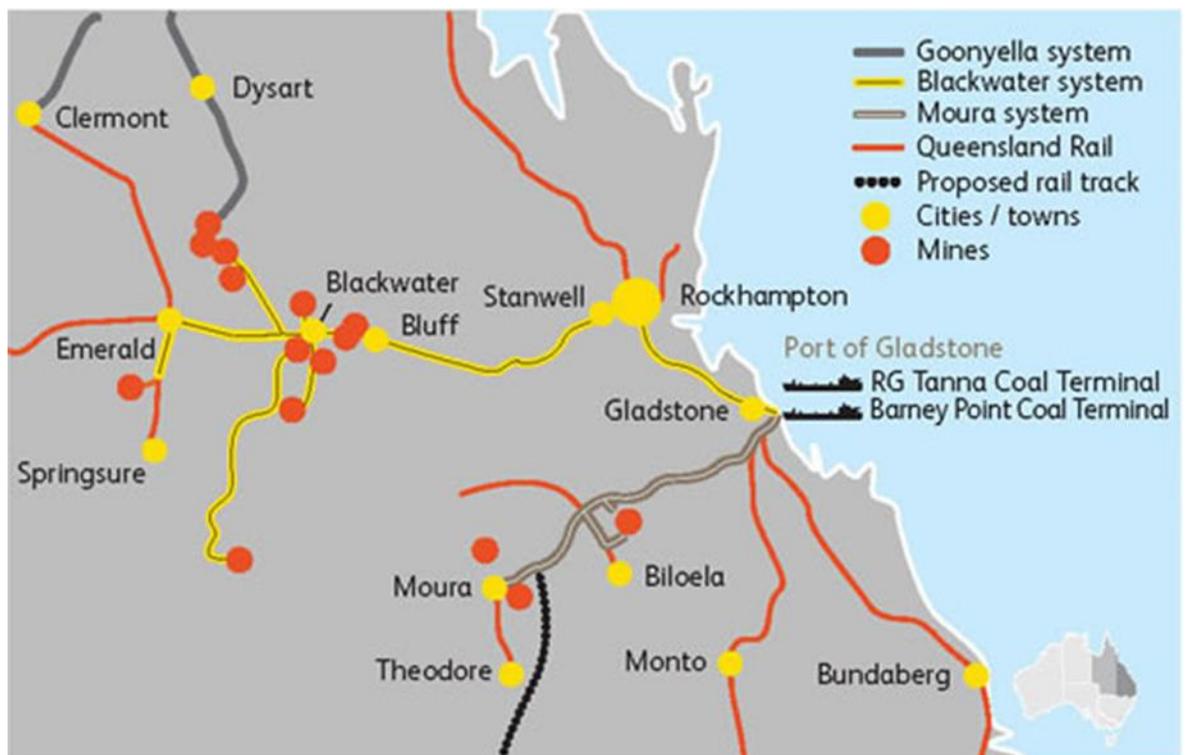
There are plenty of temporary accommodation facilities, such as hotels, motels, caravan parks and camp sites in the regional study area. Most of these are located in Rockhampton (refer to Section 3.3.8 for details on accommodation facilities in the regional study area).

3.4.5 Transport infrastructure

3.4.5.1 Rail network

Aurizon Network Pty Ltd operates the rail network in the regional study area, specifically the Blackwater system which is a coal rail network (Figure 3-7) passing through Gogango (Chapter 16 Transport). The Blackwater system also services a number of domestic users including Stanwell and Gladstone Power Stations, Cement Australia and the Comalco Refinery. Rockhampton is a major node in Queensland's railway system and plays a key role as a railways repair and service centre as well as a key despatch and control centre. Rockhampton is serviced by the Brisbane to Cairns Tilt passenger train and the Brisbane to Cairns Sunlander. The tourist train to Longreach, 'The Spirit of the Outback', also stops over in Rockhampton and traverses part of the Blackwater system through Gogango. There are no passenger services at Gogango Station.

Figure 3-7 Rail network system



Source: Aurizon (<http://www.aurizon.com.au/networksystems/Pages/BlackwaterSystem.aspx>)

3.4.5.2 Airport facilities

The Rockhampton Airport is a commercial business unit of RRC and is responsible for the management and operations of the airport. The airport is a major Australian regional airport servicing the city of Rockhampton and central Queensland, with flights to Sydney, Brisbane, Gladstone, Mackay, Townsville and Cairns through QantasLink and Virgin Australia. Approximately 20 passenger flights arrive and leave Rockhampton Airport per day.

The airport can accommodate a mix of aircraft including wide-bodied aircraft such as the B747 to B777 and A340 types. In addition, several charter flights operate. Due to the proximity to the Shoalwater Bay military training area, the airport is also frequently used by the Australian, New Zealand, American and Singaporean armed forces (Rockhampton Tourist and Business Information Inc 2004).

Approximately 750,000 domestic passengers pass through the terminal annually. Future plans for the airport include expansion to accommodate a new customs quarantine section to facilitate future international flights.

Rockhampton Airport is well equipped to handle freight operations. Facilities include air traffic control, rescue firefighting service and dedicated customs and quarantine facilities. The secondary runway (1,645 m) is capable of handling B737 aircraft.

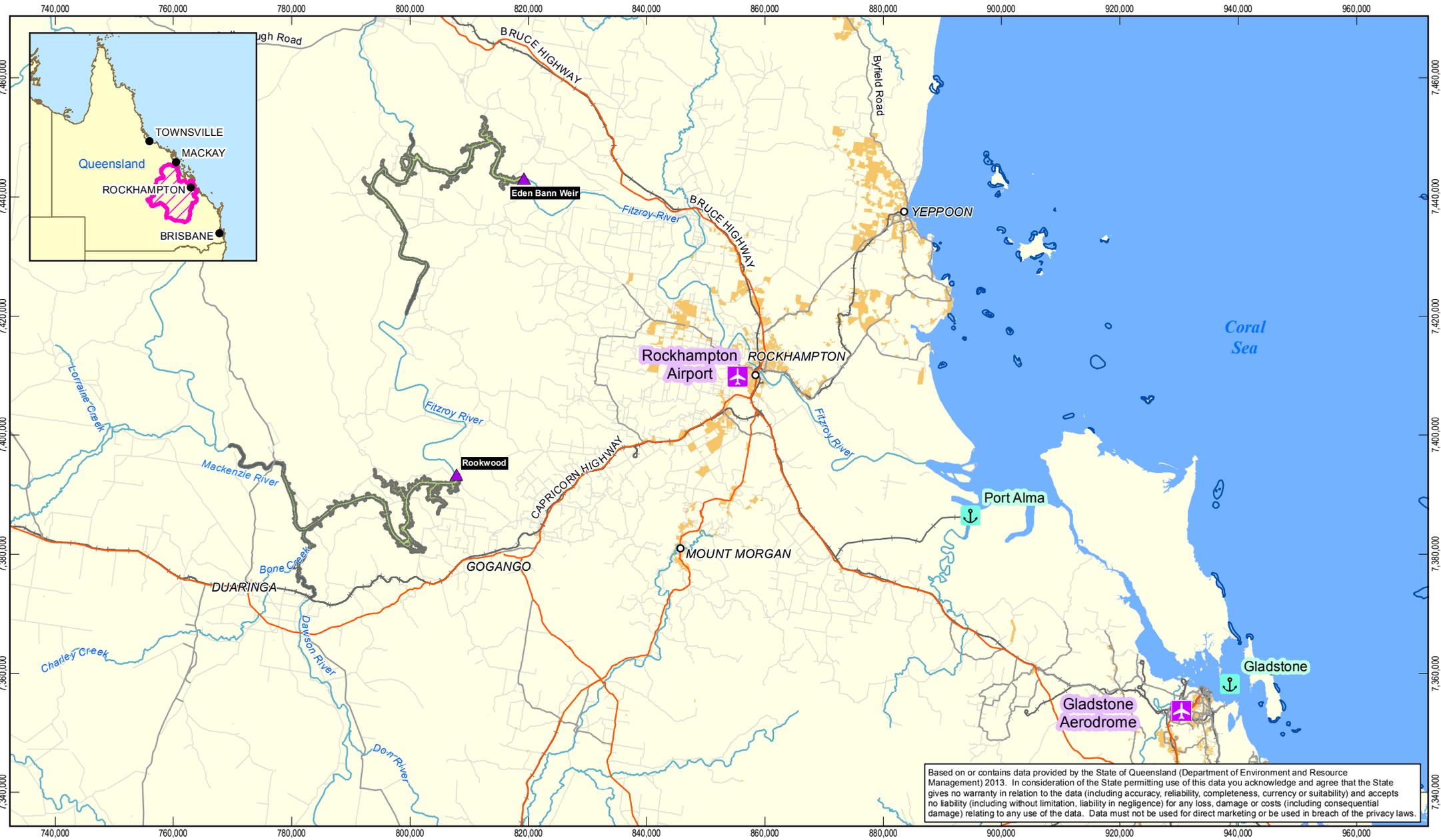
Three emergency service providers are based at and use the facilities of the Rockhampton Airport. These include the Royal Flying Doctor Service, RACQ Capricorn Helicopter Rescue Service and Airservices Australia.

Figure 3-8 shows the location of airport and port locations in the regional study area.

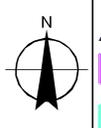
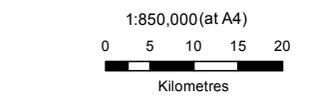
3.4.5.3 Port facilities

Two commercial ports service the region, namely Port Alma and the Port of Gladstone (Chapter 16 Transport). Keppel Bay Marina (50 km north-east of Rockhampton) provides recreational port facilities.

Figure 3-8 shows the location of airport and port locations in the regional study area.



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LEGEND

- | | | | | |
|----------|-----------------|------------------|-----------------------------------|------------------------------------|
| Weir | Highway | Fitzroy Basin | Rookwood Weir Stage 1 impoundment | Eden Bann Weir Stage 2 impoundment |
| Location | Major Road | Urbanised Area | Rookwood Weir Stage 2 impoundment | Eden Bann Weir Stage 3 impoundment |
| Airport | Streets (Local) | Waterway (Major) | Railway | |
| Port | | | | |

Map Projection: Universal Transverse Mercator
 Horizontal Datum: Geocentric Datum of Australia (GDA94)
 Grid: Map Grid of Australia 1994, Zone 55



Gladstone Area Water Board, SunWater	Job Number	41-20736
Lower Fitzroy River Infrastructure Project	Revision	B
	Date	26 Sep 2014

Port and airport locations **Figure 3-8**

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 Data Source: © Copyright Commonwealth of Australia (Geoscience Australia): Places, Waterways, Airports (2007); Sunwater: Waterways, Weir Locations - 2008; DNRM: Railways, Roads (2010); GHD: Port (2012). Created by: MS *See Appendix for disclaimers and copyrights.

3.4.5.4 Road networks and river crossings

The Capricorn Highway passes through the local study area and intersects with the Bruce Highway in Rockhampton. There are also several secondary roads and smaller tracks passing through the local study area, many of which are unsealed.

The road network is discussed further in Chapter 16 Transport. Figure 3-9 shows the road network in the local and regional study areas.

The Fitzroy River upstream from Rockhampton forms a natural barrier for movement of people with mainly low lying crossings available. Within Rockhampton City access across the Fitzroy River is facilitated via the Fitzroy River Bridge, opened in 1952, and the Neville Hewitt Bridge, opened in 1980.

