



Chapter 30

Economics

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30. ECONOMICS

30.1 Introduction

This chapter describes the economy of the project region, the existing and future economic state of the coal market, the positive and negative economic impacts of the project and measures to enhance positive impacts or mitigate negative impacts in accordance with the requirements of the Terms of Reference (ToR) for this EIS. Economic modelling is presented to describe the impacts on economic output, household incomes, direct and indirect jobs and the project's value added to the economy at a regional and State level. Information in this chapter is based on the report, "Byerwen Project Economic Impact Assessment" provided in **Appendix 30**.

30.2 Coal Market

30.2.1 Current Market

Bulk commodity prices have fallen noticeably in response to poor demand for steel and electricity, along with improving supplies of the commodities. Both coal and iron ore prices have fallen to their lowest prices since late 2009, consistent with Chinese gross domestic product (GDP) growth which slowed to its lowest rate in over three years in the June 2012 quarter.

Ongoing concerns over industrial disputes had largely shielded coking coal prices from the same sharp price declines seen in other bulk commodities in mid to late 2012. However, prices have started to reduce sharply as suppliers offer sizeable discounts in the face of underwhelming demand from steel makers.

Saleable coal production in 2010–11 amounted to a total of 179.8 million tonnes with exports totalling 162.5 million tonnes, worth A\$29.04 billion free-on-board, were made to 29 countries. These exports comprised 116.3 million tonnes of metallurgical coal and 46.2 million tonnes of thermal coal used for electricity generation and in industrial processes. Coal exports from Queensland for 2010–11 were down significantly on 2009–10 export tonnages, largely due to flooding in Central Queensland during early 2011, with markets in Asia accounting for over 80% of sales.

Despite the reduction in demand, the long-term outlook for coal demand remains positive, with Queensland's Department of Natural Resources and Mines (DNRM) outlining that Queensland has high-quality coal resources of more than 34 billion tonnes (raw coal in-situ). Resources of coking coal amount to approximately 8.7 billion tonnes, of which about 4 billion tonnes are suitable for open-cut mining. The Bowen Basin, which contains virtually all of the state's hard coking coal, is the most important source of export coal in Queensland.

30.2.2 Medium to Long Term Market Predictions

Recent media and market updates from major banks indicate that whilst the medium to long term coal market outlooks are relatively positive, there are a number of risks within the Queensland operating context that may threaten the viability of current and development projects. These risks include:

- the global macroeconomy, with continued global uncertainty resulting in a marked deterioration in global coal prices over mid to late 2012, and limiting the availability of investment funds for new mining projects

- high input costs, largely attributable to unsustainable wage rates as companies compete for skills within a small labour pool, the increasing cost of key construction inputs and multiple projects monopolise scarce inputs, and declining productivity which is eroding Queensland's international competitiveness
- increasing global competition, where the cost of production in Australia is far greater than in other coal-producing jurisdictions
- climate change policies, including the implementation of a carbon tax that is more than double the current European Union Allowance spot price, and a price not borne by any competing coal exporting nation via explicit or implicit carbon costs
- increased sovereign risk attributable to significant policy changes (including the Resource Super Profits Tax and the Minerals Resource Rent Tax) and other increases in regulatory burden through development approval conditions for major projects and industrial relations legislation
- difficulties with the attraction and retention of skilled labour.

The long term global demand outlook for thermal and coking coal remains positive, primarily due to the ongoing industrialisation and urbanisation of a number of developing countries, in particular China and India.

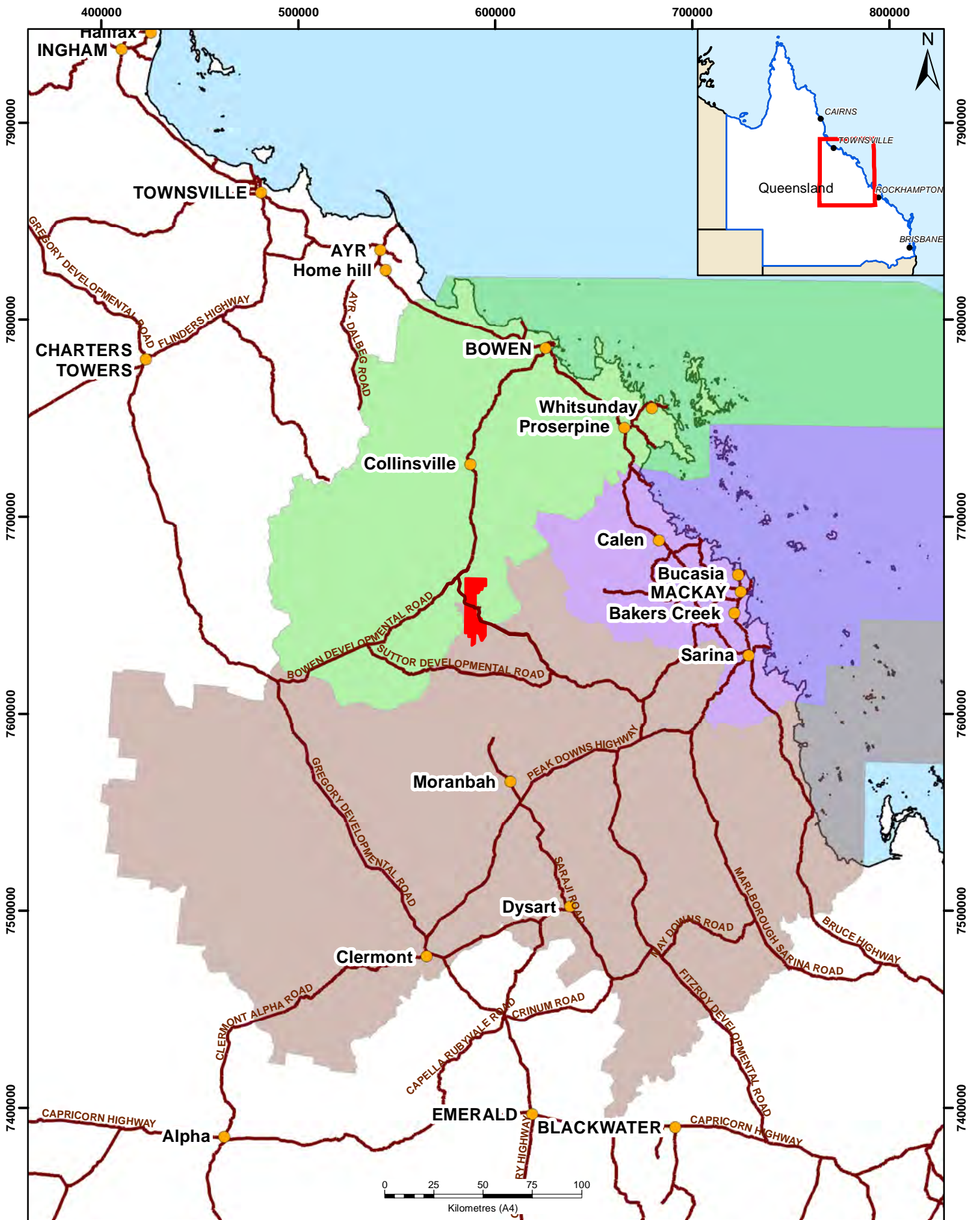
Whilst coal's share of global energy demand is forecast to decrease over the next 15 to 20 years, due to growing energy demand, there is an absolute increase in demand forecast for coal year on year. In effect, it is predicted that Queensland's thermal coal exports could grow from 54 Mtpa in 2011 to 127 Mtpa in 2025, and coking coal exports expected to grow from 111 Mtpa to 244 Mtpa in 2025.

