

16. Social and economic environment

16.1 Social and economic environment

A social and economic impact assessment of the Project and study area has been undertaken. This includes a demographic and community profile and assessment of the potential social and economic benefits and impacts of the Project. Consultation with affected landowners and local authorities has been used to inform the identification of potential benefits and impacts.

The objective of the assessment is to anticipate and predict social and economic impacts from the Water for Bowen Project so findings and recommendations can become part of the Project's planning and decision-making process. As part of the EIS process, real and perceived impacts (including those potential impacts identified by the landowners in proximity to the Project) have been taken into consideration and mitigation and management measures provided to minimise these impacts.

Social assessment data sources and methodology

The Project is located within the administrative boundaries of Whitsunday Regional Council and Burdekin Shire Council. However, much of the historic data available for the socio-economic assessment, including the 2006 Census data and local government fact sheets, reflect the former Bowen and Burdekin Local Government Areas (LGAs). For the purpose of this socio-economic assessment the study area is defined by these two LGAs.

The principal urban centres and localities within Bowen LGA include Bowen, Collinsville, and Merinda. In Burdekin LGA, the principal urban centres and localities include Ayr, Brandon, Home Hill, Giru, Kalamia Estate, and Alva Beach.

Census data for 2006 is also provided for the State Suburb administrative areas of Inkerman, Gumlu, Guthalungra and Bowen, as defined by the ABS.

The Project affected community includes directly affected landowners, whose properties will be physically traversed by the infrastructure, those who will potentially benefit from access to water and all those who are potentially impacted by downstream socio-economic changes including the provision of employment, goods or services. The majority of persons likely to be impacted by the Project reside within the localities of Inkerman, Gumlu, Guthalungra and Bowen.

Economic assessment data sources and methodology

The input-output (I-O) model approach was used to make a high-level assessment of the Project's economic impact on the regional economy from the construction and operational phases. The I-O approach relies on tables derived from the Australian Bureau of Statistics' (ABS) System of National Accounts and the Queensland Government Statisticians' Office incorporated within the Office of Economic and Statistical Research (OESR).

I-O tables are most frequently used to generate I-O multipliers, which are used to conduct economic impact analyses. I-O multipliers capture the direct and indirect effects of a proposed development. Specifically, the multipliers reflect the circular flow relationship between different sectors of the economy, and imply that changes to the value of production

in one sector will be supported by adjustments to the value of production and resources used by supplying sectors.

The I-O multipliers used for the economic assessment were obtained from the Queensland Office of the Government Statistician Regional Input-Output Tables 1996–97 (OESR, 2004). The multipliers for the OESR Northern Statistical Division were selected for the economic assessment in favour of those for the Mackay Statistical Division as they provide a more conservative estimation of Project benefits. Note, the Burdekin LGA falls within the Northern Statistical Division and Bowen LGA within the Mackay Statistical Division.

The economic impact of the Project can be traced through the economic system in several different ways. For the purpose of this assessment, the following types of impacts are used:

- the direct multiplier effect represents the increase in economic activity (value added) and employment which is directly generated in the industry receiving the initial impact
- the indirect multiplier effect represents the secondary flow-on impacts that occur from all secondary industries in the economy to support the direct impact
- the induced multiplier effect represents the change in consumption by the household sector or 'pay packet' effect in response to income changes resulting from the direct and indirect impacts.

The total multiplier effect is the sum of the direct, indirect and induced multiplier effects. The economic impact is measured by means of two key economic indicators — value added and employment:

- **Value Added Impact:** The valued added measure can be defined as the net increase in the economic activity resulting directly and indirectly from a change in final demand. Value added is equivalent to gross regional product (GRP) used by the ABS
- **Employment Impact:** Employment flow-on effects occur because businesses adjust the level of resources used to accommodate for changes in production activity. Employment includes the number of working proprietors, and may encompass managers, directors, and other employees in terms of full-time equivalents.

As the I-O Tables are dated, care should be taken in terms of the reliability and accuracy of the estimates provided. In particular, the assessment assumes that industrial structure of the Australian economy has remained relatively unchanged since the compilation of the Tables. The various multipliers generally remain fairly stable over time (ABS 1995, p. 6).

Community consultation program

As a component of the EIS, SunWater implemented a stakeholder and community consultation and communication program. The scope of the consultation program and stakeholders involved in its implementation, are described Section 1.5.1.

Socio-economic issues raised through the consultation program have been incorporated into the assessment of potential impacts and development of mitigation measures.

16.1.1 Description of environmental values

16.1.1.1 Community structure and profile

Since 1861 the study area has been used primarily for agricultural and pastoral activities, including a range of livestock grazing and irrigated horticulture activities. The drier upland areas are generally used for livestock grazing.

As described in Section 6.1.1.2, nearly 80% of the regional catchment land use is categorised as grazing of native pastures, 3.6% is irrigated agriculture and 1.3% is industrial. The remainder is water, wetland, plantation, conservation or a small component of dry-land cropping. The large grazing properties tend to be inland of the Bruce Highway and North Coast railway through which the proposed channel alignment will traverse.

Irrigation has developed on much smaller blocks nearer the coast and highway, particularly concentrated around Bowen, Gumlu and Guthalungra but with smaller pockets in other areas. The proposed pipeline and associated reticulation will service these existing irrigation areas.

The area under irrigation in Bowen constitutes approximately 77% of all irrigation in the study area. The very much larger Burdekin Haughton Water Supply Scheme lies immediately to the north and is strongly based on irrigated sugar cane and mangoes.

16.1.1.2 Demography

In 2006, 0.75% of the Queensland population lived in the Bowen and Burdekin LGAs (2006 Census). From 2001 to 2006 this population decreased from 31,670 to 31,200, a reduction of 1.5% compared to a growth of 14.1% in Queensland over the same period. Most regional centres reported a population decline over this period.

The decrease in population may have been attributed to changes in the distribution of employment opportunities associated with growth in the resources sector in the Bowen Basin, and a downturn in agricultural production due to persistent drought.

The population of Bowen LGA is expected to increase by 1.2% over the 25 year period from 2006 to 2031 (Table 16.1). In the absence of any significant new developments the population decline in Burdekin LGA is expected to average 0.1% per annum in the period to 2031.

Table 16.1 Current and future LGA demographic profile[^]

Characteristic	Bowen LGA	Burdekin LGA	QLD
Total population 2006 Census	13,135	18,085	4,090,908
Total Population 2001* Census	13,436	18,234	3,585,639
Total population change (2001 to 2006)	-2.2%	-0.1%	14.1%
Projected population 2031 Medium1	17,862	17,813	6,273,884
Average Annual Change (Medium Series) 1	1.2%	-0.1%	1.4%

Source: PIFU (2008). Queensland's future population 2008 edition (based on 2006 ASGC)

* ABS Census 2001

The demographic profile for the State Suburbs of Inkerman, Gumlu, Guthalungra and Bowen, is presented in Table 16.2. A significant proportion of the channel and pipeline alignment is located away from population centres. At its southern extent the pipeline and associated reticulation feeds the agricultural areas surrounding the urban centre of Bowen and the smaller centre of Merinda.

