Appendix E – Social Impact Assessment

Report

Port of Abbot Point T0 Social Impact Assessment

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Appendices

1 Purpose

This Social Impact Assessment (SIA) has been developed to respond to the requirements of the *Guidelines for an Environmental Impact Statement for Abbot Point Coal Terminal 0, Port of Abbot Point, Queensland* released August 2012.

This assessment investigates and assesses potential impacts on a specific geographical area, that is the township of Bowen and surrounds, in the vicinity of the Port of Abbot Point.

1.1 Methodology

This SIA is based on desktop review of relevant State and Local policy and strategic documents, findings of recent studies and review of demographic data for the area including:

- Bowen Planning Scheme, 2006
- Mackay, Isaac and Whitsunday Regional Plan, 2012
- Whitsunday Regional Council Community Plan, 2011-2012
- Queensland Sustainable Resource Community Policy, 2008
- A Sustainable Framework for Queensland Mining Towns, 2007
- Sustainable Resource Communities Policy: social impacts assessment in the mining and petroleum industries, 2008
- Bowen Abbot Point Accommodation and Community Infrastructure Study, 2010
- 2006, 2011 Census data

This desktop review established a foundation on which to formulate and test a range of preliminary conclusions and assumptions. These initial findings then formed the basis of a stakeholder consultation platform,

The assessment of potential impacts and identification of management and mitigation measures draws heavily on conversations with a variety of stakeholders including State agencies, regulatory authorities, local government departments and community stakeholders held over September and October 2012.

Potential impacts, management and mitigation measures were identified from the findings of the desktop review. These were refined as a result of discussions with several local stakeholders.

These stakeholder discussions revisited desktop findings to date to isolate issues relating specifically to the Bowen area, identify gaps in existing policy and planning and suggest appropriate measures to mitigate adverse impacts where possible and manage change resulting from T0.

2 Project Proposal

This section of the report provides a summary of the T0 proposal and existing operation at the Port of Abbot Point and outlines the processes underway as part of this proposal.

2.1 Project Background

2.1.1 Location

Located approximately 25 km north of Bowen, the Port of Abbot Point is Australia's most northerly coal port. The Port of Abbot Point is recognised as significant by both the Commonwealth and the State as one of the few locations along Queensland's eastern seaboard with deep water (>15 m) access so close to the shore.

In the 2011 financial year, the Port of Abbot Point had a throughput of approximately 15.1 million tonnes. Plans are being developed for the Terminal 0 (T0) Project within the Port of Abbot Point Strategic port land, adjacent to the Abbot Point State Development Area (APSDA). T0 will provide an additional 35 Mega Tonnes of coal per annum (Mtpa) capacity directly adjacent to the Terminal 1 (T1) which has also undergone expansion to support coal export demand. This additional capacity generates a peak capacity of 70Mtpa through the Port.

The Project site is bordered by the Caley Valley Wetland, a nationally listed wetland, and Great Barrier Reef World Heritage Area (GBRWHA). Offshore from the Port of Abbot Point is the Great Barrier Reef Marine Park (GBRMP).

2.1.2 Project Proponent

Adani Abbot Point Terminal Pty Ltd (Adani) is the proponent for developing the Terminal T0 at Abbot Point. Adani Abbot Point Terminal Pty Ltd is a step-down subsidiary of Adani Port and SEZ Ltd. (APSEZ), a company based in Ahmedabad, India. APSEZL operates India's largest private sector port at Mundra and is also developing a 32,000 acres Special Economic Zone at Mundra. Through its subsidiaries APSEZ has operational ports at various locations in India which include a state of the art coal terminal, container handling facility and car export (Ro-Ro) facility at Mundra–Gujarat, dry bulk port at Dahej-Gujarat, a multi cargo terminal and container terminal at Hazira-Gujarat. APSEZ has also acquired rights for developing a coal handling terminal at Mormugao-Goa, a coal handling terminal at Vizag- Andhra Pradesh and multi cargo facility at Tuna (Kandla)–Gujarat. With these ports APSEZL has established its pan India presence. APSEZ handled approximately 84Mtpa cargo in the 2011/12 financial year and has a target of handling 200Mtpa by 2020.

Adani also controls the 50Mtpa Abbot Point Coal Terminal in Queensland, Australia which it acquired in June 2011 via competitive international bidding. Adani has also got preferred proponent status from North Queensland Bulk Ports Corporation for development of a 90Mtpa Dudgeon Point Coal Terminal through its subsidiary Adani Mining Pty Ltd.

Adani propose to construct the Terminal T0 on the land formerly referred to as X80 and hereafter referred to T0 located at Abbot Point

2.2 Current Operations

The Project is located at the Port of Abbot Point in Central Queensland. The Port of Abbot Point currently supports existing coal export infrastructure (the T1 Terminal) which is owned by Adani under a 99 year lease term. Under the lease, the State will retain ownership of the Port land and fixed infrastructure such as the jetty and the wharf.The arrangements provide a provision for expansion of the facility in the future and as capacity requirements require additional works. The T1 infrastructure will continue to operate once T0 is operational. A number of other coal export terminals are also proposed for the Port of Abbot Point to meet growing export demand.

The existing coal export terminal (T1) has a capacity to export 50 Mtpa of product coal. The port development was originally approved in 1981 by the Queensland Government for the export of 6.5 Mtpa of steaming and coking coal from mining operations within the Bowen Basin. The facility first came into operation on 25 February 1984. Adani recently completed expansion works at T1; increasing its name plate capacity to 50 Mtpa with the port now receiving coal from Newlands, Collinsville and Sonoma mines (NQPB 2012).

The T1 terminal onshore infrastructure consists of, access roads, rail loops and rail inloading facilities, coal handling, stockpiling areas, workshop, sewerage treatment plant, car park, workshop, amenities block and administration facilities. The onshore infrastructure is located directly to the north-west of the proposed T0 terminal onshore infrastructure development.

T1 offshore infrastructure consists of a trestle jetty spanning 2.75 km into the Port of Abbot Point, loading conveyors, two shipping berths and associated shiploaders. A MOF is also located to the south-east of the T1 jetty on Abbot Point. The offshore infrastructure for the Project will be constructed adjacent (within approximately 100 m) to the south of T1 terminal.

Figure 1: Current Port Operations

2.3 Project Description

The Project will supply an additional 35Mtps capacity, generating a peak capacity of 70Mtpa. At the port facility, coal will be delivered by standard gauge rail wagons and received through underground dump-stations by bottom discharge. Coal from the dump-stations will be conveyed to the stockyard by inloading conveyors and stockpiled using stacker-reclaimers. Coal stockpiles will be reclaimed and conveyed through the outloading conveyors along the wharf to the ship loaders for loading of the coal transport vessels. Once developed the Project will consist of:

- Two rail receiving bottom dump stations located in a single common concrete vault situated on the proposed rail loop corridor;
- Two narrow gauge rail loops within the rail corridor;
- Two streams of inloading conveyors feeding coal to the stockyard;
- Stockyard consisting of six stockpile rows, arranged either side of three machine bunds with two rows per bund;
- Six stacker/reclaimers with each of the three bunds supporting two stacker/reclaimers;
- Two outloading conveyor streams in parallel and each stream consisting of one conveyor system, surge bin, sample plant and travelling ship loader;
- Onshore infrastructure including stockyard drains, sediment ponds (SP), roads, stormwater retention dams (SRD; being completed under an existing approval), administrative building, workshop, sewerage treatment plant, car park and amenities block;
- An expansion of the existing eastern Material Offloading Facility (MOF) so it can receive Roll-0n Roll-off (RORO) vessels (e.g. barges) and vehicles;
- Construction of a new reservoir north of the stockpile area at Bald Hill and within the Project boundary to provide additional water storage for operational use as part of Phase 2 construction works;
- Piled wharf approach jetty structure extending approximately 2.75 km north north-east from the shore line adjacent to the existing T1 port facility carrying the outloading stream of conveyors and access road; and
- Piled wharf structure at the end of the jetty which consists of two berths each with one shiploader. Mooring dolphins are located at each berth.

Key considerations during the design of the onshore and offshore developments of the Project included the following:

- Ensuring that the development meets all required health and safety needs of construction and operation staff;
- Minimising the potential negative impacts associated with the Project development on environmental and social receptors, particularly matters of national environmental significance (MNES);
- Incorporation of projected climate change scenarios into the design of all infrastructure components of the project;
- Developing infrastructure that will provide a reliable and economically viable mode for the exportation of product coal from the Port of Abbot Point to meet market demand; and
- Ensuring all State and Commonwealth legislative requirements are met in full.

T0 will hold its own environmental licences, separate to T1. With the exception of the bund 4, the design of T0 will include a water management system that separately channels T0 run off to its own settlement pond, prior to transfer to a separate storm water return dam for recirculation.

A draft plan of the proposed T0 development is attached at **Appendix A** of this report.

Proposed T0 Construction Program

Construction of Phase 1 and Phase 2 infrastructure may occur simultaneously, depending on productivity rates at the Carmichael Mine, effective use of labour and resources and productivity of construction for Phase 1 works. A summary of the anticipated construction programme for Phase 1 is provided below in Table 1.

It is important to note that any dredging of material required to support the Project, including for the MOF, is subject to either existing or future separate approvals processes being managed by NQBP on behalf of proponents (refer to Abbot Point T0, T2 and T3 Capital Dredging Project (EPBC 2011/6213)).