30.3 Existing Economic State

30.3.1 Definition of Areas



This chapter makes reference to a number of demographic areas, namely national, state, regional and local. These are defined as:

- National: 'National' refers to the country of Australia, consisting of six states and two territories
- State: 'State' refers to the state of Queensland
- Regional: 'Regional' refers to the area covered by the Mackay, Isaac and Whitsunday (MIW) Regional Council Areas (refer **Figure 30-1**)
- Local: 'Local' refers to the township of Glenden, located within the Isaac Local Government Area, and situated 30 km east of the Byerwen Mine
- Moranbah, Nebo and Collinsville are also referenced localities used to compare housing data with Glenden.



Legend

- Project Area
 - Main Towns
 - Main Roads
- Regional Council Area**
- Isaac
 - Mackay
 - Whitsunday

Regional Council Areas		
Figure 30-1	Byerwen Coal Project	
Date: 31/01/2013		
Revision: R1	<small>Author: emma.lewis Map Scale: 1:2,500,000 Coordinate System: GDA 1994 MGA Zone 55</small>	
<small>G:\CLIENTS\A-TO-D\BYEGEN - Byerwen EIS\GIS\Map\EIS_Chapter30_EconomicImp\BYEGEN_reg_councilareas.mxd</small>		

© State of Queensland (Department of Environment and Resource Management (DERM), Department of Natural Resources and Mines (DNRM)), ELP has produced this map for the purpose of presenting a summary of relevant spatial information based on or containing data provided by the State of Queensland (DERM, DNRM) [2012] and other sources at the time the map was prepared. In consideration of the State permitting use of this data you acknowledge and agree that both the State and ELP give no warranty in relation to the data (including accuracy, reliability, completeness or suitability) and accept no liability (including without limitation, liability in negligence) for any loss, damage or costs (including consequential damage) relating to any use of or reliance upon the data. Data must not be used for direct marketing or be used in breach of privacy laws.

30.3.2 Gross Regional Product

Gross Regional Product (GRP) represents the size of the economy and includes the total dollar value of all goods and services produced over a specific time period. Nominal GRP of the Mackay-Isaac-Whitsunday (MIW) region was estimated at approximately \$17.6 billion in 2010/11, representing a nominal increase of 8.4% from the level recorded in 2009/10 (\$16.2 billion). The region contributed approximately 6.6% of the Gross State Product (GSP) for Queensland in 2010/11 (\$266.6 billion).

Real GRP is based on chain volume measures or specifically, a function of production or output and is largely independent of inflationary price effects within the current year. In the case of the MIW region, which relies on a significant contribution from the mining sector, total production for the 2010/11 was significantly lower due to the effects of the floods, consequently impacting quite negatively on real GRP.

According to the Regional Economic Development Corporation (REDC) Regional Development Register, the GRP per capita for the MWI region is \$99,580, as compared to the GSP per capita for Queensland which is \$59,060. The economic value per capita from the region is significant when compared to the rest of Queensland.

In 2010/2011, mining contributed \$7.43 billion to the total GRP of the of MIW region \$17.6 billion, or 42%. The next most significant industry sectors contributing to the regions GRP were 'ownership of dwellings' (8.5%) and 'construction' (5.6%). Mining's share of GRP has declined from 50% to 42% from 2006/2007 to 2010/2011¹. Never-the-less mining continues to dominant the economy of the region.

Agriculture, fishing and forestry's contribution to the GRP in 2010/2011 was \$361.5 million or 2%.

At June 2009 there were approximately 15,419 registered businesses in the MIW region. The industries with the largest number of businesses were agriculture, forestry and fisheries (3,334 or 21.6% of the total), construction (2,828 or 18.3% of the total) and rental, hiring and real estate (1,627 or 10.6% of the total). These industries contributed 10.5%, 16.9% and 6.1% of the total turnover from all businesses respectively. By comparison mining contributed 244 businesses (1.6% of the total) but contributed 9.5% of the total turnover from all businesses and had the highest average turnover per business².

30.3.3 Productivity

Dividing the real GRP of a region by total hours worked measures the labour productivity within that region. The MIW region recorded total industry productivity (or industry value added per hour worked) of approximately \$82.83 in 2010/11². The mining sector's productivity was \$284.77 per hour worked, the highest of any industry sector. The next highest were financial and industrial services (\$192.63 per hour worked) and 'information, media and telecommunications' (\$87.95 per hour worked). By comparison, the productivity of the agricultural, fishing and forestry sector was \$49.16 per hour worked.