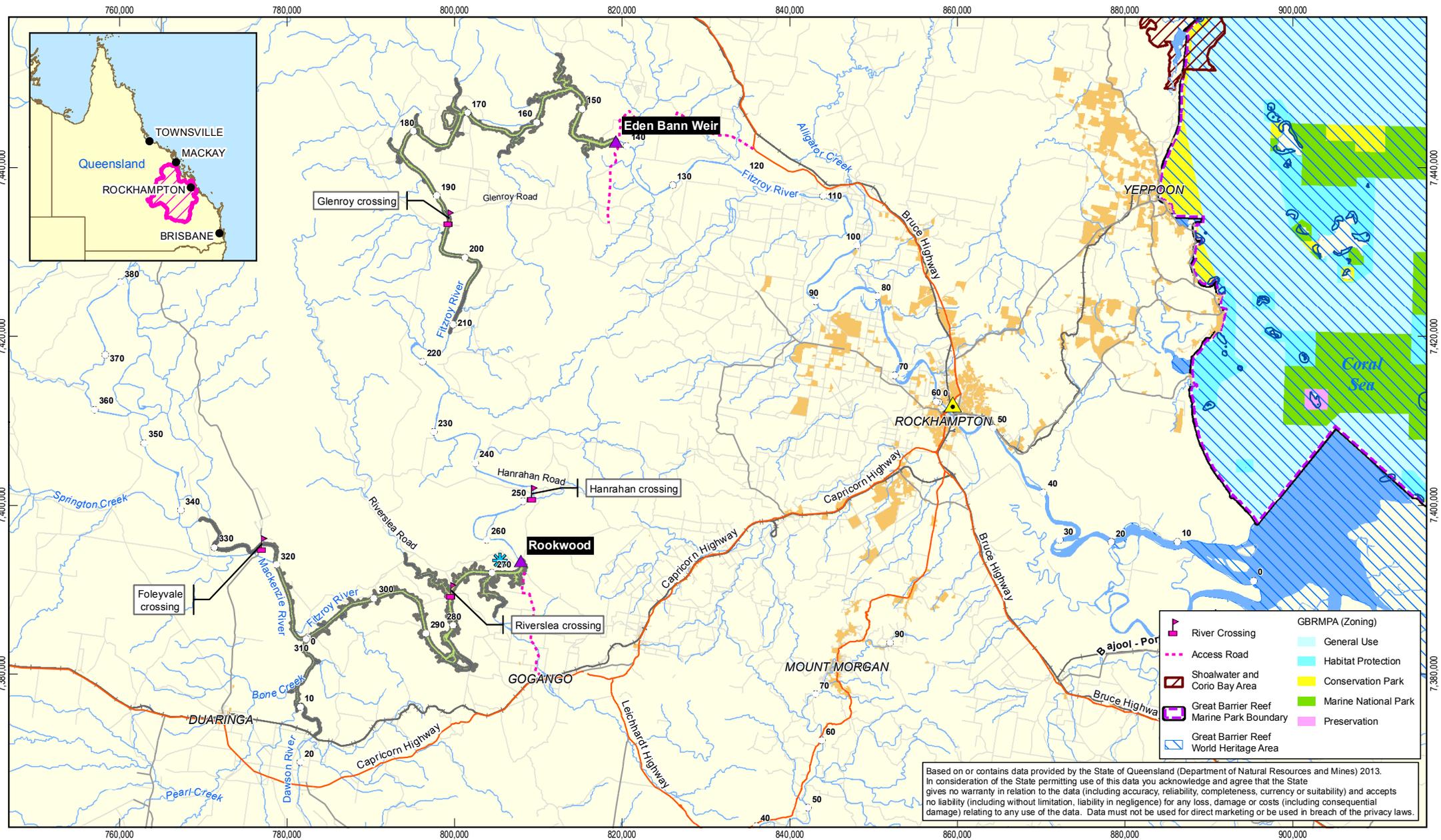
In the local study area, three primary river crossings of relevance to the Project are identified as Glenroy Crossing, Riverslea Crossing and Foleyvale Crossing and shown in Figure 3-9. These crossings comprise low level causeways with poor flood immunity. Usage of these crossings ranges from several vehicles per day to only a few per month.

The crossings are maintained by DTMR and/or RRC and described as follows:

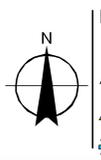
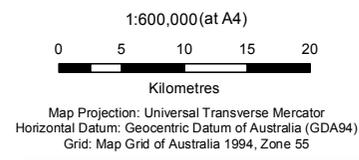
- Glenroy Crossing is the primary crossing used by people living west of the Fitzroy River in the Morenish area to travel to and from Rockhampton. Glenroy Crossing is upstream of Eden Bann Weir on Glenroy Road, a local road under the jurisdiction of RRC.
- Riverslea Crossing is the primary crossing in the Gogango area, upstream of the proposed Rookwood Weir site. Riverslea Crossing provides the only gazetted road access to several properties. Approximately 30 to 35 people depend on Riverslea Crossing for access. Riverslea Crossing is on Riverslea Road, a local road under the jurisdiction of RRC.
- Foleyvale Crossing provides access to Duaringa for properties located north of the Mackenzie River. At least five properties with several families use the crossing. The only viable alternative is to boat across the river. Foleyvale Crossing is located on the Duaringa-Apis Creek Road across the Mackenzie River and is a state-controlled road under the jurisdiction of DTMR.

Several private crossings and internal property crossings have been identified (KBR 2007) within the local study area. Some of these are rarely used and function mostly as 'opportunistic' crossings. Very little reliable information about the current function of some of these crossings is available. These crossings include (but are not limited to):

- Glenavon access track comprises an internal property access track for the Glenavon property
- Glenroy-Marlborough Road (at Green Creek, The Islands and Ten Mile Creek) supports low lying crossings along the Glenroy-Marlborough Road which provide alternative access to Rockhampton for properties on the western side of the Glenroy Crossing. It also provides a shorter connection to the Bruce Highway for people from this area and east of the river travelling north
- Redbank Crossing is an internal property crossing for the Redbank property which extends over both sides of the river
- Melrose Bottom Crossing is an internal property crossing for the Melrose property



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LEGEND	
○ AMTD (km)	— Highway
▲ Weir Location	— Major Road
▲ Fitzroy Barrage	— Streets (Local)
⊙ Saddle dams	— Access Road
▨ Fitzzy Basin	▨ Urbanised Area
▨ Rookwood Weir Stage 2 impoundment	▨ Eden Bann Weir Stage 2 impoundment
▨ Rookwood Weir Stage 1 impoundment	▨ Eden Bann Weir Stage 3 impoundment



Gladstone Area Water Board, SunWater Job Number 41-20736
 Lower Fitzroy River Infrastructure Project Revision J
 Date 26 Sep 2014

Road network and primary river crossings

Figure 3-9

- Craiglee Crossing is an internal property crossing for the Craiglee property which has land on both sides of the river
- Hanrahan Road Crossing comprises a low level crossing which is the primary property access for one property
- Rookwood Crossing provides internal property access for the Weir Park property which extends over both sides of the river. It also facilitates access for two other properties
- The Pocket 4WD access provides access over Melaleuca Creek to the Pocket and Yarra properties. An alternative route is via Rookwood Road
- Smith Road Crossing is located on Smith Road over Melaleuca Creek. This crossing provides gazetted access to some properties and an alternative access when the Pocket 4WD access is impassable
- Island Camp Crossing is used to access grazing land for the Island Camp property
- Jackson Road
- Yarra-Tarrawong Crossing
- Separation-Slatey Creek Crossing is a connection between the Separation and Slatey Creek properties located on opposite banks of the river. The crossing is currently rarely used
- Mourangee Dawson River Crossing
- Boolburra Crossing (also referred to as Aroona Road Crossing) is the primary access between Duaringa and properties located east of the Dawson River.

3.4.6 Health services and facilities

There are several health services and facilities located in the regional study area, primarily in Rockhampton. The Rockhampton Hospital is the largest hospital in the region, with more than 200 beds and provides speciality and allied health services. The Rockhampton Hospital has recently (2012 – 2013) undergone significant capital work and improvements. The Rockhampton Community and Public Health Service provide aged care services, child and family health services, amongst others. Smaller State facilities are available in Woorabinda and Blackwater and comprise the Woorabinda Multipurpose Health Service and the Blackwater Multipurpose Health Service, respectively. Medical services in Duaringa comprise the Duaringa Outpatients Clinic (Rockhampton HSD).

3.4.7 Emergency services

Emergency Management Queensland (EMQ) for the Central Region covers approximately 419,510 km² and includes the following LGAs: Gladstone and Banana, Barcaldine, Barcoo, Longreach and Winton, Isaac, Mackay and Whitsunday, Central Highlands, Woorabinda and Rockhampton. EMQ coordinates Queensland emergency and disaster management arrangements and disaster mitigation programs and provides the core staffing for the Queensland Disaster Management System and manages the State Emergency Service (SES), Emergency Service Unit volunteers, EMQ Helicopter Rescue and Emergency Services Cadets, amongst others. Regional operations are delivered through the Regional Operations Branch.

The Queensland Fire and Rescue Service (QFRS) operates its Central Region from Rockhampton and incorporates the Queensland Rural Fire Service. RRC LGA is covered by the QFRS Rural Operations Rockhampton Area Office. The CHRC LGA is covered by the QFRS Rural Operations

Emerald Area Office. Woorabinda LGA is covered by the QFRS Rural Operations Barcardine/Emerald Office.

Similarly, the Central Region of the Queensland Ambulance Service operates from Rockhampton. Rockhampton and Duaringa have local ambulance services.

The Queensland Police Service (QPS) Police Complex is located in Rockhampton. The Rockhampton Police District is comprised of 19 police divisions of Anakie, Blackwater, Capella, Duaringa, Emerald, Emu Park, Gracemere, Lakes Creek, Marlborough, Marmor, Mount Morgan, North Rockhampton, Rockhampton, Rolleston, Springsure, Tieri, Westwood, Woorabinda and Yeppoon (OESR 2012).

Few emergency services stations are located in the local study area in close proximity to the Project sites (Table 3-13). There are two police stations (at Westwood and Duaringa), a local ambulance station (at Duaringa) and Rural Fire Brigades run by volunteers (in Duaringa and Gogango).

Other higher order emergency services such as helicopter rescue are available and could be accessed from Rockhampton.

Table 3-13 Emergency services in proximity to the Project site

Service	Location
Police	Westwood Police Station and Duaringa Police Station
Ambulance	A local ambulance station is located in Duaringa
State Emergency Services	Voluntary SES units operate in Duaringa, Rockhampton and Woorabinda
Fire Brigade	The closest fire stations are located in Mount Morgan and Gracemere
Rural Fire Brigade	The Duaringa Town Rural Fire Brigade and Gogango Rural Fire Brigade

4 Potential social impacts

4.1 Overview

This section identifies and discusses the potential social impacts associated with the Project. As social impacts largely result from people's responses to changing social and biophysical change processes, it is not possible to predict them with a high degree of certainty.

In this section, the social impacts of the Project are categorised and presented based on whether they occur at the planning, construction or operational stage of the Project. For each potential impact, an assessment has been made of how it may affect the stakeholders. As described in Section 1.4.4 the categories follow the impact categories identified by van Schooten et al (2003) and include:

- Health and social wellbeing
- Quality of the living environment
- Economic and material wellbeing
- Cultural impacts
- Family and community impacts
- Institutional, legal, political and equity impacts
- Gender relations impacts.

A significance rating has also been assigned to each impact (refer to Section 1.4.4). The significance assessment broadly defines the impact, that is:

- Status of the impact: positive or negative
- Duration of the impact
- Spatial extent of the impact
- The importance of the impact to stakeholders
- Likelihood that the impact will occur
- Consequence on the impacted stakeholder
- A summary of impact significance.

The significance is assessed without any mitigation measures taken into account. Mitigation measures are then proposed, and a second significance assessment is made to identify the residual impacts (refer to Section 5.4).

A detailed description of the significance assessment process is provided in Appendix A.

The assessment of social impacts in this section has been made assuming a raise of Eden Bann Weir and constructed Rookwood Weir, both to full development levels. Although the impacts from both the developments were similar and mitigation measures were also commonly applicable to both the developments, the impacts for each site are presented separately as development is likely to be staged over time.

4.2 Rookwood Weir

4.2.1 Rookwood Weir planning phase impacts

4.2.1.1 Overview

The planning phase of the Project will extend until a decision to construct is triggered by either existing or new customer demand, drought and/or the need for the improvement of levels of service. The uncertainty involved in this process and the lengthiness of it contribute to causing social impacts during the planning phase. The Project investigations and related site visits also have social impacts during this phase, as do the creation of raised expectations with regard to perceived Project benefits.

Table 4-1 provides a summary of the potential social impacts associated with the planning phase and predicts their significance in accordance with the significance rating described in Section 1.4.4 and Appendix A.

Table 4-1 Impact significance rating for Rookwood Weir planning phase

Impact	Nature of impact	Receptors	Receptor sensitivity	Impact likelihood	Impact consequence	Impact significance
Uncertainty about the Project causing anxiety about when the Project may happen, compensation, impact on property values, and impact on ability to plan for the future	Negative impact	Riparian landholders, local community	Medium	Likely	Moderate	Medium
Raised expectations from the community for additional benefits from the Project such as additional water entitlements, improved river crossings	Neutral	Riparian landholders, local community	High	Certain	Moderate	High
Disruption to daily life and business due to project planning and assessment activities	Negative impact	Riparian landholders	Low	Likely	Insignificant	Low
Spread of weeds from Project staff and consultants visiting properties and potential remediation costs to landholders	Negative impact	Riparian landholders	Medium	Unlikely	Minor	Low

During the planning phase, consideration has been given to the following potential construction and operational impacts associated with development of the proposed Rookwood Weir:

- At the Rookwood Weir site itself, in addition to the unallocated State land within the riverbed and banks, two freehold properties (Lot 1 SP136791 and Lot 3 PN106) (and consequently two landholders, one on either side of the weir) will be impacted directly by construction activities (including upgrades to an access track within Lot 1 SP136791 and three saddle dams within Lot 3 PN 106) and partial inundation of their land during the operations phase.