The Project will be developed for operation over two phases - Phase 1 and Phase 2. Development of the port is proposed to occur over a 5-6 year period and will be timed to correspond with production outputs at the Adani Carmichael Coal Mine being developed by Adani Mining Pty Ltd. The Project will allow for an initial throughput of 35 Mtpa and an eventual maximum throughput of 70 Mtpa. This allows for potential increases in mine output efficiency and any other sources of coal to be incorporated into the port's capacity.

Phase 1 of the proposed project will be constructed to meet a target capacity of up to 35 Mtpa and will comprise:

- An upgrade of the existing eastern MOF infrastructure to accommodate RORO vessels and vehicles for the delivery of materials and modular infrastructure during construction. The MOF is required for all phases of the Project;
- Earthworks and contribution of fill material to support two new narrow gauge rail loops and infrastructure within the existing T1 loop;
- One common concrete dump station vault (designed to house two unloading trains) and an inloading conveyor stream to the coal stockyard;
- Earthworks and contribution of fill material to support development of the stockyard supporting one bund with two stockpile rows and two stacker/reclaimers;
- Inloading and outloading stream of conveyors, Stacker cum Reclaimers, transfer towers, surge bin, sample plant and shiploader;
- Associated infrastructure, including a workshop, administration building, sewerage treatment plant, amenities block;
- Offshore trestle jetty and one wharf berth; and
- Jetty and single wharf outloading conveyors feeding the shiploader.

Phase 1 is proposed to be completed by the end of 2015 to early 2016 to align with the first available coal shipments from the Carmichael Coal Mine project.

Phase 2 of the project will increase the capacity of the port to operate at an additional 35 Mtpa with a maximum target capacity of 70 Mtpa and will comprise:

- The development of the second dump-station and inloading conveyor stream to the coal stockyard;
- Earthworks and contribution of stockyard fill material to support two additional bunds with two stockpile rows and two stacker/reclaimers on each bund;
- One outloading stream of conveyor, transfer towers, surge bin, sample plant and shiploader; and
- The construction of a second berth.

Table 1: Project construction indicative timeframes

Phase	Description	Timing
Phase 1		
Early works	Establish laydowns, earthworks, site facilities, MOF (RORO)	Q2-Q4 - 2013
Offshore	Offshore Construction	Q3 2013 - Q3 2015
Onshore	Onshore MHS Construction including Stacker Reclaimers, Dump station, etc.	Q2 2014 – Q1 2016
Major Equipment	Stacker Reclaimers	Q3 2015 – Q1 2016
	Shiploader	Q3 2015 – Q1 2016
Phase 2		
Early works	Establish laydowns, earthworks, working stockpiles and site facilities	Q3 2015 – Q3 2017
Offshore	Offshore Construction	Q3 2015 - Q3 2017
Onshore	Onshore MHS Construction including Stacker Reclaimers, Dump station, etc.	Q3 2016 – Q3 2018
Major Equipment	Stacker Reclaimers	Q3 2017 - Q1 2019
	Shiploader	Q3 2017 – Q1 2019

2.4 Current and Projected Staffing Models

T1 has a capacity of 50Mtpa. In 2012, operating a throughput of 20Mtpa T1 is staffed by a 184 workers

At full operating capacity of 70 Mtpa, T0 is expected to generate 236 positions.

Table 2: Current T1 Staffing Model

Employment	Existing T1	Projected T0
Total Staff	**50**	**73**
Production	9	15
Maintenance	15	25
Strategic Development	7	8
Administration	4	4
Commercial	7	10
Logistics	9	12
Wages	**82**	**107**
Production (incl casuals)	45	58
Maintenance - Mechanical	21	30
Maintenance - Electrical	16	19
Apprentices	**17**	**26**
Total Employees	**149**	**207**
Contractors	**35**	**29**
Total Manning	**184**	**236**

2.4.1 Current T1 Workforce

Under the current staffing model, the maintenance crew is structured to operate in day time hours only. Maintenance employees form two teams, where each team works a twelve hour shift per day (6 am-6 pm), following a 7 days on/off rotating roster.

The operating team is required to keep the terminal operating on a continuous 24 hour production mode, to receive trains and load vessels. The operating crew includes both production and a skeleton maintenance crew, primarily to manage system failures between 6 pm to 6 am (when the main maintenance crew is off shift). The crew is broken up into four teams with each team working 12 hour shifts, on a 7 days on/off rotating roster.

Many of the T1 workers are permanent residents of the Bowen area.

Leave and other absences are covered by providing over time to off-shift employees; moving employees between work crews; employing contractors for specified period of time; or by sourcing casuals from the local townships on a best fit for circumstance approach.

2.4.2 Proposed T0 Operating

The main consideration in determining the structural change between T0 and the current T1 staffing structure is that T0 will be highly automated, both operationally and logistically. As a result less staff and wages will be required at full operation.

At full capacity it is anticipated that 206 full time and casual personnel and 29 contractors will be required to operate the Terminal facility at 70Mpta. Full time and casual personnel will include production, maintenance, administrative, commercial and logistic staff. This includes up to 26 apprentices may also be employed during operations.

. At this modelled manning level, T0 will be one of the most highly productive coal terminal operations in the world, with productivity at 314,000 tonnes per man per year. This high productivity figure is based on achieving a high degree of automation throughout the operating site, in addition to transparent communication and planning systems with the miners, rail providers and vessel owners. This high degree of automation and integration from mine to loading for export is enabled by the vertical integration of Adani’s operations.

At full capacity, maintenance and operational crewing is planned to be structured for a continuous 24 hour operation to receive trains, load vessels, and execute continuous minor and major maintenance tasks (both planned and unplanned), to keep the terminal operating at full capacity.

As a consequence both operating and maintenance wages site teams will each be broken up in to four equally sized teams. Each team will work a 12 hour shift, on a 7 days on / 7 days off continuous rotating roster.

In addition to the above roster crews, there will also be a week day permanent maintenance crew that will be tasked to perform project work or support the day time shifts. This team will be drawn on to cover manning gaps in the roster crews for holiday leave, sick leave and other absences on a planned or short notice as and when required.

2.4.3 Proposed T0 Construction Workforce

The construction workforce for the Project will vary during the Project duration with an estimated peak of around 500 full time employees and contractors for construction and project management. Most construction positions will be short term and temporary and it is expected that the bulk of the construction workforce will be provided by contractors. When contracts are awarded to local organisations, the work force may return home after each shift, and it is anticipated that the bulk of the workforce will work on rosters on a fly in and fly out (FIFO) basis or drive in and drive out (DIDO) basis rather than relocating permanently to the Bowen region.

An existing workers' accommodation camp for 400 people is located at Merinda, several kilometres to the south of Abbot Point. The camp is situated adjacent to a minor sealed road with access from the Bruce Highway. The camp provides an opportunity to accommodate a significant population of the construction workforce. Should this camp not have capacity available during the construction phase, a second camp may be required. Adani will require the construction contractor to demonstrate that there is sufficient accommodation to house the construction workforce as part of the tender process.

Approvals required for new camps and environmental management requirements for existing and new camps will be the responsibility of the camp contractor. Transportation of the workforce from the camp to the worksite shall be by buses to reduce construction related traffic and also reduce the requirements for on-site parking. Workers operating on a drive in and drive out basis will park their cars at the accommodation camps. Workers operating on a fly in and fly out basis will be transported from nearby airports.

The accommodation camps are self-contained communities with a range of services within the camp including sleeping quarters, laundries, dining halls, recreation, gymnasiums and sports facilities and first aid and health services. Many of the construction contractors require employees to abide by behaviour contracts to ensure that a safe respectful and healthy work and camp living environment is created. Employees who fail to abide by this may no longer be employed by the contractor.

3 Bowen -Demographic Profile

This section provides a demographic profile of the Bowen area which is regarded as the community of interest that may experience impacts generated by the proposed T0 development. In this instance, the term ‘community’ refers to the residents and users of a defined geographical area.

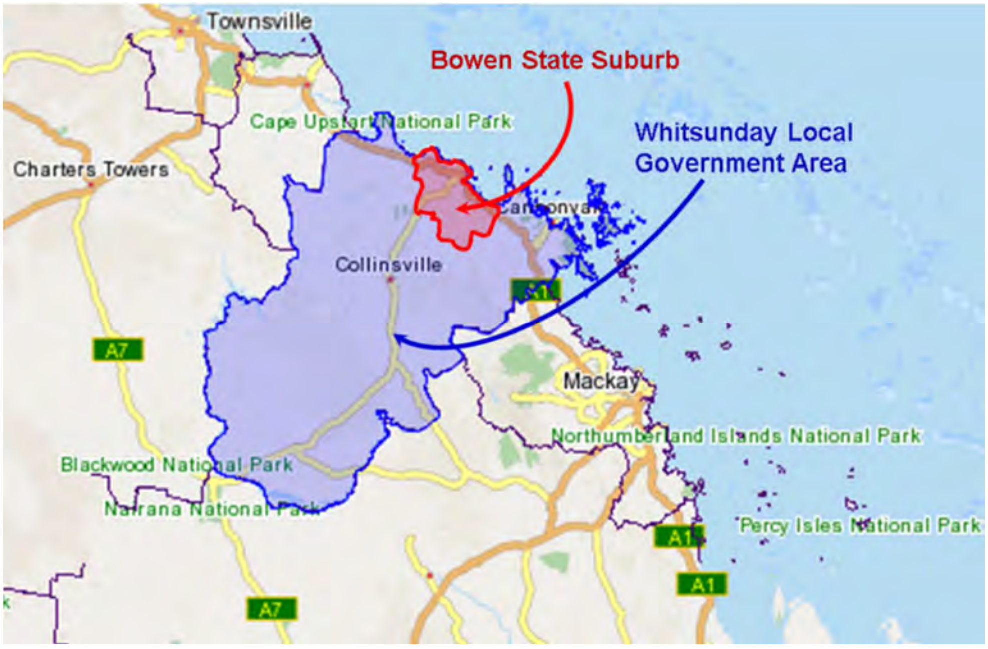
This demographic profile aims to provide context to the local residential and worker population of the area and to support the understanding and appreciation of issues for consideration in the impact assessment process.