Table 16.2 Current state suburb demographic profile

Characteristic	State suburbs			
	Inkerman	Gumlu	Guthalungra	Bowen
Total population 2006 Census	520	177	109	9,697
Male population	54.0%	58.2%	61.5%	52.7%
Female population	46.0%	41.8%	38.5%	47.3%
Indigenous population (percent of total)	1.3%	7.3%	0.0%	7.4%

Males outnumbered females, particularly in the state suburbs of Guthalungra and Gumlu, and is reflective of the on-farm working population in these small townships.

Of the total population in Gumlu and Bowen, over 7% were Indigenous persons, compared with 2.3% Indigenous persons in Queensland. Many Indigenous families in the study area rely heavily on seasonal employment in the agricultural sector.

Table 16.3 shows that the overall the population within the typical 'working age' group of 15 to 54 years was slightly lower in the study area than Queensland. Generally there are fewer young people aged 15 to 24, a trend consistent with regional populations.

Note, the smaller State Suburbs of Gumlu and Guthalungra are characterised by a high proportion of persons of 'working age' (52% and 45% respectively) and a high proportion of couples without children (48% and 53% respectively).

Table 16.3 Key age and family characteristics (2006)

Characteristic	Bowen LGA	Burdekin LGA	QLD
0–4 years	5.8%	6.8%	6.6%
5–14 years	13.7%	14.9%	14.1%
15–24 years	11.7%	10.3%	13.8%
25–54 years	40.3%	39.1%	42.0%
55–64 years	13.9%	12.6%	11.2%
65 years and over	14.6%	16.3%	12.4%
Median age of persons (years)	41	40	36
Couple families with children	39.0%	42.7%	43.3%
Couple families without children	45.9%	42.4%	39.1%
One parent families	13.7%	13.9%	15.9%
Other families	1.5%	0.9%	1.7%

Source: ABS Census Data 2006

16.1.1.3 Housing and accommodation

The type and quantity of accommodation available locally and regionally is presented in Table 16.4. In 2006 the dwelling occupancy rate in the study area was approximately 88% and slightly lower than Queensland, which is likely to reflect the presence of holiday homes in the study area. Home ownership was relatively high which is typical of regional areas. While the dominant dwelling type is separate houses, Bowen LGA has a relatively high percentage of semi-detached dwellings and dwellings characterised as 'other' (6.7% or 517 dwellings), which includes 206 caravan dwellings and 63 improvised homes.

Table 16.4 Key housing characteristics (2006)

Characteristic	Bowen LGA	Burdekin LGA	QLD
Occupied dwellings (percentage of all dwellings)	88.8%	88.4%	90.2%
Separate house	75.5%	89.4%	79.5%
Flat, unit or apartment	7.0%	7.8%	11.2%
Semi-detached dwellings	10.9%	0.7%	7.6%
Other dwellings	6.7%	2.0%	1.5%
Fully owned	38.2%	42.9%	31.6%
Being purchased	23.7%	24.8%	33.8%
Rented (includes rent-free)	32.6%	28.3%	31.1%
Other tenure type	0.7%	0.9%	0.8%
Persons per household	2.4	2.5	2.6

Source: ABS Census Data 2006

The median sale price for houses in the Bowen and Home Hill (including Inkerman) postcode area is \$390,000 and \$242,000 respectively, compared to the Queensland median of \$424,000 (Postcode Profile, www.propertyvalue.com.au, cited 20 July 2009).

Median Rent Comparisons (published by the Residential Tenancies Authority) indicate that median rent in the locality of Bowen, which includes Guthalungra and Gumlu, has increased from \$280 to \$350 per week over the two year period from July 2007 (Table 16.5). Median rent in Home Hill, which includes Inkerman, has remained relatively constant. The total number of new bonds per quarter for these localities varies from 70 to 80, with the majority of these expected to arise in the urban centre of Bowen followed by Home Hill.

Table 16.5 Median rent comparisons for June and December quarters

Post code	Locality	Dec Qtr 07		Jun Qtr 08	
		Rent \$ per wk	New bonds	Rent \$ per wk	New bonds
4805	Bowen, Guthalungra, Gumlu	280	42	300	76
4806	Inkerman, Home Hill	200	9	220	15
		Dec Qtr 08		Jun Qtr 09	
4805	Bowen, Guthalungra, Gumlu	345	54	350	52
4806	Inkerman, Home Hill	210	19	230	21

Source: Residential Tenancies Authority - Median Rents of three Bedroom Houses

Short-term accommodation facilities identified in the study area include approximately 13 hotel/motels; five taverns; nine backpacker facilities; and 10 caravan and camping facilities (comprising approximately 250 beds and 275 caravan/camping sites). Most of the hotel/motel facilities area concentrated in Ayr and the backpacker and caravan facilities are concentrated in Bowen. The township of Gumlu hosts two caravan parks. No facilities were identified in either Guthalungra or Inkerman.

Consultation with service providers confirmed the limited availability of short-term accommodation in the study area particularly from April to November when seasonal workers arrive to assist with the harvesting of agricultural produce.

16.1.1.4 Health facilities

The study area falls under the health service districts of Townsville, from Inkerman and Home Hill to the north, and Mackay, from Guthalungra to the south. Facilities and services available within the study area are (Queensland Health, 2009):

- accident and emergency health: Hospitals are located in Bowen, Ayr and Home Hill. Bowen hospital is equipped with a 24 hour emergency department. The Mackay Base Hospital acts as a secondary referral centre for regional facilities in the Mackay Health Service District; similarly Townsville Hospital for regional facilities in the Townsville Health Service District
- allied health services: physiotherapy, occupational therapy, radiography, dental and pharmacy
- community services: aged care, child health, indigenous health.

There are also approximately five private medical clinics in the study area.

16.1.1.5 Education facilities

The study area falls under the education districts of Townsville from Gumlu to the north and Mackay-Whitsunday to the south encompassing Bowen. State government education facilities located in the study area are presented in Table 16.6. In Bowen LGA this includes three primary schools and one secondary school in the vicinity of Bowen and the remaining facilities located in Collinsville. In Burdekin LGA this includes nine primary schools and two secondary schools in the vicinity of Ayr (including one primary school and one secondary school in Home hill). There is also one primary school located in Gumlu.

Table 16.6 Education facilities

Facility	Bowen LGA	Burdekin LGA
Primary school	5	13
Secondary school	2	2
Special school	0	1

Source: Education Queensland (2007).

Consultation with education service providers confirmed that most of the facilities in the Project area were operating below full capacity. One primary school in Ayr stated they had a waiting list for prospective students.

16.1.1.6 Other community infrastructure and services

Community facilities in the study area are concentrated in Bowen and Ayr (Table 16.7), and to a lesser extent Home Hill. Few or no facilities were identified in the smaller settlements of Inkerman, Guthalungra and Gumlu.

Table 16.7 Other community infrastructure and services

Service	Bowen LGA	Burdekin LGA
Daycare centres	5	8
Emergency services ¹	7	8
Community groups	25	89
Community halls ²	22	18
Sporting and recreation clubs	56	85
Cultural ³	5	5

¹ Includes police, ambulance, fire stations

² Includes churches and church halls

³ Includes cinemas, libraries, arts centres

Recreational sites identified in the Project area include (Bowen Shire 2000):

- Molongle Creek boat ramp providing access to Cape Upstart National Park
- Bird watching areas including Kaili Lake near Abbot Point, Molongle Creek, the Delta/Merinda area
- Minor sport facilities at Gumlu primary school
- Mt Inkerman lookout.