- Upstream inundation during operations associated with Rookwood Weir Stage 1 impacts 26 landholders (properties) across 38 lots. Raising the weir to Stage 2 will cumulatively impact on 33 properties across 50 lots. The tenure status of land adjacent to the inundation area comprises mainly freehold lots, some leasehold properties and a few reserves.
- Some landholders will potentially be impacted downstream during operations as a result of operational releases. One of these potential impacts relates to inundation of access (at Hanrahan Crossing) and the others relate to impacts on changes to water allocations and licencing conditions.
- Land potentially impacted as a result of the upgrade of the Riverslea Crossing will impact on a freehold property (Lot 6 PN14) and a reserve tenure (Lot 20 PN112). Land potentially impacted as a result of the upgrade of the Foleyvale Crossing comprises freehold land (Lot 4 KM73 and Lot 1 LR146). While it is expected that potential impacts associated with these upgrades relate primarily to construction activities, potential operational impacts will be considered.
- Construction materials such as clay, gravel, sand and rock are proposed to be extracted from freehold (and one leasehold) properties in close proximity to the weir site (Lot 3 PN106, Lot 3 SP230297, Lot 1711 PAK4069, Lot 14 PN34, Lot 2 SP136791, Lot 37 PN536 and unallocated state land).

Mitigation and management measures are proposed in Section 5.

4.2.1.2 Landholder uncertainty regarding the Project

The local community has been aware of strategies (in concept and with some feasibility investigations) for additional weirs (and/or water infrastructure) on the Fitzroy River for a long time, at least 20 to 30 years. The community has not however been able to access specific and certain information because, to date, plans have only been conceptual and generally have not been published. This has caused feelings of uncertainty among potentially affected stakeholders. The nature of developments like the Project, with long planning times, several development options, and ongoing environmental, technical and social investigations and approvals processes involved will facilitate the provision of that information as it gradually becomes available.

The uncertainty around whether the Project will proceed (and, if so, when) may affect people's ability to plan for their future. Residents may also believe that the value of their property has been negatively affected by these uncertainties. This uncertainty may therefore potentially result in adverse impacts to the social wellbeing of local landholders as well as a belief that adverse, economic effects may arise. The significance of this uncertainty without mitigation is predicted to be medium for Rookwood Weir.

4.2.1.3 Raised expectations for potential benefits

Consultation with landholders and local community members has revealed widespread aspirations for benefits from the proposed Project (in particular construction of Rookwood Weir) to flow to the local community. These include aspirations for additional water entitlements and expectations that river crossings will be improved. While these aspirations in themselves do not constitute an impact, the way in which they are addressed by the Project will potentially affect the local community's perception about the Project and its proponents, either positive or negative depending on whether the Project meets their expectations or not. Receptor sensitivity in this regard is high and the potential impact is considered to be of high significance (Table 4-1).

4.2.1.4 Disruption impacts on lifestyle and productivity

During the planning stage, riparian landholders may have and may continue to experience disruptions to their daily life and business activities as a result of Project planning activities. These include on-site environmental or engineering investigations, visits from land liaison officers, or investigations related to the SIA. Related to this is the requirement for landholder consent for land access, which include requirements for the proponent to give landholders notice before the Project team enters private land.

Whilst the planning of the Project has been ongoing for some time, the frequency of the site visits has been relatively low. However it can be expected that investigations may ramp up closer to a Project trigger, particularly during any early or preparatory works phases leading to the construction phase. The duration and physical impact of such disturbances are however likely to be minimal. Following the existing land access protocols agreed with landholders prior to initial site visits (including adequate notice periods and consideration of landholder activities, such as mustering) and respecting landholders wishes will also contribute to minimising this impact. Receptor sensitivity in this regard is low, and the consequences for the affected landholders are expected to be insignificant and as such the impact significance is low (Table 4-1).

4.2.1.5 Increased risk of spread of weeds

The increasing numbers of visits can potentially contribute to the spread of noxious weeds. Landholders in the local study area spend considerable amounts of time and money on managing noxious weeds. Increasing the spread of weeds can potentially have economic consequences for the affected landholder. Following the existing land access protocols agreed with landholders prior to site visits (including vehicle wash-downs prior to entry and brush downs when moving between areas on the same property) contribute to minimising this impact such that the likelihood of occurrence is considered unlikely with minor consequences. Impact significance is considered to be low (Table 4-1).

4.2.2 Rookwood Weir planning phase mitigation measures

During the planning and early works phases the following mitigation and management measures have been implemented and/or are proposed:

- A Stakeholder Engagement Plan/Strategy has been prepared for the Project. The strategy is ongoing and includes a range of communication techniques such as a Project website, a 1800 number, dedicated email address, and Project updates and information sessions at key milestones.
- A Project Land Acquisition Strategy has been facilitated through the appointment of dedicated land liaison officers for key periods during Project planning. Landholders potentially directly impacted by the Project, have had the opportunity to discuss how their properties and businesses operate (inclusive of existing and future water entitlements) for consideration within the EIS.
- A Land Access Protocol has been developed and implemented. This included:
 - Seven days advance notice of access requirements
 - Liaison with landholders regarding their land activities at the time of the access (for example mustering, sensitive stock, pig shooting)
 - All Project personnel to be identifiable through letters of introduction and clear explanation to landholders of activities proposed.
- A Weed Management Plan has been developed and implemented

- Development of, and consultation on, the Project EIS including commitments with regard to Project benefits and opportunities.

By providing consistent, concise and regular Project communication in an easy to understand language, adhering to land access protocols and weed management plans and respecting any individual requests from the landholders about timing and the likelihood of access to their properties the impacts of disruption to lifestyle, risk around Project development uncertainty and expectations can be minimised.

4.2.3 Rookwood Weir construction phase impacts

4.2.3.1 Overview

Once the construction phase starts⁵ social impacts may occur as a result of social change processes such as the presence of a construction workforce and construction activities as summarised in Table 4-2, including:

- Employment opportunities
- Loss of access to and loss of land as a result of construction activities
- Impacts on productivity and profitability of farming operations
- Disruption to and impacts on lifestyle (for example increased noise and dust)
- Impacts on social infrastructure facilities and services such as emergency and health services
- Increased traffic and associated safety impacts

Table 4-2 Impact significance rating for Rookwood Weir construction phase

Impact	Nature of impact	Receptors	Receptor sensitivity	Impact likelihood	Impact consequence	Impact significance
Workforce size, skills requirement, sourcing of workforce, workforce accommodation and workforce travel to and from project site	Positive impact	Regional community	Medium	Certain	Moderate	High
Potential, temporary or permanent loss of land from construction activities	Negative impact	Landholders on either side of weir site	Medium	Certain	Minor	Medium
Potential, temporary impact on productivity due to competing labour requirements, risk of loss of cattle due to increased traffic, time spent by landholders in dealing with project staff and weed spread due project related traffic	Negative impact	Landholders on either side of weir site and along access route	Medium	Possible	Moderate	Medium

⁵ Note that construction will only commence following approval of the Project (including the EIS) and following a trigger such as consumer demand, drought and/or a level of service requirement.

Impact	Nature of impact	Receptors	Receptor sensitivity	Impact likelihood	Impact consequence	Impact significance
Potential, temporary impact on lifestyle due to dust, noise and visual impacts	Negative impact	Landholders on either side of weir site and along access route	Medium	Likely	Minor	Low
Potential, temporary increase in demand on community services, facilities and emergency services	Negative impact	Health service providers	Medium	Possible	Minor	Low
Potential safety risks due to increased traffic on local roads near project site	Negative impact	Workforce and landholders along construction access roads	Medium	Possible	Major	High
Potential damage to local roads due to project construction traffic and loads	Negative impact	Road users	Low	Possible	Moderate	Medium

Construction is likely to occur over two dry seasons, with reduced activity during the wet seasons, and a total construction period in the order of two and a half years. The construction phase is preceded by an early works or preparatory phase which may include elements of construction (such as access road construction). The timing of commencement of construction is dependent on a Project trigger. It is not yet determined which of the two sites will be developed first, or if both will be developed at the same time and what stages of development of the weirs will be undertaken in the first instance⁶ (Refer to Section 1.1).

Mitigation and management measures are proposed in Section 5.

4.2.3.2 Workforce profile, local employment and business opportunities

It is expected that development of the Project will be staged in response to demand triggers. In total a workforce of approximately 150 persons is anticipated across the approximate two year construction period at each weir. The construction of Rookwood Weir may require approximately 60 people on site at the busiest stage (that is during the dry seasons, noting construction will occur over at least two consecutive dry seasons). It is expected that 50-60 per cent of the workforce would be unskilled construction labourers and 40-50 per cent would be skilled. Upgrade and construction of river crossings will each require a total workforce in the order of 40 people over a period of 12 consecutive months.

The majority of the employees are likely to be sourced from within the regional study area. A small proportion of highly specialised workers may be sourced from outside the regional study area, but from within Queensland. It is anticipated that locally sourced workforce will already be residing in the region. Workforce sourced from other parts of the state are expected to be mainly housed in short term temporary commercial accommodation in Rockhampton and surrounding areas. All construction workers will be transported daily by bus to the construction site and back to their accommodation or to a meeting point close to their accommodation. It is not expected that the small number of specialised workers that would be sourced from outside the regional

⁶ It is considered unlikely that the initial demand will trigger development at both sites simultaneously. Development is considered likely to be staged.

study area would impact on housing availability given the vacancy rates of residences and occupancy rates of other accommodation types available in Rockhampton.

In the context of the size of the regional economy, labour force and unemployment rates in the regional study area, it is anticipated that the Project will impact positively on regional employment and will provide employment opportunities to local communities. The skills required for employment in the on-site work will include:

- Plant and equipment operation
- Form work construction and reinforcement setting
- Concrete batching, pouring and finishing
- Welding, electrical, plumbing, dogmen, riggers, drillers and other specialist trades
- Trenching, pipe laying and joining
- Explosives (only if required during excavation)
- Surveying
- Clerical and record keeping
- Construction engineering supervision (range of skills, including foremen)
- Environmental supervision
- Laboratory technicians.

It is also likely there will be a demand for local businesses to service some requirements of the construction and operations activities as well as the needs of the temporary workforce (such as local cafes, food/catering suppliers, petrol stations and hardware stores). Through community consultation, it was identified that staff attraction and retention has been a challenge for local small business, particularly landholders in the vicinity of the proposed weirs, as they have been losing personnel to more lucrative industries, such as mining and gas. Hence it is anticipated that there may be some competing demands from the Project on the unskilled labour force. This is addressed below with regard to productivity.

The impact of increased employment and business opportunities in the regional study area is positive and of high significance (Table 4-2).

4.2.3.3 Loss of land and access to land

Landholders either side of the weirs, at river crossings and along new accesses would experience temporary or permanent loss of parts of their land or loss of access to parts of their land due to construction activities (Chapter 5 Land). While the loss of land is certain, consequences are considered minor and as such the significance of the loss of land (or access to land) as a result of construction activities is considered to be medium (Table 4-2).

The establishment of quarry and borrow areas in close proximity to the weir site will be addressed separately and will be subject to further environmental assessment and approvals. As presented in Chapter 2 Project description, resource extraction areas have been identified on three properties associated with Rookwood Weir.

4.2.3.4 Productivity impacts

Landholders indicated that they had previously experienced difficulties in attracting farm labourers. The additional demand for unskilled labour through the Project has the potential to compete with landholders employing farm labourers, which may in turn increase costs.

Given the relatively small additional demand for unskilled labour (in the order of 30 people at peak) and the temporarily and intermittent nature of the demand for labour over the construction period, these impacts would be minor when compared to the demands of other, much larger projects in the region (Chapter 21 Cumulative impacts).

Increased traffic volumes may increase the risk of accidents involving stock. Further increased traffic movements and construction activities have the potential to disturb (noise and dust) cattle and access to and use of areas for grazing may be restricted at periods during the construction phase. There are consequently both health and safety impacts as well as economic impacts related to the loss of, and disturbance to, cattle.

During construction, the landholders may also need to spend additional time in dealing with Project staff and inspecting their property or access roads for any damage caused by the Project, which will take away their time from other business. It is acknowledged however that based on construction scheduling all of these activities, impacts will be sporadic (largely over two dry seasons) and temporary (limited to two and a half years of construction).

Similar to the planning phase, mobilisation and demobilisation of construction vehicles, equipment and machinery has the potential to increase the risk of the spread of noxious weeds. Following established land access protocols agreed with landholders (including wash-downs prior to entry and brush downs when moving between areas on the same property) contribute to minimising this impact such that the impact is unlikely to occur and will not contribute to a reduction in productivity.

The significance of impacts on productivity is predicted to be medium (Table 4-2).