Community of Interest

For the purposes of this report, a community of interest has been defined to identify the population which may experience impacts as a result of the proposed T0 development. The community of interest for this assessment has been defined as that confined within the Bowen Township fringe settlements, a small number outlying of rural agricultural settlements between Bowen Township and Abbot Point, and a confined area of aquaculture land uses to the north west of Abbot Point.

The community of interest area is clearly defined by the geographical boundary created by the ranges to the west and the concentration of population in the existing settlement. The community of interest defined by this study equates approximately to the Bowen State Suburb. The settlements outside the township area and the agricultural clusters (e.g. cattle stations) are small in number and reasonably dispersed.

Figure 2: Locality Map of Community of Interest



Source: ABS, 2011, Census of Population and Housing – Bowen Sate Suburb Basic Community Profile, Code SSC30212 (SSC

Data Sources

This demographic analysis uses data provided by the Australian Bureau of Statistics from the 2011 and 2006 census. This analysis draws on data for the Bowen State Suburb area and the Whitsundays Regional Council Local Government Area.

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It is noted that the boundaries of census collection districts were revised between the 2006 and 2011 census periods. The boundary of the Bowen State Suburb appears unchanged and has therefore been adopted for this demographic profile.

It is also noted that in some instances, definitions of accommodation have been altered and this may affect the raw data.

Where comparable data is not available for these areas alternative data sources or geographical areas have been adopted.

The staged release of census data makes some 2011 data, specifically economic and employment data, for the investigation areas presently unavailable. In these instances 2006 data is employed and review is recommended following subsequent stage releases in October 2012 and March 2013.

3.1 Demographic Summary

Resident Population

Bowen was first settled in 1861 and named after Queensland's first colonial governor, Sir George Ferguson Bowen. New residents have arrived and settled in Bowen at a steady rate since the mid twentieth century, with the rate of new arrivals increasing in the subsequent 20 years.

The current resident population of the Bowen State Suburb (Bowen) at the time of the 2011 Census was 10,260 demonstrating a 5.8% rate of growth over the preceding five year census period.

The majority of Bowen residents were born in Australia (87.3%) compared with a lower proportion across the State of Queensland (74.7%). Bowen also has a significantly higher proportion of Aboriginal and Torres Strait Islander Residents (7.3%) when compared with the state average (3.6%).

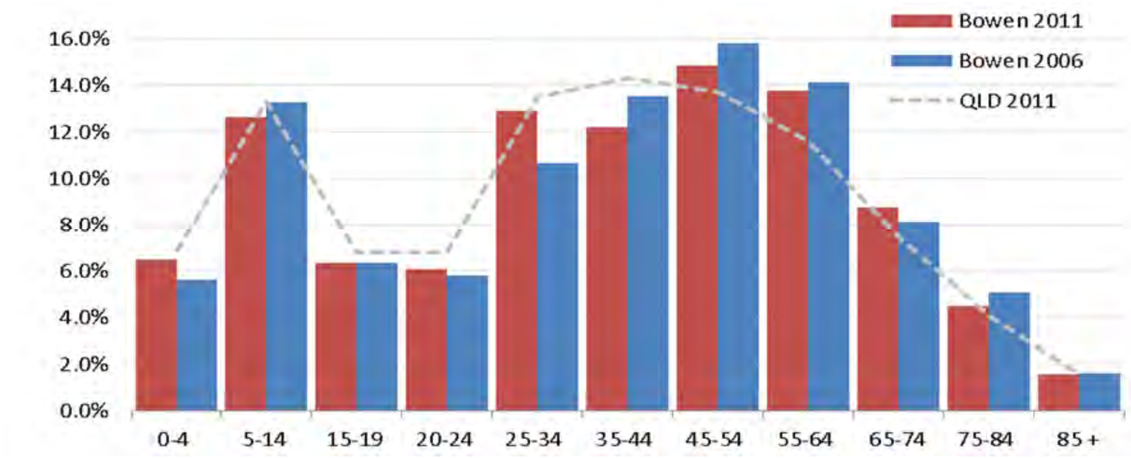
While Bowen has a comparatively low proportion of residents born overseas 12.7%, less than half the State average, Bowen has a notable population of residents born in (South) Korea (1.4%).

A report prepared by SGS Economics commissioned for the State Government and Whitsunday Regional Council in 2010 estimates that the population of Bowen is expected to fluctuate by 40% from the base population at any one time as a result of construction workers required for major projects in the region over the next 10 to 15 years. However, the same study notes that Bowen's agricultural sector attracts a large number of seasonal workers and temporary residents contributing to population fluctuations throughout the year.

Bowen has an aging population when compared with the State average and a lower than average proportion of the population aged 25-34 years and 35-44 years.

However the proportion of Bowen residents aged 25-34 years increased significantly between 2006 and 2011 (Figure 3), bringing it above the state average. The proportion of residents aged 20-24 years also increased in this period. The growth in these age groups may reflect an increase in local employment opportunities generated through recent construction and large projects.

Figure 3: Age Distribution in Bowen



The family household is the dominant household type in both Bowen and Queensland, however Bowen has a high proportion of single or lone person households (26.3%) compared with the State average (22.8%).

Dwellings & Development

At the time of the 2011 census, there were 3,623 occupied private dwellings in Bowen. The vacancy rate for private dwellings in Bowen was 13.1%, higher than the State average (10.3%). In Bowen, 59.1% of dwellings were owned outright or being purchased compared with 63.5% across the state. The rate of housing stress across owned, purchasing and rental dwellings in Bowen is lower than the State average.

Bowen has a higher proportion of separate house dwellings (81.1%) than the State average (78.5%) and a fewer attached or high density dwellings.

The rate of residential development in Whitsunday Regional Council[2] has decreased in recent years with a negative net change from 2006 to 2011. In particular, the rate of new dwellings other than separate dwellings has decreased significantly since 2008. Anecdotal evidence suggests that this reflects a wider general trend across the Queensland housing industry.

Industry & Employment

The primary contributors to the local and regional economy in and around Bowen are agriculture/horticulture (tomatoes, mangoes, and capsicums), tourism, mining (including Port of Abbot Point) and finishing and aquaculture.

2011 Census data for Industry and employment in Bowen is not yet available. The following draws on 2006 data provided for Whitsunday Regional Council.

The personal and household incomes equate to 95.0% and 89.1% of the State average respectively. The SEIFA index of relative socio-economic disadvantage for Bowen at the time of the 2008 Census was 925.6, the second lowest of the Whitsunday Regional Council Small Areas. This indicates a relatively high degree of socio-economic disadvantage in Bowen.

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[2] Data not available for Bowen State Suburb

Of the resident population of Whitsunday Regional Council aged 15years and over, 64.2% were employed full time at the 2006 Census with 4.5% of the population unemployed, slightly less than the State average.

Labourers, Technicians & Trade Workers and Managers are the predominant occupations of Bowen residents accounting for 52.9% of the total working population.

Agriculture, Forestry and Fishing employed 22% of workers from Whitsunday Regional Council compared with 4.2% of workers across the state. Other major industries of employment in Whitsunday Regional Council in 2006 were Retail Trade (11.3%), Health Care & Social Assistance (8.5%) and Construction (7.7%). Mining employed 1.9% or residents in Whitsundays Regional Council compared with 2.7% across the State.

3.2 Existing Community Facilities

Bowen is a well-established and liveable seaside community hosting a broad range of community services including a hospital, community childcare, library, swimming pool, skate park and schools including two high schools.

Bowen also offers a range of social services, such as Alcoholics Anonymous, meals on wheels and a neighbourhood community centre.

The historical township demographic has led supported a service offering weighted towards an aging community including aged care accommodation, general medical services and recreation such as lawn bowls facilities.

Population increase in the Bowen area will result in a corresponding increase in demand for additional and new community infrastructure items. In particular, stakeholder discussions highlighted that a number of existing services were nearing capacity including dental and general medical services.

The emphasis towards older resident community services has resulted in some service gaps identified by stakeholders including physiotherapy and maternal and child health. In particular it is noted that Bowen hospital does not have existing maternity services. Residents currently access these services from Proserpine.

The likely shift towards a younger demographic is anticipated to increase demand for allied health services including physiotherapy, occupational training, remedial massage, family planning and family and relationship counselling services.

4 Policy and Document Review

The following provides detail of the documents reviewed as part of the desktop assessment.

4.1 Bowen Planning Scheme 2006

The Bowen Planning Scheme prepared in 2006 is the key statutory planning instrument for the area of interest as defined by this SIA. The planning scheme is currently under review and a new planning scheme for the whole of the Whitsunday Regional Council areas is to be prepared. In the meantime, the Bowen planning scheme is the relevant plan.

