



16 SOCIAL IMPACT EVALUATION

CHAPTER SUMMARY AND CONCLUSIONS:

The Social Impact Evaluation (SIE) identified that, with appropriate enhancement measures in place, the project is anticipated to generate long-term benefits to stakeholders, including economic development for industry groups, agricultural water users, industrial water users, recreational users and residents of the regional study area and the wider area of influence. A total of six benefits were identified as having a residual rating of 'high', with no difference in social value identified between Reference Project 1 and 2. Identified benefits include:

- improved agricultural productivity supporting the local and regional economies
- increased agricultural employment opportunities for the region
- creation of direct employment opportunities
- increased indirect employment opportunities for the region
- improved recreational facilities for residents and tourists
- increased employment and business supply benefits for Aboriginal and Torres Strait Islander persons and businesses
- improved local access and connectivity in the regional study area for residents and road users.

In contrast, impacts of the project on local communities are anticipated to be temporary and would occur during the construction phase. Four social impacts were assessed as being potentially significant (with an initial risk rating of high). These impacts would predominantly affect local landholders and relate to:

- the displacement of landholders and their families with up to 19 properties located in the inundation area of the dam
- a reduction in the size of land available for farming and other land use activities on properties surrounding the dam footprint due to the introduction of a flood margin easement
- a reduction in the size of land available for farming and other land use activities due to new road construction
- restricted use of and access to land on properties within the pipeline easement.

Impacts identified by the SIE are expected to influence the associated design of the Reference Projects and would also be managed through a variety of management plans and strategies, including a Land Acquisition Strategy, Compensation Strategy, Stakeholder Communication and Engagement Plan, and Complaints Management Mechanism.

This chapter contributes towards the understanding of the balance of benefits and impacts. Monetisation of impacts and benefits is presented in the economic analysis.



16.1 Purpose

This chapter summarises the outcomes of the Social Impact Evaluation (SIE) process undertaken for the Reference Projects investigated as part of the NDMIP DBC. SIE is the process of documenting and evaluating the social value created by investment in a proposed infrastructure project, as well its anticipated social impacts.

This chapter should be read in conjunction with Chapter 8: Base Case, which details the project baseline, and Chapter 15: Economic Analysis, which provides further assessment on impacts that have been identified as quantifiable and/or monetisable.

16.2 Approach

The SIE has been prepared in accordance with the Building Queensland’s BDCF requirements. This methodology establishes a systematic approach for developing the social baseline, identifying and evaluating impacts, determining mitigation measures and identifying recommendations. The overall approach is shown in Figure 16-1 and key steps are described below.

Figure 16-1 Building Queensland SIE methodology



Scoping

A scoping exercise was first undertaken to identify the parameters for the SIE. This involved defining the social areas of influence, determining interested and affected stakeholders, and identifying the likely benefits and impacts of the Reference Projects that needed to be investigated in the SIE. To inform the scope of the SIE, the stakeholder consultation was undertaken to ensure that the views of affected and interested stakeholders were considered in determining the issues to be assessed.

The social area of influence has been defined in three parts:

- the **local study area for Reference Project 1 and 2** – this includes the landholders and land parcels directly impacted by a proposed Nullinga Dam.



- the **regional study area** – this includes the communities and rural landholders in the vicinity of the dam/s and distribution infrastructure components of the Reference Projects that may be indirectly impacted. To cover the large area of this footprint, the regional study area was defined as the local government areas (LGAs) of MSC and the TRC. All identified Reference Projects are under the same regional study area.
- the **wider area of influence** – this includes communities more distant from the regional study area that would provide broader support for the Reference Projects (e.g. higher order social infrastructure services and labour sources) and areas to which benefits would possibly extend. For this SIE, the wider area of influence is defined as CRC.

Social impact baseline

The second stage of the SIE involved establishing the existing conditions within the social areas of influence that would prevail in the absence of the Reference Project/s. The purpose of the social baseline was to provide a benchmark against which future change (i.e. introduction of a selected Reference Project) and its impact on the major stakeholders could be assessed. A mixture of quantitative and qualitative data was used to inform the social baseline, including:

- statistical information sourced from publicly available sources such as the ABS
- local knowledge collected from broad consultation and targeted interviews
- review of literature and previous relevant studies (i.e. the PBC), other impact assessments).

A full list of data drawn upon to support the SIE is presented in Section 16.2.2.

Impact assessment

Following establishment of the social baseline, potential impacts (both beneficial and detrimental) resulting from the proposed Reference Projects were identified. This included impacts arising from all aspects of the designs, such as roads, pipelines and workforce accommodation, in addition to dam infrastructure.

Potential impacts were identified based on a combination of expert opinion, stakeholder views gathered during consultation and review of impacts from documentation on similar projects. In addition, the assessment considered indirect and cumulative effects.

For each impact, key project-related drivers of change were determined. Social impacts were also divided into categories, dependent on whether they could be quantified and/or monetised.

Impact risk assessment

An impact risk assessment process was undertaken by the SIE project team to assess and determine the materiality of the identified social benefits and impacts of each Reference Project. As a first step, each of the identified benefits and impacts were allocated a consequence and likelihood category, based on the descriptions outlined in Table 16-1 and Table 16-2.

Table 16-1 Risk assessment likelihood categories

Likelihood				
Rare	Unlikely	Possible	Likely	Almost certain
5% or less chance of occurrence during course of the project.	5% to 10% chance of occurrence during course of the project.	10% to 50% chance of occurrence during course of the project.	50% to 90% chance of occurrence during course of the project.	More than 90% chance of occurrence during course of the project.



Likelihood				
The impact may occur only in exceptional circumstances.	The impact could occur though is not expected.	The impact could occur.	The impact will probably occur in most circumstances.	The event is expected to occur in most circumstances.

Table 16-2 Risk assessment consequence categories

Consequence				
Insignificant	Minor	Moderate	Major	Significant
Local and small-scale social impacts.	Short-term and mostly local social impacts.	Medium-term social impacts.	Long-term and potentially far reaching social impacts.	Long-term, high magnitude and far reaching social impacts.
These social impacts provide limited value or costs to society.	Positive social impacts provide some value to society.	Positive social impacts can be enhanced to provide substantial value to society.	Positive social impacts will provide substantial value to society.	Positive social impacts will provide considerable value both locally and regionally.
These social impacts may require future consideration if, for example, there is change to the associated reference design/s.	Negative social impacts can be easily adapted to by society.	Society has the capacity to adapt and cope with the negative social impacts.	Society has limited capacity to adapt and cope with the negative social impacts.	Society has very limited capacity to cope with potentially catastrophic negative social impacts.

An initial ‘material’ risk rating was then assigned to each impact, applying the risk assessment matrix shown in Table 16-3. This matrix reflects the understanding that risk materiality is a combination of the likelihood of an impact occurring and the magnitude of potential consequences of the impact.



Table 16-3 Risk and value assessment criteria

		Consequence				
		Insignificant	Minor	Moderate	Major	Significant
Likelihood	Almost certain	5	8	15	18	21
	Likely	4	7	14	17	20
	Possible	3	6	10	16	19
	Unlikely	2	4	9	11	13
	Rare	1	3	5	10	12

Note: 1 to 5 = 'low' risk for impacts and 'low' value for benefits

6 to 13 = 'medium' risk for impacts and 'medium' value for benefits

14 to 21 = 'high' risk for impacts and 'high' value for benefits.

After each benefit and impact was allocated an initial material risk and value rating, the SIE project team participated in a working session with other DBC specialists, to evaluate impacts that were identified as having a high or medium initial risk. Management and mitigation measures were identified and the risk ratings for each of these impacts were re-evaluated to identify the 'residual' significance. The residual significance is the product of the likelihood and consequence of the risk following the implementation of the identified management and mitigation measures.

16.2.1 Stakeholder Engagement

Engagement with interested parties and potentially affected people was a core component of the SIE. The SIE consultation was largely conducted as part of general consultation on the NDMIP. This has been ongoing since 2016 as part of the PBC and this DBC. The objectives of SIE engagement were to:

- gain an understanding of stakeholders needs, as well as potential impacts and opportunities associated with the project for these stakeholders
- develop an understanding of the phase and current investigations of the project and manage stakeholder expectations regarding the next phase
- communicate the project to the broader community with understanding of the potential for consultation fatigue
- collect qualitative data from stakeholders to inform the baseline, impact assessment and development of appropriate mitigation strategies
- ensure the SIE considered the interests of key stakeholders.

The SIE project team undertook consultation with key stakeholders primarily at three SRG workshops, which were hosted by Building Queensland in partnership with Sunwater¹¹⁸. This workshop format allowed the SIE project team to understand the sentiment of stakeholders towards development of the project, as well as seek their input and feedback on the baseline, impact assessment and mitigation strategies.

In addition, ten (10) targeted semi-structured interviews were undertaken with landholders potentially impacted by the dam component of the Reference Projects. This involved a three-day field visit to the

¹¹⁸ A fourth SRG workshop will occur in March 2019, following the finalisation of the DBC.



Mareeba and the Tablelands LGAs by a member of the SIE project team and a Sunwater representative. Each interview lasted approximately one hour. Follow-up interviews with landholders who had been absent during the time of the field visit were undertaken by Sunwater.

A complete description of the stakeholder engagement process undertaken for the DBC is provided in Chapter 12. The chapter includes the content of SRG meetings and broader engagement activities that were used to inform the wider community about the NDMIP.

16.2.2 Data Sources

Key data sources and the rationale for their use in this SIE are summarised in Table 16-4.