30.3.4 Population

Table 30-1 shows the population estimate for 2011 and future years to 2031 for the MIW region, by regional council area. The population of each regional council, and therefore the population of the entire region, is expected to grow significantly over the next 20 years. The region's population is projected to increase by an average annual growth rate of 2.2% between 2011 and 2031.

¹ Mackay-Whitsunday-Isaac REDC March 2012 and 2009 combined to demonstrate trend

² Mackay-Whitsunday-Isaac REDC March 2012

Table 30-1 Projected Population for the MIW Region - 2011 to 2031

Local Government Area	Projected population as at 30 June (number)					Average annual growth rate (%)
	2011	2016	2021	2026	2031	2011-2031
Isaac (R)	23,277	28,266	31,418	34,270	37,000	2.3
Mackay (R)	121,397	138,348	156,117	172,604	187,367	2.2
Whitsunday (R)	35,743	40,618	46,008	50,928	55,451	2.2
Mackay-Whitsunday-Isaac Region	180,417	207,232	233,543	257,802	279,818	2.2
Queensland	4,611,491	5,092,858	5,588,617	6,090,548	6,592,857	1.8
Region as % of Qld	3.9	4.1	4.2	4.2	4.2	

Source: OESR Regional Profile Mackay Isaac Whitsunday (OESR, 2012)

30.3.5 Glenden Population

Glenden had a population of 1,313 people, as at 2009. Glenden was designed and built as a township for workers at the Newlands coal mine, 30 km north-west of Glenden. The design accorded with advanced contemporary standards - no cross-road intersections and all public-utility services placed underground. The town was administered not by the company but by Nebo Shire, now part of the Isaac Regional Council. The town has a number of basic social services including an ambulance service, a school, a community centre, sports facilities, a local shopping centre and a medical centre (UQ, 2001).

Whilst there is little data available on the future population predictions for Glenden specifically, historical population growth data indicates a steady increase in the population of Glenden. **Table 30-2** outlines the population statistics from the Office of Economic Statistics and Research (OESR, 2010).

Table 30-2 Historical Population Growth for Glenden - 2001 to 2009

Local Government Area	Population as at 30 June (number)					Average annual growth rate (%)
	2001	2006	2007	2008	2009	2001-2009
Glenden	909	1,179	1,190	1,243	1,313	5.5

30.3.6 Labour Force

Based on 2006 census data (ABS, 2006a; ABS, 2006b), in the MIW region, the mining sector contributed 8,495 jobs out of a total of 72,767 (11.7%) - the greatest number of jobs in any sector. The sectors that contributed the next highest number of jobs in the MIW region were 'retail trade' (10.8%) and 'construction' (9.6%). In comparison, mining contributed 1.7% of the total jobs in Queensland. This data demonstrates the significant contribution of mining to employment in the MIW region.

The number of unemployed people (aged 15 years and over) in the MIW Region in the March quarter 2012 was 4,129 (OESR, 2012). This represented an unemployment rate of 4.1%. In comparison, Queensland had an unemployment rate of 5.5%. Within the region, the Isaac Regional Council recorded the lowest unemployment rate (1.2%), potentially due to high demand for workers in the mining sector during this period.

Based on 2006 census data, the average weekly household income in the MIW region was \$1,343 which is 10% higher than Queensland median household income. In the Isaac region, the average weekly

household income was between \$1,798 and \$1,943 and the unemployment rate was between 0.5 and 2.1%. In contrast, in the Whitsunday region the average weekly household income was between \$1,020 and \$1,180 and the unemployment rate was between 5.2 and 6.1%.

30.3.7 Housing and Accommodation in the Region

Table 30-3 presents the median house prices in the Mackay, Isaac and Whitsunday Regional Councils in the year to September 2011 and changes in median house prices over one year and 5 years. House prices in Isaac Regional Council increased 48.4% over five years. Towns in the MIW region with greatest increase in house prices over five years are Dysart (63.2%), Moranbah (49%), Marian (59.5%) and Collinsville (39.8%). With the exception of Marian, these towns are all associated with nearby mining projects.

Table 30-3 Changes in Median House Prices

Regional Council	Median house price Sep 2010 to Sep 2011	Change over 1 year	Change over 5 years
Isaac Regional Council	\$460,000	8.2%	48.4%
Mackay Regional Council	\$410,000	-2.5%	17.1%
Whitsunday Regional Council	\$350,000	-5.3%	26.1%

Source: REIQ, 2011

Within the Isaac Regional Council (REIQ, 2011):

- Vacant land prices have increased by 104.5% over five years
- Rentals for three bedroom houses have increased from \$600 to \$1,200 per week (100%) between September 2010 and September 2011
- Rentals for two bedroom flats / unit have increased from \$260 to \$950 per week (265%) between September 2010 and September 2011

In Mackay and Whitsunday Regional Councils, rentals for various accommodation types have increased by between 0% and 16% between September 2010 and September 2011. Recent resource developments such as those surrounding Moranbah are likely contributors to the increases in median rental values within the Isaac Regional Council.

The Real Estate Institute of Queensland (REIQ) outlines that vacancy rates in the Mackay region have increased from 1.7 % in June 2012 to 4 % in September 2012. The cancellation of projects in the mining industry in the previous 12 months has immediately carried over into the rental market.

30.3.8 Building Approvals

In the 12 months ending 30 June 2012, there were 1,771 dwelling units in new residential buildings approved in MIW region, with a total value of \$469.8 million (OESR, 2012). In comparison, the total value of new residential building approvals in Queensland was \$6,526.8 million. Within the region, Mackay Regional Council recorded the largest values of new residential building approvals (\$386.7 million).

The total value of non-residential building approvals in MIW region in the 12 months ending 30 June 2012 was \$310.5 million. The largest values of non-residential approvals were recorded in Mackay Regional Council (\$259.3 million) and Isaac Regional Council (\$33.1 million).

30.3.9 Local Property Markets

Table 30-4 provides the median house price and area in 2011 for Glenden, Collinsville, Moranbah and Nebo (all within the MIW region). Median house prices per square metre in Moranbah (\$389) are more than three times those in Glenden (\$111) and Nebo (\$111). Median vacant land prices per square metre are \$141 in Moranbah and \$2 in Glenden. Median commercial land prices per square metre are \$161 in Moranbah and \$168 in Glenden. The data indicates that the Glenden property market is not subject to the excess of demand over supply that can be inferred from the Moranbah property market.

