



CHAPTER 12

SOCIAL IMPACT EVALUATION

Nullinga Dam and Other Options Preliminary Business Case



CONTENTS

12	SOCIAL IMPACT EVALUATION.....	2
12.1	Purpose	3
12.2	Social Base Case (Social Baseline)	3
12.3	Stakeholder Engagement Summary	8
12.4	Preliminary Assessment of Social Impacts of Each Option	12
12.5	Option 4: Nullinga Dam for Agricultural Use	20
12.6	Conclusion	24

TABLES

Table 1	Estimated Regional Population by Age.....	4
Table 2	Tablelands Agricultural Region Religious Profile.....	5
Table 3	Level of Schooling Achieved.....	5
Table 4	Non-School Qualifications by Field of Study.....	6
Table 5	Employment by industry – Tablelands Agricultural Region and Queensland 2011.....	7
Table 6	Option 2—Beneficial Material Social Impacts.....	13
Table 7	Option 2—Detrimental Material Social Impacts.....	14
Table 8	Option 2—Social Opportunity and Impact Risk Assessment.....	15
Table 9	Option 3—Beneficial Material Social Impacts.....	16
Table 10	Option 3—Detrimental Material Social Impacts.....	17
Table 11	Option 3—Social Opportunity and Impact Risk Assessment.....	19
Table 12	Beneficial Material Social Impacts of Option 4.....	20
Table 13	Option 4—Detrimental Material Impacts.....	21
Table 14	Option 4—Social Opportunity and Risk Assessment.....	23
Table 15	Summary Table of Material Social Impacts.....	24



12 SOCIAL IMPACT EVALUATION

CHAPTER SUMMARY AND CONCLUSIONS

- The study area for the purpose of the social impact evaluation is the Tablelands Agricultural area, which is defined as the boundaries of the Mareeba and Tablelands local government areas.
- Population growth in the study area is slower than Queensland. The area has an ageing population and a high percentage of Indigenous residents. Levels of education are lower than the average for Queensland and there is a high degree of socio-economic disadvantage. Regional average incomes are lower than the average for Queensland. The unemployment rate for the region was 10.2 per cent in the September quarter of 2016 compared to 6.1 per cent for Queensland.
- Agriculture is the largest employer in the region and is central to the character and identity of the region. Stakeholder engagement revealed strong support for agricultural growth projects. Stakeholders noted additional water supply would enable future agricultural investment and other associated economic opportunities in the region.

Option 2: Improve MDWSS rules and operations

- Option 2 has two low beneficial material social opportunity impacts, three medium beneficial social opportunity impacts and two high beneficial social impact opportunities. Option 2 key beneficial impacts generally relate to additional employment and regional growth.
- Option 2 has six low detrimental social impacts, one medium detrimental social impact and zero high detrimental social impacts. Option 2 detrimental impacts relate to changes to existing business practices and processes.

Option 3: Modernise MDWSS and convert losses

- Option 3 has three low beneficial material social opportunity impacts, three medium beneficial social opportunity impacts and two high beneficial social impact opportunities. Option 3 key beneficial impacts centre on additional employment and regional growth.
- Option 3 has one low detrimental social impact, 11 medium detrimental social impacts and four high detrimental social impacts. Option 3 detrimental impacts focus on impacts from competition for additional water supply, foreign ownership, changes to existing flow regimes for domestic supplies and impacts on the Mareeba wetlands and associated tourism and cultural values.

Option 4: Nullinga Dam for agricultural use

- Option 4 has one low beneficial material social opportunity impact, three medium beneficial social opportunity impacts and six highly beneficial social impact opportunities. Option 4 key beneficial impacts centre on additional employment and regional growth during the construction period and from ongoing agricultural expansion.
- Option 4 has three low detrimental social impacts, 11 medium detrimental social impacts and seven high detrimental social impacts. Option 4 detrimental impacts focus on the impacts on downstream communities from flow alterations, large scale land use change, pressure on existing infrastructure, and land acquisition. Social conflict resulting from a large on-stream dam on the Walsh River may occur given potential impacts on threatened species and likely impacts on community and cultural values associated with the Mitchell River and the Gulf of Carpentaria.



12.1 Purpose

The purpose of this chapter is to present the preliminary social impacts arising from each of the shortlisted options.

All three shortlisted options occur in the Tablelands Agricultural area that is defined by the boundaries of the Mareeba Shire Council and the Tablelands Regional Council (DAFF 2016). Accordingly, the Tablelands Agricultural area is the study area for the purpose of the social impact evaluation.

A regional social profile for the study area is initially presented to establish the operating context for each of the shortlisted options. Following this, a summary of the outcomes of the stakeholder consultation process is presented and the potential social impacts are considered.

12.2 Social Base Case (Social Baseline)

Overview

Population growth in the study area is slower than Queensland. The area has an ageing population and a high percentage of Indigenous residents. Levels of education are lower than the average for Queensland and there is a high degree of socio-economic disadvantage. Regional average incomes are lower than the average for Queensland and unemployment is significantly higher. Agriculture is the largest employer in the region and is central to the character and identity of the region.

This social baseline presents detailed information on the study area.

The area is located in Far North Queensland and covers an area of 65,009 square kilometres.

Agriculture is the dominant land use in the area and the most intensive agricultural activity occurs on the elevated eastern highlands. Mining is a relatively minor component of the economic profile of the study area in comparison. Tourism is a growing activity in the study area based around natural features and food. Major towns in or close to the study area are Mareeba, Ravenshoe, Malanda, Kuranda, Herberton and Atherton. Smaller towns are Chillagoe, Dimbulah, Irvinebank, Julatten, Millaa Millaa, Mt Garnett, Mt Molloy, Mutchilba, Tolga, Walkamin and Yungaburra.