Table 16-4 Data sources utilised for the SIE

TYPE OF DATA	SOURCES CONSIDERED	RATIONALE
SIE Engagement	<ul style="list-style-type: none"> ▪ Feedback of SRG forums. ▪ Interviews with directly impacted landholders. ▪ Internal meetings with Building Queensland and other consultants involved in the preparation of the Nullinga Dam DBC. 	<ul style="list-style-type: none"> ▪ Stakeholders views and knowledge are central to the SIE process. ▪ Interviews and discussions were used to elicit the perspective, experiences and insight of stakeholders. ▪ Stakeholder views and knowledge are necessary to identify aspects of the community not available through statistics. ▪ Internal discussions with other DBC specialists ensured that social impacts identified in different studies were addressed in the SIE.
Publications	<ul style="list-style-type: none"> ▪ Publicly available EIS and associated assessment material for dam projects. ▪ Strategic planning documents. ▪ Government and Sunwater policy documents. ▪ Media articles. 	<ul style="list-style-type: none"> ▪ Publications were reviewed to contextualise data collected from interviews and identify findings of relevance to inform the scope, baseline, and impact assessment. ▪ Plans, policy and media articles were reviewed to gain insight on the desired outcomes for the region.
Statistical Information	<ul style="list-style-type: none"> ▪ Australian Bureau of Statistics (ABS) Census Data. ▪ Queensland Government Statistician's Office (QGSO) regional profiles information. ▪ Queensland Health Data and Australian Federal Department of Health. 	<ul style="list-style-type: none"> ▪ Established public statistical data sources were used to inform the baseline and increase the quality and rigour of the research.



16.2.3 Assumptions

The SIE is based on the Reference Project design information captured in Chapter 9. The construction workforce for the NDMIP (regardless of the selected design option) will consist of a 100 per cent non-resident fly-in, fly-out (FIFO) workforce that would be sourced from outside the local and regional study areas, unless there is available and skilled workforce locally. All FIFO construction workers would be accommodated in a temporary workers' accommodation facility, the location of which has yet to be decided.

During operations and maintenance, the project will employ two full time equivalent (FTE) workers who reside in the region, and five FTE workers located outside the region (i.e. in Cairns or Brisbane). No housing would be provided for these workers as it is expected they would use their existing accommodation.

It is assumed that the Reference Project/s would be open to the general public for recreational activities, including water sports, hiking and fishing.

16.3 Stakeholder impact analysis

Table 16-5 summarises all project impacts, including environmental, social and economic impacts, that key identified stakeholders may experience due to construction and operation of the NDMIP. Positive and negative impacts are highlighted green and red, respectively.

Table 16-5 Stakeholder impacts

STAKEHOLDER	ANTICIPATED IMPACT	RELEVANT REFERENCE PROJECT
Landholders impacted by project footprint (dam, pipeline and associated infrastructure)	Employment opportunities during construction.	1 and 2
	Opportunities to establish businesses to support recreational activities made available by the dam.	1 and 2
	Displacement from properties due to land acquisition.	1 and 2
	Reduction in size of land available for farming and other land use activities due to placement of flood margin easement.	1 and 2
	Reduction in size of land available for farming and other land use activities due to new road construction.	1 and 2
	Restricted use of and access to land on properties within the pipeline easement.	1 and 2
	Disruption to farming operations due to damage to or alteration of farm infrastructure.	1 and 2
	Potential impacts on health such as stress and anxiety arising from: <ul style="list-style-type: none"> - uncertainty around the timing and specific design of the project - the potential purchase and resumption of properties - loss of existing and future livelihood - impaired sense of security - need to relocate away from existing social networks. 	1 and 2
	Changes to the living environment and amenity from construction activities.	1 and 2
	Perception of project uncertainty affecting business viability and long-term investment decisions on property.	1 and 2



STAKEHOLDER	ANTICIPATED IMPACT	RELEVANT REFERENCE PROJECT
Traditional Owners Aboriginal and Torres Straits Islander peoples and businesses	Increased employment and business supply benefits for Aboriginal and Torres Strait Islander persons and businesses arising from Indigenous Land Use Agreement negotiations and Sunwater targets for Indigenous workforce and business participation.	1 and 2
Agricultural Water Users	Long-term increases in regional employment arising from increased water supply and associated increases in agricultural productivity in sugar and other irrigated crops.	1 and 2
Industrial Water Users	Increased water supply to improve productivity of crops and industrial process such as sugar production	1 and 2
Economic Development and Industry Groups	Increased opportunities for tourism development arising from recreational usage of the dam.	1 and 2
Residents and communities of the regional study area	Improved recreational opportunities in the region, with the dam providing opportunity for land and water-based activities, such as fishing, boating, water skiing and hiking.	1 and 2
	Improved local access and connectivity in regional study area for residents and road users.	1 and 2
	Direct employment benefits resulting from the creation of two FTE jobs during operations and maintenance.	1 and 2
	Indirect employment and economic growth resulting from the increased demand for goods and services to support the project during construction.	1 and 2
	Long-term increases in regional employment arising from increased water supply and associated increases in agricultural productivity.	1 and 2
	Increased, though temporary, population growth resulting from the presence of approximately 204 non-resident workers in the regional study area, peaking at 275-306 construction workers.	1 only
	Increased, though temporary, population growth resulting from the presence of approximately 212 non-resident workers in the regional study area, peaking at 275-306 construction workers .	2 only
	Potential weakening of the social fabric of communities due to the displacement or loss of local landholders and families.	1 and 2
	Potential increased crime and anti-social behaviour within nearby communities from non-resident FIFO workforce.	1 and 2
	Reduced perception of road safety due to increased traffic associated with construction works and haulage roads.	1 and 2
Changes to the living environment and amenity from construction activities.	1 and 2	
Residents of the wider area of influence	Direct employment benefits resulting from the creation of an estimated 204 FIFO jobs (peaking at 275-306) during construction (to be sourced outside the regional study area).	1 only
	Direct employment benefits resulting from the creation of an estimated 212 FIFO jobs (peaking at 275-306) during construction (to be sourced outside the regional study area).	2 only



STAKEHOLDER	ANTICIPATED IMPACT	RELEVANT REFERENCE PROJECT
	Indirect employment benefits resulting from the creation of five FTE jobs during operations and maintenance.	1 and 2
	Long-term increases in regional employment arising from increased water supply and associated increases in agricultural productivity.	1 and 2
Recreational Users	Improved recreational opportunities in the region, with the dam providing opportunity for land and water-based activities, such as fishing, boating, water skiing and hiking.	1 and 2
Health and emergency service organisations	Increase in demand for health and emergency services in the regional study area from a non-resident project workforce.	1 and 2
Construction workforce	Potential mental health impacts due to the use of FIFO workforce commuting arrangements by the project.	1 and 2
Urban water users	Increased water supply to cater for projected population growth, particularly in the CRC.	1 and 2

16.4 Social Context

This section presents baseline data on the existing conditions in the social area of influence that would prevail in the absence of a Nullinga Dam solution. The findings of the baseline data have been used to help predict the capacity of communities in the social area of influence to take advantage of the benefits that the project may bring as well as their ability to absorb negative impacts.

As noted previously, the social area of influence includes:

- the local study area, defined as the landholders and land parcels directly impacted by the Reference Project/s
- the regional study area, defined as the LGAs of MSC and the TRC
- the wider area of influence, defined as CRC.

16.4.1 Local study area baseline

Land tenure

Inundation associated with both Reference Projects will directly impact lots, comprising a mixture of private freehold and state landholdings. Table 16-6 shows the land tenure for the proposed location of the proposed Nullinga Dam and the difference in the proportion of land tenure to be impacted under each reference design at Full Supply Level (FSL).

A total of 30 lots will be affected by the dam at FSL 545 m AHD, Reference Project 1. Under Reference Project 2, FSL 556 m AHD, an additional 3 lots (for a total of 33) will have partial land loss. This also includes 15 lots for pipeline alignments.

Where property acquisitions are required, these will be undertaken in accordance with the *Acquisition of Land Act 1967*. The acquisition of properties will require compensation to landowners.



Table 16-6 Land tenure of properties impacted by a proposed Nullinga Dam

NO.	LOT	PLAN	TENURE	MAIN ACTIVITY	PROPORTION OF LAND IMPACTED AT FSL	
					REF PROJECT 1 (545m)	REF PROJECT 2 (556m)
DAM FOOTPRINT						
1	162	RP843529	Freehold	Dwelling, large house site	Completely	Completely
2	164	RP843529	Freehold	Cattle breeding and fattening	Completely	Completely
3	163	RP843529	Freehold	Vacant, large house site	Completely	Completely
4	49	SP220744	Freehold	Cattle grazing and breeding	Partially	Completely
5	50	SP220744	Freehold	Cattle grazing and breeding	Partially	Completely
6	481	SP257017	Freehold	Dwelling, large house site	Partially	Partial loss of land
7	41	SP188672	Freehold	Subdivided land	Completely	Completely
8	1	SP153994	Freehold	Vacant, large house site	Completely	Completely
9	2	SP153994	Freehold	Vacant, large house site	Completely	Completely
10	3	SP153994	Freehold	Vacant, large house site	Completely	Completely
11	40	SP188672	Freehold	Vacant, large house site	Partially	Completely
12	304	HG634	Leasehold [Rental]	Sugar cane	Partially	Completely
13	487	HG630			Partially	Completely
14	492	HG759	State Land [Non-Valued]	Experimental Farm	Partially	Partial loss of land
15	6	SP114934	Freehold/Leasehold [Issuing]	Perpetual Lease; for the use and control of water, and ancillary purposes, community and commercial purposes	Completely	Completely
16	9	HG760	Leasehold [Rental] Sunwater Limited		Completely	Completely
17	441	HG760	Leasehold [Rental] Sunwater Limited		Completely	Completely
18	619	OL72	Leasehold [Rental]	No term; grazing purposes	Partially	Partial loss of land
PIPELINE ALIGNMENTS						
19	46	HG527	Freehold	Orchards		
20	2	RP741713	Freehold	Sugar Cane		
21	3	RP741713	Freehold	Extractive		



NO.	LOT	PLAN	TENURE	MAIN ACTIVITY	PROPORTION OF LAND IMPACTED AT FSL	
					REF PROJECT 1 (545m)	REF PROJECT 2 (556m)
22	18	USL21366	State Land [Non-Valued]	Vacant rural land		
23	383	HG309	Freehold/Leasehold [Issuing] Sunwater Limited	Reservoir, dams and bores		
24	2	HG310	Freehold	Small crops and fodder		
25	3	HG311	Freehold	Sugar Cane		
26	4	HG311	Freehold	Sugar Cane		
27	5	HG309	Freehold	Orchards		
28	34	RP909118	Freehold	Sugar Cane		
29	14	SP237040	Freehold	Vacant		
30	1	SP153994	Freehold	Vacant		
31	A	CP846967	Easement	Easement		
32	17	HG311	State Land [Non-Valued]	Vacant		
33	19	HG539	State Land [Non-Valued]	Vacant		

Data used for the assessment of the tenures for the Nullinga Dam (Reference Project 1 and 2) was current as of December 2018.