The accommodation and housing strategy for the project is described in **Chapter 31**. The project workforce will be housed in a purpose built accommodation village, houses or flats / duplexes. It is not expected that existing housing in Glenden will be used as rental accommodation for the project.

Table 30-4 Median House and Land Prices and Areas

Median dollar values and area	Glenden	Collinsville	Moranbah	Nebo
Houses				
House price	\$98,500	\$80,500	\$315,000	\$225,000
House area (m ²)	886	1,012	809	2,023
House price per m ²	\$111	\$80	\$389	\$111
Vacant Land				
Vacant land price	\$1,625	\$18,000	\$120,000	\$63,270
Vacant land area (m ²)	865	1,012	850	2,023
Vacant land price per m ²	\$2	\$18	\$141	\$31
Commercial land				
Commercial land price	\$334,000	\$106,650	\$260,000	\$100,000
Commercial land area (m ²)	1,989	1,100	1,619	26600
Commercial land price per m ²	\$168	\$97	\$161	\$4

Source: Property Data Solutions, 2011

30.3.10 Major Developments

According to REDC there are currently \$107 billion in major developments in the MIW region in various stages of completion. Of this \$92 billion has not started, \$13 billion is in progress and \$2 billion is completed. Combined mining (\$34.5 billion), sea ports (\$41 billion) and rail (\$13.5 billion) investment contribute to approximately \$89 billion or 83% of the total investments for the region. Investment in sea ports and rail is linked to the increased investment in mining which requires rail and sea ports for export of mined product (predominantly coal).

Table 30-5 provides a summary, as at 2011, of the major proposed projects in the region, their estimated cost (investment), status and expected completion date. There is significant future investment planned in the region, with the majority of investment linked to coal mines and port expansions.

Table 30-5 Major Project Summary in the Region

Project	Proponent	Cost	Status	Estimated Completion	Council
Abbot Point Coal Terminal 1	North Queensland Bulk Ports	< \$1 Billion	Completed	2011	Whitsunday
Abbot Point Coal Terminal 2	BHP Billiton	> \$1 Billion	Preliminary Assessment		Whitsunday
Abbot Point Coal Terminal 3	Hancock Coal Pty Ltd	> \$1 Billion	Preliminary Assessment		Whitsunday
Hay Point Coal Expansion Project	BHP Billiton Mitsubishi Alliance	> \$1 Billion	Delivery	2015	Mackay
Early Childhood Education Centres		< \$100 Million	Delivery		
Mackay Base Hospital Expansion	Queensland Health	< \$500 Million	Delivery	2013	Mackay
Bruce Highway Upgrades		< \$1 Billion	Various stages		Mackay
China First Rail Network	Waratah Coal	> \$1 Billion		2014	Whitsunday
Daunia Coal Project	BHP Billiton Mitsubishi Alliance	> \$1 Billion		2013	Isaac
Byerwen Open-cut	Q Coal	> \$1 Billion		2014	Isaac
Moranbah to Alpha Pipeline Project		< \$1 Billion	Business Case	2015	
Connors River Dam and pipelines to Moranbah		> \$1 Billion	Procurement	2015	
Central Queensland Gas Pipeline	AGL Energy / Arrow Energy	< \$500 Million		2014	Isaac
Grosvenor Underground Coal Project	Anglo American Metallurgical Coal	< \$1 Billion		2014	Isaac
Peaks Downs Open Cut Expansion	BHP Billiton Mitsubishi Alliance	< \$1 Billion		2014	Isaac
Moranbah South Underground Coal Project	Anglo American Metallurgical Coal / Exxaro Australia	> \$1 Billion		2017	Isaac
Dalrymple Bay Coal Terminal Expansion	North Queensland Bulk Ports Corporation	< \$1 Billion		2018	Whitsunday
Broadmeadow Underground Expansion	BHP Billiton Mitsubishi Alliance	< \$1 Billion		2013	Isaac
Peak Downs Highway upgrades		> \$1 Billion	Various Stages		Mackay
Dudgeon Point Coal Terminals	North Queensland Bulk Ports Corporation	< \$1 Billion		2013	Whitsunday
Mackay TAFE Training Facility at Central Queensland University		< \$100 Million	Pre-project	2014	Mackay
Reinforce energy supply to Airlie Beach	Ergon Energy	< \$100 Million	Pre-project	2015	

Project	Proponent	Cost	Status	Estimated Completion	Council
Reinforce energy supply to Bowen Basin	Ergon Energy	< \$100 Million	Pre-project	2016 - 2021	
Sarina Hospital Expansion		< \$100 Million	Pre-project	2016 - 2021	
Bowen Hospital Expansion		< \$500 Million	Pre-project	2016 - 2021	

30.3.11 Existing Coal Mines

The region is home to Australia's largest coal deposit, and is the nation's largest coal producers. There was a total of 103.5 Mt of saleable coal production (73.5 Mt of coking coal and 30 Mt of thermal coal) in the MIW region in 2010-11, compared to 121.4 Mt the previous year, primarily due to weather events and natural disasters. This was produced from 31 mines with production ranging between 60,000 and 10 million tonnes per mine.

30.3.12 Existing Transport Infrastructure

There are three sea ports servicing the region, all managed by North Queensland Bulk Ports Corporation (NQBP). The Port of Abbot Point is located closest to the project's location and will be used to export the project's coal output. The coal terminal at Abbot Point, which is owned by Ports Corporation of Queensland (PCQ) and operated by Abbot Point Bulk Coal Pty Ltd, is of significant strategic value to NQBP and the State due to the unusually deep water (>15m) so close to the shore line. Studies are currently underway to significantly expand the coal export facilities at Abbot Point.

Moranbah Airport and Mackay Airport are the closest airports to the region. Moranbah Airport is recognised by the Queensland Government as an airport of significance with recent rapid growth in traffic. This is credited to the region's mining boom, with four airline carriers (Qantas, Virgin Blue, Jetstar and Tiger Airways) providing frequent and low-cost services to the airports (REDC, 2009).