While the study area has been extensively cleared for agriculture, there remain several remnants of rainforest that are protected in national parks. Cairns is the closest large regional centre with extensive social and economic infrastructure such as hospitals and ports.

12.2.1 Population

At 30 June 2015, the estimated resident population of the study area was 46,830 persons.¹

The population of the study area grew at a lower rate than Queensland, with average population growth at 0.9 per cent over the five years to June 2015 and 1.2 per cent over the ten years. This is compared to 1.6 per cent and 2.0 per cent over the five and ten years to June 2015 respectively for Queensland.

By June 2036, the population of the study area is projected to increase to 56,968 persons, an average increase of 0.9 per cent per year.² This is below the average population growth for Queensland as a whole over the same period (at 1.7 per cent per annum).

¹ Queensland Government Statisticians Office 2017

² Queensland Government Statisticians Office 2017



12.2.2 Age

The study area has an older population with a high median age and a high proportion of elderly people. The following table shows the population age distribution and indicates a higher proportion of residents aged 65 years or older (19.8 per cent) in comparison to the rest of Queensland (14.4 per cent).

Table 1 Estimated Regional Population by Age

	0-14		15-24		25-44		45-64		65+	
	Number	per cent	Number	per cent	Number	per cent	Number	per cent	Number	per cent
Mareeba (s)	4,209	19.3	2,401	11.0	5,242	24	6,019	27.6	3,962	18.1
Tablelands	5,167	20.7	2,636	10.5	4,708	18.8	7,166	28.7	5,320	21.3
Region	9,376	20	5,037	10.8	9,950	21.2	13,185	28.2	9,282	19.8
Queensland	943,992	19.8	647,983	13.6	1,327,470	27.8	1,173,195	24.5	686,214	14.4

Source: ABS 3235.0 Population by Age and Sex regions of Australia 2015

The median age of the region in 2015 was 43.6 years compared to the median age for the rest of Queensland of 36.9 years. The median age for the region increased from 40.8 years as at 30 of June 2005 to 43.6 in 2015 compared to an increase in the median age across Queensland from 35.9 years in 2005 to 36.9 years in 2015. The median age of the population within the region is projected to increase to 49.6 years in June 2036 in comparison to the projected median age for Queensland in 2036 of 39.9 years³.

The median age of the population is growing faster than the rest of Queensland and this trend is predicted to continue. In the future, based on trends, there will be an older population with a continued decline in the proportion of younger working people.

12.2.3 Indigenous Population

Based on the 2011 Census of Population and Housing, 10.3 per cent of the regional population identified as Indigenous (with Mareeba having the largest percentage of Indigenous persons with 13.4 per cent) compared to 3.6 per cent for Queensland⁴.

12.2.4 Ethnicity and Language

Based on the 2011 Census of Population and Housing, 14.5 per cent of people in the region were born overseas in comparison to 20.5 per cent for Queensland overall. 32.8 per cent of the population indicated that they spoke a language other than English at home in comparison to 36 per cent for Queensland overall. Information from the Queensland Government Statisticians Office indicates the top non-English language spoken at home to be Italian, with 2.9 per cent of the total regional population speaking Italian at home⁵.

12.2.5 Religion

Table 2 shows the religious profile of the region. 61.4 per cent of the population in the study area indicated that they were affiliated with a Christian religion compared to 64.3 per cent of the Queensland population overall.

³ Queensland Government Statisticians Office 2017

⁴ Queensland Government Statisticians Office 2017

⁵ Queensland Government Statisticians Office 2017



Table 2 Tablelands Agricultural Region Religious Profile

RELIGIOUS AFFILIATION	PERCENTAGE
Catholic	25.0 per cent
No Religion	23.7
Anglican	16.0
Uniting Church	6.1
Presbyterian and Reformed	3.5

Source: ABS 3235.0 Population by Age and Sex regions of Australia 2015

12.2.6 Families and Housing

Within the study area there were 16,237 households. 68.9 per cent of total households were a one family household. The majority of the housing stock (89.4 per cent) is defined as separate houses. The percentage of total occupied private dwellings in the study area that were fully owned was 41.1 per cent⁶.

12.2.7 Department of Social Services Payments

7,137 residents received the age pension. 2,025 received the disability support pension. 2,620 received the Australian Government's Newstart allowance⁷.

12.2.8 Education

Education levels in the study area are lower than for the rest of Queensland. The table below summarises the highest level of schooling achieved.

Table 3 Level of Schooling Achieved

AREA	DID NOT GO TO SCHOOL OR YEAR 8 OR BELOW		YEAR 9 OR 10 OR EQUIVALENT		YEAR 11 OR 12 OR EQUIVALENT		TOTAL number
	number	per cent	number	per cent	number	per cent	
Mareeba (s)	1,850	12.0	4,924	32.0	6,553	42.6 p	15,378
Tablelands	1,813	10.0	6,719	37.0	7,875	43.4	18,155
Total Region	3,663	10.9	11,643	34.7	14,428	43.0	33,533
Queensland	219,102	6.6	977,116	29.4	1,836,995	55.3	3,320,761

Source: ABS Census of Population and Housing 2011

In terms of higher education 9.9 per cent of people aged over 15 held a Bachelor degree or higher compared to 15.9 per cent for the Queensland population. Similarly, 6.3 per cent held an Advanced Diploma or Diploma compared to 7.5 per cent for the Queensland population while 20.7 per cent held a certificate in comparison to 19.9 per cent for Queensland overall (ABS 2011).