Annual festivals in the study area include the Bowen Family Fishing Classic (September), the Gumlu capsicum festival (June) and the Burdekin Water Festival (September).

16.1.1.7 Local economy

The economy of the study area is diverse, with a range of key industry sectors providing employment and economic benefits including agriculture, commercial fishing, mining, tourism and aquaculture.

Agriculture

Agricultural production from the study area makes a significant contribution to the regional and state economies. The total gross value of agricultural production for Bowen and Burdekin for the 2005–06 financial year was \$270 and \$314 million respectively, as summarised in Table 16.8.

Main agricultural production in Bowen LGA includes tomatoes, capsicum, sweet corn and mangoes. The horticulture industry produced \$207 million worth of vegetables in 2005–06 (equivalent in value to 22% of state production), which are predominately sold through the central market system, supermarket chains and to export agents (Whitsunday Regional Council 2008a).

Burdekin is Australia's largest sugar producing region with an annual production of 1.25 million tonnes (Burdekin Shire Council, 2008), contributing a quarter of the nation's sugar production and the majority of the Burdekin crop production of \$231 million in 2005–06 (Table 16.8). Burdekin also produces one-third of the nation's mango harvest and is a strong producer of capsicums, zucchinis and melons (Burdekin Shire Council, 2009a). Hence, the value of vegetable production (horticulture) in the Bowen LGA was almost equal to that of sugar in the Burdekin LGA.

Beef also plays an integral part of the Bowen and Burdekin economies.

Table 16.8 Agricultural commodities gross value 2005–06 (\$ million)

Agricultural commodities	Bowen LGA	Burdekin LGA	QLD
Crops (excl. vegetables and fruit)	6	231	2,312
Vegetables	207	59	945
Fruit	8	13	910
Livestock	49	10	4,541
Total agriculture	270	314	8,709

Source: ABS Census Data, Agricultural Commodities 7125.0

Mining and industry

Coal mining is an important industry in Bowen LGA, and is home to the Bowen Central and Collinsville coal mines. Approximately 12 million tonnes per annum of coal is exported through the Port of Abbot Point (Department of Infrastructure 2007). Increased coal throughput at the Port of Abbot Point as a result of approved planned Port expansion will raise the export capacity to 110 mtpa. The Bowen Coke Works produces up to 45,000 tonnes of coke which is transported by rail to the Xstrata Copper mine at Mount Isa.

Additional land at Abbot Point, approximately 20 km north-west of Bowen, has been identified as suitable for future development and forms a key part of the Queensland Government's Northern Economic Triangle Infrastructure Plan (Department of Infrastructure 2007, Section 1.3.3).

Aquaculture and commercial fishing

Aquaculture is a new and rapidly growing industry for the study area, supplying the large domestic markets of Brisbane and Sydney, and the growing export markets of South East Asia.

Based on a regional overview of aquaculture in Queensland (DPI&F, 2008), production is highly dependent on marine prawns, which contributed approximately 59% of the total industry value, followed by Barramundi at 26%. Both Burdekin Shire Council (2009b) and Whitsunday Regional Council (2008b) recognise the potential for expansion of the aquaculture industry in the study area.

In Bowen, the fishing industry has an annual gross turnover of \$28.8 million employing over 100 full-time and 150 part-time workers (Whitsunday Regional Council, 2008c).

Tourism

The area's close proximity to Townsville to the north and the Whitsundays to the south provide regional tourism opportunities and the potential to capture the drive-tourist market that travels the Bruce Highway. Carvanners, campers and motor-homers are identified as the fastest growing market segment of domestic tourism (Burdekin Shire Council, 2009d). Coastal and marine resources, including access to the Great Barrier Reef Marine Park, are the main attractions in the study area. The area offers snorkelling, diving, fishing and sailing access off the many beaches and waterways. One of Burdekin's attractions is the Burdekin River system delta and wetlands which are home to numerous species of bird and wildlife.

In Bowen, the annual turnover from tourism was \$4.6 million for the year ended September 2007 (REDC 2007).

16.1.1.8 Employment, labour and income

Employment rate and income characteristics in the study area and are presented in Tables 16.9 and 16.10.

The mean taxable income in the region ranges from \$38,775 in Bowen and \$39,919 in Burdekin LGA, both lower than the Queensland mean of \$43,743.

Table 16.9 Employment and income characteristics

Characteristic	Bowen LGA	Burdekin LGA	QLD
Total labour force (number of persons)	7,003	11,124	2,168,507
Mean taxable income (\$)	38,775	39,919	43,743
Unemployed persons	387	429	101,037
Unemployment rate (percent)	5.5%	3.9%	3.4%

Source: ABS Census Data 2006

In December 2008, the unemployment rate in Bowen LGA had increased to 6.3%. It is likely that this reflects the impacts of the economic downturn following three years of strong economic development during which the unemployment rate dropped from 9% in late-2004 to 4% in late 2007 (DEEWR, 2008). In December 2008, the unemployment rate in Burdekin LGA was 2.7% (DEEWR, 2008), a decrease from 3.9% recorded in the Census 2006.

Compared with Queensland, Bowen has a larger proportion of persons earning between \$150 and \$599 per week, less earning between \$600 and \$1,599, and a high proportion which did not state their income. The differences with Queensland data are likely to stem from the seasonal nature of employment opportunities in the agricultural sector.

Table 16.10 Weekly individual income for persons aged 15 years and over

Weekly individual income	Bowen LGA	Burdekin LGA	QLD
Negative/nil income	5.4%	5.6%	6.4%
\$1–\$149	6.2%	6.2%	6.6%
\$150–\$249	15.1%	15.0%	13.4%
\$250–\$399	14.6%	15.6%	13.3%
\$400–\$599	16.4%	16.4%	14.9%
\$600–\$799	9.5%	12.0%	11.4%
\$800–\$999	5.8%	18.1%	8.0%
\$1,000–\$1,299	5.0%	16.4%	7.8%
\$1,300–\$1,599	2.8%	2.8%	3.9%
\$1,600–\$1,999	2.8%	1.6%	2.2%
\$2,000 or more	1.9%	1.7%	2.9%
Not stated	14.6%	8.6%	9.2%

Source: ABS Census Data 2006

16.1.1.9 Workforce characteristics

The workforce breakdown by industry and occupation within the study area is presented in Tables 16.11 and 16.12.

Workforce participation in the agriculture, forestry and fishing industry is greater than 21% in the study area, compared to 3.4% in Queensland. Participation in mining is relatively high at 6.8% in Bowen compared to 1.7% in Burdekin and Queensland. Participation in manufacturing is relatively high at 15.3% in Burdekin compared to 5.0% in Bowen and 9.9% in Queensland.

In general, study area participation in construction, professional, technical services and public administration are low compared to Queensland.