The main national highway, the Bruce Highway, runs through Mackay, connecting with the Peak Downs Highway and Suttor and Bowen Developmental Roads that run through the regional towns.

Three designated freight rail systems service the region, designed for transporting coal, sugar and other freight products. The existing Goonyella to Abbot Point (GAP) rail line intersects the Byerwen project area.

30.3.13 Agriculture

During the 2005/06 period, both Whitsunday and Isaac's most valuable livestock commodity was cattle and calves, contributing \$49.21 million and \$200.04 million to the regions respectively, which equates to 97% of the total livestock value of \$257 million.

In 2005/06 horticulture in the Whitsunday Regional Council area contributed \$74.4 million from tomatoes and \$63.5 million from capsicums.

These estimates of agricultural value are broadly similar to the estimates of the agriculture, fishing and forestry's contribution to the GRP in 2010/2011 of \$361.5 million.

30.3.14 Analysis of Existing Economy

In summary, the main characteristics of the existing economic environment in the region include:

- significant population growth sustained by the mining and construction industries, which is expected to continue over the next 20 years

- the average annual income in the region is considerably higher than the average annual income for Queensland
- housing prices and repayment costs within the MIW region are generally on par with the state averages, however localities such as Moranbah have experienced significant short-term growth
- the region is adequately serviced by existing infrastructure, including three sea ports, the Mackay airport, the Bruce Highway and three designated freight rail systems
- a reasonably tight labour market with an unemployment rate below the state average
- the mining sector is the largest employing industry, followed by retail trade, and construction
- outside of mining, the region is predominantly made up of small businesses specialising in agriculture, forestry and fishing and the wholesale trade.

The region's competitive advantage is its proximity to the coal resources within the Bowen Basin. This competitive advantage will be realised through the planned development of port and rail infrastructure for the export of coal.

30.4 Methodology for Assessment of Economic Impacts

The method used to measure the economic impacts of constructing and operating the project is Input-Output (I-O) analysis. I-O analysis is a well-established and widely used technique for estimating economic impacts of an existing, expanding or new economic activity in a region. It examines how the project affects an economy through both backward and forward linkages between all industries in the economy. It takes the initial effect of the project, and traces all the multiplier or 'flow-on' effects – known as direct, indirect and induced. The final result is an overall picture of the project's expected contribution for the regional, state and national economies.

The framework implies the initial expenditure on the project creates a first round, or direct flow-on effect, across all businesses and employees in the supply chain (e.g. construction or mining). This in turn encourages further indirect expansionary effects to other sectors of the economy supporting the project (e.g. residential building construction). The direct and indirect effects, further induced impacts or 'pay-packet' effects are expected to be realised in terms of the consumption of goods and services by the household sector (e.g. retail trade, cafes and restaurants).

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 output) and employment which is directly generated across all supplying sectors in the industry receiving the initial impact.
- The indirect multiplier effect represents the second round that occurs across all secondary industries in the economy to support the direct impact.
- The total multiplier effect is the sum of the direct and indirect multiplier effects outlined above.

In applying the I-O method, the economic impact is measured by means of four key economic indicators – value added (at the regional and state level), output (at the rest of Australia level), impact on household incomes and employment (at both regional, state and national levels).

The value added measure can be defined as the *net* revenue of goods and a service provided by all industries resulting directly and indirectly from a change in final demand and is equivalent to GRP.

The output measure, by contrast, is defined as the *gross* revenue of goods and services produced by all industries of the economy that is required to satisfy the change in final demand for the output of that industry.

Household Income estimates include both direct and indirect impacts. Households will benefit through additional wages and salaries paid by the proposed project during both construction and operation, as well as flow-on employment, or income earning opportunities created by the project.

Employment flow-on effects occur because businesses adjust the level of resources used to accommodate for changes in the value added and output impacts. For instance, during the operational phase of the mine development, employment increases to enable the production of goods and services to service maintenance workers. Employment includes the number of working proprietors, and may encompass managers, directors, and other employees in terms of full-time equivalents. Employment flow-on effects also have direct and indirect effects. The direct flow-on effect is defined as the change in employment associated with those industries directly supporting the activities of the expanding sector. The indirect effects represent the increase in employment across all indirect support sectors (i.e. sectors providing inputs to supply sectors). The direct employment numbers predicted by the model are a function of the multipliers used in the model and are not directly comparable to the anticipated workforce numbers presented in **Chapter 6** and **Chapter 7**.

Model assumptions and limitation are described in **Appendix 31**.

The I-O multipliers for the construction period were developed under the assumption that material impacts of the project's construction were likely to have nation-wide impacts, whereas the operational multipliers cover the region and state only, under the assumption that material impacts will affect the region and state only.

30.5 Economic Impacts

The I-O model has been used to model impacts separately for the first construction phase, second construction phase and operations.

30.5.1 Construction Phase

Table 30-6 summarises the full capital expenditure costs associated with the project. Year 5+ contains capital expenditure on the second construction phase. Other years contain capital expenditure on the first construction phase.

Capital expenditure by year and type of expenditure are allocated against up to 76 industry sectors identified in the I-O tables for output (or consumption), household income, employment and value added.

The extent of the total impact for each of these measured indices will be distributed across a broad range of industry sectors. **Table 30-7** summarises the results of the I/O model from capital expenditure for the first stage of construction. The full direct, indirect and total impacts, categorised by industry, are provided in **Appendix 30**.

Over the period of the first construction phase the project will generate, directly and indirectly:

- \$2,712 million in output (or consumption)
- \$703 million in household incomes
- 5,609 full time equivalent (FTE) jobs in any one year (Year -1)
- \$1,314 million in value added

For the second stage of construction, the direct (\$10.44 million) and indirect (\$10.28 million) distributional outputs total \$20.72 million; the direct (\$3.22 million) and indirect (\$1.83 million) impact on household income totals \$5.05 million and the anticipated direct (\$4.29 million) and indirect (\$5.47 million) value added effects total \$9.76 million.