⁶ Queensland Government Statisticians Office 2017

⁷ Queensland Government Statisticians Office 2017



Table 4 Non-School Qualifications by Field of Study

FIELD OF STUDY	REGION		QUEENSLAND
	Number	%	%
Natural and Physical Sciences	395	2.2	2.3
Information Technology	132	0.7	2.2
Engineering and Related Technologies	3,178	17.8	16.8
Architecture and Building	1,222	6.8	6.6
Agriculture Environment and Related Studies	750	4.2	2.0
Health	1,561	8.7	9.3
Education	1,497	8.4	7.5
Management and Commerce	1,864	10.4	16.6
Society and Culture	1,348	7.5	9.6
Creative Arts	345	1.9	2.8
Food, Hospitality and Personal Services	966	5.5	5.6
Mixed Field Programs	29	0.2	0.2
Total	17,859	100	100

ABS, Census of Population and Housing, 2011

12.2.9 Socio-economic Index of Areas

Socio-Economic Indexes of Areas is a summary measure of the socio-economic condition of geographic areas across Australia. The Index of Relative Socio-Economic Disadvantage generally focuses on low-income earners, with relatively lower education attainment, high unemployment and dwellings without motor vehicles. 41.5 per cent of the study area population were considered to be in the most disadvantaged quintile compared to 20 per cent of the Queensland population overall. 0.9 per cent of the population were considered to be in the least disadvantaged quintile compared to 20 per cent of the Queensland population overall⁸.

12.2.10 Income

Incomes in the study area were lower than those for Queensland overall. Median annual personal income in the study area in 2011 was \$23,468 compared to \$30,524 for Queensland overall. 40.9 per cent of the population aged 15 years or older earned less than \$20,000 per annum compared to 34.6 per cent for Queensland overall.

Approximately 19.5 per cent of families in the study area were classified as low income compared to 13.0 per cent of families for Queensland overall. Median family income in the region was \$54,440 per year compared to \$75,556 for Queensland overall⁹.

⁸ Queensland Government Statisticians Office 2017

⁹ Queensland Government Statisticians Office 2017



12.2.11 Unemployment

In the September 2016 quarter, there were 2,038 unemployed persons in the study area. The unemployment rate was 10.2 per cent compared to 6.1 per cent for Queensland. 798 or 18.5 per cent of families with children under 15 years had no parent in employment compared to 13.5 per cent for Queensland overall¹⁰.

12.2.12 Employment

The table below indicates that agriculture is the major direct employer in the region. Farmer and farm manager were listed as the top occupational categories in the study area.

Table 5 Employment by industry – Tablelands Agricultural Region and Queensland 2011

INDUSTRY	REGION		QUEENSLAND
	Number	%	%
Agriculture, forestry and fishing	2,257	12.7	2.7
Mining	677	3.8	2.6
Manufacturing	1,030	5.8	8.4
Electricity, gas, water and waste	230	1.3	1.2
Construction	1,558	8.7	9.0
Wholesale trade	471	2.6	3.6
Retail trade	2,044	11.5	10.7
Accommodation and food services	1,097	6.2	7.0
Transport, postal and warehousing	721	4.0	5.3
Information, media and telecommunications	116	0.7	1.2
Financial and insurance services	195	1.1	2.7
Rental, hiring and real-estate services	224	1.3	1.8
Professional, scientific and technical services	696	3.9	6.5
Administrative and support services	463	2.6	3.2
Public administration and safety	1,230	6.9	6.7
Education and training	1,480	8.3	7.9
Health care and social assistance	1,953	11.0	11.9
Arts and recreation services	234	1.3	1.4
Other services	626	3.5	3.9
Total	17,806	100	100

Source: ABS Census of Population and Housing 2011

¹⁰ Queensland Government Statisticians Office 2017



The 2011 ABS Census of Population and Housing reports the top five occupation sub major groups of employment for the study area were:

1. Farmers and Farm Managers (7.9 per cent)
2. Sales Assistants and Salespersons (6.3 per cent)
3. Carers and Aides (4.7 per cent)
4. Hospitality, Retail and Service Managers (4.5 per cent)
5. Education Professionals (4.4 per cent).

12.3 Stakeholder Engagement Summary

12.3.1 Introduction

Engagement with key stakeholders is central to the preliminary evaluation of water supply options in the region. Key stakeholder ideas, concerns, policies and plans were captured and addressed as part of the development of this PBC.

This section of the report presents the findings of the stakeholder consultation.

In October 2016, the Building Queensland Project Team developed a Stakeholder Engagement Plan to guide the stakeholder engagement process. Building Queensland, the Department of Energy and Water Supply and SunWater provided input into this process.

A Stakeholder Reference Group (SRG) was established and key stakeholders were invited to participate in the SRG, and three meetings occurred. The following organisations participated in the SRG meetings:

- SunWater
- Department of Natural Resources and Mines
- Department of Agriculture and Fisheries
- Department of State Development
- Wet Tropics Management Authority
- Cairns Regional Council
- Mareeba Shire Council
- Tablelands Regional Council
- Advance Cairns
- Regional Development Australia Far North Queensland and Torres Strait
- James Cook University
- Tablelands Futures Corporation
- MSF Sugar Limited
- Mareeba Fruit and Vegetable Growers Association
- Mareeba Chamber of Commerce
- Mareeba Dimbulah Irrigation Area Council
- AgForce



- Stanwell—Barron Hydro
- North Queensland Land Council (NQLC).

The first SRG meeting was held in Mareeba in October 2016 during Phase 1 of the stakeholder engagement process: defining the problem and opportunity. This meeting enabled key stakeholders to understand the purpose of the study, and to discuss the water supply problem and opportunities in the region, and regional needs and benefits.