While it does not incorporate strategic directives, this document outlines policy to guide treatment of key issues and outlines preferred management approaches. As such, the Bowen Planning Scheme has been reviewed to identify planning themes which may be relevant to the Project.

- Bowen is the focus for retailing, business and administrative/ community services in the Shire
- Bowen is connected with areas to the north and south via the North Coast Railway Line as an alternative to road transport of both passengers and freight.
- Agriculture is a major employer and local economic contributor and as such Development protects the economic values of natural resources including good quality agricultural land, extractive and mineral resources, vegetation and water
- Existing and new development and populations should be effectively safeguarded against flood and bushfire impacts
- The area has elements of indigenous cultural heritage significant and recognised European/architectural cultural heritage values
- Shire's tourism industry is strengthened and expanded based on the sustainable use of natural, cultural and man-made assets and the orderly provision of services and facilities.
- Development should facilitates diverse housing choice, including affordable housing, that is responsive to the changing demographic structure of the Shire's population and promotes equity in access to goods and services.
- Growth and community development should retain a focus on urban areas to facilitate the efficient use, timely and orderly expansion and continued operation of infrastructure.
- Development should not adversely affect:
  - The community's health and safety;
  - The amenity enjoyed by people in different areas of the Shire; and
  - The safe and efficient operation of the transport, energy and other infrastructure supporting the Shire and surrounding region.
- Development reflects the community's reasonable expectations and harmonises with the natural environment and does not prejudice the Shire's existing scenic amenity, particularly along the coastal plain.
- The community values of places and landscapes reflecting the community's history and identity are not detrimentally affected by development.

4.2 Mackay, Isaac & and Whitsunday Regional Plan

The *Mackay, Isaac & and Whitsunday Regional Plan: Planning for a resilient, vibrant and sustainable community* was prepared by the Queensland Government Department of Local Government and Planning in February 2012. It outlines key regional issues facing Bowen and surrounds including the following:

- **Population Growth impacts** generated by short-medium term influx of residential and non-residential workers including the increasing incidence of fly-in/fly-out, drive-in/drive-out and bus-in/bus-out workforce, largely associated with the resource sector This phenomenon can place pressure on the environment, open spaces, productive rural land, infrastructure and social support services, particularly in the major centres and resource communities (Department of Local Government and Planning, February 2012).
- **Compatibility of major industry uses such as** sugar, horticulture, cropping and grazing industries which benefit significantly from the region's productive agricultural land which is also facing development pressures. The continued loss of good quality agricultural land and strategic cropping land has the potential to reduce the future capacity and viability of the agricultural sector and associated rural support industries. The main pressures include encroachment and fragmentation caused by urban and rural residential development and competing interests such as mining in hinterland areas and industrial growth around Bowen (Department of Local Government and Planning, February 2012)..
- Conservation of heritage values and its integration within new and evolving communities is a critical aspect of sustainable planning and development. The cultural heritage of the region is well represented in historic towns, such as Bowen, St Lawrence and Eungella.
- The non-resident population of the region, comprising non-resident workers, is not recognised in official resident population estimates, posing a challenge in planning for the growth of the region.
- The highly dispersed settlement within the region has resulted in limited access to services and a lack of public transport to support.
- Growing income gap between the proportion of the population on low incomes and those on above-average incomes is also an emerging trend which places pressure on the availability of affordable housing and housing diversity
- A shifts from the traditional demographic profile of resource communities of the nuclear family to an increase in drive-in/drive-out (DIDO) or fly-in/fly-out (FIFO) employees, housed in temporary accommodation or non-resident workforce accommodation for the period of their shift. This trend has triggered a range of social and demographic changes and challenges across the Bowen Basin.
- The culture the high number of regional cultural sites and artefacts of Aboriginal and Torres Strait Islander people is unique and offers many economic and cultural advantages. Similarly, the importance of connection to Country should not be underestimated, as it is this connection that underpins the wellbeing of Aboriginal and Torres Strait Islander communities.

4.3 Whitsundays Regional Council Community Plan 2011-2021

WRC Community Plan responds to an exhaustive community consultation process to outline a series of strategies aimed at promoting a vibrant, safe and inviting place. It recognises Bowen as the administrative hub for northern area of the Whitsunday region and the locations for critical infrastructure and government services such as a rail station, airport (utilised by the horticulture industry), high school, TAFE, hospital and other vital community services.

Council consulted with the community and committed to deliver on community vision through various strategies including;

- Advocating for a range of affordable housing options in the region;
- Upgrading critical regional infrastructure such as water and sewerage treatment plants
- Improving local traffic access and movement including parking and non-vehicular movements for residents and visitors
- Protecting good quality agricultural and strategic cropping land from land uses and infrastructure which limit or restrict these lands for legitimate agricultural purposes;

- Advocating for alternative modes of transport for freight and logistics other than the Bruce Highway;
- Protecting the amenity and availability of open space resources
- Planning and advocating for infrastructure (including social) to be provided in a timely manner in order to cater for growth;
- Continuing to support, engage and facilitate opportunities for all sectors of the community with particular reference to youth, Aboriginal and Torres Strait Islander peoples, the elderly, people with a disability and people who speak English as their second language;

4.4 Sustainable Resource Communities Policy

The Queensland State Government prepared a suite of policy documents to provide a consistent framework to guide planning for resource communities, specifically those in the mining and petroleum industries. The policy directive draws on *A Sustainable Framework for Queensland Mining Towns* February 2007. This policy is currently under review.

These documents include a policy framework for the use and structure social impact assessments outlining the Government's intention to provide coordination and consistency in their employment. The document refers specifically to the Bowen Basin as an area where communities are experiencing recent and on-going impacts as a result of significant expansion in these industries.

Sustainable Resource Communities Policy: social impact assessment in the mining and petroleum industries, September 2008 references a series of key issues for consideration when preparing and SIA for resource communities including the following which may be relevant to the Project:

- Rapidly escalating housing prices due to the influx of resource workers;
- Pressure on support services such as domestic violence due to the increased population;
- Significant increases in heavy vehicle traffic affecting road safety;
- Changes to the community dynamic resulting from predominantly single men moving to the community for work reasons.

4.5 A Sustainable Framework for Queensland Mining Towns

In 2007, the State government also prepared *A Sustainable Framework for Queensland Mining Towns*. This framework was produced to support local governments, State Agencies, mining companies and communities to strategic address the impacts of the 'boom and bust' cycles traditionally associated with the mining industry. The Framework seeks to protect the social and environmental values and economic growth of mining communities.

Specifically, it supports the government priorities of improved health care and community services such as affordable housing, managing urban growth through affective infrastructure provision, managing environmental sustainability through appropriate use of natural resources and supporting diversity in economic growth.

The framework incorporates six key principles each containing a series of strategies which incorporate consistent themes with regard to encouraging collaboration between stakeholders and communities, corporate responsibility with regard to agreement on funding and resources for infrastructure and services and fostering clear and robust processes for community engagement and communications to gather information and promote messages.

The Framework principles were informed by a background study which assessed the impact of an influx of non-resident worker and full time equivalent populations in the Bowen Basin. The findings of this study are summarised in Table 3 below.

Table 3: Non-resident worker and full time equivalent populations in Local Government Areas in the Bowen Basin June 2006 (Department of Local Government, Planning, Sport & Recreation Sustainable Planning Division 2007, p6-7).

Local Government Area	Resident population at end of June 2006 (estimated)* (persons)	Non-resident worker population at end of June 2006** (persons)	Full-Time Equivalent (FTE) population at end of June 2006 (persons)	Non-resident worker population as % of FTE population (% of total)
Banana (S)	13,416	1,154	14,570	8%
Bauhinia (S)	2,116	146	2,262	6%
Belyando (S)	10,503	2,119	12,622	17%
Broadsound (S)	6,503	1,821	8,324	22%
Bowen (S)	11,745	219	11,964	2%
Duaringa (S)	6,433	749	7,182	10%
Emerald (S)	13,181	694	13,875	5%
Nebo (S)	2,005	3,137	5,142	61%
Peak Downs (S)	3,217	724	3,941	18%
BOWEN BASIN	**69,119**	**10,763**	**78,882**	**14%**

Sources:

* PIFU Population projections, 2006 edition (High Series): resident population component for June 2006.

** PIFU Survey of Accommodation Providers, June 2006: non-resident worker population component.

Note: Non-resident workers living in SPQ accommodation located on mining leases or outside of designated localities have been allocated to the nearest population centre, which may be located in a different Shire.

Drawing on the findings above, the framework study identifies a series of areas for consideration in future land use, infrastructure and socio-economic planning. These are summarised in Table 4 below and have been used to guide the issues addressed in this SIA.

Table 4: Key Planning Considerations

Socio-Economic	Land Use	Infrastructure
§ Housing supply and demand including affordability, tenure and dwelling type § Skilled labour force trends and/or gaps § Education and training trends and opportunities for existing and new populations § Health services and future demand § Community services and facilities to support a diverse population including youth services, aged care, child care, and disability services § Arts, culture and heritage programs to protect and enhance presence in mining communities.	§ Demographic trends to inform housing and population growth forecasts § Economic trends in the local and regional economy including tourism, expenditure and industry movement § Availability or serviced land to support new development § Places of indigenous and European cultural heritage significance § Protection of good quality agricultural land § Pest management and constraints on land availability § Air, noise and water quality	§ Service provision for existing and new development including: –Water –Wastewater –Waste –Electricity –Gas –Telecommunications § Road infrastructure, demand and planned projects § Passenger and freight rail services § Airport linkages § Public transport § Recreation and public open space to support existing and new development

Sustainable Resource Communities Policy: social impact assessment in the mining and petroleum industries, September 2008 was developed on the back of the Framework and is currently under review.