Table 30-6 Project Capital Expenditure (\$M)

Activity Costs (\$M)	Total					Region					Queensland					National					International				
	Yr	Yr	Yr	Yr	Yr	Yr	Yr	Yr	Yr	Yr	Yr	Yr	Yr	Yr	Yr	Yr	Yr	Yr	Yr	Yr	Yr	Yr	Yr	Yr	Yr
	-3	-2	-1	+1	5+	-3	-2	-1	+1	5+	-3	-2	-1	+1	5+	-3	-2	-1	+1	5+	-3	-2	-1	+1	5+
Development Costs	70	70	35	-	-	15	15	7	-	-	55	55	28	-	-	-	-	-	-	-	-	-	-	-	-
Processing Plant	2	50	260	-	-	-	20	90	-	-	2	20	110	-	-	-	5	30	-	-	-	5	30	-	-
On - site Infrastructure	-	30	110	-	-	-	10	40	-	-	-	15	60	-	-	-	5	10	-	-	-	-	-	-	-
Off - site Infrastructure	340	60	140	-	-	220	15	70	-	-	120	45	70	-	-	-	-	-	-	-	-	-	-	-	-
Mobile Plant and Equipment	-	-	160	100	125	-	-	25	15	25	-	-	-	-	-	-	-	-	-	-	-	-	135	85	100
Pre Operations	-	10	25	-	-	-	5	15	-	-	-	5	10	-	-	-	-	-	-	-	-	-	-	-	-
Project Management	2	10	20	-	-	1	5	10	-	-	1	5	10	-	-	-	-	-	-	-	-	-	-	-	-
Other	5	40	60	40	-	3	20	30	20	-	2	20	30	20	-	-	-	-	-	-	-	-	-	-	-
Total	419	270	810	140	125	239	90	287	35	25	180	165	318	20	0	0	10	40	0	0	0	5	165	85	100

Table 30-7 Summary of Direct and Indirect Impacts from Capital Expenditure (\$M) – First Construction Phase

Direct and Indirect Impacts from Capital Expenditure (\$M) – First Construction Phase																
Output (or Consumption) (\$M)																
	Year-3				Year-2				Year-1				Year +1			
	Region	Qld	National	Total	Region	Qld	National	Total	Region	Qld	National	Total	Region	Qld	National	Total
Direct	239.00	180.00	0.00	419.00	90.08	164.91	10.00	265.00	287.12	318.04	27.28	632.44	35.02	20.00	0.00	55.01
Indirect	37.56	168.80	0.00	206.36	71.71	213.69	14.69	300.09	282.95	463.62	40.62	787.19	22.63	24.61	0.00	47.24
Total	276.56	348.80	0.00	625.36	161.80	378.59	24.69	565.09	570.07	781.65	67.90	1419.62	57.65	44.60	0.00	102.25
Household Incomes (\$M)																
	Year-3				Year-2				Year-1				Year +1			
	Region	Qld	National	Total	Region	Qld	National	Total	Region	Qld	National	Total	Region	Qld	National	Total
Direct	4.78	74.00	0.00	78.78	34.73	61.13	2.97	98.82	88.71	90.02	7.75	186.48	8.34	7.10	0.00	15.44
Indirect	7.28	50.80	0.00	58.08	13.25	57.65	3.28	74.18	50.32	121.15	9.10	180.56	4.12	6.75	0.00	10.87
Total	12.06	124.80	0.00	136.86	47.89	118.77	6.25	172.92	139.03	211.17	16.85	367.05	12.45	13.85	0.00	26.30
Employment Effects																
	Year-3				Year-2				Year-1				Year +1			
	Region	Qld	National	Total	Region	Qld	National	Total	Region	Qld	National	Total	Region	Qld	National	Total
Direct	68.29	1120.00	0.00	1188.29	461.32	826.16	50.18	1337.66	1263.90	1339.84	132.12	2735.86	114.51	102.95	0.00	217.46
Indirect	136.57	720.00	0.00	856.57	201.30	812.24	54.14	1067.68	906.19	1815.83	150.59	2872.62	69.60	97.55	0.00	167.15
Total	204.86	1840.00	0.00	2044.86	671.02	1638.40	103.87	2413.29	2170.09	3155.67	282.72	5608.47	185.20	200.50	0.00	385.70
Value Added (\$M)																
	Year-3				Year-2				Year-1				Year +1			
	Region	Qld	National	Total	Region	Qld	National	Total	Region	Qld	National	Total	Region	Qld	National	Total
Direct	181.87	92.80	0.00	274.67	43.28	76.95	3.84	124.07	118.04	123.55	10.22	251.81	19.29	9.14	0.00	28.42
Indirect	1.91	80.00	0.00	81.91	40.01	95.70	5.74	141.45	150.59	205.38	15.91	371.89	11.40	11.14	0.00	22.54
Total	200.76	172.80	0.00	373.56	83.21	172.61	9.58	265.40	268.64	328.89	26.13	623.66	31.51	20.27	0.00	51.78

30.5.2 Operations Phase

Following the ramp up phase of operations (Year 1 to Year 4), annual operation expenditure is predicted to be constant over the remainder of the project life. The most significant annual operating costs of the project from Year 5 onwards are the general mining expenses (\$294 million), the capital payment costs (\$168 million) and the operators cost for the mobile plant and equipment (\$142 million). Project operating expenditure is provided in **Table 30-8**.

Operating expenditure by year and type of expenditure are allocated against industry sectors identified in the I-O tables for output (or consumption), household income, employment and value added. The extent of the total impact for each of these measured will be distributed across a broad range of industry sectors.

The full direct, indirect and total impacts, categorised by industry, are provided in **Appendix 30. Table 30-9** summaries the total direct and indirect effects of the project's operations.