The second SRG meeting was held in Mareeba in December 2016 during Phase 2 of the stakeholder engagement process: discussing the potential options. This meeting provided an update on the study and sought feedback on a range of potential water supply options.

The third and final SRG meeting was held in Mareeba in March 2017 during Phase 3 of the stakeholder engagement process: proposed shortlisted options. This meeting provided confirmation of the identified service need for the PBC and the options shortlisted to meet the service need. Feedback was sought on these key findings.

12.3.2 Perceptions of the Service Need

Stakeholder feedback relating to the perceived need for additional water supply expressed during the SRG meetings included:

- Clear acceptance of the need for additional water supply to support expected urban growth in Cairns. The need to support urban growth in Mareeba and Atherton was not perceived to be as great.

However, as the study progressed, and it became clear that Cairns does not have an identified need for water from a regional source, such as Nullinga Dam, until the very long term, stakeholders began to question this assumption. At the third SRG meeting, where Building Queensland communicated that, as a result of this identified very long term need, the study is not addressing a water supply problem for Cairns, there was considerable stakeholder discussion.

It is very clear that a number of stakeholders do not accept this PBC conclusion. While these stakeholders accept that water supply in Cairns may not be needed until the very long term, they do not accept that this very long term need is not to be addressed by the study. There is a perception that the 'lead time' required to obtain approvals and then construct a dam warrant the inclusion of this very long term need for urban water as part of the Preliminary Business Case.

- Clear acceptance that there is a regional opportunity for growth in agriculture. The sugar mills, particularly the Tableland Mill operated by MSF Sugar, have indicated a desire to expand. Stakeholders also discussed potential opportunities for:
 - Growth in the production of biofuels
 - Intensified agriculture including bananas, blueberries and avocados, with a doubling of avocado yield discussed
 - A doubling of the cane yield
 - Higher value crop production.
- Acknowledgement that opportunities for agricultural growth are driven by a return on investment. If water is too expensive, growth will not happen. As part of this, there was a clear view that water affordability must be maintained.



- An observation additional water supply provides an opportunity for diversification, including biofuels and cogeneration¹¹
- A perception that there is a clear link between increased water supply and confidence to invest. This could include investment in:
 - Crop expansion
 - Crop diversification
 - Recreation
 - Tourism (particularly water-based tourism if a dam is built)
 - More, and better, use of hydroelectrical generation assets
 - Converting grazing land to cropping
 - New industry (e.g. Fruit and vegetable and other processing and aquaculture)
 - Infrastructure
 - Local government infrastructure and assets
 - Indigenous economic development.
- A perception that improving access to water will improve water sharing, competition for water and water transfers.
- Overall, the majority of stakeholders indicated that additional water supply would lead to more agriculture and tourism, which would lead to a vibrant region and towns.
- Very few negative perceptions were expressed. Those that were expressed related to:
 - Environmental impacts, including a desire for any additional water supply to be reef neutral
 - Cultural heritage impacts
 - Managing mindset that is comfortable with the inefficient use of water.

12.3.3 Perceptions about Shortlisted Options and Benefits

A number of stakeholder expectations and opinions were expressed about the shortlisted options and benefits during the SRG meetings. These perceptions included the following.

- There is need to provide more rigour around the demand projections that will inform sequencing and priorities.
- Water efficiency and trading are already happening so these could be prioritised. Where efficiencies had been achieved, or trading had occurred, these savings had already been absorbed by customers.
- There is a desire to build on-farm dams or water storage. However, there are regulatory barriers that would need to be addressed to make this possible.
- There is a clear stakeholder expectation that the shortlisted options should be considered together, as a system. There are interrelationships between all components within the system, so options should not be considered in isolation. Stakeholders emphasised on-farm efficiencies and operational losses being considered in tandem.

¹¹ Cogeneration in this instance is defined as the burning of waste sugar cane fibre to generate heat and electricity



- Water security brings with it certainty for future investment (e.g. fruit and vegetable and other processing). There is also better regional access to domestic and international markets, and this needs to be capitalised upon for the regional economy.
- There is an expectation that it is possible to better use the available resource, through on-farm efficiency measures and conversion of operational losses.

12.3.4 Perceptions of Potential for Shortlisted Options to Provide Equitable Outcomes

A number of stakeholder expectations and opinions were expressed during the SRG meetings in relation to the ability for the shortlisted options to provide equitable outcomes. These perceptions included the following:

- If there is more water, there is a perception that there will be more equitable competition for water.
- There is an acknowledged difference between the east and west of the Mareeba-Dimbulah Water Supply Scheme (MDWSS). This difference also relates to potential price of water, and the equitable management of customers moving to a new scheme, and potentially paying a higher price for water.
- A perception that existing distribution is at capacity, or will reach capacity in the near future.
- A clear opinion was expressed that equitable outcomes depend on the cost of water. If the cost of water is too high, additional water supply will not benefit anyone. If the price is right, the economy will be stimulated and everyone will benefit from the flow-on effects (e.g. increased tourism, expanded agriculture, local government infrastructure investment, and retail).
- There is also the potential for better use of the existing resource. Currently a quarter of water allocations are lost.
- There is a perception that, if Nullinga Dam or another bulk water storage is built, a market mechanism is needed for irrigators and water customers to be able to transfer their allocations between Tinaroo Falls Dam and the new bulk storage.
- Improved efficiencies of existing channels have the potential to deliver more than 10,000 ML. However, stakeholders expressed a need for clarity about who would fund these improvements works: the user or government, and where the 'new water' created from these improvements could be used in the current system.
- There was a question amongst stakeholders about whether all potential issues are currently known.

12.3.5 Potential Social Licence of Shortlisted Options

Based on stakeholder feedback at the SRG meetings, a number of observations can be made in relation to the potential social licence to operate the shortlisted options. These observations include the following.