4.2.3.5 Lifestyle impacts

The resident near the construction areas and residents along the construction access roads may experience nuisances and disruptions as a result of increased noise, dust and access constraints (Chapter 14 Noise and vibration, Chapter 12 Air quality and Chapter 16 Transport, respectively). Construction is planned to be intermittent, occurring primarily during the dry season and over a relatively short term. The number of additional heavy vehicles using access roads would be approximately 32 heavy vehicles per day. This is a relatively large increase compared to the existing low levels of vehicles using these roads. However, the number of residences in close proximity to these roads is low and therefore, while it is likely that the impact will occur, the consequence is considered minor resulting in an overall low significance (Table 4-2).

While assessment of impacts associated with resource extraction areas will be undertaken separately, it is noted here that resource materials are likely to be sourced from sites in close proximity (less than 1 km) to the construction areas and will not impact further on road traffic or increase further noise and dust levels along access roads.

4.2.3.6 Impacts on social infrastructure

Given the temporary and seasonal construction periods when labour will be required, and the availability of health related services in the region, the impacts on demand for community services and facilities from the workforce is expected to be low. However, with the construction activities underway and increased traffic generated in relation to the Project, there may be temporary and intermittent increases in demand on emergency services such as fire and rescue, ambulance and police to service the Project area, particularly in relation to transport of wide loads. The overall significance of this impact is low (Table 4-2).

4.2.3.7 Traffic safety and transport impacts

During construction there will be some increases to traffic volumes near the weir sites, at river crossings and along construction access roads, particularly during mobilisation and demobilisation (Chapter 16 Transport). At this stage, it is expected that around 32 heavy vehicles and between 20 and 30 light vehicles will travel to the Rookwood Weir site on an average day. During construction, traffic will mainly be related to transporting the workforce to and from the site, and supplying cement and fly ash and other construction material. As described above, resource materials are likely to be sourced within 1 km of the weir sites and will not increase traffic on roads in the regional study area.

Increased traffic volumes may increase the risk of accidents involving single vehicles, other road users or livestock. This impact is considered possible with the consequence of a traffic accident considered to be major resulting in an impact of high significance (Table 4-2).

Increased traffic volumes and loads may also damage local roads (Chapter 16 Transport) with moderate consequences. The significance of the impact is expected to be medium in the absence of mitigation and management (Table 4-2).

4.2.4 Rookwood Weir construction phase mitigation measures

An Environmental Management Plan (EMP) has been developed for the Project and includes the following measures:

- Develop and implement a recruitment plan including the provision of appropriate contractual arrangements with construction contractors and the use of local recruiters, that will facilitate opportunities for local employment
- Develop a Project procurement plan that considers the engagement of local businesses to provide services to the Project. In line with the Australian Industry Participation Policy, the Project procurement plan will consider advertising work packages on the Industry Capability Network (ICN) Gateway. Services, equipment and material required for the Project are considered typical for construction projects in the region and therefore are likely to be locally available.
- Issues relating to the loss of land and/or loss of access to land along with impacts on productivity will be negotiated and agreed on a one-on-one basis with directly impacted landholders. Consideration will be given to the use of the land, relocation of temporary infrastructure as far as is practicable and reinstatement and rehabilitation. Further advance and ongoing communication with regard to the Project will facilitate that individuals are able to plan for their own operational needs
- Pavement impact assessments will be undertaken as applicable (for example Third Street, amongst others) along with road traffic safety audits and dilapidation surveys to inform discussion and negotiation with DTMR and RRC with regard to upgrades and maintenance of state controlled and local roads in the local and regional Project areas. As a minimum, road condition and access will be maintained at pre-construction conditions
- A Traffic Management Plan will be used. This will include, amongst others, the following:
 - Reduced and enforced speed limits and improved signage
 - Increased signage and the use of traffic controllers (as appropriate)
 - Upgrade of the Capricorn Highway/Third Street intersection at Gogango
 - Time restrictions for traffic operations, with limited night time activities (as far as is practicable)

- Road maintenance, reinstatement and rehabilitation
- Notification and updates to stakeholders in the local study area regarding traffic movements, particularly during commissioning and decommissioning.
- Management of nuisance-type impacts will include:
 - Time restrictions on activities
 - Maintaining and operating construction equipment, plant and machinery in accordance with manufacturer’s guidelines
 - Dust suppression through water application
 - Notification to residents and stakeholders (as applicable) of noise generating activities.
- The land access protocol will continue.
- The weed and pest management plan will continue.
- The Project Stakeholder Engagement Strategy will continue. Development and implementation of Near Neighbour Policy and a Grievance Management Process (or similar) will be used to monitor and record complaints to ensure any stakeholder or community concerns are addressed appropriately and in a timely manner.
- Consult with emergency services in the development of the site emergency management plan.

4.2.5 Rookwood Weir operations phase impacts

4.2.5.1 Overview

Two change processes may occur during the operational stage of the Project, namely inundation of the bed and banks upstream of the infrastructure and changes to water flow regimes both upstream and downstream as a result of impounding water and operational releases, respectively.

The Project is expected to have a positive impact with regard to regional water security as described in Table 4-3. Potential negative social impacts associated with operation of Rookwood Weir are summarised in Table 4-3 and include:

- Potential loss of productivity and/or viability of agricultural operations (for example, loss of land and infrastructure, loss of access to land, cattle bogging, changes to water allocations and/or availability)
- Loss of access through inundation of river crossings
- Safety and security impacts through increased recreational use of the river
- Water resource impacts and potential for flooding.

Table 4-3 Impact significance rating for Rookwood Weir operation phase

Impact	Nature of impact	Receptors	Receptor sensitivity	Impact likelihood	Impact consequence	Impact significance
Increased water security and allocations at regional level	Positive impact	Regional community	High	Certain	Extreme	Very high
Loss of land and infrastructure such as pumps, fences and watering points	Negative impact	Riparian landholders upstream	High	Likely	Minor	Low
Loss of property and agricultural business viability	Negative impact	Riparian landholders upstream	High	Possible	Minor	Low
Potential increase in cattle bogging	Negative impact	Riparian landholders	High	Possible	Minor	Low
Loss of existing water allocation for agricultural activities (drinking water for cattle in water holes in the river bed and water harvesting)	Negative impact	Riparian landholders	High	Possible	Moderate	Medium
Potential for recreational use of the upstream river, disrupting rural lifestyle of the adjacent landholders and increasing the risk of trespassing and crime	Negative impact	Local community in the upstream areas	Medium	Unlikely	Minor	Low
Impacts on access to ground water, inundation of one groundwater bore	Negative impact	Riparian landholders	Medium	Unlikely	Minor	Low
Loss of access as a result of flooding	Negative impact	Riparian landholders and road users	Medium to high	Likely	Minor	Low

Mitigation and management measures are discussed in Section 0.

4.2.5.2 Water security

The most significant benefit of the Project will be the increase in availability and reliability of water. The Project will facilitate and enable development, thus benefiting the regional, state and national economies. The significance of this positive impact is considered to be very high (Table 4-3).

The Central Queensland Regional Plan (2013) identified that the central Queensland region (including the Rockhampton, Central Highlands, Woorabinda and Gladstone LGAs) is one of the most prosperous regions in the state. The regional economy is reported to have expanded by an average of 10.3 per cent per annum over the past 10 years to 2010–2011 (compared with 8.8 per cent growth for the state). This strong growth is driving demand for water as well as other services and utilities such as education, health care and electricity together with housing and construction and retail trade.

Planning for future water security through the Project supports the State's interests in achieving regional outcomes through public and private sector investment to improve water access by addressing increasing demands mainly from industry and population growth to achieve appropriate security and reliability of supply.

4.2.5.3 Productivity impacts

Potential negative impacts within the local study area may include loss of land currently used for grazing (Chapter 5 Land), agricultural infrastructure (such as pumps and fencing), severance of and/or loss of access to land, cattle bogging and changes to water allocations (Chapter 9 Surface water resources).

Positively, improved flood immunity of several river crossings (Chapter 2 Project description, Chapter 16 Transport) will facilitate the movement of people, machinery and equipment and stock in periods of flooding and maintain access to services and facilities such as schools and health facilities, social and recreational clubs and networks. Further impoundment of water will benefit the taking of water for stock and domestic use by riparian landholders in the local study area (in accordance with the *Water Act 2000* (Qld)), through provision of a more constant and reliable supply.

Despite land subject to inundation being contained within the river (and creek) bed and banks, fifty-eight landholders will lose some land (Freehold and Lands Lease) (inclusive of creek areas that are not Unallocated State Land) due to impoundments (Chapter 5 Land).

Based on cadastral data, an estimated 447 ha of land (Freehold and Lands Lease) will be impacted by the Rookwood Weir Stage 1 impoundment (increasing to 1,163 ha at Rookwood Stage 2). This equates to a negligible per cent loss of total land holdings and a one per cent loss of total land holdings for Rookwood Weir Stage 1 and Stage 2, respectively. However, due to some of the landholdings adjacent to the Rookwood Weir impoundment being small, individual losses range from negligible (less than 0.1 per cent) to 12 per cent (maximum at Stage 1) and 26 per cent (maximum at Stage 2). Two properties associated with the Stage 2 impoundment are estimated to lose 25 per cent and 26 per cent of their landholdings respectively.

While it is acknowledged that receptor sensitivity to loss of land is high and the loss of some land is likely (with the actual extent determined by final survey), the consequence of the loss, given that individual compensation negotiations will be entered into with landholders (including consideration of land value, improvements, management requirements, whole property purchase as necessary, etc), is considered minor with an overall low significance.

Properties in the local study area currently operate on the basis that flooding occurs to some degree annually. Irrigated infrastructure is set up above a 1:5 year event and cattle are moved around properties in response to rising flood waters. A detailed assessment of flood impacts is provided in Chapter 9 Surface water resources. In summary, Table 4-4 shows that post-development, some additional land will be flooded during smaller events. For the larger flood events, incremental changes to flooded areas will be negligible (on average the per cent change in land area flooded is 0.5). These incremental flood extents will inform the determination of the flood margin for the Project and will be used in individual land negotiations.

Table 4-4 Flood impact on land holdings pre and post-development

Flood event	Existing flood impact on land holdings		Post-development flood impact on land holdings		Percentage change in area of land holdings impacted		
	ha	% of total land holdings	ha	% of total land holdings	Min. %	Average %	Max. %
2 year ARI	2,987	2.42	4,123	3.35	0	1.79	24.58
5 year ARI	13,316	9.38	13,903	9.80	0	0.98	15.16
10 year ARI	19,577	14.28	20,032	14.61	0	0.68	10.37
20 year ARI	28,315	19.83	28,741	20.13	0	0.50	11.94

Additionally, infrastructure such as pumps and/or fencing close to the river will require relocation. The impacts are primarily economic in nature and associated with the cost of replacing or relocating infrastructure. Given compensation negotiations will be entered into the significance of the impact is considered to be low (Table 4-3).

Loss of access to land and loss of access within properties and between properties may impact on the ability of certain landholders to productively manage their operations. In general however the loss of access to land, while possible, will have minor consequences with an overall low significance of the impact.

Riparian landholders have indicated concern that altering the water flow regime will increase the occurrence of cattle bogging. While it is possible for cattle to become bogged during weir operation, stock mortality resulting in reduced productivity is considered unlikely with minor consequences and an overall low significance rating.

Potential impacts of the Project in relation to water allocation security objectives and opportunities for water allocations are discussed in Chapter 9 Surface water resources.

4.2.5.4 4.2.5.5 Recreational use of the river

Riparian landholders have indicated that they do not wish to see increased recreational use of the river. Concerns are that increased use may disrupt the rural lifestyle, increase the risk of trespassers and theft and increase the risk of weeds spreading. The Project area is remote and difficult to access with most riparian areas bounded by private landholdings. There are no existing publically accessible facilities (for example ablutions, boat ramps, etc.) that encourage use of the river. The Project will not facilitate recreational use of the impoundments. Recreational use of the impoundments is considered unlikely with minor consequences such that the significance of the impact is predicted to be low.

4.2.5.5 4.2.5.5 Water resources and flooding impacts

There is no groundwater extraction associated with the Project and limited local use (Chapter 5 Land, Chapter 10 Groundwater resources). Potential impacts associated with groundwater are predicted to be of low significance.

Eden Bann Weir and Rookwood Weir are not predicted to influence (or exacerbate) flooding beyond a 1 in 20 year AEP event and a 1 in 50 year AEP event, respectively. Project influences on smaller flood events are described in detail in Chapter 9 Surface water resources. It is evident from the hydraulic and hydrology modelling that the incremental change to flood impacts pre- and post-development of the weirs are negligible. In addition to the minor effects on land associated with the minor increase in extent of flooding (Table 4-4), potential impacts relate to loss of road access.

As discussed above improved flood immunity of several river crossings (Chapter 2 Project description, Chapter 16 Transport) will facilitate movement across the road network in the local and regional study areas. The time of inundation increases marginally (0.5 days) at some local road locations (Chapter 9 Surface water resources, Chapter 16 Transport)) but no upgrade is proposed given the scale of change. While the impact is considered likely to occur, consequences are predicted to be minor with the impact considered to be of low significance (Table 4-3).