4.6 Bowen Abbot Point Accommodation and Community Infrastructure Study

SGS were commissioned by Whitsunday Regional Council and Queensland Government Department of Infrastructure and Planning in 2009-2010 to prepare a report assessing the accommodation and community infrastructure needs within the Bowen Abbot Point Region, associated with large scale industrial and infrastructure development. The study considered a number of projects (both approved and proposed) in the Bowen Abbot Point area.

The study identified the following issues impacting on provision of accommodation and community infrastructure in the study area:

- Population growth impacts from major infrastructure projects and industrial expansion – population growth is not likely to increase in a consistent and predictable way over the next 5-10 years. Additional resident and non-resident workers and their families need to be adequately housed, and provided with community infrastructure without impacting on other groups within the community, and in a manner which continues to sustain the community should the population decline. Population increases (and decreases) expected from the construction workers required in the region are expected to result in an increase and decrease by some additional 40% from the base population at any one time in the region even accounting for the fly in fly out phenomenon.
- Infrastructure will be required to support growth for an economically prosperous future. Some existing systems are already at capacity, particularly the water and there is latent demand for health services and facilities and aged care.
- Identification of land use requirements for “soft” social infrastructure and services to support facilities and service provision at either a basic level to provide essential infrastructure or at a higher level to make the study area an attractive place to live and invest.
- Investigations identified land will be required external to the currently demarcated Priority Infrastructure Areas, particularly in the case of temporary workers’ accommodation areas, to ensure that projects over the next 10- 15 years can adequately house the expected number of construction workers that are likely to flow to the region for certain periods.
- Good quality agricultural land should be protected
- Challenges associated with accommodating seasonal workers – The agricultural industry is currently the largest employer in Bowen, employing approximately 22 per cent of the resident population (in 2006) and attracting a large number of seasonal workers to Bowen during the picking season. The need to accommodate seasonal workers is an existing and ongoing accommodation issue that will be exacerbated by the expected influx of major project workers and creates demand for a range of accommodation options.

The study identifies three groups requiring accommodation:

1. **Residents and operational workers** – assumed to integrate with the existing residential community and generally prefer separate houses, semi-detached dwellings, flats and houses or flats attached to a shop/office. Affordable housing (both rental and for purchase) will also be important to a proportion of this population and expected to have the greatest demand for a broad range of community facilities
2. **Construction workers** - It is assumed that, apart from a portion drawn from the local residential community, the majority of these workers will be attracted from elsewhere and require short term accommodation. Many can be accommodated in single person quarters or couples housing. It is important that adequate community facilities are provided for this group, either as part of workers “camps” or nearby communities.

3 **Tourists and seasonal workers** – The tourists and seasonal workers are assumed to prefer similar types of accommodation which includes motels, caravan parks, backpacker hostels, holiday apartments and cabins.

The study estimates demand generated the level of demand for accommodation for the first two groups (residents – including long term operational workers – and construction workers) as influenced by the number and scale of major projects that proceed. Given the relative level of uncertainty that surrounds some projects; four development scenarios were used to project the potential demand. Table 5 outlines the high and low end projections.

Table 5: Summary of Accommodation Demand, Bowen, 2009-2015

Scenario A	2009	2010	2011	2012	2013	2014	2015
Residents	5,734	6,078	6,169	6,262	6,470	7,490	7,548
Construction Workers	725	3,435	5,250	4,675	450	0	0
Tourists	710	716	721	727	733	743	752
Seasonal Workers	2,000	2,080	2,163	2,250	2,340	2,433	2,531
Scenario A Total	9,169	12,309	14,303	13,914	9,993	10,666	10,831
Scenario D	2009	2010	2011	2012	2013	2014	2015
Residents	5,734	5,915	5,972	6,033	6,095	6,150	6,177
Construction Workers	725	1,623	1,485	725	0	0	0
Tourists	710	716	721	727	733	743	752
Seasonal Workers	2,000	2,080	2,163	2,250	2,340	2,433	2,531
Scenario D Total	9,169	10,334	10,342	9,735	9,168	9,326	9,460

Source: SGS Economics and Planning using data from SGS and PIFU.

The study uses the figures above to project accommodation units required to house the anticipated population increase. The accommodation units requirements projected in Table 6 employ the following assumptions:

- The supply is based on recent building approval rates, known residential projects, and planned workers camps and does not take into account likely market responses to higher demand, nor likely (but at this stage unknown) accommodation specifically associated with major projects.
- The supply side data is grouped according to the *types* of accommodation required so that the supply can be matched with the demand groups.ie:
  - Separate houses, semi-detached dwellings, flats and houses or flats attached to a shop/office are matched with demand from residents and operational workers
  - Motel rooms, caravan sites, cabins or hostel beds will be matched with the demand from tourists and seasonal workers.
  - Construction workers are assumed to require temporary workers' accommodation.
- It is noted that some construction workers will come from the resident workforce and some will relocate to the area.
- Construction workers may also occupy dwelling in the towns on short term rental if they are available.
- Dwellings for tourist and seasonal workers which are motel or equivalent accommodation units.

Table 6: Summary of Accommodation Supply, Bowen, 2009 - 2015

Accommodation Supply for:	2009	2010	2012	2013	2014	2015
Residents & Op Workers	5,709	5,824	6,055	6,170	6,286	6,401
Construction Workers	530	1,350	1,350	1,350	1,350	1,350
Tourist & Seasonal Workers	1,654	1,654	1,654	1,654	1,654	1,654

Based on these estimates the study projects that, at a maximum, there is requirement for:

- 1,896 houses or units for future residents
- Up to 3,132 single person quarters for construction workers
- 1,584 accommodation units for seasonal workers.
- A possible maximum of 316 hectares to meet accommodation gaps assuming low density

The report notes the tight timeframes for provision of accommodation to meet the short term demands and based on the findings above concludes that;

"..it is likely that there is adequate land to meet the residential, seasonal workers and tourist accommodation needs. However further land, outside of current residential type zoning, and the urban localities, will be required to house the temporary construction workers likely to locate within the region.

Temporary workers' accommodation should be located in close proximity to the Bowen locality to ensure good outcomes for economic prosperity, amenity considerations and community cohesion".

With respect to community infrastructure, the study notes that with the exception of some commercially operated medical, aged care and allied health centres; most community infrastructure in the area is publicly funded and supported by the not-for-profit sector. Furthermore the study identified two distinct service catchments:

- Primary catchment: Bowen urban centre
- Secondary catchment: Collinsville town centre and surrounds

The services areas identified as experiencing current pressure were aged care and health services with a number of facilities already considered to be at capacity.

The report recommends strategies to guide the provision of community infrastructure with a particular focus on the areas of:

1. Learning and local enterprise to improve skills and opportunities for local people and businesses
2. Health and aging in place
3. Family friendly environments including youth and education facilities
4. Art, cultural and community development including sports and recreation, and interests of diverse cultural groups
5. Non-resident (visiting populations) applying common standards of services in purpose built workers villages

The report identifies a series of local and regional level community infrastructure requirements specifically including:

- Upgrade of the Bowen Library;
- Addition aged care (nursing care and retirement village);

- Additional child care and school facilities;
- Improved health care;
- Youth services and facilities;
- TAFE and training programs; and
- Library services targeted to temporary workers

4.7 Current Research

Central Queensland University has recently undertaken a study investigation the economic impacts of resource communities in the Bowen Basin with respect to a variety of operational and accommodation models (Rolfe 2012). The research models the potential impacts on populations of mining and resource communities to identify how those impacts vary across different workforce patterns including fly-in/fly-out (FIFO), drive-in/drive-out (DIDO) and on site accommodation. These models were applied to case studies of the Bowen and Surat Basin in Central Queensland.

The model assumed that 50% of the current proposed projects in the region would proceed by 2018 and returned the following high level findings across the four projected scenarios as summarised in Table 7 below.

Table 7: Projected Impacts of Various Resource Development Models

Workforce Scenario	Local Impacts	Regional Multiplier Effects (business chain and consumption effects)
Scenario 1 All new primary workforce based in local area	New primary employment all residing in local area Population increase	Strong regional growth spread across major regional and local scale centres
Scenario 2 Current trends towards a mix of local, DIDO and FIFO operations	Minimal change - ie. status quo	Regional growth pattern shifting towards regional centres of MacKay and Rockhampton
Scenario 3 New workforce to be largely DIDO based (90 % in regional area)	New growth mostly DIDO	Moderate regional growth occurring predominately in regional centres of MacKay, Rockhampton and Gladstone
Scenario 4 New workforce to be largely FIFO & based outside of region.	Minimal impact, minimal change	Reduced growth in region with growth projected almost exclusively in regional centres

The study concluded broadly that where the primary workforce lives locally, the demographic impact is spread across the region, however with an increasing mix of non-residency the effect of the local and regional population boost is smaller. The study found that generally the greatest population and economic increase from such development and associated workforce will be focused on the regional centres such as Mackay.

However, to encourage a more equitable spread of regional impact and stimuli the study recommends that residential location is offered as an open choice to workers allowing them to choose between local, DIDO and FIFO options. A strengthened focus on the provision of quality infrastructure, housing services and lifestyle elements will contribute to making local towns attractive and encourage a greater proportion of workers to live locally. Operators can further increase the positive impacts of their investments by implementing strategies to foster the growth of the supply chain in the region.