Table 16.11 Workforce characteristics by industry (2006)

Workforce industries	Bowen LGA	Burdekin LGA	QLD
Agriculture, forestry and fishing	21.6%	21.8%	3.4%
Mining	6.8%	1.7%	1.7%
Manufacturing	5.0%	15.3%	9.9%
Electricity, gas, water and waste services	1.3%	2.0%	1.0%
Construction	7.3%	4.8%	9.0%
Wholesale trade	3.7%	2.2%	3.9%
Retail trade	10.5%	10.5%	11.6%
Accommodation and food services	6.9%	4.9%	7.0%
Transport, postal and warehousing	6.2%	3.2%	5.3%
Information media and telecommunications	0.5%	0.4%	1.4%
Financial and insurance services	1.1%	1.8%	2.9%

Workforce industries	Bowen LGA	Burdekin LGA	QLD
Rental, hiring and real estate services	0.9%	1.0%	2.0%
Professional, scientific and technical services	1.9%	2.7%	5.6%
Administrative and support services	2.2%	1.5%	3.0%
Public administration and safety	3.7%	4.1%	6.7%
Education and training	5.8%	6.9%	7.6%
Health care and social assistance	8.0%	8.3%	10.2%
Arts and recreation services	0.3%	0.5%	1.3%
Other services	2.8%	3.6%	3.7%
Inadequately described/Not Stated	3.1%	2.6%	2.7%

Source: ABS Census Data 2006

Agriculture stimulates strong demand in the study area for seasonal employment. Large farms can recruit from 50 to 300 seasonal workers for picking and packing fruit. The tomato harvest takes place from approximately May to November and the mango harvest from approximately November to December (Hanson and Bell, 2003).

Labourers and machinery operators/drivers are strongly represented in the study area while professionals and clerical/administrative workers are relatively poorly represented. Managers are more common than across Queensland as a whole and this may reflect the inclusion of farmers and farm managers in this category.

Table 16.12 Workforce by occupation (2006)

Characteristic	Bowen LGA	Burdekin LGA	QLD
Managers	14.1%	19.2%	12.4%
Professionals	7.4%	8.8%	17.1%
Technicians and tradeworkers	14.0%	15.0%	15.4%
Community and personal service workers	7.6%	7.6%	9.1%
Clerical and administrative workers	8.7%	11.4%	14.8%
Sales workers	8.0%	7.9%	10.4%
Machinery operators and drivers	12.8%	12.8%	7.2%
Labourers	25.1%	15.8%	11.9%
Inadequately described/Not stated	2.2%	1.5%	1.8%

Source: ABS Census Data 2006

A lower proportion of the study area population have received a bachelor degree or higher relative to Queensland (Table 16.13) whereas a higher proportion, particularly in Burdekin, has certificate qualifications. In Bowen the relatively high proportion not stated may reflect the large number of itinerant workers for whom background information was unavailable.

Table 16.13 Non-school qualifications (2006)

Characteristic	Bowen LGA	Burdekin LGA	QLD
Bachelor or higher	11.0%	14.0%	26.0%
Diploma	8.4%	10.0%	13.0%
Certificate	37.7%	47.7%	35.5%
Inadequately described/not stated	42.8%	28.3%	25.4%

Source: ABS Census Data 2006

16.1.2 Potential impacts and mitigation measures

The potential impacts of the Water for Bowen Project on the social and economic environment include both positive and negative impacts which differ between construction and operation phases. Project beneficiaries include the water supply customers, who will benefit from improved water availability and security for irrigation and industrial use, and the flow-on benefits accruing from growth in these industries. The negative impacts relate mainly to directly affected landowners who will lose access to, or some potential utilisation of, land within the water infrastructure corridor. These potential impacts are described in the following sections and, where required, mitigation and enhancement measures are identified.

16.1.2.1 Direct beneficiaries of the water allocation

The Project will supply water to customers for crop irrigation, stock watering, industrial and urban applications. As of October 2008, 93 potential users were registered as Foundation Customers, and will be given first option to buy water should the Project proceed.

The majority of the foundation customers along the Elliot Main Channel have requested small volumes of water which they intend to use for stock watering, as described in Section 6.1.2. Surface water supplies for stock are currently seasonally very limited and groundwater is relied upon. The new supply will ensure that drinking water shortage is not a limitation on carrying capacity, though feed production will still be a seasonal issue.

For irrigators the Project will improve the economic security of farm production by decreasing the reliance on groundwater, access to which can be restricted during periods of drawdown. These restrictions can have a high economic impact depending on the stage and type of crop. Further, the quality of groundwater has been deteriorating over time (Jensen 2005) with reports of increased salinity. In some areas this includes seawater intrusion in times of extreme drawdown.

As described in Section 6.1.2, the water provided by the Project will predominantly be used as a substitute for or to supplement groundwater. However, there is likely to be some new development of irrigated land, estimated as follows: Inkerman 112 ha; Gumlu 760 ha; Guthalungra 112 ha; and Bowen 1,903 ha. Overall this represents an increase in irrigated land of approximately 23%, which is assumed to result from the conversion of grazing land. As horticulture is more economically valuable than grazing, this should be a significant benefit to the study area. Using a simple linear relationship of land area to crop value this represents a productivity increase of nearly \$48m per annum. The loss of grazing land equates to approximately 0.9% of the catchment area so is relatively insignificant on a regional basis (noting individual property impacts may be more significant) though some of the impacted landholders are also accessing water from the project so productivity of the property may not be reduced. Any potential growth in irrigation will need to be managed in

accordance with Land and Water Management Plans to be developed by agricultural customers as required under the *Water Act 2000*.

Over 56% of the water supplied by the Project is allocated for industrial and urban use, including proposed developments at Abbot Point. All water used by industry/urban customers will be subject to separate planning studies and approvals required for the individual industry or urban land use. The potential impacts of such water use have not been assessed in this EIS but it is clear that if the SDA goes ahead as proposed it will diversify the local economy and provide significant employment opportunities in the industrial sector in an area very near to Bowen. The significance of this development in economic terms reaches the national level.

Water for urban use will provide security from groundwater problems and support the predicted growth in the region without compromising lifestyle.

16.1.2.2 Land acquisition and relocation issues

SunWater intends to purchase the land required to accommodate the channel, and obtain easements across the land required for the pipeline and reticulation networks. In addition a small area of freehold land will be acquired to locate the Splitters Creek balancing storage, Bowen Header Tank and the five pump stations. Other design aspects include the outflow paths for cross drainage culverts or overflows. The estimated area of land required for the channel and pipelines easement is 508 ha and 502 ha respectively.

The tenure of land within the Project area consists primarily of freehold agricultural. The upland areas of Guthalungra and Bowen are generally leasehold as presented in Figure 6.4.

A total of 70 individual lots will be directly affected by the construction and operation of water infrastructure as described in Section 6.1.1.1. Of the 70 lots, 17 land owners will be directly affected by the proposed channel alignment, with a further 14 land owners affected by the establishment of an easement over the proposed main pipeline alignment.

By necessity the open channel primarily follows elevation contours. The extent of tenure impact varies between the properties but as the open channel traverses primarily larger grazing properties it is proportionally a small impact. Most of the landowners impacted by the channel or its associated infrastructure are also foundation customers, so while they will be negatively impacted by aspects of the Project they will also benefit from it. Similarly any borrow pits or detention basins established outside the easement during the construction phase may be left in place as farm dams during the operations phase if this is agreed with landowners.