4.2.6 Rookwood Weir operations phase mitigation measures

In addition to mitigation measures included in the EMP and Operation EMP, the following measures are proposed to manage social impacts arising from the operation of Rookwood Weir.

- Issues relating to the loss of land and/or loss of access to land along with impacts on productivity will be negotiated and agreed on a one-on-one basis with directly impacted landholders through the Land Acquisition Strategy and Compensation Strategy. Consideration will be given to the use of the land, relocation of temporary infrastructure as far as is practicable and reinstatement and rehabilitation.
- It is proposed that operational water releases will be communicated to stakeholders through alert systems as per the Stakeholder Engagement Plan to allow landholders to move cattle away from areas at risk. Also a Near Neighbour Policy and a Grievance Management Process (or similar) will be used to monitor and record complaints.

4.3 Eden Bann Weir

4.3.1 Eden Bann Weir planning phase impacts

4.3.1.1 Overview

The planning phase of the Project will continue until a decision to construct is triggered by either existing or new customer demand, drought improvement or levels of service requirements. The uncertainty involved in this process and the perceived lengthiness of it contribute to causing social impacts during the planning phase. The Project investigations and related site visits also have social impacts during this phase, as do the creation of raised expectations with regard to perceived Project benefits. The potential increase in the spread of weeds is also of relevance to directly impacted landholders.

Table 4-5 provides a summary of the potential social impacts associated with the planning phase and predicts their significance in accordance with the significance rating described in Section 1.4.4 and Appendix A.

Table 4-5 Impact significance rating for Eden Bann Weir planning phase

Impact	Nature of impact	Receptors	Receptor sensitivity	Impact likelihood	Impact consequence	Impact significance
Uncertainty about the Project causing anxiety about when the Project may happen, compensation, impact on property values, and impact on ability to plan for future	Negative impact	Riparian landholders, local community	Low	Possible	Moderate	Medium

Impact	Nature of impact	Receptors	Receptor sensitivity	Impact likelihood	Impact consequence	Impact significance
Disruption to daily life and business due to project planning and assessment activities	Negative impact	Riparian landholders	Low	Likely	Insignificant	Low
Spread of weeds from Project staff and consultants visiting properties and potential clean-up costs to landholders	Negative impact	Riparian landholders	Moderate	Unlikely	Minor	Low

During the planning phase, consideration has been given to the following potential construction and operational impacts associated with the raising of Eden Bann Weir:

- The Eden Bann Weir site itself is owned by SunWater under a Perpetual Lease (Lot 11 SP114939). Two freehold properties (Lot 2016 RP841502 and Lot 11 SP114939) (and consequently two landholders, one on either side of the weir) will be impacted directly by the construction activities (including upgrades to the existing access track within Lot 2016 RP841502 and a new access track within Lot 11 SP114939) and partial inundation of their land during the operations phase.
- Inundation associated with the existing Eden Bann Weir (Stage 1) impacts 11 landholders (properties) across 33 lots. Raising the weir to Stage 2 will impact on 20 properties across 52 lots cumulatively. Adding gates as at Stage 3 will impact up to 25 properties across 62 lots cumulatively.
- Some landholders may potentially be impacted downstream during operations as a result of operational releases, primarily in relation to potential changes to water allocations and licencing conditions.
- Land potentially impacted as a result of the upgrade of the Glenroy Crossing belongs to a single property on both sides of the river. While it is expected that potential impacts associated with these upgrades relate primarily to construction activities, potential operational impacts will be considered.
- Construction materials such as clay/silt, sand and rock are proposed to be extracted from freehold Lots 1976 LIV40684, 117 LN841503 and 2016 RP841502 adjacent to the weir site. In addition sand, gravel and rock are proposed to be extracted from the Fitzroy River immediately downstream of the weir within unallocated state land.

Mitigation and management measures are proposed in Section 5.

4.3.1.2 Landholder uncertainty regarding the Project

The local community has been aware of strategies (in concept and with some feasibility investigations) for additional weirs (and/or water infrastructure) on the Fitzroy River for a long time, at least 20 to 30 years. The community has not however been able to access specific and certain information because to date plans have only been conceptual and generally have not been published. This has caused feelings of uncertainty among potentially affected stakeholders. The nature of developments like the Project, with long planning times, several development options, and ongoing environmental, technical and social investigations and

approvals processes involved will facilitate the provision of that information as it gradually becomes available.

The uncertainty around whether the Project will proceed (and, if so, when) may affect people's ability to plan for their future. Residents may also believe that the value of their property has been negatively affected by these uncertainties. This uncertainty may therefore potentially result in adverse impacts to the social wellbeing of local landholders as well as a belief that adverse, economic effects may arise. Landholders associated with Eden Bann Weir have experienced development of this nature previously when Eden Bann Weir was constructed in 1994. The significance of this uncertainty without mitigation is predicted to be medium for Eden Bann Weir (Table 4-5).

4.3.1.3 Disruptions to lifestyle and business

During the planning stage, riparian landholders may have and may continue to experience disruptions to their daily life and business activities as a result of Project planning activities. These include on-site environmental or engineering investigations, visits from land liaison officers, or investigations related to the SIA. Related to this is the requirement for landholder consent for land access, which include requirements for the proponent to give landholders notice before the Project team enters private land.

Whilst the planning of the Project has been ongoing for some time, the frequency of the site visits has been relatively low. However it can be expected that investigations may ramp up closer to a Project trigger, particularly during any early or preparatory works phases leading to the construction phase. The disturbances are however likely to be minimal. Following the existing land access protocols agreed with landholders prior to initial site visits (including adequate notice periods and consideration of landholder activities, such as mustering) and respecting landholders wishes will also contribute to minimising this impact. Receptor sensitivity in this regard is low, and the consequences for the affected landholders are expected to be insignificant and as such the impact significance is low (Table 4-5).

4.3.1.4 Increased risk of spread of weeds

The increasing numbers of visits can potentially contribute to the spread of noxious weeds. Landholders in the local study area spend considerable amounts of time and money on managing noxious weeds. Increasing the spread of weeds can potentially have economic consequences for the affected landholder. Following the existing land access protocols agreed with landholders prior to site visits (including vehicle wash-downs prior to entry and brush downs when moving between areas on the same property) contribute to minimising this impact such that the likelihood of occurrence is considered unlikely with minor consequences. Impact significance is considered to be low (Table 4-5).

4.3.2 Eden Bann Weir planning phase mitigation measures

During the planning and early works phases the following mitigation and management measures have been implemented and/or are proposed:

- A Stakeholder Engagement Plan/Strategy has been prepared for the Project. The strategy is ongoing and includes a range of communication techniques such as a Project website, a 1800 number, dedicated email address, and Project updates and information sessions at key milestones.
- A Project Land Acquisition Strategy has been facilitated through the appointment of dedicated land liaison officers for key periods during Project planning. Landholders potentially directly impacted by the Project, have had the opportunity to discuss how their

properties and businesses operate (inclusive of existing and future water entitlements) for consideration within the EIS.

- A Land Access Protocol has been developed and implemented. This included:
 - Seven days advance notice of access requirements
 - Liaison with landholders regarding their land activities at the time of the access (for example mustering, sensitive stock, pig shooting)
 - All Project personnel to be identifiable through letters of introduction and clear explanation to landholders of activities proposed.
- A Weed Management Plan has been developed and implemented
- Development of, and consultation on, the Project EIS including commitments with regard to Project benefits and opportunities.

By providing consistent, concise and regular Project communication in an easy to understand language, adhering to land access protocols and weed management plans and respecting any individual requests from the landholders about timing and the likelihood of access to their properties the impacts of disruption to lifestyle, risk around Project development uncertainty and expectations can be minimised.

4.3.3 Eden Bann Weir construction phase impacts

4.3.3.1 Overview

Once the construction phase starts⁷ social impacts may occur as a result of social change processes such as the presence of a construction workforce and construction activities as summarised in Table 4-6, including:

- Employment opportunities
- Loss of access to and loss of land as a result of construction activities
- Impacts on productivity and profitability of farming operations
- Disruption to and impacts on lifestyle (for example increased noise and dust)
- Impacts on social infrastructure facilities and services such as emergency and health services
- Increased traffic and associated safety impacts.

Table 4-6 Impact significance rating for Eden Bann Weir construction phase

Impact	Nature of impact	Receptors	Receptor sensitivity	Impact likelihood	Impact consequence	Impact significance
Workforce size, skills requirement, sourcing of workforce, workforce accommodation and workforce travel to and from project site	Positive	Regional community	Medium	Certain	Moderate	High

⁷ Note that construction will only commence following approval of the Project (including the EIS) and following a trigger such as consumer demand, drought and/or a level of service requirement.

Impact	Nature of impact	Receptors	Receptor sensitivity	Impact likelihood	Impact consequence	Impact significance
Potential, temporary or permanent loss of land from construction activities	Negative impact	Landholders on either side of weir site	Medium	Certain	Minor	Medium
Potential, temporary impact on productivity due to competing labour requirements, risk of loss of cattle due to increased traffic, time spent by landholders in dealing with project staff and weed spread due project related traffic	Negative impact	Landholders on either side of weir site and along access route	Medium	Possible	Moderate	Medium
Potential, temporary impact on lifestyle due to dust, noise and visual impacts	Negative impact	Landholders on either side of weir site and along access route	Medium	Likely	Minor	Low
Potential, temporary increase in demand on community services, facilities and emergency services	Negative impact	Health and emergency service providers	Low	Possible	Minor	Low
Potential safety risks due to increased traffic on local roads	Negative impact	Workforce, landholders and residents along access roads	Medium	Possible	Major	High
Potential damage to local roads due to project construction traffic and loads	Negative impact	Landholders along construction access roads (loss of cattle)	Low	Possible	Moderate	Medium

Construction is likely to occur over two dry seasons, with reduced activity during the wet seasons, and a total construction period in the order of two and a half years. The construction phase is preceded by an early works or preparatory phase which may include elements of construction (such as access road construction). The timing of commencement of construction is dependent on a Project trigger. Also, it is not yet determined which of the two sites will be developed first, or if both will be developed at the same time and what stages of development of the weirs will be undertaken in the first instance⁸ (Section 1.1).

Mitigation and management measures are proposed in Section 5.

⁸ It is considered unlikely that the initial demand will trigger development at both sites simultaneously. Development is considered likely to be staged.

4.3.3.2 Employment opportunities and workforce profile

It is expected that development of the Project will be staged in response to demand triggers. In total a workforce of approximately 150 persons is anticipated across the approximate two year construction period at each weir. Raising Eden Bann Weir may require a workforce of approximately 40 people at the busiest stage (that is during the dry seasons, noting construction will occur over at least two consecutive dry seasons). It is expected that 50-60 per cent of the workforce would be unskilled construction labourers and 40-50 per cent would be skilled. The upgrade and construction of river crossings will each require a total workforce in the order of 40 people over a period of 12 consecutive months.

The majority of the employees are likely to be sourced from within the regional study area. A small proportion of highly specialised workers may be sourced from outside the regional study area, but from within Queensland. It is anticipated that locally sourced workforce will already be residing in the region. Workforce sourced from other parts of the state are expected to be mainly housed in short term temporary commercial accommodation in Rockhampton and surrounding areas. All construction workers will be transported daily by bus to the construction site and back to their accommodation or to a meeting point close to their accommodation. It is not expected that the small number of specialised workers that would be sourced from outside the regional study area would impact on housing availability given the vacancy rates of residences and occupancy rates of other accommodation types available in Rockhampton.

In the context of the size of the regional economy, labour force and unemployment rates in the regional study area, it is anticipated that the Project will impact positively on regional employment and will provide employment opportunities to local communities. The skills required for employment in the on-site work will include:

- Plant and equipment operation
- Form work construction and reinforcement setting
- Concrete batching, pouring and finishing
- Welding, electrical, plumbing, dogmen, riggers, drillers and other specialist trades
- Trenching, pipe laying and joining
- Explosives (only if required during excavation)
- Surveying
- Clerical and record keeping
- Construction engineering supervision (range of skills, including foremen)
- Environmental supervision
- Laboratory technicians.

It is also likely there will be a demand for local businesses to service some requirements of the construction and operations activities as well as the needs of the temporary workforce (such as local cafes, food/catering suppliers, petrol stations and hardware stores). Through community consultation, it was identified that staff attraction and retention has been a challenge for local small business, particularly landholders in the vicinity of the proposed weirs, as they have been losing personnel to more lucrative industries, such as mining and gas. Hence it is anticipated that there may be some competing demands from the Project on the unskilled labour force. This is addressed below with regard to productivity.

The impact of increased employment and business opportunities in the regional study area is positive and of high significance (Table 4-6).