Consultation by Sunwater with landholders about compensation and acquisition of land was in progress when the SIE was undertaken, with no agreements or defined criteria to fully or partially purchase properties in place as of February 2019.

Land use

Agriculture is the primary land use for properties in the footprint of either Reference Project. The main activities undertaken include production from relatively natural environments, such as grazing or forest production, and production from irrigated agriculture and plantations. Irrigated agriculture has the smallest share in the footprint and the primary produce is tropical and subtropical crops. Landholders interviewed indicated they produced a variety of crops with the most predominant being limes, grass seed and blueberries.

There are small pockets of intensive agriculture in the footprint of both the larger and smaller Nullinga Dam solution. The remainder of the area is classified as conservation and natural environment land, which is land with limited human intervention.

A small area of land within the proposed Nullinga Dam footprint is identified as Strategic Cropping Area land, as defined under the *Regional Planning Interests Act 2014*.



Property characteristics

Settlement in the local study area for Reference Project 1 and 2 is generally sparse, however about one third of land parcels in the proposed footprint area contain residences. Both these Reference Projects will impact approximately nine buildings, including homesteads and farm sheds.

Landholdings comprise a mixture of ownership, with several properties owned and managed by major farm companies while others are held by families who have generally owned and lived at their properties for several years. A small number of the properties are also used for recreational purposes (e.g. 'lifestyle or hobby' farms). Only two landholders indicated that agricultural activities undertaken on their property was their main source of income and livelihood.

Road networks and infrastructure

Access to the proposed Nullinga Dam site is gained from Mareeba Dimbulah Road, which is a state-controlled road passing east to west from Mareeba to Dimbulah.

There are no major roads, power transmission lines, rail links or other public infrastructure in the local study area. However, both Reference Project 1 and 2 will impact on Collins Weir Road, a local controlled road. From mapping, several access roads and tracks can be identified on private properties in the footprints of both proposals, many of which appear unsealed. Further field investigations will be necessary to determine the number of private property access tracks and crossings affected.

Traditional Owners

Native Title determinations exist over a portion of the inundation area for both Reference Project 1 and 2 in the Bar Barrum People #6 (QCD2016/010), Bar Barrum People #10 (QCD2017/009) and Bar Barrum Rivers (QC2016/006-1) Claims (refer to Section 10.12 and 10.13).

An Indigenous Land Use Agreement (ILUA) between Sunwater and the Native Title groups about the conditions of access and use of land and water resources will need to be negotiated prior to development of the project. The ILUA provides opportunity for Native Title groups to share in the economic and social benefits of project development and ensure that project development and activity occurs in line with local cultural values and practices.

16.4.2 Regional study area baseline

16.4.2.1 Governance and locational context

MSC and TRC are predominantly agricultural based local government areas located in Far North Queensland. Combined they form the regional study area for this SIE, an area which extends westwards and southwards from Cairns.

The TRC was formed in 2008 with the amalgamation of Atherton, Eacham, Herberton and Mareeba Shires. However, on 20 March 2013, residents of Mareeba voted in favour of reversing the amalgamation to re-establish Mareeba Shire. The new Mareeba Shire was re-established on 1 January 2014. Combined, the two local government areas cover an area of 118,609 km².

In 2011, the TRC adopted the Tablelands Community Plan 2021, a 10-year strategy which sets out the vision for the region (including MSC) in 2021. Key aspirations expressed in this vision include:

- creating a strong and diverse economy
- maintaining and protecting the character and values of rural communities
- improving the delivery of essential infrastructure and services



- enriching the variety of cultural, recreational and entertainment facilities
- supporting a diverse and multi-cultural community
- protecting the natural and rural landscape.

From a regional planning perspective, the regional study area is covered by the Far North Queensland Regional Plan 2009–2031¹¹⁹. The vision for Far North Queensland as per the plan is:

‘for a stronger, more liveable and sustainable community, where:

- *the region’s outstanding biodiversity and stunning landscape features are valued and protected*
- *residents...have a strong sense of community and feel safe, happy healthy and are able to enjoy a relaxed tropical lifestyle*
- *the region continues to grow in prosperity....(and) the economy is vibrant robust and diverse*
- *Cairns forms the heart of an efficient and sustainable settlement pattern that is supported by high level infrastructure, facilities and services’.*

The major service and activity centres of the regional study area are Mareeba in the MSC and Atherton in the TRC. Smaller population centres in relative proximity to Reference Project 1 and 2 include Mutchilba, and Dimbulah. The regional city of Cairns, located in the wider area of influence, is the principal service and activity centre in Far North Queensland and has an important role in servicing the needs of the communities in the regional study area.

16.4.2.2 Demography

Population

At the 2016 Census¹²⁰, the population of the regional study area was 46,392 persons, while the population of the wider area of influence was 156,898 persons.

The population of the regional study area grew at a lower rate than Queensland, with an increase of 6.1 per cent over the five years (or 1.2 per cent yearly) between the 2011 and 2016 Census, compared to 8.6 per cent for Queensland over the same five years (or 1.7 per cent yearly). A population growth rate for the wider area of influence cannot be provided due to boundary changes for Cairns LGA between the 2011 and 2016 Census.

Both the regional study area and the wider area of influence are projected to maintain strong growth trends for approximately 20 years. By June 2036, the population of the regional study area is projected to increase to 56,968 persons (medium projection) with an average annual growth rate of 0.9 per cent (QGSO 2018). This assumes a deceleration on the current growth rate. The population of the wider area of influence is projected to increase to 227,542 persons with a greater average annual growth rate of 1.7 per cent, which aligns with the average annual population growth rate projected for Queensland over the same period (1.7 per cent). This population projection for the regional study area and wider area of influence could increase if additional project activity from developments proposed in the region over the next five years are factored into OESR project assessments, such as ‘KurWorld Integrated Eco-resort’ in Kuranda.

The implication of this data is that substantial additional employment will be required in the regional and wider study areas if current employment rates are to be maintained or increased.

¹¹⁹ Department of Infrastructure and Planning (2008)

¹²⁰ 9 August 2016



Age

The regional study area has an older population with a high median age and a high proportion of elderly people compared to the wider area of influence and Queensland. At 30 June 2016, the median age of the regional study area was 44.7 years, compared to 36.9 years for the wider area of influence and 37 years for Queensland overall (QGSO 2018).

Table 16-7 shows the population age distribution and indicates a higher proportion of residents aged 65 years or older in the regional study area (21.6 per cent) in comparison to the wider area of influence (12.7 per cent) and Queensland overall (15.3 per cent). As is similar in other rural areas, the regional study area is experiencing an ageing of the workforce as younger generations are leaving the area looking for new opportunities, with many not returning. For example, the number of people aged 15 to 44 years in the regional study area - the group most likely to be participating in the project workforce - is only 30.9 per cent of the population, in contrast to 40.2 percent for the wider area of influence and 40.1 per cent for Queensland overall. This finding presents implications for the likely ability of the project to regionally source workers for project construction.

Table 16-7 Population by age (2016)¹²¹

AGE	REGIONAL STUDY AREA		WIDER AREA OF INFLUENCE		QUEENSLAND	
	NO.	%	NO.	%	NO.	%
0-14 YEARS	8,384	18.1	32,103	20.5	912,701	19.4
15-24 YEARS	4,794	10.3	18,951	12.1	613,147	13.0
25-44 YEARS	9,560	20.6	44,015	28.1	1,274,815	27.1
45-64 YEARS	13,624	29.4	41,902	26.7	1,184,592	25.2
65+ YEARS	10,026	21.6	19,914	12.7	717,941	15.3
TOTAL	46,388	100.0	156,885	100.0	4,703,196	100.0

Source: ABS Census of Population and Housing 2016

Aboriginal and Torres Strait Islander population

According to the 2016 Census, 10.0 per cent of the regional study area population identified themselves as being of Aboriginal and Torres Strait Islander descent (with Mareeba LGA having the greater percentage of Indigenous persons at 13.0 per cent), compared to 9.0 per cent for the wider area of influence and 4.0 per cent for Queensland. On this basis, the regional study area has an Aboriginal and Torres Strait Islander population two and a half times larger than that of the State. Notably, the Aboriginal and Torres Strait Islander population in Mareeba LGA alone is three and a half times larger than that of Queensland's.

Large infrastructure projects have a role in facilitating economic development. The large proportion of Aboriginal and Torres Strait Islander people within the regional study area provides a valuable opportunity for Sunwater to target indigenous economic participation in the NDMIP.

¹²¹ ABS Census of Population and Housing 2016



16.4.2.3 Education levels and qualifications

Education levels in the regional study area are lower than for the rest of Queensland. Table 16-8 summarises the highest level of educational attainment for the regional study area and wider area of influence in comparison to Queensland.