From Year 5 onwards (Yr5+) the I-O model predicts that the project will generate (directly and indirectly):

- \$2,299 million in output per annum
- \$482 million in household incomes per annum
- 6,208 FTE jobs per annum
- \$1,133 million in value added per annum

Table 30-8 Project Operating Expenditure (\$M)

Costs (\$M)	MWI Region					QLD					Total				
	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5+	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5+	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5+
Operators	12	23	34	46	57	17	34	52	68	85	29	57	86	114	142
Mining Fuel	27	54	81	107	134	0	0	0	0	0	27	54	81	107	134
Mining - drill & blast	16	32	48	64	80	4	8	12	16	20	20	40	60	80	100
CHPP Op Cost	7	13	20	27	33	10	20	30	40	50	17	33	50	67	83
Mining General	30	59	88	118	147	30	59	88	118	147	59	117	176	236	294
Mining capital payment costs	0	0	0	0	0	34	67	101	134	168	34	67	101	134	168
Off- site infrastructure costs	2	4	5	7	9	4	8	13	17	21	6	12	18	24	30
Management Costs	3	6	9	12	15	3	6	9	12	15	6	12	18	24	30
Total	96	190	286	381	475	102	202	304	405	506	198	392	590	786	981

Table 30-9 Summary of Direct and Indirect Impacts from Operational Expenditure (\$M)

Direct and Indirect Impacts from Operational Expenditure (\$M)															
Output (or Consumption) (\$M)															
	Year 1			Year 2			Year 3			Year 4			Year 5+ (per annum)		
	Region	Qld	Total	Region	Qld	Total	Region	Qld	Total	Region	Qld	Total	Region	Qld	Total
Direct	95.70	102.30	198.00	190.10	201.90	392.00	285.80	304.20	590.00	380.60	405.00	785.60	475.00	506.00	981.00
Indirect	100.54	165.72	266.25	193.05	317.55	510.60	302.49	499.41	801.90	405.43	668.77	1074.19	497.42	820.45	1317.87
Total	196.24	268.02	464.25	383.15	519.45	902.60	588.29	803.61	1391.90	786.03	1073.77	1859.79	972.42	1326.45	2298.87
Household Incomes (\$M)															
	Year 1			Year 2			Year 3			Year 4			Year 5+		
	Region	Qld	Total	Region	Qld	Total	Region	Qld	Total	Region	Qld	Total	Region	Qld	Total
Direct	22.19	19.69	41.88	55.73	38.86	94.59	65.63	57.27	122.90	86.78	136.19	222.97	116.70	115.05	231.75
Indirect	18.42	34.46	52.88	47.26	68.26	115.52	55.66	102.55	158.21	75.00	210.60	285.60	98.91	193.81	292.72
Total	40.61	54.14	94.76	102.99	107.12	210.11	121.29	159.83	281.12	161.77	211.31	373.08	215.60	266.54	482.13
Employment Effects															
	Year 1			Year 2			Year 3			Year 4			Year 5+		
	Region	Qld	Total	Region	Qld	Total	Region	Qld	Total	Region	Qld	Total	Region	Qld	Total
Direct	276	246	522	566	487	1053	818	722	1540	1,087	954	2040	1375	1208	2582
Indirect	275	455	730	520	909	1429	833	1357	2190	1,124	1,802	2926	1363	2260	3623
Total	551	702	1254	1086	1396	2482	1652	2079	3732	2,209	2,758	4968	2739	3469	6208
Value Added (\$M)															
	Year 1			Year 2			Year 3			Year 4			Year 5+		
	Region	Qld	Total	Region	Qld	Total	Region	Qld	Total	Region	Qld	Total	Region	Qld	Total
Direct	47.62	24.59	72.21	94.87	43.61	138.48	181.66	91.06	272.72	306.8	154.5	461.3	289.55	143.84	433.39
Indirect	55.05	61.30	116.35	107.06	102.49	209.55	210.69	235.68	446.37	357.1	406.8	763.8	334.13	365.07	699.21
Total	102.67	85.81	188.48	201.92	146.11	348.02	392.35	326.74	719.10	663.8	561.2	1225.1	623.67	508.82	1132.50

30.5.3 Government Revenue

30.5.3.1 Royalty Payments for Coal

The proponent will be exporting a mixture of thermal and coking coal, and a scenario analysis was produced outlining the various royalty payments that could be made, based on a number of changing variables including the price per tonne of thermal coal and coking coal and the split of coal production between thermal and coking coal. The two prices used were the average annual coal prices, as per the DNRM, and the forecasted December 2012 price, as per the National Australia Bank (NAB, 2012).

In total, and subject to coal prices and exchange rate variations, it is estimated that up to approximately \$23 billion in total royalty payments and levies over the life of the project, would be made to the Queensland Government.

30.5.3.2 State Payroll Tax

Based on a peak operational workforce of 545 employees, the Queensland State Government could expect to receive up to \$2.36 million in payroll tax per annum. This figure is calculated based only on the mine's direct employment numbers. Any flow-on effects created by the project may also generate significant amounts of payroll taxes to the Queensland government.

30.5.3.3 Port Dues

Port dues are also payable to the relevant port authority, namely Abbot Point. The estimated annual port dues are \$1,347,000.

30.5.3.4 Other State Duties and Taxes

Over the life of the project, the proponent may be liable for a number of other state duties and taxes, including:

- State Land Tax
- Tenure Rents
- Transfer/Stamp Duty
- Vehicle Registration Duty
- Queensland Competition Authority (QCA) Levy
- Insurance Duty.

30.5.3.5 Australian Government Revenues

In 2011, the Australian Federal Government passed the Minerals Resource Rent Tax (MRRT) regime for the mining of iron ore and coal in Australia. The current legislation details that the tax will be applicable from 1 July 2012 to those companies whose resource profits exceed \$75 million per annum. The basic MRRT rate is 30%, which is reduced by a 25% extraction allowance, making the effective tax rate 22.5%.

The proponent may be liable to the MRRT, based on the taxable annual profits achieved. Future profits are highly variable based upon market prices, costs and input resources consumed, and at this point, it is not possible to accurately project the projects future profit levels and subsequently, and potential MRRT liabilities.

The proponent, employees and other businesses providing goods and services to the project will be liable for other federal taxes, including company tax, personal income tax, GST and import duties.

30.5.3.6 Local Government Revenue

For the various local governments, it is expected that a proportion of the employment and local mine expenditure will stimulate housing, retail and commercial development. Furthermore, the use of land for the project is expected to affect the Mackay, Isaac and Whitsunday Council rates.