4.3.3.3 Loss of land and access to land

Landholders either side of the weirs, at river crossings and along new accesses would experience temporary or permanent loss of parts of their land or loss of access to parts of their land due to construction activities (Chapter 5 Land). While the loss of land is certain, consequences are considered minor and as such the significance of the loss of land (or access to land) as a result of construction activities is considered to be medium (Table 4-6).

The establishment of quarry and borrow areas in close proximity to the weir site will be addressed separately and will be subject to further environmental assessment and approvals. As presented in Chapter 2 Project description, resources extraction areas have been identified on a single property associated with Eden Bann.

4.3.3.4 Productivity impacts

Landholders indicated that they had previously experienced difficulties in attracting farm labourers. The additional demand for unskilled labour through the Project has the potential to compete with landholders employing farm labourers, which may in turn increase costs.

Given the relatively small additional demand for unskilled labour (in the order of 30 people at peak) and the temporarily and intermittent nature of the demand for labour over the construction period, these impacts would be minor when compared to the demands of other, much larger projects in the region (Chapter 21 Cumulative impacts).

Increased traffic volumes may increase the risk of accidents involving stock. Further increased traffic movements and construction activities have the potential to disturb (noise and dust) cattle and access to and use of areas for grazing may be restricted at periods during the construction phase. There are consequently both health and safety impacts as well as economic impacts related to the loss of, and disturbance to, cattle.

During construction the landholders may also need to spend additional time in dealing with Project staff and inspecting their property or access roads for any damage caused by the Project, which will take away their time from other business. It is acknowledged however that based on construction scheduling all of these activities, impacts will be sporadic (largely over two dry seasons) and temporary (limited to two and a half years of construction).

Similar to the planning phase, mobilisation and demobilisation of construction vehicles, equipment and machinery has the potential to increase the risk of the spread of noxious weeds. Following established land access protocols agreed with landholders (including wash-downs prior to entry and brush downs when moving between areas on the same property) contribute to minimising this impact such that the impact is unlikely to occur and will not contribute to a reduction in productivity.

The significance of impacts on productivity is predicted to be medium (Table 4-6).

4.3.3.5 Lifestyle impacts

The resident near the Eden Bann Weir site and residents along the construction access roads may experience nuisances and disruptions as a result of increased noise, dust and access constraints (Chapter 14 Noise and vibration, Chapter 12 Air quality and Chapter 16 Transport, respectively). Construction is planned to be intermittent, occurring primarily during the dry season and over a relatively short term. The number of additional heavy vehicles using access roads would be approximately 32 heavy vehicles per day. This is a relatively large increase compared to the existing low levels of vehicles using these roads. However, the number of residences in close proximity to these roads is low and therefore while it is likely that the impact will occur, the consequence is considered minor resulting in an overall low significance (Table 4-6).

While assessment of impacts associated with resource extraction areas will be undertaken separately it is noted here that resource materials are likely to be sourced from sites in close proximity (less than 1 km) to the construction areas and will not impact further on road traffic or increase further noise and dust levels along access roads.

4.3.3.6 Impacts on social infrastructure

Given the temporary and seasonal construction periods when labour will be required, and the availability of health related services in the region, the impacts on demand for community services and facilities from the workforce is expected to be low. However, with the construction activities underway and increased traffic generated in relation to the Project, there may be temporary and intermittent increases in demand on emergency services such as fire and rescue, ambulance and police to service the Project area, particularly in relation to transport of wide loads. The overall significance of this impact is low (Table 4-6).

4.3.3.7 Traffic safety and transport impacts

During construction there will be some increases to traffic volumes near the weir sites, at river crossings and along construction access roads, particularly during mobilisation and demobilisation (Chapter 16 Transport). At this stage, it is expected that around 32 heavy vehicles and between 20 and 30 light vehicles will travel to each site on an average day. During construction, traffic will mainly be related to transporting the workforce to and from the site, and supplying cement and fly ash and other construction material. As discussed above resource materials are likely to be sourced within 1 km of the weir sites and will not increase traffic on roads in the regional study area.

Increased traffic volumes may increase the risk of accidents involving single vehicles, other road users or livestock. This impact is considered possible with the consequence of a traffic accident considered to be major resulting in an impact of high significance (Table 4-6).

Increased traffic volumes and loads (Chapter 16 Transport) may also damage local roads with moderate consequences. The significance of the impact is expected to be medium in the absence of mitigation and management.

4.3.4 Eden Bann Weir construction phase mitigation measures

An Environmental Management Plan (EMP) has been developed for the Project and includes the following measures:

- Develop and implement a recruitment plan including the provision of appropriate contractual arrangements with construction contractors and the use of local recruiters, that will facilitate opportunities for local employment
- Develop a Project procurement plan that considers the engagement of local businesses to provide services to the Project. In line with the Australian Industry Participation Policy, the Project procurement plan will consider advertising work packages on the Industry Capability Network (ICN) Gateway. Services, equipment and material required for the Project are considered typical for construction projects in the region and therefore are likely to be locally available.
- Issues relating to the loss of land and/or loss of access to land along with impacts on productivity will be negotiated and agreed on a one-on-one basis with directly impacted landholders. Consideration will be given to the use of the land, relocation of temporary infrastructure as far as is practicable and reinstatement and rehabilitation. Further advance and ongoing communication with regard to the Project will facilitate that individuals are able to plan for their own operational needs

- Pavement impact assessments will be undertaken as applicable (for example Atkinson Road) along with road traffic safety audits and dilapidation surveys to inform discussion and negotiation with DTMR and RRC with regard to upgrades and maintenance of state controlled and local roads in the local and regional Project areas. As a minimum, road condition and access will be maintained at pre-construction conditions
- A Traffic Management Plan will be used. This will include, amongst others, the following:
 - Reduced and enforced speed limits and improved signage
 - Increased signage and the use of traffic controllers (as appropriate)
 - Time restrictions for traffic operations, with limited night time activities (as far as is practicable)
 - Road maintenance, reinstatement and rehabilitation
 - Notification and updates to stakeholders in the local study area regarding traffic movements, particularly during commissioning and decommissioning.
- Management of nuisance-type impacts will include:
 - Time restrictions on activities
 - Maintaining and operating construction equipment, plant and machinery in accordance with manufacturer's guidelines
 - Dust suppression through water application
 - Notification to residents and stakeholders (as applicable) of noise generating activities.
- The land access protocol will continue.
- The weed and pest management plan will continue.
- The Project Stakeholder Engagement Strategy will continue. Development and implementation of Near Neighbour Policy and a Grievance Management Process (or similar) will be used to monitor and record complaints to ensure any stakeholder or community concerns are addressed appropriately and in a timely manner.
- Consult with emergency services in the development of the site emergency management plan (Chapter 20 Hazard and risk).

4.3.5 Eden Bann Weir operations phase impacts

4.3.5.1 Overview

The Project is expected to have a positive impact with regard to regional water security as described in Table 4-7. Potential negative social impacts associated with operation of Eden Bann Weir are summarised in Table 4-7 and include:

- Potential loss of productivity and/or viability of agricultural operations (for example, loss of land and infrastructure, loss of access to land, cattle bogging, changes to water allocations and/or availability)
- Loss of access through inundation of river crossings
- Water resource impacts and potential for flooding.

Table 4-7 Impact significance rating for Eden Bann Weir operation phase

Impact	Nature of impact	Receptors	Receptor sensitivity	Impact likelihood	Impact consequence	Impact significance
Increase in water security and allocations at regional level	Positive impact	Regional community	High	Certain	Extreme	Very high
Loss of land and infrastructure such as pumps, fences and watering points	Negative impact	Riparian landholders upstream	High	Likely	Minor	Low
Loss of property and agricultural business viability	Negative impact	Riparian landholders upstream	High	Possible	Minor	Low
Potential increase in cattle bogging	Negative impact	Riparian landholders	High	Possible	Minor	Low
Loss of existing water allocation for agricultural activities (drinking water for cattle in water holes in the river bed)	Negative impact	Riparian landholders	High	Possible	Moderate	Medium
Loss of access as a result of flooding	Negative impact	Riparian landholders and road users	Medium to high	Likely	Minor	Low

Mitigation and management measures are discussed in Section 5.

4.3.5.2 Water security

The most significant benefit of the Project will be the increase in availability and reliability of water (Chapter 9 Surface water resources). The Project will facilitate and enable development, thus benefiting the regional, state and national economies. The significance of this positive impact is considered to be very high.

The Central Queensland Regional Plan (2013) identified that the central Queensland region (including the Rockhampton, Central Highlands, Woorabinda and Gladstone LGAs) is one of the most prosperous regions in the state. The regional economy is reported to have expanded by an average of 10.3 per cent per annum over the past 10 years to 2010–2011 (compared with 8.8 per cent growth for the state). This strong growth is driving demand for water as well as other services and utilities such as education, health care and electricity together with housing and construction and retail trade.

Planning for future water security through the Project supports the State's interests in achieving regional outcomes through public and private sector investment to improve water access by addressing increasing demands from industry, agriculture and population growth to achieve appropriate security and reliability of supply.

4.3.5.3 Productivity impacts

Potential negative impacts within the local study area may include loss of land currently used for grazing (Chapter 5 Land), agricultural infrastructure (such as pumps and fencing), severance of

and/or loss of access to land, cattle bogging and changes to water allocations (Chapter 9 Surface water resources).

Positively, improved flood immunity of several river crossings (Chapter 2 Project description, Chapter 16 Transport) will facilitate the movement of people, machinery and equipment and stock in periods of flooding and maintain access to services and facilities such as schools and health facilities, social and recreational clubs and networks. Further impoundment of water will benefit the taking of water for stock and domestic use by riparian landholders in the local study area (in accordance with the *Water Act 2000 (Qld)*), through provision of a more constant and reliable supply.

Despite land subject to inundation being contained within the river (and creek) bed and banks, fifty-eight landholders will lose some land (Freehold and Lands Lease) (inclusive of creek areas that are not Unallocated State Land) due to impoundments (Chapter 5 Land).

Using cadastral data it is conservatively estimated that in the order of 416 ha of land (Freehold or Lands Leased) will be impacted by the Eden Bann Weir Stage 2 impoundment (increasing to 757 ha at Eden Bann Stage 3). This equates to a one per cent loss of total land holdings for both Eden Bann Weir stages. Individual losses range from negligible (less than 0.1 per cent) to four percent.

While it is acknowledged that receptor sensitivity to loss of land is high and the loss of some land is likely (but will be dependent on final survey), the consequence of the loss, given individual compensation negotiations will be entered into with landholders (including consideration of land value, improvements, management requirements, whole property purchase as necessary, etc), is considered minor with an overall low significance.

Properties in the local study area currently operate on the basis that flooding occurs to some degree annually. Irrigated infrastructure is set up above a 1:5 year event and cattle are moved around properties in response to rising flood waters. A detailed assessment of flood impacts is provided in Chapter 9 Surface water resources. In summary, Table 4-4 shows that post-development some additional land is flooded during smaller events. For the larger flood events incremental changes to flooded areas are negligible (on average the per cent change in land area flooded is 0.5). These incremental flood extents will inform the determination of the flood margin for the Project and will be used in individual land negotiations.

Additionally, infrastructure such as pumps and/or fencing close to the river will require relocation. The impacts are primarily economic in nature and associated with the cost of replacing or relocating infrastructure. Given compensation negotiations will be entered into the significance of the impact is considered to be low

Loss of access to land and loss of access within properties and between properties may impact the ability of landholders to productively manage their operations. Consultation with landholders, a review and the impoundment extents and flood modelling outputs indicate that a single property associated with Eden Bann Weir may adversely be impacted in this way. An assessment of alternative access arrangements and costs has been undertaken and further discussions with the landholder will continue once a trigger for the Project is realised. The option to purchase the entire property will be considered during negotiations. In general however the loss of access to land, while possible, will have minor consequences with an overall low significance of the impact.

Riparian landholders have indicated concern that altering the water flow regime will increase the occurrence of cattle bogging. While it is possible for cattle to become bogged during weir operation, stock mortality resulting in reduced productivity is considered unlikely with minor consequences and an overall low significance rating.

Potential impacts of the Project in relation to water allocation security objectives and opportunities for water allocations are discussed in Chapter 9 Surface water resources.

4.3.5.4 Recreational use of the river

Riparian landholders have indicated that they do not wish to see increased recreational use of the river. Concerns are that increased use may disrupt the rural lifestyle, increase the risk of trespassers and theft and increase the risk of weeds spreading. The Project area is remote and difficult to access with most riparian areas bounded by private landholdings. There are no existing publically accessible facilities (for example ablutions, boat ramps, etc.) that encourage use of the river. The Project will not facilitate recreational use of the impoundments. Recreational use of the impoundments is considered unlikely with minor consequences such that the significance of the impact is predicted to be low.

4.3.5.5 Water resources and flooding impacts

There is no groundwater extraction associated with the Project and limited local use (Chapter 5 Land, Chapter 10 Groundwater resources). Potential impacts associated with groundwater are predicted to be of low significance.