4.8 Previously Identified Issues

In addition to issues addressed and directions delivered through strategic policy and planning, a number of specific issues have been raised through community and stakeholder consultation for comparable projects in the area. Many of these issues area are consistent with those issues identified in the policy and document review. Specifically, submissions made to the preliminary documentation for Terminal 3 at Abbot Point included the following points relevant[7] to this assessment:

- Concern over the quality and security of regional infrastructure and services including water, power and waste Impacts of increased road and marine traffic resulting from additional workers including safety, noise and local economy
- Physical and emotional health of workers
- Maintaining and enforcing a safe environment (marine and road safety)
- Impact on tourism, local amenity and businesses as a result of changes to the natural environment and local character and sense of place
- Implementation and enforcement of appropriate buffer zones between T0 and sensitive adjacent areas
- Ensuring appropriate planning for major events/natural disasters, particularly with respect ti climate change impacts
- Providing accessible and genuine opportunities for consultation during the project assessment process
- Concerns that the introduction of new intensive uses will set a precedent for further development with greater impacts into the future.
- Ensuring that an appropriate level of assessment is provided across all aspects or the project and alternative options

4.9 References

- Bowen Shire Council 2006, *Bowen Planning Scheme*
- Department of Local Government, Planning, Sport & Recreation 2007, *A Sustainable Framework for Queensland Mining Towns*
- Department of Local Government and Planning 2012, *Mackay, Isaac & and Whitsunday Regional Plan: Planning for a resilient, vibrant and sustainable community*
- Department of Tourism, Regional Development Industry Centres 2008, *Sustainable Resource Communities Policy: social impacts assessment in the mining and petroleum industries*
- Rolfe, J. September 2012 “Analysing the demographic, economic and social impacts on communities of long-distance commuting in the mining industry” *News from the front line - Our Resources Regions - Exploring the situation and providing solutions,* Planning Institute of Australia, Brisbane
- Whitsunday Regional Council 2012, *Whitsunday Regional Council Community Plan 2011-2012*

[7] ie. Disregarding technical aspects of the proposal outside the scope of this study

5 Key Impacts

As this assessment is concerned specifically with the impacts likely to be experienced by the community of interest, (ie. contained within the Bowen Township and surrounds), it is envisaged that the issues identified can be effectively addressed and managed through the application of appropriate conditions as part of the EIS process.

While this assessment is specifically addressing the potential impacts generated by T0, it is acknowledged that cumulative effects are likely to apply as a result of approval and construction of multiple major projects proposed in the region. These projects, if sequentially staged have potential to generate positive benefits for the area by enhancing the value of infrastructure such as workers accommodation by ensuring its ongoing commission.

The key social impacts identified and investigated in this SIA are:

- Construction workers accommodation needs
- Permanent worker accommodation needs
- Impacts upon demand for housing
- Encroachment impacts upon agriculture activities
- Impacts on existing social and community infrastructure
- Cultural impacts – permanent residents and construction workers

As mentioned in Section 0 of this report, the T0 construction workforce is proposed to be accommodated outside of the Bowen Township in purpose built accommodation for a period of 2-3 years. Construction workers typically work long shifts and have little time for recreation. The camps are typically not used by workers on their days off. The camps essentially provide sleeping quarters, dining and short term recreation opportunities and are self-contained. Opportunities for interaction with the broader community are limited and the additional workforce housed within these camps is not expected to generate significant direct impacts upon the Bowen community. Furthermore it is noted that the construction phase of the Project may also employ a number of workers currently involved on other construction projects in the area thereby reducing the net increase in accommodation demand.

The accommodation camp expected to accommodate the T0 construction workforce is located in Merinda, 10km out of the Bowen Township. The camp is self-contained and operated by private contractors and is subject to a code of conduct for its residents and employees. It is understood that conditions and facilities at the camp are managed by a private contractor. As such, the workers' camp is considered independent of the community of interest for this assessment as growth in camp population is not expected to generate any significant impacts on the Bowen Township. It is anticipated that the workers accommodation camp will provide the bulk of housing supply for nonresident workers and, consequently, will not generate significant demand upon rental housing in Bowen.

Any proposed accommodation camp will be required to comply with the relevant State and Local Government regulations and Standards including the Urban Land Development Authority Guideline 3 for Non-Resident Worker Accommodation (July 2012), Queensland Development Code MP 3.3 – Temporary Accommodation Buildings & Structures Code and the Whitsunday Regional Council Planning Scheme which is currently under development.

The Whitsunday Regional Council planning scheme (formerly Bowen Shire Council) provides a comprehensive approach to protection of good quality agricultural land from inappropriate development.

The approval for the new facilities is subject to a range of conditions designed to achieve a high quality outcome for the workers and the nearby town center and authorities. While Council has noted a preference to accommodate additional workforce in existing communities to the greatest extent possible, where this is not feasible workers' camps are required to meet quality standards to ensure their consistency with future desired development directions and ongoing sustainability.

It is anticipated that the permanent workforce for T0 operations is likely to seek housing in the Bowen area. It is likely that this will result increased housing demand and some changes in the skills and income profile of the community over time. Council has indicated that there is sufficient supply of residential land to accommodate demand for additional housing generated by the T0 project.

Bowen has historically supported a seasonal workforce as a result of the local agricultural sector. The short term increase in local opportunities in the construction sector is unlikely to impact on the availability of labour to support the local agricultural producers as the target workforce is substantially different. The agricultural sector tends to recruit unskilled workers from overseas for short stays and these workers use local backpackers hostels and caravan parks. Given that the bulk of the construction workforce will require construction industry skills and will be housed in workers accommodation camps, it is not anticipate d that this will have a detrimental impacts upon the agricultural sector in terms of loss of employees or unavailability of housing for seasonal agricultural workers.

Bowen is an established and liveable seaside town with a strong sense of community and a range of social and community infrastructure. The permanent T0 workforce is likely to be readily integrated with the community fabric, particularly with staged the staged commencement model as outlined in Section 2.4.2 of this report.

While this may generate additional impact both for housing and community infrastructure, such as health and education facilities, the staged model of commencement of operations ensures that changes can be more readily planned for and absorbed by the community.

While this may generate additional impact both for housing and community infrastructure, such as health and education facilities, the staged model of commencement of operations ensures that changes can be more readily planned for and absorbed by the community. Council and local business and community stakeholders have identified a preference to house workers within the local communities. Stakeholders have demonstrated a capacity and willingness to accommodate a growing resident population the Bowen Township and identified that this model incorporates greater benefits for the local community in terms of a strengthened local economy, improved social outcomes and on-going sustainability and population stability.

6 Management Measures

This section if the report outlines the proposed approach to manage and mitigate the potential impacts discussion in the previous section.

Communication with Stakeholders

- Establishment and implementation of a communication protocol between Adani and key stakeholders to allow for project updates and information exchange regarding project phasing and employee numbers, employment and local business opportunities, accommodation needs and servicing requirement;
- Communication protocol to provide for stakeholder feedback and will form the basis of on-going monitoring of the project particularly during the construction phase and initial operations phase.

Construction Workers

- Workers accommodation camps are to be situated outside of Bowen township such as the existing Merinda accommodation camp;
- Workers accommodation camps to comply with the requirements of the Queensland Development Code and ULDA Guideline No. 3 together with the relevant provisions of the WRC planning scheme if proposed on land within the Council planning scheme area or, alternatively, with the requirements of the Abbot Point State Development Area Development Scheme provisions if on land within the Abbot Point State Development Area;
- By providing appropriate and well planned non-resident accommodation camps for construction workers local impacts on diversity and affordability of housing stock within the Bowen township can be minimised
- Bus to and from the construction site to minimise private vehicle usage form accommodation camp to the construction site;
- Bus to and from airport to workers accommodation camp to minimise use of private vehicles

Permanent Workforce

- Through the communications protocol, advise key stakeholders of the likely timeframe for commencement of operations and influx of operations workforce to identify any accommodation gaps. Adani will rely upon local businesses to provide accommodation and additional services for the permanent workforce as required.

Social and Community Infrastructure

- Accommodation camps will provide essential health services and recreation services. Camp operators will negotiate with local service providers for any additional requirements;
- Construction programs and anticipated workforce numbers will be projected and communicated to the relevant authorities and agencies to provide some certainty to demand projections and facilitate orderly planning process to mitigate undue strain on local infrastructure and out of centre facilities to the greatest extent possible.

Cultural Issues- Construction Workers and Permanent Residents

- Camp operators will provide a code of conduct for residents to abide by to ensure that a reasonable level of health, safety and community relations are maintained or improved by the camp's operation;
- Communication protocol will provide for feedback to Adani about any emerging issues resulting from construction workforce behaviour and discussion of potential management measures.

Appendix A: Detailed Demographic Profile

Residents

The residential population of Bowen State Suburb (Bowen) at the time of the 2011 census was 10,260 people. This represents a 5.8% rate of growth, or 563 additional residents, over the previous five years.

Aboriginal and Torres Strait Islander people account for 751 of Bowen residents of 7.3% of the population. This is approximately twice the Queensland state average of 3.6%.

Table 8 provides a summary of the residential population of Bowen in 2011.