Table 16-8 Level of highest educational attainment (people aged 15 years and over)

	REGIONAL STUDY AREA		WIDER AREA OF INFLUENCE		QUEENSLAND	
	NO.	%	NO.	%	NO.	%
BACHELOR DEGREE LEVEL AND ABOVE	4,195	11.0	20,243	16.2	693,412	18.3
ADVANCED DIPLOMA AND DIPLOMA LEVEL	2,746	7.2	11,536	9.2	330,619	8.7
CERTIFICATE LEVEL IV	875	2.3	3,895	3.1	111,975	3.0
CERTIFICATE LEVEL III	6,184	16.3	20,687	16.6	576,295	15.2
PERSONS WITH A QUALIFICATION	14,000	36.8	56,361	45.2	1,712,301	45.2
YEAR 12	4,856	12.8	19,756	15.8	625,959	16.5
YEAR 11	1,620	4.3	6,077	4.9	163,394	4.3
YEAR 10	5,816	15.3	14,394	11.5	488,554	12.9
CERTIFICATE LEVEL II	28	0.1	105	0.1	2,602	0.1
CERTIFICATE LEVEL I	3	0.0	13	0.0	418	0
YEAR 9 OR BELOW	3,970	10.4	7,668	6.1	275,376	7.3
NO EDUCATIONAL ATTAINMENT	179	0.5	791	0.6	15,700	0.4
NOT STATED	6,607	17.4	16,320	13.1	409,227	10.8
PEOPLE AGED 15 AND OVER IN STUDY AREA	38,004	-	124,782	-	3,790,495	-

At the 2016 Census, 17.1 per cent of people aged 15 and over in the regional study area reported having completed Year 11 or 12 as their highest level of educational attainment, in comparison to 20.7 per cent for the wider area of influence and 20.8 per cent for Queensland. In terms of higher education, 11.0 per cent of people aged 15 years and over in the regional study area held a bachelor degree or higher compared to 16.2 per cent for the wider area of influence and 18.3 per cent for the Queensland population. The number of persons aged 15 years and over holding a Certificate III in the regional study area (16.3 per cent), however, was greater than the Queensland population (15.2 per cent), reflecting a slightly higher number of people with trade qualifications.

While it is likely that low skilled jobs such as drivers, plant operators and labouring jobs associated with the project will not require a high level of skills or qualifications, many of the jobs would require professional skills (e.g. a university degree) which places persons in the regional study area at a disadvantage. In contrast, the population of the study may be able to meet some of the demand for skilled trade positions associated with project construction due to the slightly higher proportion of the population with trade qualifications.



16.4.2.4 Labour force status, sector of employment and occupation

Unemployment

The unemployment rate in the regional study area is about 1.5 per cent higher than in Queensland. In the March 2018 quarter, the total labour force of the regional study area and wider area of influence was 20,887 and 85,345 persons, respectively. Of this, 1,572 persons (7.5 per cent) in the regional study area and 4,689 persons (5.5 per cent) in the wider area of influence were unemployed. The unemployment rate for Queensland overall was 6.0 per cent.

High levels of unemployment could be slightly alleviated with the site workforce of:

- 239 for Reference Project 1 (peaking at 270)
- 247 for Reference Project 2 (peaking at 275).

It is important to remember that lower educational levels may be a barrier to access project roles for some unemployed.

Sector of employment

The regional economy is heavily reliant on agriculture, which comprises a large diversity of grazing industries, lifestyle horticulture, and production of both tropical and subtropical crops (DAFF 2011). This is reflected in the 2016 Census, where employment in agriculture, forestry and fishing accounted for 14.9 per cent of all employment in the regional study area (refer to Table 16-9).

Following, the agriculture, forestry and fishing sector, employment was next greatest in the health care and social assistance (12.3 per cent), retail trade (10.0 per cent), and education and training (9.1 per cent) industries. The dominant industries of employment in the wider area of influence were healthcare and social assistance (14.4 per cent), retail trade (10.6 per cent), and accommodation and food services (10.0 per cent).

Conversely, residents of the regional study are under-represented in the construction sector (7.8 per cent), in comparison to the wider study area at 8.1 per cent and Queensland at 9.0 per cent. This may have implications for the ability of the project to regionally source workers for the construction.

Table 16-9 Employment by Industry (2016)¹²²

	REGIONAL STUDY AREA		WIDER AREA OF INFLUENCE		QUEENSLAND	
	NO.	%	NO.	%	NO.	%
AGRICULTURE, FORESTRY AND FISHING	2,679	14.9	1,175	1.6	60,608	2.8
MINING	486	2.7	1,051	1.5	49,997	2.3
MANUFACTURING	796	4.4	2,700	3.7	128,787	6.0
ELECTRICITY, GAS, WATER AND WASTE SERVICES	198	1.1	663	0.9	23,883	1.1
CONSTRUCTION	1398	7.8	5,901	8.1	191,338	9.0
WHOLESALE TRADE	325	1.8	1,705	2.4	56,370	2.6

¹²² ABS Census of Population and Housing 2016



	REGIONAL STUDY AREA		WIDER AREA OF INFLUENCE		QUEENSLAND	
RETAIL TRADE	1,808	10.0	7,690	10.6	211,778	9.9
ACCOMMODATION AND FOOD SERVICES	1122	6.3	7,273	10.0	156,670	7.3
TRANSPORT, POSTAL AND WAREHOUSING	700	3.9	4,590	6.3	108,083	5.1
INFORMATION MEDIA AND TELECOMMUNICATIONS	113	0.6	591	0.8	25,265	1.2
FINANCIAL AND INSURANCE SERVICES	206	1.1	1,085	1.5	54,286	2.5
RENTAL, HIRING AND REAL ESTATE SERVICES	227	1.3	1,456	2.0	42,500	2.0
PROFESSIONAL, SCIENTIFIC AND TECHNICAL SERVICES	623	3.5	3,392	4.7	133,652	6.3
ADMINISTRATIVE AND SUPPORT SERVICES	545	3.0	3,099	4.3	75,336	3.5
PUBLIC ADMINISTRATION AND SAFETY	1189	6.6	5,796	8.0	140,164	6.6
EDUCATION AND TRAINING	1630	9.1	6,503	9.0	192,143	9.0
HEALTH CARE AND SOCIAL ASSISTANCE	2,200	12.3	10,445	14.4	276,945	13.0
ARTS AND RECREATION SERVICES	251	1.4	1,440	2.0	33,667	1.6
OTHER SERVICES	656	3.7	3,050	4.2	83,470	3.9
INADEQUATELY DESCRIBED AND NOT STATED RESPONSES	786	4.4	2,800	3.9	91,513	4.3
TOTAL	17,938	100	72,405	100	2,136,455	100

Occupation

Table 16-10 indicates the occupational composition of the regional study area and wider area of influence. It shows the most common occupations in the regional study area are managers (16.1 per cent) and labourers (14.8 per cent), likely associated with the high levels of employment in the agricultural sector. In contrast, professionals (19.2 per cent) and technicians and trade workers (15.0 per cent) were more frequent in the wider area of influence. This suggests that the availability of skilled labour is greater in the wider area of influence than the regional study area.

Table 16-10 Employment by occupation – 2016¹²³

OCCUPATION	REGIONAL STUDY AREA		WIDER AREA OF INFLUENCE		QUEENSLAND	
	NO.	%	NO.	%	NO.	%
MANAGERS	2,887	16.1	7,928	10.9	258,509	12.1
PROFESSIONALS	2,583	14.4	13,932	19.2	423,917	19.8
TECHNICIANS AND TRADES WORKERS	2,460	13.7	10,827	15.0	305,441	14.3
COMMUNITY AND PERSONAL SERVICE WORKERS	2,158	12.0	9,952	13.7	241,956	11.3
CLERICAL AND ADMINISTRATIVE WORKERS	2,019	11.3	9,542	13.2	291,317	13.6
SALES WORKERS	1,592	8.9	7,770	10.7	207,795	9.7
MACHINERY OPERATORS AND DRIVERS	1,305	7.3	4,085	5.6	147,636	6.9
LABOURERS	2,647	14.8	7,136	9.9	225,268	10.5
INCLUDES INADEQUATELY DESCRIBED AND NOT STATED RESPONSES	287	1.6	1,233	1.7	34,616	1.6
TOTAL	17,938	100	72,405	100	2,136,455	100

16.4.2.5 Housing and accommodation

Collectively, the total number of occupied dwellings on the 2016 Census night in the regional study area was 16,813 dwellings, while there were 2,598 unoccupied dwellings.

Of occupied private dwellings in the regional study area, 41.2 per cent were owned outright and 26.9 per cent were owned with a mortgage, compared to 23.7 per cent and 33.5 per cent for the wider area of influence respectively. The remaining 27.6 per cent in the regional study area were being rented, in comparison to 38.9 per cent for the wider area of influence.

Median rents for a three-bedroom house in the regional study area and wider area of influence have increased steadily since 2010, reaching \$300 per week and \$380 per week respectively in the September quarter of 2018 (OESR 2018). Rental vacancies are also considered relatively tight across the two study areas, sitting at 2.5 per cent for Mareeba¹²⁴ (SQM Research 2018) and 1.4 per cent for the wider area of influence (REIQ 2018).

The regional study area hosts a number of short-term accommodation facilities with 19 listed hotels (Yellow Pages 2018a and 2018b). The TRC also manage two caravan parks within the regional study area; Malanda Falls Caravan Park and Lakeside Motor Inn and Caravan Park. As a premier tourism destination in Australia, the wider area of influence naturally hosts a larger number of short-term accommodation options, with an Internet search documenting approximately 583 hotels in Cairns alone (Trivago 2018). An assessment of the room capacity and availability of these short-term accommodation facilities is beyond the scope of this SIE.

During construction, accommodation will be provided at temporary camp to all workers not living in the local area. During operations and maintenance, the project will employ two FTE workers (already located in region) and five FTE workers located outside the region (i.e. in Cairns or Brisbane), and it is expected these

¹²³ ABS Census of Population and Housing 2016

¹²⁴ A vacancy rate was not able to be sourced for TRC.



workers would already have their own existing permanent accommodation. As such, the NDMIP is not anticipated to impact the demand for rental housing or short-term accommodation facilities in the regional study area or wider area of influence. No further assessment of impacts on housing and accommodation is therefore undertaken as part of this SIE.