Where feasible the pipelines have been designed to follow existing property and road boundaries to minimise the extent of impact to private property owners. This is particularly true of reticulation pipelines. Certain rights and restrictions will apply over the pipeline easement area i.e. restrictions on the location of infrastructure or the planting of trees. Grazing will not be restricted by the pipeline easements.

Financial compensation will be available to individual landholders affected by such restrictions on land use or encumbered by an easement in accordance with the land acquisition process being undertaken for the Project. In each case, SunWater will negotiate these effects with landowners directly.

In general terms, the Project is expected to increase the value and marketability of land lots along the channel and pipeline alignment where these lots have a potential water allocation

under the Project. The extent of this increase will relate to the potential increase in the value and security of agricultural production and is expected to be greatest in areas designated for an expansion in horticultural activities. The Project also has potential to decrease the value of land lots where lot amenity or productive value is reduced.

No houses or other buildings will be affected by the channel or pipeline alignment. Channel and pipeline construction has potential to disturb built property assets including fences, gates, cattle holding yards, cattle grids, farm dams, water troughs, irrigation pipelines and other water infrastructure.

All assets likely to be impacted by Project construction, operation and maintenance will be identified during detailed design. SunWater will negotiate with concerned property owners and reach an agreement on the reinstatement of these assets, or other ameliorative measures, prior to disturbance. Where the pipeline crosses a fence line, SunWater will place a gate or grid in the fence, following discussions with the landholder.

16.1.2.3 Land access and severance

Channel construction and operation has potential to result in the severance of property and curtailed access to land areas separated by the channel. Where channel alignment results in the severance of a property, SunWater will negotiate the provision of cross channel access with affected property owners. SunWater will design and locate these crossings to meet the operational circumstances of individual parcels of land as much as possible and will do so through liaison with the landowner. Similarly, SunWater will design the outflow paths for cross drainage culverts or overflows in consultation with affected landowners. While these impacts can be significant it should not unduly affect property viability if the crossings are thoughtfully located and constructed.

Project construction will also result in the temporary loss of access to land and/or disturbance to adjacent land use as a result of earthworks, machinery use or lay-down areas for plant and equipment. SunWater will negotiate access to the latter with the landowners and reach an agreement prior to their use. These temporarily impacted areas, including the pipeline easement, will be reinstated following the construction period, as described in Section 6.3.2.

Access to the channel and pipelines will be via public and private roads. SunWater will consult with property owners to reach amicable arrangements for access to private property during construction, operation and maintenance.

16.1.2.4 Public health and safety impacts

Uncontrolled access to construction areas or to the open water channel, siphons, water storages and pump stations during facility operation has the potential to increase the risk of injury to humans and livestock. These risks are localised and can be effectively mitigated through the application of standard health and safety practices as described in Chapter 18 Health and Safety.

In some areas it may be necessary to erect a permanent man-proof fence to restrict access to siphons, water storages and pump stations. In other areas where the risk of injury to humans or livestock or wild animals is considered to be low, there may be a simpler wire fence erected. All fence lines will be regularly checked and maintained.

SunWater will implement the necessary measures to minimise public health and safety risks in accordance with the *Workplace Health and Safety Act 1995* and the construction and operational Environmental Management.

The impact of the Project on ambient dust, waste, noise and transport are addressed in Chapters 11, 12, 13 and 14 respectively. As the Project is largely remote from sensitive receivers, these impacts were assessed as minor following mitigation.

16.1.2.5 Workforce accommodation

As described in Section 3.4.6.2, two temporary construction camps, one in the north and a second in the south of the study area, will likely be required by the workforce for the 21 month construction period. Sites near Merinda and Gumlu are proposed for these camps with site selection to be finalised during Project detailed design.

Subject to availability, the existing Merinda Village Camp established for the Port of Abbot Point expansion would avoid the requirement for SunWater to establish a southern construction camp. The availability of the Merinda Village Camp will be confirmed during Project detailed design.

Each camp will be sized to accommodate approximately 120 persons including management, supervisory staff and site workers. A typical camp is described in Section 3.2.6.2. A daily bus transit service between the camps and the construction sites will be provided. The camps will be decommissioned at the completion of Project construction unless requested as part of another approved project.

The sociological implications of a camp and its likely strongly single male focus need to be acknowledged and planned accordingly. It is SunWater's experience that remote construction sites might expect a 95% male workforce, though the number of females is increasing particularly in the professional fields. Camp planning and development will be undertaken in close collaboration with local authorities including local government representatives, police and ambulance officers and representatives of local business.

Accommodation service providers reported a shortage of rental accommodation in the study area, particularly during the period of horticultural crop picking activities from April to November. The camps are designed to accommodate 80% of the peak construction workforce, on the assumption that the remaining 20% are local residents and will reside at home.

Notwithstanding the provision of camps, some construction personnel may prefer local rental and caravan park accommodation. These personnel may also be accompanied by dependents. Project-driven demand on rental and short-term accommodation will need to be confirmed following engagement of the construction contractor and finalisation of the work breakdown structure for Project construction. SunWater may need to implement supplementary controls to minimise adverse impacts to the availability of local rental properties, including incentives to encourage use of the camp facilities.

Construction is likely to place some increased demand on temporary accommodation (hotel/motels) in the study area, associated with visiting supervisors, auditors and advisors to the Project. There is potential for this demand to temporarily displace tourists through the income from construction personnel will likely extend beyond the normal duration of the tourist season.

There is not likely to be any significant demand on property sale arising from Project construction. The relatively short construction period is likely to discourage workers from relocating their family to the study area from other regions and workers who live in other regions will operate on a fly-in-fly-out roster from Townsville or Mackay. This is likely to represent a small proportion of the workforce depending on the take up of positions by locals.

16.1.2.6 Community services

There is potential for temporary and localised impacts to traffic movement during the construction period arising from heavy vehicle movement and construction works located within road easements. Project construction is not likely to result in any prolonged or significant adverse impacts to traffic movement in the study area. Pipelines that traverse major transport corridors will be installed using directional boring techniques to minimise disturbance.

There is also potential for construction to result in temporary disruptions to local power, water supply (within the Bowen reticulation network only) and communications. Other than for accidental damage to infrastructure, these outages will be planned and the public warned in advance.

There is no significant requirement for expansion to existing community infrastructure or services as a consequence of Project development.

The construction workforce is expected to place a minor increase in demand on emergency services in the study area. Particular issues of concern to the emergency service providers include: increased number of vehicle movements in the Project area; increased visitation of non-residents in town centres of an evening and the potential for drunk and disorderly behaviour; and general conflicts with local residents. These factors have the potential to increase the demand for surveillance services and emergency call-outs.

The construction workforce is expected to have a negligible affect on health services. All construction personnel will be required to demonstrate their Fitness for Work as a condition of site induction and ongoing employment. The construction workplace will be equipped with first aid, medical and rescue facilities in accordance with legislation, award requirements and specific workplace needs. It is likely that the construction contractor will establish service agreements with medical centres in Ayr and Bowen for assessment, treatment and medical referral (if required). As noted earlier, few families are likely to relocate to the study area during the construction period, thus no significant impacts to education or family services are anticipated.