Eden Bann Weir and Rookwood Weir are not predicted to influence (or exacerbate) flooding beyond a 1 in 20 year AEP event and a 1 in 50 year AEP event, respectively. Project influences on smaller flood events are described in detail in Chapter 9 Surface water resources. It is evident from the hydraulic and hydrology modelling that the incremental change to flood impacts pre- and post-development of the weirs are negligible. In addition to the minor effects on land associated with the minor increase in extent of flooding (Table 4-4), potential impacts relate to loss of road access.

As discussed above improved flood immunity of several river crossings (Chapter 2 Project description, Chapter 16 Transport) will facilitate movement across the road network in the local and regional study areas. The time of inundation increases marginally (0.5 days) at some local road locations (Chapter 9 Surface water resources, Chapter 16 Transport)) but no upgrade is proposed given the scale of change. While the impact is considered likely to occur, consequences are predicted to be minor with the impact considered to be of low significance.

4.3.6 Eden Bann Weir operations phase mitigation measures

In addition to mitigation measures included in the EMP and Operation EMP, the following measures are proposed to manage social impacts arising from the operation of Eden Bann Weir:

- Issues relating to the loss of land and/or loss of access to land along with impacts on productivity will be negotiated and agreed on a one-on-one basis with directly impacted landholders through the Land Acquisition Strategy and Compensation Strategy. Consideration will be given to the use of the land, relocation of temporary infrastructure as far as is practicable and reinstatement and rehabilitation.
- It is proposed that operational water releases will be communicated to stakeholders through alert systems as per the Stakeholder Engagement Plan to allow landholders to move cattle away from areas at risk. Also a Near Neighbour Policy and a Grievance Management Process (or similar) will be used to monitor and record complaints.

4.4 Summary of potential social impacts

Table 4-8 summarises the potential impacts associated with the planning, construction and operations phases from the proposed developments at Rookwood Weir and Eden Bann Weir.

Table 4-8 Summary of social impacts

Potential social impact	Nature of impact	Receptors	Eden Bann Weir / Rookwood Weir	Impact significance
Planning phase				
Uncertainty about the Project	Negative	Riparian landholders, local community	Both	Medium
Raised expectations from the community for additional benefits	Neutral	Riparian landholders, local community	Both	High
Disruption to daily life and business	Negative	Riparian landholders	Both	Low
Potential costs to landholders due to the spread of weeds	Negative	Riparian landholders	Both	Low
Construction phase				
Workforce size, skills requirement, sourcing of workforce, workforce accommodation and workforce travel	Positive	Regional community	Both	High
Potential, temporary or permanent loss of land	Negative	Landholders on either side of weir site	Both	Medium
Potential, temporary impact on productivity	Negative	Landholders on either side of weir site and along access route	Both	Medium
Potential, temporary impact on lifestyle	Negative	Landholders on either side of weir site and along access route	Both	Low
Potential, temporary increase in demand for community services, facilities and emergency services	Negative	Emergency service providers	Both	Low
Potential safety risks due to increased traffic on local roads	Negative	Workforce, landholders and residents along access roads	Both	High
Potential damage to local roads due to project construction traffic	Negative	Landholders along access roads (loss of cattle)	Both	Low
Operations phase				
Increase in water security and allocations at regional level	Positive	Regional community	Both	Very high
Loss of land and infrastructure such as pumps, fences and watering points	Negative	Riparian landholders upstream	Both	Low
Loss of property and agricultural business viability	Negative	Riparian landholders upstream	Both	Low
Potential increase in cattle bogging	Negative	Riparian landholders	Both	Low

Potential social impact	Nature of impact	Receptors	Eden Bann Weir / Rookwood Weir	Impact significance
Loss of existing water allocation for agricultural activities (drinking water for cattle in water holes in the river bed)	Negative	Riparian landholders	Both	Medium
Potential for recreational use of the upstream river, disrupting rural lifestyle and increasing the risk of trespassing and crime	Negative	Local community in the upstream areas	Both	Low
Impacts on access to groundwater resources	Negative	Riparian landholders	Rookwood Weir	Low
Loss of land and access as a result of flooding	Negative	Riparian landholders and road users	Both	Low

5 Social impact management and monitoring

5.1 Summary of impact mitigation measures

Based on the potential impacts and mitigation measures described in Section 4, Table 5-1 summarises the potential impacts and corresponding mitigation measures, followed with a listing of key management plans applicable to the management of social impacts.

Table 5-1 Summary of potential social impacts and corresponding management strategy

Potential social impact	Eden Bann Weir /Rookwood Weir	Impact significance	Management strategy
Planning phase			
Uncertainty about the Project	Both	Medium	Stakeholder Engagement Plan Land Acquisition Strategy Land Access Protocol
Raised expectations from the community for additional benefits	Rookwood Weir	High	
Disruption to daily life and business due to project planning and assessment activities	Both	Low	
Potential costs to landholders due to the spread of weeds	Both	Low	Weed Management Plan
Construction phase			
Workforce size, skills requirement, sourcing of workforce, workforce accommodation and workforce travel to and from project site	Both	High	CEMP Recruitment Plan Procurement Plan and use of the ICN Gateway
Potential, temporary or permanent loss of land	Both	Medium	Land Acquisition Strategy CEMP
Potential, temporary impact on productivity	Both	Medium	Weed Management Plan Traffic Management Plan Land Access Protocol.
Potential, temporary impact on lifestyle	Both	Low	Stakeholder Engagement Plan (including a grievance management process)
Potential, temporary increase in demand on community services, facilities and emergency services	Both	Low	Emergency management plans
Potential safety risks due to increased traffic on local roads near project site	Both	High	Traffic Management Plan Stakeholder Engagement Plan
Potential damage to local roads due to project construction traffic and loads	Both	Medium	
Operations phase			
Increase in water security and allocations at regional level	Both	Very high	Positive impact, no mitigation measures required.

Potential social impact	Eden Bann Weir /Rookw ood Weir	Impact significance	Management strategy
Loss of land and infrastructure such as pumps, fences and watering points	Both	Low	Land Acquisition Strategy Compensation Strategy Stakeholder Engagement Strategy Amended Resource Operations Plan
Loss of property and agricultural business viability	Both	Low	
Potential increase in cattle bogging	Both	Low	
Loss of existing water allocation for agricultural activities (drinking water for cattle in water holes in the river bed)	Both	Medium	
Potential for recreational use of the upstream river, disrupting rural lifestyle of the adjacent landholders and increasing the risk of trespassing and crime	Both	Low	The Project will not provide facilities for, or that encourage, recreational use of the river.
Impacts on access to groundwater resources	Rookw ood Weir	Low	Compensation Strategy
Loss of land and access as a result of flooding	Both	Low	Land Acquisition Strategy Compensation Strategy

5.2 Management plans

Derived from the mitigation measures in Section 4, Table 5-2 describes the management plans and/or strategies and their key features as they apply to managing social impacts.

Table 5-2 Potential social impact management plans

Management plan/strategy	Key features of the plans/strategies to managing social impacts
Stakeholder Engagement Plan	<p>The Stakeholder Engagement Plan will include but not be limited to:</p> <ul style="list-style-type: none"> • Tools and mechanisms for adequate, timely, clear, concise and regular communication with the stakeholders regarding project status, water allocations and management of key project impacts • Consultation with landholders, identifying the respective roles and responsibilities of the Project team and landholders • Alerts system regarding water releases • Grievance and dispute management procedure • Co-ordination with Traffic Management Plan and Construction Management Plan.
Land Acquisition Strategy	<p>The Land Acquisition Strategy will include considerations for but not be limited to:</p> <ul style="list-style-type: none"> • The statutory context for land acquisition • Implications for securing land and rights to land • Preference for acquisition by agreement • The process for acquiring land, the use of private land for project construction and quarrying on private land • Timing of land acquisition and payment of compensation • Grievance and dispute mechanisms including mediation.

Management plan/strategy	Key features of the plans/strategies to managing social impacts
Compensation Strategy	<p>The Compensation Strategy will include considerations for but not be limited to:</p> <ul style="list-style-type: none"> • Productivity impacts including temporary or permanent loss of land due to impoundment and easements, loss of viability of the business, time spent on project activities, loss of cattle due to project activities, weed spread due to project activities, loss of agricultural infrastructure such as pumps, costs of new fences and alterations to water allocation • Loss of opportunistic river crossings • Improved road access and flood immunity of identified river crossings • Opportunities in relation to improved water security • Grievance and dispute mechanisms including mediation.
Land Access Protocol	<p>The Land Access Protocol will include but not be limited to:</p> <ul style="list-style-type: none"> • Providing notice to landholders prior to accessing their property • Opening/closing of property gates • Respecting any individual requests from the landholders about timing and considering other land-based activities • Limiting project traffic to agreed tracks • Respecting appointment timing • Informing landholder as soon as possible of any changes to appointments.
Weed and Pest Management Plan	<p>The Weed and Pest Management Plan will include but is not limited to:</p> <ul style="list-style-type: none"> • Assigning designated vehicle wash down/brush down areas • Restricting access to designated tracks • Facilitating that all machinery and equipment entering the site is weed and pest free • The site will be kept clear and free of waste, and waste will be appropriately stored and removed to approved waste stations (as appropriate).
Traffic Management Plan	<p>The Traffic Management Plan will include but not be limited to:</p> <ul style="list-style-type: none"> • Speed limits on access roads • Specification of access tracks and roads to be used for project purpose • Time limits on construction traffic movements • Development of plan in consultation with landholders and local residents and including considerations for cattle crossing and other road uses • Co-ordination with Stakeholder Engagement Plan to inform stakeholders about updates/changes to project traffic; an • Planning of implementation of river crossing construction and upgrades of crossings at Glenroy, Riverslea, Foleyvale and Hanrahan.
Construction Management Plan	<p>The Construction Management Plan will include but not be limited to:</p> <ul style="list-style-type: none"> • Workforce requirements including skills requirement, sourcing, accommodation and travel to and from project site • Recruitment planning giving preference to local employment by using local recruitment agencies • Contractor terms and conditions regarding recruitment.
Procurement Plan	<p>The Procurement Plan will include but not limited to:</p> <ul style="list-style-type: none"> • Policy specifying preference for local businesses to service the Project • Announce work packages through the ICN Gateway (as applicable).
Other EMPs applicable to mitigating social impacts	<ul style="list-style-type: none"> • Noise Management Plan • Air Quality Management Plan.

5.3 Monitoring of potential social impacts

In addition to mitigating the predicted social impacts, there is a need to monitor the impacts and the effectiveness of the mitigation measures. Monitoring mechanisms as outlined in Table 5-3 are proposed to track social impact development and management. Table 5-3 relates mitigation and management measures, plans and strategies to the potential social impacts identified.

Table 5-3 Monitoring strategies for potential social impacts

Impact	Impacted stakeholder	Monitoring strategy
Planning phase		
Uncertainty about the Project	Riparian landholders, local community	<ul style="list-style-type: none"> Ongoing consultations and reports from consultation database Monitoring of grievance reporting through free call number and project email
Raised expectations for potential benefits	Riparian landholders, local community, project proponent	
Disruptions to daily life and business	Riparian landholders	
Increased risk of spread of weeds	Riparian landholders	
Construction phase		
Increased local employment and business opportunities	Workforce and local businesses	<ul style="list-style-type: none"> Contractors' human resources data and reports ICN Gateway
Impacts on land, productivity impacts and impacts on lifestyle	Landholders adjacent to weir sites, residents along access roads	<ul style="list-style-type: none"> Ongoing consultations and reports from consultation database Monitoring of grievance reporting through free call number and project email As per CEMP
Increased pressure on health and emergency services	Emergency service providers in CHRC and RRC	<ul style="list-style-type: none"> Consultation with service providers
Traffic safety and transport impacts	Workforce, residents and landholders along construction access roads Residents and landholders along construction access roads (loss of cattle)	<ul style="list-style-type: none"> As per CEMP, specifically the Traffic Management Plan Monitoring of grievance reporting through free call number and project email Monitoring of incidence reporting
Operational phase		
Increased regional water security	Region water users, regional, state and national economies	<ul style="list-style-type: none"> Annual reporting of project proponent
Loss of private land and infrastructure	Riparian landholders	<ul style="list-style-type: none"> Monitoring of grievance reporting through the proponent communications management process
Loss of property viability	Riparian landholders	
Loss of river crossings and property access	Local community (particularly on the northern and western banks of the river)	
Increased risk of cattle	Riparian landholders	

Impact	Impacted stakeholder	Monitoring strategy
bogging		
Water allocations	Riparian landholders	
Increased recreational use of the river	Local community	
Increased risk of flooding	Local community	

5.4 Residual impacts

The assessment has indicated that the most significant adverse potential social impacts relate to:

- Loss of property viability (potentially two to three properties at each Weir)
- Loss of private land and infrastructure
- Increased risk of accidents
- Raised expectations for project benefits
- Increased business and employment opportunities for the regional study area
- Increased water security and allocations for the regional study area.