- There is broad stakeholder acceptance of the identified drivers for urban growth, and the demand profiles for both urban and agricultural growth. However, the agricultural drivers also need to consider other factors, such as electricity costs, distribution infrastructure, irrigation types and crop types.
- There is broad stakeholder acceptance of Nullinga Dam, or other bulk water sources. However, discussion about the comparative yield of Nullinga Dam and Tinaroo Falls Dam resulted in an observation that Nullinga Dam may not provide the 'silver bullet' solution that some stakeholders were expecting.
- There is also an appreciation that construction of a bulk water source requires a considerable lead time for impact assessment and approvals processes to occur. Stakeholders expect that these lead times will be considered.



- Stakeholders agree that water trading and water efficiency (on-farm and system-wide) measures should be priorities, as they are already well-used tools. There is an expectation that these options be considered as a system rather than in isolation, and that interrelationships between options are considered.
- Stakeholders also expect that for on-farm efficiencies to be achieved that regulatory barriers will be addressed.
- Stakeholders expect that any solution will be reef 'neutral'.

In relation to Option 2:-Improve MDWSS rules and operation, the following observations can be made:

- Stakeholders supported this option, and indicated that it could be implemented fairly and equitably.
- However, there was a perception that modelling is required to determine feasibility and to test the cumulative impact of proposed improvements to the operation of the scheme.

In relation to Option 3: Modernise MDWSS and convert losses, the following observations can be made:

- Stakeholders considered this option to be the most cost effective use of resources.
- However, stakeholders indicated that the take-up of the 15,000 ML water savings captured by this option would be heavily dependent on price. There was a perception that irrigators with higher value crops would move to take-up this water more quickly.
- There was considerable interest in SunWater's funding application to the NWIDF, and the cost assumptions that underpinned it. The outcomes of this round of funding applications will be keenly observed by stakeholders in the region.

In relation to Option 4: Nullinga Dam for agricultural use, the following observations can be made:

- Stakeholders indicated that there is broad support for this option. Some stakeholders qualified this support by indicating that it needed to be economically viable, or that their support was contingent on the water price remaining the same or being affordable.
- Stakeholders acknowledged that more work is required to assess whether this option is feasible, particularly in relation to cost and resultant water pricing, potential demand and resultant size of the dam, management of the new system, and potential opportunities to expand the dam in the future should need arise.
- Some stakeholders question the assumption that the study is not addressing a water supply problem for Cairns, and that this very long term need is not being factored into any analysis of Nullinga Dam.
- Some stakeholders indicated that, regardless of the outcome of the study, measures needed to be put in place now to protect the footprint of the dam.

It is important to note that this stakeholder engagement process was focused on capturing the opinions and feedback of key stakeholders in the study area. Broader community perceptions of shortlisted options have not been explored as part of the PBC, and, as a result, broader 'social licence' observations cannot be drawn at this time.

12.4 Preliminary Assessment of Social Impacts of Each Option

Social impacts are defined as the consequences to human populations of any public or private actions that alter the ways in which people live, work, play, relate to one another, organise to meet their needs and generally cope as members of society.



The term also includes cultural impacts involving changes to the norms, values and beliefs that guide and rationalise their cognition of themselves and their society. This section identifies material beneficial and detrimental social impacts before undertaking and documenting a social opportunity and impact risk assessment for each shortlisted option.

12.4.1 Option 2: Improve MDWSS Rules and Operation

12.4.1.1 Key Social Impact Issues Associated with Option 2

Beneficial and detrimental social impacts associated with the implementation of Option 2 are presented in Tables 6 and 7. Social impacts that were considered material (sufficiently large that upon realisation could influence the most appropriate project option) were identified through literature reviews, lessons from other projects, stakeholder engagement and expert analysis. These impacts were then grouped into key categories and impact aspects before being subjectively scored against a likelihood and consequence table.

Table 6 Option 2—Beneficial Material Social Impacts

IMPACT CATEGORY	IMPACT ASPECT	BENEFICIAL IMPACTS
Community	Employment	B1. Minor increase in regional employment from enhanced agricultural productivity. Monetised in the Cost Benefit Analysis (CBA)
	Infrastructure	B2. Enhanced usage of existing water delivery infrastructure for agricultural production. Not monetized in the CBA
	Services	No change expected
	Housing	No change expected
	Indigenous	No change expected
Cultural	Business Practices	B3. Improved use of existing resources through changing water business practices
	Land Use	B4. Change in land use to higher value per hectare crops in suitable areas. Monetised in the CBA
	Social Cohesion	No change expected
Health		No change expected
Intergenerational	Equity	B5. Enhanced confidence to invest in long term business operations and succession opportunities
Personal and property rights	Existing allocations	B6. Increase in value and flexibility of existing water allocations
Political Systems	Governance	B7. Engagement in redefining operating rules potentially beneficial to social cohesion and regional productivity
Quality of Life	Sense of Place	No change expected
	Heritage	No change expected
	Liveability	No change expected