It is likely that the construction workforce will place increased demand on recreational and sporting facilities in the urban centres of Bowen and Ayr, however there is no anticipated need for increasing the capacity of existing facilities. In general it is expected that this increased demand will be welcomed by the concerned service providers.

During longer holiday periods, rostered days off and wet season shut-down it is expected that the majority of workers accommodated in the construction camps will return home though some will choose to stay and take advantage of the local fishing, reef access or other opportunities.

16.1.2.7 Community relations

Property disturbance and the influx of non-resident workers during the construction phase have the potential to adversely affect SunWater's relations with impacted communities. Sensitive receptors include the smaller communities of Gumlu, Guthalungra and Merinda which are located in close proximity to the proposed construction camps and work activities.

To minimise property and land disturbance SunWater requires that all staff and contractors comply with their Land Access Protocol, under which they agree to:

- not enter upon land without the landholder's knowledge and consent
- recognise the landholder's rights to use land with a minimum of interference
- observe the landholder's reasonable requests with respect to times of entry, or operation of equipment, control of stock and like matters
- seek to minimise any impact on the land and make good any unavoidable disturbance as soon as practicable.

The construction contractor is required by SunWater to appoint a Landholder Contact Officer to manage community consultation and grievances.

SunWater will continue to implement a public awareness campaign informing communities in the study area of Project progress against key milestones. A 24 hour community hot-line will be established from the commencement of construction activities and maintained for the life of the Project.

During the course of construction and operations, SunWater will extend its community sponsorship program to the local area. The program is committed to sponsoring community initiatives and supporting local industry and stakeholder activities. SunWater will consult with community representatives to ensure that the sponsorship program reflects the priorities and needs of the community.

The consultation program to date has elicited little negative reaction, with the great majority of participants in favour of the new water supply. As a rural community traditionally limited by water supply security, the Project is viewed as essentially positive. SunWater will endeavour to maintain this positive relationship through continued communication and responsiveness.

Substantial growth in any region requires considerable coordination and the NET includes a 'Leadership and Collaboration Plan' to assist with this progress. Strategies within the Plan which are relevant to the operations phase of Water for Bowen:

Strategy 31: Identify and undertake planning to supply the urban and community infrastructure necessary to support population growth in the economic centres and meet the needs of new workers and their families.

SunWater participates in the Bowen Abbot Point Community Consultation Group and is therefore up to date with the NET activities, including a forthcoming Housing Needs Assessment Report and Bowen Abbot Point Accommodation and Community Infrastructure Study.

Appropriate governance and timely provision of infrastructure services should see substantial benefits accrue from the NET initiative.

16.1.2.8 Opportunities for economic growth, employment and local business

The benefits of the construction and operation of the Project will be experienced at the local, regional and state levels. The construction phase will provide short-term economic opportunities, while long-term benefits are predominantly associated with water security for foundation customers and the catalyst for growth in agricultural, livestock, industry and urban sectors.

Local economy

Construction of the Project will provide benefits to the local economy through the local procurement of goods, services and personnel.

The total construction period is programmed for 21 months with mobilisation in March 2011. As described in Section 3.4.6, construction may involve up to 300 people at peak production, assuming different teams are constructing the channel and pipelines simultaneously. The Project will generate employment opportunities in areas including: plant and machinery operation; form work construction and reinforcement; concreting; general labouring; electrical and plumbing; trenching and pipe laying; clerical and record keeping; and camp services. It will generate indirect expenditure and employment relating to the purchase of supply of raw materials, food and beverages, machinery maintenance, fuel and other needs.

In accordance with the requirements of the Local Industry Policy 'A Fair Go for Industry' (2007), SunWater will prepare a local industry participation plan for the Project, which will in turn be implemented by the construction contractor. Residential locality is a key determinant in Project resourcing, however this is also influenced by the home-base of the construction contractor and their tendency to mobilise work teams from other work contracts.

Considering the relatively low levels of local participation in the construction industry it is assumed that 10 to 20% of employment opportunities associated with construction could be sourced from the study area. Prior to the commencement of construction, SunWater will establish a registry of local individuals and businesses who are interested to supply services to the Project. Specialist and professional services are likely to be sourced from the larger urban centres of Townsville and Mackay. Local recruitment is not likely to result in any adverse impacts to the labour market due to the relative proximity of the Project to the urban centres of Bowen and Ayr.

SunWater will also provide employment opportunities for members of local indigenous communities, as identified in the State Suburbs of Bowen and Gumlu, in accordance with the State Government Indigenous Employment Policy for Queensland Government Building and Civil Construction Projects (2004).

The level of training of construction personnel will be in accordance with the State Government Building and Construction Contracts Structured Training Policy (2002) as it is applicable to SunWater policies and Projects. It will be the responsibility of the construction contractor to ensure that workforce personnel are suitably qualified and have adequate training.

SunWater will comply with government policies relating to local employment and associated with Project construction.

A small workforce will be required for operation and maintenance of the water infrastructure. The operational and maintenance workforce will consist of three full time equivalent jobs and include a mechanic, electrician and an administration officer based at the existing SunWater Ayr Office.

Regional, state and national economies

As shown in Figure 16.1, an improvement in the security of water supply would have the following effects on existing business and industry:

- enhanced viability by reducing operational risks associated with water supply and quality constraints
- enhanced productivity and service provision
- enhanced economic sustainability by improving short and long-term investment security.

The Project has the potential to induce further investment, demand for goods and services, and diversification of business type and composition. Such growth would be accompanied by a steady increase in population, skills development and community infrastructure.

The Project has a high level of significance in the local and regional economic context. There are significant advantages at the regional level if the Project was to go ahead with the provision of a reliable water supply to the development of Abbot Point State Development Area.

Construction phase

Project construction is estimated to cost around \$415m over a 21 month construction period. The estimated direct, indirect and induced economic impacts arising from the construction period are presented in Table 16.14, as per the I-O approach. This assumes that the costs are evenly distributed over the construction period and that 50% of the investment is sourced from the region (encompassing the Northern Statistical Division) and 50% outside the region.

Table 16.14 Regional economic impact during construction (per annum)

Type of impact	Benefits to gross regional product (\$m)	Employment (FTE)
Direct	32–40	540–720
Indirect	16–20	150–200
Induced	16–20	192–256
Total impact	64–80	882–1,176

Notes: Values are in 2008/09 dollars. Figures may not sum precisely due to rounding.

The direct contribution to Gross Regional Product (GRP) is expected to range from \$32 to \$40m per annum (or 540 to 720 full time equivalent (FTE) jobs annually). This includes all equipment and services provided within the region for the construction of the water infrastructure, such as earthworks, haulage, landscaping and civil and mechanical engineering.

The indirect contribution to GRP is expected to range from \$16 to \$20m per annum (or 150 to 200 FTE jobs annually). This includes the flow-on impacts to other businesses in the region who are not directly involved in Project construction but who benefit from a direct increase in demand for goods and services i.e. supply-chain businesses for construction materials and equipment, and support services for construction personnel.