16.4.2.6 Access to health and emergency services

Table 16-11 profiles the Queensland Police and Emergency Services available in the regional study area in comparison to the wider area of influence.

Table 16-11 Number of emergency services and hospitals¹²⁵

LGA	POLICE STATIONS	AMBULANCE STATIONS	FIRE STATIONS	HOSPITALS
Regional Study Area	12	9	9	9
Mareeba LGA	5	4	3	3
Tablelands LGA	6	5	6	6
Wider Study Area	5	6	6	8

Residents in the regional study area have access to nine private and public hospitals and health clinics. The two key public hospitals in the region are those at Mareeba and Atherton. Mareeba Hospital is a 52-bed Level 3 general hospital with twenty doctors. Atherton Hospital is a Level 3 general hospital and has between 50 – 90 beds with approximately 14 doctors. A more comprehensive range of medical and allied services is available in the Cairns Hospital, the largest major hospital in North Queensland.

With a temporary increased population by up to 270 additional workers, has the potential to place additional demand on hospital (including general practitioners) and emergency services in the host communities. These would only have an impact on service waiting times for local residents. Such impact would only be for the duration of the construction and predominately restricted to emergency services as routine medical is likely to occur in their place of residence. Considering in Queensland the general practitioner ratio is one for 609 people (Department of Health, Commonwealth Government, 2018) and the workers camp is likely to have primary health services, the additional demand on health services is expected not expected to measurably impact existing services.

16.4.2.7 Education and training facilities

The project construction workforce will consist of mostly non-resident workforce that would be sourced from outside the regional study area. It is not expected that construction employees would relocate to the regional study area or wider area of influence with their families. As such, the project is not anticipated to have any impacts on demand for primary or secondary school placements. No further assessment of impacts on primary and secondary school facilities is therefore undertaken as part of this SIE.

It is recommended that Building Queensland/Sunwater explore opportunities to implement training, upskilling and apprenticeship programs in consultation and partnership with educational and training institutions in the regional study area to provide career pathways for local and regional residents. Such benefit is not able to be realised however if the project is delivered with the use of a 100 per cent non-resident construction workforce.

¹²⁵ QGSO 2018



16.4.2.8 Recreation and tourism

The regional study area is home to several recreational and tourism attributes. Stakeholder consultation demonstrated that these places are of importance to those living within the regional study area, and also attract people from the wider study area and abroad. Tourist generators in proximity to the proposed Nulling Dam site include:

- Kuranda, with the Kuranda Scenic Railway and Skyrail Cableway, which draws approximately one million visitors each year
- Tinaroo Falls Dam, which attracts an estimated 500,000 visitors per year for water skiing, boating, fishing and camping (TRC 2011).

More broadly, the Cairns/North Queensland wider area of influence is one of Australia's leading international tourism regions with attributes such as the Great Barrier Reef and the Wet Tropics Rainforests (Tourism and Events Queensland 2018). In line with the importance of the tourism industry to the economy of Far North Queensland, the expansion of recreational and tourism development opportunities in the regional study area is a key strategic intent and vision of the TRC (TRC 2011).



16.5 Identified Social Impacts

Project-related social impacts were identified across six categories for each of the stakeholders identified in Section 6.2. These include: land use, property and productivity; population; services, facilities and infrastructure; community health, safety and wellbeing; access and connectivity; and employment and livelihoods.

Identified social impacts have been divided into three categories:

- social impacts that can be quantified and monetised (included in the CBA)
- social impacts that can be quantified and not monetised
- social impacts that cannot be quantified nor monetised.

Table 16-12 summarises the identified social impacts while also classifying them by their utility, drivers, timeframe for realisation, duration of effect, stakeholders affected, extent of impact, metrics and categorisations.

The duration of the potential impacts is noted in Table 16-12 under 'Duration of Effect' in four terms:

- **short term** – are effects lasting for a period ranging from a few days up to a month
- **medium term** – are effects lasting for up to three years, for example, the whole duration of the construction
- **long term** – are effects lasting longer than three years
- **permanent** – are effects that will last or remain unchanged indefinitely.



Table 16-12 Identified social impacts

NO.	IMPACT	DESCRIPTION	REFERENCE PROJECT IMPACT APPLIES TO	UTILITY	DRIVERS	TIMEFRAME FOR REALISATION	DURATION OF EFFECT	STAKEHOLDER/S AFFECTED	EXTENT OF IMPACT	METRICS	DATA SOURCE	CATEGORISATION
LAND USE, PROPERTY AND PRODUCTIVITY												
LU1	Displacement of landholders and their families from properties located in the inundation area of the dam.	The direct purchase and acquisition of property to be inundated by water at FSL will require landholders and their families to relocate from their property. For some landholders, this would represent a major change to their lifestyles and livelihoods.	2 and 3	Negative	<ul style="list-style-type: none"> Acquisition of property for inundation 	Full acquisition during pre-construction phase	Permanent	Landholders of property in dam footprint	Reference Project 1 would require 2,044 ha over 30 properties, Reference Project 2 would require 2,872 ha over 33 properties.	<ul style="list-style-type: none"> Hectares of land 	Sunwater	Monetisable
LU2	Reduced size of land available for farming and other land use activities due to flood margin easement.	The placement of an easement (associated with the 1 in 100 Annual Exceedance Probability flood margin) on properties around the storage area of the dam will restrict the existing and future use of land in this buffer area. This may impact productivity and profitability of agricultural operations.	2 and 3	Negative	<ul style="list-style-type: none"> Construction of dam and inundation of water storage area Flood safety 	Immediately following land acquisition	Permanent	Landholders of property in dam footprint and selected neighbouring properties	10 landholders would have 23ha of land within the easement \$16,174 per ha, value of income lost	<ul style="list-style-type: none"> Hectares of land Value of income lost 	Sunwater	Monetisable
LU3	Reduced size of land available for farming and other land use activities due to new road construction.	Construction of the dam will require the acquisition of road easements across properties to realign existing roads, reducing the size of land available for use.	2 and 3	Negative	<ul style="list-style-type: none"> Relocation/realignment of road infrastructure 	Immediately once construction commences	Permanent	Landholders of property in proximity to road construction	10 landholders would have 23ha of land within road easements \$16,174 per ha, value of income lost	<ul style="list-style-type: none"> Hectares of land Value of income lost 	Sunwater	Monetisable
LU4	Restricted use of and access to land on properties within the pipeline easement.	The placement of utility easements on properties for pipeline infrastructure may disrupt and restrict the existing and future use of land (e.g. interference with stock movements) on 15 properties.	2 and 3	Negative	<ul style="list-style-type: none"> Construction of pipeline infrastructure 	Immediately once construction commences	Permanent	Landholders in pipeline corridor	47 landholders would have a total of 72 ha of land within utility easements \$16,174 per ha, value of income lost	<ul style="list-style-type: none"> Hectares of land Value of income lost 	Sunwater	Monetisable
LU5	Disruption to farming operations due to damage or alteration to farm infrastructure.	Disruptions to farming operations due to damage or alteration to farm infrastructure (e.g. gates, fences, internal roads) by workforce during project construction and operations. Landholders will be required to inform and communicate with project staff to rectify the damage, which will also have a timing impact for landholders.	2 and 3	Negative	<ul style="list-style-type: none"> Construction and maintenance of dam and pipeline 	Project construction and maintenance	Long-term	Landholders in dam footprint and pipeline corridor, as well as selected neighbouring properties	Residents of the local and regional areas	<ul style="list-style-type: none"> Number of complaints 	Sunwater	Monetisable
POPULATION												



NO.	IMPACT	DESCRIPTION	REFERENCE PROJECT IMPACT APPLIES TO	UTILITY	DRIVERS	TIMEFRAME FOR REALISATION	DURATION OF EFFECT	STAKEHOLDER/S AFFECTED	EXTENT OF IMPACT	METRICS	DATA SOURCE	CATEGORISATION
P1	Construction would see a temporary population increase of non-resident workers in the regional study area.	Construction of Reference Project 1 would see a temporary population increase of approximately 204 non-resident workers in the regional study area, peaking at 275-306 workers.	2	Positive	<ul style="list-style-type: none"> Construction of the dam 	Construction	Medium-term	Residents of the local and regional areas	Regional study area	<ul style="list-style-type: none"> Number of non-resident workers 	Sunwater	Quantifiable
P2		Construction of Reference Project 2 would see a temporary population increase of approximately 212 non-resident workers in the regional study area, peaking at 275-306 workers.	3	Positive	<ul style="list-style-type: none"> Construction of the dam 	Construction	Medium-term	Residents of the local and regional areas	Regional study area	<ul style="list-style-type: none"> Number of non-resident workers 	Sunwater	Quantifiable
SERVICES, FACILITIES AND INFRASTRUCTURE												
S1	Improved recreational facilities for residents and tourists.	The dam would provide a recreational facility for land and water based activities, such as fishing, boating, water skiing, hiking, and provide opportunities for tourism development.	2 and 3	Positive	<ul style="list-style-type: none"> Development of recreation facilities associated with the dam 	Immediately after the project is commissioned	Permanent	Tourists and residents	50,000 estimated tourists per year	<ul style="list-style-type: none"> Results of community survey on attitudes and satisfaction Change in tourist numbers visiting the local area 	Sunwater	Quantifiable
S2	Increase in demand for health and emergency services in the regional study area (Noting that most general health will be undertaken back at workers place of residence.)	Non-resident workers will temporarily increase the overall population potentially adding additional demand to health and emergency services. At approximately 275-306 non-resident workers at construction peak (both Reference Projects), there will be a likely temporary increase in demand on health and emergency services in the regional study area.	2 and 3	Negative	<ul style="list-style-type: none"> Demand from non-resident construction workforce 	Construction	Medium-term	Health and emergency service organisations	90 additional estimated hospital presentations. (based on 305 separations per 1,000 population on adults 25 to 65 years old)	<ul style="list-style-type: none"> Number of admissions to hospital, health and emergency services 	Australian Institute of Health and Welfare Admitted patient care data	Quantifiable
COMMUNITY HEALTH, SAFETY AND WELLBEING												
C1	Impacts on landholder's health due to stress	<p>Affected landholders may potentially experience stress and anxiety due to:</p> <ul style="list-style-type: none"> uncertainty around the timing and specific design of the project the potential purchase and resumption of properties loss of existing and future livelihood impaired sense of security 	2 and 3	Negative	<ul style="list-style-type: none"> Land acquisition for dam and related infrastructure construction 	From project commencement when land is acquired	Medium-term	Residents of the local area	110 landholders from properties acquired for the construction of the dam and related infrastructure	<ul style="list-style-type: none"> Results of community survey on attitudes and satisfaction 	PIC Chapter Sunwater	Not monetisable or quantifiable