Table 7 Option 2—Detrimental Material Social Impacts

IMPACT CATEGORY	IMPACT ASPECT	DETRIMENTAL IMPACTS	POTENTIAL MITIGATION STRATEGIES
Community	Employment	No change expected	
	Infrastructure	D1. Minor additional demands on existing community infrastructure in terms of electricity and transport networks	Inform relevant organisations of proposed program as part of engagement process
	Services	No change expected	
	Housing	No change expected	
	Indigenous	No change expected	
Cultural	Business Practices	D2. Change in existing business practices such as requirements for water ordering	Develop detailed consultation and communication strategy
	Land Use	D3. Potential change in land use from cane to higher value crops will change land use	
	Social Cohesion	D4. Potential community conflict over changing land use and cropping patterns	Develop detailed consultation and communication strategy
Health		No change expected	
Intergenerational	Equity	D5. Loss of opportunity for future water savings	Incorporate changes in future water-planning processes
Personal and property rights	Existing	No change expected	
Political Systems	Social Cohesion	D6. Impacts on cohesion through changing long established water ordering patterns	Develop detailed consultation and communication strategy
	Governance	D7. Increased demands on local governance arrangements to manage scheme operation	Ensure SunWater has adequate resources to deliver option
Quality of Life	Sense of Place	No change expected	
	Heritage	No change expected	
	Liveability	No change expected	



Table 8 Option 2—Social Opportunity and Impact Risk Assessment

SOCIAL OPPORTUNITY AND RISK CATEGORISATION						
		Insignificant	Minor	Moderate	Major	Significant
HIGH	Almost Certain—Very likely to occur or be an opportunity at either a specific stage of the project lifecycle or more broadly					
	Likely—Likely to occur or be an opportunity at either a specific stage of the project lifecycle or more broadly	D1, D5	D6	B1, B2		
Likelihood of Occurring	Possible—Possible to occur or be an opportunity at either a specific stage of the project lifecycle or more broadly	B6, B7 D2, D3, D4, D7	B3	B4, B5		
	Unlikely—Unlikely to occur or be an opportunity at either a specific stage of the project lifecycle or more broadly					
LOW	Rare—Very unlikely to occur or be an opportunity at either a specific stage of the project lifecycle or more broadly					
Legend		LOW		OPPORTUNITY/IMPACT/CONSEQUENCE		HIGH
		INCIDENTAL	MINOR	SIGNIFICANT	MAJOR	SEVERE
		Local, small scale easily reversible change on social characteristics or values of the communities of interest or communities can easily adapt or cope with change	Short term recoverable changes to social characteristics and values of the communities of interest or community have substantial capacity to adapt and cope with change	Medium term recoverable changes to social characteristics and values of the communities of interest or community has some capacity to adapt and cope with change	Long-term term recoverable changes to social characteristics and values of the communities of interest or community have limited capacity to adapt and cope with change	Irreversible changes to social characteristics and values of the communities of interest or community has no capacity to adapt and cope with change

Legend

Low Social Impact or Opportunity	Medium Social Impact or Opportunity	High Social Impact or Opportunity
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12.4.1.2 Option 2—Conclusion

From the social opportunity and impact risk analysis it can be identified that Option 2 has two low beneficial material social opportunity impacts, three medium beneficial social opportunity impacts and two high beneficial social impact opportunities.

Option 2 has six low detrimental social impacts, one medium detrimental social impact and zero high detrimental social impacts.

12.4.2 Option 3: Modernise MDWSS and Convert Losses

12.4.2.1 Key Social Impact Issues Associated with Option 3

Beneficial and detrimental social impacts associated with the implementation of Option 3 are presented in Tables 9 and 10. Social impacts that were considered material (sufficiently large that upon realisation could influence the most appropriate project option) were identified through literature reviews, lessons from other projects, stakeholder engagement and expert analysis. These impacts were then grouped into key categories and impact aspects before being subjectively scored against a likelihood and consequence table.

Table 9 Option 3—Beneficial Material Social Impacts

IMPACT CATEGORY	IMPACT ASPECT	BENEFICIAL IMPACTS
Community	Employment	B8. Medium increase in regional employment from enhanced agricultural productivity and scheme modernisation construction activities. Monetised in the CBA
	Infrastructure	B9. Modernisation of existing water delivery infrastructure for enhanced agricultural production. Monetized in the CBA
	Services	No change expected
	Housing	No change expected
	Indigenous	No change expected
Cultural	Business Practices	B10. Improved use of existing water resources
	Land Use	B11. Change in land use to higher value per hectare crops in suitable areas. Monetised in the CBA
	Social Cohesion	No change expected
Health		No change expected
Intergenerational	Equity	B12. Enhanced confidence to invest in long term business operations and succession opportunities. Opportunities to diversify economy, would support retention of young people due to increased/diversity of employment opportunities
Personal and property rights	Existing allocations	No change expected
Political Systems	Social Cohesion	B13. Equitable allocation of additional water may add to sense of social cohesion
	Governance	No change expected
Quality of Life	Sense of Place	B14. Reinforce importance of agriculture to the study area (character and identity)



IMPACT CATEGORY	IMPACT ASPECT	BENEFICIAL IMPACTS
		B15. Positive impacts in relation to community vitality – increase in employment opportunities help to retain/attract people to the area
	Heritage	No change expected
	Liveability	No change expected

Table 10 Option 3—Detrimental Material Social Impacts

IMPACT CATEGORY	IMPACT ASPECT	DETRIMENTAL IMPACTS	POTENTIAL MITIGATION STRATEGIES
Community	Employment	D8. Potential competition for skilled labour	Undertake workforce skills gap analysis
	Infrastructure	D9. Additional demands on existing infrastructure in terms of electricity supply and transport	Inform relevant organisations of proposed works program and schedule as part of engagement process
	Services	No change expected	
	Housing	No change expected	
	Indigenous	D10. Potential impacts on cultural heritage values in areas of new infrastructure	Undertake cultural heritage survey and incorporate in planning program
Cultural	Business Practices	No change expected	
	Land Use	D11. Changes in land use and expansion of irrigated areas will create potential changes in community structure and composition	Develop detailed consultation and communication strategy
	Social Cohesion	D12. Competition for new water supplies may create social conflict	Develop detailed consultation and communication strategy
D13. Issues regarding the potential sale of new water allocations for existing businesses and local stakeholders		Develop detailed consultation and communication strategy	
Health		No change expected	
Intergenerational	Equity	D14. Loss of potential water savings identified as an option for the augmentation of the long-term water supply requirements for the city of Cairns	Incorporate changes in future water-planning processes.
Personal and property rights	Existing	D15. New infrastructure construction and provision will disrupt existing landholder activities	Develop detailed consultation and communication strategy