Table 8: Resident Population Indicators 2011

Residents	Bowen	Bowen %	QLD
Male	5,411		49.6%
Female	4,849		50.4%
TOTAL residents	10,260		
Aboriginal & Torres Strait Islander people	7.3%		3.6%
o/s born	12.7%		26.3%
Median age	39		36
Average people per household	2.4		2.6

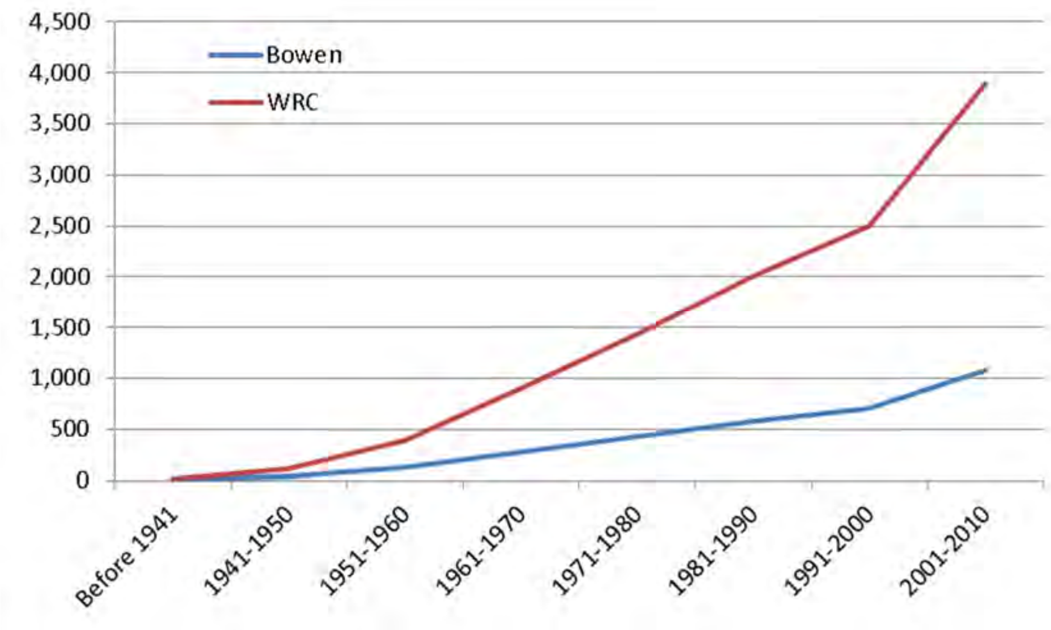
At the time of the 2011 census, the residential population of Bowen was 10,260. The resident population of Bowen grew by 5.8% since the previous Census period with an additional 563 residents arriving in the area. This is lower than the average rate of population growth for the State of Queensland over the same period of 11.0%

The indigenous population of Bowen accounts for 7.3% of residents, higher than the state average of 3.6%. This has remained steady in the five years to the 2011 Census period.

The proportion of Bowen residents born oversees (12.7%) is less than half of the state average (26.3%). While the majority of these residents come from New Zealand and England, a statistically significant proportion (1.4%) originate from (South) Korea. This population is not reflected across the State.

Figure 4 below shows the rate of arrival of new residents in Bowen against that of the Whitsundays Regional Council area. Bowen was originally settled in 1861, and has experienced steady growth since the mid twentieth century. Approximately 500 new residents settled in Bowen in the 50 years to 1990 with the same number again arriving in the subsequent twenty years.

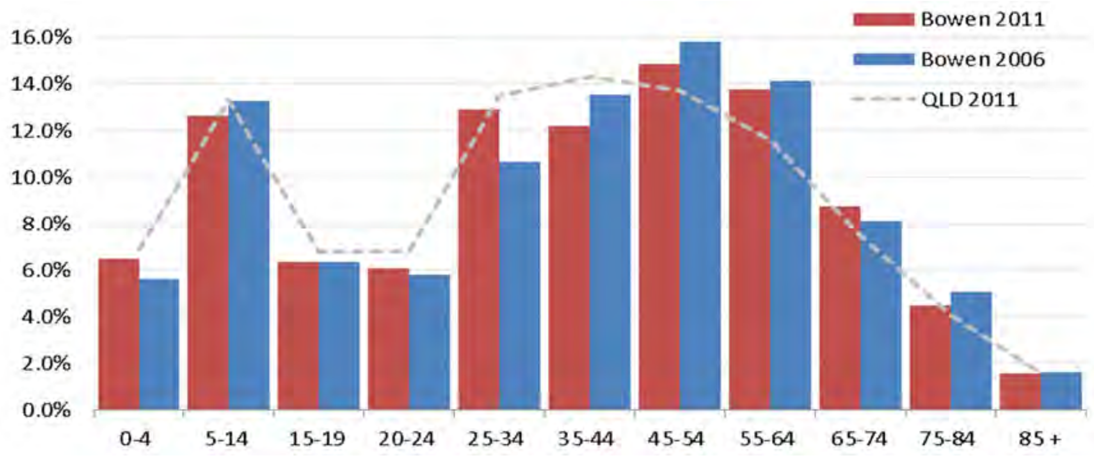
Figure 4: Date of Resident Arrival in Bowen



An SGS report commissioned in 2009 (SGS 2010) estimates that the population of Bowen is expected to fluctuate by 40% from the base population at any one time as a result of construction workers required for major projects in the region over the next 10 to 15 years. The study also notes that Bowen's agricultural sector attracts a large number of seasonal workers and temporary residents contributing to population fluctuations throughout the year.

Figure 5 shows the age distribution of Bowen residents against the Queensland State Average.

Figure 5: Age Distribution in Bowen



Bowen has an aging population when compared with the Queensland State average. The proportion of residents aged 45 years and over has outstripped the State overage in both the 2006 and 2011 census years, although this appears to be reducing to reflect broader trends. The most significant growth in population in Bowen between 2006 and 2011 was experienced in the 25-34 year age group.

Housing

At the time of the 2011 Census, there were 3,623 occupied private dwellings in Bowen. The vacancy rate of private dwellings in Bowen was 13.1%, which is higher than the Queensland State average.

A greater proportion of private dwellings were occupied by rental tenants in Bowen when compared with the State, and the rate of housing stress* experienced by both rental and owner/purchaser residents in Bowen was lower than the Queensland State average

Table 9: Residential Dwellings in Bowen

Dwelling Type	Bowen	Bowen %	QLD State Average
Occupied private dwellings	3,623	86.9%	89.7%
Vacancy Rate	548	13.1%	10.3%
Owned outright or purchasing	2,139	59.1%	63.5%
Renting	1,324	36.5%	33.2%
Purchasing Housing Stress*		10.5%	11.9%
Rental Housing Stress*		6.7%	9.7%

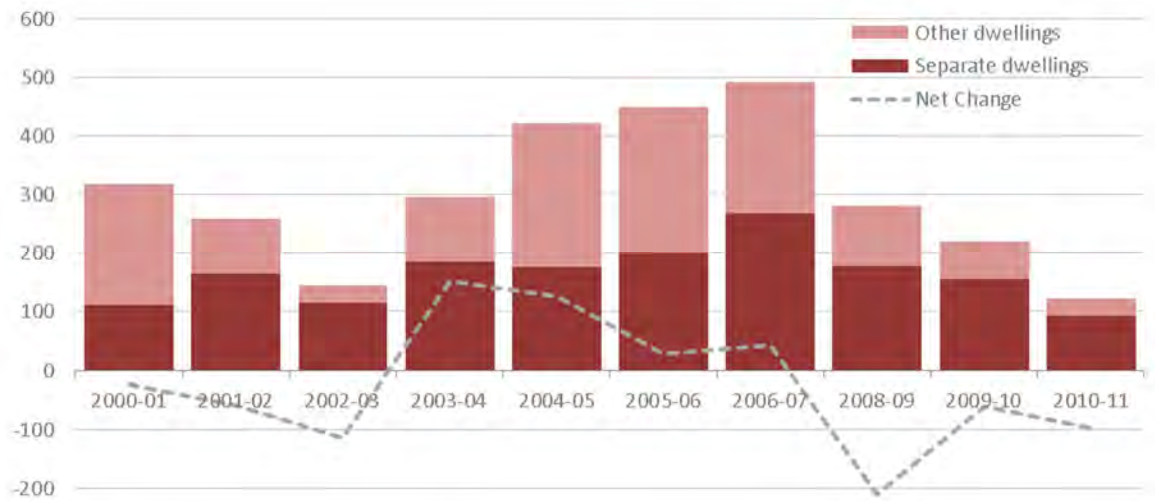
* People in housing stress are those with lower income who spend 30% or more of their gross household income on housing costs (Australian Government Social Inclusion Board, 2012)[9].

While the family household is the dominant household type across both areas, Bowen has a higher proportion of single or lone person households (26.3%) when compared with the State average (22.8%).

Bowen has a higher proportion of separate house dwellings (81.1%) than the State average (78.5%) and a fewer detached or high density dwellings. Bowen also has a significantly higher proportion of other dwelling types (5.9%) which may include caravan, cabin, houseboat, improvised home, tent, sleepout, house or flat attached to shop or office than the State average (1.3%)

Figure 6 shows the rate of residential development in Whitsunday Regional Council between 2001 and 2011. This shows that the rate of development has decreased in recent years with a negative net change from 2006 to 2011. In particular, the rate of new dwellings other than separate dwellings has decreased significantly since 2008.