NO.	IMPACT	DESCRIPTION	REFERENCE PROJECT IMPACT APPLIES TO	UTILITY	DRIVERS	TIMEFRAME FOR REALISATION	DURATION OF EFFECT	STAKEHOLDER/S AFFECTED	EXTENT OF IMPACT	METRICS	DATA SOURCE	CATEGORISATION
		- need to relocate away from existing social networks.										
C3	Increase in crime and anti-social behaviour in communities near project	Increased perception of crime and anti-social behaviour within nearby communities from a non-local workforce.	2 and 3	Negative	<ul style="list-style-type: none"> FIFO construction workforce 	Immediately once construction commences	Medium-term	Communities in the local and regional areas	Communities in the local and regional areas	<ul style="list-style-type: none"> Number and type of call-outs and complaints to police Number of complaints to project 	Queensland Police Sunwater	Quantifiable
C4	Potential mental health impacts for construction workers and their families due to FIFO commuting arrangements.	FIFO commuting workforce arrangements require workers to spend large amounts of time away from their families, which is acknowledged to cause potential mental health problems for workers and their families due to separation and social isolation.	2 and 3	Negative	<ul style="list-style-type: none"> Use of FIFO workforce for construction 	Construction	Medium-term	Construction workforce and their families	20 estimated additional presentations per year	<ul style="list-style-type: none"> Number of presentations 	Queensland Health Mental Health Data	Not monetisable
C5	Increased risk of accidents due to construction vehicles	Increased risk of road accidents due to construction works and haulage of construction materials. For Reference Project 1 and 2 only: Approx. 30 site vehicles and 4 small trucks for staff and labour. About 15 x 25 tonne dump trucks including 5 for carting concrete to the dam wall.	2 and 3	Negative	<ul style="list-style-type: none"> Construction of the dam and related facilities including new access and linking roads 	Construction	Medium-term	Road users	Proportion of (yet to be determined) potential additional accidents	<ul style="list-style-type: none"> Number of road accidents 	Queensland Police	Quantifiable
C6	Changes to the living environment and amenity from construction activities	Construction activities (e.g. noise and dust from blasting, excavators and machinery movements) may impact on sensitive receptors and the quiet nature of the local communities.	2 and 3	Negative	<ul style="list-style-type: none"> Construction works for the dam, roads, recreational amenities and other related infrastructure 	During dam construction	Medium-term	Residents of the local and regional area	Noise, dust, additional traffic and traffic restrictions, additional workforce in the area	<ul style="list-style-type: none"> Results of community survey on attitudes and satisfaction 	PIC Chapter Sunwater	Not monetisable or quantifiable
ACCESS AND CONNECTIVITY												
LA1	Changes to local roads increasing travel times	Increased travel times for residents and road users due to upgrades and rehabilitation of local road network.	2 and 3	Negative	<ul style="list-style-type: none"> Construction of the dam and related facilities including new access and linking roads 	Construction	Medium-term	Residents and road users in regional study area	(detail not available)	<ul style="list-style-type: none"> Number of vehicles delayed and length of delays 	Sunwater Queensland Police	Quantifiable
LA2	Changes to local property access	Changes to local property access due to temporary traffic	2 and 3	Negative	<ul style="list-style-type: none"> Construction of the dam and related facilities 	Construction	Medium-term	Landholders	10 of landholders impacted.	<ul style="list-style-type: none"> Number of people impacted by road works 	Sunwater	Quantifiable



NO.	IMPACT	DESCRIPTION	REFERENCE PROJECT IMPACT APPLIES TO	UTILITY	DRIVERS	TIMEFRAME FOR REALISATION	DURATION OF EFFECT	STAKEHOLDER/S AFFECTED	EXTENT OF IMPACT	METRICS	DATA SOURCE	CATEGORISATION
		diversions, road closures and construction works.			including new access and linking roads				Yet to be determined number of minutes of additional travel time.	<ul style="list-style-type: none"> Additional travel time due to road works 		
LA3	Improved local access and connectivity in regional study area for residents and road users	<p>Improved local access resulting from the construction of several new roads and upgrades associated with the project, including:</p> <ul style="list-style-type: none"> upgrade of Springmount Road (from Mareeba Dimbulah Road to dam site) to a two-lane sealed road construction of new, two-lane gravel road between dam site and Collins Weir, along the reservoir rim construction of new, two-lane gravel road on right bank along reservoir rim. 	2 and 3	Positive	<ul style="list-style-type: none"> Improvement of existing roads for the construction of the dam and realignment of access roads 	Following finalisation of construction	Permanent	<p>Landholders of properties in dam footprint and selected neighbouring properties</p> <p>Tourists and visitors to the dam and the local area</p>	<p>7 kilometres of road upgraded/improved</p> <p>33 kilometres of road realigned</p>	<ul style="list-style-type: none"> Kilometre of roads upgraded Kilometre of roads realigned 	Sunwater	Monetisable
EMPLOYMENT AND LIVELIHOODS												
E1	Landholder business uncertainty	Perception of project uncertainty may affect business viability and long-term investment decisions of landholders in the local study area.	2 and 3	Negative	<ul style="list-style-type: none"> Poor stakeholder engagement and information dissemination 	From project conception and planning until commissioning	Medium-term	Residents of the local study area	110 landholders from properties acquired for the construction of the dam and related infrastructure	<ul style="list-style-type: none"> Results of community survey on attitudes and satisfaction 	PIC Chapter Sunwater	Not monetisable or quantifiable
E1A	Creation of direct employment	Creation of an estimated 204 FIFO jobs (peaking at 275-306) during construction of Reference Project 1	2	Positive	<ul style="list-style-type: none"> Construction of the dam and pipeline infrastructure 	Construction	Medium-term	Construction employees outside the regional study area	204 direct jobs created	<ul style="list-style-type: none"> Number of direct jobs created during construction 	Sunwater	Monetisable
E1B		Creation of an estimated 212 FIFO jobs (peaking at 275-306) during construction of Reference Project 2	3	Positive	<ul style="list-style-type: none"> Construction of the dam and pipeline infrastructure 	Construction	Medium-term	Construction employees outside the regional study area	212 direct jobs created	<ul style="list-style-type: none"> Number of direct jobs created during construction 	Sunwater	Monetisable
E2c		Creation of seven FTE jobs (two in region and five located outside region) during operations and maintenance	2 and 3	Positive	<ul style="list-style-type: none"> Operation and maintenance of dam and pipeline infrastructure 	Operations and maintenance	Permanent	Employees within the regional or wider study area	Seven direct FTE jobs created	<ul style="list-style-type: none"> Number of jobs created during operations and maintenance 	Sunwater	Monetisable



NO.	IMPACT	DESCRIPTION	REFERENCE PROJECT IMPACT APPLIES TO	UTILITY	DRIVERS	TIMEFRAME FOR REALISATION	DURATION OF EFFECT	STAKEHOLDER/S AFFECTED	EXTENT OF IMPACT	METRICS	DATA SOURCE	CATEGORISATION
E3	Increased indirect employment opportunities for region	Indirect jobs would be created through increased demand for goods and services to support the project.	2 and 3	Positive	<ul style="list-style-type: none"> Construction of the dam and associated infrastructure Demand for new services for visitors and tourists 	From the beginning of the project construction and expectedly during the life of the dam as a recreational facility	Long-term to Permanent	Residents of the local, regional and wider study areas	Yet to be determined indirect employment created or Reference Project 1 and 2	<ul style="list-style-type: none"> Number of indirect jobs created during construction and operation in the local and regional economy 	Economic Adviser	Monetisable
E4	Increased agricultural employment opportunities for region	Long-term increases in regional employment from increases in agricultural productivity because of increased water supply.	2 and 3	Positive	<ul style="list-style-type: none"> Improved agricultural productivity as more water is available for irrigation 	Once dam reaches minimum supply level	Long-term to permanent	Persons in the local, regional and wider areas People relocating to the area for new opportunities	Yet to be determined estimated agricultural employment created	<ul style="list-style-type: none"> Number of indirect jobs created during construction in the local and regional economy 	Economic Adviser	Monetisable
E5	Increased employment opportunities for Aboriginal and Torres Strait Islanders	Sunwater seeks to establish (3%) targets for Indigenous workforce resulting in increased opportunities for indigenous employment.	2 and 3	Positive	<ul style="list-style-type: none"> Sunwater internal targets for workforce diversity and business procurement 	Project construction	Medium to long-term	Aboriginal and Torres Strait Islander communities	<p>Six estimated employment positions created for Aboriginal and Torres Strait Islander people (3% target)</p> <p>A number (to be defined pos-DBC) of supply opportunities for Aboriginal and Torres Strait Islander businesses</p>	<ul style="list-style-type: none"> Direct jobs created during construction Value of supply contract 	Economic Adviser	Monetisable