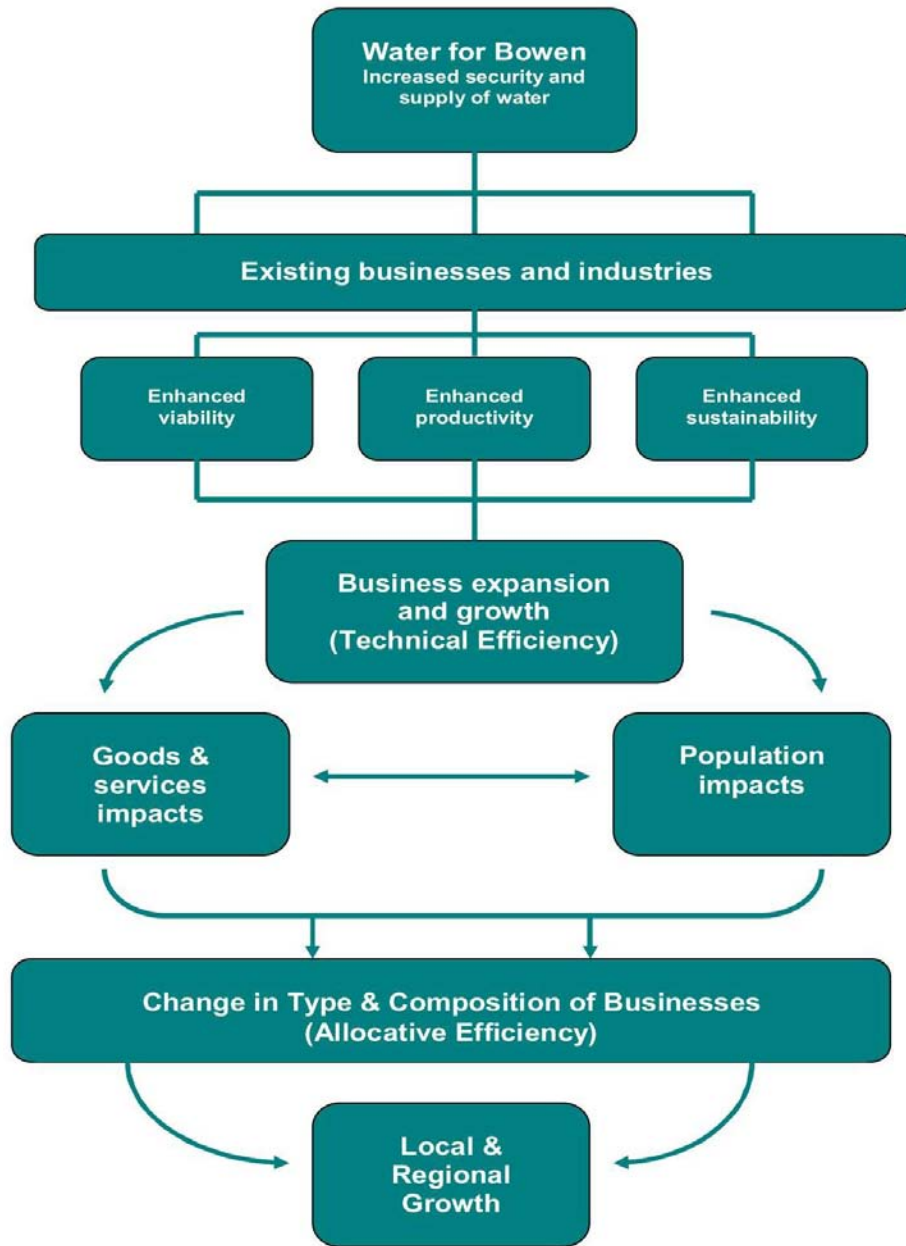


Figure 16.1 Economic implications on business and industry

The induced contribution to GRP is expected to range from \$16 to \$20m per annum (or 150 to 200 FTE jobs annually). This results from changes in consumption or income changes resulting from the direct and indirect impacts i.e. new development opportunities in the agricultural and industrial sectors arising from improved water security.

The total contribution to GRP arising from direct, indirect and induced impacts is expected to range from \$64 to \$80m per annum over the two year construction period (or 882 to 1,176 FTE jobs annually).

Operating phase

In total, operational and maintenance (O&M) expenditure for the water infrastructure itself is expected to be \$1.3m per annum (SunWater 2008). That is, approximately \$600,000 per annum for operations, and \$700,000 per annum for maintenance. It is assumed that 100% of the total operational expenditure is likely to be expended regionally. The annual impacts of the Project on the regional economy are presented in Table 16.15. As with the construction phase, the magnitude of the economic impact during operation is dependent on the level of O&M expenditure expected to be undertaken.

Table 16.15 Economic impact during operation (per annum)

Type of Impact	Gross Regional Product (\$m)	Employment (FTE)
Direct	0.62–0.78	2.89–3.85
Indirect	0.21–0.26	1.72–2.29
Induced	0.10–0.13	1.64–2.18
Total impact	0.93–1.17	6.25–8.32

Notes: Values are in 2008/09 dollars. Figures may not sum precisely due to rounding.

Due to notably smaller expenditure profile associated with the O&M activity, there is a significantly smaller economic impact on the regional economy during the operating phase of the Project.

The direct flow on affects during operation are the activities directly supporting the operation of the Project, such as engineering contractors and supplies, and trade services. The economic impact associated with the operation of the Project is estimated to be between \$0.6m and \$0.8m to GRP per annum. The operations are expected to generate between three and four FTE jobs annually.

The indirect contribution to GRP during the operational phase of the Project is estimated to range between \$0.21 and \$0.26m per annum, and is expected to generate around two FTE jobs annually. The indirect flow-on impacts would include machinery, appliances and equipment as well as the supply of water, gas and electricity.

As per the construction phase, the induced flow-on impacts are a result of the increased spending by Project employees and contractors. The induced impact on GSP is expected to range between \$0.1 and \$0.13m per annum. This spend effect by the household sector is expected to generate around two FTE jobs annually. Industries most likely to be impacted are retail trade, accommodation, cafes, restaurants, finance, property, and business services.

Total impacts during the operating phase of the Project are estimated to range between \$0.93 and \$1.17m per annum, and support between six and eight FTE jobs annually.

Benefited area impacts

As noted in Section 16.1.2.1, the water supplied by the Project will sustain and allow growth in the agricultural sector but is predominantly directed toward enabling the establishment of industry within the Abbot Point SDA and Bowen area, thereby supporting Queensland's strategic planning processes such as the Northern Economic Triangle and the Statewide Water Policy as well as the Coal infrastructure Program of Actions. Power and transport (primarily ports and rail) are the other significant components of enabling infrastructure.

While it is possible to estimate the value of enhanced agricultural production (approximately \$48M per annum; Section 16.1.2.1) based on less than half of the new water supply, it is not possible to estimate the value of potential future industrial output with any degree of certainty. However, the Abbot Point SDA is targeting mineral processing and value adding associated with the North West Minerals Province and the Bowen Basin. Industrial projects of this type require very significant capital investment, major construction phases employment significant numbers of workers and produce significant export related income streams. Individual projects are potentially more economically significant than individual items of enabling infrastructure.