IMPACT CATEGORY	IMPACT ASPECT	DETRIMENTAL IMPACTS	POTENTIAL MITIGATION STRATEGIES
		D16. Minor land resumptions required for additional infrastructure	Adequately compensate landholders
		D17. Loss of access to existing volumes of unregulated water removals for downstream riparian rights holders	Develop detailed consultation and communication strategy
Political Systems	Governance	D18. Higher demands on existing SunWater Resources	Ensure SunWater has adequate resources to deliver option
	Governance	D19. Greater demands on governance arrangements in terms of planning upgrades and allocation of additional water supplies.	Ensure regional planning bodies have adequate resources to deliver option
Quality of Life	Sense of Place	D20. Potential impacts on existing water assets such as Mareeba wetlands	Provide sufficient flows for wetland
	Heritage	D21. Changes in visual amenity of existing channel system	Develop detailed consultation and communication strategy
	Liveability	D22. Potential impacts on existing water and tourism assets such as Mareeba wetlands	Provide sufficient flows for wetland
		D23. Short term impacts from construction activities.	Develop detailed consultation and communication strategy



Table 11 Option 3—Social Opportunity and Impact Risk Assessment

SOCIAL OPPORTUNITY AND RISK CATEGORISATION						
		Insignificant	Minor	Moderate	Major	Significant
HIGH	Almost Certain - – Very likely to occur or be an opportunity at either a specific stage of the project lifecycle or more broadly		D15	B8, B9		
	Likely - – Likely to occur or be an opportunity at either a specific stage of the project lifecycle or more broadly	B14, B15 D8	D9, D18	D13, D16	D17, D20	
Likelihood of Occurring	Possible - – Possible to occur or be an opportunity at either a specific stage of the project lifecycle or more broadly	B13	D12	B10, B11, B12 D10, D11, D14, D19, D21, D22, D23		
	Unlikely - – Unlikely to occur or be an opportunity at either a specific stage of the project lifecycle or more broadly					
LOW	Rare - – Very unlikely to occur or be an opportunity at either a specific stage of the project lifecycle or more broadly					
Legend		LOW		OPPORTUNITY/IMPACT/CONSEQUENCE		HIGH
		INCIDENTAL	MINOR	SIGNIFICANT	MAJOR	SEVERE
		Local, small scale easily reversible change on social characteristics or values of the communities of interest or communities can easily adapt or cope with change	Short term recoverable changes to social characteristics and values of the communities of interest or community have substantial capacity to adapt and cope with change	Medium term recoverable changes to social characteristics and values of the communities of interest or community has some capacity to adapt and cope with change	Long-term term recoverable changes to social characteristics and values of the communities of interest or community have limited capacity to adapt and cope with change	Irreversible changes to social characteristics and values of the communities of interest or community has no capacity to adapt and cope with change

Legend

Low Social Impact or Opportunity	Medium Social Impact or Opportunity	High Social Impact or Opportunity
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12.4.2.2 Option 3—Conclusion

From the social opportunity and impact risk analysis it can be identified that Option 3 has three low beneficial material social opportunity impact, three medium beneficial social opportunity impacts and two high beneficial social impact opportunities.

Option 3 has one low detrimental social impact, eleven medium detrimental social impacts and four high detrimental social impacts.

12.5 Option 4: Nullinga Dam for Agricultural Use

12.5.1 Key Social Impact Issues Associated with Option 4

Beneficial and detrimental social impacts associated with the implementation of Option 4 are presented in Tables 12 and 13. Social impacts that were considered material (sufficiently large that upon realisation could influence the most appropriate project option) were identified through literature reviews, lessons from other projects, stakeholder engagement and expert analysis. These impacts were then grouped into key categories and impact aspects before being subjectively scored against a likelihood and consequence table.

Table 12 Beneficial Material Social Impacts of Option 4

IMPACT CATEGORY	IMPACT ASPECT	BENEFICIAL IMPACTS
Community	Employment	B16. Large long-term increase in regional employment from increases in agricultural productivity. Monetised in the CBA
	Infrastructure	B17. Construction of new large infrastructure (i.e. Nullinga Dam) and development of large greenfield irrigated agricultural site and supporting infrastructure. Monetized in the CBA
	Services	B18. Development of additional community support services
	Housing	No change expected.
	Indigenous	B19. Opportunities for indigenous business and employment
Cultural	Business Practices	No change expected
	Land Use	B20. Change in land use to higher value per hectare crops in suitable areas. Monetised in the CBA
	Social Cohesion	No change expected
Health		B21. Improved employment prospects and worker number will translate to improved community facilities and health
Intergenerational	Equity	B22. Enhanced confidence to invest in long term business operations, additional processing, industry diversification, lowering of age profile and succession opportunities
Personal and property rights	Existing allocations	No change expected
Political Systems	Governance	B23. Development of new governance and planning support
Quality of Life	Sense of Place	B24. Improved sense of place as a thriving agricultural area based on new infrastructure and agricultural expansion
	Heritage	No change expected
	Liveability	B25. Opportunities for additional recreation areas surrounding dam