The contributions through community grant schemes and proceeds from royalty payments are expected to assist in the funding of a wide range of services to the benefit of the community. This includes the management and maintenance of critical social and economic infrastructure such as local roads, libraries, sporting grounds and swimming pools, parks and playgrounds, community halls, and street lighting, as well as providing services such as waste collection, information and economic development.

30.5.4 Impacts on the Local Area and Region

The investment in the construction and operation of the project is expected to generate moderate to major economic benefits to the region in the form of increased economic activity and employment. These benefits (as measured and described above), would in turn lead to a steady increase in the region's population and subsequent demand for goods and services. **Chapter 31** describes the social and economic impacts of an increasing regional populations and the accommodation strategy proposed by the proponent to cater for the project's workforce.

30.5.5 Impacts for Business and Industries

The project is expected to change the underlying economic base and industrial structure of the Bowen Basin region by developing businesses and industries that directly and indirectly support the construction and operation of coal mining activities. The key driver of this underlying change relates to the increase in demand for goods and services and population growth resulting from increased employment opportunities.

The social and socio-economic impacts associated with the construction and operations of the project are likely to include:

- increased employment opportunities for skilled and unskilled workers, particularly in engineering and technical trade areas, including for workers already resident in the Glenden / Collinsville / Mackay area
- an increase in local population where workers and families may relocate to Glenden or Collinsville
- an increase in the temporary population of Glenden or Collinsville where workers choose to work on a drive in/drive out basis
- relocation of workers and families from outside the region to centres such as Mackay
- increased demand for local community services and facilities
- flow on effects in relation to accommodation in Glenden and Collinsville
- increased business opportunities for local and regional suppliers
- increased revenue to the government sector from infrastructure charges, taxes and royalties.

Based on the economic impact assessment, the impacts of the project include:

- moderate to major beneficial impacts:
 - increased economic activity, including gross regional product, employment and incomes
 - direct benefits for industries other than mining, e.g., construction, port activities, retail
- minor to moderate adverse impacts:

- population growth placing demand on social infrastructure, such as housing, commercial property, education, healthcare and ports
- labour shortage through demand for labour for mining and construction workers and support services
- upward pressure on wages due to labour shortage, and potential to increase gap between other employment generators (e.g. agriculture).

With regard to employment, education and training, the project also has the potential to contribute to regional skills shortages and to draw skills from other businesses, to generate opportunities for local businesses, and to increase the cost of living in the local area.

Chapter 31 describes mitigation measures for potential adverse socio-economic impacts of the project.

30.5.6 Agricultural Value of Land

The contribution to the economy is the total value of agricultural production for the 2009–10 year in the Mackay Statistical Division was \$1,066.6 million, representing 11 per cent of the total value of agricultural production in Queensland. This project area represents less than 1% of the Mackay Statistical Division and it is estimated that the annual agricultural production of the land in the project would be approximately \$10 million. This is significantly less than the annual value added from project operations of \$1,133 million.

30.5.7 Impacts of Adverse Weather

The proponent will devise a number of strategies to mitigate for above average seasonal wet weather and any potential impacts this may have on the production and delivery of the mine's coal.

During construction, this may include:

- developing a construction program with delay contingencies around expected wet weather periods
- utilising construction techniques that, in the case of severe rainfall, will not significantly hamper the completion of the project.

During operations, this may include advanced planning of production and transporting schedules to prepare for expected wet seasons.

Chapter 16 describes flood modelling for the project, which shows that only some sections of the western extents of a limited number of waste rock dumps are at risk from flooding in a 1 in 1,000 year rainfall event. Thus operations should not be severely impacted by adverse wet weather.

30.6 Sustainable Development

The objectives of the National Strategy for Ecological Sustainable Development (NSESD) are

- to enhance individual and community well-being and welfare by following a path of economic development that safeguards the welfare of future generations
- to provide for equity within and between generations
- to protect biological diversity and maintain essential ecological processes and life-support systems

This chapter demonstrates the economic benefits that will be obtained by current and future generations from the project over approximately 50 years. Social impacts and benefits are described in **Chapter 31** and measures are proposed to mitigate impacts and enhance benefits such that community and individual well-being is advanced.

The project will impact the environment and these impacts and measures to mitigate impacts are described in the chapters of this EIS. With the implementation of proposed mitigation measures the project is not expected to minimise impacts to biological diversity and essential ecological processes and life-support systems.

30.7 Conclusion

The project is estimated to contribute moderate to major economic benefits to the region and the wider domestic economy over the life of the project. The project is aligned to government policies and priorities, supporting and strengthening Queensland as part of the four pillar economy. Over the period of the first phase of construction the project is estimated to have the following direct and indirect economic benefits in the region and State:

- \$2,712 million in output
- \$1,309 million in gross value added (outputs less inputs)
- \$700 million in household incomes
- Up to 5,609 FTE jobs (direct and indirect) in any one year.

During the operations phase of the project is estimated to have the following average annual (following the initial four years of ramp up) direct and indirect economic benefits:

- \$2,299 million per annum in output
- \$1,133 million per annum in gross value added (outputs less inputs)
- \$482 million per annum in household incomes
- 6,206 full time equivalent jobs per annum (direct and indirect).

The project is expected to provide a number of economic benefits to the project area as well as Queensland including:

- contribution to meeting long-term projected demands in the global coking coal market
- contribution to regional household income
- contribution to employment, education and training opportunities
- the continued prosperity of the Queensland economy.

Considering the impacts of the projects on the region, there is potential to deliver both beneficial and adverse economic impacts. Moderate to major beneficial impacts include:

- increased economic activity, including gross regional product, employment and incomes.
- direct benefits for industries other than mining, e.g. construction, port activities, retail.
- increased government revenues through taxation and royalties.

Minor to moderate adverse impacts include:

- population growth placing demand on social infrastructure
- labour shortages through labour demand for mining and construction workers
- upward pressure on wages due to labour shortage, and potential to increase the gap between wages in other economic sectors
- direct impacts on agricultural land and production due to competition for land.

The social impact assessment describes measures to mitigate socio-economic impacts. Measures to mitigate direct impacts on the land within the project area are described in **Chapter 14**.