This economic assessment has included the following items that will result from the provision of enhanced water supply:

- costs associated with enhancing or expanding irrigation ventures
- additional employment in the agricultural areas, either permanent or seasonal
- secondary benefits to industries supporting those agricultural areas
- benefits associated with the proposed multi-cargo facility at Abbot Point that will support export of value-added agricultural products
- the value of any development in the Abbot Point SDA.

It is clear that the economic impact of these items is highly significant at local, regional, state and national levels.

16.1.3 Management and mitigation measures

This section presents key measures to manage the potential negative impacts of the Project on the social character and infrastructure of both the study area and the region. Strategies have also been developed to enhance the potential benefits to the local communities. Many are already included within the Project as detailed in Chapter 3 but have been included to show the relationship with potential impacts. SunWater has a number of existing policies in relation to social and community engagement, sustainability, employment, and health and safety. These mitigation and enhancement strategies are developed to work with those existing policies but are targeted specifically to the Project.

SunWater is responsible for informing and eliciting the support and participation of other stakeholders in the implementation of these measures as necessary. Key stakeholders include local communities, service providers and government agencies.

16.1.3.1 Construction phase

During construction, SunWater and its nominated construction contractor/s will have responsibility for social and economic management. This will include responsibility for preparing and implementing a Construction Environment Management Plan (CEMP) which shall include, but not be limited to the management of impacts identified in Table 16.16.

Table 16.16 Management measures during design or construction

Impact	Management measure	Monitoring indicator
Land and easement acquisition and disturbance	During detailed design and construction review options to minimise the nature and extent of disturbance to affected landowners.	Area and value of land to be acquired.
	In consultation with property owners agree on the value of land to be acquired within the infrastructure corridor.	Number of affected landowners.
	Provide financial compensation and other ameliorative measures for loss of land in accordance with SunWater's land acquisition procedures.	Value of compensation provided.
	Reinstate all land areas disturbed by Project construction that are not required for operation.	Other forms of construction agreed, e.g. detention basins to serve as stock watering points Area of disturbed land reinstated.
Land severance and access	During detailed design and construction consult with affected landowners to determine the nature and extent of impacts to property utility and measures to minimise disturbance.	Number of complaints.
	Design and locate channel crossings to minimise potential adverse impacts to property utility.	Area of restricted land.
	Provide financial compensation and other ameliorative measures (such as fencing, gates, grids) to individual landowners affected by restrictions on land use or encumbered by an easement in accordance with SunWater's land acquisition procedures.	Number of affected landowners.
		Number of crossings Value of restricted land.
Built property assets	During detailed design identify all built property assets likely to be impacted by Project construction.	Value of compensation provided.
	Reinstate all built property assets disturbed by Project construction.	Number of complaints.
Public health and safety	All staff and contractors to comply with SunWater's Land Access Protocol and occupational, health and safety procedures.	Inventory of built property assets disturbed.
	SunWater will undertake the necessary measures to minimise public health and safety risks in accordance with the WHS Act and as per the Construction Environmental Management Plan (CEMP).	Assets reinstated.
	Relevant health and safety information packs provided to all at risk landowners.	Number of complaints.
Workforce accommodation	Provide accommodation for the construction workforce.	Staff and contractor knowledge of SunWater's Land Access Protocol.
	Plan and construct the proposed construction camps in consultation with local authorities to minimise adverse impacts to local communities.	Number of complaints/incidents received and addressed.
	Following engagement of the construction contractor verify the potential Project-driven demand for rental accommodation.	CEMP implementation.
		Health and safety packs provided to landowners.
Community infrastructure and services	Notify and inform local authorities and the public of all planned disruptions to community infrastructure and services.	Construction camps provided.
	Reinstate infrastructure and services	No adverse reduction in the availability of local accommodation in accordance with the outcomes of the Bowen Abbot Point accommodation and community infrastructure study. Response to consultation outcomes.

Impact	Management measure	Monitoring indicator
Community relations	accidentally damaged in consultation with affected persons.	Number of complaints.
	Inform and consult with local authorities to ensure businesses and local services can support increased workforce and existing population – establish a working group to facilitate consultation.	Response to consultation outcomes. Participation in community working groups
	All staff and contractors to comply with SunWater's Land Access Protocol and occupational, health and safety procedures. The construction contractor to appoint a Landholder Contact Officer responsible for managing community consultation and grievances. Monitoring or 24 hour hot-line during Project construction.	Staff and contractor knowledge of SunWater's Land Access Protocol. Number of complaints/incidents received and addressed.
Local employment and business	Develop a Local Participation Plan in to comply with the requirements of the 'Local Industry Policy: A Fair Go for Local Industry' including strategies for indigenous employment and training for construction contracts. In consultation with the construction contractor set targets for local participation, including targets for indigenous employment and training. Develop a register in advance of Project construction of individuals and local business interested in providing goods and services.	Industry participation plan prepared. Local employment and business register. Value of goods and services procured locally. Number of local staff employed

16.1.3.2 Operations phase

SunWater will be responsible on a day-to-day basis for the management of social and economic impacts associated with the operation and maintenance of the water infrastructure corridor. SunWater shall maintain an Environment Management Plan as of their EMS which shall include, but not be limited to the management of impacts related to social and economic issues identified in Table 16.17.

Table 16.17 Management measures during operation

Impact	Management measure	Monitoring indicator
Land and easement disturbance	Minimise potential disturbance to landowners and the general public through compliance with SunWater's Land Access Protocol.	Area of disturbed land reinstated. Number of complaints.
	Reinstate all land areas disturbed by Project operations and maintenance i.e. erosion, weed invasion.	
Public health and safety	All staff and contractors to comply with SunWater's Land Access Protocol and occupational, health and safety procedures.	Staff and contractor knowledge of SunWater's Land Access Protocol.
	SunWater will undertake the necessary measures to minimise public health and safety risks in accordance with the WHS Act and as per the Operational Environmental Management Plan (OEMP).	Number of complaints/incidents received and addressed. OEMP implementation.
	Relevant health and safety information packs provided to all at risk landowners.	Health and safety packs provided to landowners.

Impact	Management measure	Monitoring indicator
Community infrastructure and services	<p>Notify and inform local authorities and the public of all planned disruptions to community infrastructure and services.</p> <p>Reinstate infrastructure and services accidentally damaged in consultation with affected persons.</p>	<p>Number of planned and accidental disruptions to community infrastructure and services.</p> <p>Number of complaints.</p>
Community relations	All staff and contractors to comply with SunWater's Land Access Protocol and occupational, health and safety procedures.	<p>Staff and contractor knowledge of SunWater's Land Access Protocol.</p> <p>Number of complaints/incidents received and addressed.</p>
Water supply beneficiaries	<p>Water supply permitting, review options to increase the number of customers and other beneficiaries.</p> <p>In consultation with DERM, support irrigation customers with the development and implementation of their Land and Water Management Plan (LWMP).</p>	<p>Number of beneficiaries.</p> <p>Prepare template for LWMPs.</p>
Local employment and business	Set targets for local participation, including targets for indigenous employment.	Value of goods and services procured locally.