Table 13 Option 4—Detrimental Material Impacts

IMPACT CATEGORY	IMPACT ASPECT	DETRIMENTAL IMPACTS	POTENTIAL MITIGATION STRATEGIES
Community	Employment	D24. Competition for skilled labour	Undertake workforce skills gap analysis
	Infrastructure	D25. Significant impacts for existing transport networks and electricity infrastructure at both dam site and new irrigation area	Inform relevant organisations of proposed works program and schedule and engage as part of the planning process
	Services	D26. Additional demands on existing services during construction and operational phases	Inform relevant organisations of proposed works program and schedule as part of engagement process
	Housing	D27. Demand for worker housing during construction phase may impact on regional housing affordability and supply	Undertake housing supply analysis and develop alternative housing arrangements if required
		D28. Long-term impacts on housing availability in area	Undertake housing supply analysis
	Indigenous	D29. Potential loss of areas of cultural significance	Undertake cultural heritage survey and incorporate in planning program
Cultural	Business Practices	D30. Potential significant impacts on downstream communities through changes in flow regimes impacting on important commercial aquatic species	Determine significance of impacts as part of EIS process and develop mitigation strategies
	Land Use	D31. Large scale change in land use from broad acre grazing to intensive agriculture will change community numbers and composition	Develop detailed consultation and communication strategy
	Social Cohesion	D32. Opposition to major dam on Walsh River by local, regional, national and international environmental groups	Develop detailed consultation and communication strategy
		D33. Competition for new water sources and cost of water may drive social conflict	Develop detailed consultation and communication strategy
		D34. Displacement of existing landholders and industry	Develop detailed consultation and communication strategy
		D35. Issues regarding the potential sale of new water allocations for existing businesses and local stakeholders	Develop detailed consultation and communication strategy
		D36. Temporary influx of construction workers impacting on community cohesion	Develop detailed consultation and communication strategy



IMPACT CATEGORY	IMPACT ASPECT	DETRIMENTAL IMPACTS	POTENTIAL MITIGATION STRATEGIES
Intergenerational	Equity	D37. Loss of potential water supply as an option for the augmentation of the long-term water supply requirements for the city of Cairns	Incorporate changes in future water-planning processes
Personal and property rights	Existing	D38. Acquisition of land in dam inundation and buffer area.	Adequately compensate landholders
Political Systems	Governance	D39. Significant impacts on existing governance arrangements and requirements for comprehensive long term planning	Ensure regional planning bodies have adequate resources to deliver option
Quality of Life	Sense of Place	D40. Loss of sense of place in upper Walsh catchment	Develop detailed consultation and communication strategy
	Heritage	D41. Potential impacts on heritage areas from changes in flow regimes and impacts on groundwater tables.	Undertake cultural heritage survey and incorporate in planning program.
		D42. Potential impacts on cultural heritage values in that area identified for the dam	Undertake cultural heritage survey and incorporate in planning program
	Liveability	D43. Lifestyle impacts from dam construction, development of new irrigation area and supporting infrastructure.	Develop detailed consultation and communication strategy
		D44. Temporary impacts during construction on liveability (noise, dust)	Mitigate as part of EIS process



Table 14 Option 4—Social Opportunity and Risk Assessment

SOCIAL OPPORTUNITY AND RISK CATEGORISATION						
		Insignificant	Minor	Moderate	Major	Significant
HIGH	Almost Certain – Very likely to occur or be an opportunity at either a specific stage of the project lifecycle or more broadly		D25, D26, D44		B16 D30, D32	
	Likely – Likely to occur or be an opportunity at either a specific stage of the project lifecycle or more broadly	B25 D28, D36	D27, D29, D38, D39	D31	B17	
Likelihood of Occurring	Possible – Possible to occur or be an opportunity at either a specific stage of the project lifecycle or more broadly	D40	B23 D24, D42	B18, B19 D33, D43	B20, B121, B22, B24 D34, D35, D37, D41	
	Unlikely – Unlikely to occur or be an opportunity at either a specific stage of the project lifecycle or more broadly					
LOW	Rare – Very unlikely to occur or be an opportunity at either a specific stage of the project lifecycle or more broadly					
Legend		LOW		OPPORTUNITY/IMPACT/CONSEQUENCE		HIGH
		INCIDENTAL	MINOR	SIGNIFICANT	MAJOR	SEVERE
		Local, small scale easily reversible change on social characteristics or values of the communities of interest or communities can easily adapt or cope with change	Short term recoverable changes to social characteristics and values of the communities of interest or community have substantial capacity to adapt and cope with change	Medium term recoverable changes to social characteristics and values of the communities of interest or community has some capacity to adapt and cope with change	Long-term term recoverable changes to social characteristics and values of the communities of interest or community have limited capacity to adapt and cope with change	Irreversible changes to social characteristics and values of the communities of interest or community has no capacity to adapt and cope with change
		Low Social Impact or Opportunity		Medium Social Impact or Opportunity		High Social Impact or Opportunity



12.5.1.1 Option 4—Conclusion

From the social opportunity and impact risk analysis it can be identified that Option 4 has one low beneficial material social opportunity impacts, three medium beneficial social opportunity impacts and six highly beneficial social impact opportunities.

Option 4 has three low detrimental social impacts, eleven medium detrimental social impacts and seven high detrimental social impacts.

12.6 Conclusion

The following table summarises the positive and negative material social impacts for each option.

Table 15 Summary Table of Material Social Impacts

SOCIAL IMPACTS	OPTION 2			OPTION 3			OPTION 4		
	LOW	MEDIUM	HIGH	LOW	MEDIUM	HIGH	LOW	MEDIUM	HIGH
Positive Material Social Impacts	2	3	2	3	3	2	1	3	6
Negative Material Social Impacts	6	1	0	1	11	4	3	11	7