While the management strategies seek to address all potentially significant social impacts, potential impacts of high and very high significance are given priority. Table 5-4 summarises the identified social impacts with an assessment of residual impacts after applying the mitigation measures. This demonstrates that the significance of the impact is likely to be reduced to manageable levels.

Table 5-4 Residual social impacts significance assessment

Impact	Eden Bann Weir / Rookwood Weir	Impact significance	Management strategy	Residual impact
Planning phase				
Uncertainty for landholders	Both	Medium	Stakeholder Engagement Plan Land Acquisition Strategy	Low
Raised expectations from the community for additional benefits	Rookwood Weir	High	Land Access Protocol	Low
Disruption to daily life and business	Both	Low		Low
Potential costs to landholders due to the spread of weeds	Both	Low	Weed Management Plan	Low
Construction phase				
Workforce size, skills requirement, sourcing of workforce, workforce accommodation and workforce travel	Both	High	CEMP Recruitment Plan Procurement Plan and use of the ICN Gateway	High
Potential, temporary or permanent loss of land	Both	Medium	Land Acquisition Strategy	Low

Impact	Eden Bann Weir / Rookwood Weir	Impact significance	Management strategy	Residual impact
Potential, temporary impact on productivity	Both	Medium	CEMP Weed Management Plan	Low
Potential, temporary impact on lifestyle	Both	Low	Traffic Management Plan Land Access Protocol. Stakeholder Engagement Plan (including a grievance management process)	Negligible
Potential, temporary increase in demand on community services and facilities and emergency services	Both	Low	Emergency management plans	Negligible
Potential safety risks to landholders and residents due to increased traffic on local roads	Both	High	Traffic Management Plan Stakeholder Engagement Plan	Low
Potential damage to local roads due to project construction traffic	Both	Medium		Negligible
Operations phase				
Increase in water security and allocations at regional level	Both	Very high	Positive impact, no mitigation measures required.	Very high
Loss of land and infrastructure such as pumps, fences and watering points	Both	Low	Land Acquisition Strategy Compensation Strategy Stakeholder Engagement Strategy	Low
Loss of property and agricultural business viability	Both	Low	Amended Resource Operations Plan	Low
Potential increase in cattle bogging	Both	Low		Low
Loss of existing water allocation for agricultural activities (drinking water for cattle in water holes in the river bed)	Both	Medium		Low
Potential for recreational use of the upstream river, disrupting rural lifestyle and increasing the risk of trespassing and crime	Both	Low	The Project will not provide facilities for, or that encourage, recreational use of the river.	Low
Impacts on access to groundwater resources	Rookwood Weir	Low	Compensation Strategy	Negligible
Loss of land and access as a result of flooding	Both	Low	Land Acquisition Strategy Compensation Strategy	Low

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Appendices

Appendix A – Social Impact Assessment significance assessment methodology

Overview

A social impact significance matrix was employed as the main tool for assessing the significance of the potential social impacts. The matrix is a table which lists and describes the various impacts that have been identified as possibly resulting from the proposed project. The table does not weight impacts against each other, rather they are displayed and assessed individually, to paint a picture of the impacts and allow an overall discussion regarding the proposal. The purpose of the significance matrix is also to identify priority areas for mitigation and management actions.

It is acknowledged that assessing the significance of social impacts involves subjective judgements on behalf of the assessor (Stanley, Clouston and Binney 2004, Lawrence 2007). Social impacts are felt or experienced by stakeholders, and different stakeholders may therefore assign differing significances to the same impacts, depending on their particular situation. Two strategies have been used to manage and reduce the subjective nature of the assessment process:

- By clearly outlining the assessment processes, criteria and arguments the SIA team have used to assign significance a larger degree of transparency in the process is achieved.
- By basing the assessment on a variety of sources, including extensive consultation with directly impacted stakeholders, the robustness of the significance assessment is augmented.

All the data sources used throughout the previous steps in the SIA have been analysed to determine impact significance.

The completion of the social impact significance matrix involves the following components:

- Identification of impacted stakeholders
- Likelihood/consequence rating
- Status of impact
- Duration of impact
- Spatial extent of the impact
- Stakeholder importance.

The process of assessing the significance of the social impacts is undertaken for the current project design. Based on this, a social impact management plan is developed, involving impact mitigation and enhancement. A second assessment is then carried out taking proposed mitigation and enhancement measures into account, identifying whether there is a risk of a residual impact.

Significance assessment process

Step 1: Identification of impacted stakeholders

This considers the stakeholders likely to be impacted by the proposed project. The stakeholder groups are not ranked but used for descriptive purposes only. Each impact is linked to at least one stakeholder group.

Step 2: Stakeholder importance

The stakeholder importance (or receptor sensitivity) describes how important an impact is to the affected stakeholders. Establishing the importance of an impact complements the significance determination as it allows the affected stakeholders themselves to describe how important an impact is to them. A social impact identified as being non-significant by the SIA practitioner may be very important to the affected stakeholders, and vice versa.

Information regarding stakeholder importance has been gathered solely during consultation. Importance ratings are provided in Table 1.

Table 1 Acceptability of the social impact

Rating	Proposed description
High	A majority of the affected stakeholders have indicated that the social impact is very important to them.
Medium	Some stakeholders have indicated that the social impact is important to them, some have indicated it is of little importance.
Low	A majority of affected stakeholders have indicated that the impact is of little importance to them. Few stakeholders have indicated it is important.

Step 3: Likelihood/consequence rating

This step involves, first, assessing the likelihood that the impact will occur (refer to Table 2). Second, it involves assessing the consequence of each of the identified social impacts. The consequence refers to the consequence *on the impacted stakeholder*.

As the consequence refers to the consequence on the impacted stakeholder, it is not possible to provide an exhaustive definition for each rating and for all stakeholders. Rather the proposed descriptions consist of indicative criteria for a number of stakeholder groups⁹. Table 3 and Table 4 show indicative criteria for assessing the consequences on the stakeholders.

The results are then combined into a likelihood/consequence matrix, assigning a significance rating to the social impact (refer to Table 5).

Table 2 Descriptions of likelihood

Likelihood	Description
Certain	The identified social impact will occur (100 %)
Very likely	There is a 75% certainty that the impact will occur
Likely	The identified social impact is likely to occur (60 % certain)
Possible	It is possible for the social impact to occur (40 % certain)
Unlikely	The identified social impact is unlikely to occur (25 % certain)
Very unlikely	It will be very unlikely for the social impact to occur (5 % certain)

⁹ While every reasonable care has been taken to remain neutral, the indicative criteria are still likely to exhibit a bias related to the context in which they have been developed. It is important to remember that they constitute a professional judgement based on the experience of the SIA team. Groups of stakeholders may assign different ranks to the criteria identified.

Table 3 Indicative criteria for negative social impact consequences

Rating	Indicative criteria
Extreme	Individuals and families: Death and serious injury, disability, personal bankruptcy, severe stress and mental illness, severance of strong connections to places and communities.
	Businesses: bankruptcy, close down of business.
	Communities: Tensions leading to widespread violence, rapid geographic change of large proportion of local area, rapid large scale population changes such as relocation of majority of population, destruction of cultural objects of large significance.
	Project proponent: multiple fatalities caused by project, serious nation-wide impact to projects reputation, media coverage at the state level by more than one source.
Major	Individuals and families: Injury, serious illness, severe financial hardship, long term unemployment, severance of connections to places and communities, severe stress.
	Businesses: Severe financial hardship, large noticeable impact to business in terms of changing revenue, number of employees.
	Communities: Large scale social tensions, rapid geographic and social change to a significant proportion of area or population, rapid change to way of life or, profanation of important cultural objects and geographical areas.
	Project Proponent: Single fatality or permanent major disability of a member of the public or construction workforce, improvement or damage to the project's reputation at the local level, media coverage at the state level by one source or local level by more than one source. A proliferation of calls from dissatisfied or supportive stakeholders.
Moderate	Individuals and families: Recoverable but long term illness, severe nuisances and disruptions, short term financial hardship, short term unemployment, disruption to family life, stress.
	Businesses: Short term financial hardship, noticeable impacts to business in terms of changing revenue, number of employees.
	Communities: localised or occasional social tension, geographic change to part of the area, social change to small proportion of community such as relocation of a minority of community, loss of some important areas/buildings such as parks and meeting places.
	Project proponent: Recoverable accidents, improvement or damage to the project's reputation, media coverage at the local level by more than one source, several calls from dissatisfied or supportive stakeholders.
Minor	Individuals and families: Short term recoverable illness, manageable nuisances and disruptions, changing employment situations (but not deteriorating), easily manageable stress.
	Businesses: Changing but not deteriorating business conditions, practical challenges with minor financial implications.
	Communities: Social tension between individual members of community, social or geographic change to small part of community.
	Project proponent: Incident leading to medical treatment, improvement or damage to the project's reputation within industry, media coverage at the local level, calls from a few dissatisfied or supportive stakeholders.
Insignificant	Individuals and families: minor nuisance or disruptions, no accidents or illness.
	Businesses: Practical challenges, no financial implications.
	Communities: harmoniously managed social changes, localised (very small proportion of community) change to geographic or social set up.

Rating	Indicative criteria
	Project proponent: On site first aid incident, improvement or damage to the project's reputation, no media coverage, no calls from dissatisfied or supportive stakeholders.

Table 4 Indicative criteria for positive social impact consequences

Rating	Indicative criteria
Extreme	Individuals and families: Significantly increased health and social and emotional wellbeing. Sustainable increase in economic prosperity, such as long term employment opportunities and career prospects to men and women. Significantly increased access to training and education. Significantly increased access to services.
	Businesses: Significantly increased business opportunities and profits for the long term.
	Communities: Significantly increased general community wellbeing. Significant and sustainable reduction in violence and crime, and positive changes to community aspirations. Recognition of, support for and long term preservation of cultural objects, artefacts and practices.
	Project proponent: Very strong and widespread community support for project. Sustained positive nationwide media coverage.
Major	Individuals and families: Increased health and social and emotional wellbeing. Widespread employment opportunities. Increased access to training and education.
	Businesses: Noticeable increase in business opportunities, increased profits.
	Communities: Strongly increased community wellbeing, significant reduction in crime and violence, positive changes to community aspirations. Recognition of and support for cultural practices, objects and artefacts.
	Project Proponent: Strong support for the project. Nationwide positive media coverage.
Moderate	Individuals and families: Increase to health and wellbeing for some individuals. Some employment, training and education opportunities.
	Businesses: Increased revenues and profits.
	Communities: Increased community wellbeing, reduction in crime and violence. Recognition of cultural practices, objects and artefacts.
	Project proponent: Some local support for the project, some local, regional and nationwide positive media coverage.
Minor	Individuals and families: Increased access to services, short term employment opportunities. Some training opportunities.
	Businesses: Business conditions changing slightly to the positive.
	Communities: Slightly increased community wellbeing.
	Project proponent: Occasional local and regional positive media coverage.
Insignificant	Individuals and families: Some short term employment opportunities. Health and social wellbeing virtually unchanged.
	Businesses: Practical benefits, no financial implications.
	Communities: Community wellbeing virtually unchanged. Some changes (not negative) to cultural practices, objects and artefacts.
	Project proponent: Localised neutral media coverage.

Table 5 Assessment of likelihood and consequence of social impact

Likelihood of social impact	Consequence of social impact				
	Insignificant	Minor	Moderate	Major	Extreme
Certain	Medium	Medium	High	Very high	Very high
Very likely	Low	Medium	High	High	Very high
Likely	Low	Low	Medium	High	Very high
Possible	Negligible	Low	Medium	High	High
Unlikely	Negligible	Low	Low	Medium	High
Very unlikely	Negligible	Negligible	Low	Medium	Medium

Step 4: Nature of impact

The status of the impact considers whether the impact is positive, negative or neutral. It is important to remember that the same impact can have a different status for different stakeholders.

Step 5: Impact phase

Impact phase refers to when the impact will occur during the project, the three project phases described in this SIA are planning, construction and operation of the weirs. This also gives an indication of the duration of the potential impact.

This Lower Fitzroy River Infrastructure Project: Social Impact Assessment Report (the Report) has been prepared by GHD Pty Ltd (GHD) on behalf of and for SunWater and Gladstone Area Water Board (GAWB) in accordance with an agreement between GHD and SunWater and GAWB.

The Report may only be used and relied on by SunWater and GAWB for the purpose of informing environmental assessments and planning approvals for the proposed Lower Fitzroy River Infrastructure Project (Purpose) and may not be used by, or relied on by any person other than SunWater and GAWB.

The services undertaken by GHD in connection with preparing the Report were limited to those specifically detailed in Section 1.4 of the Report.

The Report is based on conditions encountered and information reviewed, including assumptions made by GHD, at the time of preparing the Report.

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