16.5.1 Social Impact Baseline

Table 16-13 Summary of social impacts of the project

SOCIAL IMPACT SUMMARY		
SOCIAL IMPACT BASELINE	KEY STAKEHOLDERS	CHANGE WITH REFERENCE PROJECT
IMPACTS		
There are 30 and 33 properties in the proposed area for Reference Project 1 and 2 covering an area of 2,044 ha and 2,872 ha respectively. These properties are a mixture of private freehold and state landholdings where people live.	10 Landholders that will have properties completely or partially inundated by the Nullinga Dam	19 landholders will be relocated from their primary place of residence. Up to 33 landholders will have their grazing and agricultural activities disrupted.
Currently there is 2,872 ha of land under production for grazing, forest production, and production from irrigated agriculture and plantations that are within the inundation area for Reference Project 1 and 2. With respect to irrigated agriculture, the primary produce is tropical and subtropical crops (with the most predominant being limes, grass seed and blueberries). There are small pockets of intensive agriculture in the footprint of both reference designs. A small area of land within the dam footprint of Reference Projects 1 and 2 is identified as Strategic Cropping Area land.	10 Landholders with properties inundated by the Nullinga Dam	Up to 2,872 ha of productive land used for grazing and agricultural activities lost to dam inundated area.
		10 landholders will have their grazing and agricultural activities disrupted as their land is taken by road easements.
Forty-seven properties have unrestricted use and access to land where the proposed pipeline for Reference Projects 1 and 2 may traverse, 7 of them are used for plantations of orchards, sugar cane, small crops and fodder, one for extractive activities and one for Sunwater reservoir dams and bores. The remaining five are vacant or easement lands.	10 Landholders with properties traversed by the pipelines	42 ha over 47 properties will have their agricultural activities temporarily disrupted during the construction of the pipeline. Subsequently their activities will be permanently changed once crossings and other restrictions around the pipeline easements are put in place.



16.6 Social Impact Evaluation

Table 16-14 below documents the evaluation of the social impacts identified in Section 6.4. It provides an assessment of likelihood and consequence for the social impact, and then a subsequent residual risk rating following implementation of mitigation.

Table 16-14 Impact risk assessment

NO.	IMPACT	DESCRIPTION	IMPACT ASSESSMENT BEFORE MITIGATION/ENHANCEMENT		RISK RATING	MITIGATION/ENHANCEMENT MEASURES	OUTCOME	IMPACT ASSESSMENT AFTER MITIGATION/ENHANCEMENT		RESIDUAL RISK RATING	RESIDUAL OUTCOME
			LIKELIHOOD	CONSEQUENCE				LIKELIHOOD	CONSEQUENCE		
E2a (+)	Creation of direct employment	Creation of an estimated 204 FIFO jobs (peaking at 275-306) during construction (Reference Project 1).	Likely	Moderate	14	<ul style="list-style-type: none"> Catering, personal protective equipment and other services required for the workforce are provided by local businesses. Workforce living in the local area support local businesses by buying locally. Maximise local employment opportunities. 	Business opportunities for the construction period are created Businesses take advantage of additional temporary residents to increase their sales	Likely	Moderate to major	14 to 17	<ul style="list-style-type: none"> Construction camp design, location and code of conduct allows workers to visit local businesses. The project design includes a local-buy policy. The project design includes policies that support workers accessing goods and services locally. <ul style="list-style-type: none"> Include in the design. Include in the implementation plan.
E2 b (+)		Creation of an estimated 212 FIFO jobs (peaking at 275-306) during construction (Reference Project 2).	Likely	Moderate	14			Likely	Moderate to major	14 to 17	
E2c (+)		Creation of seven FTE jobs (two in region and five located outside region) during operations and maintenance.	Likely	Minor	8			<ul style="list-style-type: none"> Operation workers are hired locally. 	Long term project benefits are felt in the area.	Likely	
E3 (+)	Increased indirect employment opportunities for region	Indirect jobs would be created through increased demand for goods and services to support the project.	Possible	Moderate	10	<ul style="list-style-type: none"> Catering, personal protective equipment and other services required for the workforce are provided by local businesses. A local-buy program supports small and medium local business that can become providers of goods and services. 	Indirect employment opportunities are stimulated in the region.	Likely	Moderate	14	<ul style="list-style-type: none"> The project design includes a local-buy policy. <ul style="list-style-type: none"> Include in the implementation plan.
E4 (+)	Increased agricultural employment opportunities for region	Large long-term increases in regional employment from increases in agricultural productivity because of increased water supply.	Likely	Moderate	14	<ul style="list-style-type: none"> Water allocation prioritises those farming activities that promote/required larger workforces. 	Increased agricultural employment opportunities	Likely	Major	17	<ul style="list-style-type: none"> Water allocation favours farming activities that create larger employment opportunities. <ul style="list-style-type: none"> Include in the design. Include in the implementation plan.
E5 (+)	Increased employment and business supply benefits for Aboriginal and Torres Strait Islander persons and businesses	Sunwater seeks to establish targets for Indigenous workforce and business participation, resulting in increased opportunities for indigenous employment and increased supply opportunities for Indigenous businesses.	Likely	Minor	15	<ul style="list-style-type: none"> Implementation of Aboriginal and Torres Strait Islander peoples employment and business participation targets. Negotiation of employment and business opportunities in ILUA. 	Opportunities for local Aboriginal and Torres Strait Islander peoples are secured.	Almost certain	Moderate	15	<ul style="list-style-type: none"> Aboriginal and Torres Strait Islander peoples employment and business participation targets are included in the project design. <ul style="list-style-type: none"> Include in the design. Include in the implementation plan.



NO.	IMPACT	DESCRIPTION	IMPACT ASSESSMENT BEFORE MITIGATION/ENHANCEMENT		RISK RATING	MITIGATION/ENHANCEMENT MEASURES	OUTCOME	IMPACT ASSESSMENT AFTER MITIGATION/ENHANCEMENT		RESIDUAL RISK RATING	RESIDUAL OUTCOME
			LIKELIHOOD	CONSEQUENCE				LIKELIHOOD	CONSEQUENCE		
S1 (+)	Improved recreational facilities for residents and tourists	The dam would provide a recreational facility for land and water based activities, such as fishing, boating, water skiing, hiking, and provide opportunities for tourism development.	Likely	Minor	7	<ul style="list-style-type: none"> Recreational activities are allowed in the design of the project to ensure local residents can develop alternative business opportunities 	Alternative business opportunities are created as a result of the project.	Likely	Moderate to major	14 - 17	<ul style="list-style-type: none"> Project design incorporates options for the development of recreational and tourism opportunities. <ul style="list-style-type: none"> Include in the design. Include in the implementation plan.
LA3 (+)	Improved local access and connectivity in regional study area for residents and road users	Improved local access resulting from the construction of several new roads and upgrades associated with the project, including: <ul style="list-style-type: none"> upgrade of Springmount Road (from Mareeba Dimbulah Road to dam site) to a two-lane sealed road construction of new, two-lane gravel road between dam site and Collins Weir, along the reservoir rim construction of new, two-lane gravel road on right bank along reservoir rim. 	Likely	Moderate	14	<ul style="list-style-type: none"> Stakeholder Communication and Engagement Strategy, which requires, communication of road works and changes in connectivity to landholders. 	N/A	Likely	Moderate	14	<ul style="list-style-type: none"> Improved local access and connectivity in regional study area for residents and road users. <ul style="list-style-type: none"> Include in the design. Include in the implementation plan. Include in the Stakeholder Communication and Engagement Plan.
P1 (+)	Construction would see a temporary population increase of non-resident workers in the regional study area.	Construction would see a temporary population increase of approximately 204 non-resident workers in the regional study area, peaking at 275-306 workers (Reference Project 1).	Almost certain	Minor	8	<ul style="list-style-type: none"> Set up of the workers camp includes health facility such as gyms and medical centres as well as preventative programs such as healthy meal choices and healthy lifestyle programs. 	Impact to health and emergency services are minimised	Almost certain	Insignificant	5	<ul style="list-style-type: none"> Project design/budget allows to support local health facilities and program within the workers camp. <ul style="list-style-type: none"> Include in the implementation plan.
P2 (+)		Construction would see a temporary population increase of approximately 212 non-resident workers in the regional study area, peaking at 275-306 workers (Reference Project 2).	Almost certain	Minor	8			Almost certain	Insignificant	5	