Figure 6: Residential Development in Whitsunday Regional Council



Industry & Employment

Regional Economic Contribution of Bowen

In 2006, economic activity in Bowen economic contributed $250M per annum to the horticulture industry growing tomatoes (43 000 tpa), mangoes (2600 tpa), capsicums (22 000 tpa), sweet corn (6650 tpa) and beans.

The local tourism industry in Bowen generated $2.9M and the Port of Abbot Point generated 12 Mtpa coal exports (Mackay Whitsunday Regional Economic Development Corporation et al 2006).

Bowen is also home to significant fishing and aquaculture and cattle industries, the Cheetham Salt Works which produces 29 000 tonnes of salt annually and the Bowen Coke Works produces 44,000 tpa, most of which is railed for use by Xstrata at Mount Isa.

Industry & Employment

Economic and industry data for the 2011 census period is due for public release in early 2013. The following section employs data taken from the 2006 Census; however as census collection districts and data processing methods have changed the data for the Bowen area is not directly comparable for the 2006 and 2011 census periods. As such, this section illustrates proportional trends only.

Table 10: Median weekly incomes 2011

People aged 15 years & over	Bowen	Queensland
Personal	$ 558	$ 587
Family	$ 1,364	$ 1,453
Household	$ 1,100	$ 1,235

Source: Australian Bureau of Statistics Census of Population and Housing 2011 Quick stats)

The Median weekly incomes for residents of Bowen are lower than the State average. The median weekly personal income in Bowen in 2011 was $558, equating to 95.0% of the State average while household income in Bowen was 89.1% of the weekly median household income for Queensland.

Of the people employed and working within Whitsunday Regional Council at the time of the 2006 census, 88.6% were also residents of the municipality. While 11.1% of workers employed in Whitsunday Regional Council travelled to work from other local government areas.

Socio-Economic Disadvantage

Socio-Economic Indexes for Areas (SEIFA) is a product developed by the ABS to provide a comparable indicator to assess the level of relative local social and economic well-being of Australian communities.

The **SEIFA** Index of Relative Socio-Economic Disadvantage is derived from attributes such as low income, low educational attainment, high unemployment, jobs in relatively unskilled occupations and variables that reflect disadvantage rather than measure specific aspects of disadvantage (e.g., Indigenous and Separated/Divorced).

High scores on the Index of Relative Socio-Economic Disadvantage occur when the area has few families of low income and few people with little training and in unskilled occupations. Low scores on the index occur when the area has many low income families and people with little training and in unskilled occupations. It is important to understand that a high score here reflects lack of disadvantage rather than high advantage (.id 2006)[11].

Table 11: SEIFA index – Whitsundays Regional Council Small Areas 2006

SEIFA index of disadvantage 2006[12] (Whitsunday Regional Council's small areas)	2006 SEIFA (Index of disadvantage)
Collinsville - Scottville	916.6
Bowen	925.6
Proserpine	959.6
Whitsunday Regional Council	*975.7*
Rural Remainder	986.5
Whitsundays - Coral Sea	997.5
Cannonvale	1015.9
Jubilee Pocket - Airlie Beach & District	1037.6
Strathdickie - Cannon Valley & District	1047.1

Table 11 shows the SEIFA index if relative disadvantage drawing on 2006 Census data for Bowen against the other small areas of the Whitsundays Regional Council. Bowen's index of 925.6 is the second lowest in the municipality and reflects a relatively high incidence of socio-economic disadvantage.

Employment

The labour force in Whitsunday Regional Council in 2006 had a comparatively higher rate of full time employment (64.2%) against the State average (61.6%). The unemployment rate in Whitsunday Regional Council in 2006 was comparable to the State average.

Table 12: Labour Force in Bowen 2006

Population aged 15 + years	% of persons in the labour force in Bowen	% of persons in the labour force in Queensland
Employed full-time	64.2%	61.6%
Employed part-time	26.0%	27.7%
Unemployed	4.5%	4.7%

12 SEIFA index ratings for the 2011 Census period are scheduled for release in early 2013.

As illustrated in Table 13 below, Labourers constitute the largest proportion of the work force made up of Whitsunday Regional Council residents. This aligns with the State average. The workforce in Whitsunday Regional Council in 2006 reflected that of Queensland despite having a slightly smaller proportion of Machinery Operators and Drivers and a higher proportion of managers.

Table 13: Occupation of Workers in Whitsunday Regional Council 2006

Occupation of employed persons aged 15 years and over	% of employed persons aged 15 years and over in Whitsunday Regional Council	% of employed persons aged 15 years and over in Queensland
Labourers	26.9%	28.6%
Technicians & Trades Workers	13.7%	13.2%
Managers	13.3%	12.7%
Machinery Operators & Drivers	9.9%	10.2%
Clerical & Administrative Workers	9.5%	9.4%
Sales Workers	8.7%	8.1%
Community & Personal Service Workers	8.1%	8.0%
Professionals	7.7%	7.8%

As a regional community, the Agriculture, Forestry & Fishing industry was the largest employer in Whitsunday Regional Council in 2006 accounting for 22.9% of the residential workforce compared with only 4.2% across the state of Queensland. Retail Trade accounted for a further 11.3% of jobs in Whitsunday Regional Council against 4.69% across the state. The proportion of construction workers in Whitsunday Regional Council (7.7%) was considerably lower than the state average (14.3%), while mining accounted for 1.9% of the resident workforce against 2.7% across the state.

Table 14: Industry of Workers in Whitsunday Regional Council 2006[13]

Industry of employment of persons aged 15 years and over	Whitsunday Regional Council	QLD
Agriculture, Forestry & Fishing	22.9%	4.2%
Retail Trade	11.3%	4.9%
Health Care and Social Assistance	8.5%	4.0%
Construction	7.7%	14.3%
Accommodation and Food Services	6.5%	5.3%

[13] *The profile of workers presented below provides information on the people who worked in the Whitsunday Regional Council during the week preceeding the Census in 2006. The information includes all employed persons aged 15 years and over who worked in area regardless of where they lived. As a result the profile below includes residents of the Whitsunday Regional Council as well as residents of other Local Government Areas. (id)*

References

- Australian Bureau of Statistics 2006 & 2011, *Census of Population and Housing*
- Australian Government Social Inclusion Board 2012, *Social Inclusion in Australia: How Australia is faring,* available at http://www.socialinclusion.gov.au/sites/www.socialinclusion.gov.au/files/publications/pdf/HAIF_report_final.pdf
- id 2006, *Whitsunday Regional Council Community Profile* available at http://profile.id.com.au/whitsunday
- Mackay Whitsunday Regional Economic Development Corporation & Ports Corporation of Queensland 2006, *Bowen Shire LGA Profile*, December 2006.

Appendix B – T0 Draft Development Plan

Refer Draft Masterplan (sheet 1 of 2) 14_08_12 CONSTRAINTS DATA A

Appendix C – T0 Anticipated Traffic & Vehicle Movements

The following vehicles are expected to utilised specifically by the T0 terminal operator at full capacity (70 Mtpa):

- **4 Operator Utilities** – for the movement of operator crews and their tools around site
- **7 Maintenance Utilities** – for the movement of maintenance crews and their tools around site
- **5 Staff / Superintendent Utilities** -
- **2 Lubrication Trucks** – specifically designed trucks to hold multiple oil drums to carry out machinery lubrication activities
- **1 Vacuum Truck** – to assist site cleaning, a specifically designed truck for the removal of dry and wet material from sumps, pits, and general areas around site
- **1 Flatbed Truck** - 10 ton load capacity, for maintenance and warehousing (logistics).
- **2 Fork Lifts (external)** - 1x10 ton & 1x5 ton lift capacity
- **1 fork lift (internal)** – 3 ton for warehousing
- **1 Manitou Forklift** – for the transportation of palletised material around site
- **1 Fire Truck** – remote site fire safety
- **1 Franna Crane** – 15-25 ton crane for movement of out of gauge items around site
- **1 dozer –** clearing and movement of coal on stockpiles
- **1 loader** – handling coal and digging out sediment pits and drains.
- **1 digger** – digging out sediment pits and drains
- **1 tipper truck** – movement of coal and sediment around site

In addition to the above tradesman / contractor vehicles will access site to carry out specific functions. Examples of vehicles include:

- **Heavy Lift Cranes** – major lift activities
- **Utilities** – contractor and tradesman work vehicles
- **Goods Trucks** – delivery of consumables to the site's warehouse

It is expect at peak operation 70-100 vehicles may access and operate on site per day.

Appendix D – Stakeholders

Stakeholders have been differentiated in terms of the level of engagement proposed in the Stakeholder and Community Engagement Plan into Tier 1, Tier 2 and Tier 3 stakeholders.

Tier 1 Stakeholders

Tier 1 stakeholders are individuals or representative groups with potential to be directly affected by the project or who are involved in decision making about the project. Tier 1 stakeholders are:

- Department of Sustainability Environment, Water, Population and Community;
- Great Barrier Reef Marine Park Authority;
- Federal Member for Dawson;
- Department of Environment and Heritage Protection;
- Department of Agriculture Forestry and Fisheries;
- Department of Transport and Main Roads;
- Maritime Safety Queensland;
- State Member for Burdekin;
- Whitsunday Regional Council;
- North Queensland Bulk Ports Corporation;
- Adjoining property owners;
- Native Title claimants;
- Commercial Fishing Sector.

Tier 2 Stakeholders

- Utility and service providers
- District Growers Association
- Whitsundays Marketing & Development
- Bowen-Collinsville Enterprise

Tier 3 Stakeholders

- Bowen community and broader community.