NO.	IMPACT	DESCRIPTION	IMPACT ASSESSMENT BEFORE MITIGATION/ENHANCEMENT		RISK RATING	MITIGATION/ENHANCEMENT MEASURES	OUTCOME	IMPACT ASSESSMENT AFTER MITIGATION/ENHANCEMENT		RESIDUAL RISK RATING	RESIDUAL OUTCOME
			LIKELIHOOD	CONSEQUENCE				LIKELIHOOD	CONSEQUENCE		
EB1 (-)	Landholder business uncertainty	Perception of project uncertainty affecting landholders' business viability and long-term investment decisions of landholders in the local study area.	Possible	Moderate	10	<ul style="list-style-type: none"> Landholders are engaged early in the project (from the design phase) and regular and up to date information is provided. 	<p>Landholders are able to make informed decisions</p> <p>Project develops/gains a social licence to operate</p>	Possible	Moderate to major	10 to 16	<ul style="list-style-type: none"> Communication strategy to inform project activities is included in the project design and implemented from the initial phases (design). <ul style="list-style-type: none"> Include in the Stakeholder Communication and Engagement Plan.
LU1 (-)	Displacement of landholders and their families from properties located in the inundation area of the dam.	The direct purchase and acquisition of property to be inundated by water at FSL will require landholders and their families to relocate from their property. For some landholders, this would represent a major change to their lifestyles and livelihoods.	Almost certain	Major	18	<ul style="list-style-type: none"> Development of a Land Acquisition Strategy and Compensation Strategy to ensure adequate compensation and/or land acquisition. Implementation of livelihood restoration program for those landholders families for whom the relocation represents a major change to their livelihoods. 	<ul style="list-style-type: none"> Landholders are able to restore their livelihoods shortly after the land acquisition process and, as a result, are better off or at least have restored their livelihoods to the same standards prior to project commencement. 	Almost certain	Minor to Moderate	8 - 15	<ul style="list-style-type: none"> Land acquisition budget includes allowance for livelihood restoration programs. <ul style="list-style-type: none"> Include in Reference Project Design. Include in CBA. Include in the risk register. Include in Land Acquisition Strategy.
LU2 (-)	Reduced size of land available for farming and other land use activities due to flood margin easement.	The placement of an easement (associated with the 1 in 100 annual exceedance probability flood buffer margin) on properties around the storage area of the dam will restrict/disrupt the existing and future use of land in this buffer area.	Almost certain	Major to Moderate	15 - 18	<ul style="list-style-type: none"> Where properties become economically unsustainable due to the amount of land lost (acquired by the project), properties will be acquired in full. Creation of a fund for future compensation and assistance payments to offset potential losses. 	<ul style="list-style-type: none"> Landholders are provided with avenues to compensate for their loss of land access. 	Almost certain	Insignificant to Minor	5 - 8	<ul style="list-style-type: none"> Land acquisition and compensation budget includes allowance for the creation of a fund for potential compensation and assistance programs. <ul style="list-style-type: none"> Include in Reference Project Design. Include in CBA. Include in the risk register. Include in Land Acquisition Strategy.
LU3 (-)	Reduced size of land available for farming and other land use activities due to new road construction.	Construction of the dam will require the direct purchase and acquisition of road easements across properties to realign existing roads, reducing the size of land available for use.	Almost certain	Minor	8	<ul style="list-style-type: none"> Where properties become economically unsustainable due to the amount of land lost (acquired by the project), properties will be acquired in full. 	<ul style="list-style-type: none"> Landholders are provided with avenues to compensate for their loss of land access. 	Almost certain	Insignificant to Minor	5 - 8	<ul style="list-style-type: none"> Project design and budget allows for acquisition of properties that may become economically unsustainable due to their reduced size. <ul style="list-style-type: none"> Include in Reference Project Design. Include in CBA. Include in the risk register. Include in Land Acquisition Strategy.
LU4 (-)	Restricted use of and access to land on properties within the pipeline easement.	The placement of utility easements on properties for pipeline infrastructure may disrupt and restrict the existing and future use of land (e.g. interference with stock movements) on 15 properties.	Likely	Minor	8	<ul style="list-style-type: none"> Where properties become economically unsustainable due to the amount of land lost (acquired by the project) properties are acquired in full. Cattle and road crossings to be designed and built by the project. 	<ul style="list-style-type: none"> Landholders are provided with avenues to compensate for their loss of land access. Cattle and farming activities continue undisturbed. 	Likely	Insignificant to Minor	4 - 7	<ul style="list-style-type: none"> Features are included in the project design. <ul style="list-style-type: none"> Include in Reference Project Design. Include in CBA. Include in the risk register. Include in Land Acquisition Strategy.



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			LIKELIHOOD	CONSEQUENCE				LIKELIHOOD	CONSEQUENCE		
LU5 (-)	Disruption to farming operations due to damage or alteration to farm infrastructure.	Disruption to farming operations due to damage or alteration to farm infrastructure.	Possible	Minor	6	<ul style="list-style-type: none"> Land access rules are discussed and agreed with each landholder. All project personnel are required to read and commit (sign) to the land access rules prior to work in the property. 	Disruption of regular activities in the properties is minimised.	Possible	Minor to insignificant	3 - 6	<ul style="list-style-type: none"> Land access rules are considered in the implementation of project. Implement a Complaints Management System. <ul style="list-style-type: none"> Include in the implementation plan. Include in the risk register.
S2 (-)	Increase in demand for health and emergency services in the regional study area	Non-resident workers increase the overall size of the population and hence demands on health and emergency services. At approximately 275-306 non-resident workers at construction peak (both reference projects), there will be a likely temporary increase in demand on health and emergency services in the regional study area.	Possible	Minor	6	<ul style="list-style-type: none"> Implementation of Employee Assistance Programme. Funds are allocated to support relevant local social services to cater for temporary (considering the proposed workforce is 100% FIFO, the only social services expected to be impacted are health and emergency). 	Impact to health and emergency services are minimised	Unlikely	Minor	4	<ul style="list-style-type: none"> Project design/budget allows to support local health and emergency services as required. <ul style="list-style-type: none"> Include in the design. Include in the implementation plan.
C1 (-)	Impacts on landholder's health due to stress	Affected landholders may potentially experience stress and anxiety due to: <ul style="list-style-type: none"> uncertainty around the timing and specific design of the project the potential purchase and resumption of properties loss of existing and future livelihood impaired sense of security need to relocate away from existing social networks. 	Possible	Minor	6	<ul style="list-style-type: none"> Stakeholder Communication and Engagement Strategy is developed and put in place. The strategy is to be implemented from the beginning of the project and provides landholders and other relevant stakeholders with relevant and up to date information. 	Landholders are well informed	Possible	Insignificant	3	<ul style="list-style-type: none"> Stakeholder Communication and Engagement Strategy is included in the project design. <ul style="list-style-type: none"> Include in the Stakeholder Communication and Engagement Plan.
C3 (-)	Increase in crime and anti-social behaviour in communities near project	Increased crime and anti-social behaviour within nearby communities from a 100 per cent non-resident FIFO workforce.	Possible	Minor	6	<ul style="list-style-type: none"> Worker Code of Conduct Complaints Management Mechanism 	Project' workers are bound by a code of conduct that minimises anti-social behaviour. Communities concerns are responded to efficiently and in a timely manner through a Complaints Management Mechanism.	Possible	Insignificant	3	<ul style="list-style-type: none"> Code of Conduct is included in the project design <ul style="list-style-type: none"> Include in the implementation plan.



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			LIKELIHOOD	CONSEQUENCE				LIKELIHOOD	CONSEQUENCE		
C4 (-)	Potential mental health impacts for construction workers and their families due to FIFO commuting arrangements.	FIFO commuting workforce arrangements require workers to spend significant time away from their families, which is acknowledged to cause potential mental health problems for workers and their families due to separation and social isolation.	Possible	Moderate	10	<ul style="list-style-type: none"> Maximise employment of local and regional workforce. Rosters take in consideration family composition. Implementation of programmes to support physical and mental health and wellbeing of workers. Provision of confidential employee and family assistance programme. 	Workforce has a good work life balance that minimises the impacts of having family members working away from home for extended periods of time.	Unlikely	Minor	4	<ul style="list-style-type: none"> Rosters for workers to be developed in consideration of work life balance and the potential impact, particularly for young or new families Positive outcomes for wellbeing achieved for workers and their families through the implementation of physical and mental health and wellbeing programmes and employee assistance programme. <ul style="list-style-type: none"> Include in the implementation plan. Include in the risk register.
C5 (-)	Reduced perception of road safety	Reduced perception of road safety by motorists due to construction works and haulage roads.	Possible	Insignificant (considering road traffic controls are required for any road work in Qld)	5	<ul style="list-style-type: none"> Stakeholder Communication and Engagement Strategy, which provides information on road safety measures Traffic Management Plan, which includes road safety measures such as reduced speeds on access roads and time limits on construction traffic movements. 	Local residents are well informed of road works and additional traffic during construction, as well as the increased risks and their management mechanisms. Reduced road risks.	Possible	Insignificant	3	<ul style="list-style-type: none"> Stakeholder Communications and Engagement Strategy includes information on road safety and additional road activities during construction. <ul style="list-style-type: none"> Include in the implementation plan. Include in the Stakeholder Communication and Engagement Plan.
C6 (-)	Changes to the living environment and amenity from construction activities	Construction activities (e.g. noise and dust from blasting, excavators and machinery movements) may impact on sensitive receptors and the quiet nature of the local communities.	Unlikely (due to the location of most of the required works is away from households)	Minor	4	<ul style="list-style-type: none"> Dust suppression, daylight working hours among other measures are put in place to minimise impacts to amenity. 	Impacts on amenity are minimised to tolerable levels for surrounding landholders and the local community.	Unlikely	Insignificant	2	<ul style="list-style-type: none"> Strategies to minimise impacts on amenity are included in the project design. <ul style="list-style-type: none"> Include in the design. Include in the Stakeholder Communication and Engagement Plan.
LA1 (-)	Reduced access and connectivity	Reduced access and connectivity (and increased travel times) for residents and road users due to disruption and changes to local road networks.	Likely (particularly during the construction period)	Minor	7	<ul style="list-style-type: none"> Stakeholder Communication and Engagement Strategy, which requires communication of road works and changes in connectivity ahead of time to landholders. Traffic Management Plan, which requires the provision of signage and information on road works and changes to road users so they can identify alternative routes. 	Road users can plan their trips and minimise delays by being informed of road works creating delays and road closures. Landholders are well informed of potential access changes.	Likely	Minor	7	<ul style="list-style-type: none"> Communication strategy to inform project activities is included in the project design. <ul style="list-style-type: none"> Include in the Stakeholder Communication and Engagement Plan.
LA2 (-)	Changes to local property access	Potential changes to local property access due to temporary traffic diversions, road closures and construction works.	Likely (particularly during the construction period)	Minor (limited number of roads to be impacted)	7	<ul style="list-style-type: none"> Stakeholder Communication and Engagement Strategy, which requires communication of road works and changes in connectivity ahead of time to landholders. Traffic Management Plan, which requires the negotiation and provision of alternative access routes to properties. 	Landholders are well informed of potential access changes and alternative access routes are provided.	Likely	Minor	7	<ul style="list-style-type: none"> Communication strategy to inform project activities is included in the project design. <ul style="list-style-type: none"> Include in the Stakeholder Communication and Engagement Plan.

Note: C# = Community health, safety and wellbeing E# = Employment and livelihoods LA# Access and connectivity LU# - Land use and property P# = Population growth S# = Services, Facilities and Infrastructure